CHAPTER 1
GENERAL INFORMATION

1996 Publication Numbers

Model	Model No.	Owner's Manual	Parts Manual	Parts Microfiche	Assembly Instructions
Indy Lite	0963433	9913084	9913166	9913167	9913085
Indy Lite Deluxe	0963431	9913084	9913166	9913167	9913088
Indy Lite GT	0963133	9913084	9913308	9913309	9913087
Indy Sport	0960443	9913224	9913222	9913223	9913220
Indy TranSport	0960143	9913224	9913227	9913228	9913225
Indy Sport Touring	0960243	9913215	9913222	9913223	9913221
Indy Super Sport	0960743	9913215	9913218	9913219	9913216
Indy 440 LC	0962760	9913107	9913174	9913175	9913172
Indy 440 XCR	0961660	9913207	9913211	9913213	9913208
Indy 440 XCR SP	0961760	9913706	9913158	9913336	9913338
Indy WideTrak GT	0962061	9913092	9913162	9913163	9913093
Indy WideTrak LX	0962064	9913089	9913164	9913165	9913090
Indy Trail	0962761	9913107	9913176	9913177	9913110
Indy Trail Touring	0962262	9913465	9913176	9913177	9913109
Indy 500	0962764	9913210	9913187	9913188	9913185
Indy 500 SKS	0962564	9913210	9913187	9913188	9913185
Indy 500 RMK	0962964	9913210	9913187	9913188	9913189
Indy Classic	0963865	9913153	9913538	9913539	9913184
Indy Classic Trg.	0963365	9913153	9913362	9913363	9913154
Indy 500 EFI	0963774	9913617	9913618	9913619	9913196
Indy 500 EFI SKS	0962574	9913195	9913198	9913199	9913310
Indy 500 EFI RMK	0962974	9913195	9913198	9913199	9913200
Indy XLT	0966756	9913103	9913382	9913383	9913178
Indy XLT SKS	0960556	9913307	9913181	9913182	9913466
Indy XLT RMK	0960956	9913307	9913181	9913182	9913179
Indy XLT SP	0966676	9913103	9913170	9913171	9913105
Indy XLT Touring	0963357	9913153	9913192	9913193	9913190
Indy 600 XCR	0961676	9913207	9913212	9913214	9913209
Indy 600 XCR SP	0965677	9913322	9913206	9913311	9913323
Indy RXL	0966768	9913205	9913203	9913204	9913201
Indy Ultra SP	0960678	9913094	9913708	9913707	9913194
Indy Ultra SKS	0960578	9913094	9913168	9913169	9913095
Indy Ultra RMK	0960978	9913094	9913168	9913169	9913183
Indy Storm	0965782	9913097	9913159	9913160	9913098
Indy Storm SKS	0965582	9913097	9913159	9913160	9913101
Indy Storm RMK	0965982	9913097	9913159	9913160	9913101

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Model	Model No.	Owner's Manual	Parts Manual	Parts Microfiche	Assembly Instructions
Indy Lite	0973433	9913748	9913827	9913828	9913749
Indy Lite Deluxe	0973431	9913748	9913827	9913828	9913750
Indy Lite GT	0973133	9913740	9913825	9913826	9913742
Indy Sport	0970443	9913688	9913767	9913768	9913687
Indy TranSport	0970143	9913696	9913829	9913830	9913697
Indy Sport Touring	0970243	9913699	9913767	9913768	9913702
Indy XCF	0971643	9913661	9913861	9913862	9913662
Indy Super Sport	0970761	9913763	9913764	9913765	9913766
Indy 440 LC	0972760	9913934	9913835	9913836	9913837
Indy 440 XC	0971760	9913755	9913787	9913788	9913754
Indy 440 XCR	0971660	9914006	9913789	9914472	9913791
Indy WideTrak GT	0972061	9913816	9913817	9913818	9913819
Indy WideTrak LX	0972065	9913821	9913822	9913823	9913824
Indy Trail	0972761	9913709	9913831	9913832	9913710
Indy Trail Touring	0972262	9913705	9913831	9913832	9913704
Indy Trail RMK	0970961	9913647	9913833	9913834	9913648
Indy 500	0972764	9913709	9913839	9913840	9913735
Indy 500 SKS	0972564	9913841	9913839	9913840	9913735
Indy 500 RMK	0972964	9913841	9913839	9913840	9913844
Indy Classic	0973865	9913845	9913846	9913847	9913848
Indy Classic Trg.	0973365	9913732	9913849	9913850	9913737
Indy 500 EFI	0973774	9913753	9913842	9913843	9913751
Indy XLT	0976756	9913713	9913769	9913770	9913714
Indy XLT SKS	0970556	9913761	9913769	9913770	9913762
Indy XLT RMK	0970956	9913761	9913769	9913770	9913771
Indy XLT SP	0976676	9913774	9913775	9913776	9913777
Indy XLT Touring	0973357	9913732	9913772	9913773	9913733
Indy XLT LTD	0973756	9913658	9913779	9913780	9913659
Indy XLT SP LTD	0973776	9913658	9914007	9914008	9913659
Indy 600 XC	0971776	9913755	9913793	9913794	9913758
Indy 600 XCR	0975677	9913795	9913796	9913797	9913798
Indy 600 XCR SE	H975677	9913795	9913796	9913797	9913798
Indy RXL	0976768	9913851	9913852	9913853	9913854
Indy Ultra	0976778	9913804	9913805	9913806	9913807
Indy Ultra SP	0970678	9913912	9913809	9913810	9913811
Indy Ultra SPX	0975678	9913801	9913953	9913954	9913802
Indy Ultra SPX SE	H975678	9913801	9913953	9913954	9913802
Indy Ultra Touring	0975378	9913812	9913813	9913814	9913815
Indy 700 SKS	0970566	9913856	9913857	9913858	9913859
Indy 700 RMK	0970966	9913856	9913857	9913858	9913859
Indy 700 XC	0971766	9914180	9914181	9914182	9914183
Indy Storm	0975782	9913781	9913782	9913783	9913784
Indy Storm SE	H975782	9913781	9913782	9913783	9913784
Indy Storm RMK	0975982	9913786	9913782	9913783	9913784

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Model	Model No.	Supplement to Owner's Manual	Parts Book	Parts Microfiche	Assembly Manual Addendum
Indy Lite	0983433	9914185	9914186	9914187	9914241
Indy Lite Deluxe	0983431	9914185	9914186	9914187	9914188
Indy Lite Trg.	0983133	9914185	9914193	9914194	9914195
Indy Sport	0980443	9914281	9914205	9914206	9914299
Indy TranSport	0980143	9914281	9914282	9914283	9914284
Indy Super Sport	0980761	9914281	9914287	9914288	9914289
Indy Sport Trg.	0980243	9914281	9914205	9914206	9914207
Indy XCF	0981643	9914281	9914277	9914278	9914279
Indy 440	0982760	9914257	9914272	9914273	9914274
Indy 440 XCR	0981660	9914371	9914590	9914591	9914592
Indy Trail	0982761	9914257	9914258	9914259	9914260
Indy Trail Trg.	0982362	9914257	9914231	9914232	9914233
Indy Trail RMK	0980961	9914281	9914221	9914222	9914223
Indy 500	0982764	9914257	9914210	9914211	9914212
Indy 500 Classic	0983865	9914257	9914362	9914363	9914364
Indy 500 RMK	0982964	9914257	9914263	9914264	9914265
Indy Classic Trg.	0983365	9914247	9914248	9914249	9914250
Indy WideTrak LX	0982065	9914387	9914388	9914389	9914390
Indy XLT LTD	0983756	9914302	9914303	9914304	9914305
Indy XLT Classic	0983857	9914302	9914226	9914227	9914228
Indy XLT SP	0985776	9914215	9914216	9914217	9914218
Indy XLT Trg.	0983357	9914302	9914253	9914254	9914255
Indy 600 XCR	0985677	9914339	9914316	9914317	9914318
Indy 700 XCR	0985678	9914339	9914311	9914312	9914313
Indy 600 RMK	0980958	9914371	9914463	9914464	9914465
Indy 700 RMK	0980966	9914371	9914372	9914373	9914374
Indy 600 XC	0981758	9914414	9914419	9914420	9914421
Indy 700 XC	0981766	9914414	9914415	9914416	9914417
Indy Storm	0985782	9914339	9914367	9914368	9914369
Indy Ultra	0986778	9914354	9914355	9914356	9914357
Indy Ultra Trg.	0985378	9914339	9914340	9914341	9914342

1998 Snowmobile Owner's Manual (All) - PN 9914617

1998 Snowmobile Dealer Assembly Manual - PN 9913911

1998 Snowmobile Dealer Assembly Manual Update - PN 9914643

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	S-95-22	Service	False Oil Level
	S-95-18	Service	Exhaust Thermal Sensing System
	S-95-10	Service	Kinked Oil Lines
	I-96-11	Info	Cracked Exhaust Pipes
	I-96-10	Info	Loose Wheel Lock Collars
	I-96-04	Info	Bogging or Belt slippage
	I-96-02	Info	Sharp Edge on Mounting Bracket
	I-95-13	Info	Heavy Steering
1996 Indy Ultra RMK	S-96-13	Service	Aluminum Ski Replacement Program
	S-96-10	Service	Improved Clutch Alignment
	S-96-09	Service	Improved Running Quality & Snowmobility
	S-96-06	Safety	Coolant Tank Expansion
	S-95-22	Service	False Oil Level
	S-95-18	Service	Exhaust Thermal Sensing System
	S-95-10	Service	Kinked Oil Lines
	S-95-07	Service	Recoil Hub Cracking
	I-96-11	Info	Cracked Exhaust Pipes
	I-96-10	Info	Loose Wheel Lock Collars
	I-96-08	Info	Improved High Elevation Performance
	I-96-05	Info	Optional Setup for Deep Snow Performance
	I-96-04	Info	Bogging or Belt slippage
	I-96-02	Info	Sharp Edge on Mounting Bracket
	I-95-15	Info	Improved Snowmobility In Deep Snow
	I-95-13	Info	Heavy Steering
	I-95-09	Info	Kinked Coolant Hose
	I-95-08	Info	Carb & Fuel Recommendations for High Alt.
1996 RXL	I-96-04	Info	Bogging or Belt Slippage
	I-95-13	Info	Heavy Steering
1996 600 XCR SP	S-96-10	Service	Improved Clutch Alignment
	S-96-06	Safety	Coolant Tank Expansion
	S-96-02	Service	Sharp Edge On Engine Mount
	S-95-22	Service	False Oil Level
	I-96-10	Info	Loose Wheel Lock Collars
	I-96-09	Info	Improved Low End Performance-Low Alt.
	I-96-08	Info	Improved High Alt. Performance
	I-96-06	Info	Loose Front Torque Arm Bolts
	I-96-04	Info	Bogging or Belt slippage

Bulletin Index - 1996 By Model

1996 Model	Bulletin #	Type	Notes
1996 600 XCR SP (cont.)	I-96-02	Info	Sharp Edge on Mounting Bracket
	I-95-13	Info	Heavy Steering
	I-95-11	Info	Setup Recommendations
1996 600 XCR	I-96-12	Info	Extended Warranty on 1996 EC58PL Engines
	I-96-10	Info	Loose Wheel Lock Collars
	I-96-06	Info	Loose Front Torque Arm Bolts
	I-96-04	Info	Bogging or Belt slippage
	I-96-03	Info	Restricted Coolant Filter
	I-95-13	Info	Heavy Steering
1996 Indy XLT RMK	S-96-13	Service	Aluminum Ski Replacement Program
	S-95-11	Service	Snow Skirts Cracking Around Mounting Boss
	I-96-12	Info	Extended Warranty on 1996 EC58PL Engines
	I-96-10	Info	Loose Wheel Lock Collars
	I-96-05	Info	Optional Setup for Deep Snow Performance
	I-96-04	Info	Bogging or Belt slippage
	I-96-03	Info	Restricted Coolant Filter
	I-95-13	Info	Heavy Steering
	I-95-07	Info	19 Tooth Top Sprocket For Reverse Kit
1996 XLT SP	I-96-12	Info	Extended Warranty on 1996 EC58PL Engines
	I-96-04	Info	Bogging or Belt slippage
	I-96-03	Info	Restricted Coolant Filter
	I-95-13	Info	Heavy Steering
	I-95-03	Info	Wrong Octane Callout on Specification Decal
1996 XLT SKS	S-95-11	Service	Snow Skirts Cracking Around Mounting Boss
	I-96-12	Info	Extended Warranty on 1996 EC58PL Engines
	I-96-10	Info	Loose Wheel Lock Collars
	I-96-04	Info	Bogging or Belt slippage
	I-96-03	Info	Restricted Coolant Filter
	I-95-13	Info	Heavy Steering
1996 XLT	I-96-12	Info	Extended Warranty on 1996 EC58PL Engines
	I-96-04	Info	Bogging or Belt slippage
	I-96-03	Info	Restricted Coolant Filter
	I-95-13	Info	Heavy Steering
	I-95-04	Info	Front Muffler Damper Installation Location
1996 XLT Touring	S-96-08	Service	Increased Rear Handwarmer Heat
	S-96-05	Safety	Handle Bar Welds Missing or Incomplete
	S-96-01	Service	Front Torque Arm Shaft Retention Kit
	I-96-13	Info	Slide Rail Beam Repair Kit
	I-96-12	Info	Extended Warranty on 1996 EC58PL Engines
	I-96-04	Info	Bogging or Belt slippage
	I-96-03	Info	Restricted Coolant Filter
	I-95-13	Info	Heavy Steering
	I-95-10	Info	Nut Sert™ Missing From Back Rest Bracket

1996 Model	Bulletin #	Type	Notes
1996 Indy Classic	S-96-05	Safety	Handle Bar Welds Missing or Incomplete
	I-96-14	Info	Oil In Fuel Pump Impulse Line
	I-96-07	Info	Hose Clamp Tab May Damage Coolant Line
	I-96-04	Info	Bogging or Belt slippage
	I-95-13	Info	Heavy Steering
1996 Classic Touring	S-96-08	Service	Increased Rear Handwarmer Heat
	S-96-05	Safety	Handle Bar Welds Missing or Incomplete
	S-96-01	Service	Front Torque Arm Shaft Retention Kit
	I-96-14	Info	Oil In Fuel Pump Impulse Line
	I-96-13	Info	Slide Rail Beam Repair Kit
	I-96-07	Info	Hose Clamp Tab May Damage Coolant Line
	I-96-04	Info	Bogging or Belt slippage
	I-95-13	Info	Heavy Steering
	I-95-10	Info	Nut Sert™ Missing From Back Rest Bracket
1996 Indy 500 RMK	S-96-13	Service	Aluminum Ski Replacement Program
	S-96-05	Safety	Handle Bar Welds Missing or Incomplete
	I-96-14	Info	Oil In Fuel Pump Impulse Line
	I-96-10	Info	Loose Wheel Lock Collars
	I-96-07	Info	Hose Clamp Tab May Damage Coolant Line
	I-96-05	Info	Optional Setup for Deep Snow Performance
	I-96-04	Info	Bogging or Belt slippage
	I-95-13	Info	Heavy Steering
	I-95-07	Info	19 Tooth Top Sprocket Required For Reverse Kit
1996 Indy 500 EFI RMK	S-96-13	Service	Aluminum Ski Replacement Program
	S-96-05	Safety	Handle Bar Welds Missing or Incomplete
	I-96-10	Info	Loose Wheel Lock Collars
	I-96-05	Info	Optional Setup for Deep Snow Performance
	I-96-04	Info	Bogging or Belt slippage
	I-95-13	Info	Heavy Steering
	I-95-07	Info	19 Tooth Top Sprocket Required For Reverse Kit
1996 Indy 500 EFI/SKS	S-96-05	Safety	Handle Bar Welds Missing or Incomplete
(SKS Only)	I-96-10	Info	Loose Wheel Lock Collars
	I-96-04	Info	Bogging or Belt slippage
	I-95-13	Info	Heavy Steering
1996 Indy 500	S-96-05	Safety	Handle Bar Welds Missing or Incomplete
	I-96-14	Info	Oil In Fuel Pump Impulse Line
	I-96-10	Info	Loose Wheel Lock Collars
	I-96-07	Info	Hose Clamp Tab May Damage Coolant Line
	I-96-06	Info	Loose Front Torque Arm Bolts
	I-96-04	Info	Bogging or Belt slippage
	I-95-13	Info	Heavy Steering
1996 Indy 500 SKS	S-96-05	Safety	Handle Bar Welds Missing or Incomplete
	I-96-14	Info	Oil In Fuel Pump Impulse Line

Bulletin Index - 1996 By Model

1996 Model	Bulletin #	Type	Notes
1996 Indy 500 SKS (cont.)	I-96-10	Info	Loose Wheel Lock Collars
	I-96-07	Info	Hose Clamp Tab May Damage Coolant Line
	I-96-04	Info	Bogging or Belt slippage
	I-95-13	Info	Heavy Steering
1996 Indy 440 XCR	I-96-10	Info	Loose Wheel Lock Collars
	I-96-06	Info	Loose Front Torque Arm Bolts
	I-96-04	Info	Bogging or Belt slippage
	I-95-13	Info	Heavy Steering
1996 Indy 440 XCR SP	S-95-20	Service	Loose Shock Eyelet On Fox Shocks
	I-96-10	Info	Loose Wheel Lock Collars
	I-96-06	Info	Loose Front Torque Arm Bolts
	I-96-04	Info	Bogging or Belt slippage
	I-95-14	Info	Jetting and Clutching For Improved Perf.
	I-95-13	Info	Heavy Steering
	I-95-12	Info	Exhaust Pipe May Contact Hood
1996 Indy 440	S-96-05	Safety	Handle Bar Welds Missing or Incomplete
	I-96-10	Info	Loose Wheel Lock Collars
	I-96-14	Info	Oil In Fuel Pump Impulse Line
	I-96-06	Info	Loose Front Torque Arm Bolts
	I-96-04	Info	Bogging or Belt slippage
	I-95-13	Info	Heavy Steering
1996 Indy Widetrak GT/LX	S-95-12	Service	Handlebar Damage When Opening Hood
	I-96-04	Info	Bogging or Belt slippage
(LX Only)	I-96-14	Info	Oil In Fuel Pump Impulse Line
1996 Indy Trail	S-96-05	Safety	Handle Bar Welds Missing or Incomplete
	I-96-10	Info	Loose Wheel Lock Collars
	I-96-06	Info	Loose Front Torque Arm Bolts
	I-96-04	Info	Bogging or Belt slippage
	I-95-13	Info	Heavy Steering
1996 Indy Trail Touring	S-96-05	Safety	Handle Bar Welds Missing or Incomplete
	S-95-09	Service	Throttle Cable Ends May Be Reversed
	S-95-08	Service	Wrong Pinion Gear In Chaincase
	I-96-10	Info	Loose Wheel Lock Collars
	I-96-04	Info	Bogging or Belt slippage
	I-95-13	Info	Heavy Steering
1996 Indy Super Sport	I-96-10	Info	Loose Wheel Lock Collars
	I-96-06	Info	Loose Front Torque Arm Bolts
	I-95-13	Info	Heavy Steering
1996 Indy Sport Touring	S-95-11	Service	Snow Skirts Cracking Around Mounting Boss
	I-96-10	Info	Loose Wheel Lock Collars
	I-95-13	Info	Heavy Steering
1996 Sport and Lites	I-95-13	Info	Heavy Steering

1997 Model	Bulletin #	Type	Notes
1997 Storm / SE	S-96-18	Service	Coolant Check Valve / Filter Assembly Installed Incorrectly
1997 Storm RMK	S-96-18	Service	Coolant Check Valve / Filter Assembly Installed Incorrectly
1997 700 (SKS and RMK)	S-97-05R	*Safety Alert*	Pitman Arm Weld Failure and Pitman Arm to Steering Rack Bolt Replacement
	S-97-05	*Safety Alert - Refer to S-97-05R*	
	S-97-02	Service	Coolant Hose May Contact Recoil Housing
	I-96-24	Info	Revised Oil Pump Bleeding Procedure
(RMK Only)	S-96-20	Service	Insufficient Clearance Between Exhaust Pipe and Hood
All 700s (XC/SKS/RMK)	I-96-29	Info	Carburetor Calibration Changes
	S-97-07	Service	Durability Improvement Kit for Oil Pump and CDI
1997 Ultra SPX/SE	S-97-05R	*Safety Alert*	Pitman Arm Weld Failure and Pitman Arm to Steering Rack Bolt Replacement
	S-97-05	*Safety Alert - Refer to S-97-05R*	
1997 Ultra SP (Euro)	S-97-05R	Service	Pitman Arm Weld Failure and Pitman Arm to Steering Rack Bolt Replacement
	S-97-05	*Safety Alert - Refer to S-97-05R*	
	S-96-17	Service	Oil Supply Line May Kink Below Filter
1997 Ultra Touring	S-96–19	Service	Hood Interference With Reverse Cable
	S-96-15	Service	Aluminum Tape On Speedometer Cable May Contact Battery
	S-96-14	Service	Electric Start - Loose Starter Ring Gear Screws
1997 Ultra (Euro)	S-96-17	Service	Oil Supply Line May Kink Below Filter
1997 RXL			
1997 600 XCR / SE	S-97-05R	*Safety Alert*	Pitman Arm Weld Failure and Pitman Arm to Steering Rack Bolt Replacement
	S-97-05	*Safety Alert - Refer to S-97-05R*	
1997 600 XC	S-97-05R	*Safety Alert*	Pitman Arm Weld Failure and Pitman Arm to Steering Rack Bolt Replacement
	S-97-05	*Safety Alert - Refer to S-97-05R*	
1997 XLT RMK	S-96-21	Service	Rich Condition / Poor Fuel Economy
1997 XLT LTD / LTD SP	S-96-16	Service	Incorrect Main Jets Installed In Carburetors
1997 XLT Touring	S-96-14	Service	Electric Start - Loose Starter Ring Gear Screws
1997 XLT SP			
1997 XLT SKS			
1997 XLT			
1997 500 EFI			
1997 500 L/C			
1997 500 RMK	S-96-13	Service	Aluminum Ski Replacement Program
	S-96-12	Service	Incorrect Throttle Lever
1997 500 SKS			

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1997 Model	Bulletin #	Type	Notes
1997 Classic	S-96-14	Service	Electric Start - Loose Starter Ring Gear Screws
1997 Classic Touring	S-96-14	Service	Electric Start - Loose Starter Ring Gear Screws
1997 Widetrak GT	S-97-03	Service	Transmission Not Engaging or Sticking In Gear
	S-96-23	Service	Transmission Oil Leaks / Hard To Shift
1997 Widetrak LX	S-97-03	Service	Transmission Not Engaging or Sticking In Gear
	S-96-23	Service	Transmission Oil Leaks / Hard To Shift
	S-96-14	Service	Electric Start - Loose Starter Ring Gear Screw
1997 440 XCR	S-97-06	Service	Engine Kit options
	S-97-01	Service	Cracked or Broken CDI Wires
	S-96-22	Service	Fuel Line And Water Trap Abrasion
1997 440 XC	S-97-04	***Safety Alert***	Pitman Arm Weld Failure
	S-96-11	Service	Front Track Shock Reservoir Clamps Installed Incorrectly
1997 440 L/C			
1997 XCF	S-97-04	***Safety Alert***	Pitman Arm Weld Failure
1997 Trail Touring	S-96-14	Service	Electric Start - Loose Starter Ring Gear Screws
1997 Trail			
1997 Sport			
1997 Super Sport			
1997 Sport Touring			
1997 Transport			
1997 Lite			
1997 Lite Deluxe	S-96-14	Service	Electric - Loose Starter Ring Gear Screws
1997 Lite GT			

1998 Model	Bulletin #	Type	Notes
Storm			
700 XC			
700 XCR	S-97-05R	*Safety Alert*	Pitman Arm Weld Failure And Pitman Arm to Steering Rack Bolt Replacement
	S-97-05	*Safety Alert - Refer To S-97-05R*	
700 RMK	S-97-05R	*Safety Alert*	Pitman Arm Weld Failure And Pitman Arm to Steering Rack Bolt Replacement
	S-97-05	*Safety Alert - Refer To S-97-05R*	
Ultra			
Ultra Touring			
600 XC			
600 XCR	S-97-05R	*Safety Alert*	Pitman Arm Weld Failure And Pitman Arm to Steering Rack Bolt Replacement
	S-97-05	*Safety Alert - Refer To S-97-05R*	
600 RMK	S-97-05R	*Safety Alert*	Pitman Arm Weld Failure And Pitman Arm to Steering Rack Bolt Replacement
	S-97-05	*Safety Alert - Refer To S-97-05R*	
XLT SP	S-97-05R	*Safety Alert*	Pitman Arm Weld Failure And Pitman Arm to Steering Rack Bolt Replacement
	S-97-05	*Safety Alert - Refer To S-97-05R*	
XLT Ltd			
XLT Classic			
XLT Touring			
500			
500 RMK			
Classic			
Classic Touring			
Widetrak LX			
Trail			
Trail Touring			
Trail RMK			
440			
440 XCR			
XCF			
Sport			
Super Sport			
Sport Touring			
Transport			
Lite			
Lite Deluxe			
Lite Touring			

Service Videos

Part Number	Description
9914394	Advanced Carburetion
9912776	Fuel System Diagnostics
9913987	Polaris Variable Transmissions
9914171	Customer Service
9912996	Magnum 4 Stroke Introduction
9913278	Charging System Diagnostics
9913533	Ignition System Diagnostics
9913684	Snowmobile Suspension Service

SERIAL NUMBER IDENTIFICATION

The machine serial number may be used as an aid in identifying machine model year. Refer to the first digits in the serial number for proper identification:

FIRST DIGITS	MODEL YEAR
26	1996

1996 MODEL DESIGNATION

YEAR DESIGNATION — 0 9 6 — MODEL DESIGNATION — 0 7 — ENGINE DESIGNATION — 8 2

0 9 6 0 7 8 2

Refer to Engine Section for more detailed information

1996 MODEL DESIGNATION NUMBERS (Chassis)	1996 ENGINE DESIGNATION NUMBERS
01 - Indy TranSport	33 - EC34-2PM02
02 - Indy Sport Touring	43 - EC44-3PM01, PM02
04 - Indy Sport	60 - EC45PL07, PL08, PL06
05 - Indy XLT SKS, Ultra SKS	61 - EC50PM03, PM04
06 - Indy Ultra SP	62 - EC50PM04
07 - Indy Super Sport, XLT, Storm	56 - EC58PL03, PL07
09 - Indy XLT RMK, Ultra RMK	57 - EC58PLE05
16 - Indy 440 XCR, 600 XCR	64 - EC50PL11, PL15, PLE12
20 - Indy WideTrak GT/LX	65 - EC50PLE11, PL14
22 - Indy Trail Touring	68 - EC65PL05
25 - Indy 500 EFI SKS, 500 SKS	74 - EC50PL13
27 - Indy 440, Trail, 500	76 - EC58PL02
29 - Indy 500 RMK, 500 EFI RMK	77 - EC59PL01
31 - Indy Lite GT	78 - EC68PL01, PL04
33 - Indy Classic Touring, XLT Touring	82 - EC80PL05, PL04
34 - Indy Lite, Lite Deluxe	31 - EC34-2PME02
37 - Indy 500 EFI	
38 - Indy Classic	
55 - Indy Storm SKS	
56 - Indy 600 XCR SP	
57 - Indy Storm	
59 - Indy Storm RMK	
66 - Indy XLT SP	
67 - Indy XLT, RXL	

MODEL NO. MADE IN U.S.A.

V.I.N. NO.

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL AND STATE REQUIREMENTS AND CANADA MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE.

MFD. DATE:

POLARIS PATENT NOTICE

Mfd. by Polaris Industries Inc.. in Roseau, MN under one or more of the following patents:

U.S. Patents

3,605,511	3,613,810	5,050,559
3,580,647	3,867,991	5,048,503
3,483,766	4,793,950	5,056,482
3,533,662	5,038,881	5,099,813
3,545,821	5,172,675	5,074,271
3,605,510	5,090,386	5,191,531
3,525,412	5,050,564	3,613,811

Patented Canada
882,491/71
883,694/71
884,394/71
Canadian Rd.
34,573/71
34,572/71
1,227,823/87

7072133

These numbers should be referred to in any correspondence regarding warranty, service or replacement parts.

The machine model and serial number identification decal is located on the right front side of the tunnel. The serial number is permanently stamped into the tunnel. The model number is embossed on the decal.

Whenever corresponding about an engine it is important that the engine model and serial numbers be called out. Laser engraved model and serial numbers are located on the crankcase (intake side).

	Indy Lite	Indy Lite Deluxe	Indy Lite GT	Indy Sport
	0963433	0963431	0963133	0960443
Engine Type Engine Model Number	Fan Twin EC34-2PM02	Fan Twin EC34-2PM02	Fan Twin EC34-2PM02	Fan Twin EC44-3PM01
Displacement (cc)	339	339	339	432
Bore x Stroke (mm)	62.3 x 55.6	62.3 x 55.6	62.3 x 55.6	67.72 x 60
Carburetion/Throttle Body	2 Mikuni VM30SS Slide	2 Mikuni VM30SS Slide	2 Mikuni VM30SS Slide	2 Mikuni VM34SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	CDI	CDI
Alternator Output	12V 150W	12V 150W	12V 150W	12V 200W
Length (in./cm.)	105/266.7	105/266.7	115/292.1	106.25/269.9
Width (in./cm.)	42.5/108	42.5/108	42.5/108	43.5/110.5
Height (in./cm.)	44/111.8	44/111.8	48/121.9	44/111.8
Ski Stance (in./cm.)	37/94	37/94	37/94	38/96.5
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	121/307.3	121/307.3	133.5/339.1	121/307.3
Fuel Capacity (U.S. gas./Imp. gal./liters)	8/6.7/30.3	8/6.7/30.3	8/6.7/30.3	10.7/8.9/40.5
Recommended Fuel	87 Octane Min.	87 Octane Min.	87 Octane Min.	87 Octane Min.
Front Suspension	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS
Rear Suspension	Standard	Standard	Standard	Standard
Brake Type	Mechanical Disc	Mechanical Disc	Mechanical Disc	Hydraulic Disc
Storage	Rear of Seat Top of Hood	Rear of Seat Top of Hood	Rear of Seat Top of Hood	Rear of Seat Toolbox Footrest
Speedometer	Standard	Standard	Standard	Standard
Tachometer	N/A	N/A	N/A	Option
Electric Fuel Gauge	N/A	N/A	N/A	Option
Accessory Lights	N/A	Oil/Acc	Oil/Acc	Oil/Brake Acc High Beam
Electric Start	Option	Standard	Option	Option
Handwarmers/Thumbwarmer	Option/Option	Single Heat/Std	Single Heat/Std	Single Heat/Std
Seat	Standard Lite	Standard Lite	2 Up Lite	Standard
Storage Rack	Option	Option	Standard	Option
Tow Hitch	Option	Option	Standard	Option

	Indy TranSport	Indy Super Sport	Indy Sport Touring	Indy 440 LC
	0960143	0960743	0960243	0962760
Engine Type Engine Model Number	Fan Twin EC44-3PM01	Fan Twin EC44-3PM02	Fan Twin EC44-3PM01	LC Twin EC45PL06
Displacement (cc)	432	432	432	432
Bore x Stroke (mm)	67.72 x 60	67.72 x 60	67.72 x 60	67.72 x 60
Carburetion/Throttle Body	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	CDI	CDI
Alternator Output	12V 200W	12V 200W	12V 200W	12V 200W
Length (in./cm.)	113/287	106.25/269.9	113/287	108/274.3
Width (in./cm.)	43.5/110.5	45.5/115.6	43.5/110.5	46.5/118.1
Height (in./cm.)	45/114.3	38.5/97.8	50/127	46/118.1
Ski Stance (in./cm.)	38/96.5	41/104.14	38/96.5	41/104.14
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	141/358.1	121/307.3	133.5/339.1	121/307.3
Fuel Capacity (U.S. gas./Imp. gal./liters)	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5
Recommended Fuel	87 Octane Min.	88 Octane Min.	87 Octane Min.	87 Octane Min.
Front Suspension	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS
Rear Suspension	Standard	XTRA 10	XTRA 10	XTRA 10
Brake Type	Hydraulic Disc	Hydraulic Disc	Hydraulic Disc	Hydraulic Disc
Storage	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Option	Standard	Option	Standard
Electric Fuel Gauge	Option	Option	Option	Option
Accessory Lights	Oil/Brake Acc High Beam	Oil/Brake Acc High Beam	Oil/Brake Acc High Beam	Oil/Brake Temp High Beam
Electric Start	Option	Option	Option	Option
Handwarmers/Thumbwarmer	Single Heat/Acc	Single Heat/Std	Single Heat/Acc	Hi-Lo/Std
Seat	2 Up	Standard	2 Up	Short
Storage Rack	Option	Option	Option	Option
Tow Hitch	Option	Option	Option	Option

	Indy 440 XCR	Indy 440 XCR SP	Indy Trail	Indy Trail Touring
	0961660	0961760	0962761	0962262
Engine Type Engine Model Number	LC Twin EC45PL07	LC Twin EC45PL08	Fan Twin EC50PM04	Fan Twin EC50PME04
Displacement (cc)	439	439	488	488
Bore x Stroke (mm)	68.25 x 60	68.25 x 60	72 x 60	72 x 60
Carburetion/Throttle Body	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	CDI	CDI
Alternator Output	12V 200W	12V 200W	12V 200W	12V 200W
Length (in./cm.)	109/276.8	109/276.8	114/289.5	122/309.8
Width (in./cm.)	46.5/118.1	46.5/118.1	46.5/118.1	46.5/118/1
Height (in./cm.)	38.5/97.8	TBA	46/116.8	48/121.9
Ski Stance (in./cm.)	41/104.14	41/104.14	41/104.14	41/104.14
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	121/307.3	121/307.3	121/307.3	133.5/339.1
Fuel Capacity (U.S. gas./Imp. gal./liters)	9.5/8.9/40.5	9.5/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5
Recommended Fuel	91 Octane Min.	91 Octane Min.	87 Octane Min.	87 Octane Min.
Front Suspension	CRC	CRC	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS
Rear Suspension	XTRA 10	XTRA 10	XTRA 10	XTRA 10
Brake Type	Liquid Cooled Hydraulic Disc	TBA	Hydraulic Disc	Hydraulic Disc
Storage	Rear of Seat	Rear of Seat	Rear of Seat Toolbox	Rear of Seat Toolbox
Speedometer	Standard	Option	Standard	Standard
Tachometer	Standard	Standard	Standard	Option
Electric Fuel Gauge	N/A	N/A	Option	Option
Accessory Lights	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake High Beam	Oil/Brake High Beam
Electric Start	Option	Option	Option	Standard
Handwarmers/Thumbwarmer	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std
Seat	2 pc / Knee Pad	2 pc / Knee Pad	Long	2 Up
Storage Rack	Option	Option	Option	Option
Tow Hitch	Option	Option	Option	Option

	Indy Classic	Indy Classic Touring	Indy 500	Indy 500 SKS Indy 500 RMK
	0963865	0963365	0962764	0962564 0962964
Engine Type Engine Model Number	LC Twin EC50PLE11	LC Twin EC50PL14	LC Twin EC50PL11	LC Twin EC50PL11 EC50PL15 RMK
Displacement (cc)	488	488	488	488
Bore x Stroke (mm)	72 x 60	72 x 60	72 x 60	72 x 60
Carburetion/Throttle Body	2 Mikuni VM38SS Slide	2 Mikuni VM34SS Slide	2 Mikuni VM38SS Slide	2 Mikuni VM38SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	CDI	CDI
Alternator Output	12V 200W	12V 200W	12V 200W	12V 200W
Length (in./cm.)	108/121.9	115/292.1	108/274.3	108/274.3
Width (in./cm.)	48/121.9	48/121.9	46.5/118.1	46.5/118.1
Height (in./cm.)	49.5/125.7	51.5/130.8	46/116.8	48/121.9
Ski Stance (in./cm.)	42.5/107.9	42.5/107.9	41/104.14	41/104.14
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	121/307.3	133.5/339.1	121/307.3	133.5/339.1
Fuel Capacity (U.S. gas./Imp. gal./liters)	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5
Recommended Fuel	87 Octane Min.	87 Octane Min.	87 Octane Min.	87 Octane Min.
Front Suspension	IFS	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS
Rear Suspension	XTRA 12	XTRA 12	XTRA 10	XTRA 10
Brake Type	Hydraulic Disc	Hydraulic Disc	Hydraulic Disc	Hydraulic Disc HD Pads RMK
Storage	Rear of Seat Toolbox	Rear of Seat Toolbox	Rear of Seat Toolbox	Rear of Seat Toolbox
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard	Standard
Electric Fuel Gauge	Standard	Standard	Option	Option
Accessory Lights	Oil/Brake Temp High Beam	Oil/Brake Temp High Beam	Oil/Brake Temp High Beam	Oil/Brake Temp High Beam
Electric Start	Standard	Standard	Option	Option
Handwarmers/Thumbwarmer	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std
Seat	Long	2 Up/Tour	Short	Long
Storage Rack	Option	Option	Option	Option
Tow Hitch	Option	Option	Option	Option

	Indy 500 EFI	Indy 500 EFI SKS Indy 500 EFI RMK	Indy WideTrak LX	Indy WideTrak GT
	0963774	0962574 0962974	0962064	0962061
Engine Type Engine Model Number	LC Twin EC50PL13	LC Twin EC50PL13	LC Twin EC50PLE12	Fan Twin EC50PM03
Displacement (cc)	488	488	488	488
Bore x Stroke (mm)	72 x 60	72 x 60	72 x 60	72 x 60
Carburetion/Throttle Body	2 Throttle Body 46 mm	2 Throttle Body 46 mm	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	CDI	CDI
Alternator Output	12V 250W	12V 250W	12V 200W	12V 200W
Length (in./cm.)	108/274.3	108/274.3	128/325.1	121.5/308.6
Width (in./cm.)	48/121.9	46.5/118.1	43.5/110.5	43.5/110.5
Height (in./cm.)	49.5/125.7	48/121.9	49/124.5	49/124.5
Ski Stance (in./cm.)	42.5/107.9	41/104.14	38/96.5	38/96.5
Track Width (in./cm.)	15/38.1	15/38.1	20/50.8	20/50.8
Track Length Overall (in./cm)	121/307.3	133.5/339.1	156/396.2	141/358.1
Fuel Capacity (U.S. gas./Imp. gal./liters)	10.7/8.9/40.5	10.7/8.9/40.5	10/8.3/38	10/8.3/37.8
Recommended Fuel	87 Octane Min.	87 Octane Min.	87 Octane Min.	88 Octane Min.
Front Suspension	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS
Rear Suspension	XTRA 12	XTRA 10	Standard	Standard
Brake Type	Hydraulic Disc	Hydraulic Disc HD Pads RMK	Mechanical	Mechanical
Storage	Rear of Seat Toolbox	Rear of Seat Toolbox	Under Seat Storage Rack	Under Seat
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard	Option
Electric Fuel Gauge	Option	Option	N/A	N/A
Accessory Lights	Oil/Brake/Temp Batt High Beam	Oil/Brake/Temp Batt High Beam	Oil/Temp Rev High Beam	Rev/Acc Oil High Beam
Electric Start	Option	Option	Standard	Option
Handwarmers/Thumbwarmer	Hi-Lo/Std	Hi-Lo/Std	Single Heat/Std	Single Heat/Std
Seat	Long	Short	2 Up w/Riser	2 Up w/Riser
Storage Rack	Option	Option	Standard	Standard
Tow Hitch	Option	Option	Standard	Standard

	Indy XLT	Indy XLT SP	Indy XLT SKS	Indy XLT RMK
	0966756	0966676	0960556	0960956
Engine Type Engine Model Number	LC Triple EC58PL03	LC Triple EC58PL02	LC Triple EC58PL03	LC Triple EC58PL07
Displacement (cc)	597	597	597	597
Bore x Stroke (mm)	65 x 60	65 x 60	65 x 60	65 x 60
Carburetion/Throttle Body	3 Mikuni VM34SS	3 Mikuni VM38SS	3 Mikuni VM34SS Slide	3 Mikuni VM34SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	CDI	CDI
Alternator Output	12V 170W	12V 170W	12V 170W	12V 170W
Length (in./cm.)	108/274.3	106.25/269.9	113/287	113/287
Width (in./cm.)	48/121.9	48/121.9	46.5/118.1	43.5/110.4
Height (in./cm.)	48.5/123.1	48.5/123.1	44/111.8	44/111.8
Ski Stance (in./cm.)	42.5/107.9	42.5/107.9	41/104.14	38/96.5
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	121/307.3	121/307.3	133.5/339.1	133.5/339.1
Fuel Capacity (U.S. gas./Imp. gal./liters)	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5
Recommended Fuel	88 Octane Min.	91 Octane Min.	88 Octane Min.	87 Octane Min.
Front Suspension	42.5 IFS	Non-Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS
Rear Suspension	XTRA 12	XTRA 12	XTRA 10	XTRA 10
Brake Type	Hydraulic Disc	Hydraulic Disc	Hydraulic Disc	Hydraulic Disc
Storage	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox Footrest
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard	Standard
Electric Fuel Gauge	Option	Option	Option	Option
Accessory Lights	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam
Electric Start	Option	Option	Option	Option
Handwarmers/Thumbwarmer	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std
Seat	Standard	Long	Long	Long
Storage Rack	Option	Option	Option	Option
Tow Hitch	Option	Option	Option	Option

	Indy XLT Touring	Indy 600 XCR	Indy 600 XCR SP	Indy RXL
	0963357	0961676	0965677	0966768
Engine Type Engine Model Number	LC Triple EC58PLE05	LC Triple EC58PL02	LC Triple EC59PL01	LC Triple EC65PL05
Displacement (cc)	597	597	598	648
Bore x Stroke (mm)	65 x 60	65 x 60	62.5 x 65	67.72 x 60
Carburetion/Throttle Body	3 Mikuni VM34SS Slide	3 Mikuni VM38AL Slide	3 Mikuni VM38AL Slide	3 Throttle Body 46mm
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	Digital CDI	CDI
Alternator Output	12V 200W	12V 170W	12V 200W	12V 180W
Length (in./cm.)	115/292.1	109/276.8	109/276.8	106.25/269.9
Width (in./cm.)	48/121.9	46/116.8	46/116.8	48/121.9
Height (in./cm.)	51.5/130.8	38.5/97.7	44/111.7	48.5/123.1
Ski Stance (in./cm.)	42.5/107.9	41/104.14	41/104.14	42.5/107.9
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	133.5/339.1	121/307.3	121/307.3	121/307.3
Fuel Capacity (U.S. gas./Imp. gal./liters)	10.7/8.9/40.5	9.5/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5
Recommended Fuel	87 Octane Min.	91 Octane Min.	91 Octane Min.	87 Octane Min.
Front Suspension	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS	Non-Parallel Link Trailing Arm IFS
Rear Suspension	XTRA 12	XTRA 10	XTRA 10	XTRA 12
Brake Type	Hydraulic Disc	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc
Storage	Rear of Seat Toolbox Under Hood	Rear of Seat	Rear of Seat Toolbox	Rear of Seat Toolbox Footrest
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard	Standard
Electric Fuel Gauge	Standard	N/A	Option	Standard
Accessory Lights	Oil/Brake Temp High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam
Electric Start	Standard	Option	N/A	Option
Handwarmers/Thumbwarmer	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Option
Seat	2 Up Touring	2 pc Knee Pad	Mid, 1 pc, 121	Long
Storage Rack	Option	Option	N/A	Option
Tow Hitch	Option	Option	Option	Option

	Indy Ultra SP	Indy Ultra SKS	Indy Ultra RMK	Indy Storm
	0960678	0960578	0960978	0965782
Engine Type Engine Model Number	LC Triple EC68PL01	LC Triple EC68PL01	LC Triple EC68PL04	LC Triple EC80PL05
Displacement (cc)	679	679	679	794
Bore x Stroke (mm)	66.6 x 65	66.6 x 65	66.6 x 65	72 x 65
Carburetion/Throttle Body	3 Mikuni VM38 Slide	3 Mikuni VM38 Slide	3 Mikuni VM38 Slide	3 Mikuni VM38SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	Digital CDI	Digital CDI	Digital CDI	Digital CDI
Alternator Output	12V 200W	12V 200W	12V 200W	12V 200W
Length (in./cm.)	108/274.3	114/289.5	114/289.5	108/274.3
Width (in./cm.)	46.5/118.1	41/104.14	43.5/110.4	46.5/118.1
Height (in./cm.)	38.5/97.7	46/116.8	46/116.8	44/111.7
Ski Stance (in./cm.)	41/104.14	41/104.14	38/96.5	41/104.14
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (In./cm)	121/307.3	133.5/339.1	133.5/339.1	121/307.3
Fuel Capacity (U.S. gas./Imp. gal./liters)	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5
Recommended Fuel	87 Octane Min.	87 Octane Min.	87 Octane Min.	91 Octane Min.
Front Suspension	Parallel Link	Parallel Link	Parallel Link	41" IFS
Rear Suspension	XTRA 10	XTRA 10	XTRA 10	XTRA 10 HP
Brake Type	Liquid Cooled Hydraulic Disc	Hydraulic	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc
Storage	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard	Standard
Electric Fuel Gauge	Option	Option	Option	Option
Accessory Lights	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam
Electric Start	N/A	N/A	N/A	N/A
Handwarmers/Thumbwarmer	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std Hi-Lo
Seat	Standard	Long	Long	Sculpt, Mid 121
Storage Rack	Option	Option	Option	N/A
Tow Hitch	Option	Option	Option	Option

	Indy Storm SKS	Indy Storm RMK
	0965582	0965982
Engine Type Engine Model Number	LC Triple EC80PL05	LC Triple EC80PL04
Displacement (cc)	794	794
Bore x Stroke (mm)	72 x 65	72 x 65
Carburetion/Throttle Body	3 Mikuni VM38SS Slide	3 Mikuni VM38SS Slide
Oil Injected	Standard	Standard
Ignition	Digital CDI	Digital CDI
Alternator Output	12V 200W	12V 200W
Length (in./cm.)	114/289.5	114/289.5
Width (in./cm.)	46.5/118.1	46.5/118.1
Height (in./cm.)	44/111.8	44/111.8
Ski Stance (in./cm.)	41/104.14	38/96.5
Track Width (in./cm.)	15/38.1	15/38.1
Track Length Overall (in./cm.)	133.5/339.1	133.5/339.1
Fuel Capacity (U.S. gas./Imp. gal./liters)	10.7/8.9/40.5	10.7/8.9/40.5
Recommended Fuel	91 Octane Min.	91 Octane Min.
Front Suspension	41″ IFS	38″ IFS
Rear Suspension	XTRA 10 HP	XTRA 10
Brake Type	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc
Storage	Rear of Seat Toolbox	Rear of Seat Toolbox Footrest
Speedometer	Standard	Standard
Tachometer	Standard	Standard
Electric Fuel Gauge	Option	Option
Accessory Lights	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam
Electric Start	N/A	N/A
Handwarmers/Thumbwarmer	Hi-Lo/Std Hi-Lo	Hi-Lo/Std Hi-Lo
Seat	Sculpt, Mid, 133	Sculpt, Mid, 133
Storage Rack	N/A	N/A
Tow Hitch	Option	Option

SERIAL NUMBER IDENTIFICATION

The machine serial number may be used as an aid in identifying machine model year. Refer to the first digits in the serial number for proper identification:

FIRST DIGITS	MODEL YEAR
31	1997

1997 MODEL DESIGNATION

YEAR DESIGNATION — 0 | 9 7 | 0 7 | 8 2 — ENGINE DESIGNATION

MODEL DESIGNATION

Refer to Engine Section for more detailed information

1997
MODEL DESIGNATION
NUMBERS (Chassis)

01 - Indy TranSport
02 - Indy Sport Touring
04 - Indy Sport
05 - Indy XLT SKS, 700 SKS
06 - Indy Ultra SP
07 - Indy Super Sport, XLT,
09 - Indy Trail RMK, XLT RMK, 700 RMK
16 - Indy XCF, 440 XCR
17 - Indy 440 XC, 600 XC
20 - Indy WideTrak GT/LX
22 - Indy Trail Touring
25 - Indy 500 SKS
27 - Indy 440, Trail, 500
29 - Indy 500 RMK
31 - Indy Lite GT
33 - Indy Classic Touring, XLT Touring
34 - Indy Lite, Lite Deluxe
37 - Indy 500 EFI, XLT LTD
38 - Indy Classic
53 - Ultra Touring
56 - Indy 600 XCR, 600 XCR SE
57 - Indy Storm, Storm SE
59 - Indy Storm RMK
66 - Indy XLT SP
67 - Indy RXL, Ultra

1997
ENGINE DESIGNATION
NUMBERS

31 - EC34-2PME02
33 - EC34-2PM02
43 - EC44-3PM02
56 - EC58PL03, PL05, PL07
57 - EC58PL09
60 - EC45PL08, PL09
61 - EC50PM03, PM04, PM05, PM06
64 - EC50PL16, PL17
65 - EC50PL19, PL20
66 - SN70LCDCSP-01, SP-02
68 - EC65PL05
73 - EC50PL18
76 - EC58PL08, PL12
77 - EC59PL01
78 - EC68PL01, PL03
82 - EC80PL04, PL05

MODEL NO. MADE IN U.S.A.

V.I.N. NO.

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL AND STATE REQUIREMENTS AND CANADA MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE.

MFD. DATE:

POLARIS PATENT NOTICE

Mfd. by Polaris Industries Inc., In Roseau, MN under one or more of the following patents:

U.S. Patents			Patented Canada
3,605,511	3,613,810	5,050,559	882,491/71
3,580,647	3,887,991	5,048,503	883,694/71
3,483,766	4,793,950	5,056,482	864,394/71
3,533,662	5,038,881	5,099,813	Canadian Rd.
3,545,821	5,172,675	5,074,271	34,573/71
3,605,510	5,090,386	5,191,531	34,572/71
3,525,412	5,050,564	3,613,811	1,227,823/87

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These numbers should be referred to in any correspondence regarding warranty, service or replacement parts.

The machine model and serial number identification decal is located on the right front side of the tunnel. The serial number is permanently stamped into the tunnel. The model number is embossed on the decal.

Whenever corresponding about an engine it is important that the engine model and serial numbers be called out. Laser engraved model and serial numbers are located on the crankcase (intake side).

	Indy Lite	Indy Lite Deluxe	Indy Lite GT	Indy Sport
	0973433	0973431	0973133	0970443
Engine Type Engine Model Number	Fan Twin EC34-2PM02	Fan Twin EC34-2PM02	Fan Twin EC34-2PM02	Fan Twin EC44-3PM01
Displacement (cc)	339	339	339	432
Bore x Stroke (mm)	62.3 x 55.6	62.3 x 55.6	62.3 x 55.6	67.72 x 60
Carburetion/Throttle Body	2 Mikuni VM30SS Slide	2 Mikuni VM30SS Slide	2 Mikuni VM30SS Slide	2 Mikuni VM34SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	CDI	CDI
Alternator Output	12V 150W	12V 150W	12V 150W	12V 200W
Length (in./cm.)	105/266.7	105/266.7	115/292.1	108/274.3
Width (in./cm.)	42.5/108	42.5/108	42.5/108	43.5/110.5
Height (in./cm.)	44/111.8	44/111.8	48/121.9	44/111.8
Ski Center Distance (in./cm.)	37/94	37/94	37/94	38/96.5
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	121/307.3	121/307.3	133.5/339.1	121/307.3
Fuel Capacity (U.S. gas./Imp. gal./liters)	8/6.7/30.3	8/6.7/30.3	8/6.7/30.3	10.7/8.9/40.5
Recommended Fuel	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated
Front Suspension	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS
Rear Suspension	X-Lite	Xd-Lite	Standard	X-Lite
Brake Type	Mechanical Disc	Mechanical Disc	Mechanical Disc	Hydraulic Disc
Storage	Rear of Seat Top of Hood	Rear of Seat Top of Hood	Rear of Seat Top of Hood	Rear of Seat Toolbox Footrest
Speedometer	Standard	Standard	Standard	Standard
Tachometer	N/A	N/A	N/A	Option
Electric Fuel Gauge	N/A	N/A	N/A	Option
Accessory Lights	N/A	Oil/Acc	Oil/Acc	Oil/Brake Acc High Beam
Electric Start	Option	Standard	Option	Option
Handwarmers/Thumbwarmer	Option/Option	Single Heat/Std	Single Heat/Std	Single Heat/Std
Seat	Standard Lite	Standard Lite	2 Up Lite	Standard
Storage Rack	Option	Option	Standard	Option
Tow Hitch	Option	Option	Standard	Option

	Indy TranSport	Indy Super Sport	Indy Sport Touring	Indy 440 LC
	0970143	0970761	0970243	0972760
Engine Type Engine Model Number	Fan Twin EC44-3PM02	Fan Twin EC50PM06	Fan Twin EC44-3PM02	LC Twin EC45PL09
Displacement (cc)	432	488	432	432
Bore x Stroke (mm)	67.72 x 60	72 x 60	67.72 x 60	67.72 x 60
Carburetion/Throttle Body	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	CDI	CDI
Alternator Output	12V 200W	12V 200W	12V 200W	12V 200W 2P
Length (in./cm.)	117/297.2	108/274.3	117/297.2	108/274.3
Width (in./cm.)	43.5/110.5	46.5/118.1	43.5/110.5	46.5/118.1
Height (in./cm.)	48/121.9	38.5/97.8	48/121.9	47.5/120.7
Ski Center Distance (in./cm.)	38/96.5	41/104.14	38/96.5	41/104.14
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	141/358.1	121/307.3	133.5/339.1	121/307.3
Fuel Capacity (U.S. gas./Imp. gal./liters)	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5
Recommended Fuel	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated
Front Suspension	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS	IFS
Rear Suspension	Standard	XTRA 10	XTRA 10	XTRA 10
Brake Type	Hydraulic Disc	Hydraulic Disc	Hydraulic Disc	Hydraulic Disc
Storage	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox Under Hood
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Option	Standard	Option	Standard
Electric Fuel Gauge	Option	Option	Option	Option
Accessory Lights	Oil/Brake Acc High Beam	Oil/Brake Acc High Beam	Oil/Brake Acc High Beam	Oil/Brake Temp High Beam
Electric Start	Option	Option	Option	Option
Handwarmers/Thumbwarmer	Single Heat/Std	Single Heat/Std	Single Heat/Acc	Hi-Lo/Std
Seat	2 Up	Standard	2 Up	Short
Storage Rack	Option	Option	Option	Option
Tow Hitch	Std	Option	Option	Option

	Indy XCF	Indy 440 XC	Indy Trail	Indy Trail Touring
	0971643	0971760	0972761	0972262
Engine Type Engine Model Number	Fan Twin EC44-CPM02	LC Twin EC45PL08	Fan Twin EC50PM04	Fan Twin EC50PME04
Displacement (cc)	432	438	488	488
Bore x Stroke (mm)	67.72x60	68.19 x 60	72 x 60	72 x 60
Carburetion/Throttle Body	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	CDI	CDI
Alternator Output	12V 200W	12V 200W 2P	12V 200W 2P	12V 200W 2P
Length (in./cm.)	108/274.3	108/274.3	108/274.3	114/289.6
Width (in./cm.)	46.5/118.1	46.5/118.1	46.5/118.1	46.5/118/1
Height (in./cm.)	38.5/97.8	38.5/97.8	47.5/120.7	48/121.9
Ski Center Distance (in./cm.)	41/104.1	41/104.14	41/104.14	41/104.14
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	121/307.3	121/307.3	121/307.3	133.5/339.1
Fuel Capacity (U.S. gas./Imp. gal./liters)	9.5/8.9/40.5	9.5/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5
Recommended Fuel	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated
Front Suspension	CRC	CRC	IFS	IFS
Rear Suspension	XTRA 10	XTRA 10	XTRA 10	XTRA 10
Brake Type	Vented Hydraulic Disc	Liquid CooledHydraulic Disc	Hydraulic Disc	Hydraulic Disc
Storage	Rear Seat	Rear of Seat	Rear of Seat Toolbox Under Hood	Rear of Seat Toolbox Under Hood
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard	Option
Electric Fuel Gauge	Option	N/A	Option	Option
Accessory Lights	Oil/Brake Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake High Beam	Oil/Brake High Beam
Electric Start	Option	Option	Option	Standard
Handwarmers/Thumbwarmer	Single Heat/Std	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std
Seat	2 Pc	2 pc / Knee Pad	Long	2 Up
Storage Rack	Option	Option	Option	Option
Tow Hitch	Option	Option	Option	Option

1997 Model Identification

	Indy Trail RMK	Indy Classic	Indy Classic Touring	Indy 500
	0970961	0973865	0973365	0972764
Engine Type Engine Model Number	Fan Twin EC50PM05	LC Twin EC50PL17	LC Twin EC50PL19	LC Twin EC50PL17
Displacement (cc)	488	488	488	488
Bore x Stroke (mm)	72x60	72 x 60	72 x 60	72 x 60
Carburetion/Throttle Body	2Mikuni/ACCS VM34SS Slide	2 Mikuni VM38SS Slide	2 Mikuni VM34SS Slide	2 Mikuni VM38SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	CDI	CDI
Alternator Output	12V 200W 2P	12V 200W 2P	12V 200W 2P	12V 200W 2P
Length (in./cm.)	114/289.6	108/121.9	115/292.1	108/274.3
Width (in./cm.)	43.5/110.5	48/121.9	48/121.9	46.5/118.1
Height (in./cm.)	46/116.8	49.5/125.7	51.5/130.8	41/104.14
Ski Center Distance (in./cm.)	38/96.5	42.5/107.9	42.5/107.9	41/104.14
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	133.5/339.1	121/307.3	133.5/339.1	121/307.3
Fuel Capacity (U.S. gas./Imp. gal./liters)	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5
Recommended Fuel	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated
Front Suspension	Parallel Link Trailing Arm IFS	IFS	IFS	IFS
Rear Suspension	XTRA 10	XTRA 12	XTRA 12	XTRA 10
Brake Type	Hydraulic Disc	Hydraulic Disc	Hydraulic Disc	Hydraulic Disc
Storage	Rear Seat/Toolbox	Rear of Seat Toolbox	Rear of Seat Toolbox	Rear of Seat Toolbox
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard	Standard
Electric Fuel Gauge	Option	Standard	Standard	Option
Accessory Lights	Oil/Brake Acc High Beam	Oil/Brake Temp High Beam	Oil/Brake Temp High Beam	Oil/Brake Temp High Beam
Electric Start	Option	Standard	Standard	Option
Handwarmers/Thumbwarmer	Single Heat/Std	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std
Seat	Long/RMK	Long	2 Up/Tour	Short
Storage Rack	Option	Option	Option	Option
Tow Hitch	Option	Option	Option	Option

	Indy 500 SKS Indy 500 RMK	Indy 500 EFI	Indy WideTrak LX	Indy WideTrak GT
	0972564 0972964	0973774	0972065	0972061
Engine Type Engine Model Number	LC Twin EC50PL17 EC50PL16 RMK	LC Twin EC50PL18	LC Twin EC50PLE12	Fan Twin EC50PM03
Displacement (cc)	488	488	488	488
Bore x Stroke (mm)	72 x 60	72 x 60	72 x 60	72 x 60
Carburetion/Throttle Body	2 Mikuni VM38SS Slide 2 Mikuni/ACCS/RMK VM34SS Slide/ RMK	2 Throttle Body 46 mm	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	CDI	CDI
Alternator Output	12V 200W 2P	130 AC/125 DC 2P	12V 200W	12V 200W
Length (in./cm.)	114/289.6	108/274.3	128/325.1	122/309.9
Width (in./cm.)	46.5/118.1 43.5/110.5/RMK	48/121.9	43.5/110.5	43.5/110.5
Height (in./cm.)	48/121.9	49.5/125.7	49/124.5	49/124.5
Ski Center Distance (in./cm.)	38/96.5	42.5/107.9	38/96.5	38/96.5
Track Width (in./cm.)	15/38.1	15/38.1	20/50.8	20/50.8
Track Length Overall (in./cm)	133.5/339.1	121/307.3	156/396.2	141/358.1
Fuel Capacity (U.S. gas./Imp. gal./liters)	10.7/8.9/40.5	10.7/8.9/40.5	10/8.3/38	10/8.3/37.8
Recommended Fuel	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated
Front Suspension	IFS	IFS	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS
Rear Suspension	XTRA 10	XTRA 12	WideTrak Single Slide Rail	WideTrak Single Slide Rail
Brake Type	Hydraulic Disc HD Pads RMK	Hydraulic Disc	Mechanical	Mechanical
Storage	Rear of Seat Toolbox	Rear of Seat Toolbox	Under Seat	Under Seat
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard	Option
Electric Fuel Gauge	Option	Option	N/A	N/A
Accessory Lights	Oil/Brake Temp High Beam	Oil/Brake/Temp Batt High Beam	Oil/Temp Rev High Beam	Rev/Acc Oil High Beam
Electric Start	Option	Option	Standard	Option
Handwarmers/Thumbwarmer	Hi-Lo/Std	Hi-Lo/Std	Single Heat/Std	Single Heat/Std
Seat	Long	Long	2 Up w/Riser	2 Up w/Riser
Storage Rack	Option	Option	Standard	Standard
Tow Hitch	Option	Option	Standard	Standard

1997 Model Identification

	Indy XLT	Indy XLT SP	Indy XLT SKS	Indy XLT RMK
	0976756	0976676	0970556	0970956
Engine Type Engine Model Number	LC Triple EC58PL03	LC Triple EC58PL12	LC Triple EC58PL03	LC Triple EC58PL07
Displacement (cc)	597	597	597	597
Bore x Stroke (mm)	65 x 60	65 x 60	65 x 60	65 x 60
Carburetion/Throttle Body	3 Mikuni VM34SS	3 Mikuni VM38SS	3 Mikuni VM34SS Slide	3 Mikuni VM34SS Slide/ACCS
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	CDI	CDI
Alternator Output	12V 170W	12V 200W	12V 170W	12V 170W
Length (in./cm.)	108/274.3	108/274.3	114/289.6	114/289.6
Width (in./cm.)	46.5/118.11	48/121.9	46.5/118.1	43.5/110.4
Height (in./cm.)	46/116.8	48.5/123.1	46/116.8	4/116.8
Ski Center Distance (in./cm.)	41/104.14	42.5/107.9	41/104.14	38/96.5
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	121/307.3	121/307.3	133.5/339.1	133.5/339.1
Fuel Capacity (U.S. gas./Imp. gal./liters)	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5
Recommended Fuel	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated
Front Suspension	42.5 IFS	Non-Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS	Parallel Link Trailing Arm IFS
Rear Suspension	XTRA 10	XTRA 12	XTRA 10	XTRA 10
Brake Type	Hydraulic Disc	Hydraulic Disc	Hydraulic Disc	Hydraulic Disc
Storage	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox Footrest
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard	Standard
Electric Fuel Gauge	Option	Option	Option	Option
Accessory Lights	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam
Electric Start	Option	Option	Option	Option
Handwarmers/Thumbwarmer	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std
Seat	Standard	Long	Long	Long
Storage Rack	Option	Option	Option	Option
Tow Hitch	Option	Option	Option	Option

	Indy XLT Touring	Indy XLT LTD	Indy XLT LTD SP	Indy 600 XC
	0973357	0973756	0973776	0971776
Engine Type Engine Model Number	LC Triple EC58PL09	LC Triple EC58PL09	LC Triple EC58PL12	LC Triple EC58PL08
Displacement (cc)	597	597	597	597
Bore x Stroke (mm)	65 x 60	65x60	65x60	65 x 60
Carburetion/Throttle Body	3 Mikuni VM34SS Slide	3 Mikuni VM34CS Slide	3 Mikuni VM38SS	3 Mikuni VM38SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	CDI	CDI
Alternator Output	12V 200W 6P	12V 200W 6P	12V 200W 6P	12V 170W 6P
Length (in./cm.)	115/292.1	108/274.3	108/274.3	108/274.3
Width (in./cm.)	48/121.9	48/121.9	48/121.9	46.5/118.11
Height (in./cm.)	51.5/130.8	49.5/125.7	49.5/125.7	38.5/97.7
Ski Center Distance (in./cm.)	42.5/107.9	42.5/108	42.5/108	41/104.14
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	133.5/339.1	121/307.3	121/307.3	121/307.3
Fuel Capacity (U.S. gas./Imp. gal./liters)	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5	9.5/8.9/40.5
Recommended Fuel	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated
Front Suspension	IFS	IFS	IFS	CRC
Rear Suspension	XTRA 12	XTRA 12	XTRA 12	XTRA 10
Brake Type	Hydraulic Disc	Hydraulic Disc	Hydraulic Disc	Liquid Cooled Hydraulic Disc
Storage	Rear of Seat Toolbox Under Hood	Rear Seat/Toolbox	Rear Seat/Toolbox	Rear of Seat
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard	Standard
Electric Fuel Gauge	Standard	Option	Option	N/A
Accessory Lights	Oil/Brake Temp High Beam	Oil/Brake Acc High Beam	Oil/Brake Acc High Beam	Oil/Brake Temp/Acc High Beam
Electric Start	Standard	Option	Option	Option
Handwarmers/Thumbwarmer	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std
Seat	2 Up Touring	Long	Long	2 pc Knee Pad
Storage Rack	Option	Option	Option	Option
Tow Hitch	Option	Option	Option	Option

	Indy 600 XCR	Indy 600 XCR SE	Indy RXL	Indy Ultra
	0975677	H975677	0976768	0976778
Engine Type Engine Model Number	LC Triple EC59PL01	LC Triple EC59PL01	LC Triple EC65PL05	LC Triple EC68PL01
Displacement (cc)	597	597	648	679
Bore x Stroke (mm)	62.5 x 65	62.5 x 65	67.72 x 60	66.6 x 65
Carburetion/Throttle Body	3 Mikuni VM38AL Slide	3 Mikuni VM38AL Slide	3 Throttle Body 46mm	3 Mikuni VM38AL Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	Digital CDI	Digital CDI	CDI	Digital CDI
Alternator Output	12V 200W	12V 200W	12V 180W	12V 200W
Length (in./cm.)	109/276.8	109/276.8	106.25/269.9	108/274.3
Width (in./cm.)	46.5/118.11	46.5/118.11	48/121.9	48/121.9
Height (in./cm.)	44/111.7	44/111.7	48.5/123.1	48.5/123.2
Ski Center Distance (in./cm.)	41/104.14	41/104.14	42.5/107.9	42.5/108
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm)	121/307.3	121/307.3	121/307.3	121/307.3
Fuel Capacity (U.S. gas./Imp. gal./liters)	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5
Recommended Fuel	91 Octane Min.	91 Octane Min.	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated
Front Suspension	Parallel Link IFS	Parallel Link IFS	Non-Parallel Link Trailing Arm IFS	Parallel Link IFS
Rear Suspension	XTRA 10	XTRA 10	XTRA 12	XTRA 12
Brake Type	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc
Storage	Rear of Seat Toolbox	Rear of Seat Toolbox	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox Footrest
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard	Standard
Electric Fuel Gauge	Option	Option	Standard	Option
Accessory Lights	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam
Electric Start	N/A	N/A	Option	N/A
Handwarmers/Thumbwarmer	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std
Seat	Mid, 1 pc, 121	Mid, 1 pc, 121	Long	Standard
Storage Rack	N/A	N/A	Option	Option
Tow Hitch	Option	Option	Option	Option

	Indy Ultra SP	Indy Ultra SPX	Indy Ultra SPX SE	Indy Ultra Touring
	0970678	0975678	H975678	0975378
Engine Type Engine Model Number	LC Triple EC68PL01	LC Triple EC68PL03	LC Triple EC68PL03	LC Triple EC68PL01
Displacement (cc)	679	679	679	679
Bore x Stroke (mm)	66.6 x 65	65x60	65x60	66.6 x 65
Carburetion/Throttle Body	3 Mikuni VM38AL Slide	3 Mikuni VM38AL Slide	3 Mikuni VM38AL Slide	3 Mikuni VM38AL Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	Digital CDI	Digital CDI	Digital CDI	Digital CDI
Alternator Output	12V 200W	12V 170W	12V 170W	12V 200W
Length (in./cm.)	108/274.3	109/276.9	109/276.9	115/292.1
Width (in./cm.)	46.5/118.1	46.5/118.1	46.5/118.1	48/121.9
Height (in./cm.)	47.5/120.7	44/111.8	44/111.8	47/119.4
Ski Center Distance (in./cm.)	41/104.14	41/104.14	41/104.14	42.5/108
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	121/307.3	121/307.3	121/307.3	133.5/339.1
Fuel Capacity (U.S. gas./Imp. gal./liters)	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5
Recommended Fuel	87 Octane Non-Oxygenated or 89 Octane Oxygenated	91 Octane Min.	91 Octane Min.	87 Octane Non-Oxygenated or 89 Octane Oxygenated
Front Suspension	Parallel Link IFS, CRC	CRC	CRC	Parallel Link IFS
Rear Suspension	XTRA 10	XTRA 10	XTRA 10	XTRA 12
Brake Type	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc
Storage	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox Footrest	Rear of Seat
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard	Standard
Electric Fuel Gauge	Option	N/A	N/A	Option
Accessory Lights	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam
Electric Start	N/A	Option	Option	N/A
Handwarmers/Thumbwarmer	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std
Seat	Standard	2-Pc/Knee Pad	2-Pc/Knee Pad	Standard
Storage Rack	Option	Option	Option	Option
Tow Hitch	Option	Option	Option	Option

	Indy 700 XC	Indy 700 SKS	Indy 700 RMK
	0971766	0970566	0970966
Engine Type Engine Model Number	LC Twin SN70-LCDCSP-01	LC Twin SN70-LCDCSP-01	LC Twin SN70-LCDCSP-02
Displacement (cc)	700	700	700
Bore x Stroke (mm)	81x68	81x68	81x68
Carburetion/Throttle Body	2 Keihin 2-38MM D Slide	2 Keihin 2-38MM D Slide	2 Keihin 2-38MM D Slide
Oil Injected	Standard	Standard	Standard
Ignition	Digital CDI	Digital CDI	Digital CDI
Alternator Output	12V 280W	12V 280W	12V 280W
Length (in./cm.)	109/276.9	116/294.6	116/294.6
Width (in./cm.)	46.5/118.1	46.5/118.1	43.5/110.5
Height (in./cm.)	38.5/97.8	46/116.8	46/116.8
Ski Center Distance (in./cm.)	41/104.14	41/104.14	38/96.5
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	121/307.3	136/345.4	136/345.4
Fuel Capacity (U.S. gas./Imp. gal./liters)	9.5/7.9/35.9	10.7/8.9/40.5	10.7/8.9/40.5
Recommended Fuel	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated
Front Suspension	XC-10 CRC IFS	Parallel Link CRC IFS	Parallel Link CRC IFS
Rear Suspension	XTRA 10	XTRA 10	XTRA 10
Brake Type	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc
Storage	Rear of Seat Toolbox	Rear of Seat Toolbox	Rear of Seat Toolbox
Speedometer	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard
Electric Fuel Gauge	Option	Option	Option
Accessory Lights	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam
Electric Start	Option	Option	Option
Handwarmers/Thumbwarmer	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std
Seat	Long	Long	Long
Storage Rack	Option	Option	Option
Tow Hitch	Option	Option	Option

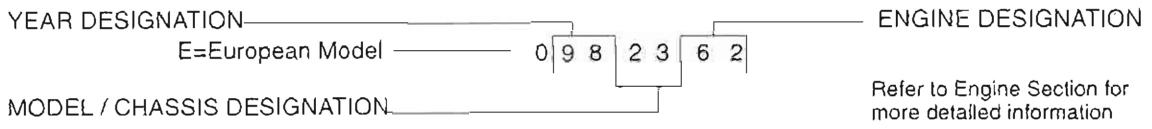
	Indy Storm	Indy Storm SE	Indy Storm RMK	Indy 440 XCR
	0975782	H975782	0975982	0971660
Engine Type Engine Model Number	LC Triple EC80PL05	LC Triple EC80PL05	LC Triple EC80PL04	LC Twin SN44LCDCSP-01
Displacement (cc)	794	794	794	439
Bore x Stroke (mm)	72 x 65	72 x 65	72 x 65	68.25 x 60
Carburetion/Throttle Body	3 Mikuni VM38SS Slide	3 Mikuni VM38SS Slide	3 Mikuni VM38SS Slide	2 Mikuni VM34SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	Digital CDI	Digital CDI	Digital CDI	Digital CDI
Alternator Output	12V 200W	12V 200W	12V 200W	12V 200W 2P
Length (in./cm.)	109/276.9	109/276.9	115/292.1	109/276.9
Width (in./cm.)	46.5/118.1	46.5/118.1	46.5/118.1	46.5/118.1
Height (in./cm.)	44/111.7	44/111.7	49/124.5	38.5/97.8
Ski Center Distance (in./cm.)	41/104.14	41/104.14	38/96.5	41/104.14
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	121/307.3	121/307.3	133.5/339.1	121/307.3
Fuel Capacity (U.S. gas./Imp. gal./liters)	10.7/8.9/40.5	10.7/8.9/40.5	10.7/8.9/40.5	9.5/7.9/35.9
Recommended Fuel	91 Octane Min.	91 Octane Min.	91 Octane Minimum	91 Octane Minimum
Front Suspension	41″ IFS	41″ IFS	38″ IFS	XC-10 CRC
Rear Suspension	XTRA 10 HP	XTRA 10 HP	XTRA 10 LWT	XTRA 10
Brake Type	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc	Liquid CooledHydraulic Disc 5/8 Piston (Mast Cyl)
Storage	Rear of Seat Toolbox	Rear of Seat Toolbox	Rear of Seat Toolbox	Rear of Seat
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard	Standard
Electric Fuel Gauge	Option	Option	Option	N/A
Accessory Lights	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam
Electric Start	N/A	N/A	N/A	Option
Handwarmers/Thumbwarmer	Hi-Lo/Std Hi-Lo	Hi-Lo/Std Hi-Lo	Hi-Lo/Std Hi-Lo	Hi-Lo/Std
Seat	Sculpt, Mid 121	Sculpt, Mid 121	Sculpt, Mid, 133	2 pc / Knee Pad
Storage Rack	N/A	N/A	N/A	N/A
Tow Hitch	Option	Option	Option	N/A

SERIAL NUMBER IDENTIFICATION

The machine serial number may be used as an aid in identifying machine model year. Refer to the first digits in the serial number for proper identification:

FIRST DIGITS	MODEL YEAR
33	1998

1998 MODEL DESIGNATION

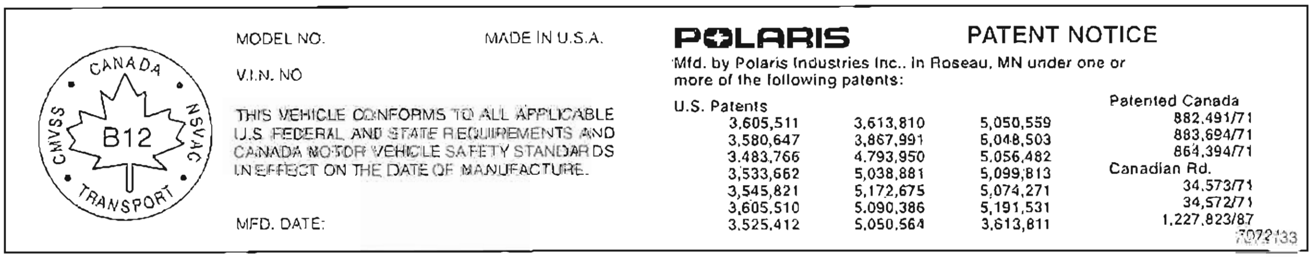


1998
MODEL DESIGNATION
NUMBERS (Chassis)

01 - Indy TranSport
02 - Indy Sport Touring
04 - Indy Sport
07 - Indy Super Sport
09 - Indy Trail RMK, 600 RMK, 700 RMK
16 - Indy XCF, 440 XCR
17 - Indy 600 XC, 700 XC
20 - Indy WideTrak LX
23 - Indy Trail Touring
27 - Indy 440, Trail, 500
29 - Indy 500 RMK
31 - Indy Lite Touring
33 - Indy Classic Touring, XLT Touring
34 - Indy Lite, Lite Deluxe
37 - XLT LTD
38 - Indy 500 Classic, XLT Classic,
53 - Ultra Touring
56 - Indy 600 XCR, 700 XCR
57 - Indy Storm, XLT SP
67 - Indy Ultra

1998
ENGINE DESIGNATION
NUMBERS

31 - EC34-2PM02A
33 - EC34-2PM02A
43 - EC44-3PM024
56 - EC58PL130
57 - EC58PL130, EC58PL150
58 - SN60-70LCDCSP-01 / 02
60 - SN44-44LCDCSP-01 / EC45PL091
61 - EC50PM043, EC50PM051, EC50PM061
62 - EC50PM043 (-S)
64 - EC50PL161, EC50PL171
65 - EC50PL171, EC50PL191, EC50PL201
66 - SN70-70LCDCSP-01 / SN70-70LCDCSP-02
68 - SN60-70LCDCSP-01
76 - EC58PL140
77 - EC59PL020
78 - EC68PL050, EC68PL060
82 - EC80PL052



These numbers should be referred to in any correspondence regarding warranty, service or replacement parts.

The machine model and serial number identification decal is located on the right front side of the tunnel. The serial number is permanently stamped into the tunnel. The model number is embossed on the decal.

Whenever corresponding about an engine it is important that the engine model and serial numbers be called out. Laser engraved model and serial numbers are located on the crankcase (intake side).

1998 Model	Indy Lite	Indy Lite Deluxe	Indy Lite Touring	Indy Sport
	0983433	0983431	0983133	0980443
Engine Type Engine Model Number	Fan Twin EC34-2PM02A	Fan Twin EC34-2PM02A	Fan Twin EC34-2PM02A	Fan Twin EC44-3PM024
Displacement (cc)	339	339	339	432
Bore x Stroke (mm)	62.3 x 55.6	62.3 x 55.6	62.3 x 55.6	67.72 x 60
Carburetion/Throttle Body	2 Mikuni VM30SS Slide	2 Mikuni VM30SS Slide	2 Mikuni VM30SS Slide	2 Mikuni VM34SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	CDI	CDI
Alternator Output	12V 150W	12V 150W	12V 150W	12V 200W
Length (in./cm.)	105/266.7	105/266.7	115/292.1	108/274.3
Width (in./cm.)	42.5/108	42.5/108	42.5/108	43.5/110.5
Height (in./cm.)	44/111.8	44/111.8	48/121.9	44/111.8
Ski Center Distance (in./cm.)	37/94	37/94	37/94	38/96.5
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	121/307.3	121/307.3	133.5/339.1	121/307.3
Fuel Capacity (U.S. gas./Imp. gal./liters)	8.8/7.3/33.3	8.8/7.3/33.3	8.8/7.3/33.3	10.7/8.9/40.5
Recommended Fuel	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated
Front Suspension	IFS-38	IFS-38	IFS-38	IFS-38
Rear Suspension	XTRA-Lite	XTRA-Lite	XTRA-Lite	XTRA-Lite
Brake Type	Mechanical Disc	Mechanical Disc	Mechanical Disc	Hydraulic Disc
Storage	Rear of Seat Top of Hood	Rear of Seat Top of Hood	Rear of Seat Top of Hood	Rear of Seat Toolbox Footrest
Speedometer	Standard	Standard	Standard	Standard
Tachometer	N/A	N/A	N/A	Option
Reverse	Accessory	Accessory	Accessory	Accessory
Electric Fuel Gauge	N/A	N/A	N/A	Option
Accessory Lights	N/A	Oil/Acc	Oil/Acc	Oil/Brake Acc High Beam
Electric Start	Option	Standard	Option	Option
Handwarmers/Thumbwarmer	Option/Option	Single Heat/Std	Single Heat/Std	Single Heat/Std
Seat	Standard Lite	Standard Lite	2 Up Lite	Standard
Storage Rack	Option	Option	Standard	Option
Tow Hitch	Option	Option	Standard	Option

1998 Model Identification

1998 Model	Indy TranSport	Indy Sport Touring	Indy XCF	Indy 440 LC
	0980143	0980243	0981643	0982760
Engine Type Engine Model Number	Fan Twin EC44-3PM024	Fan Twin EC44-3PM024	Fan Twin EC44-3PM024	LC Twin EC45PL091
Displacement (cc)	432	432	432	432
Bore x Stroke (mm)	67.72 x 60	67.72 x 60	67.72x60	67.72 x 60
Carburetion/Throttle Body	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	CDI	CDI
Alternator Output	12V 200W	12V 200W	12V 200W	12V 200W 2P
Length (in./cm.)	117/297.2	117/297.2	108/274.3	108/274.3
Width (in./cm.)	43.5/110.5	43.5/110.5	46.5/118.1	46.5/118.1
Height (in./cm.)	48/121.9	48/121.9	38.5/97.8	47.5/120.7
Ski Center Distance (In./cm.)	38/96.5	38/96.5	41/104.1	41/104.14
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	141/358.1	133.5/339.1	121/307.3	121/307.3
Fuel Capacity (U.S. gas./Imp. gal./liters)	11.8/9.8/44.7	11.8/9.8/44.7	10.5/8.7/39.7	11.8/9.8/44.7
Recommended Fuel	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated
Front Suspension	IFS-38	IFS-38	IFS XTRA-10 CRC	IFS XTRA-10
Rear Suspension	Standard	XTRA Lite	XTRA 10	XTRA 10
Brake Type	Hydraulic Disc	Hydraulic Disc	Vented Hydraulic Disc	Hydraulic Disc
Storage	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox Footrest	Rear Seat	Rear of Seat Toolbox Under Hood
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Option	Option	Standard	Standard
Reverse	Option	Option	Option	Option
Electric Fuel Gauge	Option	Option	Option	Option
Accessory Lights	Oil/Brake Acc High Beam	Oil/Brake Acc High Beam	Oil/Brake Acc High Beam	Oil/Brake Temp High Beam
Electric Start	Option	Option	Option	Option
Handwarmers/Thumbwarmer	Single Heat/Std	Single Heat/Acc	Single Heat/Std	Hi-Lo/Std
Seat	2 Up	2 Up	Racing w/0 pads	Std Length
Storage Rack	Option	Option	Option	Option
Tow Hitch	Std	Option	Option	Option

1998 Model	Indy Trail	Indy Trail Touring	Indy Trail RMK	Indy Super Sport
	0982761	0982362	0980961	0980761
Engine Type Engine Model Number	Fan Twin EC50PM043	Fan Twin EC50PM043	Fan Twin EC50PM051	Fan Twin EC50PM061
Displacement (cc)	488	488	488	488
Bore x Stroke (mm)	72 x 60	72 x 60	72x60	72 x 60
Carburetion/Throttle Body	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide	2Mikuni/ACCS VM34SS Slide	2 Mikuni VM34SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	CDI	CDI
Alternator Output	12V 200W 2P	12V 200W 2P	12V 200W 2P	12V 200W
Length (in./cm.)	108/274.3	114/289.6	114/289.6	108/274.3
Width (in./cm.)	46.5/118.1	46.5/118/1	43.5/110.5	46.5/118.1
Height (in./cm.)	47.5/120.7	48/121.9	46/116.8	38.5/97.8
Ski Center Distance (in./cm.)	41/104.14	41/104.14	38/96.5	41/104.14
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	121/307.3	133.5/339.1	133.5/339.1	121/307.3
Fuel Capacity (U.S. gas./Imp. gal./liters)	11.8/9.8/44.7	11.8/9.8/44.7	11.8/9.8/44.7	11.8/9.8/44.7
Recommended Fuel	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated
Front Suspension	IFS XTRA-10	IFS XTRA-10	XTRA-10 IFS	IFS XTRA-10
Rear Suspension	XTRA 10	XTRA 10	XTRA 10	XTRA 10
Brake Type	Hydraulic Disc	Hydraulic Disc	Hydraulic Disc	Hydraulic Disc
Storage	Rear of Seat Toolbox Under Hood	Rear of Seat Toolbox Under Hood	Rear Seat/Toolbox	Rear of Seat Toolbox Footrest
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard	Standard
Electric Fuel Gauge	Option	Option	Option	
Reverse	Option	Standard	Option	Option
Accessory Lights	Oil/Brake High Beam	Oil/Brake High Beam	Oil/Brake Acc High Beam	Oil/Brake Acc High Beam
Electric Start	Option	Standard	Option	Option
Handwarmers/Thumbwarmer	Hi-Lo/Std	Hi-Lo/Std	Single Heat/Std	Single Heat/Std
Seat	Standard	Dlx 2 Up Touring	Long	Standard
Storage Rack	Option	Option	Option	Option
Tow Hitch	Option	Option	Option	Option

1998 Model	Indy 440 XCR	Indy 500	Indy 500 RMK	Indy Classic
	0981660	0982764 (0982764A) (0982764B)	0982964	0983865
Engine Type Engine Model Number	LC Twin SN44-44LCDCSP-01	LC Twin EC50PL171	LC Twin EC50PL161	LC Twin EC50PL171
Displacement (cc)	438	488	488	488
Bore x Stroke (mm)	66 x 64	72 x 60	72 x 60	72 x 60
Carburetion/Throttle Body	2 Mikuni VM34SS Slide	2 Mikuni VM38SS Slide	2 Mikuni VM34SS / ACCS	2 Mikuni VM38SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	Digital CDI	CDI	CDI	CDI
Alternator Output	12V 280W	12V 200W 2P	12V 200W 2P	12V 200W 2P
Length (in./cm.)	109/276.86	108/274.3	114/289.6	108/121.9
Width (in./cm.)	46.5/118.1	46.5/118.1	43.5/110.5/RMK	48/121.9
Height (in./cm.)	44.0/111.76	41/104.14	48/121.9	49.5/125.7
Ski Center Distance (in./cm.)	41/104.14	41/104.14	38/96.5	42.5/107.9
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	121/307.3	121/307.3	133.5/339.1	121/307.3
Fuel Capacity (U.S. gas./Imp. gal./liters)	10.5/8.7/39.7	11.8/9.8/44.7	11.8/9.8/44.7	11.8/9.8/44.7
Recommended Fuel	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated
Front Suspension	XC-10 CRC	IFS XTRA-10 CRC	IFS 38 RMK	IFS XTRA-12
Rear Suspension	XTRA 10	XTRA 10	XTRA 10	XTRA 12
Brake Type	Liquid Cooled Hydraulic Disc	Hydraulic Disc	Hydraulic Disc HD Pads	Hydraulic Disc
Storage	Rear of Seat Toolbox Under Hood	Rear of Seat Toolbox	Rear of Seat Toolbox	Rear of Seat Toolbox
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard	Standard
Reverse	Option	Option	Option	Standard
Electric Fuel Gauge	Option	Option	Option	Standard
Accessory Lights	Oil/Brake Temp High Beam	Oil/Brake Temp High Beam	Oil/Brake Temp High Beam	Oil/Brake Temp High Beam
Electric Start	N/A	Option	Option	Standard
Handwarmers/Thumbwarmer	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std
Seat	Racing w/ pads	Standard (Long Opt.A&B)	Long	Long
Storage Rack	Option	Option	Option	Option
Tow Hitch	Option	Option	Option	Option

1998 Model	Indy Classic Touring	Indy WideTrak LX	Indy XLT Touring	Indy XLT LTD
	0983365	0982065	0983357	0983756
Engine Type Engine Model Number	LC Twin EC50PL191	LC Twin EC50PL201	LC Triple EC58PL130	LC Triple EC58PL130
Displacement (cc)	488	488	597	597
Bore x Stroke (mm)	72 x 60	72 x 60	65 x 60	65x60
Carburetion/Throttle Body	2 Mikuni VM34SS Slide	2 Mikuni VM34SS Slide	3 Mikuni VM34SS Slide	3 Mikuni VM34SS Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	CDI	CDI
Alternator Output	12V 200W 2P	12V 200W	12V 280W	12V 280W
Length (in./cm.)	115/292.1	128/325.1	115/292.1	108/274.3
Width (in./cm.)	48/121.9	43.5/110.5	48/121.9	48/121.9
Height (in./cm.)	51.5/130.8	49/124.5	51.5/130.8	49.5/125.7
Ski Center Distance (in./cm.)	42.5/107.9	38/96.5	42.5/107.9	42.5/107.9
Track Width (in./cm.)	15/38.1	20/50.8	15/38.1	15/38.1
Track Length Overall (in./cm)	133.5/339.1	156/396.2	133.5/339.1	121/307.3
Fuel Capacity (U.S. gas./Imp. gal./liters)	11.8/9.8/44.7	11.0/9.1/41.6	11.8/9.8/44.7	11.8/9.8/44.7
Recommended Fuel	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated
Front Suspension	IFS XTRA-12	IFS 38	IFS XTRA-12	IFS XTRA-12
Rear Suspension	XTRA 12	WideTrak Single Slide Rail	XTRA 12	XTRA 12
Brake Type	Hydraulic Disc	Mechanical	Hydraulic Disc	Hydraulic Disc
Storage	Rear of Seat Toolbox	Under Seat	Rear of Seat Toolbox Under Hood	Rear Seat/Toolbox
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard	Standard
Reverse	Standard	Standard	Standard	Option
Electric Fuel Gauge	Standard	N/A	Standard	Option
Accessory Lights	Oil/Brake Temp High Beam	Oil/Temp Rev High Beam	Oil/Brake Temp High Beam	Oil/Brake Acc High Beam
Electric Start	Standard	Standard	Standard	Option
Handwarmers/Thumbwarmer	Hi-Lo/Std	Single Heat/Std	Hi-Lo/Std	Hi-Lo/Std
Seat	Deluxe 2 Up/Tour	WideTrak 2 Up	Deluxe 2 Up Touring	Standard Length
Storage Rack	Option	Standard	Option	Option
Tow Hitch	Option	Standard	Option	Option

1998 Model Identification

1998 Model	Indy XLT SP	Indy XLT Classic	Indy 600 XC	Indy 600 RMK
	0985776	0983857	0981758	0980958
Engine Type Engine Model Number	LC Triple EC58PL140	LC Triple EC58PL150	LC Twin SN60-70LCDCSP-01	LC Twin SN60-70LCDCSP-02
Displacement (cc)	597	597	593	593
Bore x Stroke (mm)	65 x 60	65 x 60	74.5 x 68	74.5 x 68
Carburetion/Throttle Body	3 Mikuni VM38SS	3 Mikuni VM38SS	2 Keihin 39mm D-Slide	2 Keihin 39mm D-Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	CDI	CDI	Digital CDI	Digital CDI
Alternator Output	12V 280W	12V 280W	12V 280W	12V 280W
Length (in./cm.)	108/274.3	108/274.3	109/276.86	116/294.64
Width (in./cm.)	46.5/118.11	48/121.92	46.5/118.1	43.5/110.5
Height (in./cm.)	46.5/118.11	48.5/123.19	44/111.76	46/116.84
Ski Center Distance (in./cm.)	41/104.14	42.5/107.9	41/104.14	38/96.52
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	121/307.3	121/307.3	121/307.3	121/307.3
Fuel Capacity (U.S. gas./Imp. gal./liters)	11.8/9.8/44.7	11.8/9.8/44.7	11.8/9.79/44.66	11.8/9.79/44.66
Recommended Fuel	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated
Front Suspension	IFS XTRA-10 CRC	IFS XTRA-12	XC-10 CRC	38 RMK CRC
Rear Suspension	XTRA 10	XTRA 12	XTRA 10	XTRA 10
Brake Type	Hydraulic Disc	Hydraulic Disc	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc
Storage	Rear of Seat Toolbox Footrest	Rear of Seat Toolbox Footrest	Rear of Seat	Rear of Seat
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard	Standard
Reverse	Option	Standard	Option	Option
Electric Fuel Gauge	Option	Option	N/A	N/A
Accessory Lights	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam
Electric Start	Option	Standard	Option	Option
Handwarmers/Thumbwarmer	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std
Seat	Aggressive Mid Length	Long	Aggressive Mid Length	Long
Storage Rack	Option	Option	Option	Option
Tow Hitch	Option	Option	Option	Option

1998 Model	Indy 600 XCR	Indy Ultra	Indy Ultra Touring	Indy 700 XCR
	0985677	0986778	0985378	0985678 (0985678A)
Engine Type Engine Model Number	LC Triple EC59PL020	LC Triple EC68PL050	LC Triple EC68PL050	LC Triple EC68PL060
Displacement (cc)	597	679	679	679
Bore x Stroke (mm)	62.5 x 65	66.6 x 65	66.6 x 65	66.6 x 65
Carburetion/Throttle Body	3 Mikuni VM38AL Slide	3 Mikuni VM38AL Slide	3 Mikuni VM38AL Slide	3 Mikuni VM38AL Slide
Oil Injected	Standard	Standard	Standard	Standard
Ignition	Digital CDI	Digital CDI	Digital CDI	Digital CDI
Alternator Output	12V 280W	12V 280W	12V 280W	12V 280W
Length (in./cm.)	109/276.8	108/274.3	115/292.1	109/276.8
Width (in./cm.)	46.5/118.11	48/121.9	48/121.9	46.5/118.11
Height (in./cm.)	44/111.7	48.5/123.2	51.5/130.8	44/111.7
Ski Center Distance (in./cm.)	41/104.14	42.5/108	42.5/108	41/104.14
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm)	121/307.3	121/307.3	133.5/339.1	121/307.3
Fuel Capacity (U.S. gas./Imp. gal./liters)	11.8/9.8/44.7	11.8/9.8/44.7	11.8/9.8/44.7	11.8/9.8/44.7
Recommended Fuel	91 Octane Min.	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	91 Octane Min.
Front Suspension	XTRA 10 CRC	IFS XTRA 12	IFS XTRA 12	XTRA 10 CRC
Rear Suspension	XTRA 10	XTRA 12	XTRA 12	XTRA 10
Brake Type	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc
Storage	Rear of Seat Toolbox	Rear of Seat Toolbox Footrest	Rear of Seat	Rear of Seat Toolbox
Speedometer	Standard	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard	Standard
Reverse	Option	Option	Standard	Option
Electric Fuel Gauge	Standard	Option	Standard	Standard
Accessory Lights	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam
Electric Start	N/A	Option	Standard	N/A
Handwarmers/Thumbwarmer	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std
Seat	Aggressive Mid Length	Standard	Deluxe 2-up Touring	Aggressive Mid Length
Storage Rack	Option	Option	Standard	Option
Tow Hitch	Option	Option	Option	Option

1998 Model	Indy 700 XC	Indy 700 RMK	Indy Storm
	0981766	0980966	0985782
Engine Type Engine Model Number	LC Twin SN70-70LCDCSP-02	LC Twin SN70-70LCDCSP-01	LC Triple EC80PL052
Displacement (cc)	700	700	794
Bore x Stroke (mm)	81 x 68	81 x 68	72 x 65
Carburetion/Throttle Body	2 Keihin 39mm D-Slide	2 Keihin 39mm D-Slide	3 Mikuni VM38SS Slide
Oil Injected	Standard	Standard	Standard
Ignition	Digital CDI	Digital CDI	Digital CDI
Alternator Output	12V 280W	12V 280W	12V 280W
Length (in./cm.)	109/276.86	116/294.64	109/276.9
Width (in./cm.)	46.5/118.1	43.5/110.5	46.5/118.1
Height (in./cm.)	44/111.76	46/116.84	44/111.7
Ski Center Distance (in./cm.)	41/104.14	38/96.52	41/104.14
Track Width (in./cm.)	15/38.1	15/38.1	15/38.1
Track Length Overall (in./cm.)	121/307.3	121/307.3	121/307.3
Fuel Capacity (U.S. gas./Imp. gal./liters)	11.8/9.79/44.66	11.8/9.79/44.66	11.8/9.8/44.7
Recommended Fuel	87 Octane Non-Oxygenated or 89 Octane Oxygenated	87 Octane Non-Oxygenated or 89 Octane Oxygenated	91 Octane Min.
Front Suspension	XC-10 CRC	38 RMK CRC	XTRA 10 IFS
Rear Suspension	XTRA 10	XTRA 10	XTRA 10
Brake Type	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc	Liquid Cooled Hydraulic Disc
Storage	Rear of Seat	Rear of Seat	Rear of Seat Toolbox
Speedometer	Standard	Standard	Standard
Tachometer	Standard	Standard	Standard
Reverse	Option	Option	Option
Electric Fuel Gauge	Option	Option	Standard
Accessory Lights	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam	Oil/Brake Temp/Acc High Beam
Electric Start	Option	Option	N/A
Handwarmers/Thumbwarmer	Hi-Lo/Std	Hi-Lo/Std	Hi-Lo/Std Hi-Lo
Seat	Aggressive Mid Length	Long	Aggressive Mid Length
Storage Rack	Option	Option	Option
Tow Hitch	Option	Option	Option

1996 Polaris Snowmobile Paint Codes

Model	Color Description	Polaris "P" No.	Polaris Raw Material No.	PPG/Ditzler No.
Indy Lite	Black Metallic	P177	8520044	9000
Indy Lite Deluxe	Teal Metallic	P168	8520096	4300
Indy Lite GT	Dark Sapphire Metallic	P204	8520154	–
Indy Sport	Black Metallic	P177	8520044	9000
Indy Sport Touring	Black Metallic	P177	8520044	9000
Indy TranSport	Black Metallic	P177	8520044	9000
Indy Super Sport	Bright White	P133	8520079	2185
Indy 440 XCR	Bright White	P133	8520079	2185
Indy 440 XCR SP	Bright White	P133	8520079	2185
Indy 600 XCR	Bright White	P133	8520079	2185
Indy 600 XCR SP	Black Metallic	P177	8520049	9000
Indy 440 LC	Royal Plum Metallic	P203	8520141	–
Indy 500 EFI	Porsche Red	P136	8520066	72060
Indy 500 EFI SKS	Porsche Red	P136	8520066	72060
Indy 500 EFI RMK	Porsche Red	P136	8520066	72060
Indy Classic	Dark Cloisonne	P204	8520154	–
Indy Classic Touring	Dark Cloisonne	P204	8520154	–
Indy 500 Carb	Black Metallic	P177	8520044	9000
Indy 500 SKS	Black Metallic	P177	8520044	9000
Indy 500 RMK	Black Metallic	P177	8520044	9000
Indy Trail	Teal Metallic	P168	8520096	4300
Indy Trail Touring	Teal Metallic	P168	8520096	4300
Indy XLT	Black Sapphire Metallic	P173	8520098	3885
Indy XLT SKS	Black Sapphire Metallic	P173	8520098	3885
Indy XLT RMK	Black Sapphire Metallic	P173	8520098	3885
Indy XLT SP	Black Sapphire Metallic	P173	8520098	3885
Indy XLT Touring	Black Sapphire Metallic	P173	8520098	3885
Indy RXL	Black Metallic	P177	8520044	9000
Indy Ultra SP	Black Metallic	P177	8520044	9000
Indy Ultra SKS	Black Metallic	P177	8520044	9000
Indy Ultra RMK	Black Metallic	P177	8520044	9000
Indy WideTrak GT	Emerald	P210	8520163	–
Indy WideTrak LX	Emerald	P210	8520163	–
Indy Storm	Black Metallic	P177	8520044	9000
Indy Storm SKS	Black Metallic	P177	8520044	9000
Indy Storm RMK	Black Metallic	P177	8520044	9000

Order Polaris "P" Number from Midwest Industrial Coatings (612-942-1840) (FAX 612-942-1838). Mix as directed.

1997 Polaris Snowmobile Paint Codes

Model	Color Description	Polaris "P" No.	Raw Material No.	Ditzler #
Indy Lite	Black Metallic *	P177	8520197	9000
Indy Lite GT	Dark Cloisonne *	P204	8520154	–
Indy Lite Deluxe	Teal Metallic *	P168	8520199	4300
Indy Sport	Raspberry Metallic *	P231	8520225	–
Indy Transport	Emerald *	P210	8520163	–
Indy Super Sport	Bright White **	P133	8520201	2185
Indy Sport Touring	Raspberry Metallic *	P231	8520225	–
Indy 440 XC	Bright White **	P133	8520201	2185
Indy 600 XC	Bright White **	P133	8520201	2185
Indy WideTrak LX	Emerald *	P210	8520163	–
Indy WideTrak GT	Emerald *	P210	8520163	–
Indy Trail RMK	Teal Metallic *	P168	8520199	4300
Indy XCF	Bright White **	P133	8520201	2185
Indy Trail	Teal Metallic *	P168	8520199	4300
Indy Trail Touring	Teal Metallic *	P168	8520199	4300
Indy 440 L/C	Royal Plum *	P203	8520141	–
Indy XLT Touring	Blue Spruce *	P228	8520218	–
Indy 500 L/C	Black Metallic *	P177	8520197	9000
Indy 500 EFI	Dark Cloisonne *	P204	8520154	–
Indy XLT LTD	Blue Spruce *	P228	8520218	–
Indy 500 SKS	Black Metallic *	P177	8520197	9000
Indy 500 RMK	Black Metallic *	P177	8520197	9000
Indy Classic	Royal Plum *	P203	8520141	–
Indy Classic Touring	Royal Plum *	P203	8520141	–
Indy Storm	Black Metallic *	P177	8520197	9000
Indy Storm RMK	Black Metallic *	P177	8520197	9000
Indy XLT	Black Sapphire *	P173	8520193	3885
Indy XLT SP	Indigo Metallic *	P229	8520228	–
Indy XLT SKS	Black Sapphire *	P173	8520193	3885
Indy XLT RMK	Black Sapphire *	P173	8520193	3885
Indy RXL	Indigo Metallic *	P229	8520228	–
Indy 600 XCR	Bright White **	P133	8520201	2185
Indy Ultra	Black Metallic *	P177	8520197	9000
Indy Ultra SP	Deep Violet Metallic *	P230	8520222	–
Indy Ultra SPX	Deep Violet Metallic *	P230	8520222	–
Indy Ultra Touring	Deep Violet Metallic *	P230	8520222	–
Indy 700 SKS	Blue Spruce *	P228	8520218	–
Indy 700 RMK	Blue Spruce *	P228	8520218	–

Order Polaris "P" Number from Midwest Industrial Coatings (612-942-1840) (FAX 612-942-1838). Mix as directed.

** Receive clear topcoat (8520198)

* Receive clear topcoat with sparkle metallic powder (8520194)

1998 Polaris Snowmobile Paint Codes

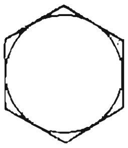
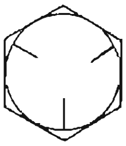
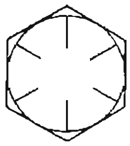
1998 Model	Color Description	Polaris "P" No.	Raw Material No.	Ditzler#
Indy Lite	Porsche Red Metallic	P245	8520066	
Indy Lite Deluxe	Teal Metallic	P168	8520199	4300
Indy Lite Touring	Black Metallic	P177	8520197	9000
Indy Sport	Dark Cloisonné	P204	8520154	
Indy TranSport	Emerald	P210	8520163	
Indy Super Sport	Bright White Metallic	P241	8520201	
Indy Sport Touring	Dark Cloisonné	P204	8520154	
Indy XCF	Bright White Metallic	P241	8520201	
Indy Trail	Teal Metallic	P168	8520199	4300
Indy Trail Touring	Teal Metallic	P168	8520199	4300
Indy Trail RMK	Teal Metallic	P168	8520199	4300
Indy 440	Bright White Metallic	P241	8520201	
Indy 440 XCR	Bright Red	P243	8520247	
Indy 500 (Color Opt. 1)	Black Metallic	P177	8520197	9000
Indy 500 Classic	Royal Plum Metallic	P203	8520141	
Indy 500 RMK	Black Metallic	P177	8520197	9000
Indy Classic Touring	Royal Plum Metallic	P203	8520141	
Indy Widetrak LX	Emerald	P210	8520163	
Indy XLT Classic	Blue Spruce Metallic	P228	8520218	
Indy XLT LTD	Rigel Blue	P246	8520254	
Indy XLT SP	Black Metallic	P177	8520197	9000
Indy XLT Touring	Blue Spruce Metallic	P228	8520218	
Indy 600 XCR	Bright White Metallic	P241	8520201	
Indy 700 XC	Bright White Metallic	P241	8520201	
Indy 700 RMK	Dark Cloisonné	P204	8520154	
Indy 700 XCR (Color Opt. 1)	Deep Violet Metallic	P230	8520222	
Indy Ultra	Black Metallic	P177	8520197	9000
Indy Ultra Touring	Deep Violet Metallic	P230	8520222	
Indy Storm	Porsche Red Metallic	P245	8520066	
Indy 600 XC	Bright White Metallic	P241	8520201	
Indy 500 (Color Opt. 2)	Bright White Metallic	P241	8520201	
Indy 500 (Color Opt. 3)	Dk Cloisonné/Blue Spruce	P1075	8520154/218	
Indy 600 RMK	Deep Violet Metallic	P230	8520222	
Indy 700 (Color Opt. 2)	Bright White Metallic	P241	8520201	
Metallic Topcoat	Clear Topcoat with Sparkle Metallic Powder	N/A	8520194	

Order Polaris "P" Number from Midwest Industrial Coatings (612-942-1840) (FAX 612-942-1838). Mix as directed.

** Receive clear topcoat (8520198)
* Receive clear topcoat with sparkle metallic powder (8520194)

Standard Torque Specifications

The following torque specifications are to be used as a general guideline. There are exceptions in the steering, suspension, and engine areas. Always consult the standard torque chart and the specific manual section for torque values of fasteners. Use special torque values when listed.

Bolt Size	Threads/In (MM/Thread)	Grade 2	Grade 5	Grade 8
		Torque in. lbs. (kg/m)		
#10 -	24	27 (.31)	43 (.50)	60 (.69)
#10 -	32	31 (.36)	49 (.56)	68 (.78)
		Torque ft. lbs. (kg/m)*		
1/4 -	20	5 (.7)	8 (1.1)	12 (1.6)
1/4 -	28	6 (.8)	10 (1.4)	14 (1.9)
5/16 -	18	11 (1.5)	17 (2.3)	25 (3.5)
5/16 -	24	12 (1.6)	19 (2.6)	29 (4.0)
3/8 -	16	20 (2.7)	30 (4.0)	45 (6.2)
3/8 -	24	23 (3.2)	35 (4.8)	50 (6.9)
7/16 -	14	30 (4.0)	50 (6.9)	70 (9.7)
7/16 -	20	35 (4.8)	55 (7.6)	80 (11.0)
1/2 -	13	50 (6.9)	75 (10.4)	110 (15.2)
1/2 -	20	55 (7.6)	90 (12.4)	120 (16.6)

*To convert ft. lbs. to kg/m multiply foot pounds by .138.
*To convert kg/m to N/m move the decimal to the right one position.

Special Application Torque List

Due to the special grade bolts and nuts required for specific applications, observe the following torque values in the areas specified. Refer to specific manual section for torque values of fasteners not listed here.

Bolt Size	Area Where Used	Torque Minimum-Maximum
3/8	Outer Radius Rod End to Trailing Arm (Top & Bottom)	28-30 ft. lbs. (3.86-4.14 kg-m)
7/16	Inner Radius Rod End To Bulkhead (Top)	35-40 ft. lbs. (4.83-5.52 kg-m)
1/2	Inner Radius Rod End To Bulkhead (Bottom)	40-50 ft. lbs. (5.52-6.9 kg-m)
——	Radius Rod, Drag Link, or Tie Rod End Jam Nuts	24-25 ft. lbs. (3.31-3.45 kg-m)
1/2	Bellcrank (Center Steering Arm)	55-60 ft. lbs. (7.59-8.28 kg-m)
3/8	Drag Link to Steering Post Arm	28-30 ft. lbs. (3.86-4.14 kg-m)
3/8	Drag Link to Bellcrank	28-30 ft. lbs. (3.86-4.14 kg-m)
3/8	Tie Rod to Steering Arm	28-30 ft. lbs. (3.86-4.14 kg-m)
3/8	Tie Rod to Steering Post Arm	28-30 ft. lbs. (3.86-4.14 kg-m)
7/16	Trailing Arm Rear Support	40-45 ft. lbs. (5.52-6.21 kg-m)
3/8	IFS Shock (Top & Bottom)	28-30 ft. lbs. (3.86-4.14 kg-m)
5/16	Steering Post to Bulkhead	15-17 ft. lbs. (2.07-2.35 kg-m)
1/4	Upper Steering Bracket to Hoop	8-10 ft. lbs. (1.10-1.38 kg-m)
1/4	Handlebar Block	8-10 ft. lbs. (1.10-1.38 kg-m)
1/4	Side Panel to Nosepan Brace, Rubber Washer	4-6 in. lbs. (.05-.07 kg-m)
1/4	Side Panel to Nosepan, Well Nut	4-6 in. lbs. (.05-.07 kg-m)
3/8	Throttle Block Set Screw	30-35 in. lbs (.35-.40 kg-m)
3/8	Ski Pivot Bushing Bolt	25-28 ft. lbs. (3.45-3.86 kg-m)
	Choke to Plastic Console	20-25 in. lbs. (.23-.29 kg-m)

Special Application Torque List, Cont.

Bolt Size	Area Where Used	Torque Minimum-Maximum
1/4	Coolant Tank to Hoop	4-6 ft. lbs. (.55-.83 kg/m)
5/16	Driven Clutch to Shaft	15-17 ft. lbs. (2.07-2.35 kg/m)
7/16	Drive Clutch to Engine	45-50 ft. lbs. (6.21-6.9 kg/m)
7/16	Engine Mount to Chassis	45-50 ft. lbs. (6.21-6.9 kg/m)
7/16	Engine Mount to Engine	44-48 ft. lbs. (6.07-6.62 kg/m)
10-24	Regulator	38-43 in. lbs. (.43-.49 kg/m)
1/4	Side Panel to Nosepan Brace, Rubber Washer	4-6 in. lbs. (.05-.07 kg/m)
1/4	Side Panel to Nosepan, Well Nut	4-6 in. lbs. (.05-.07 kg/m)
1/4	Air Silencer	4-6 in. lbs. (.05-.07 kg/m)
3/8	Set Screw to Throttle Block	30-35 in. lbs (.35-.40 kg/m)
3/8	Shock Rod Bolt	10-12 ft. lbs. (1.38-1.66 kg/m)
	Rubber Motor Mount Nuts, Low Flex	15-18 ft. lbs. (2.07-2.48 kg/m)
	Rubber Motor Mount Nuts, High Flex	25-30 ft. lbs. (3.45-4.14 kg/m)
	Manifold Nuts	13-17 ft. lbs. (1.79-2.35 kg/m)
	Ignition Switch to Plastic Console	20-25 in. lbs. (.23-.29 kg/m)
	Ignition Switch to Aluminum Console	50-55 in. lbs. (.57-.63 kg/m)
	Choke to Plastic Console	20-25 in. lbs. (.23-.29 kg/m)
	Lock Collar Set Screws	70-80 in. lbs. (.8 -.92 kg/m)

Recommended Shop Supplies/Accessories

Description	Part Number
Chaincase Lubricant - One Gallon	2870464
Chaincase Lubricant - (Quart)	2871280
Chaincase Oil Pump	2870465
Cable Lubricant	2870510
Fuel System Deicer (Isopropyl)	2870505
Loctite Primer T - 6 Oz. Aerosol	2870585
Loctite RC 680 - 10cc Retaining Compound	2870584
Loctite 515 Gasket Eliminator - 50cc Tube	2870587
Loctite/Chisel – Gasket Remover - 18 Oz.	2870601
Metal Polish - 8 Oz.	2870632
DOT 3 Brake Fluid	2870990
Fogging Oil	2870791
Corrosion Resistant Dielectric Grease	2871027
Fox Shock Oil	2870995
Premium All Season Grease (14 1/2 oz)	2871423
Premium All Season Grease (3 oz)	2871322
Premium 60/40 Anti-Freeze/Coolant	2871323
Premium Carbon Clean Fuel System Additive	2871326
Fuel Stabilizer (16 oz.)	2870652
Polaris Battery Tender	2871076
Carbon Clean Fuel System Additive	2871326
T-9 Metal Protectant	2871064
Synthetic Chaincase Lubricant - Gallon	2871477
Synthetic Chaincase Lubricant - 12 oz.	2871478
Starter Drive Grease	2871460

1/64	.0156	
1/32	.0312	1 mm = .0394″
3/64	.0469	
1/16	.0625	
5/64	.0781	2 mm = .0787″
3/32	.0938	
7/64	.1094	3 mm = .1181″
1/8	1250	
9/64	.1406	
5/32	.1563	4 mm = .1575″
11/64	.1719	
3/16	.1875	5 mm = .1969″
13/64	.2031	
7/32	.2188	
15/64	.2344	6 mm = .2362″
1/4	.25	
17/64	.2656	7 mm = .2756″
9/32	.2813	
19/64	.2969	
5/16	.3125	8 mm = .3150″
21/64	.3281	
11/32	.3438	9 mm = .3543″
23/64	.3594	
3/8	.375	
25/64	.3906	10 mm = .3937″
13/32	.4063	
27/64	.4219	11 mm = .4331″
7/16	.4375	
29/64	.4531	
15/32	.4688	12 mm = .4724″
31/64	.4844	
1/2	.5	13 mm = .5118
33/64	.5156	
17/32	.5313	
35/64	.5469	14 mm = .5512″
9/16	.5625	
37/64	.5781	15 mm = .5906″
19/32	.5938	
39/64	.6094	
5/8	.625	16 mm = .6299″
41/64	.6406	
21/32	.6563	17 mm = .6693″
43/64	.6719	
11/16	.6875	
45/64	.7031	18 mm = .7087″
23/32	.7188	
47/64	.7344	19 mm = .7480″
3/4	.75	
49/64	.7656	
25/32	.7813	20 mm = .7874″
51/64	.7969	
13/16	.8125	21 mm = .8268″
53/64	.8281	
27/32	.8438	
55/64	.8594	22 mm = .8661″
7/8	.875	
57/64	.8906	23 mm = .9055″
29/32	.9063	
59/64	.9219	
15/16	.9375	24 mm = .9449″
61/64	.9531	
31/32	.9688	25 mm = .9843
63/64	.9844	
1	1.0	

Conversion Table

Unit of Measure	Multiplied by	Converts to
ft. lbs.	x 12	= in. lbs.
in. lbs.	x .0833	= ft. lbs.
ft. lbs.	x .1383	= kg-m
in. lbs.	x .0115	= kg-m
kg-m	x 7.233	= ft. lbs.
kg-m	x 86.796	= in. lbs.
kg-m	x 10	= Nm
in.	x 25.4	=mm
mm	x .03937	= in.
in.	x 2.54	= cm
mile (mi.)	x 1.6	= km
km	x .6214	= mile (mi.)
Ounces (oz)	x 28.35	= Grams (g)
Grams (g)	x 0.035	= Ounces (oz)
cc	x .03381	= Fluid Ounces (oz)
lb.	x .454	= kg
kg	x 2.2046	= lb.
Cubic inches (cu in)	x 16.387	= Cubic centimeters (cc)
Cubic centimeters (cc)	x 0.061	= Cubic inches (cu in)
Imperial pints (Imp pt)	x 0.568	= Liters (l)
Liters (l)	x 1.76	= Imperial pints (Imp pt)
Imperial quarts (Imp qt)	x 1.137	= Liters (l)
Liters (l)	x 0.88	= Imperial quarts (Imp qt)
Imperial quarts (Imp qt)	x 1.201	= US quarts (US qt)
US quarts (US qt)	x 0.833	= Imperial quarts (Imp qt)
US quarts (US qt)	x 0.946	= Liters (l)
Liters (l)	x 1.057	= US quarts (US qt)
US gallons (US gal)	x 3.785	=Liters (l)
Liters (l)	x 0.264	= US gallons (US gal)
Pounds - force per square inch (psi)	x 6.895	= Kilopascals (kPa)
Kilopascals (kPa)	x 0.145	= Pounds - force per square inch (psi)
Kilopascals (kPa)	x 0.01	= Kilograms - force per square cm
Kilograms - force per square cm	x 98.1	= Kilopascals (kPa)

°C to °F: 9 (°C + 40) ÷ 5 – 40 = °F
°F to °C: 5 (°F + 40) ÷ 9 – 40 = °C

SAE Tap Drill Sizes

Thread Size	Drill Size	Thread Size	Drill Size
#0-80	3/64	1/2-13	27/64
#1-64	53	1/2-20	29/64
#1-72	53	9/16-12	31/64
#2-56	51	9/16-18	33/64
#2-64	50	5/8-11	17/32
#3-48	5/64	5/8-18	37/64
#3-56	45	3/4-10	21/32
#4-40	43	3/4-16	11/16
#4-48	42	7/8-9	49/64
#5-40	38	7/8-14	13/16
#5-44	37	1-8	7/8
#6-32	36	1-12	59/64
#6-40	33	1 1/8-7	63/64
#8-32	29	1 1/8-12	1 3/64
#8-36	29	1 1/4-7	1 7/64
#10-24	24	1 1/4-12	1 11/64
#10-32	21	1 1/2-6	1 11/32
#12-24	17	1 1/2-12	1 27/64
#12-28	4.6mm	1 3/4-5	1 9/16
1/4-20	7	1 3/4-12	1 43/64
1/4-28	3	2-4 1/2	1 25/32
5/16-18	F	2-12	1 59/64
5/16-24	I	2 1/4-4 1/2	2 1/32
3/8-16	O	2 1/2-4	2 1/4
3/8-24	Q	2 3/4-4	2 1/2
7/16-14	U	3-4	2 3/4
7/16-20	25/64		

Metric Tap Drill Sizes

Tap Size	Drill Size	Decimal Equivalent	Nearest Fraction
3 x .50	#39	0.0995	3/32
3 x .60	3/32	0.0937	3/32
4 x .70	#30	0.1285	1/8
4 x .75	1/8	0.125	1/8
5 x .80	#19	0.166	11/64
5 x .90	#20	0.161	5/32
6 x 1.00	#9	0.196	13/64
7 x 1.00	16/64	0.234	15/64
8 x 1.00	J	0.277	9/32
8 x 1.25	17/64	0.265	17/64
9 x 1.00	5/16	0.3125	5/16
9 x 1.25	5/16	0.3125	5/16
10 x 1.25	11/32	0.3437	11/32
10 x 1.50	R	0.339	11/32
11 x 1.50	3/8	0.375	3/8
12 x 1.50	13/32	0.406	13/32
12 x 1.75	13/32	0.406	13/32

Glossary of Terms

ACS: Alternator control system. The main relay for the 1993-1996 500 EFI systems. Rectifies AC alternator voltage to DC for battery charging, and triggers the ECU with DC for start up.

ACV: Alternating current voltage.

Air Gap Spark Test: A good check for ignition voltage and general ignition system condition. Spark should arc 3/8" (1 cm) minimum from end of high tension lead to ground. Several testers are available commercially.

Alternator: Electrical generator producing alternating current voltage.

Bore: Diameter of cylinder.

BTDC: Before Top Dead Center.

Bump Steer: When skis toe in and toe out through suspension travel.

CDI: Capacitor Discharge Ignition. Ignition system which stores voltage generated by the stator plate exciter coil in a capacitor or condenser (in CDI box). At the proper moment a voltage generated by the stator plate pulser coil closes an electronic switch (thyristor) in the CDI box and allows the voltage in the capacitor to discharge into the primary windings of the ignition coil.

Center Cylinder: On three cylinder engines, the cylinder between Mag and PTO ends.

Center Distance: Distance between center of crankshaft and center of driven clutch shaft.

Chain Pitch: Distance between chain link pins (No. 35 = 3/8" or 1 cm). Polaris measures chain length in number of pitches.

Clutch Buttons: Plastic bushings which transmit rotation of the clutch to the movable sheave in the drive and driven clutch.

Clutch Offset: Drive and driven clutches are offset so that drive belt will stay nearly straight as it moves along the clutch face as the engine torques back.

Clutch Weights: Three levers in the drive clutch which relative to their weight, profile and engine RPM cause the drive clutch to close.

Coil: A winding of wire around an iron core which has the ability to generate an electrical current when a magnetic field passes through it.

Combustion Chamber: Space between cylinder head and piston dome at TDC.

Compression: Reduction in volume or squeezing of a gas.

Condenser/Capacitor: A storage reservoir for electricity, used in both E.T. and CDI systems.

Crankshaft Run-Out: Run-out or "bend" of crankshaft measured with a dial indicator while crankshaft is supported between centers on V blocks or resting in lower half of crankcase. Measure at various points especially at PTO. Maximum allowable run-out is .006" (.02 cm).

DCV: Direct current voltage.

Detonation: The spontaneous ignition of the unburned fuel/air mixture after normal spark ignition. Piston looks "hammered" through, rough appearance around hole. Possible causes: 1) too high a compression ratio for the fuel octane; 2) low octane fuel; 3) over-advanced ignition timing; 4) lean fuel/air mixture.

Dial Bore Gauge: A cylinder measuring instrument which uses a dial indicator. Good for showing taper and out-of-round in the cylinder bore.

Displacement: The volume of the cylinder displaced by the piston as it travels from BDC to TDC. The formula is:

$$\frac{\text{Bore}^2 \times \text{Stroke} \times 3.1416}{4} = \text{Displacement in CCs}$$

Dropping Resistor: Component in an EFI system which reduces input (battery) voltage to approximately 5 volts.

ECU: Electronic Control Unit. In an EFI System, the component which monitors all data from sensors in the system, and electronically adjusts injector duration accordingly.

Effective Compression Ratio: Compression ratio measured from after the piston closes the exhaust port.

Electrical Open: Open circuit. An electrical circuit which isn't complete. (i.e. poor connections or broken wire at hi-lo beam switch resulting in loss of headlights.

Electrical Short: Short circuit. An electrical circuit which is completed before the current reaches the intended component. (i.e. a bare wire touching the snowmobile chassis under the seat resulting in loss of taillights and brake lights).

End Seals: Rubber seals at each end of the crankshaft.

Engagement RPM: Engine RPM at which the drive clutch engages to make contact with the drive belt.

E.T. Ignition: Energy Transfer ignition. Generates primary ignition voltage through electro magnetic induction.


Flat Head Bolt: To be used where finished surfaces require a flush fastening unit. Countersunk.

Foot Pound: Ft. lb. A force of one pound at the end of a lever one foot in length, applied in a rotational direction.

Fuel Pressure Regulator: Mechanical device in an EFI system which regulates fuel pressure in the distribution manifold by returning excess fuel to the tank.

Fuel Rail: The fuel distribution manifold for the injectors in an EFI system.

g: Gram. Unit of weight in the metric system.

Head Volume: Cylinder head capacity in cc, head removed from engine with spark plug installed.

Heat Exchanger: A device used to transfer heat. Mounted under running boards, they dissipate engine heat to the atmosphere.


Hex Head Bolt: Standard type of wrench-applied hexagon head, characterized by clean, sharp corners trimmed to close tolerances. Recommended for general commercial applications.

Hi-Fax: Trademark of Himont Advanced Materials. The special slide material which fits onto the bottom of the suspension rails.

High Side: Sled pushes or tips up.

High Tension Wire: The heavy insulated wire which carries the high secondary voltage from the coil to the spark plug.

Hole Shot: A term used when machine starts a race from a dead stop.

Holed Piston: Piston in which a hole has formed on the dome. Possible causes: 1) detonation; 2) pre-ignition.

Ignition Coil: A type of transformer which increases voltage in the primary windings (approx. 200V) to a higher voltage in the secondary windings (approx. 14KV - 32KV) through inductions. Secondary voltage is high enough to arc the air gap at the spark plug.

Ignition Generating Coil: Exciter coil, primary charge coil. Stator plate coil which generates primary ignition voltage. CDI system uses one ignition generating coil. Twin cylinder E.T. ignition systems use two ignition generating coils. Coil is mounted at the top of the stator plate.

Inch Pound: In. lb. 12 in. lbs. = 1 ft. lb.

Kg/cm2: Kilograms per square centimeter. Metric equivalent of PSI.

Keystone Ring: A piston ring with bevel on upper inside surface.

Kilogram/meter: A force of one kilogram at the end of a lever one meter in length, applied in a rotational direction. Metric equivalent of ft. lbs.

L Ring: A wide face piston ring with an "L" shaped cross section. Leg of "L" goes up when installing on piston.

Labyrinth Seal: A pressure type center seal identified by series of grooves and lands. Polaris engines us this type of seal to separate the cylinders in the crankcase halves.

Left Side: Always referred to based on normal operating position of the driver.

Lighting Coil: Generates voltage for lights, battery charging, etc by electromagnetic induction.

Loose: When the rear of the vehicle slides outward in a turn. The track does not grab sufficiently.

mm: Millimeter. Unit of length in the metric system. 1mm = .040".

Mag End: Flywheel side of engine.

Magnetic Induction: As a conductor (coil) is moved through a magnetic field, a voltage will be generated in the windings. This is how mechanical energy in our engines is converted to electrical energy in the lighting coil, ignition generating coils and trigger coil.

Ohm: The unit of electrical resistance opposing current flow.


Oval Head Screw: Fully specified as "oval countersunk", this head is identical to the standard flat head, but possesses a rounded upper surface for attractiveness of design.

PTO End: Power Take Off drive (clutch side).


Pan Head Screw: Provides a low, large diameter head, but with characteristically high outer edges along the outer edge of the head where driving action is most effective. Slightly different head contour when supplied with Phillips Recess. See dotted line.

Piston Clearance: Total distance between piston and cylinder wall.

Piston Erosion: Piston dome melts. Usually occurs at the exhaust port area. Possible causes: 1) lean fuel/air mixture; 2) improper spark plug heat range.

Pre-Ignition: A problem in combustion where the fuel/air mixture is ignited before normal spark ignition. Piston looks melted at area of damage. Possible causes: 1) too hot a spark plug; 2) spark plug not properly torqued; 3) "glowing" piece of head gasket, metal burr or carbon in the combustion chamber; 4) lean fuel/air mixture; 5) Incorrect ignition timing.

Primary Circuit: This circuit is responsible for the voltage build up in the primary windings of the coil. Parts of this circuit include the exciter coil, points and condenser, wires from the stator plate to the small primary winding in the ignition coil. In the CDI system the parts include the exciter coil, the trigger coil, the wires from stator plate to CDI box and to the low resistance primary windings in the ignition coil.

Primary Clutch: Drive clutch on engine.

Primary Compression: Pressure built up in the crankcase of a two stroke engine.

psi.: Pounds per square inch.

Pushing: When the front of the vehicle does not steer as much as the driver desires. The skis do not grab sufficiently.

R & R: Remove and replace.

RFI: Radio Frequency Interference. Caused by high voltage from the ignition system. There are special plug caps and spark plugs to help eliminate this problem. Required in Canada.

RPM: Revolutions Per Minute.

Relay Coils: Electromagnetic device in an EFI system which controls circuit connection with input from another circuit.

Resistance: In the mechanical sense, friction or load. In the electrical sense, ohms. Both result in energy conversion to heat.

Right Side: Always referred to based on normal operating position of the driver.

Round Head Screw: The familiar head most universally used for general application. Good slot depth, ample underhead bearing surface and finished appearance are characteristic of this head.

Running Time: Ignition timing when fully advanced or at specified RPM.

Secondary Circuit: This circuit consists of the large secondary coil windings, high tension wire and ground through the spark plug air gap.

Secondary Clutch: Driven clutch on chaincase or jackshaft.

Seized Piston: Galling of the sides of a piston. Usually there is a transfer of aluminum from the piston onto the cylinder wall. Possible causes: 1) improper lubrication; 2) excessive temperatures; 3) insufficient piston clearance; 4) stuck piston rings.

Select Monitor: Diagnostic tool which provides static and dynamic displays of the function of critical components in an EFI system. It also has the capability to display the contents of the ECU memory.

Self Steer: Pulling the machine to the inside of the track.

Spark Plug Reach: Length of threaded portion of spark plug. Polaris uses 3/4" (2 cm) reach plugs.

Static Timing: Ignition timing when engine is at zero RPM.

Stator Plate: The plate mounted under the flywheel supporting the primary ignition components and lighting coils.

Stroke: The maximum movement of the piston from bottom dead center to top dead center. It is characterized by 180° of crankshaft rotation.

Surge Tank: The fill tank in the liquid cooling system.

TDC: Top Dead Center. Piston's most outward travel from crankshaft.

Throttle Body: The air flow metering device in an EFI system.

Transfer: The movement of fuel/air from the crankcase to the combustion chamber in a two stroke engine.

Trigger Coil: Pulser coil. Generates the voltage for triggering (closing) the thyristor and timing the spark in CDI systems. Small coil mounted at the top of the stator plate next to the ignition generating coil.

V Regulator: Voltage regulator. Maintains maximum lighting coil output at approx. 14.5 ACV as engine RPM increases.

Venturi: An area of air constriction. A venturi is used in carburetors to speed up air flow which lowers pressure in venturi to below atmospheric pressure, causing fuel to be pushed through jets, etc., and into the venturi to be mixed with air and form a combustible air/fuel mixture.

Volt: The unit of measure for electrical pressure of electromotive force. Measured by a voltmeter in parallel with the circuit.

Watt: Unit of electrical power. Watts = amperes x volts.

In order to perform service work efficiently and to prevent costly errors, the technician should read the text in this manual, thoroughly familiarizing him/herself with procedures before beginning. Pictures and illustrations have been included with the text as an aid. Notes, cautions and warnings have also been included for clarification of text and safety concerns. However, a knowledge of mechanical theory, tool use and shop procedures is necessary to perform the service work safely and satisfactorily. Use only genuine Polaris service parts.

⚠ Cleanliness of parts and tools as well as the work area is of primary importance. Dirt and foreign matter will act as an abrasive and cause damage to precision parts. Clean the snowmobile before beginning service. Clean new parts before installing.

⚠ Watch for sharp edges which can cause personal injury, particularly in the area of the tunnel. Protect hands with gloves when working with sharp components.

⚠ If difficulty is encountered in removing or installing a component, look to see if a cause for the difficulty can be found. If it is necessary to tap the part into place, use a soft face hammer and tap lightly.

⚠ Some of the fasteners in the snowmobile were installed with locking agents. Use of impact drivers or wrenches will help avoid damage to fasteners.

⚠ Always follow torque specifications as outlined throughout this manual. . Incorrect torquing may lead to serious machine damage or, as in the case of steering components, can result in injury or death for the rider(s).

⚠ If a torquing sequence is indicated for nuts, bolts or screws, start all fasteners in their holes and hand tighten. Then, following the method and sequence indicated in this manual, tighten evenly to the specified torque value. When removing nuts, bolts or screws from a part with several fasteners, loosen them all about 1/4 turn before removing them.

⚠ If the condition of any gasket or O-Ring is in question, replace it with a new one. Be sure the mating surfaces around the gasket are clean and smooth in order to avoid leaks.

⚠ Some procedures will require removal of retaining rings or clips. Because removal weakens and deforms these parts, they should always be replaced with new parts. When installing new retaining rings and clips use care not to expand or compress them beyond what is required for installation.

⚠ Because removal damages seals, replace any oil or grease seals removed with new parts.

⚠ Polaris recommends the use of Polaris lubricants and greases, which have been specially formulated for the top performance and best protection of our machines. In some applications, such as the engine, warranty coverage may become void if other brands are substituted.

⚠ Grease should be cleaned from parts and fresh grease applied before reassembly of components. Deteriorating grease loses lubricity and may contain abrasive foreign matter.

⚠ Whenever removing or reinstalling batteries, care should be taken to avoid the possibility of explosion resulting in serious burns. Always disconnect the negative (black) cable first and reconnect it last. Battery electrolyte contains sulphuric acid and is poisonous! Serious burns can result from contact with the skin, eyes or clothing. **ANTIDOTE:** External - Flush with water. Internal - Drink large quantities or water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call physician immediately. Eyes - Flush with water for 15 minutes and get prompt medical attention.

GENERAL INFORMATION

Warranty Policy

LIMITED WARRANTY

Polaris Industries Inc., 1225 Highway 169 North, Minneapolis, Minnesota 55441-5078, gives a ONE YEAR LIMITED WARRANTY on all components of the Polaris snowmobile against defects in material or workmanship. Details of warranty period and coverage may vary by model. This warranty covers the parts and labor charges for repair or replacement of defective parts which are covered by this warranty. This warranty begins on the date of purchase. This warranty is transferrable to another consumer during the warranty period through a Polaris dealer. There is a charge of $35.00 payable to Polaris Industries Inc.

REGISTRATION

At the time of sale, the Warranty Registration Form must be completed by your dealer and submitted to Polaris within ten days. Upon receipt of this registration, Polaris will record the registration for warranty. No verification of registration will be sent to the purchaser as the copy of the Warranty Registration Form will be the warranty entitlement. If you have not signed the original registration and received the "customer copy", please contact your dealer immediately. NO WARRANTY COVERAGE WILL BE ALLOWED UNLESS YOUR SNOWMOBILE IS REGISTERED WITH POLARIS.

Initial dealer preparation and set-up of your snowmobile is very important in ensuring trouble-free operation. Purchasing a machine in the crate or without proper dealer set-up will void your warranty coverage.

WARRANTY COVERAGE AND EXCLUSIONS:

LIMITATIONS OF WARRANTIES AND REMEDIES

The warranty excludes any failures that are not caused by a defect in material or workmanship. This warranty does not cover accidental damage, normal wear and tear, abuse or improper handling. This warranty also does not cover any snowmobile that has been altered structurally, modified, neglected, improperly maintained, used for racing, or used for purposes other than for which it was manufactured, or for any damages which occur during trailer transit or as a result of unauthorized service or the use of unauthorized parts. In addition, this warranty does not cover physical damage to paint or finish, stress cracks, tearing or puncturing of upholstery material, corrosion, or defects in parts, components or snowmobile due to fire, explosions or any other cause beyond Polaris' control.

This warranty does not cover the use of unauthorized lubricants, chemicals, or fuels that are not compatible with the snowmobile.

The exclusive remedy for breach of this warranty shall be, at Polaris' exclusive option, repair or replacement of any defective materials, or components or products. THE REMEDIES SET FORTH IN THIS WARRANTY ARE THE ONLY REMEDIES AVAILABLE TO ANY PERSON FOR BREACH OF THIS WARRANTY. POLARIS SHALL HAVE NO LIABILITY TO ANY PERSON FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY DESCRIPTION, WHETHER ARISING OUT OF EXPRESS OR IMPLIED WARRANTY OR ANY OTHER CONTRACT, NEGLIGENCE, OR OTHER TORT OR OTHERWISE. Some states do not permit the exclusion or limitation of incidental or consequential damages or implied warranties, so the above limitations or exclusions may not apply to you if inconsistent with controlling state law.

ALL IMPLIED WARRANTIES (INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) ARE LIMITED IN DURATION TO THE ABOVE ONE YEAR WARRANTY PERIOD. POLARIS FURTHER DISCLAIMS ALL EXPRESS WARRANTIES NOT STATED IN THIS WARRANTY. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you if inconsistent with controlling state law.

HOW TO OBTAIN WARRANTY SERVICE

If your snowmobile requires warranty service, you must take it to a Polaris Servicing Dealer. When requesting warranty service you must present your copy of the Warranty Registration form to the dealer. (THE COST OF TRANSPORTATION TO AND FROM THE DEALER IS YOUR RESPONSIBILITY). Polaris suggests that you use your original selling dealer; however, you may use any Polaris Servicing Dealer to perform warranty service.

Please work with your dealer to resolve any warranty issues. Should your dealer require any additional assistance they will contact the appropriate person at Polaris.

This warranty also gives you specific legal rights, and you may also have other rights which vary from state to state.

If any of the above terms are void because of state or federal law, all other warranty terms will remain in effect.

Engine Oil

1. Always use Polaris 2-Cycle engine oil.
2. Never substitute or mix oil brands as serious engine damage and voiding of warranty can result.

Special tool part numbers and usage are listed in each section of this manual as required for a specific service procedure. For complete tool information refer to the Service Tool Catalog (PN 9914681). U.S. dealers can obtain a current price list or get tool information by contacting Victor Specialty Tool Company at the address, phone or FAX number listed below. Canadian dealers can obtain this information by contacting the Winnipeg parts department at (204)-925-7125. Dealers serviced by a distributor should follow tool ordering procedures established by their respective distributor parts department.

POLARIS

SPECIAL TOOLS

VICTOR SPECIALTY TOOL CO.

66 School Street

Victor, New York 14564

TO PLACE AN ORDER

Toll Free Tool Order **FAX** Numbers

(U.S.)1–800–716–3938

(Canadian Dealers) 1-800-413-4441

Phone Orders or Information

(U.S.) 1–716–742–1790

(Canadian Dealers) 1-204-925-7125

CHAPTER 2
MAINTENANCE / TUNE UP

500 Mile (805 km) Initial Maintenance Inspection

Customer Name ______________________________ **Phone** ______________

Machine Model ______________ **Machine Serial** ______________ **Miles** ____________

__1. Torque cylinder head(s) (cold) & cylinder base nuts
Only the following models need to have their cylinder heads periodically re-torqued:
EC34-2PM(E)02, EC44-3PM01 & 02 (PRIOR TO 1996)
EC50-PM(E) 03,04,05 &06, EC50-PL(E) 17,18,19 & 20
EC65-PL(E)05

__2. Check ignition timing
_____ observed BTDC
_____ corrected BTDC

__3. Check clutch offset (belt removed)

__4. Check belt condition

__5. Check and adjust belt tension

__6. Inspect rubber engine mounts

__7. Torque engine mounting plate to chassis fasteners

__8. Adjust engine torque stop (if equipped)

__9. Carburetor Inspections
- A. Adjust choke plungers
- B. Adjust pilot air screw
- C. Synchronize carburetor slide valves at idle and off idle
- D. Adjust engine idle RPM
- E. Adjust throttle lever free play
- F. Synchronize oil pump lever

__10. Electronic Fuel Injection System Inspections
- A. Check and adjust throttle position sensor
- B. Check and adjust MR screw
- C. Check battery state of charge
- D. Adjust Idle RPM
- E. Check charging system
- F. Adjust throttle lever free play
- G. Synchronize oil pump lever

__11. Check ski toe alignment

__12. Torque and inspect all steering fasteners

__13. Torque suspension to tunnel mounting bolts

__14. Check rear suspension fasteners for tightness

__15. Adjust track tension and align track

__16. Remove chaincase cover, flush chaincase, inspect and adjust chain, refill with new chaincase oil.

__17a. Brakes-Hydraulic
- A. Check brake fluid level. Should be 1/4" from top on large style reservoir, 1/8" from top on older small style reservoir.
- B. Check for proper hose security and routing
- C. Check for system fluid leaks
- D. Visually inspect pads for wear damage or looseness
- E. Check security and surface condition of brake disc.

__17b. Brake-Mechanical
- A. Lubricate brake cable. NOTE: Must use Polaris Cable lubricant.
- B. Check brake pad and brake disc condition and mounting
- C. Adjust brake to proper specifications

__18. Check auxiliary shut-off switch

__19. Perform throttle safety switch tests

__20. Check brake light for proper operation

__21. Check tail lights

__22. Check headlamp security and high-low beam operation.

__23. Liquid cooled models:
- A. Check coolant level and specific gravity
- B. Check water pump drive belt condition & deflection (where applicable)
- C. Check coolant hose, routing and clamps
- D. Inspect heat exchangers condition and fasteners
- E. Check cooling system for proper coolant circulation.

__24. Lubricate rear suspension pivot shafts.

__25. Check all suspension mounting fasteners.

<u>Recommendations</u>

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Polaris Service Technician ______________________

Authorized Dealer ______________________

Date ______________________

Base Inspection Price ______________

Parts ______________

Labor ______________

1500 Mile (2400 km) Maintenance Inspection

Customer Name ______________________________ **Phone** ____________

Machine Model ____________ **Machine Serial** ____________ **Miles** __________

__1. Torque cylinder head(s) & cylinder base nuts (cold)
Only the following models need to have their cylinder heads & cylinder base nuts periodically re-torqued:
EC34-2PM(E)02, EC44-3PM01 & 02 (PRIOR TO 1996)
EC50-PM(E) 03,04,05 &06, EC50-PL(E) 17,18,19 & 20
EC65-PL(E)05

__2. Check compression and record readings

__3. Check ignition timing
______ observed BTDC
______ corrected BTDC

__4. Inspect recoil starter rope

__5. Check drive to driven clutch offset (belt removed)

__6. Remove clutches, disassemble & inspect all wear surfaces. Clean sheaves, repair clutch as necessary, reassemble clutches and torque to specifications.

__7. Check belt condition

__8. Check and adjust belt deflection

__9. Inspect rubber engine mounts

__10. Torque engine mounting plate to chassis fasteners

__11. Adjust engine torque stop (if equipped)

__. Carburetor Inspections
- A. Adjust choke plungers
- B. Adjust pilot air screw
- C. Synchronize carburetor slide valves at idle and off idle
- D. Adjust engine idle RPM
- E. Adjust throttle lever free play
- F. Synchronize oil pump lever

__12. Electronic Fuel Injection System Inspections
- A. Synchronize throttle bodies
- B. Check and adjust throttle position sensor
- C. Check and adjust MR screw
- D. Remove battery, check fluid level and specific gravity of each cell. Charge if necessary.
- E. Adjust idle RPM
- F. Check charging system
- G. Adjust throttle lever free play
- H. Synchronize oil pump lever
- I. Replace secondary filter @ 5,000 miles

__13. Remove chaincase cover, flush chaincase, inspect and adjust chain, refill with new chaincase oil.

__14. Change primary fuel filter and oil filter

__15. Check fuel and oil line condition and routing

__16. Inspect fuel and oil tank vent lines/routing

__17. Inspect airbox fit/air filter. Clean or replace

__18. Change shock oil (Fox) annually before storage

Polaris Service Technician: ____________________
Authorized Dealer: ____________________
Base Inspection Price: ____________________
Date: ________ Parts: ________ Labor: ________

__19a. Brakes-Hydraulic
- A. Check brake fluid level. Should be 1/4" from top on large style reservoir, 1/8" from top on older small style reservoir.
- B. Check for proper hose security and routing
- C. Check for system fluid leaks
- D. Visually inspect pads for wear damage or looseness
- E. Check security and surface condition of brake disc.
- F. Flush brake fluid and change every two years.

__19b. Brake-Mechanical
- A. Lubricate brake cable. NOTE: Must use Polaris Cable lubricant.
- B. Check brake pad and brake disc condition and mounting
- C. Adjust brake to proper specifications

__20. Check auxiliary shut-off switch & perform throttle safety switch tests.

__21. Inspect brake light, tail light, oil light and all electrical accessories

__22. Inspect Hi/Lo beam operation and aim headlight

__23. Liquid cooled models:
- A. Check coolant level and specific gravity
- B. Check water pump drive belt condition & deflection (where applicable)
- C. Check coolant hose, routing and clamps
- D. Inspect heat exchangers condition and fasteners
- E. Check cooling system for proper coolant circulation
- F. Replace recovery line filter: NOTE: Must use correct filter
- G. Check coolant recovery line one way check valve (must hold pressure)
- H. Pressure test cooling system

__24. Fan Cooled: Inspect cooling fins and shrouds

__25. Remove chaincase cover, flush chaincase, inspect chain & sprockets and adjust chain. Inspect chaincase seals.

__26. Check condition of drive shaft and jackshaft bearings. Lubricate greaseable bearings with Premium All Season grease.

__27. Inspect and adjust reverse cable (if applicable)

__28. Remove ski pivot bushings and lubricate

__29. Inspect ski wear bars, replace if worn to 1/2 original diameter

__30. Check camber alignment and lubricate spindles

__31. Remove radius rod end bushings, lubricate and reinstall, inspect all radius rod ends.

__32. Reinstall skis and inspect/adjust toe alignment

__33. Check handlebar centering and lubricate steering bell crank

__34. Torque tie rod end bolts and jam nuts

__35. Inspect steering arms and torque bolts. Inspect handlebar bolt torque

__36. Lubricate rear suspension pivot shafts **(1000 mile intervals)**

__37. Torque suspension mounting bolts and check all rear suspension fasteners and components

__38. Inspect rear suspension wheels, bearings and hi-fax

__39. Inspect track for damage. Adjust tension and alignment

For optimum performance and reliability, repeat the above maintenance and inspections annually (preferably before off-season storage) or every 1500 miles, except where noted.

RECOMMENDATION: ______________________________

____

Recommended Maintenance Products

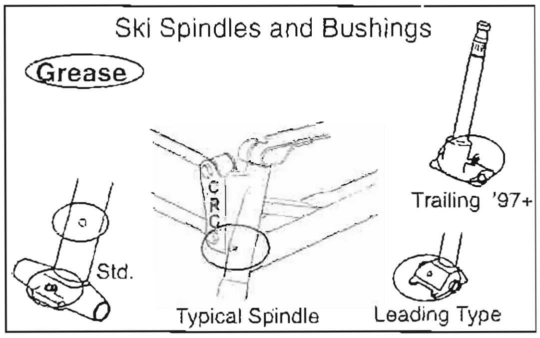
Part #	Description	Packaging (size / quantity)
ENGINE OIL		
2871721	Synthetic 2-Cycle Premium Gold	Quart Cans / 6
2871722	Synthetic 2-Cycle Premium Gold	Gallon / 4
2871723	Synthetic 2-Cycle Premium Gold	16 Gallon Drum
2871098	Premium 2-Cycle Oil (TC-W3)	Quart Cans / 12
2871097	Premium 2-Cycle Oil (TC-W3)	Gallon / 6
2871240	Premium 2-Cycle Oil (TC-W3)	2.5 Gallon / 2
2871566	Premium 2-Cycle Oil (TC-W3)	16 Gallon Drum
2871385	Premium 2-Cycle Oil (TC-W3)	30 Gallon Drum
2871096	Premium 2-Cycle Oil (TC-W3)	55 Gallon Drum
2871281	Premium-4 Synthetic 4 Cycle Oil (0W-40)	Quart Cans / 12
2871567	Premium-4 Synthetic 4 Cycle Oil (0W-40)	16 Gallon Drum
MAINTENANCE PRODUCTS		
2871326	Carbon Clean Plus	12 oz / 12
2871478	Premium Synthetic Gearcase Lube	12 oz / 12
2871477	Premium Synthetic Gearcase Lube	Gallon / 4
2871280	Chain Case Lubricant	Quart / 12
2870464	Chain Case Lubricant	Gallon / 6
2871323	Premium Antifreeze 60/40 Premix	Gallon / 6
2871534	Premium Antifreeze 60/40 Premix	Quart / 12
2870995	Premium Gas Shock Oil	Quart / 6
2870990	Premium Brake Fluid DOT-3	12 oz / 12
2870791	Premium Fogging Oil (spray)	12 oz / 12
2871517	Premium Fogging Oil (liquid with spout)	Quart / 12
2871518	Premium Fogging Oil (liquid)	Gallon / 6
2871312	Grease Gun Kit (All Season)	3 oz / 4
2871322	Premium All Season Grease	3 oz / 24
2871423	Premium All Season Grease	14 oz / 10
2871460	Premium Starter Grease	2 oz / 12
2871592	Barrel Pump (for 16/30/55 gallon drums)	Each
2871285	Flex Spout (fits gallon and 2.5 gallon jugs)	25
2870505	Isopropyl	10 oz / 24
2870652	Fuel Stabilzer	16 oz / 12
2871027	Corrosion Resistant DiElectric Grease	2 oz
2871064	T-9 Metal Protectant	
2870632	Metal Polish	8 oz
2871076	Battery Tender™	

Part #	Description	Packaging (size/quantity)
RETAINING/SEALING PRODUCTS		
2870585	Primer N, Aerosol	25 gr / 1
2870584	680 Retaining Compound	10cc /
2871949	Threadlock 242	50cc / 10
2871950	Threadlock 242	6cc / 12
2871951	Threadlock 262	50cc / 10
2871952	Threadlock 262	6cc / 12
2871953	Threadlock 271	6cc / 12
2871954	Threadlock 271	36cc / 6
2871955	Instant Adhesive: Prisim 401	3cc / 30
2871956	Pipe Sealant 565	50cc / 6
2871957	Silicone, Black RTV	3 oz tube / 12
2871958	Silicone, Black RTV	11 oz Cartridge/12
2871959	Ultra Blue RTV	3.35 oz / 12
2871960	Ultra Blue RTV	13 oz Cartridge/12
2871961	518 Flange Sealant	50cc / 10
CRANKCASE SEALANTS		
2870587	518 Gasket Eliminator Supercedes 515	50cc
2871557	3 Bond 1215	5oz

Lubrication

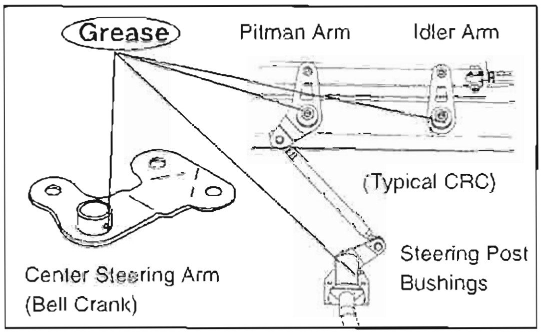
Lubricate the following fittings with Polaris Premium All Season grease annually or approximately every 1000 miles (1600 km). Remove weight from the component being greased to permit better penetration and flushing of the joint.

- Spindles, left and right.
- Rear suspension pivot shafts.
- Lubricate both front ski pivots at fitting as shown using low temperature grease.
- Grease jackshaft and driveshaft (clutch side) bearings.
- Grease steering post support bracket bushings.



- Grease center steering arm (bell crank), pitman arm, and idler arm (where applicable).

NOTE: A grease gun kit complete with grease and adaptors is available to lubricate all fittings on Polaris snowmobiles.

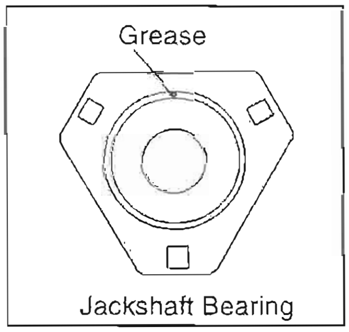


Polaris Premium All Season Grease 14 oz. PN 2871423

Grease Gun Kit PN 2871312

Jackshaft Bearing Greasing

Loosen driven clutch retaining bolt and pull clutch outward to expose bearing. Use a point type grease gun fitting to inject grease through hole in flangette into bearing until grease purges out inside or outside bearing seal. Push clutch back onto shaft and replace clutch retaining bolt.

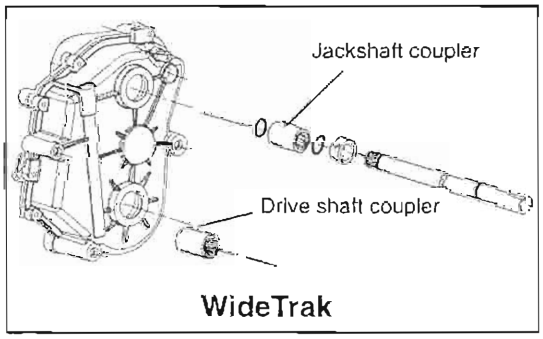


Grease Gun Adapter: 2871174
Point Type

Driveshaft Bearing Greasing

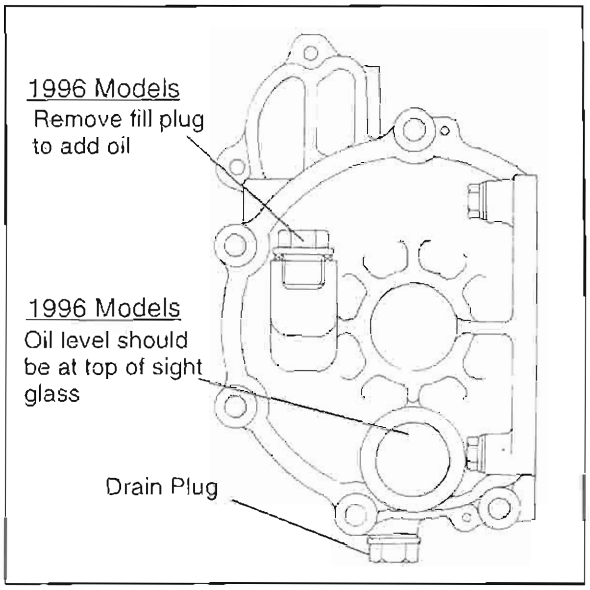
Inject grease into fitting on speedometer drive adaptor until grease purges out inside or outside bearing seal.

Driveshaft Bearing Greasing - WideTrak



1996 Ultra Models

The water pump gear case is a sealed unit on 1996 EC68PL (Ultra) engines and required separate oil level maintenance. 1997 models are open to the crankcase and periodic maintenance is not required. The level should be inspected every 1000 miles on 1996 models, and changed annually (end of season before storage).



Water Pump Oil Level Inspection (1996)

4. With the machine on a level surface, check the fluid level in the sight glass.
5. If the oil level is below the top of the sight glass (see illustration at right), remove filler plug and add Polaris Premium 4 0W40 synthetic oil as required to bring the level back up to the top of the sight glass.

CAUTION:

Failure to maintain the proper level could result in severe engine damage.

NOTE: Care should be taken when checking the oil level not to confuse the level with the water pump gear which can be seen through the glass. Be sure that what you are seeing in the window is indeed the oil level and *not the gear.*

Should overfilling occur, drain to proper level by removing drain plug. An atmospheric vent located on the crankcase just below the mag and center carburetors will allow a small amount of excess oil to be vented out of the case.

Water Pump Oil Change (1996)

1. To change lubricant, remove drain plug.
2. Allow oil to drain completely and reinstall plug. Torque to 12 ft. lbs.
3. Add oil to top of sight glass as outlined in oil level inspection.

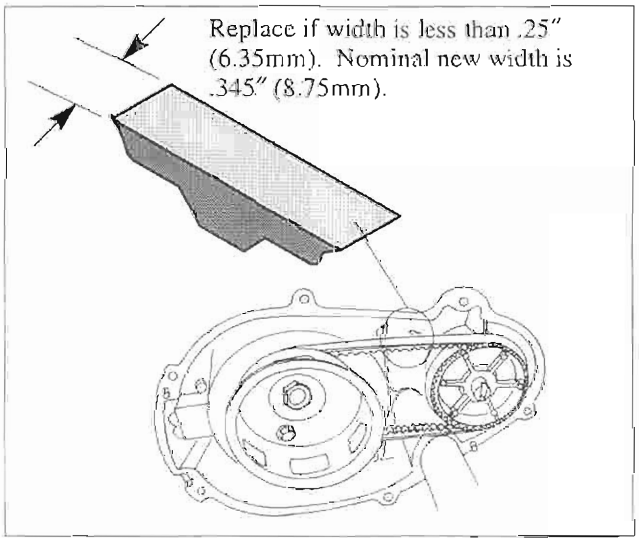
1997 to Current Ultra Models

Periodic maintenance is not required on 1997 to current EC68PL engine water pump gear case. The drive gears are lubricated by engine oil. Do not add oil to the gearcase on 1997 to current models.

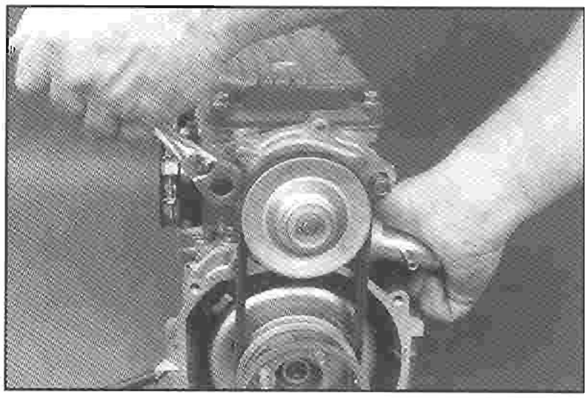
1997 Current 600 & 700 Domestic Twins

The water pump belt on all 600 & 700 domestic twins snowmobile engines should be inspected every 1500 miles. Belts should be inspected by measuring the width at several locations around the belt. Belt width at any location should not be thinner than .250″ (6.35mm). Replace the belt if you notice any loose cords, broken cracked or missing cogs, and variations in width. If the water pump belt fails, serious engine damage could result. Nominal thickness of a new belt should be approximately .345″ (8.75mm).

Check belt tension by rotating crankshaft 1/8 turn at a time. The tension should be equal at all points of rotation.



Water Pump Belt Tension - Fuji

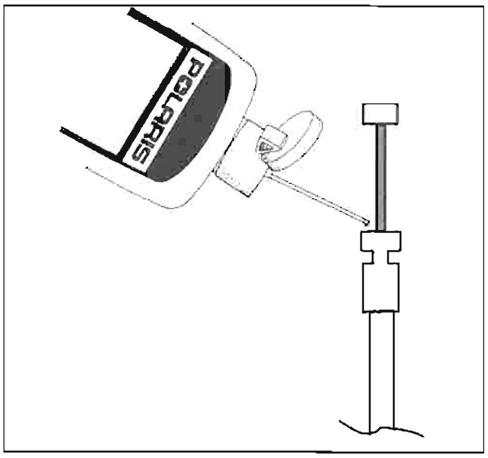


1. Loosen pump mounting bolts.
2. Push on pump housing to apply tension to belt and hold in this position. Tighten pump mounting bolts.
3. Apply light pressure at center of belt span. Check total deflection of belt span and compare to specifications. Re-adjust if necessary.

Water Pump Belt Tension

1/8″ - 3/16″ (3-4mm)

Throttle Cable Lubrication

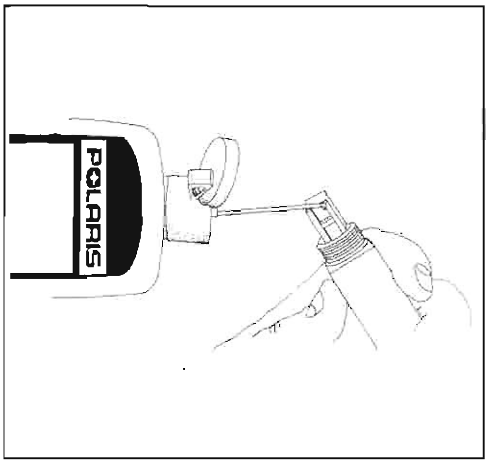


With the engine off, remove the throttle cable from the throttle flipper and block. Lubricate the throttle cable with Polaris Clutch and Cable Lubricant. Turn the handlebars to the left and lubricate liberally as shown.

Polaris Cable Lube

PN 2870510

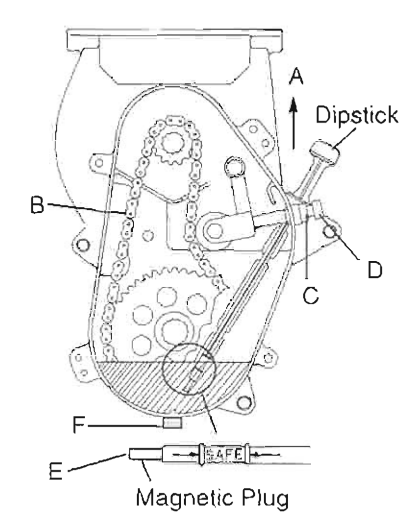
Choke Cable Lubrication



Lubricate the choke slide and cables as shown with Polaris Cable Lubricant. Operate the choke intermittently before turning the machine off. This draws moisture out of the choke plunger area and reduces the possibility of the choke becoming frozen.

Chaincase Oil Level (All Except WideTrak Models)

Proper chaincase oil level is determined by checking the level on the dipstick with machine placed on a level surface. The oil level should be between the "safe" marks on the dipstick. Add oil through dipstick opening as required to maintain proper level. Use Polaris Chaincase Lubricant or Polaris Synthetic Chaincase Lubricant. *Do not overfill.*



Chaincase Lubricant PN 2870337
Synthetic Chaincase Lubricant PN 2870337
Refer to Page 9.1-9.1b for model type and capacity

CAUTION:

Polaris Synthetic Chaincase Lubricant is compatible with Polaris petroleum based chaincase oil and can be mixed. However, do not mix or use other types of lubricant. Excessive wear to chain, sprockets and bearings may result.

Drive Chain Tension (All Except WideTrak Models)

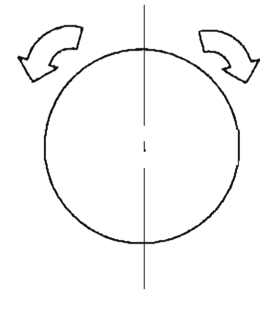
To obtain correct chain tension:

1. Remove drain plug (F) and drain oil into a suitable container. Dispose of properly.
2. Remove the chaincase cover.
3. While putting a slight reverse tension on the chain by turning brake disc as indicated by the arrow (A), there should be approximately 1/4-3/8" (.6-1 cm) deflection on the chain at point (B).
4. The chain is adjusted by loosening the adjusting bolt locknut (C) and turning adjusting bolt (D) until correct chain deflection is obtained.
5. Lock the adjusting bolt locknut (C) while holding a wrench on the adjusting bolt (D) to prevent it from turning.
6. Reinstall the chaincase cover and drain plug. Add Polaris chaincase lubricant (PN 2870337) through the dipstick opening to the level described above.

NOTE: Clean the magnetic plug (E) every 500 miles (800 km) and whenever checking or changing lubricant.

The chain may also be tightened without removing the cover using the following procedure. Do Not over-tighten!

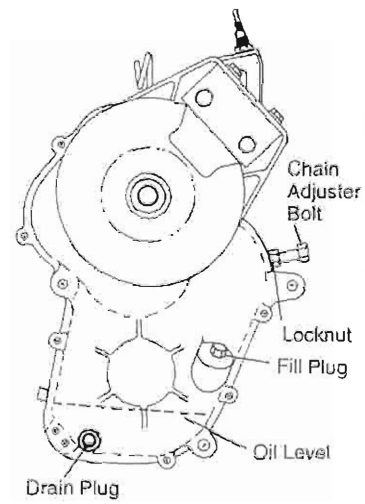
1. Rotate driven clutch counterclockwise to move all chain slack to the tensioner side.
2. Loosen the adjuster bolt jam nut.
3. Finger tighten the adjuster bolt until no movement or slack can be detected on the *jackshaft* when moving the driven clutch back & forth. Some play may be evident on driven clutch key way, and must not be confused with movement on the jackshaft.
4. Back off the adjuster bolt by <u>1/4 turn.</u>
5. Tighten the jam nut while holding the adjuster bolt.
6. The chain is now tensioned. Release the brake lock lever.



Observe jackshaft while rotating driven clutch to check for drive chain slack

Chaincase Oil Level (WideTrak Models)

Maintain the proper oil level by removing the magnetic check plug. Remove the fill plug and add lubricant until a small amount of oil flows from the check plug hole. Wipe off any metal particles from the magnetic check plug. Small amounts of particles will be common on this plug. Reinstall the check plug and fill plug. Use Polaris Synthetic Chaincase Lubricant



Polaris Synthetic Chaincase Lubricant
1996 . . . . 11 fl. oz. (330cc)
1997/1998 . . . . 20 fl. oz. (600cc)

CAUTION:

Polaris Synthetic Chaincase Lubricant is compatible with our petroleum based chaincase oil and can be mixed. However, do not mix or use other types of lubricant. Excessive wear to chain, sprockets and bearings may result.

Drive Chain Tension (1996 and prior WideTrak Models & all models with reverse kits installed)

To obtain correct chain tension:

1. Loosen locknut and chain adjuster.
2. Rotate driven clutch in the normal direction of rotation (top forward) to apply slight tension on drive chain.
3. Tighten adjuster bolt to 20 in. lbs. (.23 Kg-m)
4. Back off adjuster bolt (counterclockwise)1 1/4 to 1 1/2 turns.
5. Hold adjuster bolt in position and tighten locknut.

Drive Chain Tension (1997 WideTrak Models)

The 1997 model WideTrak Transmissions have self-adjusting chain tensioners and no adjustment is necessary.

Drive Chain Tension (1998 WideTrak Models)

Drive chain service is not required on 1998 model WideTrak Transmissions.

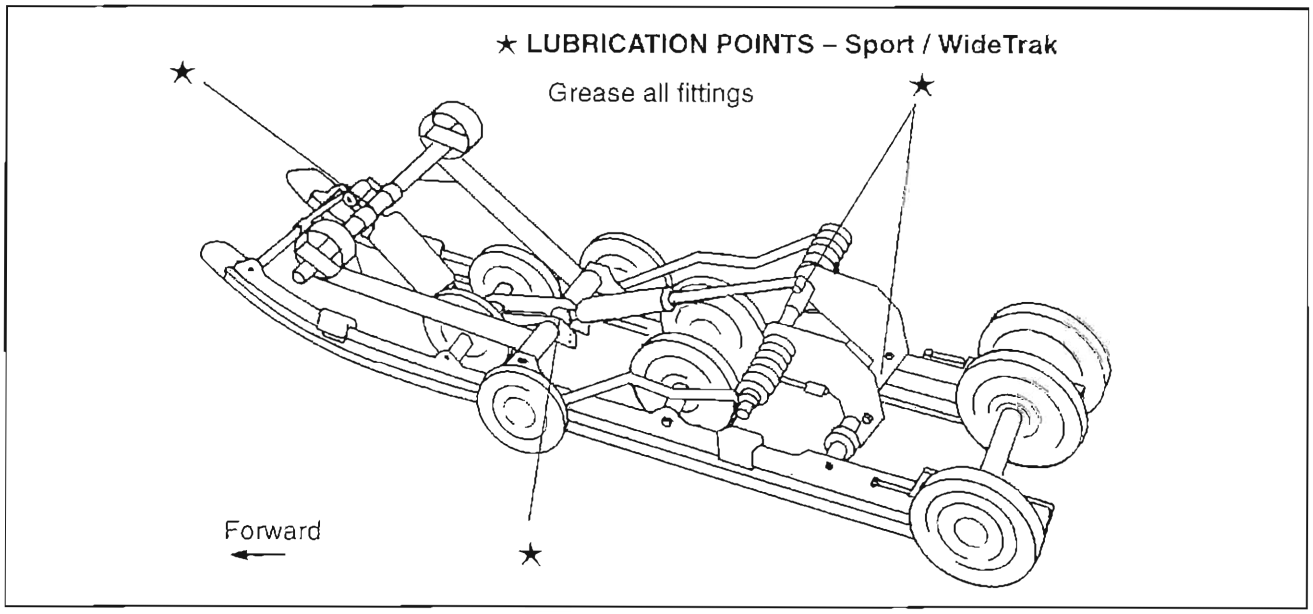
Suspension Lubrication

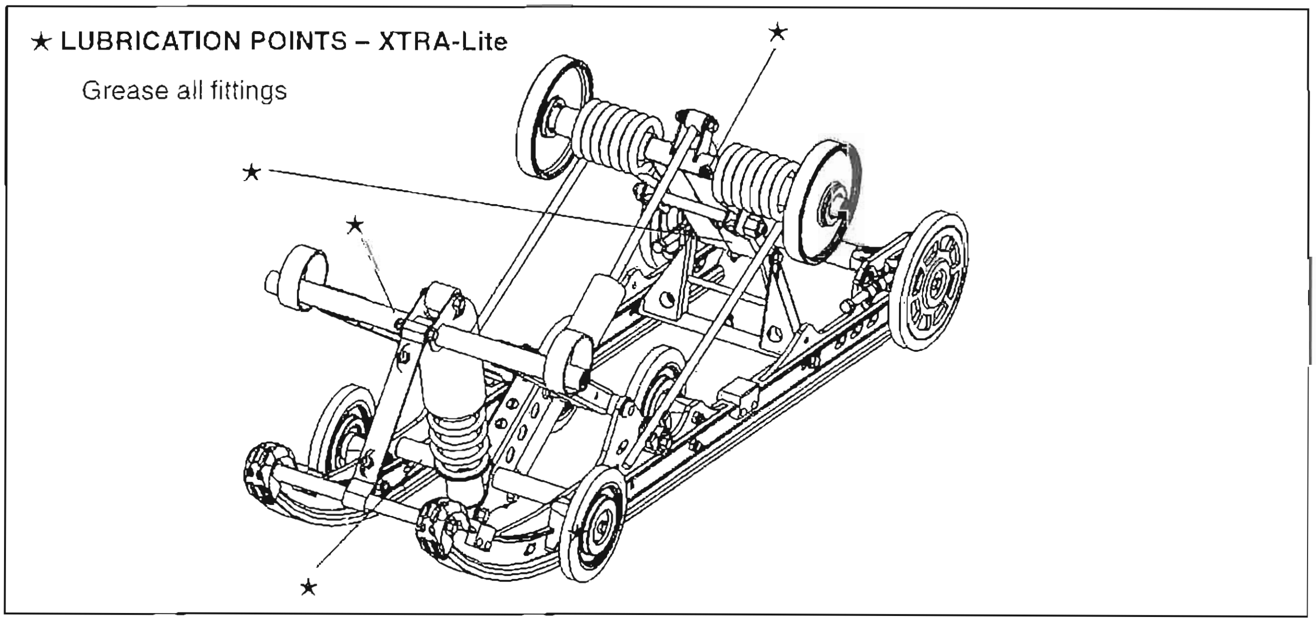
To maintain rider comfort and to retard wear of the pivot shafts, the suspension pivot shafts should be lubricated with Polaris Premium All Season Grease, PN 2871423, at 500 miles (800 km) initially; 1000 miles (1600 km) and before summer storage each year. The riding characteristics of the snowmobile will be affected by lack of lubrication of these shafts. **NOTE:** A grease gun kit complete with grease and adaptors is available to lubricate all fittings on Polaris snowmobiles. Order PN 2871312.

Polaris Premium Grease PN 2871423
Grease Gun Kit PN 2871312

Refer to the following diagrams for suspension lubrication points.

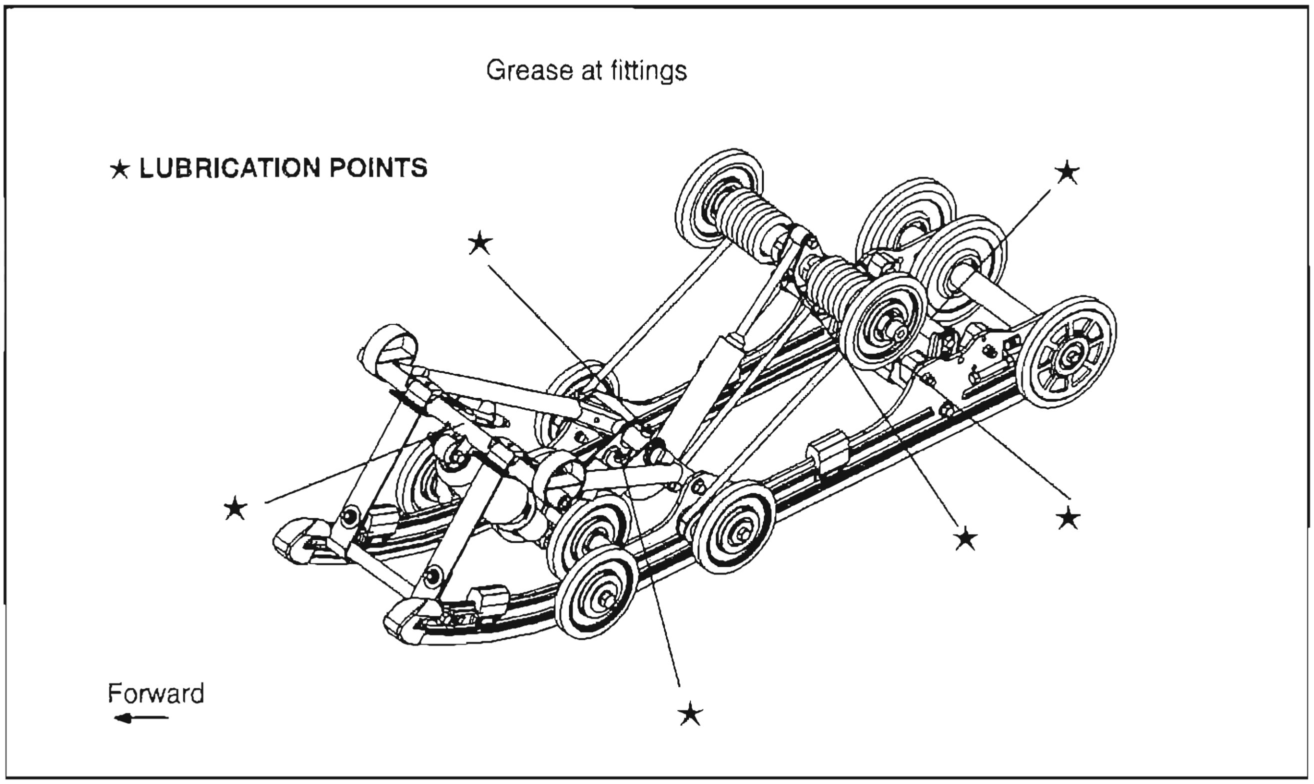
Sport Style and WideTrak Style



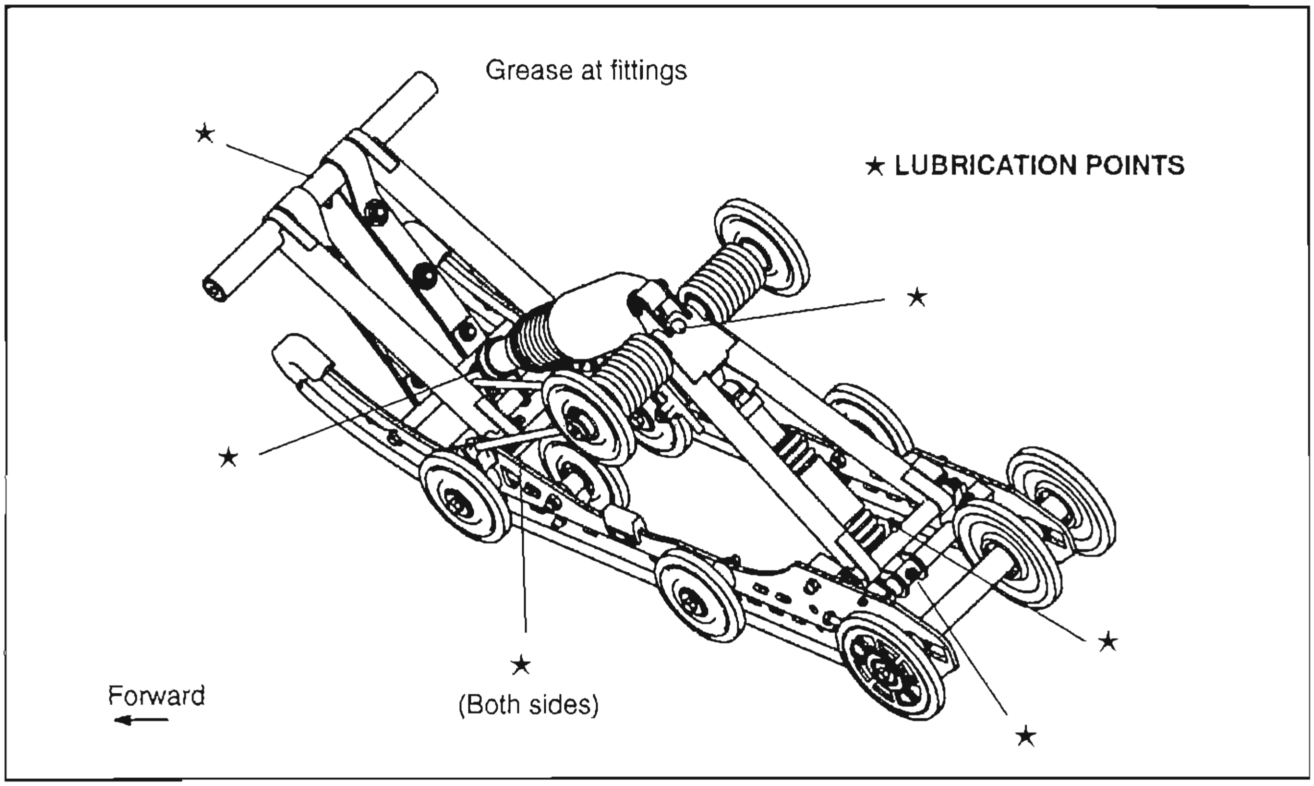


Suspension Lubrication

XTRA 10 Style



XTRA 12 Style



⚠ WARNING

Never remove the pressure cap when the engine is warm or hot. If the pressure cap is to be removed, the engine must be cool. Severe personal injury could result from steam or hot liquid.

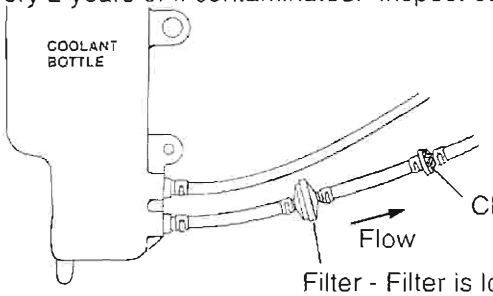
Use of a non-standard pressure cap will not allow the recovery system to function properly. If the cap should need replacement, install the correct Polaris cap with the same pressure rating. Refer to the appropriate parts manual.

Coolant Level

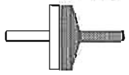
Coolant level in the reservoir or surge tank must be maintained between the minimum and maximum levels to prevent overheating and serious engine damage.

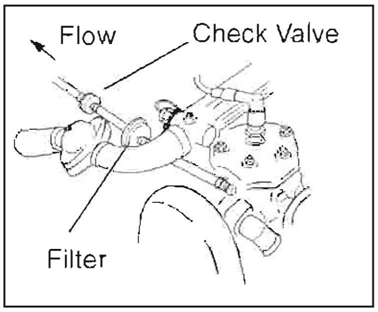
Recommended Coolant

Use a 50/50 or 60/40 mixture of antifreeze and distilled water depending on the freeze protection required for your area. Do not use tap water in the system or reduced cooling or filter contamination may result. Replace coolant every 2 years or if contaminated. Inspect coolant filter annuallyfor contamination and replace if necessary.



Check Valves - tapered side points in flow direction

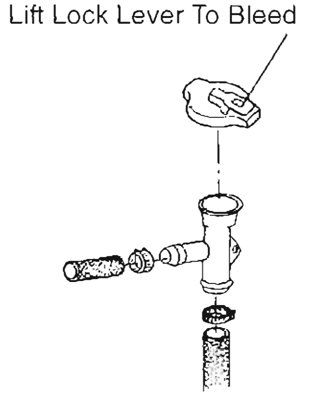




Bleeding the Cooling System - Pressure Caps

If the cooling system should become low in the tank and/or filler neck, the system should be bled of any trapped air using the following procedure:

1. Allow the system to cool completely. Fill the reservoir with coolant to the maximum indicated mark.
2. With pressure cap removed, add coolant and fill to the top of the filler neck.
3. Install the pressure cap with the lever lock up in its release position and run the engine at fast idle for two to three minutes. This will purge the system of trapped air. Close the lever lock and check recovery tank fluid level. **CAUTION:** On models equipped with remote filler neck, *low idle RPM must be used* for bleeding (600 RPM ± 100) to allow all air to purge and prevent trapped air which can lead to overheating. Reset idle to specified RPM after bleeding.

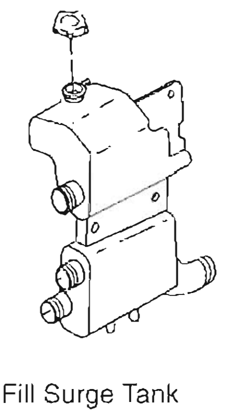


Remote Filler Neck Shown

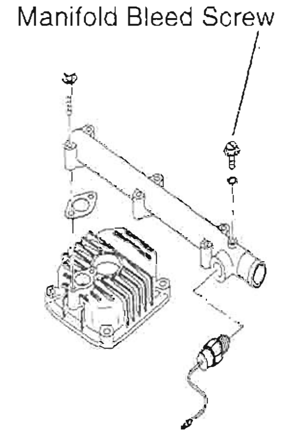
Bleeding the Cooling System - Surge Tanks

If the cooling system should become low in the surge tank, the system must be bled of any trapped air using the following procedure:

1. Allow the system to cool completely. Fill the surge tank with coolant to the maximum indicated mark.
2. Start the engine and loosen the bleed screw on the top of the water pump until trapped air has been purged. Tighten the bleed screw.
3. Loosen the bleed screw at the end and top of the water outlet manifold until trapped air has been purged. Tighten the bleed screw.
4. Recheck the surge tank coolant level and add coolant again if necessary.



Fill Surge Tank



Track Maintenance/Alignment

⚠ WARNING

When performing the following checks and adjustments, stay clear of all moving parts to avoid serious personal injury.

Track Maintenance

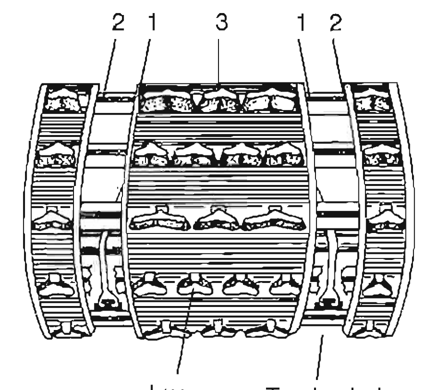
⚠ WARNING

Never make this maintenance check with the engine running as serious personal injury can result.

Using a hoist, safely lift and support the rear of the snowmobile off the ground. Rotate the track by hand to check for any possible damage.

To inspect track rods, carefully examine the track along the entire length of each rod, bending the track and inspecting for breakage. The three most common places where breakage occurs are shown in the illustration.

If any rod damage is found, the track should be replaced.



⚠ WARNING

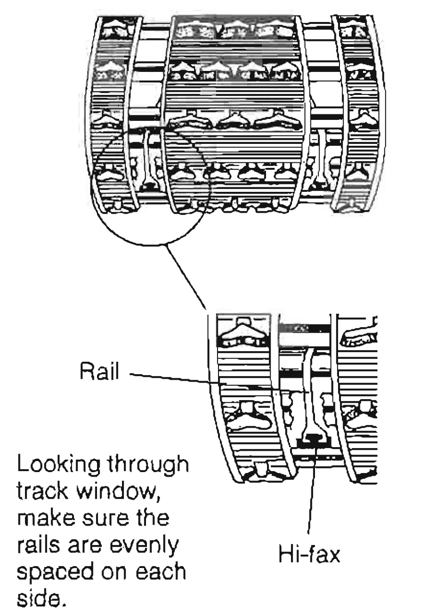
Broken track rods are a serious hazard, since they can cause a rotating track to come off the machine. Never operate or rotate a torn or damaged track under power. Serious personal injury or death may occur.

Track Alignment

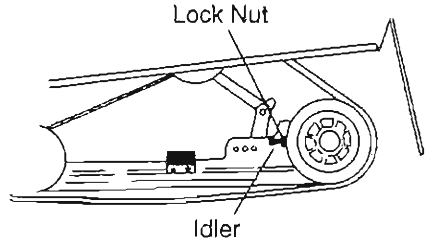
Track alignment affects track tension. Misalignment will cause excessive wear to the track and slide rail.

A periodic check should be made to see that the track is centered and running evenly on the slide rails. Misalignment will cause excessive wear to the track and slide rail. **NOTE:** If excessive hi-fax wear occurs due to poor snow conditions, additional wheel kits are available.

1. Safely support the rear of the machine with the track off the ground.
2. Start the engine and apply a small amount of throttle until the track turns *slowly* at least five complete revolutions. Stop the engine.
3. Inspect track alignment by looking through the track window to make sure the rails are evenly spaced on each side. If the track runs to the left, loosen left locknut and tighten the left adjusting bolt. If the track runs to the right, loosen right locknut and tighten the right adjusting bolt.
4. After adjustments are complete, be sure to tighten locknuts and idler shaft bolts. Torque to specification.



Idler Shaft Bolt Torque -
35 - 40 ft. lbs. (4.8 - 5.5 kgm)



Track Tension Data

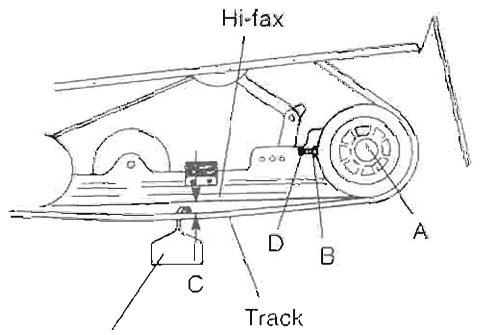
Suspension (Refer to Suspension Chapter for type)	Weight	Measurement Location	Measurement
XTRA 12 121″	none	2″ behind rail bumper	1/2″ (1.27 cm) free hanging
XTRA 12 133″	none	16″ ahead of rear idler shaft	1-1 1/8″ (2.54 - 2.86 cm) free hanging
XTRA 10 121″, 133″, 136″	10 lbs. (4.54 kg)	16″ ahead of rear idler shaft	3/8 - 1/2″ (1 - 1.3 cm)
Standard 121″ (Sport & Lite)	10 lbs. (4.54 kg)	16″ ahead of rear idler shaft	3/8 - 1/2″ (1 - 1.3 cm)
Lite GT	10 lbs. (4.54 kg)	16″ ahead of rear idler shaft	1 1/4 - 1 1/2″ (3.2 - 3.8 cm)
WideTrak GT / LX and Transport	10 lbs. (4.54 kg)	16″ ahead of rear idler shaft	3/4 - 1″ (1.9 - 2.5 cm)
XTRA Lite	10 lbs. (4.54 kg)	16″ ahead of rear idler shaft	3/8 - 1/2″ (1 - 1.3 cm)

⚠ WARNING

When performing the following checks and adjustments, stay clear of all moving parts to avoid serious personal injury.

Track Tension - Sport and XTRA Lite Style

1. Turn the machine off.
2. Lift the rear of the machine and safely support it off the ground.
3. Place a 10 lb. (4.5 kg) downward pressure on the track at a point approximately 16″ (40.6 cm) ahead of the center of the rear idler wheel.



All Models Except Lite GT

4. Check for 3/8-1/2″ (1-1.3 cm) slack between the inside of the track clip and the hi-fax (C). **NOTE:** Measure at the point where the weight is hanging.

> **Sport & XTRA Lite Style Track Tension -**
> **3/8 - 1/2″ slack (1 - 1.3 cm)**
> **w/10 lb. (4.54 kg) weight**

Indy Lite GT

5. Check for 1 1/4-1 1/2″ (3.2-3.8 cm) slack between the inside of the track clip and the hi-fax (C). **NOTE:** Measure at the point where the weight is hanging.

> **Indy Lite GT Track Tension -**
>
> **1 1/4 - 1 1/2″ slack (3.2 - 3.8 cm)**
> **w/10 lb. (4.54 kg) weight**

If the track needs adjustment:

6. Loosen rear idler shaft bolts (A) on both sides of the machine.
7. Loosen track adjusting bolt locknuts (B).
8. Tighten or loosen the track adjusting bolts (D) evenly as necessary to obtain proper track tension.
9. Tighten idler shaft bolts and adjuster bolt locknuts.

NOTE: Track alignment affects track tension. Misalignment will cause excessive wear to the track and slide rail. Excessive Hi Fax wear will appear on units with track tension set too tight. Refer to page 2.12 for alignment procedure.

⚠ WARNING

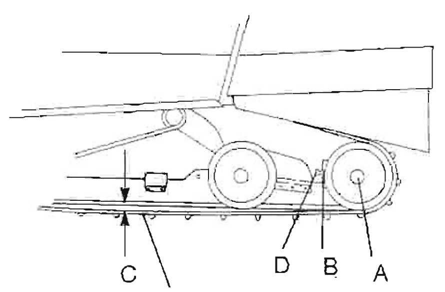
When performing the following checks and adjustments, stay clear of all moving parts to avoid serious personal injury.

Track Tension - WideTrak LX & GT Style

Tension adjustments should be made only after the track is warmed up and limber.

1. Turn the machine off.
2. Lift the rear of the machine and safely support it off the ground.
3. Place a 10 lb. (4.5 kg) downward pressure on the track at a point approximately 16″ (40.6 cm) ahead of the center of the rear idler wheel.
4. Check for 3/4-1″ (1.9-2.5 cm) slack between the inside of the track clip and the plastic hi-fax (C).

NOTE: Measure at the point where the weight is hanging.



WideTrak LX & GT Style Track Tension -

3/4 - 1″ slack (1.9 - 2.5 cm)
w/10 lb. (4.54 kg) weight

If the track needs adjustment:

5. Loosen rear idler shaft bolt (A).
6. Loosen locknuts (B).
7. Tighten or loosen the track adjusting screws (D) as necessary to provide equal adjustment on both sides of the track.

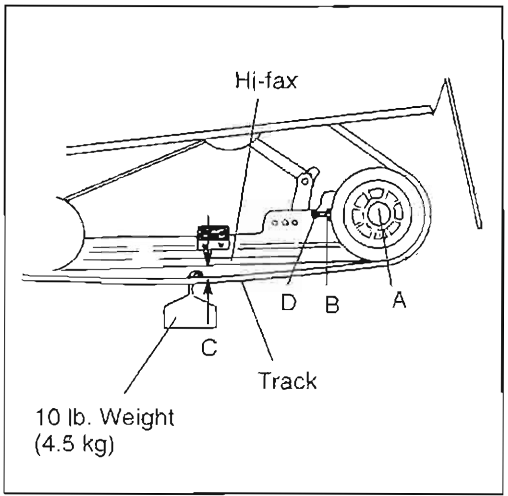
NOTE: Track alignment affects track tension. Misalignment will cause excessive wear to the track and slide rail. Excessive Hi Fax wear will appear on units with track tension set too tight. Refer to page 2.12 for alignment procedure.

⚠ WARNING

When performing the following checks and adjustments, stay clear of all moving parts to avoid serious personal injury.

Track Tension - XTRA 10 Style

1. Turn the machine off.
2. Lift the rear of the machine and safely support it off the ground.
3. Place a 10 lb. (4.5 kg) downward pressure on the track at a point approximately 16″ (40.6 cm) ahead of the center of the rear idler wheel (D).
4. Check for 3/8-1/2″ (1-1.3 cm) slack between the inside of the track clip and the hi-fax (C). **NOTE:** Measure at the point where the weight is hanging.



**XTRA 10 121″ & 133/136″ Style Track Tension -
3/8 - 1/2″ slack (1 - 1.3 cm)
w/10 lb. (4.54 kg) weight**

If the track needs adjustment:

5. Loosen rear idler shaft bolts (A) on both sides of the machine.
6. Loosen track adjusting bolt locknuts (B).
7. Tighten or loosen the track adjusting bolts (D) evenly as necessary to obtain proper track tension.
8. Tighten idler shaft bolts and adjuster bolt locknuts.

Always inspect track alignment after track tension adjustment.

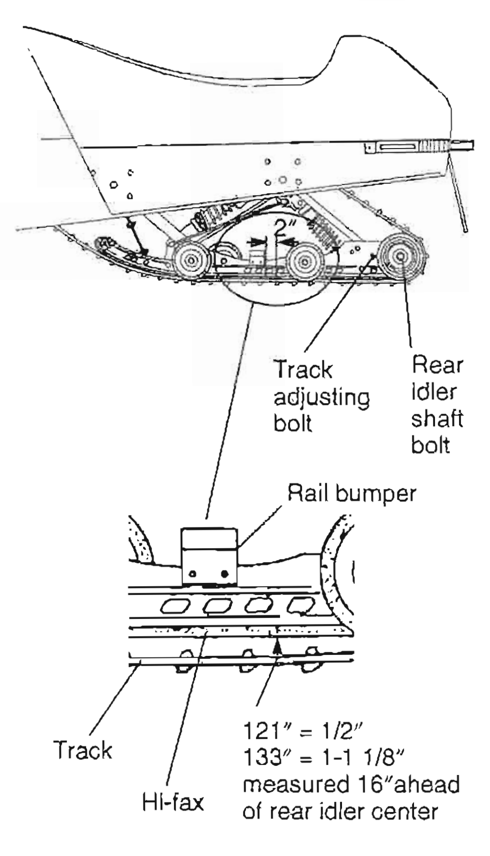
NOTE: Track alignment affects track tension. Misalignment will cause excessive wear to the track and slide rail. Excessive Hi Fax wear will appear on units with track tension set too tight. Refer to page 2.12 for alignment procedure.

⚠ WARNING

When performing the following checks and adjustments, stay clear of all moving parts to avoid serious personal injury.

Track Tension - XTRA 12 Style

1. Turn the machine off.
2. Lift the rear of the machine and safely support it off the ground.
3. Take measurement with track free hanging at a point 2″ behind rail bumper or 16″ ahead of rear idler on 133″ tracks. The distance between the inside top of the track clip and the Hi-Fax should be as shown below and in the illustration at right. Repeat measurement on the other side of the track. **NOTE:** Check more frequently when machine is new.



XTRA 12 Style Track Tension -

121″ 1/2″ (1.3 cm) free hanging
133″ 1 - 1 1/8″ (2.54 - 2.86 cm) free hanging

If the track needs adjustment:

4. Loosen rear idler shaft bolts on both sides of the machine.
5. Loosen track adjusting bolt locknuts.
6. Tighten or loosen the track adjusting bolts evenly as necessary to obtain proper track tension.
7. Tighten idler shaft bolts and adjuster bolt locknuts.

Always inspect track alignment after track tension adjustment.

NOTE: Track alignment affects track tension. Misalignment will cause excessive wear to the track and slide rail. Excessive Hi Fax wear will appear on units with track tension set too tight.

Spark Plug Selection

Original equipment parts or their equivalent should always be used. However, the heat range of spark plugs is of utmost importance. A spark plug with a heat range which is too high will cause engine damage. A spark plug with a heat range which is too low will cause excessive fouling and malfunction.

In selecting a spark plug heat range for production, a manufacturer is forced to assume that the engine is going to operated under extreme heavy duty conditions. This protects the engine from internal damage in the event that the purchaser actually does operate the engine in this manner. This selection however, could cause the customer who normally operates the engine under medium or light duty to have spark plug failure.

CAUTION:

A plug with a heat range which is too high will *always* cause engine damage if the engine is operated in conditions more severe than that for which the spark plug was intended.

A new engine can cause temporary spark plug fouling even though the heat range is correct, due to the preservative which has been added during assembly of the engine to combat rust and corrosion. Avoid prolonged idle speeds, as plug fouling and carbonization will result. Always use resistor type plugs.

NOTE: Incorrect fuel mixture can often cause a spark plug to appear to be too dark or too light in color. Before changing spark plug heat ranges, be sure the correct main jet is installed in the carburetor(s).

The spark plug and its condition is generally indicative of engine operation. The spark plug firing end condition should be read after the engine is warmed up and the vehicle is driven under load. Immediately check the spark plug for correct color.

Normal

The insulator tip is gray, tan, or light brown. There will be a few combustion deposits. The electrodes are not burned or eroded. This indicates the proper type and heat range for the engine and the service.

NOTE: The tip should not be white. A white insulator tip indicates overheating, caused by use of an improper spark plug or incorrect carburetion adjustments.

Wet Fouled

The insulator tip is black. A damp oily film covers the firing end. There may be a carbon layer over the entire nose. Generally, the electrodes are not worn. General causes are excessive oil, use of non-recommended injection oil, excessive idling, idle too low or air screws adjusted too rich, or weak ignition output.

1. Inspect electrodes for wear and carbon buildup. Look for a sharp outer edge with no rounding or erosion of the electrodes.
2. Clean with electrical contact cleaner or a glass bead spark plug cleaner only.

CAUTION:

A wire brush or coated abrasive should not be used.

3. Measure gap with a wire gauge and adjust to specifications by bending side electrode carefully. Refer to page 2.18 for plug type and gap specification.
4. Coat spark plug threads with a small amount of anti-seize compound.
5. Install spark plug and torque to specification.

Spark Plug Torque:

11 Ft. Lbs

Spark Plug Application Chart

1996 Models

Machine Model	Engine Model	Spark Plug NGK	Spark Plug Champion	Plug Gap MM/Inches
Indy Lite Models	EC34-2PM02/E02	**BR8ES**	RN-3C	0.7/.028
Indy Sport Models	EC44-3PM01/02	**BR8ES**	RN-3C	0.7/.028
Indy Trail Models	EC50PM04/E04	**BR8ES**	RN-3C	0.7/.028
Indy 440 LC	EC45PL06	BR8ES	**RN-3C**	0.7/.028
Indy 440 XCR	EC45PL07	BR9ES	**RN-2C**	0.7/.028
Indy 440 XCR SP	EC45PL08	BR9ES	**RN-2C**	0.7/.028
Indy 500/SKS/RMK/Classic	EC50PLE11/11/14/15	BR8ES	**RN-3C**	0.7/.028
Indy WideTrak GT	EC50PM03	**BR8ES**	RN-3C	0.7/.028
Indy WideTrak LX	EC50PLE12	BR8ES	**RN-3C**	0.7/.028
Indy 500 EFI	EC50PL13	BR8ES	**RN-3C**	0.7/.028
Indy XLT / XLT SKS	EC58PL03	BR8ES	**RN-3C**	0.7/.028
Indy XLT RMK	EC58PL07	BR8ES	**RN-3C**	0.7/.028
Indy XLT Touring	EC58PLE05	BR8ES	**RN-3C**	0.7/.028
Indy XCR 600 / XLT SP	EC5802	BR9ES	**RN-2C**	0.7/.028
Indy 600 XCR SP	EC59PL01	BR9ES	**RN-2C**	0.7/.028
Indy RXL	EC65PL05	BR9ES	**RN-2C**	0.7/.028
Indy Ultra SP/SKS/ (RMK)	EC68PL01 / (04)	BR9ES	**RN-2C**	0.7/.028
Indy Storm/SKS/ (RMK)	EC80PL05 / (04)	BR9ES	**RN-2C**	0.7/.028

1997 Models

Machine Model	Engine Model	Spark Plug NGK	Spark Plug Champion	Plug Gap MM/Inches
Indy Lite Models	EC34-2PM02	**BR8ES**	RN-3C	0.7/.028
Indy Sport/TranSport/Sport Touring	EC44-3PM02	**BR8ES**	RN-3C	0.7/.028
Indy XCF	EC44-3PM02	**BR8ES**	RN-3C	0.7/.028
Indy Trail/Trail Touring	EC50PM04	**BR8ES**	RN-3C	0.7/.028
Indy Trail RMK	EC50PM05	**BR8ES**	RN-3C	0.7/.028
Indy Super Sport	EC50PM06	**BR8ES**	RN-3C	0.7/.028
Indy WideTrak GT	EC50PM03	**BR8ES**	RN-3C	0.7/.028
Indy WideTrak LX	EC50PL20	BR8ES	**RN-3C**	0.7/.028
Indy 440 LC	EC45PL09	BR8ES	**RN-3C**	0.7/.028
Indy 440 XC	EC45PL08	BR9ES	**RN-2C**	0.7/.028
Indy 440 XCR	SN44LCDCSP-01	BR9ES	**RN-2C**	0.7/.028
Indy 500 RMK	EC50PL16	BR8ES	**RN-3C**	0.7/.028
Indy 500/SKS	EC50PLE17	BR8ES	**RN-3C**	0.7/.028
Indy Classic	EC50PL11	BR8ES	**RN-3C**	0.7/.028
Indy 500 EFI	EC50PL18	BR8ES	**RN-3C**	0.7/.028
Indy Classic Touring	EC50PL19	BR8ES	**RN-3C**	0.7/.028
Indy XLT/SKS	EC58PL03	BR8ES	**RN-3C**	0.7/.028
Indy XLT RMK	EC58PL07	BR8ES	**RN-3C**	0.7/.028
Indy 600 XC	EC58PL08	BR9ES	**RN-2C**	0.7/.028

Bold indicates production spark plug.

1997 Models (continued)

Machine Model	Engine Model	Spark Plug		Plug Gap MM/Inches
Indy XLT Touring/ XLT LTD	EC58PL09	BR8ES	**RN-3C**	0.7/.028
Indy XLT SP / XLT LTD SP	EC58PL12	BR9ES	**RN-2C**	0.7/.028
Indy 600 XCR/SE	EC59PL01	BR9ES	**RN-2C**	0.7/.028
Indy RXL	EC65PL05	BR9ES	**RN-2C**	0.7/.028
Indy Ultra/SP/Touring	EC68PL01	BR9ES	**RN-2C**	0.7/.028
Indy Ultra SPX/SPX SE	EC68PL03	BR9ES	**RN-2C**	0.7/.028
Indy 700 XC	SN70LCDCSP-01	BR9ES	**RN-2C**	0.7/.028
Indy 700 SKS	SN70LCDCSP-01	BR9ES	**RN-2C**	0.7/.028
Indy 700 RMK	SN70LCDCSP-02	BR9ES	**RN-2C**	0.7/.028
Indy Storm/SE	EC80PL05	BR9ES	**RN-2C**	0.7/.028
Indy Storm RMK	EC80PL04	BR9ES	**RN-2C**	0.7/.028

1998 Models

Machine Model	Engine Model	Spark Plug		Plug Gap MM/Inches
		NGK	Champion	
Lite Models	EC34-2PM02A	**BR8ES**	RN-3C	0.7/.028
Sport/TranSport/Sport Touring/XCF	EC44-3PM024	**BR8ES**	RN-3C	0.7/.028
Super Sport	EC50PM061	**BR8ES**	RN-3C	0.7/.028
Trail/Trail Touring	EC50PM043	**BR8ES**	RN-3C	0.7/.028
Trail RMK	EC50PM051	**BR8ES**	RN-3C	0.7/.028
440 XCR	SN44-44LCDCSP-01	BR9ES	**RN-2C**	0.7/.028
440 LC	EC45PL091	BR8ES	**RN-3C**	0.7/.028
500 RMK	EC50PL161	BR8ES	**RN-3C**	0.7/.028
500	EC50PL171	BR8ES	**RN-3C**	0.7/.028
Classic	EC50PL171	BR8ES	**RN-3C**	0.7/.028
Classic Touring	EC50PL191	BR8ES	**RN-3C**	0.7/.028
WideTrak LX	EC50PL201	BR8ES	**RN-3C**	0.7/.028
XLT SP	EC58PL140	BR8ES	**RN-3C**	0.7/.028
XLT LTD	EC58PL130	BR8ES	**RN-3C**	0.7/.028
XLT Touring	EC58PL130	BR8ES	**RN-3C**	0.7/.028
XLT Classic	EC58PL150	BR8ES	**RN-3C**	0.7/.028
600 XC	SN60-70LCDCSP-01	BR9ES	**RN-2C**	0.7/.028
600 XCR	EC59PL020	BR9ES	**RN-2C**	0.7/.028
600 RMK	SN60-70LCDCSP-02	BR9ES	**RN-2C**	0.7/.028
Ultra/Touring	EC68PL050	BR9ES	**RN-2C**	0.7/.028
700 XC	SN70-70LCDCSP-02	BR9ES	**RN-2C**	0.7/.028
700 XCR	EC68PL060	BR9ES	**RN-2C**	0.7/.028
700 RMK	SN70-70LCDCSP-01	BR9ES	**RN-2C**	0.7/.028
Storm	EC80PL052	BR9ES	**RN-2C**	0.7/.028

Bold indicates production spark plug.

Drive Belt

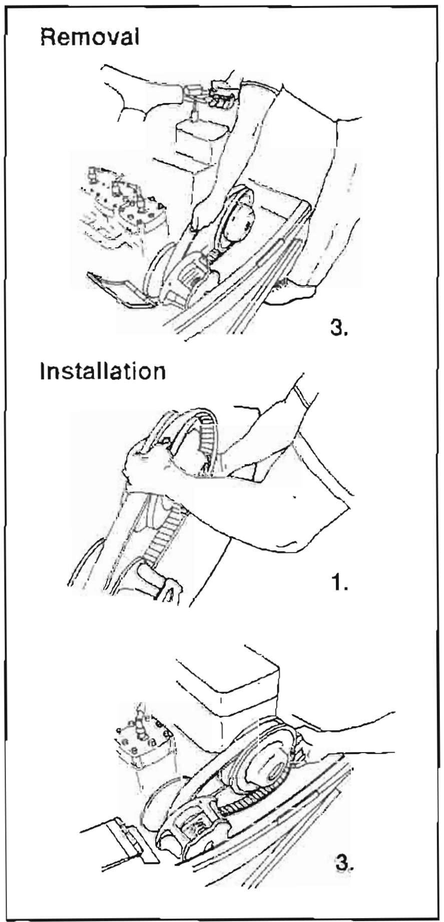
⚠ WARNING

Inspect the condition of the drive belt. Inspect clutch sheaves for damage, wear, or belt residue. Clean with non-oil base cleaner such as isopropyl alcohol.

To ensure satisfactory belt life, install belts so they operate in the same direction of rotation. Position the identification numbers so that you can read them. This will keep the belt rotating in the same direction.

Belt Removal

1. Be sure key switch is off and engine has come to a complete stop. Remove the retaining knob or pin and open the clutch guard.
2. Apply brake (or lock parking brake if so equipped).
3. Grasp belt firmly midway between clutches and pull upward and rearward to open the driven clutch sheaves. Remove the belt from the driven clutch and then from the drive clutch.

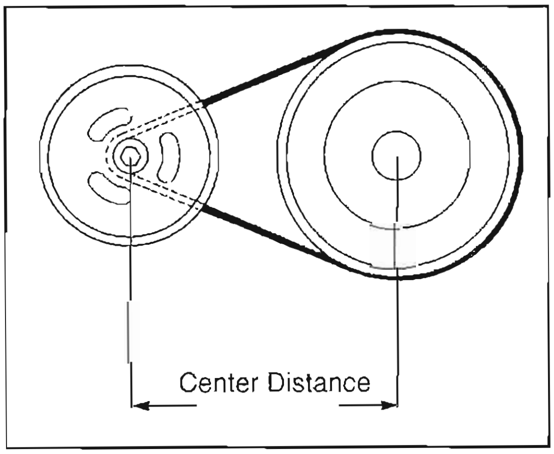


Belt Installation

1. Drop the drive belt over the drive clutch and pull back the slack.
2. Turn the driven clutch moveable sheave clockwise while at the same time pushing inward and forcing the belt down between the sheaves.
3. Hold the belt down between the sheaves and roll the bottom portion over the outer clutch sheave. Once installed, be sure to work the belt to the outer edge of the sheave. Be sure to release parking brake if applied.
4. Close the clutch guard and reinstall the retaining knob or pin.

Belt Inspection

5. Refer to PVT Section for belt inspection and width measurement.
6. Measure belt length with a tape measure around the outer circumference of the belt. Belts which measure shorter or longer than a nominal length may require driven clutch or engine adjustment to obtain proper belt deflection.
7. Replace belt if worn past the service limit. Belts with thin spots, burn marks, etc., should be replaced to eliminate noise, vibration, or erratic operation. See Troubleshooting Chart at the back of this chapter for possible causes. **NOTE:** If a new belt is installed, check belt deflection. Install so part numbers are easily read.



Refer to pages 6.40 and 6.41 for belt specifications and measurement procedures.

Backrest Adjustment

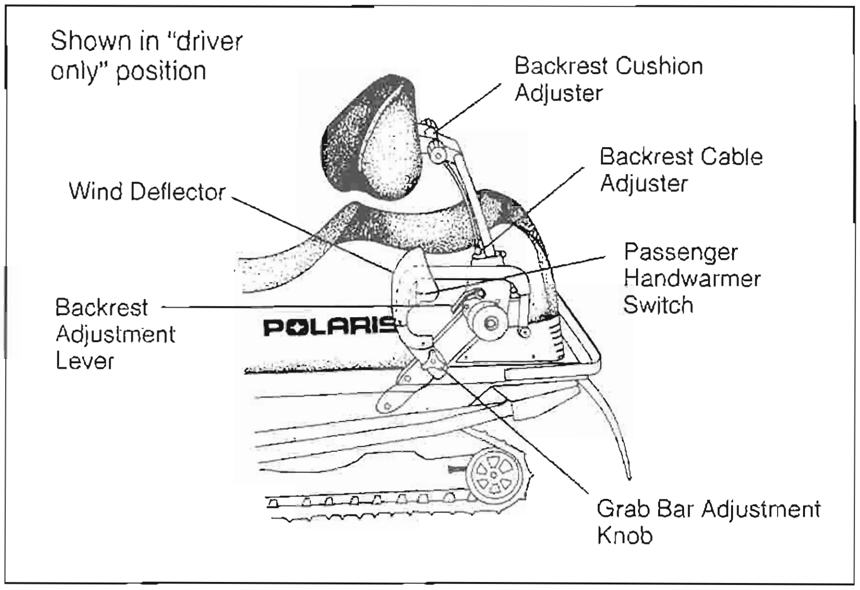
The passenger backrest on the Classic Touring and XLT Touring Models is adjustable. To move the backrest forward or backward, lift the adjustment lever on the left side.

To lengthen or shorten the backrest cable, lift the cable until spring tension is felt and lock the jamb nut.

When adjusting the backrest from a passenger position to a single rider position, rotate the backrest cushion adjustment knobs until the proper angle is reached.

The grab bars have five height adjustments. To raise or lower the grab bar, remove the grab bar adjuster knob, position the grab bar at the desired height, and reinstall the knob.

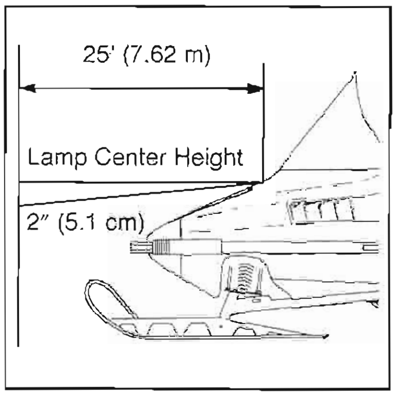
The Classic Touring and XLT Touring models are also equipped with passenger handwarmers. The handwarmer switch, located under the left hand wind deflector, has three settings: high, off, and low.



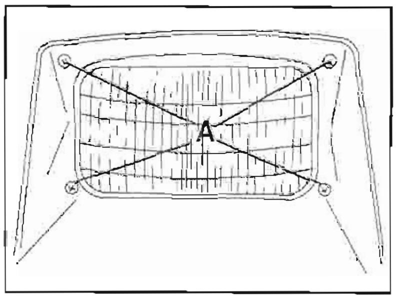
Headlight Adjustment

The headlight can be adjusted for vertical aim using the following procedure:

1. Place snowmobile on a level surface with headlight approximately 25' (7.6m) from a wall.
2. Measure distance from floor to center of headlight and make a mark on the wall.
3. Start engine and turn headlight switch to high beam.
4. Observe headlight aim. The most intense part of the headlight beam should be aimed 2" (5.1 cm) below the mark placed on the wall in Step 2. **NOTE:** Rider weight must be included on the seat.



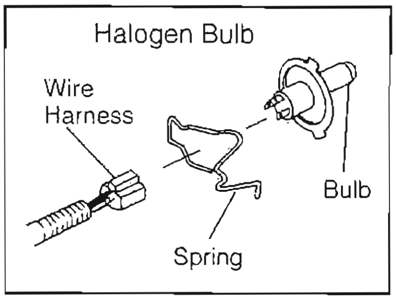
5. If necessary, the headlight aim can be adjusted by turning the four adjusting screws located on the front of the lens (A). Turn in or out as needed for proper aim.



Removing the Bulb

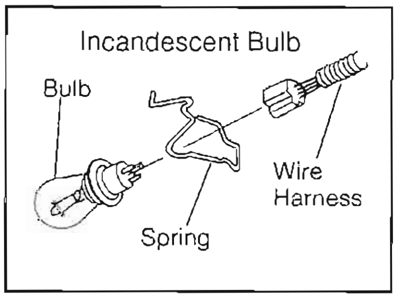
NOTE: Do not touch a halogen bulb with bare fingers. Oil from skin leaves a residue, causing a hot spot which will shorten the life of the lamp.

1. Push down on left side of spring until it releases from spring retainer.
2. Lift spring carefully around wire harness and flip to outside of housing.
3. With the wire harness attached to the bulb, withdraw bulb from housing.
4. Grasp bulb by metal base and carefully separate bulb from harness.



Installing the Bulb

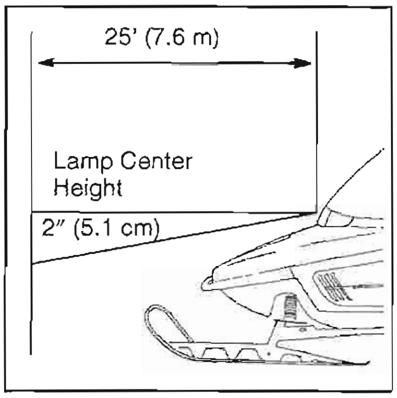
1. Hold bulb by metal base and install into wire harness.
2. Insert bulb into housing.
3. Carefully flip spring back into housing placing it around wire harness.
4. Push spring down until it is secured by spring retainer.
5. Verify headlight aim.



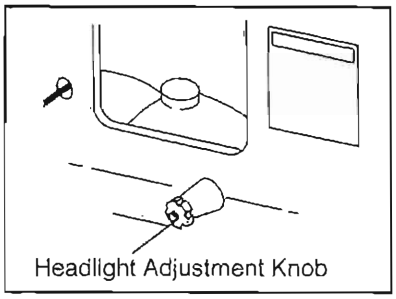
Headlight Adjustment

The headlight can be adjusted for vertical aim using the following procedure:

1. Place the snowmobile on a level surface with the headlight approximately 25' (7.6 m) from a wall.
2. Measure the distance from the floor to the center of the headlight and make a mark on the wall.
3. Start the engine and turn the headlight switch to high beam.
4. Observe the headlight aim. The most intense part of the headlight beam should be aimed 2" (5.1 cm) below the mark placed on the wall in Step 2. **NOTE:** Rider weight must be included on the seat.



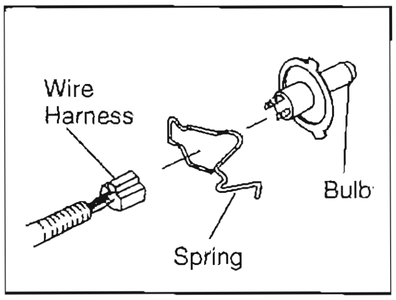
5. If necessary, the headlight aim can be adjusted by turning the adjustment knob located inside the hood just below the headlamp opening. Turn knob in or out as needed for proper aim.



Removing the Center Bulb

1. Push down on spring until it releases from spring retainer.
2. With wire harness attached to bulb, withdraw bulb from housing.
3. Grasp bulb by metal base and carefully separate bulb from harness.

Installing the Center Bulb



NOTE: Do not touch a halogen bulb with bare fingers. Oil from skin leaves a residue, causing a hot spot which will shorten the life of the lamp.

1. Hold bulb by metal base *only* and install into wire harness.
2. Insert bulb into housing.
3. Push spring down until it is secured by spring retainer.
4. Verify headlight aim.

Removing the Side Bulbs

1. Disconnect terminal from back of bulb.
2. Turn bulb assembly 1/4 turn to right and withdraw from housing.

Installing the Side Bulbs

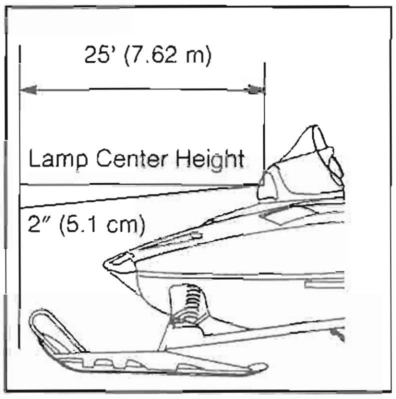
NOTE: Do not touch a halogen bulb with bare fingers. Oil from skin leaves a residue, causing a hot spot which will shorten the life of the lamp.

1. Hold bulb assembly by plastic base and plug into wire terminal.
2. Insert bulb assembly into housing.
3. Turn bulb assembly 1/4 turn to left to secure in housing.
4. Verify headlight operation.

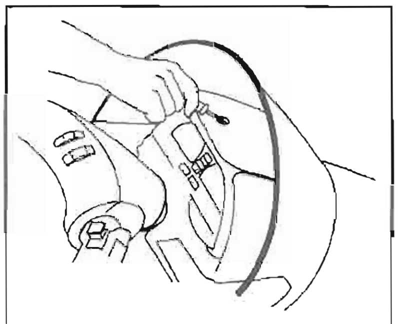
Headlight Adjustment

The headlight can be adjusted for vertical aim using the following procedure:

1. Place snowmobile on a level surface with headlight approximately 25' (7.6m) from a wall.
2. Measure distance from floor to center of headlight and make a mark on the wall.
3. Start engine and turn headlight switch to high beam.
4. Observe headlight aim. The most intense part of the headlight beam should be aimed 2" (5.1 cm) below the mark placed on the wall in Step 2. **NOTE:** Rider weight must be included on the seat.



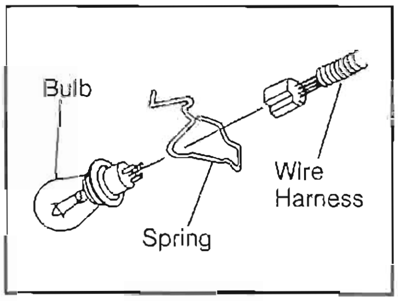
5. If necessary, headlight aim can be adjusted by inserting a Phillips screwdriver into the boss in the top of the console and turning the screw until correct adjustment is achieved.



Insert screwdriver into access hole and turn screw to adjust

Removing the Bulb

1. Push down on left side of spring until it releases from spring retainer.
2. Lift spring carefully around wire harness and flip to outside of housing.
3. With the wire harness attached to the bulb, withdraw bulb from housing.
4. Grasp bulb by metal base and carefully separate bulb from harness.

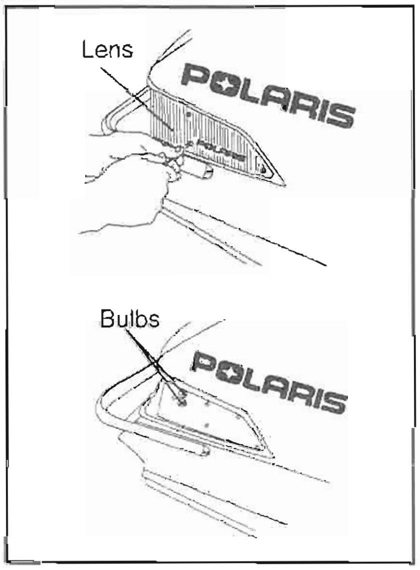


Installing the Bulb

1. Hold bulb by metal base and install into wire harness.
2. Insert bulb into housing.
3. Carefully flip spring back into housing placing it around wire harness.
4. Push spring down until it is secured by spring retainer.
5. Verify headlight aim.

Taillight Bulb Replacement

1. Remove (5) Phillips screws from taillight lens.
2. Working from front to back, carefully pry lens away from seal and remove lens.
3. Pull bulb straight out from socket and insert new bulb.
4. Reinstall lens.

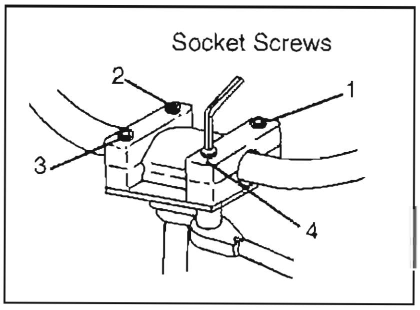


Handlebar Adjustment - Standard Indy Models

Handlebar Adjuster Block Bolt Torque -

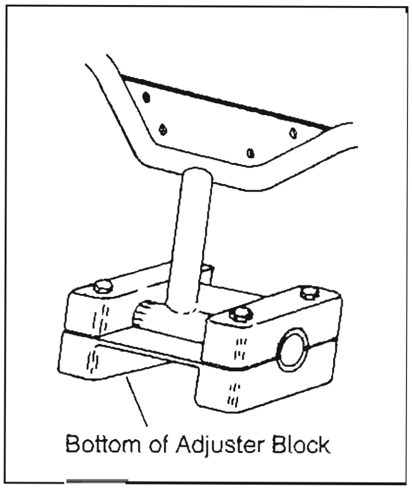
11 - 13 ft. lbs. (1.5 - 1.8 kgm)

1. Remove handlebar cover and foam.
2. Using a 7/16″ (11 mm) wrench, loosen four nuts on bottom of adjuster block. **NOTE:** Turn handlebar to left or right for access to back nuts.
3. Adjust handlebar to the desired height. Be sure that handlebars, brake lever and throttle lever operate smoothly and do not hit the gas tank, windshield or any other part of the machine when turned fully to the left or right.
4. Torque the handlebar adjuster block bolts to specification. Maintain an equal gap on front and back of block.
5. Replace handlebar cover and foam.



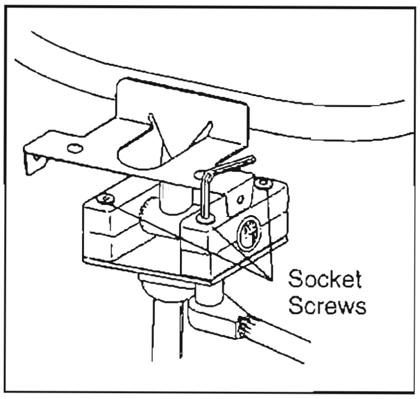
Handlebar Adjustment - Evolved and Aggressive Style Models

1. Remove two plastic fasteners holding console cover located below handlebar cover on hood side of steering post.
2. Using a 7/16″ (11 mm) wrench, loosen four nuts on bottom of adjuster block. **NOTE:** Turn handlebar to left or right for access to rear nuts.
3. Adjust handlebar to the desired height. Be sure that handlebars, brake lever and throttle lever operate smoothly and do not hit the gas tank, windshield or any other part of the machine when turned fully to the left or right.
4. Torque the handlebar adjuster block bolts to specification. Maintain an equal gap on front and back of block.
5. Replace console cover.



Handlebar Adjustment - Indy Lite Style Models

1. Remove metal clips at front of plastic housing by prying out with screwdriver. Loosen four retainer bolts.
2. Adjust handlebar to the desired height. Be sure that handlebars, brake lever and throttle lever operate smoothly and do not hit the gas tank, windshield or any other part of the machine when turned fully to the left or right.
3. Torque handlebar adjuster block to specification. Maintain an equal gap on front and back of block.



⚠ WARNING

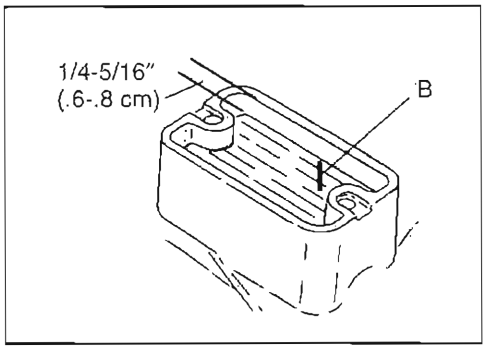
Improper adjustment of the handlebars, or incorrect torquing of the adjuster block tightening bolts can cause limited steering or loosening of the handlebars, resulting in loss of control.

Replenishing Brake Fluid

Remove brake fluid master cylinder reservoir cover. Add Polaris brake fluid as required to bring the level up to the top of the fluid level mark on the inside of the reservoir (B). The proper fluid level is 1/4-5/16″ (.6-.8 cm) below the lip of the reservoir opening.

Inspect the reservoir to be sure it contains the correct amount of fluid.

Use only Polaris DOT 3 high temperature brake fluid. Change brake fluid every 2 years. Change fluid every 2 years or whenever the fluid is dark or if contamination is suspected.



Polaris DOT 3 High Temp Brake Fluid

PN 2870990

Master Cylinder Fluid Level

1/4 - 5/16″ (.6 - .8 cm) below lip of reservoir opening

Brake Fluid Should Changed Every 2 Years or when fluid is dark or if contamination is suspected.

⚠ WARNING

Do not over fill the master cylinder. Fluid expansion could cause brakes to lock, resulting in serious injury or death. Once a bottle of brake fluid is opened, use what is necessary and discard the rest. Do not store or use a partial bottle of brake fluid. Brake fluid is hygroscopic, meaning it rapidly absorbs moisture from the air. This causes the boiling temperature of the brake fluid to drop, leading to early brake fade and the possibility of serious injury.

Bleeding the Hydraulic Brake System

Air in the hydraulic brake system will cause a springy or spongy brake lever action. Bleeding is necessary to remove air from the system.

1. Remove brake fluid master cylinder reservoir cover and gasket.
2. Fill the master cylinder reservoir (B) and replace gasket and cover. Keep the fluid level 1/4-5/16″ (.6-.8 cm) below lip of reservoir opening.
3. Slip a rubber tube over the ball of the bleeder valve and direct the flow of fluid into a container.

⚠ WARNING

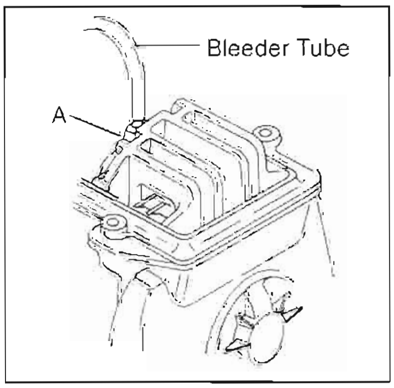
Never re-use brake fluid. Brake fluid is hygroscopic, meaning it rapidly absorbs moisture from the air. This causes the boiling temperature of the brake fluid to drop, leading to early brake fade and the possibility of serious injury.

4. Squeeze brake lever a full stroke. Then unscrew bleeder valve (A) 3/4 of a turn to release air.
5. Close bleeder valve first and then release brake lever.

Repeat steps 4 and 5 until fluid flows from bleeder valve in a solid stream free of air bubbles. Do not allow reservoir to run dry or air will be drawn into system.

6. Re-fill reservoir to proper level after bleeding operation. *Do not overfill the master cylinder.*
7. Replace gasket and cover.

During the bleeding procedure make sure to keep the reservoir as level as possible to minimize the possibility of air entering the system.



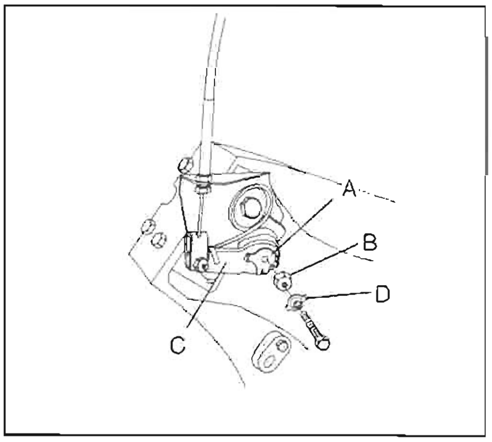
Brake Adjustment - Mechanical Disc Brakes

If excessive brake lever to brake block clearance is evident, the caliper adjuster should be adjusted using the following method.

⚠ WARNING

Adjust brake with caliper adjuster bolt only. *Do not* adjust cable or cable sleeve length. Improper brake adjustment could result in brake failure which could result in severe injury or death.

Caliper Adjustment



1. Bend locking tab (A) away from lock nut (B) and loosen lock nut.
2. Push down on actuating lever (C) and insert a .015″ feeler gauge between the brake disc and outer brake pad.
3. Turn adjusting bolt (D) in until a slight pressure is felt against the feeler gauge.
4. While holding adjusting bolt (D), tighten locknut (B).
5. Bend locking tab (A) against locknut.

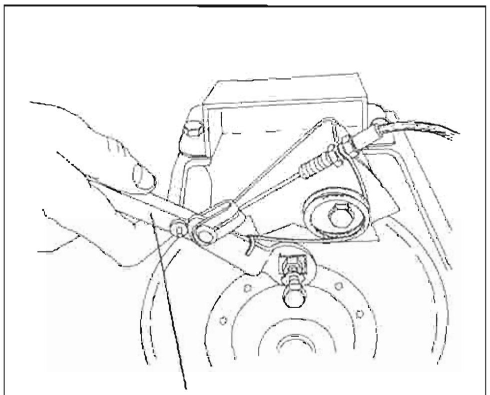
⚠ WARNING

Be certain locking tab is correctly positioned in actuating lever.

After locknut is tightened, check pad to disc clearance to be certain there is .015″ clearance.

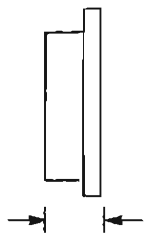
Be certain brake pads are not dragging on disc and brake lever travel is not excessive.

Improper brake adjustment could result in brake failure which could result in severe injury or death.



Brake Pad to Disc Clearance - .015″ (.38 mm)

NOTE: Replace pads when worn beyond service limit.



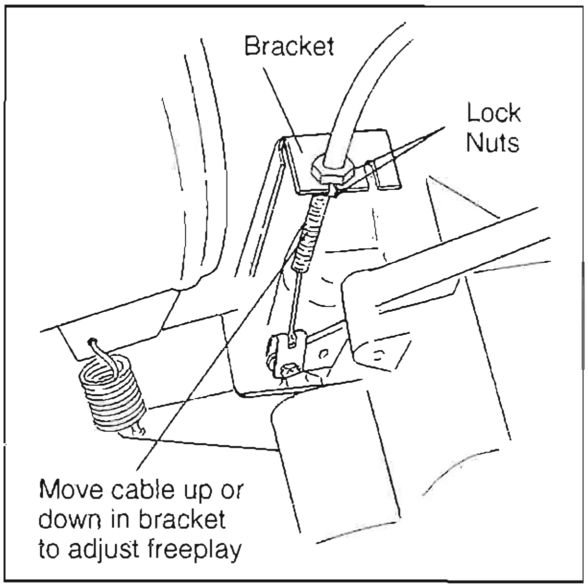
Brake Pad Thickness - Type M3 shown.
Service Limit .250″ (6.35mm)
(All brake pads)

Exhaust System

Inspect the exhaust system 1500 miles (2400 km). To inspect, allow engine and exhaust system to cool completely. Open the hood and inspect the muffler and pipes for cracks or damage. Check for weak or missing retaining springs. Be sure the resonator outlet pipe exits the belly pan.

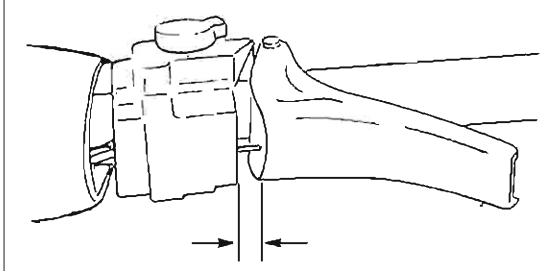
WT-2 Brake Adjustment

1. Check to ensure floating parts move freely and that all other parts are mounted securely. Tighten hardware as required.
2. Check actuator linkage to ensure there is adequate freedom of movement for positive brake operation. Periodic adjustment of pad gap can be performed using actuating cable.
3. Loosen lock nuts.

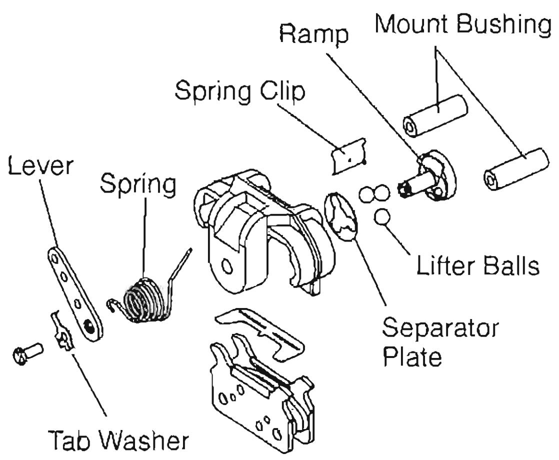


4. To increase brake lever free play turn nuts counterclockwise to move cable down in bracket. To decrease lever free play move cable up in bracket. Tighten lock nuts.

Brake Lever Free Play
1/4-3/8 in. (6-10mm)



5. If cable adjuster has reached maximum (used up), the lever arm can be re-indexed. Loosen lock nuts and turn counterclockwise (as viewed from top) to obtain the maximum amount of cable freeplay. Straighten tab on tab washer and loosen bolt enough to disengage actuator lever spline.
6. Slip long leg of lever spring off caliper and rotate to the side.
7. Rotate the lever one tooth in the direction opposite the actuation direction, and tighten bolt making sure spline teeth are properly engaged.
8. Bend up a tab aligning with one of the bolt head flats to prevent bolt rotation.
9. Return the spring to its original position on the caliper. Both lever and linkage must be free to return to original position.
10. Perform steps 3. and 4. to adjust lever freeplay.
11. Verify proper brake operation. Disc should rotate freely without drag.
12. Check disc surface condition. Refer to Brake/Final Drive section to inspect disc and pad condition and thickness.



Adjustment

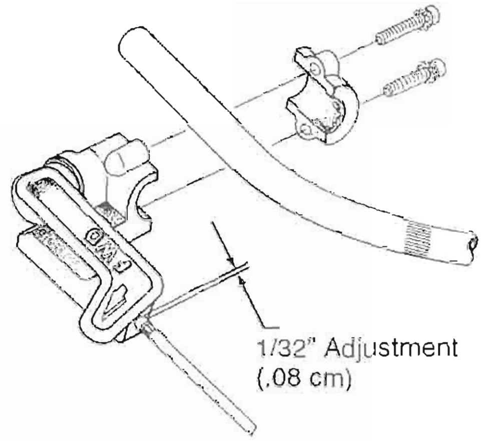
Due to break-in or replacement of components, the reverse shift mechanism may require adjustment. Adjust with the shifter in the forward position.

Standard Indy Style

1. Loosen jam nuts on lower end of cable.
2. Adjust cable until endplay movement of cable housing at the handlebar bracket is 1/32″ (.08 cm). Do not adjust beyond this point.
3. Tighten jam nuts and re-check adjustment.

Reverse Cable End Play -

1/32″ (.08 cm)

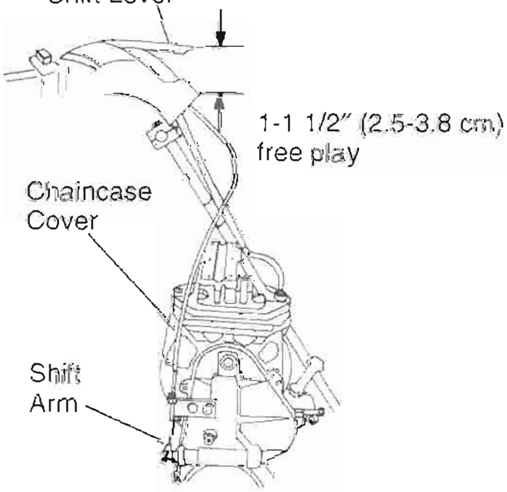


Evolved and Aggressive Style

1. Lift shift lever slowly while observing shift arm on transmission.
2. If adjustment is correct, shift will move 1 - 1 1/2″ before the shift arm begins to move. If adjustment is required, proceed with step 3.
3. Loosen jam nuts on lower end of cable.
4. Adjust cable end at transmission until the end of the shift lever has 1 - 1 1/2″ (2.5 - 3.8 cm) of freeplay before the cable starts to move the shift arm. Do not adjust beyond this point.
5. Tighten jam nuts and re-check adjustment.

Reverse Shift Lever Freeplay -

1 - 1 1/2″ (2.5 - 3.8 cm) measured at end of shift lever



Cleaning And Preservation Of Hood, Chassis And Trim

Proper storage starts by cleaning, washing and waxing the hood, chassis, upholstery and plastic parts. Clean and touch up with paint any rusted or bare metal surfaces. Ensure that all corrosive salt and acids are removed from surfaces before beginning preservation with waxes and rust inhibitors (grease, oil, or paint).

If the machine is equipped with a battery, disconnect the battery cables and clean the cables and battery posts. Fill battery to proper level with distilled water and charge to full capacity. Remove and store the battery in a cool dry place.

The machine should be stored in a dry garage or shed out of the sunlight and covered with a fabric snowmobile cover. *Do not use plastic to cover the machine;* moisture will be trapped inside causing rust and corrosion problems.

Controls And Linkage

All bushings, spindle shafts and tie rod ends should be coated with a light coat of oil or grease. Throttle controls and cables should be lubricated with Polaris Cable Lubricant. Force a small amount of lubricant down cables.

Polaris Cable Lubricant

PN 2870510

Electrical Connections

Separate electrical connector blocks and clean corrosive build-up from connectors. Lubricate or pack connector blocks with dielectric grease and reconnect. Replace worn or frayed electrical wire and connectors.

Dielectric Grease PN 2871027

Clutch And Drive System

Remove drive belt and store in a cool dry location. Lubricate sheave faces, shaft and ramps of drive and driven clutches with light oil or rust inhibitor. A generous amount of lubrication, such as Polaris cable lubricant should be applied onto the rollers and weight pins. All lubrication applied as a rust preventative measure must be cleaned off before installing belt for service and operating machine.

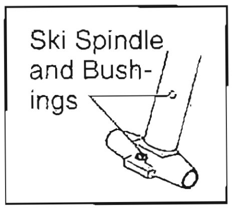
Chaincase Lubricant

Change chaincase lubricant as outlined in this section. Remove the outer cover and clean the chaincase thoroughly.

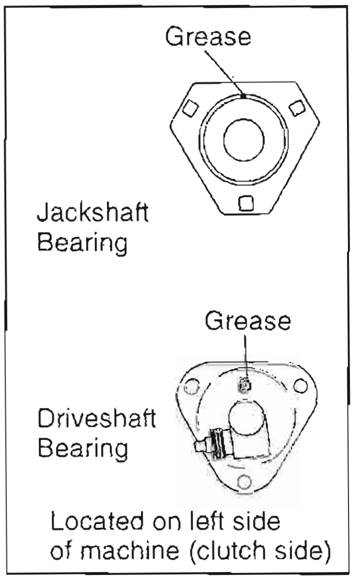
Lubrication

Refer to page 2.5-2.10 for complete lubrication information.

To prevent corrosion which will destroy the bearings, always grease jackshaft and drive shaft (clutch side) bearings with a high quality bearing grease. Loosen driven clutch retaining bolt and pull clutch outward to expose bearing. Use a point type grease gun fitting to inject grease through hole in flangette into bearing until grease purges out inside or outside bearing seal. Push clutch back on shaft and replace clutch retaining bolt. Inject grease into fitting on speedometer drive adaptor until grease purges out inside or outside bearing seal. Lubricate both front ski pivots at bushings and spindles. See Ill.1 and 2.



Ill. 1



Ill. 2

Polaris Premium All Season Grease

PN 2871423 14 1/2 oz.

Grease Gun Adapter: 2871174
Point Type

Use T-9 Metal Protectant on shock absorber shafts to help prevent corrosion.

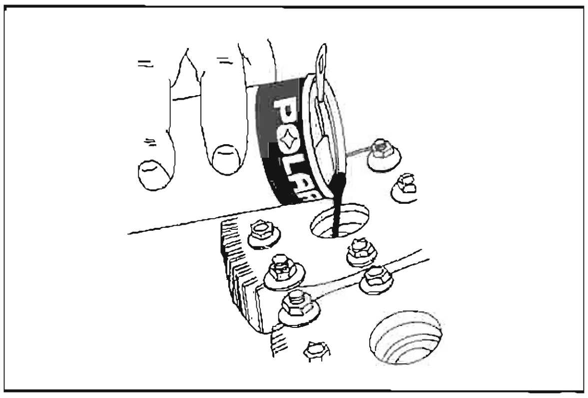
T-9 Metal Protectant

PN 2871064

Under normal conditions moderate track tension should be maintained during summer storage. Rubber track tension should be maintained at the prescribed normal operating tension specified in this manual. The rear of the machine should be supported off the ground to allow free hanging of track.

Engine and Carburetor

Fog engine with Polaris Fogging Oil (aerosol type) according to directions on can. On models with carburetor vacuum fittings the fogging oil can be sprayed through the fitting.



If you choose not to use Polaris Fogging Oil perform the following procedure: Support front of snowmobile so engine is level or tilted slightly rearward. Remove spark plug(s). Rotate piston to BDC and pour approximately two ounces (16 ml) Polaris 2-Cycle Injector oil into the cylinder. **NOTE:** Allow ample time for oil to flow from top of piston down transfer ports and onto crankshaft bearings before proceeding to next cylinder. Turn engine over several times to insure coverage of piston rings, cylinder walls and crankshaft bearings. See photo at right.

Polaris Fogging Oil PN 2870791

Treat the fuel system with Polaris fuel system additive

Carbon Clean PN 2871326

If Polaris fuel system additive is not used, fuel tank, fuel lines, and carburetor should be completely drained of gasoline. To eliminate any fuel remaining in the carburetor, run the engine until it stops.

Battery

Disconnect and remove battery. Fill with distilled water. Clean terminals and cables. Apply dielectric grease. Charge until specific gravity is t least 1.270 (each cell). If machine is to be stored for one month or longer, fill and charge battery monthly using Polaris Battery Tender, or a 1 amp trickle charger to maintain at 1.270 specific gravity.

Polaris Battery Tender

PN 2871076

EFI Storage Considerations

Add fuel conditioner/stabilizer and fill tank as described above. Fog engine. Disconnect battery ground cable if machine will be stored for 30 days or less. If storage period will exceed 30 days, remove battery from machine and maintain as described above. Cover and store machine out of direct sunlight. If machine is to be stored more than four months, start and run engine for at least 15 minutes and re-fog with fuel stabilizer added to the fuel.

Fill fuel tank and add the recommended amount of Polaris Fuel System Additive.

Variable Exhaust System (V.E.S.)

Some snowmobiles are equipped with the Polaris (patent pending) *Variable Exhaust System (V.E.S.)*

This unique exhaust valve management system changes the effective exhaust port height in the cylinder to provide maximum horsepower at high RPM without sacrificing fuel economy and engine torque at low to midrange throttle settings.

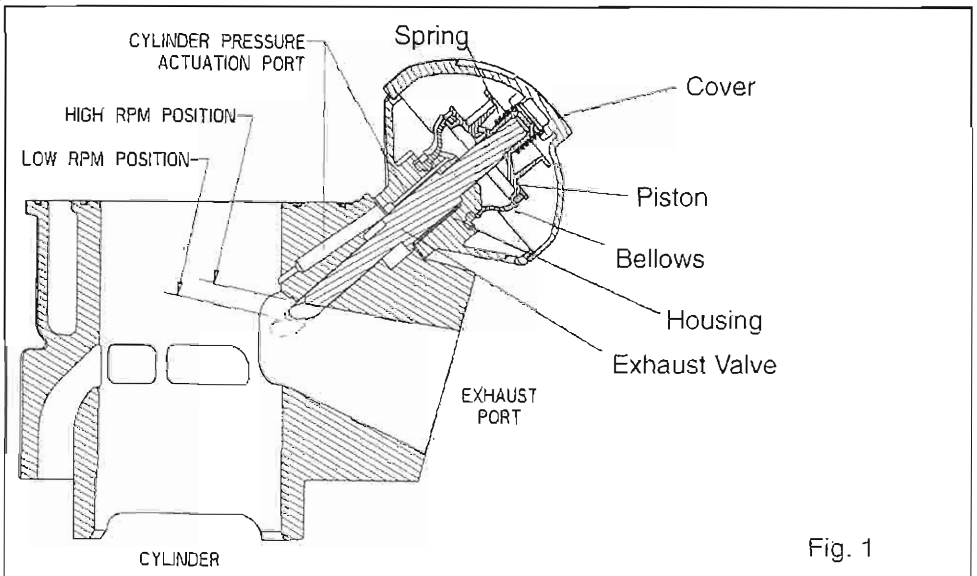


Fig. 1

In order to understand the operation and function of the V.E.S. we must first consider the characteristics of a two stroke engine. The height of the exhaust port in a two stroke engine cylinder has an affect on the total power output of an engine, as well as the RPM at which the power occurs.

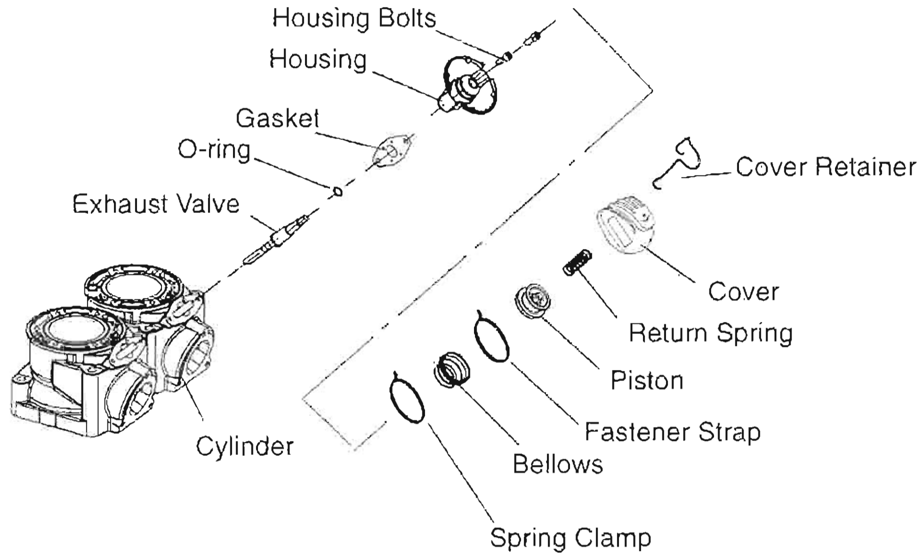
Exhaust systems are "tuned" by design to match engine exhaust port configuration and desired power delivery characteristics. Engines with relatively "high" exhaust ports (and exhaust pipe to match) produce more horsepower at high RPM, but only at the expense of low to midrange fuel economy and torque. On the other hand, "low" port engines provide good fuel economy in the midrange and make their power at relatively lower RPM, but will not produce as much peak horsepower for a given displacement range. In general, an engine designed for a racing or high performance snowmobile will have a relatively high exhaust port compared to an engine of the same displacement range designed for touring.

Although the V.E.S. does not in itself increase horsepower, it does allow an engine to be designed for maximum horsepower without the inherent disadvantages of a high exhaust port.

The main components of the V.E.S. are the exhaust valve, valve housing, bellows, piston, return spring, and cover.

A guillotine style exhaust valve is connected to a moveable piston. This piston is attached to a flexible bellows, forming two chambers. The lower chamber is connected to the cylinder by a drilled passageway located just above the exhaust port. The upper chamber is vented to atmospheric pressure. A valve return spring is located in the upper chamber between the piston and cover.

At idle and low speeds, the exhaust valve is held in the "low port" position by the return spring. When throttle is applied (and RPM begins to increase) rising cylinder pressure is applied to the under side of the bellows via the actuation port. This forces the exhaust valve upward against spring pressure. The valve continues to move upward toward the "High Port" position as cylinder pressure, horsepower, and RPM increase.



V.E.S. Maintenance

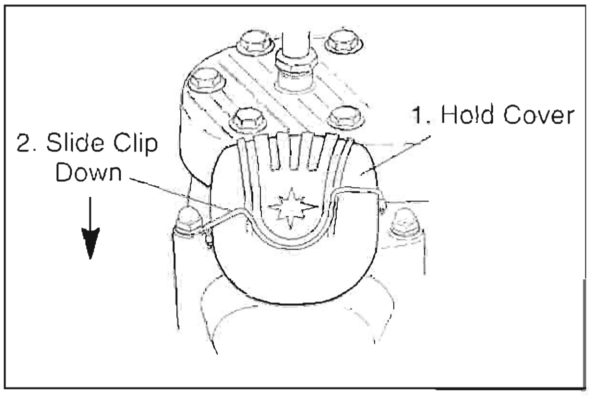
Due to the simplicity of V.E.S. design, maintenance is limited to a periodic inspection and cleaning of system components. The V.E.S. should be disassembled, inspected, and cleaned (remove carbon deposits) every 1000 to 2000 miles, depending on operating conditions. NOTE: To ensure maximum performance and minimize required maintenance, Polaris recommends the use of Premium Gold Synthetic 2 Cycle lubricant (PN 2871721) only. The use of other lubricants may cause improper function of the valve mechanism, and increase the frequency of required cleaning due to excessive buildup of carbon deposits. NOTE: Polaris Premium 2-Cycle TC-W3 Engine Lubricant (blue) is recommended for use during the break-in period.

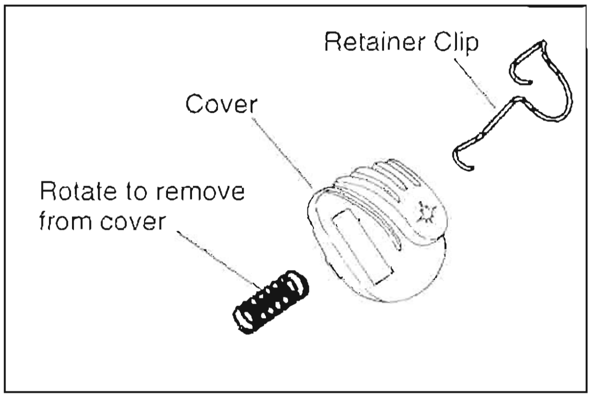
V.E.S. Removal

1. Pull back cover retainer clip while holding the cover in place.
2. Remove cover and return spring.
3. If the spring stays in the cover, hold the cover with spring facing toward you. Rotate spring in a counterclockwise direction while pulling outward on the spring. Do not distort the spring upon removal.

CAUTION: Do not attempt to remove the plastic valve piston at this time. The bellows must first be removed from the piston or damage may occur to the bellows or piston.

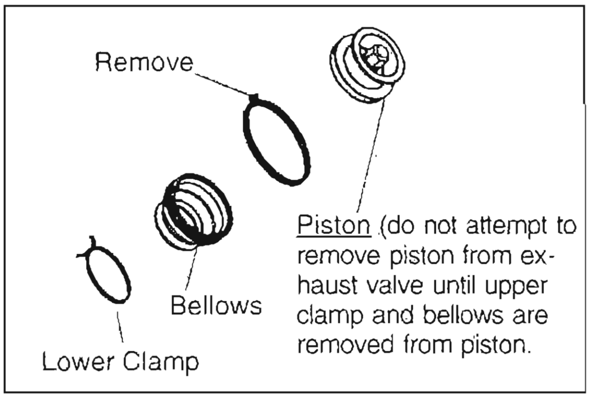
4. Remove two (5mm) hex screws from valve housing.
5. Lift entire valve assembly from cylinder along with gasket.



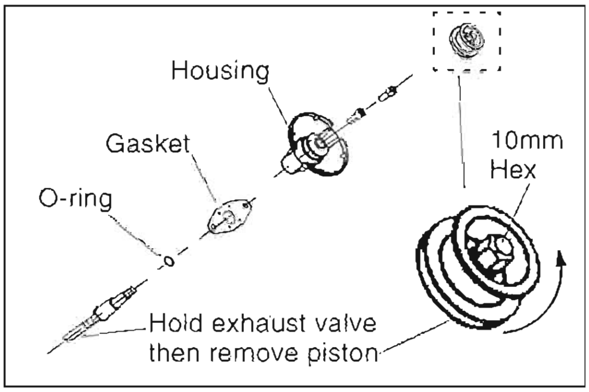


Disassembly, Cleaning, Inspection

1. Carefully remove the fastener strap in the area shown. Use care to avoid cutting the bellows.
2. Fold back upper edge of bellows to expose lower edge of piston.

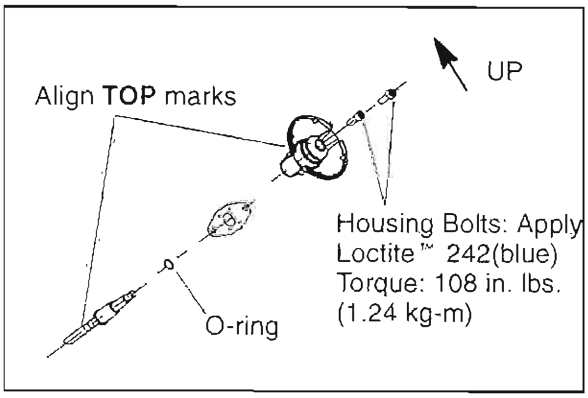


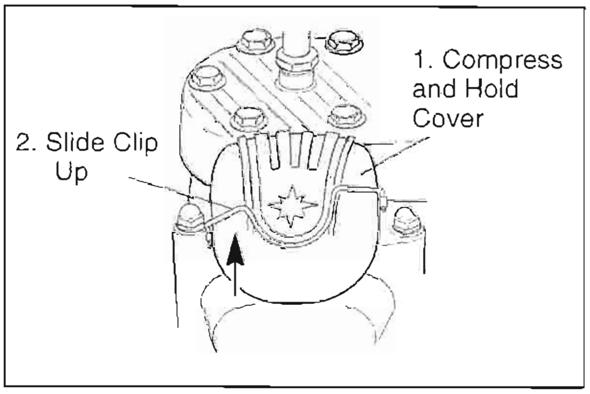
3. Hold exhaust valve securely and remove piston by turning the 10mm hex counterclockwise.
4. Slide exhaust valve out of housing.
5. Remove O-ring from exhaust valve shaft.
6. Compress lower spring clamp and remove bellows and clamp.
7. Clean O-ring and bellows in warm water and mild detergent. Inspect bellows for holes, distortion or damage. Replace if necessary. Inspect O-ring for damage.
8. Clean all other parts with solvent. Be sure all parts are thoroughly clean.
9. Inspect the actuator port in cylinder and valve housing. Be sure it is clear and not obstructed by debris or carbon.
10. Carbon deposits can be removed from valve with a Scotch Brite™ pad or similar soft abrasive brush.
11. Lubricate exhaust valve with Polaris Premium Gold 2-cycle engine lubricant. Install valve in cylinder and move it through the entire travel range to check for free movement without binding. If the valve sticks anywhere in the travel range, check the valve and valve bore in the cylinder for carbon deposits and clean if necessary.



V.E.S. Assembly

1. Install lower clamp over small end of bellows.
2. Assemble dry. Install bellows on housing. Be sure bellows is completely seated in groove, and install clamp.
3. Place a new o-ring and gasket on exhaust valve.
4. Insert exhaust valve in housing with TOP marks aligned. Both the valve housing and valve are marked with "TOP".
5. Apply Loctite™ 242 to threads of exhaust valve and install the piston. Hold exhaust valve and torque piston to 25 in. lbs. (.28 kg-m).
6. Install valve assembly in cylinder with TOP marks on valve and housing facing up. Apply Loctite 242 (blue) to housing bolt threads. Install and torque bolts to 108 in. lbs. (1.24. kg-m).
7. Fit upper sealing edge of bellows into groove on piston.
8. Secure the bellows by installing the fastener strap. **NOTE:** Move the valve up and down in the full travel range and check for smooth operation. If the valve binds in any spot, check the bellows to be sure it is not twisted on the piston.
9. Install spring and cover. Be sure spring is properly positioned on the piston and in the cover.

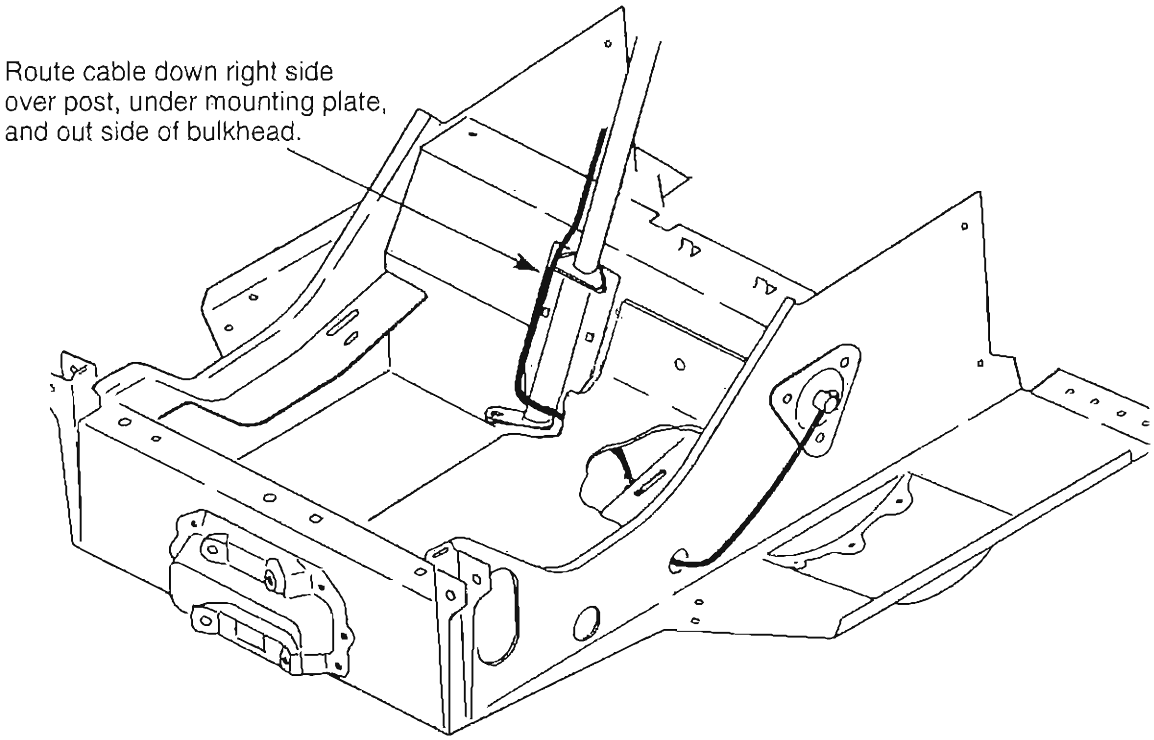




V.E.S. Troubleshooting

Symptom	Possible Cause	Remedy
Engine will not reach designed operating RPM	Valve not opening or not opening completely: 1. Exhaust valve sticking 2. Cylinder pressure feed port restricted 3. Bellows damaged or not sealing correctly 4. Incorrect spring 5. Problem in clutch setup, drive line, engine, etc.	1. Remove carbon deposits, burrs etc. 2. Clean port 3. Inspect bellows, fastener straps, and gasket and repair as required 4. Inspect 5. Inspect
Poor acceleration; hesitation; High RPM performance is normal or near normal	Valve opening too early: 1. Valve sticking open or partially open 2. Broken, damaged, or incorrect, spring	1. Clean, Inspect 2. Inspect, Replace

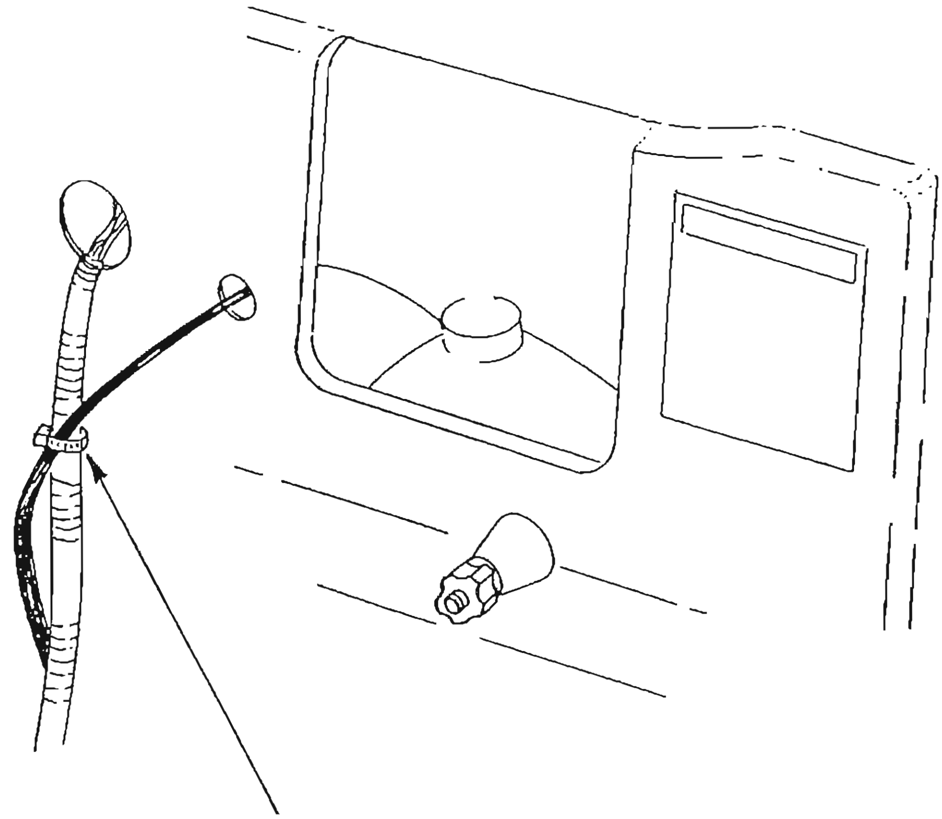
1996 to Current Indy Lite Models



Routing Diagram - Speedometer Cable

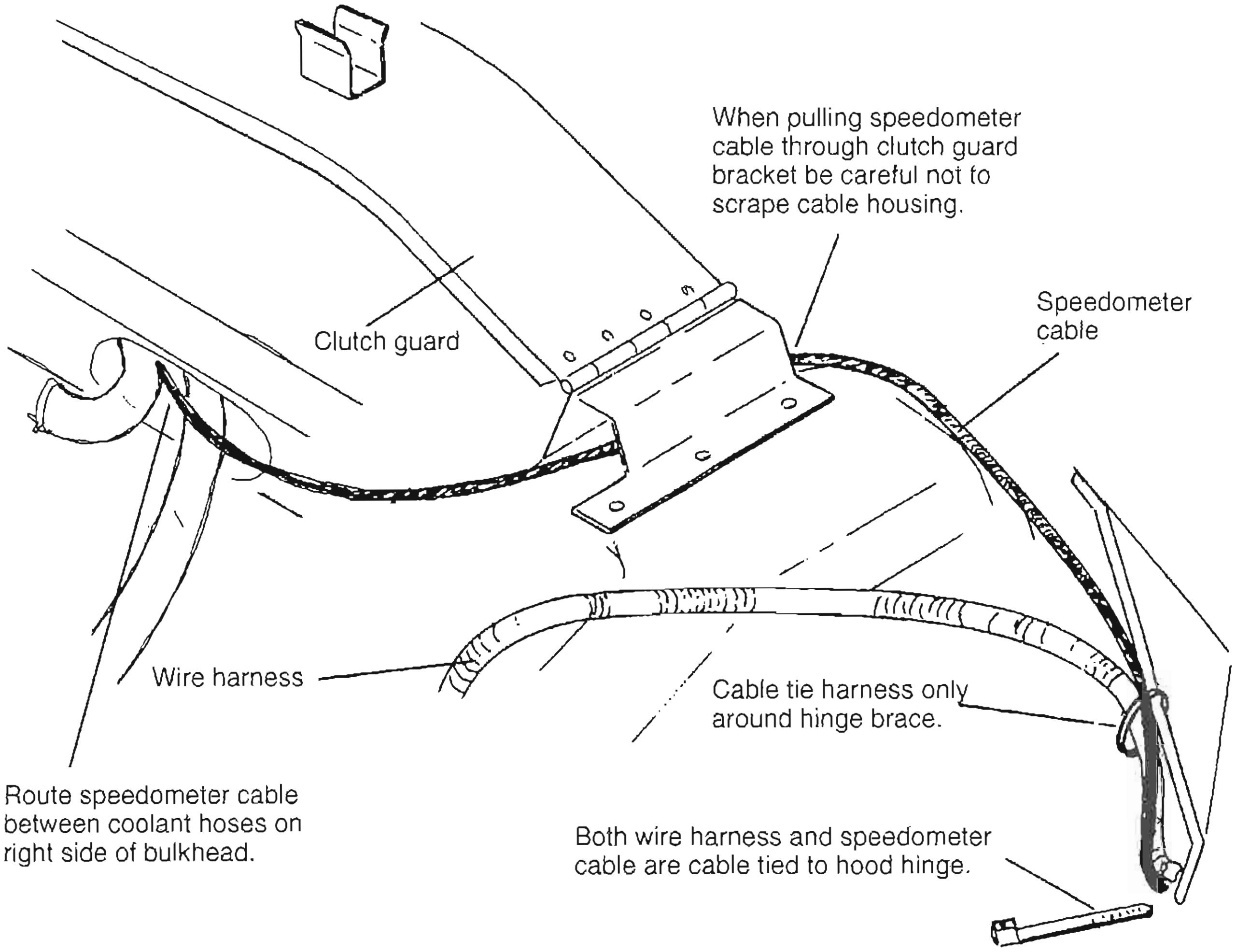
1996 Indy 440 LC/Classic/Classic Touring/Trail/Trail Touring/500/500 SKS/500 RMK/XLT Touring Models

1997 Indy Trail/Trail Touring/500/500 SKS/ 500 RMK/440 LC/500 EFI/XLT LTD/XLT Touring/ Classic/Classic Touring Models

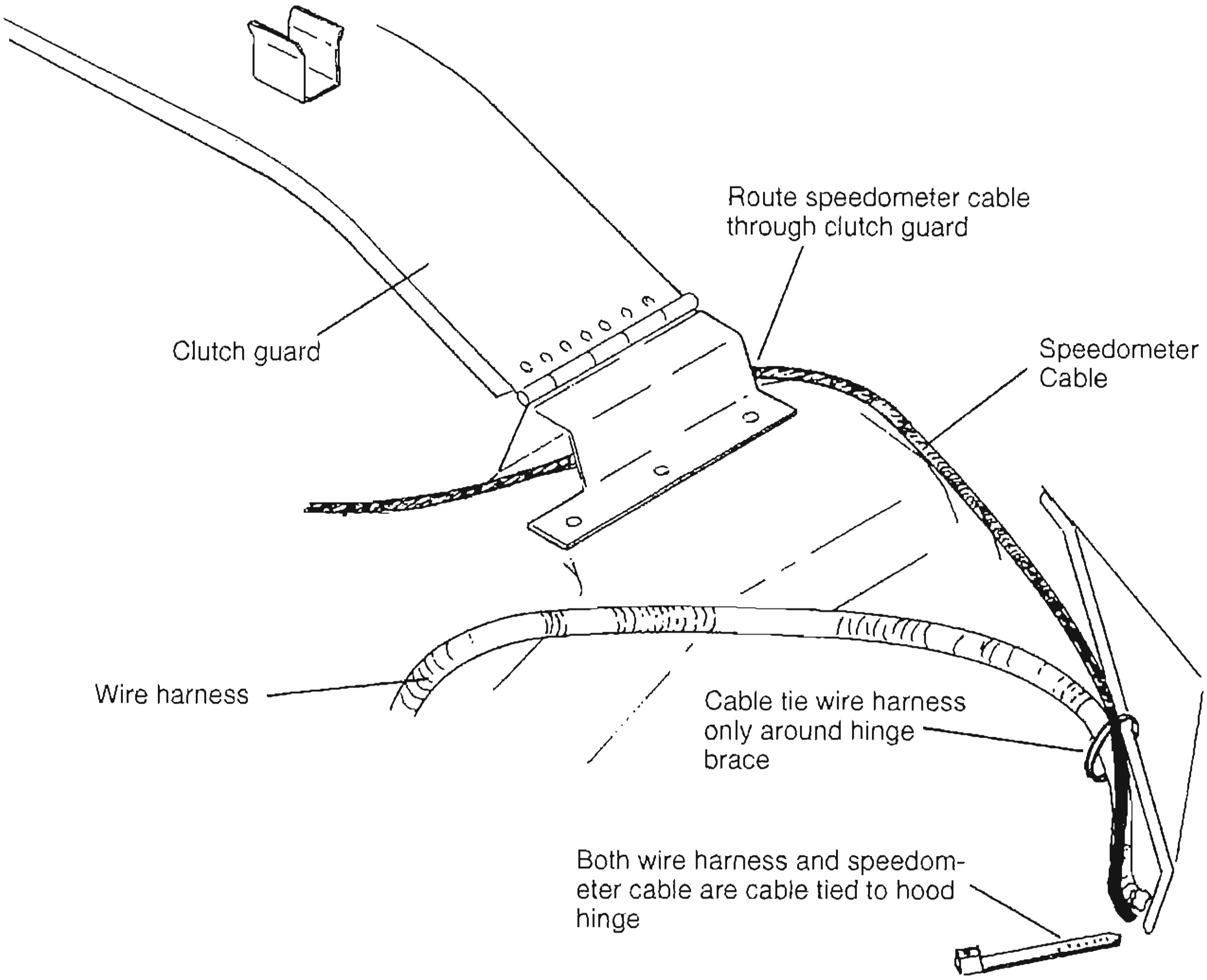


Speedometer cable should be tie strapped to wire harness at approximately this location inside hood.

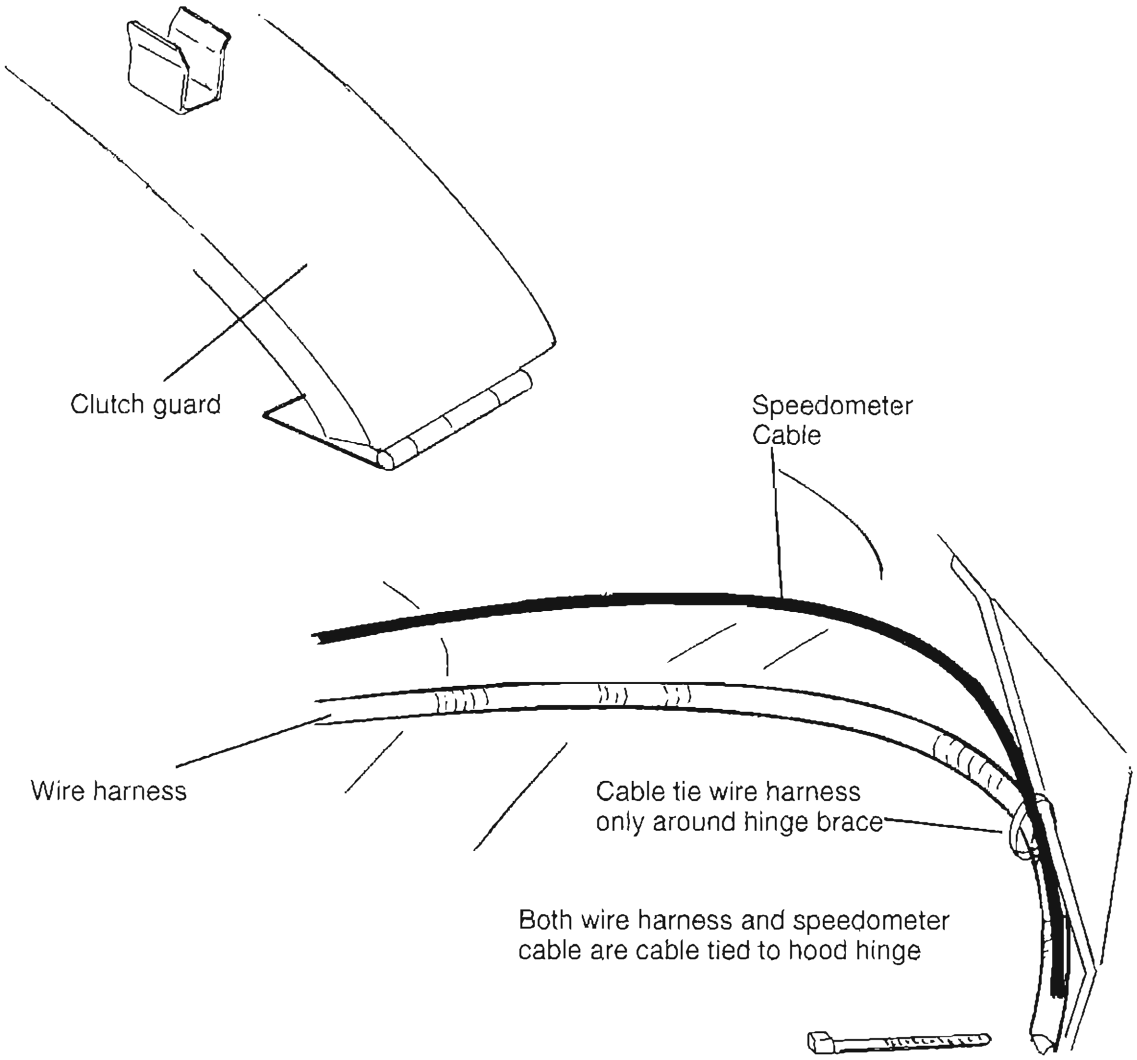
1996 Indy RXL/440 XCR/XLT SKS/XLT RMK Models
1997 Indy XLT/XLT SKS/XLT RMK/Ultra SP Models



1997 Indy 440 XC Models



1997 Indy XLT SP Models

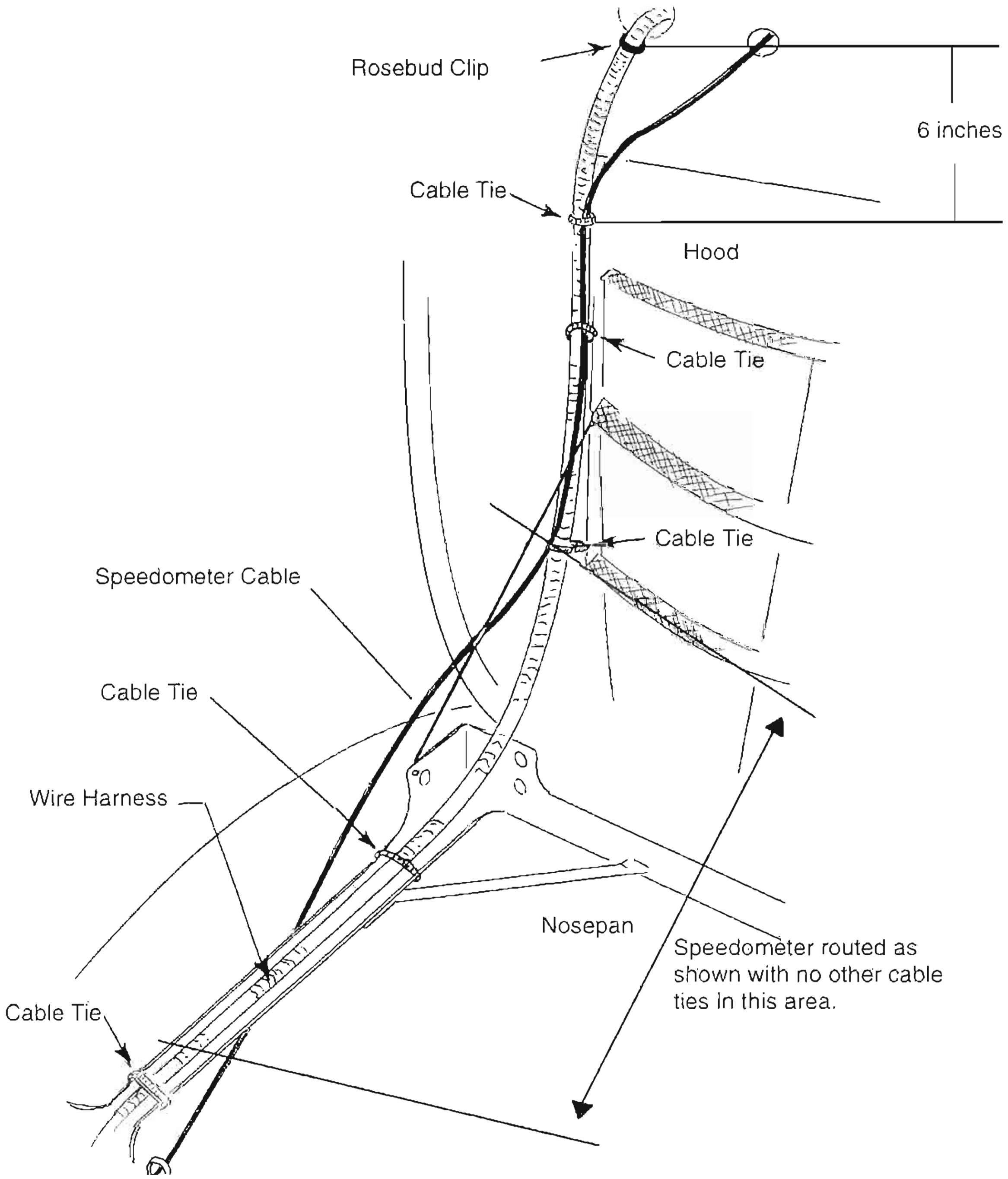


Routing Diagram - Wire Harness/Speedometer Cable

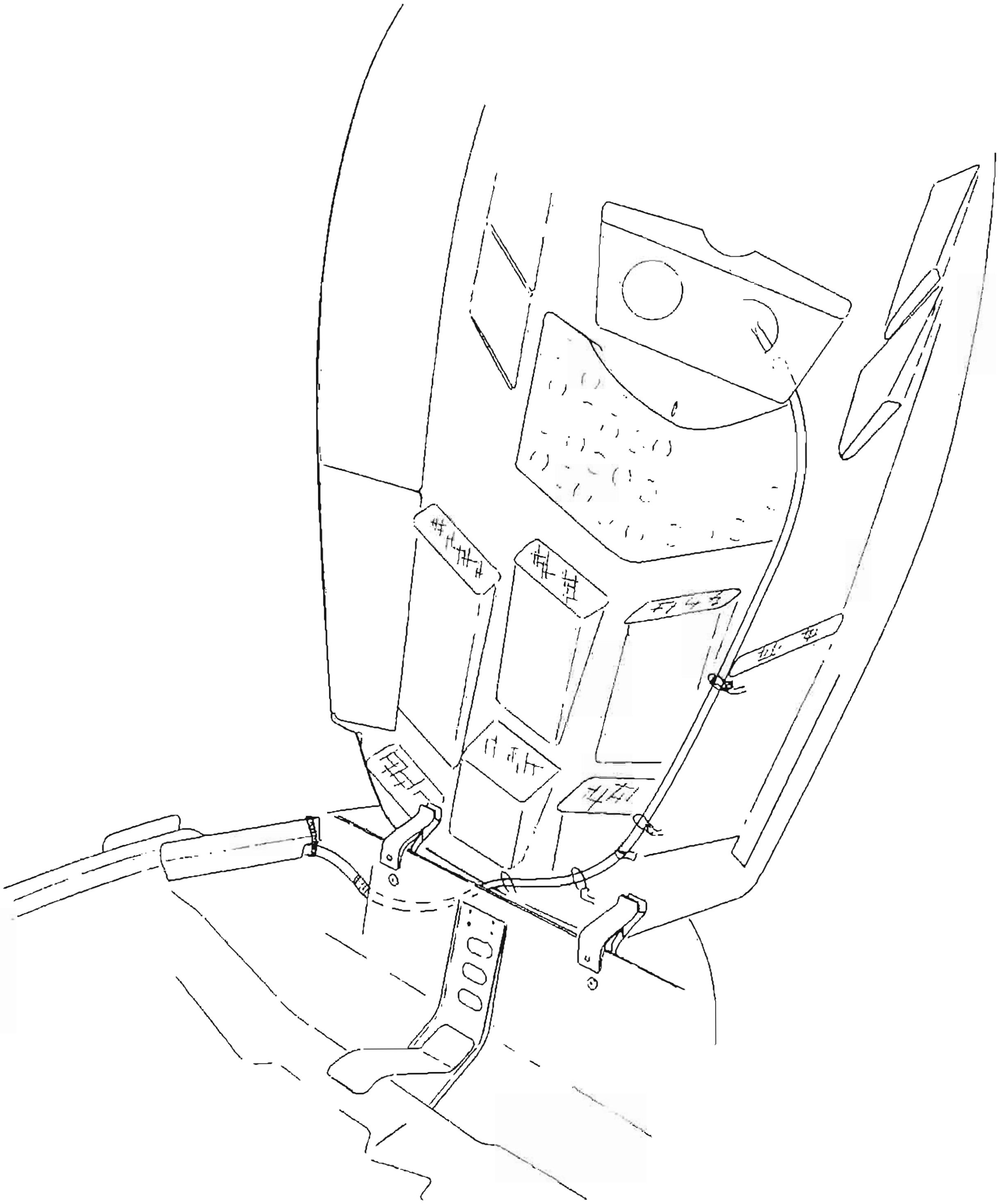
1996 Indy 440 LC/Classic/Classic Touring/XLT Touring/500/500 SKS/500 RMK/Trail/Trail Touring Models

1997 Indy Trail/Trail Touring/500/500 SKS/500 RMK/440 LC/500 EFI/XLT Touring/classic/ Classic Touring/XLT LTD Models

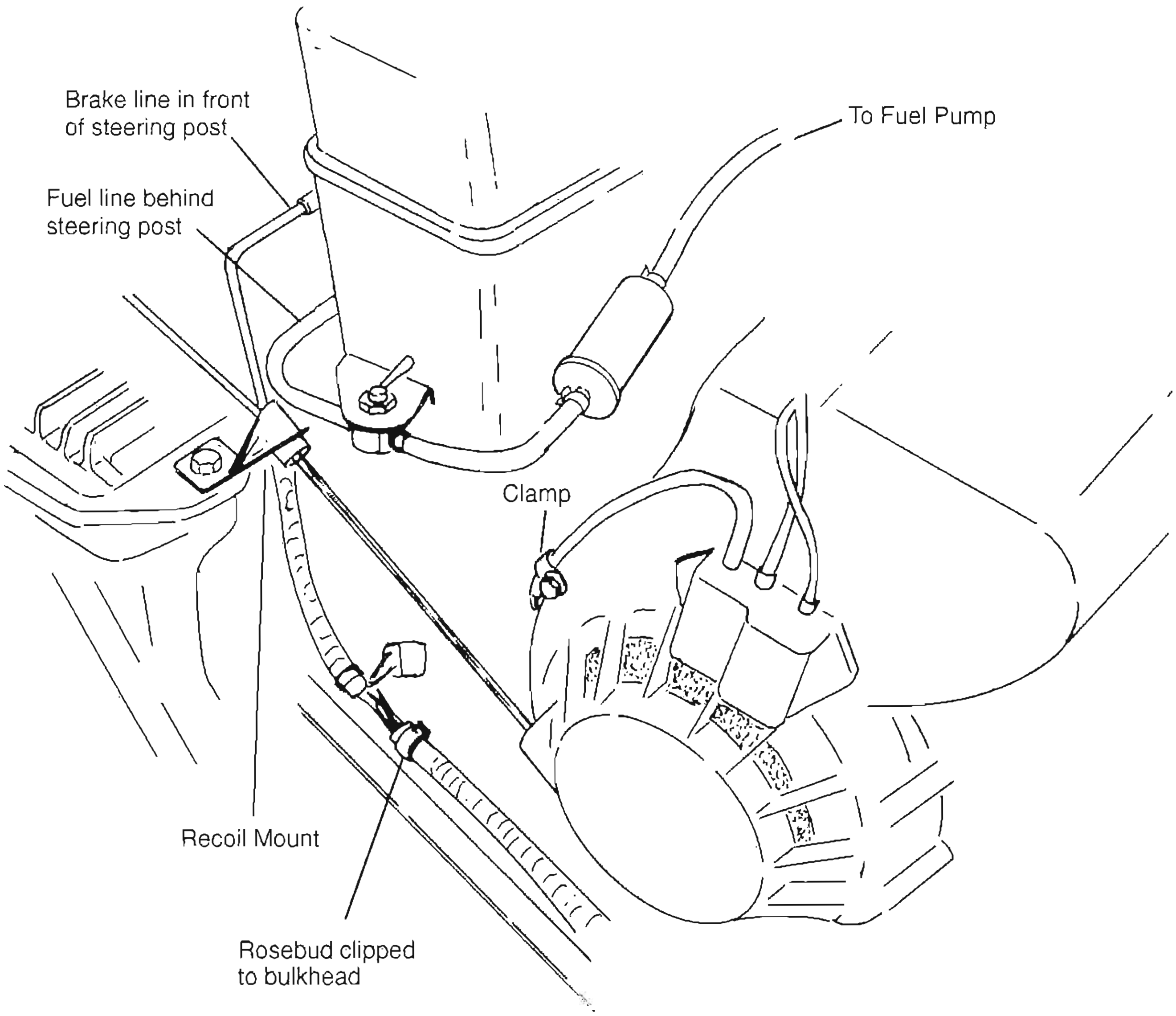
1998 Trail / 440 Indy / 500 Indy / 500 Classic / XLT Touring



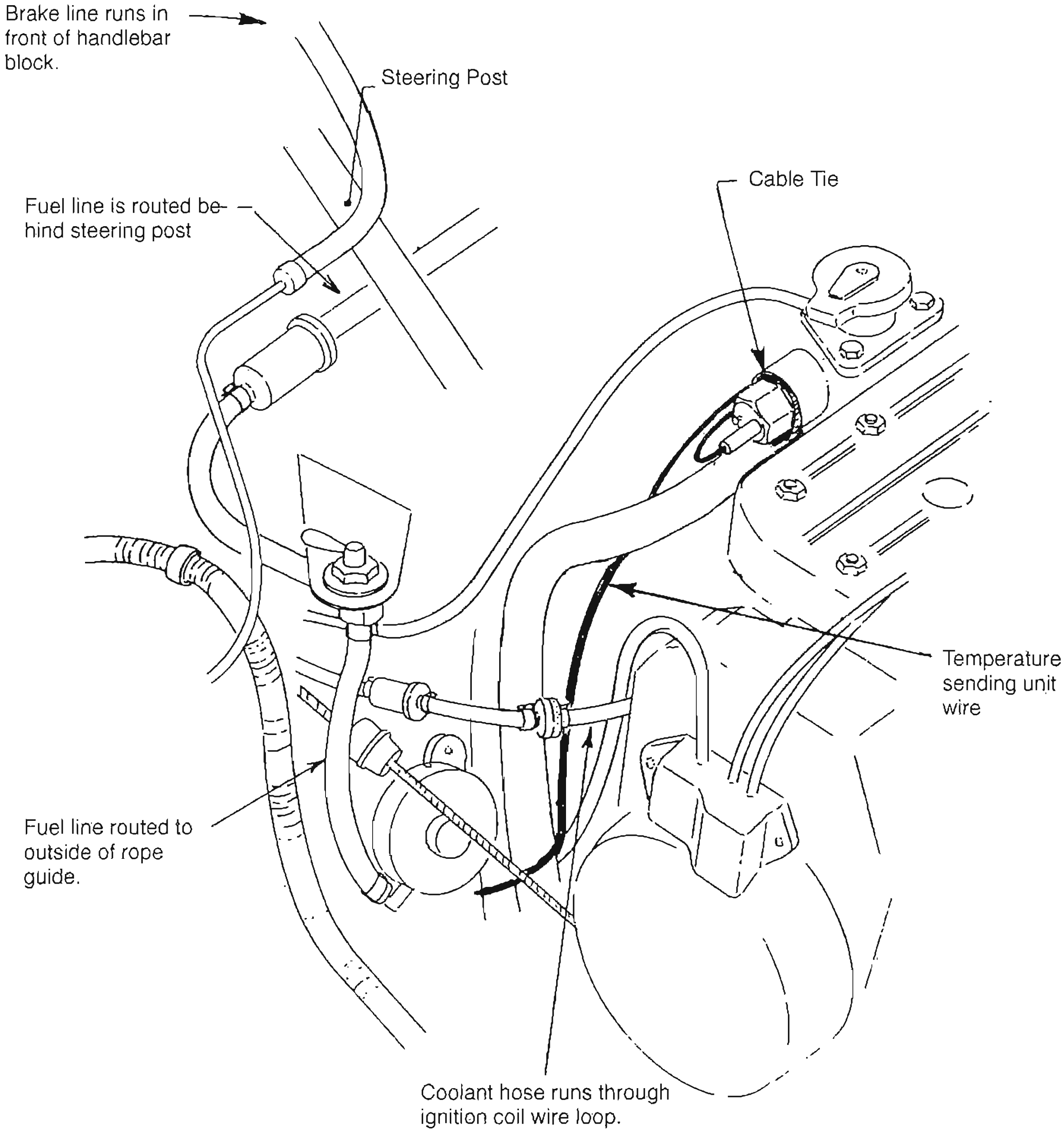
1997 Indy Ultra Touring Models



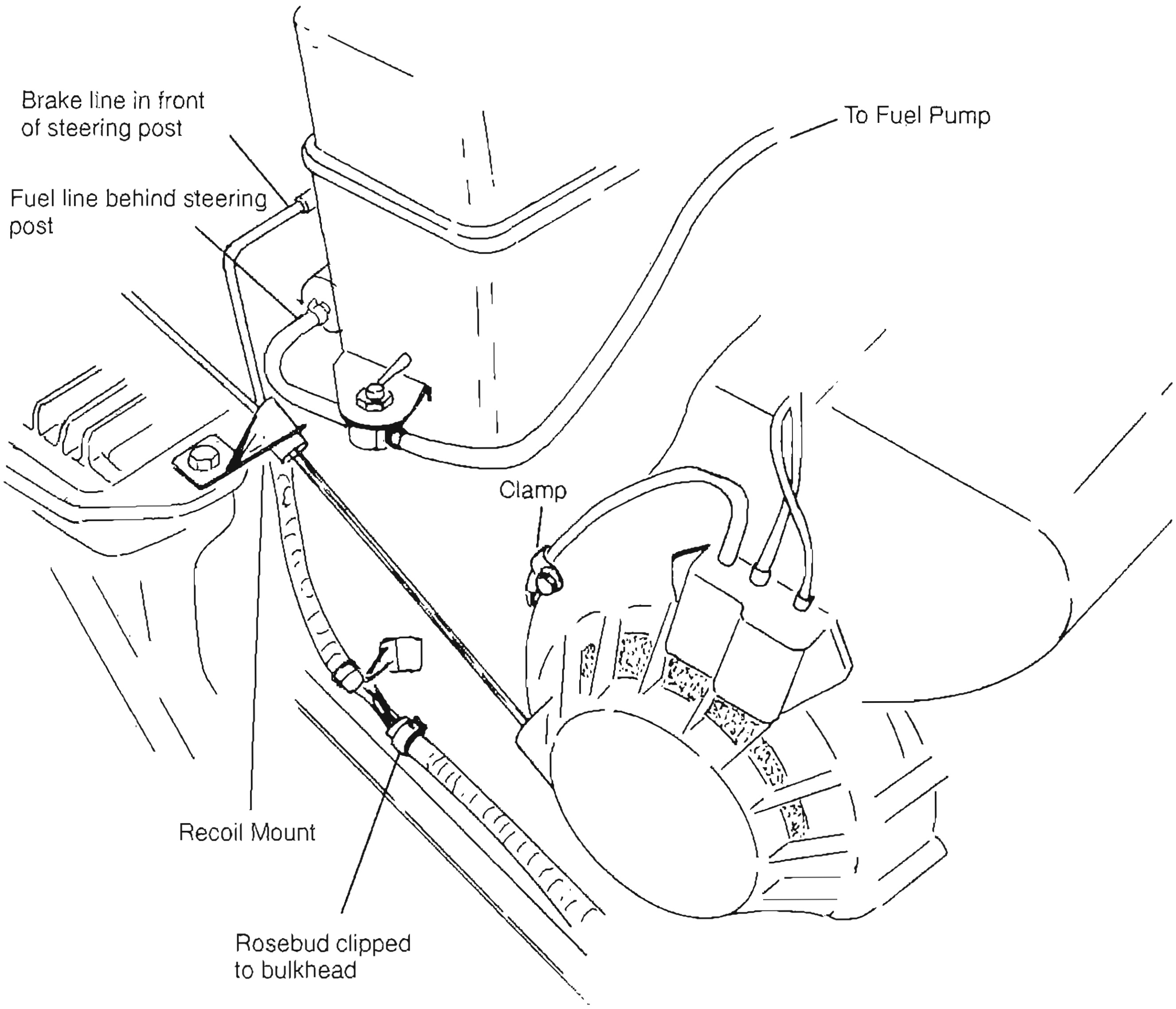
1996 Indy WideTrak LX/Sport/Sport Touring/TranSport/Super Sport/Trail/Trail Touring Models



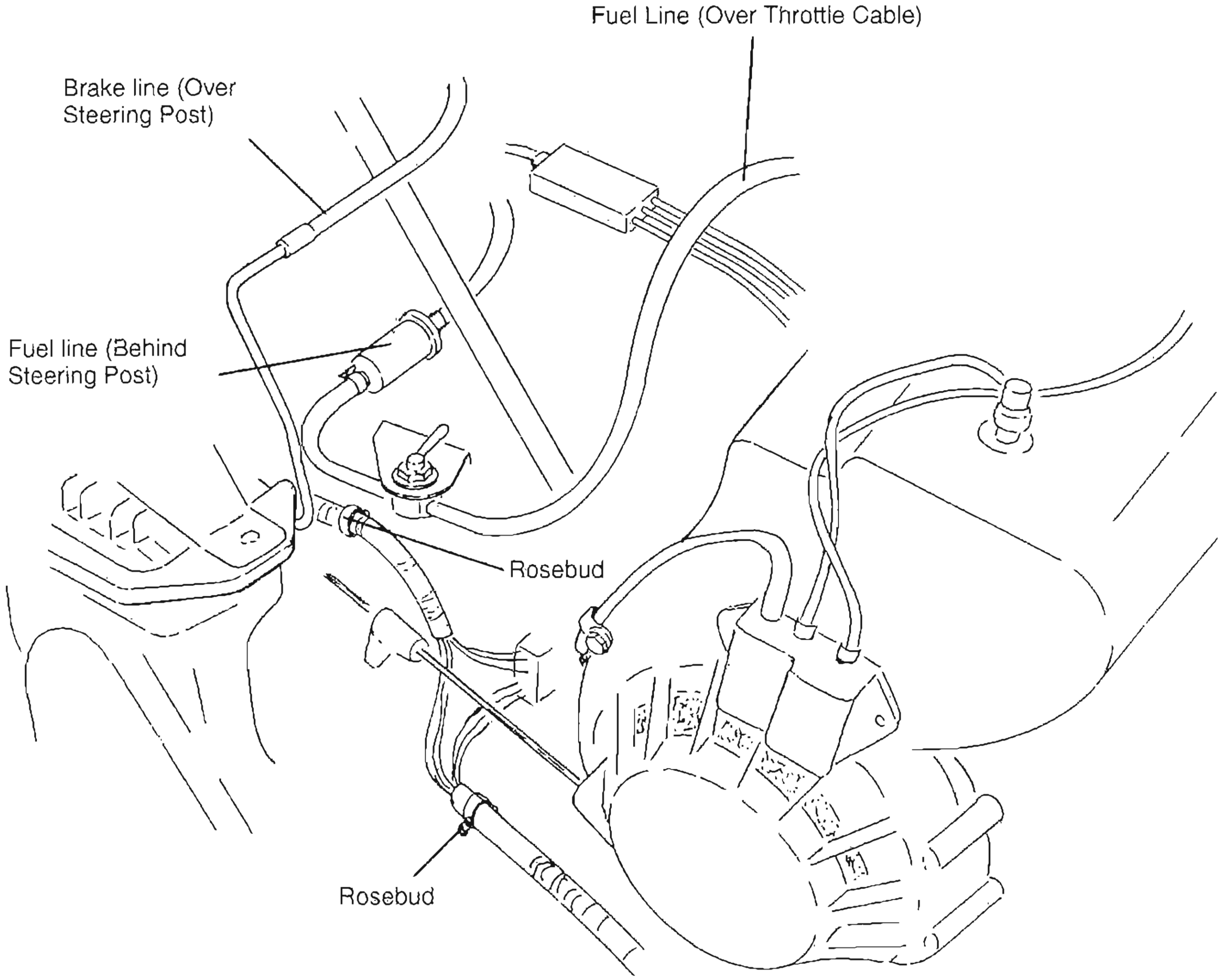
1996 Indy 440 LC/Classic/Classic Touring/500/500 SKS/500 RMK Models



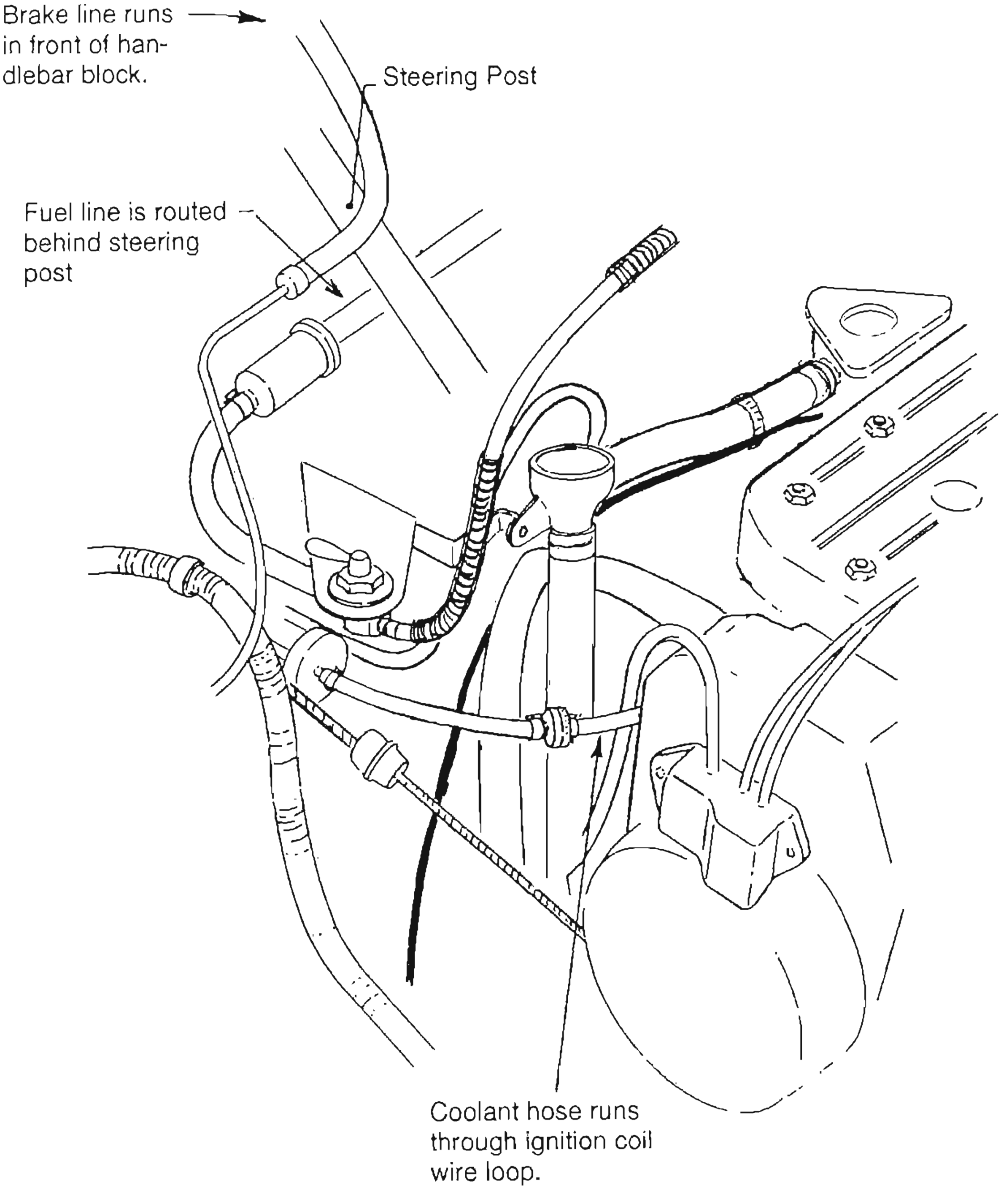
1997 Indy TranSport/Super Sport/Sport/Sport Touring Models



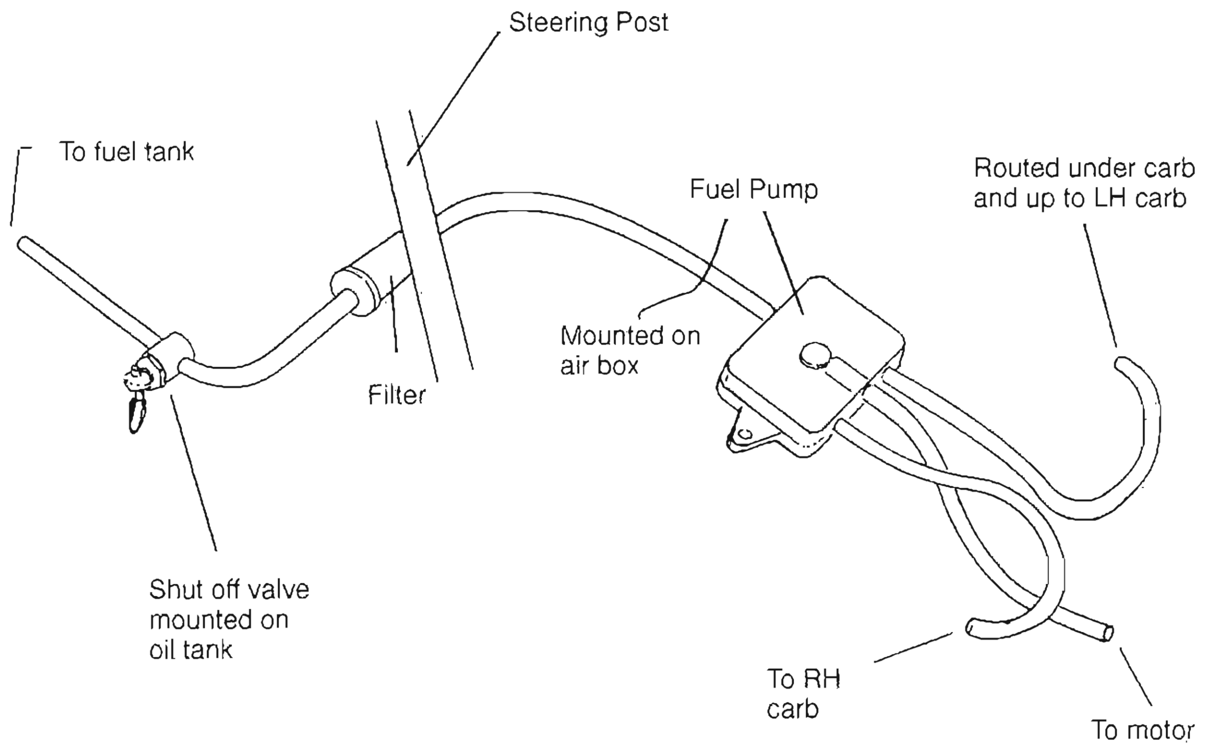
1997 Indy Trail/Trail Touring Models



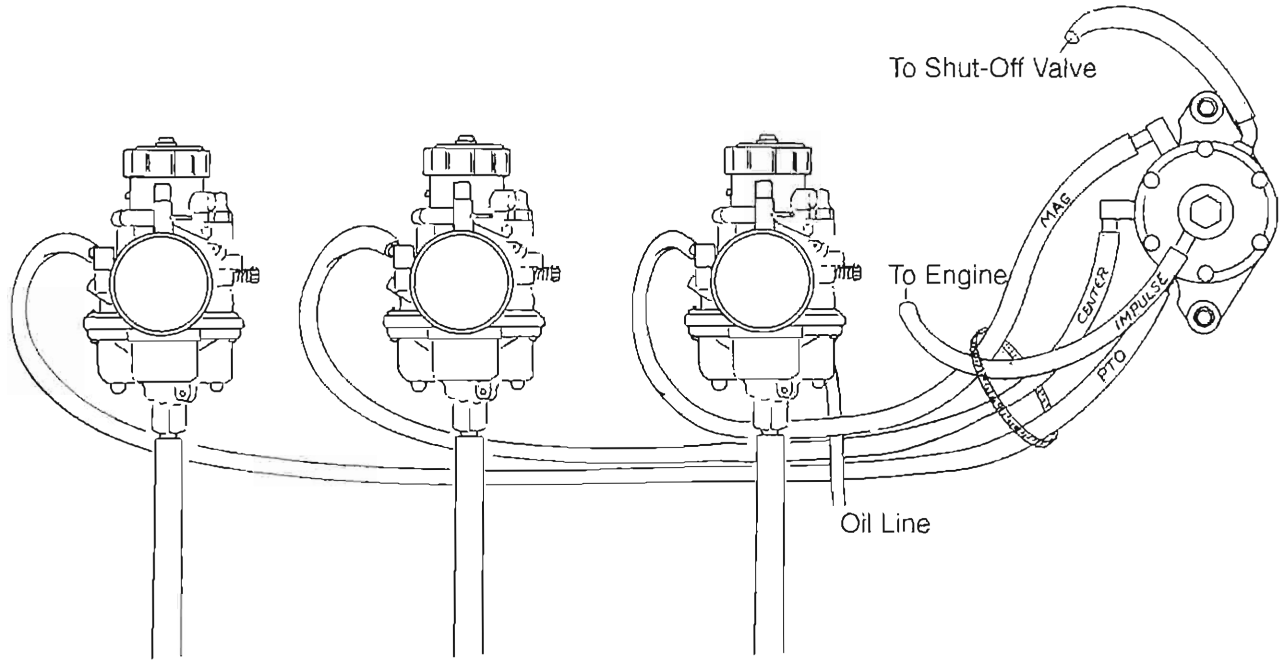
1997 Indy Trail/Trail Touring/500/500 SKS/500 RMK/440 LC/Classic Touring Models



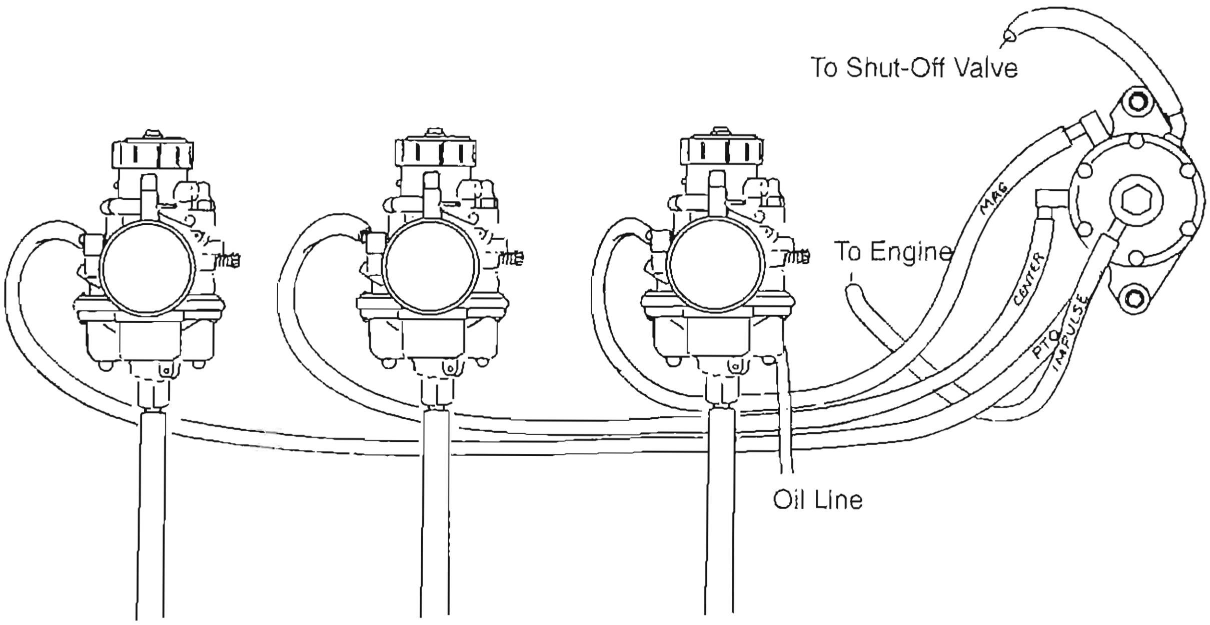
1996 to Current Indy Lite Models



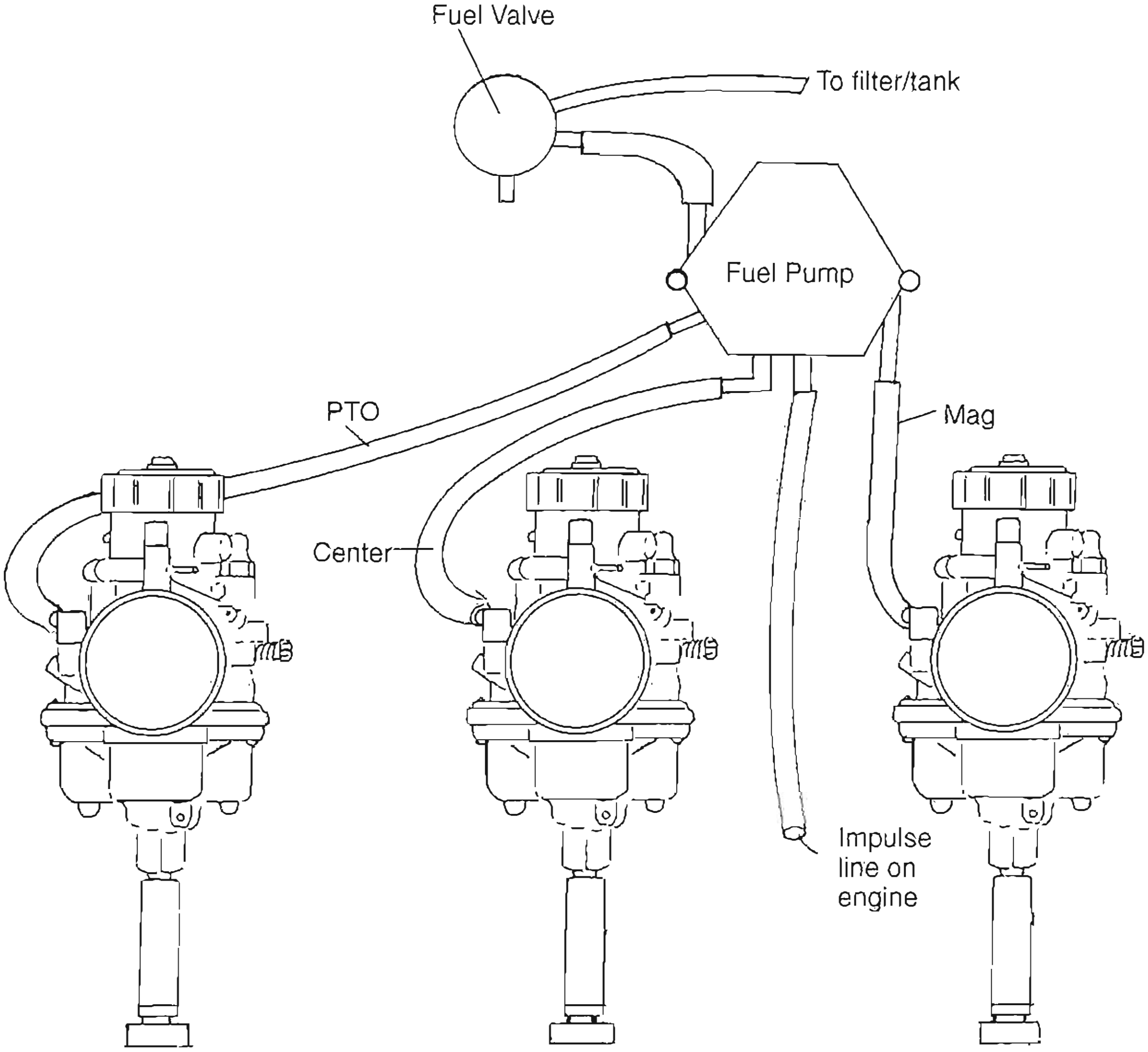
1996 Indy 600 XCR Models
1997 Indy 600 XC Models



1996 Indy XLT SKS/XLT RMK/XLT Touring Models
1997 Indy XLT SP/XLT/XLT SKS/XLT RMK/XLT Touring/XLT LTD Models

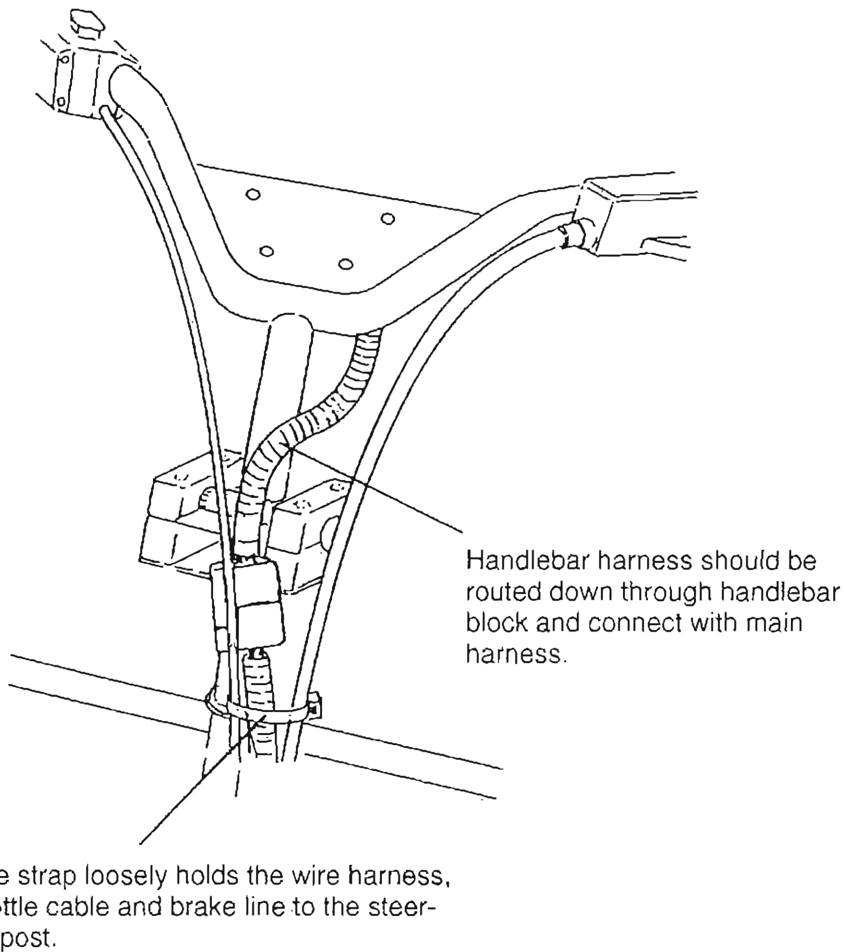


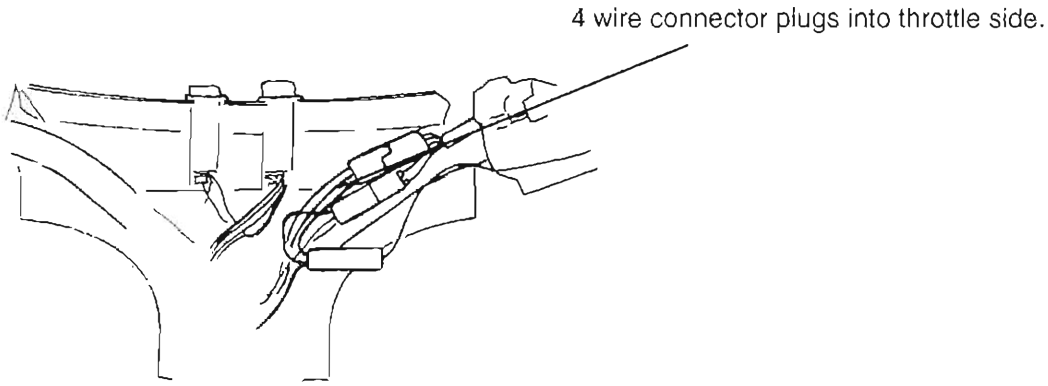
1997 Indy Ultra/Ultra SP Models



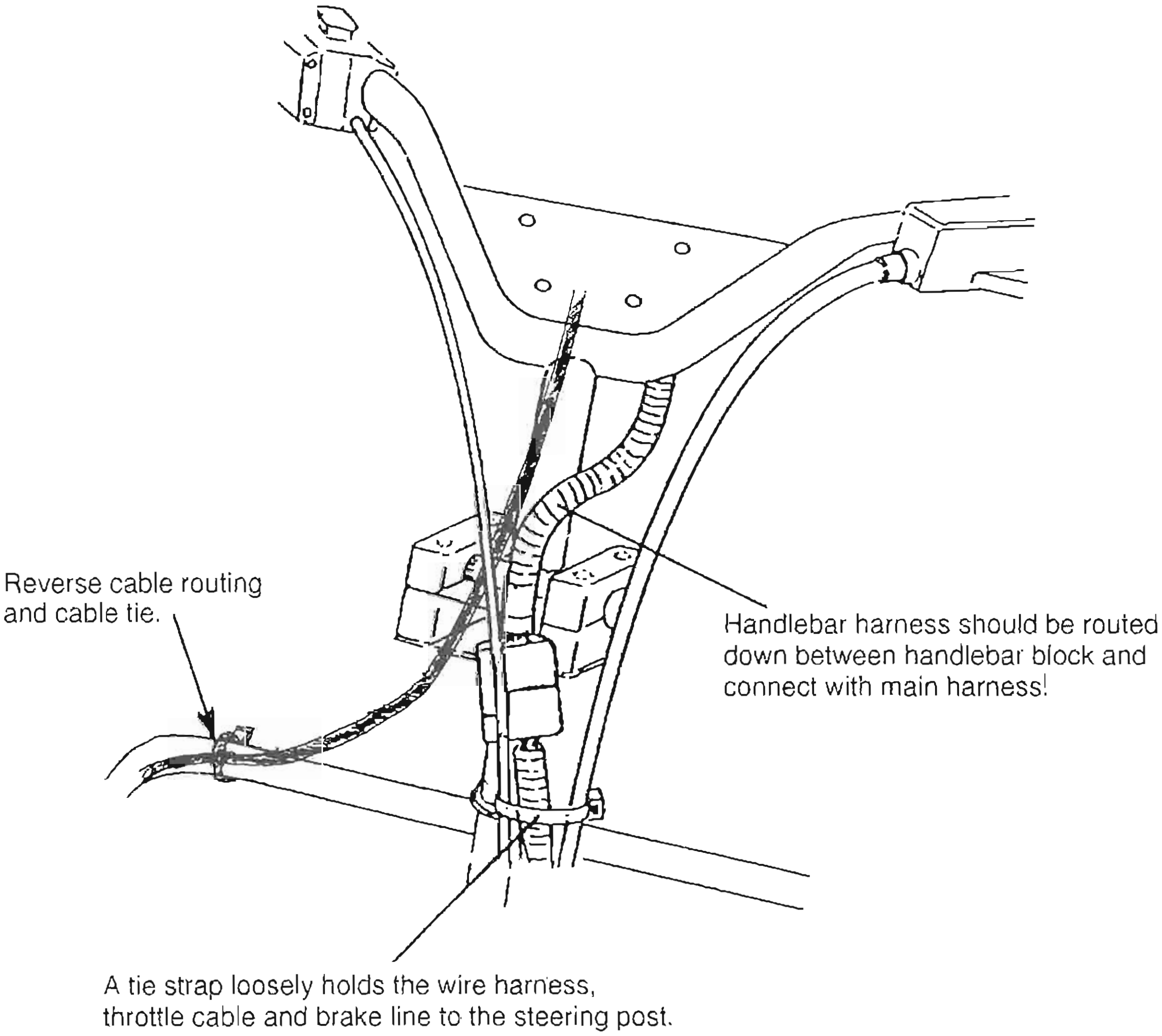
1996 Indy 440 LC/Classic/Classic Touring/XLT Touring/500/500 SKS/500 RMK/Tail/Trail Touring Models

1997 Indy XLT LTD/Classic Touring/XLT Touring/Ultra Touring/440 LC Models

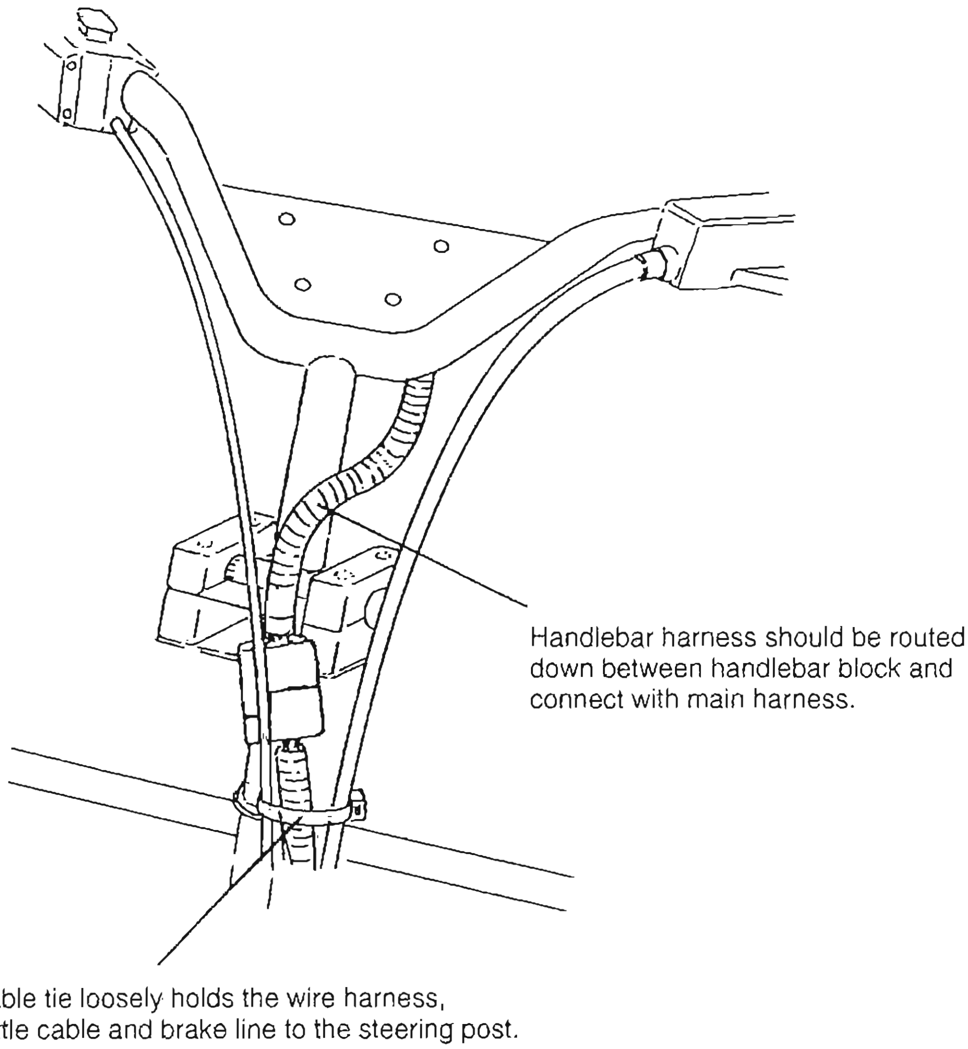




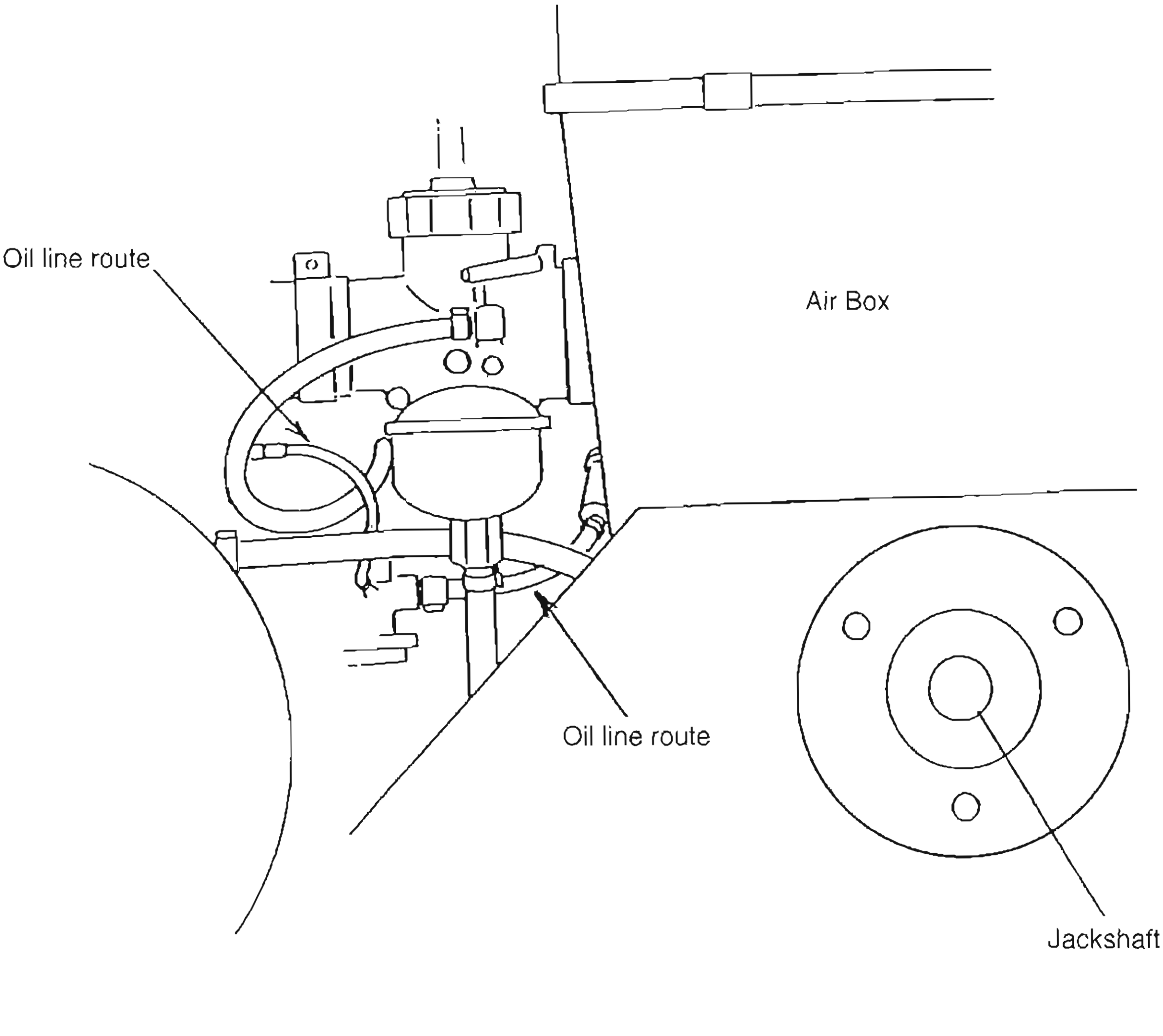
1997 Indy Trail/Trail Touring/500/500 SKS/500 RMK Models



1997 Indy 500 EFI Models

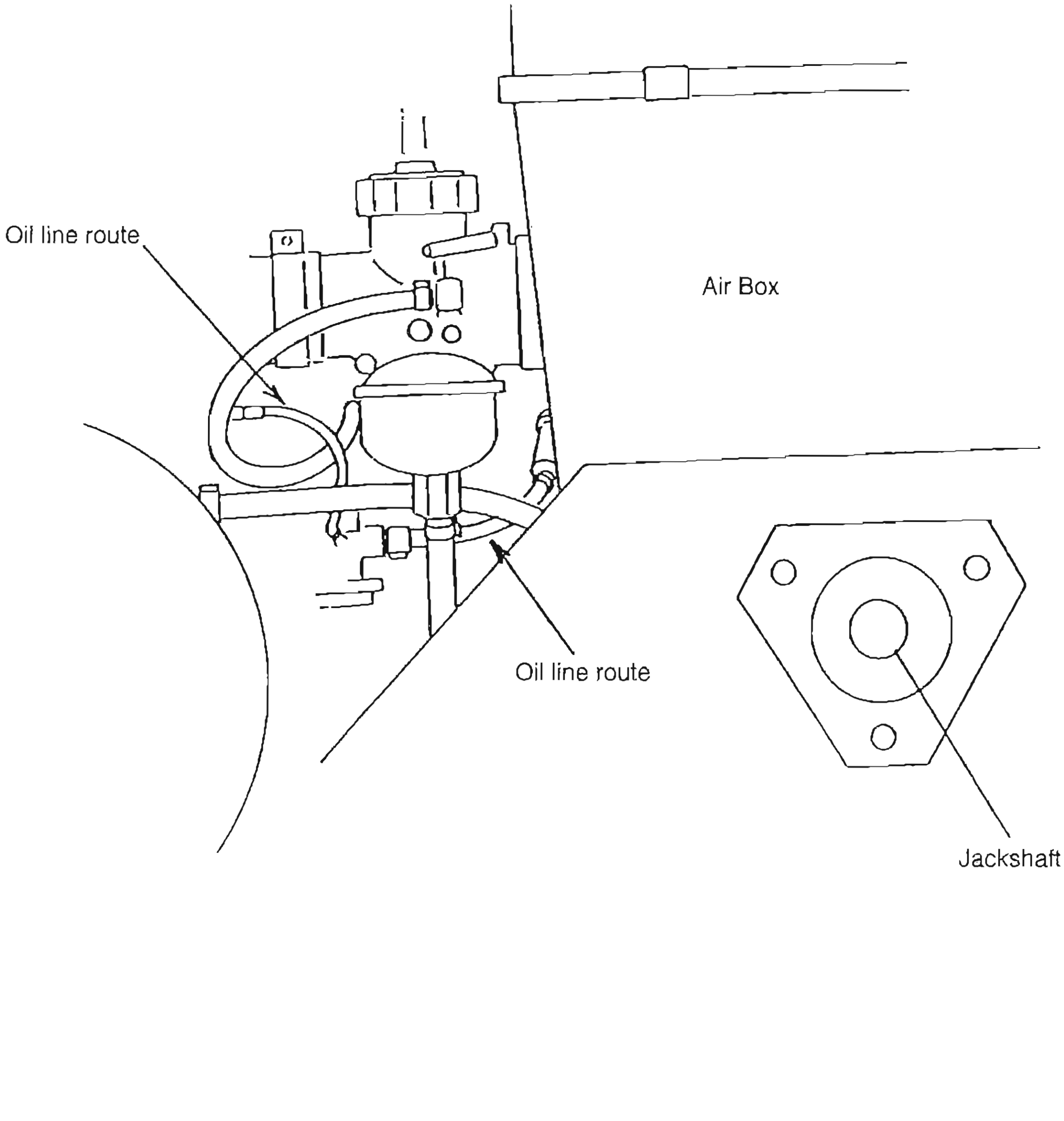


1996 440 XCR/XLT SKS/XLT RMK Models
1997 440 XC/XLT/XLT SKS/XLT RMK/XLT SP Models

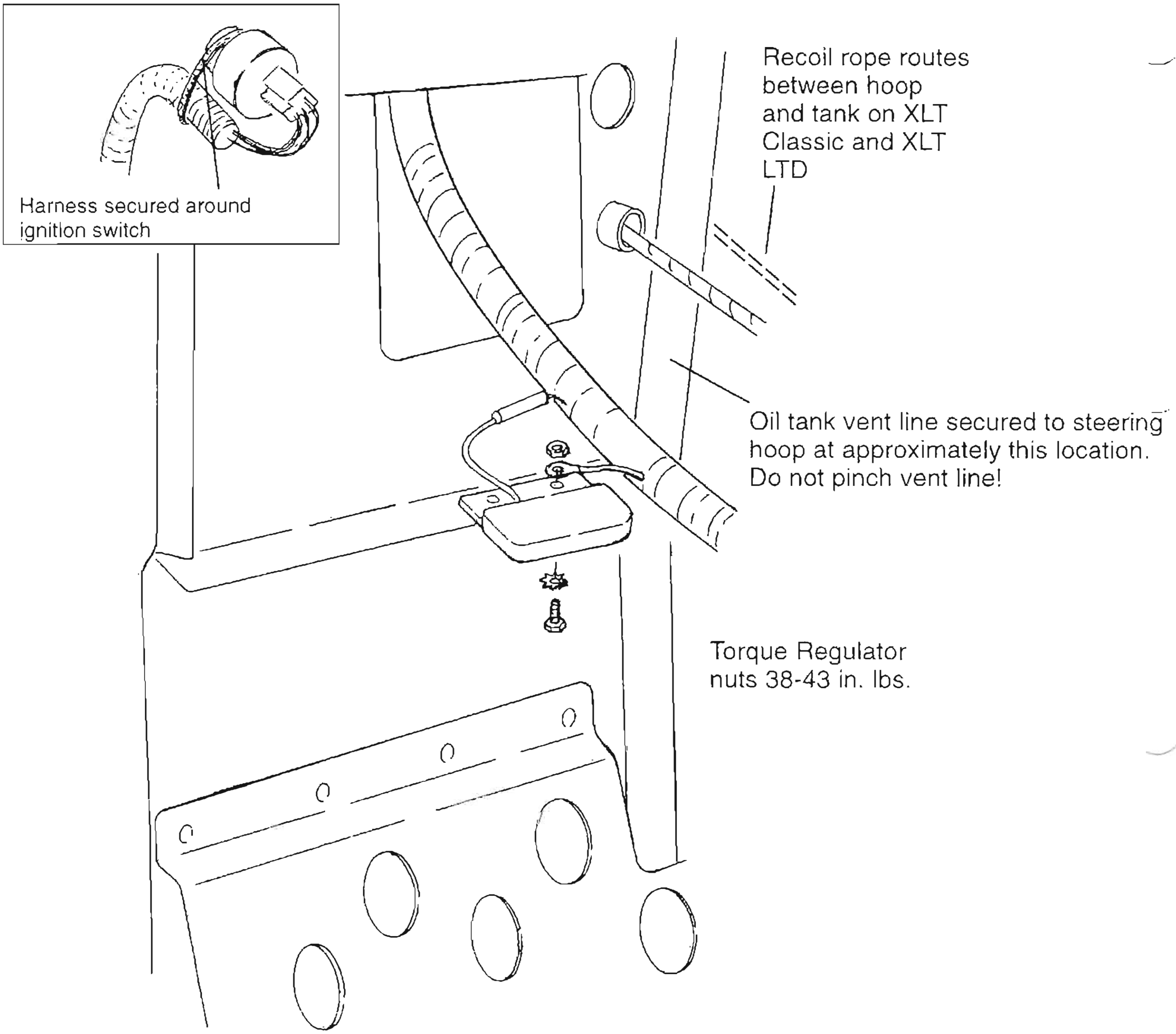


1996 Indy WideTrak LX/WideTrak GT/Classic/Classic Touring/XLT Touring/500/500 SKS/500 RMK/Trail/Trail Touring/Sport/Sport Touring/Super Sport/TranSport/Lite/Lite GT/Lite Deluxe/600 XCR/440 LC Models

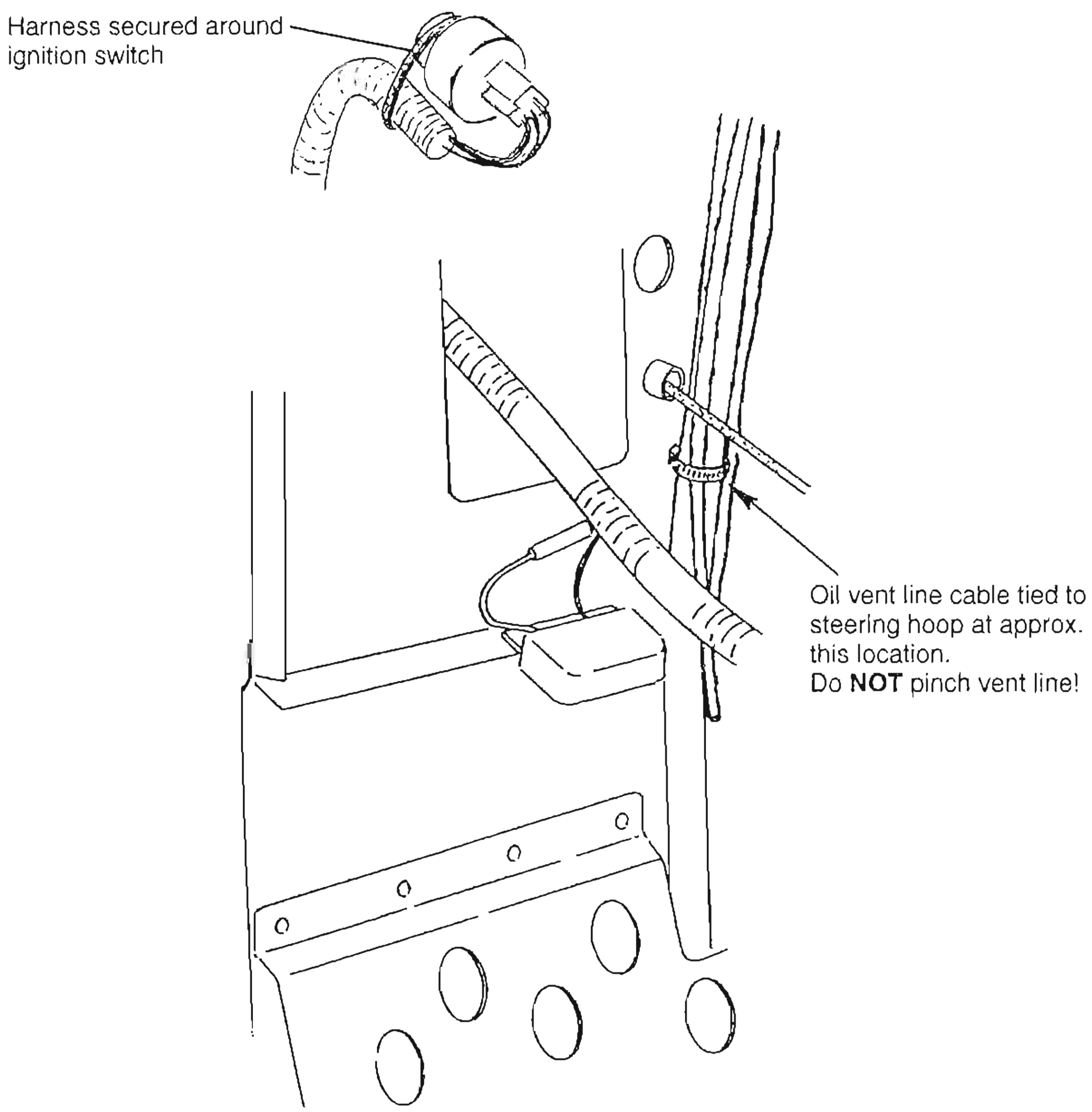
1997 Lite/Lite Deluxe/Lite GT/Sport/Sport Touring/TranSport/Super Sport/440 LC/Trail/Trail TouringClassic Touring/500/500 SKS/500 RMK/600 XC/XLT Touring/XLT LTD Models



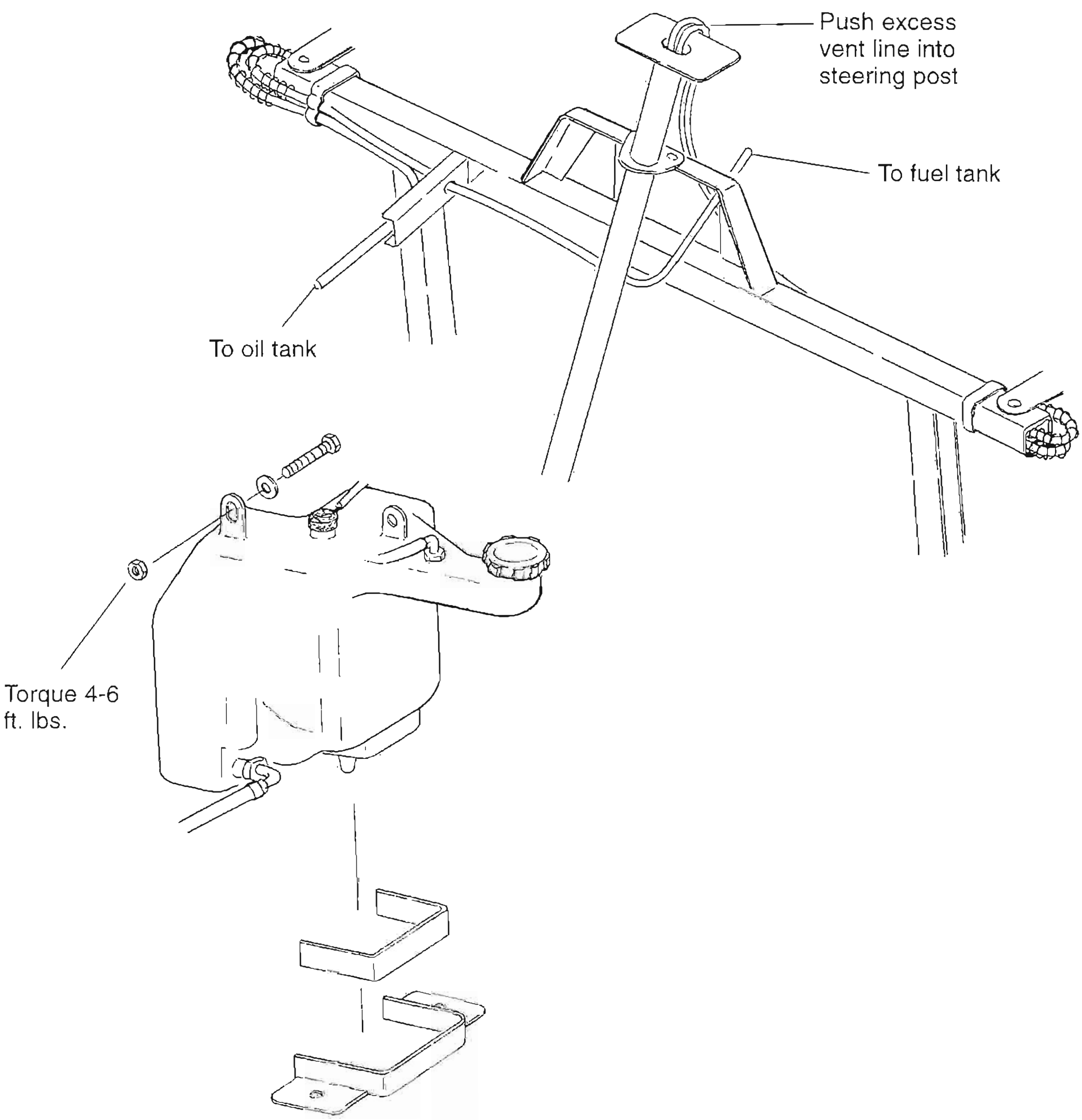
1996 Indy 440 LC/Classic Touring/XLT Touring/500/500 SKS/500 RMK/Trail/ Trail Touring Models
1997 Indy 440 LC/Trail/Trail Touring/Classic/500/500 SKS/500 RMK/Classic Touring/ XLT Touring/XLT LTD/500 EFI Models
1998 Trail / 440 Indy / 500 Indy / 500 Classic / 500 RMK / XLT LTD / XLT Touring Trail Touring / XLT Classic



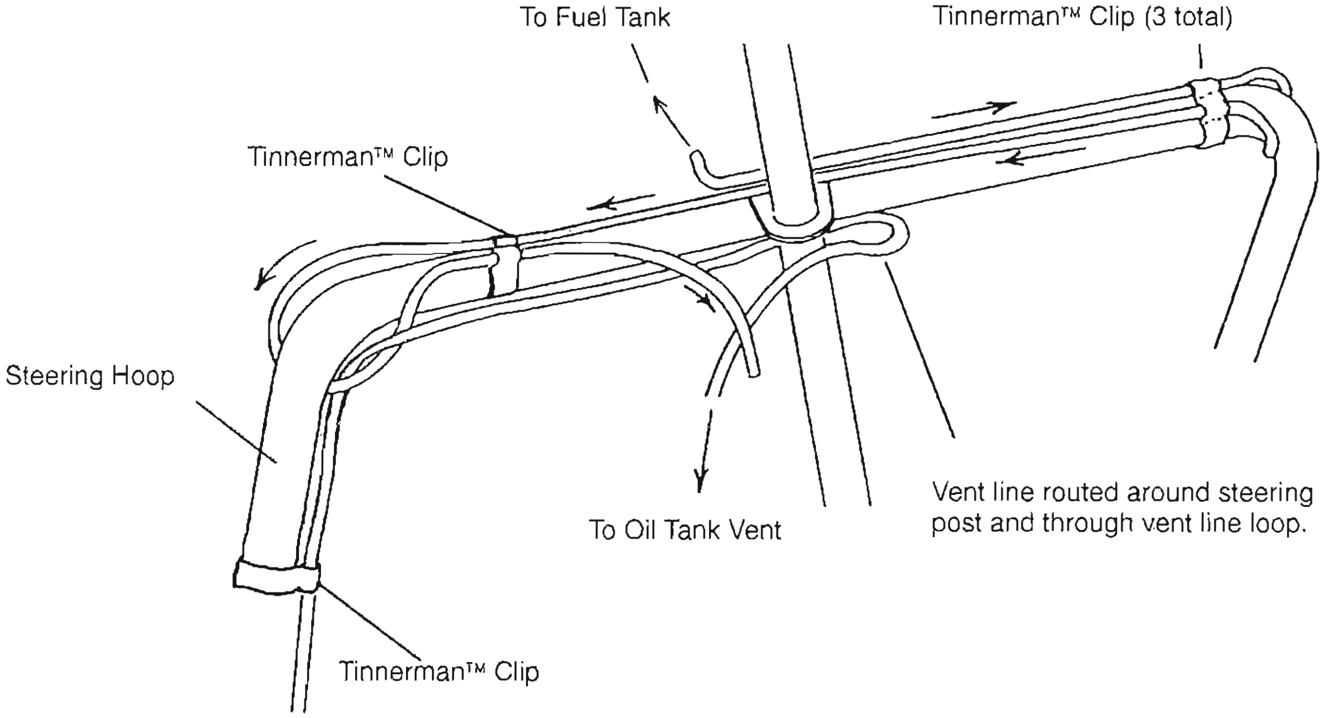
1996 to Current Indy Classic Models



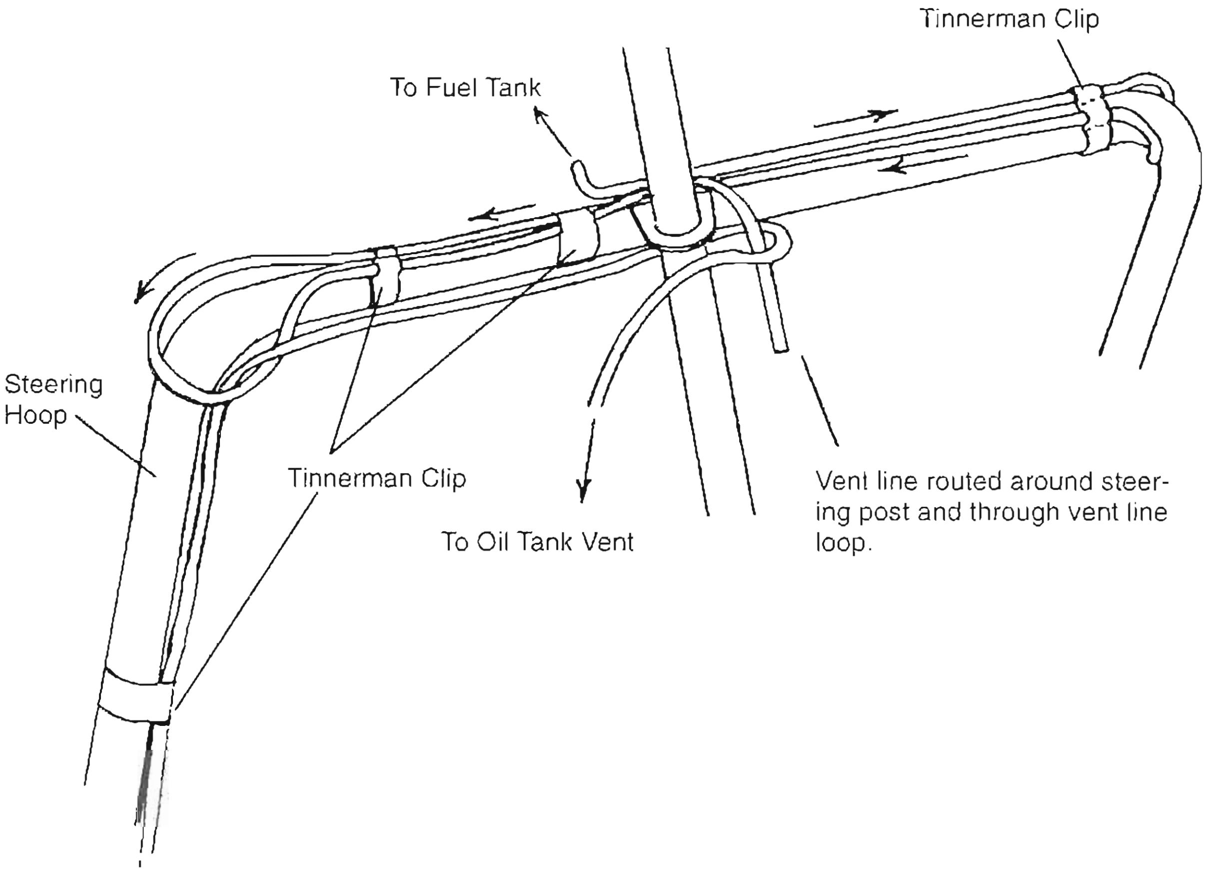
1996 To Current Indy Lite Models



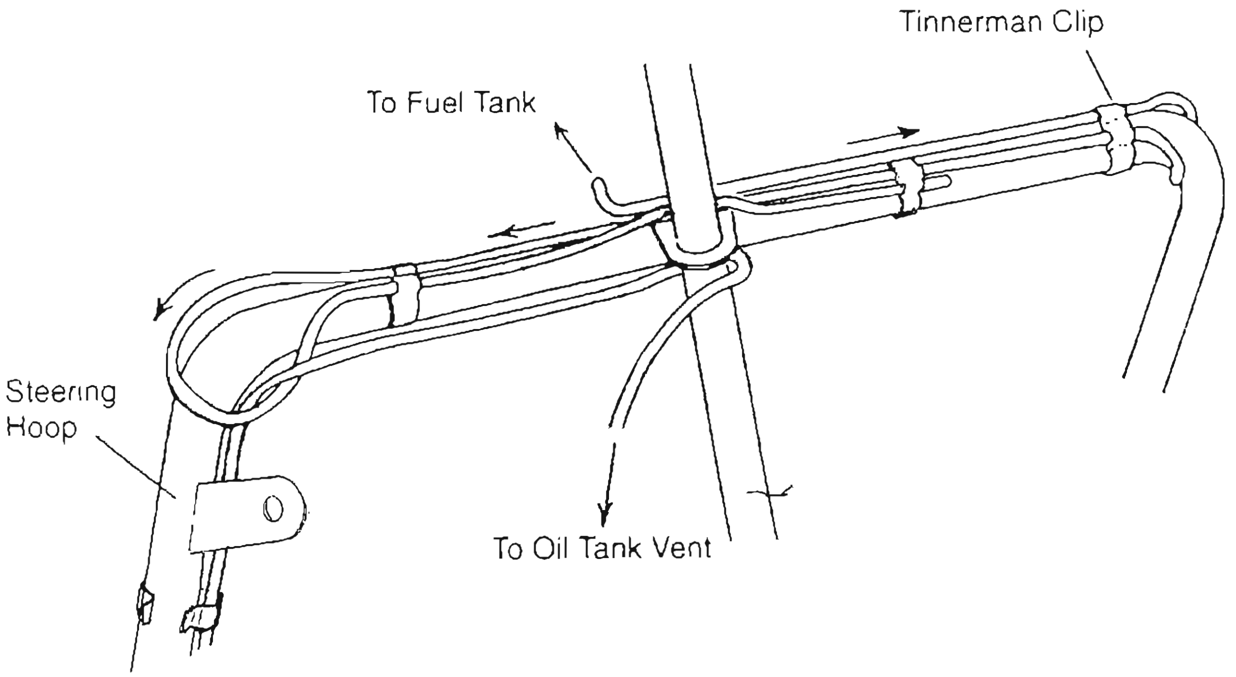
1996 All Models Except Indy Lites



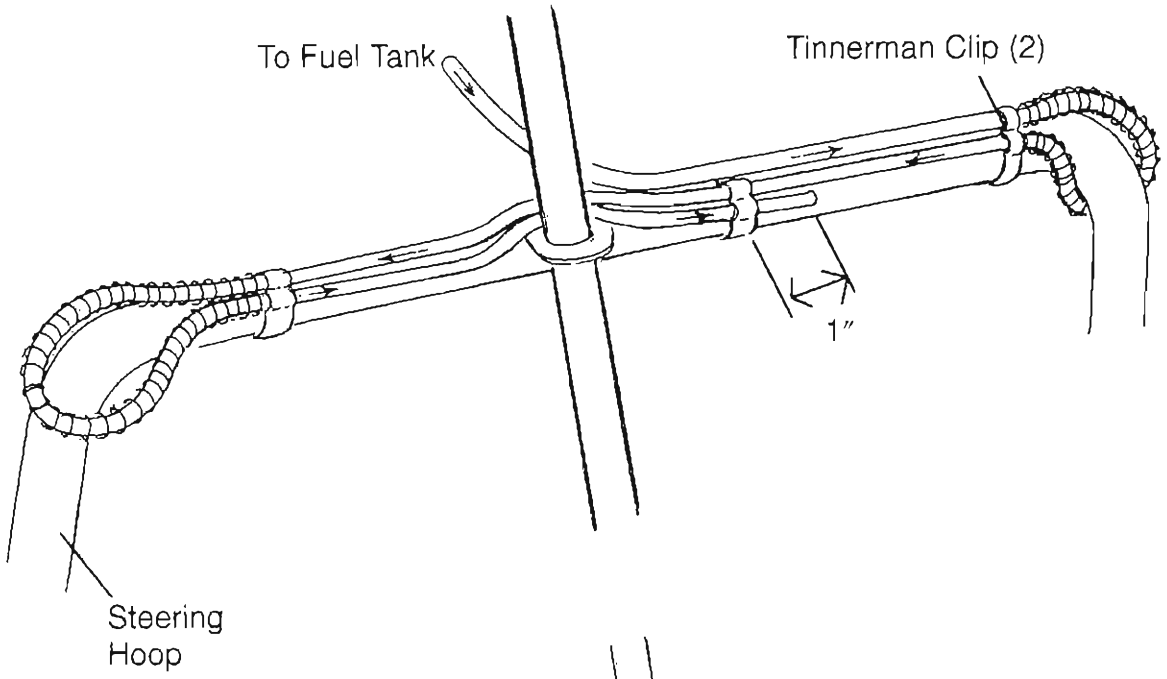
1997 To Current Indy XLT/XLT SKS/XLT RMK/600 XC/440 XC Models

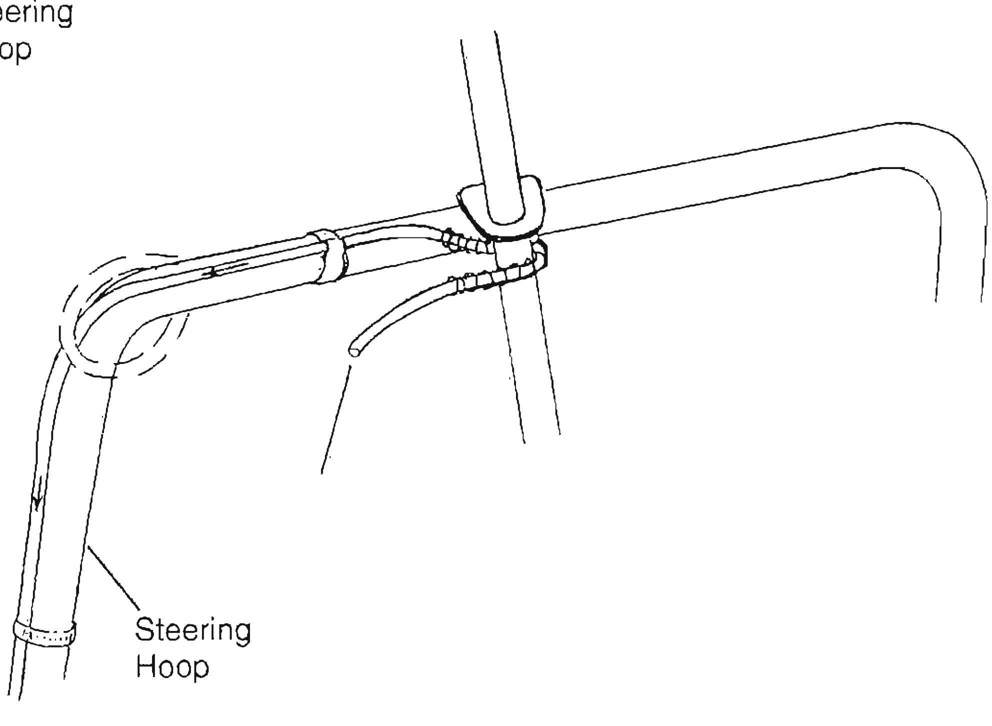


1997 Indy Ultra Touring Models

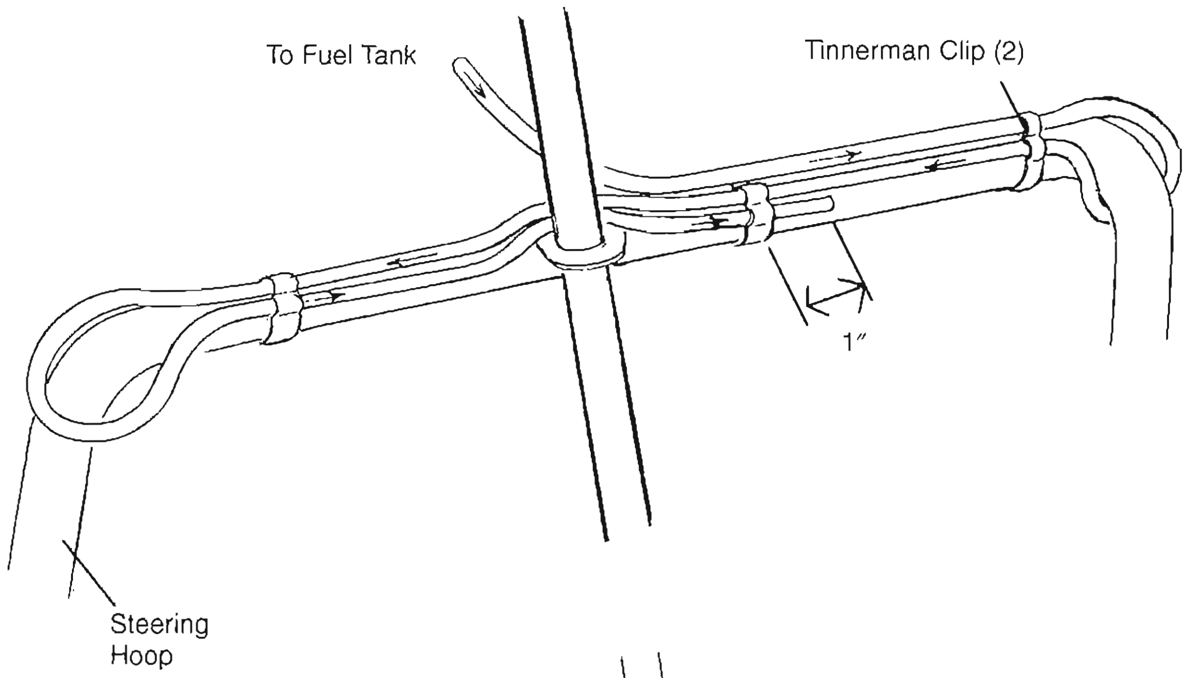


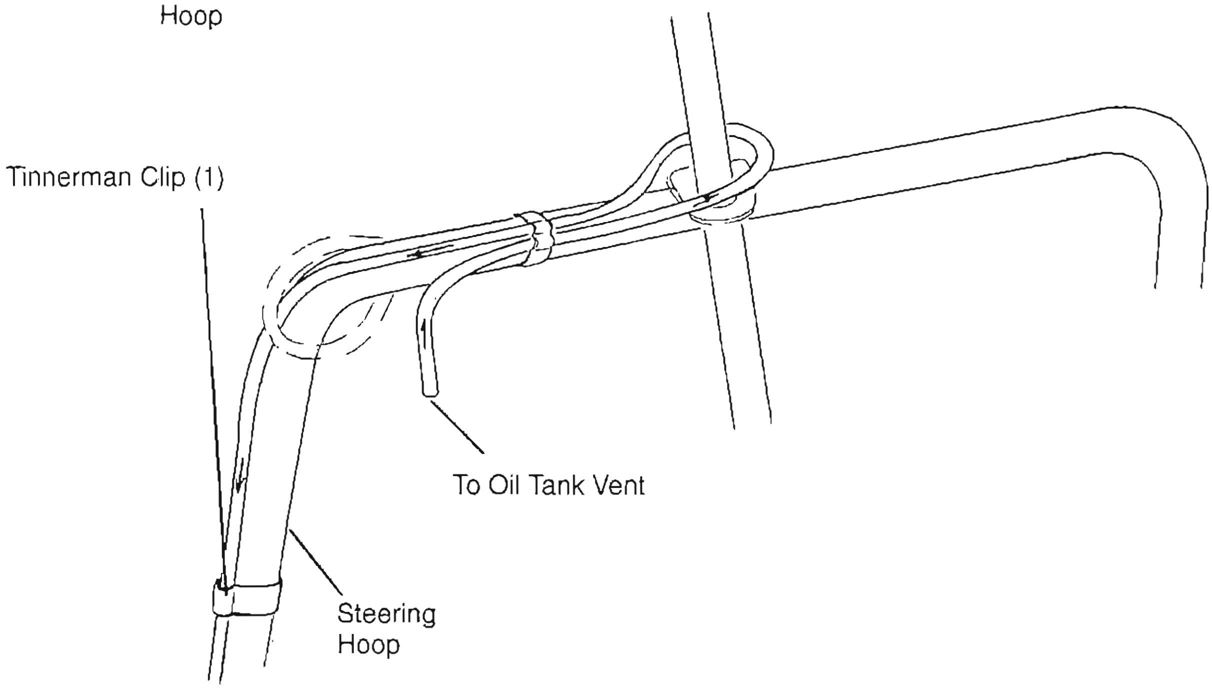
1997 Indy Sport/Sport Touring/TranSport/Super Sport/440 LC/500/500 SKS/500 RMK/500 EFI/ Classic/Classic Touring/XLT Touring/XLT LTD Models





1997 Indy Trail/Trail Touring/XLT SP Models

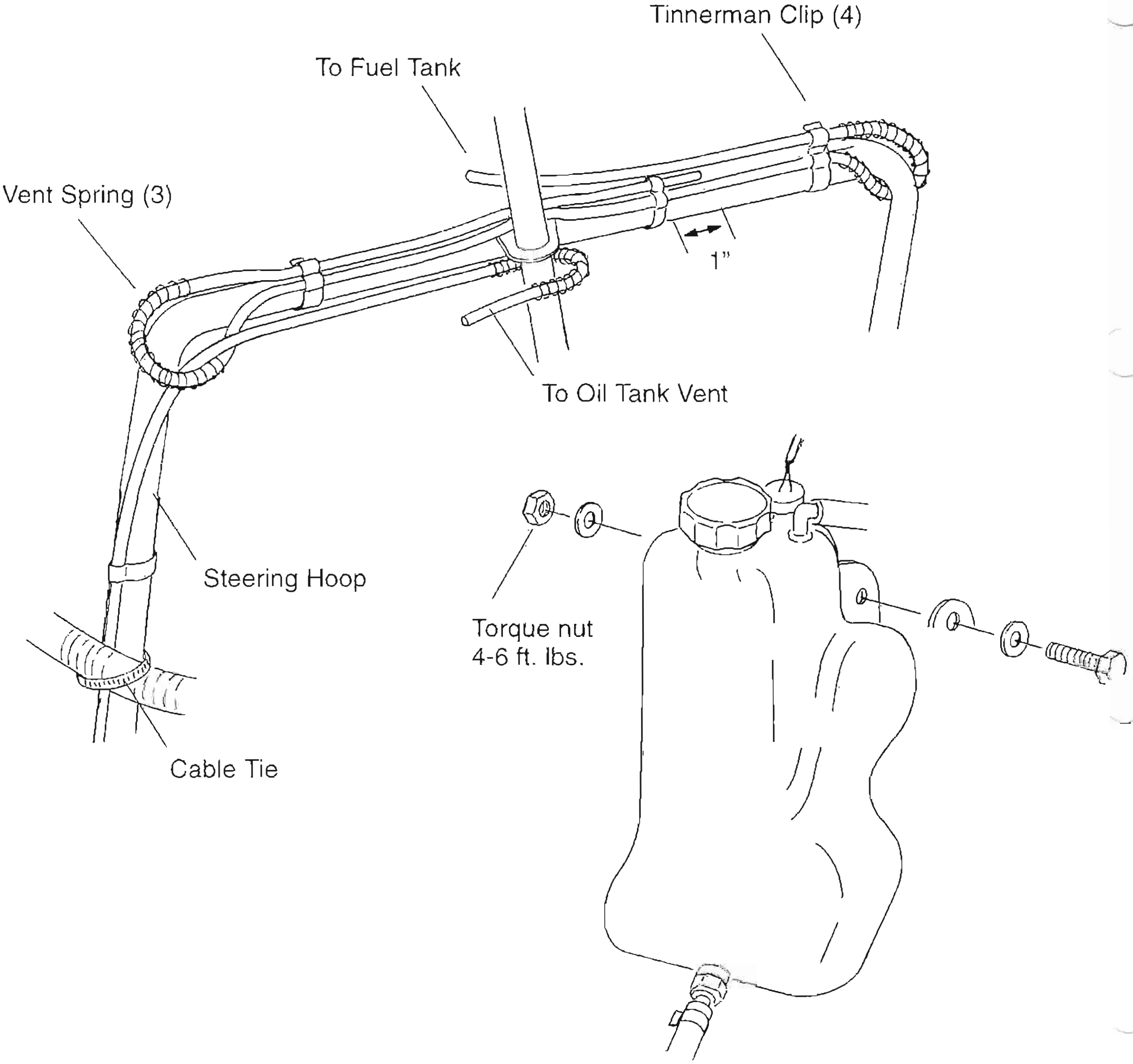




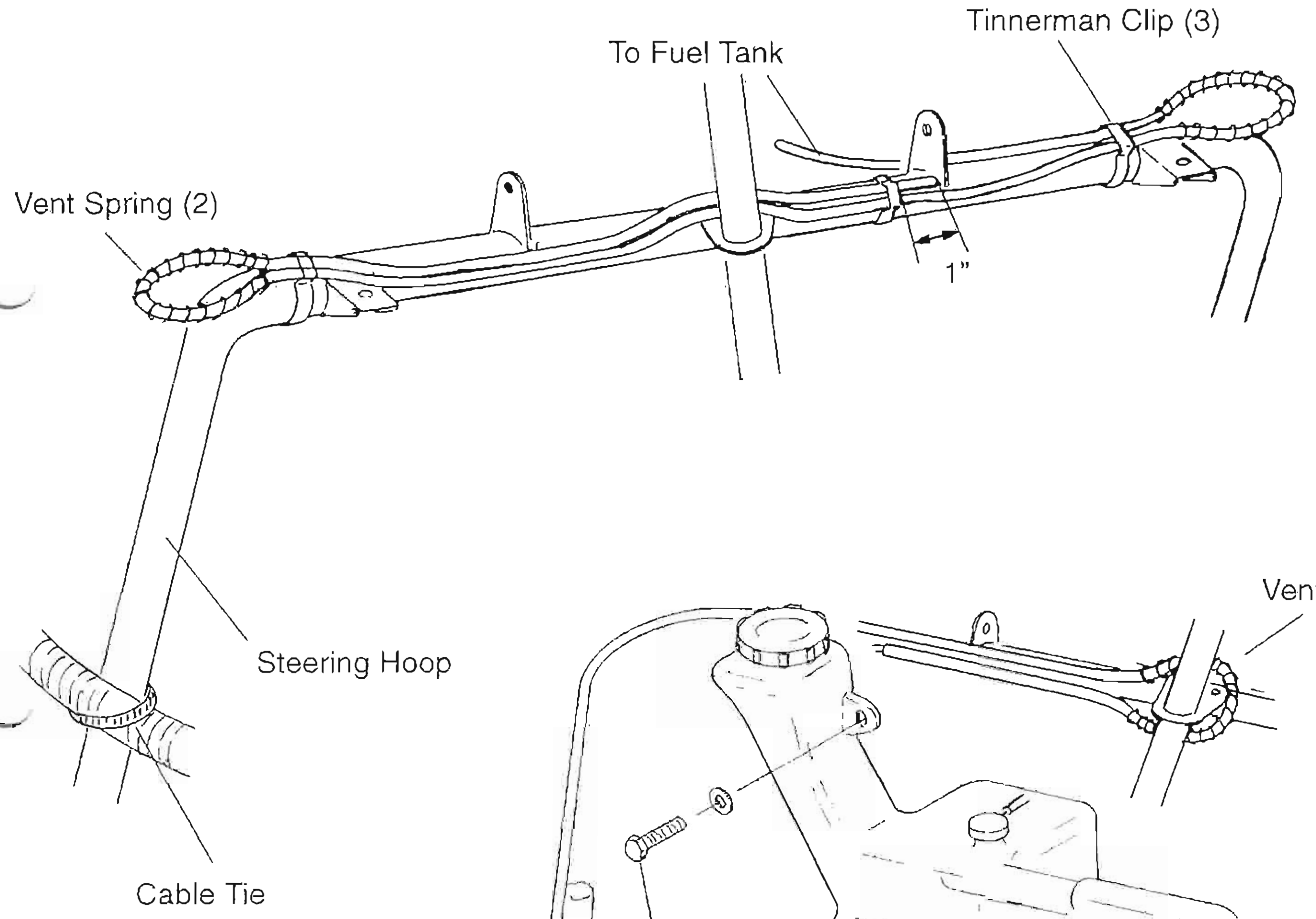
Routing Diagram - Vent Lines

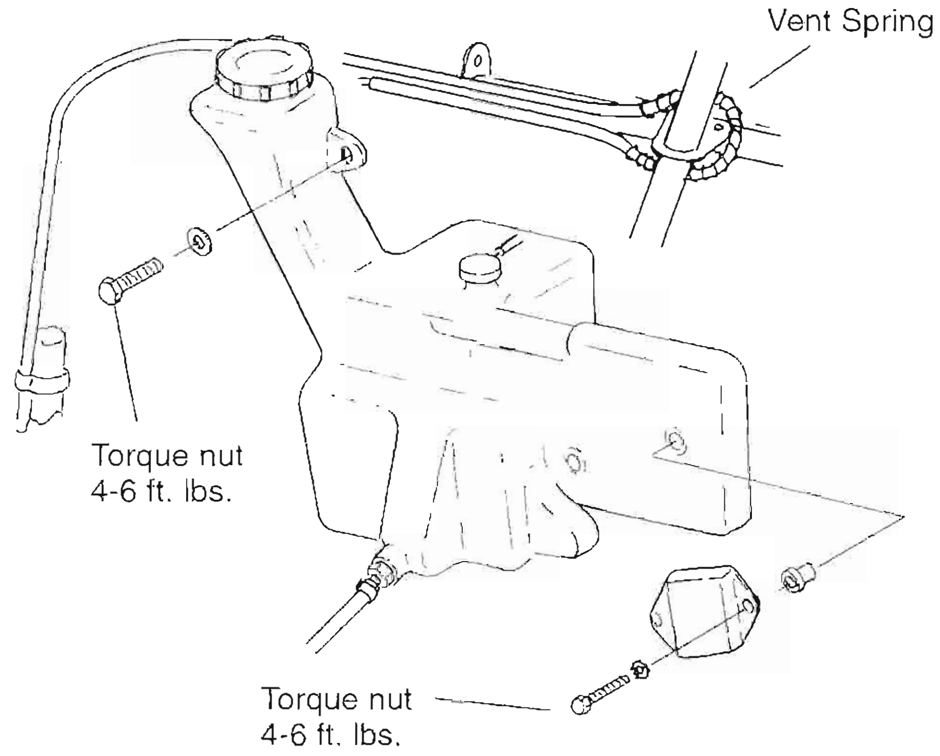
1997 Indy Sport/Sport Touring/TranSport/Super Sport/440 LC/500/500 SKS/500 RMK/500 EFI/ Classic/Classic Touring/XLT Touring/XLT LTD Models

1998 Sport / Sport Touring / TranSport / XCF / Trail / Super Sport / Trail RMK / Trail Touring

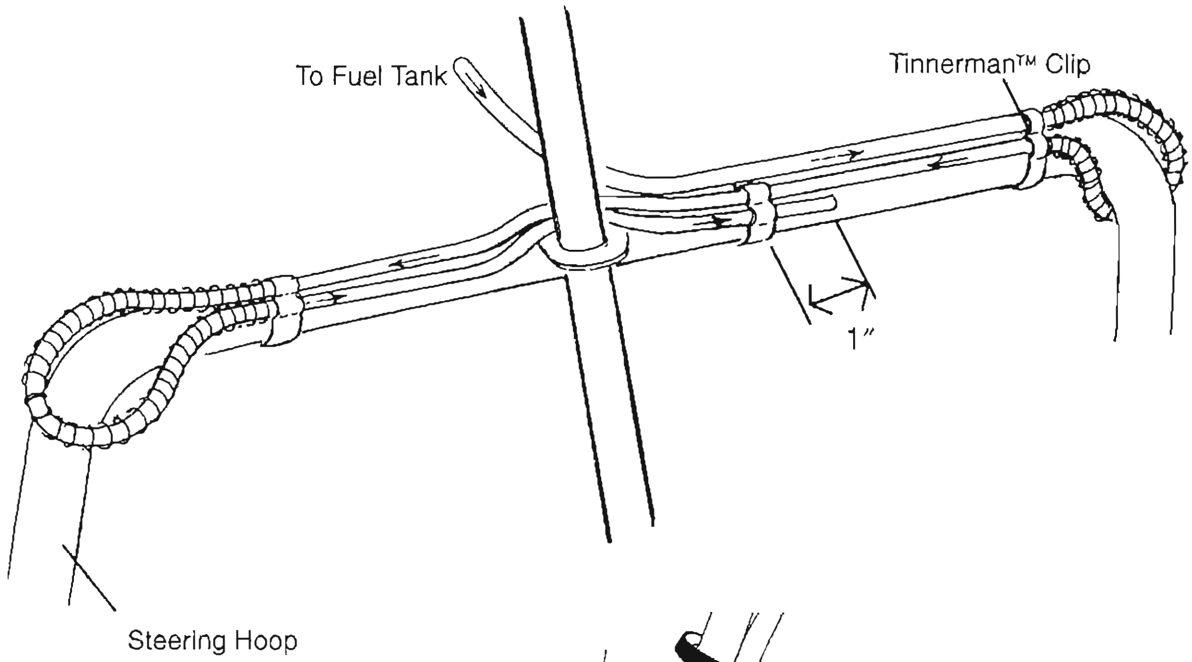


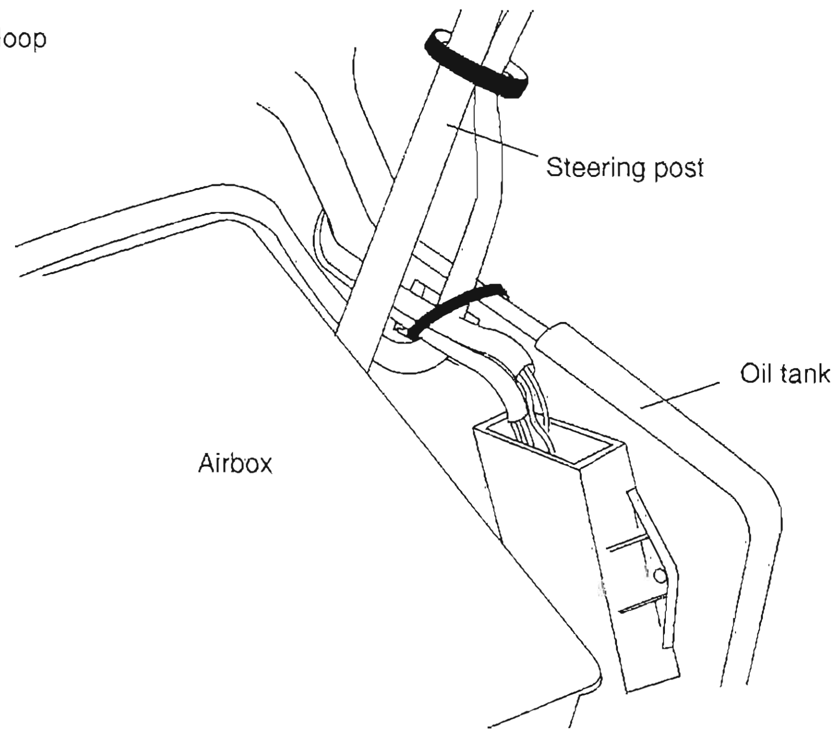
1998 Ultra/Ultra Touring/600 XCR/700 XCR /Storm



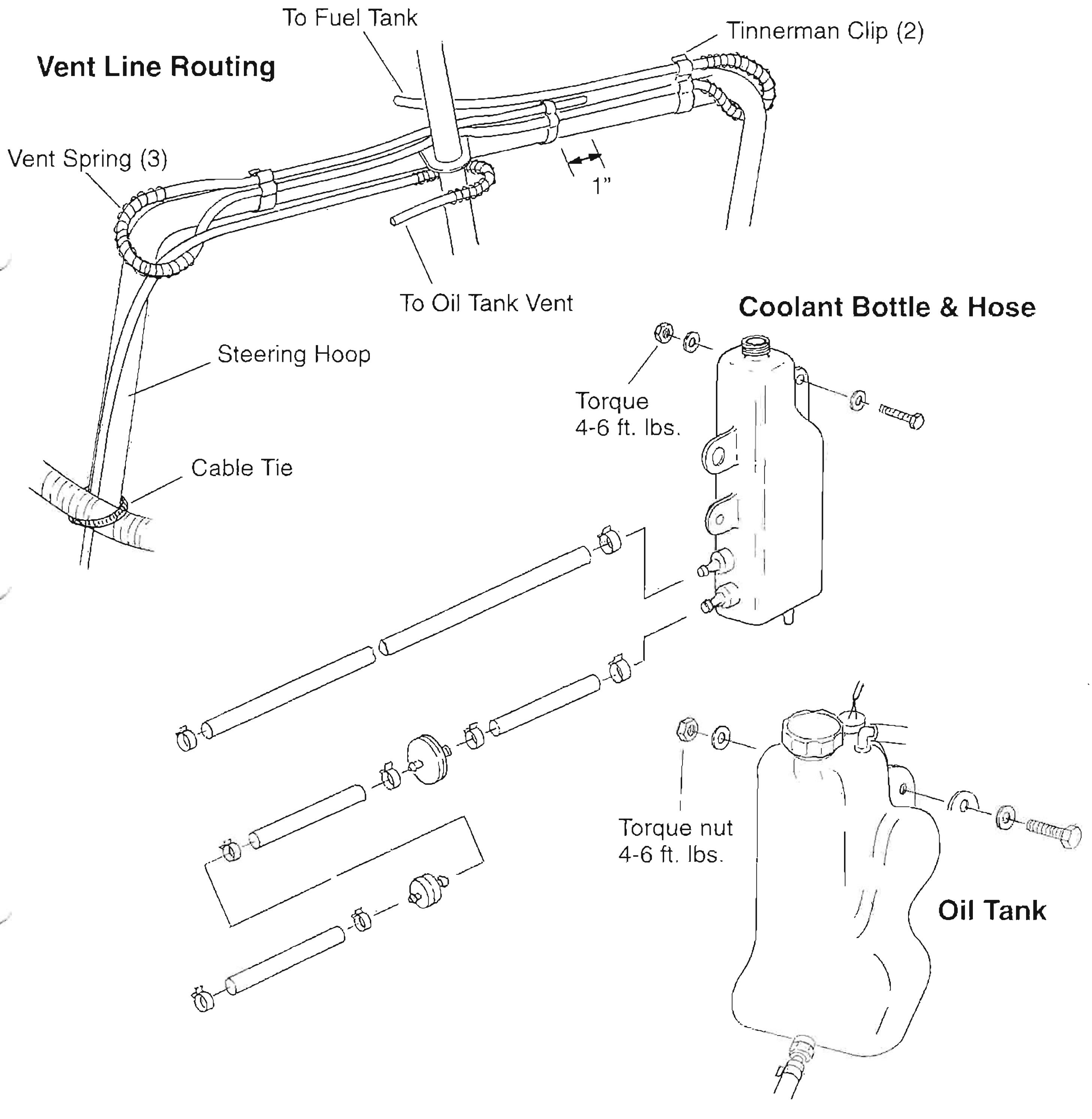


1997 Indy Ultra/Ultra SP Models

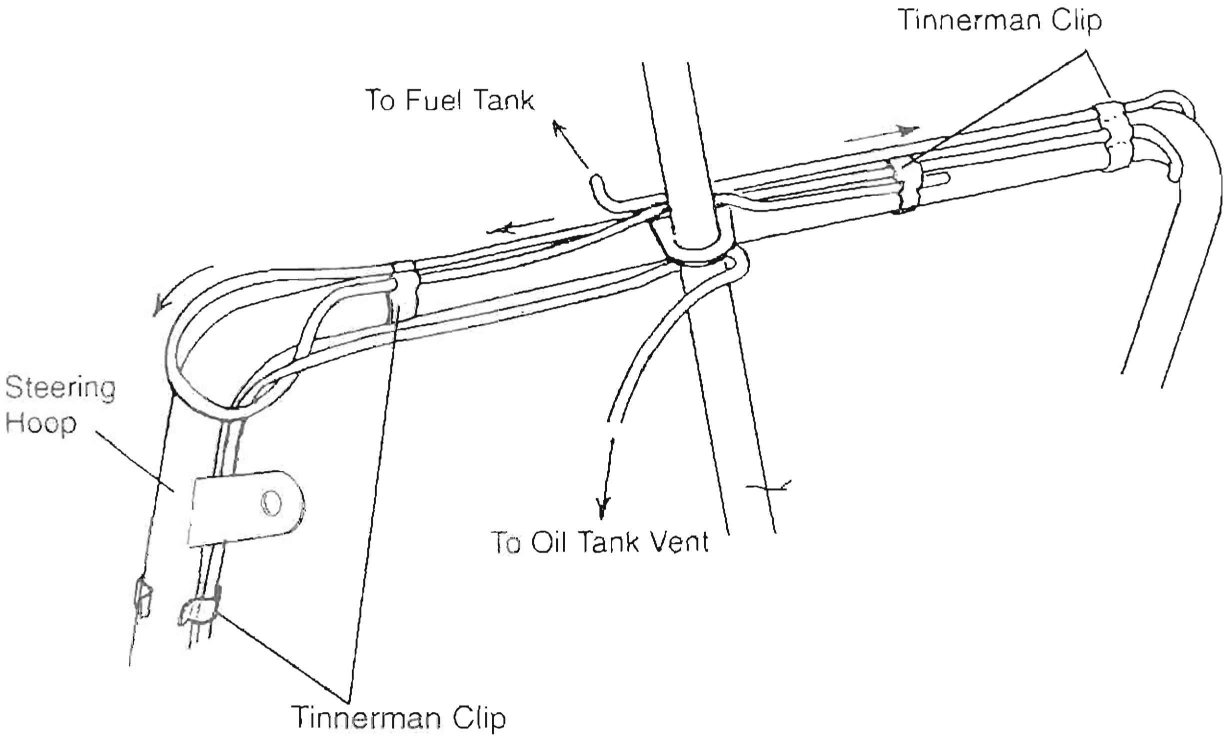




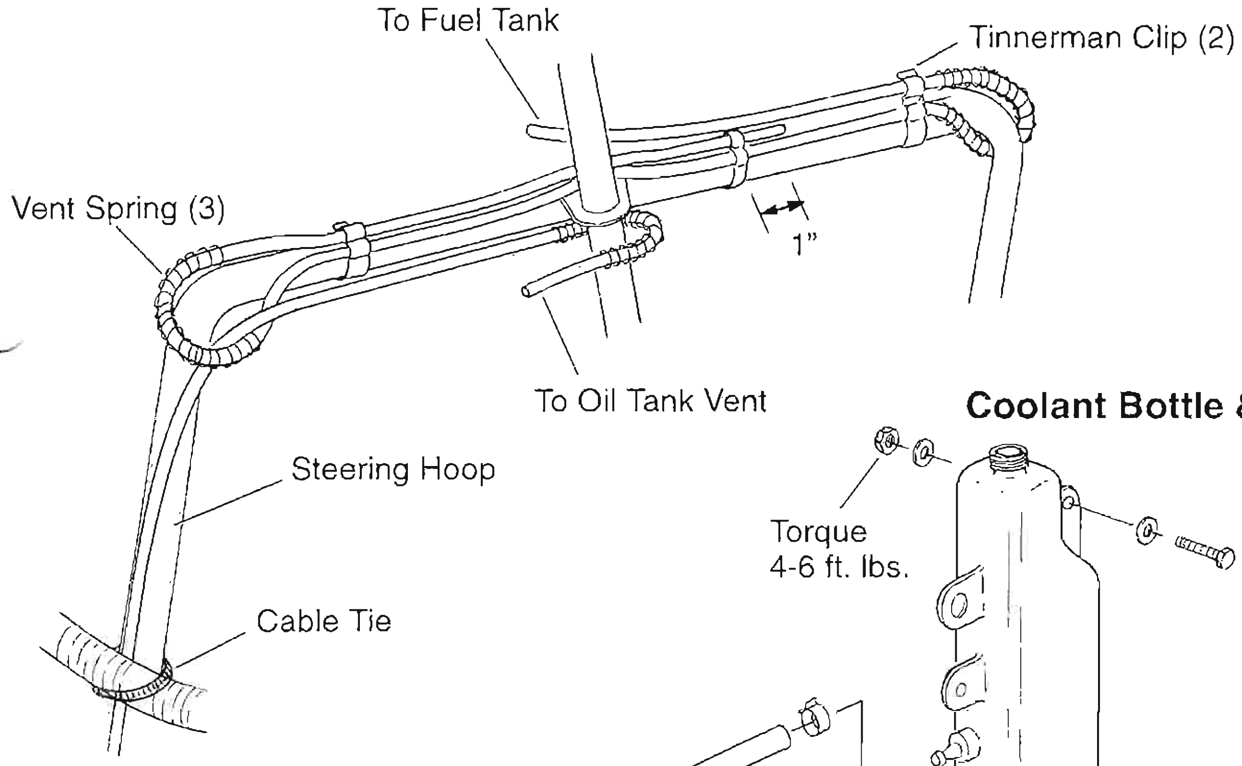
1998 440 Indy / 500 Classic / 500 RMK / Classic Touring / 500 Indy

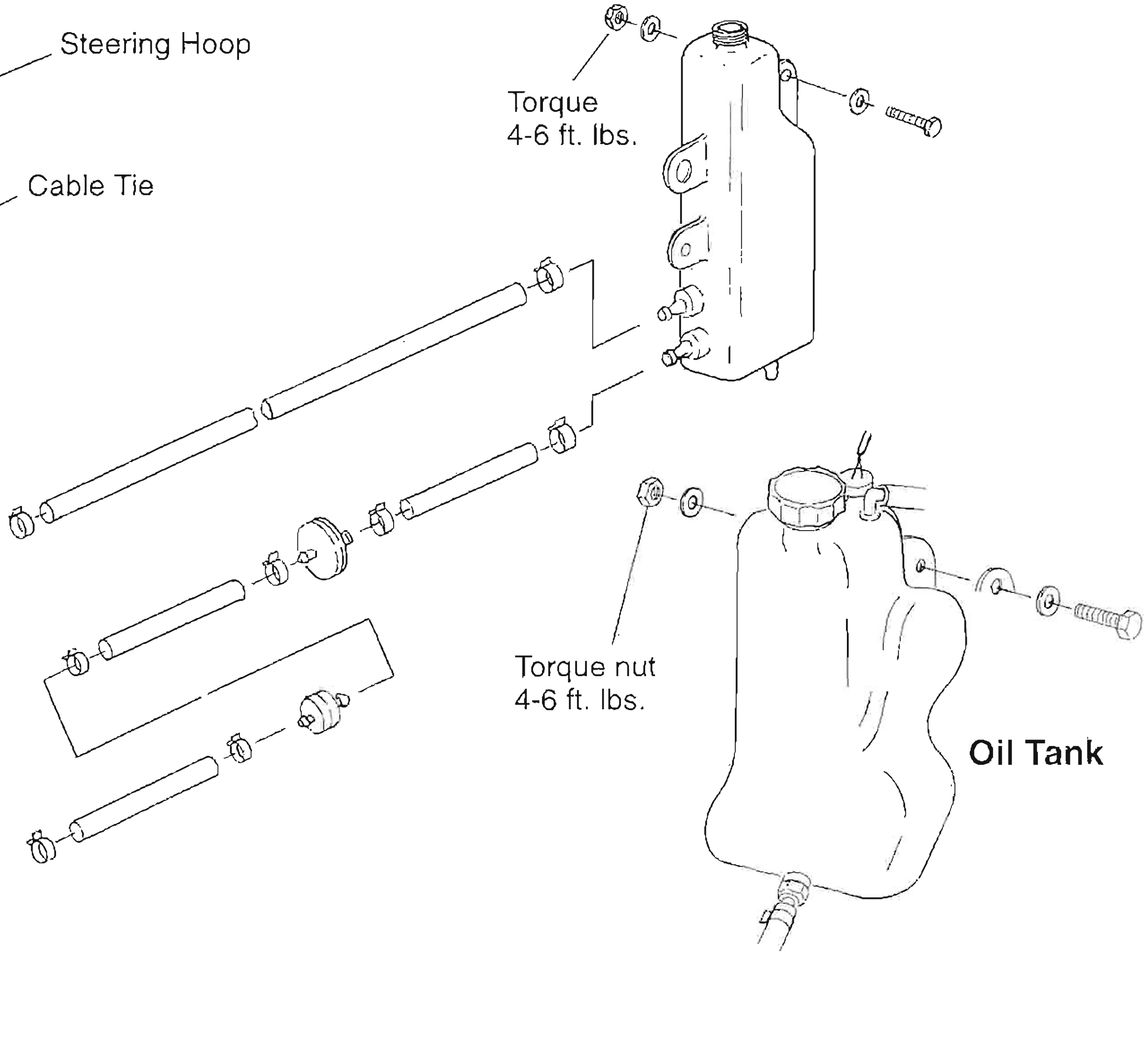


1997 Indy Ultra Touring Models



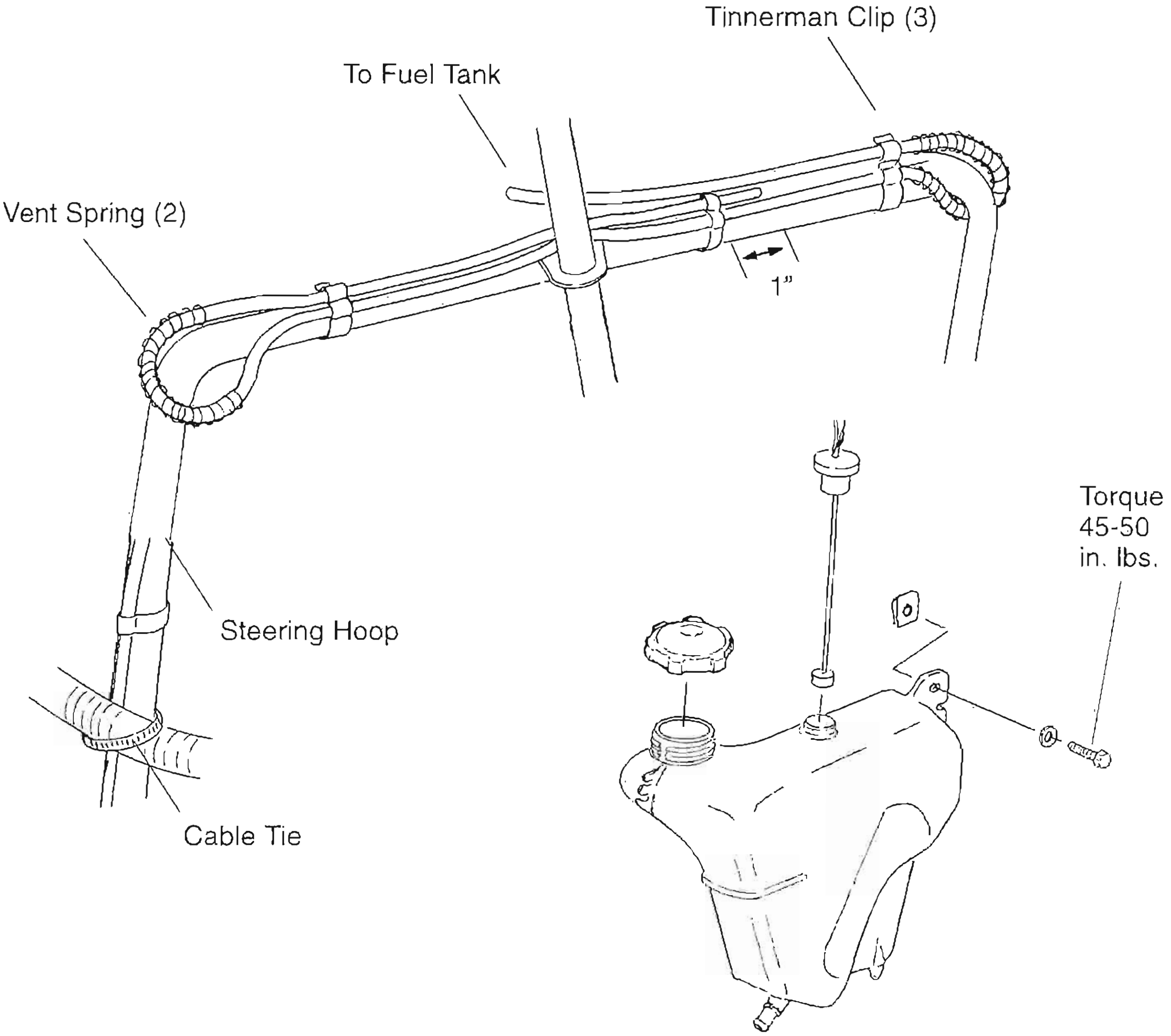
1998 XLT LTD / XLT SP / XLT Touring / XLT Classic



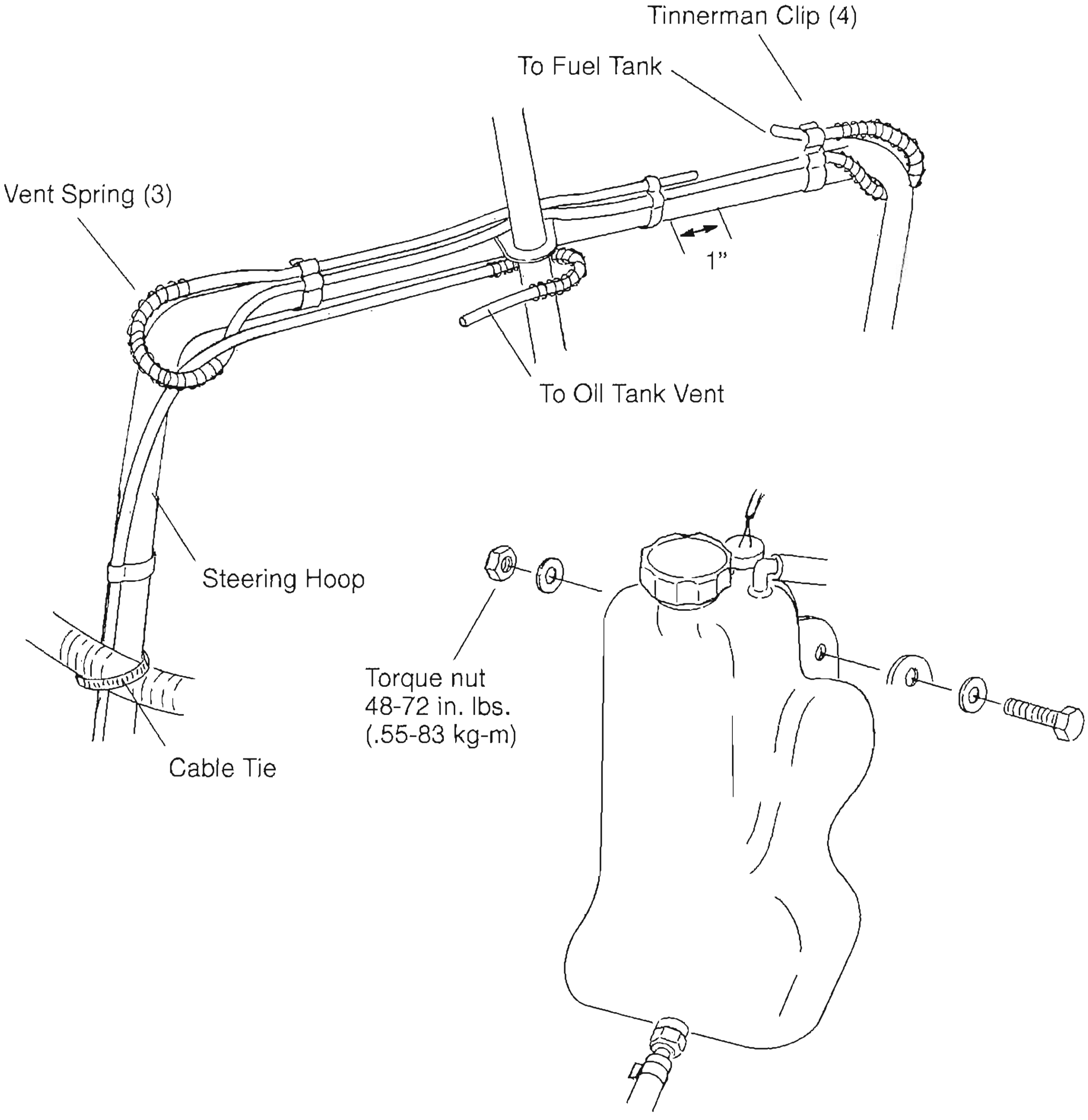


Routing Diagram - Vent Lines

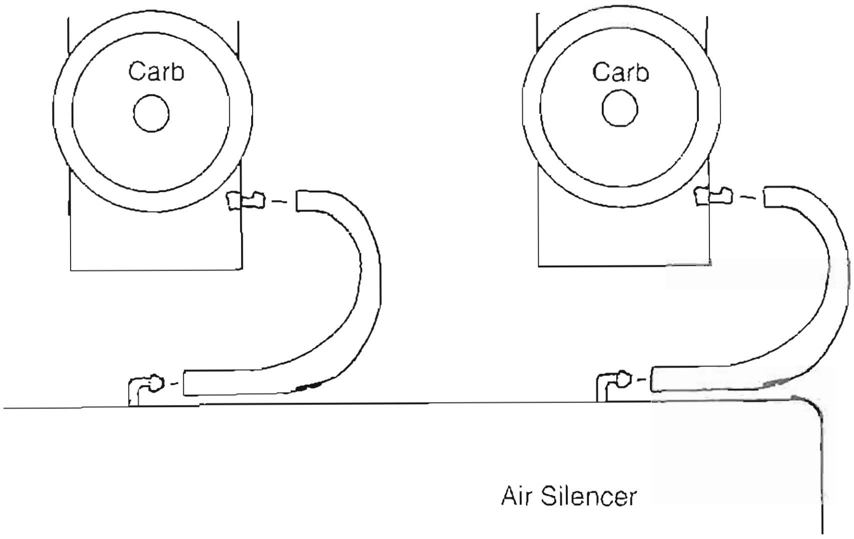
1998 700 RMK / 700 XC / 600 XC / 600 RMK



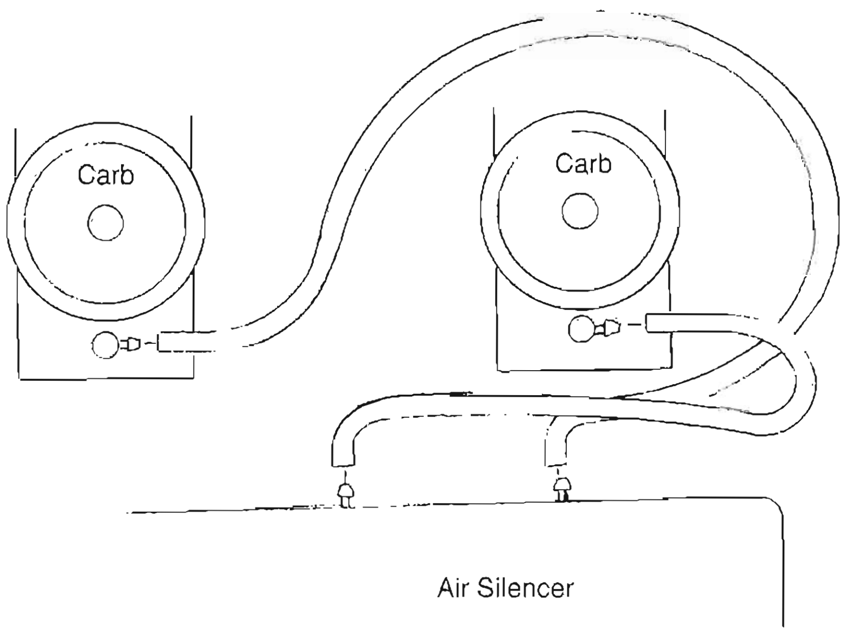
1998 WideTrak LX



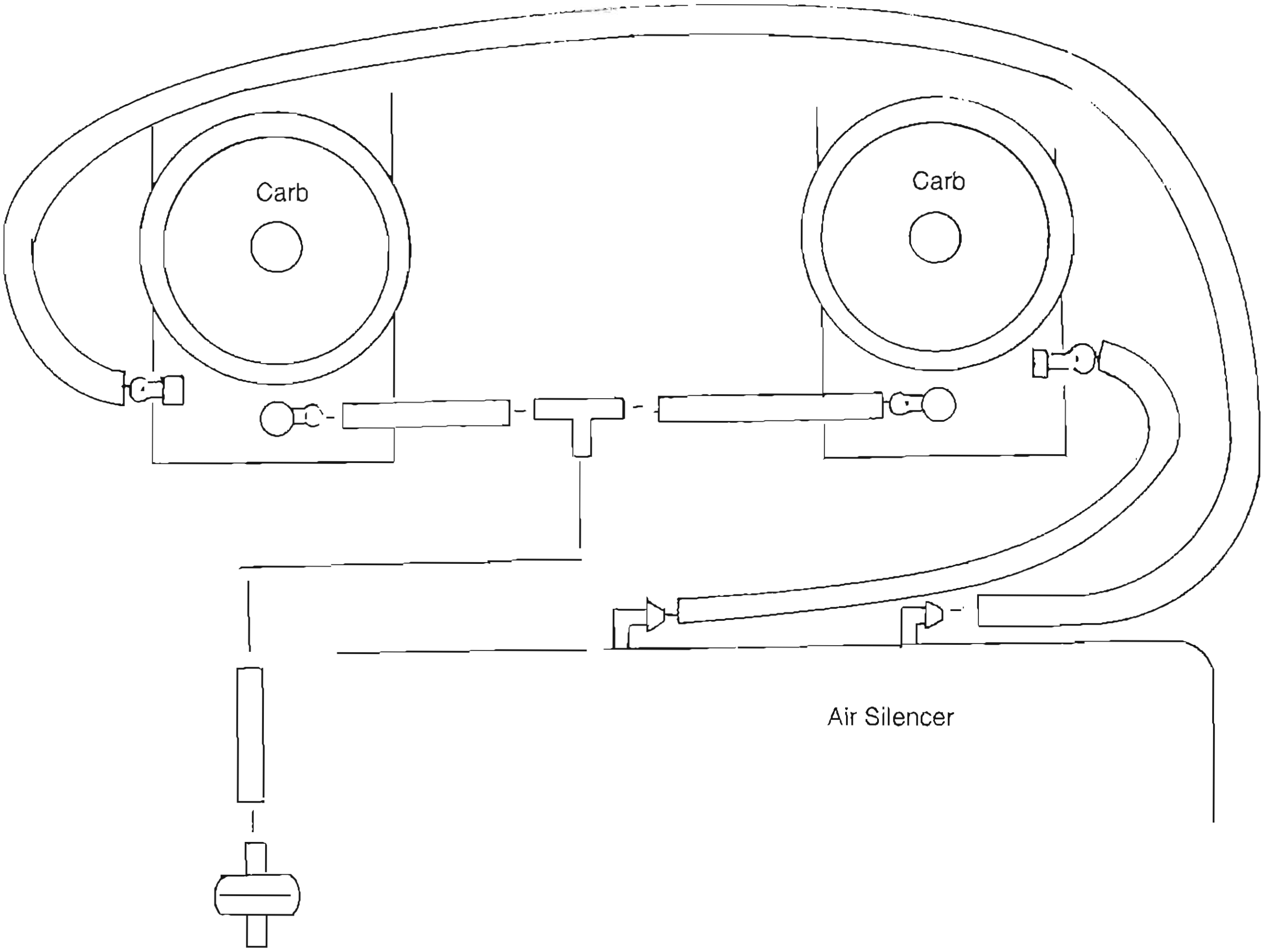
1996 Indy 440 LC



1996 Indy Trail/Trail Touring

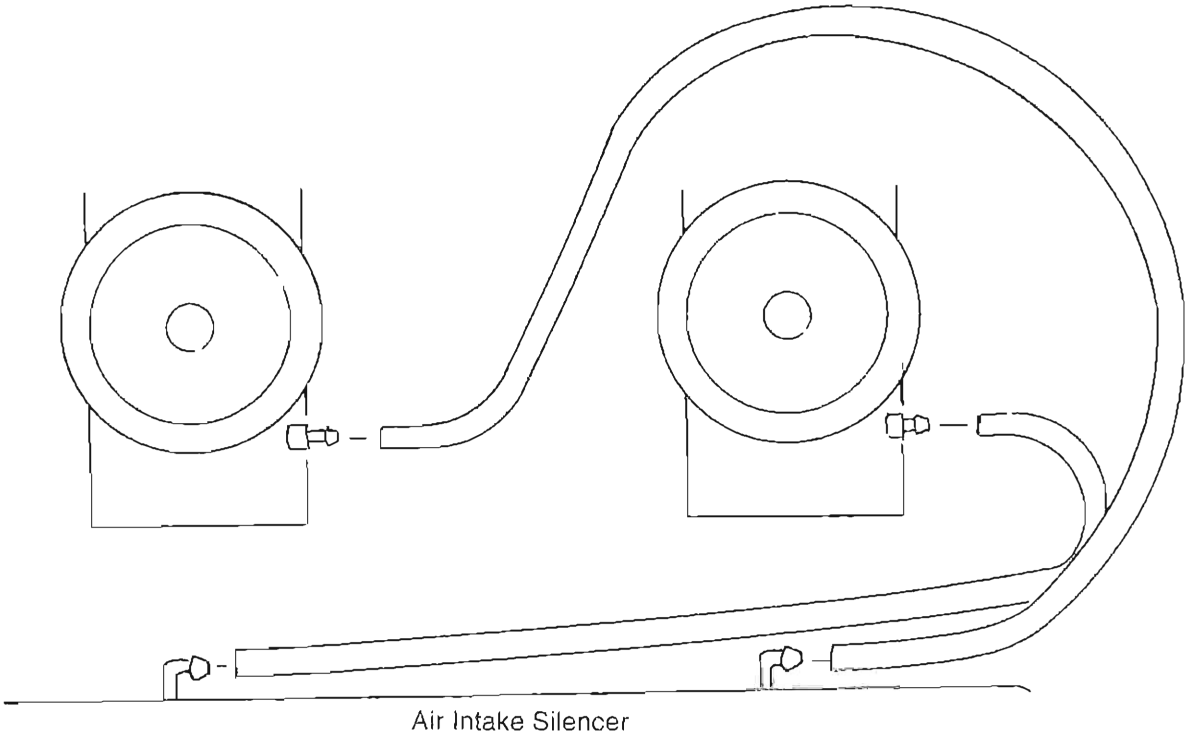


1996 Indy 500/500 SKS/500 RMK/Classic/Classic Touring

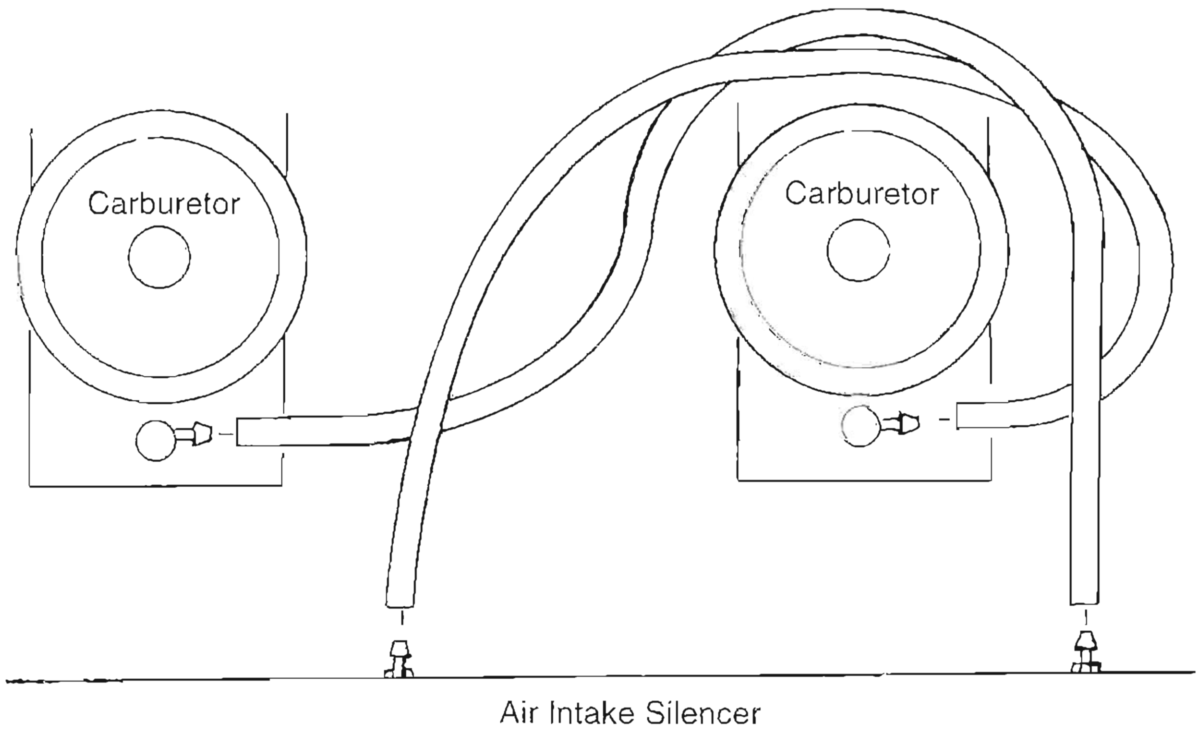


Routing Diagram - Carburetor Vent Line

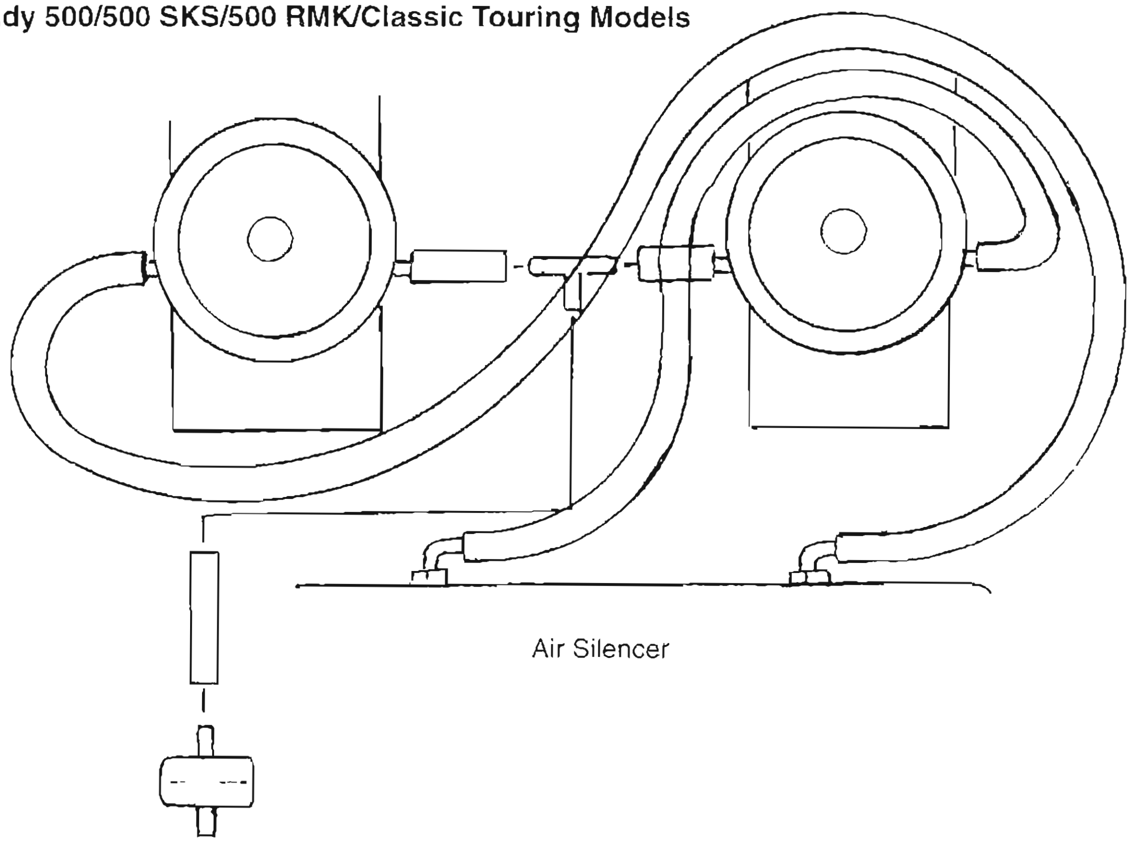
1997 Indy 440 LC Models



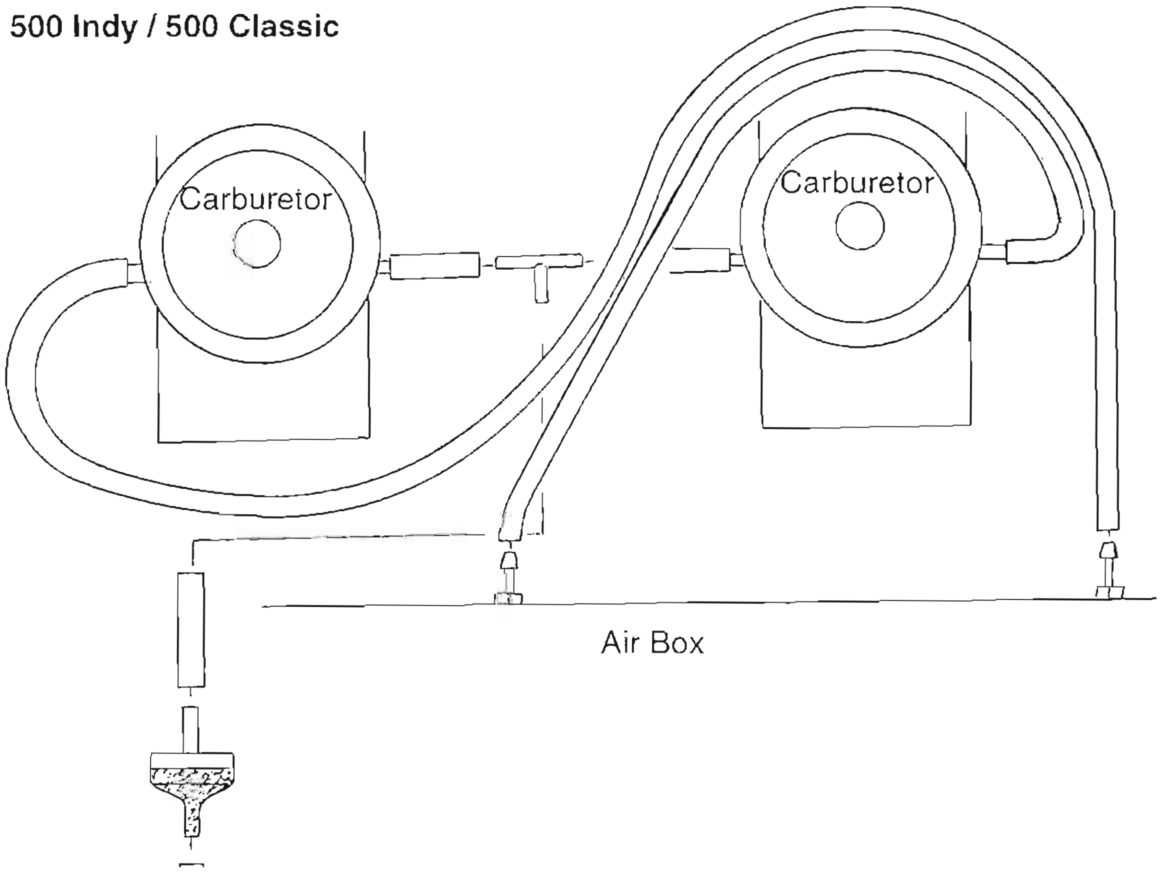
1998 Trail / Super Sport / 440 / Classic Touring / Trail Touring



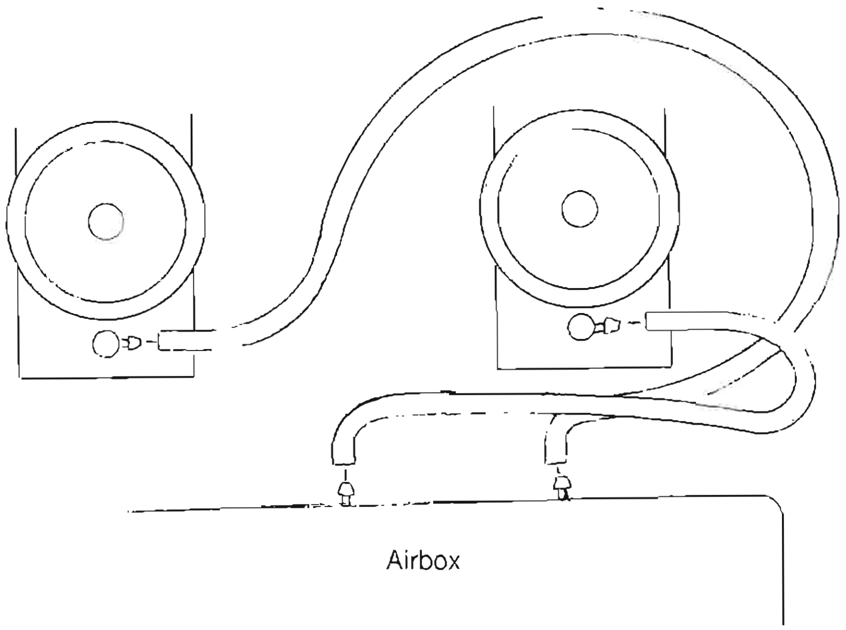
1997 Indy 500/500 SKS/500 RMK/Classic Touring Models



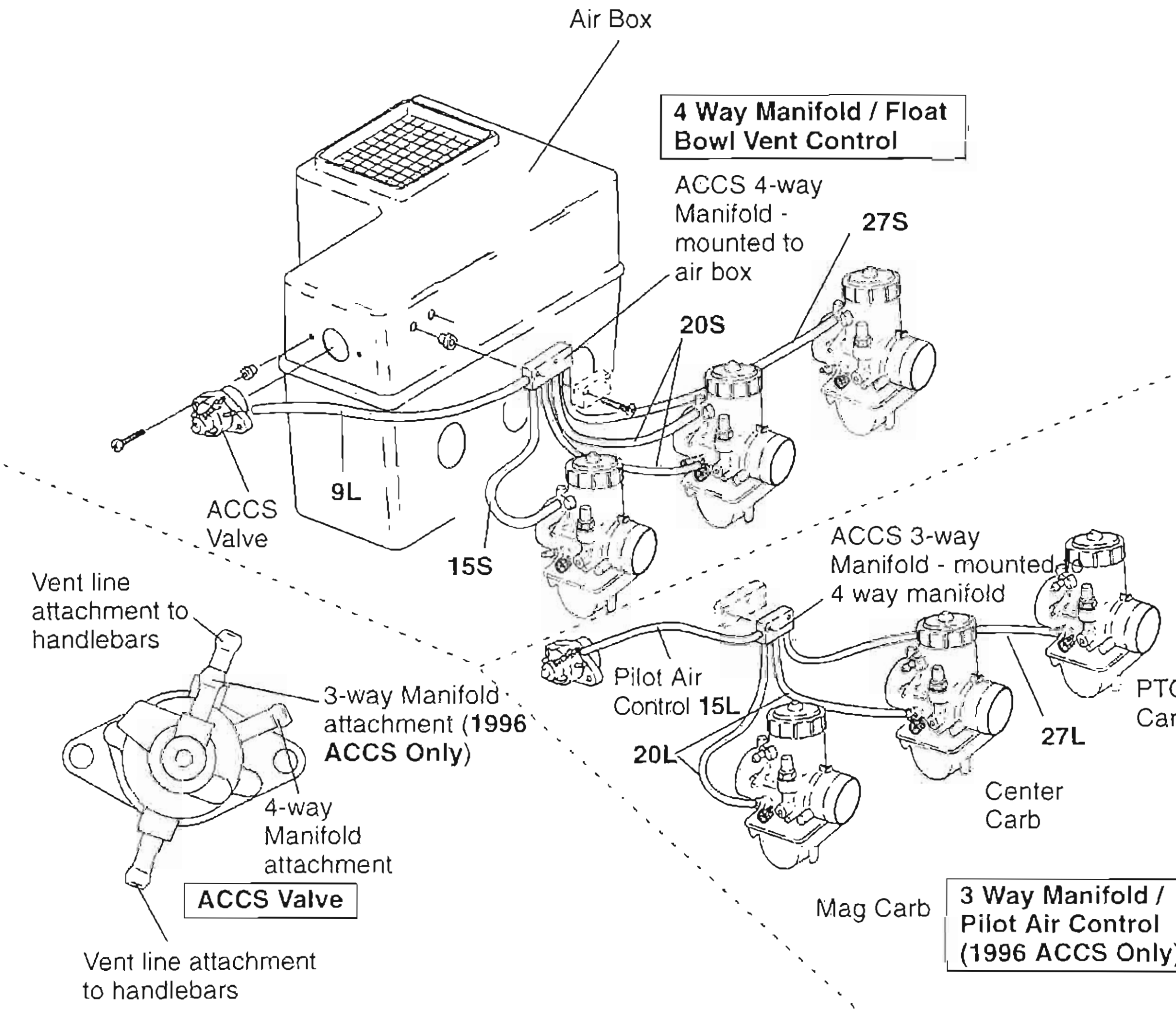
1998 500 Indy / 500 Classic



1997 Indy Trail/trail Touring Models



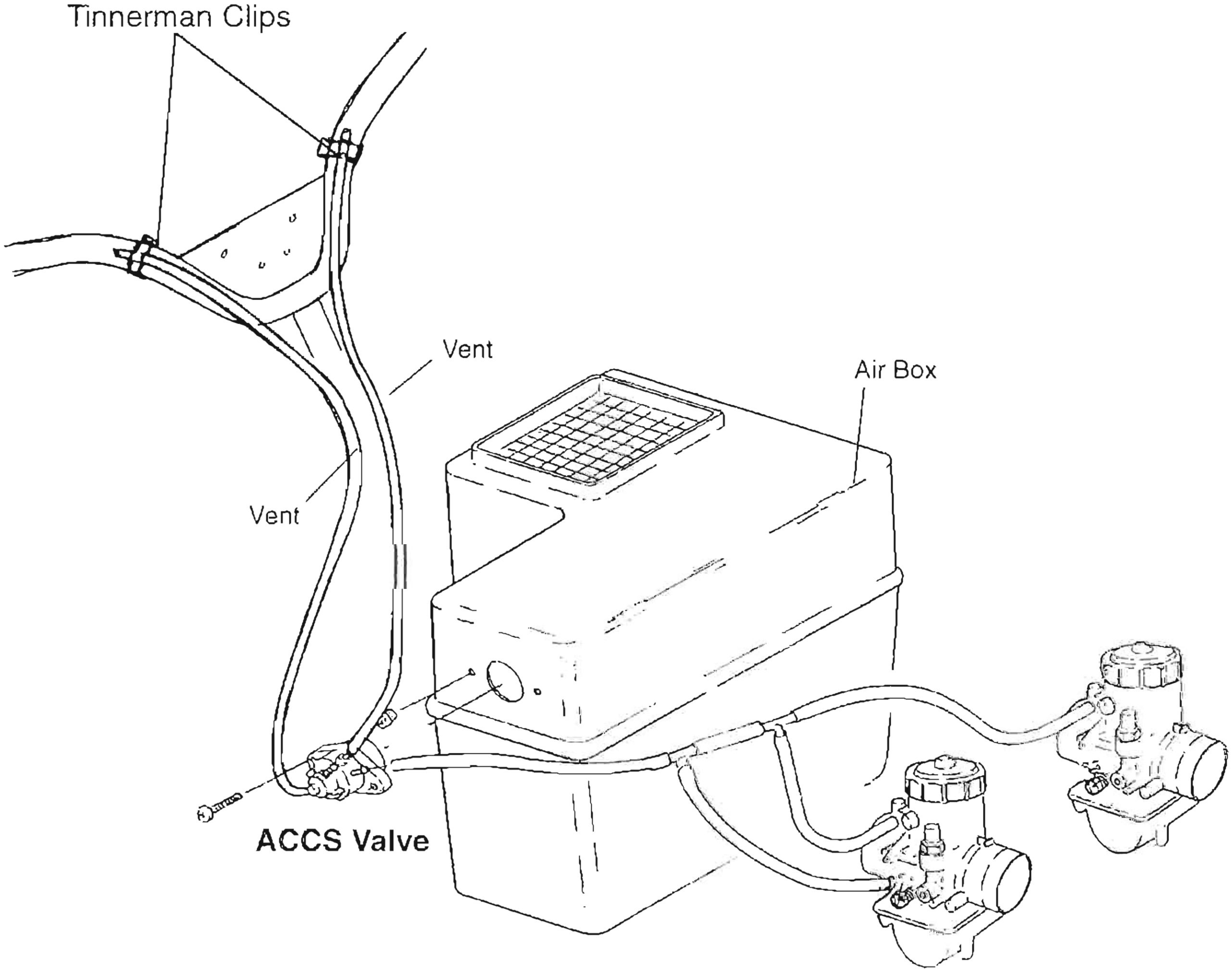
1996-Current ACCS Systems



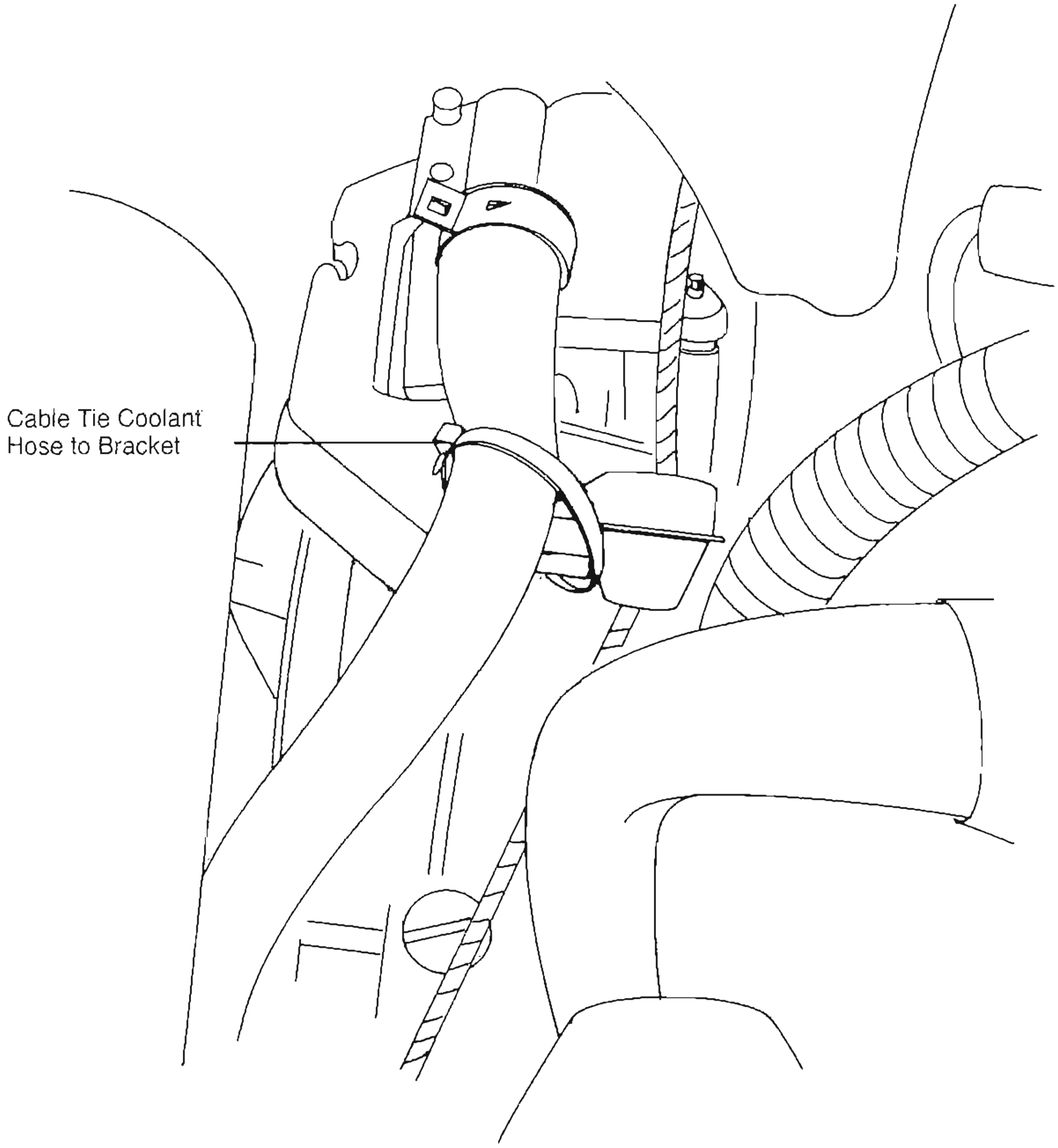
EXAMPLE: 27L = 27cm Length, Large Diameter
27 = 27cm Length
S = Small Diameter
L = Large Diameter

NOTE: There is only one ACCS valve. The illustration above has been divided to show the separation of systems. See page 5.7a for line connections.

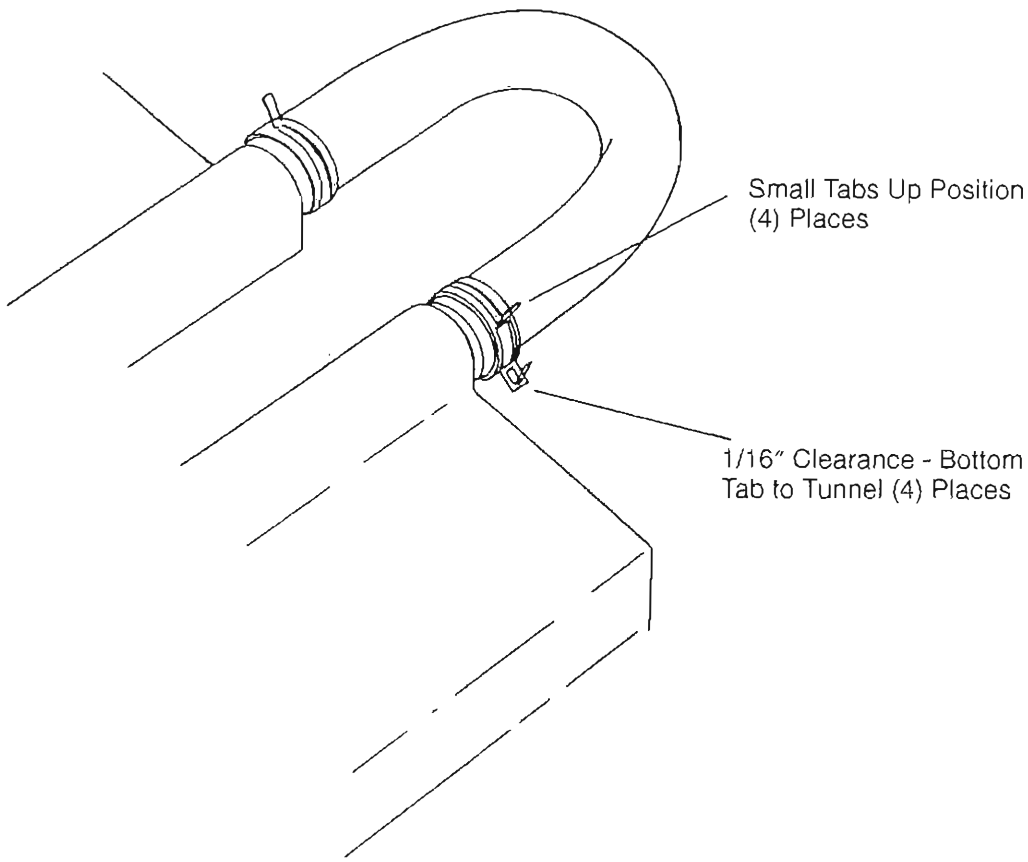
1997 - Current Indy Trail RMK and 500 RMK Models



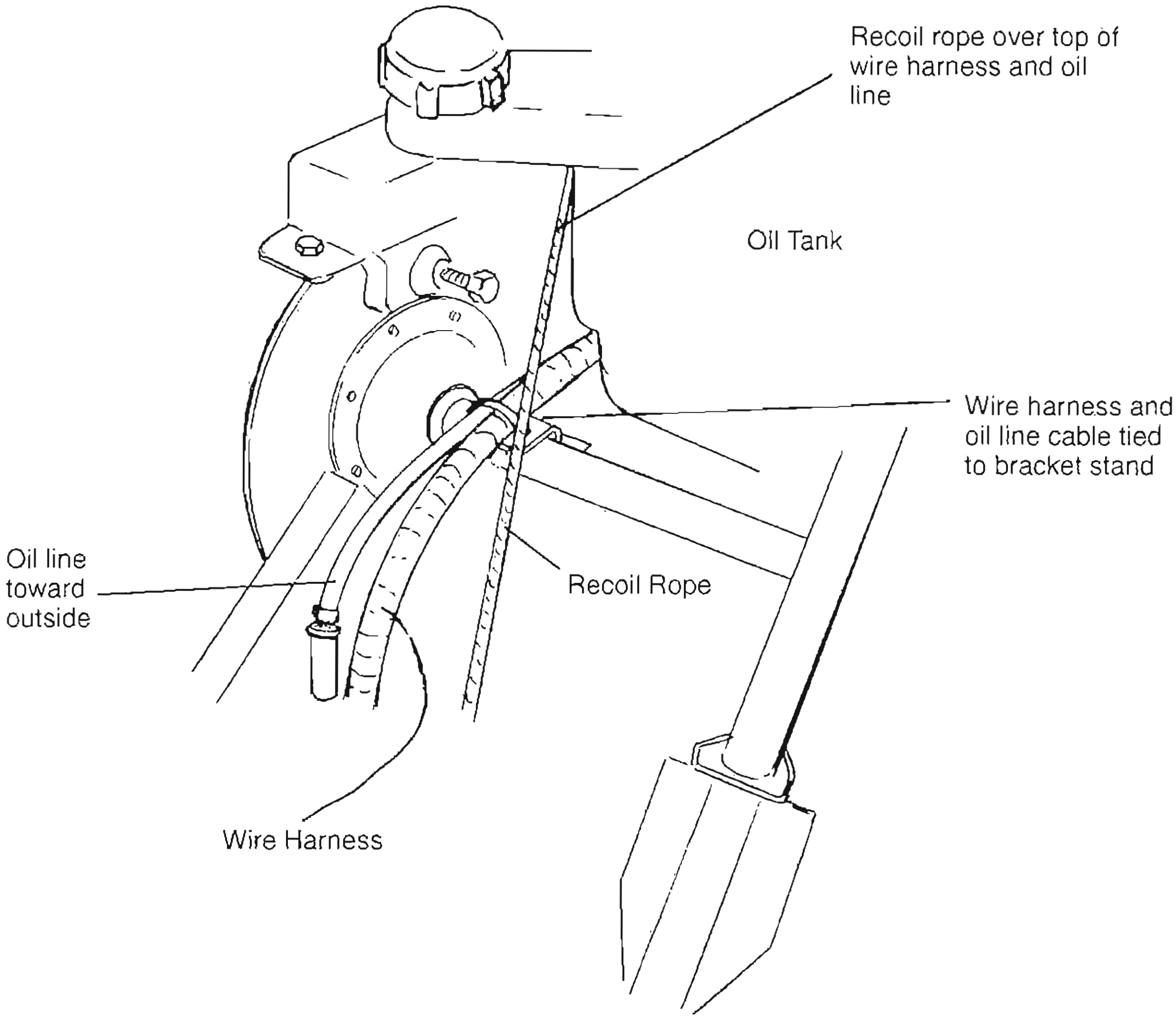
1996 Indy RXL Models



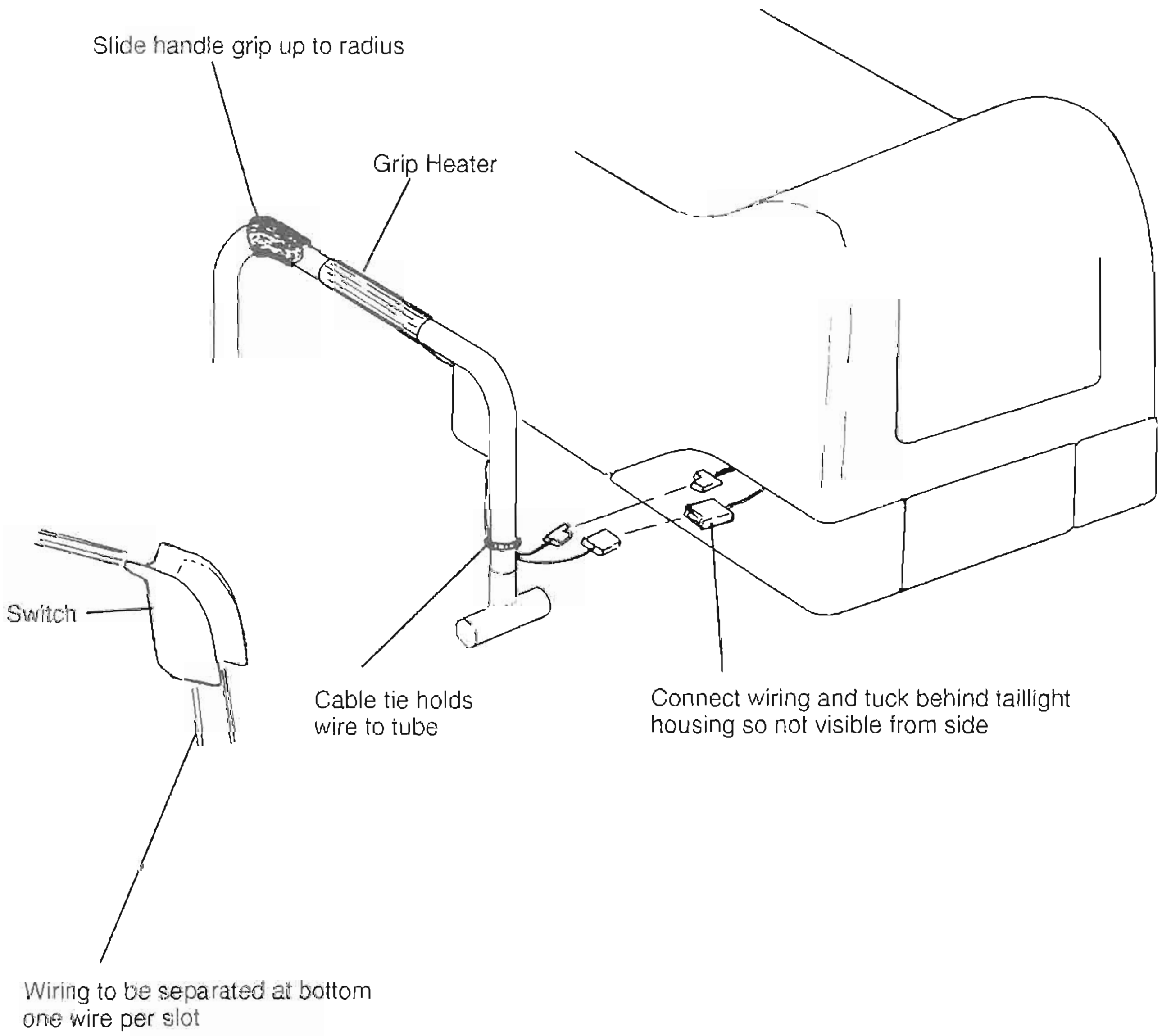
1996 Indy RXL Models
1997 Indy XLT Touring/Ultra Touring Models



1996 Indy Lite GT Models



1996 Indy XLT Touring Models
1997 Indy Class Touring/XLT Touring/Ultra Touring Models



CHAPTER 3
ENGINES

1996 Models

Machine Model	Engine Model	Cyl. Disp. CC's	Bore MM	Bore Inches	Stroke MM	Stroke Inches	No. of Cyl.	Type of Cooling	Fuel Octane (Minimum)
Indy Lite/GT	EC34-2PM02	339	62.3	2.4528	55.6	2.1889	2	Fan	87*
Indy Lite Deluxe	EC34-2PME02	339	62.3	2.4528	55.6	2.1889	2	Fan	87*
Indy Sport/TranSport/ Sport Touring	EC44-3PM01	432	67.72	2.6661	60	2.3622	2	Fan	87*
Super Sport	EC44-3PM02	432	67.72	2.6661	60	2.3622	2	Fan	87*
Indy WideTrak GT	EC50PM03	488	72	2.8346	60	2.3622	2	Fan	87*
Indy Trail	EC50PM04	488	72	2.8346	60	2.3622	2	Fan	87*
Indy Trail Touring	EC50PME04	488	72	2.8346	60	2.3622	2	Fan	87*
Indy 440 LC	EC45PL06	432	67.72	2.6661	60	2.3622	2	Liquid	87*
Indy 440 XCR	EC45PL07	439	68.25	2.6870	60	2.3622	2	Liquid	91
Indy 440 XCR SP	EC45PL08	439	68.25	2.6870	60	2.3622	2	Liquid	91
Indy 500 Carb/SKS	EC50PL11	488	72	2.8346	60	2.3622	2	Liquid	87*
Indy Classic	EC50PLE11	488	72	2.8346	60	2.3622	2	Liquid	87*
Indy WideTrak LX	EC50PLE12	488	72	2.8346	60	2.3622	2	Liquid	87*
Indy 500 EFI/SKS/RMK	EC50PL13	488	72	2.8346	60	2.3622	2	Liquid	87*
Indy Classic Touring	EC50PL14	488	72	2.8346	60	2.3622	2	Liquid	87*
Indy 500 Carb RMK	EC50PL15	488	72	2.8346	60	2.3622	2	Liquid	87*
Indy 600 XCR/XLT SP	EC58PL02	597	65	2.5590	60	2.3622	3	Liquid	91
Indy XLT/SKS	EC58PL03	597	65	2.5590	60	2.3622	3	Liquid	87*
Indy XLT Touring	EC58PLE05	597	65	2.5590	60	2.3622	3	Liquid	87*
Indy XLT RMK	EC58PL07	597	65	2.5590	60	2.3622	3	Liquid	87*
Indy 600 XCR SP	EC59PL01	598	62.5	2.461	65	2.561	3	Liquid	91
Indy RXL	EC65PL05	648	67.72	2.6661	60	2.3622	3	Liquid	87*
Indy Ultra SP, SKS	EC68PL01	679	66.6	2.622	65	2.5591	3	Liquid	87*
Indy Ultra RMK	EC68PL04	679	66.6	2.622	65	2.5591	3	Liquid	87*
Indy Storm / RMK	EC80PL04	794	72	2.8346	65	2.5591	3	Liquid	91
Indy Storm/SKS	EC80PL05	794	72	2.8346	65	2.5591	3	Liquid	91

* Non-oxygenated. Minimum octane when using oxygenated fuel is 89 and re-jetting is required. See page 3.8 for fuel recommendation on 1996 models.

1996 Models

Engine Model	Cyl. Head CC's Uninstalled	Cyl. Head CC's Installed	Piston Rings	Piston/Cylinder Bore Clearance +.05 mm −.00 mm	Engine Operating RPM ±200 RPM	Recommended Idle RPM
EC34-2PM02/E02	21.1	17.3	(2) 1.5 mm	.08-.14 (.0031-.0055")	7000	1600
EC44-3PM01	28.6	23.0	(2) 1.5 mm	.09-.14 (.0035-.0055")	7000	1600
EC44-3PM02	28.6	23.0	(2) 1.5 mm	.09-.14 (.0035-.0055")	6800	1600
EC50PM03	31.2	28.6	(2) 1.5 mm	.10-.16 (.0039-.0063")	6500	1600
EC50PM04/E04	26.7	24.1	(2) 1.5 mm	.10-.16 (.0039-.0063")	7000	1600
EC45PL06	25.8	21.1	(2) 1.2 mm	.09-.14 (.0035-.0055")	7750	1600
EC45PL07	20.0	19.0	(2) 1.2 mm	.06 (.0023")	8250	1800
EC45PL08	20.0	19.0	(2) 1.2 mm	.06 (.0023")	8250	2200
EC50PL11	23.6	23.6	(2) 1.2 mm	.09-.125 (.0035-.0049")	7800	1600
EC50PLE11	23.6	23.6	(2) 1.2 mm	.09-.125 (.0035-.0049")	7800	1900
EC50PLE12	23.6	23.6	(2) 1.2 mm	.06-.095 (.0023-.0037")	7000	1600
EC50PL13	23.6	23.6	(2) 1.2 mm	.09-.125 (.0035-.0049")	8000	1600
EC50PL14	23.6	23.6	(2) 1.2 mm	.06-.095 (.0023-.0037")	7800	1600
EC50PL15	23.6	23.6	(2) 1.2 mm	.09-.125 (.0035-.0049")	7800	1600
EC58PL02	19.8	17.1	(2) 1.2 mm	.09-.125 (.0035-.0049")	8500	2000
EC58PL03/E05/07	19.8	19.1	(2) 1.2 mm	.09-.125 (.0035-.0049")	8000	1700
EC59PL01	20.2	18.1	(2) 1.2 mm	.06-.095 (.0023-.0037")	8500	2000
EC65PL05	21.4	20.4	(2) 1.2 mm	.12-.170 (.0047-.0066")	8000	2200
EC68PL01	23.8	20.5	(2) 1.2 mm	.06-.095 (.0023-.0037")	8200	1800
EC68PL04	22.5	19.1	(2) 1.2 mm	.06-.095 (.0023-.0037")	8200	1800
EC80PL04	25.6	22.8	(2) 1.2 mm	.09-.125 (.0035-.0049")	8250	1600
EC80PL05	25.6	24.4	(2) 1.2 mm	.09-.125 (.0035-.0049")	8250	1600

Piston Ring End Gap (Installed)

Piston ring end gap all engines (except EC80PL04/05) .20 mm - .51 mm (.008" - .020")

Piston ring end gap EC80PL04/05 engines .30 mm - .45 mm (.012" - .018")

1997 Models

Machine Model	Engine Model	Cyl. Disp. CC's	Bore MM	Bore Inches	Stroke MM	Stroke Inches	No. of Cyl.	Type of Cooling	Fuel Octane (Min)
Indy Lite	EC34-2PM02	339	62.3	2.4528	55.6	2.1889	2	Fan	87*
Indy Lite GT	EC34-2PM02	339	62.3	2.4528	55.6	2.1889	2	Fan	87*
Indy Lite Deluxe	EC34-2PME02	339	62.3	2.4528	55.6	2.1889	2	Fan	87*
Indy Sport	EC44-3PM02	432	67.72	2.6661	60	2.3622	2	Fan	87*
Indy TranSport	EC44-3PM02	432	67.72	2.6661	60	2.3622	2	Fan	87*
Sport Touring	EC44-3PM02	432	67.72	2.6661	60	2.3622	2	Fan	87*
Super Sport	EC50PM06	488	72	2.6661	60	2.3622	2	Fan	87*
Indy Trail	EC50PM04	488	72	2.8346	60	2.3622	2	Fan	87*
Indy Trail RMK	EC50PM05	488	72	2.8346	60	2.3622	2	Fan	87*
Indy Trail Touring	EC50PME04	488	72	2.8346	60	2.3622	2	Fan	87*
Indy XCF	EC44-3PM02	432	67.72	2.6661	60	2.3622	2	Fan	87*
Indy 440 LC	EC45PL09	432	67.72	2.6661	60	2.3622	2	Liquid	87*
Indy 440 XC	EC45PL08	438	68.19	2.6846	60	2.3622	2	Liquid	87*
Indy 500	EC50PL17	488	72	2.8346	60	2.3622	2	Liquid	87*
Indy 500 SKS	EC50PL17	488	72	2.8346	60	2.3622	2	Liquid	87*
Indy 500 RMK	EC50PL16	488	72	2.8346	60	2.3622	2	Liquid	87*
Indy 500 EFI	EC50PL18	488	72	2.8346	60	2.3622	2	Liquid	87*
Indy Classic	EC50PLE17	488	72	2.8346	60	2.3622	2	Liquid	87*
Indy Classic Touring	EC50PL19	488	72	2.8346	60	2.3622	2	Liquid	87*
Indy WideTrak GT	EC50PM03	488	72	2.8346	60	2.3622	2	Fan	87*
Indy WideTrak LX	EC50PLE20	488	72	2.8346	60	2.3622	2	Liquid	87*
Indy XLT	EC58PL03	597	65	2.5590	60	2.3622	3	Liquid	87*
Indy XLT SKS	EC58PL03	597	65	2.5590	60	2.3622	3	Liquid	87*
Indy XLT RMK	EC58PL07	597	65	2.5590	60	2.3622	3	Liquid	87*
Indy XLT Touring	EC58PLE09	597	65	2.5590	60	2.3622	3	Liquid	87*
Indy XLT SP	EC58PL12	597	65	2.5590	60	2.3622	3	Liquid	87*
Indy XLT LTD	EC58PLE09	597	65	2.5590	60	2.3622	3	Liquid	87*
Indy XLT LTD SP	EC58PL12	597	65	2.5590	60	2.3622	3	Liquid	87*
Indy 600 XC	EC58PL08	597	65	2.5590	60	2.3622	3	Liquid	87*
Indy 600 XCR	EC59PL01	598	62.51	2.4610	65	2.5591	3	Liquid	91
Indy 600 XCR (SE)	EC59PL01	598	62.51	2.4610	65	2.5591	3	Liquid	91
Indy RXL	EC65PL05	648	67.72	2.6661	60	2.3622	3	Liquid	87*
Indy Ultra	EC68PL01	679	66.6	2.6220	65	2.5591	3	Liquid	87*
Indy Ultra Touring	EC68PL01	679	66.6	2.6220	65	2.5591	3	Liquid	87*
Indy Ultra SP	EC68PL01	679	66.6	2.6220	65	2.5591	3	Liquid	87*
Indy Ultra SPX	EC68PL03	679	66.6	2.6220	65	2.5591	3	Liquid	91
Indy Ultra SPX SE	EC68PL03	679	66.6	2.6220	65	2.5591	3	Liquid	91
Indy 700 SKS	SN70LCDCSP-01	701	81	3.1889	68	2.6772	2	Liquid	87*
Indy 700 RMK	SN70LCDCSP-02	701	81	3.1889	68	2.6772	2	Liquid	87*
Indy Storm	EC80PL05	794	72	2.8346	65	2.5591	3	Liquid	91
Indy Storm SE	EC80PL05	794	72	2.8346	65	2.5591	3	Liquid	91
Indy Storm RMK	EC80PL04	794	72	2.8346	65	2.5591	3	Liquid	91

* Non-oxygenated. Use minimum 89 octane when using oxygenated fuel.

1997 Models

Engine Model	Cyl. Head CC's Uninstalled	Cyl. Head CC's Installed	Piston/Cylinder Bore Clearance +.05 mm −.00 mm	Piston Clearance Service Limit	Engine Operating RPM ±200 RPM	Recommended Idle RPM
EC34-2PM02/E02	21.1	17.3	.08-.14 (.0031-.0055″)	.2 (.0078)	7000	1600
EC44-3PM02	28.6	23.0	.09-.14 (.0035-.0055″)	.2 (.0078)	6800	1600
EC50PM03	31.3	28.7	.10-.16 (.0039-.0063″)	.2 (.0078)	6600	1600
EC50PM04/E04/05	26.7	24.1	.10-.16 (.0039-.0063″)	.2 (.0078)	7000	1600
EC45PL08	20.0	19.0	.06-.095 (.0023-.0037″)	.15 (.0059)	8250	1500
EC45PL09	25.8	21.1	.09-.140 (.0035-.0055″)	.2 (.0078)	7750	1600
EC50PL16	28.0	22.0	.06-.095 (.0023-.0037″)	.2 (.0078)	7750	1600
EC50PL17	23.6	23.6	.09-.125 (.0035-.0049″)	.2 (.0078)	7750	1600
EC50PL18	23.6	23.6	.09-.125 (.0035-.0049″)	.2 (.0078)	7750	1600
EC50PL19	23.6	23.6	.09-.125 (.0035-.0049″)	.2 (.0078)	7750	1600
EC50PL20	23.6	23.6	.09-.125 (.0035-.0049″)	.2 (.0078)	7750	1600
EC58PL03	19.8	19.1	.09-.125 (.0035-.0049″)	.2 (.0078)	8250	1900
EC58PL07	19.8	19.1	.09-.125 (.0035-.0049″)	.2 (.0078)	8250	1900
EC58PL08	19.8	17.1	.09-.125 (.0035-.0049″)	.2 (.0078)	8500	1900
EC58PL09/E09	19.8	19.1	.09-.125 (.0035-.0049″)	.2 (.0078)	8250	1900
EC58PL12	19.8	17.1	.09-.125 (.0035-.0049″)	.2 (.0078)	8500	1900
EC59PL01	20.3	18.0	.07-.095 (.0028-.0037″)	.15 (.0059)	8500	1500
EC65PL05	21.4	20.4	.12-.170 (.0047-.0066″)	.2 (.0078)	8000	2200
EC68PL01	23.8	20.5	.07-.095 (.0028-.0037″)	.15 (.0059)	8000	1500
EC68PL03	25.1	21.4	.06-.095 (.0023-.0037″)	.15 (.0059)	8600	2200
SN70LCDCSP-01	41	32	.124 (.0048)	.2 (.0078)	8000	1500
SN70LCDCSP-02	41	32	.124 (.0048)	.2 (.0078)	8000	1500
EC80PL04	27.2	26.0	.09-.125 (.0035-.0049″)	.2 (.0078)	8400	1600
EC80PL05	27.2	26.0	.09-.125 (.0035-.0049″)	.2 (.0078)	8400	1600

Piston Ring End Gap (Installed)

Piston ring end gap all engines (except EC80PL04/05) .20 mm - .51 mm (.008″ - .020″)

Piston ring end gap EC80PL04/05 engines .30 mm - .45 mm (.012″ - .018″)

1998 Models

Machine Model	Engine Model	Cyl. Disp. CC's	Bore MM	Bore Inches	Stroke MM	Stroke Inches	No. of Cyl.	Type of Cooling	Fuel Octane (Min)
Indy Lite / Dlx / Trg	EC34-2PM02A	339	62.3	2.4528	55.6	2.1889	2	Fan	87*
Indy Sport	EC44-3PM024	432	67.72	2.6661	60	2.3622	2	Fan	87*
Indy TranSport	EC44-3PM024	432	67.72	2.6661	60	2.3622	2	Fan	87*
Sport Touring	EC44-3PM024	432	67.72	2.6661	60	2.3622	2	Fan	87*
Indy XCF	EC44-3PM024	432	67.72	2.6661	60	2.3622	2	Fan	87*
Indy 440 LC	EC45PL091	432	67.72	2.6661	60	2.3622	2	Liquid	87*
Indy 440 XCR	SN44-44LCDCSP -01	438	66	2.5984	64	2.5197	2	Liquid	87*
Indy Trail	EC50PM043	488	72	2.8346	60	2.3622	2	Fan	87*
Indy Trail Touring	EC50PM043	488	72	2.8346	60	2.3622	2	Fan	87*
Indy Trail RMK	EC50PM051	488	72	2.8346	60	2.3622	2	Fan	87*
Super Sport	EC50PM061	488	72	2.6661	60	2.3622	2	Fan	87*
Indy WideTrak LX	EC50PL201	488	72	2.8346	60	2.3622	2	Liquid	87*
Indy 500	EC50PL171	488	72	2.8346	60	2.3622	2	Liquid	87*
Indy Classic	EC50PL171	488	72	2.8346	60	2.3622	2	Liquid	87*
Indy 500 RMK	EC50PL161	488	72	2.8346	60	2.3622	2	Liquid	87*
Indy Classic Trg	EC50PL191	488	72	2.8346	60	2.3622	2	Liquid	87*
Indy XLT LTD	EC58PL130	597	65	2.5590	60	2.3622	3	Liquid	87*
Indy XLT Touring	EC58PL130	597	65	2.5590	60	2.3622	3	Liquid	87*
Indy XLT SP	EC58PL140	597	65	2.5590	60	2.3622	3	Liquid	87*
Indy XLT Classic	EC58PL150	597	65	2.5590	60	2.3622	3	Liquid	87*
Indy 600 XC	SN60-70LCDCSP -01	593	74.5	2.9331	68	2.6772	2	Liquid	87*
Indy 600 RMK	SN60-70LCDCSP -02	593	74.5	2.9331	68	2.6772	2	Liquid	87*
Indy 600 XCR	EC59PL020	598	62.51	2.4610	65	2.5591	3	Liquid	91
Indy Ultra	EC68PL050	679	66.6	2.6220	65	2.5591	3	Liquid	87*
Indy Ultra Touring	EC68PL050	679	66.6	2.6220	65	2.5591	3	Liquid	87*
Indy 700 XC	SN70-70LCDCSP -02	701	81	3.1889	68	2.6772	2	Liquid	87*
Indy 700 RMK	SN70-70LCDCSP -01	701	81	3.1889	68	2.6772	2	Liquid	87*
Indy 700 XCR	EC68PL060	679	66.6	2.6220	65	2.5591	3	Liquid	91
Indy Storm	EC80PL052	794	72	2.8346	65	2.5591	3	Liquid	91

* Non-oxygenated. Use minimum 89 octane when using oxygenated fuel.

1998 Models

Engine Model	Cyl. Head CC's Uninstalled (Bench)	Cyl. Head CC's Installed	Piston/Cylinder Bore Clearance (Target) +.05 mm −.00 mm	Piston Clearance Service Limit mm (inch)	Engine Operating RPM ±200 RPM	Recommended Idle RPM
EC34-2PM02A	21.1	17.3	.08-.14 (.0031-.0055″)	.2 (.0078)	7000	1600
EC44-3PM024	28.6	23.0	.09-.14 (.0035-.0055″)	.2 (.0078)	6800	1600
SN44-44LCDCSP-01	19.6	18.3	.09-.13 (.0035-.0051″)	.19 (.0075)	8250	1600
EC45PL091	25.8	21.1	.09-.14 (.0035-.0055″)	.2 (.0078)	7750	1600
EC50PM043	26.7	24.1	.10-.16 (.0039-.0063″)	.2 (.0078)	7000	1600
EC50PM051	26.7	24.1	.10-.16 (.0039-.0063″)	.2 (.0078)	7000	1600
EC50PM061	26.7	24.1	.10-.16 (.0039-.0063″)	.2 (.0078)	7000	1600
EC50PL161	28.0	22.0	.06-.095 (.0023-.0037″)	.2 (.0078)	7750	1600
EC50PL171	28.0	23.6	.09-.125 (.0035-.0049″)	.2 (.0078)	7750	1600
EC50PL191	28.0	23.6	.06-.095 (.0023-.0037″)	.2 (.0078)	7750	1600
EC50PL201	28.8	23.6	.06-.095 (.0023-.0037″)	.2 (.0078)	7750	1600
EC58PL130	19.9	19.2	.09-.125 (.0035-.0049″)	.2 (.0078)	8250	1900
EC58PL140	20.5	17.1	.09-.125 (.0035-.0049″)	.2 (.0078)	8500	1900
EC58PL150	20.5	17.1	.09-.125 (.0035-.0049″)	.2 (.0078)	8500	1900
EC59PL020	20.3	18.0	.07-.095 (.0028-.0037″)	.15 (.0059)	8500	1500
EC68PL050	23.8	20.5	.07-.105 (.0028-.0041″)	.15 (.0059)	8000	1500
EC68PL060	25.1	21.4	.06-.095 (.0023-.0037″)	.15 (.0059)	8600	1800
SN60-70LCDCSP-01	34.0		.11-.15 (.0043-.0059″)	.2 (.0078)	8000	1500
SN60-70LCDCSP-01	34.0		.11-.15 (.0043-.0059″)	.2 (.0078)	8000	1500
SN70-70LCDCSP-01	41	32	.11-.135 (.0043-.0053″)	.2 (.0078)	8000	1500
SN70-70LCDCSP-02	41	32	.11-.135 (.0043-.0053″)	.2 (.0078)	8000	1500
EC80PL052	27.2	26.0	.09-.125 (.0035-.0049″)	.2 (.0078)	8400	1600

Piston Ring End Gap (Installed)

Piston ring end gap (all engines except EC80PL04/05) .20 mm - .51 mm (.008″ - .020″)

Piston ring end gap EC80PL engines .30 mm - .45 mm (.012″ - .018″)

When tightening bolts, nuts, or screws, a torque pattern should be followed to ensure uniform equal tension is applied to all fasteners. Proper torque application prevents fasteners from loosening or breaking in critical service. It also minimizes wear and eliminates premature or needless repair costs. Following uniform torque application sequence patterns ensures optimum performance from precision machined, close tolerance assemblies. On vital engine parts, torquing negligence is of the utmost importance.

Torque is a force which tends to produce rotation. The measurement of this force is expressed in units of force and length. There are at present two basic systems of units used to express torque, English and Metric. In the English system, the units of force are the pound or ounce, and the length is the foot or inch.

In the Metric system, the unit of force is expressed in grams (gm) or kilograms (kg), and length as centimeters (cm) or meters (m). The most common units of torque in the English system are ft. lb. and in. lb. In the Metric system, torque is commonly expressed in units of kg-m. Multiply foot pounds by .1383 to obtain kg-m.

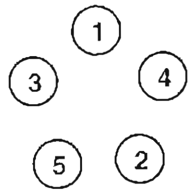
Engine	Cylinder Head*		Cylinder Base Nuts	Crankcase 8 mm	Crankcase 10 mm	Flywheel
Fan Cooled Twin Cylinder	18-19 ft. lbs. (2.5-2.65 kgm)		24-28 ft. lbs. (3.3-3.9 kgm)	17-18 ft. lbs. (2.2-2.3 kgm)	23-25 ft. lbs. (3.2-3.5 kgm)	60-65 ft. lbs. (8.3-9.0 kgm)
EC45PL EC50PL EC58PL* EC59PL EC65PL EC68PL EC80PL	8 mm 17-20 ft. lbs. (2.4-2.8 kgm)	10 mm 24-26 ft. lbs. (3.3-3.6 kgm)	24-28 ft. lbs. (3.3-3.9 kgm)	17-18 ft. lbs. (2.2-2.3 kgm)	23-25 ft. lbs. (3.2-3.5 kgm)	60-65 ft. lbs. (8.3-9.0 kgm)
SN44	20-24 ft.lbs. (2.8 - 3.3 kgm)		30-34 ft.lbs (4.15-4.7 kgm)	20-24 ft.lbs. (2.8 - 3.3 kgm)		90 ft. lbs. (12.4 kgm)
SN60** SN70**	18 - 22 ft. lbs.** (2.3 - 3.04 kgm)		30-34 ft.lbs (4.15-4.7 kgm)	20-24 ft.lbs. (2.8 - 3.3 kgm)	26-30 Ft lbs (3.6-4.15 kgm)	55 ft. lbs. (7.4 kgm)

* Use high end of torque range

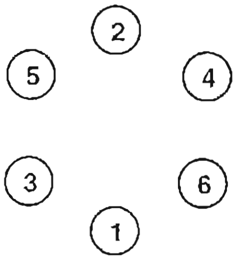
** Torque head bolts prior to torquing cylinder base nuts. Apply Loctite™ 242.

All 6mm Crankcase Bolts ..... 108 in. lbs. (1.24 kg-m)

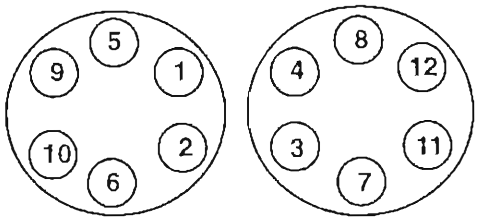
All 7/16-14 Engine Mount Strap Bolts ..... 44-48 ft. lbs. (6.0-6.63 kg-m)



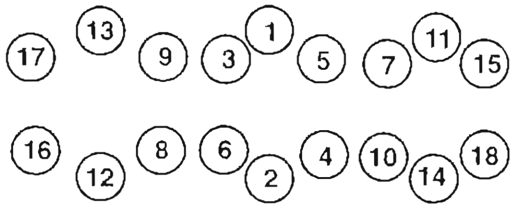
CYLINDER HEAD - 5 STUD



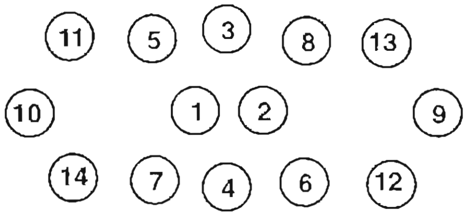
CYLINDER HEAD - 6 STUD



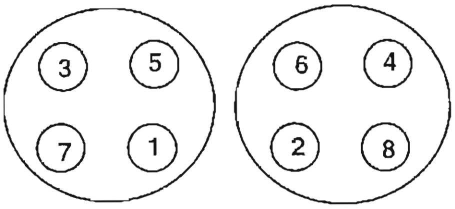
CYLINDER HEAD
Domestic Twins 600 / 700



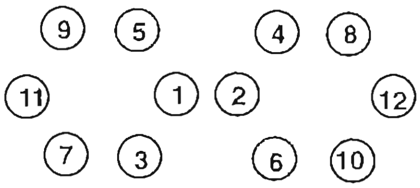
CYLINDER HEAD - EC58PL



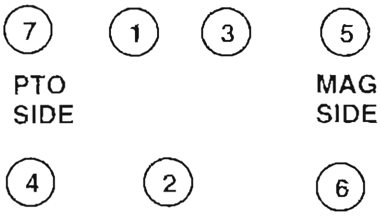
CYLINDER HEAD - EC45/50PL



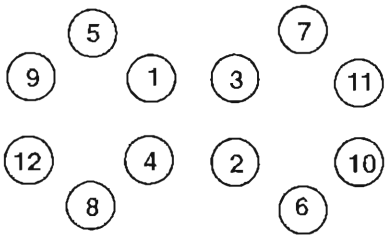
CYLINDER BASE - 600 / 700 Twins
<u>Note: Torque Head Bolts Prior to torquing cylinder base.</u>



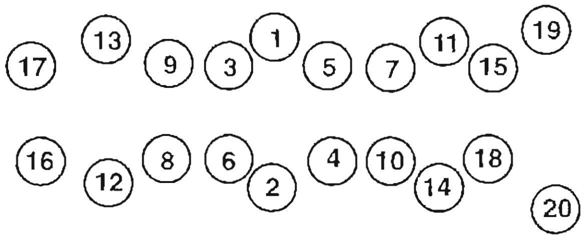
Cylinder Head - SN44



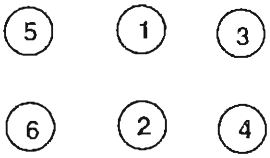
PL TWIN BASE



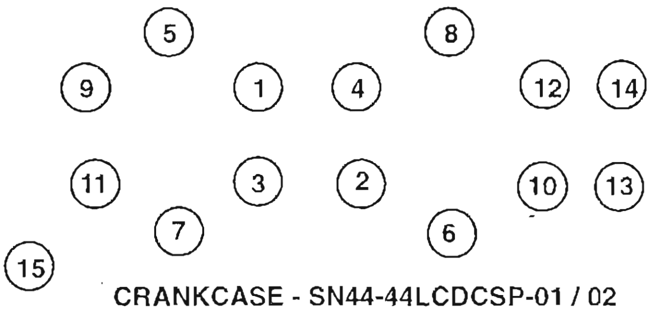
CRANKCASE - TWIN CYLINDER
(Except 600/700 Twins)



CRANKCASE - 3 CYLINDER



CRANKCASE - 600 / 700 TWINS

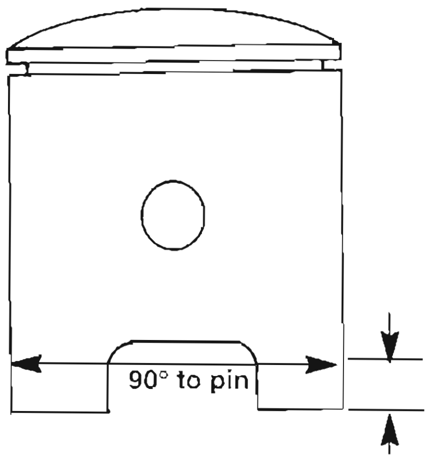


CRANKCASE - SN44-44LCDCSP-01 / 02

Piston Measurement

Whenever cylinders are honed or bore clearance is checked, it is important to measure piston diameter properly to arrive at its major dimension. Measurements should be taken with piston at room temperature, and **at right angles to the pin** as shown. Determine the largest diameter within this area and refer to the chart below for clearance specifications.

Cylinder bore must be straight and concentric. Refer to honing information outlined in this section for specific procedures. Refer to the specification charts at the beginning of this chapter for *Target Clearance* when re-boring cylinder, or *Service Limit* specifications (to determine if piston requires replacement. Specifications are listed by engine model number.



FUJI ENGINES - Measure 1/2″ (12.7mm) up from bottom of skirt

DOMESTIC ENGINES - Measure 3/8″ (10.0mm) up from bottom of skirt

Ni-Ca-Sil cylinders can be lightly honed if the proper stone is used. Ammco #3955 honing stones (for use with the Ammco 3950 cylinder hone) are suitable and can be ordered through most automotive supply stores or VST. See General Information chapter for tool ordering information.

To Determine Metric Displacement

mm Bore ÷ 2 =
x itself, or R squared =
x pi 3.1416 =
x mm stroke =
÷ 1000 = ________
displacement of one cylinder in cc

To Determine Compression Ratio

Compression Ratio =

Piston Displacement +
Installed Head Volume ÷

Installed Head Volume =

________ : 1 Ratio

Oxygenated Fuel

Due to increased emphasis on reducing auto emissions, some areas are required to use oxygenated fuels. Oxygenated fuels are those which include oxygen in the molecule due to the addition of an ether or alcohol.

Polaris engines are designed for use with a specific fuel octane number. If fuels with a lower octane number than that specified are used, the engine may be severely damaged.

1997 - current models are calibrated for a minimum 87 octane (no lead regular) or 89 octane (oxygenated) fuel [(R+ M)/2]. Some high performance models require a minimum of 91 octane. No change is required to 1997 models provided the minimum fuel octane requirement is met. Refer to the Specification Decal on the hood, Owner's Safety and Maintenance Manual, or Engine Chapter in this manual for minimum octane recommendation.

1996 Models-Oxygenated fuel can be used in all 1996 models of Polaris snowmobiles if these guidelines are followed:

NOTE: The use of fuel containing *methanol* is not recommended.

Carbureted Models: (see following page for EFI recommendations)

1. Use fuel with a minimum pump octane of 89 or higher (R+M)/2 method and jet carbs as outlined in step 2. **NOTE:** Some models are calibrated to use a minimum of *91 octane* fuel. On these models, only 91 octane or higher should be used. Refer to the Specification Decal, Owner's Safety and Maintenance Manual, or Engine Chapter in this manual for minimum octane recommendation.
2. When using 89 octane oxygenated fuel on 1996 models, install main jets that are one size larger than that listed on the jetting chart for a given altitude and temperature. For example, the minimum octane (non-oxygenated) fuel for the 1996 Indy Classic is 87. The main jet installed during production for use at altitudes of 0-3000 ft. and temperatures between -20 and +10°F) is a 340. To use 89 octane *oxygenated* fuel, install 350 main jets.
3. Turn the pilot air screws in (clockwise) 3/8 turn from the standard setting. Example: if the production air screw setting is 1 turn out, the setting for 89 octane oxygenated fuel would be 5/8 turn out. This adjustment may vary according to model and type of fuel.

NOTE: The following 1996 Indy Classic charts are provided as an example only.

1996 Indy Classic

87 Octane (Non-Oxygenated)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40 °F Above +5°C
Altitude Meters (Feet)	0-900 (0-3000)	360	*340	320	300
	900-1800 (3000-6000)	320	300	280	260
	1800-2700 (6000-9000)	280	260	240	220
	2700-3700 (9000-12000)	240	230	210	200

- Shaded zone should drop Jet Needle one position (raise E-Clip)

* Production Setting

1996 Indy Classic

89 Octane (Oxygenated)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40 °F Above +5°C
Altitude Meters (Feet)	0-900 (0-3000)	370	350	330	310
	900-1800 (3000-6000)	330	310	290	270
	1800-2700 (6000-9000)	290	270	250	230
	2700-3700 (9000-12000)	250	240	220	210

- Shaded zone should drop Jet Needle one position (raise E-Clip)

Oxygenated Fuel - 1996 EFI Models

The fuel used in the Polaris engine is as important to engine life and performance as the lubricant used.

CAUTION:

Polaris engines are designed for use with a specific fuel octane number. If fuels with a lower octane number than that specified are used, the engine can become severely damaged.

Be certain the fuel used in the Polaris engine meets or exceeds the required minimum 87 octane (no lead regular) or 89 octane (oxygenated) fuel [(R+ M)/2].

NOTE: See oxygenated fuel recommendations below for 1996 EFI models. 1997 - current EFI models are calibrated for 89 octane oxygenated fuel or 87 octane non-oxygenated fuel, and do not require modifications below 5000 ft.

Refer to the Specification Decal, Owner's Safety and Maintenance Manual, or Engine Specifications in this manual for minimum octane recommendation.

Only winter gasoline should be used in Polaris snowmobiles. The gasoline sold at the pumps and used in the summer is different than gasoline sold in the winter. "Summer" fuels used in snowmobiles can cause hard starting.

To use 89 octane oxygenated fuel on 1996 EFI models:

1. At altitudes below 5000 ft., the compression ratio must be reduced by installing .020" head gasket shims between the cylinder head gasket and cylinder head. The part numbers are shown below. No change is required if machine is operated at altitudes above 5000 feet (1500 meters).

1996 EFI Cylinder Head Shims

Model	Shim Part Number
1996 500 EFI/SKS/RMK	(1) 5211416
1996 RXL	(3) 5211414

Fuel System Deicers

If non-oxygenated fuel is being used, Polaris recommends the regular use of Isopropyl base fuel system deicer (Polaris PN 2870505). Add 1 to 2 ounces per gallon (8-16 milliliters per liter) of gasoline to prevent engine damage resulting from fuel system icing and lean mixtures. Never use deicers or additives that contain *methanol*. Use *only* isopropyl fuel system deicers.

If using oxygenated fuel containing ethanol, additional alcohol deicers or water absorbing additives are not required and should not be used.

Whenever servicing the carburetor or fuel system, it is important to heed the warnings found on page 5.1.

Engine Removal, Typical

1. Open hood and remove retention cable. Support hood securely.

2. Disconnect battery ground (–) from battery. Shut off fuel.

3. Remove airbox.

NOTE: On some models, fuel pump and/or CDI box must be removed from airbox before removing airbox.

4. Remove fuel pump from engine if applicable.

Engine Removal, Typical-Cont.

5. Free recoil rope from chassis.

6. Loosen clamps at carburetor mounting flange. Pull carbs from adaptors and secure out of the way. Note routing of all cables and hoses for reassembly.

7. Disconnect oil pump control cable.

8. Disconnect and plug oil supply line. A spare water trap plug can be used to plug the oil line from the oil reservoir.

Engine Removal, Typical-Cont.

9. Remove drive belt and drive clutch.

10. Remove exhaust system.

NOTE: On triple pipe models, mark pipe location to simplify reassembly.

11. On liquid cooled models, drain coolant into suitable container.

12. Disconnect coolant supply hoses. (Liquid models)

Engine Removal, Typical-Cont.

13. Disconnect electrical connections from stator and starter motor (where applicable).

14. Remove two front and two rear engine mounting bolts securing engine mounting plate to chassis.

15. Remove engine from chassis.

Engine Installation, Typical

1. Prepare chassis for engine installation by moving hoses and wiring out of the way.

2. With engine mounting plate connected to engine, set engine on rubber mounts and loosely install mounting bolts and nuts.

3. Install drive clutch and check clutch offset/alignment. See page 6.44. Adjust torque stop (where applicable) to .100″ (2.5mm).

4. Tighten engine mounting bolts to specification.

Engine Mounting Bolt Torque-

Front - 28 Ft lbs (6.67 kgm)
Rear - 28 Ft lbs (6.67 kgm)

Engine Installation, Typical-Cont.

5. Connect all stator connections.

6. Connect oil supply line to oil pump. Bleed oil pump by opening bleed screw on top until oil flows steadily. Secure bleed screw. Install throttle cable to oil pump and check adjustment. Refer to page 3.89 for oil pump adjustment procedure.

7. Install carburetors and tighten clamps. Make sure hoses and cables are routed correctly.

8. Install airbox.

Engine Installation, Typical-Cont.

9. Secure fuel pump and CDI box.

10. Install coolant hoses where applicable. Make sure hoses are routed properly and hose clamps are positioned and tightened securely.

11. Route and install recoil rope to chassis.

12. Install starter and starter cables (electric start models).

Engine Installation, Typical-Cont.

13. Install exhaust system in reverse order of disassembly.

14. Secure hood cable.

15. Remove any coolant bleed screws or radiator caps and fill coolant system with coolant (liquid models).

Polaris Antifreeze
Quarts PN 2871534
Gallons PN 2871323

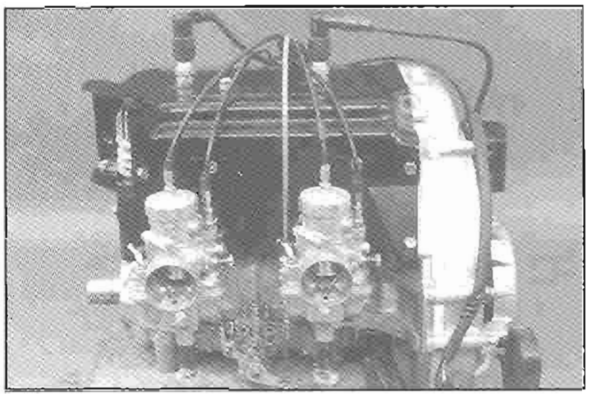
16. Add a full tank of premix fuel (40:1) to fuel tank.

Engine Installation, Typical-Cont.

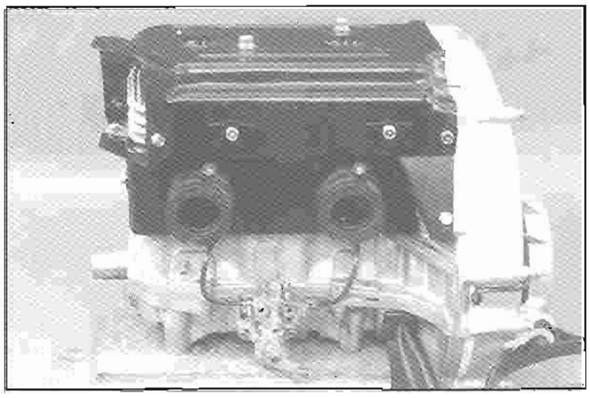
17. Start engine and check operation. (Bleed cooling system on liquid models.)

Engine Disassembly

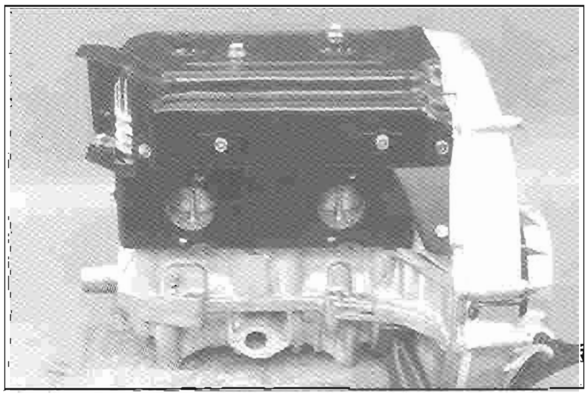
The photo at right shows a complete twin cylinder engine.



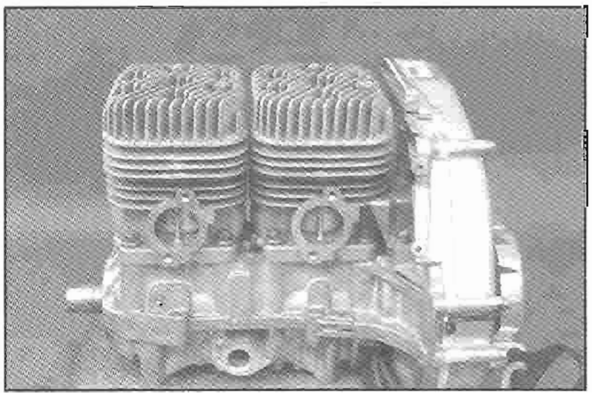
1. Remove carburetors.
2. Disconnect oil pump feed lines and remove oil pump.



3. Remove carburetor adaptors.

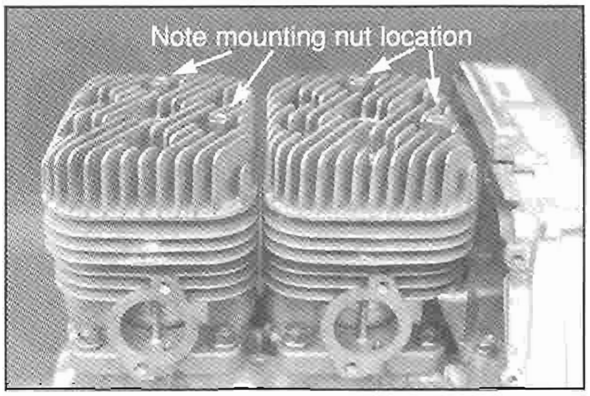


4. Remove air shrouds. **NOTE:** There are gaskets between shroud and cylinder.

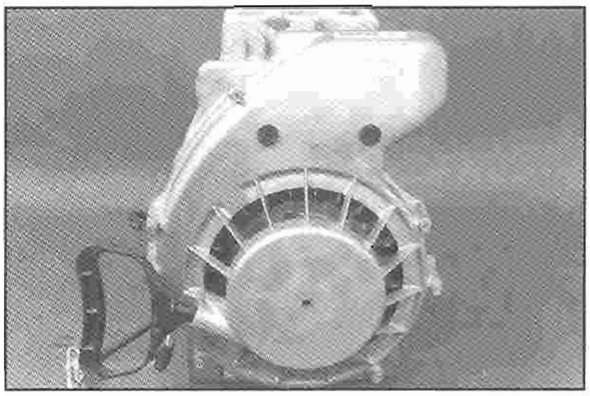


Engine Disassembly, Cont.

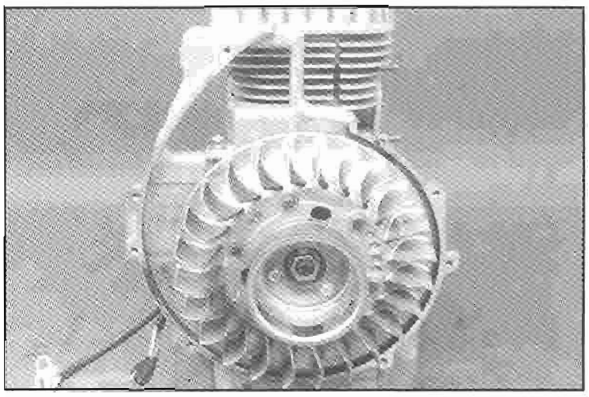
5. Note position of shroud retainer mounts on cylinder heads. These must be in the same position for reassembly.



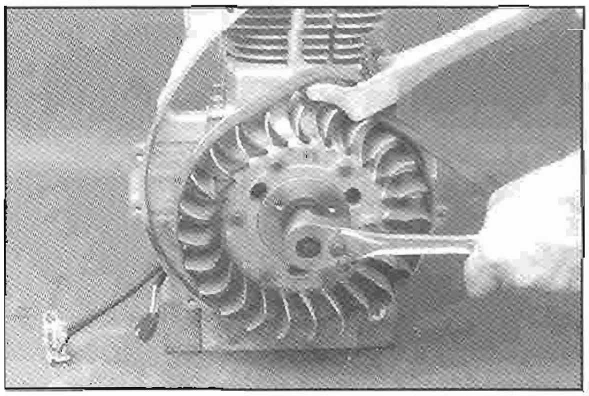
6. Remove recoil fan housing.



7. Remove recoil drive hub.



8. Remove flywheel retaining nut.

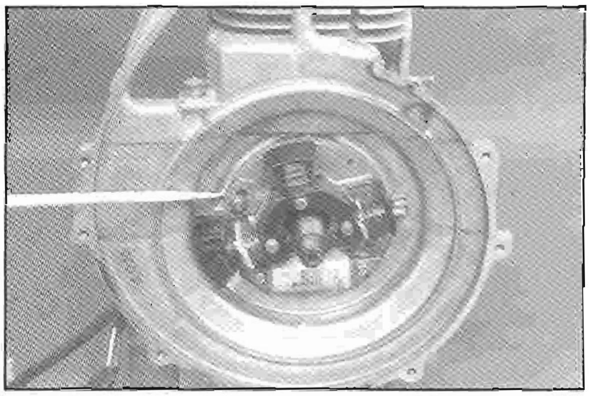


Engine Disassembly, Cont.

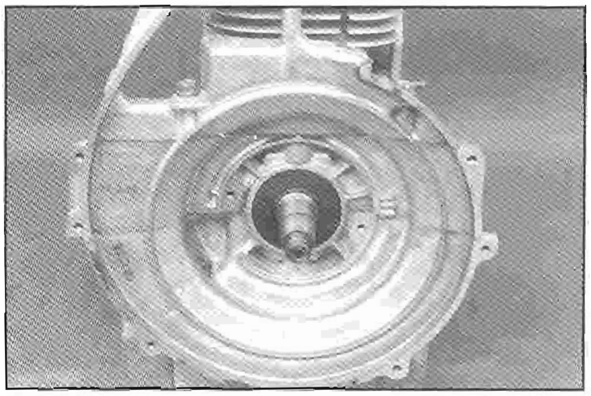
9. Using flywheel puller, remove flywheel.

Flywheel Puller
PN 2871043

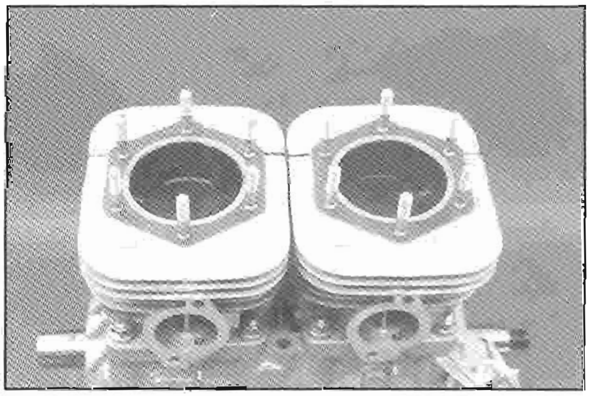
10. Mark stator plate and crankcase to ease reassembly. Remove stator plate.



11. Remove two bolts securing inner and upper shroud. Remove upper shroud.

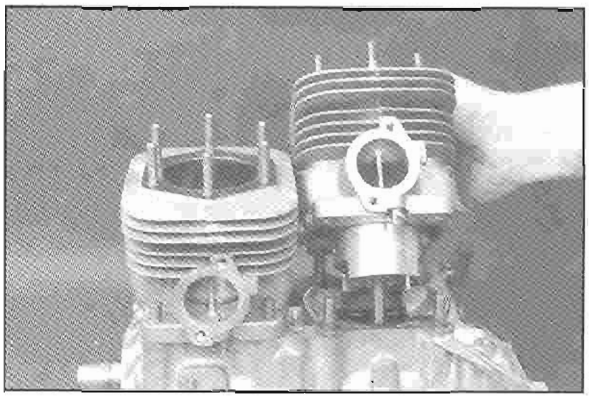


12. Loosen and remove all bolts securing cylinder heads to cylinder. Remove heads.

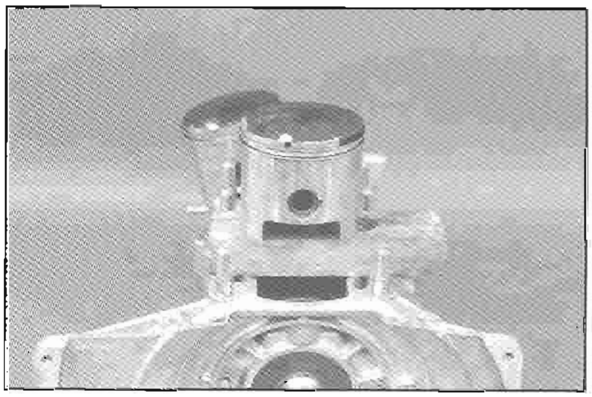


Engine Disassembly, Cont.

13. Remove cylinder base nuts and remove cylinders.
    NOTE: Refer to cylinder inspection page 3.86.

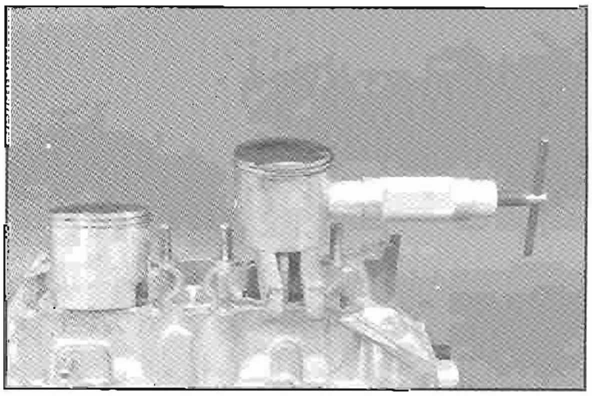


14. Remove piston c-clip.

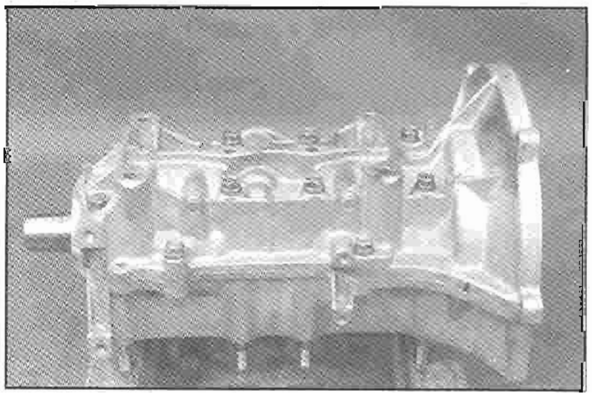


15. Remove piston pin and remove pistons. Refer to general inspection procedures page 3.80-3.87.

Piston Pin Puller **PN 2870386**

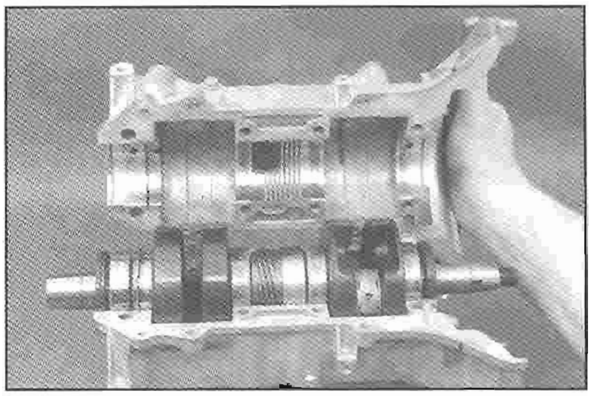


16. Remove all crankcase bolts.



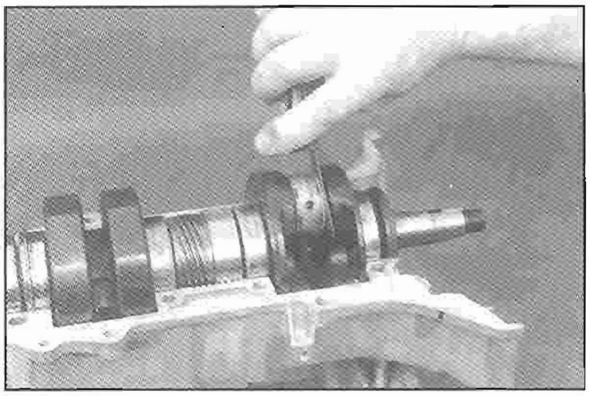
Engine Disassembly, Cont.

17. Separate crankcase halves.

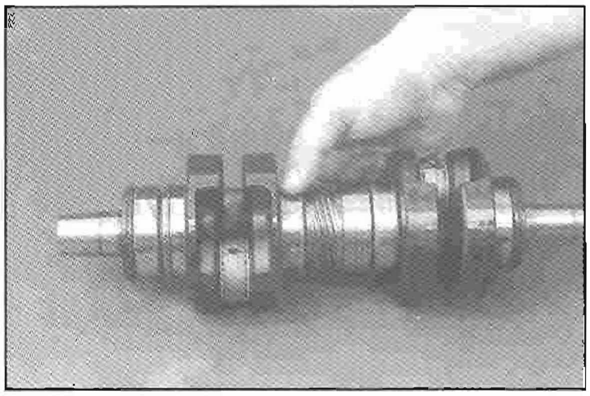


18. Measure connecting rod side clearance. See page 3.82 for measurement procedure.

Connecting Rod Side Clearance
.012″ - .016 (.30 - .40 mm)



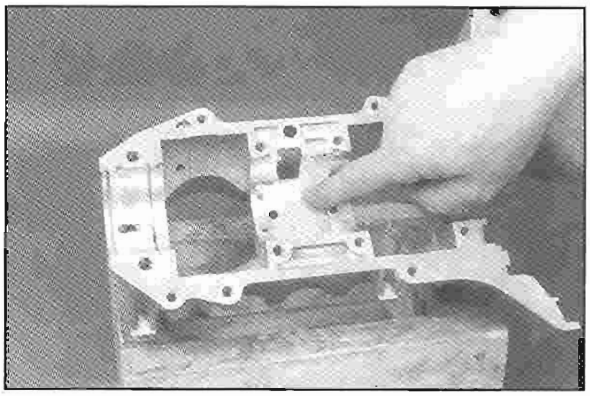
19. Refer to page 3.81 for crankshaft inspection procedure.



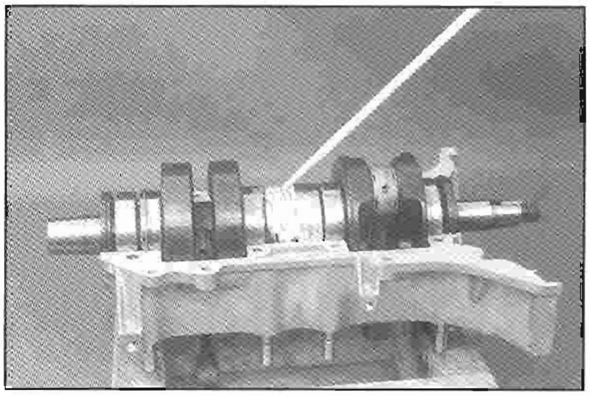
Engine Assembly

1. Clean all engine components thoroughly in a solvent tank. Remove all filings, excess sealer, and dust. Blow dry with compressed air.
2. Apply 3-Bond™ sealer to top half of crankcase and lubricate labyrinth seal and oil pump drive gear.

3-Bond ™ 1215	
PN 2871557	**120 Gram Tube**



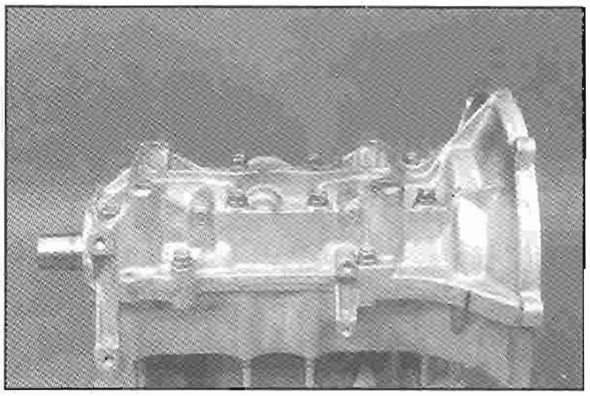
3. Lightly grease seals and install on crankshaft on crankshaft with lip (spring) facing inward toward crankshaft. Place crankshaft in upper crankcase half. Make sure seal and PTO bearing retainer fit properly into grooves.



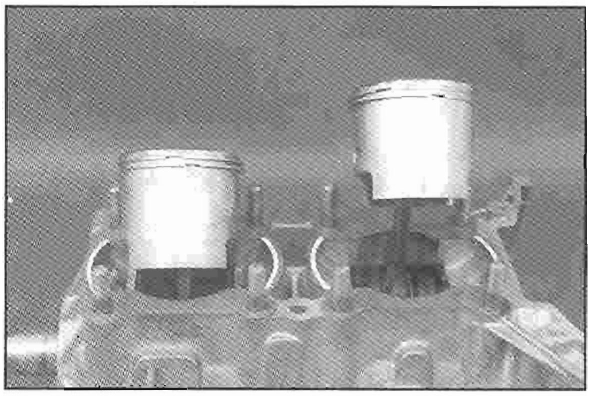
4. Install bottom crankcase half and insert crankcase bolts. Torque to specification in proper sequence shown on page 3.6.

Crankcase Mounting Bolt Torque:

8mm - 18 ft. lbs. (2.48 kgm)
10mm - 26 ft. lbs. (3.59 kgm)



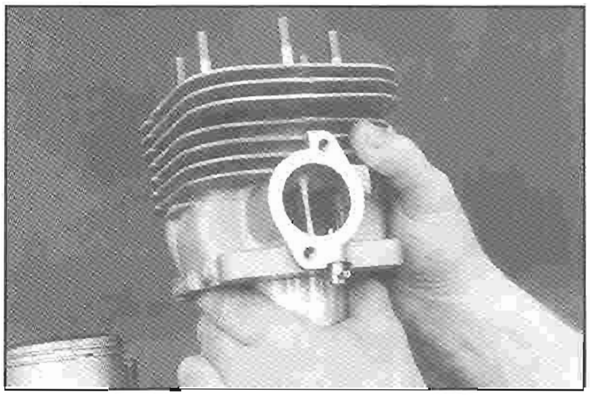
5. Install pistons with arrow (▶) on piston facing flywheel. Install C-clips securely in piston groove.
6. Lubricate rings and pistons with two stroke oil. Install rings with letter mark or beveled side facing upward.
7. Install base gasket with adhesive strip facing up.



Engine Assembly, Cont.

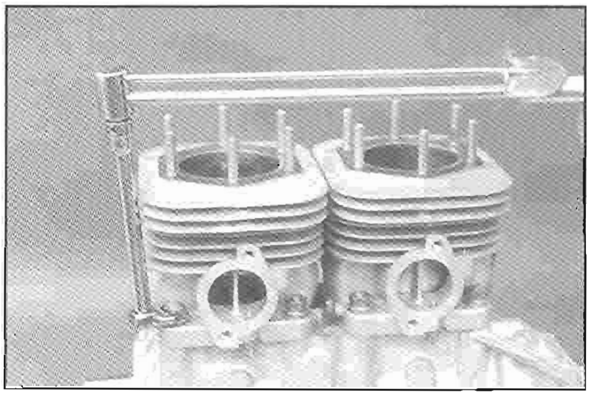
8. Lubricate cylinder with two stroke oil and install onto piston while compressing piston rings by hand. Be sure ring end gap is centered over locating pin or ring damage may occur. **NOTE:** Use a piston support block to help hold piston and prevent piston damage during assembly.

Piston Support Block
PN 2870390

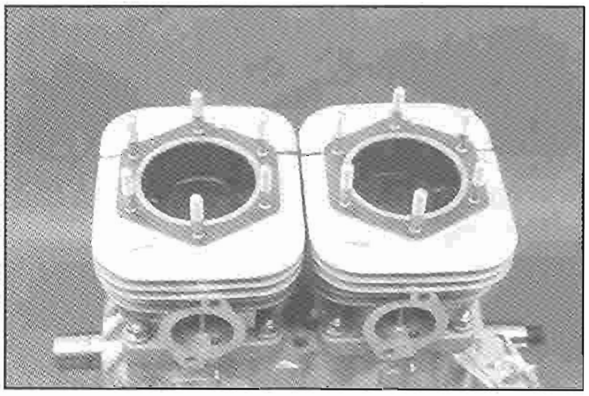


9. Torque cylinder base bolts to specification.

Cylinder Base Bolt Torque
24-28 Ft lbs (3.3-3.9 kgm)

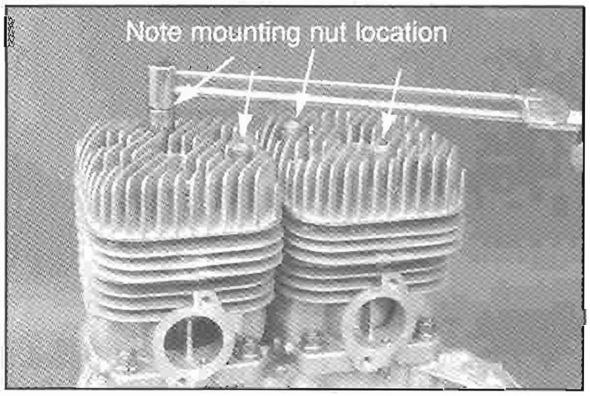


10. Install head gasket with wide side of fire ring facing down (narrow side up).



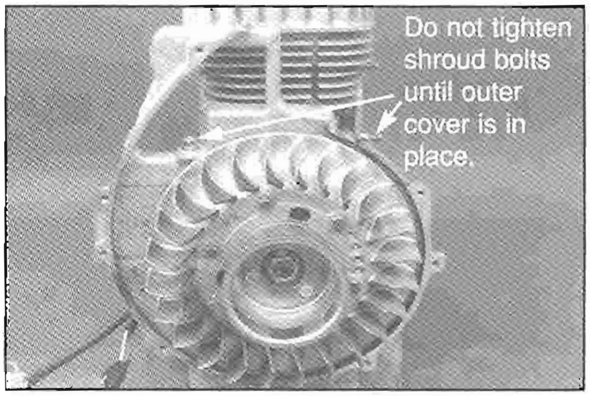
11. Install cylinder heads and torque head bolts to specification. **NOTE:** Make sure threaded head nuts are in the proper position for shroud mounting. See "x" in photo at right.

Head Bolt Torque-
19-18 Ft lbs (2.3-2.65 kgm)



Engine Assembly, Cont.

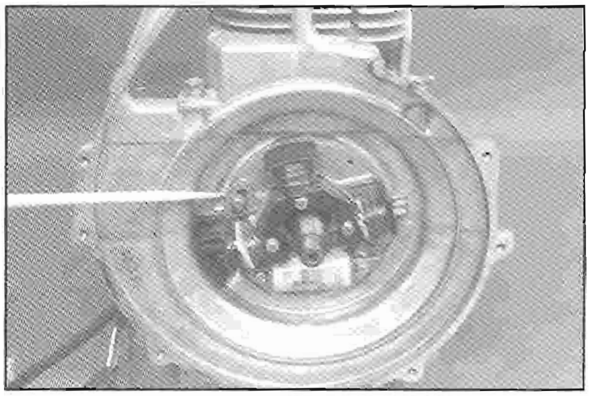
12. Install inner fan shroud.



CAUTION:

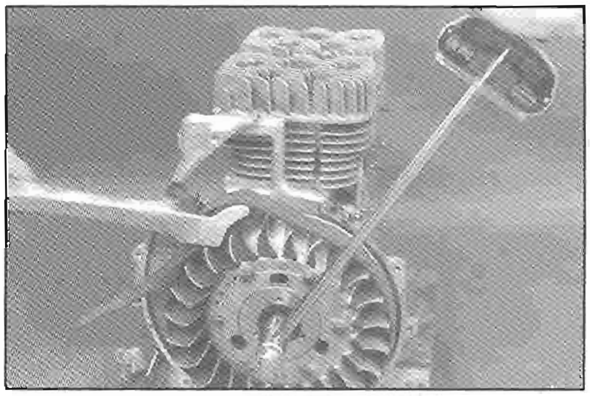
Do not tighten bolts until outer shroud is bolted in place. Outer shroud must determine placement of inner shroud, or damage may result.

13. Install stator plate aligning ignition timing mark as seen during disassembly. Tighten stator mounting bolts securely.



14. Make sure key is on crankshaft and install flywheel aligning keyway.

15. Install flywheel nut and torque to specification.



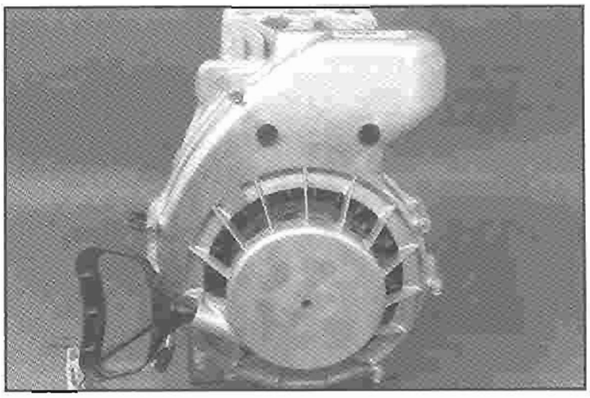
Flywheel Nut Torque-

60-65 Ft lbs (8.3-9.0 kgm)

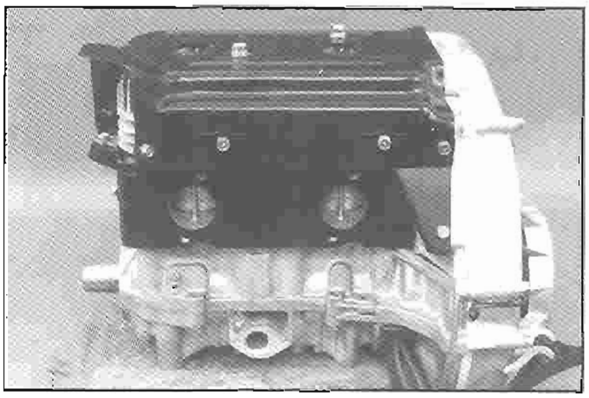
Engine Assembly, Cont.

16. Install recoil starter hub and recoil housing. **NOTE:** Tighten two inner shroud bolts.

Recoil Hub Bolt Torque:
8-10 ft. lbs. (1.11 - 1.38 kg-m)



17. Reassemble cooling shroud.

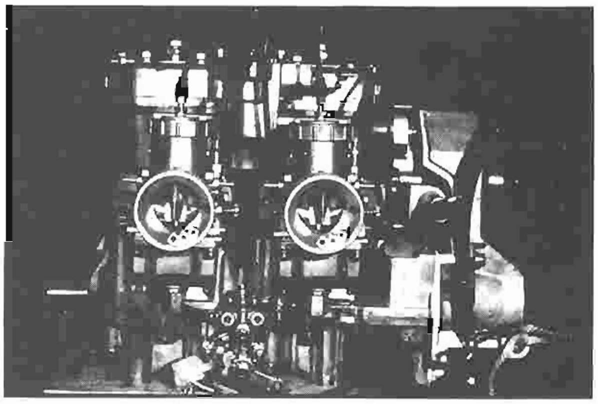


18. Install oil pump. If crankcase, oil pump, or pump drive components were replaced, refer to page 3.89 to inspect drive gear end play.

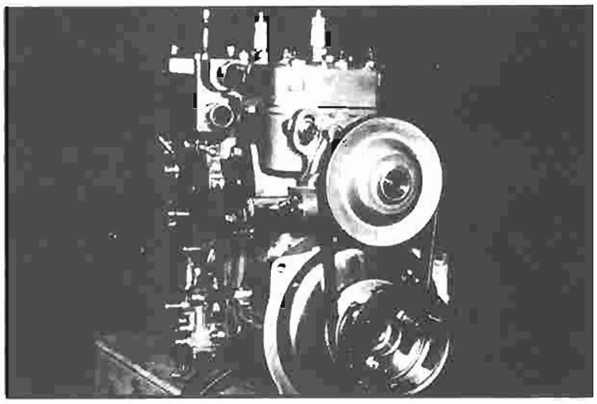
Oil Pump Mounting Screw Torque:
48 - 72 in. lbs. (.55 - .83 kg-m)

Disassembly

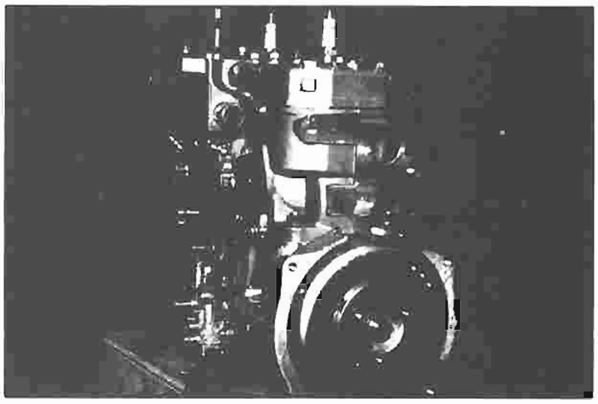
The photo at right shows a complete liquid twin cylinder engine.



1. Remove carburetors or throttle bodies.
2. Remove recoil housing and exhaust manifold.

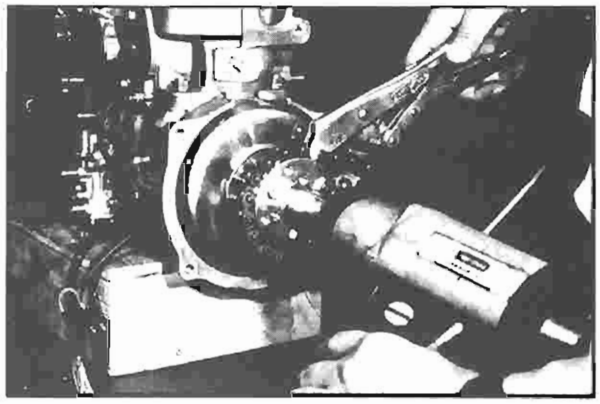


3. Remove water pump, starter recoil cup with water pump drive pulley and flywheel nut. Note position of shim washers for pulley alignment upon reassembly.



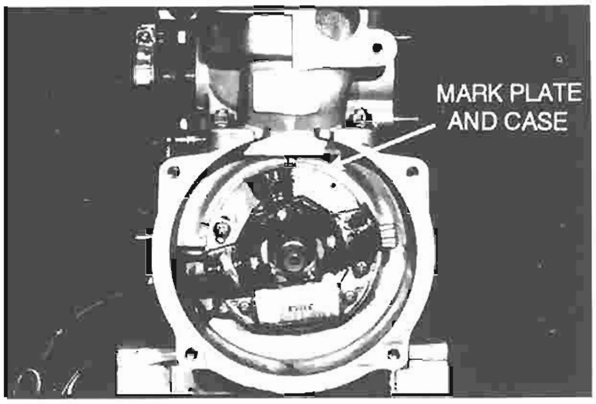
4. Install flywheel puller. Secure puller with a holding fixture tool, strap wrench, or chain wrench while pulling flywheel.

Flywheel Puller
PN 2871043

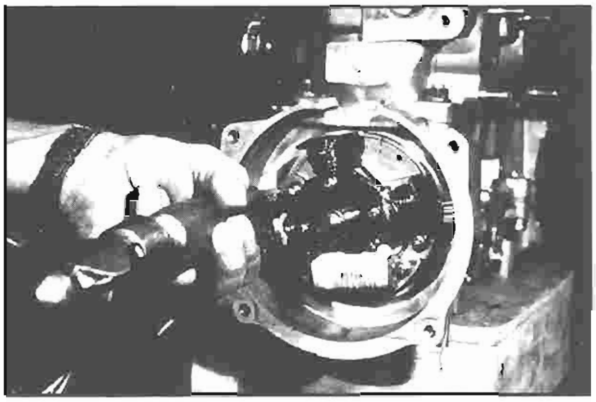


Disassembly, Cont.

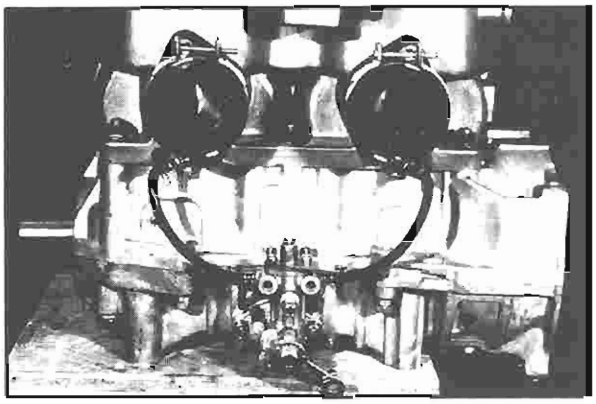
5. Mark stator plate and crankcase for reference when reassembling the engine.



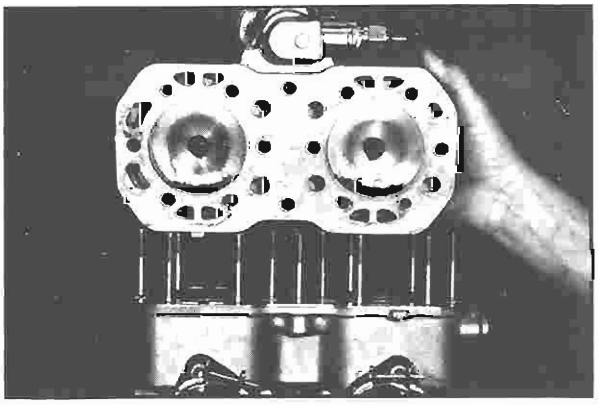
6. Using an impact screwdriver, remove stator screws.



7. Remove oil pump and oil pump feed lines from cylinder banjo bolts.

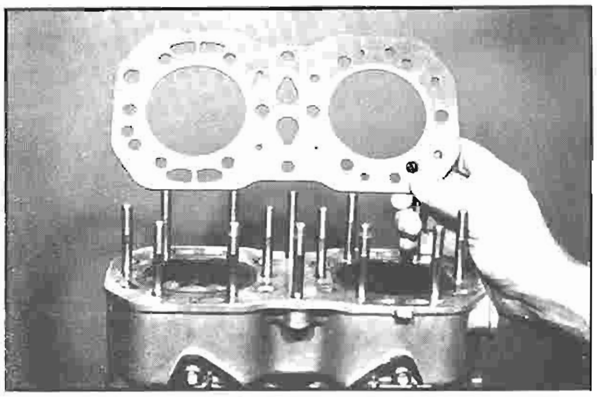


8. Remove cylinder head.

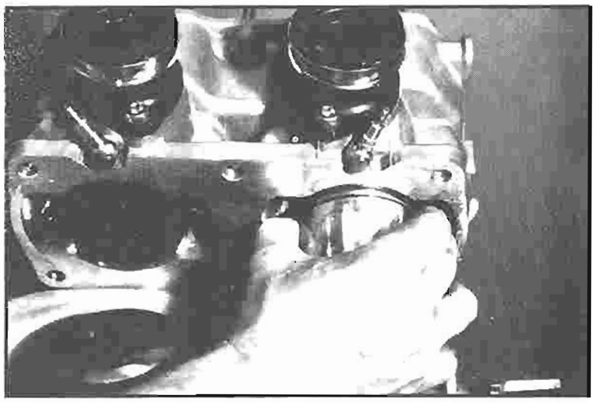


Disassembly, Cont.

9. Remove head gasket. Note position of head gasket inlet and outlet hole sizes for reference during reassembly.



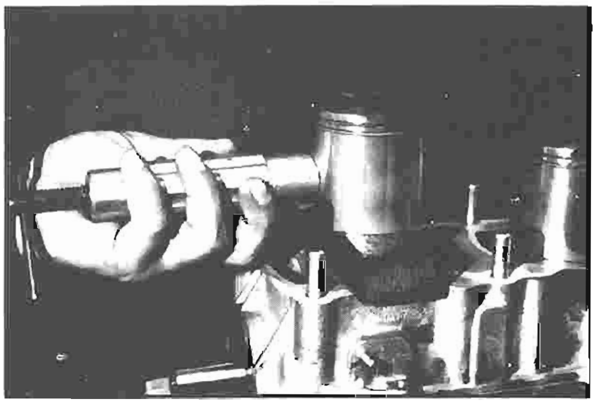
10. Remove cylinder.



11. Remove C-clip retainer clips from piston as shown.

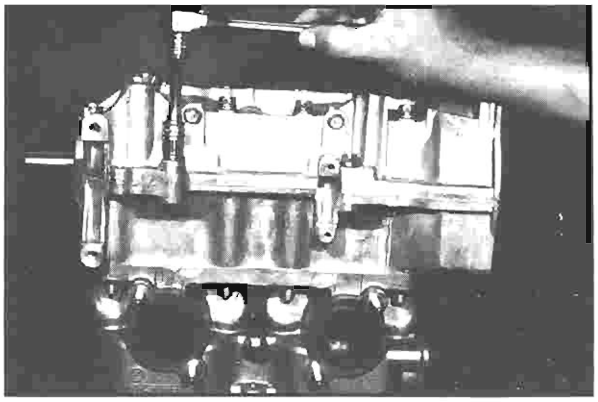
12. Using piston pin puller, remove piston pin from piston as shown.

Piston Pin Puller
PN 2870386



Disassembly, Cont.

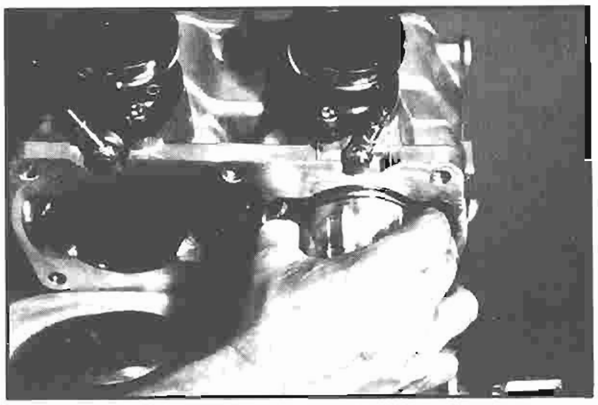
13. Remove crankcase bolts.



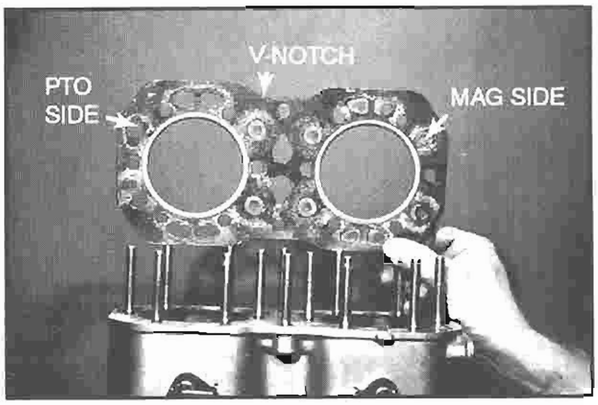
NOTE: Refer to general inspection procedures on pages 3.79-3.90 for engine component inspection (i.e. crankshaft and crankcase inspection, piston clearance, oil pump drive gear end play etc.).

Assembly, Cont.

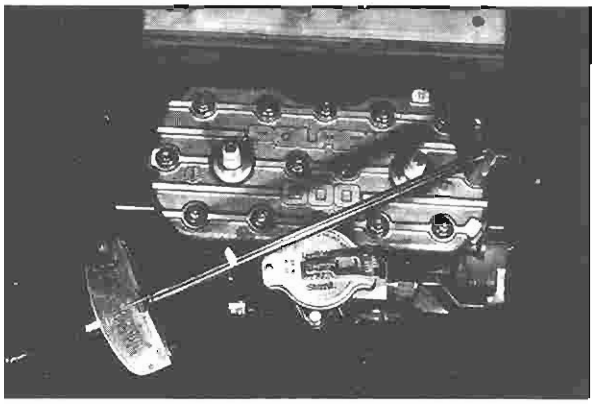
9. Lubricate rings and cylinder with Premium 2 Cycle Lubricant and compress rings with fingers, aligning end gaps with locating pins. Install cylinder with a gentle front-to-back rocking motion, being careful not to damage rings. Install cylinder base nuts and tighten to 24-28 ft. lbs. (3.3-3.9 kg-m) following the pattern shown on page 3.6.



10. Install head gasket. Note proper position of gasket, "V" notch forward, small intake hole on right (mag) side, large hole on left (PTO) side.

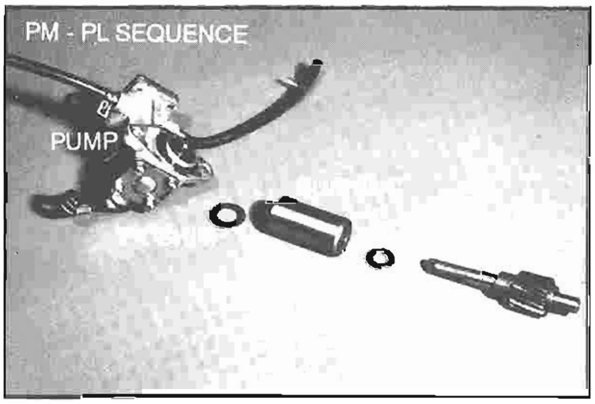


11. Install cylinder head and torque cylinder head nuts following torque specs and pattern sequence on pages 3.5 and 3.6.



12. Before installing oil pump drive gear, refer to end play adjustment, page 3.89.

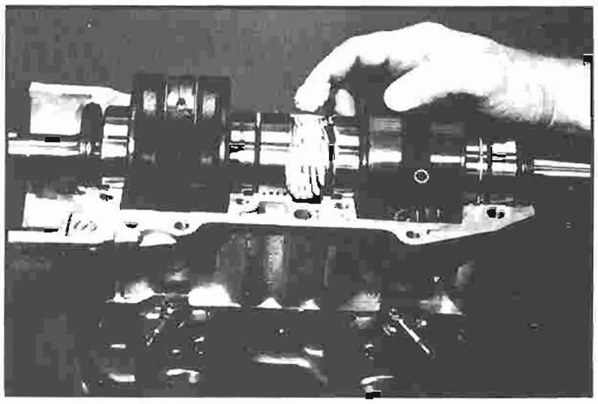
13. Install oil pump in the sequence shown in photo at right.



Assembly

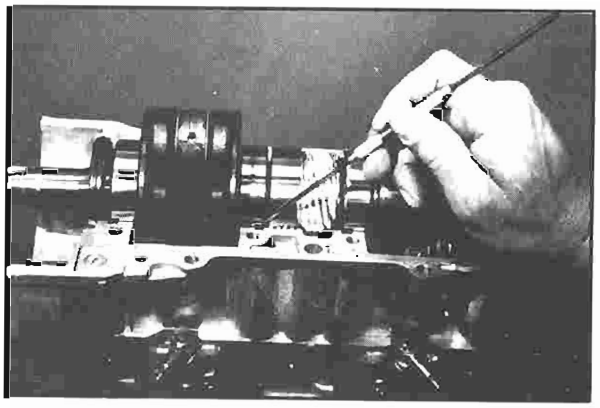
Prior to assembly, refer to page 3.87 and check ring end gap and piston to cylinder clearance.

1. Grease crankshaft end seals, oil pump drive gear, and labyrinth seal area as shown. Seals should be installed with spring and lip facing inward toward crankshaft.



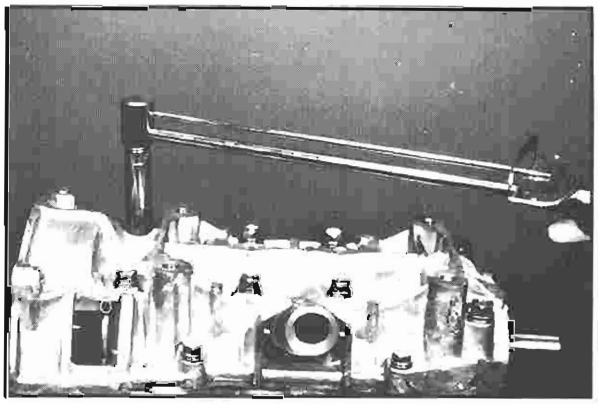
2. Turn bearing so anti-rotation pins are in the proper groove.
3. Apply 3-Bond™ sealant to crankcase halves.

3-Bond ™ 1215
PN 2871557 120 Gram Tube

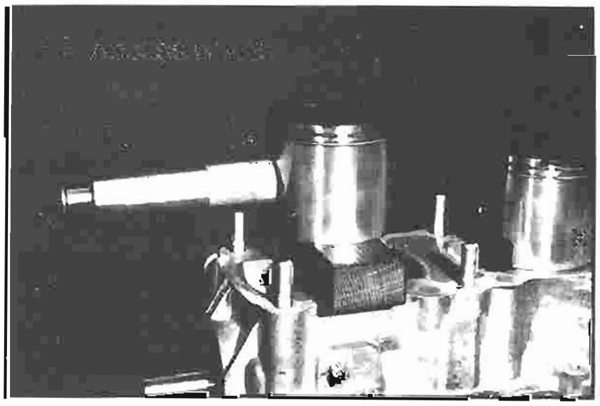


4. Torque crankcase following torquing specs and sequence outlined on pages 3.5 and 3.6. Lubricate crankshaft main bearings through access holes.

Crankcase Mounting Bolt Torque:
8mm - 18 ft. lbs. (2.48 kgm)
10mm - 26 ft. lbs. (3.59 kgm)

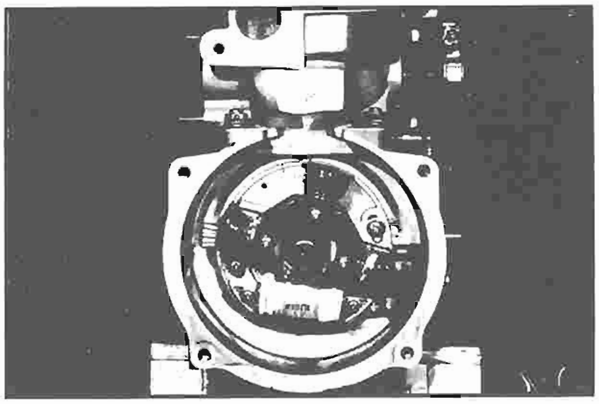


5. Install pistons with "F" mark or arrow (▲) toward flywheel.
6. Install C-clip using installation tool PN 2870773.
7. Install base gasket.
8. Lubricate rings and pistons with two stroke oil. Install rings with letter mark or beveled side facing upward. See page 3.87.



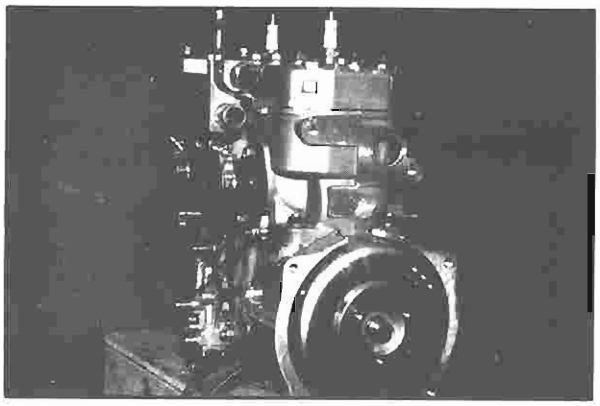
Assembly, Cont.

14. Connect oil feed lines to cylinder.
15. Align stator as previously marked on stator plate and secure with screws.



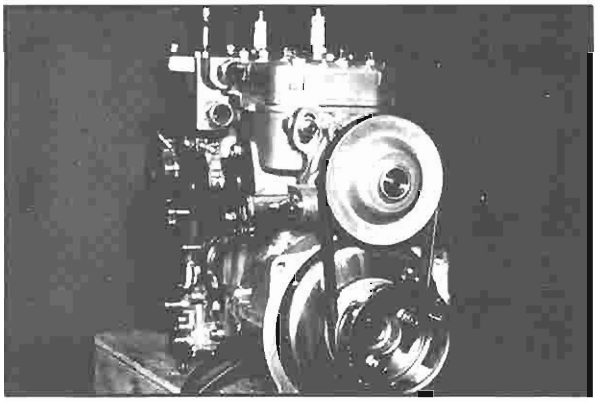
16. Install flywheel and torque flywheel nut to specifications.

Flywheel Nut Torque -
60 to 65 ft. lbs. (8.28 to 8.97 kgm)

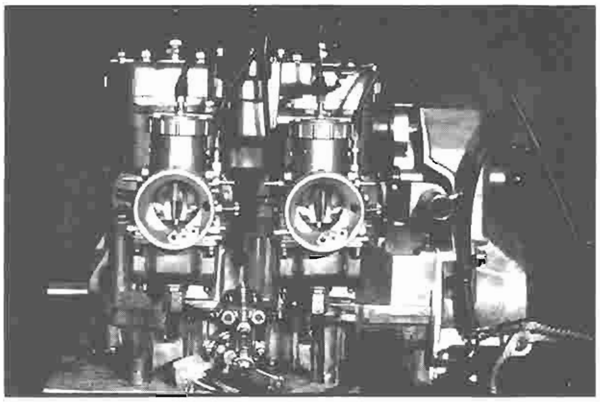


17. Install water pump and recoil starter cup.
18. Adjust tension on water pump belt by loosening mounting bolts, applying tension, and re-tightening bolts.

Water Pump Belt Deflection -
1/8 - 3/16"(.3 - .4 cm)

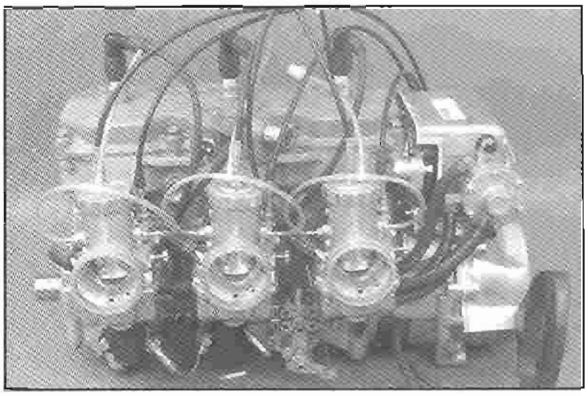


19. Install recoil housing, carburetors, and oil pump cable. Refer to oil pump bleeding in this section.
20. Connect CDI to stator plug connector.

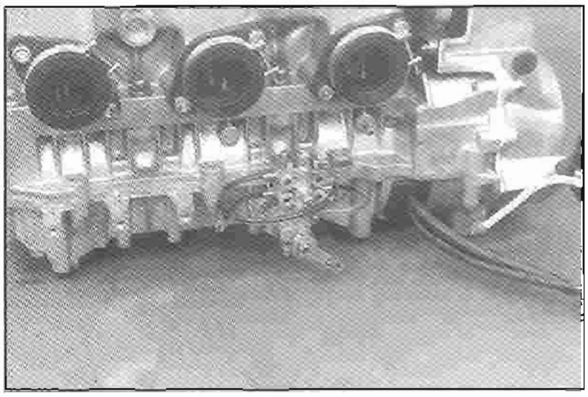


Disassembly

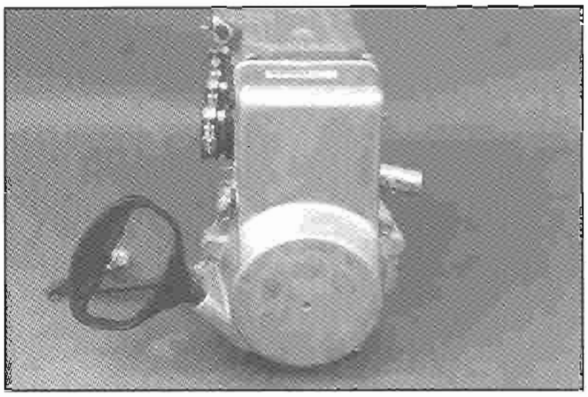
1. Remove carburetors and secondary coils.



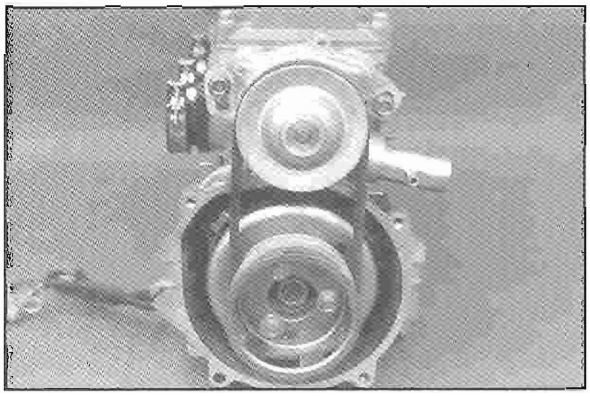
2. Remove oil pump.



3. Remove recoil housing.

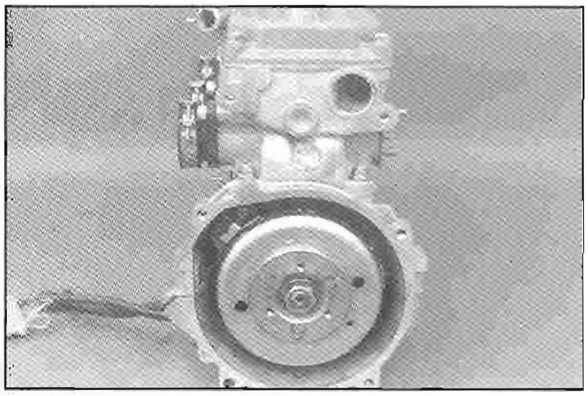


4. Remove recoil hub.



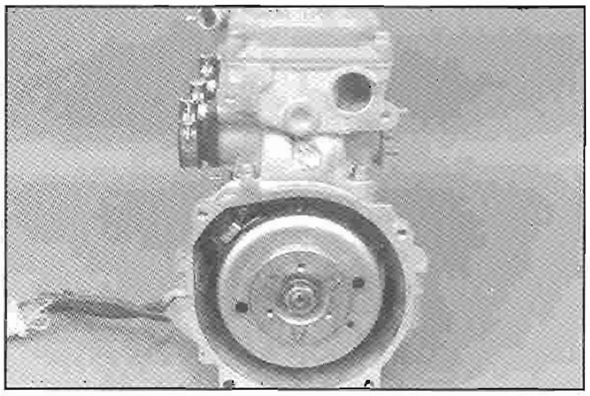
Disassembly, Cont.

5. Remove water pump.



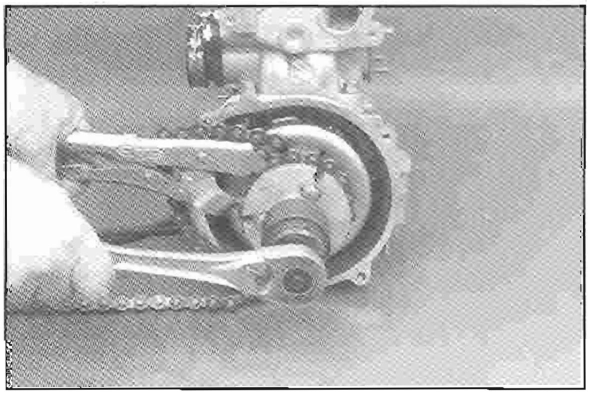
6. Remove flywheel retaining nut. Position flywheel holder as shown.

Flywheel Holder
PN 8700229



7. Install flywheel puller. Remove flywheel.

Flywheel Puller
PN 2871043

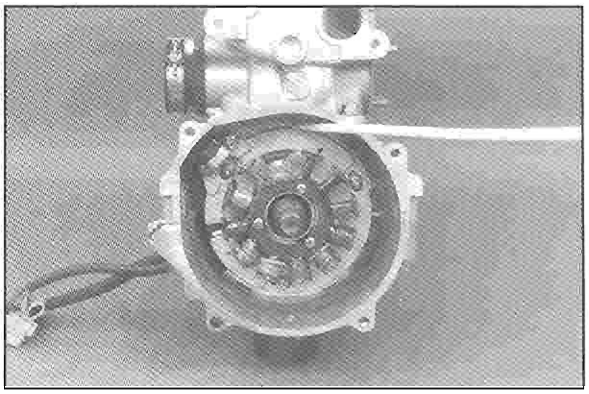


CAUTION:

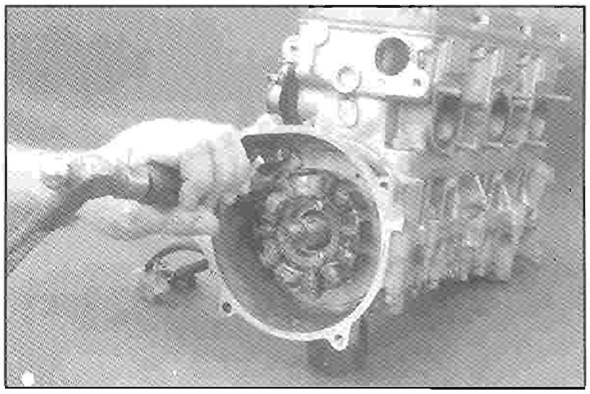
Do not install puller bolts more than 5/16″ (7.9 mm) or stator damage may result.

Disassembly, Cont.

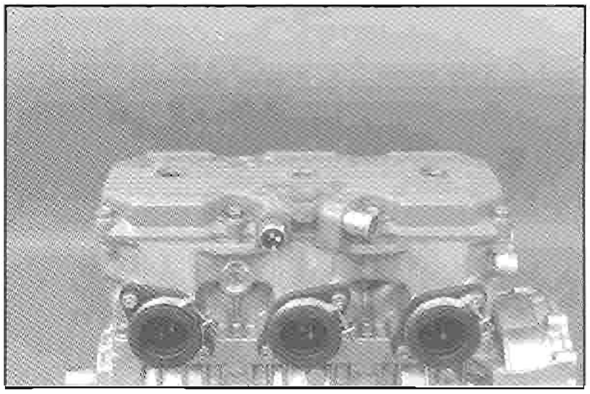
8. Note location of ignition timing marks.



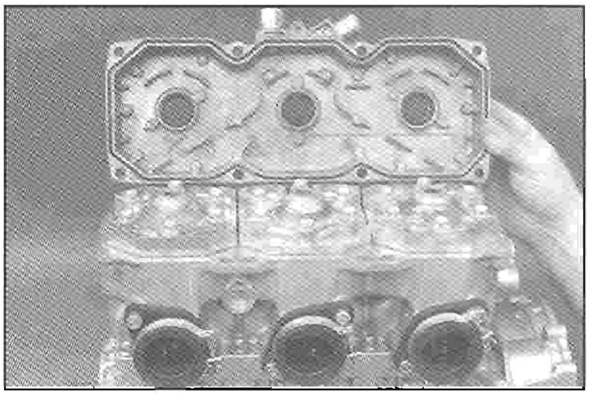
9. Remove stator. **NOTE:** Stator bolts may be loosened using an impact driver.



10. Remove cylinder head cover.

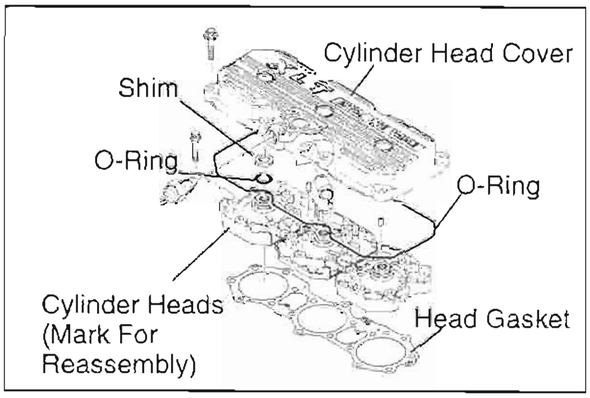


11. Note condition and location of spark plug seat O-rings in head cover. Also note the quantity and location of shim washers located beneath the O-rings.

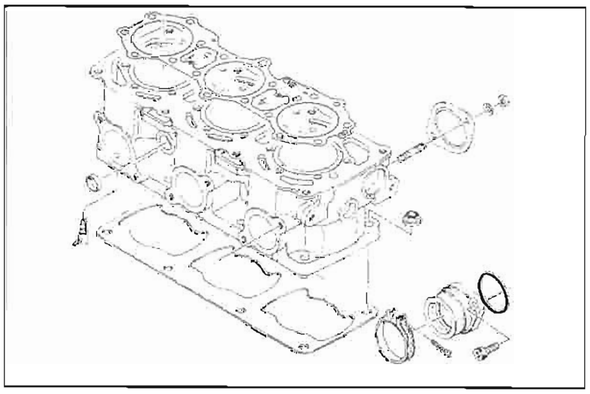


Disassembly, Cont.

12. Remove cylinder heads. Mark PTO, Center, and Mag head to ensure correct reassembly.



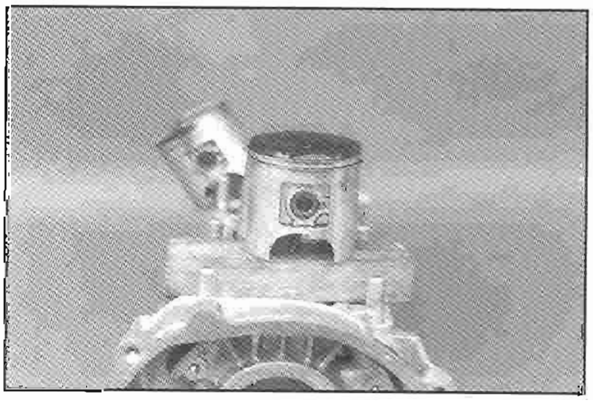
13. Remove cylinder and base gasket.
14. Refer to cylinder inspection procedure on page 3.86 to inspect cylinder.



CAUTION:

Use care to ensure pistons are not damaged as cylinder is removed.

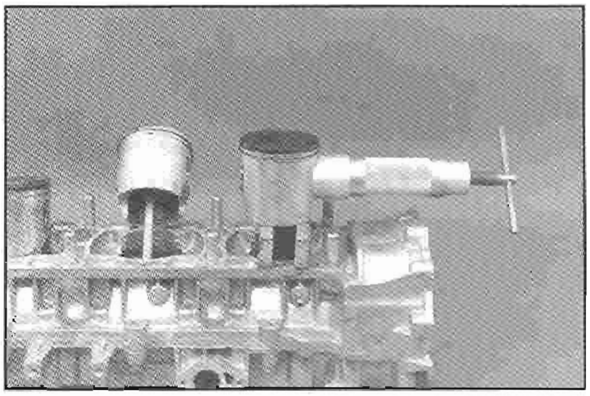
15. Support pistons with piston support block and remove C-clips.



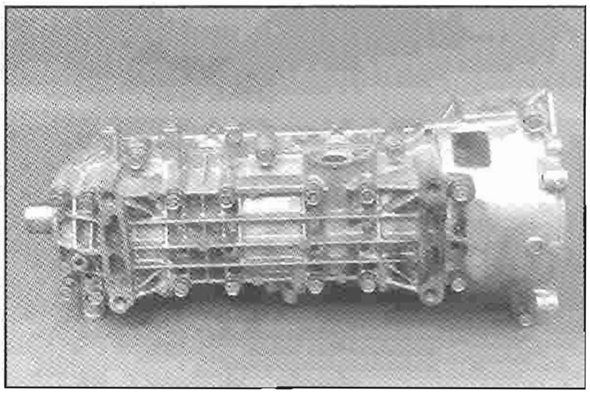
Disassembly, Cont.

16. Remove piston pins using piston pin puller and adaptor as shown. Refer to pages 3.79 through 3.90 for general inspection procedures.

Piston Pin Puller PN	**2870386**
Adapter PN	**5130971**

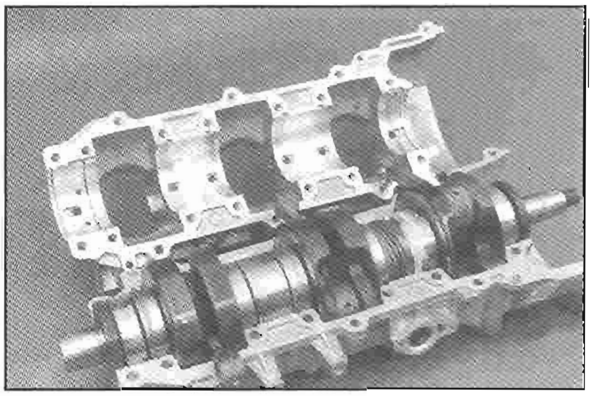


17. Remove all crankcase bolts.



18. Separate crankcase halves and remove crankshaft.

19. Follow procedure on page 3.81 for crankshaft inspection.

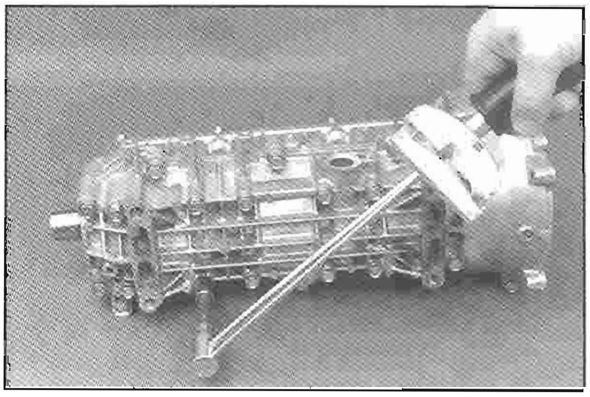


Disassembly, Cont.

20. Clean all components in a solvent tank to remove any dust, dirt, debris, and excess sealant. Inspect mating surface of upper and lower crankcase for damage.

Assembly

1. Apply 3-Bond™ to upper crankcase half. Lubricate labyrinth seal and oil pump drive gear. Lightly grease seals and install on crankshaft with seal lip (spring) facing inward.

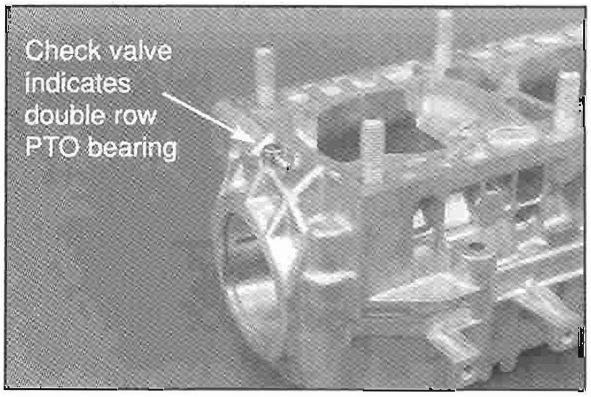


3-Bond ™ 1215

PN 2871557 120 Gram Tube

2. Install crankshaft in upper crankcase.

NOTE: Make sure seals and all locating (anti-rotation) pins fit correctly in grooves.

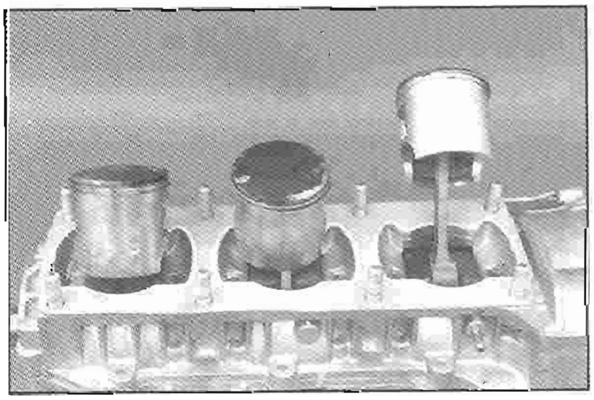


3. Some 1997 three cylinder monoblock engines have a double row PTO bearing. These models can be identified by the PTO oil check valve and wider housing. Make sure the crankshaft and crankcase mate properly.
4. Install bottom crankcase half. Make sure anti-rotation pins are aligned properly and torque bolts to specification.

Crankcase Bolt Torque:

8mm - 18 ft. lbs. (2.48 kgm)
10mm - 26 ft. lbs. (3.59 kgm)

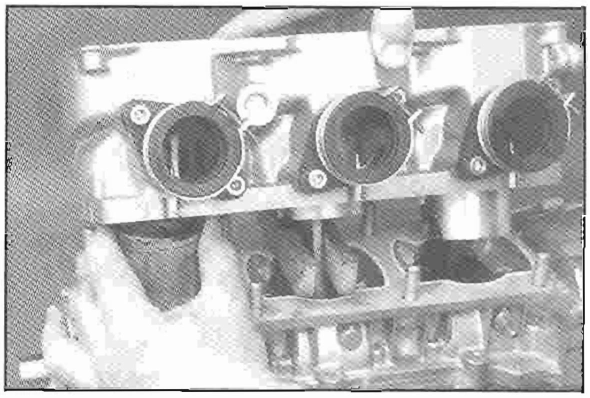
5. Lubricate crankshaft main bearings through oil holes in upper crankcase. Lubricate connecting rod big end bearing.
6. Lubricate pistons, rings, connecting rod small end bearing and cylinder before assembly. Install pistons, piston pins, and C-clips with end gap up or down. **NOTE:** Marking on piston faces flywheel. Be sure "C" clips are fully seated in groove.



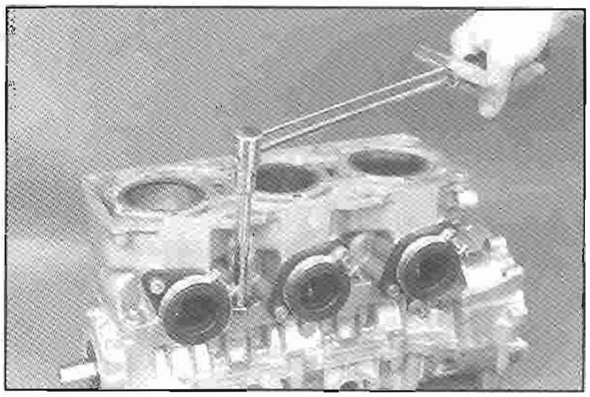
7. Apply a small amount of Loctite 515 gasket eliminator to base gasket ends and install gasket noting location of transfer port reliefs. **NOTE:** The sealant on base gasket faces up.

Assembly, Cont.

8. Before installing cylinder, refer to honing procedure on pages 3.79-3.80 of this section. Inspect piston to cylinder clearance and piston ring installed gap as shown on page 3.87. Install rings on pistons. Depress rings in alignment with locating pins on piston using either a ring compressor or your fingers. Carefully install the cylinder. Install pistons in the following order:
   - Mag
   - Center
   - PTO

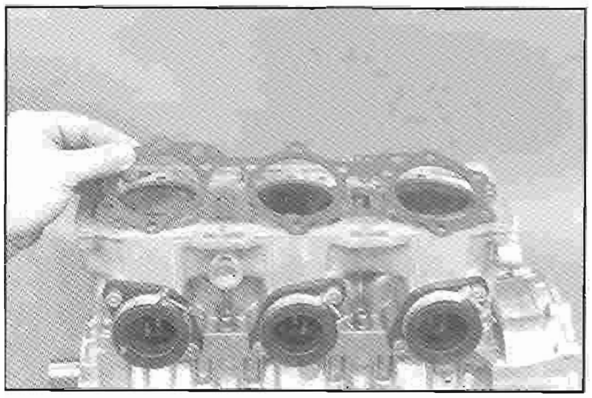


9. Torque base bolts, starting in the middle, alternate intake to exhaust side, moving toward PTO end and mag end. Refer to page 3.5 and 3.6 for torque patterns and specifications.



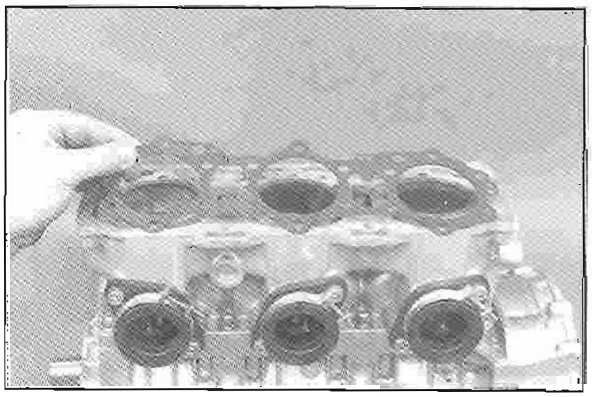
10. Install new head gasket. Be sure cylinder and cylinder head sealing surfaces are clean.

NOTE: EX stamping should be readable and facing exhaust side.



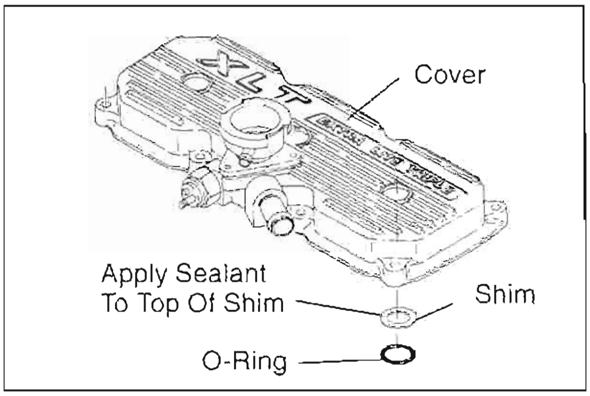
11. Install heads in the correct position and location as marked during disassembly. Torque head bolts to specification.

Head Bolt Torque
20 ft. lbs. (2.8 kgm)

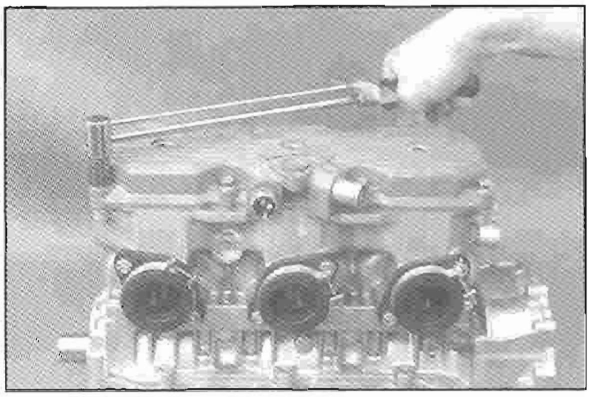


Assembly, Cont.

12. Replace outer O-ring on cover.
13. Apply Loctite 515 to cover as shown.
14. Position shim and O-Ring as shown.

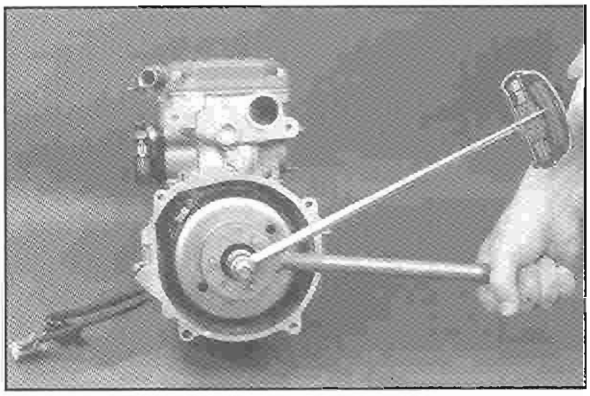


15. Install head cover.
16. Install and torque head cover mounting bolts to specification.



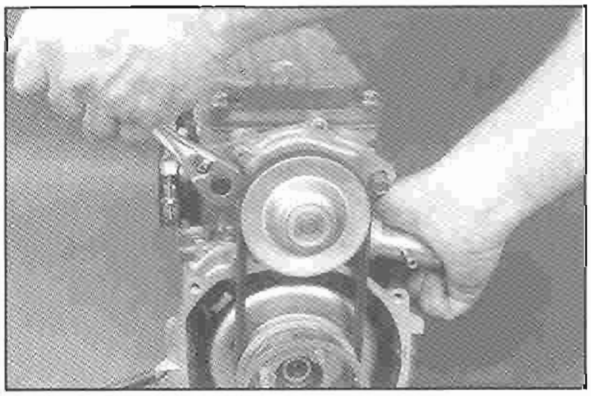
Head Cover Mounting Bolt Torque
17-20 Ft lbs (2.4-2.8 kgm)

17. Install stator in the previously marked position and tighten screws securely.
18. Install and torque flywheel nut.



Flywheel Nut Torque -
60-65 ft. lbs. (8.28-8.97 kg-m)

19. Install water pump and belt. Apply proper tension to belt and tighten pump mounting bolts.

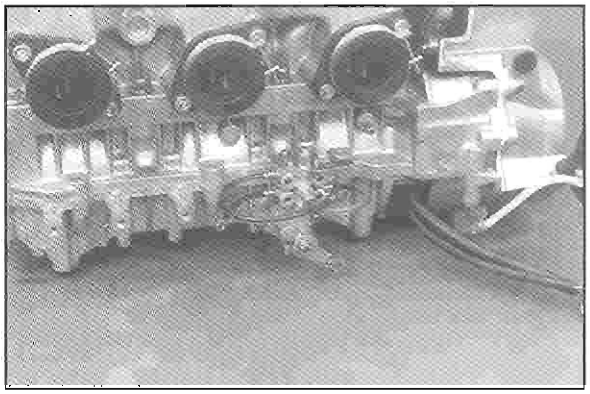


Water Pump Belt Tension
1/8" - 3/16" (3-4mm)

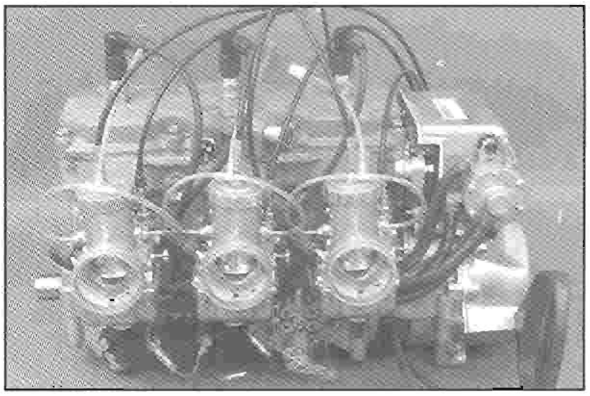
Assembly, Cont.

20. Install oil pump and connect feed lines to rubber mount. If crankcase, oil pump, or drive components were replaced, refer to oil pump drive gear end play adjustment on page 3.89.

21. Install recoil housing.

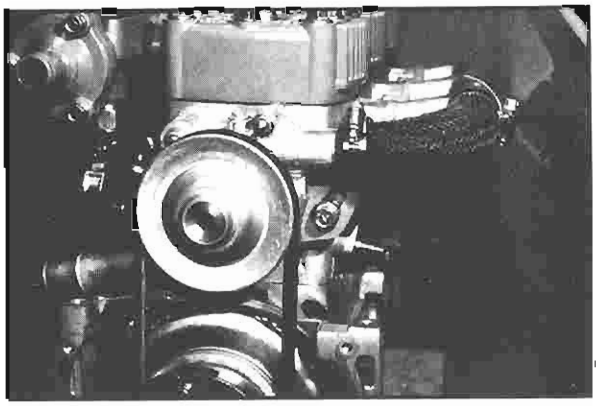


22. Install secondary coils and secure carburetors to rubber mounts.

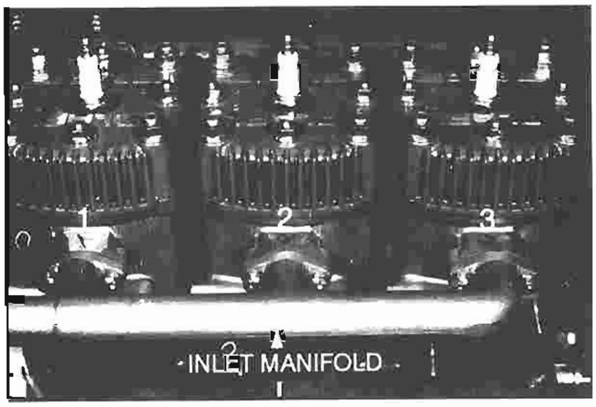


Disassembly

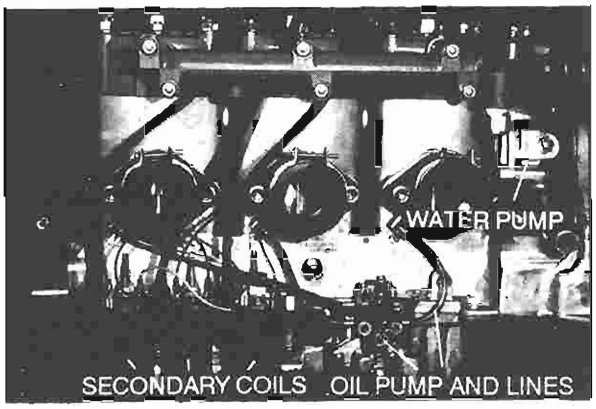
1. Remove water pump cover.



2. Mark cylinders #1 mag side, #2 center, #3 PTO side.
3. Remove inlet water manifold.

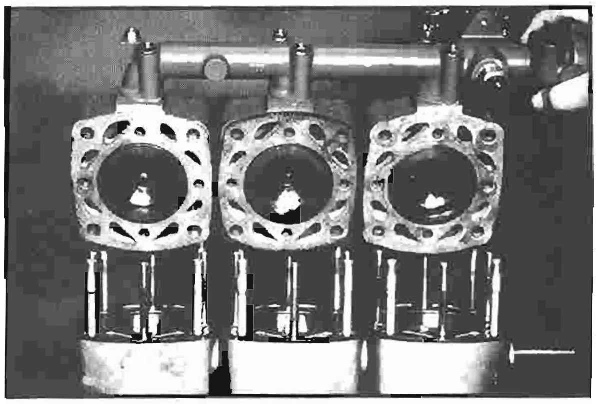


4. Remove oil pump lines and secondary coils.
5. Remove oil pump and drive gear.
6. Remove water pump.



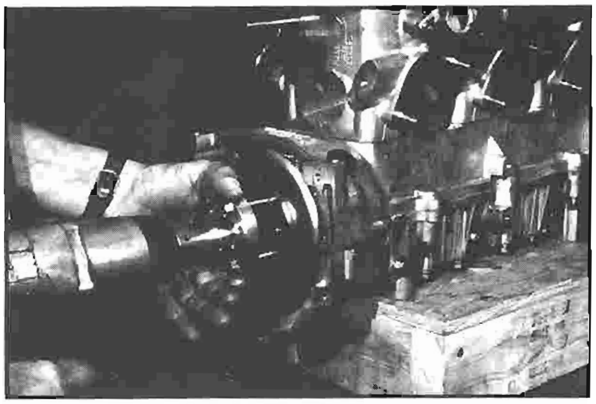
Disassembly, Cont.

7. Remove outlet manifold.
8. Remove heads either as a unit or individually.

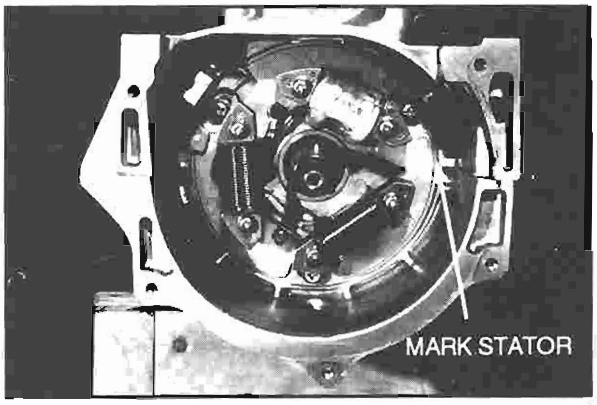


9. Remove recoil starter cup and flywheel nut.
10. Using flywheel puller, remove flywheel.

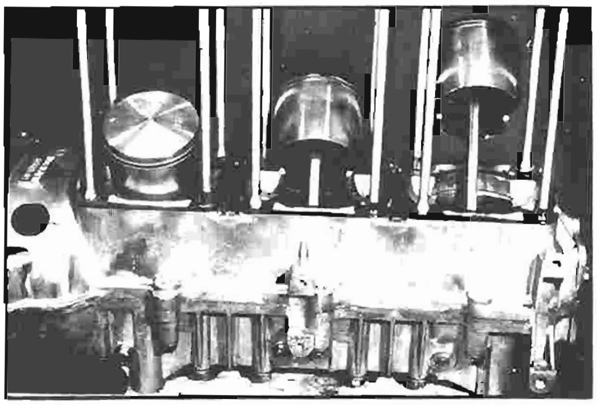
Flywheel Puller PN 2871043



11. Mark stator plate and case. Remove attaching screws.



12. Mark cylinders - mag, center, PTO.

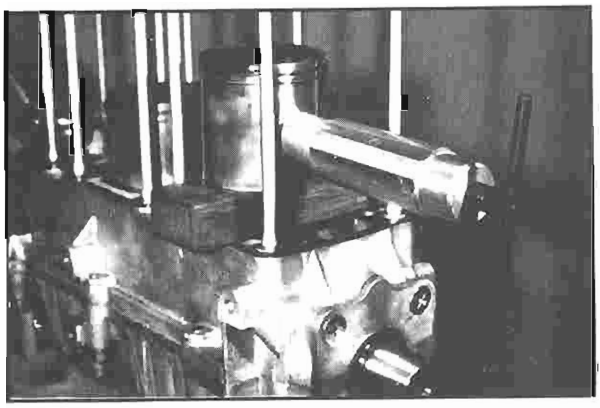


Disassembly, Cont.

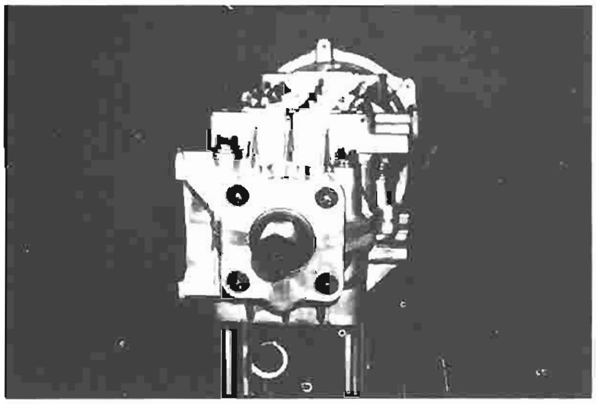
13. Remove piston C-clips as shown.

14. Using piston pin puller, remove piston pin and mark pistons mag, center and PTO. Refer to pages 3.86 - 3.87 for cylinder and piston inspection. Refer to pages 3.79 - 3.80 for cylinder honing information.

Piston Pin Puller PN 2870386

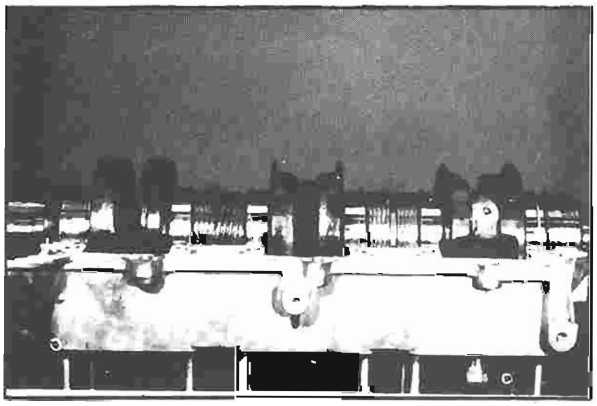


15. Remove seal plate and crankcase bolts.



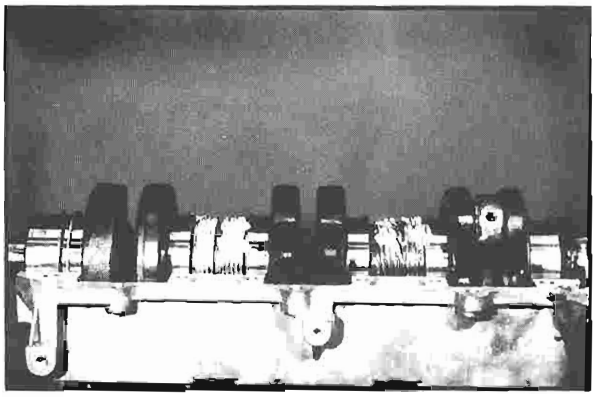
16. Remove crankshaft from case. Refer to pages 3.81-3.85 for crankcase and crankshaft inspection procedures.

17. Clean all parts.



Assembly

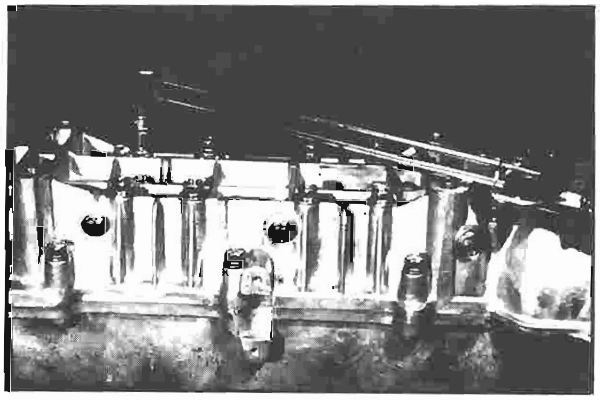
1. Remove old crankcase sealer from case halves.
2. Grease mag end seal lip, oil pump drive gear, and labyrinth seal area.
3. Make sure all bearing anti-rotation pins are aligned with reliefs in crankcase.



4. Apply 3-Bond™ sealer to the bottom crankcase half.

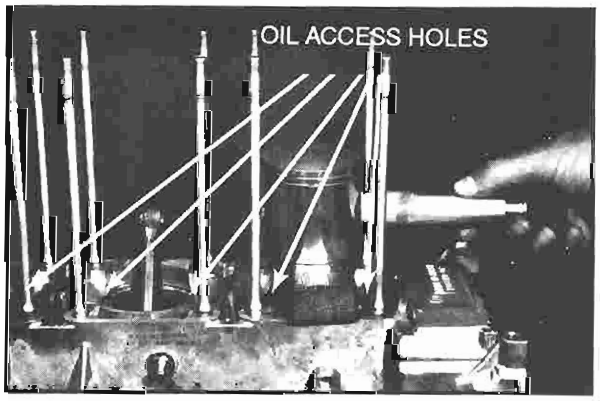
> **3-Bond ™ 1215**
>
> **PN 2871557 120 Gram Tube**

5. Torque crankcase bolts as shown. Refer to torquing pattern and specifications page 3.5 - 3.6.



> **Crankcase Mounting Bolt Torque:**
>
> **8mm - 18 ft. lbs. (2.48 kgm)**
> **10mm - 26 ft. lbs. (3.59 kgm)**

6. Install pistons with arrow toward flywheel side of crankcase.
7. Install piston C-clips with C-clip installation tool.



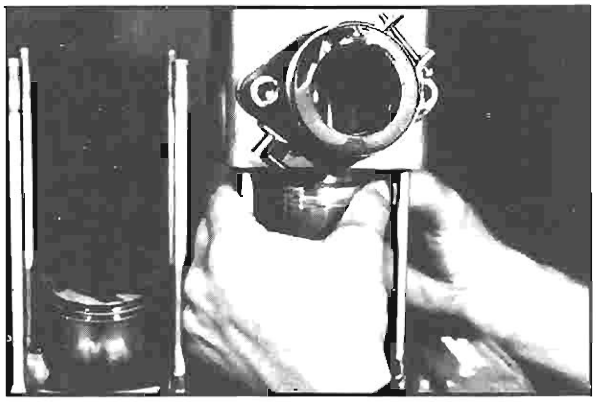
> **C Clip Installation Tool PN 2870773**

8. Lubricate crankshaft bearings through access holes in the case.
9. Install keystone rings onto piston with beveled side up and flat side of ring down.

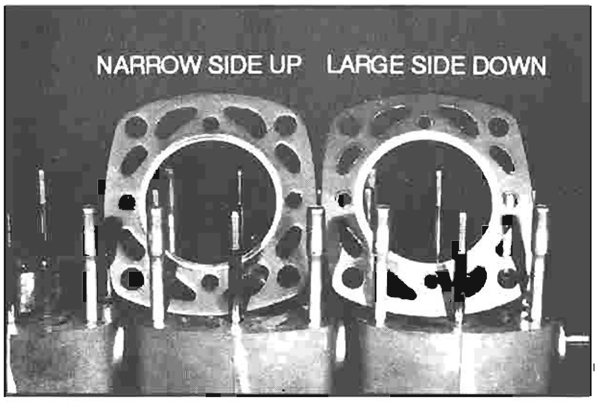
Assembly, Cont.

10. Before installing cylinder, refer to honing procedure on pages 3.79-3.80 and piston/cylinder inspection on pages 3.86-3.87 of this section. Lubricate all parts with Premium 2 Cycle Lubricant.

11. Depress rings in alignment with locating pins on piston using either a ring compressor or your fingers. Carefully install the cylinder.

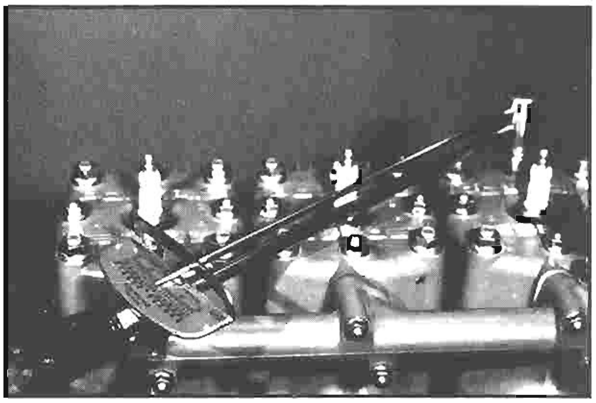


12. Install new head gasket with large diameter side of fire ring toward cylinder.



13. Install cylinder heads onto cylinder either as a unit or individually.

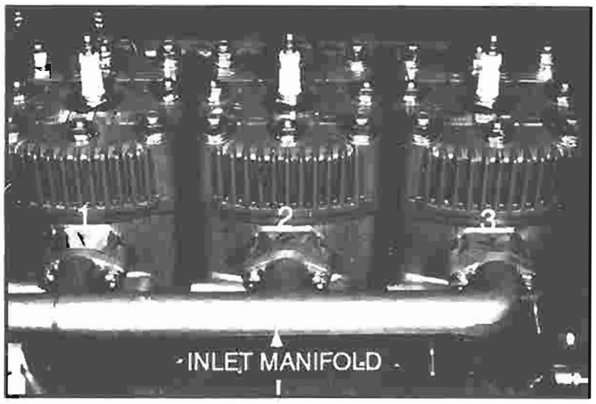
Cylinder Head Nut Torque:
10mm - 24-26 ft. lbs. (3.3-3.59 kgm)
8mm - 17-18 ft. lbs. (2.35-2.48 kgm)



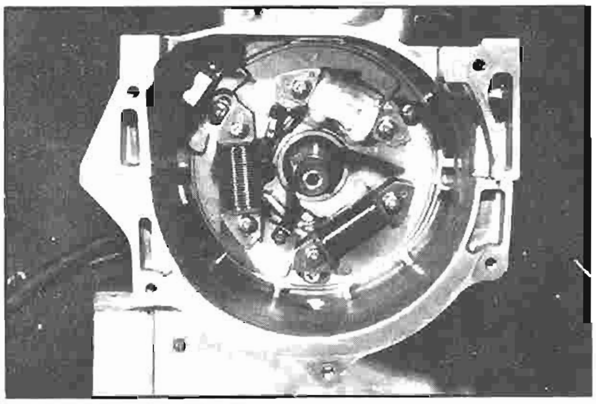
Assembly, Cont.

14. Install exhaust manifold gaskets and water manifold. Torque nuts to specification. Use caution when torquing nuts to avoid gasket damage.

Exhaust Manifold Nut Torque:
6 ft. lbs. (2.28 kgm)



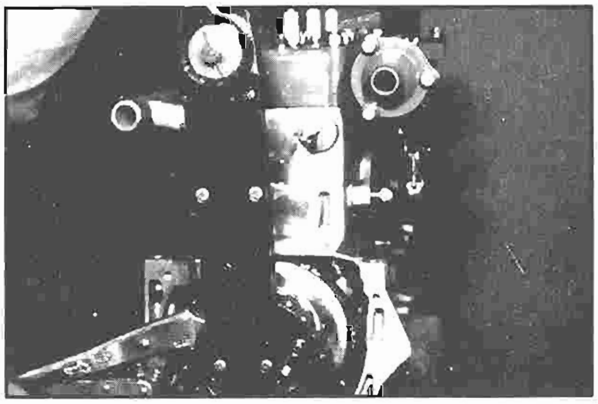
15. Install and align stator plate with previous marks.



16. Install flywheel and flywheel nut. Using flywheel holder to hold flywheel, torque nut to specification.

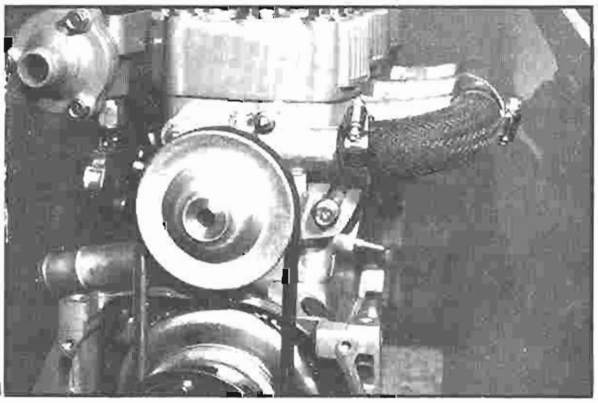
Flywheel Nut Torque:
60 ft. lbs. (8.28 kgm)

Flywheel Holder PN 8700229



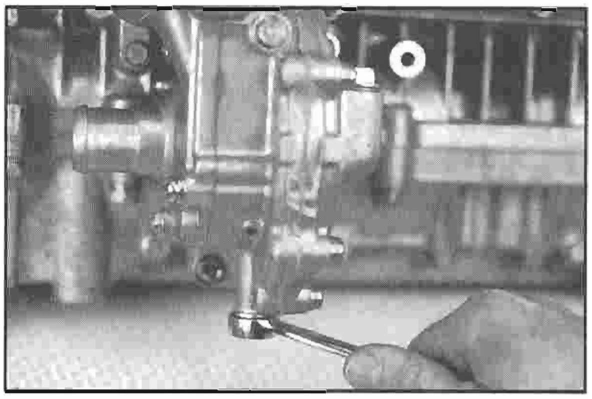
17. Install water pump and pump belt. Adjust belt tension.

Water Pump Belt Deflection -
1/8 - 3/16"(.3 - .4 cm)

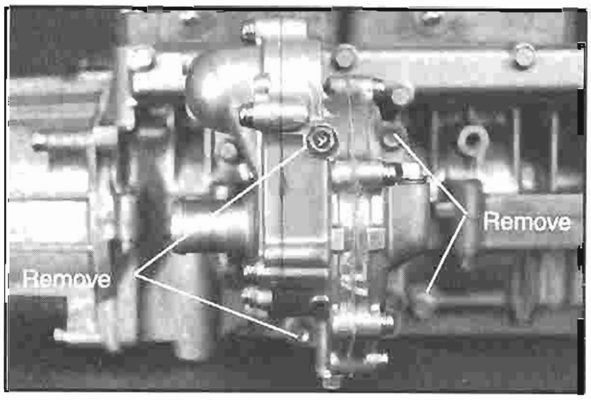


Disassembly

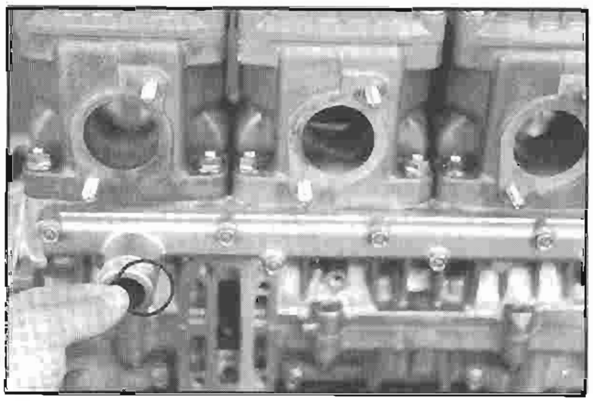
1. Drain lubricant from water pump drive gear case (1996 models).



2. Remove four bolts and pull water pump straight outward.



3. Inspect sealing O-ring on water pump manifold. Replace if worn or damaged.



Assembly, Cont.

18. Install oil pump and connect feed lines to cylinder.

19. Install secondary coils.

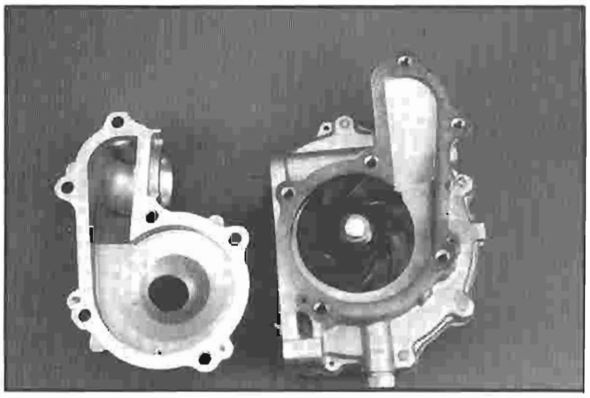
20. Install carburetors, recoil housing and water pump belt guard.

21. Install exhaust manifold gaskets and exhaust manifold.

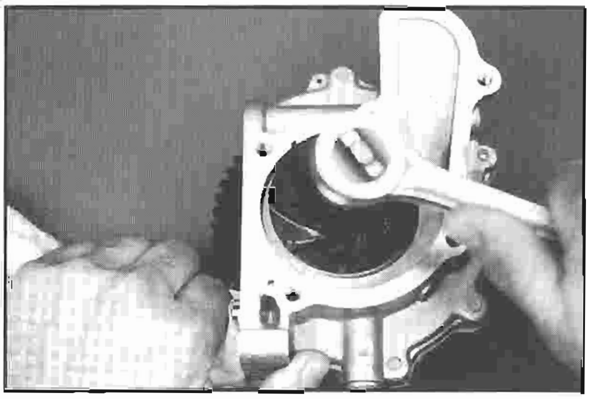
22. Refer to oil pump drive gear end play adjustment, page 3.89.

Water Pump Disassembly/Inspection

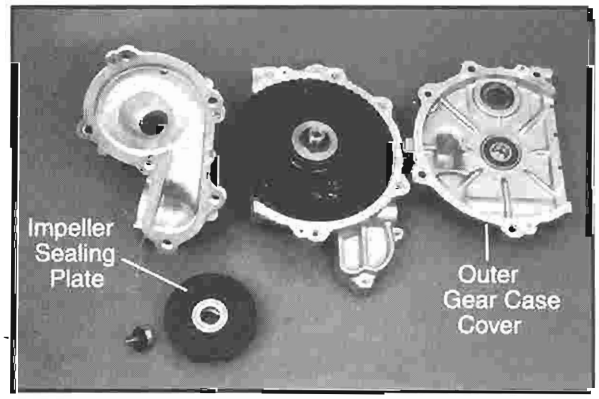
1. Remove (6) impeller housing cover bolts. Replace gasket and thoroughly clean surfaces prior to reassembly.



2. Remove impeller bolt and impeller.



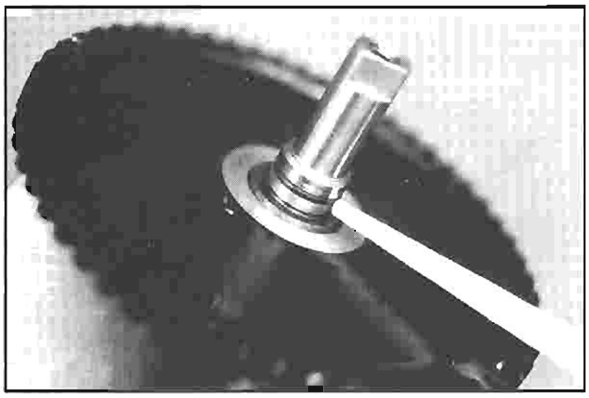
3. Remove outer gear case cover. Remove impeller sealing plate from impeller. Inspect plate and rubber seal for corrosion or damage.



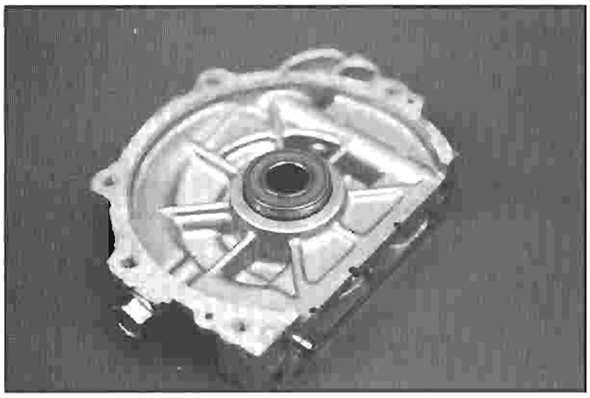
4. Use a soft faced hammer to drive gear and pump shaft assembly from pump housing.

Water Pump Disassembly/Inspection, Cont.

5. Replace O-ring on pump shaft upon reassembly. Drive or press mechanical seal assembly from case. Always replace the seal if removed. If coolant is evident in gearcase oil, replace mechanical seal.

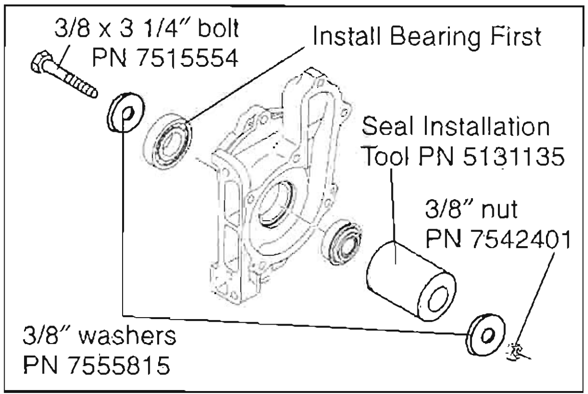


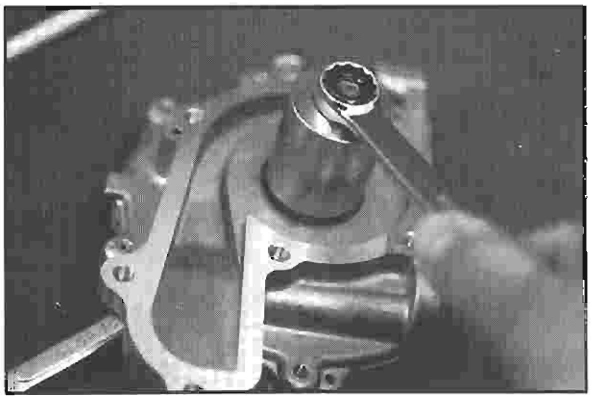
6. Inspect bearings in cover and pump housing, replace if worn. The bearing seal on gear case must be in good condition to prevent oil leaks. Replace the sealed bearing if oil leakage is evident at water pump weep hole.



7. Grease O-ring on pump shaft and install shaft in pump housing. Install new mechanical seal using seal installation tool kit PN 5131135 and parts hardware shown below.

Seal Installation Tool PN 5131135



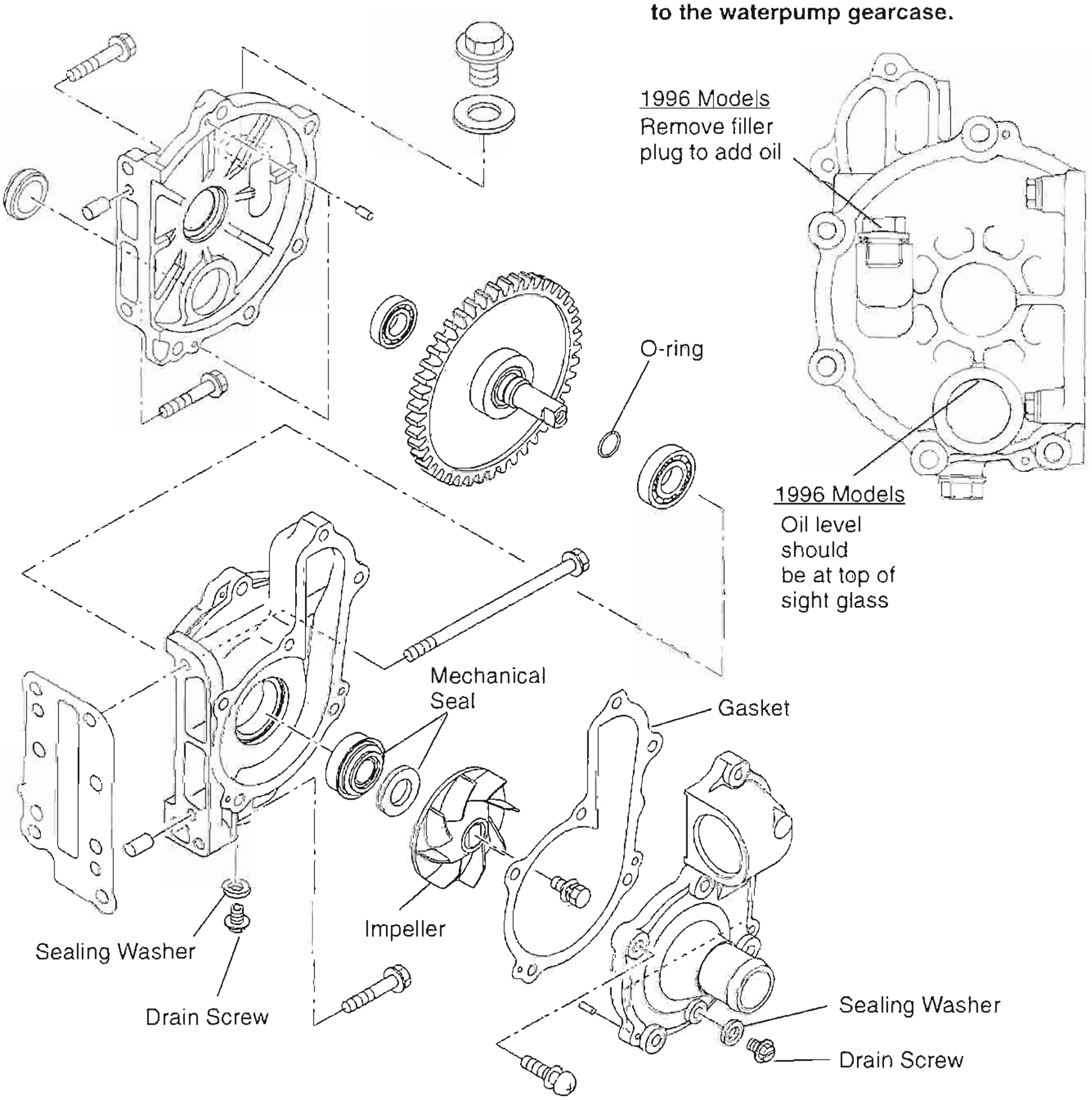


Water Pump Disassembly/Inspection Cont.

8. Install impeller, apply Loctite 242™ to bolt and torque to 72 in. lbs. (.83 kg-m).
9. Install impeller cover with new gasket and torque bolts to 72 in. lbs. (.83 kg-m).
10. Apply 3-Bond™ 1215 or Loctite 518 to sealing surfaces and install gearcase cover. Torque bolts to 72 in. lbs. (.83 kg-m).

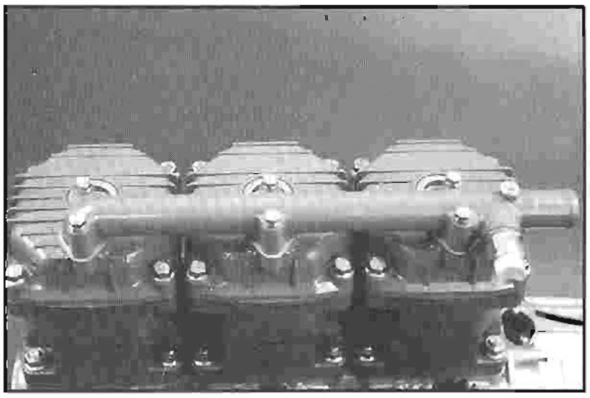
Water Pump Gearcase Lubricant: (96 only)	
Capacity:	Approximately 50cc*
Type:	Polaris All Season 0W40 Synthetic PN 2871281
*Fill to top of sight glass with engine installed.	

Note: 97 models - do not add lubricant to the waterpump gearcase.

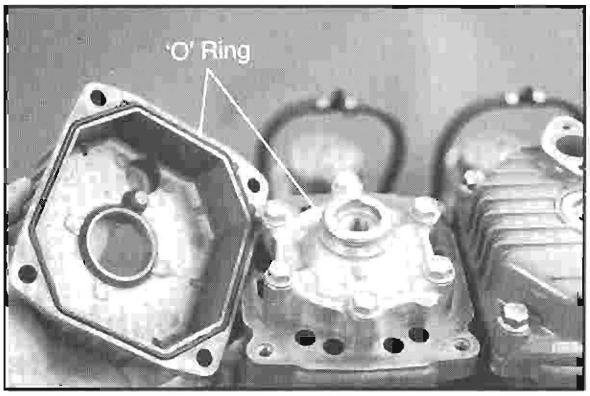


Disassembly, Cont.

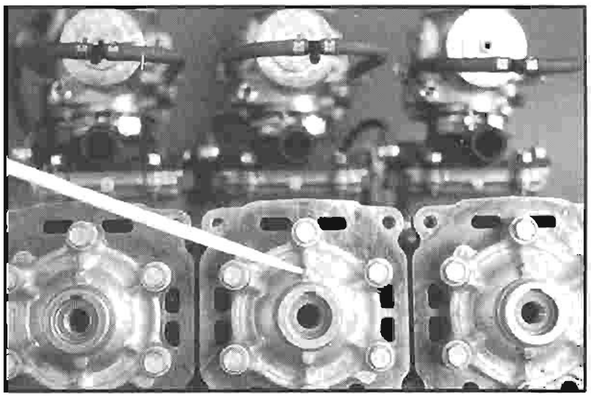
1. Remove water manifold and cylinder head covers.



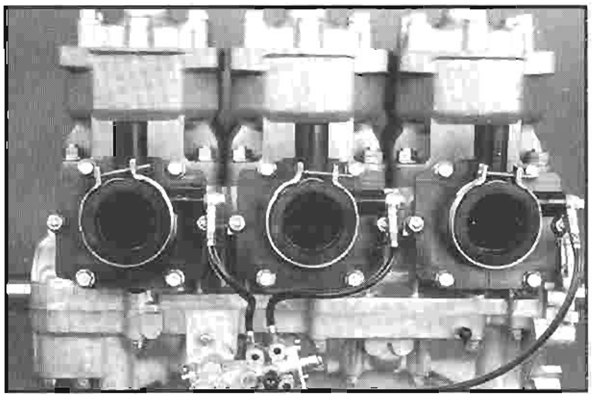
2. Inspect cylinder head cover O-rings.



3. Arrow on cylinder head points to intake.

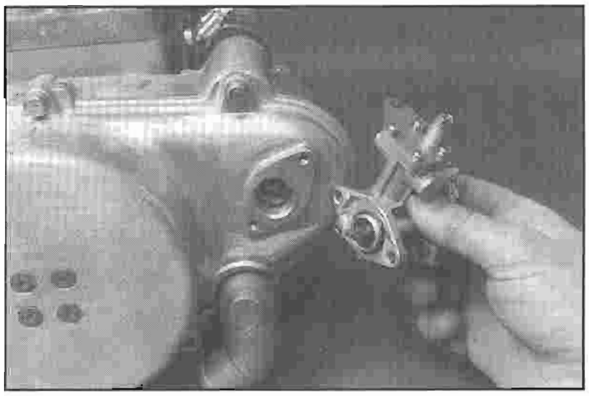


4. Remove carburetor adaptors, reed valves, and disconnect oil lines. Refer to page 3.77 for reed valve inspection.

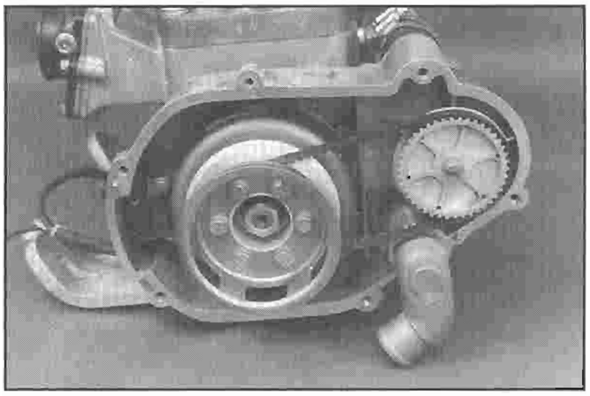


Disassembly

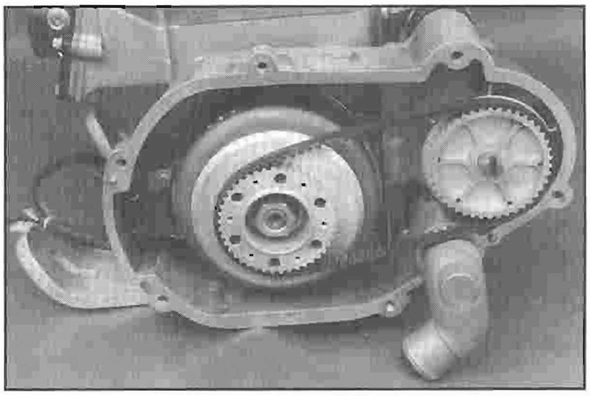
1. Remove oil pump.



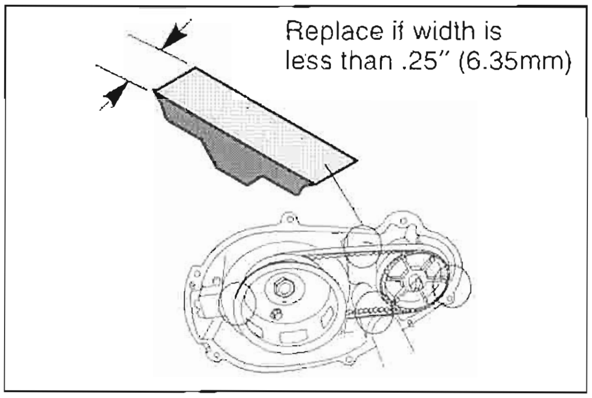
2. Remove recoil housing.



3. Remove recoil hub. Inspect waterpump drive belt for missing, cracked, or broken drive cogs. Replace if worn.

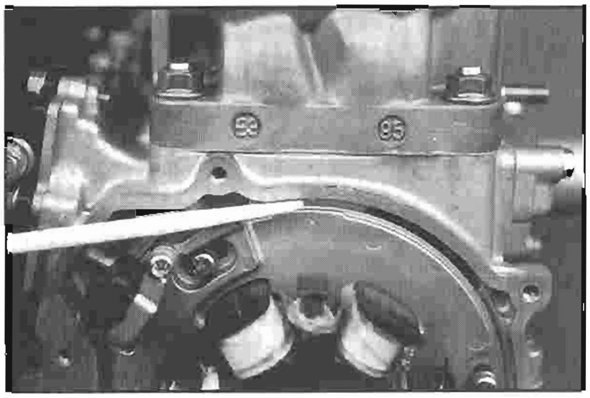


Measure the belt at 4 different points as shown. Replace if width is less than .25" (6.35mm). Nominal new width is .345" (8.75mm). Refer to engine assembly for installation tips.



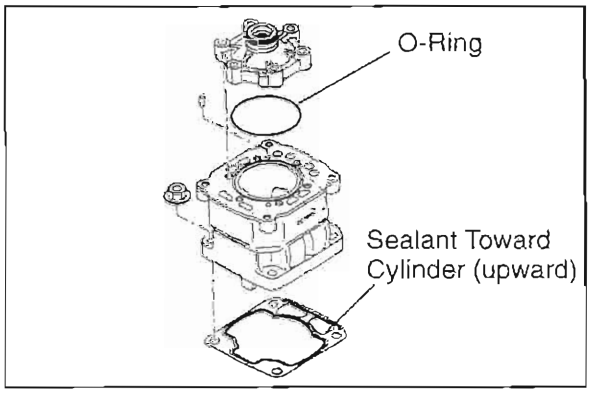
Disassembly, Cont.

5. Remove flywheel nut and washer. Install puller and remove flywheel. Align mark on stator plate with crankcase projection upon reassembly. Remove stator plate screws (3) with a hand impact driver.



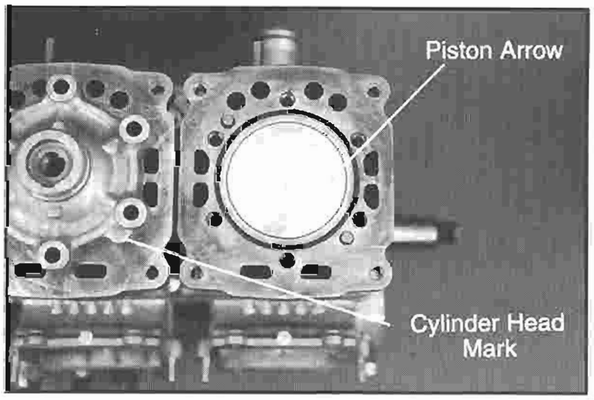
Flywheel Puller PN 2871043
Flywheel Holder PN 8700229

6. Remove cylinder heads, cylinder base nuts, and cylinders. Mark cylinders mag, center, PTO for reference. Replace O-rings and base gaskets. Install new base gaskets with sealant toward the cylinder.



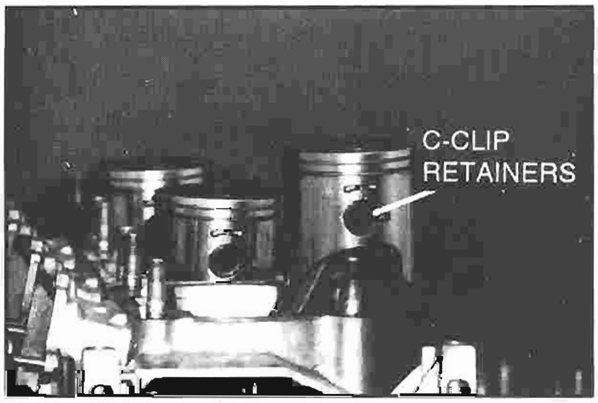
NOTE: Refer to pages 3.79-3.90 for general inspection procedures.

7. Identify pistons mag, center, and PTO. The arrow must point to Mag end of engine upon reassembly.



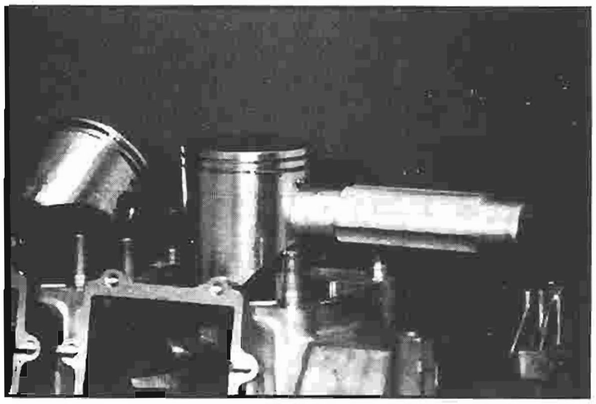
Cylinder Head Marking (EC68PL Engines)	
EC68PL01	**"C" Marked On Head**
EC68PL04	**"G" Marked On Head**

8. Remove piston C-clips.



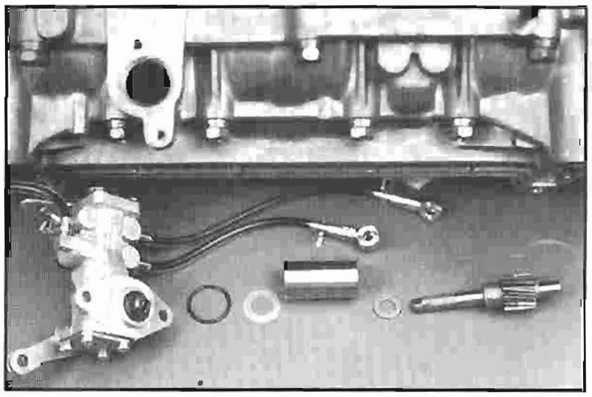
Disassembly, Cont.

9. Remove pistons using piston pin puller.

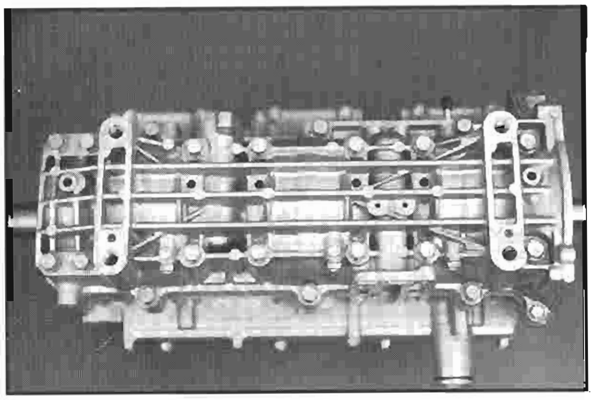


Piston Pin Puller PN 2870386

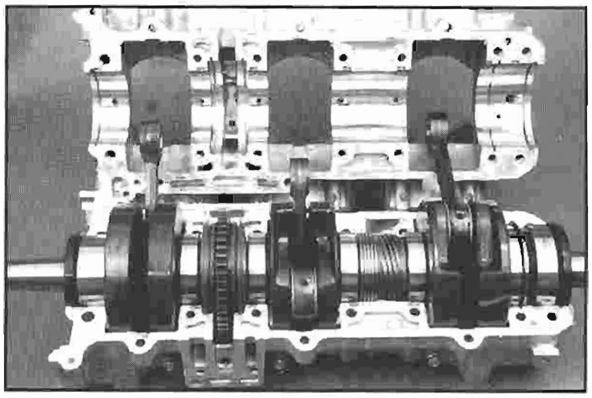
10. Remove oil pump. Note position of shim(s), spacer, and thrust washer for reassembly. Refer to page 3.88 for oil pump drive gear end play adjustment procedure.



11. Remove crankcase bolts.



12. Tap crankcase lightly with a soft faced hammer to separate. Remove crankshaft from case.

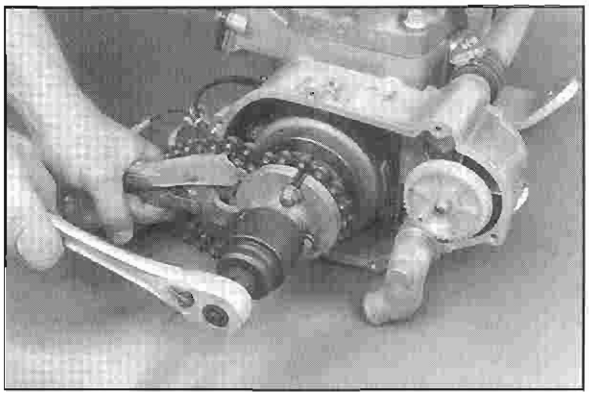


NOTE: Refer to pages 3.79-3.90 for general inspection procedures.

Disassembly, Cont.

4. Remove drive gears and belt.

5. Remove flywheel nut using flywheel holder.

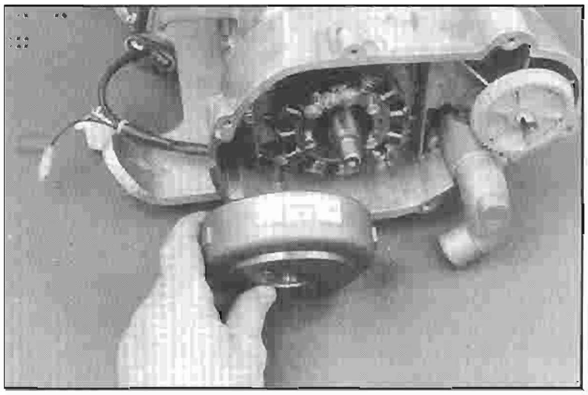


Flywheel Holder
PN 8700229

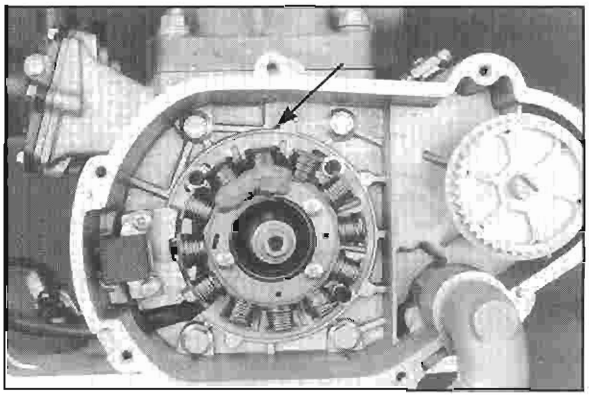
6. Remove flywheel using flywheel puller.

Flywheel Puller
PN 2871043

7. Note the ignition timing strip on the flywheel.



8. Before removing stator plate, note where ignition timing marks are located.



Assembly

1. Replace crankshaft end seals.
2. Clean crankcase surfaces and apply a thin even layer of 3-Bond™ 1215 sealer to both halves.

> **3-Bond ™ 1215**
>
> **PN 2871557 120 Gram Tube**

3. Align crankshaft bearing anti-rotation pins with relief in bottom case half.
4. Torque crankcase bolts to specification following pattern on page 3.6.

> **Crankcase Mounting Bolt Torque:**
>
> **8mm - 18 ft. lbs. (2.48 kgm)**
> **10mm - 26 ft. lbs. (3.59 kgm)**

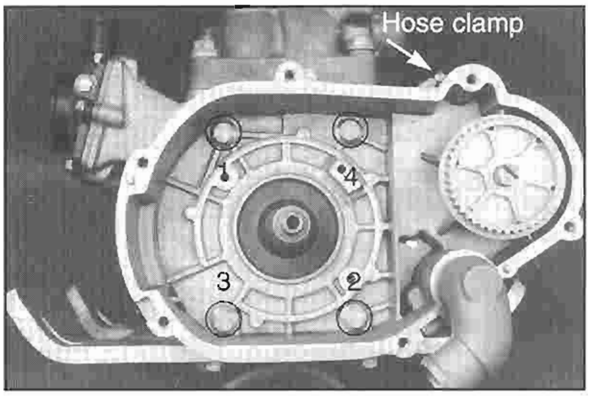
5. Measure piston to cylinder clearance and piston ring installed gap before cylinder installation.
6. Install pistons with arrow to mag (flywheel) end. Be sure "C" clips are fully seated with gap up or down.
7. Install keystone rings on pistons with beveled side up and flat side down. See page 3.87. Lubricate all top end components with Polaris Premium 2 Cycle Lubricant during assembly.
8. Install cylinder heads with new O-rings and arrows pointing to intake.
9. Install water pump on crankcase.

> **Water Pump Bolt Torque:**
>
> **8-10 ft. lbs. (1.11-1.38 kgm)**

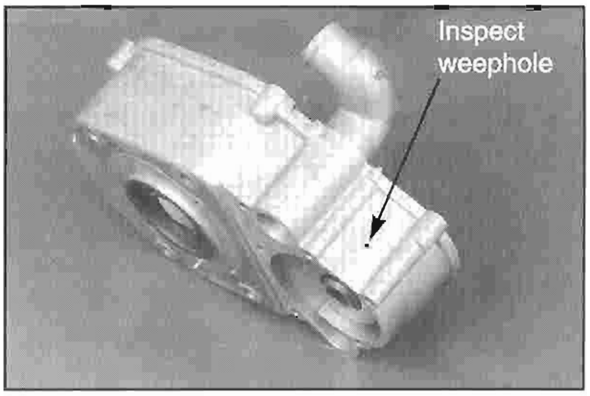
10. Align mark on stator plate with crankcase projection. Apply Loctite™ 242 to stator plate screws and tighten securely.
11. Apply Loctite™ 242 to flywheel nut threads. Torque nut to **60-65 ft. lbs. (8.30 - 8.99 kg-m).**
12. Install recoil hub and torque bolts to **8-10 ft. lbs. (1.11 - 1.38 kg-m).**
13. Install oil pump and torque screws to **4-6 ft. lbs. (.55 - .83 kg-m).**
14. Bleed oil pump and cooling system as outlined in Maintenance section after engine installation.
15. Fill and bleed cooling system as outlined on page 3.91.
16. Inspect ignition timing.

Disassembly, Cont.

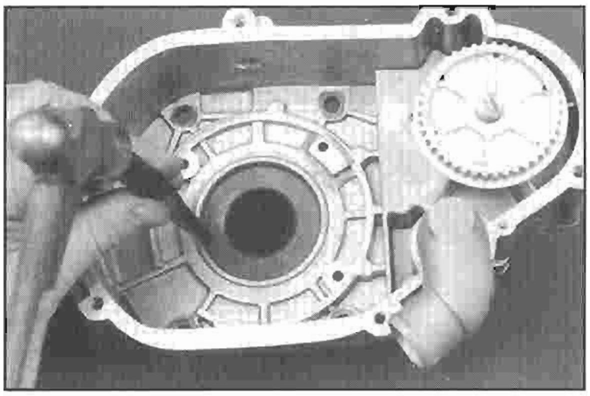
9. Remove four bolts holding water pump housing to crankcase. Loosen hose clamp and remove housing.



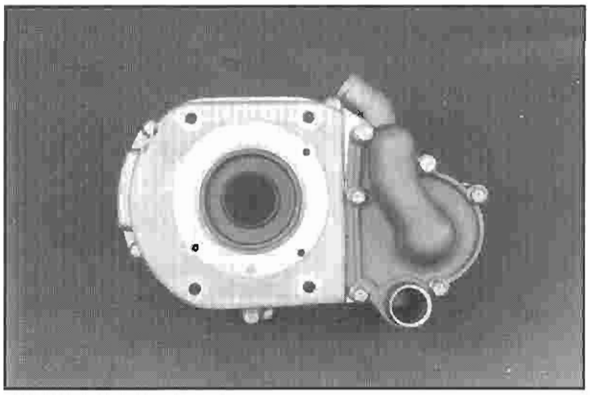
10. Inspect water pump weep hole for signs of leakage or blockage.



11. Inspect crankshaft seal and replace if necessary. Remove seal by driving from outside toward engine. Replace seal if removed.

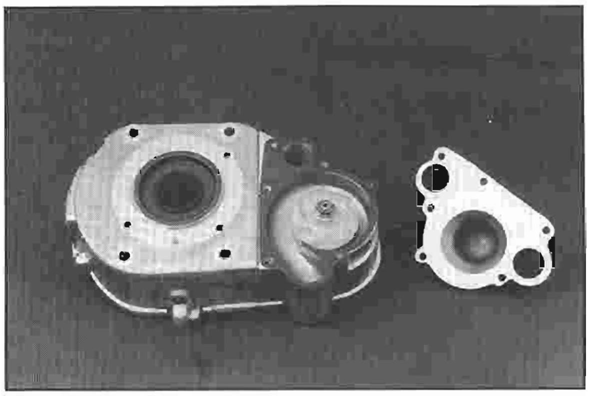


12. Remove water pump cover bolts.

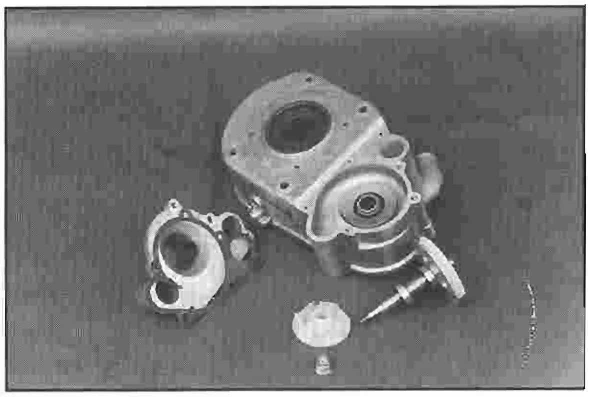


Disassembly, Cont.

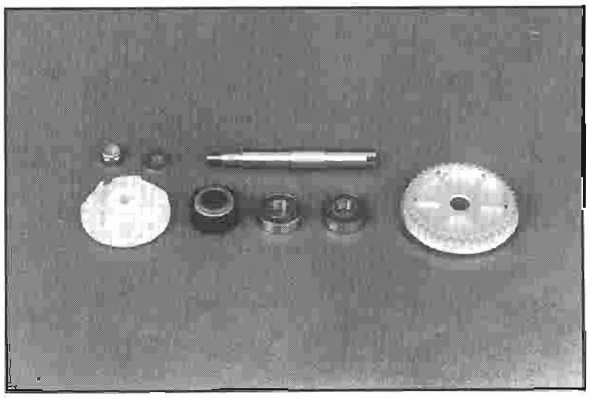
13. Remove impeller retaining nut, washer, impeller, and 10x14mm washer.



14. Slide shaft assembly out of cover.



15. Inspect bearings. Replace if necessary. Replace mechanical seal using the special tools listed below. Use the seal press to install a new mechanical seal in cover with spring sleeve toward impeller housing. Install seal guide over end of shaft and apply a light film of grease to seal guide. Carefully install shaft and bearings in cover. Assemble 10x14mm washer, impeller, washer, and nut. Torque impeller nut to specification.



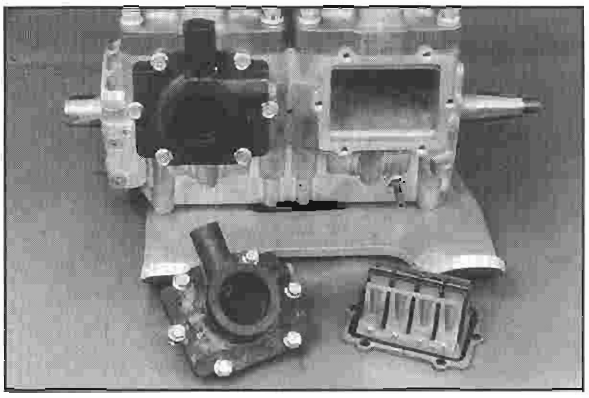
Seal Guide	**2871846**
Seal Press	**2871847**

Impeller Nut Torque

10 ft. lbs. (1.38 kg-m)

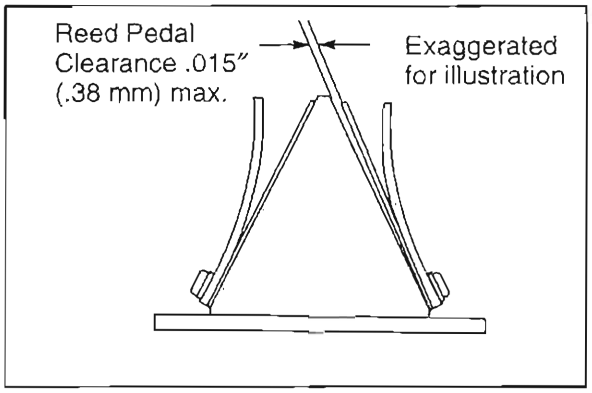
Disassembly, Cont.

16. Remove reed cover, reed stuffers, and reeds.

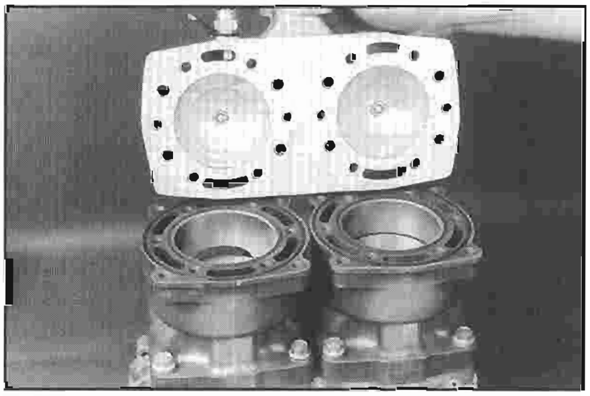


Reed Valve Inspection

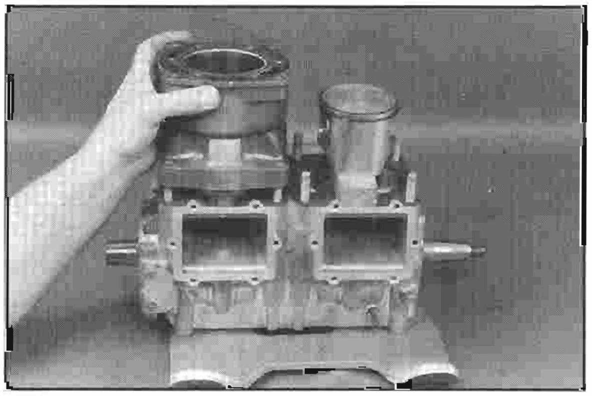
17. Measure air gap between fiber reed and reed block as shown. The air gap should not exceed .015″ (.4 mm). If clearance is excessive DO NOT attempt to reverse the reeds to reduce the air gap. *Always replace them if damaged.* Check each fiber reed for white stress marks or missing material. Replace if necessary.



18. Remove cylinder head. Note condition and placement of both cylinder head O-rings. Refer to pages 3.80-3.85 for general inspection procedures.

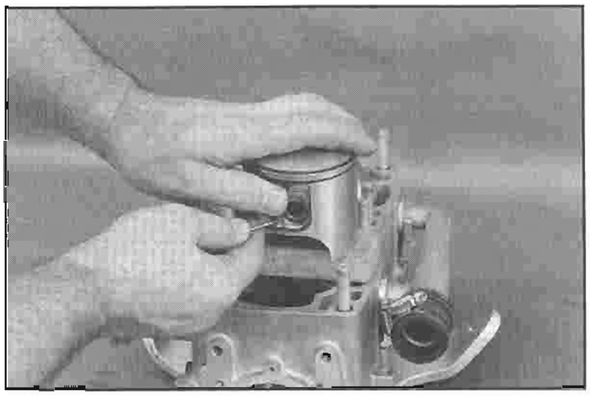


19. Loosen cylinder base nuts and remove cylinders.



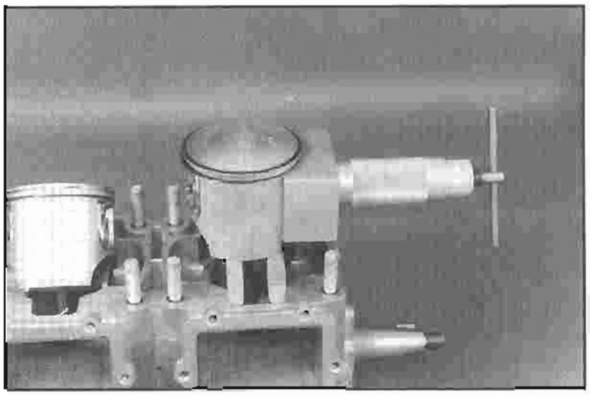
Disassembly, Cont.

20. Carefully remove C-clip holding piston pin in place.

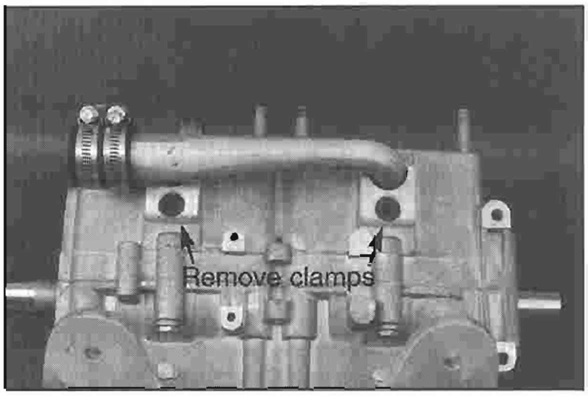


21. Remove piston pin using piston pin puller and adaptor.

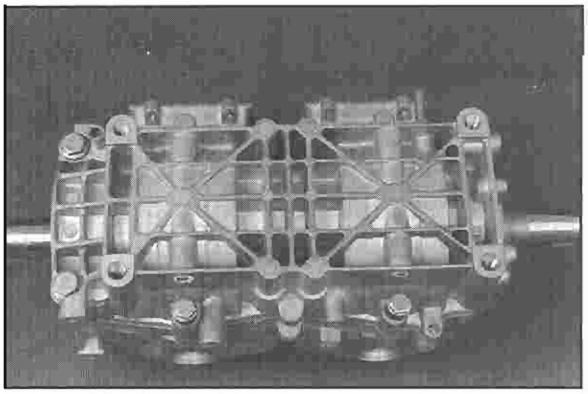
Piston Pin Puller PN 2870386
Adaptor PN 2871445



22. Remove water manifold by removing both retainer brackets.



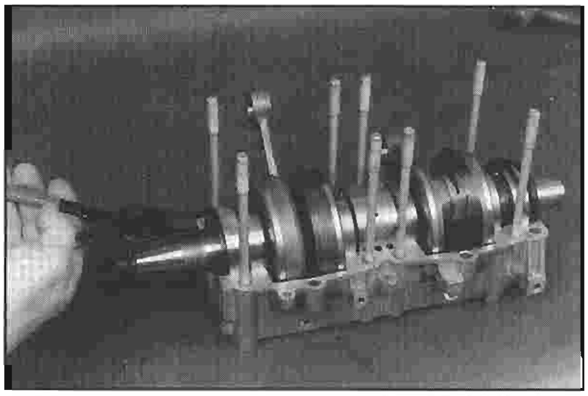
23. Remove bottom crankcase bolts and separate crankcase halves.



Disassembly, Cont.

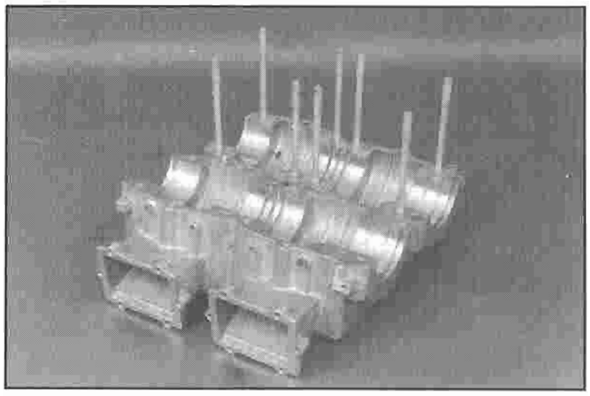
24. Remove snap rings and crankshaft seals. For crankshaft/crankcase inspection procedure, refer to pages 3.81-3.85.

25. Clean thoroughly to remove all grease, oil, dirt, and old sealant.



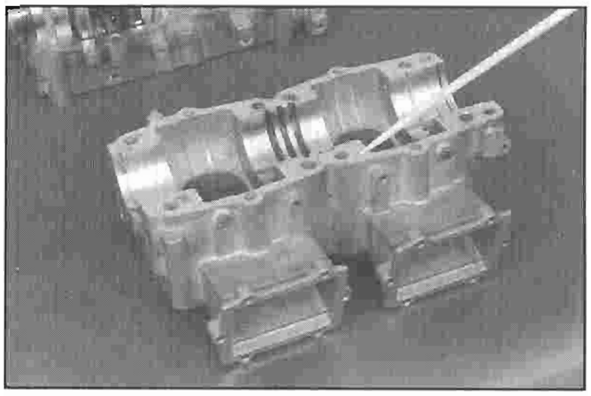
Assembly

1. Clean all parts with solvent.



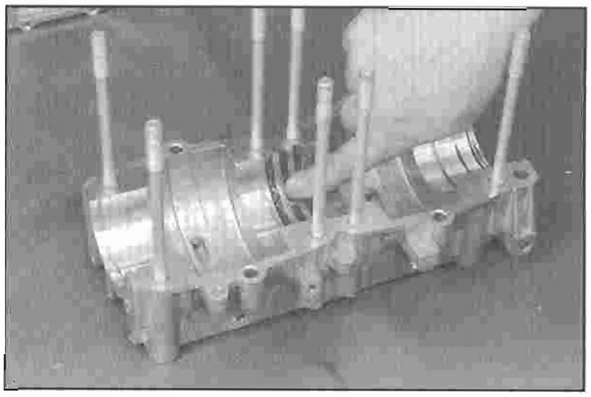
2. Apply 3-Bond™ 1215 sealant to upper crankcase half.

NOTE: Use only 3-Bond™ 1215 sealant. Curing time and film thickness are critical for proper bearing clearance.

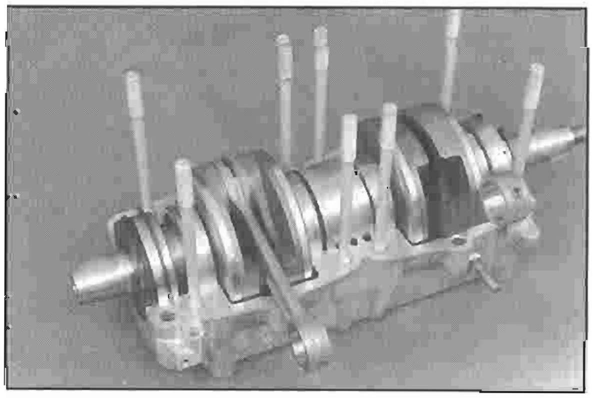


3-Bond ™ 1215	
PN 2871557	**120 Gram Tube**

3. Grease labyrinth seal.

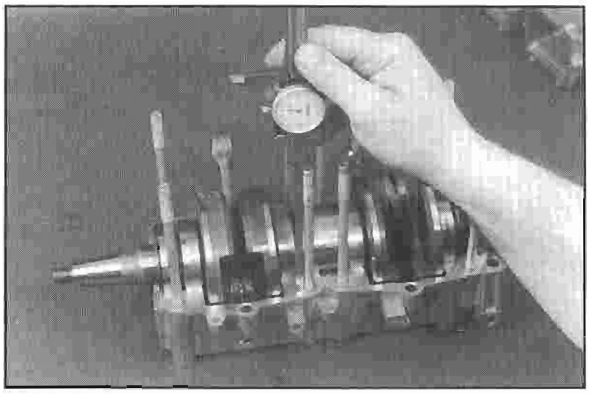


4. Set crankshaft in lower crankcase. Lubricate seal lips with Premium All Season Grease. Make sure seals are positioned properly with lip and spring facing inward toward crankshaft. Install snap rings with gap facing upward toward upper case half.



Assembly, Cont.

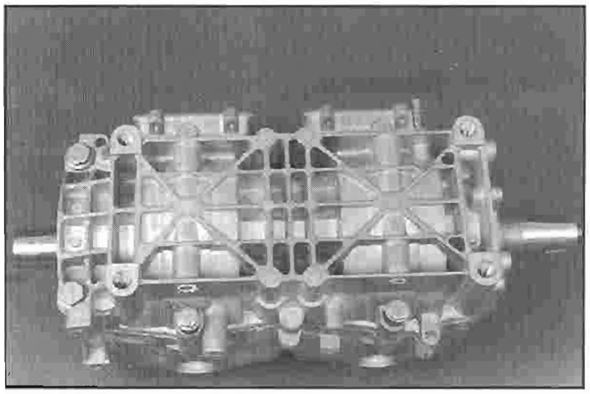
5. If studs were removed or new crankcase installed, apply Loctite™ 242 to threads of studs and screw in until bottomed. Tighten securely.



6. Measure installed length of stud bolt. This is the length necessary to allow cylinder installation.

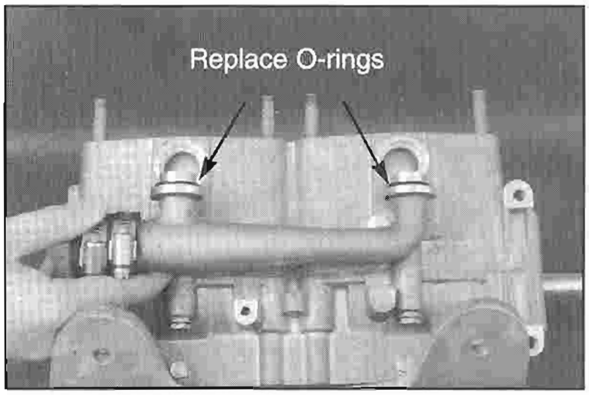
Lower Crankcase Stud Height
121-124 mm (4.76-4.88") from crankshaft parting line.

7. Install crankcase halves together. Torque bottom crankcase bolt to specification in the proper sequence.

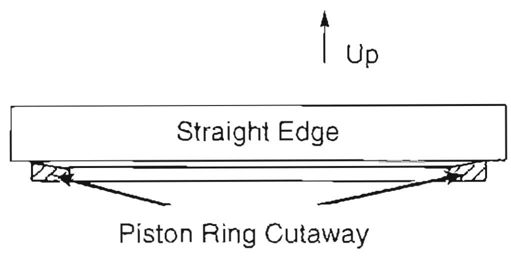


Crankcase Mounting Bolt Torque:
8mm - 18 ft. lbs. (2.48 kgm) 10mm - 26 ft. lbs. (3.59 kgm)

8. Install new O-rings on water manifold. Grease O-rings and install manifold.



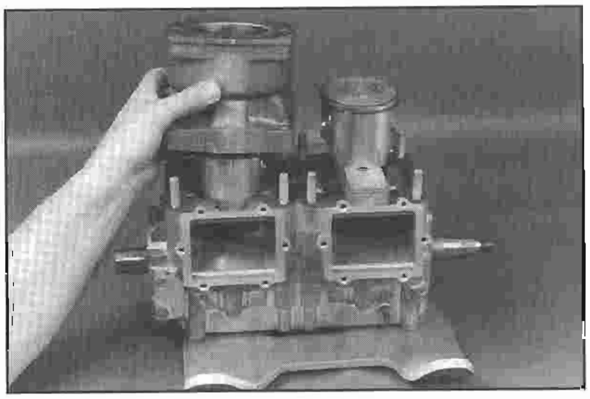
9. Install pistons and rings. Make sure C-clips are firmly seated in grooves. **NOTE:** Keystone ring bevel must be up. Marking near ring end gap faces upward.



Keystone Piston Ring

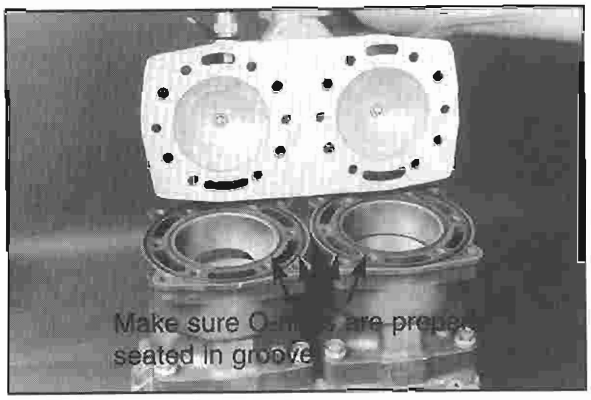
Assembly, Cont.

10. Lubricate pistons, rings, upper rod bearing, and cylinders with two stroke oil and install cylinders. Loosely install cylinder nuts.



11. Install new cylinder head O-ring and install cylinder head. Make sure O-ring is properly seated in groove. Apply Loctite 242 to threads of head bolts and install.

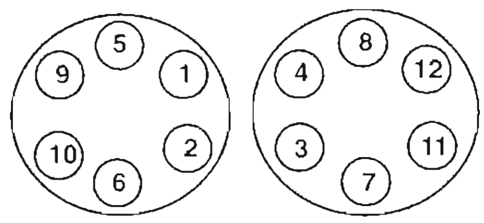
NOTE: Torque cylinder head bolts prior to torquing cylinder base nuts.



12. Torque head bolts in proper sequence.

Head Bolt Torque

24 Ft lbs (3.3 kgm)

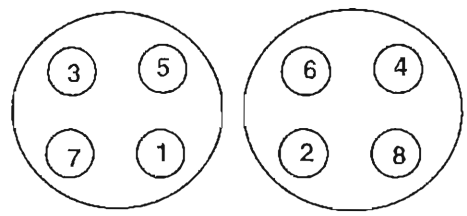


600 / 700 Cylinder Head

13. Torque cylinder base nuts in proper sequence.

Cylinder Base Nut Torque

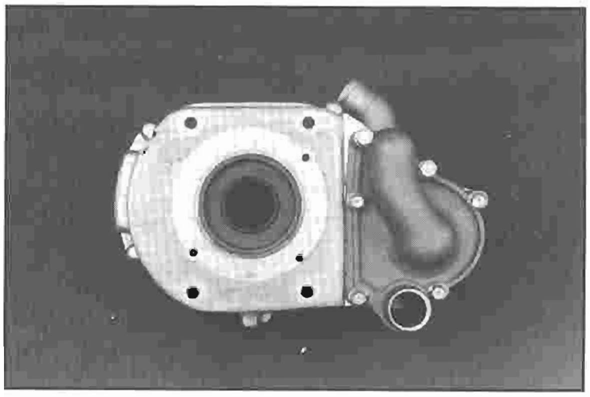
30 - 34 Ft lbs (4.15 - 4.70 kgm)



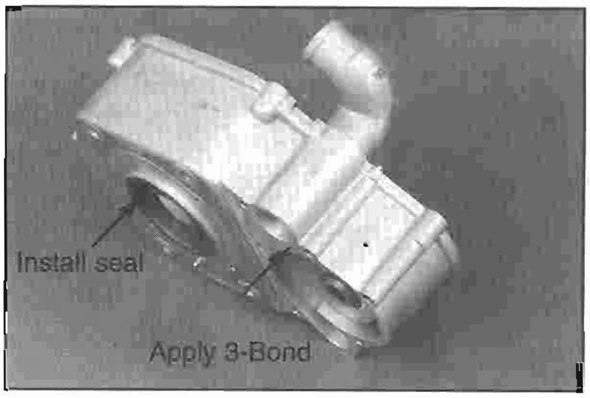
600 / 700 Cylinder Base

Assembly, Cont.

14. Reassemble water pump carefully installing seal.

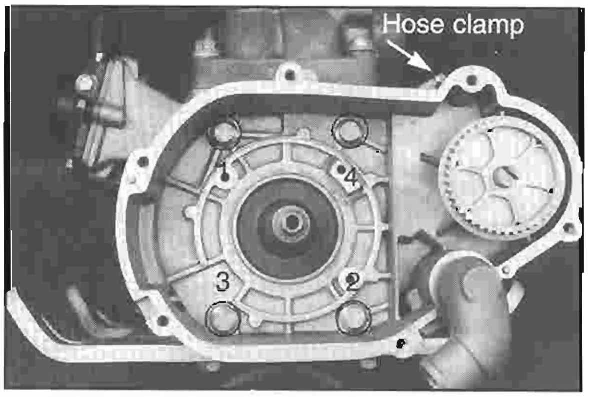


15. Install crankcase seal to ignition/water pump housing from inside toward outside. Spring and seal lip must face inward toward crankshaft. Seal lip bottoms on housing.

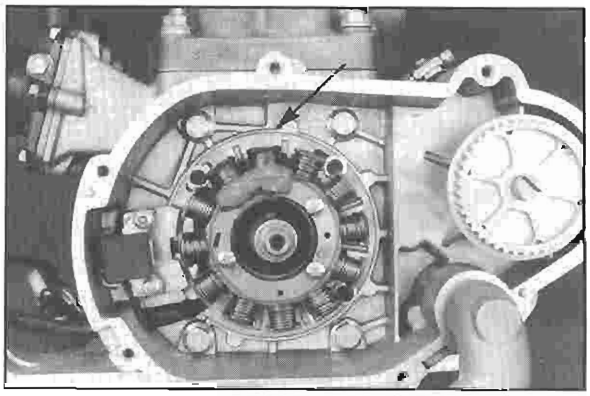


16. Apply 3 Bond™ sealant to pump housing crankcase mating surface and carefully install onto crankcase. Tighten water pump to engine hose clamp and torque bolts to specification.

Ignition/Water Pump Housing Torque
22 Ft. lbs (3.04kgm)



17. Align timing marks and install stator.

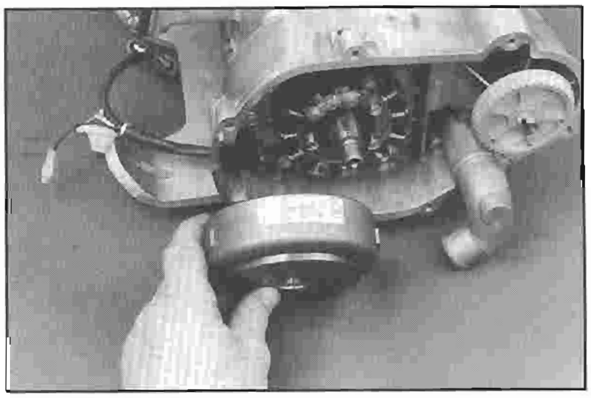


Assembly, Cont.

18. Apply Loctite™ 262 evenly to flywheel taper. Install flywheel key and flywheel. Apply Loctite™ 242 to crankshaft threads. Torque nut to specification.

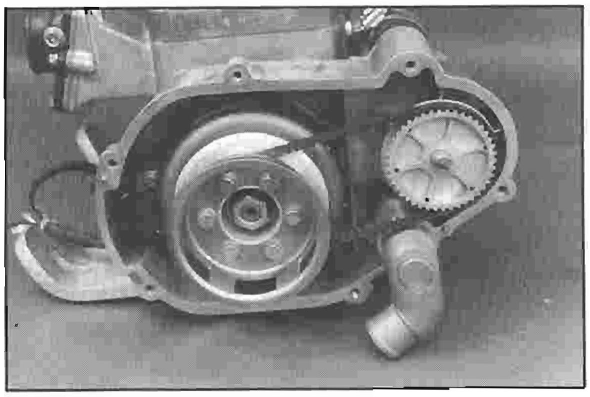
Flywheel Nut Torque -
60-65 ft. lbs. (8.28-8.97 kg-m)

Flywheel Holder
PN 8700229



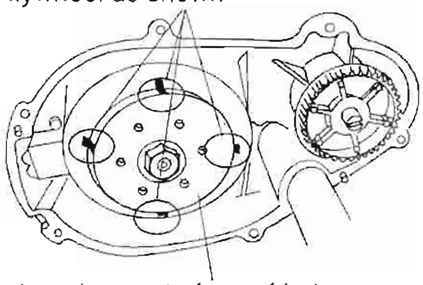
19. Install water pump belt and recoil hub.

Recoil Hub Bolt Torque -
96-108 in. lbs. (1.11 - 1.25 kg-m)



20. To verify concentricity of the drive hub, rotate the flywheel 1/8 turn at a time while checking belt deflection. Tension should be even at all points without any tight spots. If a tight spot is found, place four 1/2″ (12.7mm) lengths of 1/2″ wide masking tape on outer circumference of the flywheel hub as shown at right. This will center the drive pulley on the flywheel hub and ensure even tension on the belt in all crankshaft positions.

Place tape every 90° over edge of hub and onto flywheel as shown

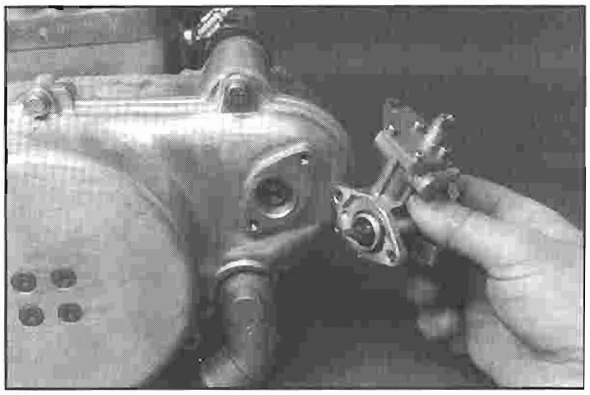


Do not apply tape to face of hub.

Water Pump Belt Width Service Limit
1/4″ (6.35 mm) Minimum Width

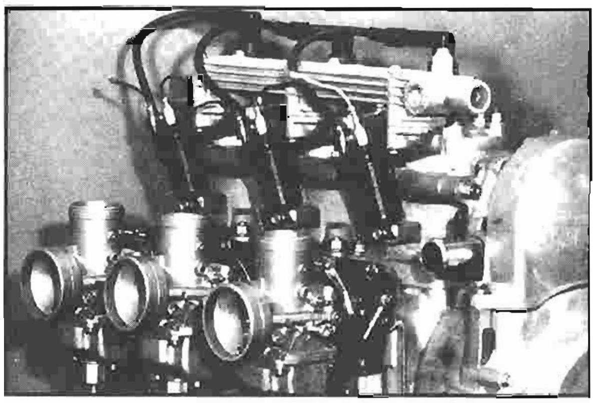
21. Install recoil cover and oil pump. Make sure oil pump drive slot mates properly with water pump shaft. Torque oil pump mounting bolts to specification.

22. Install reed valve, reed stuffer, and reed cover.

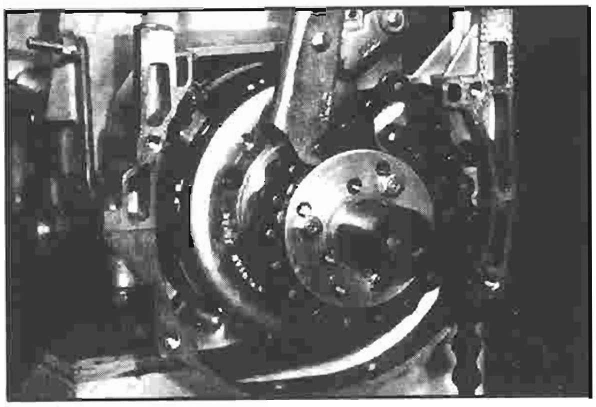


Disassembly

1. Remove carburetors, water outlet manifold, secondary coils, oil pump and reed valve cage assemblies. **NOTE:** Mark each components mag, center, and PTO so they will be in the correct location when reassembling.



2. Remove recoil housing, water pump belt guard, water pump and flywheel nut.



Flywheel Holder PN 8700229

3. Install flywheel puller and remove flywheel.

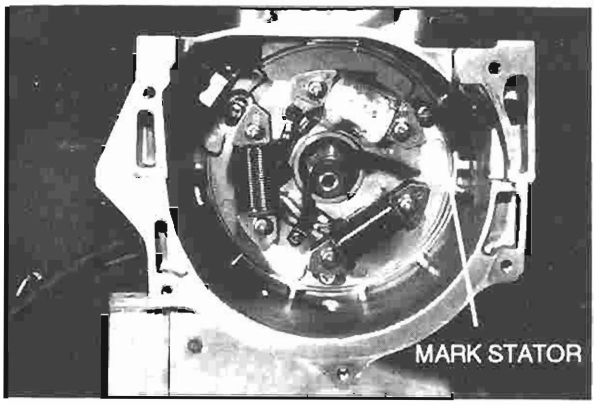
Flywheel Puller **PN 2871043**

CAUTION:

Do not thread puller bolts more than 3/8″ (0.5 mm) into flywheel or coil damage may occur.

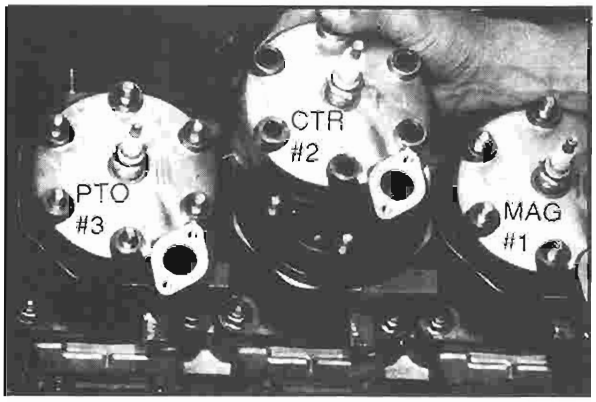
Disassembly, Cont.

4. Mark stator plate at case parting line and remove plate.

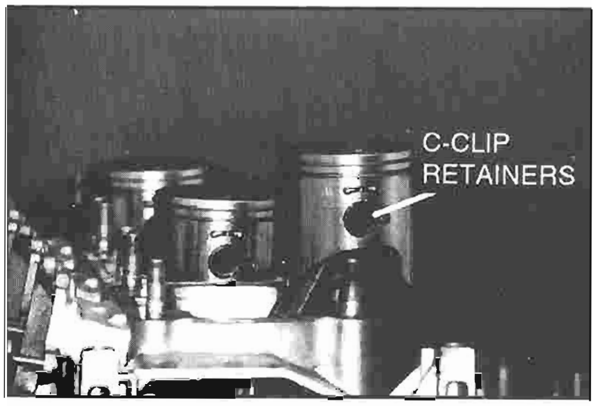


5. Remove remainder of head nuts and cylinder base nuts.

6. Carefully remove cylinders. Measure piston to cylinder clearance and piston ring installed gap. Refer to pages 3.80-3.85 for general inspection procedures.

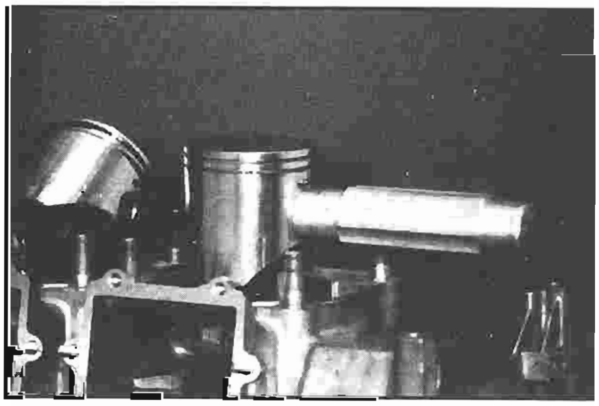


7. Remove C-clip retainers.



8. Use piston pin puller to remove piston pins.

Piston Pin Puller
PN 2870386

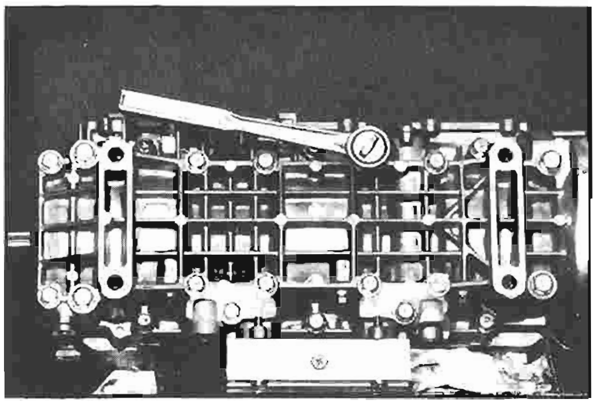


Disassembly, Cont.

9. Remove crankcase bolts and separate crankcase halves.

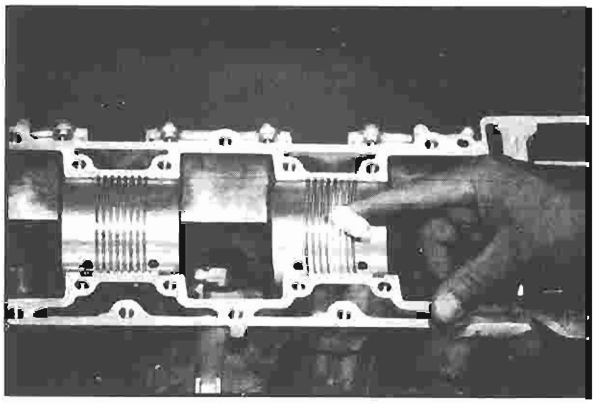
10. Inspect crankcase and crankshaft as outlined on pages 3.81-3.85.

11. Clean crankcase thoroughly to remove all grease, oil, dirt, and old sealant.

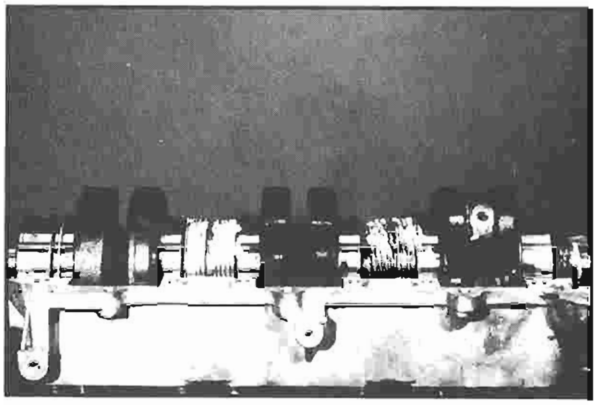


Assembly

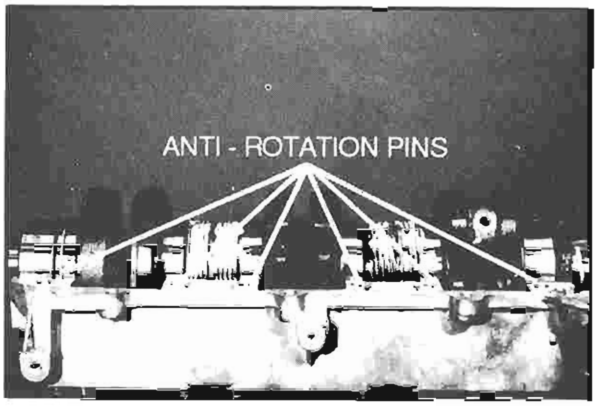
1. Grease oil pump drive gear and labyrinth seal area.



2. Grease end seals and oil pump drive gear.

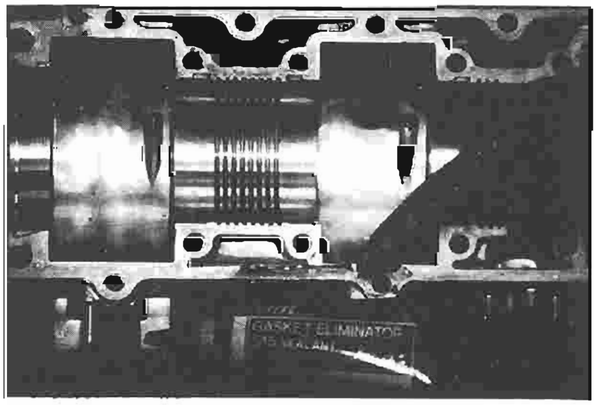


3. Position anti-rotation pins with relief in case.



4. Apply a light film of 3 Bond™ 1215 to crankcase and reassemble halves.

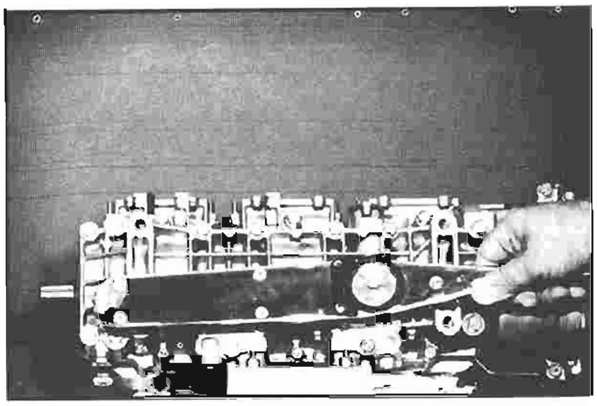
3-Bond ™ 1215	
PN 2871557	120 Gram Tube



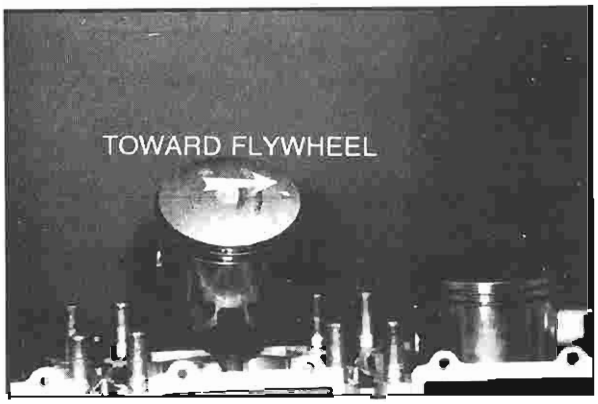
Assembly, Cont.

5. Install bolts and torque to specifications and pattern found on page 3.5 and 3.6.

Crankcase Mounting Bolt Torque:
8mm - 18 ft. lbs. (2.48 kgm) 10mm - 26 ft. lbs. (3.59 kgm)

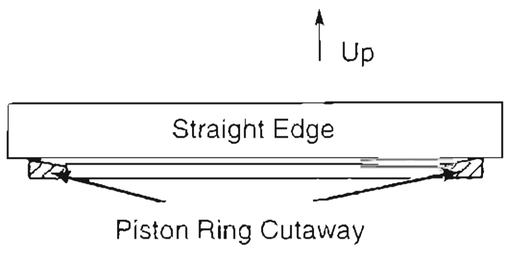


6. Install piston pin bearings.
7. Install piston with arrow (▶) toward flywheel.
8. Install C-clip retainers using tool. **NOTE:** The C-clip opening should be in the up or down position.



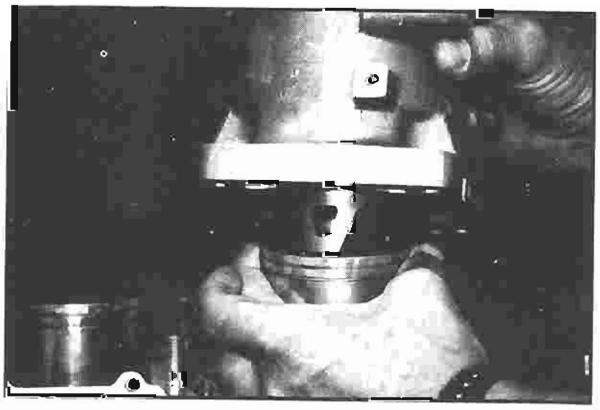
C-Clip Retainer Installation Tool
PN 2870773

9. Lightly oil rings and cylinder. **NOTE:** Keystone ring bevel must be up. Marking near ring end gap faces upward.



Keystone Piston Ring

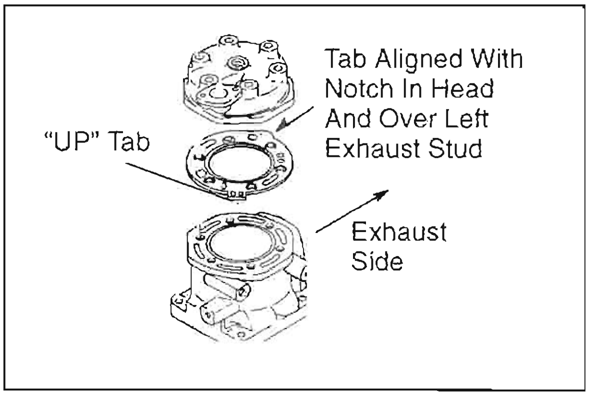
10. Carefully compress rings and install cylinder over piston. Torque cylinder base nuts to specification.



Cylinder Base Nut Torque:
28 ft. lbs. (3.86 kgm)

Assembly, Cont.

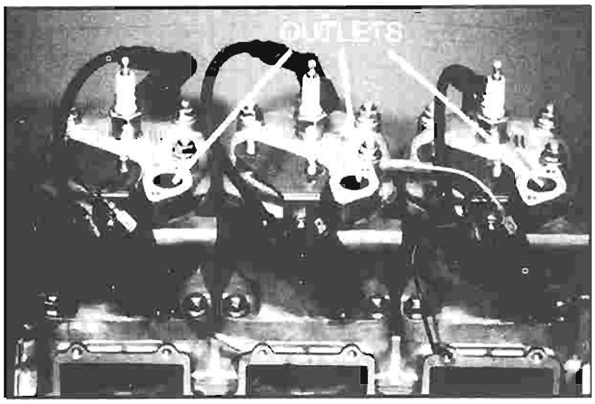
11. Install new head gasket with the rounded tab positioned directly over the left exhaust flange stud and the "UP" tab under the water outlet of head. When properly installed on the cylinder the word "UP" and "80" should be readable. All head gaskets are the same thickness.



Head Gasket Thickness .8mm

12. Install heads, positioning outlets as shown. Make sure coils are in correct position and torque head nuts to specification.
    - Storm coolant outlet restrictor plates must be positioned as follows for proper cooling:

      PTO 11 mm
      Center 12 mm
      Mag 13 mm

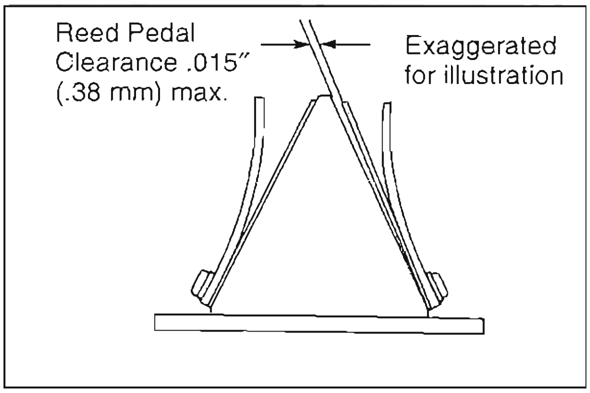


Cylinder Head Nut Torque:

18 ft. lbs. (2.48 kgm)

Reed Valve Inspection

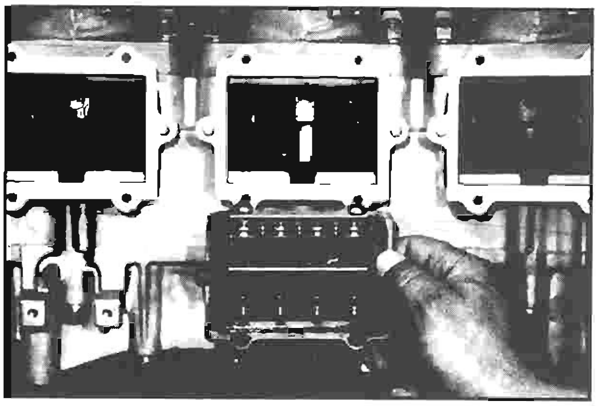
13. Measure air gap between fiber reed and reed block as shown. The air gap should not exceed .015″ (.4 mm). If clearance is excessive DO NOT attempt to reverse the reeds to reduce the air gap. *Always replace them if damaged.* Check each fiber reed for white stress marks or missing material. Replace if necessary.



Reed Air Gap - Maximum

.015″ (.4 mm)

14. Install reed cages.

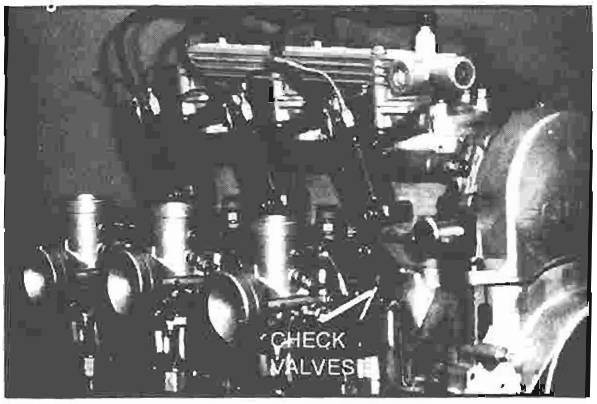


Assembly, Cont.

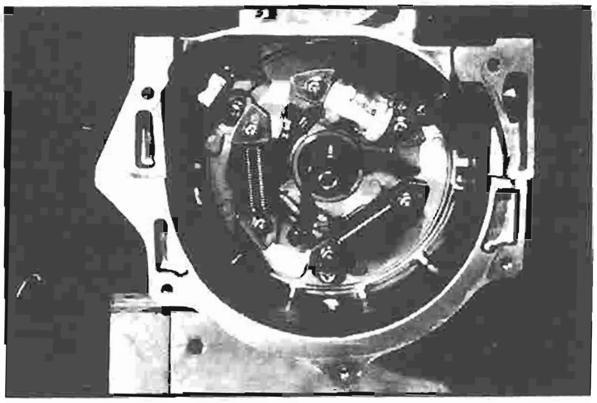
15. Install carburetor mounting flanges.

CAUTION:

Position oil check valve as shown.



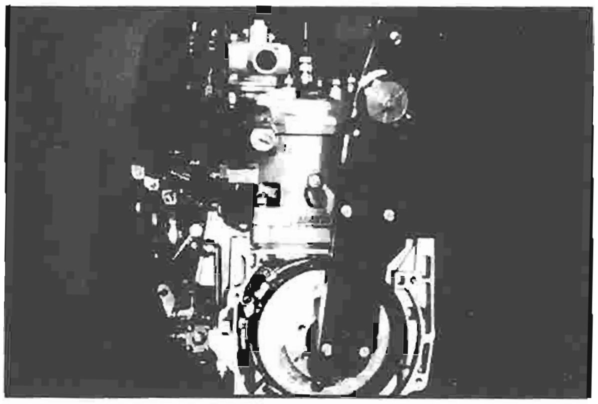
16. Install oil pump drive gear in correct sequence.
17. Check oil pump drive gear end play. See adjustment on page 3.89.
18. Install oil pump.
19. Position stator plate at previously marked position and secure in place.



20. Torque flywheel nut to specification. Install new O-ring on water pump and grease lightly. Install pump, recoil cup, and belt.

Flywheel Nut Torque:

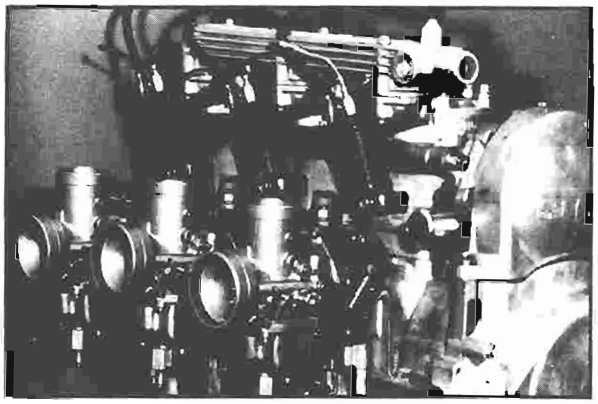
65 ft. lbs. (8.97 kgm)



21. Adjust tension on water pump belt by loosening mounting bolts, applying tension, and re-tightening bolts. Install recoil housing and belt guard.

Water Pump Belt Deflection -

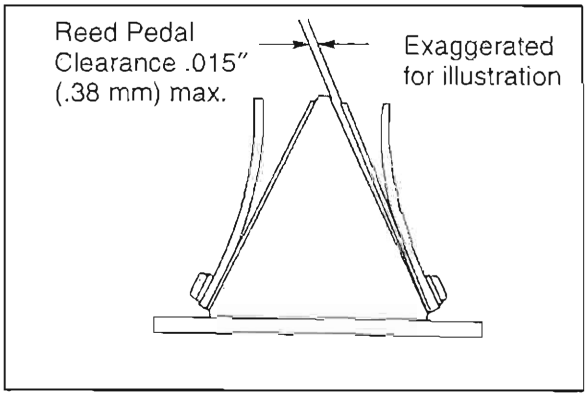
1/8 - 3/16"(.3 - .4 cm)



Disassembly

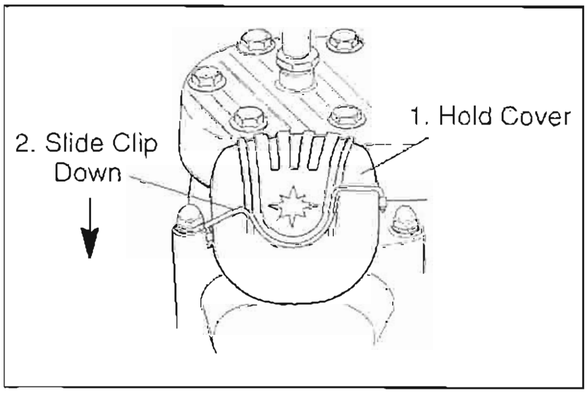
1. Remove carburetor mount adaptors, reed cages, stuffers, and oil pump. Note position of stator wire guide.

   Measure air gap between fiber reed and reed block as shown. The air gap should not exceed .015" (.4 mm). If clearance is excessive DO NOT attempt to reverse the reeds to reduce the air gap. *Always replace them if damaged.* Check each fiber reed for white stress marks or missing material. Replace if necessary.



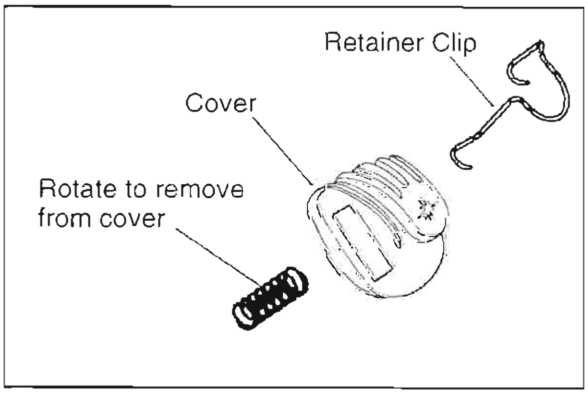
V.E.S. Removal

2. Pull back cover retainer clip while holding the cover in place.
3. Remove cover and return spring.



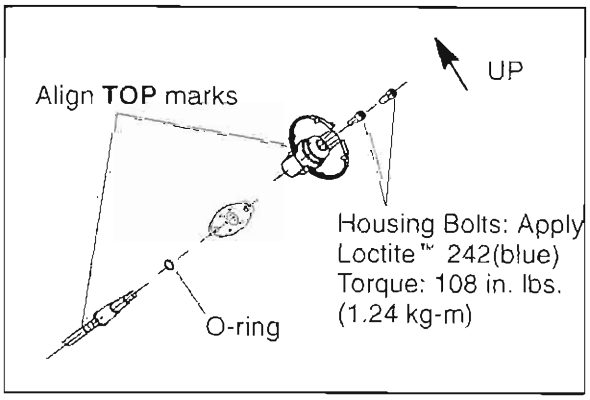
4. If the spring stays in the cover, hold the cover with spring facing toward you. Rotate spring in a counterclockwise direction while pulling outward on the spring. Do not distort the spring upon removal.

CAUTION: Do not attempt to remove the plastic valve piston at this time. The bellows must first be removed from the piston or damage may occur to the bellows or piston.



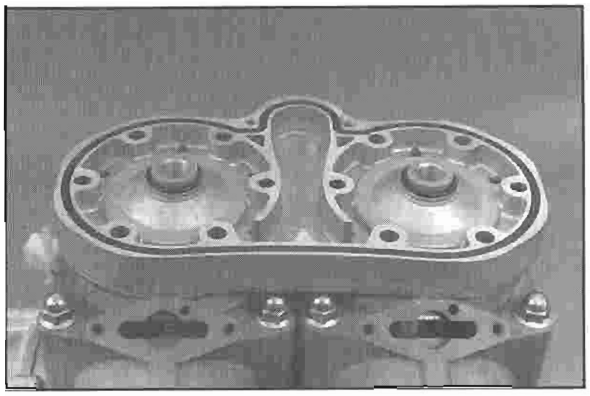
5. Remove two (5mm) hex screws from valve housing.
6. Note location of "TOP" marks on housing and exhaust valve. Lift entire valve assembly from cylinder along with gasket.

NOTE: Refer to Maintenance Chapter page 2.28a - 2.28e for cleaning and inspection procedure.

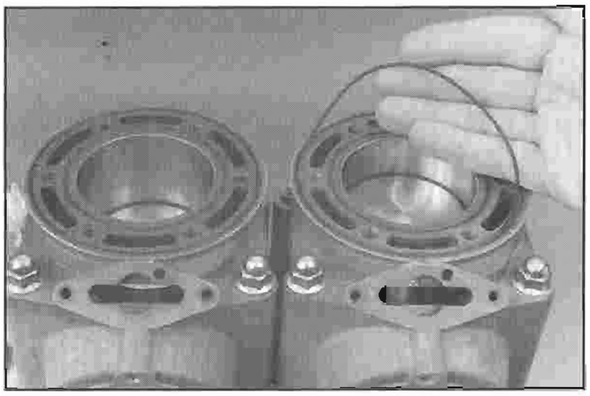


Disassembly, Cont.

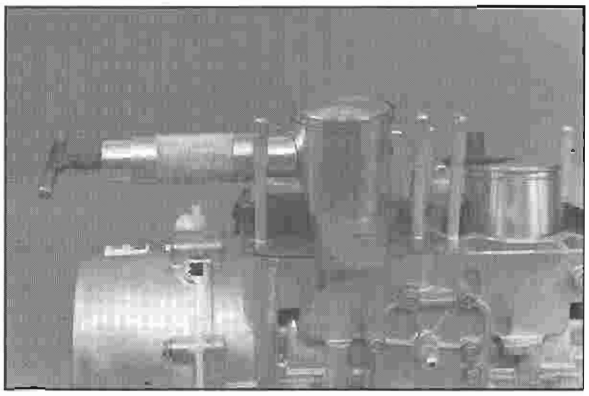
7. Remove cylinder head cover and inspect O-rings (A, B) and sealing surfaces for damage.



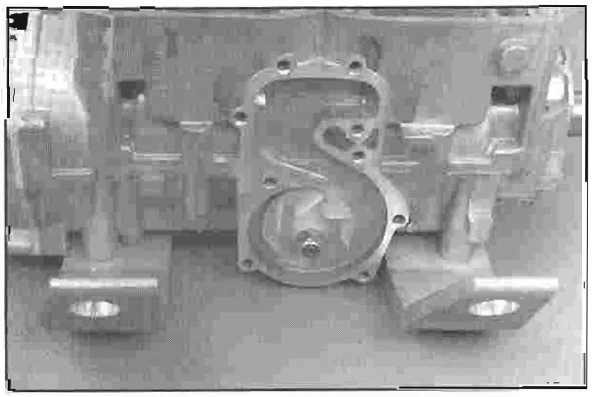
8. Remove cylinder head and inspect all O-ring sealing surfaces and grooves for damage or debris. Use new O-rings upon reassembly.
9. Remove cylinder base nuts. Niote location of acorn nuts on exhaust side (where applicable).
10. Carefully remove cylinders while supporting pistons and connecting rods to prevent piston damage. Refer to pages 3.80-3.85 for general inspection procedures.
11. Remove outer piston pin C-clips using a scribe through access slot in piston.
12. Place support block under piston and remove piston pins using pin puller.



Piston Pin Puller	**PN 2870386**
Support Block	**PN 2870390**

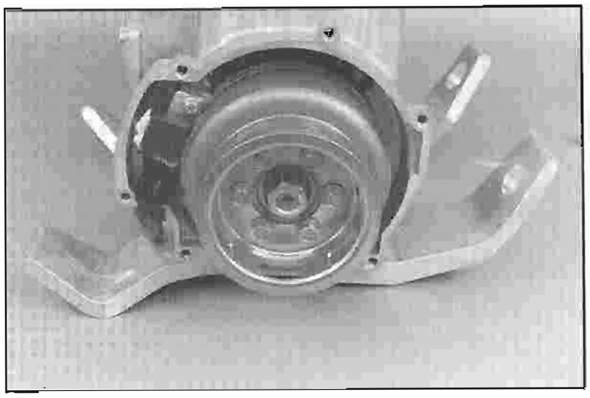


13. Remove water pump cover from front of engine.



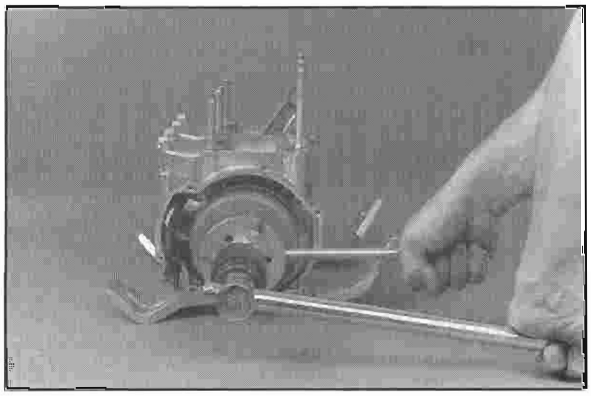
Disassembly, Cont.

14. Remove recoil housing and drive hub.

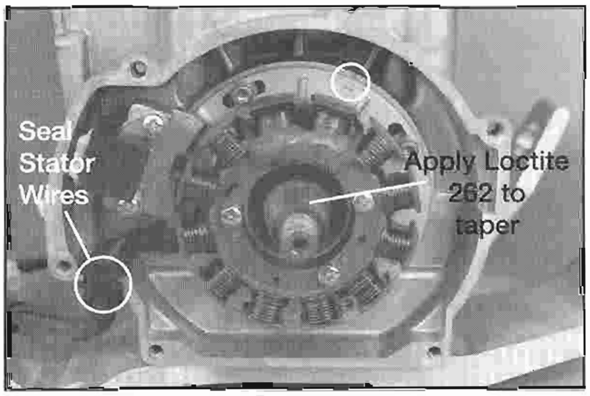


15. Remove flywheel using heavy-duty flywheel puller. Use drive clutch puller T-handle to hold puller.

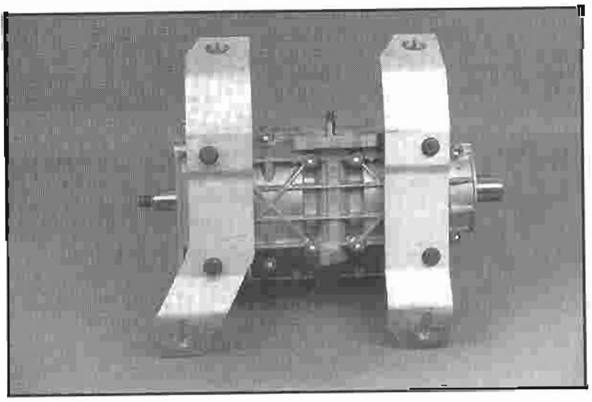
Flywheel Puller	**PN 2871043**
T-Handle	**PN 5020326**



16. Before removing stator plate, note where ignition timing marks are located, or scribe additional marks for reference upon reassembly.

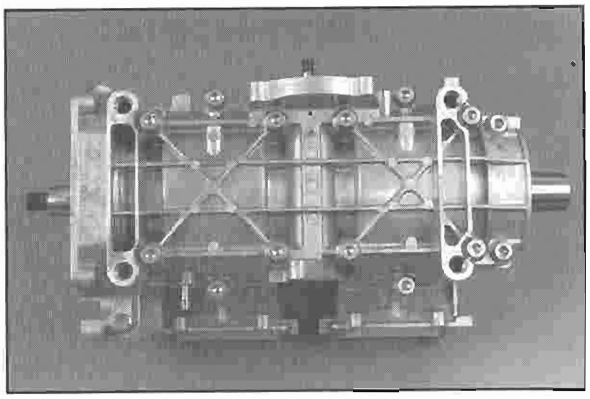


17. Mark or note location of engine mount straps and remove.

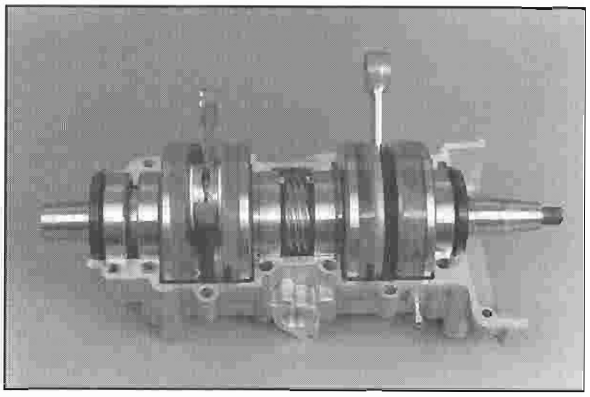


Disassembly, Cont.

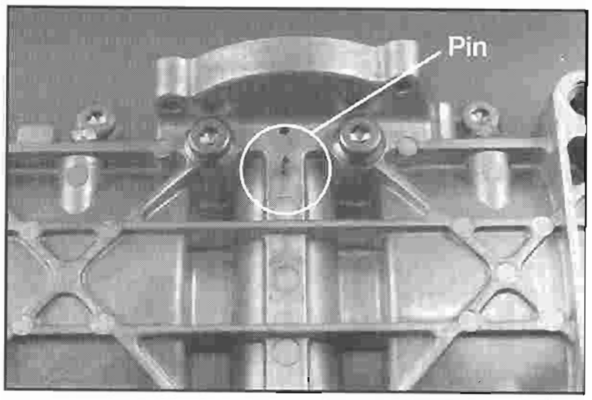
18. Remove bolts and separate case halves. Keep bolts in order for assembly.



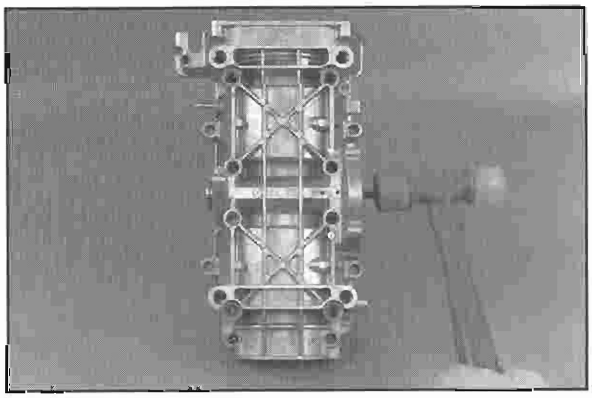
19. To prevent damage to snap-ring grooves, lift crankshaft straight upward and out of lower case.



20. If pump shaft removal is necessary, remove retaining pin from crankcase using a diaganol cutter or similar tool.

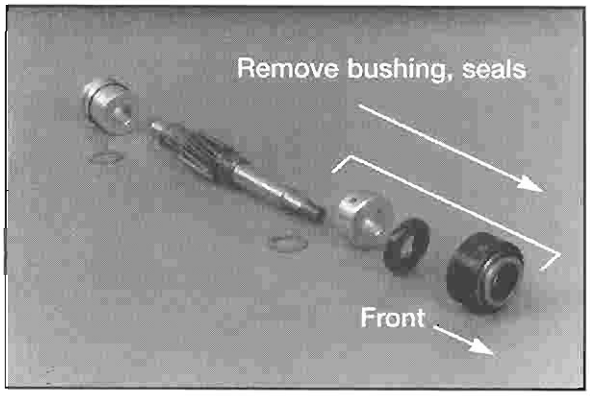


21. Using a soft faced hammer, tap pump shaft out of lower case half from front (water pump side) to rear (oil pump side). Note location washers on the shaft.



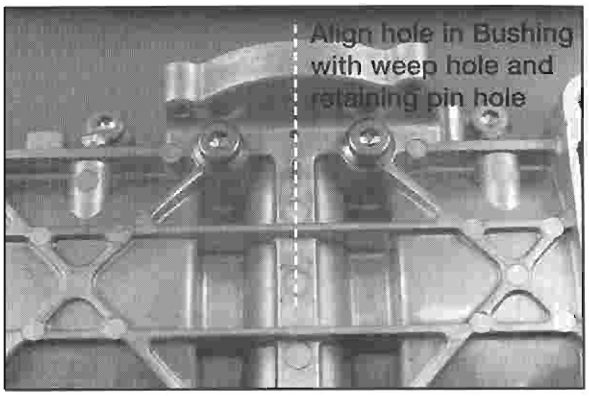
Disassembly, Cont.

22. Press front bushing, oil seal and mechanical seal out of lower crankcase using a suitable (soft) drift from the oil pump (rear) side. Be careful not to damage bushing.



Assembly

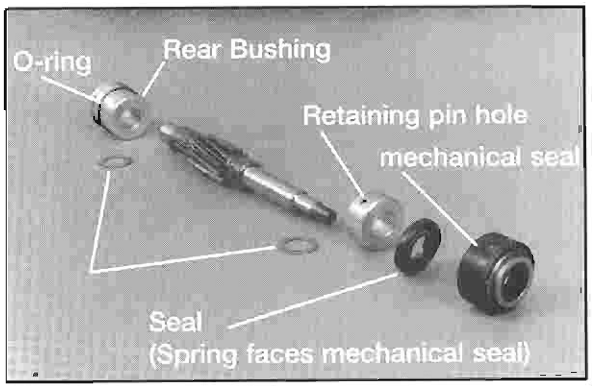
1. Insert bushing into case on water pump side using weep hole to align hole for retaining pin. Press in until firmly seated in case. Install retaining pin. Tap in until seated in bushing



NOTE: If front bushing is replaced it may be necessary to drill a retaining pin hole in the new bushing. If there is no hole in the bushing:

- Install bushing in crankcase as described above.
- Remove the retaining pin from lower crankcase.
- Using the retaining pin hole as a guide, carefully drill a hole in the new bushing to the same depth and diameter as the hole in the old bushing. Be careful not to enlarge the retaining pin hole.
- Install new retaining pin.

2. Install oil seal with spring facing outside of crankcase (toward you) until seated against bushing.



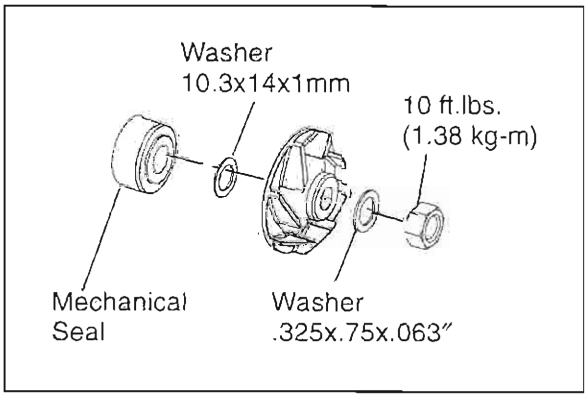
3. Lubricate and install washer on pump shaft (water pump end). Install shaft with washer through bushing and oil seal from the oil pump side of case. Be sure spring stays in position on seal lip.
4. Install remaining washer on shaft.
5. Lubricate and install rear bushing with new O-ring until seated against shaft.
6. Install oil pump, being careful to engage pump shaft in drive shaft.

Oil Pump Mounting Screw Torque:
60 in. lbs. (.70 kg-m)

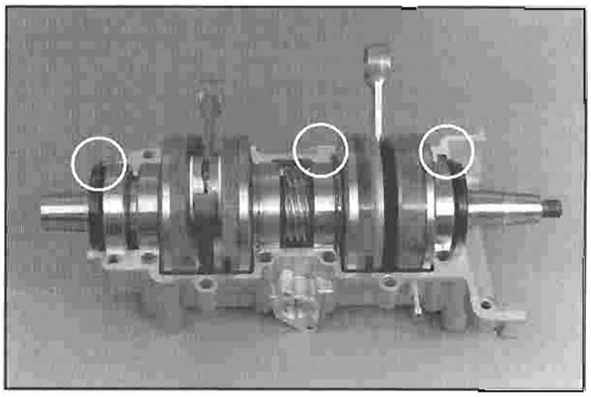
Assembly, Cont.

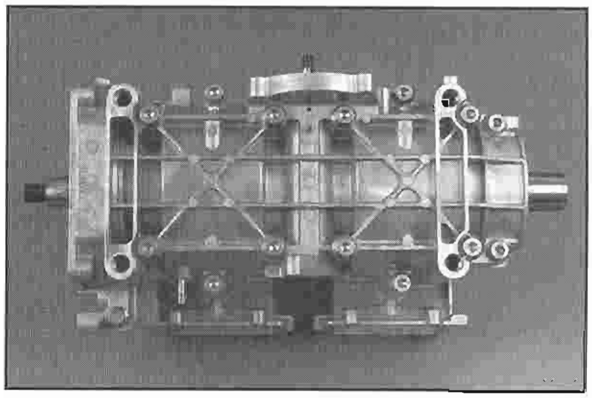
7. Install mechanical seal guide (special tool) on end of pump shaft.

Mechanical Seal Guide Tool: PN 2871846
Mechanical Seal Press Tool: PN 2871846

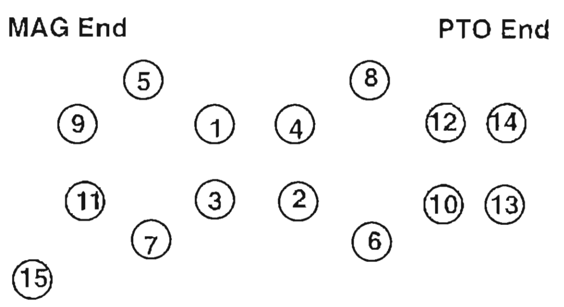


8. Lubricate seal guide and drive or press a new mechanical seal into case until fully seated using the seal press tool.
9. Lubricate all crankshaft bearings with Premium 2-Cycle or Premium Gold Engine Lubricant.
10. Lightly grease pump shaft drive gear and sealing lip of crankshaft seals.
11. Install seals on crankshaft with spring facing inward (toward crankshaft).
12. Clean and de-grease lower crankcase and install crankshaft assembly, aligning seals and snap ring with grooves in case.
13. Apply a thin coating of 3-Bond 1215 sealant to lower crankcase mating surface.
14. Install upper crankcase on lower crankcase.
15. Apply Loctite 242 to threads of bolts and install. Torque bolts in three steps to specified torque following the sequence shown at right





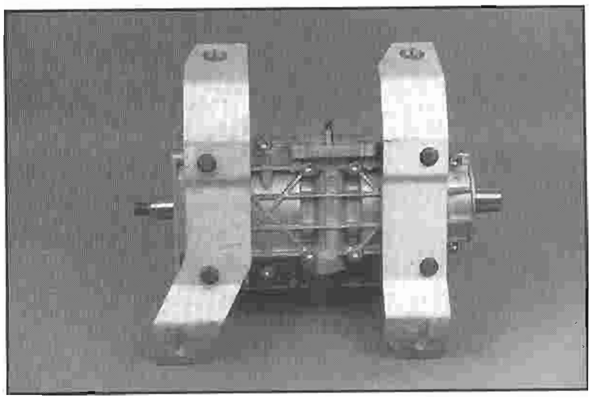
Crankcase Bolt Torque:	
8mm	**20-24 ft.lbs. (2.8 - 3.3 kgm)**
6mm	**108 in. lbs. (1.24 kg-m)**



CRANKCASE - SN44-44LCDCSP-01 / 02

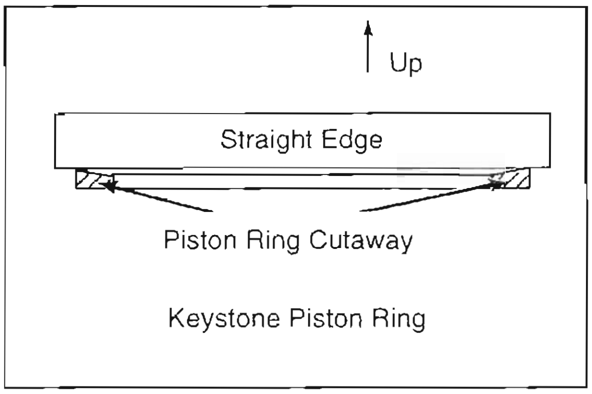
Assembly, Cont.

16. Assemble engine mount straps to crankcase.



Engine Mount Strap Torque:
44-48 ft. lbs. (6.0-6.6 kg-m)

17. Lubricate main bearing oil holes with Polaris Premium 2 Cycle or Premium Gold engine oil and rotate crankshaft to distribute oil evenly.
18. Install a new C-clip in both pistons (inside) with gap facing down. Be sure clip is fully seated in groove.
19. Lubricate and install new connecting rod small end bearing in rod.
20. Install piston with arrow facing exhaust (ring locating pins should be facing intake). Warming the piston may help to ease installation of pin.
21. Install remaining C-clip with gap down. Be sure both clips are fully seated on the groove.
22. Install new base gasket. Be sure gasket surface is clean and free of nicks, burrs, or scratches.
23. Lubricate and install piston rings on piston with mark on end of ring facing upward.

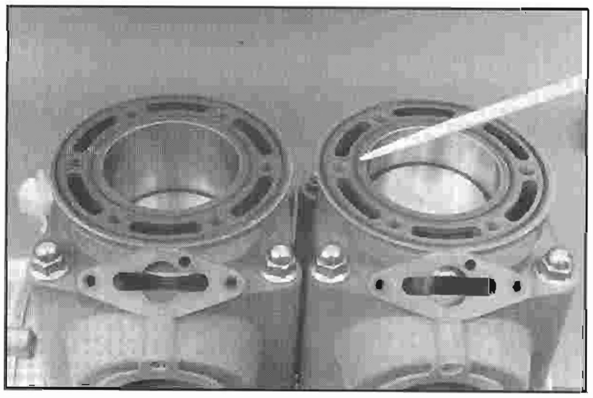


24. Place piston support under skirt and lubricate pistons and cylinders thoroughly.
25. Align ring end gaps with locating pins and compress rings. Install cylinder carefully with a gentle front to rear rocking motion. Install cylinder base nuts loosely. Do not tighten them at this time. Repeat Steps 22-25 for other cylinder.

CAUTION:

Do not twist or force cylinder during installation.

26. Install new cylinder head O-rings and install cylinder head. Make sure O-rings are properly seated in grooves. Apply a light film of grease to hold O-rings in place if necessary.

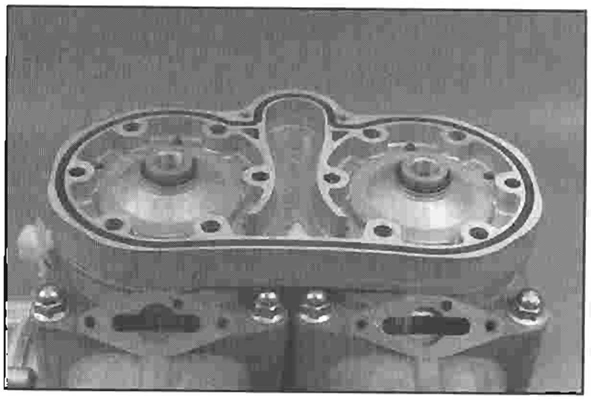


Assembly, Cont.

27. Install new cylinder head cover O-rings and install cylinder head cover. Make sure O-rings are properly seated in grooves. Apply a light film of grease to hold O-rings in place if necessary.

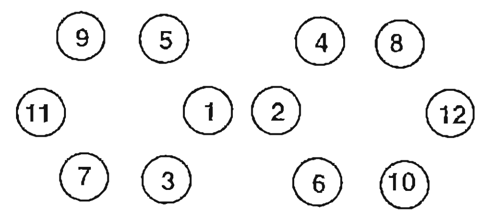
28. Loctite 242 to threads of head bolts and install.

NOTE: Torque cylinder head bolts prior to torquing cylinder base nuts.



29. Torque head bolts in proper sequence.

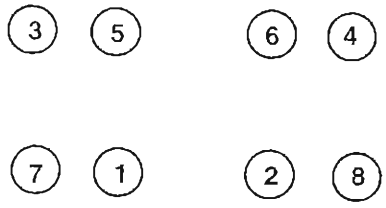
Head Bolt Torque:
20-24 Ft lbs (2.77 - 3.3 kgm)



Cylinder Head

30. Torque cylinder base nuts in proper sequence.

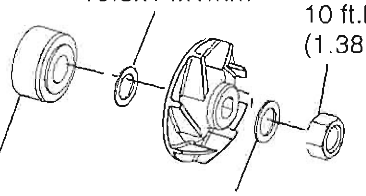
Cylinder Base Nut Torque:
30 - 34 Ft lbs (4.15 - 4.70 kgm)



Cylinder Base

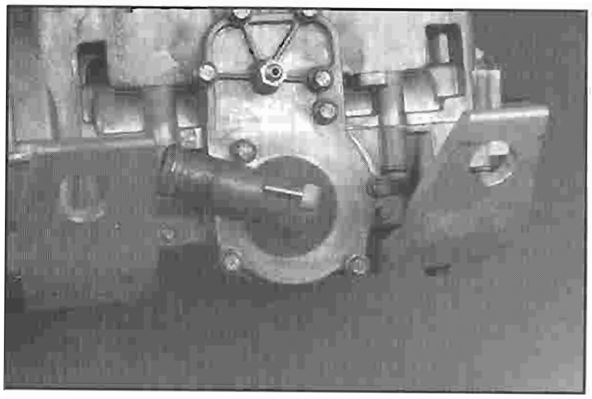
31. Install washers and water pump impeller as shown and torque nut to 10 ft. lbs. (1.38 kg-m).

Impeller Nut Torque:
10 Ft lbs (1.38 kgm)



Assembly, Cont.

32. Install water pump cover with new gasket.



Water Pump Cover Bolt Torque:
9 Ft lbs (1.25 kgm)

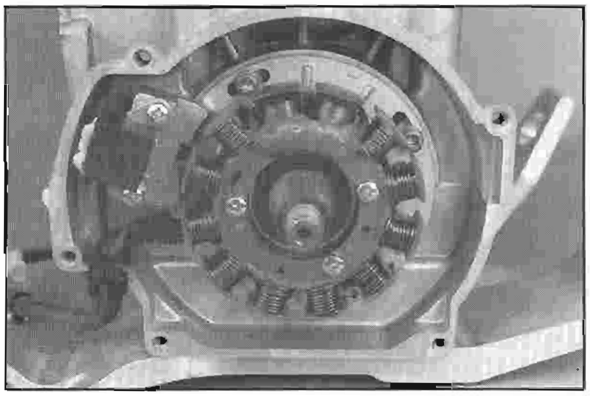
33. Install new exhaust manifold gaskets and manifold.

Exhaust Manifold Bolt Torque:
16 Ft lbs (2.21 kgm)

34. Assemble V.E.S. valve as outlined in Maintenance section page 2.28a-e.

35. Install reed valves, stuffers, and carburetor adaptors. Place stator wire guide on Mag side carburetor adaptor bolt.

36. Install stator assembly, aligning timing marks or marks made upon disassembly. Seal stator wires with high temperature silicone sealant. Install and tighten stator screws to specification.



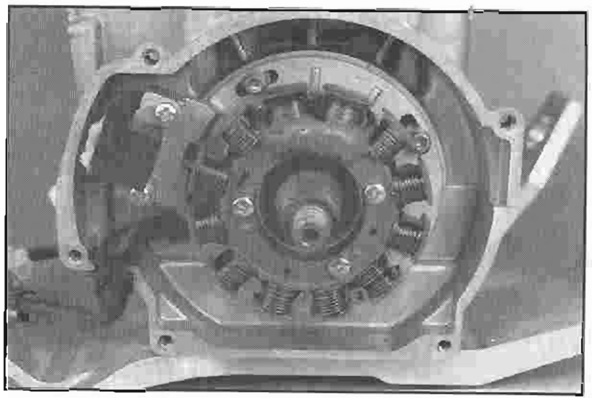
37. Measure trigger (pulse) coil gap and compare to specification.

Stator Screw Torque
60 in. lbs. (.69 kg-m)

Trigger (Pulse) Coil Gap	
Minimum:	.020" (.5mm)
Maximum:	.040" (1.0mm)

Assembly, Cont.

38. Apply Loctite™ 262 evenly to the flywheel mounting taper on crankshaft. Install woodruff key.

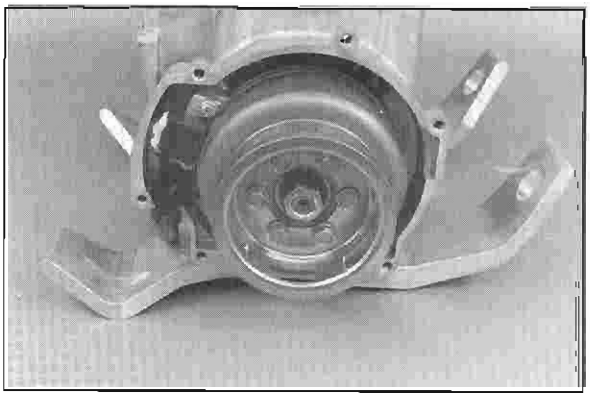


39. Install flywheel. Apply Loctite™ 242 to crankshaft threads. Install washer and nut.

40. Use flywheel holder to hold flywheel and torque nut to specification.

Flywheel Holder:	**PN 8700229**
Flywheel Nut Torque:	
90 ft. lbs. (12.45 kg-m)	

41. Install recoil hub and recoil housing. Torque bolts to specification.



Recoil Hub and Housing Bolt Torque:
108 in. lbs. (1.25 kg-m)

42. Install engine in chassis and align clutches.

43. Refer to Maintenance Chapter to fill and bleed cooling system and oil pump.

Cylinder Honing

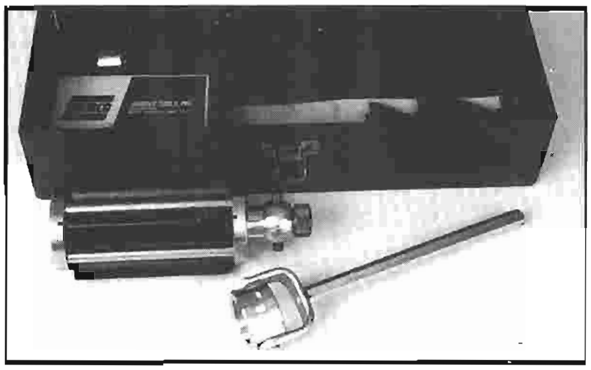
The cylinder bore must be de-glazed whenever new piston rings are installed*. A light honing with fine stones removes only a very small amount of material. A proper crosshatch pattern is important to provide a surface that will hold oil, and allow rings to seat properly. If the crosshatch is too steep, oil retention will be reduced. A crosshatch angle which is too shallow will cause ring vibration, poor sealing, and overheating of the rings due to blow-by and reduced contact with the cylinder wall. Service life of the pistons and rings will be greatly reduced.

* Except Nicasil

Cylinder Hone Selection

Selecting a hone which will straighten as well as remove material from the cylinder is very important. Honing a cylinder with a spring loaded glaze breaker is never advised. Polaris recommends using a rigid type hone which also has the capability of oversizing. These hones are manufactured by such companies as Sunnen Products Company of St. Louis, Missouri; and Ammco Tools, Inc., of North Chicago, Illinois.

Shown at right is the Ammco No. 3950 hone. This hone has roughing and finishing stone sets available to service engines with cylinder bores up to 75mm in diameter.



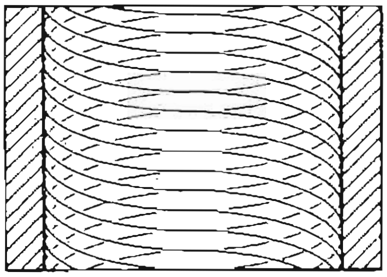
De-glazing

If cylinder wear or damage is minimal, hone the cylinder lightly with finish stones following the procedure outlined on page 3.80

Honing To Oversize

If cylinder wear or damage is excessive, it will be necessary to oversize the cylinder using a new oversize piston and rings. This may be accomplished by either boring the cylinder and then finish honing to the final bore size, or by rough honing followed by finish honing.

For oversize honing always wet hone using honing oil and a coarse roughing stone. Measure the piston (see piston measurement) and rough hone to the size of the piston or slightly larger. Always leave .002 - .003″ (.05 - .07 mm) for finish honing. Refer to pages 3.3-3.4 for piston to cylinder specifications before honing. Complete the sizing with fine grit stones to provide the proper cross-hatch finish and required piston clearance. See procedure on page 3.80.

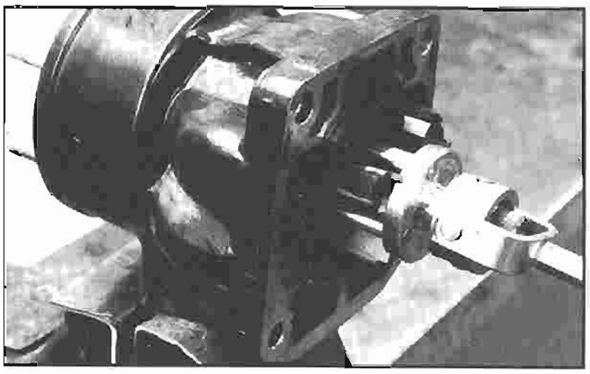


EXAMPLE OF CROSS HATCH PATTERN

Honing Procedure

1. Wash cylinder with solvent. Clamp cylinder securely in a soft jawed vise by the exhaust port studs.

2. Place hone in cylinder and tighten stone adjusting knob until stone contacts the cylinder walls (DO NOT OVERTIGHTEN). Cylinders may be wet or dry honed depending on the hone manufacturer's recommendations. Wet honing removes more material faster and leaves a more distinct pattern in the bore. Using a 1/2" (13 mm) drill motor rotating at a speed of 300-500 RPM, run the hone in and out of the cylinder rapidly until cutting tension decreases. Remember to keep the hone drive shaft centered to prevent edge loading and always bring the stone approximately 1/2" (1.3 cm) beyond the bore at the end of each stroke. Release the hone at regular intervals to inspect bore size and finish. Do not "drag" the hone out of the bore.



Port Chamfering

Remove the sharp edges at the bottom and top of each port whenever boring or honing is performed. Make sure there are no sharp edges.

IMPORTANT:

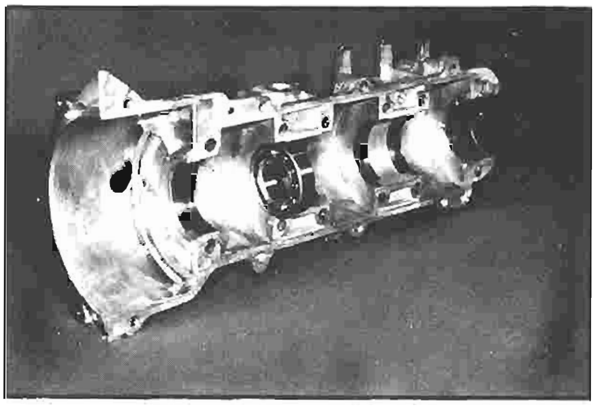
Cleaning the Cylinder After Honing

It is very important that the cylinder be thoroughly cleaned after honing to remove all grit material. Wash the cylinder in a solvent, then in hot soapy water. Pay close attention to areas where the cylinder sleeve meets the aluminum casting (transfer port area). Use electrical contact cleaner if necessary to clean these areas. Rinse thoroughly, dry with compressed air, and oil the bore immediately with Polaris Premium 2 Cycle Lubricant.

Crankcase Inspection / Bearing Fit

Any time crankshaft bearing failure occurs and the case is to be reused, Polaris recommends checking the bearing fit into the case halves using the following procedure.

1. With case halves cleaned, press a replacement bearing into each of the main bearing journals to determine a basic amount of press fit. **NOTE:** Do a comparison check of all journals by manually forcing the bearing into the bearing seats noting if any are noticeably loose or tight. Normal hand installation will be an indication of the recommended interference fit. If the bearing falls out of the case when the case is inverted, the case should be replaced.



Crankcase Bearing Interference Fit:

C-3 - .0006″ (.015mm) - Crush
C-4 - .001″ (.025mm) - Crush

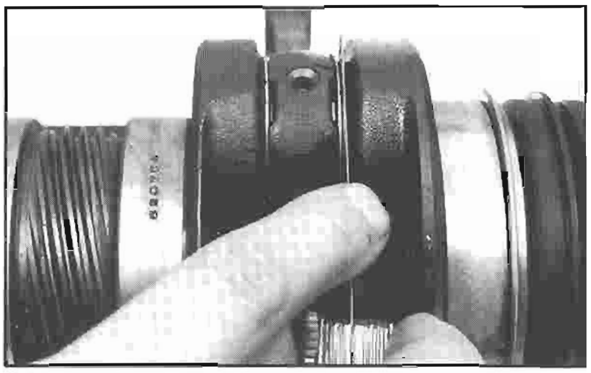
Crankshaft Main Bearing Inspection

1. Clean crankshaft thoroughly and oil main and connecting rod bearings with Polaris Premium 2 engine oil. Carefully check each main bearing on the shaft.

NOTE: Due to extremely close tolerances, the bearings must be inspected visually, and by feel. Look for signs of discoloration, scoring or galling. Turn the outer race of each bearing. The bearings should turn smoothly and quietly. The inner race of each bearing should fit tightly on the crankshaft. The outer race should be firm with minimal side to side movement and no detectable up and down movement. Replace any loose or rough bearings.

Connecting Rod (Big End) Bearing Inspection

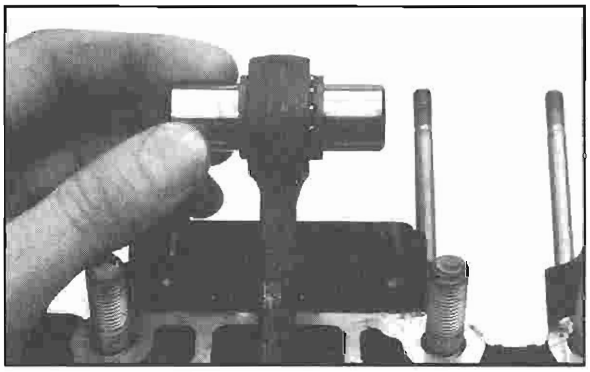
1. Measure connecting rod big end side clearance with a feeler gauge. Clearance should be equal on all rods (within .002"). Rotate rod on crankshaft and check for rough spots. Check radial end play in rod by supporting rod against one thrust washer and alternately applying up and down pressure. Replace bearing, pin, and thrust washers if side clearance is excessive or if there is any up and down movement detectable in the big end bearing.



NOTE: Specialized equipment and a sound knowledge of crankshaft repair and straightening is required to perform crankshaft work safely and correctly. Crankshaft repair should be performed by trained Polaris service technicians in a properly equipped shop.

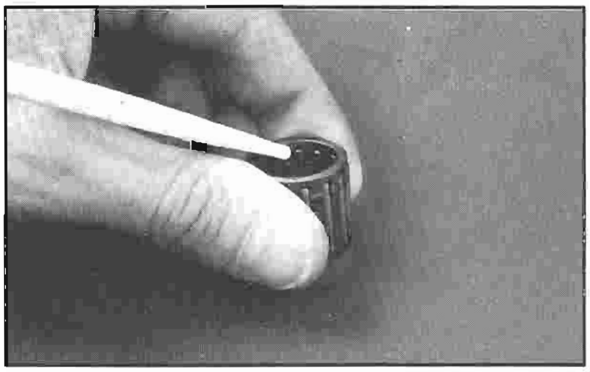
Connecting Rod Small End Inspection

1. Clean small end of connecting rod and inspect inner bore with a magnifying glass. Look for any surface irregularities including pitting, wear, or dents.
2. Run your fingernail around the inside of the rod and check for rough spots, galling, or wear.
3. Oil and install needle bearing and pin in connecting rod. Rotate pin slowly and check for rough spots or any resistance to movement. Slide pin back and forth through bearing while rotating and check for rough spots.
4. With pin and bearing centered in rod, twist ends back and forth in all directions to check for excessive axial play. Pull up and down evenly on both ends of pin to check for radial play. Replace pin *and* bearing if there is any resistance to rotation or excessive axial or radial movement. If play or roughness is evident with a new pin and bearing, replace the connecting rod.



Piston Pin / Needle Bearing Inspection

1. Clean needle bearing in solvent and dry with compressed air.
2. Inspect needle cage carefully for cracks or shiny spots which indicate wear. Replace needle bearings if worn or cracked, and always replace them if piston damage has occurred.
3. Visually inspect piston pin for damage, discoloration, or wear. Run your fingernail along the length of the pin and replace it if any rough spots, galling or wear is detected.



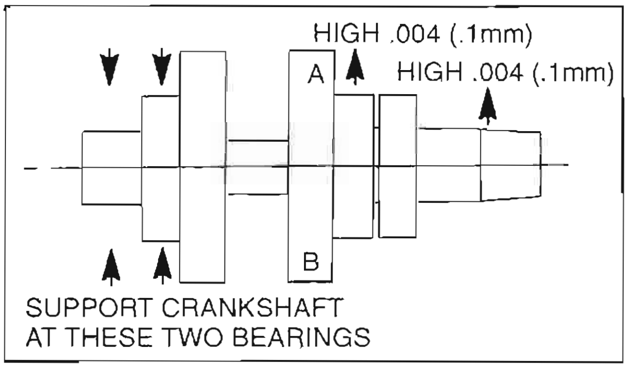
Crankshaft Straightening

Lubricate the bearings and clamp the crankshaft securely in the holding fixture. On three cylinder crankshafts, straighten one of the ends (Magneto or PTO) and then straighten the center section. Place the center section in the holding fixture and then straighten the remaining end. If truing the crankshaft requires striking with a hammer, always be sure to re-check previously straightened areas to verify truing. Refer to the illustrations below.

Crankshaft Alignment Fixture **PN 2870569**

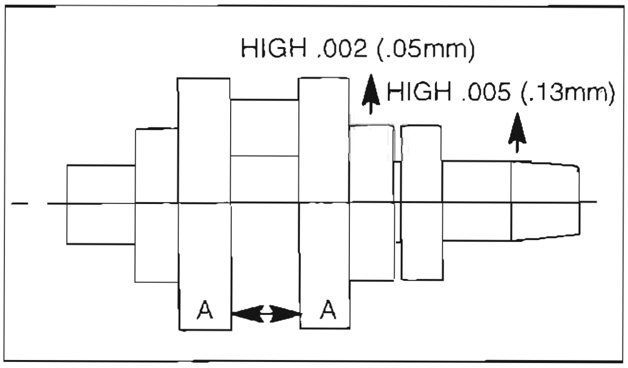
NOTE: The rod pin position in relation to the dial indicator position tells you what action is required to straighten the shaft.

4. To correct a situation like the one shown in the illustration at right, strike the shaft at point A with a brass hammer.



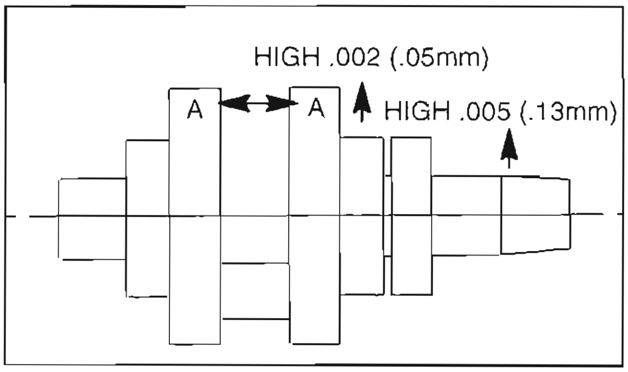
NOTE: The rod pin position in relation to the dial indicator position tells you what action is required to straighten the shaft.

5. To correct a situation like the one shown in the illustration at right, squeeze the crankshaft at point A. (Use tool from alignment kit).



6. If the crank rod pin location is 180° from the dial indicator (opposite that shown above), it will be necessary to spread the crankshaft at the A position as shown in the illustration at right. When rebuilding and straightening a crankshaft, straightness is of utmost importance. Runout must be as close to zero as possible.

NOTE: Maximum allowable runout is .004″ (.1 mm).



Crankshaft Indexing

Polaris crankshafts are pressed together or "indexed" so the connecting rod journal center lines are 180° (twins) or 120° (triples) apart from each other.

It is sometimes necessary to check multi-cylinder crankshafts to verify that one cylinder has not been forced out of position relative to the other cylinder or cylinders. Causes for out-of-index crankshafts include but are not not limited to:

- Hydrolock from water or fuel;
- Impact to drive clutch from foreign object or accident;
- Abrupt piston or other mechanical failure;
- Engine lock-up due to drive belt failure;

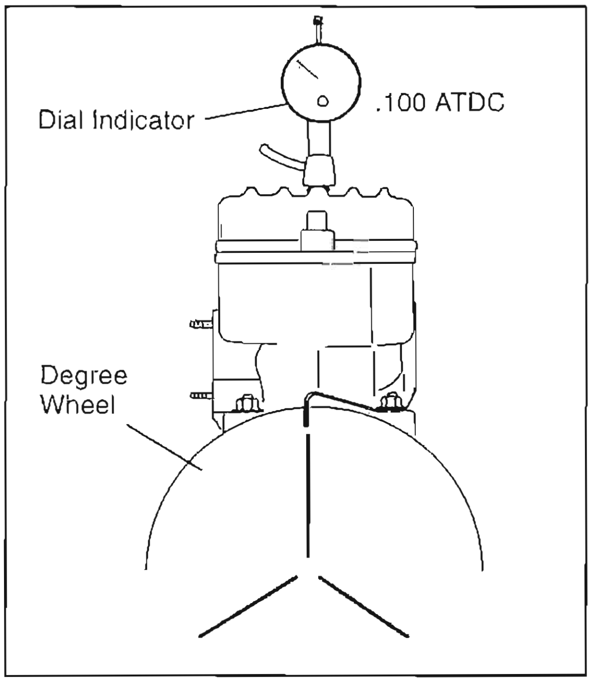
Following is a method of checking:

CAUTION:

Disconnect battery ground cable and **all** spark plug high tension leads; ground high tension leads to engine. Disconnect lanyard from engine stop switch before proceeding with the following steps.

1. Securely fasten a degree wheel on the flywheel or PTO end of crankshaft. Use a large degree wheel for more accuracy, and make sure it is mounted concentrically with the crankshaft center line.
2. Sharpen a coat hanger or section of welding rod and anchor it to a convenient spot. Point the sharpened end at the outer perimeter of the degree wheel.
3. Install a dial indicator into the magneto end cylinder spark plug hole (front) (#1). (The ignition timing is referenced by the magneto end.)
4. Rotate the engine to bring the piston to top dead center (TDC) on the cylinder with the indicator installed.
5. Locate TDC as accurately as possible by finding the center of the point where there is no piston movement. "Zero" the dial indicator at this point. Continue to rotate the crankshaft in the normal direction of rotation until the dial indicator reads .100″ (2.54mm) after top dead center (ATDC).

   IMPORTANT: Do not allow the crankshaft to move from this position.



Crankshaft Indexing (Continued)

6. Bend the pointer or move the degree wheel until the pointer aligns with the 180 or 120° mark on the degree wheel.
7. With the pointer aligned, make sure the degree wheel and pointer are secured and will not move out of position. Re-check accuracy of this location by repeating steps 4. and 5. . The pointer should align with the 180 or 120° mark when the dial indicator reads .100″ (2.54mm) ATDC.

IMPORTANT: *Do not* move the degree wheel or pointer after the initial setting on the mag end cylinder - simply read the wheel and dial indicator.

8. Remove the dial indicator and install in cylinder #2 or center cylinder. Repeat steps 4. and 5. Note the degree wheel indication when the dial indicator reads .100″ ATDC. It should be 180 or 120° (± 2°) from cylinder #1. Repeat procedure on PTO cylinder (#3) where applicable. Cylinder #3 should also be 120°(± 2°) from cylinder #1.

Symptoms of an out of index crankshaft can include:

- Difficulty calibrating carburetor (repetitive plug fouling on one cylinder with no other cause);
- Unexplained piston failure on one cylinder (i.e. severe detonation, broken ring lands, piston holing);
- Excessive vibration of engine, backfiring, etc.;
- Rough idle, poor top speed.

Cylinder Head Inspection

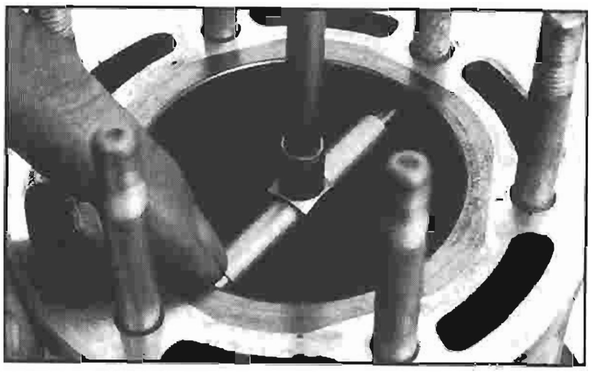
1. Inspect each cylinder head for warping. Replace cylinder head if warp exceeds service limit.

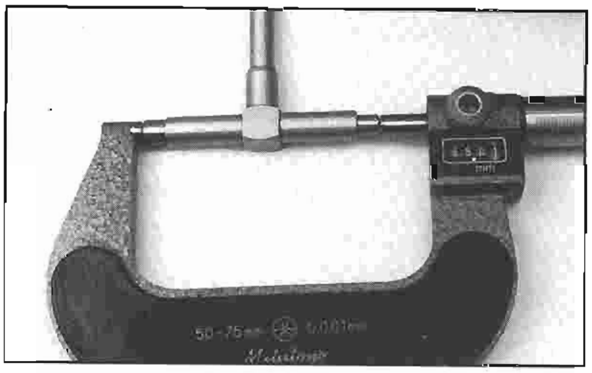
Cylinder Head Warp

Service Limit: .003″ (.08mm)

Cylinder Measurement

2. Inspect each cylinder for wear, scratches, or damage. If no damage is evident, measure the cylinder for taper and out of round with a telescoping gauge or a dial bore gauge. Measure the bore 1/2″ from the top of the cylinder; in line with the piston pin and 90° to the pin to determine if the bore is out of round. Repeat the measurements at the bottom of the cylinder to determine taper or out of round at the bottom. Record all measurements.





Cylinder Taper
Limit: .002 Max.

Cylinder Out of Round
Limit: .002 Max.

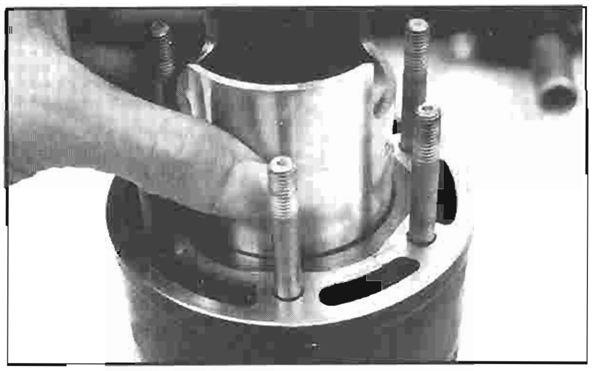
Piston Inspection/Measurement

1. Check piston for scoring or cracks in piston crown or pin area. Excessive carbon buildup below the ring lands is an indication of piston, ring or cylinder wear.
2. Measure piston outside diameter at a point 10 mm (3/8") up from the bottom of the skirt at a 90° angle to the direction of the piston pin. Record the measurement for each piston.

NOTE: The piston must be measured at this point to provide accurate piston-to-cylinder clearance measurement.

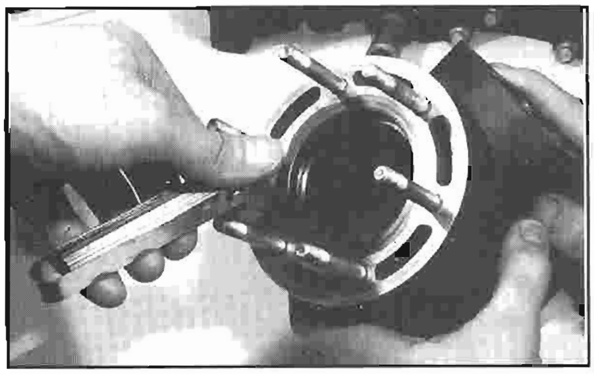
3. Subtract this measurement from the minimum cylinder measurement recorded previously. If clearance exceeds the service limit, the cylinder should be re-bored and new pistons and rings installed. Refer to specifications on pages 3.3-3.4 for specifications.

Piston Ring Installed Gap

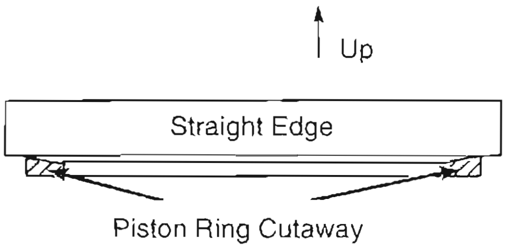


1. Position ring 1/2" (1.3 cm) from the top of the cylinder using the piston to push it squarely into place. Measure installed gap with a feeler gauge at both the top and bottom of the cylinder.

NOTE: A difference in end gap indicates cylinder taper. The cylinder should be measured for excessive taper and out of round. Replace rings if the installed end gap exceeds the service limit.



NOTE: Always check piston ring installed gap after reboring a cylinder or when installing new rings.



Keystone Piston Ring

Oil Pump Operation and Troubleshooting

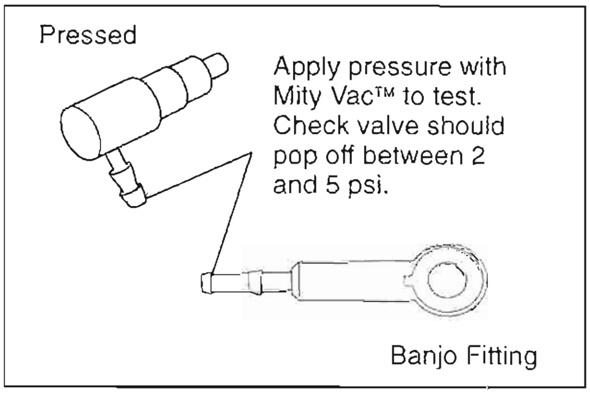
Any time the engine is disassembled or repaired, it is important that the oil supply from the pump to the engine be checked.

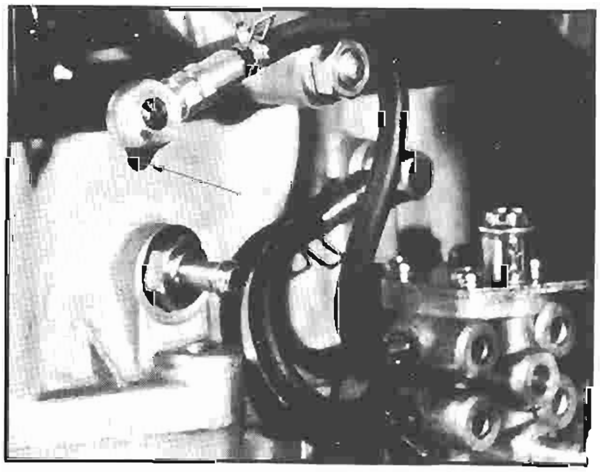
NOTE: Banjo type or pressed in valves should open with 2 to 5 lbs. of pressure.

CAUTION:

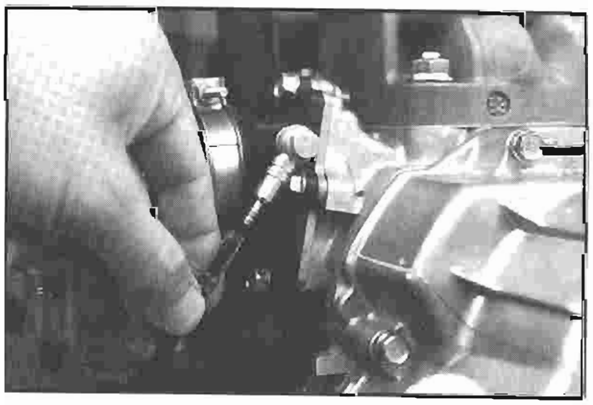
Use 40:1 premix in tank when troubleshooting oil delivery problems.

1. With engine in chassis, oil reservoir full, and pump bled, remove two oil feed line banjo bolts from their location on the manifold or carburetors. **NOTE:** Use care not to lose the two washers on either side of the banjo check valve. Some oil fittings are pressed into the carburetor mounting flange. Check valve is inline on 700 models.
2. Inspect each banjo bolt to make sure it is not plugged or restricted.
3. Loosely thread only the banjo bolts back into the manifold or carburetors.
4. Place oil feed lines with their check valves away from the clutch area. Start the engine and let it idle at normal idle RPM.
5. Lift oil pump control lever up to its maximum flow position.





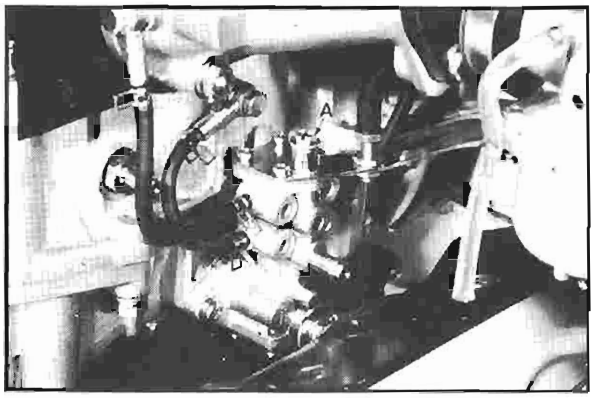
6. Drops of oil should be visible from the banjo check valves after the engine is idled one to two minutes, with a drop occurring approximately every few seconds.
7. If oil does not flow from one of the check valves, remove oil line from check valve and again idle engine. If oil then flows, the check valve is defective and must be replaced.
8. If oil does not flow with check valves removed from their feed lines, the malfunction is one of the following:
   - Inline filter or feed lines blocked;
   - Kinked or restricted oil tank vent line;
   - Feed lines leaking;
   - Defective pump.



Oil Pump Bleeding

The oil pump must always be bled following any service to the injector system or engine which allows the loss of oil and subsequent entrapped air during reassembly.

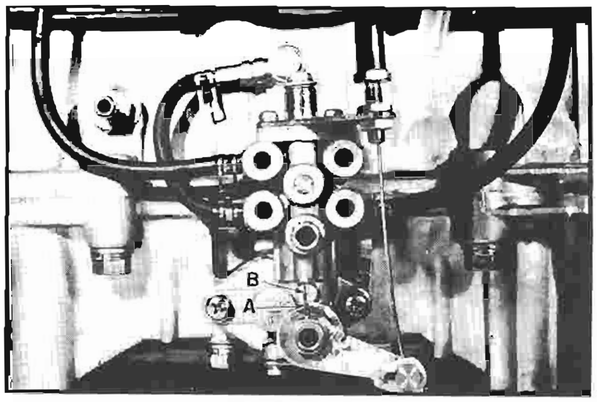
1. Fill oil reservoir with Polaris injector oil.
2. Loosen brass hex head screw (A). After a short time oil should flow from beneath the screw head to indicate the pump is free of air.
3. Tighten bleed bleed screw.



Oil Pump Adjustment - All Models

After the engine RPM and carburetor adjustments have been made, the oil pump must also be adjusted.

1. With engine shut off and throttle in its idle position, the pump lever index mark (A) must align with the pump housing boss index mark (B).
2. Loosen lock nuts on cable housing sleeve and vary cable housing length as required. **NOTE:** Verify that pump lever is actuated upon initial throttle opening.

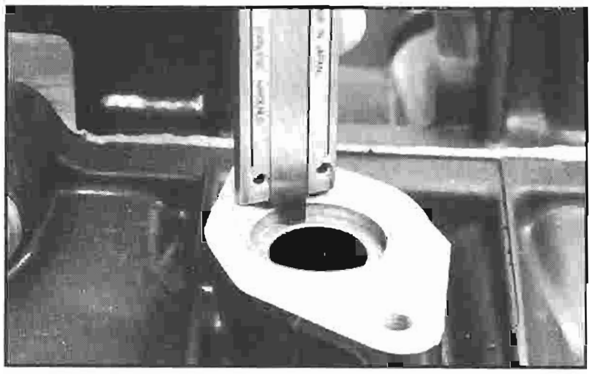


Oil Pump Drive Gear End Play Adjustment

If the oil pump, crankcase, or any other oil pump drive component is replaced, inspect the drive gear end play using the following procedure:

1. Measure distance from oil pump mounting surface to bushing. Call this measurement "A".

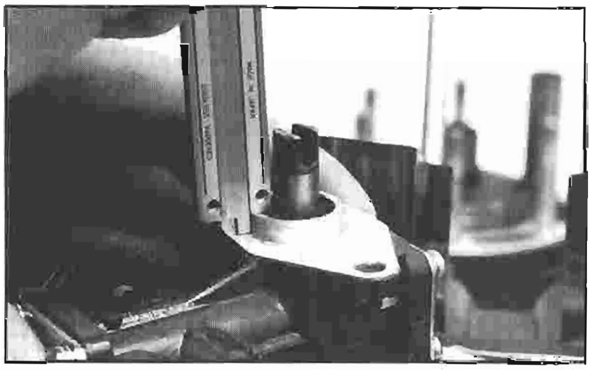
NOTE: Make sure the bushing is fully seated in the crankcase.



Oil Pump Drive Gear End Play Adjustment

2. Measure distance from oil pump mounting flange surface to end of seal flange as shown. Call this measurement "B".

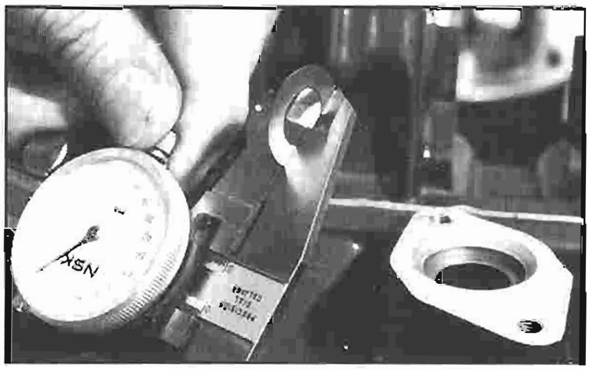
3. Subtract measurement "B" from "A" to determine total bushing end play.



4. Measure thickness of existing shims and subtract from total bushing end play determined in step 3.

5. Add or subtract shims as required to provide specified end play.

6. Lightly grease a new O-ring and install it on the pump. Install pump, engaging slot in shaft with drive gear. Apply Loctite™ 242 to bolts and torque evenly to 78 in. lbs. (.9 kg-m).



Oil Pump Mounting Bolt Torque (242 Blue)

78 in. lbs (.9 kg-m)

Optional Shims:

PN 3083671 = .006"(.15mm)
PN 3083672 = .012" (.3mm)
PN 3083673 = .024" (.6mm)

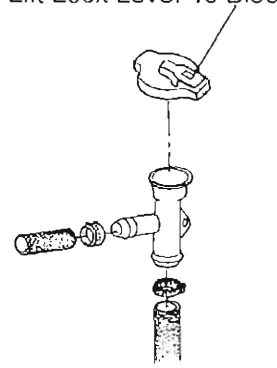
End Play

.008 - .016" (.203 - .406 mm)

Filling and Bleeding Procedure

If the cooling system should become low in the tank and/or filler neck, the system should be bled of any trapped air using the following procedure:

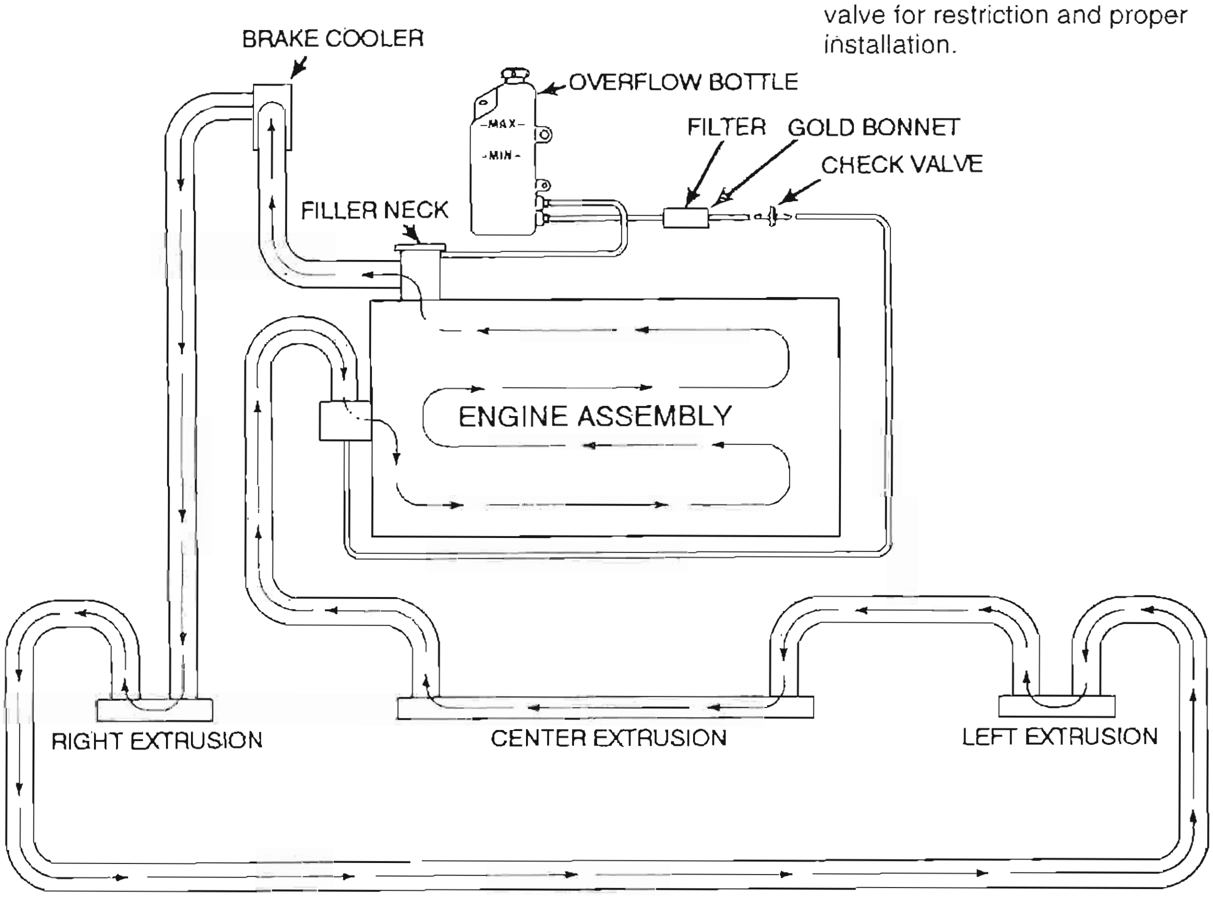
1. Elevate front end of machine approximately 10" (25 cm).
2. Fill coolant expansion reservoir to indicated maximum level line.
3. Remove pressure cap and slowly pour coolant into engine until the coolant level is at the pressure cap fitting neck. Install pressure cap and lift lever.
4. Install the pressure cap with the lever lock up in its release position and run the engine at fast idle for two to three minutes. This will purge the system of trapped air. Close the lever lock and check recovery tank fluid level. **CAUTION: On models equipped with remote filler neck, *low idle RPM must be used* for bleeding (600 RPM ± 100) to allow all air to purge and prevent trapped air which can lead to overheating and engine damage.** Reset idle to specs after bleeding. System is properly bled when no air bubbles are visible in overflow line when RPM is increased slightly.



Remote Filler Neck Shown

EC45/50PL ENGINES

NOTE: If system is difficult to bleed, inspect coolant filter and check valve for restriction and proper installation.



COOLANT FLOW SCHMATIC

Filling and Bleeding Procedure

1. Fill system with a 50/50 mixture of antifreeze and water.

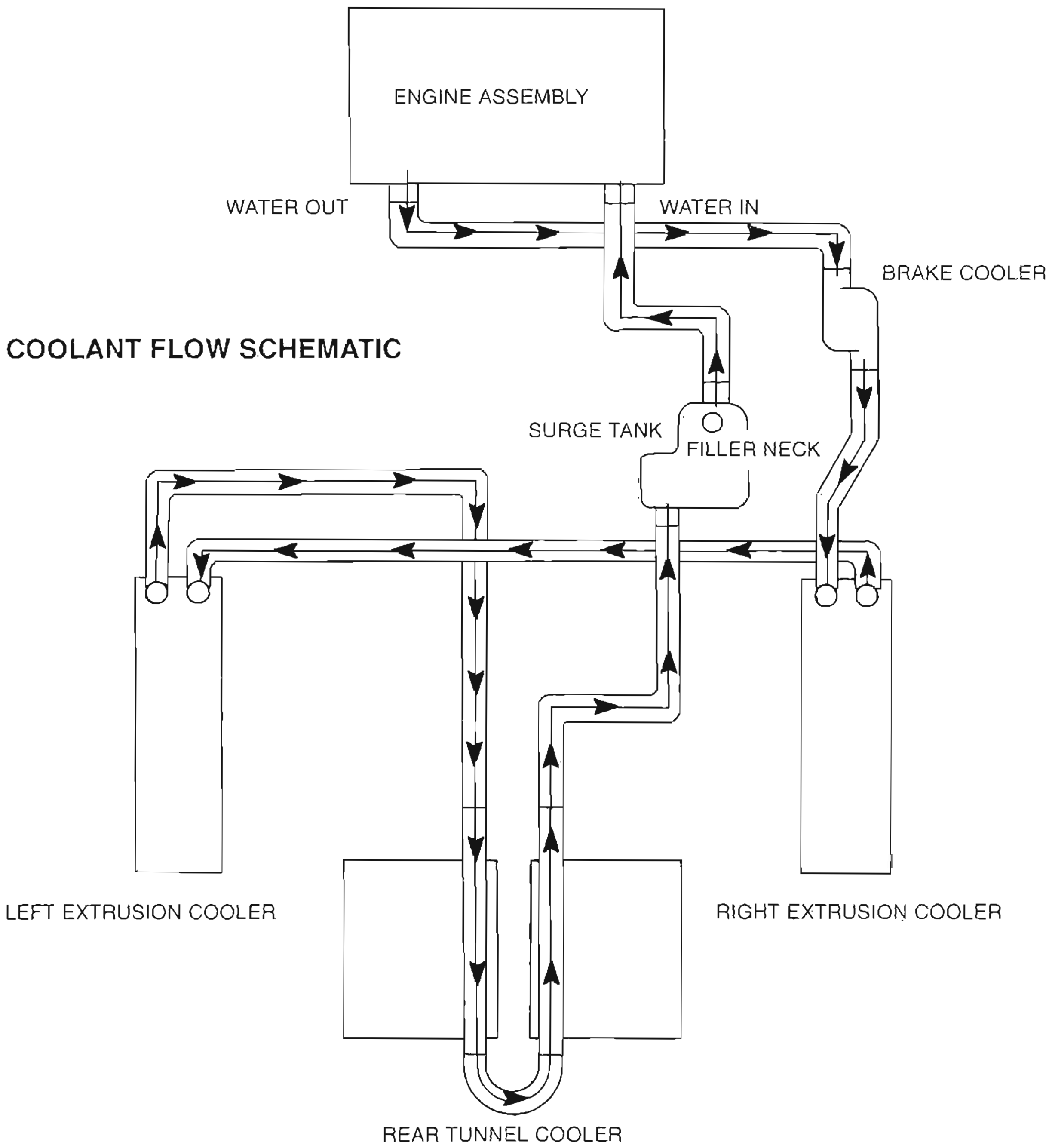
2. With engine running, crack bleed screws on water pump and head.

3. Continue adding antifreeze mixture until system is purged of air.

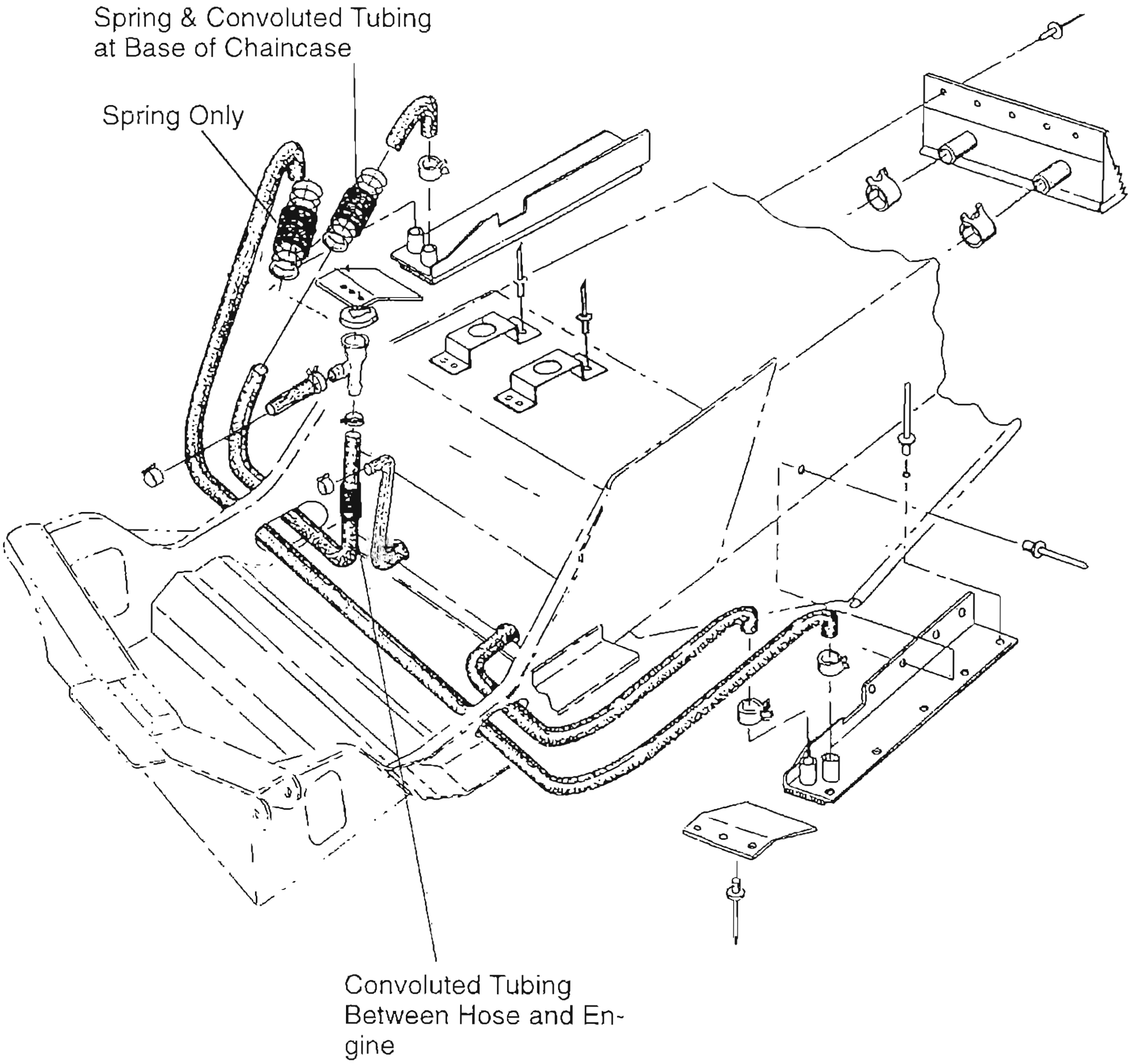
4. Close bleed screws.

5. Add antifreeze mixture up to fill line.

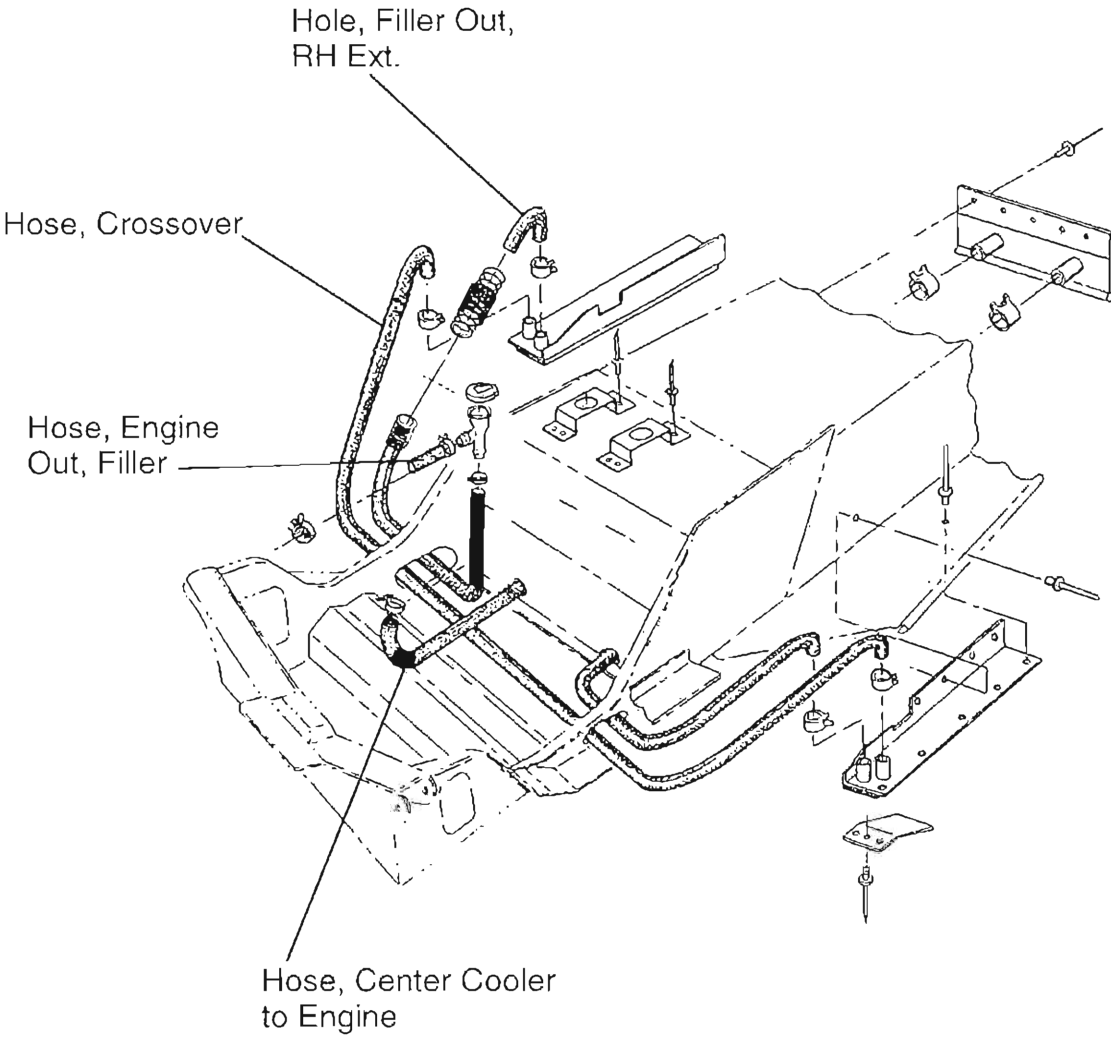
COOLANT FLOW SCHEMATIC



NOTE: When leak testing cooling system, system pressure should not exceed 2 lbs. less than cap pressure. Refer to filling and bleeding procedure on page 3.91.



NOTE: When leak testing cooling system, system pressure should not exceed 2 lbs. less than cap pressure. Refer to filling and bleeding procedure on page 3.91.



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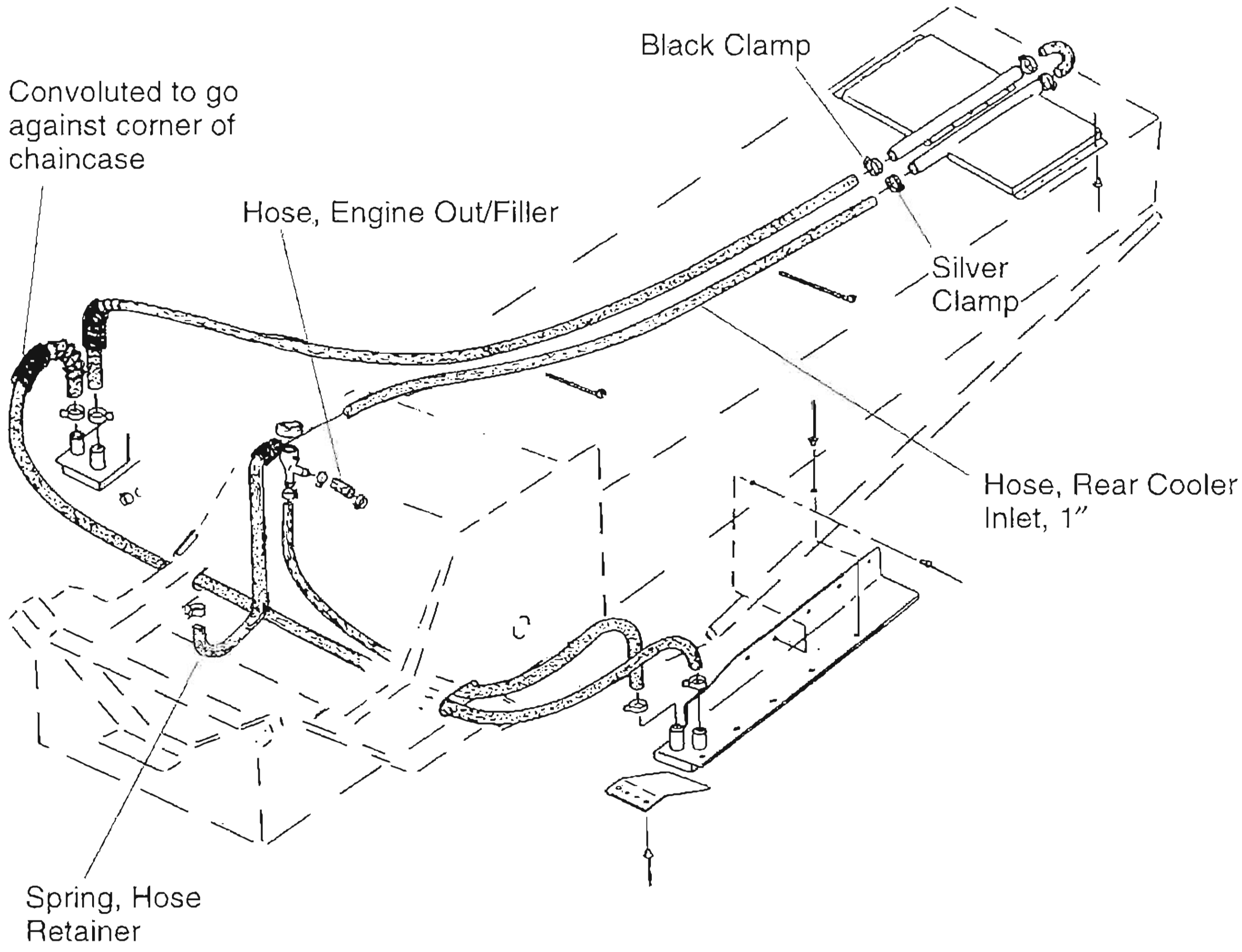
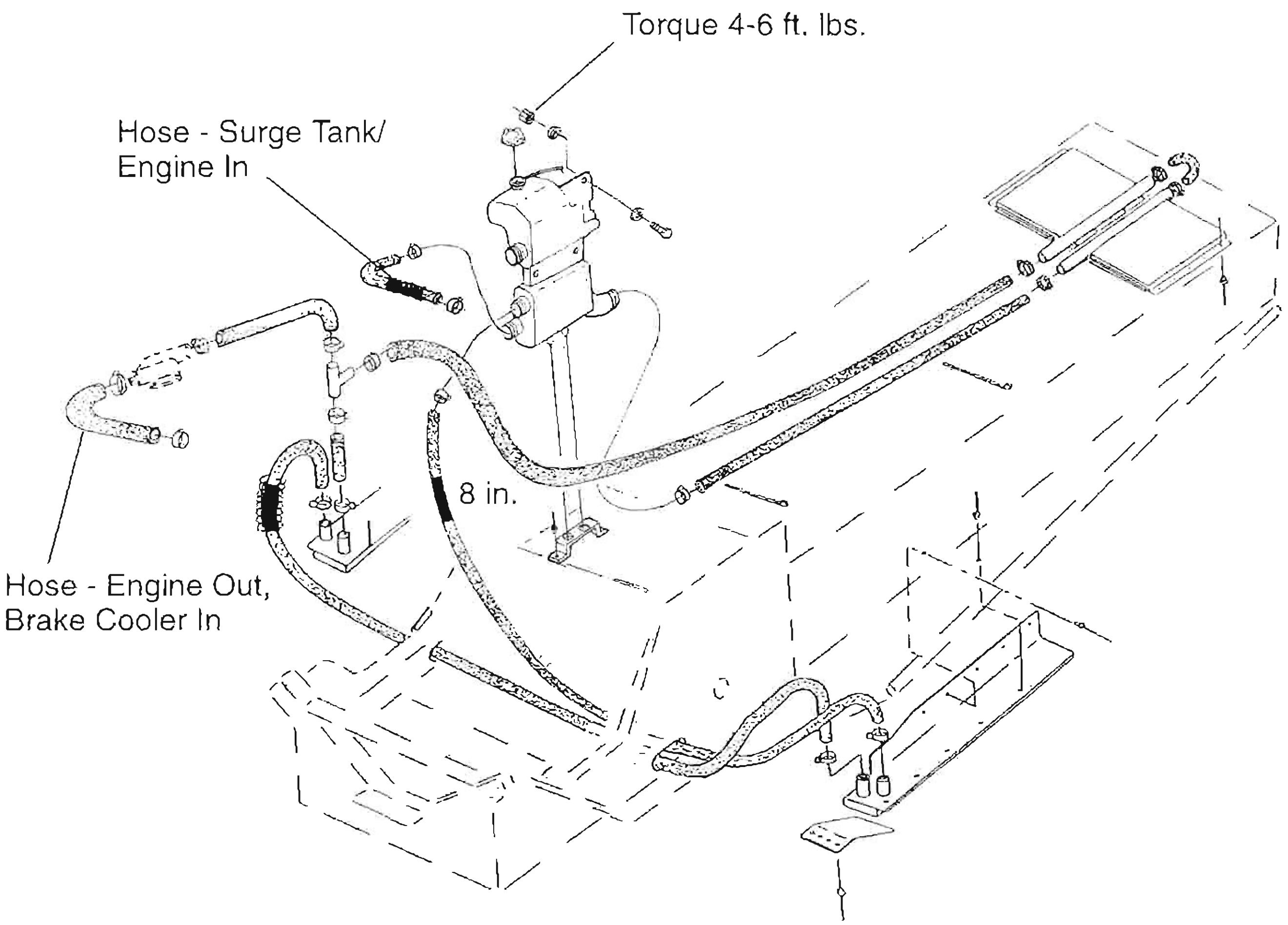
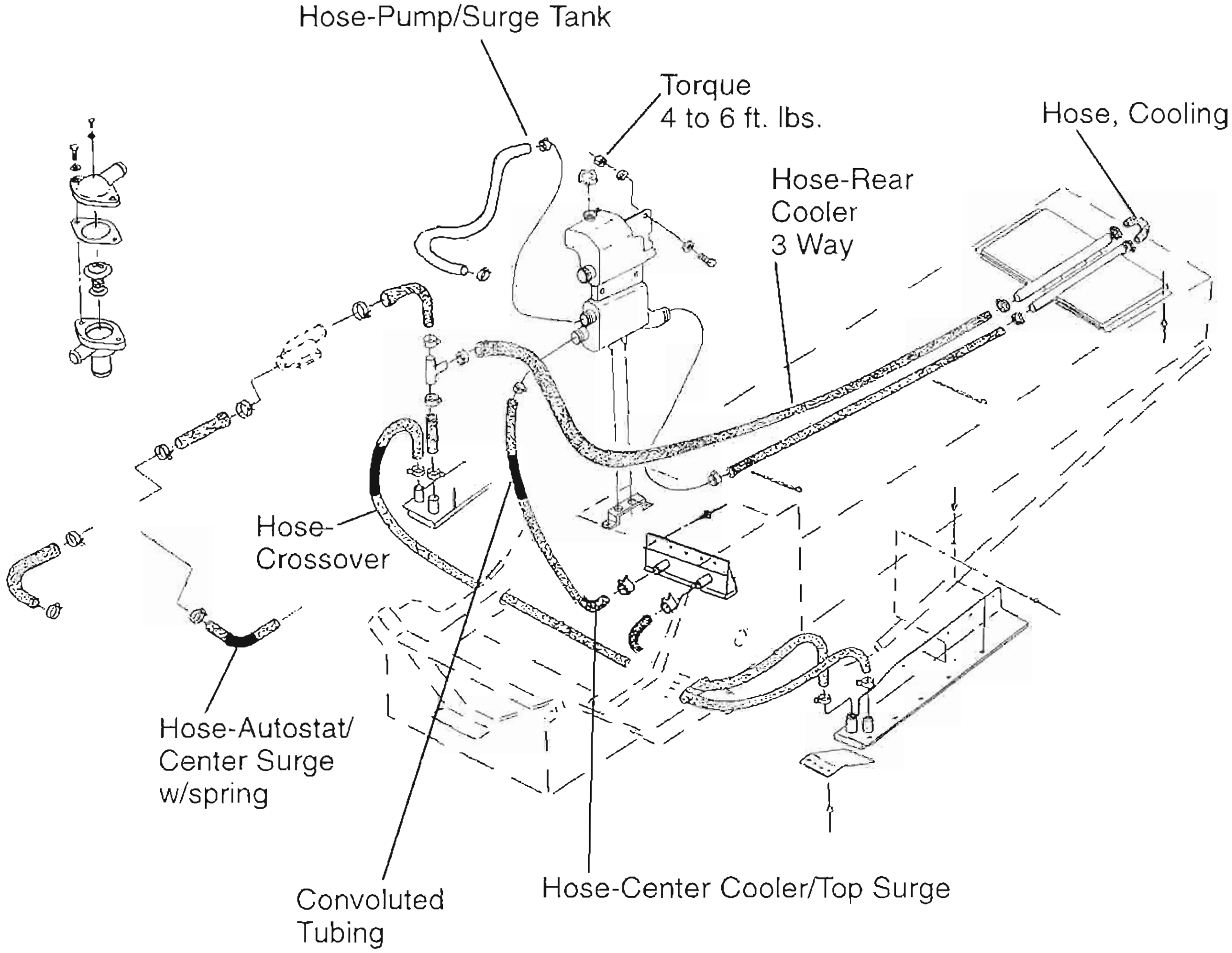


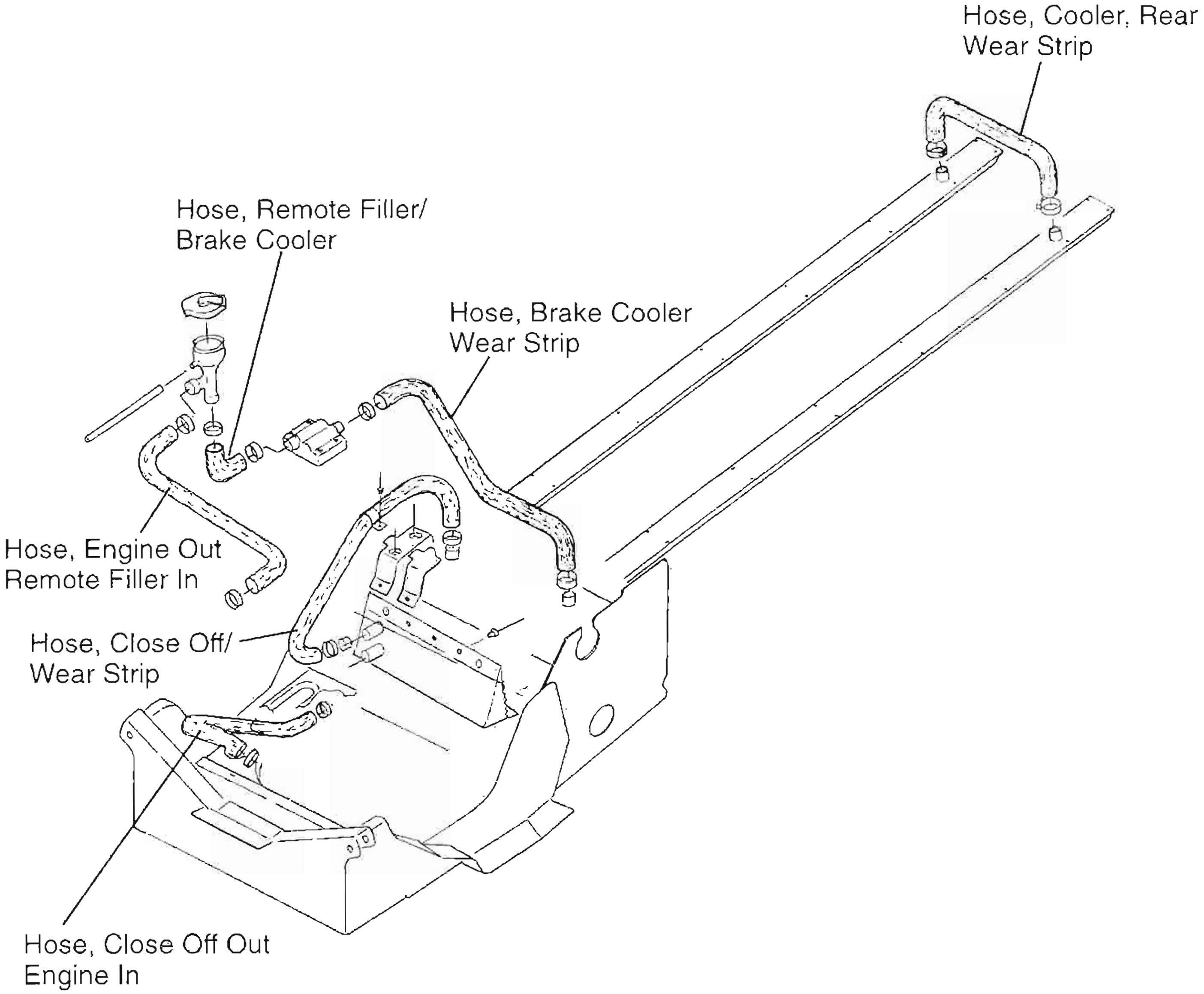
NOTE: When leak testing cooling system, system pressure should not exceed 2 lbs. less than cap pressure. Refer to filling and bleeding procedure on page 3.91.



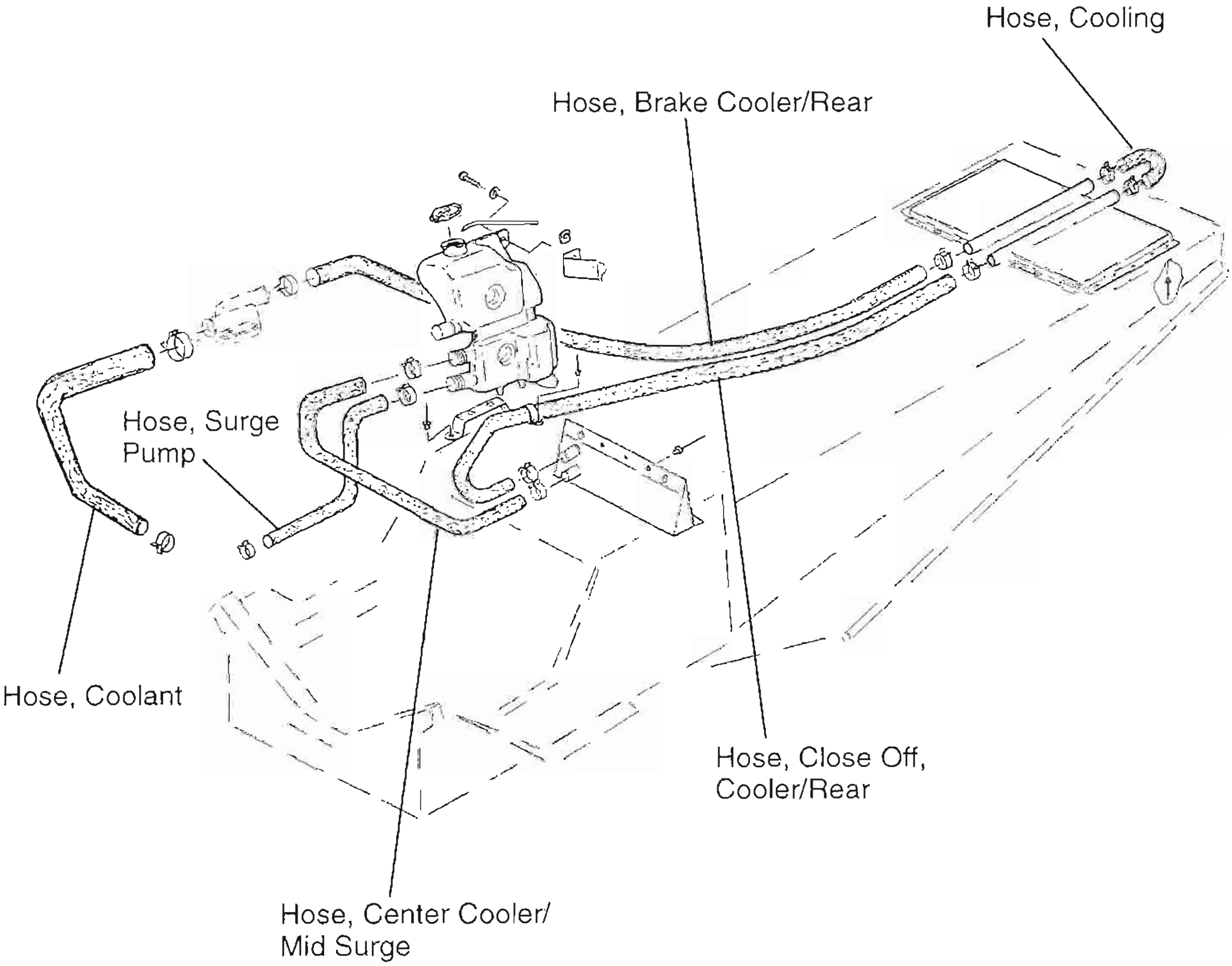
NOTE: When leak testing cooling system, system pressure should not exceed 2 lbs. less than cap pressure. Refer to filling and bleeding procedure on page 3.91.



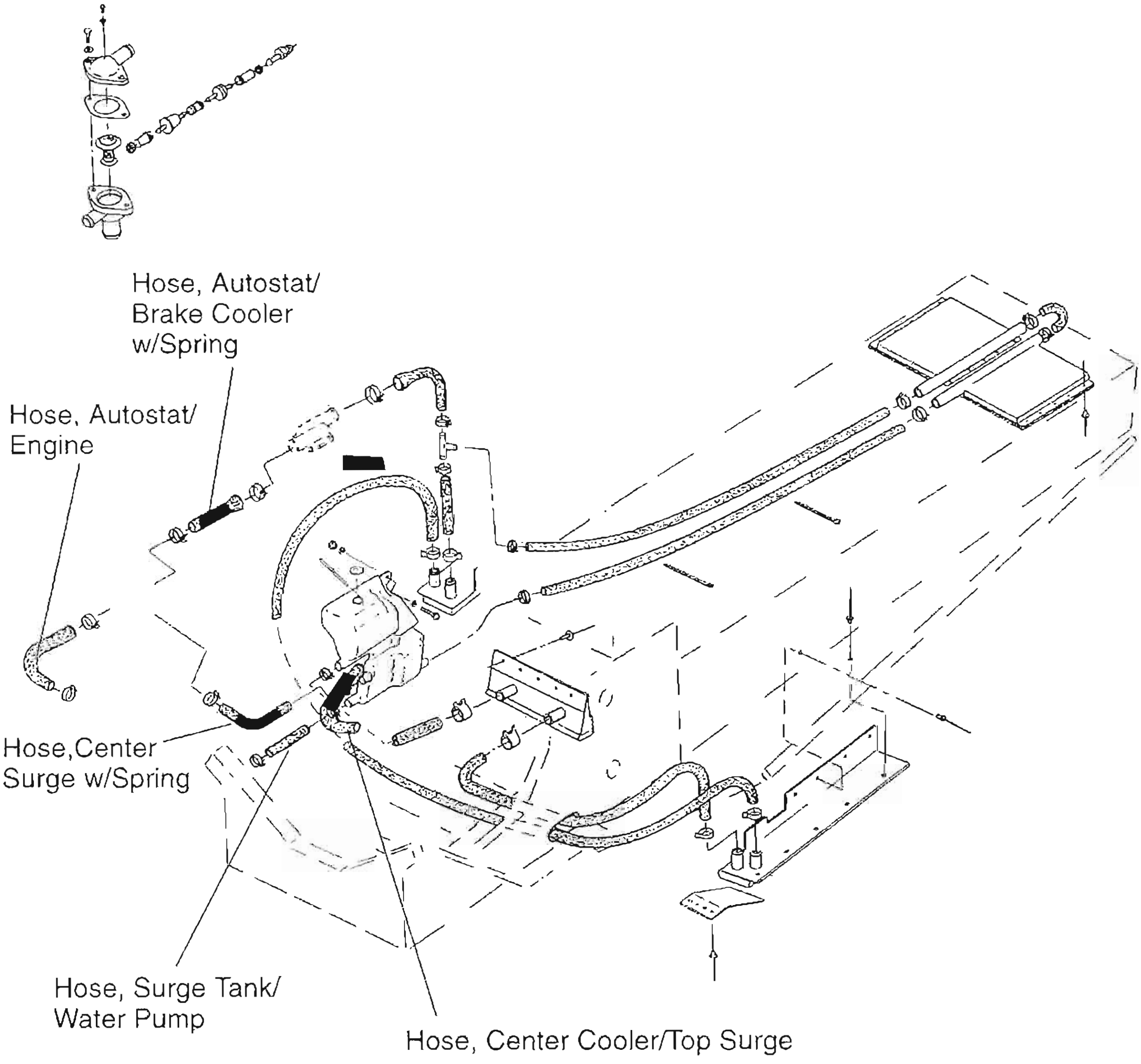
NOTE: When leak testing cooling system, system pressure should not exceed 2 lbs. less than cap pressure. Refer to filling and bleeding procedure on page 3.91.



NOTE: When leak testing cooling system, system pressure should not exceed 2 lbs. less than cap pressure. Refer to filling and bleeding procedure on page 3.91.

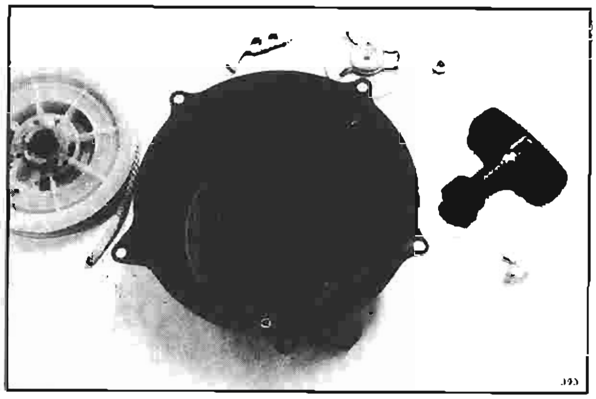


NOTE: When leak testing cooling system, system pressure should not exceed 2 lbs. less than cap pressure. Refer to filling and bleeding procedure on page 3.91.



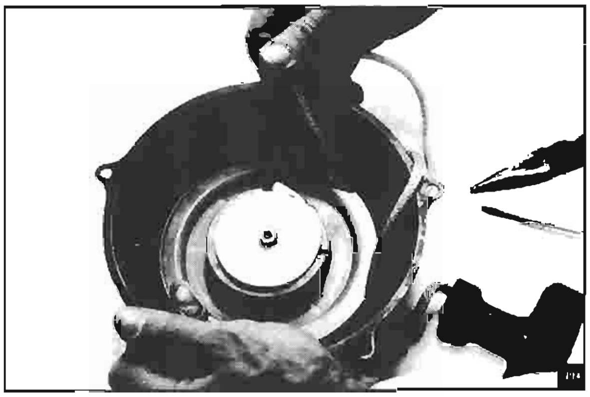
Recoil Starter Spring Replacement

Disassembly



1. Remove recoil handle and allow rope to retract and spring to totally unwind.
2. Remove retaining nut, ratchet friction plate and ratchet pawl from reel face.
3. Lift reel assembly straight up, out of housing. **NOTE:** If the spring tension is relieved and the reel is lifted straight out, the spring will remain in the housing.

Assembly



1. If the spring was removed, reinstall it by spiraling counterclockwise toward the center.
2. Lubricate center shaft and spring with grease.

> **Premium All Season Grease**
>
> **PN 2871423 (14 oz.)**

3. Wind rope in a counterclockwise direction around outside of reel, as viewed from ratchet side of reel.
4. Pass end of rope through rope guide and slide reel down onto shaft and spring. **NOTE:** Make sure reel tab engages hook on end of spring.

Assembly, Cont.

5. Install rope handle.
6. Reinstall ratchet pawl onto reel face. **NOTE:** Ratchet spring holds ratchet in.
7. Reinstall friction plate with one end of friction spring in hole on end of ratchet pawl.
8. Reinstall flange nut and torque to specification.

> **Flange Nut Torque-**
>
> **5 ft. lbs. (.69 kg-m)**

Assembly, Cont.

9. Pull recoil rope to full extension and align notch on outside edge of reel with housing rope guide hole.
10. Using a needle nose pliers or hooked wire, pull a loop of rope through the notch into center of housing.
11. Holding side of rope loop attached to reel, wind reel counterclockwise until coil bind is felt. Then unwind reel between one and two turns.
12. Pull loop to outside of housing by pulling on rope handle.
13. Allow rope to fully retract and check for normal recoil and ratchet operation.

PROBLEM	PROBABLE CAUSE
Will not start/ hard starting	-Check ignition switch for run position, moisture contamination -Check auxiliary shut-off switch operation -Low compression -Out of fuel/fuel restriction -No spark -Spark plug(s) fouled -Disconnect engine connector to eliminate any shorts that might be in the system -If starter won't work (electric models), check wires from starter solenoid and battery or check battery and battery cables -Open or broken reed valves
Low compression	-Sheared flywheel key -Broken piston skirt -Excessive piston ring end gap -Improper piston clearance -Head gasket faulty -Poor ring sealing, piston damage, cylinder scored
No spark	-Spark plug fouled -Secondary coil faulty or wires disconnected -Primary coil shorted or open -Exciter coil faulty -CDI faulty -Trigger coil faulty -Ignition switch shorted, contaminated with moisture -Auxiliary switch shorted or contaminated with moisture
Engine idles but no acceleration	-Restricted fuel flow/air flow -Restricted or plugged main jet -Incorrect ignition timing -Clutching incorrect
Engine runs but fails to reach maximum RPM	-Restricted or plugged fuel filter -Fuel tank inlet screen restricted or plugged -Fuel pump not operational -Impulse line restricted or plugged -Incorrect track tension -Incorrect main jet -Throttle slides not fully open -Drive chain too tight -Incorrect clutching, worn clutch components -Exhaust restriction -Excessive driveline friction (HiFax overheating)
Engine runs but fails to idle	-Incorrect air mixture setting -Throttle stop screw incorrectly adjusted -Pilot jet restricted or plugged -Fuel pump lacks fuel to impulse line -Air leak at carb adaptor -Incorrect carburetor synchronization -Low compression -Tight belt -Piston damage -Choke plungers not seating properly -Throttle cable incorrectly adjusted
Engine runs, but overloads with fuel	-Chokes are not seating -Fuel pump diaphragm is ruptured (can be caused by engine backfiring) -Carburetor slides are not synchronized -Too large main jet -Needle and seat not seating properly -Incorrect float level -Poor reed valve condition -Restricted air intake or exhaust outlet
Carburetion and plug fouling	-If a lot of riding is on trails, and plugs foul and get black when doing so, verify *all* tune up adjustments: carb sync, oil pump adjustment, pilot screw setting, spark plug type and gap, venting for carbs, proper jetting for altitude and temperature, belt tension, clutch operation. If tune up items are correct, check: float level, jet needle position, jet needle wear, inlet needle and seat wear, exhaust outlet clear, etc.

Troubleshooting

PROBLEM	PROBABLE CAUSE
Engine runs but overheats	-Coolant level -Incorrect main jet -Incorrect timing -Incorrect spark plug -Water pump belt loose or broken -Cooling restriction -Air in cooling system (bleed properly) -Inadequate snow for cooling (ice and/or marginal conditions)
Battery will not charge (battery equipped models only)	-Faulty connections -Insufficient alternator output -Faulty diodes (rectifier) -Sulfated battery -Battery electrolyte overfilled or low -Faulty cell in battery -Amp draw with key off -Excessive load on alternator
Lights don't work	-Engine not running -Check wiring harness connector - color matching -Check for burned out bulbs -Check wiring for shorts or loose connections -Disconnect taillight wiring harness- if headlight works, short is in taillight wiring or taillight
Unit fails to propel itself	-Check belt (center distance) -Check clutch -Check chain -Check drive sprocket assembly -Track frozen or stuck -Check tune up items
Track wears unevenly	-Check tension -Check for proper alignment -Check for loose, bent, or broken suspension parts -Riding in marginal or no snow conditions
Chaincase gets hot	-Check oil level -Check chain tension -Check track assembly -Check jackshaft and drive shaft bearings -Check brake operation
Unit hard to steer (heavy steering)	-Check lubrication on spindles -Check ski alignment -Check spindle bushings -Check steering post bushings -Check carbide skags -Front limiter strap too short (if steering is heavy) -Torsion springs set too heavy

CHAPTER 4
ELECTRONIC FUEL INJECTION (EFI)

⚠ WARNING

Gasoline is extremely flammable and explosive under certain conditions.

⚠ Always stop the engine and refuel outdoors or in a well ventilated area.

⚠ Do not smoke or allow open flames or sparks in or near the area where refueling is performed or where gasoline is stored or used.

⚠ Do not overfill the tank. Do not fill the tank neck.

⚠ If you get gasoline in your eyes or if you swallow gasoline, see your doctor immediately.

⚠ If you spill gasoline on your skin or clothing, immediately wash it off with soap and water and change clothing.

⚠ Never start the engine or let it run in an enclosed area. Gasoline powered engine exhaust fumes are poisonous and can cause loss of consciousness and death in a short time.

⚠ WARNING

Battery electrolyte is poisonous. It contains acid!
Serious burns can result from contact with the skin, eyes, or clothing.

ANTIDOTE:

EXTERNAL: Flush with water.
INTERNAL: Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call physician immediately.
EYES: Flush with water for 15 minutes and get prompt medical attention.
Batteries produce explosive gases. Keep sparks, flame, cigarettes, etc. away. Ventilate when charging or using in closed space. Always shield eyes when working near batteries.
KEEP OUT OF REACH OF CHILDREN.

ROM Identification / Charge Coil Test Specifications

Model	System Type	ROM ID	ROM PN	Battery Charge Coil Test Position/Resistance
1996 500 EFI/SKS/RMK	II	1996 500 V1	4040061	Gry to Brn/W .2 to .4 ohms Brn/W to Gry/W .2 to .4 ohms
1996-1997 RXL	I	1996 650 V1	4040065	Gry to Brn/W .2 to .4 ohms Brn/W to Gry/W .2 to .4 ohms
1997 500 EFI	II	1997 500 V1	4040073	Gry to Brn/W .2 to .4 ohms Brn/W to Gry/W .2 to .4 ohms

Electronic Fuel Injection (EFI) Operation

EFI Operation

Machines equipped with Polaris Electronic Fuel Injection (EFI) have many advantages over normal carburetor equipped models. The most noticeable improvements will be ease of throttle operation, better cold weather starting and improved cold engine drive away. The EFI system also compensates for temperature and altitude, and with minor adjustments will perform well over a wide range of temperatures and altitudes.

To assist technicians in understanding EFI, we have divided it into three separate systems. Following is a short description of these three systems:

System I

- Battery
- Battery charging
- How the EFI is "powered up" or energized

System II

- Fuel handling
- Fuel filtering
- Fuel pressure regulation

System III

- Electronic Control Unit (ECU)
- ECU inputs from various sensors
- Control of fuel to the cylinders by injector operation

The following information is a more detailed explanation of these three systems. It's very important during diagnosis that each system be checked. Failure to do so may result in a repeat failure.

Basic Operation - System I
Battery, Battery Charging and Powering Up

The battery is the heart of the EFI system, its condition is critical to all EFI functions. Long off-season storage periods, high vibrations, and extreme temperature variations which are encountered in snowmobile applications make periodic battery inspection and service essential.

If the battery is partially shorted or in a low state of charge, or if connections offer high resistance, the result might be a lean fuel condition.

NOTE: Type II systems will compensate or "fail safe" for low battery voltage or a charging problem.

EFI models have two separate alternators or charging systems. One is used for lighting and accessories, the other for battery charging and EFI operation. The battery size and alternator size have been designed to provide adequate output for the EFI system. On machines equipped with electric start a larger battery will be required to provide adequate cold cranking amperage.

EFI Accessory Note

CAUTION:

At no time should any accessories be added to the battery or battery side of the charging system. To do so may overload the system, discharge the battery and cause substandard EFI operation.

There are two basic types of EFI systems:

TYPE I (RXLs)

The Type I system is used on all RXLs. Powering up requires both key and auxiliary (engine stop) switch to be in the "Run" position. At that time, a circuit is completed between the battery positive terminal and the brown relay which passes through the switches and the circuit breaker. The brown relay then connects the battery directly to the Electronic Control Unit (ECU) via the fuse link, causing the ECU to begin to function. The ECU connects itself to the battery via a self shut-off relay, which serves to maintain power to the ECU for approximately ten minutes after power is cut off by the key or auxiliary switches. The ECU is kept on for a short time in order to help prevent flooding of the engine during a restart.

When the ECU is first powered up, the fuel pump will run for approximately five seconds in order to build pressure in the fuel rail. If the engine is stopped by the switches and then restarted within the ten minute period, the fuel pump will not repeat the five second run, since the ECU was kept powered up by the self shut-off relay.

If the engine is stopped with the switches in the "Run" position, the ECU will remain powered up until the battery is drained.

TYPE II (500s)

The Type II system is used on all 500 EFI models. The Type II system is similar to the Type I system in the way that it maintains power to the ECU after the engine stops, but is different in the way that it powers down. The Type I system depends on the operator to turn off at least one of the switches before the ECU will power down. The Type II system will power down regardless of the position of the switches in the event that the engine stops unexpectedly. This preserves battery power.

The key switch on these models only grounds the ignition in order to stop the engine. There is no battery power connected to the switch in these models, unless electric start is used.

This system uses an Alternator Controlled Switch (ACS). Mounted on the battery box, it incorporates the voltage regulator/rectifier. The ACS senses the rotation of the crankshaft by recognizing output from the engine's alternator. The alternator signal causes the ACS to connect the battery to the ECU. The operator simply pulls on the rope and the system powers up automatically.

CAUTION:

When servicing the fuel system on models with an ACS it is very important to first disconnect the battery. Turning the engine over without disconnecting the battery could cause the fuel pump to run and create a dangerous fuel spill.

Battery Maintenance

Battery maintenance is of the utmost importance to ensure satisfactory EFI operation. Partially shorted batteries can cause an additional load on the charging system and in turn leave the EFI system with too little to supply the relays, ECU, fuel pump, injectors, etc. When this type of machine enters your service area, be sure to thoroughly clean, inspect and test the battery.

CAUTION:

It is extremely important that the battery condition and state-of-charge be maintained at the highest level possible or serious performance and driveability problems will arise. Battery testing procedures are covered below.

Off season storage for snowmobiles, especially EFI equipped machines, requires the battery to be removed. In the summer months higher temperatures and higher levels of humidity, along with a small drain applied from the EFI system, will in a very short time discharge the battery. Once the battery is discharged, the plates will become sulfated (turn white), and the battery will no longer accept a charge. Batteries which are not disconnected, removed and kept charged will need to be replaced at the beginning of each season. **Never substitute any battery of lesser quality when replacement is required.** Batteries may be maintained by using the Polaris Battery Tender. The battery tender can be connected indefinitely, and will automatically maintain battery charge. The electrolyte level should be monitored monthly during periods of non-use.

Battery Tender

Polaris Battery Tender

PN 2871076

Battery Service

Conventional battery service techniques apply to this battery. Maintain the specific gravity of the electrolyte to between 1.270 and 1.300. The open circuit voltage must be maintained between 12.7 and 12.9 volts DC (at room temperature), at lower temperatures, slightly lower values are acceptable. Voltage readings should always be taken with a Fluke™ digital volt meter. The select monitor will place a load on the battery and on Type I units the monitor will incorrectly read voltage less than 10 VDC.

Specific Gravity - 1.270-1.300

Open Circuit Voltage 12.7-12.9 v DC

Fluke Meter PN 2870659

Battery Charging System Testing

1. Set digital meter to DC volts and check battery voltage. Must be 12.4 volts or more (no load). **NOTE:** The select monitor on some models will not accurately read voltage below 12.0 and therefore should not be used. Does DC voltage read correctly? No→ Yes ↓	Remove the battery. Service and test as outlined earlier in the engine electrical section. Before continuing, the battery must be in good serviceable condition and fully charged. **IMPORTANT:** Replace battery if questionable. Yes - See Block 2
2. Start engine and increase to at least 4000 RPM. Battery voltage should increase to 13.6 to 14.6 volts. **NOTE:** If battery is low on charge, the reading will be low. A fully charged battery will reach the higher number more quickly. Is voltage reading correct? No→ Yes↓	Check battery charging coil. Disconnect coil leads. Refer to specifications for resistance values and connections. **NOTE:** These coils are open to ground, between any wire and ground should show open circuit. AC amperage testing will show approximately 7 amps at 4000 to 6000 RPM. Are tests within specification? Yes - See Block 3 No↓
3. Charging system is testing OK. Check for any possible loose connections between rectifier, regulator and battery. Are there any loose connections? No↓	Replace battery charge coil and/or flywheel. Re-test system. See Block 1.
4. Replace regulator rectifier and re-test system.	

ELECTRONIC FUEL INJECTION (EFI)
Power Up Testing

Refer to appropriate wiring diagram in Chapter 10.

Type I (RXLs)

1. Check battery voltage. Must be 12.2 or higher. Use digital volt meter. Does it read correctly? No→ Yes↓	Charge, service, test and/or replace battery.
2. Check EFI brown relay. Y/BK wire should read 12.2 volts or more with switches turned on. Does it read correctly? No→ Yes↓	Check circuit breaker, key switch, kill switch, connections and wires. Check relay ground black wire.
3. Check brown relay. Relay should connect R/Y from fuse link to R/BK (ECU) and R/BLU (select monitor). Does it? No→ Yes↓	Replace relay and repeat tests.
4. Check self shut-off relay and wires from relays to ECU. Are tests OK? No→ Yes↓	Replace wires and/or relays.*
5. Replace ECU.	

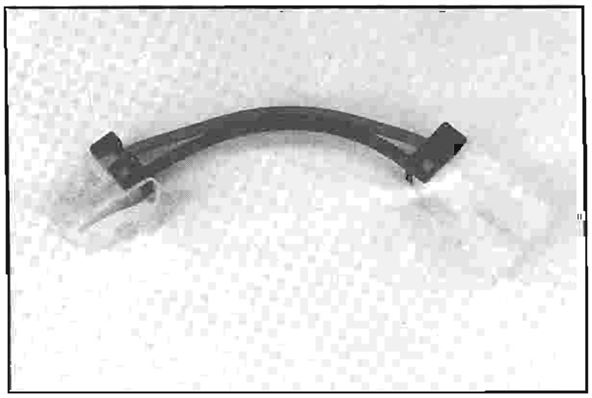
Type II (500s)

1. Check battery voltage using digital fluke meter. <u>Must</u> read 12.2 or higher. Is voltage within specification? No→ Yes↓	Charge, service, and test battery; or replace battery. Continue testing if needed. See battery service.
2. Check voltage to ECU R/GN Pin #106. Should be 12.2 or higher. Is voltage within specification? No→ Yes↓	Check circuit from battery through circuit breaker and to ECU. Repair and/or replace faulty wiring or components. Continue to step 3.
3. Check voltage to ECU O/BK wire Pin #11. Should be 12.2 volts while engine is being turned over. Is voltage within specification? No→ Yes↓ See Also Block 5	Check for an AC signal from battery charge coil to ACS Gry - GryW wires. Is signal OK? Repair circuit if necessary. No - See Block 4 Yes↓
4. Check battery charge coil and connecting wires. Replace coil and/or repair wires. Continue tests.	Check for battery voltage at ACS (red wire). Is voltage present? Repair circuit if needed. Yes↓
	Replace ACS. Is system now OK? No↓
	Replace ECU and retest.*
5. Check self-shut-off relay and circuit, OK? No→ Yes↓	Repair relay circuit.*
6. Replace ECU and retest.	

NOTE: Use only resistor spark plug caps on ignition coil high tension leads. Non-resistor caps may affect ECU operation.

Fuse Link

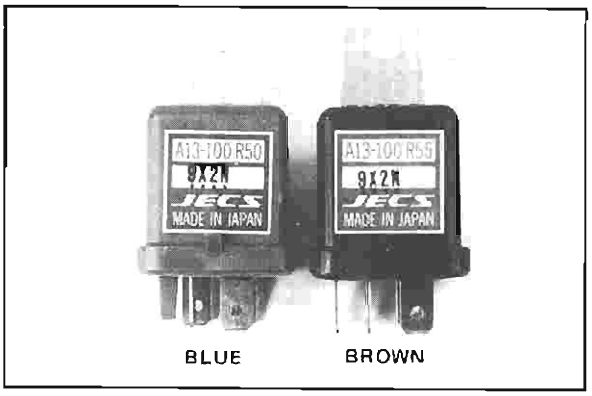
The fuse link is attached to the ignition switch harness with a tie strap. It can be identified by the light green and brown wires in 2 prong white connectors. The fuse link is the circuit protection device in Type I electrical systems. If a system overload (such as a dead short) occurs, the fuse wire will open the circuit preventing further damage. If this link is open, find and correct the problem and then replace the fuse link. Never attempt to replace the fuse link with a conventional fuse. Use only an OEM fuse link.



Fuse Link PN 3084113

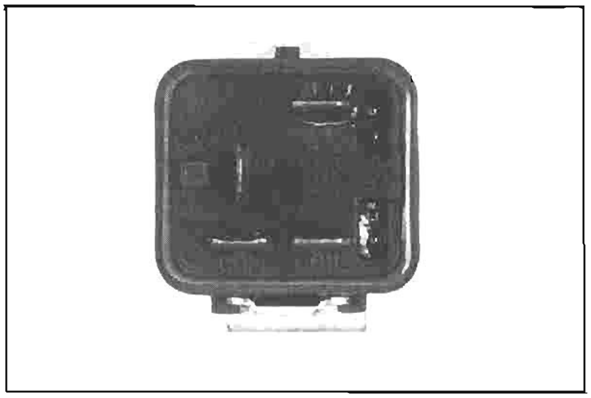
Inspection

Service of the fuse link is limited to verification of whether or not the wire is continuous. Remove fuse link from machine. Measure resistance on the light green wire and the brown wire. Replace the fuse link if resistance is greater than .5 Ω. Type II systems (500s) use a self-setting circuit breaker, located near the battery.



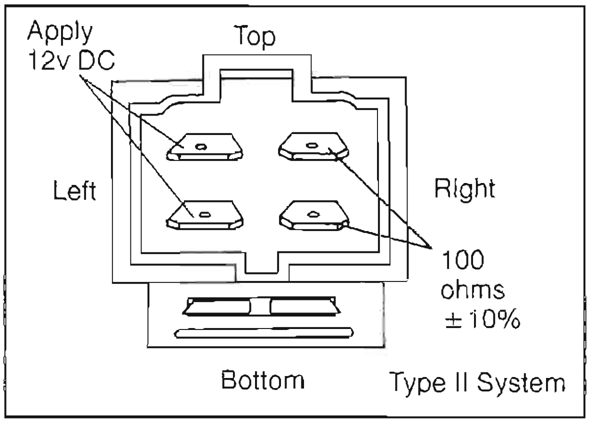
Relay Coils

The system relay coils for Type I systems are mounted on the front side of the right footrest assembly. The relays for Type II systems are mounted on the ECU. Their function is to control a major current carrying circuit with a smaller, low current carrying control circuit. When the ECU or ignition switch closes the low current coil circuit within the relay, the magnetism in the coil closes the contact points, allowing current to pass through the relay and power up to the ECU, fuel pump, etc. Type I systems incorporate two blue relays (black on Type II systems), one controlling the fuel pump and the other the self shut-off time delay relay. The Type I system also uses a brown relay to control the main power input to the ECU.



Relays can be tested by measuring pull-in coil resistance and volt drop across the main contacts. Coil resistance should be between 65 and 70 ohms measured between the two pins marked "coil" on relay base. When relay is energized, volt drop across relay contacts should be less than .1vDC, measured in parallel with relay. On the bench, the relay can be checked by hooking the marked relay coil terminals to a 12v battery and checking resistance of relay contacts. The resistance must be less than .2 ohms.

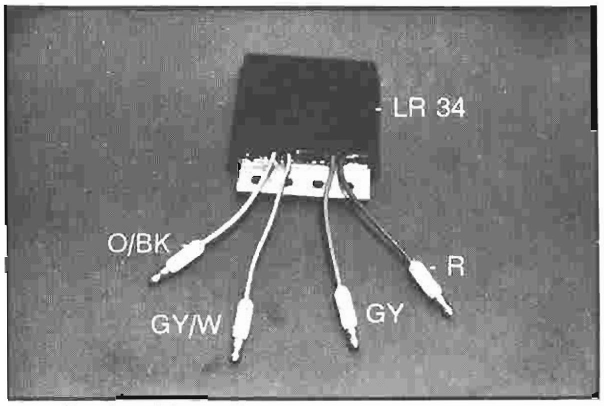
Type II style EFI relays are tested by placing 12 volts to contact left side as shown in the diagram at right. Measuring volt drop across contacts .1vDC. Measure resistance of right side contact. This should be 100 ohms ± 10%.



Electronic Fuel Injection (EFI)
Alternator Controlled Switch (ACS) - Type II Systems

Shown in the photo at right is the 500 EFI system ACS. The ACS has two functions: 1) Rectifies AC voltage from alternator to DC voltage for battery charging; 2) Connects the ECU with 12vDC battery voltage when an AC signal from the alternator indicates that the engine's crankshaft is turning.

NOTE: Even if the key switch and kill switch are in the "off" position, the ACS will power up the system if the crankshaft is turned. (See also page 4.6, Power up testing.)



Test Procedure

With ignition in the "on" or "run" position, crank engine over slowly. You will hear the fuel pump run for approximately five seconds. This tells you the ACS is working. If the fuel pump doesn't cycle when cranking, disconnect ECU wire harness and reconnect to reset ECU. Crank engine again. If fuel pump won't start working, unplug the harness at the ECU and check Orange/Black wire PIN #11 on the ECU harness. Battery voltage should be present when cranking engine. **NOTE:** 500s have a five wire ACS LR36. The extra wire is for a center tap alternator.

You can also use the select monitor to determine if the ECU is gettlng power. If the select monitor display lights up the ECU is getting power. Check the ACS wire at the ECU plug.

CAUTION:

Take care not to distort the pin with the tester lead. If no voltage is present, reset ECU and check Orange/Black lead at ACS unit. If no voltage is present, check for alternator output or loose connections. If alternator output is OK, replace ACS.

Cold Starting

On Type I systems, during cold starting the ECU will select a special "start-up" mode. This will occur any time the engine is being cold started, for example, any Type I system which has had the key off long enough for the self shut-off timer to power down the system will go to the start up mode. After turning on the ignition key to reset the system, the fuel pump will run from three to five seconds to pressurize the fuel rail. When the ECU sees the first ignition pulse it provides a longer than normal "prime" pulse to the injectors to inject enough fuel into the engine for starting.

On Type II systems, there is no ready light or ignition key reset. The pump may or may not run for the 3-5 second period depending on how long the engine has been off. In all systems, the "prime" pulse only occurs if the pump runs for the 3-5 second period.

Once the engine is running the ECU provides a rich mixture while the engine is warming up. It uses the engine temperature sensor(s) as an indicator of when the engine is warm, and will begin decreasing the fuel air ratio accordingly. If the key is turned off, the ECU provides power to the self shut-off relay for a period of ten seconds to ten minutes, depending upon the system type, and will not repeat the fuel system pressurizing and prime pulse during that time. Once the self shut-off sequence has expired, the engine will have had sufficient time to cool and the ECU will again repeat the cold start sequence.

In Type I systems only, during times of severely hard running or in very warm weather, if the engine crankcase should approach a temperature which might result in engine damage the ECU will provide additional fuel to the engine for cooling. When the crankcase temperature sensor indicates a temperature of approximately 100°C (212°F), the ECU will lengthen the pulse time and cause an over-rich condition which will cool the engine. As soon as the engine temperature returns to normal, the ECU will return to the original map.

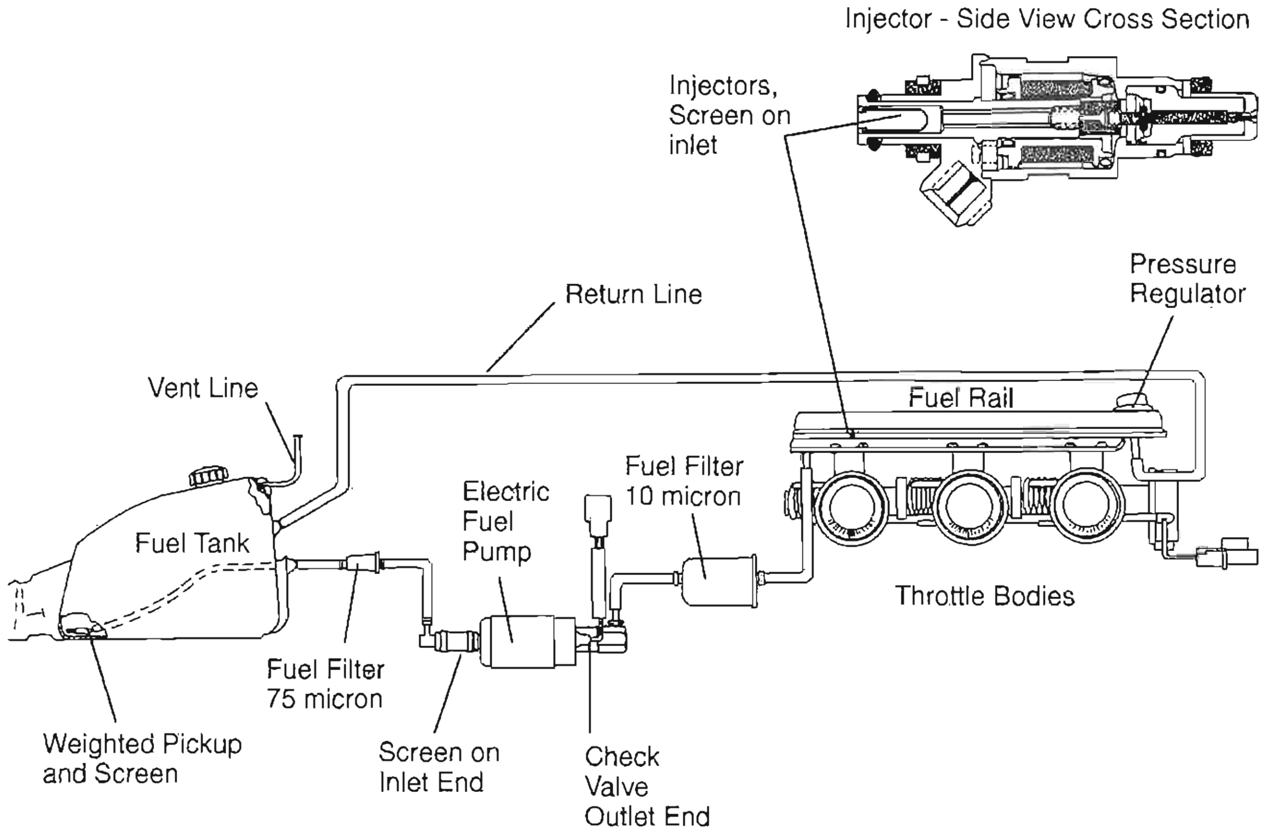
In Type II systems, the engine is protected against overheating by the engine coolant sensor. If the engine coolant reaches 85°C (185°F) the "temp" light on the dash will begin to flash. If the engine coolant temperature continues to increase, the light will begin to blink faster. At this point the ECU adds fuel to enrich the mixture and help prevent engine damage. Fuel will continue to be added until the light stops blinking.

If the engine should become flooded during starting, it can be cleaned out by holding the throttle wide open while turning the engine over. If the engine is not running, and the throttle is open more than 60°, no fuel will be injected. The engine will start and will begin receiving fuel from injection when the engine exceeds 800 RPM, or when the throttle position goes under 60°. The engine should then clean out and run normally.

The fuel system consists of all the parts responsible for storing, cleaning, delivering, pressurizing and injecting fuel into the engine. They are: fuel tank, fuel pick-up, fuel hose, primary filter, fuel pump, secondary filter, fuel rail, injectors, throttle bodies, pressure regulator and fuel return hose.

Fuel is picked up from the bottom of the fuel tank by the fuel pick-up hose and filter. It then travels through a hose to the primary (75 micron) filter, located under the air box. Once leaving the primary filter, it travels to the electric fuel pump, located under the mag end throttle body.

The electric fuel pump is responsible for the movement of the fuel in the entire system. Connected to the battery by a relay, the pump runs continuously whenever the engine is started. Also located at the outlet end of the pump is a check valve which holds pressure in the system when the pump has stopped.

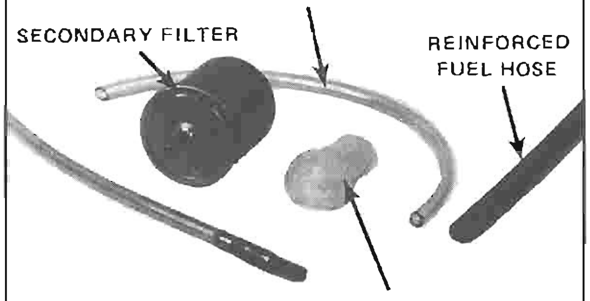


After leaving the pump, the fuel goes through the secondary 10 micron filter for further purification. The secondary filter is located under the mag end throttle body. Cleanliness is essential to the operation of the system, and its importance cannot be overstressed.

The fuel is then stored under pressure in the fuel rail, ready for discharge into the throttle bores. The pressure regulator provides consistent pressure and maintains specific pressure in the rail. The pressure regulator is pre-set to maintain rail pressure at 35-37 PSI. Any pressure greater than this is relieved or returned to the tank by a return line. The return line must be free of kinks or obstructions to prevent excess fuel rail pressure which may cause a rich condition. Refer to fuel pressure test page 4.11.

Tank, Hose And Filters

The fuel tank is the reservoir for the fuel. It contains a flexible hose with a weighted pickup and a course screen which drops to the lowest part of the tank regardless of machine attitude. Fuel travels through the fuel hose to the primary (75 micron) filter located under the airbox and then to the fuel pump. The fuel hose changes to a reinforced rubber hose on the pressure side of the pump, which carries fuel to the secondary (10 micron) filter located under the throttle bodies, and then to the fuel rail.



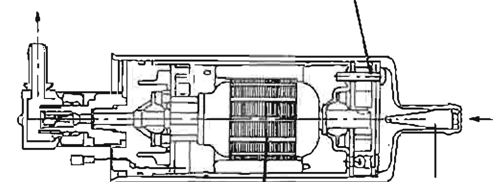
The fuel tank, hoses, and filters require little maintenance or service. Periodically inspect tank and hose condition. Ensure that the pickup is clean and properly positioned and vent tube is properly routed and not kinked or pinched. Replace any hose showing signs of deterioration. Replace primary and secondary filters at 5000 mile (8000 km) intervals, every two years, or more often if contamination of any kind is present in the system. Use OEM parts only. If for any reason, at any engine RPM, the fuel system should fail to deliver a sufficient quantity of fuel to meet engine requirements and have some fuel returning to the tank, the fuel hoses must be checked for obstructions and/or the fuel filters replaced. If the problem does not rectify itself, proceed to fuel pump testing.

CAUTION:

Whenever inspection reveals worn, damaged or defective parts, replacement is necessary in order to avoid serious damage to the machine or injury to the operator.

Fuel Pump

The electric fuel pump is located on the bulkhead underneath the mag end throttle body. The 12v pump receives fuel from the fuel tank, then sends it through the small strainer in the pump inlet nozzle, through the roller vane type pump, through the outlet check valve and on to the injector rail. The pump is completely filled with fuel during operation. This provides cooling, corrosion protection and lubrication.



CAUTION:

Never run the pump without a sufficient supply of fuel or pump damage will result. The pump is cooled and lubricated by fuel.

The pump outlet pressure can reach as much as 70 psi. It is regulated. however, to between 35 and 37 PSI by the fuel rail pressure regulator. Located near the outlet end of the pump is a check valve. The pressure regulator also acts as a check valve. There will be high pressure fuel between these two valves.

The fuel pump is a sealed unit. No internal repair of the pump components can be performed. Pump condition can be verified by an amp draw test, an output volume test and an output pressure test.

Amp Draw Test

Install a DC ammeter in series with the purple pump power feed wire. The draw should be 2.5 amps. A draw at or slightly less than that value indicates the pump is electrically sound. No draw indicates either no power present or an open circuit in either the pump or its ground. A draw greater than that value indicates either a stuck or defective pump. A pump which is stuck due to long periods of non-use can occasionally be freed by striking with a soft face hammer. If this does not free the pump, it must be replaced.

Amp Draw -
2.5 amps

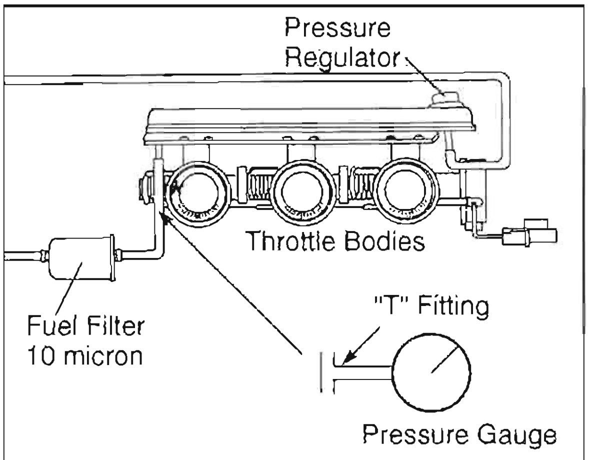
Output Volume Test

The output volume of the fuel pump and delivery system can be verified with an output volume test. To perform test, start machine and make sure delivery side of system is filled and pressurized to the pressure regulator. With machine turned off, disconnect fuel return hose and place it into a 200 milliliter graduated container. Activate ECU to cycle pump for approximately five seconds. The measured output during this time period should not be less than 90 to 100 milliliters.

NOTE: Battery voltage less than 12.6vDC or restrictions in the fuel lines or filters will cause output to be less than recommended amount.

Fuel Pressure Test

Install EFI fuel System pressure tester in fuel line on PTO end of rail. **NOTE:** Use caution when removing hose. The rail may contain pressurized gas if engine has been recently run. Activate dealer mode using select monitor service harness plug, by connecting gray and black test loads together or by jumping gray and black wire terminals at diagnostic plug, then turning on ignition switch. With pump running, system pressure should be between 35 and 37 psi. A pressure reading of higher than normal indicates a faulty pressure regulator or an obstructed fuel return hose. A pressure reading lower than normal indicates a faulty pressure regulator, a bad pump, or a restriction in fuel hoses or filters between tank and rail. If pressure starts out normal and then gradually lowers, suspect the fuel tank vent and/or any of the fuel filters or hoses which may restrict fuel delivery to the pump.

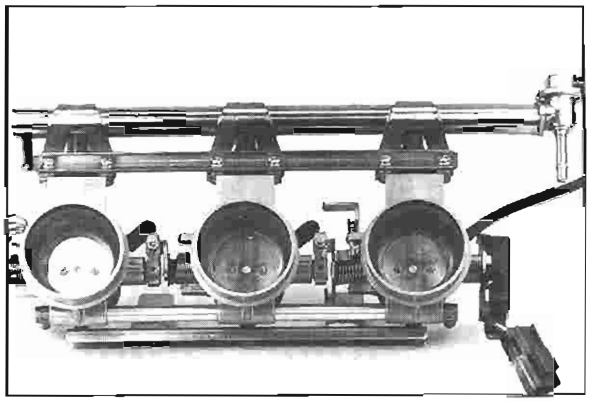


Connect Fuel Pressure Gauge Between Rail and 10 Micron Filter

EFI Fuel System Pressure Tester
PN 2870982

Fuel pressure can also be checked with the gauge in place and with the engine running. Pressure should be checked at both idle and at operating RPM. A plugged filter or restricted fuel pickup hose may show good pressure at idle but restrict flow at operating RPM.

Fuel Rail



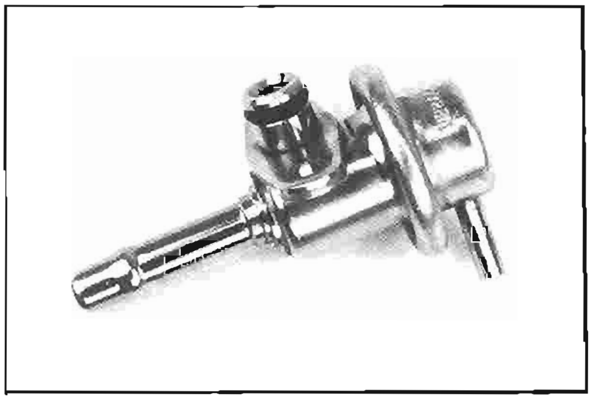
The fuel rail is the fuel distribution manifold for the injectors. The injectors slip into fittings on the underside of the rail which are sealed with O-Rings around the injectors. The rail stores fuel under pressure so that simply opening the injectors will allow fuel to pass from the fuel rail through the injectors and into the throttle body. Pressure in the fuel rail is controlled by the pressure regulator.

The fuel rail requires little if any service. Periodically inspect seal between rail and injectors and rail and regulator. If any leakage exists, replace O-Rings and recheck for leaks.

Return Hose

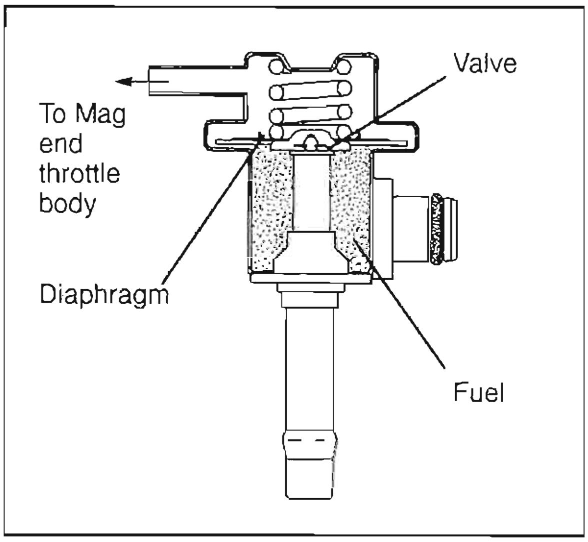
The return hose runs between the bottom of the pressure regulator and the top of the fuel tank. It provides a path for excess fuel from the fuel rail to return to the fuel tank. If this hose should become obstructed in any way, the excessive fuel pressure in the rail will cause a rich operating condition.

Pressure Regulator

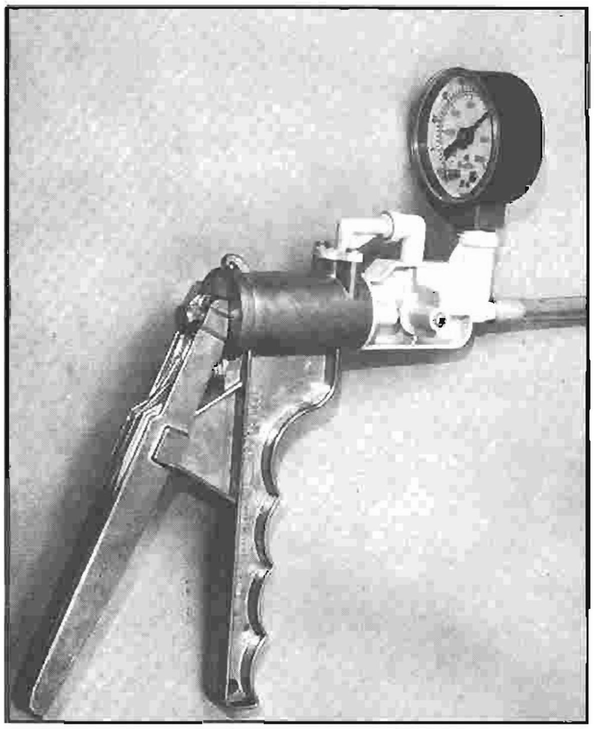


The fuel pressure regulator is mounted on the fuel rail, opposite the fuel entry point. Its function is to maintain a consistent fuel pressure within the rail by allowing pressure above the desired level to bleed off the rail, through the regulator, and back to the tank by way of the return hose. When the fuel pressure on the bottom of the regulator diaphragm reaches between 35 and 37 psi, it overcomes the spring on the other side of the diaphragm and pushes it up. This opens the valve to the return hose allowing fuel to escape, maintaining the specified pressure.

The regulator can also vary pressure consistent with engine load, atmospheric pressure, etc. A manifold pressure tube runs between the mag end throttle body and the top of the diaphragm. As the throttle is opened, the pressure in the throttle bore rises. This additional pressure enters the cavity above the diaphragm, assisting the regulator spring and raising the pressure in the rail, allowing more fuel through the injectors while they are open due to the higher pressure. The opposite is true during deceleration. High engine vacuum while the butterflies are closed is applied to the top of the diaphragm, allowing the fuel to compress the spring and open the regulator valve at a lower pressure. These pressure changes are very small and tend only to maintain a specific pressure differential between the throttle bodies and the fuel rail, and not to vary mixture ratios while driving.



In addition to checks made under fuel pump service, the pressure regulator span can also be checked. With a fuel pressure gauge on the fuel line and a Mity Vac™ pump installed on the regulator, activate the system as was done to check the fuel pump. The fuel pressure at atmospheric pressure should read between 35 and 37 psi; with five inches (mercury) of vacuum it should be between 33 and 35 psi; with ten inches (mercury) of vacuum it should read between 30 and 32 psi; and with five pounds of pressure it should be between 42 and 44 psi. Consistent readings outside the span indicate a bad regulator, bad hoses or filter, bad fuel pump, or an inaccurate test gauge. Verify the problem and correct it before any additional work is done to the system.

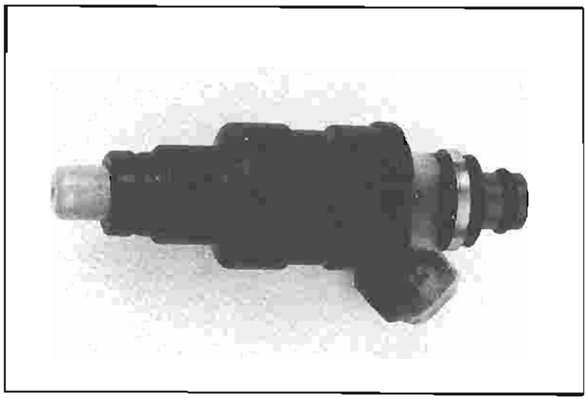


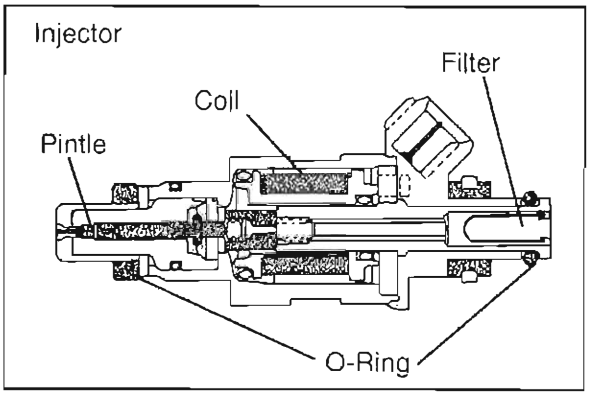
Mity Vac

PN 2870975

Injector

The injector is an extremely close tolerance solenoid type valve which opens and closes electrically. It allows fuel to pass from the fuel rail through the injector body and into the throttle body. The quantity of fuel is controlled by the *length of time* each injector is open, and constant fuel rail pressure.





1. Check battery voltage. Must be 12.2 or higher and be capable of handling pump load. If not, the fuel rail pressure test will be low. No → Yes↓	Charge, service, test and/or replace battery. See battery service section.	
Connect fuel pressure gauge and test as earlier outlined. Must read 35 to 37 psi. Pressure reading high→ Pressure reading low↓	Check for pinched or kinked pressure regulator return line. Is line OK? No → Yes↓	Clean or replace return line.
Inspect pump pickup lines, filters and volume test pump. Is volume OK? No → Yes↓	Replace pressure regulator.	
Replace pump.		

NOTE: It is very important to inspect fuel tank pick up screen and tank for floating plastic particles. It's possible to have particles collect around screen as pump is running and float away after pump has stopped running.

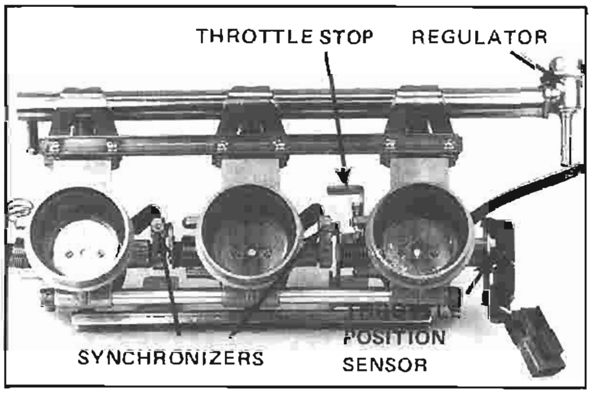
Injectors cannot be disassembled for service or cleaning. If a cylinder is not functioning properly and fuel supply is suspected as the cause, determine if an injector problem exists and whether it is mechanical or electrical. Switch the harness leads from the injector in question with an adjacent injector. If the problem moves to the adjacent injector, it is electrical. Refer to injector electrical service, page 4.29. If the problem stays with the same injector, it is a mechanical problem, and injector replacement is necessary.

If one of the cylinders fills with fuel and the rail empties after shutdown, remove airbox and open throttles. Install a 1″ (2.5 cm) wide strip of cardboard above butterfly and close throttles. Turn on ignition to pressurize rail. Wait two minutes and remove cardboard. Some wetting is OK, but a soaked cardboard indicates a defective injector.

Some of the mechanical problems which will necessitate injector replacement are: internal and external leakage, partial or total fuel blockage, open injector coil, and physical damage to the pintle and pintle case.

Throttle Body

The throttle body assembly replaces carburetors in a fuel injected engine. It consists of one throttle body unit for each cylinder. Air flow is controlled by a throttle plate or butterfly type throttle shutter. On top of each unit one injector is held in place by the fuel rail. The throttle position sensor is mounted on the mag end of the throttle body assembly. Engine idle RPM is controlled by the throttle stop screw mounted between the mag and center throttle bore units. To synchronize the throttle assembly, synchronize the adjuster between each pair of throttle body units.



Throttle Body Synchronization

Since each cylinder and throttle bore operates independently and the only common factor is that they all get the same quantity of fuel, it may be necessary to periodically synchronize the throttle butterflies to coordinate the fuel/air quantities. This is best accomplished by removing the throttle body and visually synchronizing the butterflies on the bench.

Procedure

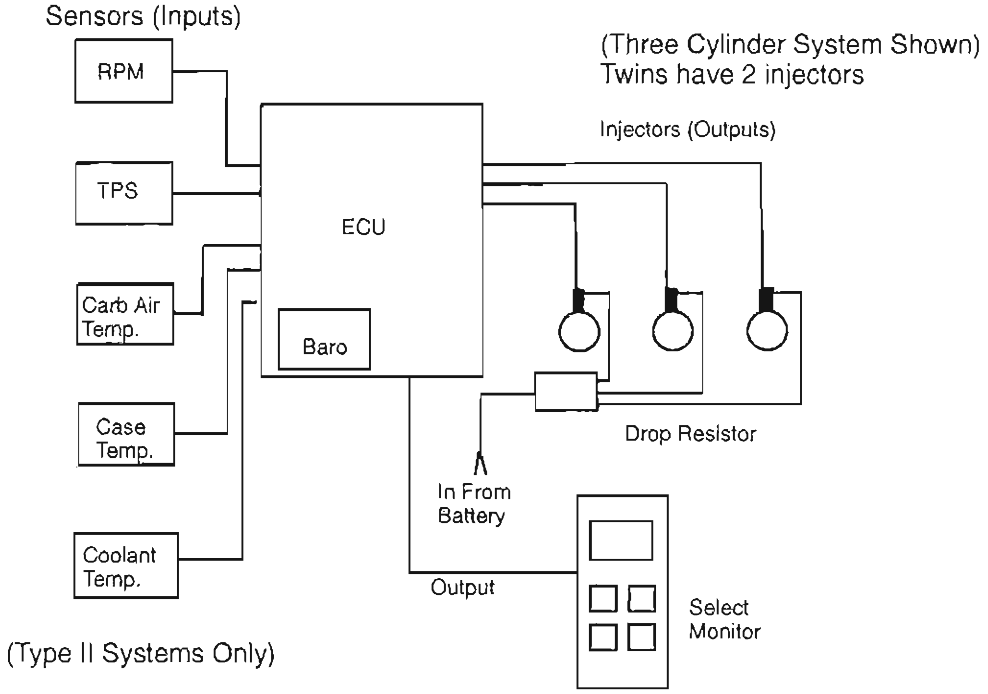
1. Loosen synchronizer jam nut between mag and center cylinder.
2. Turn adjuster until center and PTO butterflies are farther open than mag side.
3. While shining a flashlight into bore on engine side, view through air box side of mag throttle bore. Back out throttle stop screw until butterfly just closes at top of bore (no light shining through).
4. Moving flashlight to center bore, adjust synchronizer jam nut until center butterfly just closes at top of bore.

NOTE: Make sure the PTO butterfly does not hold the center open while adjusting.

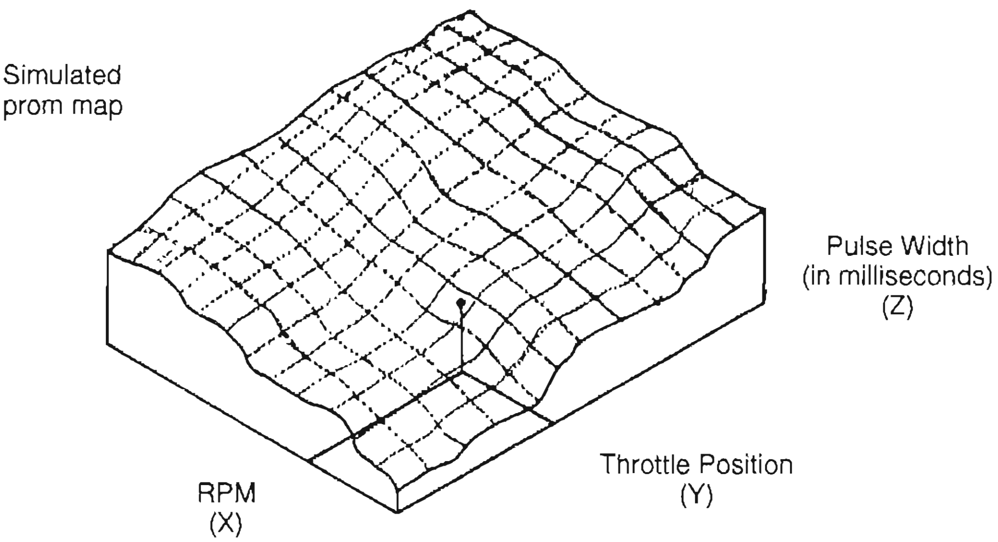
5. Once center and mag butterflies are set to a just closed position, synchronize PTO butterfly the same way by adjusting synchronizer jam nut between center and PTO throttle bores until PTO butterfly is just closed.
6. Open and close throttle three or four times by pulling up on cable attaching point on throttle shaft.
7. Recheck all three butterflies to verify synchronization and readjust if necessary. Make sure that all synchronizer jam nuts are tight.
8. Reinstall throttle body assembly on engine. The method for adjusting the throttle position sensor is covered on page 4.24.

NOTE: The same procedure can be used on twin cylinder engines.

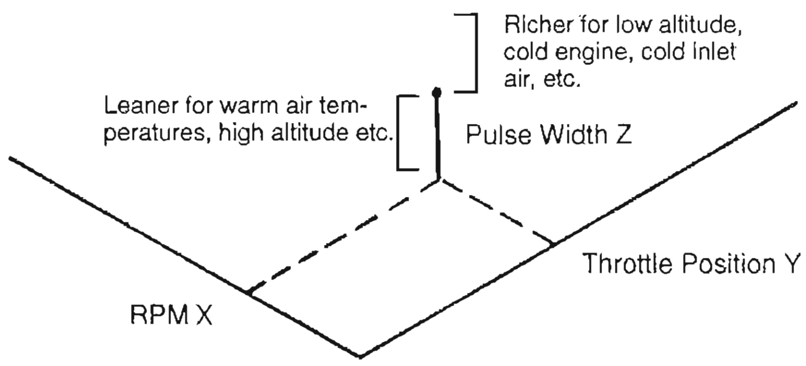
The Electronic Control System is the mixture control part of the system. It uses sensor inputs to control the fuel/air ratio. The illustration below shows the components of the basic Electronic Control System.



The electronic control unit delivers a low voltage signal to each sensor. Depending on variations in air temperature, throttle position, etc., each sensor will vary the amount of that signal passing through it to ground, depending on its position and temperature. The ECU reads the information and from that determines actual air temperature, throttle position, etc. This information is then plotted on a map which is pre-programmed on the PROM (Programmable Read Only Memory) or "chip". Based on the two primary inputs; RPM (X) and throttle position (Y), the ECU can select a specific injector open time (Z). This value is the distance between the base plane and the map at the point where X and Y cross. The value is converted to milliseconds and referred to as pulse width.



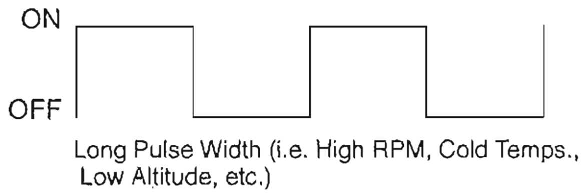
Input from the other sensors either adds or subtracts a percentage from the pulse width to tailor the fuel/air ratio for the specific altitude, air temperature and engine temperature. See Ill. 1.



Ill. 1

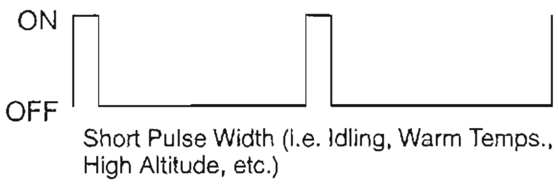
The illustrations at right depict pulse widths in milliseconds output by the ECU. Ill. 2 shows a situation where the air temperature is low, the machine is at low altitude with a cold engine, wide open throttle and high RPM.

The ECU determines the engine's fuel requirements and selects a relatively long pulse width which allows more injector open time for fuel to enter the engine.



Ill. 2

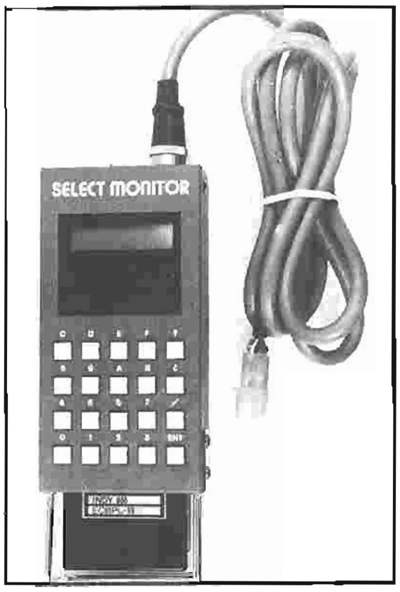
If the same engine were at high altitude on a warm day at low RPM and throttle settings, the ECU would select a pulse width closer to Ill. 3, indicating a shorter injector open time and less fuel entering the engine. In this way the system can ultimately vary the mixture for all temperatures, loads and altitudes by varying the amount of time the injectors are open per revolution.



Ill. 3

Select Monitor

The select monitor is designed to provide easy, accurate diagnostic and service information to the technician. When installed on the machine it will provide both dynamic and static displays of the function of critical fuel system control components. It also has the ability to display the contents of the ECU memory. With this tool, electrical service of the EFI system should be quick and easy.



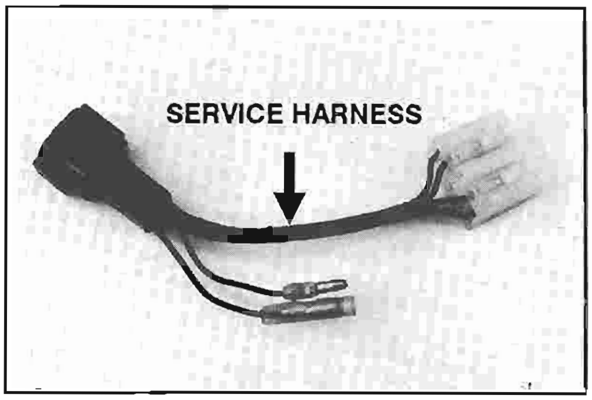
Select Monitor

PN 2870969

Remove protective plug from diagnostic plug in machine harness next to ECU. Connect select monitor to instrument harness, to service harness, and to diagnostic plug in. Install program cartridge into select monitor. Turn on ignition switch and place handlebar kill switch into run position. Turn on select monitor switch. On most models the monitor display will now light up.

Type I (RXL) models will stay powered up with switches on. On Type II (500) systems, the time will be limited unless the engine is running. The ECU will remain powered for approximately one minute at or above room temperature.

There are two ways to search for information with the monitor. You can scroll through the different modes in order until the correct information is found, or you can select the specific mode letter and number and advance to the specific information that you want.



Electronic Control Unit

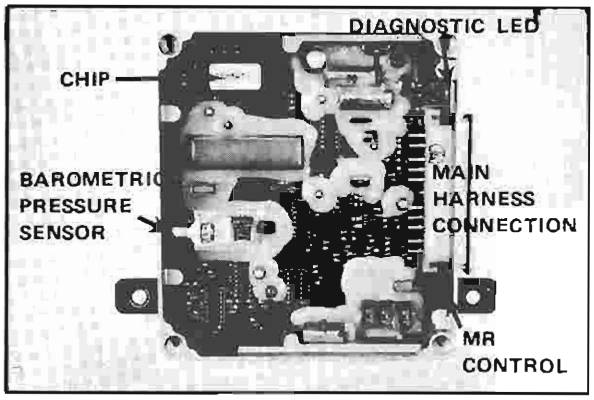
The Electronic Control Unit (ECU) is the brain of the EFI system. It is a digital computer which holds the memory chip for the read out of basic injector opening duration on a three dimensional map. There are two ECU systems used, Type 1 for the RXL and Type 2 for the 500 EFI snowmobiles. Each system receives the same type of information from the sensors. The ECU incorporates a number of special features. Some of these features are:

- adjustable low speed mixture control
- automatic cold engine start up enrichment
- engine over temperature protection
- flooded engine clean out mode
- fail safe feature
- LED self diagnostic system

In the event that any sensor should give inaccurate or no information, the ECU will then flash a coded light sequence to identify the affected sensor.

NOTE: It is important to note that the ECU will not identify mechanical problems. Only sensor inputs are monitored. For example, low fuel pressure or lack of fuel will not be diagnosed.

The ECU can only tell if a sensor reading is within a specific range. For example, a failure code will not be indicated if throttle position shows 3.9° when the throttle is actually wide open. Use display of throttle position to ensure the readings reflect actual conditions. This same concept applies to the temperature sensors and the barometric sensor.

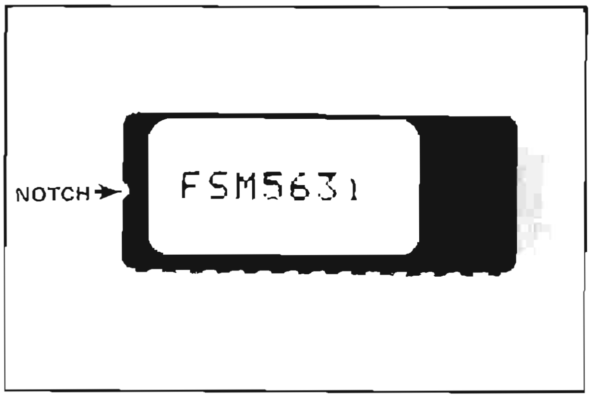


ECU Part Numbers	
Type I w/o chip	2410028
Type I w/o chip Elect. Start	2410029
Type II w/o chip	2410030

Select Monitor Cartridge	3084414
Select Monitor Cable	3084417

ROM Chip Removal and Installation

The chip can be removed and replaced with the appropriate chip puller and installation tool. You will need to supply a ROM removal tool and dielectric grease. Note the location of the indicator notch when replacing the chip (see photo at right). The system will not function with the chip in backwards or with the chip pins not properly in their sockets. See the specification section in this chapter for chip information.



ROM Removal Tool -

Digi-Key PN: K158-ND
Phone # 1-800-344-4539

Polaris Dielectric Grease

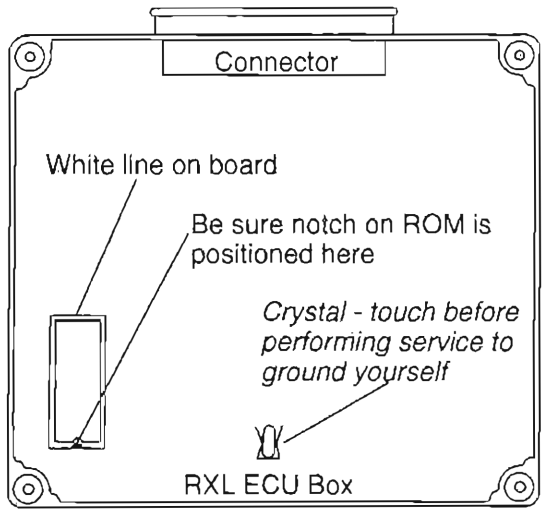
PN 2871044

CAUTION:

The computer chip and the ECU are extremely sensitive to static electricity. The handling of either component in a static electricity environment will cause irreversible damage. Work on a metal bench or other static dissipating surface. It is very important that you ground yourself by touching the crystal inside the ECU before any internal service work begins on the ECU assembly. See Ill. 1 and 2. If the ECU has not been removed from the machine, be sure to unplug it before proceeding.

1. Disconnect main harness connector from ECU. Remove phillips head cover screws and cover.

2. *Touch the crystal located inside the ECU box to ground yourself before proceeding.* See Illustrations 1 and 2.



Ill. 1

CAUTION:

The chip and the ECU are very sensitive to static electricity. Working inside the ECU without grounding yourself may cause irreversible damage to either or both components.

3. In the event you are removing an old chip for replacement, place ROM removal tool over ROM chip. Pull up on triggers to securely grasp chip and pull chip out.

4. Check charts on page 4.1 to be sure you are installing the correct ROM.

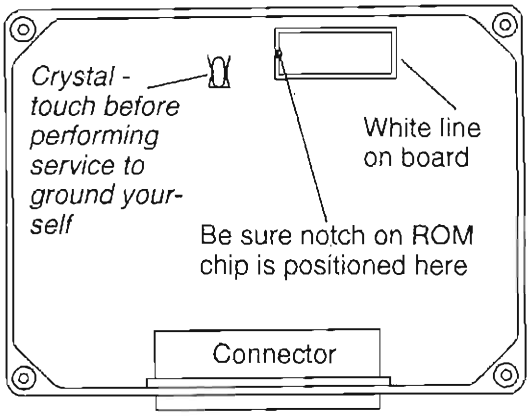
5. Coat the pins of the ROM with a light coating of dielectric grease.

6. Carefully insert the ROM, making sure the notch on the end of the ROM matches the notch indication mark drawn in white on the circuit board. See illustrations 1 and 2.

CAUTION:

If the chip is installed with the notch incorrectly positioned the chip will be ruined and the machine will fail to run.

7. Align cover gasket, positioning cover rubber bumper above chip. Reinstall cover screws and reconnect wire harness. Install select monitor and check functions.



500 ECU Box

Ill. 2

Troubleshooting EFI System

When key switch is turned to the on position, voltage is supplied to ECU and the select monitor. **NOTE:** Some models will require the engine to be turned over.

After the ECU is powered up, it will run the fuel pump for five seconds, read the sensors and do a self diagnosis of the complete system. The ECU does not check the Air Temperature Sensor (ATS) until the engine RPM is above 1000.

With a good understanding of how each component functions, the test procedures given in this manual, and the use of the select monitor, you will be able to service and diagnose the Polaris fuel injection system. All information and specifications are based on the latest product information available.

Select Monitor Scrolling

With the ignition on and the monitor hooked up and turned on as described earlier, the display should show the year and the mode (F00). By pressing the ▲ key, the display will proceed to (F01), which is the model. Press the ▲ again and the (F02) will appear, which is battery voltage. By pressing the ▲ or ▼ keys, you can either scroll forward or backward through the modes.

If you know the mode you want, simply press "F" followed by the two digit mode number, and enter. The monitor will display the mode number and the registered information.

The following chart shows the modes, what the readings are for, and what an approximate reading should be.

Mode	Description	Normal Reading
F00	Model Year	Year of machine (not always correct)
F01	Engine Code	Polaris code number 30 for Triples; 20 for Twins
F02	Battery Voltage	12.2 or above at room temperature
F03	Engine RPM	Idle: 2000 to 2200 3 Cylinder; 1600 Twins
F04	Throttle Valve Angle (Whole Range)	0° to 77° large steps
F05	Intake Air Temp in C°	Room temperature (engine cold)
F06	Intake Air Temp in F°	Room temperature (engine cold)
F07	Crankcase Temp in C°	Room temperature (engine cold)
F08	Crankcase Temp In F°	Room temperature (engine cold)
F09	Barometric Sensor	Barometric pressure in millimeters of mercury
F14	Throttle Valve Angle (Low End)	0° to 35.9° small steps
F21	MR (Idle Mixture) Position	2.5 or more than 4.0 for Alt. See page 4.27.
F22	Water Temp Sensor in C°	Same as ATS or CTS Cold or 30° to 90° running
FA0	Ignition Key Diagnostic	KY + No. 3 LED (with key on)
FA1	Dealer Mode	DM + No. 5 LED (with DM activated)
FA2	Relay Check	FP,SD,SS + No. 1,2, and 3 LED when operating
FB0	Existing Trouble Codes	Faults presently existing
FB1	Memory Trouble Codes	Faults that are intermittent
FC0	Memory Clear	—

The ECU determines the amount of fuel to be injected by accurately calculating the engine's need for fuel delivery. To do this, the ECU memory chip reads the three dimensional map discussed on page 4.16. Various sensors such as air temperature sensor, coolant temperature sensor, barometric pressure sensor, battery voltage, and MR setting in the ECU are also inputs to control fuel delivery.

Select Monitor Readings

Mode	Description	Normal Reading
F100	Model Year	Year of machine
F01	Engine Code	Polaris code number 30 for Triples Polaris code number 20 for Twins
F02	Battery Voltage	12.2 or above

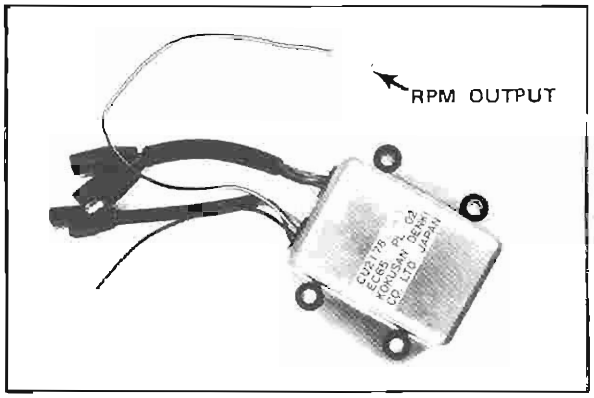
Type I systems will indicate a high battery voltage on the select monitor if the actual voltage is below approximately 10vDC. If you suspect a low battery, use a Fluke meter to directly measure the battery voltage. This will not occur in Type II systems. The select monitor accurately reads low battery voltage.

Fluke Meter PN 2870659

RPM Sensor

The ECU receives an engine RPM signal from the CDI box. This signal is one of the main inputs and is very critical to proper operation. If the ECU does not see this signal, the injectors will not open and the fuel pump will only cycle for the initial five seconds when the ECU is powered up.

The ignition switch and auxiliary kill switch are connected in series with the ECU CDI signal. If these switches are leaking partial voltages to ground, the ECU will not function properly. Whenever CDI or intermittent running problems are occurring, the switches should be suspected. These switches will also fail more often when humidity is high. To troubleshoot the switches, disconnect or isolate them from the circuit.

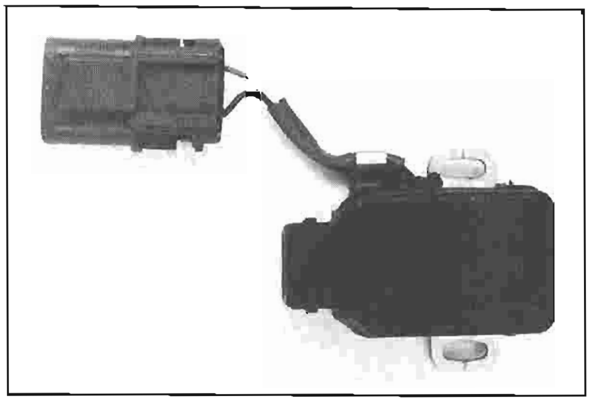


Select Monitor Readings

Mode	Description	Normal Reading
F03	Engine RPM	Cranking 300-500

Throttle Position Sensor (TPS)

Throttle position is one of the two main inputs used to calculate fuel/air ratio. The throttle position sensor is a rheostat type variable resistor which is mounted on the end of the throttle shaft. The resistance value of the sensor is relatively low at idle. As the throttle is opened, the resistance goes up proportionately to the butterfly angle. The ECU passes a specific current through the sensor and experiences more current flow at idle. This flow lessens as the throttle is opened. From this information, the ECU can determine butterfly angle and control fuel delivery accordingly.



The throttle position sensor can be checked on the bench with an ohmmeter. With the butterflies closed, the resistance between the black and white wire, measured at the plug, should be between 400 and 700 ohms. With the throttle wide open, the resistance should be approximately 4.5 k ohms.

Some minor variations in resistance values will be experienced due to throttle position sensor location, but radical differences or failure to see a consistent progressive increase or decrease in the resistance as the throttle is opened and closed indicate a defective position sensor.

The sensor can also be checked with the select monitor using mode F04. It should read between 3° - 4° when the throttle is closed and consistently, progressively increase with throttle opening to more than 74° at wide open throttle. The throttle position sensor can be replaced by removing the two mounting screws and gently prying it off the end of the throttle shaft.

TPS Adjustment

During periodic inspection, or when replacing the TPS, it must be synchronized to the throttle butterflies. The sensor must be positioned to the positive side of 0° with the butterflies totally closed. To adjust the sensor, disconnect the throttle cable from the throttle flipper and back out the throttle stop screw until the butterflies are totally closed. Connect the select monitor to the system diagnostic plug. Turn on the ignition switch and the monitor on/off switch. Scroll the monitor to mode F04 or F14 and verify the sensor positioning.

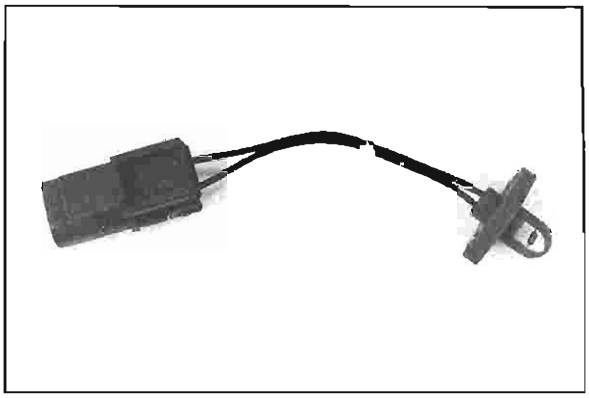
NOTE: F14 is a low end scale for sensor adjustment. This is the desirable scale, but because of programming may not work on all models.

Loosen the sensor mounting screws and rotate the sensor until the reading on the monitor is .1° on F14, or the point where the reading "breaks over" between 0° and a positive number on F04. Tighten the mounting screws, open and close the throttle a few times and recheck the reading. Readjust if necessary.

Select Monitor Readings

Mode	Description	Normal Reading
F04	Throttle Valve Angle-Range	0° to 77° Large Steps See TPS Adjustment
F14	Throttle Valve Angle Low End Not Used on All Systems	0° to 35° Small Steps Depending on Position

Intake Air Temperature Sensor (ATS)



The air temperature sensor is mounted in the air box. Its function is similar to the crankcase temperature sensor in that its temperature will vary the resistance across the sensor. It has a reduced thermal capacity for quicker response. Cold air will cause high resistance and warmer air will lower the resistance.

The ECU sends current to the sensor and, depending on its temperature, a certain amount will pass through to ground. By measuring how much passes through, the ECU can calculate air inlet temperature and vary fuel/air ratio accordingly.

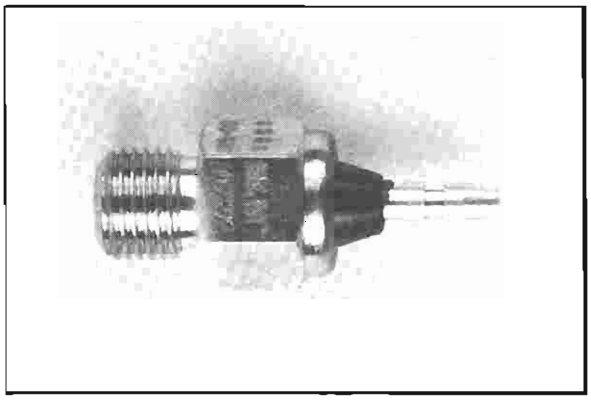
The intake air temperature sensor can be tested in a manner similar to the crankcase temperature sensor. Determine the approximate temperature of the sensor, measure the resistance between the two lead ends at the plug and compare the reading to the graph shown on the bottom of page 4.28.

An easier and more accurate method is to use the select monitor to indicate what air temperature reading the ECU receives from the sensor. If the air box and underhood area have not been warmed due to recent running of the engine, the air temperature sensor should read room temperature on the select monitor. Radical differences between room temperature and the indicated reading indicate a problem with the sensor, wiring, battery, or ECU. Verify and repair any problem before attempting to operate the machine.

Select Monitor Readings

Mode	Description	Normal Reading
F05	Intake Air Temp °C	Room Temp "Engine Cold"
F06	Intake Air Temp °F	Room Temp "Engine Cold"

Crankcase Temperature Sensor (CTS)



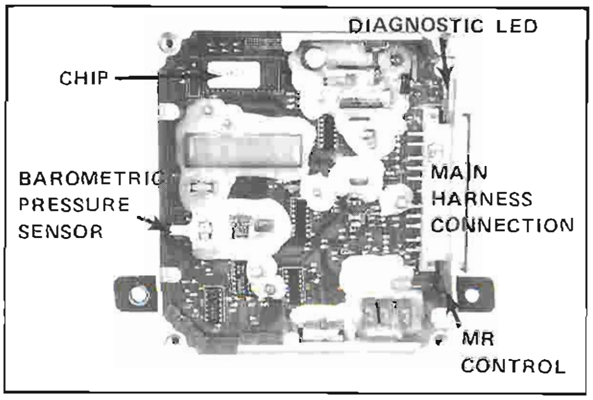
The crankcase temperature sensor is screwed into the upper crankcase half below the mag throttle bore. This thermistor type semi conductor varies in resistance depending on its temperature. The ECU delivers an electrical current to the sensor. When the sensor is cold, its resistance is high and little current passes through the sensor to the engine ground. As the sensor heats up its resistance lowers, allowing more current to pass through. The ECU measures the current flow through the sensor and knows the temperature of the engine crankcase and can vary fuel ratio according to case temperature.

The CTS is used on all Type I (RXL) systems. Type II (500) systems do not use a crankcase temperature sensor.

Select Monitor Readings

Mode	Description	Normal Reading
F07	Crankcase Temp °C	Room Temp "Engine Cold"
F08	Crankcase Temp °F	Room Temp "Engine Cold"

Barometric Pressure Sensor (BPS)



The barometric pressure sensor is located inside the ECU. Its function is to read atmospheric pressure. This information is then used by the ECU to determine fuel/air ratio, depending on pressure changes during a given day, or for any altitude change. The barometric pressure sensor is an integral part of the ECU and cannot be replaced separately.

No service can be performed on the barometric pressure sensor. However, the barometric sensor reading can be checked with the select monitor. The monitor reads millimeters of mercury. To arrive at air pressure in inches of mercury, divide this number by 25.4. Compare the reading to an accurate barometer.

NOTE: Readings reported by the radio or television are corrected to sea level. The select monitor is an actual reading. Any changes to the stock machine which affect the air pressure around the ECU will cause the barometric sensor reading to be inaccurate.

Select Monitor Readings

Mode	Description	Normal Reading
F09	Barometric Sensor	Barometric Pressure in Millimeters of Mercury

MR Adjustments

On Type I (RXL) systems, the fuel/air ratio at engine RPMs below 3500 can be adjusted slightly richer or leaner than the standard program mixture by adjusting the MR control. This adjustment is made to improve idle quality and drive away. It affects the same carb area as an air screw.

To adjust the MR control, remove the rubber plug. Install the select monitor, power up the system and press F-21. A correct reading on the monitor is between 2 and 3, with 2.5 being the most desirable. (The production setting is 2.5). Turning the MR screw clockwise will increase the observed number and richen the mixture. Turning the screw counterclockwise will lower the number and lean the mixture. The leanest setting is 0 and the richest will approach 5.

NOTE: At high altitudes, a higher number will result in earlier drive-away after startup.

Adjusting the MR control screw on Type II (500) systems will only affect cold starts and cold drive-away. (It is designed to assist the driver when using poor or summer grade fuels.) If a lean condition is suspected, change the number to a higher value. If a rich condition is suspected, change to a lower number. Approximately two minutes after starting, this adjustment has little effect; after 10 minutes it has no effect.

Select Monitor Readings

Mode	Description	Normal Reading
F21	Mixture Enrichment	2.5

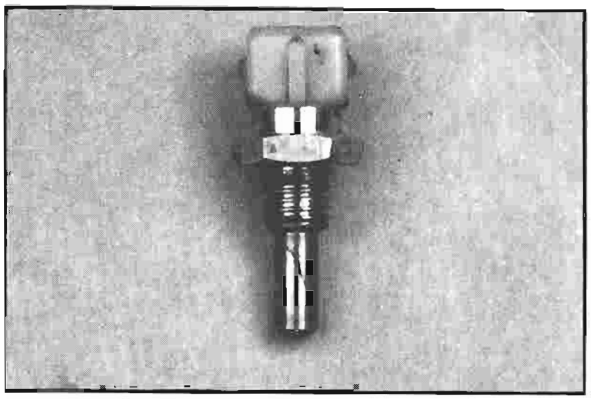
MR Adjustments For Altitude And Temperature

The following tables list MR screw settings for various temperatures and altitudes. Whenever performing MR adjustments, take the operator's riding location and weather conditions into account before making an adjustment. Numbers anywhere within the ranges listed should provide acceptable operation.

Type I Systems - RXL
Production Settings 2.5

Ambient Temperature	Below +20°F (-6°C)	+20° to +50°F (-6° to 10°C)	Above +50°F (10°C)
0-3000 Ft. or 0-900 m	2.5	3.0-3.5	3.5-4.5
3000-6000 Ft. or 900-1800 m	3.0-3.5	3.5-4.0	3.5-4.5
6000-9000 Ft. or 1800-2700 m	3.5-4.5	4.0-4.5	4.5
9000-12000 Ft. or 2700-3700 m	3.5-4.5	4.0-4.5	4.5

Type II System



Type II EFI systems incorporate an engine coolant temperature sensor. This sensor is positioned in the engine water jacket where it is able to receive and relay reliable engine top end temperature to the ECU. This sensor also controls the temperature light and "fail safe" mode. The "TEMP" light will come on and begin to blink slowly when the coolant reaches an unsafe temperature. If the temperature continues to increase, the light will begin to blink faster; at this time the EFI system will increase the fuel being supplied to the engine.

This increase in fuel will cause a decrease in engine performance which is designed to protect the engine in an overheat condition. The increased fuel will continue until the engine coolant reaches a safe temperature and the light goes out. Correcting this problem may be as simple as driving the machine slower and/or driving in a snow condition which allows more snow to be thrown onto the heat exchangers. If this condition continues, check the cooling system, coolant level, water pump belt tension, etc.

To check sensor function, connect a select monitor and advance to mode F22. With engine cold, observe reading. It should be near the readings of the ATS and CTS in degrees centigrade. Start engine and observe temperature increase as engine warms up. If readings vary greatly or fluctuate from other sensor readings, check harness and connectors for condition and repair as necessary. If no other problems can be found, and incorrect readings continue, replace sensor.

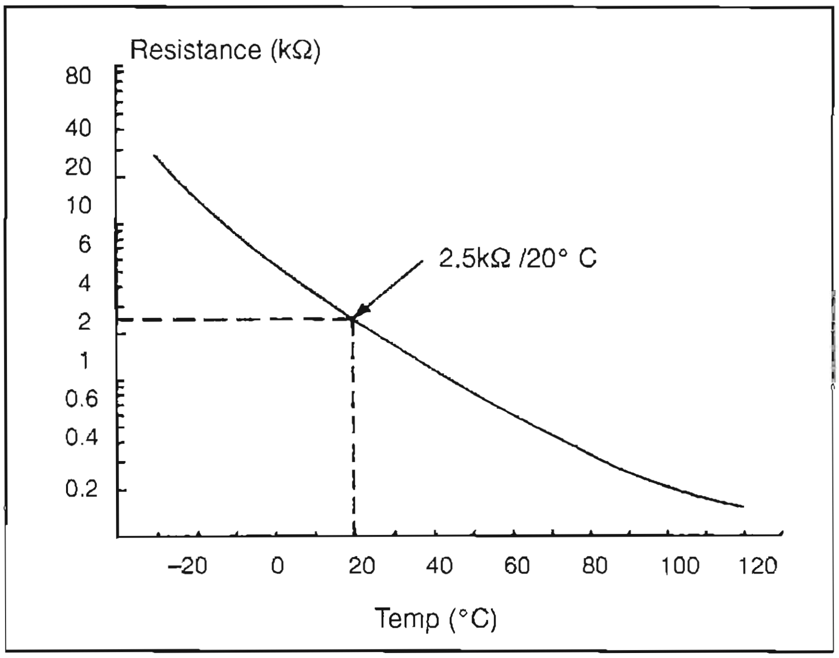
Select Monitor Readings

Mode	Description	Normal Reading
F22	Water Temp C°	Cold Engine Room Temp

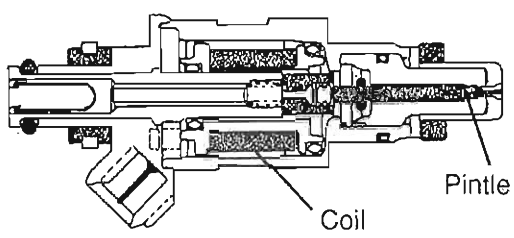
To bench test a temperature sensor, measure resistance between sensor wire terminal and sensor shell; then compare reading to the graph shown below. An easier and more accurate method is to use the select monitor to indicate what temperature reading the ECU receives from the sensor. If the engine has not recently run, the sensor should read at or near room temperature. A radically different reading from room temperature could indicate a problem with sensor, wire to sensor, any of sensor connections, battery, or ECU. Verify and repair any problem before attempting to operate machine.

The sensor's resistance curve is shown at right. Resistance of the sensor is high when it is cold, and lowers as its temperature increases. This creates low current flow through the sensor at low temperatures and high current flow as the temperature increases.

NOTE: The formula for converting °F to °C is (°F = °C x 1.8 + 32)



Fuel Injectors



Variation in the amount of fuel delivered per stroke to suit varying load and speed conditions can be obtained by controlling the discharge duration of the injector.

The injector is a solenoid-actuated constant stroke plunger consisting of a solenoid, plunger, needle valve and housing. The ECU will determine the duration time the injector is energized to deliver fuel.

The resistance between the two pins on the injector (isolated) should be 2 to 2.5 ohms. There should be no continuity to ground.

CAUTION:

Since the operating voltage is approximately 5 volts DC on the injectors, never attempt to test them with any higher voltage or the injector will be destroyed.

Select Monitor Readings

Mode	Description	Normal Reading
FBO-21	Type One System RXL Type Two System 500 EFI	Mag Side Injector
FBO-22	Type One System Type Two System	Center of PTO Injector on Twin Cylinders
FBO-23	Type One System	PTO Injector

Dropping Resistor

The dropping resistor is mounted on the engine side of the battery box. The three cylinder system consists of four individual resistors wired in parallel with a common voltage feed (only three are used). The twin cylinder has two resistors wired parallel, also with a common voltage feed. They are used to drop or reduce the voltage going to the injectors to approximately 5 volts. Voltage from the battery travels through one of the resistors, through an injector and into the ECU. A failure of any injector or resistor will cause one cylinder to quit operating. The ECU will then flash the trouble code for that injector.

NOTE: The ECU can only determine electrical failure. If an injector failure code is flashing, the problem could be anywhere in the electrical circuit for that injector. The ECU will not find a plugged or leaky injector.

The dropping resistor may be tested with an ohmmeter between the white terminal and each of the black terminals at the resistor plug. The resistance is 6 ohms ± 10%. Replace the resistor if any of the readings are outside of the spec. Clean the terminals if they become corroded. The injector's operating power comes through these resistors. Any suspected injector electrical problem must first be traced through the dropping resistor.

ECU Diagnostics

If any of the main sensors should malfunction while the machine is being driven, the ECU will sense a problem and proceed to an over-rich "fail safe" mode. An open or shorted circuit in any of the sensor circuits will show the ECU a reading outside what it normally sees and the ECU will determine that a problem exists. Without this feature, certain kinds of failures could cause the mixture to be leaner than the required ratio and cause engine damage. This feature is important for engine protection. Once the sensor problem is determined and corrected, the ECU will return to the original map.

If any of the injectors or sensors should malfunction during operation, the ECU will record this information and start flashing a Light Emitting Diode (LED) code informing the mechanic/owner which component failed. The LED is on the right of the ECU, in front of the main plug. See ECU photo below.

If the problem still exists and is ongoing, the LED will continuously flash the code. If the problem occurred but the machine is now operating properly (intermittent), it will be stored in the memory and can be drawn out of the ECU by connecting the gray and black wires together at the diagnostic plug.

The LED will then begin blinking long followed by short light pulses; then a pause and the long and short pulses again. The long pulses are the first digit in the code and the short pulses are the second digit. Compare the code to the trouble code chart on page 4.31 to determine the problem. Remember that the problem can exist in the sensor, the power feed to the sensor, the sensor ground, connectors, or the part of the injector or sensor circuit inside the ECU.

Select Monitor Readings

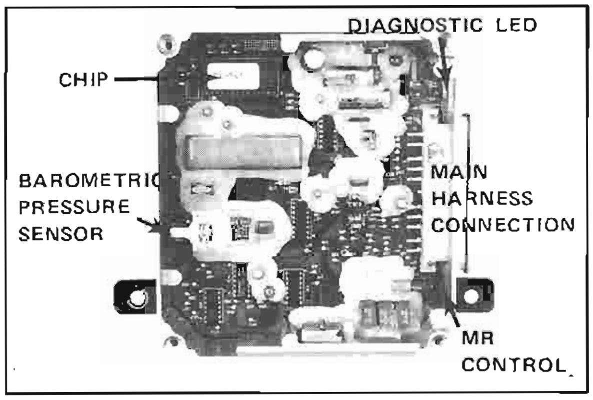
Mode FB0 is for existing problem diagnosis. Press buttons F, B, 0 and enter. If there is an existing problem, a code number and the abbreviation of the problem component will appear. See the chart on page 4.31 for an explanation of the code numbers. The LED will also display this code. For example, if the LED displays one long and two short pulses, this is a code 12.

Mode FB1 is for retrieving trouble codes from the ECU memory. If a problem happened sometime during the machine's operation, but everything is operating properly at the present time, the ECU memory will verify which component was at fault. This helps find intermittent problems such as a wiring open or short. Press the F, B, 1 and enter buttons. If the display shows one of the codes, check that component and its circuit. If nothing appears, there is nothing in memory.

NOTE: If the ECU power is disconnected at any time, this memory will be erased.

Mode FC0 is used for erasing problem codes which are stored in the ECU's memory. To erase the problem codes, certain steps must be followed in a particular order.

1. Select the mode for the component which indicated a failure.
2. Press F, C, 0, and enter on the monitor.
3. The display will ask "Memory clear? 0-yes and 1-no". By pressing 0 and enter the memory will be erased. Indication of the memory being cleared will be a display of "Please key off".



Mode	Description	Normal Reading
FB0	Existing Trouble Codes	Faults Presently Existing
FB1	Memory Trouble Codes	Faults Which Are Intermittent
FC0	Memory Clear	Used to Remove Stored Information

Monitor Code First Number = Long Dash— Second Number = Short Dash-	L.E.D. CODE	System		Abb.	Component
		Type One	Type Two		
—— –	11	X	X	THV	Throttle Position Sensor
—— – –	12	X		T Case	Crankcase Temperature Sensor
—— – – –	13	X	X	T Air	Intake Air Temperature Sensor
—— – – – –	14	X	X	ALT	Barometric Pressure Sensor
—— – – – –	14		X	TW	Water Temperature Sensor
—— – – – – –	15		X	ALT	Barometric Pressure Sensor
—— —— –	21	X	X	Inj 1	Mag Side Injector
—— —— – –	22	X	X	Inj 2	Center Injector or PTO on Twins
—— —— – – –	23	X		Inj 3	PTO Injector
—— —— —— –	31		X	VB	Low Battery Voltage
—— —— —— – –	32		X	VB	Low Charging System Output
—— —— —— – – –	33		X	CDI	CDI Output

The FA modes are for testing the input and output functions from the ignition switch and the relays.

Type I System

With the select monitor on mode FA0, the display should show KY. Whenever the ignition switch and the handlebar kill switch are in the run position, the number 3 LED should also light. Cycle the switches a few times and make sure the LED goes off when the switches are turned off and comes on when the switches are returned to the run position.

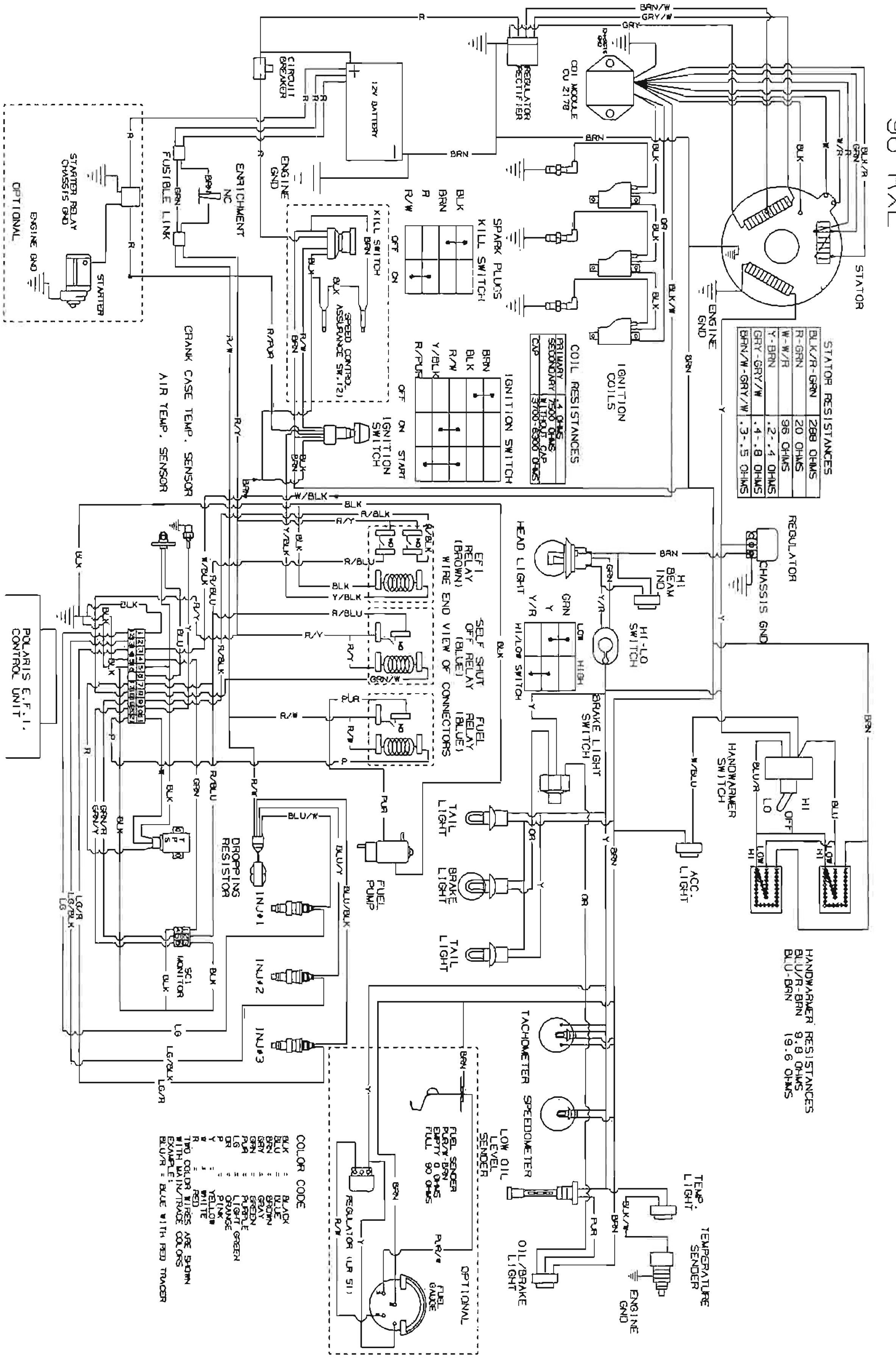
Advance the monitor to mode FA1. Connect the gray and black dealer mode wires together on the monitor's service harness. The monitor display should read DM (Dealer Mode), and the number 5 LED should be lit. During dealer mode operation, the fuel pump will cycle on and off in one second intervals and any stored problem code will flash on the ECU's LED.

Advance the monitor to mode FA2 and the letters FP (fuel pump), SD (self diagnostics) and SS (self shut-off) will appear on the display. When the EFI system is in the normal run mode, the number 1 LED will be lit when the fuel pump is required to run. This will be for five seconds when the key is initially turned on, and whenever the ECU senses engine ignition pulses. The number 3 LED will be lit when the key is turned on and will go out ten minutes after the switch is turned off. When the dealer mode wires are connected together at the service harness, the ignition key is cycled off and on, and the select monitor returns to mode FA2, the number 3 LED will not be lit. The number 2 LED will flash any problem codes which are in memory in the ECU and the number 1 LED will flash off and on in one second intervals.

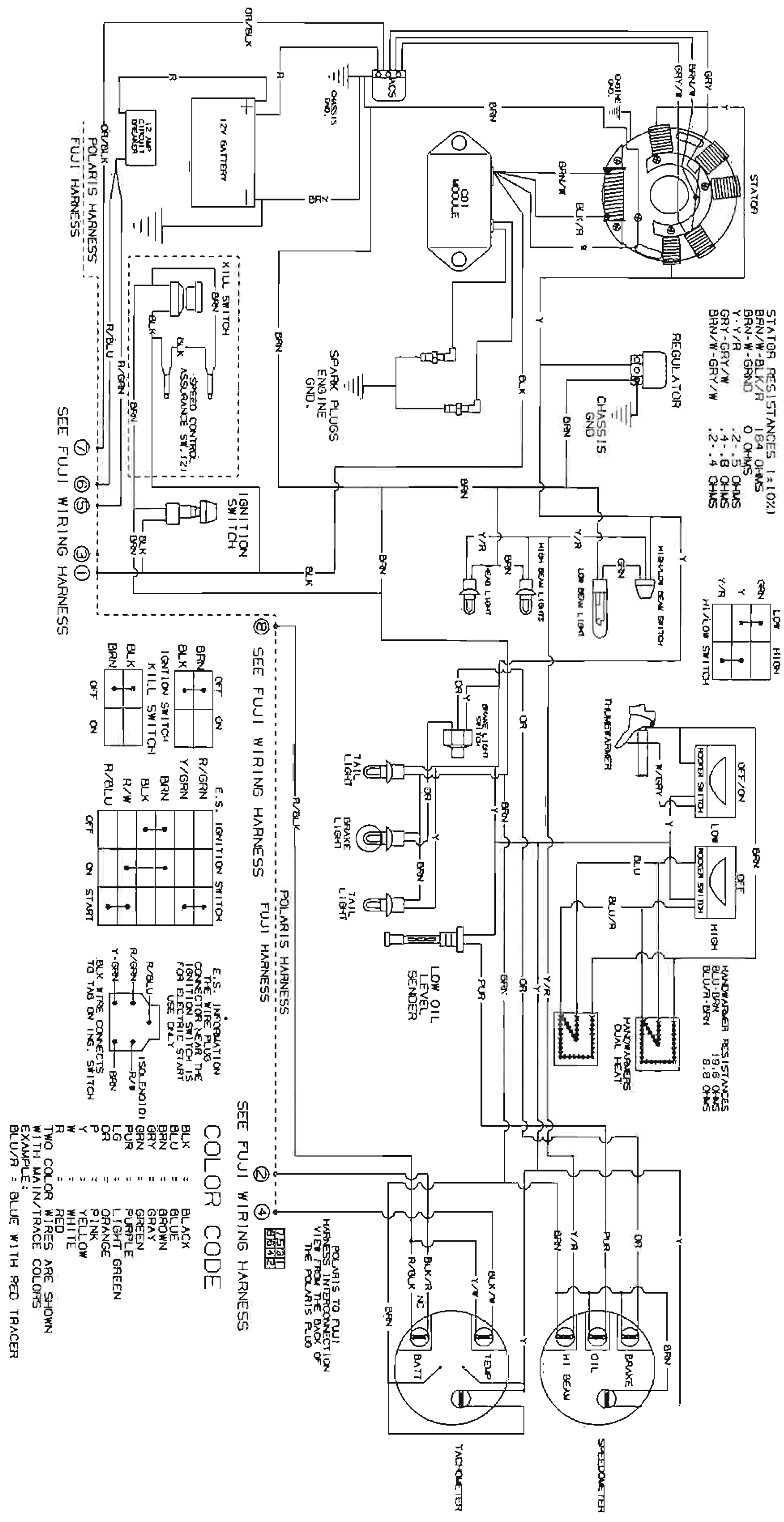
Type II System

With the select monitor on mode FA0, the monitor should show an ST and DM on the left, and a KY on the right of the display. The number 1 and 5 LEDs will light when the key is rotated to the start/reset position. The number 6 LED will light when the gray and black dealer mode wires are connected together on the service harness. The fuel pump relay will only cycle on and off for three one second runs each time the system is reset while in dealer mode.

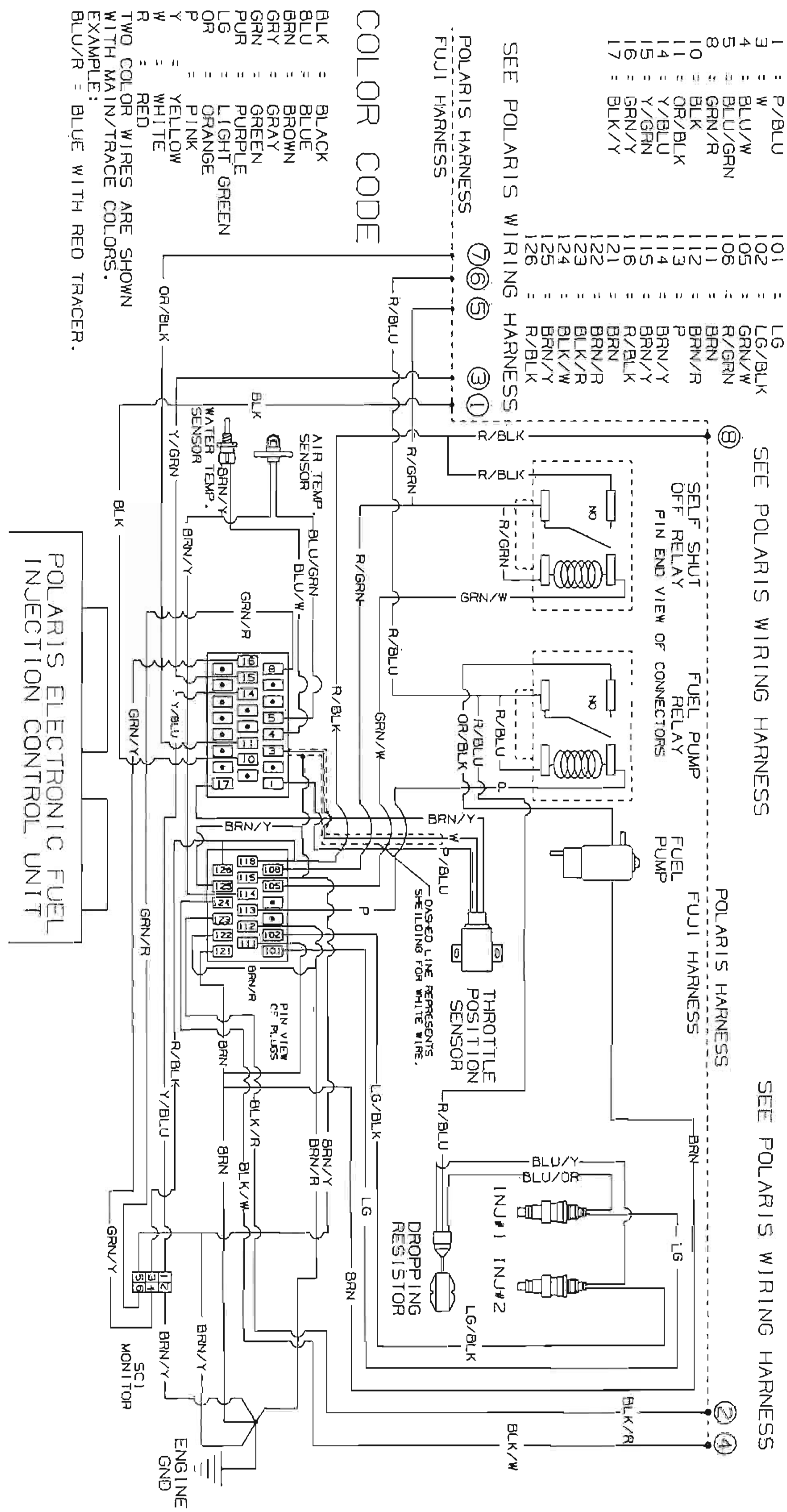
Due to the different operational method used in the Type Two system, there is not an FA1 or FA2.


96 RXL
STATOR
STATOR RESISTANCES
IGNITION COILS
COIL RESISTANCES
IGNITION SWITCH
IGNITION SWITCH
SPARK PLUGS
KILL SWITCH
REGULATOR
CHASSIS GND
HEAD LIGHT
HI-LO SWITCH
EFI RELAY (BROWN)
SELF SHUT OFF RELAY (BLUE)
FUEL RELAY (BLUE)
POLARIS E.F.I. CONTROL UNIT
FUEL PUMP
DROPPING RESISTOR
INJ#1
INJ#2
INJ#3
TAIL LIGHT
BRAKE LIGHT
BRAKE LIGHT SWITCH
HANDWARMER SWITCH
ACC. LIGHT
HANDWARMER RESISTANCES
TACHOMETER
SPEEDOMETER
TEMP. LIGHT
TEMPERATURE SENDER
ENGINE GND
OIL/BRAKE LIGHT
LOW OIL LEVEL SENDER
FUEL GAUGE
OPTIONAL
COLOR CODE
CRANK CASE TEMP. SENSOR
AIR TEMP. SENSOR
12V BATTERY
CIRCUIT BREAKER
REGULATOR RECTIFIER
CDI MODULE
FUSIBLE LINK
ENRICHMENT NC
STARTER
STARTER RELAY
OPTIONAL

1996 Wiring Diagram - 500 EFI /SKS / RMK (Page 1 of 2)



1996 Wiring Diagram - 500 EFI / SKS / RMK (Page 2 of 2)



CHAPTER 5
FUEL SYSTEM / CARBURETION

Whenever servicing the carburetor or fuel system, it is important to heed the following warnings.

⚠ WARNING

Gasoline is extremely flammable and explosive under certain conditions.

⚠ Always stop the engine and refuel outdoors or in a well ventilated area.

⚠ Do not smoke or allow open flames or sparks in or near the area where refueling is performed or where gasoline is stored or used.

⚠ Do not overfill the tank. Do not fill the tank neck.

⚠ If you get gasoline in your eyes or if you swallow gasoline, see your doctor immediately.

⚠ If you spill gasoline on your skin or clothing, immediately wash it off with soap and water and change clothing.

⚠ Never start the engine or let it run in an enclosed area. Gasoline powered engine exhaust fumes are poisonous and can cause loss of consciousness and death in a short time.

Jet Part Numbers

The following chart lists all Mikuni main and pilot jets and the part number of each that are presently available.

Mikuni

PILOT JET NO.	PART NO.
25	3130064
30	3130065
35	3130066
40	3130067
45	3130068

Mikuni

PILOT JET NO.	PART NO.
50	3130069
55	3130070
60	3130071
65	3130072

Keihin

PILOT JET	PART NO.
35	3050219-35
38	3050219-38
40	3050219-40
42	3050219-42
45	3050219-45
48	3050219-48

Keihin

PILOT JET	PART NO.
50	3050219-50
52	3050219-52
55	3050219-55
58	3050219-58
60	3050219-60
62	3050219-62
65	3050219-65

Mikuni
HEX HEAD

MAIN JET NO.	PART NO.
80	3130099
85	3130100
90	3130101
95	3130102
100	3130103
105	3130104
110	3130105
115	3130106
120	3130107
125	3130108
130	3130109
135	3130110
140	3130111
145	3130112
150	3130113
155	3130114
160	3130115
165	3130116
170	3130117
175	3130118
180	3130119
185	3130120
190	3130121
195	3130122
200	3130123
210	3130124
220	3130125
230	3130126
240	3130127

Mikuni
HEX HEAD

MAIN JET NO.	PART NO.
250	3130128
260	3130129
270	3130130
280	3130131
290	3130132
300	3130133
310	3130134
320	3130135
330	3130136
340	3130137
350	3130138
360	3130139
370	3130290
380	3130140
390	3130480
400	3130141
410	3130599
420	3130142
430	3130143
440	3130144
450	3130145
460	3130146
470	3130147
490	3130148
500	3130149
530	3130150
560	3130151
590	3130152
620	3130153

Keihin
Long Hex Head (Amal Type)

MAIN JET NO	PART NO.
140	3050235-140
142	3050235-142
145	3050235-145
148	3050235-148
150	3050235-150
152	3050235-152
155	3050235-155
158	3050235-158
160	3050235-160
162	3050235-162
165	3050235-165
168	3050235-168
170	3050235-170
172	3050235-172
176	3050235-176
178	3050235-178
180	3050235-180
182	3050235-182
185	3050235-185
188	3050235-188
190	3050235-190
192	3050235-192
195	3050235-195
198	3050235-198
200	3050235-200
205	3050235-205
210	3050235-210
215	3050235-215
220	3050235-220

Jet Needle Part Numbers (Mikuni)

JET NEEDLE NO.	PART NO.
5DP7	3130155
5DT49	3130154
5DP10	3130333
5DP10	3130310
5DT2	3130473
5D78	3130667
5F81	3130528
5D78	3130667
6CEY6	3130476
6CGY3	3130484
6CGY6	3130652
6DH3	3130470
6DH4	3130402
6DH5	3130391
6DH7	3130329
6DH8	3130645
6DH29	3130462
6DP1	3130156
6DP17	3130374
6EJ26	3130423
6EJ3	3130680
6F4	3130319
6F9	3130378

Jet Needle Part Numbers (Keihin)

JET NEEDLE NO.	PART NO.
R-1368G	3050244
R-1370G	3050220
R-1371G	3050256
R-1372J	3050247
R-1369G	3050245
R-1370J	3050221
R-1371J	3050246

Needle Jet Part Numbers (Mikuni)

NEEDLE JET NO	PART NO.
P-4 (159)	3130162
P-2 (166)	3130460
P-4 (166)	3130348
P-4 (166)	3130499
P-6 (166)	3130160
P-8 (166)	3130421
Q-2 (166)	3130376
O-4 (169)	3130166
O-4 (169)	3130409
O-6 (169)	3130358
O-6 (169)	3130469
O-8 (169)	3130453
O-8 (171)	3130035
P-0 (225)	3130579
P-2 (255)	3130608
P-2 (259)	3130161
P-0 (247)	3130671
P-2 (247)	3130672
P-4 (247)	3130641
P-6 (247)	3130655
P-8 (247)	3130382
Q-0 (247)	3130414
Q-2 (247)	3130165
Q-4 (247)	3130603
Q-8 (247)	3130485
R-0 (247)	3130477
P-0 (286)	3130607
P-2 (286)	3130608
O-4 (286)	3130635
O-6 (480)	3130429
O-8 (480)	3130683
P-2 (480)	3130675
P-4 (480)	3130639
Q-6 (480)	3130618
P–8 (513)	3130510

Throttle Valve Part Numbers (Keihin)

Throttle Valve No.	PART NO.
3.0	3050234-B02
4.0	3050234-C02
5.0	3050234-D02
5.5	3050234-J02
6.0	3050234-E02
6.5	3050234-K02
7.0	3050234-F02
7.5	3050234-L02
8.0	3050234-G02
9.0	3050234-H02

1996 Condensed Data

Machine Model	Engine Model	Cyl. Disp. CCs	Carburetor Model, Mount Type & No.	Std. Main Jet & Type	Std. Pilot Jet	Air Screw Adjust (counterclock-wise from light seat)	Fuel Octane Reqmt.
Indy Lite/GT/Deluxe	EC34-2PM(E)02	339	VM30SS (2) Zinc	145 Hex	35	1 1/2 Turn	87*
Indy Sport/Sport Touring/ TranSport	EC44-3PM01	432	VM34SS (2) Zinc	180 Hex	35	1 1/4 Turn	87*
Indy Super Sport	EC44-3PM02	432	VM34SS (2) Zinc	180 Hex	35	1 1/4 Turn	87*
Indy 440 LC	EC45PL06	432	VM34SS (2) Zinc	260 Hex	40	1 1/2 Turn	87*
Indy 440 XCR	EC45PL07	439	VM34SS (2) Aluminum	260 Hex	50	1 Turn	91
Indy 440 XCR SP	EC45PL08	439	VM34SS (2) Aluminum	260 Hex	50	1 Turn	91
Indy Trail/Touring	EC50PM(E)04	488	VM34SS (2) Zinc	220 Hex	35	1 Turn	87*
Indy Classic	EC50PLE11	488	VM38SS (2) Aluminum	340 Hex	40	1 Turn	87*
Indy Classic Touring	EC50PL14	488	VM34SS (2) Zinc	240 Hex	40	3/4 Turn	87*
Indy WideTrak GT	EC50PM03	488	VM34SS (2) Zinc	200 Hex	30	1 Turn	87*
Indy WideTrak LX	EC50PL12	488	VM34SS (2) Zinc	190 Hex	35	3/4 Turn	87*
Indy 500/SKS	EC50PL11	488	VM38SS (2) Aluminum	340 Hex	40	1 Turn	87*
Indy 500 RMK	EC50PL15	488	VM38SS (2) Aluminum	240 Hex	45	1 Turn	87*
Indy XLT/SKS	EC58PL03	597	VM34SS (3) Zinc	210 Hex	35	1 Turn	87*
Indy XLT Touring	EC58PLE05	597	VM34SS (3) Zinc	250 Hex	35	1 Turn	87*
Indy XLT RMK w/ACCS	EC58PL07	597	VM34SS (3) Zinc	190 Hex	35	N/A (see page 5.32)	87*
Indy XLT SP/600 XCR	EC58PL02	597	VM38AL (3) Aluminum	260 Hex	35	1 Turn	91
Indy 600 XCR SP	EC59PL01	598	VM38SS (3) Aluminum	400 Hex	40	1 1/2 Turn	91
Indy Ultra SP/SKS	EC68PL01	679	VM38AL (3) Aluminum	340 Hex	50	1 Turn	87*
Indy Ultra RMK	EC68PL04	679	VM38AL (3) Aluminum	280 Hex	50	1 Turn	87*
Indy Storm RMK	EC80PL04	794	VM38 (3) Aluminum	PTO Ctr Mag 330 330 350	45	1 Turn	91
Indy Storm/SKS	EC80PL05	794	VM38 (3) Aluminum	PTO Ctr Mag 400 400 420	45	1 Turn	91

* Non-Oxygenated. When using oxygenated fuel increase octane minimum to 89.

Engine Model	Jet Needle No. "E" Clip Position	Needle Jet No.	Throttle Valve Cutaway	Valve Seat	Idle RPM ± 200	Fuel/Oil Mixture
EC34-2PM02	5DP7-2	O-6 (169)	2.5 AL	1.5	1600	Variable Ratio Auto Injection
EC44-3PM01	6DH7-3	P-4 (166)	2.5 CH	1.5	1600	Variable Ratio Auto Injection
EC44-3PM02	6FJ6-3	P-8 (166)	2.0	1.5	1600	Variable Ratio Auto Injection
EC45PL02	6DH7-3	P-2 (480)	2.0	1.5	1600	Variable Ratio Auto Injection
EC45PL07	6DH3-2	O-4 (286)	2.0	1.5	1800	Variable Ratio Auto Injection
EC45PL08	6DH3-3	O-4 (286)	2.0	1.5	2000	Variable Ratio Auto Injection
EC50PLE11	6F9-3	P-8 (247)	2.5	1.5	1900	Variable Ratio Auto Injection
EC50PL14	6EJ26-2	P-4 (480)	3.0 CH	1.5	1600	Variable Ratio Auto Injection
EC50PME04	6DH7-3	P-8 (166)	3.0	1.5	1600	Variable Ratio Auto Injection
EC50PM03	6DH7-3	P-6 (166)	3.0 CH	1.5	1600	Variable Ratio Auto Injection
EC50PL12	6EJ26-2	P-6 (166)	3.0 CH	1.5	1600	Variable Ratio Auto Injection
EC50PL11	6F9-3	P-8 (247)	2.5 CH	1.5	1600	Variable Ratio Auto Injection
EC50PL15	6F9-2	P-4 (247)	2.0	1.5	1600	Variable Ratio Auto Injection
EC58PL03	6DP17-3	Q-2 (166)	2.0	1.5	1700	Variable Ratio Auto Injection
EC58PLE05	6DP17-3	Q-2 (166)	2.5	1.5	1700	Variable Ratio Auto Injection
EC58PL07	6DP17-3	Q-6 (480)	2.0	1.5	1700	Variable Ratio Auto Injection
EC58PL02	6DH7-3	Q-2 (247)	2.5 CH	1.5	2000	Variable Ratio Auto Injection
EC59PL01	6CEY6-3	R-0 (247)	2.5	1.5	2000	Variable Ratio Auto Injection
EC68PL01	6DH8-2	P-4 (247)	2.0	1.5	1800	Variable Ratio Auto Injection
EC68PL04	6DH8-2	P-4 (247)	1.5	1.5	1800	Variable Ratio Auto Injection
EC80PL04	6CGY6-3	P-6 (247)	3.0	1.5	1600	Variable Ratio Auto Injection
EC80PL05	6CGY6-3	Q-0 (247)	3.0	1.5	1600	Variable Ratio Auto Injection

1997 Condensed Data

Machine Model	Engine Model	Cyl. Disp. CCs	Carburetor Model, Mount Type & No.	Std. Main Jet & Type	Std. Pilot Jet	Air Screw Adjust (counterclock-wise from light seat)	Fuel Octane Reqmt.
Indy Lite/GT/Deluxe	EC34-2PM(E)02	339	VM30SS (2)Zinc	150 Hex	35	1 1/2 Turn	87*
Indy Sport/Sport Touring/ TranSport	EC44-3PM02	432	VM34SS (2)Zinc	185 Hex	35	1 Turn	87*
Indy XCF	EC44-3PM02	432	VM34SS (2)Zinc	185 Hex	35	1 Turn	87*
Indy Super Sport	EC50PM06	488	VM34SS (2)Zinc	250 Hex	45	1 Turn	87*
Indy Trail/Touring	EC50PM(E)04	488	VM34SS (2)Zinc	230 Hex	35	1 1/2 Turn	87*
Indy Trail RMK	EC50PM05	488	VM34SS (2)Zinc (ACCS)	270 Hex	45	1 Turn	87*
Indy 440 LC	EC45PL09	432	VM34SS (2)Zinc	270 Hex	40	3/4 Turn	87*
Indy 440 XC	EC45PL08	438	VM34SS (2) AL	240 Hex	50	3/4 Turn	87*
Indy 500/SKS/Classic	EC50PL17	488	VM38SS (2) AL	350 Hex	40	1 Turn	87*
Indy 500 RMK	EC50PL16	488	VM34SS (2)Zinc (ACCS)	250 Hex	40	3/4 Turn	87*
Indy Classic Touring	EC50PL19	488	VM34SS (2)Zinc	250 Hex	40	1 Turn	87*
Indy WideTrak GT	EC50PM03	488	VM34SS (2)Zinc	200 Hex	30	1 Turn	87*
Indy WideTrak LX	EC50PL20	488	VM34SS (2)Zinc	195 Hex	35	1/2 Turn	87*
Indy XLT/SKS	EC58PL03	597	VM34SS (3)Zinc	220 Hex	35	1 Turn	87*
Indy XLT RMK	EC58PL07	597	VM34SS (3)Zinc (ACCS)	240 Hex	50	3/4 Turn	87*
Indy XLT Touring/LTD	EC58PL(E)09	597	VM34CS (3)Zinc	260 Hex	35	1 Turn	87*
Indy XLT SP	EC58PL12	597	VM38AL (3) AL	270 Hex	35	1.5 Turn	87*
Indy XLT LTD SP	EC58PL12	597	VM38AL (3) AL	310 Hex	35	1 Turn	87*
Indy 600 XC	EC58PL08	597	VM38SS (3)Zinc	270 Hex	35	3/4 Turn	87*
Indy 600 XCR/SE	EC59PL01	598	VM38SS (3) AL	PTO Ctr Mag 360 380 380Hex	40	1/2 Turn	91
Indy Ultra/SP/Touring	EC68PL01	679	VM38AL (3) AL	340 Hex	40	1 Turn	87*
Indy Ultra SPX/SE	EC68PL03	679	VM38AL (3) AL	380 Hex	50	1 Turn	91
Indy 700 SKS	SN70LSDCSP-01	701	PWK 39-Keihin	185 Long Hex	40	1 Turn	87*
Indy 700 RMK	SN70LCDCSP-02	701	PWK 39-Keihin	158 Long Hex	55	1/2 Turn	87*
Indy Storm RMK	EC80PL04	794	VM38SS (3) AL	PTO Ctr Mag 300 290 310	55	1 Turn	91
Indy Storm/SE	EC80PL05	794	VM38SS (3) AL	PTO Ctr Mag 410 400 420	50	1 Turn	91

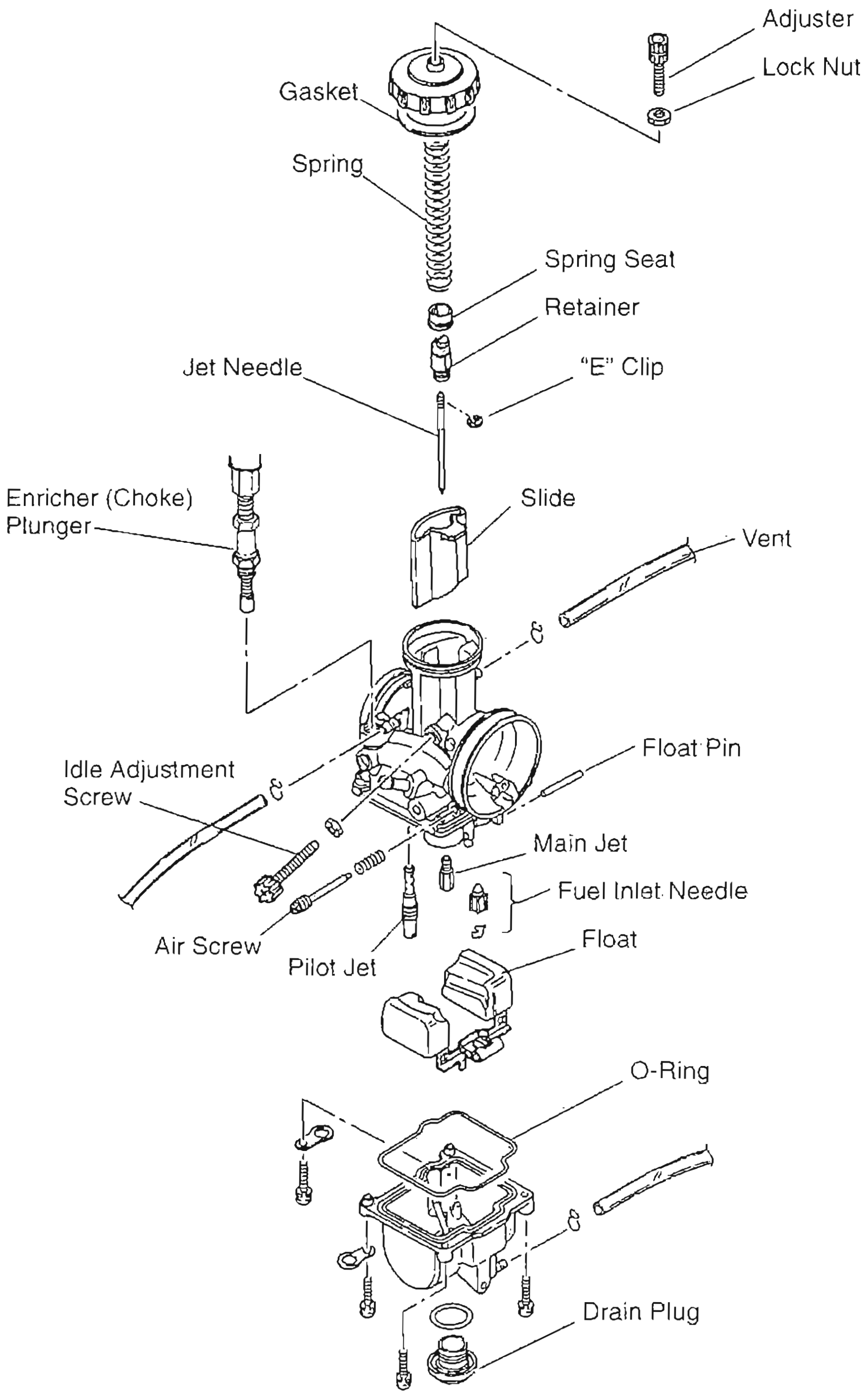
* Non-Oxygenated. When using oxygenated fuel increase octane minimum to 89.

Engine Model	Jet Needle No. "E" Clip Position	Needle Jet No.	Throttle Valve Cutaway
EC34-2PM02	5DP7-2	O-6 (169)	2.5
EC44-3PM02	6FJ6-3	P-8 (166)	2.0
EC45PL09	6DH7-2	P-2 (480)	2.0
EC45PL08	6DH3-3	O-4 (286)	1.5
EC50PM03	6DH7-3	P-6 (266)	3.0
EC50PM04	6DH7-3	P-8 (166)	3.0
EC50PM05	6DH7-2	P-2 (480)	2.0
EC50PM06	6DH7-3	O-8(480)	2.0
EC50PL16	6EJ26-3	P-2 (480)	2.5
EC50PL17	6F9-3	P-8 (247)	2.5
EC50PL19	6EJ26-3	P-2 (480)	3.0
EC50PL20	6EJ26-2	P-6 (166)	3.0
EC58PL03	6DP17-3	Q-2 (166)	2.0
EC58PL07	6EJ3-2	P-2 (480)	2.0
EC58PL08	6DH7-3	Q-2 (247)	2.0
EC58PL09	6DP17-3	Q-2 (166)	2.5
EC58PL12	6DH7-3	Q-2 (247)	2.0
EC59PL01	6CEY6-4	P-6 (247)	2.0
EC68PL01	6DH8-2	P-4 (247)	2.0
EC68PL03	6CEY6-4	Q-2 (247)	3.0
SN70LCDCSP-01	R1370G-3	Fixed	6.5
SN70LCDCSP-02	R1370J-3	Fixed	5.0
EC80PL04	6CGY6-3	P-6 (247)	2.5
EC80PL05	6CGY6-3	Q-0 (247)	3.0

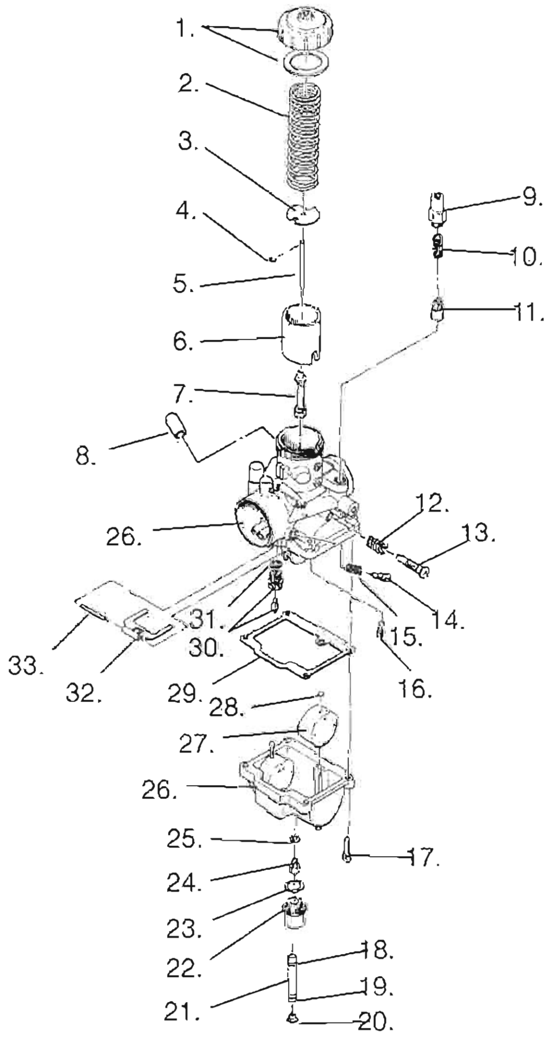
1998 Condensed Data -

Machine Model	Engine Model	Cyl. Disp. CCs	Carburetor Model, Mount Type & No.	Std. Main Jet & Type	Std. Pi-lot Jet	Air Screw (Turns Out)	Fuel Octane Reqmt.	Jet Needle & E Clip	Needle Jet #	Throt. Valve Cut-away
Indy Lite/ Lite Deluxe/ Lite Touring	EC34-2PM02A	339	VM30SS (2)Zinc	150 Hex	35	1 1/2	87*	5DP7 #2	0-6 (169)	2.5 AL
Indy Sport/ Sport Touring/ TranSport, XCF	EC44-3PM024	432	VM34SS (2)Zinc	185 Hex	35	1	87*	6FJ6 #3	P-8 (166)	2.0
Indy Super Sport	EC50PM061	488	VM34SS (2)Zinc	250 Hex	45	1	87*	6DH7 #3	0-8 (480)	2.0
Indy Trail/Touring	EC50PM043	488	VM34SS (2)Zinc	230 Hex	40	1	87*	6DH7 #3	P-8 (166)	3.0
Indy Trail RMK	EC50PM051	488	VM34 (2)Zinc (ACCS)	270 Hex	45	1	87*	6EJ3 #3	0-6 (480)	2.0
Indy 440 LC	EC45PL091	432	VM34SS (2)Zinc	270 Hex	40	3/4	87*	6DH7 #2	P-2 (480)	2.0
Indy 440 XCR	SN44-44LCDCSP-01	438	VM34SS	360 Hex	45	1 1/2	87*	6DH7 #3	P-4 (286)	2.0
Indy 500/ 500 Classic	EC50PL171	488	VM38SS (2) AL	350 Hex	45	3/4	87*	6F9 #3	P-6 (480)	2.5
Indy 500 RMK	EC50PL161	488	VM34SS (2)Zinc (ACCS)	260 Hex	55	1 1/4	87*	6FJ43 #2	P-0 (480)	2.5
Indy Classic Trng	EC50PL191	488	VM34SS (2)Zinc	250 Hex	40	3/4	87*	6EJ26 #3	P-2 (480)	3.0
Indy WideTrak LX	EC50PL201	488	VM34SS (2)Zinc	195 Hex	35	1/2	87*	6EJ26 #2	P-6 (166)	3.0
Indy XLT LTD/ XLT Touring	EC58PL130	597	VM34SS (3)Zinc	240 Hex	40	1	87*	6DP17 #3	Q-4 (480)	2.5
Indy XLT SP	EC58PL140	597	VM38SS (3)AL	330 Hex	35	1.5	87*	6DH7 #3	Q-0 (247)	2.0
Indy XLT Classic	EC58PL150	597	VM38SS (3)AL	340 Hex	35	1.5	87*	6DH7 #3	Q-0 (247)	2.0
Indy 600 XCR	EC59PL020	598	VM38SS (3) AL	PTO Ctr Mag 360 380 380 Hex	40	1/2	91	6CEY6 #4	P-6 (247)	2.0
Indy 600 XC	SN60-70LCDCSP -01	593	Keihin PWK 39 (2) AL	185 Hex	45	1	87*	R1368G #3	FIXED	6.5
Indy 600 RMK	SN60-70LCDCSP -02	600	Keihin PWK 39 (2) AL	160 Hex	45	1/2	87*	R1368G #2	FIXED	6.0
Indy Ultra/ Ultra Touring	EC68PL050	679	VM38 (3) AL	340 Hex	40	1	87*	6DH8 #2	P-4 (247)	2.0
Indy 700 XC	SN70-70LCDCSP -02	701	Keihin PWK 39 (2) AL	185	38	1	87*	R1369G #3	FIXED	6.0
Indy 700 XCR	EC68PL060	679	VM38 (3) AL	380	50	1	91	6CEY6 #4	Q-2 (247)	3.0
Indy 700 RMK	SN70-70LCDCSP -01	701	Keihin PWK 39 (2) AL	158	42	1	87*	R1371G #3	FIXED	5.5
Indy Storm	EC80PL052	794	VM38 (3) AL	PTO Ctr Mag 410 400 420	50	1	91	6CGY6 #3	Q-0 (247)	3.0CH

* Non-Oxygenated. When using oxygenated fuel increase octane minimum to 89.

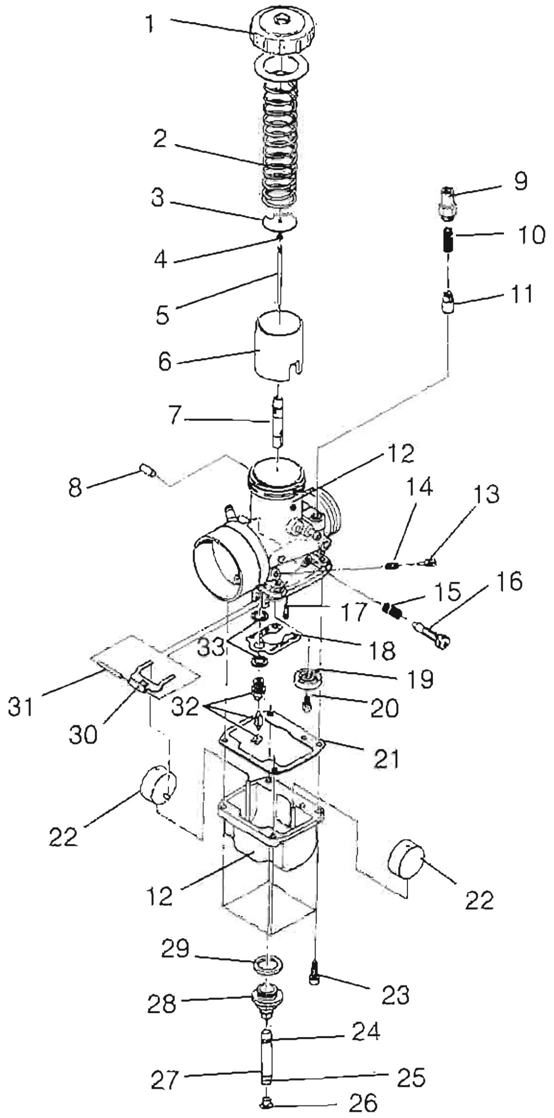

Adjuster
Lock Nut
Gasket
Spring
Spring Seat
Retainer
Jet Needle
"E" Clip
Enricher (Choke) Plunger
Slide
Vent
Idle Adjustment Screw
Float Pin
Main Jet
Fuel Inlet Needle
Air Screw
Pilot Jet
Float
O-Ring
Drain Plug

FUEL SYSTEM/CARBURETION
Exploded View - VM30SS



Ref.	Qty.	Description
1.	1	Asm., Mixing Chamber Top (Incl. Gasket)
2.	1	Spring, Throttle
3.	1	Plate, Throttle
4.	1	E-Ring
5.	1	Jet Needle
6.	1	Throttle Valve
7.	1	Needle Jet
8.	1	Cap
9.	1	Cap, Plunger
10.	1	Spring, Plunger
11.	1	Asm., Plunger
12.	1	Spring, Throttle Adjuster
13.	1	Screw, Throttle Stop
14.	1	Screw, Air
15.	1	Spring, Throttle Stop Screw
16.	1	Pilot Jet
17.	4	Asm., Screw and Washer

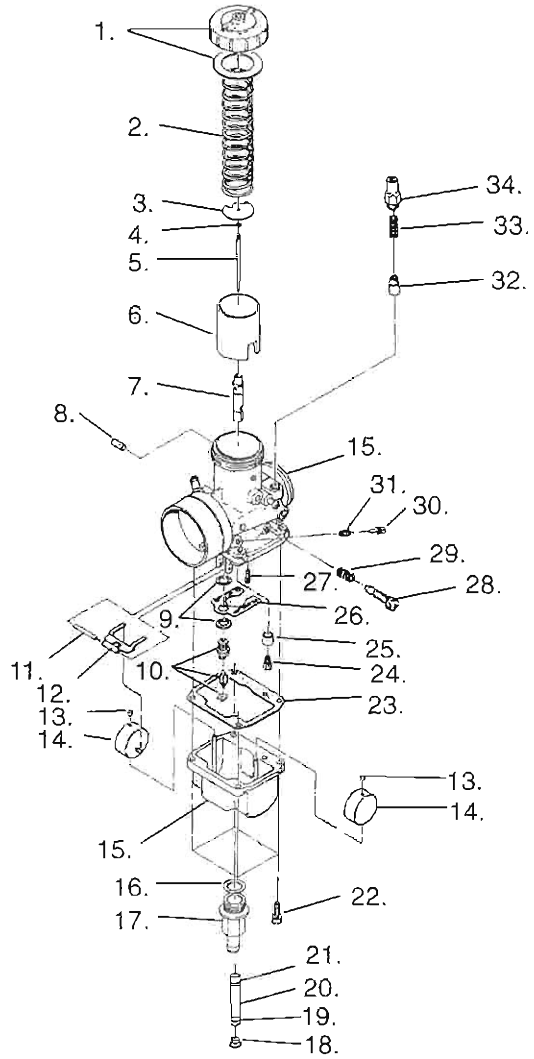
Ref.	Qty.	Description
18.	1	Clamp, Hose
19.	1	Clamp, Hose
20.	1	Plug, Trap
21.	1	Line, Fuel
22.	1	Nipple
23.	1	O-Ring
24.	1	Main Jet
25.	1	Washer
26.	2	Asm., Carburetor (Incl. 1.-17.,23.-33.)
27.	2	Asm., Float
28.	2	Cap
29.	1	Gasket, Float Chamber
30.	1	Needle & Seat
31.	1	Packing, Needle Valve
32.	1	Arm, Float
33.	1	Pin, Float



Ref.	Qty	Description
1.	1	Asm., Mixing Chamber Top (Incl. Gasket)
2.	1	Spring, Throttle
3.	1	Plate, Throttle
4.	1	E-Ring
5.	1	Jet Needle
6.	1	Throttle Valve
7.	1	Needle Jet
8.	1	Cap
9.	1	Guide, Holder
10.	1	Spring, Plunger
11.	1	Asm., Plunger
12.	2	Asm., Carburetor (Incl. 1.-17.,23.-31.)
13.	1	Screw, Air
14.	1	Spring, (Air Adjuster)
15.	1	Spring, Throttle Adjuster
16.	1	Screw, Throttle Stop

Ref.	Qty	Description
17.	1	Pilot Jet
18.	1	Plate
19.	1	Ring
20.	1	Main Jet
21.	1	Gasket, Float Chamber
22.	2	Asm., Float
23.	4	Asm., Screw and Washer
24.	1	Clamp, Hose
25.	1	Clamp, Hose
26.	1	Plug, Trap
27.	AR	Tube, Sediment
28.	1	Nipple
29.	1	O-Ring
30.	1	Arm, Float
31.	1	Pin, Float
32.	1	Asm., Fuel Inlet Needle Valve
33.	1	Packing, Needle Valve

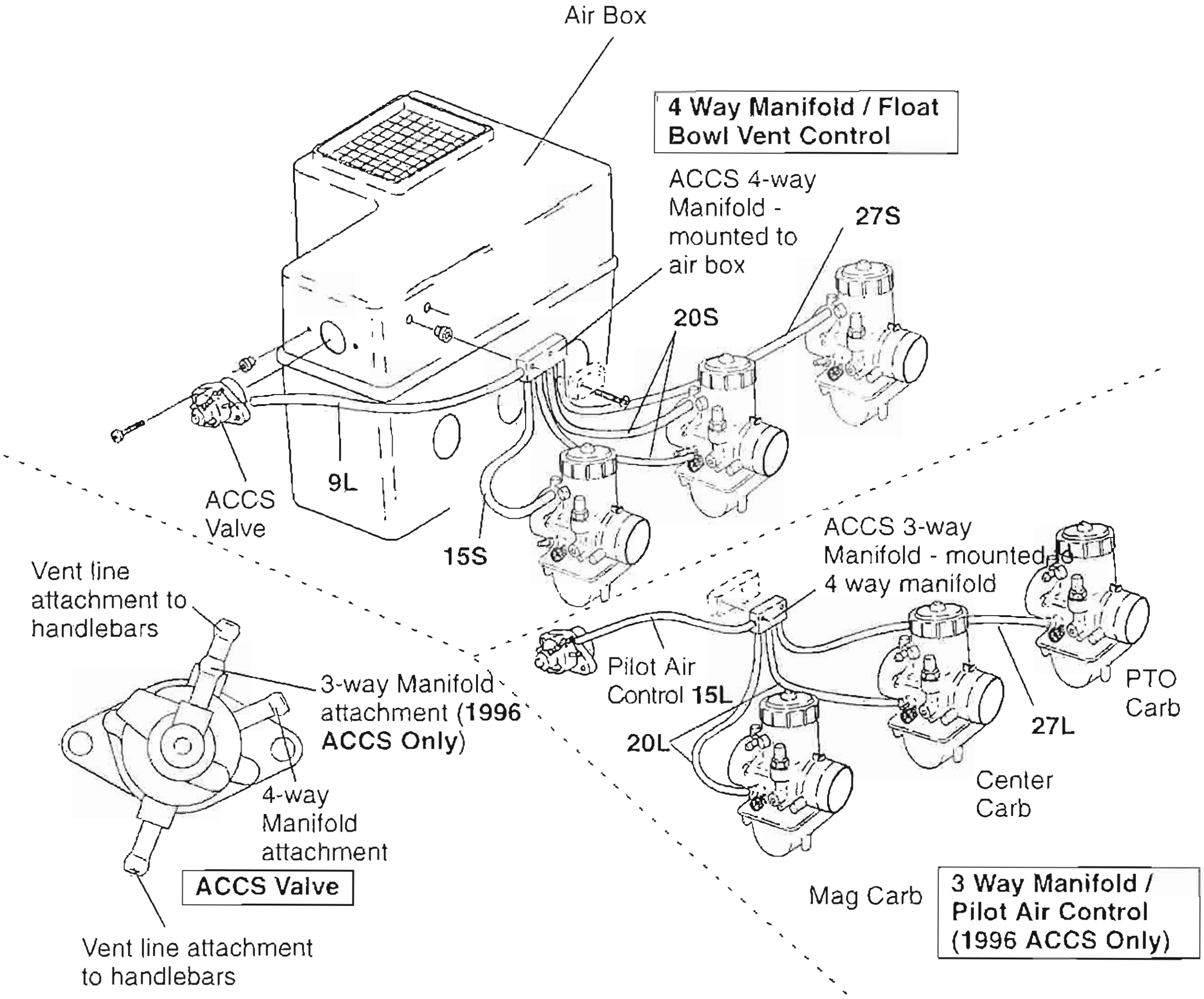
FUEL SYSTEM/CARBURETION
Exploded View - VM38SS



Ref.	Qty	Description
1.	1	Asm., Mixing Chamber, Top (Incl. Gasket)
2.	1	Spring
3.	1	Plate
4.	1	E-Ring
5.	1	Jet Needle (6F9-3)
6.	1	Throttle Valve (2.5)
7.	1	Needle Jet (P–8) (247)
8.	1	Cap
9.	2	Packing
10.	1	Asm., Needle Valve (1.5)
11.	1	Float Pin
12.	1	Float Arm
13.	2	Cap
14.	2	Asm., Float
15.	2	Asm., Carburetor (Incl. 1.-16.,22.-34.)
16.	1	O-Ring
17.	1	Nipple

Ref.	Qty	Description
18.	2	Plug, Trap
19.	2	Clamp, Hose
20.	AR	Line, Fuel
21.	2	Clamp, Hose
22.	4	Asm., Screw and Washer
23.	1	Gasket, Float Chamber
24.	1	Main Jet (#340)
25.	1	Ring
26.	1	Plate
27.	1	Pilot Jet (#40)
28.	1	Throttle Stop Screw
29.	1	Spring
30.	1	Air Screw
31.	1	Spring
32.	1	Asm., Plunger
33.	1	Plunger Spring
34.	1	Plunger Cap

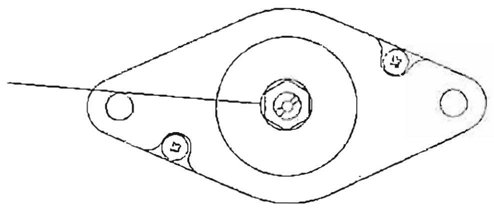
1996-Current ACCS Systems



EXAMPLE: 27L = 27cm Length, Large Diameter
27 = 27cm Length
S = Small Diameter
L = Large Diameter

NOTE: There is only one ACCS valve. The illustration above has been divided to show the separation of systems.

<u>**Do not change calibration setting or serious engine damage may result.**</u>



1996 Jetting Compensation Charts

Indy Lite
EC34-2PM02
Carburetor Type - VM30SS
Main Jet - 145 | Pilot Jet - 35
Cut Away - 2.5 AL | Air Screw - 1.5 Turn
Jet Needle - 5DP7-2 | Needle Jet - O-6 (169)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	155	*145	135	130
	900-1800 (3000-6000)	140	135	125	120
	1800-2700 (6000-9000)	130	120	115	110
	2700-3700 (9000-12000)	120	110	105	100

- Shaded zone should drop Jet Needle one position (raise E-clip)
* - Production Setting

Indy Lite GT
EC34-2PM02
Carburetor Type - VM30SS
Main Jet - 145 | Pilot Jet - 35
Cut Away - 2.5 AL | Air Screw - 1.5 Turn
Jet Needle - 5DP7-2 | Needle Jet - O-6 (169)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	155	*145	135	130
	900-1800 (3000-6000)	140	135	125	120
	1800-2700 (6000-9000)	130	120	115	110
	2700-3700 (9000-12000)	120	110	105	100

- Shaded zone should drop Jet Needle one position (raise E-clip)
* - Production Setting

Indy Lite Deluxe
EC34-2PME02
Carburetor Type - VM30SS
Main Jet - 145 | Pilot Jet - 35
Cut Away - 2.5 AL | Air Screw - 1.5 Turn
Jet Needle - 5DP7-2 | Needle Jet - O-6 (169)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	155	145	135	130
	900-1800 (3000-6000)	140	135	125	120
	1800-2700 (6000-9000)	125	120	115	110
	2700-3700 (9000-12000)	110	110	105	100

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy Sport
EC44-3PM01
Carburetor Type - VM34SS
Main Jet - 180 | Pilot Jet - 35
Cut Away - 2.5 CH | Air Screw - 1.25 Turn
Jet Needle - 6DH7-3 | Needle Jet - P-4 (166)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	190	180	170	160
	900-1800 (3000-6000)	180	165	155	145
	1800-2700 (6000-9000)	160	150	140	130
	2700-3700 (9000-12000)	145	140	130	120

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy Sport Touring
EC44-3PM01
Carburetor Type - VM34SS
Main Jet - 180 Pilot Jet - 35
Cut Away - 2.5 Air Screw - 1.25 Turn
Jet Needle - 6DH7-3 Needle Jet - P-4 (166)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	190	180	170	160
	900-1800 (3000-6000)	180	165	155	145
	1800-2700 (6000-9000)	160	150	140	130
	2700-3700 (9000-12000)	145	140	130	120

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy TranSport
EC44-3PM01
Carburetor Type - VM34SS
Main Jet - 180 Pilot Jet - 35
Cut Away - 2.5 Air Screw - 1.25 Turn
Jet Needle - 6DH7-3 Needle Jet - P-4 (166)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	190	*180	170	160
	900-1800 (3000-6000)	175	165	155	150
	1800-2700 (6000-9000)	160	150	140	135
	2700-3700 (9000-12000)	150	140	130	130

- Shaded zone should drop Jet Needle one position (raise E-clip)
* - Production Setting

Indy Super Sport
EC44-3PM02
Carburetor Type - VM34SS
Main Jet - 180 Pilot Jet - 35
Cut Away - 2.0 Air Screw - 1.25 Turn
Jet Needle - 6FJ6-3 Needle Jet - P-8 (166)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	190	180	170	160
	900-1800 (3000-6000)	180	165	155	145
	1800-2700 (6000-9000)	160	150	140	130
	2700-3700 (9000-12000)	145	140	130	120

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy Trail
EC50PM04
Carburetor Type - VM34SS
Main Jet - 220 Pilot Jet - 35
Cut Away - 3.0 Air Screw - 1.5 Turn
Jet Needle - 6DH7-3 Needle Jet - P-8 (166)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	230	220	210	200
	900-1800 (3000-6000)	210	200	190	180
	1800-2700 (6000-9000)	195	185	175	170
	2700-3700 (9000-12000)	180	170	170	170

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy Trail Touring
EC50PME04
Carburetor Type - VM34SS
Main Jet - 220 Pilot Jet - 35
Cut Away - 3.0 Air Screw - 1.5 Turn
Jet Needle - 6DH7-3 Needle Jet - P-8 (166)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	260	240	220	210
	900-1800 (3000-6000)	230	220	200	195
	1800-2700 (6000-9000)	210	200	190	180
	2700-3700 (9000-12000)	190	180	170	165

- Shaded zone should drop Jet Needle one position (raise E-clip)

1996 Jetting Compensation Charts

Indy 440 LC
EC45PL02
Carburetor Type - VM34SS
Main Jet - 260 Pilot Jet - 40
Cut Away - 2.0 Air Screw - 1.5 Turn
Jet Needle - 6DH7-2 Needle Jet - P-2 (480)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	280	260	240	230
	900-1800 (3000-6000)	250	240	230	220
	1800-2700 (6000-9000)	230	220	210	200
	2700-3700 (9000-12000)	210	200	190	180

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy Classic
EC50PLE11
Carburetor Type - VM38SS
Main Jet - 340 Pilot Jet - 40
Cut Away - 2.5 Air Screw - 1.0 Turn
Jet Needle - 6F9-3 Needle Jet - P-8 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	360	*340	320	300
	900-1800 (3000-6000)	320	300	280	260
	1800-2700 (6000-9000)	280	260	240	220
	2700-3700 (9000-12000)	240	230	210	200

- Shaded zone should drop Jet Needle one position (raise E-clip)
* - Production Setting

Indy Classic Touring
EC50PL14
Carburetor Type - VM34SS
Main Jet - 240 Pilot Jet - 40
Cut Away - 3.0 CH Air Screw - 3/4 Turn
Jet Needle - 6EJ26-2 Needle Jet - P-4 (480)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	250	*240	230	220
	900-1800 (3000-6000)	230	220	210	200
	1800-2700 (6000-9000)	210	200	190	180
	2700-3700 (9000-12000)	195	185	175	165

- Shaded zone should drop Jet Needle one position (raise E-clip)
* - Production Setting

Indy 500
EC50PL11
Carburetor Type - VM38SS
Main Jet - 340 Pilot Jet - 40
Cut Away - 2.5 CH Air Screw - 1 Turn
Jet Needle - 6F9-3 Needle Jet - P-8 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	360	*340	320	300
	900-1800 (3000-6000)	320	300	280	260
	1800-2700 (6000-9000)	280	260	240	220
	2700-3700 (9000-12000)	240	230	210	200

- Shaded zone should drop Jet Needle one position (raise E-clip)
* - Production Setting

Indy 500 SKS
EC50PL11
Carburetor Type - VM38SS
Main Jet - 340 Pilot Jet - 40
Cut Away - 2.5 CH Air Screw - 1 Turn
Jet Needle - 6F9-3 Needle Jet - P-8 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	360	*340	320	300
	900-1800 (3000-6000)	320	300	280	260
	1800-2700 (6000-9000)	280	260	240	220
	2700-3700 (9000-12000)	240	230	210	200

- Shaded zone should drop Jet Needle one position (raise E-clip)
* - Production Setting

Indy 500 RMK
EC50PL15
Carburetor Type - VM38SS
Main Jet - 240 Pilot Jet - 45
Cut Away - 2.0 Air Screw - 1 Turn
Jet Needle - 6F9-2 Needle Jet - P-4 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	360	340	320	300
	900-1800 (3000-6000)	320	300	280	260
	1800-2700 (6000-9000)	280	260	*240	220
	2700-3700 (9000-12000)	240	230	210	200

- Shaded zone should raise Jet Needle one position (lower E-clip to #3)
- Shaded zone should raise Jet Needle two positions (lower E-clip to #4)
* - Production Setting

Indy WideTrak GT
EC50PM03
Carburetor Type - VM34SS
Main Jet - 200 Pilot Jet - 30
Cut Away - 3.0 CH Air Screw - 1 Turn
Jet Needle - 6DH7-3 Needle Jet - P-6 (166)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	210	200	190	180
	900-1800 (3000-6000)	195	185	175	165
	1800-2700 (6000-9000)	180	170	160	150
	2700-3700 (9000-12000)	160	155	145	135

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy WideTrak LX
EC50PL12
Carburetor Type - VM34SS
Main Jet - 190 Pilot Jet - 35
Cut Away - 3.0 Air Screw - 3/4 turn
Jet Needle - 6EJ26-2 Needle Jet - P-6 (166)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	200	*190	180	170
	900-1800 (3000-6000)	185	175	165	155
	1800-2700 (6000-9000)	170	160	150	140
	2700-3700 (9000-12000)	150	145	135	130

- Shaded zone should drop Jet Needle one position (raise E-clip)
* - Production Setting

1996 Jetting Compensation Charts

Indy 440 XCR
EC45PL07
Carburetor Type - VM34SS
Main Jet - 260 Pilot Jet - 50
Cut Away - 2.0 Air Screw - 1 Turn
Jet Needle - 6DH3-3 Needle Jet - O-4 (286)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	270	*260	250	230
	900-1800 (3000-6000)	260	240	230	220
	1800-2700 (6000-9000)	230	220	210	195
	2700-3700 (9000-12000)	210	195	185	175

- Shaded zone should drop Jet Needle one position (raise E-clip)

* - Production Setting

Indy 440 XCR SP
EC45PL08
Carburetor Type - VM34
Main Jet - 260 Pilot Jet - 50
Cut Away - 2.0 Air Screw - 1 Turn
Jet Needle - 6DH3-3 Needle Jet - O-4 (286)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	280	260	250	230
	900-1800 (3000-6000)	260	250	230	220
	1800-2700 (6000-9000)	230	220	200	190
	2700-3700 (9000-12000)	200	195	180	170

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy 600 XCR
EC58PL02
Carburetor Type - VM38AL Slide
Main Jet - 260 Pilot Jet - 35
Cut Away - 2.5 Air Screw - 1.0 Turn
Jet Needle - 6DH7-3 Needle Jet - Q-2 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	270	260	240	230
	900-1800 (3000-6000)	250	240	220	210
	1800-2700 (6000-9000)	220	220	210	190
	2700-3700 (9000-12000)	200	200	190	180

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy 600 XCR SP
EC59PL01
Carburetor Type - VM38SS
Main Jet - 400 Pilot Jet - 40
Cut Away - 2.5 Air Screw - 1.5 Turn
Jet Needle - 6CEY6-3 Needle Jet - R-0 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	420	400	370	350
	900-1800 (3000-6000)	390	370	350	330
	1800-2700 (6000-9000)	350	330	310	300
	2700-3700 (9000-12000)	310	300	280	270

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy XLT
EC58PL03
Carburetor Type - VM34SS
Main Jet - 210 Pilot Jet - 35
Cut Away - 2.0 Air Screw - 1.0 Turn
Jet Needle - 6DP17-3 Needle Jet - Q-2

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	220	210	200	185
	900-1800 (3000-6000)	200	190	180	165
	1800-2700 (6000-9000)	175	170	160	145
	2700-3700 (9000-12000)	160	150	140	130

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy XLT SKS
EC58PL03
Carburetor Type - VM34SS
Main Jet - 210 Pilot Jet - 35
Cut Away - 2.0 Air Screw - 1.0 Turn
Jet Needle - 6DP17-3 Needle Jet - Q-2 (166)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	220	210	200	185
	900-1800 (3000-6000)	200	190	180	165
	1800-2700 (6000-9000)	175	170	160	145
	2700-3700 (9000-12000)	160	150	140	130

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy XLT RMK
EC58PL07
Carburetor Type - VM34SS
Main Jet - 190 Pilot Jet - 35
Pilot Air Jet 1 (PAJ1) - 1.0
Pilot Air Jet 2 (PAJ2) - 1.6
Cut Away - 2.0 Air Screw - N/A (ACCS)
Jet Needle - 6DP17-3 Needle Jet - Q-6 (480)

	AMBIENT TEMPERATURE			
	Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Main Jet	230	210	*190	180

* - Production Setting

Indy XLT SP
EC58PL02
Carburetor Type - VM38AL
Main Jet - 260 Pilot Jet - 35
Cut Away - 2.5 Air Screw - 1.0 Turn
Jet Needle - 6DH7-3 Needle Jet - Q-2 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	270	260	240	230
	900-1800 (3000-6000)	250	240	220	210
	1800-2700 (6000-9000)	220	220	210	190
	2700-3700 (9000-12000)	200	200	190	180

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy XLT Touring
EC58PLE05
Carburetor Type - VM34SS
Main Jet - 250 Pilot Jet - 35
Cut Away - 2.5 Air Screw - 1.0 Turn
Jet Needle - 6DP17-3 Needle Jet - Q-2 (166)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	270	*250	240	230
	900-1800 (3000-6000)	240	230	220	210
	1800-2700 (6000-9000)	220	210	200	190
	2700-3700 (9000-12000)	200	190	180	170

- Shaded zone should drop Jet Needle one position (raise E-clip)
* - Production Setting

1997 Jetting Compensation Charts

Indy TranSport
EC44-3PM02
Carburetor Type - VM34SS

Main Jet - 185	Pilot Jet - 35
Cut Away - 2.0	Air Screw - 1.0 Turn
Jet Needle - 6FJ6-3	Needle Jet - P-8 (166)

Alt. Met. (Ft)	AMBIENT TEMPERATURE: Below -20°F / Below -29°C	-20° to +10°F / -29° to -12°C	+10° to +40°F / -12° to +5°C	Above +40°F / Above 5°C
0-900 (0-3000)	195	185	175	165
900-1800 (3000-6000)	185	170	160	150
1800-2700 (6000-9000)	165	155	145	135
2700-3700 (9000-12000)	150	145	135*	125

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy Super Sport
EC50PM06
Carburetor Type - VM34SS

Main Jet - 250	Pilot Jet - 45
Cut Away - 2.0	Air Screw - 1 Turn
Jet Needle - 6DH7-3	Needle Jet - O-8 (480)

Alt. Met. (Ft)	AMBIENT TEMPERATURE: Below -20°F / Below -29°C	-20° to +10°F / -29° to -12°C	+10° to +40°F / -12° to +5°C	Above +40°F / Above 5°C
0-900 (0-3000)	260	250	240	230
900-1800 (3000-6000)	250	230	220	210
1800-2700 (6000-9000)	220	210	210	200
2700-3700 (9000-12000)	210	200	200	200

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy Trail
EC50PM04
Carburetor Type - VM34SS

Main Jet - 230	Pilot Jet - 35
Cut Away - 3.0	Air Screw - 1.5 Turn
Jet Needle - 6DH7-3	Needle Jet - P-8 (166)

Alt. Met. (Ft)	AMBIENT TEMPERATURE: Below -20°F / Below -29°C	-20° to +10°F / -29° to -12°C	+10° to +40°F / -12° to +5°C	Above +40°F / Above 5°C
0-900 (0-3000)	240	230	220	210
900-1800 (3000-6000)	220	210	200	190
1800-2700 (6000-9000)	200	195	185	180
2700-3700 (9000-12000)	190	180	180	180

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy Trail Touring
EC50PM04
Carburetor Type - VM34SS

Main Jet - 230	Pilot Jet - 35
Cut Away - 3.0	Air Screw - 1.5 Turn
Jet Needle - 6DH7-3	Needle Jet - P-8 (166)

Alt. Met. (Ft)	AMBIENT TEMPERATURE: Below -20°F / Below -29°C	-20° to +10°F / -29° to -12°C	+10° to +40°F / -12° to +5°C	Above +40°F / Above 5°C
0-900 (0-3000)	240	230	220	210
900-1800 (3000-6000)	220	210	200	190
1800-2700 (6000-9000)	200	195	185	180
2700-3700 (9000-12000)	190	180	180	180

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy Trail RMK
EC50PM05
Carburetor Type - VM34SS

Main Jet - 270	Pilot Jet - 45
Cut Away - 2.0	Air Screw - 1 Turn
Jet Needle - 6DH7-2	Needle Jet - P-2 (480)

Alt. Met. (Ft)	AMBIENT TEMPERATURE: Below -20°F / Below -29°C	-20° to +10°F / -29° to -12°C	+10° to +40°F / -12° to +5°C	Above +40°F / Above 5°C
0-900 (0-3000)	310 #4	290 #3	270 #3	250 #2
900-1800 (3000-6000)	310 #3	290 #3	270 #2	250 #2
1800-2700 (6000-9000)	310 #3	290 #2	270 #2*	250 #2
2700-3700 (9000-12000)	310 #2	290 #2	270 #2	250 #1

* - Production Setting

1996 Jetting Compensation Charts

Indy Ultra RMK

EC68PL04
Carburetor Type - VM38
Main Jet - 280 Pilot Jet - 50
Cut Away - 1.5 Air Screw - 1.0 Turn
Jet Needle - 6DH8-2 Needle Jet - P-4 (247)

Alt. Met. (Ft)	Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	350	340	320	300
WARNING: YOU MUST CHANGE CYLINDER HEAD TO RUN BELOW 6000 FEET (1800 METERS)!!				
900-1800 (3000-6000)	320	310	300	280
1800-2700 (6000-9000)	290	280	270	260
2700-3700 (9000-12000)	270	260	250	240

- Shaded zone change cylinder head

- Shaded zone production setting

No Jet Needle Changes are Recommended

Indy Ultra SKS

EC68PL01
Carburetor Type - VM38
Main Jet - 340 Pilot Jet - 50
Cut Away - 2.0 Air Screw - 1.0 Turn
Jet Needle - 6DH8-2 Needle Jet - P-4 (247)

Alt. Met. (Ft)	Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	350	340	320	300
900-1800 (3000-6000)	320	310	300	280
1800-2700 (6000-9000)	290	280	270	260
2700-3700 (9000-12000)	270	260	250	240

Indy Ultra SP

EC68PL01
Carburetor Type - VM38
Main Jet - 340 Pilot Jet - 50
Cut Away - 2.0 Air Screw - 1.0 Turn
Jet Needle - 6DH8-2 Needle Jet - P-4 (247)

Alt. Met. (Ft)	Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	350	340	320	300
900-1800 (3000-6000)	320	310	300	280
1800-2700 (6000-9000)	290	280	270	260
2700-3700 (9000-12000)	270	260	250	240

Indy Storm

EC80PL05
Carburetor Type - VM38SS
Main Jet - 400-400-420 Pilot Jet - 45
Cut Away - 3.0 Air Screw - 1.0 Turn
Jet Needle - 6CGY6-3 Needle Jet - Q-0 (247)

Alt. Met. (Ft)	Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	420 420 440	400 400 420	380 380 400	360 360 380
900-1800 (3000-6000)	390 390 410	370 370 390	360 350 370	330 330 350
1800-2700 (6000-9000)	360 360 380	340 340 360	320 320 340	300 300 320
2700-3700 (9000-12000)	320 320 340	300 300 320	280 280 300	260 260 280

- Shaded zone should drop Jet Needle one position (raise E-clip)

- Production Setting

PTO smallest - Mag biggest, PTO-Center-Mag left to right

Indy Storm SKS

EC80PL05

Carburetor Type - VM38SS

Main Jet - 400-400-420 Pilot Jet - 45

Cut Away - 3.0 Air Screw - 1.0 Turn

Jet Needle - 6CGY6-3 Needle Jet - Q-0 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	420 420 440	400 400 420	380 380 400	360 360 380
	900-1800 (3000-6000)	390 390 410	370 370 390	350 350 370	330 330 350
	1800-2700 (6000-9000)	360 360 380	340 340 360	320 320 340	300 300 320
	2700-3700 (9000-12000)	320 320 340	300 300 320	280 280 300	260 260 280

- Shaded zone should drop Jet Needle one position (raise E-clip)

- Production Setting

PTO smallest - Mag biggest, PTO-Center-Mag left to right

Indy Storm RMK

EC80PL04

Carburetor Type - VM38SS

Main Jet - 330-330-350 Pilot Jet - 50

Cut Away - 3.0 Air Screw - 1.0 Turn

Jet Needle - 6CGY6-3 Needle Jet - P-6 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	430 430 450	410 410 430	390 390 410	370 370 390
	900-1800 (3000-6000)	400 400 420	380 380 400	360 360 380	340 340 360
	BELOW 6000 FT (1800 M) INSTALL DOUBLE HEAD GASKET				
	1800-2700 (6000-9000)	370 370 390	350 350 370	330 330 350	310 310 330
	2700-3700 (9000-12000)	330 330 350	310 310 330	300 300 310	280 280 300

- Shaded zone should raise Jet Needle one position (lower E-clip to #4)

- Production Setting

- Shaded zone should drop Jet Needle one position (raise E-clip)

PTO smallest - Mag biggest, PTO-Center-Mag left to right

1997 Jetting Compensation Charts

Indy 440 LC
EC45PL09
Carburetor Type - VM34SS
Main Jet - 270 Pilot Jet - 40
Cut Away - 2.0 Air Screw - .75 Turn
Jet Needle - 6DH7-2 Needle Jet - P-2 (480)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	290	270	250	240
	900-1800 (3000-6000)	260	250	240	230
	1800-2700 (6000-9000)	240	230	220	210
	2700-3700 (9000-12000)	220	210	200	190

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy 500 Classic
EC50PL17
Carburetor Type - VM38SS
Main Jet - 350 Pilot Jet - 40
Cut Away - 2.5CH Air Screw - 1.0 Turn
Jet Needle - 6F9-3 Needle Jet - P-8 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	370	*350	330	310
	900-1800 (3000-6000)	330	310	290	270
	1800-2700 (6000-9000)	290	270	250	230
	2700-3700 (9000-12000)	250	240	220	210

- Shaded zone should drop Jet Needle one position (raise E-clip)
* - Production Setting

Indy Classic Touring
EC50PL19
Carburetor Type - VM34SS
Main Jet - 250 Pilot Jet - 40
Cut Away - 3.0 CH Air Screw - 1.0 Turn
Jet Needle - 6EJ26-3 Needle Jet - P-2 (480)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	260	*250	240	230
	900-1800 (3000-6000)	240	230	220	210
	1800-2700 (6000-9000)	220	210	195	185
	2700-3700 (9000-12000)	200	190	180	175

- Shaded zone should drop Jet Needle one position (raise E-clip)
* - Production Setting

Indy 500
EC50PL17
Carburetor Type - VM38SS
Main Jet - 350 Pilot Jet - 40
Cut Away - 2.5CH Air Screw - 1.0 Turn
Jet Needle - 6F9-3 Needle Jet - P-8 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	370	*350	330	310
	900-1800 (3000-6000)	330	310	290	270
	1800-2700 (6000-9000)	290	270	250	230
	2700-3700 (9000-12000)	250	240	220	210

- Shaded zone should drop Jet Needle one position (raise E-clip)
* - Production Setting

1997 Jetting Compensation Charts

Indy Lite

EC34-2PM02
Carburetor Type - VM30SS
Main Jet - 150 Pilot Jet - 35
Cut Away - 2.5 AL Air Screw - 1.5 Turn
Jet Needle - 5DP7-2 Needle Jet - O-6 (169)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	160	150	140	135
	900-1800 (3000-6000)	145	140	130	125
	1800-2700 (6000-9000)	130	125	120	115
	2700-3700 (9000-12000)	115	115	110	105

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy Lite GT

EC34-2PM02
Carburetor Type - VM30SS
Main Jet - 150 Pilot Jet - 35
Cut Away - 2.5 AL Air Screw - 1.5 Turn
Jet Needle - 5DP7-2 Needle Jet - O-6 (169)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	160	150	140	135
	900-1800 (3000-6000)	145	140	130	125
	1800-2700 (6000-9000)	130	125	120	115
	2700-3700 (9000-12000)	115	115	110	105

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy Lite Deluxe

EC34-2PM02
Carburetor Type - VM30SS
Main Jet - 150 Pilot Jet - 35
Cut Away - 2.5 AL Air Screw - 1.5 Turn
Jet Needle - 5DP7-2 Needle Jet - O-6 (169)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	160	150	140	135
	900-1800 (3000-6000)	145	140	130	125
	1800-2700 (6000-9000)	130	125	120	115
	2700-3700 (9000-12000)	115	115	110	105

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy Sport

EC44-3PM02
Carburetor Type - VM34SS
Main Jet - 185 Pilot Jet - 35
Cut Away - 2.0 Air Screw - 1 Turn
Jet Needle - 6FJ6-3 Needle Jet - P-8 (166)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	195	185	175	165
	900-1800 (3000-6000)	185	170	160	150
	1800-2700 (6000-9000)	165	155	145	135
	2700-3700 (9000-12000)	150	145	135	125

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy Sport Touring

EC44-3PM02
Carburetor Type - VM34SS
Main Jet - 185 Pilot Jet - 35
Cut Away - 2.0 Air Screw - 1.0 Turn
Jet Needle - 6FJ6-3 Needle Jet - P-8 (166)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	195	185	175	165
	900-1800 (3000-6000)	185	170	160	150
	1800-2700 (6000-9000)	165	155	145	135
	2700-3700 (9000-12000)	150	145	135	125

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy XCF
EC44-3PM02
Carburetor Type - VM34SS
Main Jet - 185 Pilot Jet - 35
Cut Away - 2.0 Air Screw - 1 Turn
Jet Needle - 6FJ6-3 Needle Jet - P-8 (166)

Alt. Met. (Ft)	AMBIENT TEMPERATURE: Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	195	185	175	165
900-1800 (3000-6000)	185	170	160	150
1800-2700 (6000-9000)	165	155	145	135
2700-3700 (9000-12000)	150	145	135	125

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy 500 SKS
EC50PL17
Carburetor Type - VM38SS
Main Jet - 350 Pilot Jet - 40
Cut Away - 2.5CH Air Screw - 1.0 Turn
Jet Needle - 6F9-3 Needle Jet - P-8 (247)

Alt. Met. (Ft)	AMBIENT TEMPERATURE: Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	370	*350	330	310
900-1800 (3000-6000)	330	310	290	270
1800-2700 (6000-9000)	290	270	250	230
2700-3700 (9000-12000)	250	240	220	210

- Shaded zone should drop Jet Needle one position (raise E-clip)
* - Production Setting

Indy 500 RMK
EC50PL16
Carburetor Type - VM34SS
Main Jet - 250 Pilot Jet - 40
Cut Away - 2.5CH Air Screw - .75 Turn
Jet Needle - 6EJ26-3 Needle Jet - P-2 (480)

Alt. Met. (Ft)	AMBIENT TEMPERATURE: Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	290 #4	270 #4	250 #4	240 #3
900-1800 (3000-6000)	290 #4	270 #4	250 #3	240 #3
1800-2700 (6000-9000)	290 #4	270 #3	*250 #3	240 #3
2700-3700 (9000-12000)	290 #3	270 #3	250 #3	240 #2

- Shaded zone should raise Jet Needle one position (lower E-clip to #3)
- Shaded zone should raise Jet Needle two positions (lower E-clip to #4)
* - Production Setting

Indy WideTrak GT
EC50PM03
Carburetor Type - VM34SS
Main Jet - 200 Pilot Jet - 30
Cut Away - 3.0 CH Air Screw - 1 Turn
Jet Needle - 6DH7-3 Needle Jet - P-6 (166)

Alt. Met. (Ft)	AMBIENT TEMPERATURE: Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	210	*200	190	180
900-1800 (3000-6000)	195	185	175	165
1800-2700 (6000-9000)	180	170	160	150
2700-3700 (9000-12000)	160	155	145	135

- Shaded zone should drop Jet Needle one position (raise E-clip)
* - Production Setting

1997 Jetting Compensation Charts

Indy WideTrak LX

EC50PL20
Carburetor Type - VM34SS

Main Jet - 195	Pilot Jet - 35
Cut Away - 3.0	Air Screw - 1/2 turn
Jet Needle - 6EJ26-2	Needle Jet - P-6 (166)

Alt. Met. (Ft)	AMBIENT TEMPERATURE Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	205	*195	185	175
900-1800 (3000-6000)	190	180	170	170
1800-2700 (6000-9000)	175	165	155	145
2700-3700 (9000-12000)	155	150	140	135

- Shaded zone should drop Jet Needle one position (raise E-clip)

* - Production Setting

Indy 440 XC

EC45PL08
Carburetor Type - VM34SS

Main Jet - 240	Pilot Jet - 50
Cut Away - 1.5	Air Screw - .75 Turn
Jet Needle - 6DH3-3	Needle Jet - O-4 (286)

Alt. Met. (Ft)	AMBIENT TEMPERATURE Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	250	240	230	220
900-1800 (3000-6000)	230	220	210	200
1800-2700 (6000-9000)	210	200	190	180
2700-3700 (9000-12000)	195	185	175	170

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy 600 XCR

EC59PL01
Carburetor Type - VM38SS

Main Jet - P-360/C-380/M-380	Pilot Jet - 40
Cut Away - 2.0	Air Screw - .5 Turn
Jet Needle - 6CEY6-4	Needle Jet - P-6 (247)

Alt. Met. (Ft)	AMBIENT TEMPERATURE Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	400	380	360	PTO Gen Mag Example- 320/340/340 340
900-1800 (3000-6000)	360	350	330	310
1800-2700 (6000-9000)	330	320	300	280
2700-3700 (9000-12000)	300	290	270	260

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy 600 XCR SE

EC59PL01
Carburetor Type - VM38SS

Main Jet - P-360/C-380/M-380	Pilot Jet - 40
Cut Away - 2.0	Air Screw - .5 Turn
Jet Needle - 6CEY6-4	Needle Jet - P-6 (247)

Alt. Met. (Ft)	AMBIENT TEMPERATURE Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	400	380	360	(PTO Gen Mag) Example- 320/340/340 340
900-1800 (3000-6000)	360	350	330	310
1800-2700 (6000-9000)	330	320	300	280
2700-3700 (9000-12000)	300	290	270	260

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy 600 XC
EC58PL08
Carburetor Type - VM38SS

Main Jet - 270	Pilot Jet - 35
Cut Away - 2.0CH	Air Screw - .75 Turn
Jet Needle - 6DH7-3	Needle Jet - Q-2 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	290	270	250	240
	900-1800 (3000-6000)	260	250	240	230
	1800-2700 (6000-9000)	240	230	220	210
	2700-3700 (9000-12000)	220	210	200	190

- Shaded zone should drop Jet Needle one position (raise E-clip).

Indy XLT
EC58PL03
Carburetor Type - VM34SS

Main Jet - 220	Pilot Jet - 35
Cut Away - 2.0	Air Screw - 1.0 Turn
Jet Needle - 6DP17-3	Needle Jet - Q-2 (166)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	230	220	210	200
	900-1800 (3000-6000)	210	200	190	180
	1800-2700 (6000-9000)	195	185	175	170
	2700-3700 (9000-12000)	180	170	170	170

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy XLT SKS
EC58PL03
Carburetor Type - VM34SS

Main Jet - 220	Pilot Jet - 35
Cut Away - 2.0	Air Screw - 1.0 Turn
Jet Needle - 6DP17-3	Needle Jet - Q-2 (166)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	230	220	210	200
	900-1800 (3000-6000)	210	200	190	180
	1800-2700 (6000-9000)	195	185	175	170
	2700-3700 (9000-12000)	180	170	170	170

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy XLT RMK
EC58PL07
Carburetor Type - VM34SS (ACCS)

Main Jet - 240	Pilot Jet - 50
Cut Away - 2.0	Air Screw - .75
Jet Needle - 6EJ3-2	Needle Jet - P-2 (480)

		AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	280 #3	260 #2	240 #2	230 #2
	900-1800 (3000-6000)	280 #2	260 #2	240 #2	230 #2
	1800-2700 (6000-9000)	280 #2	260 #2	*240 #2	230 #2
	2700-3700 (9000-12000)	280 #2	260 #2	240 #2	230 #1

* - Production Setting

1997 Jetting Compensation Charts

Indy XLT SP
EC58PL12
Carburetor Type - VM38ALSS
Main Jet - 270 Pilot Jet - 35
Cut Away - 2.0 Air Screw - 1.5 Turn
Jet Needle - 6DH7-3 Needle Jet - Q-2 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	290	270	250	240
	900-1800 (3000-6000)	270	250	240	230
	1800-2700 (6000-9000)	240	230	220	210
	2700-3700 (9000-12000)	220	210	200	190

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy XLT Touring
EC58PL09
Carburetor Type - VM34CS
Main Jet - 260 Pilot Jet - 35
Cut Away - 2.5 Air Screw - 1.0 Turn
Jet Needle - 6DP17-3 Needle Jet - Q-2 (166)
Inlet Needle Seat - 1.5

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	280	260*	240	230
	900-1800 (3000-6000)	250	240	230	220
	1800-2700 (6000-9000)	230	220	210	190
	2700-3700 (9000-12000)	210	200	190	180

- Shaded zone should drop Jet Needle one position (raise E-clip)
* - Production Setting

Indy XLT LTD
EC58PL09
Carburetor Type - VM34CS
Main Jet - 260 Pilot Jet - 35
Cut Away - 2.5 Air Screw - 1.0 Turn
Jet Needle - 6DP17-3 Needle Jet - Q-2 (166)
Inlet Needle Seat - 1.5

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	280	260*	240	230
	900-1800 (3000-6000)	250	240	230	220
	1800-2700 (6000-9000)	230	220	210	190
	2700-3700 (9000-12000)	210	200	190	180

- Shaded zone should drop Jet Needle one position (raise E-clip)
* - Production Setting

Indy XLT LTD SP
EC58PL12
Carburetor Type - VM38ALSS
Main Jet - 310 Pilot Jet - 35
Cut Away - 2.0 Air Screw - 1 Turn
Jet Needle - 6DH7-3 Needle Jet - Q-2 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	330	310	290	270
	900-1800 (3000-6000)	310	290	270	260
	1800-2700 (6000-9000)	280	270	250	240
	2700-3700 (9000-12000)	260	240	230	220

- Shaded zone should drop Jet Needle one position (raise E-clip)

Indy Ultra

EC68PL01

Carburetor Type - VM38

Main Jet - 340	Pilot Jet - 40
Cut Away - 2.0	Air Screw - 1.0 Turn
Jet Needle - 6DH8-2	Needle Jet - P-4 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	350	340	320	300
	900-1800 (3000-6000)	320	310	300	280
	1800-2700 (6000-9000)	290	280	270	260
	2700-3700 (9000-12000)	270	260	250	240

Indy Ultra SP

EC68PL01

Carburetor Type - VM38

Main Jet - 340	Pilot Jet - 40
Cut Away - 2.0	Air Screw - 1.0 Turn
Jet Needle - 6DH8-2	Needle Jet - P-4 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	350	340	320	300
	900-1800 (3000-6000)	320	310	300	280
	1800-2700 (6000-9000)	290	280	270	260
	2700-3700 (9000-12000)	270	260	250	240

Indy Ultra Touring

EC68PL01

Carburetor Type - VM38

Main Jet - 340	Pilot Jet - 40
Cut Away - 2.0	Air Screw - 1.0 Turn
Jet Needle - 6DH8-2	Needle Jet - P-4 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	350	340	320	300
	900-1800 (3000-6000)	320	310	300	280
	1800-2700 (6000-9000)	290	280	270	260
	2700-3700 (9000-12000)	270	260	250	240

Indy Ultra SPX

EC68PL03

Carburetor Type - VM38

Main Jet - 380	Pilot Jet - 50
Cut Away - 3.0	Air Screw - 1.0
Jet Needle - 6CEY6-4	Needle Jet - Q-2 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	400 #4	*380 #4	360 #3	340 #3
	900-1800 (3000-6000)	370 #4	350 #3	330 #3	310 #2
	1800-2700 (6000-9000)	340 #3	320 #3	300 #2	280 #2
	2700-3700 (9000-12000)	310 #3	290 #2	270 #2	250 #1

* - Production Setting

Indy Ultra SPX SE

EC68PL03

Carburetor Type - VM38

Main Jet - 380	Pilot Jet - 50
Cut Away - 3.0	Air Screw - 1.0
Jet Needle - 6CEY6-4	Needle Jet - Q-2 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	400 #4	*380 #4	360 #3	340 #3
	900-1800 (3000-6000)	370 #4	350 #3	330 #3	310 #2
	1800-2700 (6000-9000)	340 #3	320 #3	300 #2	280 #2
	2700-3700 (9000-12000)	310 #3	290 #2	270 #2	250 #1

* - Production Setting

1997 Jetting Compensation Charts

Indy 700 SKS

SN70LCDCSP-01
Carburetor Type - Keihin PWK 39
Main Jet - 185 Long Hex   Pilot Jet - 40
Cut Away - 6.5   Air Screw - 1 Turn
Jet Needle - R1370G–3   Needle Jet - Fixed

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	190	*185	178	172
	900-1800 (3000-6000)	178	175	168	162
	1800-2700 (6000-9000)	158	165	158	155
	2700-3700 (9000-12000)	158	155	150	145

- Above 6000ft use JN R1370J-3, 5.0 CA, 55 pilot, and 1/2 turn air screw

- Lower Jet Needle 1 position (raise E-clip) and install RMK components listed above

* - Production Setting

Indy 700 RMK

SN70LCDCSP-02
Carburetor Type - Keihin PWK 39
Main Jet - 158 Long Hex   Pilot Jet - 55
Cut Away - 5.0   Air Screw - 1/2 Turn
Jet Needle - R1370J–3   Needle Jet -Fixed

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	190	185	178	172
	900-1800 (3000-6000)	178	175	168	162
	1800-2700 (6000-9000)	168	165	*158	155
	2700-3700 (9000-12000)	158	155	150	145

- Lower Jet Needle 1 position (raise E-clip)

- Below 6000ft use JN R1370G-3, 6.5 CA, 40 pilot, and 1 turn air screw

* - Production Setting

Indy 700 XC

SN70LCDCSP-01
Carburetor Type - Keihin PWK 39
Main Jet - 185 Long Hex   Pilot Jet - 40
Cut Away - 6.5   Air Screw - 1 Turn
Jet Needle - R1370G–4   Needle Jet -Fixed

		AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	190 #4	*185 #4	178 #4	172 #3
	900-1800 (3000-6000)	178 #4	175 #4	168 #3	162 #3
	1800-2700 (6000-9000)	168 #4	165 #3	158 #3	155 #3
	2700-3700 (9000-12000)	158 #3	155 #3	150 #3	145 #3

* - Production Setting

Indy Storm

EC80PL05
Carburetor Type - VM38SS
Main Jet - 410-400-420   Pilot Jet - 50
Cut Away - 3.0   Air Screw - 1.0 Turn
Jet Needle - 6CGY6-3   Needle Jet - Q-0 (247)

		AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
#3	0-900 (0-3000)	430/420/440 #3	*410/400/420 #3	390/380/400 #3	370/360/380 #3
Alt. Met. (Ft)	900-1800 (3000-6000)	380/370/390 #3	360/350/370 #3	340/330/350 #3	320/310/330 #2
	1800-2700 (6000-9000)	340/330/350 #3	320/310/330 #3	300/290/310 #2	290/280/300 #2
	2700-3700 (9000-12000)	290/280/300 #3	270/260/280 #2	250/240/260 #2	240/230/250 #2

* - Production Setting
Mag biggest, PTO-Center-Mag left to right

Indy Storm SE

EC80PL05
Carburetor Type - VM38SS
Main Jet - 410-400-420   Pilot Jet - 50
Cut Away - 3.0   Air Screw - 1.0 Turn
Jet Needle - 6CGY6-3   Needle Jet - Q-0 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
#3	0-900 (0-3000)	430/420/440 #3	*410/400/420 #3	390/380/400 #3	370/360/380 #3
Alt. Met. (Ft)	900-1800 (3000-6000)	380/370/390 #3	360/350/370 #3	340/330/350 #3	320/310/330 #2
	1800-2700 (6000-9000)	340/330/350 #3	320/310/330 #3	300/290/310 #2	290/280/300 #2
	2700-3700 (9000-12000)	290/280/300 #3	270/260/280 #2	250/240/260 #2	240/230/250 #2

Indy Storm RMK

EC80PL04
Carburetor Type - VM38SS
Main Jet - 300-290-310   Pilot Jet - 55
Cut Away - 2.5   Air Screw - 1.0 Turn
Jet Needle - 6CGY6-3   Needle Jet - P-6 (247)

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
#3	0-900 (0-3000)	430/420/440 #4	410/400/420 #4	390/380/400 #4	370/360/380 #4
Alt. Met. (Ft)	900-1800 (3000-6000)	380/370/390 #4	360/350/370 #4	340/330/350 #4	320/310/330 #3
	1800-2700 (6000-9000)	340/330/350 #4	320/310/330 #4	*300/290/310 #3	290/280/300 #3
	2700-3700 (9000-12000)	290/280/300 #4	270/260/280 #3	250/240/260 #3	240/230/250 #2

* - Production Setting
Mag biggest, PTO-Center-Mag left to right

Indy 440 XCR

SN44LCDCSP-01
Carburetor Type - VM34SS
Main Jet - 360   Pilot Jet - 40
Cut Away - 2.0   Air Screw - 1/2 Turn
Jet Needle - 6DH7-4   Needle Jet - P-4 (286 or 159)

		AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
		Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
Alt. Met. (Ft)	0-900 (0-3000)	380 #4	*360 #4	340 #3	320 #3
	900-1800 (3000-6000)	340 #4	320 #3	300 #3	280 #3
	1800-2700 (6000-9000)	300 #3	290 #3	270 #3	250 #3
	2700-3700 (9000-12000)	270 #3	250 #3	240 #3	220 #3

* - Production Setting

1998 Jetting Compensation Charts

Lite
Lite Deluxe
Lite Touring

EC34-2PM02
VM30SS

Main Jet - 150
Pilot Jet - 35
Cut Away - 2.5 AL
Air Screw - 1.5 Turn
Jet Needle - 5DP7-2
Needle Jet - O-6 (169)

Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
	Below -20°F -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	160 #2	*150 #2	140 #2	135 #2
900-1800 (3000-6000)	145 #2	140 #2	130 #2	125 #1
1800-2700 (6000-9000)	130 #2	125 #2	120 #1	115 #1
2700-3700 (9000-12000)	115 #2	115 #1	110 #1	105 #1

Sport
Sport Touring
TranSport
XCF

EC44-3PM024
VM34SS

Main Jet - 185
Pilot Jet - 35
Cut Away - 2.0
Air Screw - 1 Turn
Jet Needle - 6FJ6-3
Needle Jet - P-8 (166)

Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
	Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	195 #3	*185 #3	175 #3	165 #2
900-1800 (3000-6000)	185 #3	170 #3	160 #2	150 #2
1800-2700 (6000-9000)	165 #3	155 #2	145 #2	135 #2
2700-3700 (9000-12000)	150 #2	145 #2	135 #2	125 #2

Super Sport
EC50PM061
VM34SS

Main Jet - 250
Pilot Jet - 45
Cut Away - 2.0
Air Screw - 1 Turn
Jet Needle - 6DH7-3
Needle Jet - O-8 (480)

Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
	Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	260 #3	*250 #3	240 #3	230 #3
900-1800 (3000-6000)	250 #3	230 #3	220 #3	210 #2
1800-2700 (6000-9000)	220 #3	210 #3	210 #2	200 #2
2700-3700 (9000-12000)	210 #3	200 #2	200 #2	200 #2

Trail
Trail Touring

EC50PM043
VM34SS

Main Jet - 230
Pilot Jet - 40
Cut Away - 3.0
Air Screw - 1.0 Turn
Jet Needle - 6DH7-3
Needle Jet - P-8 (166)

Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
	Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	240 #3	*230 #3	220 #3	210 #3
900-1800 (3000-6000)	220 #3	210 #3	200 #3	190 #2
1800-2700 (6000-9000)	200 #3	195 #3	185 #2	180 #2
2700-3700 (9000-12000)	190 #3	180 #2	180 #2	180 #2

Trail RMK
EC50PM051
VM34 (ACCS)

Main Jet - 270
Pilot Jet - 45
Cut Away - 2.0
Air Screw - 1 Turn
Jet Needle - 6EJ3-3
Needle Jet - O-6 (480)

Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	310 #3	290 #3	270 #3	250 #3
900-1800 (3000-6000)	310 #3	290 #3	270 #3	250 #3
1800-2700 (6000-9000)	310 #3	290 #3	'270 #3'	250 #3
2700-3700 (9000-12000)	310 #3	290 #3	270 #3	250 #3

440 LC
EC45PL091
VM34SS

Main Jet - 270
Pilot Jet - 40
Cut Away - 2.0
Air Screw - .75 Turn
Jet Needle - 6DH7-2
Needle Jet - P-2 (480)

Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	290 #2	'270 #2	250 #2	240 #2
900-1800 (3000-6000)	260 #2	250 #2	240 #2	230 #3
1800-2700 (6000-9000)	240 #2	230 #2	220 #3	210 #3
2700-3700 (9000-12000)	220 #2	210 #3	200 #3	190 #3

1998 440 XCR
SN44-44LCDCSP-01
VM34SS

MainJet-360 Hex
Pilot Jet - 45
Cut Away - 2.0
Air Screw - 1.5 Turns
Jet Needle - 6DH7-3
Needle Jet- P-4 (286)

Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	380 #3	360 #3	340 #3	320 #3
900-1800 (3000-6000)	340 #3	320 #3	300 #3	280 #3
1800-2700 (6000-9000)	300 #3	290 #3	270 #3	250 #3
2700-3700 (9000-12000)	270 #3	250 #3	240 #3	220 #3

500
500 Classic
EC50PL171
VM38SS

Main Jet - 350
Pilot Jet - 45
Cut Away - 2.5
Air Screw - .75 Turn
Jet Needle - 6F9-3
Needle Jet - P-6 (480)

Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	370 #3	350 #3	330 #3	310 #3
900-1800 (3000-6000)	330 #3	310 #3	290 #3	270 #2
1800-2700 (6000-9000)	290 #3	270 #3	250 #2	230 #2
2700-3700 (9000-12000)	250 #3	240 #2	220 #2	210 #2

500 RMK
EC50PL161
VM34SS (ACCS)

Main Jet - 260
Pilot Jet - 55
Cut Away - 2.5
Air Screw - 1.25 Turn
Jet Needle - 6FJ43-2
Needle Jet - P-0 (480)

Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	290 #4	270 #3	260 #3	240 #3
900-1800 (3000-6000)	290 #4	270 #3	260 #3	240 #2
1800-2700 (6000-9000)	290 #3	270 #3	'260 #2	240 #2
2700-3700 (9000-12000)	290 #3	270 #2	260 #2	240 #2

1998 Jetting Compensation Charts

Classic Touring
EC50PL191
VM34SS

Main Jet - 250
Pilot Jet - 40
Cut Away - 3.0 CH
Air Screw - 3/4 Turn
Jet Needle - 6EJ26-3
Needle Jet - P-2 (480)

Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
	Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	260 #3	*250 #3	240 #3	230 #3
900-1800 (3000-6000)	240 #3	230 #3	220 #3	210 #2
1800-2700 (6000-9000)	220 #3	210 #3	195 #2	185 #2
2700-3700 (9000-12000)	200 #3	190 #2	180 #2	175 #2

WideTrak LX
EC50PL201
VM34SS

Main Jet - 195
Pilot Jet - 35
Cut Away - 3.0
Air Screw - 1/2 turn
Jet Needle - 6EJ26-2
Needle Jet - P-6 (166)

Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
	Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	210 #2	*195 #2	185 #2	175 #2
900-1800 (3000-6000)	190 #2	180 #2	170 #2	170 #1
1800-2700 (6000-9000)	175 #2	165 #2	155 #1	145 #1
2700-3700 (9000-12000)	155 #2	150 #1	140 #1	135 #1

XLT LTD
XLT Touring
EC58PL130
VM34SS

Main Jet - 240
Pilot Jet - 40
Cut Away - 2.5
Air Screw - 1.0 Turn
Jet Needle - 6DP17-3
Needle Jet - Q-4 (480)

Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
	Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	250 #3	*240 #3	220 #3	210 #3
900-1800 (3000-6000)	230 #3	220 #3	210 #2	195 #2
1800-2700 (6000-9000)	210 #3	200 #2	190 #2	180 #2
2700-3700 (9000-12000)	190 #3	180 #2	175 #2	165 #2

XLT SP
EC58PL140
Type - VM38SS

Main Jet - 330
Pilot Jet - 35
Cut Away - 2.0
Air Screw - 1.5 Turn
Jet Needle - 6DH7-3
Needle Jet - Q-0 (247)

Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
	Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	350 #3	*330 #3	310 #3	300 #3
900-1800 (3000-6000)	320 #3	300 #3	280 #3	270 #2
1800-2700 (6000-9000)	290 #3	270 #3	250 #2	240 #2
2700-3700 (9000-12000)	270 #3	250 #2	230 #2	220 #2

XLT Classic
EC58PL150
VM38SS

Main Jet - 340
Pilot Jet - 35
Cut Away - 2.0
Air Screw - 1.5 Turn
Jet Needle - 6DH7-3
Needle Jet - Q-0 (247)

Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
	Below -20°F Below -29°C	-20° to +10°F -29° to -12°C	+10° to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	360 #3	*340 #3	320 #3	310 #3
900-1800 (3000-6000)	330 #3	310 #3	290 #3	280 #2
1800-2700 (6000-9000)	300 #3	280 #3	260 #2	250 #2
2700-3700 (9000-12000)	280 #3	260 #2	240 #2	230 #2

600 XCR EC59PL020 VM38SS MainJet- Pto/Cen/Mag 360/380/380 Pilot Jet - 40 Cut Away - 2.0 Air Screw - .5 Turn Jet Needle - 6CEY6-4 Needle Jet - P-6 (247)	Alt. Met.(Ft)	AMBIENT TEMPERATURE (PTO/CENTER/MAG) # Indicates E-clip Location from top of Jet Needle			
		Below -20°F Below -29°C	-20° to +10°F -29°to -12°C	+10°to +40°F -12° to +5°C	Above +40°F Above 5°C
	0-900 (0-3000)	380/400/400 #4	*360/380/380 #4	340/360/360 #4	320/340/340 #3
	900-1800 (3000-6000)	340/360/360 #4	330/350/350 #4	310/330/330 #3	290/310/310 #3
	1800-2700 (6000-9000)	310/330/330 #4	300/320/320 #3	280/300/300 #3	260/280/280 #3
	2700-3700 (9000-12000)	280/300/300 #3	270/290/290 #3	260/270/270 #3	240/260/260 #3

600 XC SN60-701CDCSP-01 Keihin - PWK 39 Main Jet-185 Long Hex Pilot Jet - 45 Cut Away - 6.5 Air Screw - 1 Turn Jet Needle- R1368G-3 Needle Jet - 2.9mm Fixed	Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
		Below -20°F Below -29°C	-20° to +10°F -29°to -12°C	+10°to +40°F -12° to +5°C	Above +40°F Above 5°C
	0-900 (0-3000)	188 #3	*185 #3	178 #3	172 #3
	900-1800 (3000-6000)	178 #3	175 #3	168 #3	162 #3
	1800-2700 (6000-9000)	168 #3	165 #3	160 #2	155 #2
	2700-3700 (9000-12000)	158 #3	155 #2	150 #2	145 #2

600 RMK SN60-70LCDCSP-02 Type-Keihin PWK 39 Main Jet - 160 Pilot Jet - 45 Cut Away - 6.0 Air Screw - .5 Jet Needle R1368G-2 Needle Jet - 2.9mm Fixed	Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
		Below -20°F Below -29°C	-20° to +10°F -29°to -12°C	+10°to +40°F -12° to +5°C	Above +40°F Above 5°C
	0-900 (0-3000)	188 #3	185 #3	178 #3	172 #3
	900-1800 (3000-6000)	178 #2	175 #2	168 #2	162 #2
	1800-2700 (6000-9000)	168 #2	165 #2	*160 #2	155 #1
	2700-3700 (9000-12000)	158 #2	155 #2	150 #1	145 #1

- Shaded zone turn Air Screw to 1 turn

Ultra Ultra Touring EC68PL050 VM38 Main Jet - 340 Pilot Jet - 40 Cut Away - 2.0 Air Screw - 1.0 Turn Jet Needle - 6DH8-2 Needle Jet - P-4 (247)	Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
		Below -20°F Below -29°C	-20° to +10°F -29°to -12°C	+10°to +40°F -12° to +5°C	Above +40°F Above 5°C
	0-900 (0-3000)	350 #2	*340 #2	320 #2	300 #2
	900-1800 (3000-6000)	320 #2	310 #2	300 #2	280 #2
	1800-2700 (6000-9000)	290 #2	280 #2	270 #2	260 #2
	2700-3700 (9000-12000)	270 #2	260 #2	250 #2	240 #2

1998 Jetting Compensation Charts

700 XC
SN70-70LCDCSP-02
Keihin PWK 39

MainJet-185 Long Hex
Pilot Jet - 38
Cut Away - 6.0
Air Screw - 1 Turn
Jet Needle - R1368G-3
Needle Jet- 2.9mm Fixed

Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
	Below -20°F Below -29°C	-20° to +10°F -29°to -12°C	+10°to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	190 #3	*185 #3	178 #3	172 #3
900-1800 (3000-6000)	178 #3	175 #3	168 #3	162 #3
1800-2700 (6000-9000)	170 #3	165 #3	158 #2	155 #2
2700-3700 (9000-12000)	158 #3	155 #2	150 #2	145 #2

700 XCR
EC68PL060
VM38

Main Jet - 380
Pilot Jet - 50
Cut Away - 3.0
Air Screw - 1.0 Turn
Jet Needle - 6CEY6-4
Needle Jet - Q-2 (247)

Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
	Below -20°F Below -29°C	-20° to +10°F -29°to -12°C	+10°to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	400 #4	*380 #4	360 #3	340 #3
900-1800 (3000-6000)	370 #4	350 #3	330 #3	310 #2
1800-2700 (6000-9000)	340 #3	320 #3	300 #2	280 #2
2700-3700 (9000-12000)	310 #3	290 #2	270 #2	250 #1

700 RMK
SN70-70LCDCSP-01
Keihin PWK 39

MainJet-158 Long Hex
Pilot Jet - 42
Cut Away - 5.5
Air Screw - 1 Turn
Jet Needle - R1371G-3
Needle Jet- 2.9mm Fixed

Alt. Met.(Ft)	AMBIENT TEMPERATURE # Indicates E-clip Location from top of Jet Needle			
	Below -20°F Below -29°C	-20° to +10°F -29°to -12°C	+10°to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	190 #3	185 #3	175 #3	172 #3
900-1800 (3000-6000)	178 #3	175 #3	165 #3	162 #3
1800-2700 (6000-9000)	168 #3	162 #3	158* #3	152 #2
2700-3700 (9000-12000)	158 #3	155 #3	148 #2	145 #2

- Shaded zone should turn Air Screw to 1/4 turn.

Storm

EC80PL052
VM38
PTO - CEN - MAG
MainJet-410-400-420
Pilot Jet - 50
Cut Away - 3.0 CH
Air Screw - 1.0 Turn
Jet Needle - 6CGY6-3
Needle Jet - Q-0 (247)

Alt. Met.(Ft)	AMBIENT TEMPERATURE (PTO/CENTER/MAG) # Indicates E-clip Location from top of Jet Needle			
	Below -20°F Below -29°C	-20° to +10°F -29°to -12°C	+10°to +40°F -12° to +5°C	Above +40°F Above 5°C
0-900 (0-3000)	430/420/440 #3	410/400/420 *#3	390/380/400 #3	370/360/380 #3
900-1800 (3000-6000)	380/370/390 #3	360/350/370 #3	340/330/350 #3	320/310/330 #2
1800-2700 (6000-9000)	340/330/350 #3	320/310/330 #3	300/290/310 #2	290/280/300 #2
2700-3700 (9000-12000)	290/280/300 #3	270/260/280 #2	250/240/260 #2	240/230/250 #2

Main jets listed left to right - PTO-Center-Mag

Gasoline Volatility

Whenever servicing the carburetor or fuel system, it is important to heed the following warnings.

⚠ WARNING

Gasoline is extremely flammable and explosive under certain conditions.

⚠ Always stop the engine and refuel outdoors or in a well ventilated area.

⚠ Do not smoke or allow open flames or sparks in or near the area where refueling is performed or where gasoline is stored or used.

⚠ Do not overfill the tank. Do not fill the tank neck.

⚠ If you get gasoline in your eyes or if you swallow gasoline, see your doctor immediately.

⚠ If you spill gasoline on your skin or clothing, immediately wash it off with soap and water and change clothing.

⚠ Never start the engine or let it run in an enclosed area. Gasoline powered engine exhaust fumes are poisonous and can cause loss of consciousness and death in a short time.

Explanation of Gasoline Volatility

In order for an engine to start easily and run properly, gasoline must be able to burn without causing detonation, vapor lock, flooding, or icing of fuel lines, fuel pumps, or carburetors. One of the sometimes misunderstood properties of gasoline is its volatility, or ability to vaporize at different ambient temperatures and altitudes during the year.

When gasoline is blended, it is given a Reid Vapor Pressure (RVP) number which reflects its ability to vaporize or mix with air at a given temperature range. Gasoline vapor pressure is measured by putting a sample of fuel inside a closed container and applying a specified amount of heat to the container for a certain amount of time. This pressure will vary from about 7.0 PSI during the summer to approximately 13.5 PSI during the colder months. Service stations selling a large volume of fuel will normally have the correct blend to work well at all times throughout the year.

When the weather is very cold, gasoline must be able to atomize very quickly in order for an engine to start and warm up properly. If summer blend fuel, which has a low Reid Vapor number, is being used, little or no vaporization will occur. Droplets will form causing flooding and very hard starting.

If winter blend fuel is being used during the summer months, it may cause vapor lock (boiling fuel) inside the fuel lines, fuel pump, or carburetor. This will cause warm engine driveability problems and hard starting when warm. Some states are limiting the Reid Vapor number to 9.0 PSI year around to help meet evaporative emissions standards.

Warm Weather ↑ — Low Vaporization Rate ↑

Maximum Reid Vapor		Ambient Air Temp. Range	
Class	Pressure	Low	High
A	7.0 PSI	60° F	110° F +
B	9.0 PSI	50° F	110° F
C	10.5 PSI	40° F	97° F
D	12.0 PSI	30° F	85° F
E	13.5 PSI	20° F	69° F

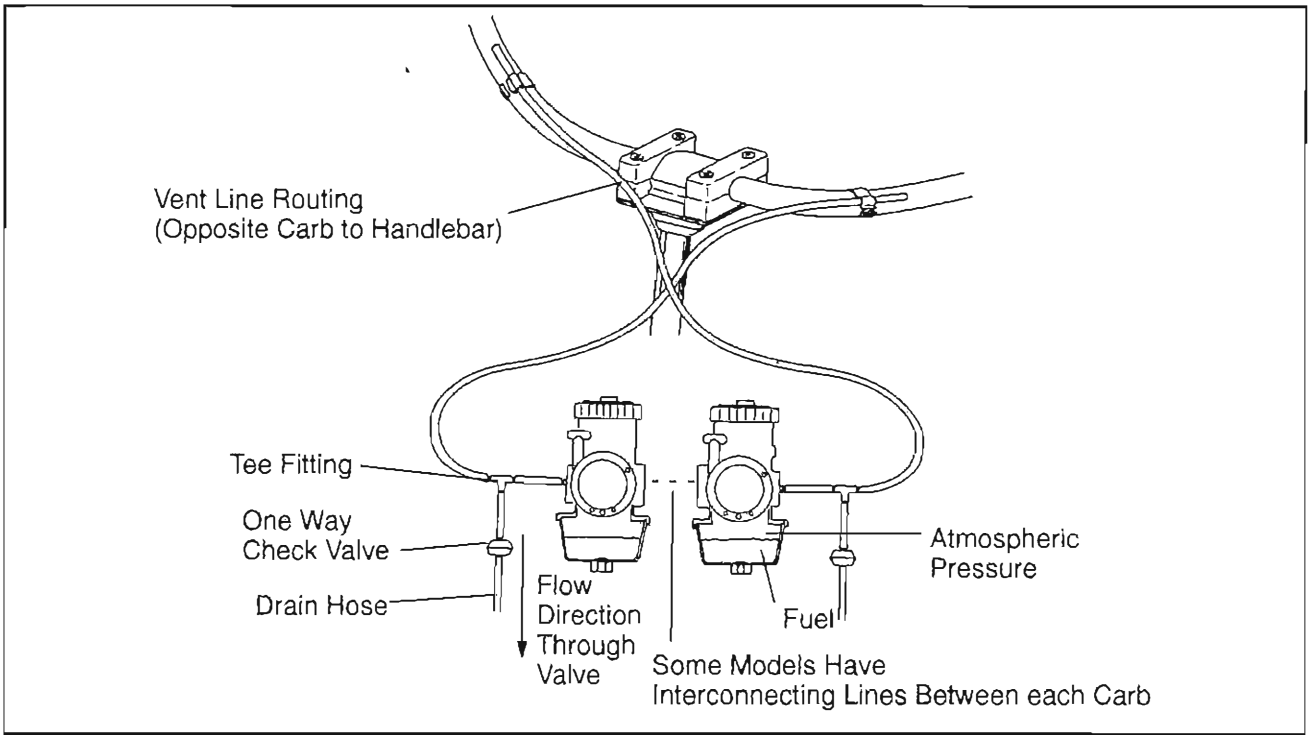
Cold Weather ↓ — High Vaporization Rate ↓

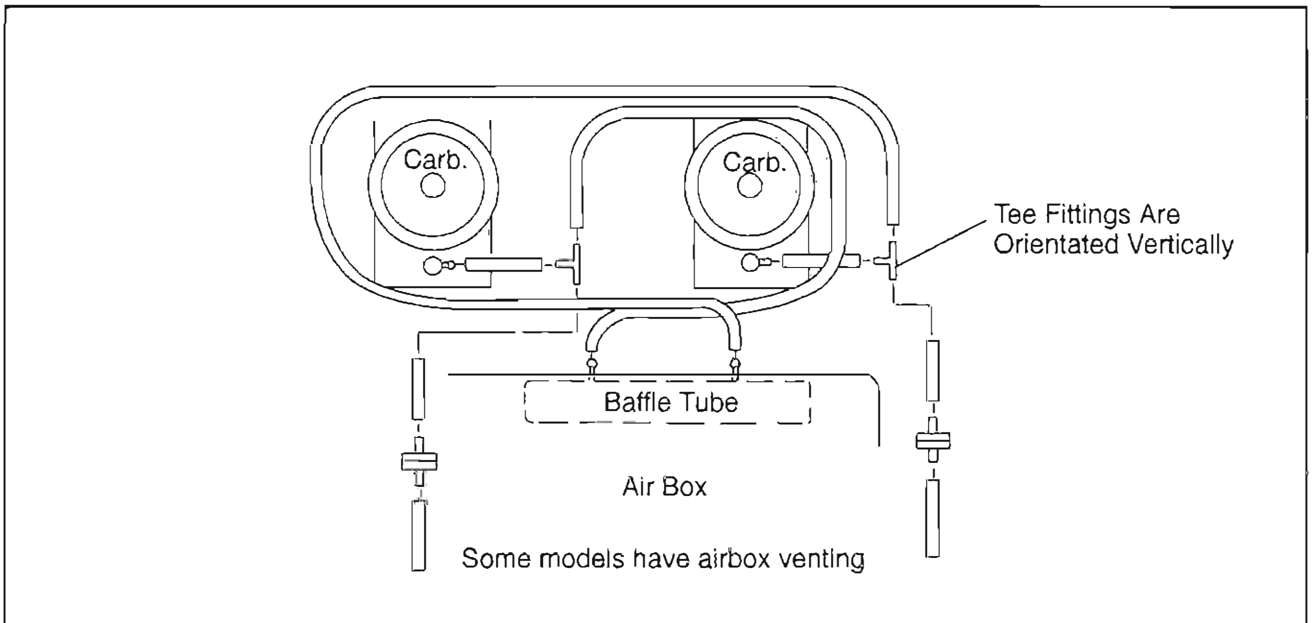
Add 2.4° F for each 1000 feet above seal level.

Float Chamber Venting

Fuel flows through a carburetor by creating a pressure difference between the venturi and the float bowl. The greater the pressure difference, the greater the fuel flow. On some models the float bowl is vented to the handlebars. This provides consistent atmospheric pressure for a consistent fuel flow. If the vent lines become kinked, plugged, or exposed to fluctuating pressures (under hood) the pressure difference will change, causing erratic fuel flow.

Polaris has introduced airbox venting on some models. The vent lines are connected to a baffle inside the airbox. This provides a more consistent pressure difference between the carburetor venturi and the float bowl as the vacuum inside the airbox changes. For example, if the airbox foam filter becomes plugged with snow when riding in powder, the airbox vacuum increases. Without airbox venting, the pressure difference would increase substantially, choking or flooding the engine. With airbox venting, the pressure difference remains the same, creating a leaner mixture to compensate for reduced air flow.





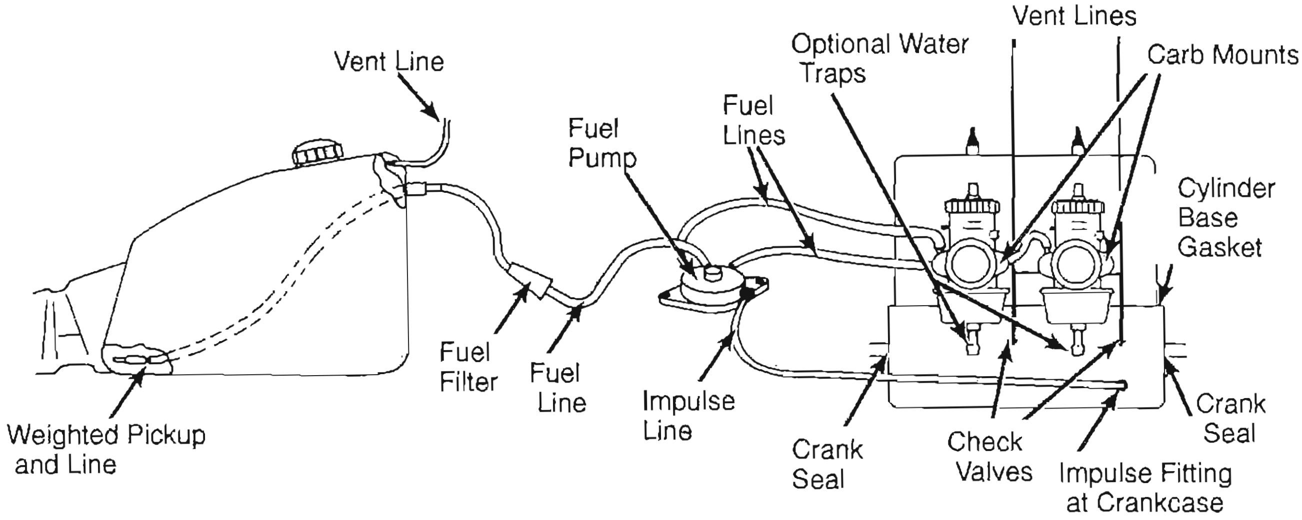
FUEL SYSTEM/CARBURETION
Fuel Delivery System - Typical

The fuel system contains many components which directly affect fuel mixture and driveability. When performing diagnosis or carburetor maintenance, the entire fuel delivery system should be inspected. The illustration below shows parts of the system requiring periodic maintenance to ensure there is no fuel or air leaks present.

Fuel filters should be replaced at least once per season or more often if any contamination is suspected.

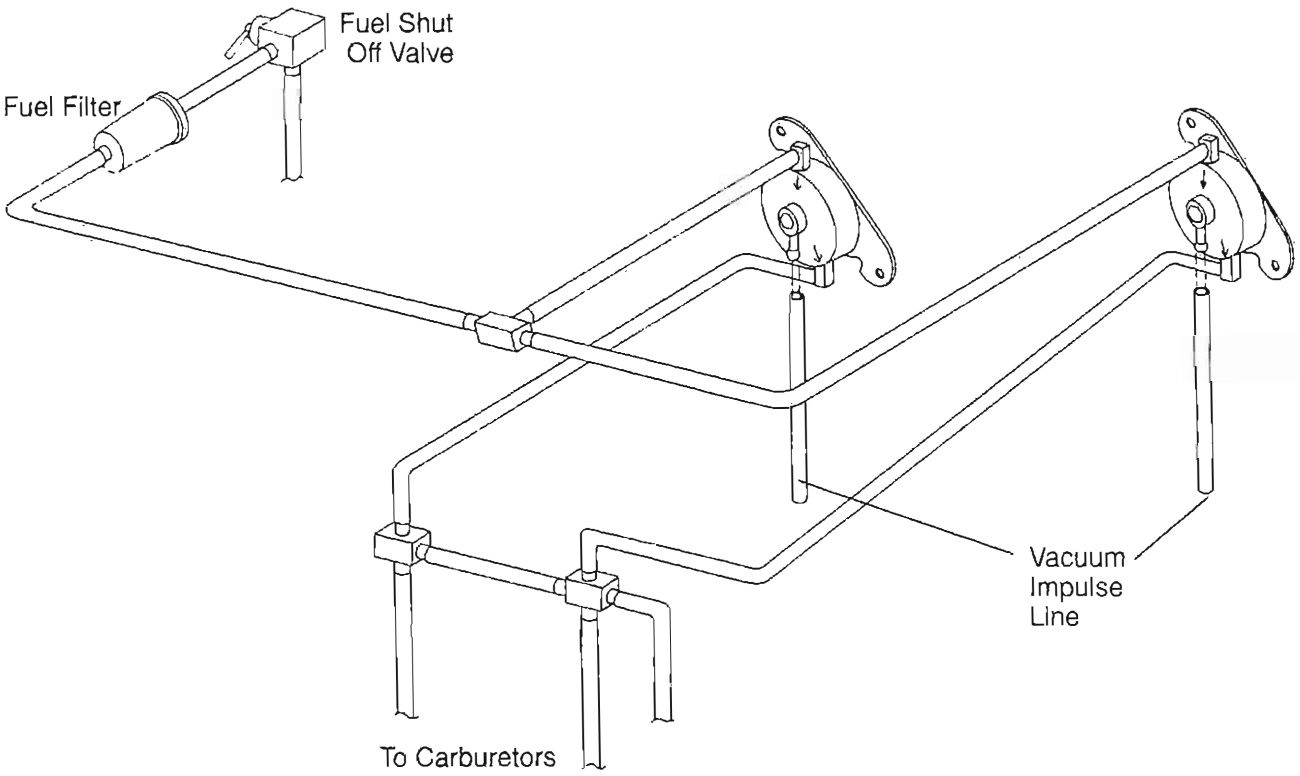
Fuel lines should be replaced every other season or more often if they become brittle or swollen. Fittings should be inspected at that time for cracks or leaks.

Test run and check the fuel system for leaks any time parts are replaced. Verify that all lines are routed correctly away from any moving parts.

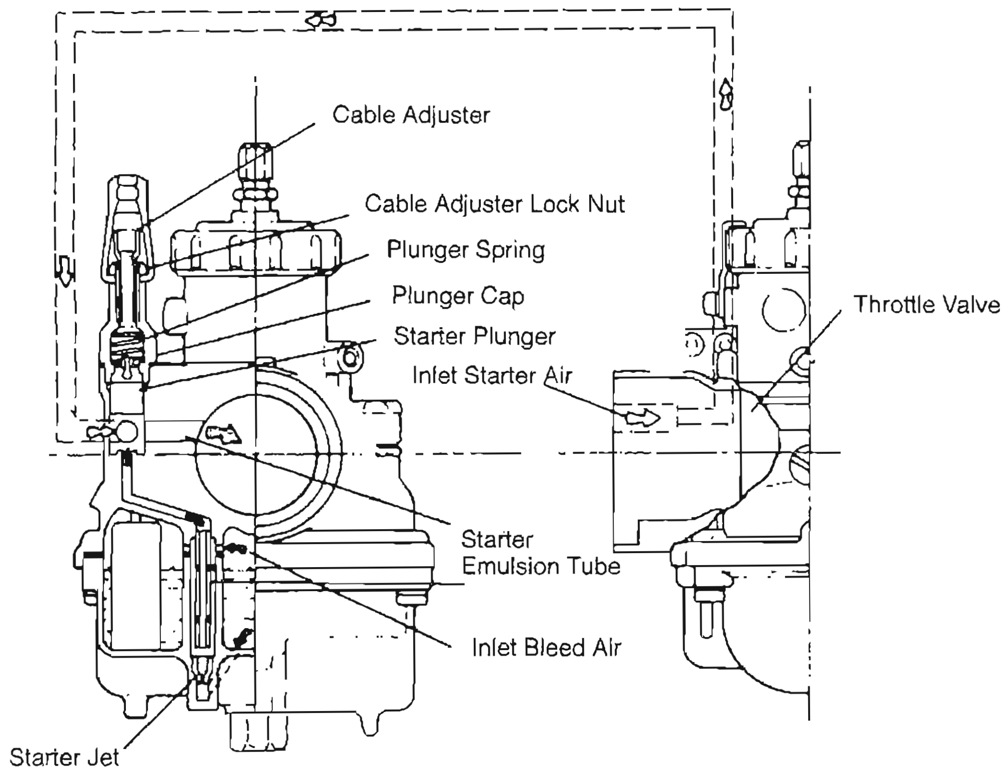


Fuel Hose - Indy Storm/SKS/RMK

The Storm fuel system incorporates dual fuel pumps. It is important to pay particular attention to correct routing of the fuel lines in order to provide an adequate fuel supply to the engine.



Mikuni carburetors use a starter system rather than a choke. In this type of carburetor, fuel and air for starting the engine are metered with entirely independent jets. The fuel metered in the starter jet is mixed with air and is broken into tiny particles in the emulsion tube. The mixture then flows into the plunger area, mixes again with air coming from the air intake port for starting and is delivered to the engine through the fuel discharge nozzle in the optimum air/fuel ratio. The starter is opened and closed by means of the starter plunger. The starter type carburetor is constructed to utilize the negative pressure of the inlet pipe, so it is important that the throttle valve is closed when starting the engine.

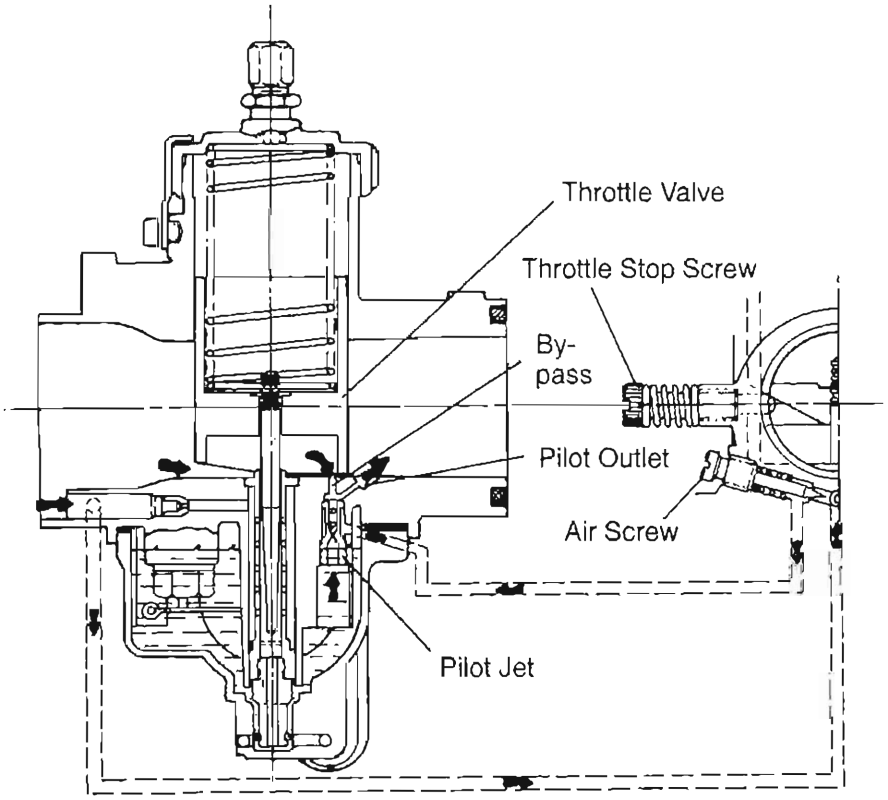


Pilot System (0-3/8 Throttle)

The pilot system's main function is to meter fuel at idle and low speed driving. Though its main function is to supply fuel at low speed, it does feed fuel continuously throughout the entire operating range.

Fuel for the pilot jet is drawn from the float bowl, mixed with air regulated by the air screw, and delivered to the engine through the pilot outlet.

The mixture is regulated to some degree by adjusting the air screw. When the air screw is closed, the fuel mixture is made richer as the amount of air is reduced. When the air screw is opened, the mixture is made more lean as the amount of air is increased.

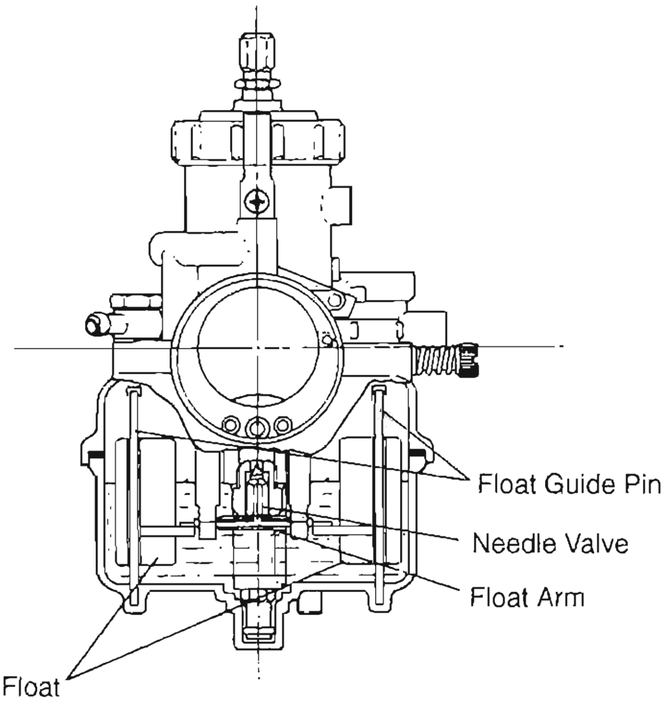


FUEL SYSTEM/CARBURETION
Function

The function of a carburetor is to produce a combustible air/fuel mixture by breaking fuel into tiny particles in the form of vapor, to mix the fuel with air in a proper ratio, and to deliver the mixture to the engine. A proper ratio means an ideal air/fuel mixture which can burn without leaving an excess of fuel or air. Whether the proper mixture ratio is maintained or not is the key to efficient engine operation.

The engine of a vehicle is operated under a wide range of conditions, from idling with the throttle valve remaining almost closed, to full load or maximum output with the throttle valve fully opened. In order to meet the requirements for the proper mixture ratio under these varying conditions, a low speed fuel system, or pilot system, and a main fuel system are provided in Mikuni VM type carburetors.

The Mikuni carburetor has varying operations depending upon varying driving conditions. It is constructed of a float system, pilot system, main system, and starter system or initial starting device.



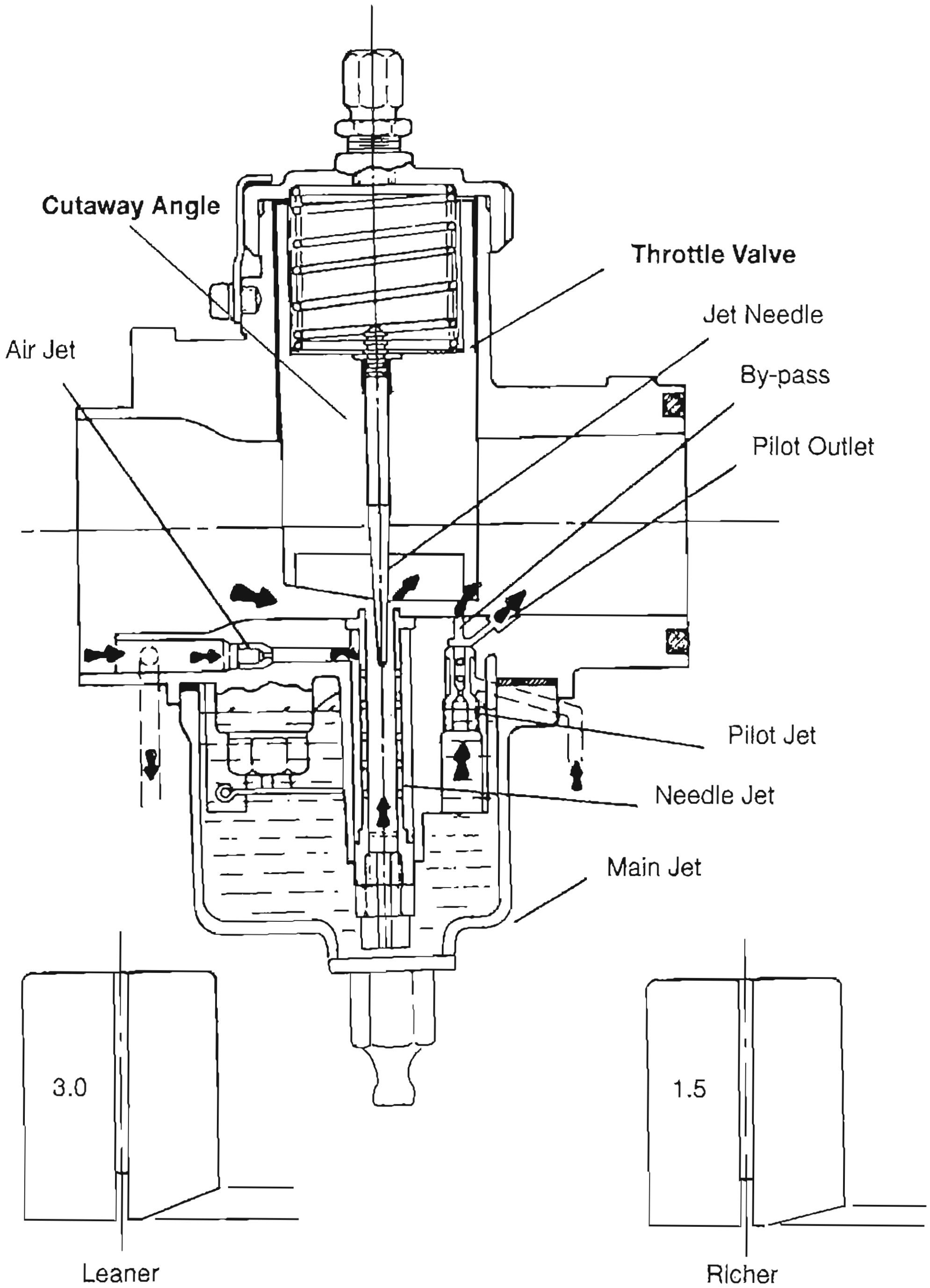
Float System

The float system is designed to maintain a constant height of gasoline during operation. When the fuel flowing from the fuel pump into the float chamber through the needle valve reaches the constant fuel level, the floats rise. When the buoyancy of the float and the fuel pressure of the fuel pump balance, the needle valve sticks fast to the needle seat, preventing further delivery of gasoline, thereby holding the standard level of gasoline.

The fuel level in the bowl assists in controlling the amount of fuel in the fuel mixture. Too high a level allows more fuel than necessary to leave the nozzle, enriching the mixture. Too low a level results in a leaner mixture, since not enough fuel leaves the nozzle. Therefore, the predetermined fuel level should not be changed arbitrarily.

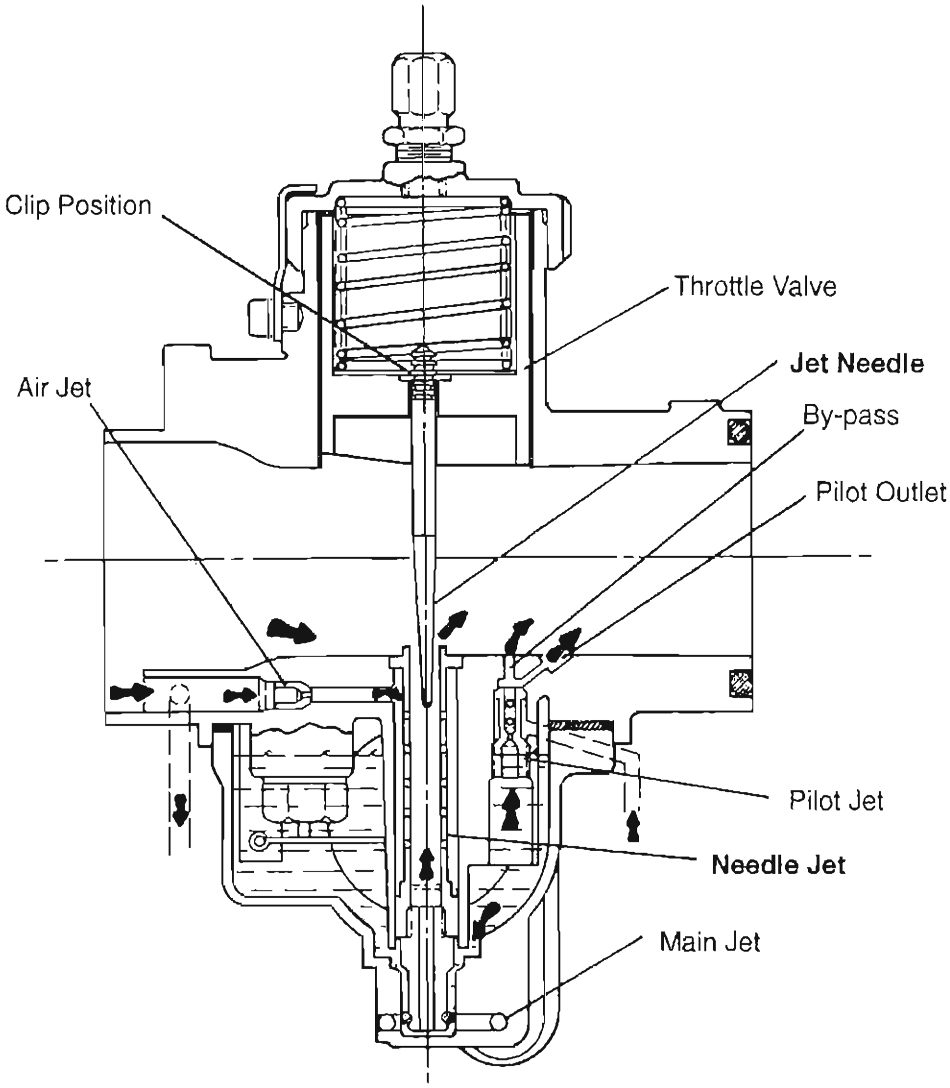
Slide Cutaway (1/8-3/8 Throttle)

Throttle valve cutaway effect is most noticeable at 1/4 throttle opening. The amount of cutaway is pre-determined for a given engine to maintain a 14:1 air/fuel ratio at part throttle. A steep angle would indicate a fairly lean mixture because there is less resistance to air flow. A flat angle would provide a much richer mixture because there is more resistance to air flow. The venturi shape can be adjusted for each engine's breathing characteristics by using a different valve cutaway angle. A number will be stamped into the bottom of the valve (e.g. 2.5) indicating the size of the cutaway. The higher the number, the steeper the angle.



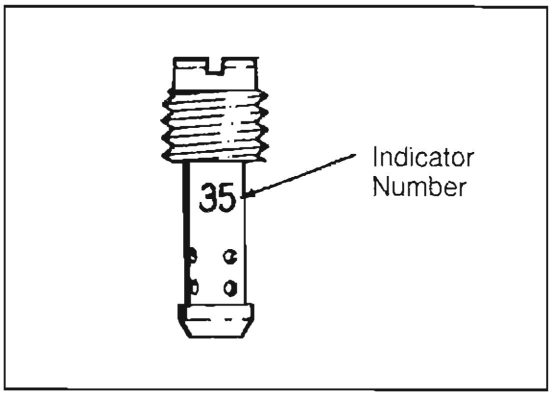
Jet Needle/Needle Jet (3/8-3/4 Throttle)

The jet needle and needle jet have the most effect between 3/8 and 3/4 throttle opening. Some mixture adjustment can be accomplished by changing the location of the "E" clip on the needle. Moving the clip down raises the needle in the jet passage and richens the mixture. Moving the clip up lowers the needle in the jet passage and leans the mixture. Letter and number codes are stamped into the needle and the jet indicating sizes and tapers of each.



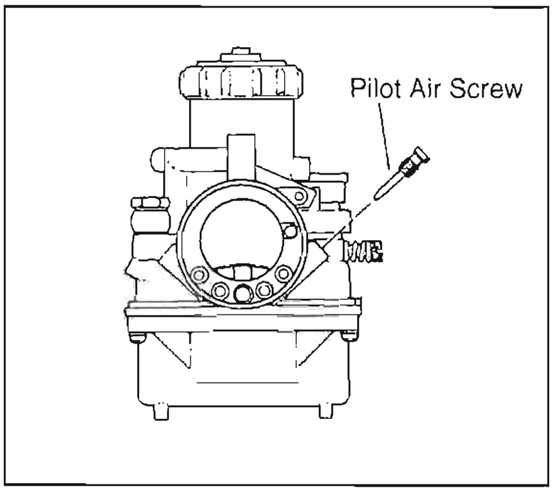
Pilot Jet

From idling to low speeds, the fuel supply is metered by the pilot jet. There are several air bleed openings in the sides of the pilot jet which reduce the fuel to mist. The number stamped on the jet is an indication of the amount of fuel in cc's which passes through the jet during a one minute interval under a given set of conditions.



Pilot Air Screw

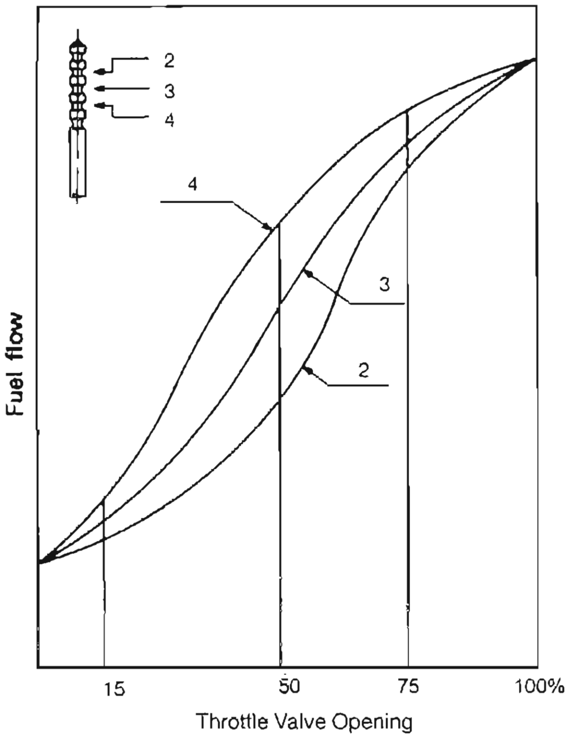
The pilot air screw controls the fuel mixture from idle to low speeds. The tapered tip of the air screw projects into the air passage leading to the pilot jet air bleeds. By turning the screw in or out, the cross sectional area of the air passage is varied, in turn varying the pilot jet air supply and changing the mixture ratio.



Air/Fuel Mixture Ratio

A carburetor with a piston type throttle valve is also called a variable venturi type carburetor. In this type of carburetor, the needle jet and jet needle serve to control a proper air/fuel mixture ratio at the medium throttle valve opening (between 1/4 and 3/4 opening). Having the proper needle jet and jet needle has a major impact on engine performance at partial load.

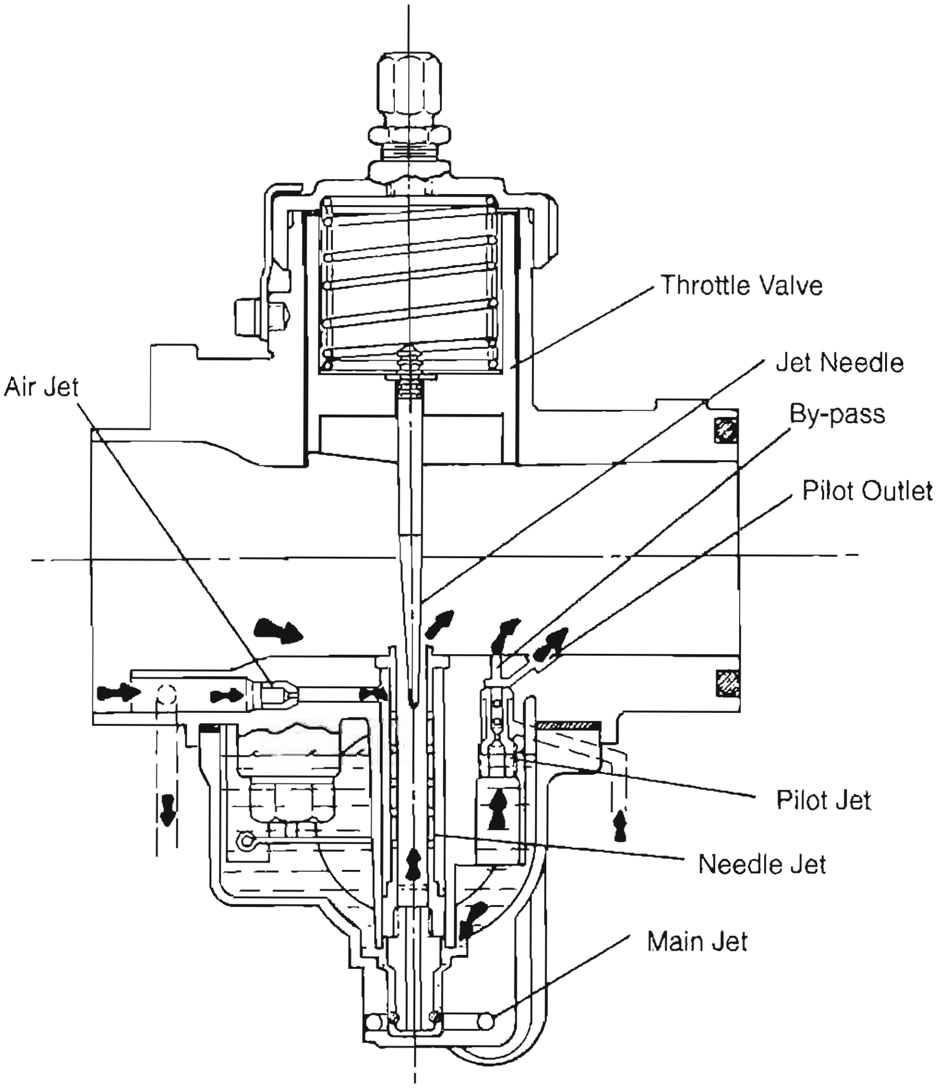
The jet needle tapers off at one end and the clearance between the jet needle and the needle jet increases as the throttle valve opening gets wider. The air/fuel mixture ratio is controlled by the height of the "E" ring inserted into one of the five slots provided in the head of the jet needle. The chart at right shows the variation of fuel flow based on the height of the "E" ring.



Main System (3/4 to Full Throttle)

The main system is designed for delivering fuel between low speed and high speed operation. This system is made up of the jet needle, needle jet, and main jet. The main system begins to take effect as soon as there is enough air flow into the carburetor venturi to draw fuel up through the main jet and needle jet assembly. This system works in conjunction with the needle jet system.

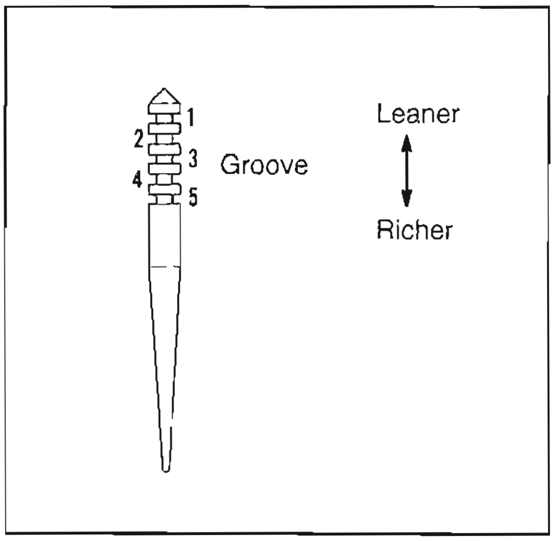
During low speed driving, there is very little clearance between the jet needle and the needle jet; therefore, very little fuel from the main jet can pass between the jet needle and the needle jet. As the throttle valve opening is increased, the tapered jet needle is raised farther out of the needle jet, allowing greater fuel flow. Under full throttle opening, the cross sectioned area of clearance between the jet needle and the needle jet becomes greater than the cross sectioned area of the main jet. Thus the main jet is now controlling the amount of fuel flow.



Component Functions

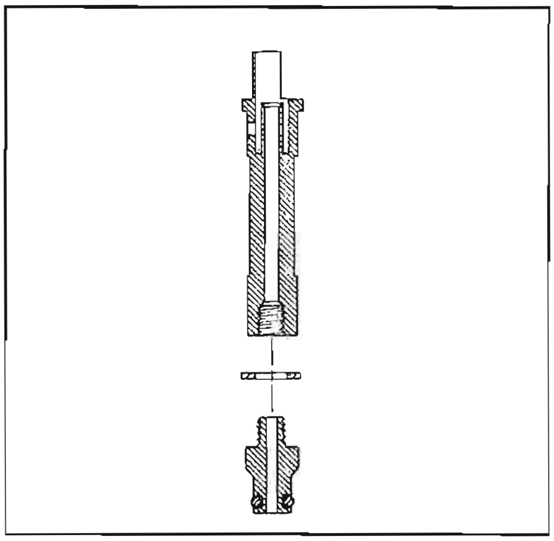
Jet Needle

The jet needle has five adjustment grooves cut into the upper portion, and is tapered from approximately the middle of the needle to the lower end. The top is fixed to the center of the throttle valve by the needle clip, and the tapered end extends into the needle jet. Fuel flows through the space between the needle jet and jet needle. This space does not vary until the throttle reaches the 1/4 open point. At that time the tapered portion of the needle begins to move out of the jet, affecting fuel flow as the opening enlarges. If the needle clip is changed from the standard position to a lower groove, the needle taper starts coming out of the jet sooner, resulting in a richer mixture. Moving the clip higher produces a leaner mixture. If the taper is worn due to vibration, fuel flow may be significantly affected.



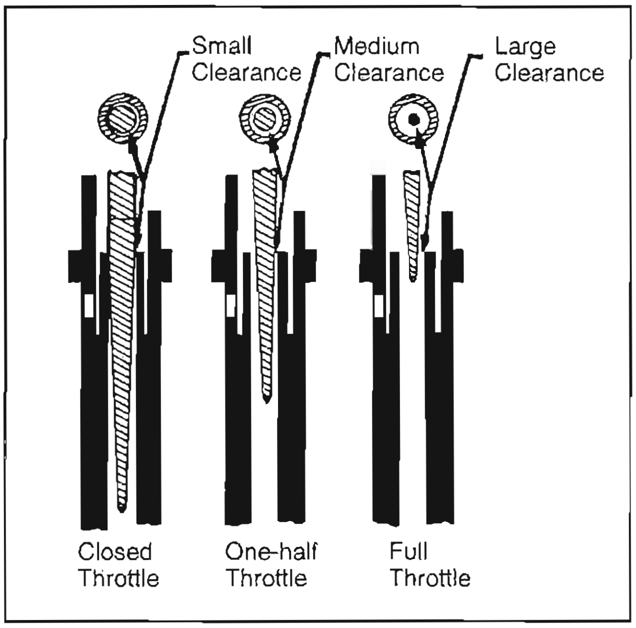
Needle Jet

The needle jet works in conjunction with the jet needle to regulate fuel flow rate. An air bleed opening in the side of the needle jet brings in air measured by the air jet. This air initiates the mixing and atomizing process inside the needle jet. Mixing is augmented by a projection at the needle jet outlet, called the primary choke. The letter number code stamped on the jet indicates jet inside diameter.



Throttle Opening vs. Fuel Flow

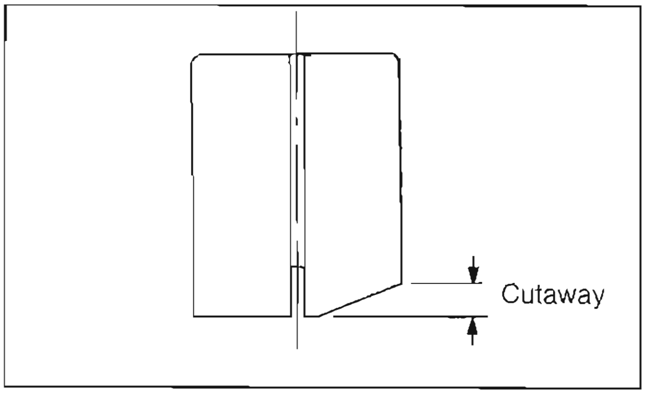
In a full throttle condition the cross sectioned area between the jet needle and the needle jet is larger than the cross sectioned area of the main jet. The main jet therefore has greater control over fuel flow.



Throttle Valve

The throttle valve controls the rate of engine air intake by moving up and down inside the main bore. At small throttle openings, air flow control is performed chiefly by the cutaway. By controlling air flow the negative pressure over the needle valve is regulated, in turn varying the fuel flow.

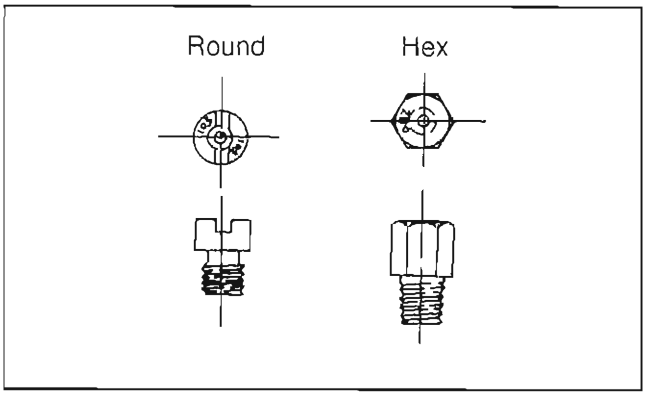
The throttle valves are numbered 1.0, 1.5, 2.0, etc., according to the size of the cutaway. The higher the number, the leaner the gasoline/air mixture.



Mikuni Main Jet

When the throttle opening becomes greater and the area between the needle jet and jet needle increases, fuel flow is metered by the main jet. The number on the jet indicates the amount of fuel CCs which will pass through it in one minute under controlled conditions. Larger numbers give a greater flow, resulting in a richer mixture.

Main jets are screwed directly into the needle jet base.



Keihin Main Jet

The number on the Keihin (Round) main jet corresponds to the diameter of the metering orifice.

Component Effect vs Throttle Opening

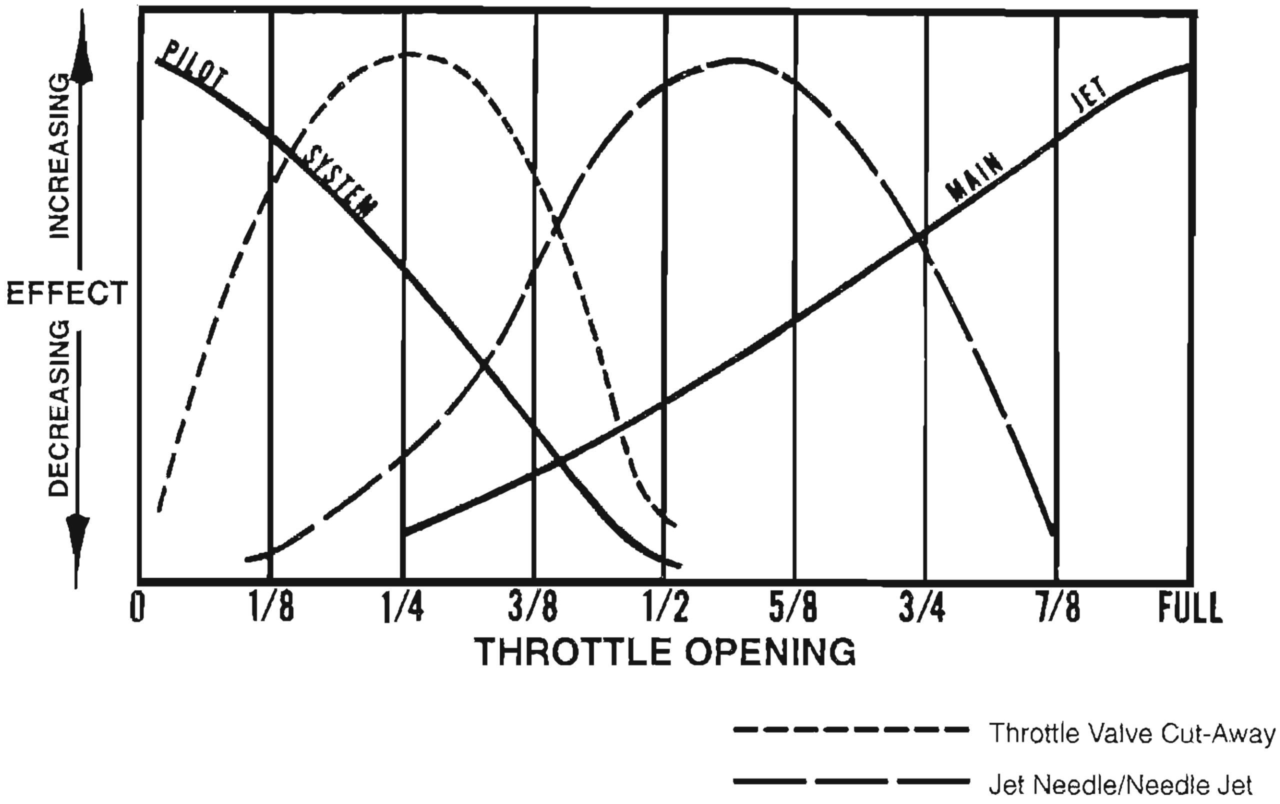
The throttle opening chart below demonstrates component relationship to fuel flow versus throttle valve opening.

The pilot system's main function is that of a low speed jet. It's most effective range of fuel delivery is from idle to approximately 3/8 throttle valve opening.

The throttle valve controls the rate of engine air by its movement up and down in the carburetor venturi. At small throttle openings the air flow is regulated chiefly by the valve cutaway, with greatest effectiveness at 1/4 throttle opening. Throttle valves are numbered 1.0, 1.5, 2.0, etc., according to the size of the cutaway. Decreasing the cutaway number will increase the amount of fuel delivered in its effective range.

The jet needle and needle jet have an effective operating range from approximately 1/8 to 7/8 throttle opening. The amount of fuel delivered during this range relies upon the jet needle clip position, as well as the needle jet size and other specifications.

The main jet affects fuel delivery at 1/4 throttle and consistently increases to full throttle opening.



Changes in altitude and temperature affect air density, which is essentially the amount of oxygen available for combustion. In low elevations and cold temperatures, the air has more oxygen. In higher elevations and higher temperatures, the air is less dense.

Carburetors on *most* Polaris models are calibrated for an altitude of 0-3000 ft (0-900 meters) and ambient temperatures between -20° to +10° F (-29° to -12° C). All carburetors must be re-calibrated if operated outside the production temperature and/or altitude range. The main jet installed in production is not correct for all altitudes and/or temperatures.

CAUTION:

A main jet that is too small will cause a lean operating condition and may cause serious engine damage. Jet the carburetors carefully for elevation and temperature according to the jetting charts in this manual, the specification decal on the hood, or the jetting charts in the Owner's Safety and Maintenance Manual for each particular model. See additional information regarding the use of oxygenated fuels on following page.

NOTE: It is the dealer's responsibility to ensure that the correct jets are installed in the machine for a geographical area. Be very careful when jetting down in warm weather. As the weather turns colder it will be necessary to re-jet upward to prevent engine damage. When selecting the proper main jet *always* use the *lowest* elevation and temperature that is likely to be encountered.

Oxygenated Fuel

Due to the increased emphasis on reducing auto emissions, some areas of the U.S. are required to use oxygenated fuels. Oxygenated fuels are those which include oxygen in the molecule due to the addition of an ether or alcohol.

Oxygenated fuel containing a mixture of up to 10% ethanol can be used in all models of Polaris snowmobiles if these guidelines are followed:

NOTE: The use of fuel containing *methanol* is not recommended.

On carbureted models

1. Use fuel with a minimum pump octane of 89 or higher (R+M)/2 method. **NOTE:** Some models are calibrated to use a minimum of *91 octane* fuel. On these models, only 91 octane or higher should be used. Refer to the Specification Decal or Owner's Safety and Maintenance Manual for octane recommendation.
2. When using 87 octane oxygenated fuel, install main jets that are one size larger than that listed on the jetting chart for a given altitude and temperature. For example, the minimum octane (non-oxygenated) fuel for the 1996 Indy Classic is 87. The main jet installed during production for use at altitudes of 0-3000 ft. and temperatures between -20 and +10°F) is a 340. To use 87 octane *oxygenated* fuel, install 350 main jets.
3. Turn the pilot air screws in (clockwise) 3/8 turn from the standard setting. Example: if the production air screw setting is 1 turn out, the setting for 87 octane oxygenated fuel would be 5/8 turn out.

NOTE: The following Indy Classic charts are provided as an example only.

Indy Classic

89 Octane Oxygenated

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29°to -12°C	+10°to +40°F -12° to +5°C	Above +40 °F Above +5°C
Altitude Meters (Feet)	0-900 (0-3000)	360	*340	320	300
	900-1800 (3000-6000)	320	300	280	260
	1800-2700 (6000-9000)	280	260	240	220
	2700-3700 (9000-12000)	240	230	210	200

- Shaded zone should drop Jet Needle one position (raise E-Clip)
* Production Setting

Indy Classic

87 Octane Oxygenated

		AMBIENT TEMPERATURE			
		Below -20°F Below -29°C	-20° to +10°F -29°to -12°C	+10°to +40°F -12° to +5°C	Above +40 °F Above +5°C
Altitude Meters (Feet)	0-900 (0-3000)	370	350	330	310
	900-1800 (3000-6000)	330	310	290	270
	1800-2700 (6000-9000)	290	270	250	230
	2700-3700 (9000-12000)	250	240	220	210

- Shaded zone should drop Jet Needle one position (raise E-Clip)

Oxygenated Fuel

To use 87 octane oxygenated fuel on EFI models:

1. At altitudes below 5000 ft., the compression ratio must be reduced by installing .020″ head gasket shims between the cylinder head gasket and cylinder head. The part numbers are shown below. No change is required if machine is operated at altitudes above 5000 feet (1500 meters).

EFI Cylinder Head Shims

Model	Shim Part Number
500 EFI/SKS/RMK	(1) 5211416
RXL	(3) 5211414

Fuel System Deicers

If non-oxygenated fuel is being used, Polaris recommends the regular use of Isopropyl base fuel system deicer (Polaris PN 2870505). Add 1 to 2 ounces per gallon (8-16 milliliters per liter) of gasoline to prevent engine damage resulting from fuel system icing and lean mixtures. Never use deicers or additives that contain *methanol.* Use *only* isopropyl fuel system deicers.

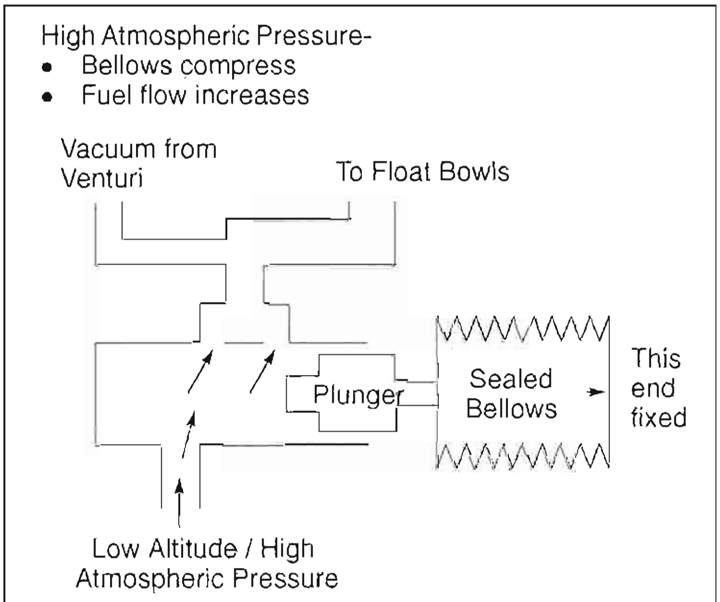
If using oxygenated fuel containing ethanol, additional alcohol deicers or water absorbing additives are not required and should not be used.

Whenever servicing the carburetor or fuel system, it is important to heed the warnings found on page 5.1.

1996 To Current Altitude Compensating Carburetor System (ACCS)

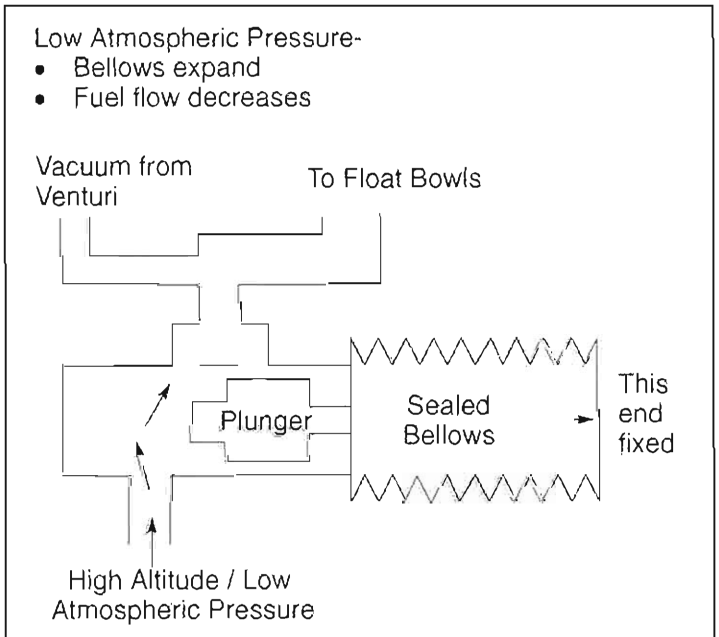
The Altitude Compensating Carburetor System (ACCS) is designed to automatically compensate for changes in altitude. This allows the snowmobile to operate in changing elevations without having to change jets, although extreme temperatures may require re-jetting for optimum performance. Refer to the jetting compensation chart on page 5.15f. The 1996 ACC System compensates for both high speed and low speed changes, eliminating the need to adjust air screws. On 1997 ACCS models, the air screw is adjustable.

A vacuum line is connected to the float bowl. The ACCS valve is connected to this line via the 4-way manifold. At low altitude the ACCS valve supplies atmospheric pressure to the vacuum line and the float bowl (see Ill. 1).



1996 to Current ACCS System Ill. 1

At high altitudes the bellows expand, moving the plunger to the left and closing off some of the passageways through the ACCS valve (see Ill. 2). This prevents atmospheric pressure from reaching the float bowl, allowing the vacuum line to reduce the pressure in the float bowl. This reduces the amount of fuel supplied through the carburetor, preventing the mixture from becoming too rich.



1996 to Current ACCS System Ill. 2

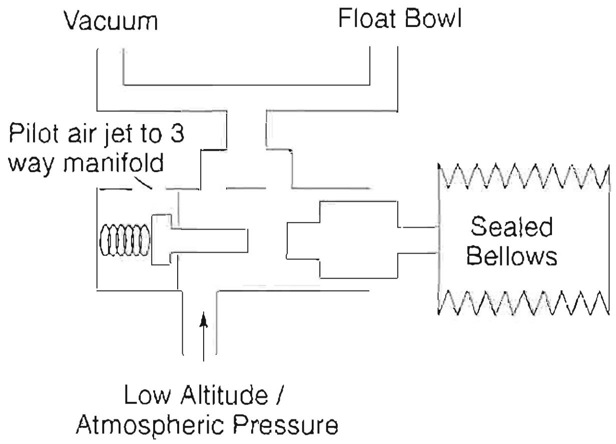
Altitude Compensating Carburetor System (Cont.)

NOTE: The 1997 to current ACCS models are equipped with air screws to adjust the low speed (pilot) air/fuel mixture.

Another feature of the 1996 ACC System automatically adjusts the slow (pilot) air system passageways. This feature serves the same function as an air screw on a standard carburetor system.

A spring loaded plunger is located inside the valve. At low altitude, the spring pushes the plunger into a closed position (see Ill. 3).

ACCS Valve Operation

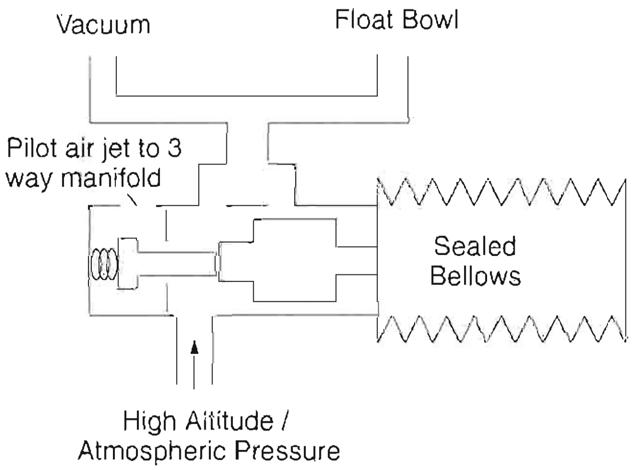


1996 ACCS Only

Ill. 3

In Ill. 4, the bellows has moved the primary plunger to the left, engaging the secondary plunger and removing it from its seat. Atmospheric pressure is now being supplied to the pilot air jet, supplementing the air flow in the secondary slow air system and making the fuel mixture leaner to compensate for the thinner air at high altitudes.

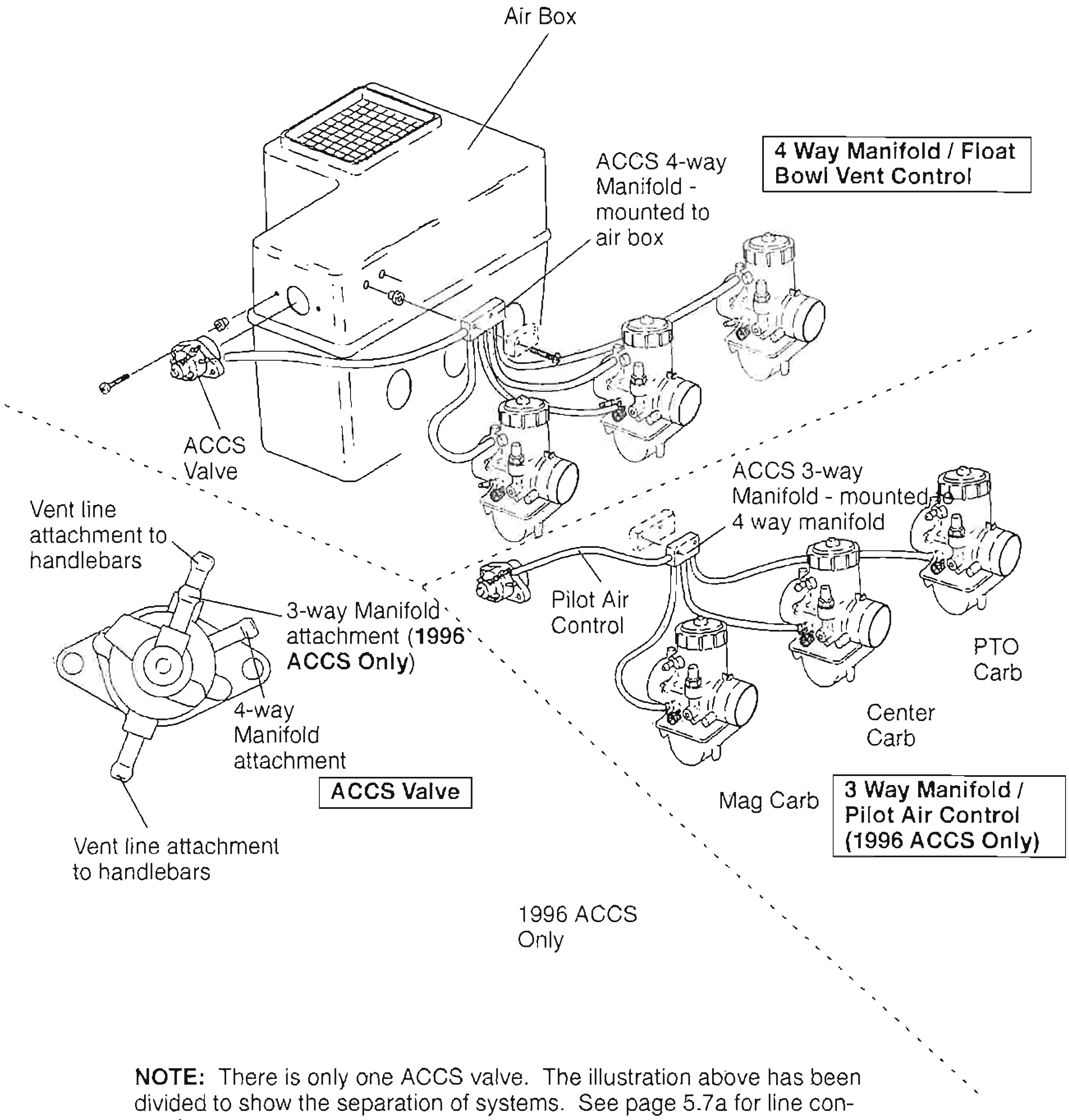
ACCS Valve Operation



1996 ACCS Only

Ill. 4

ACCS System

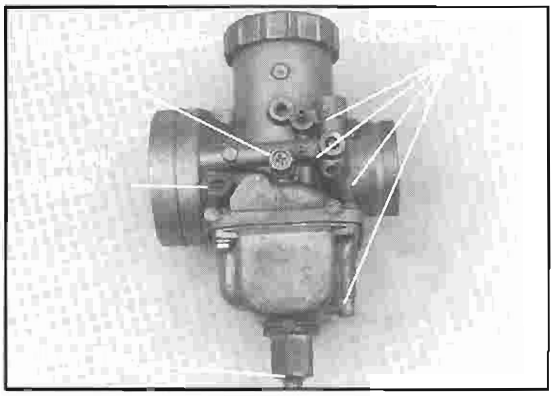


NOTE: There is only one ACCS valve. The illustration above has been divided to show the separation of systems. See page 5.7a for line connections.

Carburetor Removal, Disassembly, and Inspection (Typical)

Typical VM 38 Shown. Refer to exploded views on pages 5.4 - 5.7a for other types.

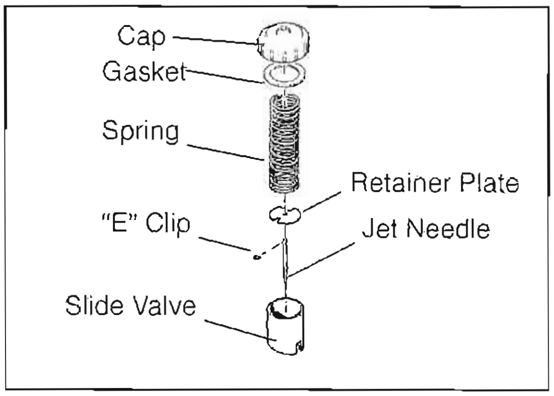
1. Remove carburetor from engine. Before disassembling, clean outside of carburetor thoroughly with solvent.



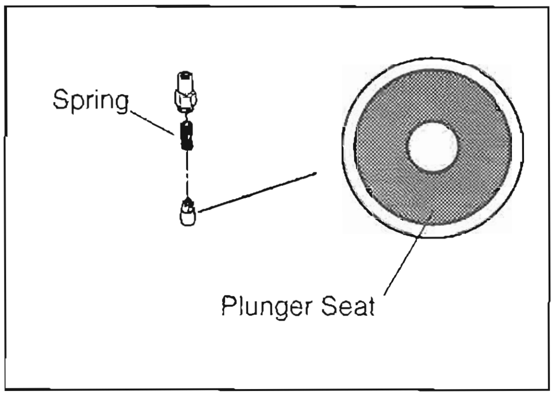
CAUTION:

Do not use compressed air to dry at this time. The float chamber could become pressurized resulting in damage to the floats or inlet needle and seat..

2. Remove slide valve. Inspect for nicks or burrs which may cause sticking.
3. Remove jet needle by compressing return spring toward top cap and removing throttle plate which rests on top of needle "E" clip. Note the "E" clip position and inspect needle taper for wear. An indication of wear would be an hourglass shape or polished spots somewhere along the taper.

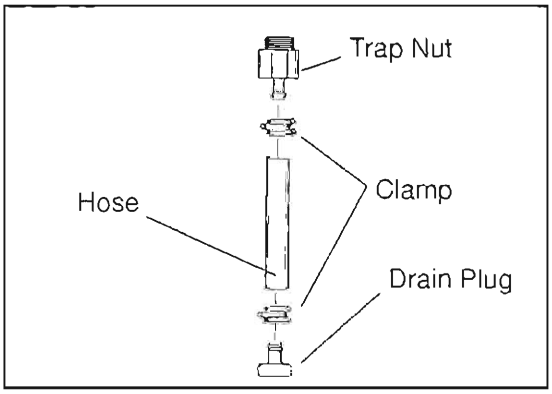


4. Remove choke plunger. Check condition of seal on tip of plunger. Any nicks or cuts will cause leakage and a rich fuel condition, usually most evident at idle and low speeds. Inspect the plunger seat for damage or foreign material.
5. Check choke cable movement. Plungers and springs should move back and forth freely.

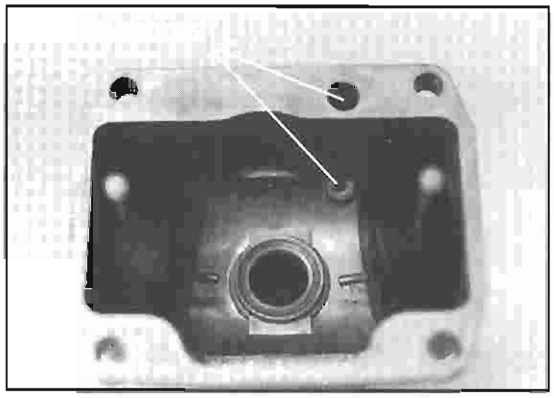


Carburetor Disassembly and Inspection Cont.

6. Remove water trap assembly from float bowl and inspect O-ring, hose and clamp condition. Refer to exploded view corresponding with carburetor being serviced.

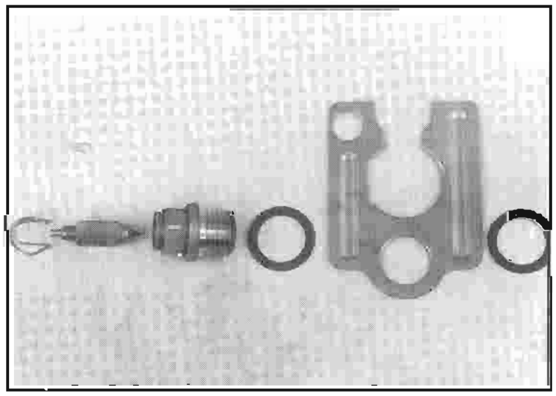


7. Inspect choke fuel supply passage in bowl for obstruction.



8. Use an automatic center punch to remove float arm pin. Remove inlet needle and seat assembly.

9. Inspect needle for wear and replace sealing washers upon reassembly.

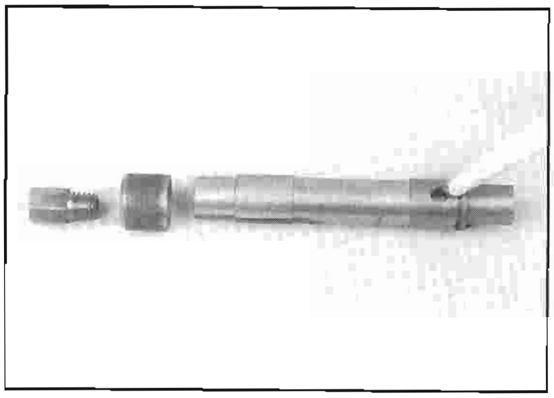


CAUTION:

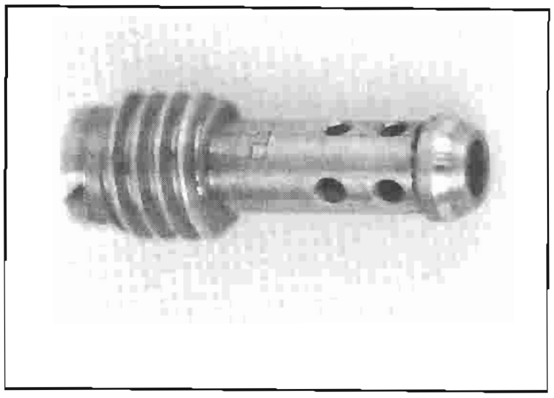
Do not bend float arm during disassembly. Do not use excessive force to remove float arm pin. The float pin tower castings are very easily damaged and are not repairable.

Carburetor Disassembly and Inspection Cont.

10. Remove main jet and washer (or spacer ring) and push needle jet into the slide valve chamber to remove. Clean air bleed hole in needle jet.



11. Remove pilot jet.



CAUTION:

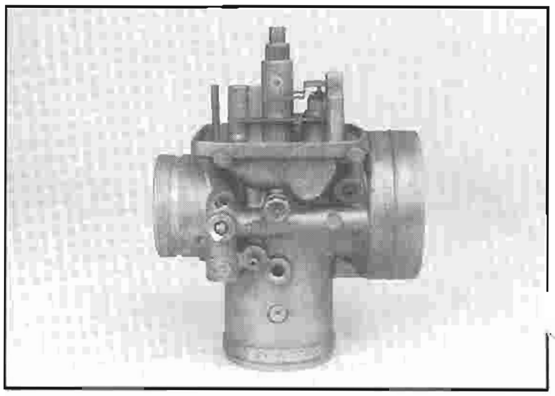
Wear eye protection when using compressed air or cleaning solvents. Review all fuel system warnings found on page 5.1 before proceeding.

12. Remove pilot air screw and clean all passages in the carburetor body with carburetor cleaner. Dry all passages and jets with compressed air. Replace gaskets and any parts which show wear or damage.
13. Reassemble carburetor, adjusting float level before installing float bowl.

Refer to page 5.38 for float level adjustment and leak testing procedures.

Float Level Adjustment

1. Remove float bowl.
2. With carburetor in an inverted position, float arm (A) should be parallel with body (B). See illustration at right. Arms must be parallel to each other.
3. To adjust float arm, bend tang contacting inlet needle.

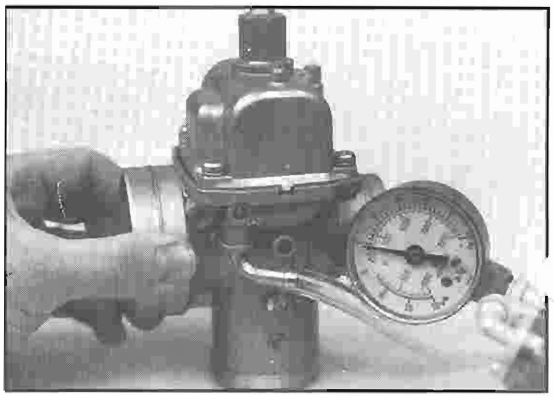


CAUTION:

Never bend the float arm itself.

Leak Testing Needle and Seat

1. After adjustment of float level, with carburetor still in an inverted position, install float chamber and connect pressure tester PN 2870975 to fuel inlet fitting.

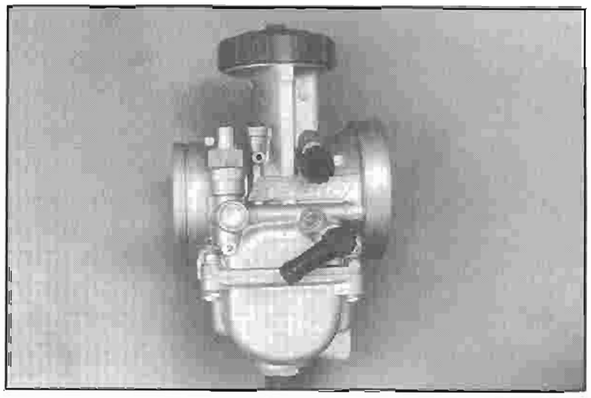


Pressure Tester PN 2870975

2. Apply approximately 5 PSI pressure and wait for one minute. The needle and seat should hold pressure indefinitely. If the pressure drops rapidly replace the needle and seat assembly and/or sealing washers.

Carburetor Removal, Disassembly, and Inspection

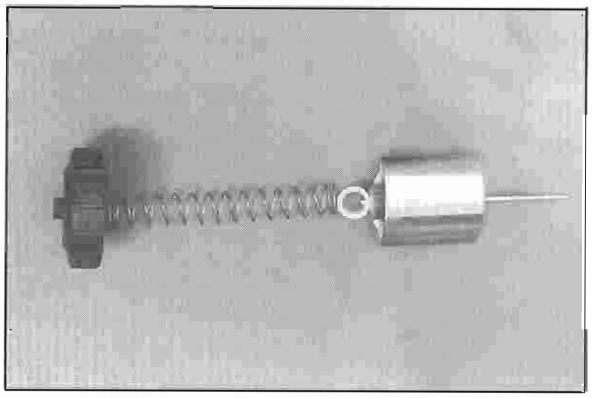
1. Remove carburetor from engine. Before disassembling, clean outside of carburetor thoroughly with solvent.



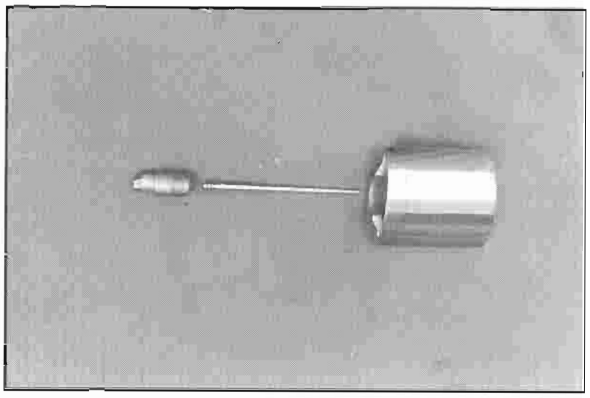
CAUTION:

Do not use compressed air to dry at this time. The float chamber could become pressurized resulting in damage to the floats or inlet needle and seat. Do not soak Keihin carburetors in carb cleaner. Clean only with aerosol cleaner.

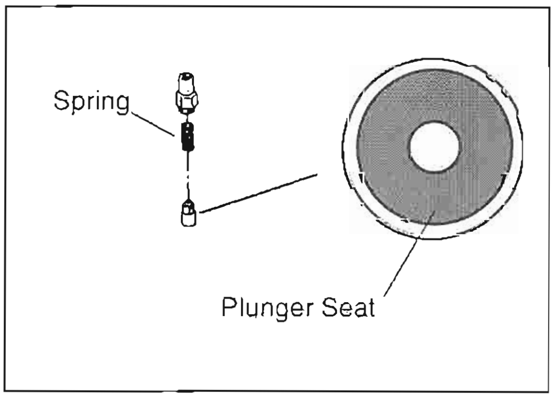
2. Remove slide valve. Inspect for nicks or burrs which may cause sticking.



3. Remove jet needle by compressing return spring toward top cap and removing throttle cable. Disconnect cable holder and remove jet needle. Note "E" clip position and inspect needle taper for wear. An indication of wear would be an hourglass shape or polished spots somewhere along the taper.

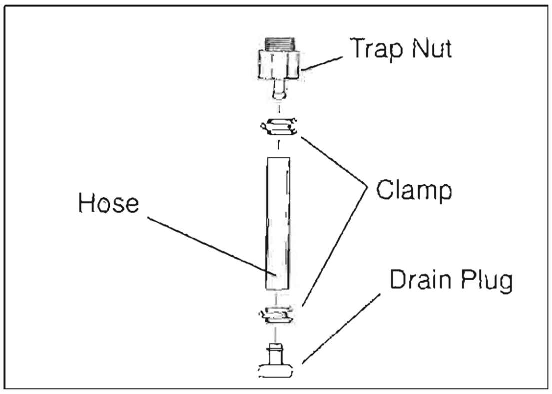


4. Remove choke plunger. Check condition of seal on tip of plunger. Any nicks or cuts will cause leakage and a rich fuel condition, usually most evident at idle and low speeds. Inspect the plunger seat for damage or foreign material.
5. Check choke cable movement. Plungers and springs should move back and forth freely.

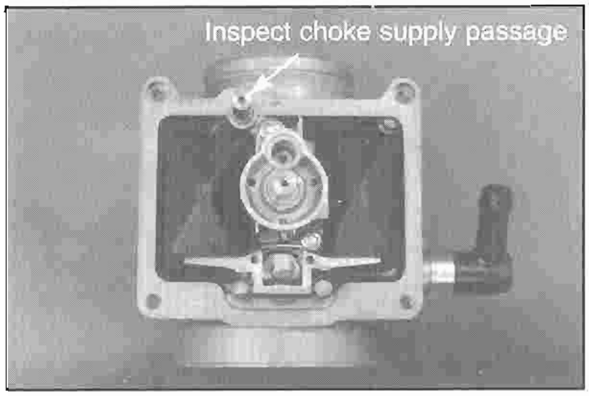


Disassembly Cont.

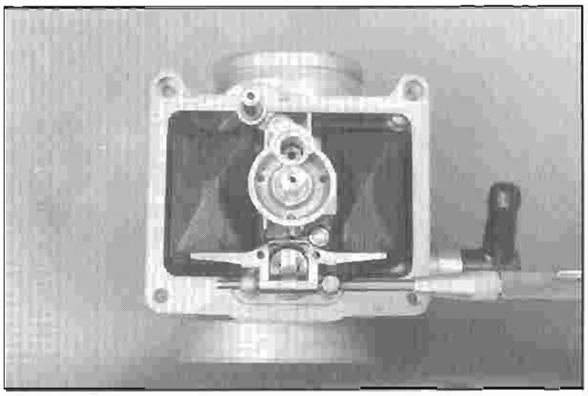
6. Remove water trap assembly from float bowl and inspect O-ring, hose and clamp condition. Refer to exploded view corresponding with carburetor being serviced.



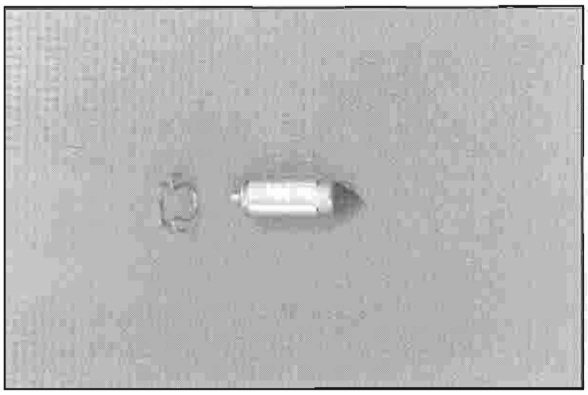
7. Inspect choke fuel supply passage as shown for obstruction.



8. Remove float arm pin. Remove inlet needle. **NOTE:** Seat assembly is not replaceable. DO NOT remove.



9. Inspect needle for wear.

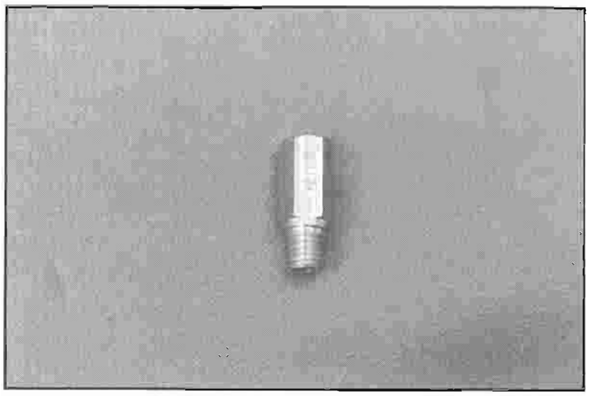


CAUTION:

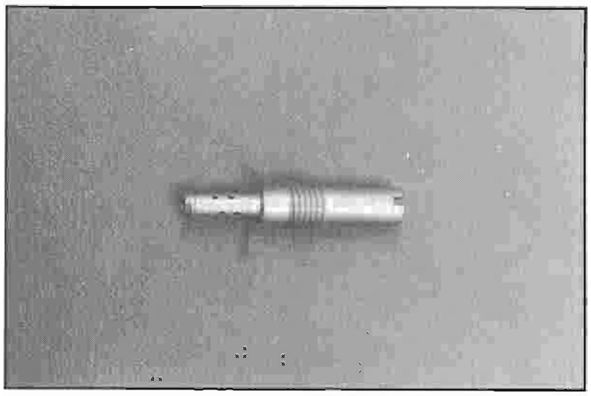
Do not bend float arm during disassembly. Do not use excessive force to remove float arm pin. The float pin tower castings are very easily damaged and are not repairable.

Carburetor Disassembly Cont.

10. Remove main jet.



11. Remove pilot jet.



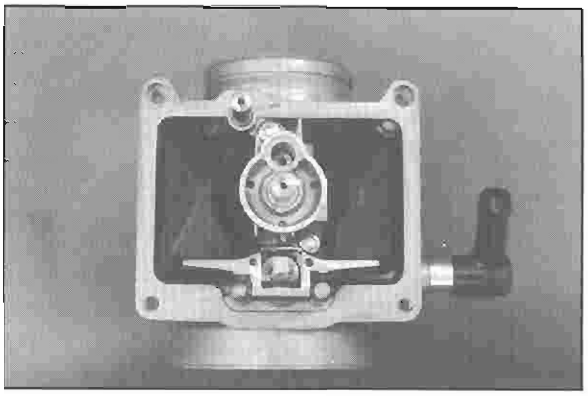
CAUTION:

Wear eye protection when using compressed air or cleaning solvents. Review all fuel system warnings found on page 5.1 before proceeding.

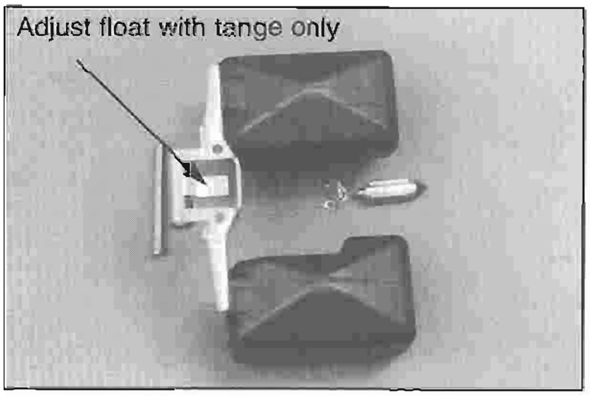
12. Remove pilot air screw and clean all passages in the carburetor body with carburetor cleaner. Dry all passages and jets with compressed air. Replace gaskets and any parts which show wear or damage.

Carburetor Assembly

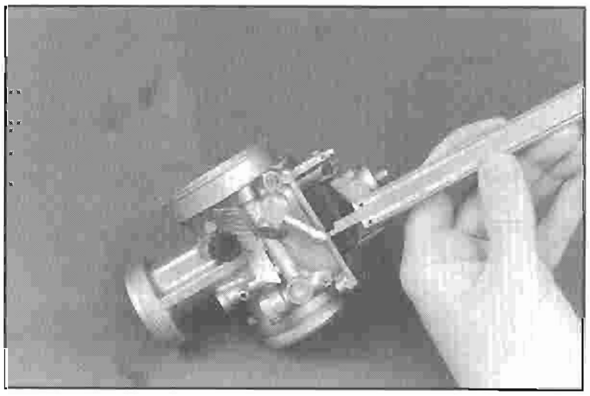
1. Install pilot jet and main jet.



2. Install inlet needle and float assembly.



3. Hold carburetor at angle shown so needle spring is not compressed. Measure from gasket surface of carb body to highest point on float. Measurement should be within specification.



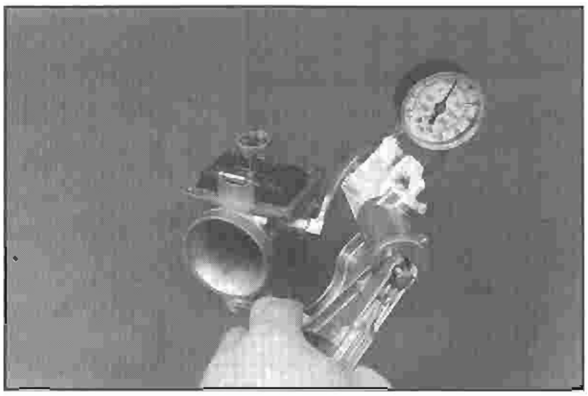
Float Height - Keihin:
16mm ± 2 mm

4. To adjust float level, bend tang contacting inlet needle. See photo above.

CAUTION:

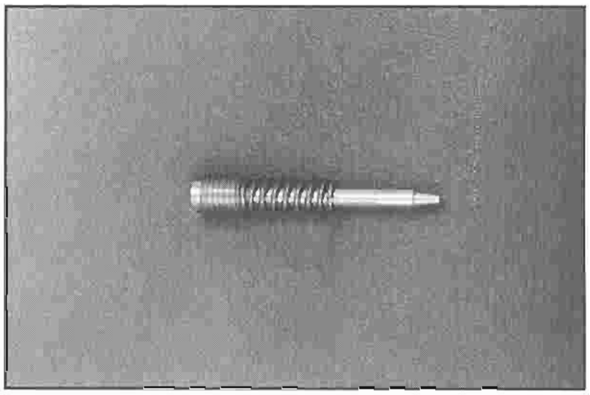
Do not bend float arm. Adjustment should be made with tang contacting inlet needle.

5. After adjusting float level, place carburetor in an inverted position.
6. Connect pressure tester to fuel inlet fitting. Apply 5 psi pressure and observe for one minute. The needle and seat should hold pressure indefinitely. If the pressure drops, carefully inspect the needle and the needle seat. The needle can be replaced if necessary. The needle seat cannot be replaced. If the seat surface is damaged replace the carburetor.



Pressure Tester PN 2870975

7. Carefully inspect float bowl gasket and replace if necessary. Install float bowl on carburetor.
8. Install idle screw and air adjusting screw.
9. Install jet needle clip onto needle jet.
10. Install jet needle into throttle valve.
11. Screw cable holder into throttle valve to secure jet needle and throttle valve.
12. Inspect gasket under throttle cap. Install throttle cable, spring, and collar. Connect cable to slide valve.
13. Install carburetor top cap until seated on carburetor body.



1996 Throttle Gap Chart

Model	Engine Model	Throttle Gap Under Cutaway	Air Screw CCW From Seat	Idle RPM
Lite, Lite GT, Lite Deluxe	EC34-2PM02	.240″/6.1mm	1.5	1600
Sport, Transport, Sport Touring	EC44-3PM01	.236″/6.0mm	1.25	1800
Super Sport	EC44-3PM02	.200″/5.1mm	1.25	1600
440	EC45PL02/06	.210″/5.3mm	1.5	1600
440 XCR	EC45PL07	.210″/5.3mm	1.0	1800
440 XCR SP	EC45PL08	.210″/5.3mm	1.0	2000
WideTrak GT	EC50PM03	.240″/6.1mm	1.0	1600
Trail, Trail Touring	EC50PM04/E04	.240″/6.1mm	1.5	1600
500, 500 SKS	EC50PL11	.210″/5.3mm	1.0	1600
Classic	EC50PLE11	.210″/5.3mm	1.0	1900
WideTrak LX	EC50PL12	.240″/6.1mm	1.5	1600
Classic Touring	EC50PL14	.240″/6.1mm	1.5	1600
500 RMK	EC50PL15	.210″/5.3mm	1.0	1600
XLT SP, 600 XCR	EC58PL02	.221″/5.6mm	1.0	2000
XLT, XLT SKS	EC58PL03	.193″/4.9mm	1.0	1700
XLT Touring	EC58PLE05	.230″/5.8mm	1.0	1700
XLT RMK	EC58PL07	.193″/4.9mm	ACCS	1700
600 XCR SP	EC59PL01	.187″/4.8mm	1.5	2000
Ultra SP, Ultra SKS	EC68PL01	.187″/4.8mm	1.0	1500
Ultra RMK	EC68PL04	.250″/6.4mm	1.0	1800
Storm RMK	EC80PL04	.218″/5.5mm	1.0	1600
Storm, Storm SKS	EC80PL05	.218″/5.5mm	1.0	1600

1997 Throttle Gap Chart

1997 Model	Engine Model	Throttle Gap-Under Cutaway (Under front of slide on Keihin) Drill Size (Inches/mm)	Idle Sync. Gap (Under Cutaway) Drill Size (Inches/mm)	Air Screw (Turns)	Idle RPM	Special Tool Required
Lite, Lite GT, Lite Deluxe	EC34-2PM02	.219″-7/32(5.55mm)	.240″-B(6.10mm)	1.5	1600	
Sport, Sport Trng, Transport, XCF	EC44-3PM02	.180″-15(4.57mm)	.200″-8(5.10mm)	1.0	1600	
440 XC	EC45PL08	.172″-11/64(4.37mm)	.190″-12(4.80mm)	.75	1600	
440	EC45PL09	.190″-12(4.80mm)	.210″-8(5.30mm)	.75	1600	
440 XCR	SN44LCDCSP-01	.172″-11/64(4.37mm)	.190″-12(4.80mm)	1.0	1800	
WideTrak GT	EC50PM03	.219″-7/32(5.55mm)	.240″-B(6.10mm)	1.0	1600	
Trail, Trail Touring	EC50PM04	.219″-7/32(5.55mm)	.240″-B(6.10mm)	1.5	1600	
Trail RMK	EC50PM05	.219″-7/32(5.55mm)	.240″-B(6.10mm)	1.0	1600	
Super Sport	EC50PM06	.180″-15(4.57mm)	.200″-B(5.10mm)	1.0	1600	
500, 500 Classic, 500 SKS	EC50PL17	.190″-12(4.80mm)	.210″-4(5.30mm)	1.0	1600	
500 RMK	EC50PL16	.210″-4(5.3mm)	.228″-1(5.80mm)	.75	1600	
Classic Touring	EC50PL19	.219″-7/32(5.55mm)	.240″-B(6.10mm)	1.0	1600	
WideTrak LX	EC50PL20	.219″-7/32(5.55mm)	.240″-B(6.10mm)	0.5	1600	
XLT, XLT SKS	EC58PL03	.172″-11/64(4.37mm)	.193″-11(4.90mm)	1.0	1700	
XLT RMK	EC58PL07	.172″-11/64(4.37mm)	.193″-11(4.90mm)	.75	1700	
600 XC	EC58PL08	.172″-11/64(4.37mm)	.190″-12(4.80mm)	.75	1700	
XLT LTD, XLT Touring	EC58PL09	.210″-4(5.3mm)	.228″-1(5.80mm)	1.0	1600	
XLT SP, XLT LTD SP	EC58PL12	.166″-19(4.22mm)	.187″-3/16(4.75mm)	1.0	1600	
600 XCR, 600 XCR SE	EC59PL01	.166″-19(4.22mm)	.187″-3/16(4.75mm)	0.5	1600	
Ultra, Ultra Touring, Ultra SP	EC68PL01	.166″-19(4.22mm)	.187″-3/16(4.75mm)	1.0	1800	
Ultra SPX, Ultra SPX SE	EC68PL03	.228″-1(5.79mm)	.248″-1/4(6.30mm)	1.0	1800	
700 SKS, 700 XC	SN70LCDCSP–01	.031″-1/32(0.79mm)*	.0469″-3/64(1.19mm)*	1.0	1500	PN2871810
700 RMK	SN70LCDCSP–02	.078″-5/64(1.98mm)*	.0937″-3/32(2.38mm)*	1.5	1500	PN2871811
Storm RMK	EC80PL04	.228″-1(5.79mm)	.248″-1/4(6.30mm)	1.0	1600	
Storm, Storm SE	EC80PL04	.228″-1(5.79mm)	.248″-1/4(6.30mm)	1.0	1600	

* Requires Special tool with two drill gauges spaced 8mm apart. Measured on forward edge (engine side) of slide.

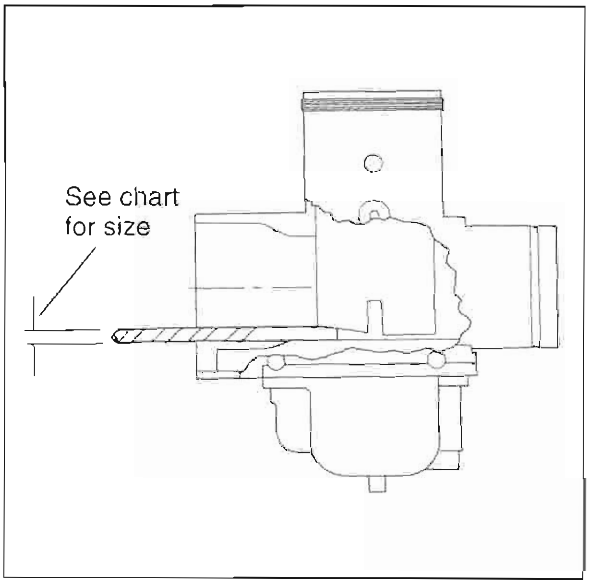
1998 Models

1998 Model	Engine Model	Throttle Gap-Under Cutaway (Front of slide on Keihin)	Idle Sync. Gap Under Cutaway (Front of slide on Keihin)	Air Screw (Turns out)	Idle RPM	Tool
Lite Deluxe Lite / Lite Touring	EC34-2PM02A	.219" - 7/32 (5.55mm)	.240"-#73 (6.1mm) (15/64=.2344")	1.5	1600	
Sport / Sport Tour Transport XCF	EC44-3PM024	.180" - #15 (4.57mm)	.200"(5.1mm) (#7 or 13/64")	1.0	1600	
440 XCR	SN44-44LCDCSP-01	.200" - 13/64 (5.1mm)	.217"-(5.5mm) (7/32")	1.25	1600	
440 Indy	EC45PL091	.189" - #12 (4.80mm)	.208"-(5.3mm) (#7 or 13/64")	.75	1600	
Trail Trail Touring	EC50PM043	.219" - 7/32 (5.55mm)	.240" - #73 (6.1mm) (15/64)	1.0	1600	
Trail RMK	EC50PM051	.219" - 7/32 (5.55mm)	.240" - #73 (6.1mm) (15/64)	1.0	1600	
Super Sport	EC50PM061	.180" - #15 (4.57mm)	.200"(5.1mm) (#7 or 13/64")	1.0	1600	
500; 500 Classic (Classic Touring)	EC50PL171 (EC50PL191)	.219" - 7/32 (5.55mm)	.240" - #73 (6.1mm) (15/64)	.75	1600	
500 RMK	EC50PL161	.189" - #12 (4.80mm)	.208"-(5.3mm) (#7 or 13/64")	1.25	1600	
XLT SP (XLT Classic)	EC50PL140 (PL150)	.166" - #19 (4.22mm)	.187" - 3/16" (4.8mm)	1.5	1800	
Widetrak LX	EC50PL201	.219" - 7/32 (5.55mm)	.240" - #73 (6.1mm) (15/64)	0.5	1600	
XLT LTD XLT Tour	EC58PL130	.213 / #3 5.5mm=0.2165"	.234" - A (5.94mm) (7/32")	1.0	1600	
600 XC	SN60-70LCDCSP-01	.7mm (.028") Tool PN: 2872093	1.5mm (.059") Tool PN: 2872093	1.0	1500	*
600 RMK	SN60-70LCDCSP-02	1.98mm (.078") Tool PN: 2871811	2.38mm (.094") Tool PN: 2871811	0.5	1500	*
600 XCR	EC59PL020	.166" - #19 (4.22mm)	.187" - 3/16" (4.8mm)	.5	1600	
Ultra Ultra Touring	EC68PL050	.166" - #19 (4.22mm)	.187" - 3/16" (4.8mm)	1.0	1800	
700 XCR	EC68PL060	.228" - 1 (5.79mm)	.248" - D (6.3mm) (1/4")	1.0	1800	
700 RMK	SN70-70LCDCSP–01	.70mm (.028") Tool PN: 2872093	1.5mm (.059") Tool PN: 2872093	1.0	1500	*
700 XC	SN70-70LCDCSP–02	1.3mm (.051") Tool PN: 2872092	1.60mm (.063") Tool PN: 2872092	1.0	1500	*
Storm	EC80PL052	.228" - 1 (5.79mm)	.248" - D (6.3mm) (1/4")	1.0	1600	

* Requires Special tool with two drill gauges spaced 8mm apart. Measured on forward edge (engine side) of slide.

Throttle Synchronization Procedure-1996 Mikuni Carburetors

1. Remove air box, noting position of throttle cable junction block. Reposition throttle cable and junction block in same position when air box is reinstalled.
2. Rotate slide valve adjustment screws (idle screw) out (counterclockwise) approximately two turns. Loosen throttle cable adjuster sleeve jam nuts and turn adjuster down (clockwise) two turns.
3. Referring to charts on pages 5.39-5.39a, select the correct diameter throttle gap drill gauge for the engine.
4. Place drill gauge beneath slide valve cutaway as shown in illustration at right.
5. Turn idle screw in until there is a slight drag on gauge. **NOTE:** Drill gauge must be in center of carb bore. This indicates proper throttle gap. Repeat procedure on all cylinders.
6. Hold throttle cable junction block in same location as noted in step #1. This is *very important,* since synchronization changes if throttle cable or junction block are improperly positioned.
7. With drill gauge installed under throttle slide as shown, turn cable adjuster out (up) until the gauge starts to move. **NOTE:** The drill gauge must be centered in the carburetor bore.
8. Turn cable adjuster clockwise (down) 1/3 turn. Repeat for all cylinders.
9. The throttle slides must raise from the idle position in unison. Check by visually observing a drill gauge in all carburetors, noting and comparing while lightly depressing the throttle lever.
10. Check throttle lever freeplay. If adjustment is required, the throttle cable adjusters must be turned equally to maintain synchronization. Tighten jam nut while holding cable adjusters.
11. Check oil pump adjustment.
12. Reinstall air box and correctly position throttle cable and junction block. Start engine and adjust idle stop screws evenly until proper idle RPM is achieved. (See chart above.) Re-check throttle lever freeplay and reset by turning cable adjusters evenly. Tighten cable adjuster jam nuts.



Throttle Free Play -
(Std.) 0.010 - 0.030″ (.25-.76mm)

EZ Throttle 0.050 - 0.060″ (1.25-1.50mm)

Throttle Synchronization Procedure-1997 to Current Mikuni and Keihin (With Idle Gap Specified)

1. Remove air box, noting position of throttle cable junction block. Reposition throttle cable and junction block in same position when air box is reinstalled.

Throttle Cable Synchronization (Throttle Gap)

2. Referring to chart on page 5.39a-b, select correct diameter **Throttle Gap** synchronization drill gauge for your engine.

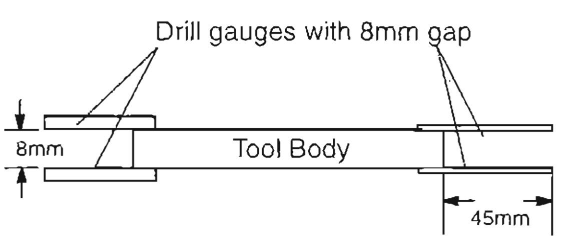
NOTE: Keihin carburetors, require a special tool with two drill gauges separated by an 8mm gap. See chart on page 5.39a and Illustrations at right.

3. Back out idle screws about three turns.
4. Slightly lift throttle slides with throttle lever and insert drill gauge under throttle slide. Allow throttle slides to return.
5. Loosen lock nut and turn throttle cable adjuster (on top of carburetor) in (clockwise) or out (counterclockwise) as required until a slight drag can be felt on the gauge.
6. Securely tighten throttle cable synchronization lock nut.
7. Repeat steps 3 through 5 on remaining carburetor.

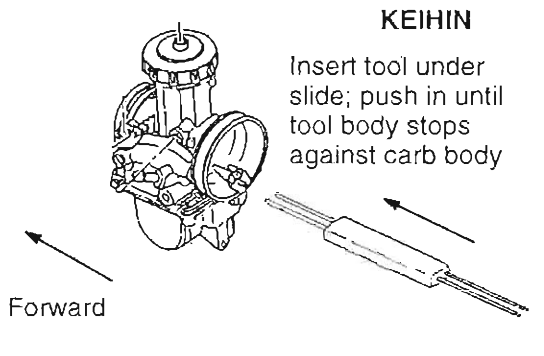
Idle Gap Synchronization

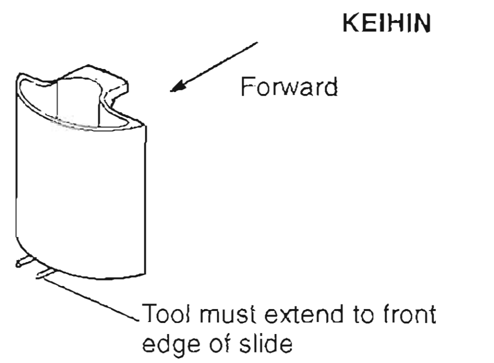
8. Referring to chart on page 5.39a, select correct diameter **Idle Gap** drill gauge for the engine.
9. Slightly lift throttle slides with throttle lever and insert idle gap drill gauge under throttle slide. Allow throttle slides to return.
10. Turn idle adjustment screw in as required until only a slight drag can be felt on the gauge.
11. Repeat steps 8 through 10 for remaining cylinders.
12. Verify proper throttle lever free play and adjust if necessary, by loosening cable adjuster locknuts and turning adjusters out equally until throttle lever freeplay is correct.

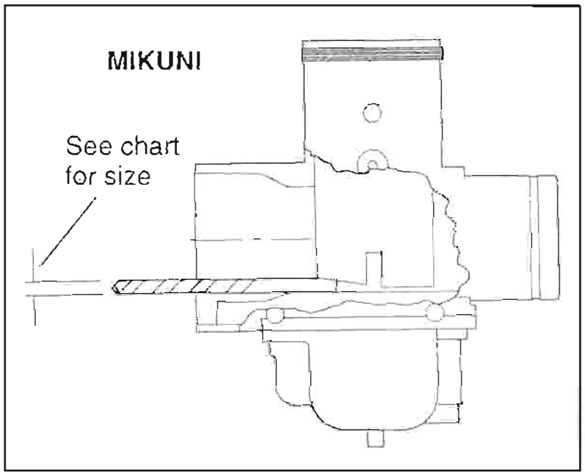
Throttle Free Play -
(Std.) 0.010 - 0.030″ (.25-.76mm)
EZ Throttle 0.050 - 0.060″ (1.25-1.50mm)



KEIHIN
Carburetor Synchronization Tool





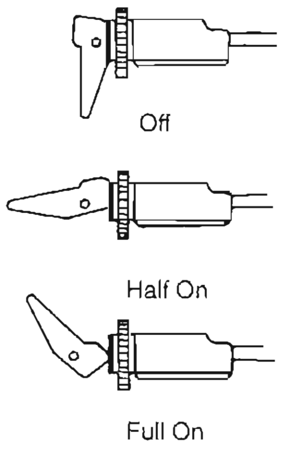


Choke Adjustments

With the dash mounted choke control toggle flipped to the full off position, the choke plunger must be seated on the fuel passage way in the carburetor. If the plunger is not seated on the passage way, the engine will flood or run too rich, causing plug fouling and very poor engine performance.

If cable slack is too great there will be excessive toggle free play resulting in hard cold starting. Also, the half on position used for intermittent applications will not function.

Choke Toggle Position

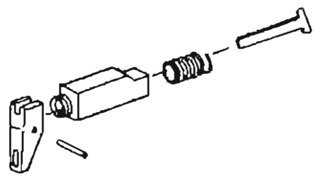


If the choke lever assembly becomes damaged, a lever kit is available. This allows replacement of the lever assembly rather than the entire cable assembly. Installation instructions are included with the kit.

Choke Lever Kits -

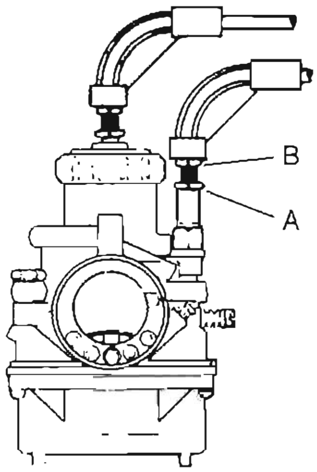
2 Cylinder PN 2200188
3 Cylinder PN 2200189

Contents of Lever Kit



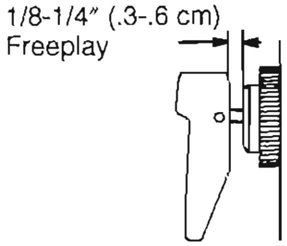
Adjustment Procedure

1. Flip choke toggle to full off position.
2. Loosen adjustment locknut (A) on carburetor(s).
3. Turn cable sleeve adjusting nut (B) clockwise on carburetor(s) until 1/4" (.6 cm) or more choke toggle free play is evident.
4. Turn cable sleeve adjusting nut counterclockwise on one carburetor until toggle has zero free play, then rotate it clockwise until 1/8"-1/4" (.3-.6 cm) toggle free play is evident.
5. Tighten adjustment locknut (A).
6. Repeat steps 4 and 5 for remaining carburetor(s).



Choke Lever Freeplay -

1/8 - 1/4" (.3 - .6 cm)



The amount of air drawn into the cylinders is influenced by such factors as altitude, temperature, humidity, etc. Suppose the amount of air drawn into the cylinders at an elevation of zero is taken as 100 (the temperature and humidity in this case are considered constant). The amount of air in question decreases in proportion to a rise in elevation as shown in Chart A. Reduction in the amount of air drawn into the cylinders changes the air/fuel mixture ratio, resulting in a marked drop in power output.

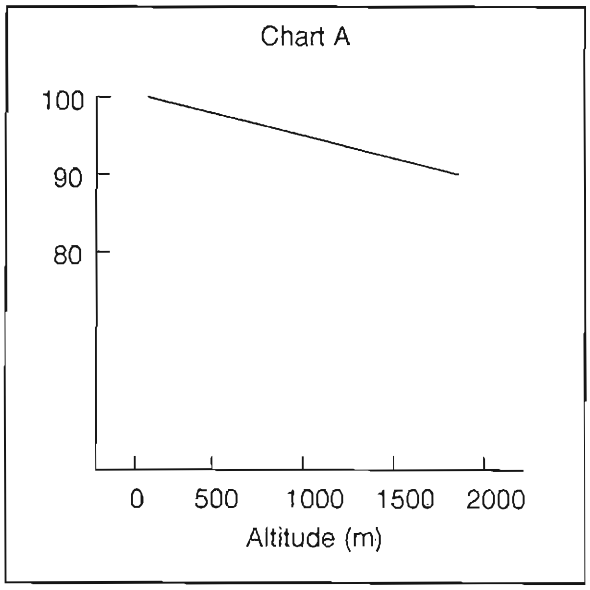
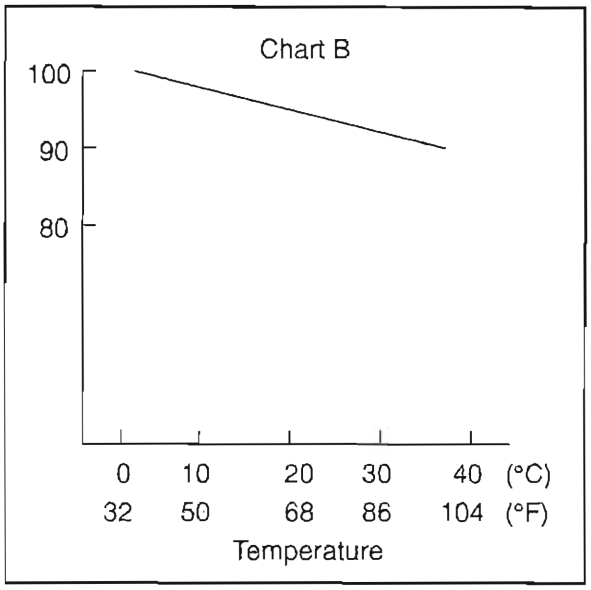


Chart B shows the relationship between a rise in temperature and the amount of air drawn into the cylinders. In this case, the atmospheric pressure (elevation) and the humidity are considered unchanged and the amount of air going into the cylinders at 32° F (0° C) is taken as 100.



On Mikuni VM carburetors the pilot system and the main system are of independent construction. The fuel flow in these two systems is shown in Chart C.

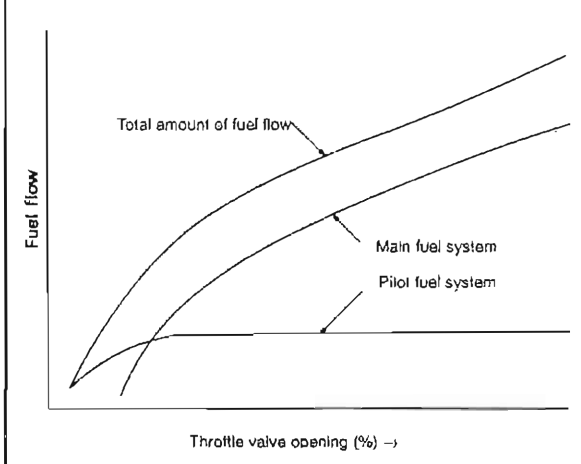
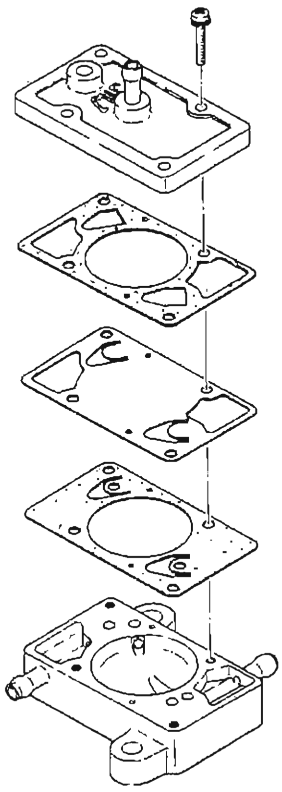


CHART C

Fuel Pump - Operation



The fuel pumps on all Polaris engines are basically the same. The differences are in the size and location of the pumps. Pumps may be mounted to the engine or to the chassis.

In the two cycle engine, the pressure in the crankcase changes with the up and down stroke of the piston. The amplitudes of pressure vary according to the RPM and degree of throttle opening. Whether idling or at full throttle, the pressure built up in the crankcase has enough amplitude to operate the pump.

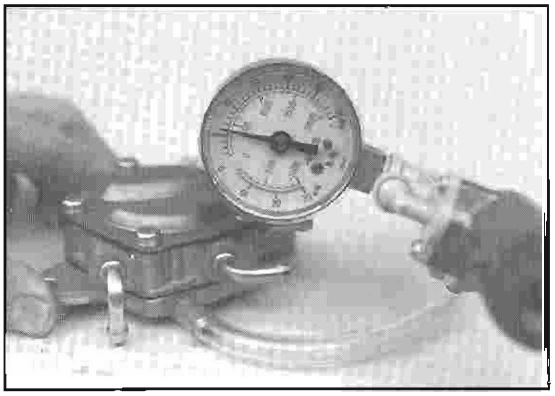
When the piston is on the upstroke, crankcase pressure in that cylinder becomes less positive. The diaphragm in the fuel pump moves toward the engine, causing a negative pressure or suction in the pump chamber. This causes the inlet valve from the fuel supply to open and permits fuel to enter the chamber. This same suction causes the outlet valve (to the carburetor) to close so that fuel cannot return form the carburetor.

When the piston begins its downward stroke, the pressure from the crankcase becomes positive, causing the fuel pump diaphragm to move in the opposite direction and reversing the pressure in the fuel pump chamber. This causes the inlet valve in the pump to close and the outlet valve to open, filling the float bowl in the carburetor. When the float level in the carburetor reaches its standard level, the needle valve will close, preventing more fuel from entering the carburetor, even though the fuel pump continues to try to provide the carburetor with fuel.

Maintenance

The impulse operated diaphragm fuel pump does not require any specific scheduled maintenance. However, the following procedures should be observed.

Operation:



- The pump may be checked for operation by removing the fuel supply line from the carburetor and placing it into a container. With the engine idling at approximately 2000 RPM, a steady flow of fuel should be visible.

Cleaning:

- The pump and impulse line must be disassembled and cleaned of foreign material in the event of piston or other internal engine part failures which produce fragments.

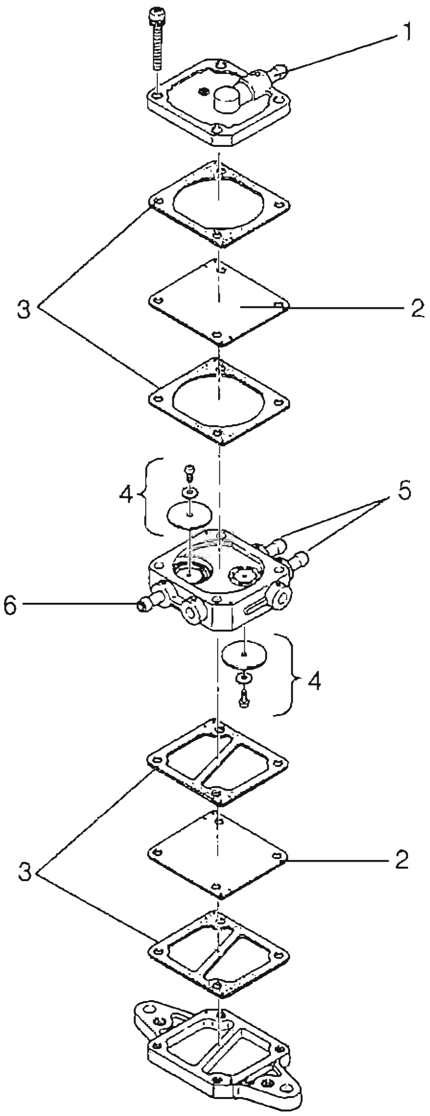
Inspection:

- Disconnect impulse line from pump. Connect Mity Vac™ to impulse fitting (or line) and apply 4-6 PSI pressure. Diaphragm should hold pressure indefinitely.
- The diaphragms and check valves must be carefully examined for cracks, holes, or other damage. If in doubt as to the condition of any internal parts, replace all diaphragms, check valves, and gaskets.

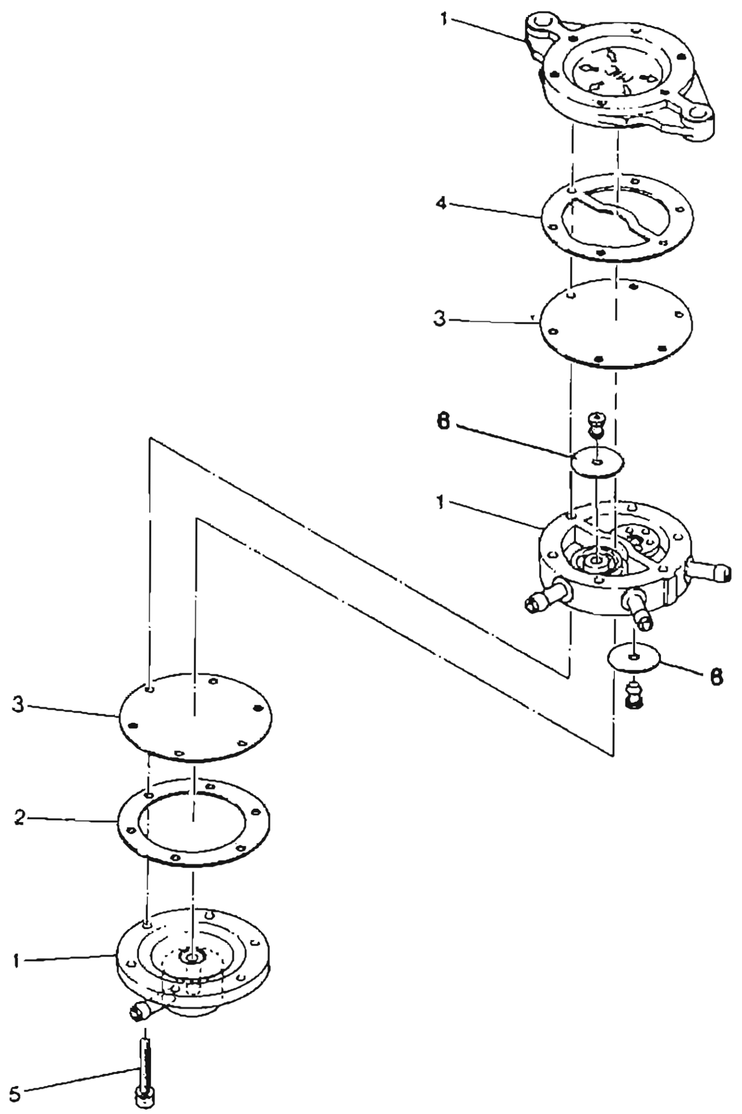
Taio Giken

Description of Parts

1. Vacuum (from crankcase)
2. Diaphragm
3. Gaskets
4. Check Valves
5. Fuel Outlets (to carbs)
6. Fuel Inlet (from tank)

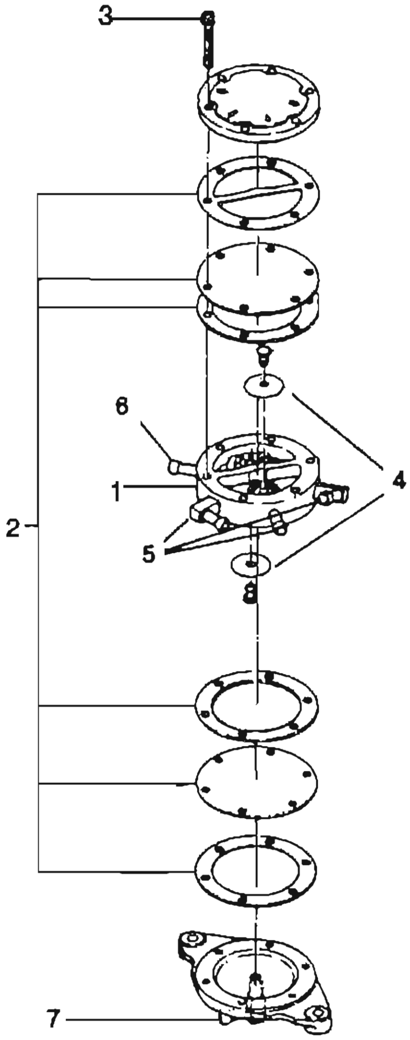


Exploded View - Twin Cylinder (Typical) Fuel Pump



Parts Description

1. Pump Body Assembly
2. Lower Gasket
3. Diaphragm
4. Upper Gasket
5. Screw (6 used)
6. Check Valve



Parts Description

1. Pump Valve Body
2. Diaphragms and Gaskets
3. Screw (6 used)
4. Check Valves

NOTE: Be sure of proper order and position of gaskets and diaphragms upon reassembly.

5. Fuel Outlet (3 to carbs)
6. Fuel Inlet (from tank)
7. Vacuum/Pressure (from crank-case)

Water Trap Service

⚠ WARNING

Fuel spillage will occur during this installation. *Gasoline is extremely flammable and explosive under certain conditions.*

⚠ Do not smoke or allow open flames or sparks in or near the area where refueling is performed or where gasoline is stored.

⚠ Do not weld or operate a torch near the fuel system. Remove fuel tank before any chassis welding is performed.

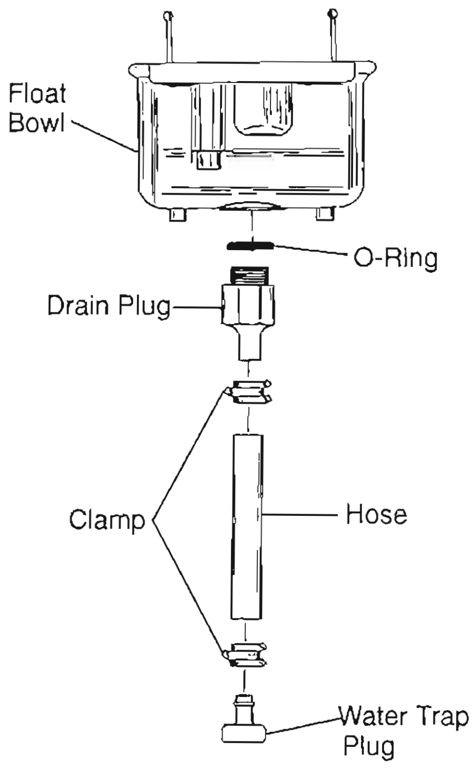
⚠ If you get gasoline in your eyes or if you swallow gasoline, see your doctor immediately.

⚠ If you spill gasoline on your skin or clothing, immediately wash it off with soap and water and change clothing.

⚠ Never start the engine or let it run in an enclosed area. Gasoline powered engine exhaust fumes are poisonous and can cause loss of consciousness and death in a short time.

1. Turn fuel valve off.
2. Remove air silencer.
3. Position a shop cloth or container below drain plug and water trap plug.
4. Remove drain plug and sealing O-Ring, or slide clamp upward and remove water trap plug.
5. Drain water/fuel. Clean trap with electrical contact cleaner and dry with compressed air.
6. Lightly grease O-ring and install water trap assembly into bottom of float bowl, or reinstall trap plug in hose and position. Tighten securely.
7. Turn fuel on, start engine and check for possible fuel leaks.
8. Reinstall air box.

The water traps should be periodically inspected and drained. Draining frequency will depend upon fuel supply, riding conditions, and fuel handling precautions.



Fuel system diagnosis should follow a specific path, first examining the fuel tank, then the filters, fuel lines, vent lines, fuel pump, impulse hose, air box, exhaust system and finally the carburetors.

The following troubleshooting information assumes that the general mechanical condition of the engine (pistons, rings, bearings, etc.) is good.

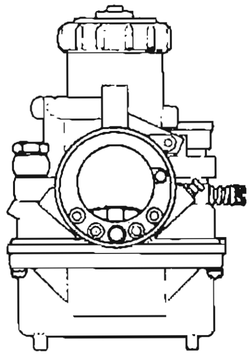
When the fuel/air mixture is diagnosed as improper due to spark plug readings, clean the carburetor and blow its passages clear with compressed air. Use the spark plug firing end condition as a guide for further determination of whether the mixture is too rich or too lean.

Use the throttle lever to determine at what degree of throttle valve opening the problem exists.

CONDITION	SYMPTOMS
Mixture Too Rich	-Black spark plug tip; plug fouling -Heavy exhaust smoke -Engine runs worse after warm up -Engine "loads up"
Mixture Too Lean	-Spark plug electrodes white -Fluctuation in engine speed -Power loss -Engine overheats -Cylinder scoring / Holing pistons -Backfiring - detonation -Throttle diagnostic opening check points
Poor Fuel Mileage	-Incorrect ignition timing -Improper track tension (too tight) -Incorrect carburetor jetting -Fuel leaks (lines, fittings, fuel pump) -Needle and seat leaks -Plugged exhaust -Carburetor vent line problems -Clutching incorrect for conditions / worn belt

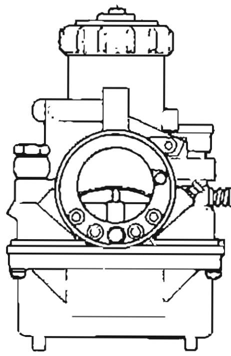
Troubleshooting Tips, 0-1/4 Throttle:

- Pilot air screw misadjusted
- Pilot jet of wrong size, loose, or obstructed
- Obstruction of pilot jet
- Incorrect throttle synchronization
- Choke plunger not seating (rich)
- Carburetor mounting air leak (lean)
- Crankshaft seal air leak (lean)
- Fuel pump diaphragm damaged (rich)
- Float level incorrect
- Air bleed obstructed



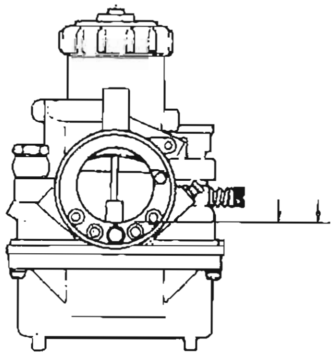
Troubleshooting Tips, 1/4-3/8 Throttle:

- Obstruction in main jet or needle jet
- Jet needle worn or out of adjustment
- Pilot system malfunction
- Incorrect throttle valve cutaway
- Incorrect throttle synchronization



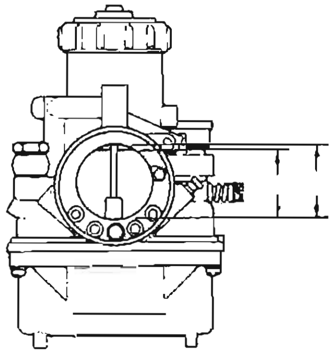
Troubleshooting Tips, 3/8-3/4 Throttle:

- Main jet incorrect size or clogged (lean)
- Needle jet damaged or loose
- Needle jet/jet needle worn (rich)
- Incorrect throttle synchronization



Troubleshooting Tips, Full Throttle:

- Main jet size (rich or lean)
- Fuel filter blocked (lean)
- Fuel vent lines or check valves plugged
- Exhaust system plugged
- Air box restricted
- Fuel pump weak
- Exhaust leaking into engine compartment (rich)
- Water in float bowl (lean)
- Incorrect throttle synchronization



CHAPTER 6
CLUTCHES

⚠ WARNING

All drive clutch maintenance, disassembly and assembly must be performed only by an authorized Polaris dealer who has attended current model Dealer Service Seminars, has received a certificate of completion, and displays the Polaris Servicing Dealer decal.

Because of the critical nature and precision balance incorporated into the drive clutch, it is absolutely essential that no attempt at clutch disassembly and/or repair be made without factory authorized tools and service procedures.

Essential Drive Clutch Tools

Refer to the Service Tool Catalog (PN 9914681) for photos and descriptions of all tools.

Description	Part Number
Offset Alignment Tool - 21/32" (1.7 cm) P-90 Clutches	2870914
Offset Alignment Tool - 5/8" (1.6 cm) P-85 Clutches	2870426
T-Handle Drive Clutch Puller (Large Shaft ID)	2870506
Drive Clutch Puller 14mm (Small Shaft ID)	2871757
Strap Wrench	2870336
Replacement Strap for 2870336	2870389
Spider Spanner Nut Driver (Jam Nut)	2870338
Spider Removal / Installation Tool	2870341
Holding Fixture	2871358
Holding Fixture Tab	5130518
Tapered Reamer	2870576
Spider Button Tool	2870985
Clutch Bushing Rebuild Tool Kit (P-85/P90)	2871025
P-85 Drive Clutch Compression Tool	2870984
Driven Clutch Puller (P-90)	2871056
Torque Wrench, 250 ft. lb.	Commercially Available
Torque Wrench, 0-600 in. lb.	Commercially Available
Clutch Compression Tool	8700220

CLUTCHES
Clutch Torque Values

Bolt Size	Area Where Used	Torque Minimum-Maximum
7/16″	Drive Clutch Retaining Bolt	40-45 ft. lbs. (5.52-6.21 kgm)
14mm	Drive Clutch Retaining Bolt	50 ft. lbs. (6.9 kgm)
1/4″	Drive Clutch Cover Bolts	90 in. lbs. (1.03 kgm)
#10-24″	Drive Clutch Weight Pin	30 in. lbs. (.34 kgm)
1-1/4″	Drive Clutch Spider	200 ft. lbs. (29.60 kgm)
1-1/4″	Drive Clutch Spider Jam Nut	235 ft. lbs. (32.43 kgm)
5/16″	Driven Clutch Retaining Bolt	15 ft. lbs. (2.07 kgm)
#8-32″	Driven Button Screw	20 in. lbs. (.23 kgm)
1/4″	Driven Adjust Plate Screw	10 ft. lbs. (1.38 kgm) see decal

1996 Clutch Specifications 0-3000 Feet (0-900 Meters)

Machine Model	Engine Model	Operating RPM ± 200	Production Clutch Part No.	Spring Color, Wire Dia.	Shift Wt. I.D./Gram	Bore Taper Dia.	Clutch Center Distance +.100" −.000	Driven Helix Angle & Location	Chaincase Gearing
Indy Lite/GT Indy Lite Deluxe	EC34-2PM02	7000	1321601 1321602	Silver/ Gold .218	10	1.160	11.030"	36.5° B-2	16:39
Indy Sport Indy Sport Touring Indy TranSport	EC44-3PM01	6800	1321594	Brown .200	10	1.160	12.00"	36.5° B-2	16:35 16:39 15:39
Indy Super Sport	EC50PM06	7000	1321619	Red/ White .192	10AL Bushed	1.160	12.00"	36.5° B-2	17:35
Indy Trail	EC50PM04	7000	1321659	Red/ White .192	10AL Bushed	1.190	12.00"	36° #2	21:39
Indy Trail Touring	EC50PME04	7000	1321660	Red/ White .192	10AL Bushed	1.190	12.00"	36° #2	20:39
Indy WideTrak GT	EC50PM03	6600	1321661	Brown .200	10 Bushed	1.190	12.00"	36° #2	19:41
Indy WideTrak LX	EC50PLE12	7000	1321644	Brown .200	10 Bushed	1.190	12.00"	36° #2	19:41
Indy 440 LC	EC45PL06	8000	1321580	Gold .207	10 MB Bushed	1.190	12.00"	34° #2	21:39
Indy 440 XCR	EC45PL07	8250	1321648	Blue .207	10 MB Bushed	1.190	12.00"	34° #2	21:39
Indy 440 XCR SP	EC45PL08	8250	1321643	Blue .207	10M Bushed	1.190	12.00"	R-8 #2	21:39
Indy 500 Indy 500 SKS	EC50PL11	7750	1321663	Gold .207	10M Bushed	1.190	12.00"	36° #2	21:39 20:39
Indy 500 RMK*	EC50PL11	7750	1321655	Gold .207	10M Bushed	1.190	12.00"	36° #2	20:39
Indy Classic	EC50PLE11	7750	1321666	Gold .207	10 M Bushed	1.190	12.00"	36° #2	21:39
Indy Classic Touring	EC50PL14	7750	1321606	Gold .207	10 MB Bushed	1.190	12.00"	34° #2	20:39
Indy 500 EFI Indy 500 EFI SKS	EC50PL13	8000	1321663	Gold .207	10 M Bushed	1.190	12.00"	36° #2	21:39 20:39
Indy 500 EFI RMK*	EC50PL13	8000	1321655	Gold .207	10 M Bushed	1.190	12.00"	36° #2	20:39
Indy XLT/XLT SKS	EC58PL03	8000	1321665	Gold .207	10 M Bushed	1.177	12.00"	34° #2	21:39
Indy XLT RMK*	EC58PL07	8000	1321656	Gold .207	10 M Bushed	1.177	12.00"	34° #2	18:39
Indy XLT Touring	EC58PLE05	8250	1321664	Gold .207	10M Bushed	1.174	12.00"	34° #2	20:39
Indy XLT SP/ 600 XCR	EC58PL02	8500	1321678	Blue .207	10MB Bushed	1.177	12.00"	34° #2	21:39
Indy 600 XCR SP	EC59PL01	8500	1321650	Blue .207	10 AL Bushed	1.177	12.00"	R-1 #2	21:35
Indy RXL	EC65PL05	8000	1321650	Blue .207	10 AL Bushed	1.177	12.00"	36° #2	21:35
Indy Ultra SP/SKS	EC68PL01	8200	1321682	Silver/ Gold	10 Bushed	1.177	12.00"	36° #2	21:35
Indy Ultra RMK*	EC68PL04	8200	1321678	Silver/ Gold	10 Bushed	1.177	12.00"	36° #2	20:35
Indy Storm/ (Indy Storm SKS)	EC80PL05	8250	1321651	Blue .207	10-60 Bushed	1.177	12.50"	R-3 #2	23:37 (20:35)
Indy Storm RMK	EC80PL04	8250	1321658	Blue .207	10-60 Bushed	1.177	12.50"	R-3 #2	20:35

* **NOTE:** RMK production setup is 6000-9000 feet. Refer to page 6.4 for 1996 RMK production setup.

1996 HIGH ELEVATION RECOMMENDATIONS												
	3000 Ft. to 6000 Ft.				6000 Ft. to 9000 Ft.				9000 Ft. to 12000 Ft.			
Machine Model	Shift Weight	Clutch Spring	Driven Helix	Chain-case Gearing	Shift Weight	Clutch Spring	Driven Helix	Chain-case Gearing	Shift Weight	Clutch Spring	Driven Helix	Chain-case Gearing
Indy Lite/ GT/Deluxe	10MB	Gold	36.5° #B-2	16:39	10M White	Gold	36.5° #B-2	16:39	10M White or 10M Red	Blue Gold	36.5° #B-2	16:39
Indy Sport	10	Red/White	36.5° #B-2	16:35	10 Bushed	Gold	36.5° #B-2	16:35	10 or 10M Blue	Blue Gold	36.5° #B-2	16:35
Indy Sport Touring	10	Red/White	36.5° #B-2	16:39	10M Bushed	Gold	36.5° #B-2	16:39	10 or 10M Blue	Blue Gold	36.5° #B-2	16:39
Indy TranSport	10	Red/White	36.5° #B-2	15:39	10	Gold	36.5° #B-2	15:39	10 or 10M Blue	Blue Gold	36.5° #B-2	15:39
Indy Super Sport	10 Bushed	Red/White	36.5° #B-2	17:35	10AL Bushed	Gold	36.5° #B-2	17:35	10MB Bushed 10 Bushed	Red/White Gold	36.5° #B-2	17:35
Indy Trail/ Touring	10AL Bushed	Gold Red/White	36° #2	21:39 20:39	10 Bushed	Gold Red/White	36° #2	21:39 20:39	10MB Bushed	Gold Red/White	36° #2	21:39 20:39
Indy Wide- Trak GT	10 Bushed	Red/White	36° #2	19:41	10M Bushed	Red/White	36° #2	19:41	10MB Bushed	Red/White	36° #2	19:41
Indy wide- Trak LX	10 Bushed	Red/White	36° #2	19:41	10MB Bushed	Red/White	36° #2	19:41	10MW Bushed	Red/White	36° #2	19:41
Indy 440 LC	10MW Bushed	Blue	34° #2	21:39	10MR Bushed	Blue	34° #2	21:39	10MR Bushed	Blue	34° #2	21:39
Indy 440 XCR	10MW Bushed	Blue	34° #2	21:39	10MW Bushed	Blue	34° #2	21:39	10MR Bushed	Blue	34° #2	21:39
Indy 440 XCR SP	10MB Bushed	Blue	R-8	21:39	10MW Bushed	Blue	R-8	21:39	10MR Bushed	Blue	R-8	21:39
Indy 500	10MB Bushed	Gold	36° #2	21:39	10MW Bushed	Blue	36° #2	21:39	10MR Bushed	Blue	36° #2	21:39
Indy 500 SKS	10MB bushed	Gold	36° #2	20:39	10MW Bushed	Blue	36° #2	20:39	10MR Bushed	Blue	36° #2	20:39
Indy Clas- sic Touring	10MB Bushed	Blue	34° #2	20:39	10MW Bushed	Blue	34° #2	20:39	10MR Bushed	Blue	34° #2	20:39
Indy Classic	10MB Bushed	Gold	36° #2	21:39	10MW Bushed	Blue	36° #2	21:39	10MR Bushed	Blue	36° #2	21:39
Indy 500 RMK	10MB Bushed	Gold	36° #2	20:39	10MW bushed	Blue	36° #2	20:39	10MR Bushed	Blue	36° #2	20:39
Indy 500 EFI	10MB Bushed	Gold	36° #2	21:39	10MW bushed	Blue	36° #2	21:39	10MR Bushed	Blue	36° #2	21:39
Indy 500 EFI SKS	10MB Bushed	Gold	36° #2	20:39	10MW bushed	Blue	36° #2	20:39	10MR Bushed	Blue	36° #2	20:39
Indy 500 EFI RMK	10MB Bushed	Gold	36° #2	20:39	10MW Bushed	Blue	36° #2	20:39	10MR Bushed	Blue	36° #2	20:39
Indy XLT	10MB Bushed	Gold	34° #2	21:39	10MW Bushed	Blue	34° #2	21:39	10MR Bushed	Blue	34° #2	21:39
Indy XLT SKS	10MB Bushed	Gold	34° #2	20:39	10MW Bushed	Blue	34° #2	20:39	10MR Bushed	Blue	34° #2	20:39
Indy XLT SP	10MW Bushed	Blue	34° #2	21:39	10MR Bushed	Blue	34° #2	20:39	10MR Bushed	Blue	34° #2	21:39
Indy XLT Touring	10MB Bushed	Gold	34° #2	20:39	10MW Bushed	Blue	34° #2	20:39	10MR Bushed	Blue	34° #2	20:39
Indy XLT RMK	10MB Bushed	Gold	34° #2	18:39	10MW Bushed	Blue	34° #2	18:39	10MR Bushed	Blue	34° #2	18:39
Indy 600 XCR	10MW Bushed	Blue	34° #2	21:39	10MR Bushed	Blue	34° #2	21:39	10MR Bushed	Blue	34° #2	21:39
Indy 600 XCR SP	10 Bushed	Blue	R-1 #2	21:35	10M Bushed	Blue	R-1 #2	21:35	10MB or 10MW	Blue	R-1 #2	21:35
Indy RXL	10 Bushed	Blue	36° #2	20:35	10MB Bushed	Blue	34° #2 36° #3	20:35	10MW Bushed	Blue	34° #2 36° #3	20:35

1996 HIGH ELEVATION RECOMMENDATIONS (Cont.)												
	3000 Ft. to 6000 Ft.				6000 Ft. to 9000 Ft.				9000 Ft. to 12000 Ft.			
Machine Model	Shift Weight	Clutch Spring	Driven Helix	Chain-case Gearing	Shift Weight	Clutch Spring	Driven Helix	Chain-case Gearing	Shift Weight	Clutch Spring	Driven Helix	Chain-case Gearing
Indy Ultra SP	10M Bushed	Blue	36° #2	21:35	10MB Bushed	Blue	36° #2	21:35	10MW Bushed	Blue	36° #2	21:35
Indy Ultra RMK	10M Bushed	Blue	36° #2	20:35	10MB Bushed	Blue	R-9 #2	20:39	10MW Bushed	Blue	R-9 #2	20:39
Indy Ultra SKS	10M Bushed	Blue	36° #2	20:35	10MB Bushed	Blue	36° #2	20:35	10MW Bushed	Blue	36° #2	20:35
Indy Storm	10-58 Bushed	Blue	R-3 #2	23:37	10-56 Bushed	Blue	R-3 #2	21-37* or 20:35	10AL Bushed	Blue	R-3 #2	21-37* or 20:35
Indy Storm SKS	10-58 Bushed	Blue	R-3 #2	20:35	10-56 Bushed	Blue	R-3 #2	20:35	10AL Bushed	Blue	R-3 #2	20:35
Indy Storm RMK	10-58 Bushed	Blue	R-3 #2	20:35	10-56 Bushed	Blue	R-3 #2	20:39	10AL Bushed	Blue	R-3 #2	20:39

* Cannot be used with reverse kit

1997 Clutch Specifications 0-3000 Feet (0-900 Meters)

Machine Model	Engagement RPM ± 300	Operating RPM ± 200	Production Drive ClutchPart No.	Spring Color, Wire Dia.	Shift Wt. I.D./Gram	Driven Spring Color	Clutch Center Distance +.100″ −.000	Driven Helix Angle & Location	Chaincase Gearing
Indy Lite/GT Indy Lite Deluxe	4100	7000	1321601 1321602	Silver/Gold .218	10	Red	11.030″	36.5° B-2	16:39
Indy Sport	4000	7000	1321687	Red/White .192	10AL Bushed	Red	12.00″	36.5° B-2	17:35
Sport Touring Indy TranSport	3500	7000	1321594	Brown .200	10 Bushed	Red	12.00″	36.5° B-2	16:39 15:39
Indy Super Sport	4000	7000	1321659	Red/White .192	10AL Bushed	Red	12.00″	36° #2	21:39
Indy Trail Indy Trail Touring	3600	7000	1321659 1321660	Red/White .192	10AL Bushed	Red	12.00″	36° #2	21:39 20:39
Indy Trail RMK	3600	7000	1321683	Red/White .192	10AL Bushed	Red	12.00″	36° #2	19:40
Indy XCF	4000	7000	1321698	Red/White .192	10 Bushed	Red	12.00″	34° #2	20:39
Indy WideTrak GT	3800	6500	1321661	Brown .200	10 Bushed	Red	12.00″	36° #2	19:41
Indy WideTrak LX	3800	7000	1321692	Brown .200	10 Bushed	Red	12.00″	36° #2	19:41
Indy 440 LC	3800	7750	1321662	Gold .207	10 MB Bushed	Red	12.00″	34° #2	21:39
Indy 440 XC	4900	8250	1321686	Dark Blue .218	10 Bushed	Silver	12.00″	R-8 #2	21:39
Indy 440 XCR	4900	8250	1321704	Almond/ Gold .207	S-53R Bushed	Silver	12.00″	R-8 #2	22:41
Indy 500 Indy 500 SKS Indy 500 EFI	4000	7800 7800 8000	1321663	Gold .207	10M Bushed	Red	12.00″	36° #2	21:39 20:39 21:39
Indy 500 RMK*	3800	7800	1321655	Gold .207	10M Bushed	Red	12.00″	36° #2	20:39
Indy Classic	4000	7800	1321690	Gold .207	10 M Bushed	Red	12.00″	36° #2	21:39
Indy Classic Touring	4000	7800	1321691	Gold .207	10 MB Bushed	Red	12.00″	34° #2	19:39
Indy XLT/XLT LTD Indy XLT Touring Indy XLT SKS	4200	8000	1321665 1321689 1321571	Gold .207	10 M Bushed	Red	12.00″	34° #2	21:39 20:40 20:39
Indy XLTSP	4200	8300	1321678	Gold .207	10 MB Bushed	Red	12.00″	34° #2	21:39
Indy XLT RMK*	4000	8000	1321656	Blue .207	10 M Bushed	Red	12.00″	34° #2	18:40
Indy XLT LTD SP	4400	8300	1321665	Gold .207	10M Bushed	Red	12.00″	34° #2	21:39
Indy 600 XC	4200	8300	1321693	Dark Blue .218	10 M Bushed	Red	12.00″	34° #2	21:39
Indy 600 XCR Indy 600 XCR SE	4800	8500	1321708	Almond square	10-54	Gold	12.00″	R-1 #2	21:35
Indy RXL	4000	8000	1321650	Blue .207	10 AL Bushed	Red	12.00″	36° #2	20:35
Indy Ultra Indy Ultra SP Indy Ultra Touring	4500	8200	1321682 1321682 1321688	Dark Blue .218	10-54 Bushed	Red	12.00″	36° #2	21:35 21:35 20:35
Indy Ultra SPX Indy Ultra SPX SE	4800	8600	1321708	Almond square	10-54 Bushed	Gold	12.00″	R-8 #2	21:35
Indy 700 SKS	4200	8000	1321695	Dark Blue .218	10-60	Silver	12.50″	36° #2	20:35
Indy 700 RMK	4200	8000	1321696	Dark Blue .218	10-60 Bushed	Silver	12.50″	R-11 #2	21:39
Indy Storm Storm SE (RMK)	4800	8400	1321651 (1321658)	Almond square	10-58 Bushed	Gold	12.50″	R-4 #2	23:37 (20:39)

* **NOTE:** RMK production setup is 6000-9000 feet.

1997 HIGH ELEVATION RECOMMENDATIONS												
	3000 Ft. to 6000 Ft.				6000 Ft. to 9000 Ft.				9000 Ft. to 12000 Ft.			
Machine Model	Shift Weight	Clutch Spring	Driven Helix	Chain-case Gearing	Shift Weight	Clutch Spring	Driven Helix	Chain-case Gearing	Shift Weight	Clutch Spring	Driven Helix	Chain-case Gearing
Indy Lite/ GT/Deluxe	10M Blue	Gold	36.5° #B-2	16:39	10M White	Gold	36.5° #B-2	16:39	10M White or 10M Red	Blue Gold	36.5° #B-2	16:39
Indy Sport	10 Bushed	Red/White	36.5° #B-2	17:35	10AL Bushed	Gold	36.5° #B-2	16:35	10M Blue or 10 Bushed	Red/White Gold	36.5° #B-2	16:35
Indy Sport Touring	10M Bushed	Brown	36.5° #B-2	16:39	10M Bushed	Gold	36.5° #B-2	16:39	10M Blue Bushed	Gold	36.5° #B-2	16:39
Indy TranSport	10M Bushed	Brown	36.5° #B-2	15:39	10M Bushed	Gold	36.5° #B-2	15:39	10M Blue Bushed	Gold	36.5° #B-2	15:39
Indy Super Sport	10AL Bushed	Red/White	36° #2	21:39	10 Bushed	Red/White	36° #2	20:39	10MB Bushed	Red/White	36° #2	20:39
Indy Trail/ Touring	10AL Bushed	Red/White	36° #2	21:39 20:39	10 Bushed	Red/White	36° #2	21:39 20:39	10MB Bushed	Red/White	36° #2	21:39 20:39
Indy Trail RMK	10 Bushed	Red/White	36° #2	19:40	10MB Bushed	Red/White	36° #2	19:40	10MW Bushed	Red/White	36° #3	19:40
XCF	10M Bushed	Red/White	34° #2	20:39	10M Bushed	Gold	34° #2	16:35	10MB Bushed	Gold	34° #2	16:35
Indy Wide-Trak GT	10 Bushed	Red/White	36° #2	19:41	10M Bushed	Red/White	36° #2	19:41	10MB Bushed	Red/White	36° #2	19:41
Indy wide-Trak LX	10 Bushed	Red/White	36° #2	19:41	10MB Bushed	Red/White	36° #2	19:41	10MW Bushed	Red/White	36° #2	19:41
Indy 440 LC	10MW Bushed	Blue	34° #2	21:39	10MR Bushed	Blue	34° #2	21:39	10MR Bushed	Blue	34° #2	21:39
Indy 440 XC	10M Bushed	Dark Blue	R-8 #2	21:39	10MB Bushed	Dark Blue	R-8 #2	20:39	10MW Bushed	Dark Blue	R-8 #2	20:39
Indy 500/ Classic	10MB Bushed	Gold	36° #2	21:39	10MW Bushed	Blue	36° #2	21:39	10MR Bushed	Blue	36° #2	21:39
Indy 500 SKS	10MB bushed	Gold	36° #2	20:39	10MW Bushed	Blue	36° #2	20:39	10MR Bushed	Blue	36° #2	20:39
Indy 500 RMK	10MB Bushed	Gold	36° #2	20:39	10MW bushed	Dark Blue	36° #2	20:39	10MR Bushed	Dark Blue	36° #2	20:39
Indy Clas-sic Touring	10MB Bushed	Blue	34° #2	19:39	10MW Bushed	Blue	34° #2	19:39	10MR Bushed	Blue	34° #2	19:39
Indy 500 EFI	10MB Bushed	Gold	36° #2	21:39	10MW bushed	Blue	36° #2	21:39	10MR Bushed	Blue	36° #2	21:39
Indy XLT/ XLT LTD	10MB Bushed	Gold	34° #2	21:39	10MW Bushed	Blue	34° #2	21:39 20:39	10MR Bushed	Blue	34° #2	21:39 20:39
Indy XLT SKS	10MB Bushed	Gold	34° #2	20:39	10MW Bushed	Blue	34° #2	20:39	10MR Bushed	Blue	34° #2	20:39
Indy XLT SP	10MW Bushed	Gold	34° #2	21:39	10MR Bushed	Blue	34° #2	21:39	10MR Bushed	Blue	34° #2	21:39
Indy XLT Touring	10MB Bushed	Gold	34° #2	20:40	10MW Bushed	Blue	34° #2	19:39	10MR Bushed	Blue	34° #2	19:39
Indy XLT RMK	10MB Bushed	Gold	34° #2	18:40	10MW Bushed	Blue	34° #2	18:40	10MR Bushed	Dark Blue	34° #2	18:40
Indy 600 XC	10MB Bushed	Dark Blue	34° #2	21:39	10MW Bushed	Dark Blue	34° #2	21:39	10MR Bushed	Dark Blue	34° #2	21:39
Indy 600 XCR	10 Bushed	Almond	R-1 #2	21:35	10M Bushed	Almond	R-1 #2	20:39	10MB or 10MW	Almond	R-1 #2	20:39
Indy RXL	10 Bushed	Blue	36° #2	20:35	10MB Bushed	Blue	34° #2 36° #3	20:35	10MW Bushed	Blue	34° #2 36° #3	20:35

1997 HIGH ELEVATION RECOMMENDATIONS												
Machine Model	3000 Ft. to 6000 Ft.				6000 Ft. to 9000 Ft.				9000 Ft. to 12000 Ft.			
	Shift Weight	Clutch Spring	Driven Helix	Chain-case Gearing	Shift Weight	Clutch Spring	Driven Helix	Chain-case Gearing	Shift Weight	Clutch Spring	Driven Helix	Chain-case Gearing
Indy Ultra/ Ultra SP	10 Bushed	Dark Blue	36° #2	21:35	10M Bushed	Dark Blue	36° #3	20:35	10MB Bushed	Dark Blue	36° #3	20:35
Indy Ultra SPX	10 Bushed	Almond	R-8 #2	21:35	10M Bushed	Almond	R-8 #2	20:35	10MB Bushed	Almond	R-8 #2	20:35
Indy Ultra Touring	10 Bushed	Dark Blue	36° #2	20:35	10M Bushed	Dark Blue	36° #3	21:39	10MB Bushed	Dark Blue	36° #3	21:39
700 SKS	10-58	Dark Blue	R-11 #2	20:35	10-58 Bushed	Dark Blue	R-11 #2	20:35	10-56	Dark Blue or Almond	R-11 #2	20:35
Indy 700 RMK	10-58	Dark Blue	R-11 #2	20:39	10-58 Bushed	Dark Blue	R-11 #2	20:39	10-56	Dark Blue or Almond	R-11 #2	20:39
Indy Storm	10-56 Bushed	Almond	R-4 #2	23:37	10-56 Bushed	Almond	R-4 #2	*21:37 or 20:35	10-54 Bushed	Almond	R-4 #2	*21:37 or 20:35
Indy Storm RMK	10-58 Bushed	Almond	R-36 #2	20:39	10-56 Bushed	Almond	R-36 #2	20:39	10-54 Bushed	Almond	R-36 #2	20:39

* Cannot be used with reverse kit

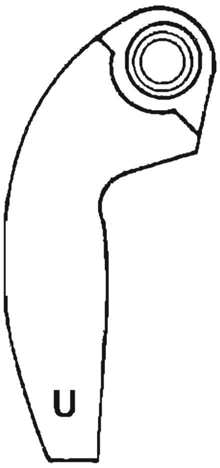
1998 / 0-3000 Feet (0-900 Meters)

Machine Model	Engagement RPM ± 300	Operating RPM ± 200	Service Drive Clutch Part No.	Drive Clutch Spring Color, Wire Dia.	Shift Wt. I.D./Gram	Driven Spring Color	Clutch Center Distance +.100 − .000	Driven Helix Angle & Location	Chaincase Gearing / Chain Pitch
Lite Lite Deluxe/Trng	4100	7000	1321596	Silver/Gold .218	10	Silver	11.030″	36.5° A-1	16:39 64P
Sport	4000	7000	1321596	Red/White .192	10AL	Red	12.00″	36.5° B-2	17:35 62P
Sport Touring TranSport	3500	7000	1321596	Brown .200	10	Red	12.00″	36.5° B-2	17:41 / 66 15:39 / 64
440	3800	7750	1321739	Gold .207	10 MB Bushed	Red	12.00″	34° #3	22:41 68P
XCF	4000	7000	1321721	Red/White .192	10 Bushed	Silver /Blue	12.00″	34° #2	19:39 66P
440 XCR	5000	8250	1321762	Almond/ Gold	S-53R Bushed	Silver /Blue	12.00″	R8 #2	22:41 70P
Trail	3600	7000	1321735	Red/White .192	10AL Bushed	Red	12.00″	36° #2	22:41 68P
Trail Touring	3600	7000	1321738	Red/White .192	10 Bushed	Silver	12.00″	36° #2	20:40 66P
Trail RMK* See Note Below	3600	7000	1321735	Red/White .192	10AL Bushed	Red	12.00″	34° #2	18:41 66P
Super Sport	3600	7000	1321735	Red/White .192	10AL Bushed	Silver	12.00″	36° #2	22:41 68P
500 500 Classic	4000	7800	1321736 1321737	Gold .207	10M Bushed	Gold	12.00″	36°/#2 34°/#2	22:41 68P
500 RMK* See Note Below	3800	7800	1321736	Gold .207	10M Bushed	Red	12.00″	34° #2	17:41 66P
Classic Touring	4000	7800	1321737	Gold .207	10 MB Bushed	Silver	12.00″	34° #2	19:40 66P
WideTrak LX	3800	7000	1321738	Brown .200	10 Bushed	Silver	12.00″	36° #2	19:41 66P
XLTSP	4200	8300	1321733	Dark Blue .218	10 MB Bushed	Silver	12.00″	R32 #2	22:41 68P
XLT LTD	4200	8000	1321733	Silver/Gold .218	10 M Bushed	Red	12.00″	34° #2	22:41 68P
XLT Classic	4200	8300	1321734	Dark Blue .218	10 M Bushed	Red	12.00″	34° #2	22:41 68P
XLT Touring	3800	8000	1321734	Silver/Gold .218	10 MB Bushed	Silver	12.00″	34° #2	20:40 66P
600 XC	4200	8000	1321694	Dark Blue .218	10-58 Bushed	Silver	12.50″	R32 #2	22:40 70P
600 XCR	4800	8500	1321732	Almond (square)	10-54 Bushed	Gold	12.00″	R-1 #2	23:40 68P
600 RMK* See Note Below	4200	8000	1321713	Dark Blue .218	10-58 Bushed	Silver/ Blue	12.50″	R-8 #2	19:40 68P
Ultra Ultra Touring	4500	8200	1321733 1321734	Dark Blue .218	10-54 Bushed	Red	12.00″	36° #2	23:40/68P 22:40/68P
700 XC	4200	8000	1321694	Dark Blue .218	10-60 Bushed	Silver	12.50″	36°Mod #2	24:40 70P
700 XCR	4000	8600	1321732	Almond (square)	10-54 Bushed	Gold	12.00″	R-8 #2	24:40 68P
700 RMK* See Note Below	4200	8000	1321713	Dark Blue .218	10-60 Bushed	Silver/ Blue	12.50″	R–11 #2	21:41 70P
Storm	4500	8400	1321740	Almond (square)	10-58 Bushed	Gold	12.50″	R-4 #2	25:40 70P

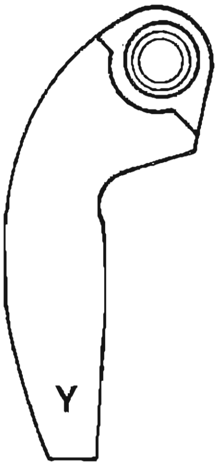
* **NOTE:** RMK production setup is **6000-9000** ft. Refer to Page 6.8b for production RMK Specs

1998 High Elevation Clutch Specifications

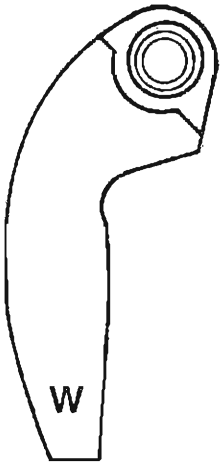
1998 HIGH ELEVATION RECOMMENDATIONS												
	3000 Ft. to 6000 Ft.				6000 Ft. to 9000 Ft.				9000 Ft. to 12000 Ft.			
Machine Model	Shift Weight	Clutch Spring	Driven Helix	Chain-case Gearing	Shift Weight	Clutch Spring	Driven Helix	Chain-case Gearing	Shift Weight	Clutch Spring	Driven Helix	Chain-case Gearing
Lite/ Deluxe /Touring	10M Blue	Gold	36.5° #A-1	16:39	10M White	Gold	36.5° #A-1	16:39	10M White or 10M Red	Blue Gold	36.5° #A-1	16:39
Sport	10 Bushed	Red/White	36.5° #B-2	17:35	10AL Bushed	Gold	36.5° #B-2	16:35	10M Blue or 10 Bushed	Red/White Gold	36.5° #B-2	16:35
Sport Tour-ing	10M Bushed	Brown	36.5° #B-2	16:39	10M Bushed	Gold	36.5° #B-2	16:39	10M Blue Bushed	Gold	36.5° #B-2	16:39
TranSport	10M Bushed	Brown	36.5° #B-2	15:39	10M Bushed	Gold	36.5° #B-2	15:39	10M Blue Bushed	Gold	36.5° #B-2	15:39
Super Sport	10M Bushed	Red/White	36° #2	22:41	10MB Bushed	Red/White	36° #2	21:41	10MB Bushed	Red/White	36° #2	21:41
Trail	10 Bushed	Red/White	36° #2	22:41	10MB Bushed	Red/White	36° #2	22:41	10MW Bushed	Red/White	36° #2	22:41
TrailTouring	10M Bushed	Red/White	36° #2	20:40	10MB Bushed	Red/White	36° #2	20:40	10MB Bushed	Red/White	36° #2	20:40
Trail RMK	10 Bushed	Red/White	34° #2	18:41	10MB Bushed	Red/White	34° #2	18:41	10MW Bushed	Red/White	34° #3	18:41
XCF	10M Bushed	Red/White	34° #2	19:39	10M Bushed	Gold	34° #2	19:41	10MB Bushed	Gold	34° #2	19:41
WideTrak LX	10 Bushed	Red/White	36° #2	19:41	10MB Bushed	Red/White	36° #2	19:41	10MW Bushed	Red/White	36° #2	19:41
440 LC	10MW Bushed	Gold	34° #3	22:41	10MW Bushed	Gold	34° #3	22:41	10MR Bushed	Gold	34° #3	22:41
440 XCR	S 53 Blue	Almond/ Gold	R-8 #2	22:41	10M Bushed	Almond/ Gold	R-8 #2	21:41	10MB Bushed	Almond/ Gold	R-32 #2	21:41
500	10MB Bushed	Gold	36° #2	22:41	10MW Bushed	Dark Blue	36° #2	22:41	10MR Bushed	Dark Blue	36° #2	22:41
500 Classic	10MB Bushed	Gold	34° #2	22:41	10MW Bushed	Dark Blue	34° #2	22:41	10MR Bushed	Dark Blue	34° #2	22:41
500 RMK	10MB Bushed	Gold	34° #2	17:41	10MW Bushed	Dark Blue	34° #2	17:41	10MR Bushed	Dark Blue	34° #2	17:41
Classic Touring	10MB Bushed	Blue	34° #2	19:40	10MW Bushed	Blue	34° #2	19:40	10MR Bushed	Blue	34° #2	19:40
XLT SP	10MB Bushed	Dark Blue	R-32 #2	22:41	10MR Bushed	Dark Blue	R-32 #2	21:41	10MR Bushed	Dark Blue	R-32 #2	21:41
XLT LTD	10MB Bushed	Silver-Gold	34° #2	22:41	10MW Bushed	Dark Blue	34° #2	21:41	10MR Bushed	Dark Blue	34° #2	21:41
XLT Classic	10MB Bushed	Dark Blue	34° #2	22:41	10MR Bushed	Dark Blue	R-32 #2	21:41	10MR Bushed	Dark Blue	R-32 #2	21:41
XLT Touring	10MB Bushed	Silver-Gold	34° #2	20:40	10MW Bushed	Blue	34° #2	19:40	10MR Bushed	Blue	34° #2	19:40
600 XC	10-56	Almond/ Gold	R-3 #2	22:40	10-54	Almond/ Gold	R-3 #2	21:41	10AL	Almond/ Gold	R-3 #2	21:41
600 XCR	10 Bushed	Almond	R-1 #2	23:40	10M Bushed	Almond	R-1 #2	21:41	10MB or 10MW	Almond	R-1 #2	21:41
600 RMK	10-56 Bushed	Dark Blue	R-8	19:40	10-54 Bushed	Dark Blue	R-8	19:40	10 Bushed	Dark Blue	R-8	19:40
Ultra	10 Bushed	Dark Blue	36° #2	23:40	10M Bushed	Dark Blue	36° #3	22:41	10MB Bushed	Dark Blue	36° #3	22:41
Ultra Tour-ing	10 Bushed	Dark Blue	36° #2	22:40	10M Bushed	Dark Blue	36° #3	21:40	10MB Bushed	Dark Blue	36° #3	21:40
700 XC	10-58	Almond-Gold	R-11 #2	24:40	10-56 Bushed	Almond-Gold	R-11 #2	23:40	10-54	Almond-Gold	R-11 #2	23:40
700 XCR	10 Bushed	Almond	R-8 #2	24:40	10M Bushed	Almond	R-8 #2	23:40	10MB Bushed	Almond	R-8 #2	23:40
700 RMK	10-58 Bushed	Dark Blue	R-11	21:41	10-58 Bushed	Dark Blue	R-11	21:41	10-56 Bushed	Dark Blue	R-11	21:41
Storm	10-56 Bushed	Almond	R-4 #2	25:40	10-56 Bushed	Almond	R-4 #2	21:41	10-54 Bushed	Almond	R-4 #2	21:41



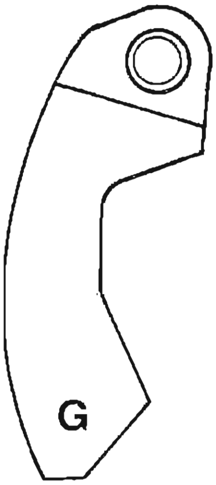
U
Gram Weight: 34 ± 1
PN 5630107



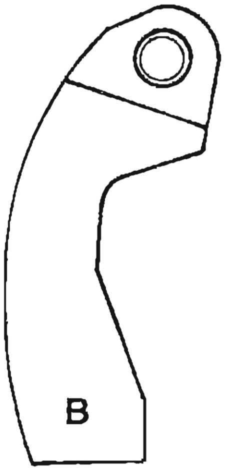
Y
Gram Weight: 35 ± 1
PN 5630139



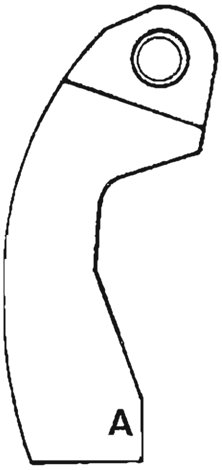
W
Gram Weight: 37.5 ± 1
PN 5630109



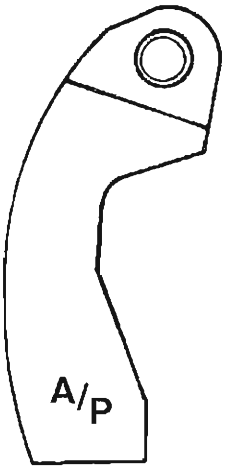
G - (B Modified)
Gram Weight: 41.5 ± 1
PN 5630063



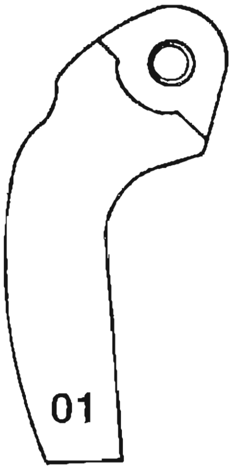
B
Gram Weight: 43 ± 1
PN 5630084



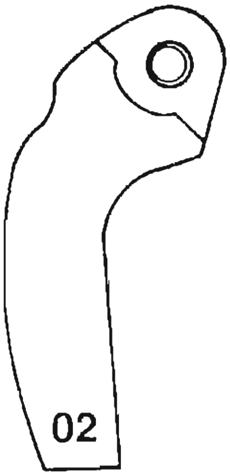
A
Gram Weight: 47.5 ± 1
PN 5630080



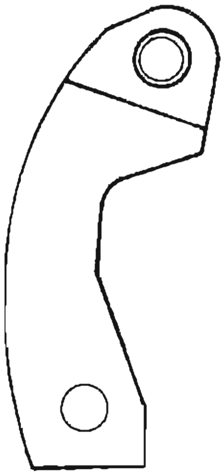
A/P
Gram Weight: 47.5 ± 1
PN 5630094



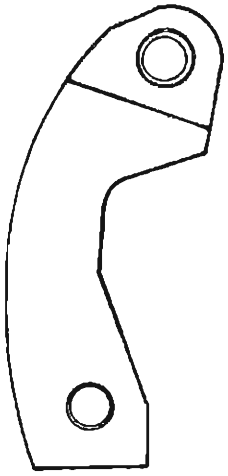
01
Gram Weight: 48.5 ± 1
PN 5630224



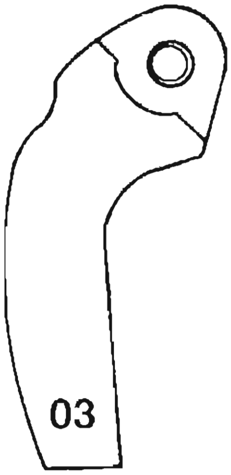
02
Gram Weight: 49 ± 1
PN 5630225



O
Gram Weight: 51
PN 5610088

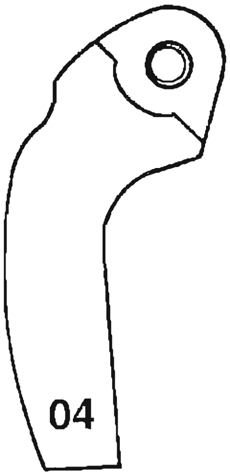


o
Gram Weight: 53 ± 1
PN 5630174

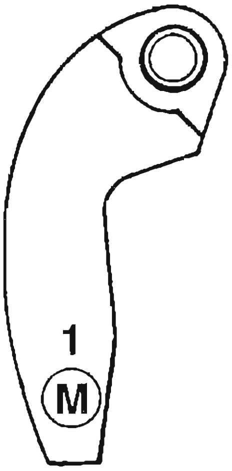


03
Gram Weight: 32.5 ± 1
PN 5630227

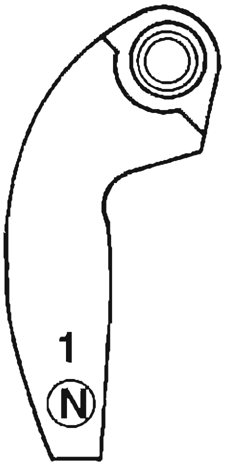
Drive Clutch Weight Identification - Actual Size



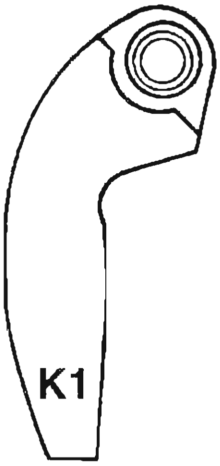
04
Gram Weight: 57.5 ± 1
PN 5630229



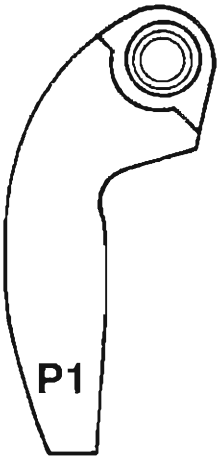
M1 (Modified)
Gram Weight: 46.0 ± 1
PN 5630301



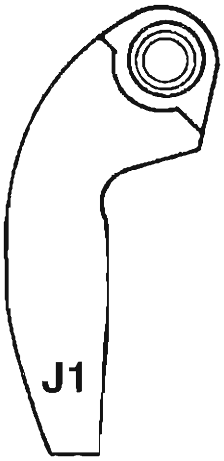
N1 (Modified)
Gram Weight: 51.5 ± 1
PN 5630302



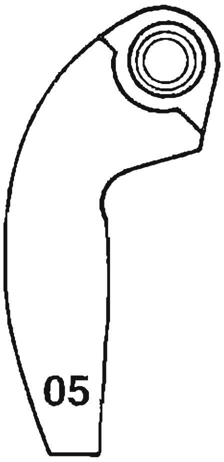
K1
Gram Weight: 39 ± 1
PN 5630144



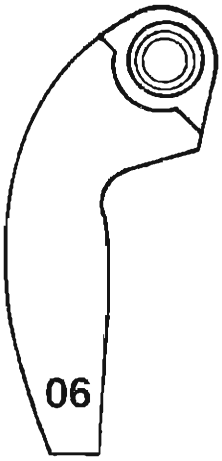
P1
Gram Weight: 42 ± 1
PN 5630089



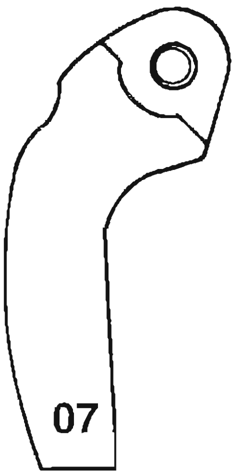
J1
Gram Weight: 44 ± 1
PN 5630065



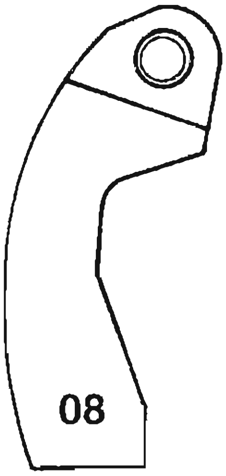
05
Gram Weight: 53.5 ± 1
PN 5630234



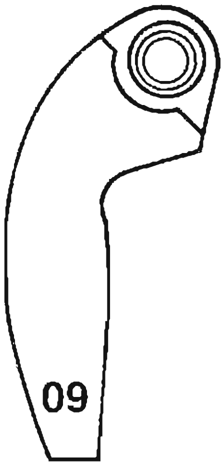
06
Gram Weight: 50 ± 1
PN 5630243



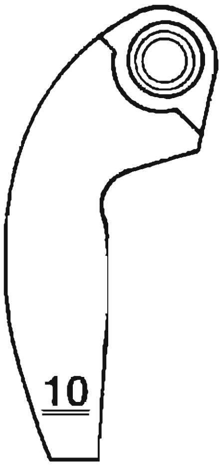
07
Gram Weight: 52 ± 1
PN 5630244



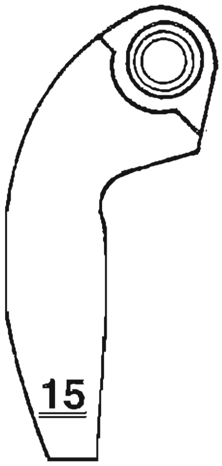
08
Gram Weight: 47.5 ± 1
PN 5630245



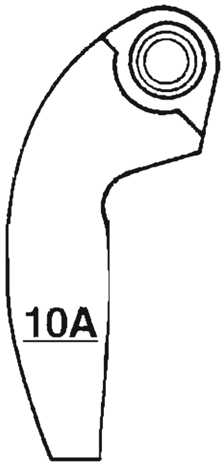
09
Gram Weight: 51.5 ± 1
PN 5630249



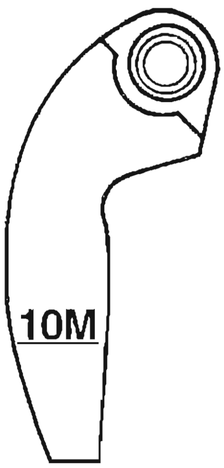
10
Gram Weight: 51.5 ± 1
PN 5630272



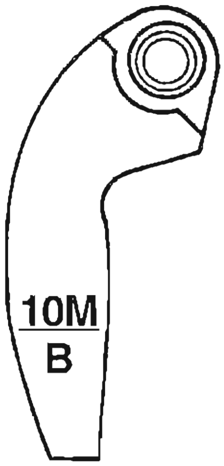
15
Gram Weight: 55.5 ± 1
PN 5630274



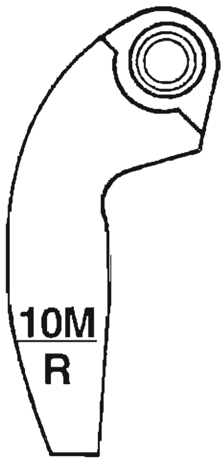
10A
Gram Weight: 55.0 ± 1
PN 5630286



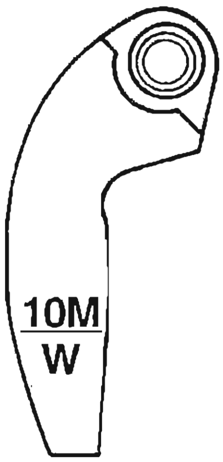
10M
Gram Weight: 49.5 ± 1
PN 5630273



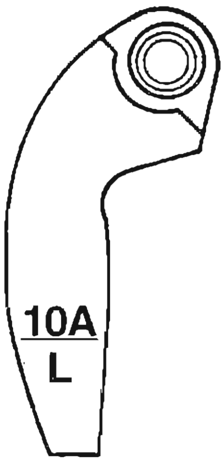
10M Blue
Gram Weight: 47.5 ± 1
PN 5630324



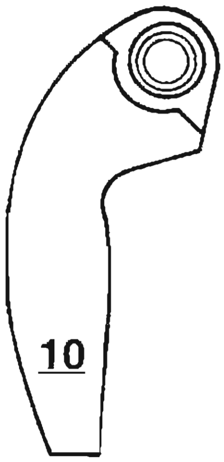
10M Red
Gram Weight: 44 ± 1
PN 5630325



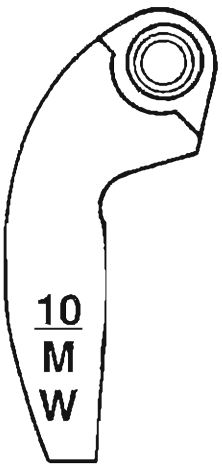
10M/W
Gram Weight: 46 ± 1
PN 5630369



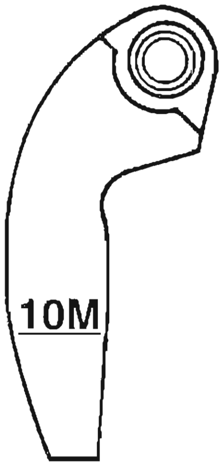
10A/L
Gram Weight: 53 ± 1
PN 5630368



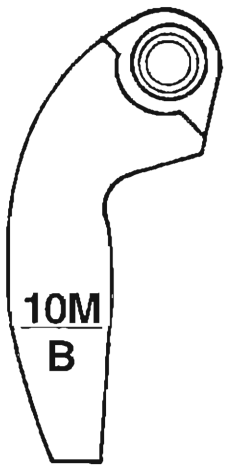
10 Bushed
Gram Weight: 51.5 ± 1
PN 1321526



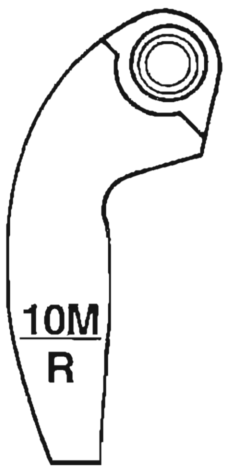
10M-W Bushed
Gram Weight: 46 ± 1
PN 1321527



10M Bushed
Gram Weight: 49.5 ± 1
PN 1321528

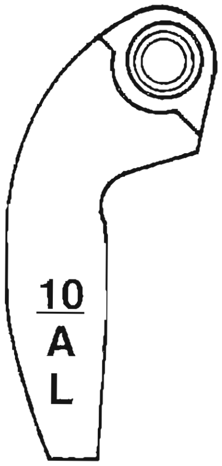


10M Blue Bushed
Gram Weight: 47.5 ± 1
PN 1321529

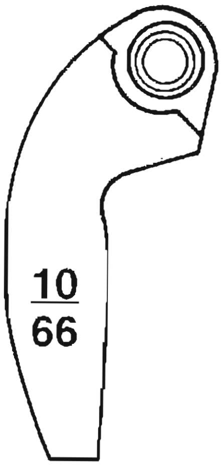


10M Red Bushed
Gram Weight: 44 ± 1
PN 1321530

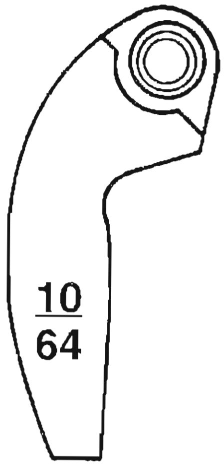
Drive Clutch Weight Identification - Actual Size



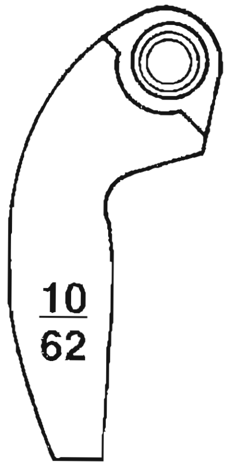
10-AL Bushed
Gram Weight: 53 ± 1
PN 1321531



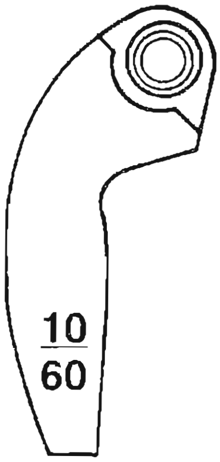
10-66 Bushed
Gram Weight: 66
PN 1321584



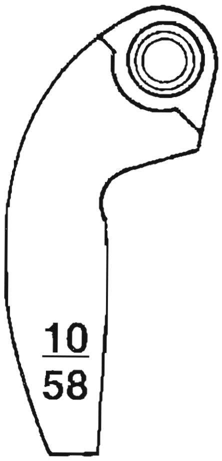
10-64 Bushed
Gram Weight: 64
PN 1321585



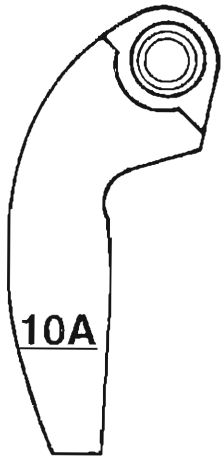
10-62 Bushed
Gram Weight: 62
PN 1321586



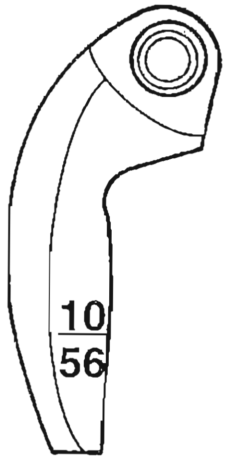
10-60 Bushed
Gram Weight: 60
PN 1321587



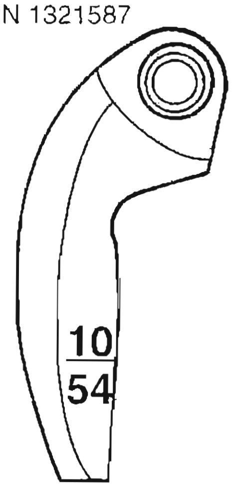
10-58 Bushed
Gram Weight: 58
PN 1321588



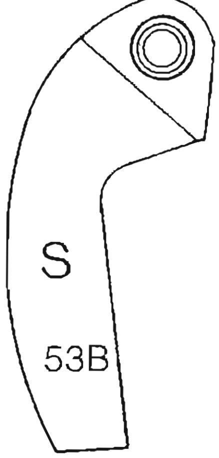
10A Bushed
Gram Weight: 55
PN 1321589



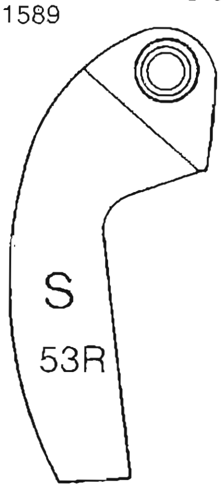
10-56 Bushed
Gram Weight: 56±1
PN 1321684



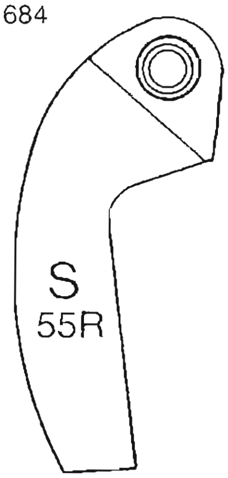
10-54 Bushed
Gram Weight: 54±1
PN 1321685



S53B
Gram Weight:49 ±1
PN 1321730



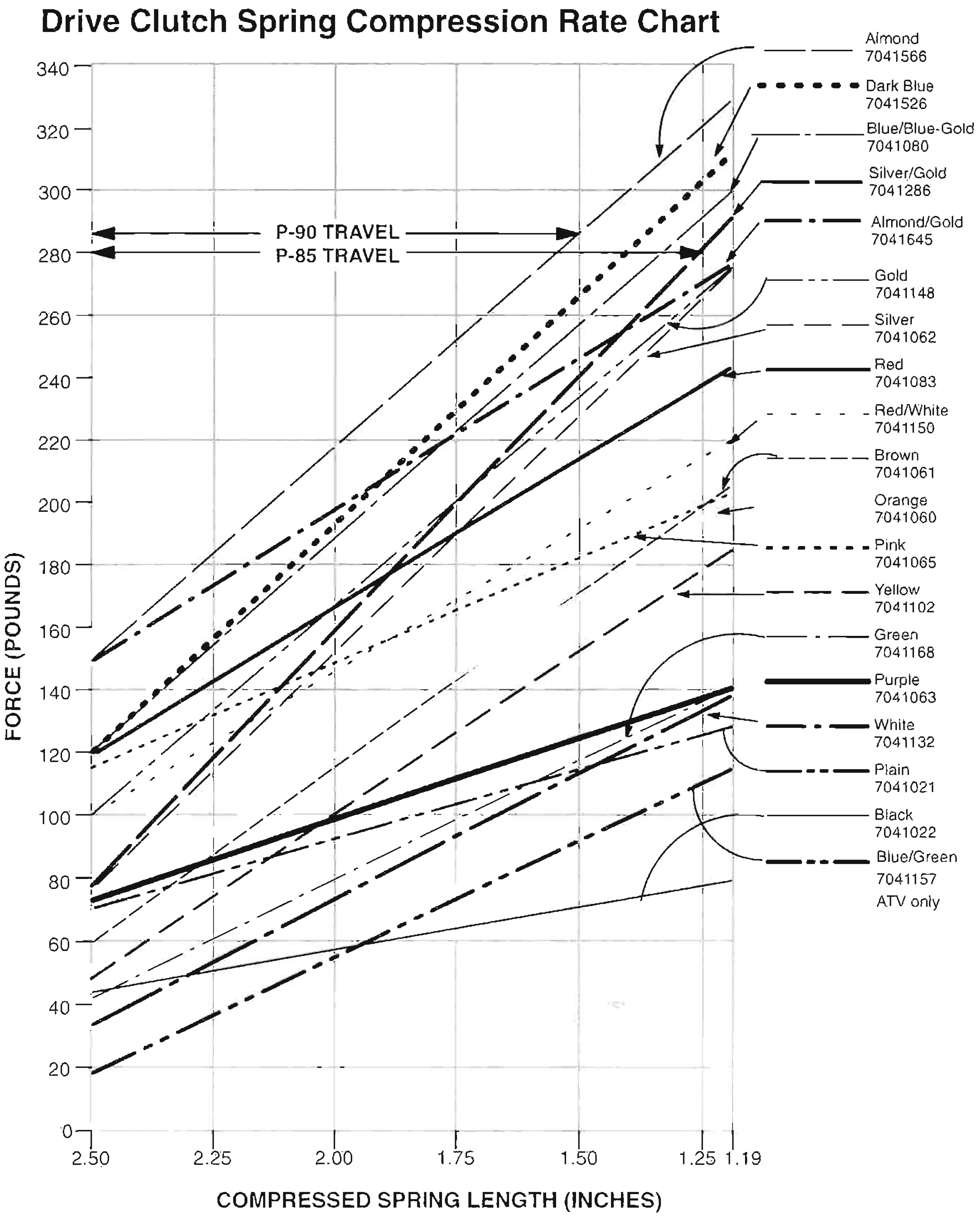
S53R
Gram Weight:51 ±1
PN 1321731



S55R
Gram Weight:53 ±1
PN 1221759

The following chart will aid in the setup and balance of engine RPM power curves for special converter tuning requirements such as high operating altitude, heavy loads, mountainous terrain, etc.

Drive Clutch Spring Compression Rate Chart



Drive Clutch Spring Data

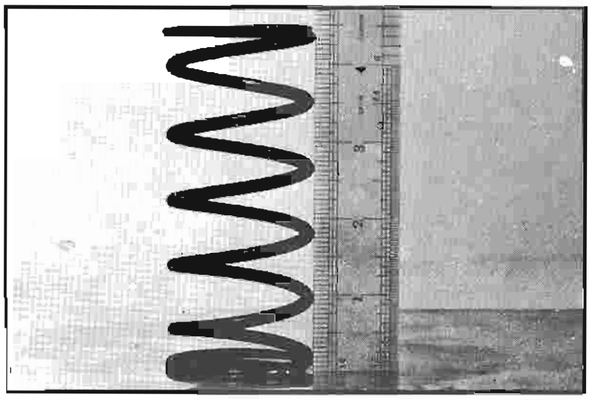
PART NUMBER	COLOR CODE	WIRE DIAMETER	FREE LENGTH +/- .125″
7041021	Clear	.157″	4.38″
7041022	Black	.140″	4.25″
7041063	Purple	.168″	4.37″
7041062	Silver	.208″	3.12″
7041065	Pink	.177″	4.69″
7041060	Orange	.196″	3.37″
7041080	Blue/Gold	.207″	3.50″
7041083	Red	.192″	3.77″
7041102	Yellow	.192″	2.92″
7041061	Brown	.200″	3.06″
7041132	White	.177″	2.92″
7041168	Green	.177″	3.05″
7041148	Gold	.207″	3.25″
7041150	Red/White	.192″	3.59″
7041286	Silver/Gold	.218″	3.05″
7041080	Blue	.207″	3.55″
7041526	Dark Blue	.218″	3.52″
7041566	Almond	.207″ (Square)	3.65″
7041645	Almond/Gold	.207″	4.0″

CAUTION:

Never shim a drive clutch spring to increase its compression rate. This may result in complete stacking of the coils and subsequent clutch cover failure.

Maximum efficiency of the variable speed drive system is dependent upon many factors. Included in these are converter offset and alignment, belt tension, belt to sheave clearance, and internal condition of the drive and driven clutch components. One of the most critical and easily serviced parts is the drive clutch spring. Due to the severe stress the spring is subject to during operation, it should always be inspected and checked for tolerance limits during any clutch operation diagnosis or repair.

With the spring resting on a flat surface, measure free length from outer coil surfaces as shown. Refer to the chart above for specific free length measurements and tolerances.



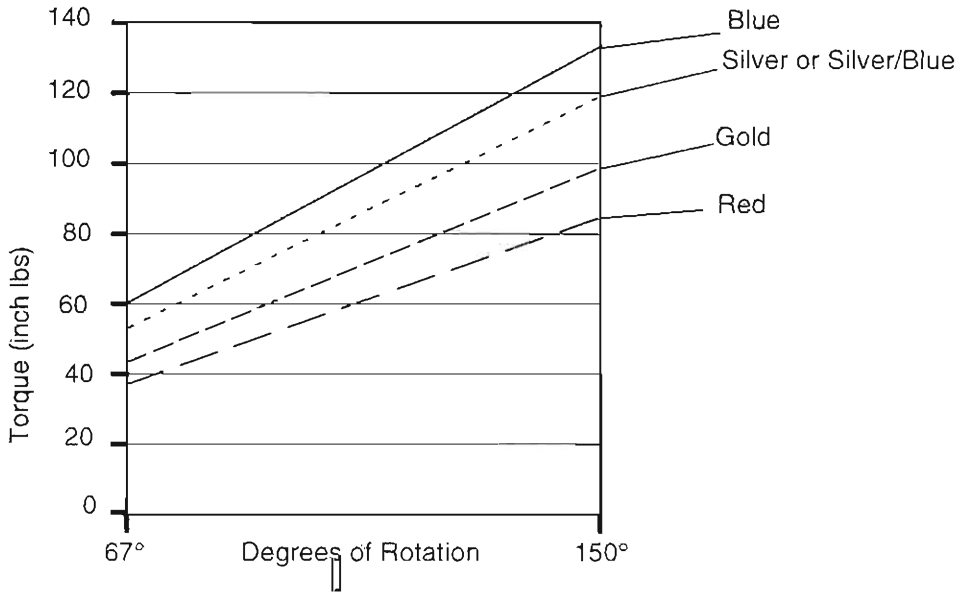
In addition to proper free length, the spring coils should be parallel to one another when placed on a flat surface. Distortion of the spring indicates stress fatigue. Replacement is required.

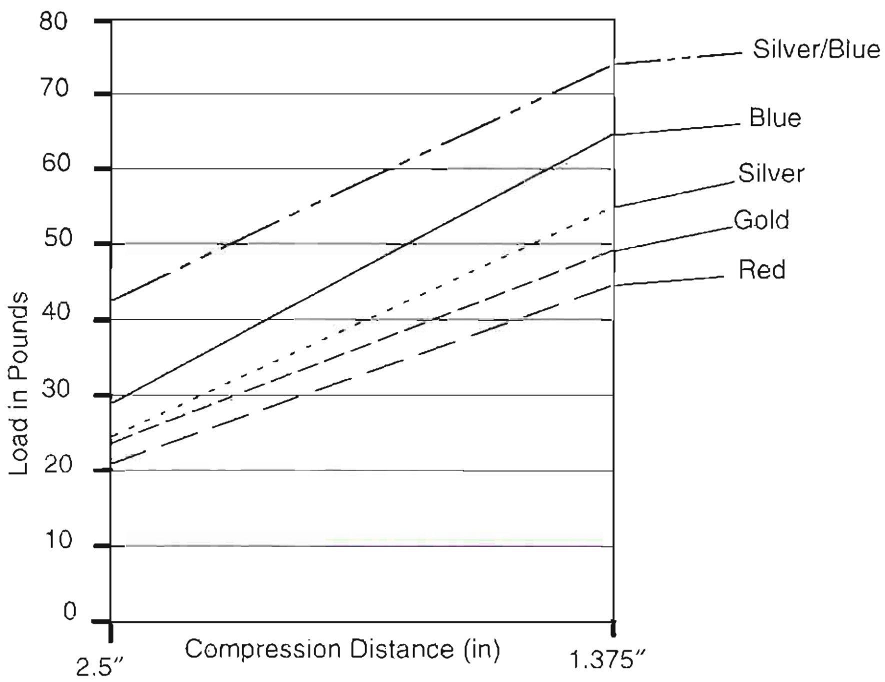
Driven Clutch Spring Data

Part Number	Description
7041198	Red
7041501	Gold
7041499	Silver
7041296	Blue
7041646	Silver / Blue

Refer to page 6.37 for driven clutch helix information

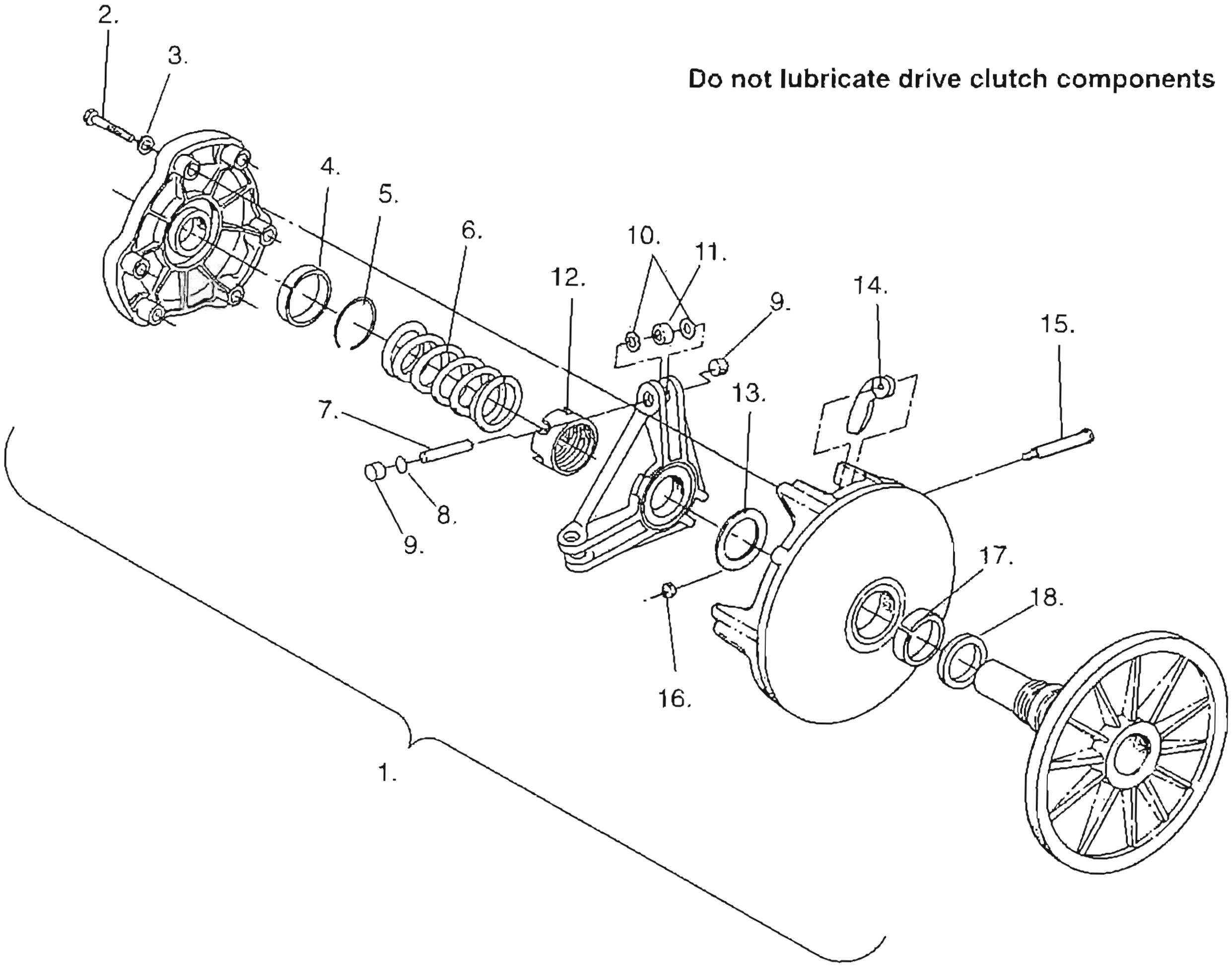
Driven Spring Charts





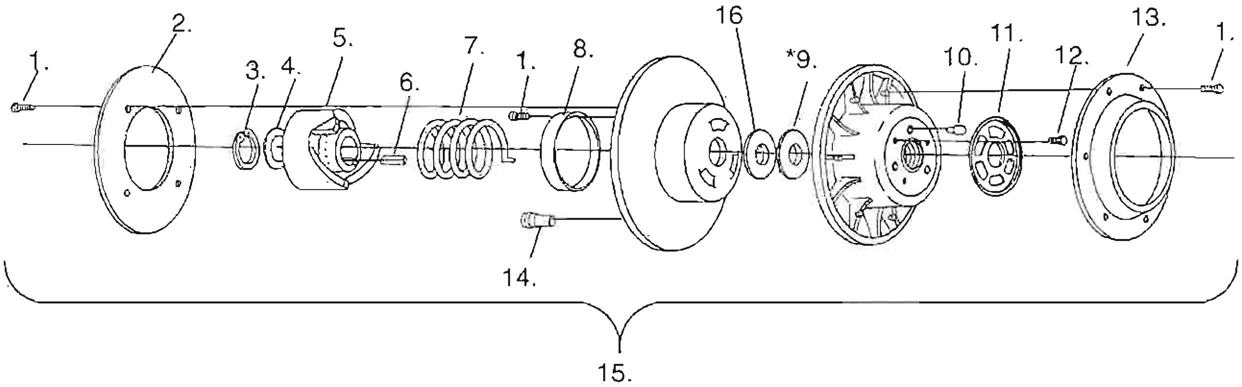
P-85 Drive Clutch Exploded View - Typical

Do not lubricate drive clutch components



Ref.	Qty	Description
1.	1	Asm., Drive Clutch Basic 62 (Less 6,14)
2.	6	Bolt
3.	6	Washer, Spring Lock
4.	1	Cover, Bearing
5.	1	Ring, Retaining, Cover
6.	1	Spring, Clutch
7.	3	Pin, Roller
8.	1	Kit - Shim, Drive Clutch
9.	6	Button, Guide
10.	6	Washer, Multilube
11.	3	Asm., Roller & Bushing
12.	1	Nut, Jam
13.	AR	Spacer, .050mm
	AR	Spacer, .032mm
	AR	Spacer, .020mm
14.	3	Asm., Weight/Bushing
15.	3	Pin, Weight, Hardened
16.	3	Nut, FLEXLOC
17.	1	Bearing, Sleeve
18.	1	Insert, Moveable
		Kit – clutch rebuild, incl.7-11, 15

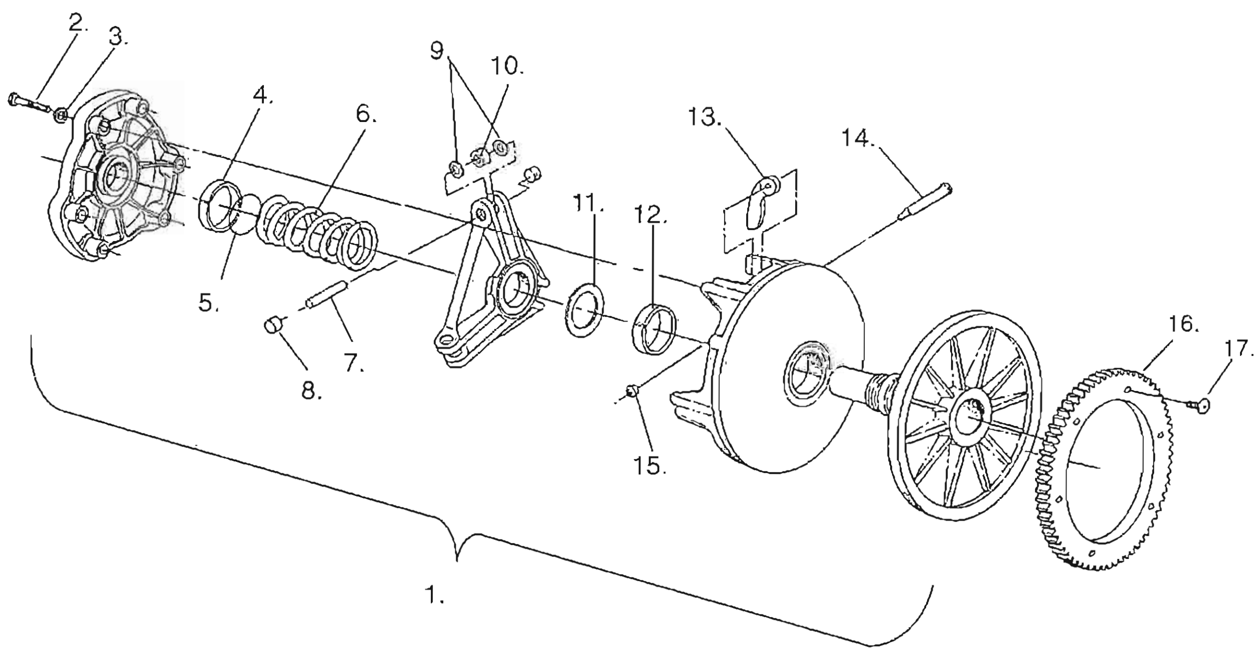
Do not lubricate driven clutch components except inside of helix hub to reduce fretting and corrosion.



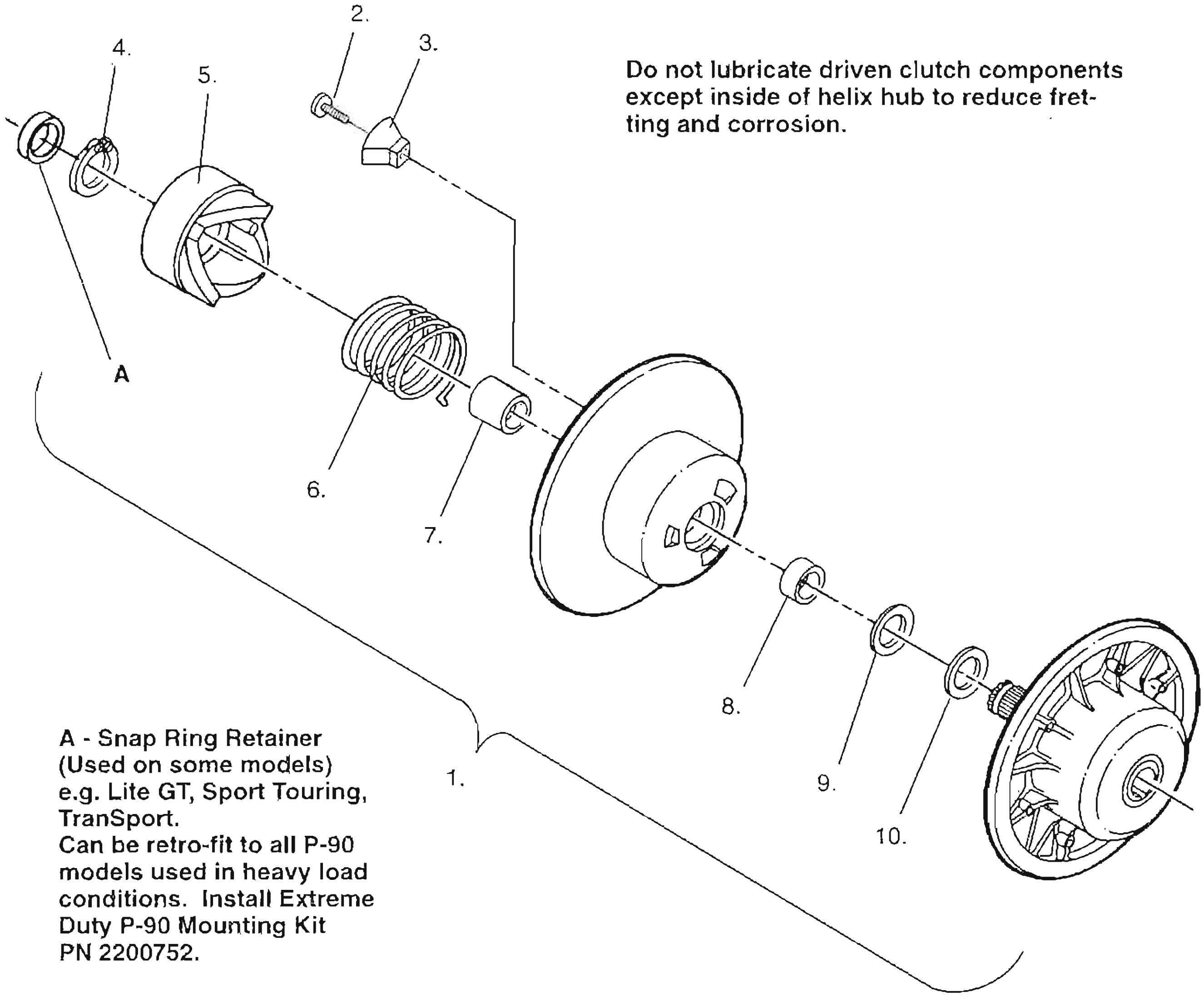
Ref.	Qty	Description
1.	14	Screw
2.	1	Plate, Driven
3.	1	Ring, Retaining
4.	2	Washer
5.	1	Ramp, Driven
6.	1	Key, Square
7.	1	Spring, Driven Clutch
8.	1	Bushing, Driven Large DU
*9.	A/R	Washer
10.	3	Pin, Adjustment, Driven
11.	1	Cam, Adjustment, Driven
12.	3	Screw
13.	1	Cap, Driven
14.	3	Button
15.	1	Asm., Driven Clutch - Adjustable (Incl. 1.-13.)
16.	AR AR	7556804 Washer .030″ 7555898 Washer .020″

P-90 Drive Clutch Exploded View - Typical

Do not lubricate drive clutch components



Ref.	Qty	Description
1.	1	Asm., Drive Clutch Basic 42 (Incl. 2.-4.,7.-12.,14.,15.)
2.	6	Bolt
3.	6	Washer, Spring Lock
4.	1	Cover, Bearing
5.	1	Ring, Retaining, Cover
6.	1	Spring, Clutch
7.	3	Pin, Roller
8.	6	Button, Guide
9.	6	Washer, Multilube
10.	3	Asm., Roller and Bushing
11.	AR	Spacer, .050mm
	AR	Spacer, .032mm
	AR	Spacer, .020mm
12.	1	Bearing, Moveable 1/2"
13.	3	Weight, Shift
14.	3	Pin, Weight, Hardened
15.	3	Nut, FLEXLOC
16.	1	Gear, Ring
17.	6	Screw



Do not lubricate driven clutch components except inside of helix hub to reduce fretting and corrosion.

A - Snap Ring Retainer (Used on some models) e.g. Lite GT, Sport Touring, TranSport. Can be retro-fit to all P-90 models used in heavy load conditions. Install Extreme Duty P-90 Mounting Kit PN 2200752.

Ref.	Qty.	Description
1.	1	Asm., Driven Clutch
2.	3	Bolt, Tap
3.	3	Button, Ramp
4.	1	Ring, Retaining, Extension
5.	1	Ramp, Stationary, Cast
6.	1	Spring, Clutch
7.	1	Bearing, Moveable, 1"
8.	1	Bearing, Moveable, 1/2"
9.	AR	Washer
10.	AR	Washer

CLUTCHES
Operation

The Polaris drive system is a centrifugally actuated variable speed belt drive unit. The drive clutch, driven clutch, and belt make up the torque converter system. Each clutch comes from the factory with the proper internal components installed for its specific engine model. Therefore, modifications or variations of components at random are never recommended. Proper converter setup and adjustments of existing components must be the primary objective in converter operation diagnosis.

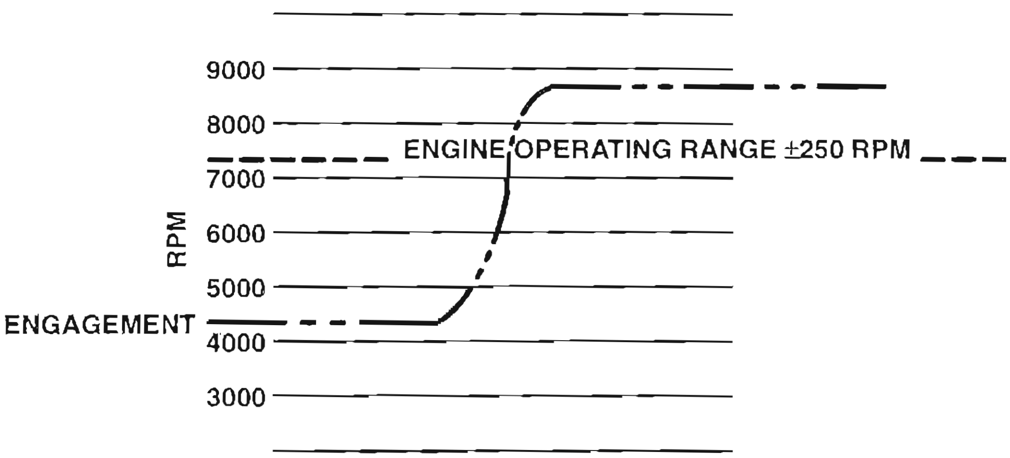
CAUTION:

All converter maintenance repairs must be performed only by an authorized Polaris service technician who has attended a Polaris sponsored service training seminar and understands the proper procedures as outlined in this manual. Because of the critical nature and precision balance incorporated into the drive clutch, it is absolutely essential that no attempt at clutch disassembly and/or repair be made without factory authorized special tools and service procedures. Any unauthorized modifications to clutches, such as adding or removing weights, will void the warranty.

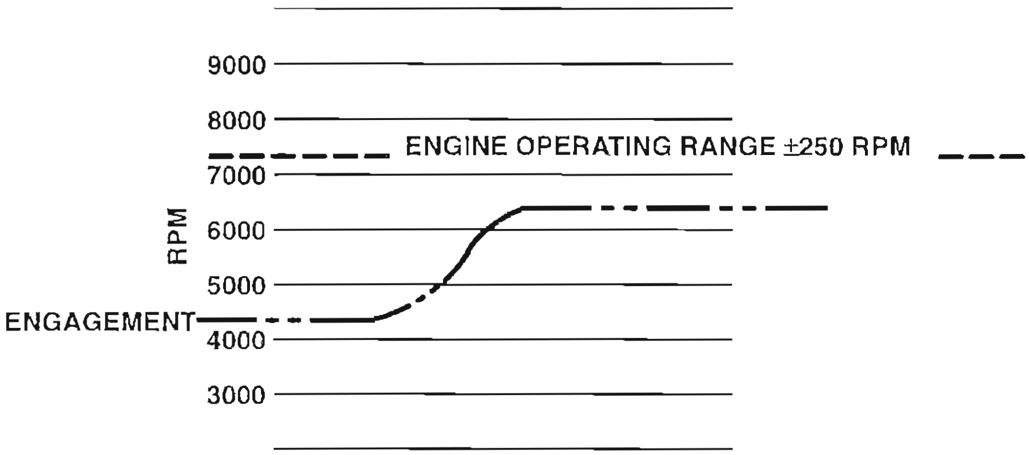
Relationship Between Drive Clutch Weights And Spring In Maintaining Operating RPM

The drive clutch is an RPM and torque sensing unit designed to transfer the maximum amount of horsepower from the engine to the ground. This is accomplished by weights and a spring inside the unit which react to the centrifugal force from the engine RPM.

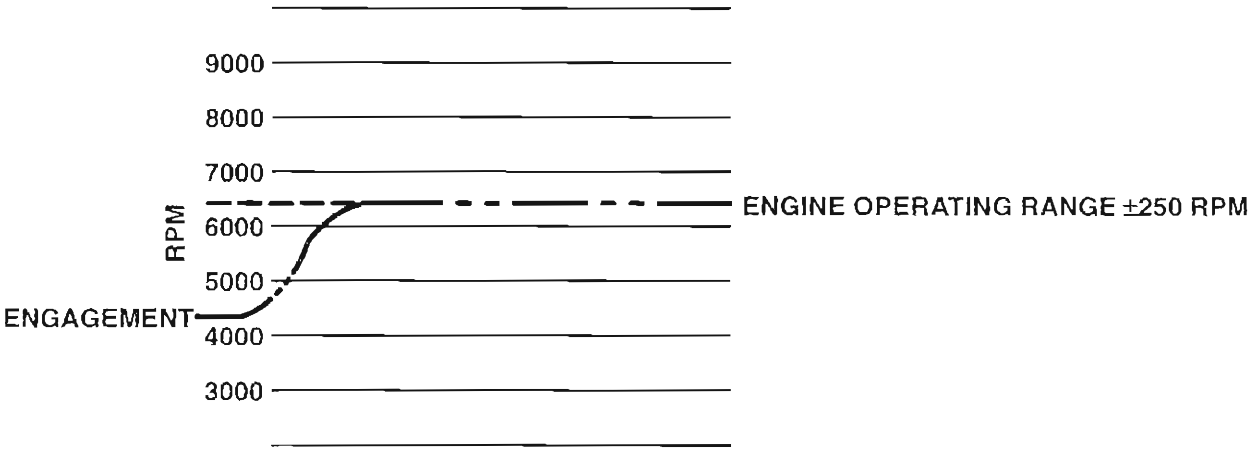
The spring and weights work in combination. In a properly set up clutch, the maximum desired operating RPM will be reached immediately after clutch engagement, under full throttle conditions. To gain optimum power this RPM should be maintained. As centrifugal force pushes the weights against the rollers, the moveable sheave will force the belt to climb up the drive clutch sheave and increase vehicle speed.



If the weights are too light, or the spring rate too high, the maximum RPM will be too great and the drive belt will not move into highest ratio at the top of the clutch. Engine damage may also occur if RPM is too high.



If the weights are too heavy, or spring rate too low, the engine RPM will be low and the drive clutch will upshift too quickly, keeping engine RPM below peak horsepower, possibly causing engine damage.



If the weights and spring are matched properly, the engine RPM will increase quickly to the desired range and remain there on both upshift and backshift.

CLUTCHES
Driven Clutch Operation

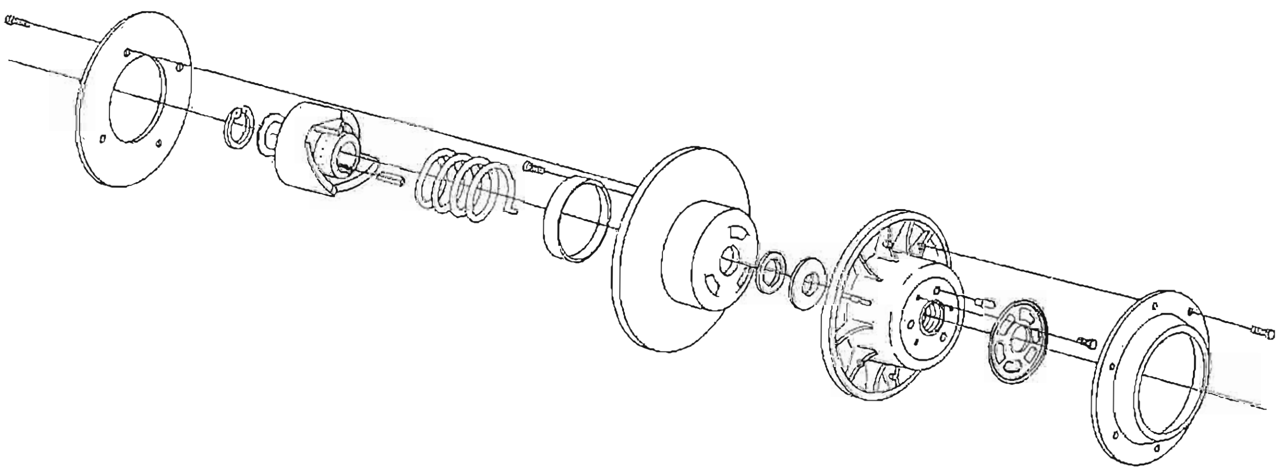
The driven clutch operates in conjunction with the drive clutch. Its function is to maintain drive belt tension preventing slippage, and sense variations in load requirements necessary to maintain optimum engine torque output and load requirements from the track. Output torque is transmitted through the chaincase jackshaft and chaincase to the front drive shaft and track.

When the load on the driven clutch is increased and becomes greater than the torque delivered from the engine, the driven clutch becomes dominant and overrides the drive clutch. The driven clutch downshifts into a ratio which will match the increased load.

Because the driven clutch can sense and shift into the proper ratio, engine RPM will remain within the specified range.

Driven Clutch Adjustments

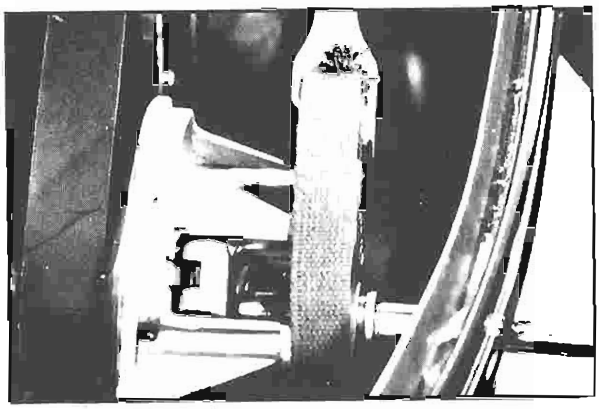
The driven clutch has a provision for varying the torque requirement to change its ratio. It can be readjusted by relocating the spring in the helix which in turn increases or decreases the amount of load required to change the ratio.



Driven Clutch (Typical P-85)

Removal

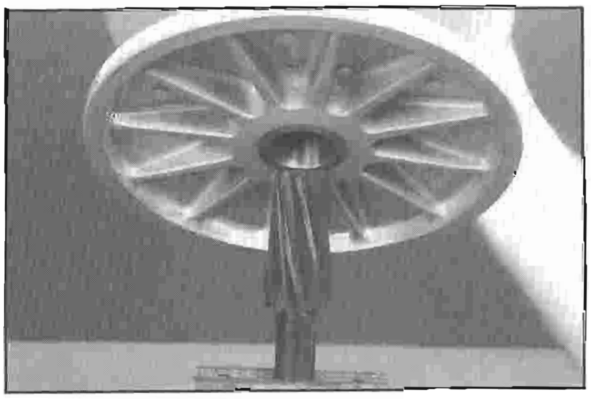
1. Hold clutch with strap wrench. Remove drive clutch retaining bolt, grease puller thread and tip lightly and install puller into clutch. Tighten puller with a wrench, or strike t-bar with a hammer until clutch is removed.



Strap Wrench PN 287033
Clutch Puller PN 2870506- 3/4-16 ID Clutch
Clutch Puller PN 2871757-14mm ID Clutch

NOTE: Some 1997-Current P-85 domestic engine drive clutches have a 14mm inner diameter (ID) on the shaft. These clutches require puller PN 2871757.

2. Slight galling or scoring of bore taper can usually be corrected using a tapered reamer. Place reamer in a vise and lubricate with cutting oil. Clean clutch taper by manually rotating clutch clockwise. Do not ream taper more than required to remove galling or scoring.



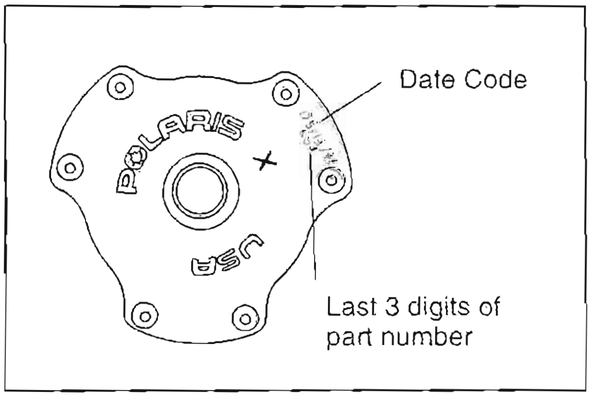
Tapered Reamer PN 2870576

CAUTION:

Never use an air impact wrench for installing or removing a drive clutch. It will loosen the spider torque value and could cause engine crankshaft damage.

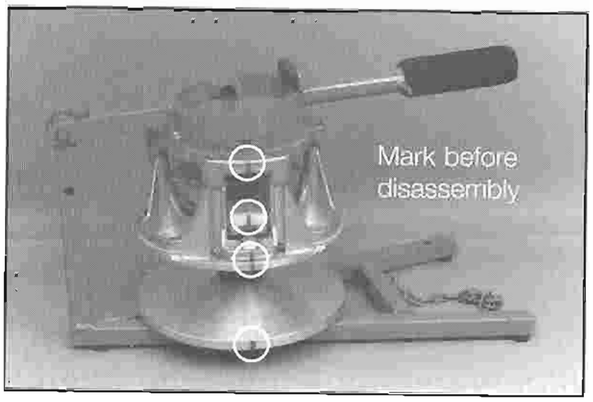
Identification

This number indicates internal clutch component variation for individual engines. For easy identification, refer to the three numbers behind date code on clutch cover plate. These numbers are the last three digits of the clutch part number.



Disassembly and Inspection

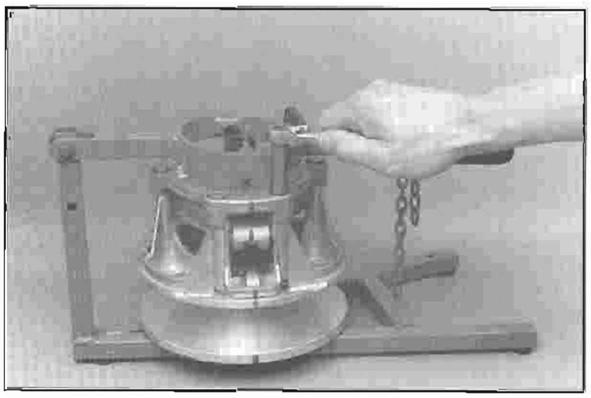
1. Install drive clutch in clutch compression tool (8700220). Mark both moveable and fixed sheave, cover, and spider with a permanent marker.



CAUTION:

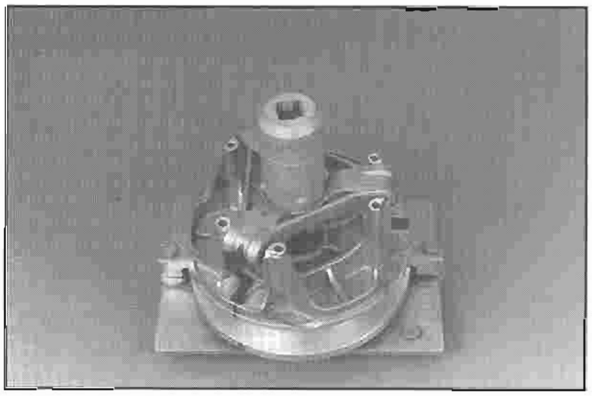
Sheaves must be marked to provide a reference point for clutch balance and spider indexing. If the sheaves are not marked, and spider shim washers are changed or misplaced, the will clutch will be out of balance and must be replaced. See page 6.32 for indexing procedure.

2. Carefully and evenly remove cover attaching bolts. Do not allow side loading or misalignment of cover or bushing may be damaged. Remember there is spring tension on the cover. Inspect cover bushing for wear. See page 6.47 for inspection and repair procedure.



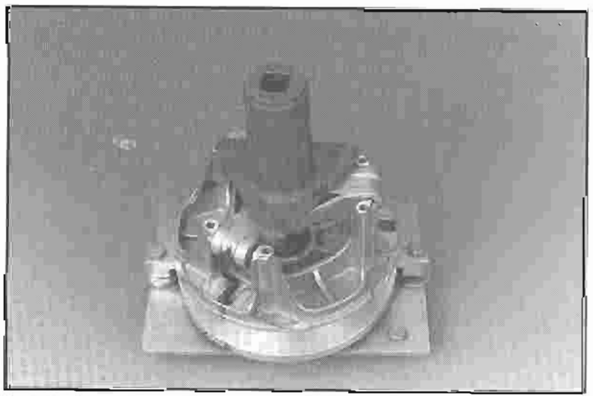
Drive Clutch Compression Tool
PN 8700220
Drive Clutch Holding Fixture
PN 2871358

3. Mount drive clutch securely in the holding fixture. On models equipped with a spider jam nut (P-85 Clutches), remove jam nut in a counterclockwise direction (standard thread) using the special tool.



Spider Spanner (Jam Nut) Tool
PN 2870338

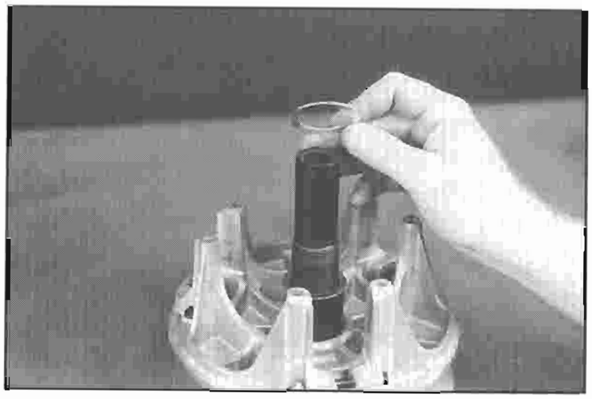
4. Install spider removal tool and remove spider in a counterclockwise direction (standard thread).



Spider Removal Tool
PN 2870341

Disassembly, Cont.

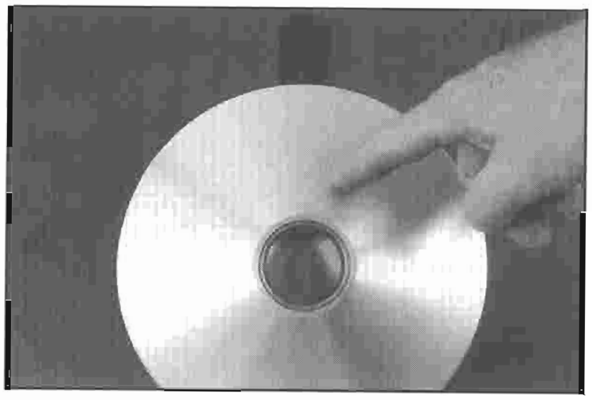
5. Measure the total thickness of the spacer washers installed beneath spider and record.



CAUTION:

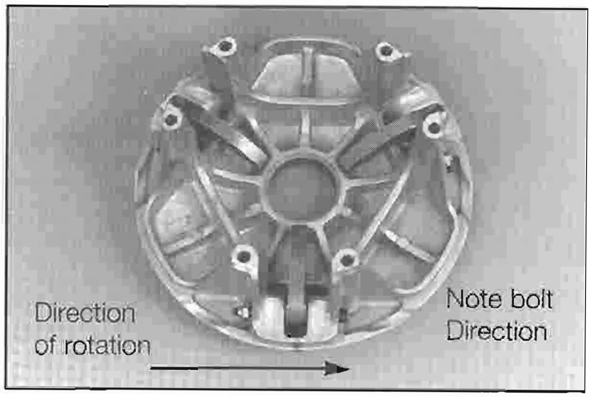
NOTE: In order to maintain proper belt-to-sheave clearance and clutch balance, the same washers (or equivalent total thickness) must be reinstalled during assembly. If sheaves are not marked, or if total thickness of existing shim washers under spider is not recorded, clutch will be out of balance when reassembled and must be replaced. Be sure to follow indexing procedure on page 6.32 if belt-to-sheave clearance is being adjusted.

6. Inspect both sheave surfaces for wear or damage. Inspect movable sheave bushing. See page 6.49 for inspection and repair procedure.

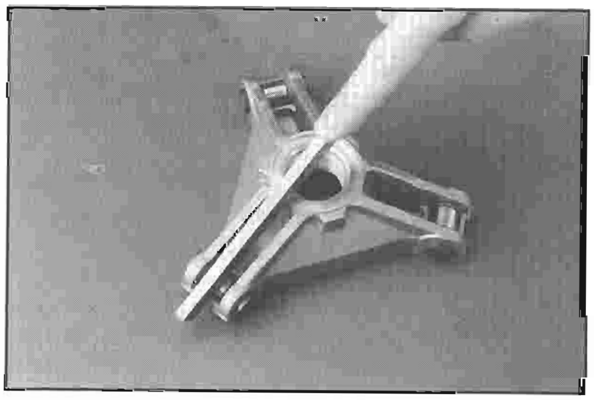


7. Using an 1/8″ Allen wrench with a 3/8″ combination wrench, remove drive clutch fly weights. Note direction of weight pin with nut on trailing side. Inspect each weight. Surface should be smooth, with no waves or galling. Place bolt inside weight to check flyweight bushing and pin surface for wear.

NOTE: The weight bushing is not a service part and both weight and pin must be replaced if worn.



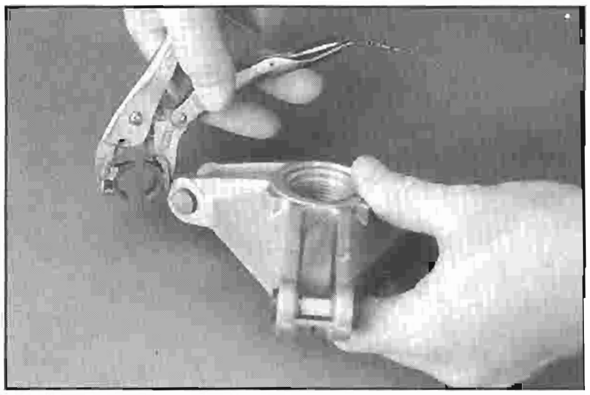
8. Inspect all rollers, bushings and roller pins by pulling a flat metal rod across the roller. Roller can also be inspected by rolling with finger to feel for flat spots, roughness, or loose bushing. Also inspect to see if roller and bushing are separating. Bushing must fit tightly in roller. Replace roller and pin if roller fails to roll smoothly (flat spots) or if bushing is loose.



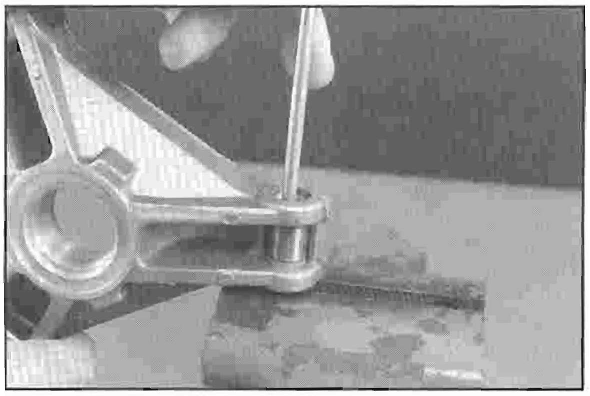
Spider Roller Removal

1. Remove spider buttons using button removal tool. Remove shims (if any are installed) and note location.

Spider Button Removal Tool
PN 2870985

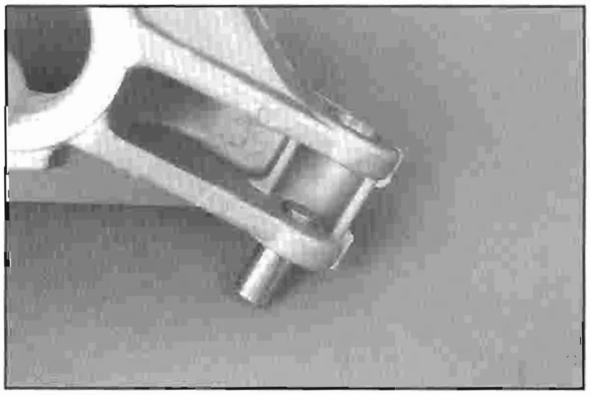


2. Place spider on a vise or in an arbor press. Using a pin punch, drive out the roller pin.

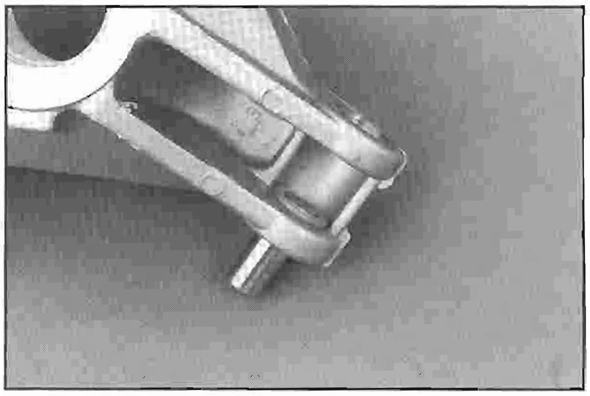


Roller Installation

1. Start a replacement roller on each leg, driving a pin in .100"-.125" (.25-.32 cm) beyond the first land of the spider leg (A). Remove any aluminum burrs from pin protruding from spider.

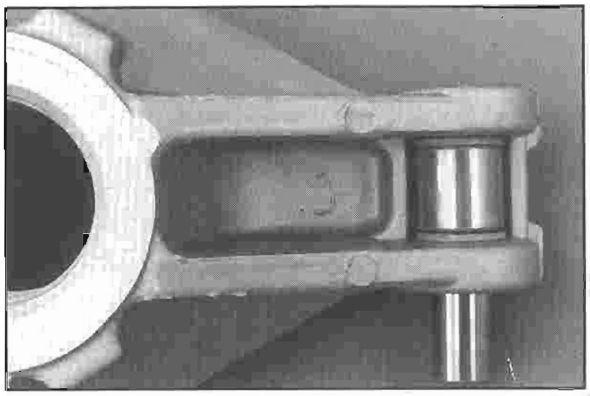


2. Install one washer onto pin.



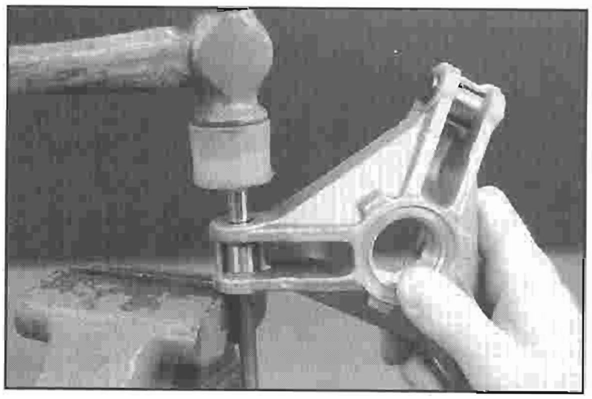
Roller Installation, Cont.

3. Place roller on pin as it protrudes from first land.
4. Place a second washer on other side of roller.



5. Install service tool as shown.

6. Place spider on a vise anvil and drive roller pin through to second land of spider.



CAUTION:

Use care to start the pin straight. Aluminum burrs could pass through into the roller bushing causing it to bind and stick. Also use care to make sure the roller remains aligned when the pin is driven through. The roller bushing could be damaged causing premature wear and roller failure.

Spider Button Shimming

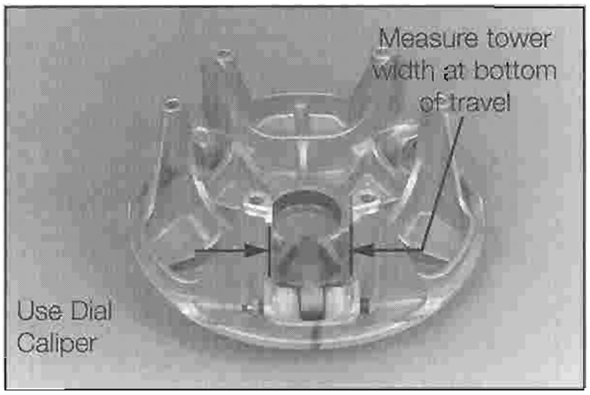
1. Determine how many shims are to be used.

NOTE: A shim kit is available which contains an assortment of shims, including .002″, .005″, and .010″.

Shim Kit PN 2200387

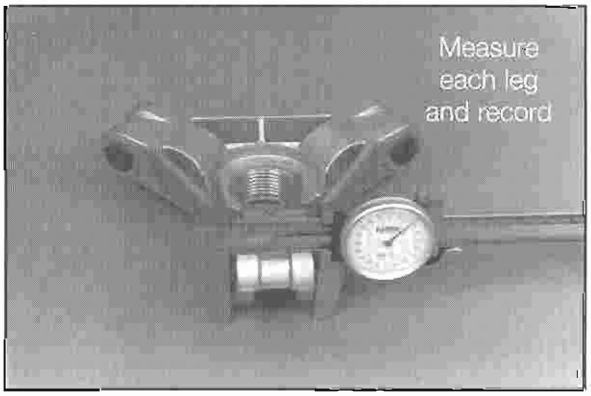
Spider Button Shimming, Cont.

9. Measure the dimension between towers at the lower half of the towers as shown.



10. Install spider buttons using a soft face hammer.

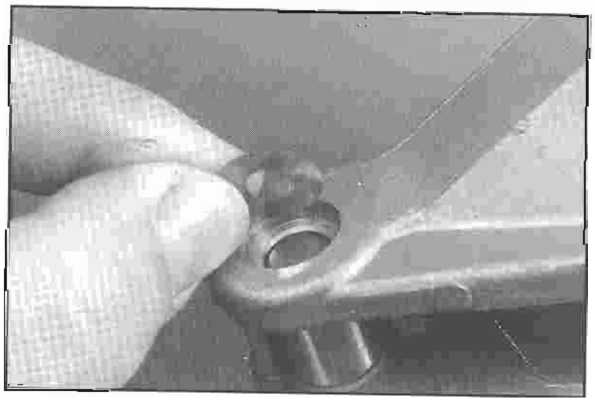
11. Record width of spider buttons on each leg.



12. Add shims beneath trailing side spider button to obtain specified button-to-tower clearance when assembled.

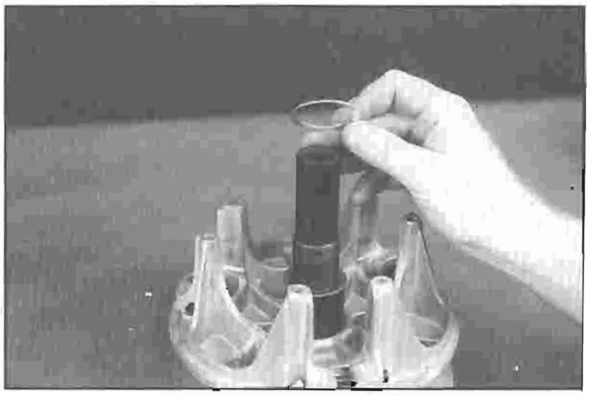
Button to Tower Clearance -

P-85 / P-90 = .002″ (.05 mm)



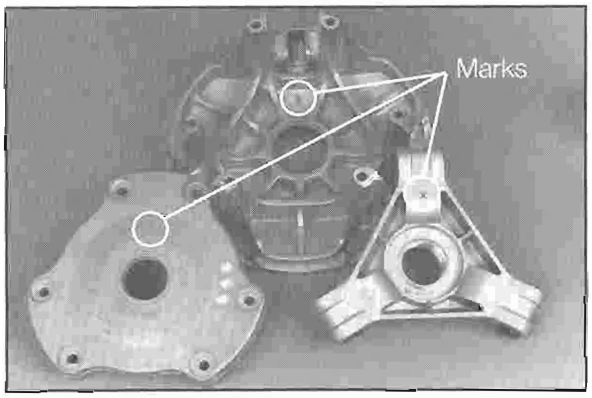
Drive Clutch Assembly

1. Place the correct number of spacer washers beneath the spider.



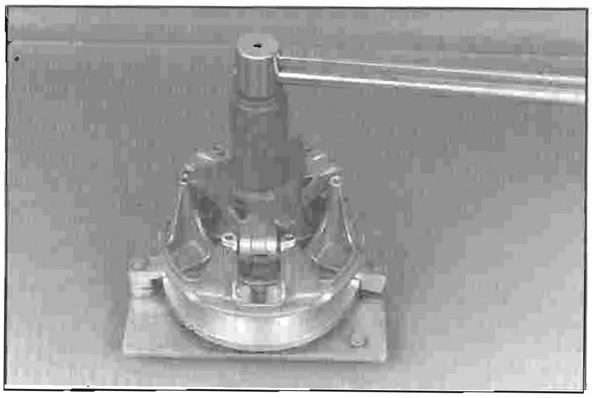
2. Assemble clutch making sure "X" marks on movable sheave and spider are aligned to achieve proper balance.

NOTE: If belt to sheave clearance is being changed by adding or removing washers from under the spider, and the sheaves were marked before disassembly, follow indexing procedure on page 6.32.



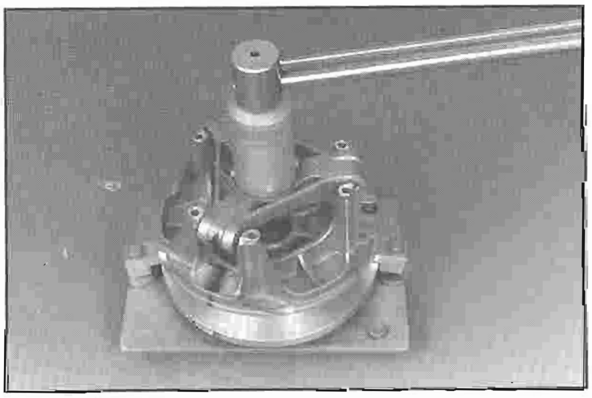
3. Torque spider to specification.

> **Spider Torque - P85 and P90**
> **200 ft. lbs. (27.6 kgm)**
>
> **Spider Removal Tool**
> **PN 2870341**



4. Torque jam nut to specification (P-85 Clutches). Install weights with weight pin nut on trailing side. Use new nuts to ensure proper retention. Torque nut to 30 in. lbs.

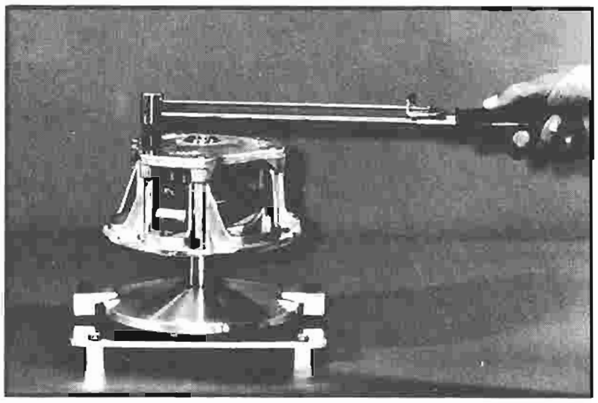
> **Jam Nut Torque - P85 models only**
> **235 ft. lbs. (32.43 kgm)**
>
> **Jam Nut Tool**
> **PN 2870338**
>
> **Weight Pin Nut Torque**
> **30 In. Lbs. (.34 kgm)**



Assembly, Cont.

5. Install spring and cover. Torque cover bolts evenly to specification.

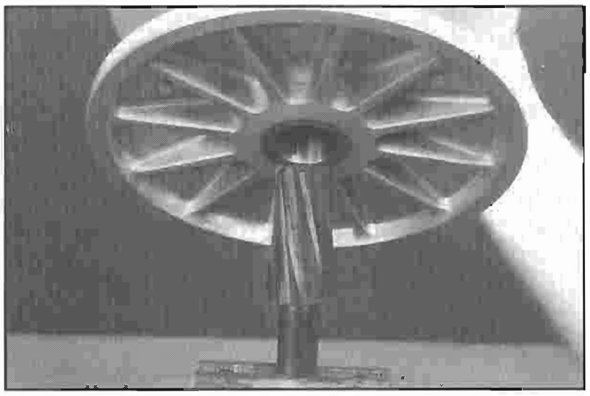
CAUTION: Carefully align bushing with shaft during installation of cover to prevent bushing damage. Maintain alignment by tightening cover bolts evenly and carefully.



Spider Cover Bolt Torque -
90 in. lbs. (1.03 kgm)

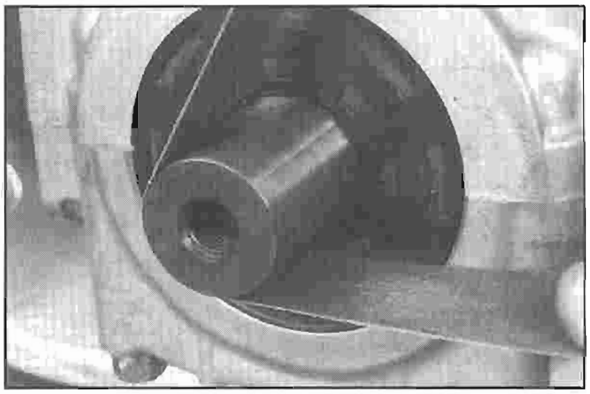
Installation

1. Slight galling or scoring of the bore taper can usually be corrected using a tapered reamer. Place reamer in a vise and lubricate with cutting oil. Clean taper by manually rotating clutch clockwise.

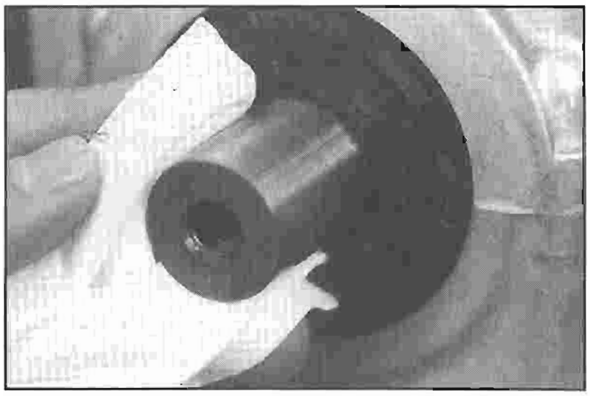


Tapered Reamer PN 2870576

2. Check crankshaft taper for galling or scoring. If necessary clean taper evenly with 200 grit emery cloth.



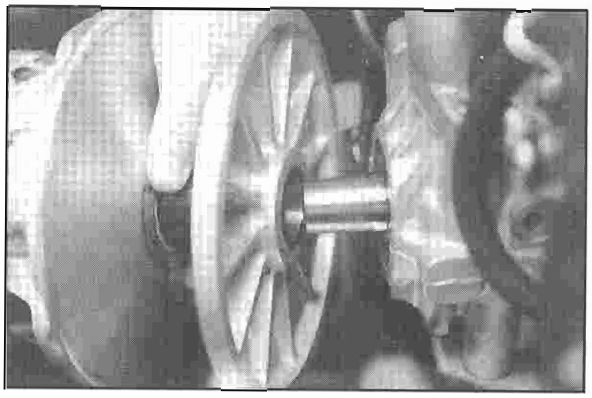
3. Both clutch taper and crankshaft taper should be clean and dry.



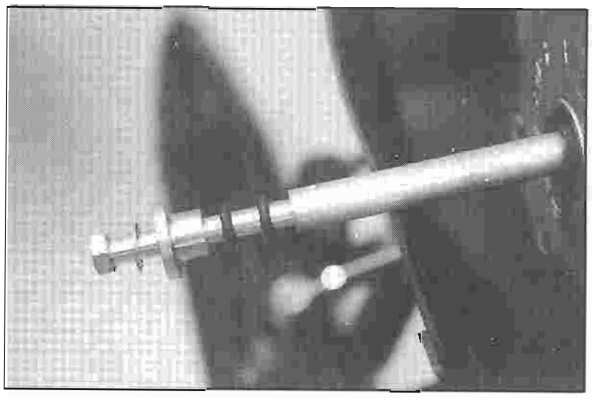
NOTE: Do not use harsh cleaners which may cause clutch taper to corrode during use. This will cause difficulty when removing clutch in future. Clean clutch taper with lacquer thinner or isopropyl alcohol.

Installation, Cont.

4. Slide clutch fully onto crankshaft taper.



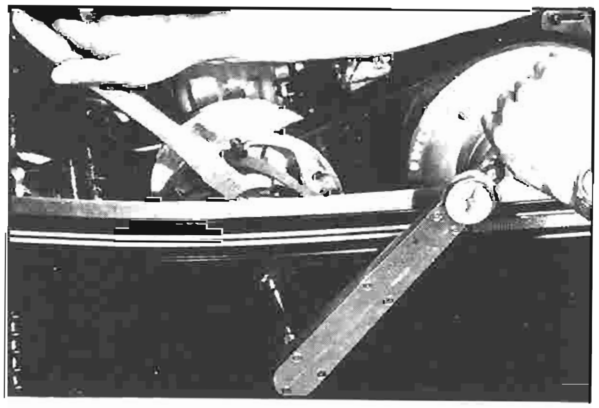
5. Install retaining bolt with any spacers, washers or O-rings. See appropriate parts manual for type and placement of retaining bolt components.



6. Torque retaining bolt to specifications. Hold clutch with strap wrench.

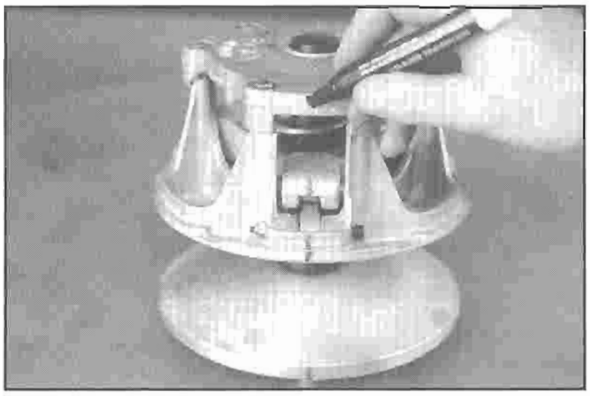
Drive Clutch Bolt Torque (Large ID Shaft)-
40 - 45 ft. lbs (5.52 - 6.21 kgm)

Drive Clutch Bolt Torque (Small ID Shaft)-
50 ft lbs. (6.9 kgm)



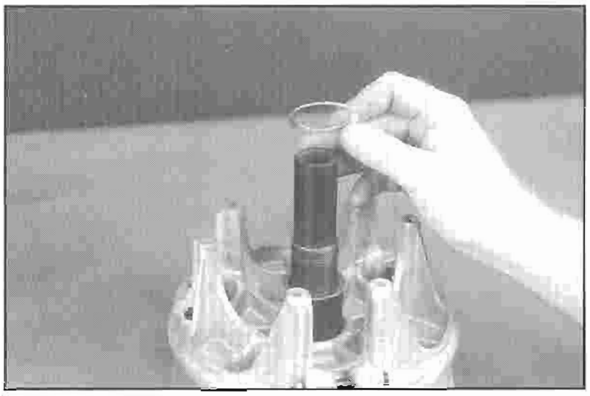
NOTE: Re–torque clutch to specification after first period of operation (such as a test ride).

Spider Indexing



NOTE: Spider indexing affects clutch balance and belt to sheave clearance. Read procedures carefully before proceeding.

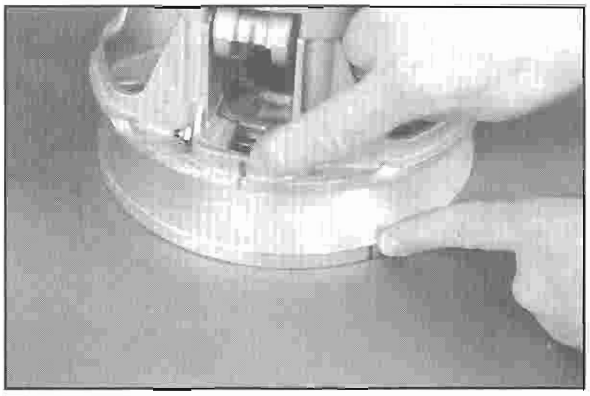
1. Before disassembling drive clutch, mark spider, cover, moveable sheave, and stationary sheave in line with a permanent marker as shown.
2. Disassemble drive clutch as described on page 6.24. Take care to note the amount and thickness of the shim washers under the spider.



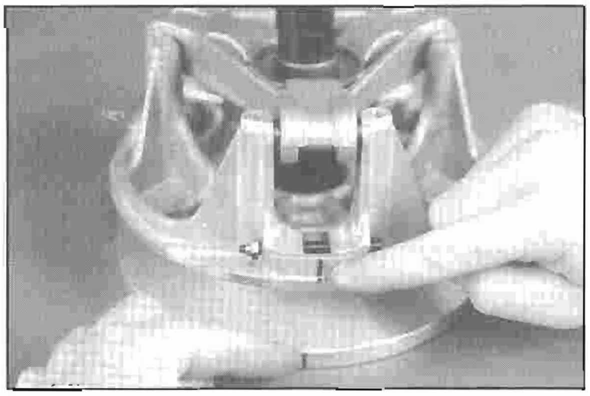
3. Add or remove spider washers as required to achieve desired belt to sheave clearance.
   - For example: If belt to sheave clearance is .020″ too large, removing one .020″ shim will position the movable sheave closer to the fixed sheave reducing belt to sheave clearance by .020″.

NOTE: The following washers are available for fine tuning:

Washers:	
PN 5210754	.050″
PN 5210753	.032″
PN 5210752	.020″



4. Install spider washer(s) and spider aligning Xs. Notice as the spider seat location is changed, the sheave marks made before disassembly no longer align. There are two ways to bring the sheave marks into alignment.
   - Vary the amount and thickness of spacer washers (Washer thickness may vary slightly).
   - Re-index marked spider leg to another tower. This can be done because spider has little effect on overall clutch balance.



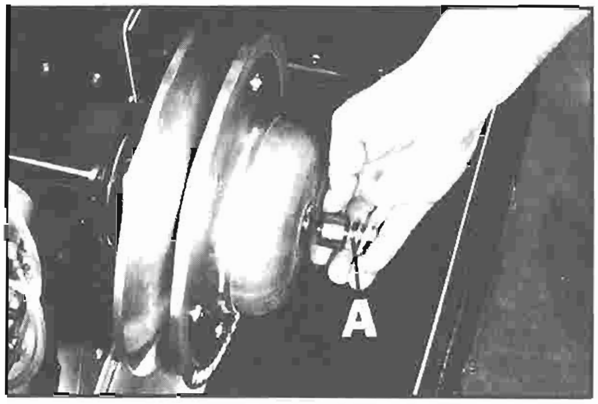
Re-indexing the spider 1/3 turn clockwise, or 1 leg, will allow the realignment of the moveable and stationary sheaves as previously marked. For example:

- .020″ or .032″ washer removed - re-index spider clockwise 1/3 turn
- .050″ or .064″ washer removed - re-index spider clockwise 1/3 turn
- Two .050″ or .064″ washers removed - re-index clockwise 2/3 turn

NOTE: Alignment marks should be within 1″ (25 mm) after final assembly and torquing.

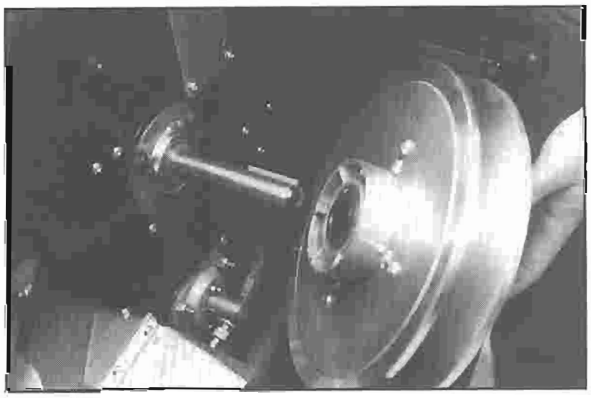
Driven Clutch Removal

1. Remove driven clutch retaining bolt.



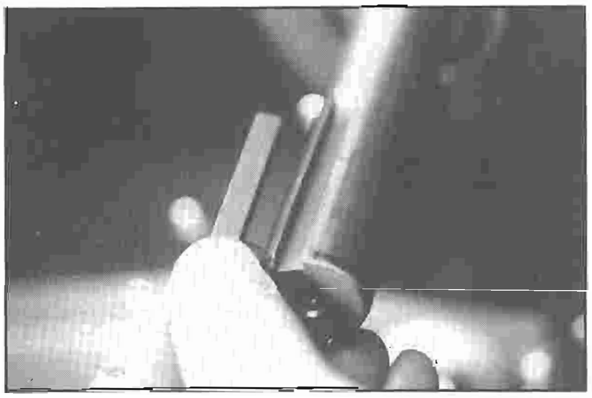
2. Slide driven clutch off jackshaft. It may be necessary to use a puller on some driven clutches. P-85 clutches (externally adjustable) can be removed using a 3-point flywheel or steering wheel puller and the 1/4-20 adjustment bolt holes. Use a suitable spacer on the end of the jackshaft.

P-90 Driven Clutch Puller
PN 2871056



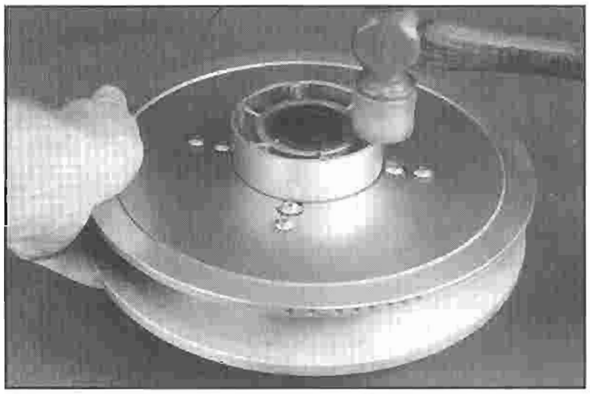
3. Inspect jackshaft keyway (splines / P-90s) for wear or damage.

NOTE: Notice the number and thickness of shim washers between driven clutch and jackshaft bearing. These must be replaced to maintain proper offset/alignment.



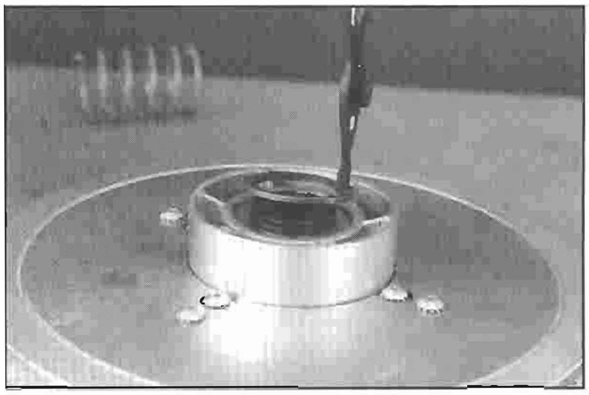
Disassembly

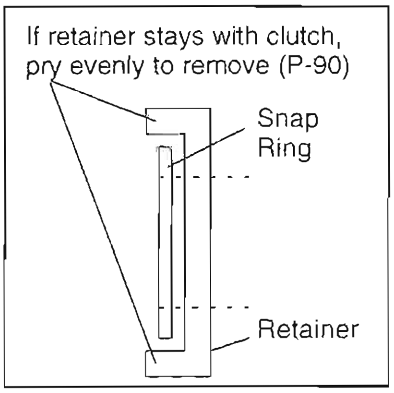
1. Place clutch on bench.



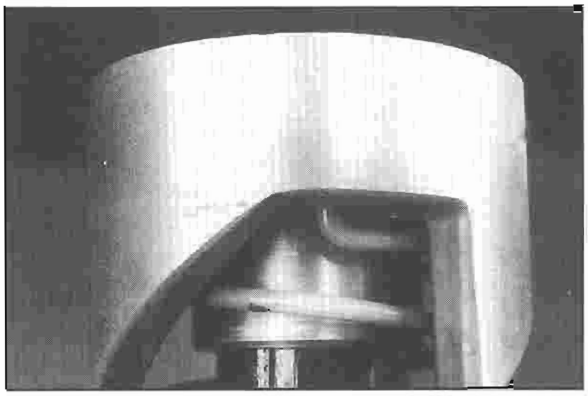
CAUTION: Wear eye protection during disassembly and assembly of driven clutch.

2. Hold fixed sheave and turn movable sheave 1/4 turn. Hold movable in place tap helix down with a soft faced hammer. Remove snap ring and washer. **NOTE:** On models equipped with snap ring retainers as shown below, retainer may stay on back of snap ring when clutch is removed. Pry lightly to remove retainer and gain access to snap ring. (Refer to illustration below.)

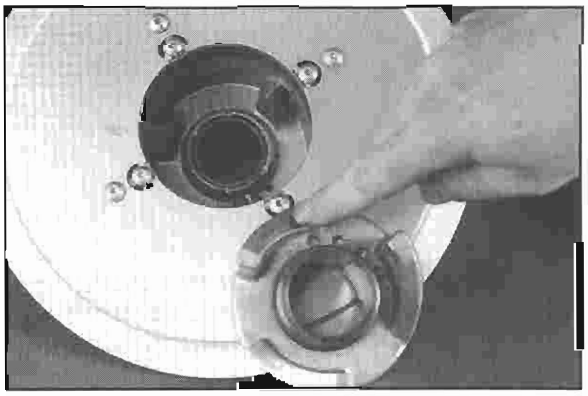




3. Allow sheaves to return and force the helix out. Before removing helix, note driven clutch spring position. Remove helix.

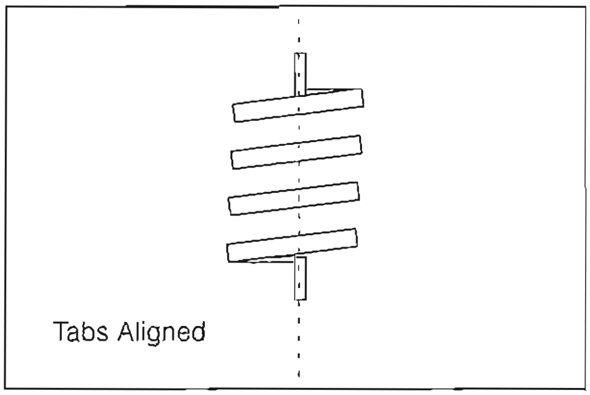


4. Inspect helix ramps and movable buttons and for wear or damage. P-90 driven clutch ramp buttons are secured by Torx™ screws. P-85 buttons can be removed by applying heat to the button housing or drill button with an 1/8″ drill bit. The ramp buttons should be replaced when worn. See Maintenance section for inspection intervals.

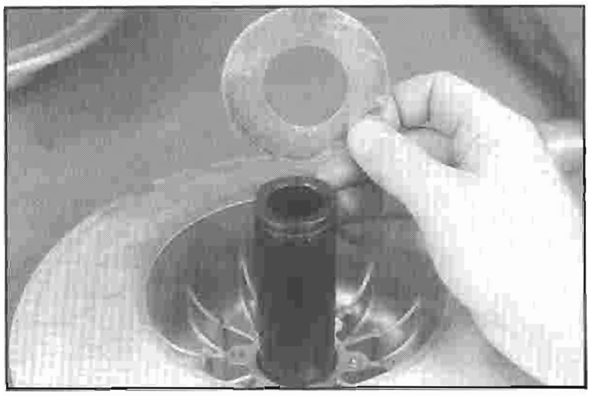


Disassembly, Cont.

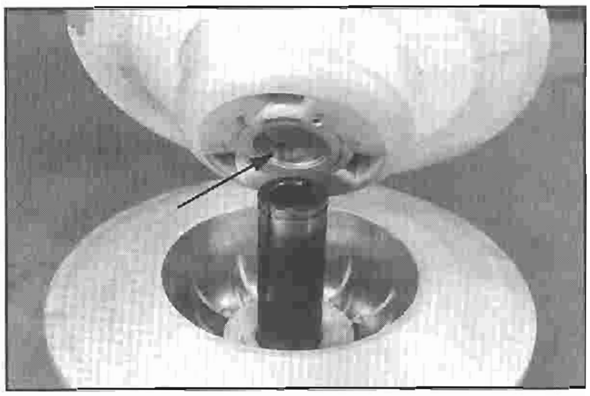
2. Remove driven clutch spring. Both spring tabs should line up. If not spring is fatigued and should be replaced.



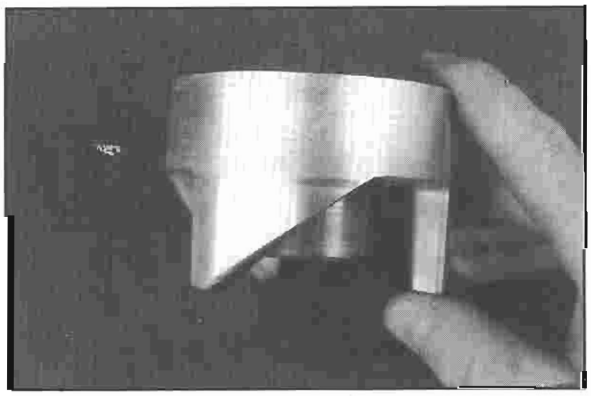
3. Slide moveable sheave off and inspect sheave surfaces for wear or grooving. Note size and number of shim washers between sheaves.



4. Note condition of moveable sheave bushing. Install helix into bushing. It should slide freely without binding. See page 6.51 for bushing replacement.



5. Polish helix with a fine emery cloth to remove any sharp edges or build up which may cause sticking.

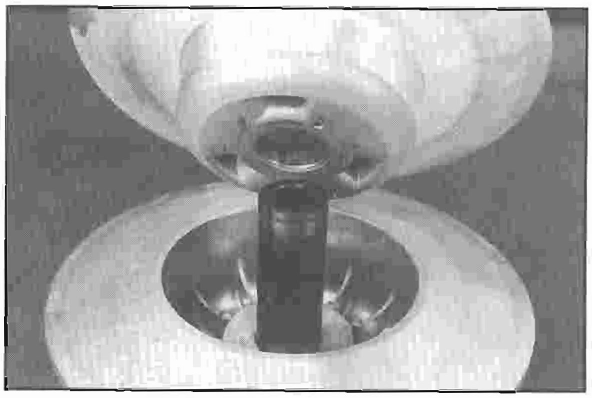


Assembly

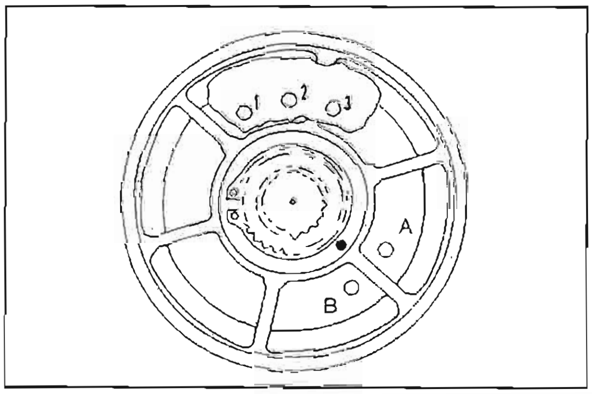
1. Install appropriate washer(s) on fixed shaft.

Optional Thin Adjustment Washer (P-85)
.048" - PN 7555899

2. Slide moveable sheave on fixed shaft.



3. Install driven clutch spring. Be sure spring tab is seated in hole in moveable sheave. Refer to specifications in front of this section for driven spring setting.
   - **P-85** driven clutches have 1 spring locating hole in the movable sheave and 4 holes in the helix.
   - **P-90** driven clutches have 2 spring locating holes in the movable sheave, and 3 in the helix



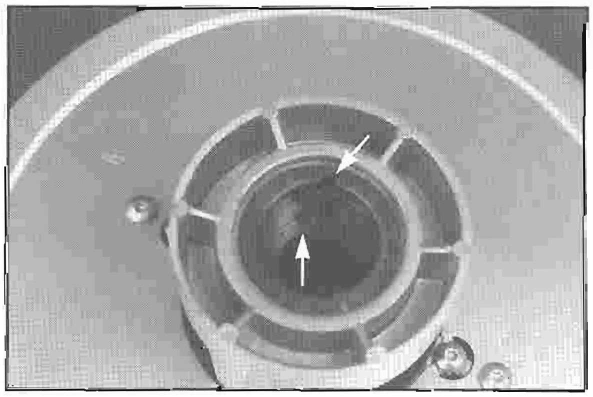
NOTE: The driven clutch helix/moveable assembly has several different spring locations which affect clutch shifting and RPMs. Tighter spring tension will raise engine RPMs during clutch upshift and allow quicker downshift when pulling or negotiating a hill. The lighter tension positions will tend to have a slower downshift and a harder upshift.

P-90

Example:	Helix	Moveable Sheave	Spring Tension
	B	1	Heavy
Spring/	B	2	
Position	A	1	
	B	3	
	A	2	
	A	3	Soft

P-90 production settings are usually B2
P-85 production settings are usually #2

4. Align inner keyway (P-85) or boss spline (P-90) between the helix and movable sheave. With the spring in place, slide helix onto shaft .5" (12mm).



Assembly, Cont.

Helix Angles and Effects

The driven clutch helix was selected for overall performance in relation to the other driven system components. In fine tuning situations requiring a slight adjustment of engine operating RPM or improved backshift, we recommend trying a helix change before changing other components.

Polaris has several helix angles available for the P-85 and P-90 driven clutch. Refer to the chart below for specific angle effects and identification.

Helix Ramps*

Description	PN	Degrees	Type
34	5130896	34	P85
34M*	5130751	34	P85
36	5130895	36	P85
36M*	5130717	36	P85
38	5130723	38	P85
40	5130724	40	P85
42	5130725	42	P85
44	5130726	44	P85
40-36*	5130898	40-36	P85
R1*	5131287	40-32	P85
R2*	5131288	42-32	P85
R3*	5131289	45-32	P85
R4*	5131290	50-32	P85
R5*	5131291	40-34	P85
R6*	5131292	42-34	P85
R7*	5131293	45-34	P85
R8*	5131294	50-34	P85
R9*	5131295	40-36	P85
R10*	5131296	42-36	P85
R11*	5131297	45-36	P85
R32*	5131623	50-34	P85
R12*	5131298	50-36	P85
T-1*	5131013	42-36-34	P-85
36.5	5130383	36.5	P90
40-38-36	5131161	40-38-36	P90
38-36	5131162	38-36	P90
38-36-34	5131163	38-36-34	P90
34	5131164	34	P90

The helix spring should always be adjusted within its limits before a helix change is performed. The normal rate of change between helix angle steps is 250 RPM under full throttle. This is approximately the same result as in going from the No. 1 to No. 4 spring position (P-85).

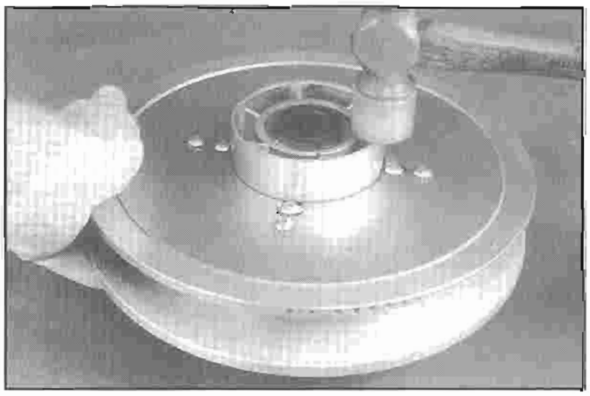
NOTE: Increasing spring tension increases engine RPM. RPM changes may not be evident if other drive or driven clutch components are substandard.

* **NOTE:** All R-Series, Mod(M), T1, and 40-36 helix ramps are cut 0.060″ deeper in the snap ring pocket. These are made so the driven clutch can open far enough for full shift out with wide 1 7/16″ belts (standard on Storm and 600/700 twins).

If these helix ramps are used with narrow belts, 2 (two) additional (for a total of three) .030″ /.8 mm washers (PN 7556804) should be installed under the snap ring to prevent the belt from touching the inner hub at full shift which can cause belt failure.

Wide belt models (Storm and 600&700 twins) use only the existing washer under the snap ring.

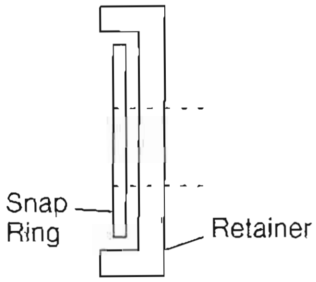
5. Hold fixed sheave and turn movable sheave 1/4 turn counterclockwise.

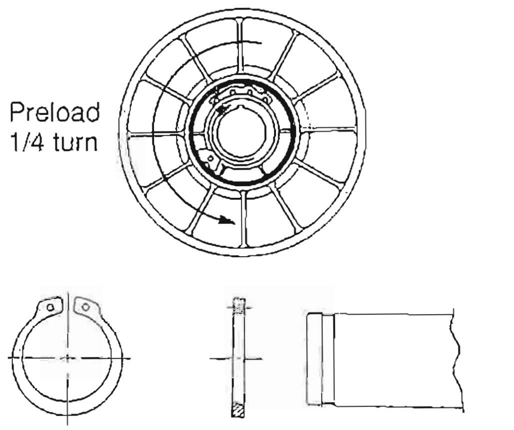


5. Force helix down into place, exposing snap ring groove.

Assembly, Cont.

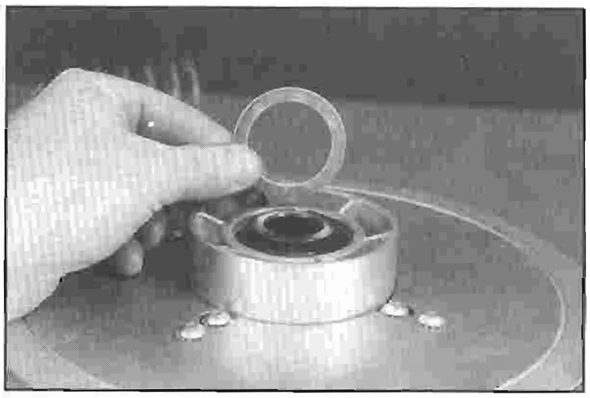
6. Install retainer (where applicable on P-90) spacer washer(s), and snap ring. Snap ring should be installed with flat (machined) side up or toward jackshaft bearing. **NOTE:** On models equipped with snap ring retainers as shown below, retainer may stay on back of snap ring when clutch is removed. Pry lightly to remove retainer and gain access to snap ring. (Refer to illustration below.)

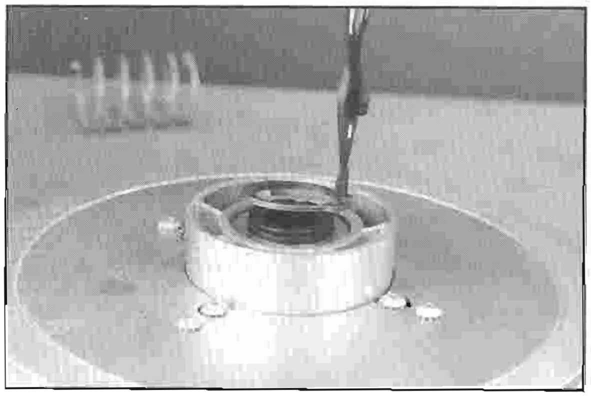




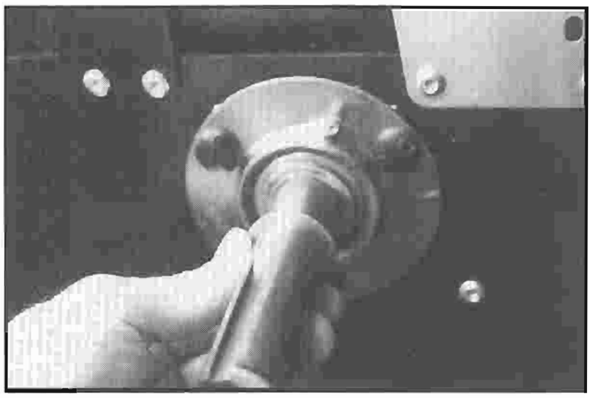
NOTE: Always install snap ring with chamfer towards helix (sharp edge outward)

7. Allow sheaves to close. Test clutch by pre-loading movable sheave 1/4 turn counterclockwise and releasing. Sheave should open and close smoothly with a positive stop. Some helix ramps have more than one washer beneath the snap ring. Refer to page 6.37 for more information.



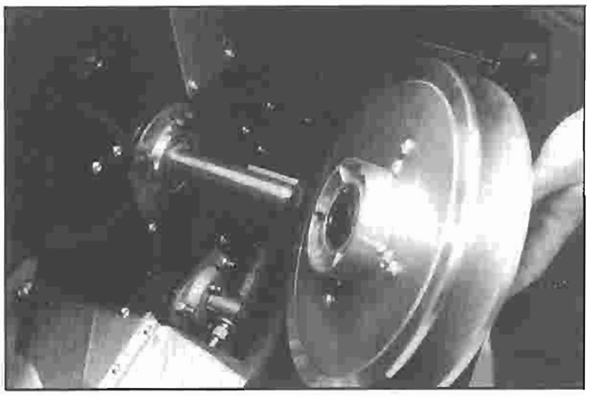


Installation

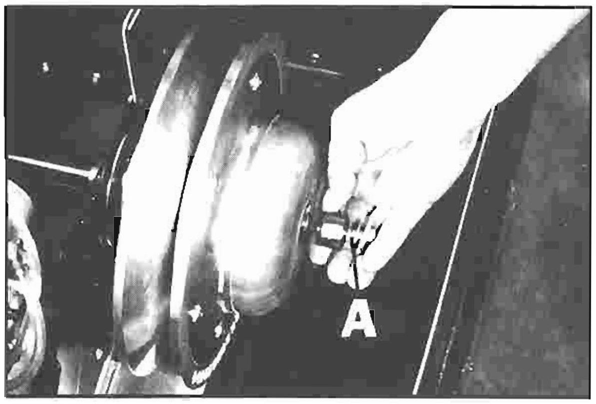


1. Install proper number of spacer washers on jackshaft between clutch and jackshaft bearing.
   Inspect Jackshaft Bearing
   Excessive vibration or abnormal drive belt wear can be caused by a worn bearing or jackshaft on the driven clutch side. To inspect bearing fit, watch the bearing area closely as you try to force the jackshaft up and down. If movement is detected, disassemble to determine which parts are worn. Replace the jackshaft if the new bearing is loose on the shaft. The bearing should be greased at 1000 mile (1600 km) intervals and before storage.

NOTE: Spacer washers between driven clutch and jackshaft bearing set the offset. Refer to adjustment procedure on page 6.44 to adjust offset between the drive and driven clutch.

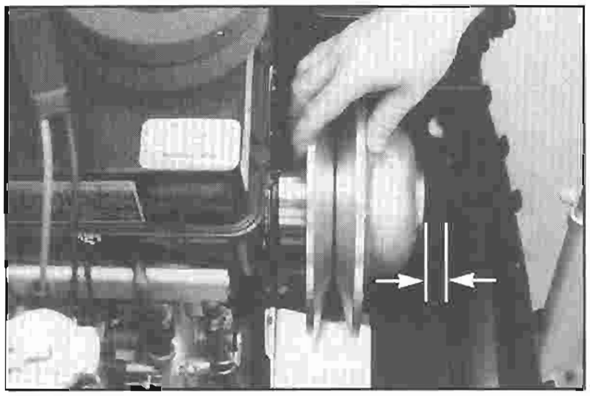


2. Lightly grease jackshaft keyway or spline. With square key in place (P-85s) slide clutch onto jackshaft.



3. Install spacer, bolt and washer to hold driven clutch in place.

Driven Clutch Retaining Bolt Torque-
15 ft. lbs. (2.08 kg-m)



4. P-85 and P-90 driven clutches should float from side to side (.040-.080″ (1-2 mm)). Without a slight free float, jackshaft bearings could be side loaded, causing premature bearing failure. **NOTE:** Some models with P-90 clutches use a snap ring retainer cup to captivate the snap ring. On these models end float should be adjusted between .000 and .010″ (.000-.254 mm) Torque bolt to specification.

Driven Clutch Torque/Float
P-85 / P-90 - .040-.080″ (1-2 mm)
P-90 with retainer .000-.010″ (.000-.254 mm)

Drive Belt

Part No.	Belt Width* (Projected)	Side Angle Overall*	Center to Center* +.100″ – .000″	Outer Circum-ference*	Notes
3211042	1.375″ (34.93mm)	32°	12.00″	47.250″	Common production belt for P-85 systems
3211045	1.375″ (34.93mm)	32°	12.00″	47.125″	Close tolerance version of 3211042
3211057	1.438″ (36.53mm)	28°	12.50″	48.375″	Obsolete – original Storm Belt
3211058	1.250″ (31.75mm)	28°	11.00″	43.313″	Indy Lite belt (P-90)
3211059	1.250″ (31.75mm)	28°	12.00″	45.125″	Longer Indy Sport Belt (P-90)
3211061	1.375″ (34.93mm)	32°	12.00″	47.188″	CVT version of 3211045
3211065	1.438″ (36.53mm)	28°	12.50″	48.375″	CVT Double Cog Storm belt
3211066	1.375″ (34.93mm)	28°	12.00″	47.250″	Double cog - CVT - thicker than 3211070. Production on higher horsepower snowmobiles.
3211067	1.375″ (34.93mm)	28°	12.00″	47.250″	Double cog–Good for short runs on higher horsepower engines (Drag Racers) - Good for lower horsepower trail riding
3211070	1.375″ (34.93mm)	28°	12.00″	47.250″	Common production belt for late model P-85 systems
3211073	1.438″ (36.52mm)	28°	12.50″	48.375″	Double cog–Good for short runs on higher horsepower engines (Drag Racers) - Good for lower horsepower trail riding
3211074	1.438″ (36.52mm)	28°	12.00″	47.625″	Double cog–Good for short runs on higher horsepower engines (Drag Racers) - Good for lower horsepower trail riding
3211075	1.438″ (36.52mm)	28°	12.00″	47.625″	Double cog - CVT

***± Belt dimensions given are nominal dimensions.** There is a ± variance for all critical dimensions. Clutch set-up must be inspected when a new belt is installed and, If necessary, clutch set-up must be adjusted.

The drive belt is an important component of the converter system. In order to achieve maximum efficiency from the converter, drive belt tension (deflection), clutch offset, and alignment must be adjusted properly.

General Belt Selection Guidelines

NOTE: Refer to appropriate parts manual for proper belt. Production belt is recommended unless tuning for a specific application.

CVT

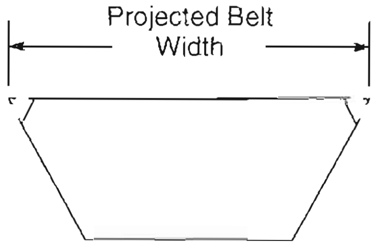
- Increased service life for high horsepower and extended high speed running
- Need 1-2 grams heavier drive clutch weight
- Good for prolonged high speed running.
- Good for aggressive riders

Standard Compound

- More aggressive at low speeds
- Reduced heat and drive clutch sheave wear
- Used for short, higher horsepower runs (Drag Racing)
- Good trail belt for lower horsepower engines.

Drive Belt Inspection

1. Measure belt width and replace if worn severely. Generally, belt should be replaced if clutches can no longer be adjusted to provide proper belt deflection.
   - The top edges have been trimmed on some drive belts. It will be necessary to project the side profiles and measure from corner to corner.
   - Place a straight edge on each side of the drive belt.
   - Place another straight edge on top of belt.
   - Measure the distance where the side straight edges intersect the top, as shown in the illustration at right.
2. Inspect belt for loose cords, missing cogs, cracks, abrasions, thin spots, or excessive wear. Replace if necessary.
3. Inspect belt for hour glassing (extreme circular wear in at least one spot and on both sides of the belt). Hour glassing occurs when the drive train does not move and the drive clutch engages the belt.

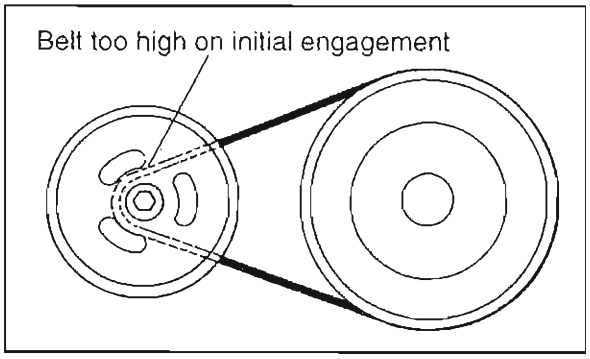


Belt Wear / Burn Diagnosis

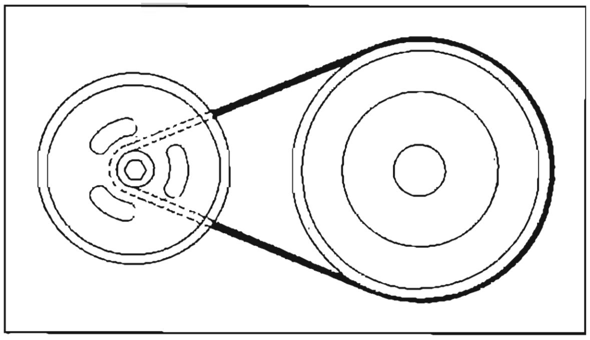
Belt Wear / Burn Diagnosis	
Possible Cause Of Wear Or Burning	**Solution**
Driving at or about engagement RPM for extended periods in all types of conditions	Drive at higher RPM if possible. Gear the machine down. Make sure belt deflection is at 1.25″ to achieve optimum starting ratio
Cold weather startups	Be patient. Warm up engine at least 5 minutes or until it readily responds to throttle input. For the quickest most efficient driveaway in extreme cold weather, take drive belt off machine and bring it in to a warm environment. Break skis and track loose from the snow. Engage throttle aggressively for short durations for initial cold driveaway
Towing another machine at or about engagement RPM	When possible, do not go in deep snow when towing another machine. Use fast, effective throttle to engage the clutch. Not all machines are intended for pulling heavy loads or other machines.
Spinning track while vehicle is stuck (high RPM, low vehicle speed, high ambient temp. Example: 8000 RPM, 10mph vehicle speed, 60 mph indicated on speedometer.	Lower the gear ratio. Remove windage plates from driven clutch. If possible, move to better snow conditions and reduce RPM. Avoid riding in very high ambient temperatures.
Ice and snow piled up between track and tunnel overnight or after stopping for a long period of time (enough to re-freeze the snow).	Break loose snow and ice under tunnel. Allow longer than normal warmup. Allow belt to warm sufficiently and increase grip ability on clutch sheaves. Use fast, effective throttle when engaging clutch.
Poor running engine (Bog, Miss, Backfire, etc.)	Maintain good state of tune including throttle and choke synchronization. Check for fouled spark plug(s). Check for foreign material in carbs. Make sure no water or ice in fuel tank, lines, or carburetors.
Loading machine on trailer	Use caution when loading machine. Carbide skags may gouge into trailer and prevent drive train from spinning freely. Use enough speed to drive completely onto trailer. If machine cannot be driven completely onto trailer, it may need to be pulled or pushed to avoid belt wear / burning.
Clutch malfunction	Check for correct clutch components.
Slow, easy belt engagement – easing on the throttle	Use fast, effective throttle to engage the clutch.

Belt Deflection

Too much belt deflection - If the belt is too long or the center distance too short, the initial starting ratio will be too high, resulting in performance loss. This is due to the belt rising too high in the drive clutch sheaves upon engagement.



Not enough belt deflection (belt too tight) - If the drive belt is too short or the center distance too long, the ratio will again be incorrect. In addition, the machine may creep when the engine idles, causing damage to the internal face of the drive belt.

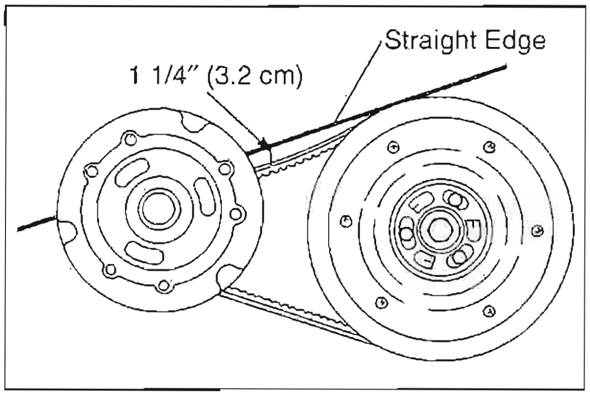


Measuring Belt Deflection

IMPORTANT NOTE: Do not apply excessive pressure to force belt into driven sheaves. This will result in an improper measurement. If belt deflection cannot be adjusted within specification using methods below, inspect center distance and compare to specifications beginning on page 6.3.

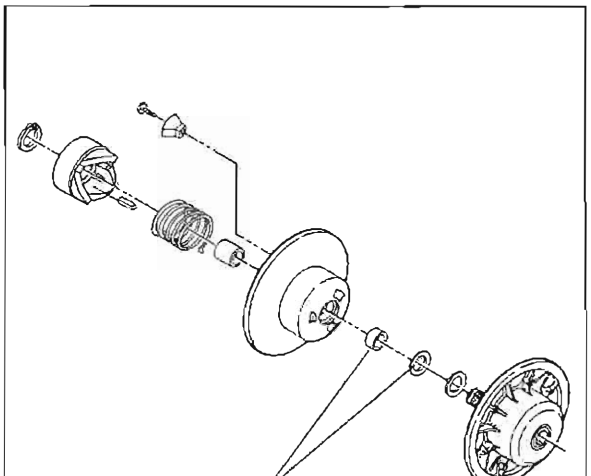
1. Measure belt deflection with both clutches at rest and in their full neutral position.
2. Place a straight edge on the belt and apply downward pressure while measuring at the point shown.

Belt Deflection -
1 1/4″ (3.2 cm)



Adjusting Belt Deflection (P-90)

1. Belt deflection on P-90 clutches is controlled by adding or removing shim washers from between the driven clutch sheaves. To change belt deflection, disassemble clutch as outlined on page 6.34.
2. Adjust shim stack between clutches to achieve desired belt deflection. At least 1 washer must remain between clutch sheave.
   - Remove washers to decrease belt deflection
   - Add washers to Increase belt deflection
3. Reassemble clutch as outlined on page 6.36.



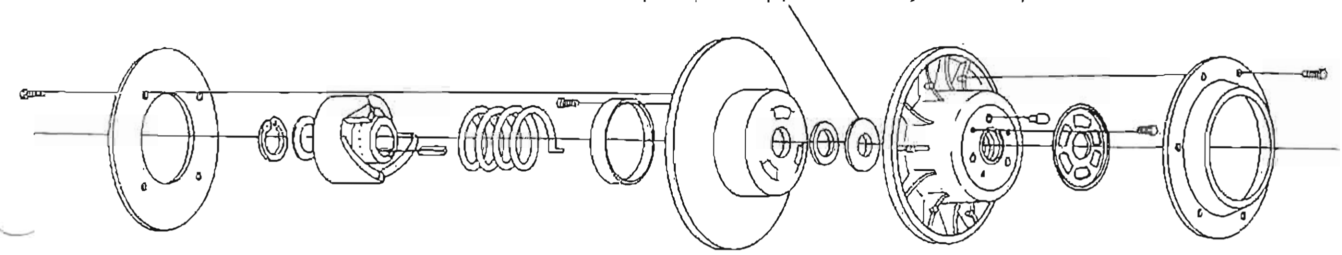
Adjusting Belt Deflection (P-85)

Belt deflection can be adjusted without removing the clutch from the jackshaft.

1. Pull belt into driven clutch to slightly open sheaves.
2. Loosen three bolts on adjustment cam.
3. Turn cam counterclockwise to reduce distance between sheaves. *Do not* rotate past #1 position.
4. Torque bolts to specification.

Optional Thin Adjustment Washer (P-85)
.048″ - PN 7555899

Production washer is usually .075″ with other .020 or .030 washers as required. May use optional, thinner (.048″) washer PN 7555899 if required to obtain proper sheave width. Either the .075″ or .048″ washer must be installed in this location to provide support the adjustment pins.



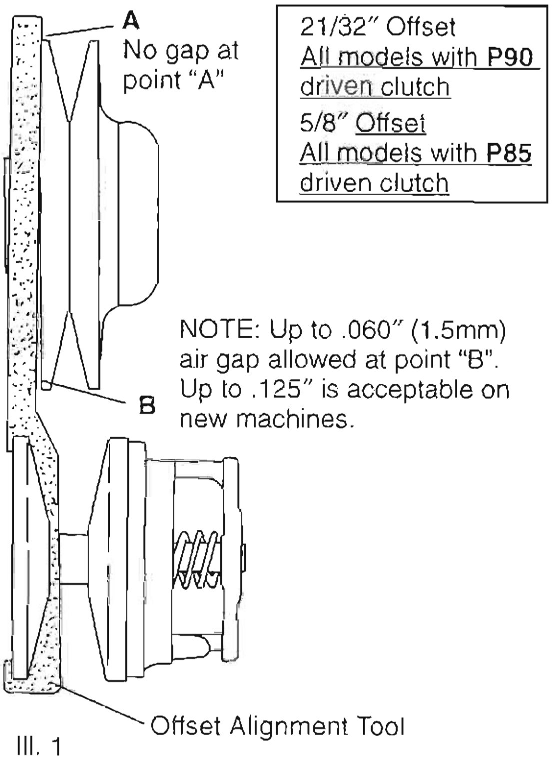
Clutch Offset Inspection

NOTE: Proper offset aligns the fixed sheaves of both clutch assemblies. This allows the clutches to be aligned throughout the shift range.

1. Remove drive belt. Belt deflection adjustments affect offset. Set belt deflection first.
2. Install proper alignment tool, depending on type of clutch, as shown in Ill. 1.
3. Rear of driven clutch moveable sheave should just contact tool when clutch is pushed inward on jackshaft.

> **Clutch Alignment (Tools) -**
>
> **P90 - 21/32″ Offset (PN 2870914)**
> **P85 - 5/8″Offset (PN 2870426)**
>
> **P90 Electric Start -**
> **1.28″Offset (straight edge)**
> **P85 Electric Start -**
> **1″ Offset (straight edge)**

Offset - Non-Electric Start Models



Ill. 1

Clutch Offset Adjustment

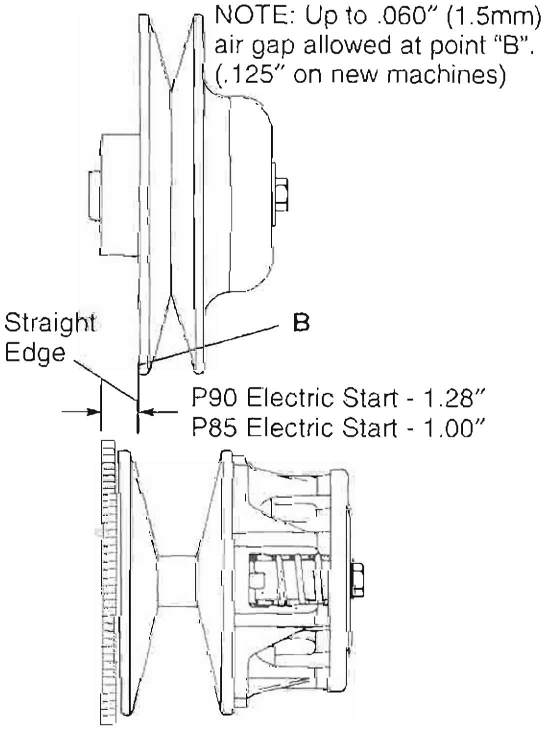
1. Determine direction driven clutch needs to be adjusted. (Refer to Clutch Offset Inspection procedure above).
2. Remove driven clutch retaining bolt, and remove driven clutch.
3. Add or take out washers on jackshaft between the driven clutch and jackshaft bearing to achieve proper offset.
4. Most models require the driven clutch to float on the jackshaft. After adjusting offset, add or remove shim washers from the retaining bolt to provide a .030″-.060″ (.75-1.5mm) of float on jackshaft. This will prevent side loads on the jackshaft bearing.

NOTE: On models with driven clutch snap ring retainer (Transport, Lite Touring, Sport Touring, etc.) the clutch is mounted firmly on the shaft without float.

NOTE: When checking electric start models, use a straight edge as shown in Ill. 2. If alignment is off, loosen the engine mounts and shift engine as required to obtain the proper offset and alignment.

> **Driven Clutch Bolt Torque -**
>
> **12 ft. lbs. (1.66 kgm)**

Offset -Electric Start Models



Ill. 2

Clutch Alignment Inspection

NOTE: Drive clutches are purposely misaligned slightly forward to compensate for the engine shifting on it's mounts. Under load, the engine will pull back slightly so both clutches are in alignment.

1. After clutch offset has been verified, inspect alignment.
2. Install proper alignment tool, depending on type of clutch, as shown in Ill. 1 page 6.44.
3. There should be a .060" - .090" (1.5 - 2.25 mm) gap between front of driven clutch and tool, with the tool just touching at the rear. Up to .125" (3.1 mm) gap is acceptable in the front on new machines.

Clutch Alignment Adjustment

1. Loosen all 4 engine mounting bolts.
2. Adjust engine torque stop until clutches are in proper alignment.
3. Tighten engine mounts securely.
4. Recheck both clutch offset and alignment.
5. Verify proper torque stop adjustment.

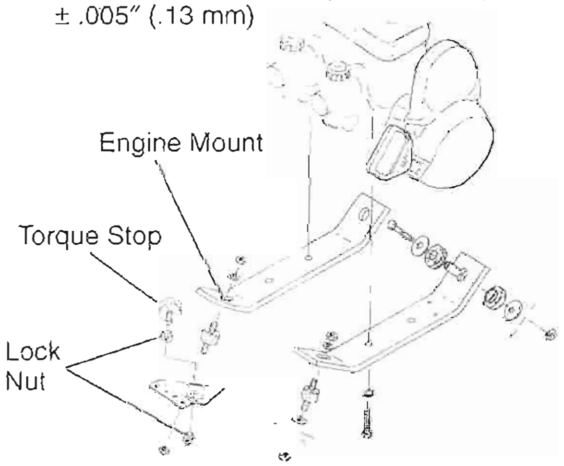
Torque Stop Adjustment

NOTE: There are two types of torque stops currently used. Refer to the illustrations below for adjustment of each type.

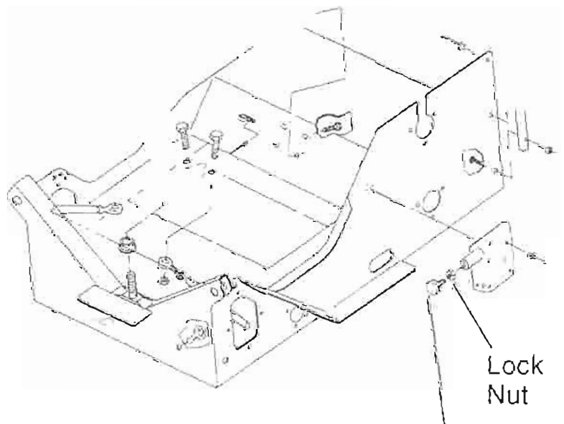
1. After aligning clutches, adjust torque stop by loosening lock nut and rotating stop to proper clearance as shown. Hold torque stop and tighten jam nut to 15-17 ft. lbs. (2.07-2.35 kg-m).

ENGINE MOUNT TORQUE STOP

Adjust gap between stop and engine mount to .010" - .030" (.25 - .75 mm) ± .005" (.13 mm)



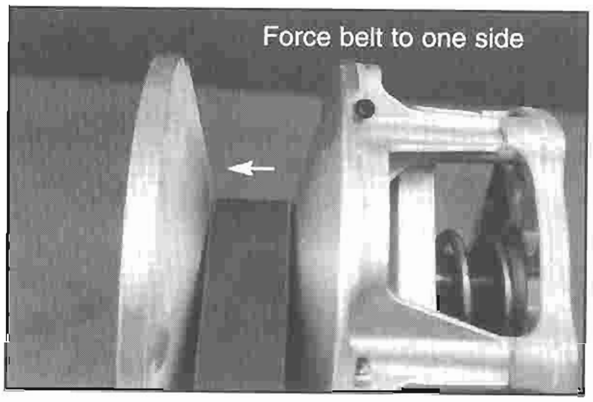
CRANKCASE TORQUE STOP



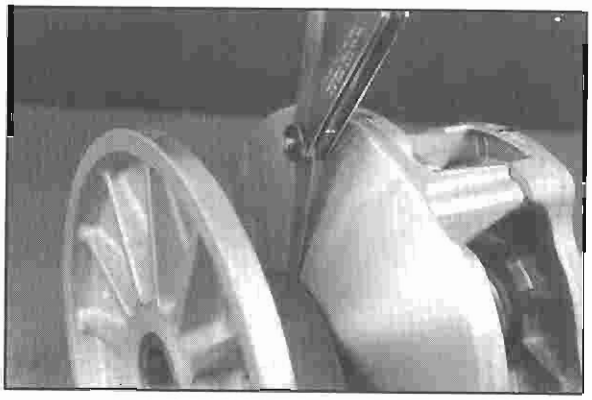
Adjust gap between stop and engine crankcase to .100" (2.5"mm) ± .010" (.25 mm)

Belt to Sheave Clearance Inspection

NOTE: The distance between the belt and the moveable sheave on the drive clutch is very important. This distance controls the starting ratio (lowest starting ratio is most preferable) and the position of the clutch weight to engine RPM. The distance between the belt and moveable sheave should be as close to .020″ (.5 mm) as possible without creating a drag on the belt, when positioned around the hub at the bottom of the sheaves.



1. Force belt to one side of drive clutch. **NOTE:** Measure total belt to sheave clearance with a new belt.



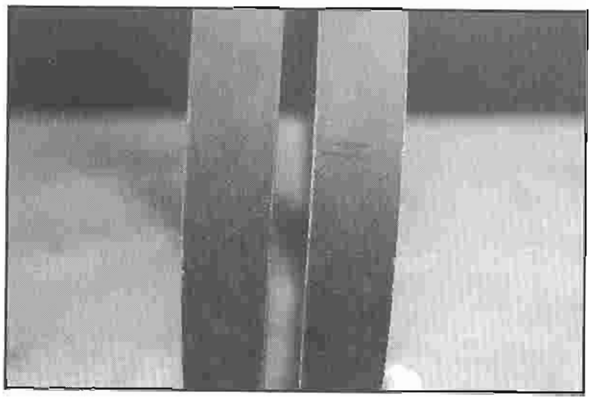
2. Install feeler gage between other sheave and belt.

Belt to Sheave Clearance -
.020″ ±.015″(.5 mm±.4mm)

Belt to Sheave Clearance Adjustment

Belt to sheave clearance can be adjusted in two ways.

1. Try several new belts to achieve proper clearance.
2. Can add or remove shims from under the spider to increase or decrease belt to sheave clearance. See Spider indexing on page 6.32.



NOTE: Spider indexing affects clutch balance and belt to sheave clearance. Read procedures carefully before proceeding.

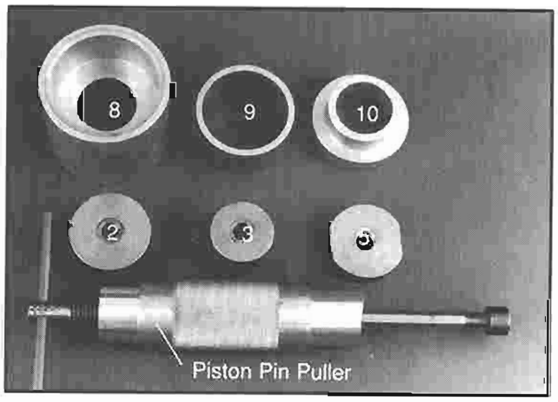
NOTE: Belts with various widths will also affect belt deflection since they will fit differently in the driven clutch. Deflection should be checked per procedure on page 6.43.

Kit PN 2871025

Item	Qty.	Part Description	Part No.
1	1	P-85 Drive Clutch Moveable Bushing Removal and Installation Tool	5020627
2	1	P-90 Drive Clutch and Driven Clutch Bushing Installation Tool	5020628
3	1	Drive Clutch Cover Bushing Removal and Installation Tool (for all drive clutches)	5020629
4	1	P-85 Driven Clutch DU Split Bushing Installation Tool	5020630
5	1	P-90 Driven Clutch Bushing Removal Tool	5020631
6	1	P-85 Driven Moveable Sheave Removal Tool	5130862
7	1	P-85 Driven Moveable Sheave Removal Bridge	5222768
8	1	Main Puller Adapter	5020632
9	1	Adapter Reducer	5010279
10	1	Number Two Puller Adapter	5020633
11	1	Instruction	9912260

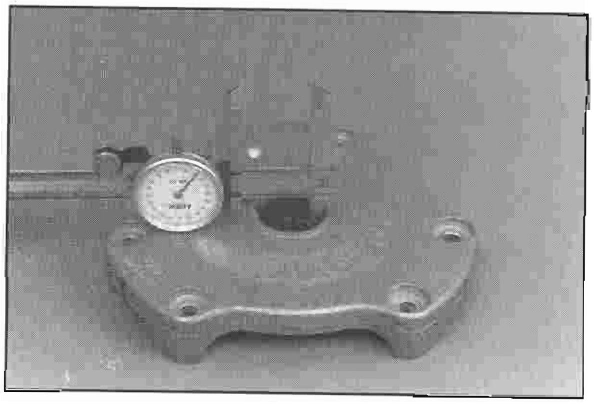
You will need to supply:

- Piston pin puller (PN 2870386)
- Bench vise
- Soft face hammer (for P-85 Driven Moveable)
- Small scribe or pick (for Cover Bushing Removal)
- Hand held propane torch (for P-90 Driven)
- Loctite RC 860 Retaining Compound (2870584)



P-85 Drive Clutch Cover Bushing Removal

1. Disassemble clutch as outlined in this section.
2. Inspect or measure bushing and replace if worn beyond service limit. Note: Bushing must be installed in cover. There are two types of bushings used. Refer to the following specifications.

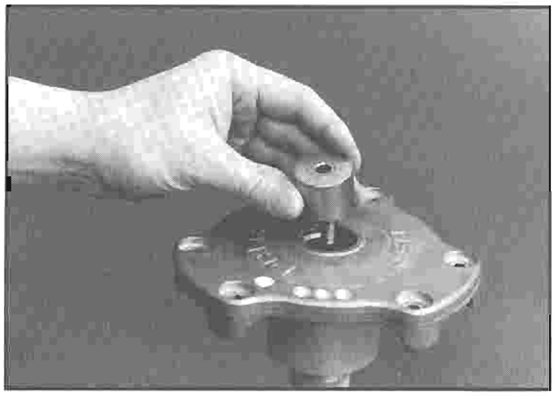


Cover Bushing Inspection:
Garmax™ Style (Installed Dimension)
Nominal Bearing Bore: 1.125″ (28.57mm)
Service Limit: 1.140″ (28.95mm)

Cover Bushing Inspection:

Teflon/Bronze Style
Service Limit: Replace cover bushing if more bronze than Teflon™ is visible.
Nominal Bearing Bore: 1.125″ (28.57mm)
Service Limit: 1.132″ (28.75mm)
(Measure When Bushing is Installed)

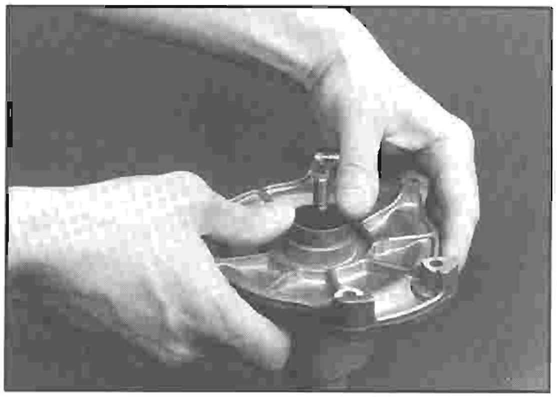
P-85 Drive Clutch Cover Bushing Removal Cont.



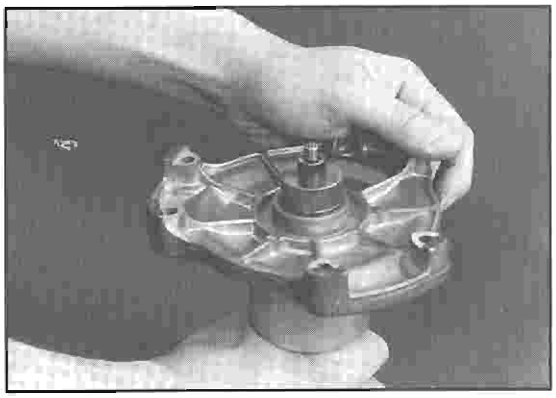
3. On models equipped with snap ring, remove round wire snap ring from inside of clutch cover using a small scribe or pick and set aside.
4. Install main adapter (Item 8) on puller.
5. From outside of clutch cover, insert removal tool (Item 3) into cover bushing.
6. With inside of cover toward vise, slide cover onto puller.
7. Install nut onto puller rod and hand tighten. Turn puller barrel to increase tension as needed.

8. Turn clutch cover counterclockwise on puller rod until bushing is removed.
9. Remove nut from puller rod and set aside.
10. Remove bushing and bushing removal tool from puller. Discard bushing.

P-85 Drive Clutch Cover Bushing Installation



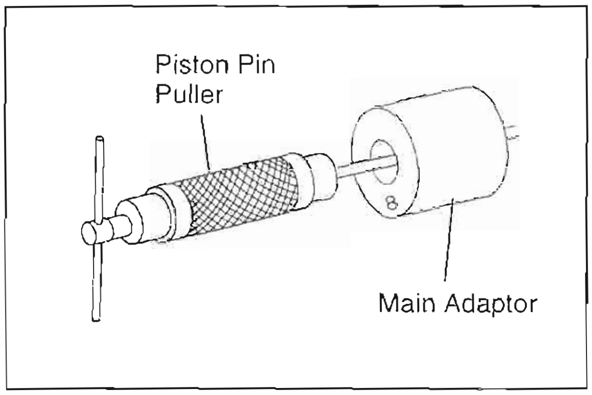
1. On Garmax™ style bushings (PN 3576516) apply Loctite 680 retaining compound (PN 2870584) to the outer surface of the bushing. Retaining compound is not required on bronze / Teflon™ type bushings (PN 3576510). **Do not lubricate bushings, or premature wear will result.**
2. Working from inside of cover, insert bushing and bushing installation tool into center of clutch cover.
3. With main adapter on puller, insert cover onto puller rod, placing outside of cover toward vise.
4. Install nut on rod and hand tighten. Turn puller barrel to apply more tension if needed.



5. Turn clutch cover counterclockwise on puller rod until bushing is seated.
6. Remove nut from puller rod and take installation tool and clutch cover off rod.
7. Squeezing ends of snap ring, gently fit ring into clutch cover.

P-85 Drive Clutch Movable Sheave Bushing Removal

1. Inspect bushing and replace if excessively worn.
2. Install handle end of piston pin puller (PN 2870386) securely into bench vise and lightly grease puller threads.
3. Remove nut from puller rod and set aside.
4. Install main adapter (Item 8) onto puller. See Ill. 1.
5. Working from inside of moveable sheave, insert removal tool (Item 1) into center of sheave. With towers pointing away from vise, slide sheave onto puller rod.
6. Install nut removed in step 2 onto end of puller rod and hand tighten. Turn puller barrel to increase tension on sheave if needed.
7. Turn sheave counterclockwise on puller rod until it comes free.
8. Remove nut from puller rod and set aside.
9. Pull bushing removal tool and adapter from puller rod. Remove bushing from tool and discard.
10. Remove retaining ring from inside adapter and set aside.



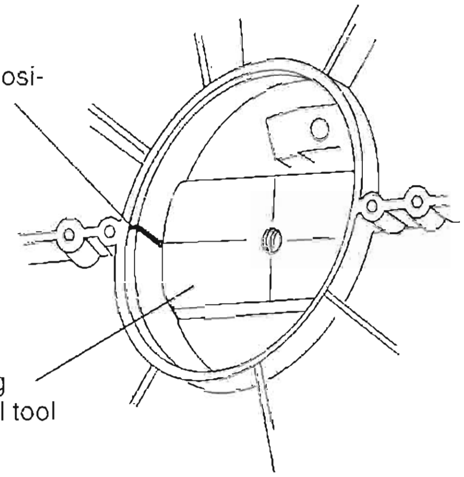
Ill. 1

P-85 Drive Clutch Movable Sheave Bushing Installation

1. Place main adapter (Item 8) on puller.
2. Push new bushing into center of sheave by hand.
3. Insert installation tool (Item 1) into center of sheave and with towers pointing toward vise, slide sheave onto puller rod.
4. Install nut on puller rod and hand tighten. Turn barrel to apply additional tension if needed.
5. Turn sheave counterclockwise until bushing is seated.
6. Remove nut from puller rod and set aside.
7. Remove sheave from puller.
8. Remove installation tool.
9. Insert retaining ring removed in step 9 and installation tool into center of sheave.
10. With towers pointing toward vise, install sheave onto puller rod.
11. Install nut on puller rod and hand tighten. Turn barrel to apply additional tension if needed.
12. Turn sheave counterclockwise until ring is seated.
13. Remove nut from puller rod and set aside.
14. Remove sheave from puller.
15. Remove installation tool. **Do not lubricate bushings, or premature wear will result.**

P-85 Driven Clutch Movable Sheave Large Bushing Removal

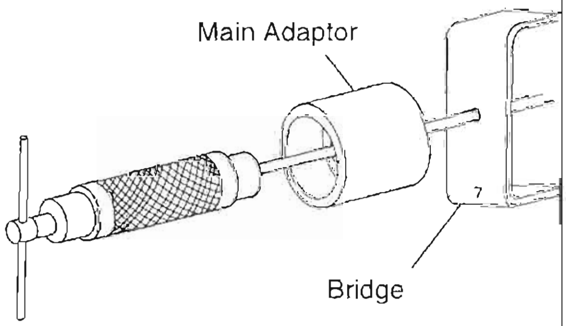
NOTE: The P-85 driven moveable has a split bushing. Note the position of this split during bushing removal. See Ill. 2.



Ill. 2

> **Moveable Sheave Bushing Inspection:**
>
> **Replace the cover bushing if more brass than Teflon™ is visible on the bushing.**

1. Inspect bushing and replace if excessively worn.
2. Insert bushing removal tool (Item 6) into sheave, centering split on tool. **NOTE:** The split must be touching the tool. See Ill. 2.
3. Install main adapter as illustrated. Install bridge (Item 7) onto puller with legs pointing toward clutch. See Ill. 3.
4. From the outside, insert thumb through center of sheave. Using downward pressure, hold bushing removal tool tightly in place.
5. With back side toward vise, slide sheave onto puller.
6. Install nut onto puller rod and hand tighten. Slowly align clutch with bridge and turn puller barrel to increase tension if needed.
7. Turn sheave counterclockwise until bushing is removed and sheave comes free.
8. Remove nut from puller and set aside.
9. Remove tool and bushing from puller. Discard bushing.
10. Remove bridge and adapter from puller.

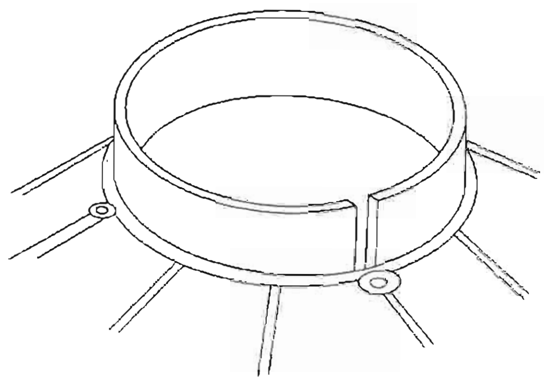


Ill. 3

P-85 Driven Clutch Movable Sheave Large Bushing Installation

NOTE: The P-85 driven moveable has a split bushing. The bushing is held in place after installation by screws.

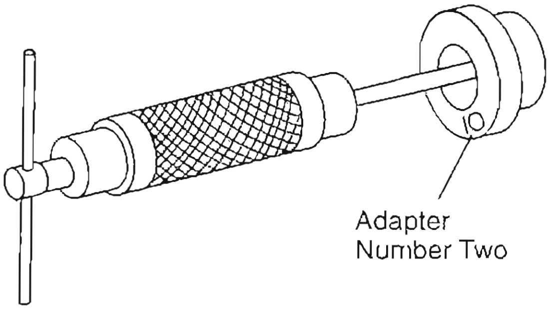
11. Insert bushing (PN 3569803) into clutch and tap lightly with a soft face hammer.



Ill. 4

12. Install adapter number two (Item 10) onto puller. See Ill. 5.
13. Slide clutch sheave onto puller with back side away from vise.
14. Turn puller barrel until rod extends past back side of sheave.
15. Insert large installation tool for DU bushing (Item 4) onto rod.
16. Install nut onto puller rod and hand tighten. Turn puller barrel to increase tension as needed.
17. Turn clutch sheave counterclockwise until bushing is seated.
18. Remove nut from puller rod and set aside.
19. Remove installation tool and slide clutch sheave from puller.

NOTE: The screws hold the bushing in place.



Ill. 5

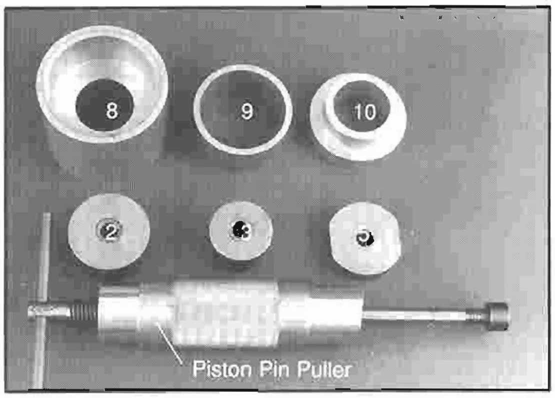
Polaris Kit PN 2871226

Item	Qty.	Part Description	Part No.
2	1	P-90 Drive Clutch and Driven Clutch Bushing Installation Tool	5020628
3	1	Drive Clutch Cover Bushing Removal and Installation Tool (for all drive clutches)	5020629
5	1	P-90 Driven Clutch Bushing Removal Tool	5020631
8	1	Main Puller Adapter	5020632
9	1	Adapter Reducer	5010279
10	1	Number Two Puller Adapter	5020633

P-90 Drive Clutch Moveable Sheave - Bushing Removal

Moveable Sheave Bushing Inspection:

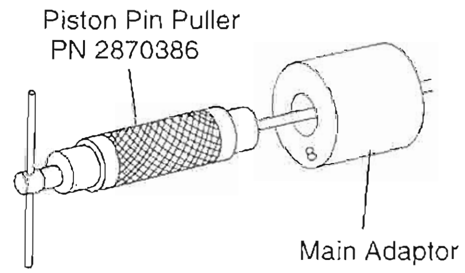
Replace the cover bushing if more brass than Teflon™ is visible on the bushing.



1. Install handle end of piston pin puller securely into bench vise and lightly grease puller threads.

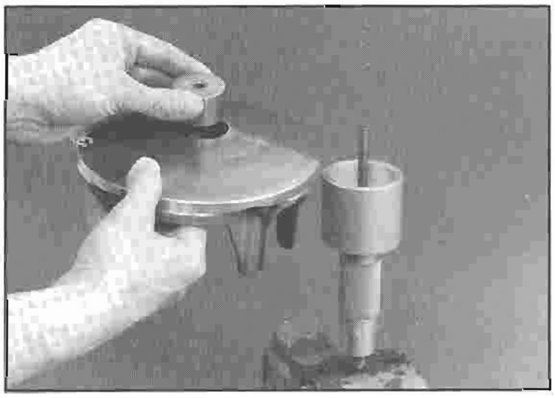
2. Remove nut from puller rod and set aside.

3. Install main adapter (Item 8) onto puller.



4. Insert adaptor #2 into bushing from belt side as shown. With towers pointing toward vise, slide sheave and bushing onto puller rod.

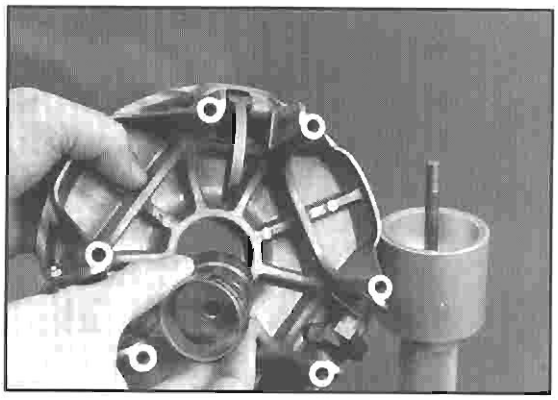
5. Install nut removed in step 2 onto end of puller rod and hand tighten. Turn puller barrel to increase tension on sheave if needed. Nut is left hand thread.



6. Turn sheave and puller barrel together counterclockwise on puller rod until bushing is removed.

7. Remove nut from puller rod and set aside.

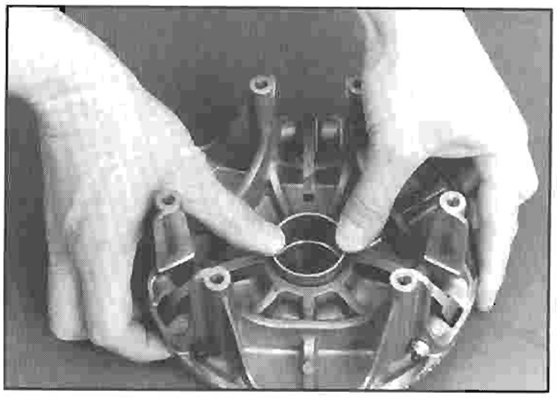
8. Pull bushing removal tool and adapter from puller rod. Remove bushing from tool and discard.



Drive Clutch Moveable Sheave - Bushing Installation

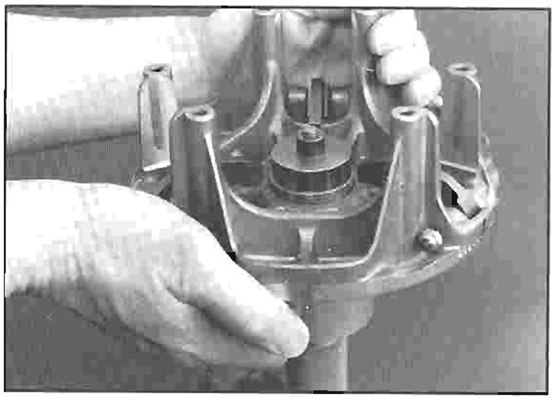
9. Place main adapter (Item 8) on puller.

10. Push bushing into center of sheave on tower side by hand.



Bushing PN 3576504

11. Insert installation tool (Item 2) into center of sheave and with towers pointing away from vise, slide sheave onto puller rod.



12. Install nut on puller rod and hand tighten. Turn barrel to apply additional tension if needed.

13. Turn sheave and barrel together counterclockwise until bushing is seated.

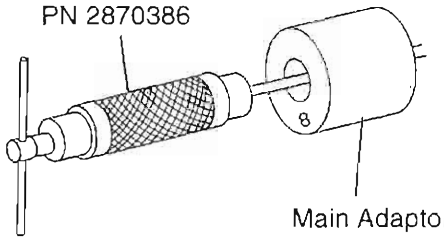
14. Remove nut from puller rod and set aside.

15. Remove sheave from puller.

16. Remove installation tool.

P-90 Drive Clutch Cover - Bushing Removal

1. Install main adapter (Item 8) on puller.

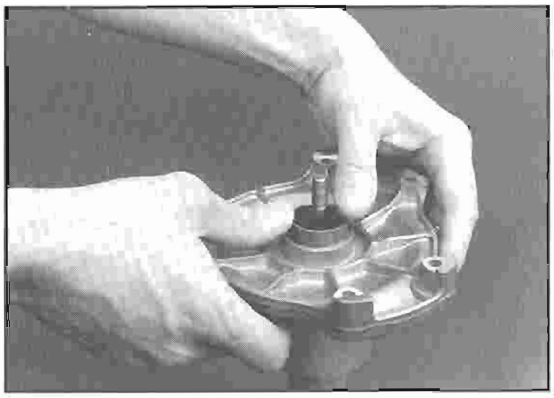


2. From outside of clutch cover, insert removal tool (Item 3) into cover bushing.
3. With inside of cover toward vise, slide cover onto puller.
4. Install nut onto puller rod and hand tighten. Turn puller barrel to increase tension as needed.

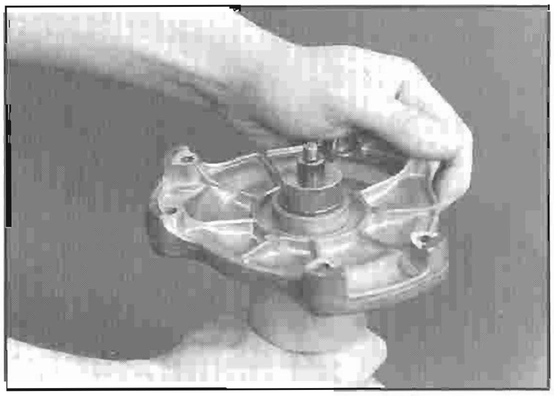
5. Turn clutch cover counterclockwise on puller rod until bushing is removed.
6. Remove nut from puller rod and set aside.
7. Remove bushing and bushing removal tool from puller. Discard bushing.

P-90 Drive Clutch Cover - Bushing Installation

8. On Garmax™ style bushings (PN 3576516) apply Loctite 680 retaining compound (PN 2870584) to the outer surface of the bushing. Retaining compound is not required on bronze / Teflon™ type bushings (PN 3576510). **<u>Do not</u> lubricate bushings, or premature wear will result.** Working from inside of cover, insert bushing and bushing installation tool into center of clutch cover.



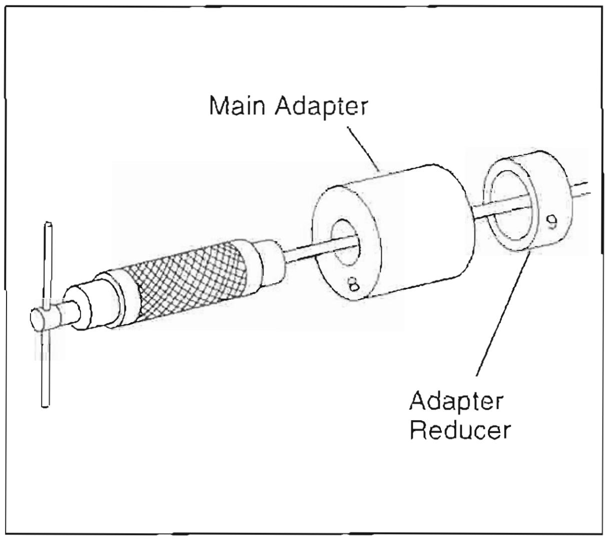
9. With main adapter on puller, insert cover onto puller rod, placing outside of cover toward vise.
10. Install nut on rod and hand tighten. Turn puller barrel to apply more tension if needed.
11. Turn clutch cover and barrel together counterclockwise on puller rod until bushing is seated.
12. Remove nut from puller rod and take installation tool and clutch cover off rod.



P-90 Driven Clutch Moveable Sheave - Bushing Removal

NOTE: Bushings are installed at the factory using Loctite™ 680. In order to remove the bushing it will be necessary to apply heat.

13. Install main adapter (Item 8) onto puller.
14. Insert adapter reducer (Item 9) onto puller, sliding it inside the main adapter..
15. Remove ramp buttons from moveable sheave.

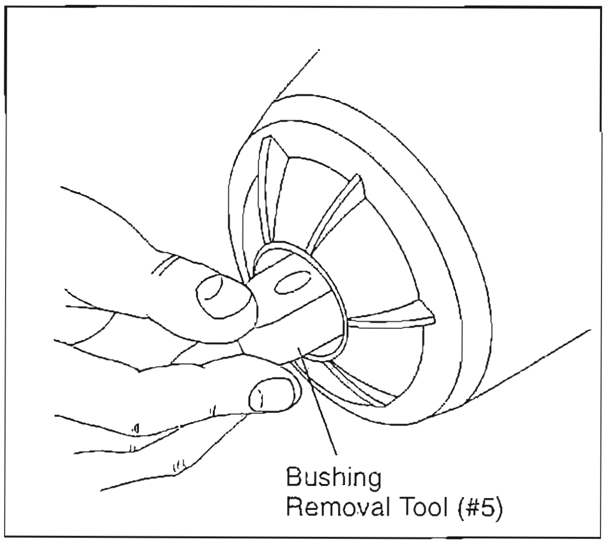


16. Using a hand held propane torch, apply heat directly on bushing until tiny smoke tailings appear.

CAUTION:

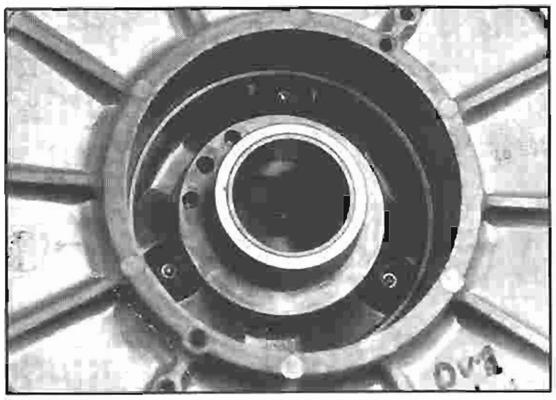
Clutch components will be hot! In order to avoid serious burns, wear some type of insulated gloves for the rest of the removal process.

17. Working from the top, install bushing removal tool (Item 5) into center of clutch sheave with smaller diameter toward bushing to be removed. See illustration at right.



18. Install sheave onto puller.

19. Install nut onto puller rod and tighten by hand. Turn puller barrel for further tension if needed.

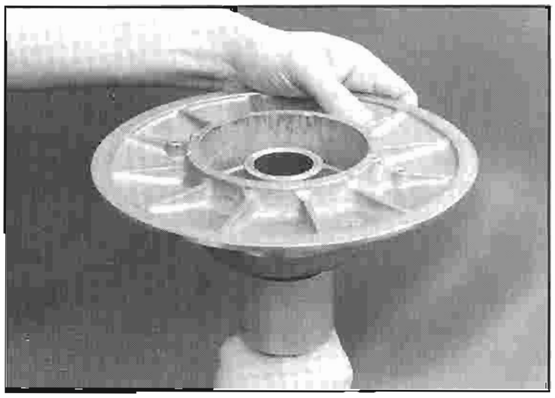


20. Turn clutch sheave counterclockwise until bushing is removed. Repeat steps 17. - 20. for other bushing.

21. Remove nut from puller rod and set aside.

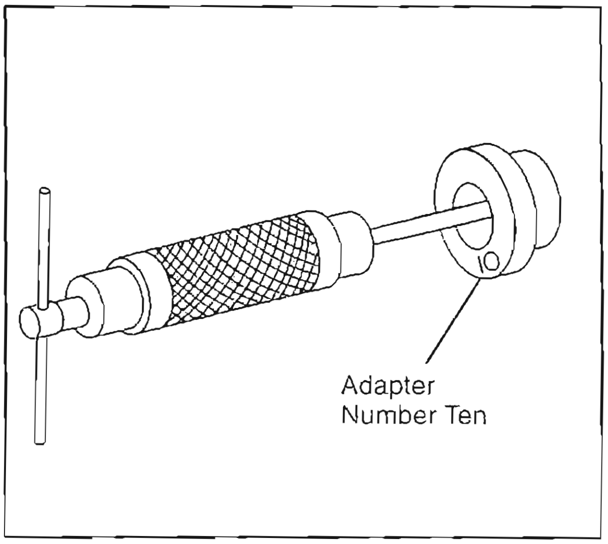
22. Remove adapters from puller.

23. Remove bushing and removal tool from adapters. Discard bushing.



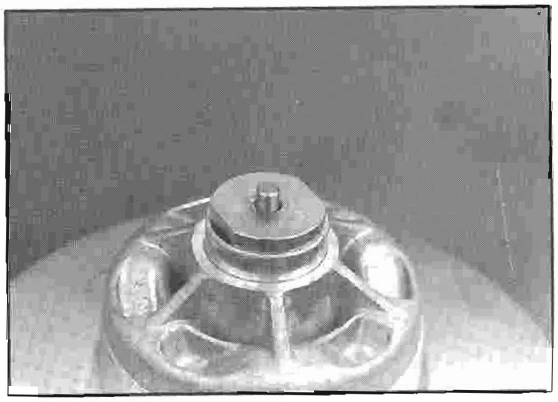
P-90 Driven Clutch Moveable Sheave - Bushing Installation

24. Working from the top, insert adapter number ten onto puller. See illustration at right.

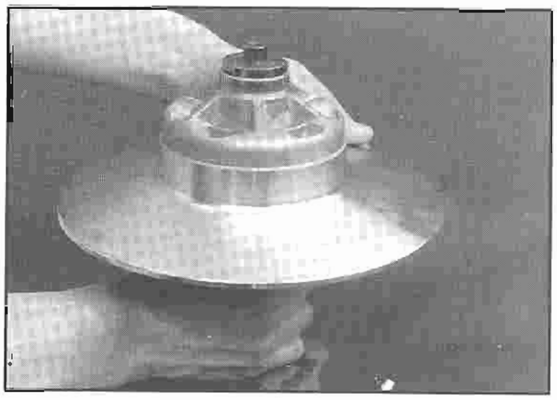


25. Start new bushing evenly in moveable sheave.

26. Install sheave onto puller with new bushing upward as shown. Install adaptor number two.



27. Install nut onto puller rod and hand tighten against installation tool.

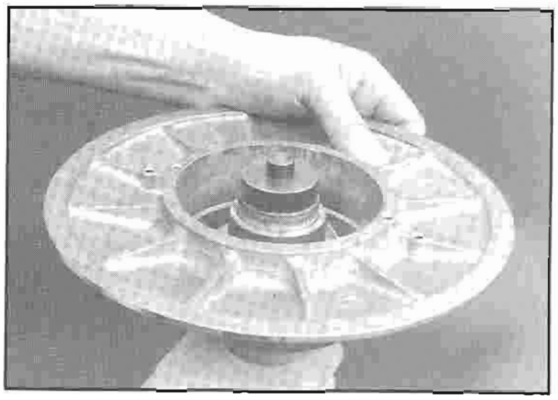


28. Turn clutch sheave counterclockwise until bushing is seated.

29. Remove nut from puller rod and set aside.

30. Remove installation tool and clutch sheave from puller.

31. Repeat installation procedure for other moveable bushing.



SYMPTOMS	PROBABLE CAUSE	REMEDY
Harsh drive clutch engagement	-Drive belt worn too narrow	-Replace
	-Excessive belt to sheave clearance with new belt (high performance version without detent shift weight)	-Perform belt to sheave clearance adjustment with shim washers beneath spider
Drive belt turn over	-Wrong belt for application	-Replace
	-Clutch alignment out of spec	-Adjust alignment offset
	-Engine mount broken or loose	-Inspect, adjust or replace
	-Driven clutch sheaves have excessive runout, are bent or damaged	-Measurement should be taken .25″ in from outer circumference on sheave face. Maximum allowable tolerance is .015″ (.6 mm).
Noise in drive system	-Broken drive clutch components	-Inspect/replace
	-Excessive drive clutch button - tower clearance	-Install new buttons or shim out existing buttons
	-Bearing failure/ chaincase, jackshaft or front drive shaft	-Inspect/replace
	-Drive chain loose or worn, sprocket teeth broken	-Inspect/adjust or replace
		-Inspect/replace
	-Driven clutch bushing worn excessively or spring broken	-Inspect/replace
	-Drive chain adjustment too tight/too loose	Inspect/adjust
	-Drive belt surface flat spots	Inspect/replace
Over rev during initial acceleration or during heavy pulling at low ground speeds.	-Spider roller position remaining in detent	-Add spider shim washers
		-Add driven washers
		-Reduce gear ratio (chaincase models)
Engine bogs after engagement.	-Improper driven clutch setup	
	-Worn belt	-Replace
	-Excessive belt deflection	-Subtract driven clutch washers
	-Improper offset/alignment	-Inspect/adjust
	-Broken or misadjusted torque stop	-Inspect/adjust/replace
	-Broken motor mount	-Inspect/replace
	-Jackshaft bearing seizure	-Replace

Clutch System Troubleshooting

SYMPTOMS	PROBABLE CAUSE	REMEDY
Engine RPM below specified operating range, although engine is properly tuned	a) Wrong or broken drive clutch spring b) Drive clutch shift weight too heavy c) Driven clutch spring broken or installed in wrong helix location d) Drive belt too long e) Improper driven clutch setup	a) Replace with recommended spring b) Install correct shift weight kit to match engine application c) Replace spring; refer to proper installation location d) Install new belt and/or adjust belt tension e) Install correct parts and/or adjust to match engine application and machine use
Erratic engine operating RPM during acceleration or load variations	Drive clutch binding or driven clutch malfunction Converter sheaves greasy; belt slippage	-Disassemble drive clutch; inspect shift weights for wear and free operation Clean clutches; install new belt -Clean and polish stationary shaft hub; reassemble clutch without spring to determine problem area -Replace ramp buttons -Inspect moveable sheave for excessive bushing clearance/replace
Engine RPM above specified operating range	a) Incorrect drive clutch spring (too high spring rate) b) Drive clutch shift weights incorrect for application (too light) c) Drive clutch binding d) Driven clutch binding e)Converter sheaves greasy; belt slippage f)Improper driven clutch setup	a) Install proper spring b) Install proper shift weights c) Disassemble and clean clutch, inspecting shift weights and buttons. Reassemble without the spring to determine probable cause. d)-Disassemble, clean and inspect driven clutch, noting worn sheave bushing and ramp buttons and helix spring location e) Clean clutches; install new belt f) Install correct parts and/or adjust to match engine application and machine use
Burnt Belts / Premature Wear Also see Belt Wear / Burning Diagnosis Chart on page 6.63	a) Wrong or broken drive clutch spring b) Drive clutch shift weight too heavy c) Driven clutch spring broken or installed in wrong helix location d) Drive belt too long e) Converter sheaves greasy; belt slippage. f) Improper driven clutch setup	a) Replace with recommended spring b) Install correct shift weight kit to match engine application c) Replace spring; refer to proper installation location d) Install new belt and/or adjust belt tension e) Clean clutches; install new belt f) Install correct parts and/or adjust to match engine application and machine use

Belt Wear / Burn Diagnosis	
Possible Cause Of Wear Or Burning	**Solution**
Driving at or about engagement RPM for extended periods in all types of conditions	Drive at higher RPM if possible. Gear the machine down. Make sure belt deflection is at 1.25″ to achieve optimum starting ratio
Cold weather startups	Be patient. Warm up engine at least 5 minutes or until it readily responds to throttle input. For the quickest most efficient driveaway in extreme cold weather, take drive belt off machine and bring it in to a warm environment. Break skis and track loose from the snow. Engage throttle aggressively for short durations for initial cold driveaway
Towing another machine at or about engagement RPM	When possible, do not go in deep snow when towing another machine. Use fast, effective throttle to engage the clutch. Not all machines are intended for pulling heavy loads or other machines.
Spinning track while vehicle is stuck (high RPM, low vehicle speed, high ambient temp. Example: 8000 RPM, 10mph vehicle speed, 60 mph indicated on speedometer.	Lower the gear ratio. Remove windage plates from driven clutch. If possible, move to better snow conditions and reduce RPM. Avoid riding in very high ambient temperatures.
Ice and snow piled up between track and tunnel overnight or after stopping for a long period of time (enough to re-freeze the snow).	Break loose snow and ice under tunnel. Allow longer than normal warmup. Allow belt to warm sufficiently and increase grip ability on clutch sheaves. Use fast, effective throttle when engaging clutch.
Poor running engine (Bog, Miss, Backfire, etc.)	Maintain good state of tune including throttle and choke synchronization. Check for fouled spark plug(s). Check for foreign material in carbs. Make sure no water or ice in fuel tank, lines, or carburetors.
Loading machine on trailer	Use caution when loading machine. Carbide skags may gouge into trailer and prevent drive train from spinning freely. Use enough speed to drive completely onto trailer. If machine cannot be driven completely onto trailer, it may need to be pulled or pushed to avoid belt wear / burning.
Clutch malfunction	Check for correct clutch components.
Slow, easy belt engagement – easing on the throttle	Use fast, effective throttle to engage the clutch.

CHAPTER 7
BODY AND STEERING

Torque Application List

Due to the special grade bolts and nuts required for specific applications, observe the following torque values in the areas specified or refer to steering rod end orientation pages in this chapter for diagrams depicting location, orientation, and torque values of fasteners. Always use genuine Polaris parts and fasteners.

Bolt Size	Area Where Used	Torque Minimum-Maximum
3/8	Outer Radius Rod End to Trailing Arm (Top & Bottom)	28-30 ft. lbs. (3.86-4.14 kg-m)
7/16	Inner Radius Rod End To Bulkhead (Top)	35-40 ft. lbs. (4.83-5.52 kg-m)
1/2	Inner Radius Rod End To Bulkhead (Bottom)	40-50 ft. lbs. (5.52-6.9 kg-m)
—	Radius Rod, Drag Link, or Tie Rod End Jam Nuts	24-25 ft. lbs. (3.31-3.45 kg-m)
1/2	Bellcrank (Center Steering Arm) (Non-CRC) Pitman Arm Pivot Idler Arm Pivot	55-60 ft. lbs. (7.59-8.28 kg-m)
3/8	Drag Link to Steering Post Arm	28-30 ft. lbs. (3.86-4.14 kg-m)
3/8	Drag Link to Bellcrank or Pitman Arm	28-30 ft. lbs. (3.86-4.14 kg-m)
3/8	Steering Arm Pinch Bolt	28-30 ft. lbs. (3.86-4.14 kg-m)
3/8	Tie Rod to Steering Arm	28-30 ft. lbs. (3.86-4.14 kg-m)
3/8	Tie Rod to Bellcrank	28-30 ft. lbs. (3.86-4.14 kg-m)
7/16	Trailing Arm Rear Support	40-45 ft. lbs. (5.52-6.21 kg-m)
3/8	IFS Shock (Top & Bottom)	28-30 ft. lbs. (3.86-4.14 kg-m)
5/16	Steering Post to Bulkhead	15-17 ft. lbs. (2.07-2.35 kg-m)
1/4	Upper Steering Bracket to Hoop	8-10 ft. lbs. (1.10-1.38 kg-m)
1/4	Handlebar Block	8-10 ft. lbs. (1.10-1.38 kg-m)
1/4	Side Panel to Nosepan Brace, Rubber Washer	4-6 in. lbs. (.05-.07 kg-m)
1/4	Side Panel to Nosepan, Well Nut	4-6 in. lbs. (.05-.07 kg-m)
3/8	Throttle Block Set Screw	30-35 in. lbs (.35-.40 kg-m)
3/8	Ski Pivot Bushing Bolt	25-28 ft. lbs. (3.45-3.86 kg-m)
	Choke to Plastic Console	20-25 in. lbs. (.23-.29 kg-m)

1996 Steering Specifications

Model	Suspension Type	Reference Width*	Front Vertical Travel
Indy Lite/GT/Deluxe	Lite	37″	7″
Indy Sport Indy TranSport Indy Sport Touring	IFS-38x7	38″	7.25″
Indy Super Sport	Std. IFS	41″	7.25″
Indy 440 XCR	XTRA-10 CRC	Use Max Set Up Width See 1997 XTRA-10 CRC	8.4″
Indy 440 XCR SP	XTRA-10 CRC	Use Max Set Up Width See 1997 XTRA-10 CRC	9.15″
Indy WideTrak GT / LX	IFS-38	38″	7.25″
Indy Trail Indy 440 LC	Std. IFS	41″	7.25″
Indy Trail Touring	XTRA-10	41″	8.4″
Indy 500	Std. IFS	41″	7.25″
Indy 500 SKS Indy 500 RMK	XTRA-10	41″	8.4″
Indy 500 EFI	XTRA-12	42.5″	9.8″
Indy 500 EFI SKS/RMK	XTRA-10	41″	8.4″
Indy Classic Indy Classic Touring	XTRA-12	42.5″	9.8″
Indy XLT Indy XLT SP Indy XLT LTD/LTD SP	XTRA-12	42.5″	9.8″
Indy XLT SKS	XTRA-10	41″	8.4″
Indy XLT RMK	XTRA-10	38″	7.0
Indy XLT Touring	XTRA-12	42.5″	9.8″
Indy RXL	XTRA-12	42.5″	9.8″
Indy 600 XCR / XCR SP	Std. IFS	41″	7.25″
Indy Ultra SP Indy Ultra SKS	XTRA-10	41″	7.25″ 8.4″
Indy Ultra RMK	XTRA-10	38″	7.0″
Indy Storm Indy Storm SKS	Std. IFS	41″	7.25″
Indy Storm RMK	Std. IFS	38″	7.0″

CAUTION:

1996 Models: **Reference width** is measured from center of spindles near grease fitting on bottom of spindle, with the front suspension compressed to the point of maximum width. On Std. IFS (non XTRA models) the point of maximum width is when radius rods are parallel to the ground. On XTRA models, radius rods are non-parallel, and widest point is when lower radius rod is parallel to the ground. Always verify adequate tie rod and radius rod end thread engagement after installing or adjusting front suspension or steering components. Refer to page 7.11.

Caster: Fixed

Camber: Adjusted with suspension fully extended - front end elevated.

Toe-in/Toe-out: Adjusted at Normal Ride Height

NOTE: Precision camber and toe setup can be performed on Xtra-10 CRC and XC-10 models. Refer to page 7.18a.

Model	Suspension Type	Reference Width	Maximum Set Up Width*(± 1/4″)	Camber ± 5/16″(8mm)	Vertical Travel	◇
Indy Lite/GT/Deluxe	Lite	37″	36 1/2 (92.70 cm)	0	7″	
Indy Sport / Touring Indy TranSport	38x7	38″	37 3/8″ (94.90 cm)	1/2″ (13 mm)	7 1/4″	◇ ◇
Indy Super Sport	XTRA-10	41″	39 1/8″ (99.40 cm)	0	9 1/2″	◇
Indy 440 XC	XTRA-10 CRC	41″	39 1/4″ (99.70 cm)	3/4″ (19 mm)	9 1/2″	
Indy 440 XCR	XC-10 CRC	41″	39″ (99.00 cm)	1″ (25.5 mm)		
Indy XCF	XTRA-10 CRC	41″	39 1/4″ (99.70 cm)	3/4″ (19 mm)	9 1/2″	
Indy WideTrak GT/LX	38x7	38″	37 3/8″ (94.90 cm)	1/2″ (13 mm)	7 1/4″	◇
Indy 440 L/C Indy Trail / Trail Touring	XTRA-10	41″	39 1/8″ (99.40 cm)	0	9 1/2″	
Indy Trail RMK	38-RMK	38″	36 3/4″ (93.35 cm)	0	8 1/4″	◇
Indy 500 / 500 SKS	XTRA-10	41″	39 1/8″ (99.40 cm)	0	9 1/2″	
Indy 500 RMK	38-RMK	38″	36 3/4″ (93.35 cm)	0	8 1/4″	◇
Indy 500 EFI	XTRA-12	42.5″	40 1/2″ (102.90 cm)	0	10″	
Indy Classic / Touring	XTRA-12	42.5″	40 1/2″ (102.90 cm)	0	10″	
Indy XLT / XLT SKS	XTRA-10	41″	39 1/8″ (99.40 cm)	0	9 1/2″	
Indy XLT RMK	38-RMK	38″	36 3/4″ (93.35 cm)	0	8 1/4″	◇
Indy XLT Touring Indy XLT SP Indy XLT LTD / LTD SP	XTRA-12	42.5″	40 1/2″ (102.90 cm)	0	10″	
Indy RXL	XTRA-12	42.5″	40 1/2″ (102.90 cm)	0	10″	
Indy 600 XCR Indy 600 XCR SE Indy 600 XC	XTRA-10 CRC	41″	39 1/4″ (99.70 cm)	3/4″ (19 mm)	9 1/2″	
Indy 700 XC	XC-10 CRC	41″	39″ (99.00 cm)	1″ (25.5 mm)		
Indy 700 SKS	XTRA-10 CRC	41″	39 1/4″ (99.70 cm)	3/4″ (19 mm)	9 1/2″	
Indy 700 RMK	38-RMK CRC	38″	37″ (94.00 cm)	3/8″ (9.5mm)	8 1/4″	
Indy Ultra SP Indy Ultra SPX/SPX SE	XTRA-10 CRC	41″	39 1/4″ (99.70 cm)	3/4″ (19 mm)	9 1/2″	
Indy Ultra/UltraTouring	XTRA-12	42.5″	40 1/2″ (102.90 cm)	0	10″	
Indy Storm / Storm SE	XTRA-10	41″	39 1/8″ (99.40 cm)	0	9 1/2″	
Indy Storm RMK	38-RMK	38″	36 3/4″ (93.35 cm)	0	8 1/4″	◇

CAUTION:

*1997 - **Current models** have torsion bar attached to inside of trailing arm – **Maximum set up width** is listed for these models to prevent possible disengagement of the torsion bar from the trailing arm, which could interfere with steering. This measurement must be taken from center of spindles near grease fitting on bottom of spindle with front of machine elevated and suspension fully extended. See pages 7.13 for measurement method and adjustment procedure.

◇ Indicates upper radius rod non-adjustable.

Caster: Fixed

Camber: Adjusted with suspension fully extended - front end elevated.

Toe-in/Toe-out: Adjusted at Normal Ride Height

NOTE: Precision camber and toe setup can be performed on models equipped with Xtra-10 CRC or XC-10 front suspension. Refer to page 7.18a.

1998 Steering Specifications

Model	Suspen-sion Type	Reference Width	Maximum Set Up Width*(± 1/4″)	Camber ± 5/16″(8mm)	Vertical Travel	◇
Indy Lite/Deluxe/Touring	Lite	37″	36 1/2″ (92.70 cm)	0	7″	
Indy Sport / Touring Indy TranSport	38x7	38″	37 3/8″ (94.93 cm)	1/2″ (13 mm)	7.25″	◇ ◇
Indy Super Sport	XTRA-10	41″	39 1/8″ (99.40 cm)	0	9.5″	◇
Indy XCF / Indy 500	XTRA-10 CRC	41″	39 1/4″ (99.70 cm)	3/4″ (19 mm)	9.5″	
Indy 440 XCR	XC-10 CRC	41″	39″ (99.00 cm)	1″ (25.5 mm)		
Indy WideTrak LX	38x7	38″	37 3/8″ (94.93 cm)	1/2″ (13 mm)	7.25″	◇
Indy 440 L/C Indy Trail Indy Trail Touring	XTRA-10	41″	39 1/8″ (99.40 cm)	0	9.5″	◇ ◇ ◇
Indy Trail RMK/500 RMK	38-RMK	38″	36 3/4″ (93.35 cm)	0	8.25″	◇
Indy Classic / Touring	XTRA-12	42.5″	40 1/2″ (102.90 cm)	0	10″	◇
Indy XLT Classic Indy XLT Touring Indy XLT LTD	XTRA-12	42.5″	40 1/2″ (102.90 cm)	0	10″	◇ ◇
Indy 600 XC Indy 700 XC	XC-10 CRC	41″	39″ (99.00 cm)	1″ (25.5 mm)	9.5″	·
Indy 600 XCR Indy 700 XCR Indy XLT SP	XTRA-10 CRC	41″	39 1/4″ (99.70 cm)	3/4″ (19mm)	9.5″	
Indy 600 RMK Indy 700 RMK	38-RMK CRC	38″	37″ (94.00 cm)	3/8″ (9.5mm)	8.25″	
Indy Ultra	XTRA-12	42.5″	40 1/2″ (102.90 cm)	0	10″	◇
Indy Ultra Touring	XTRA-12	42.5″	40 1/2″ (102.90 cm)	0	10″	◇
Indy Storm	XTRA-10	41″	39 1/8″ (99.40 cm)	0	9.5″	◇

CAUTION:

***1997 - Current models** have torsion bar attached to inside of trailing arm – **Maximum set up width** is listed for these models to prevent possible disengagement of the torsion bar from the trailing arm, which could interfere with steering. This measurement must be taken from center of spindles near grease fitting on bottom of spindle with front of machine elevated and suspension fully extended. See pages 7.13 for measurement method and adjustment procedure.

◇ Indicates upper radius rod non-adjustable.

Caster: Fixed

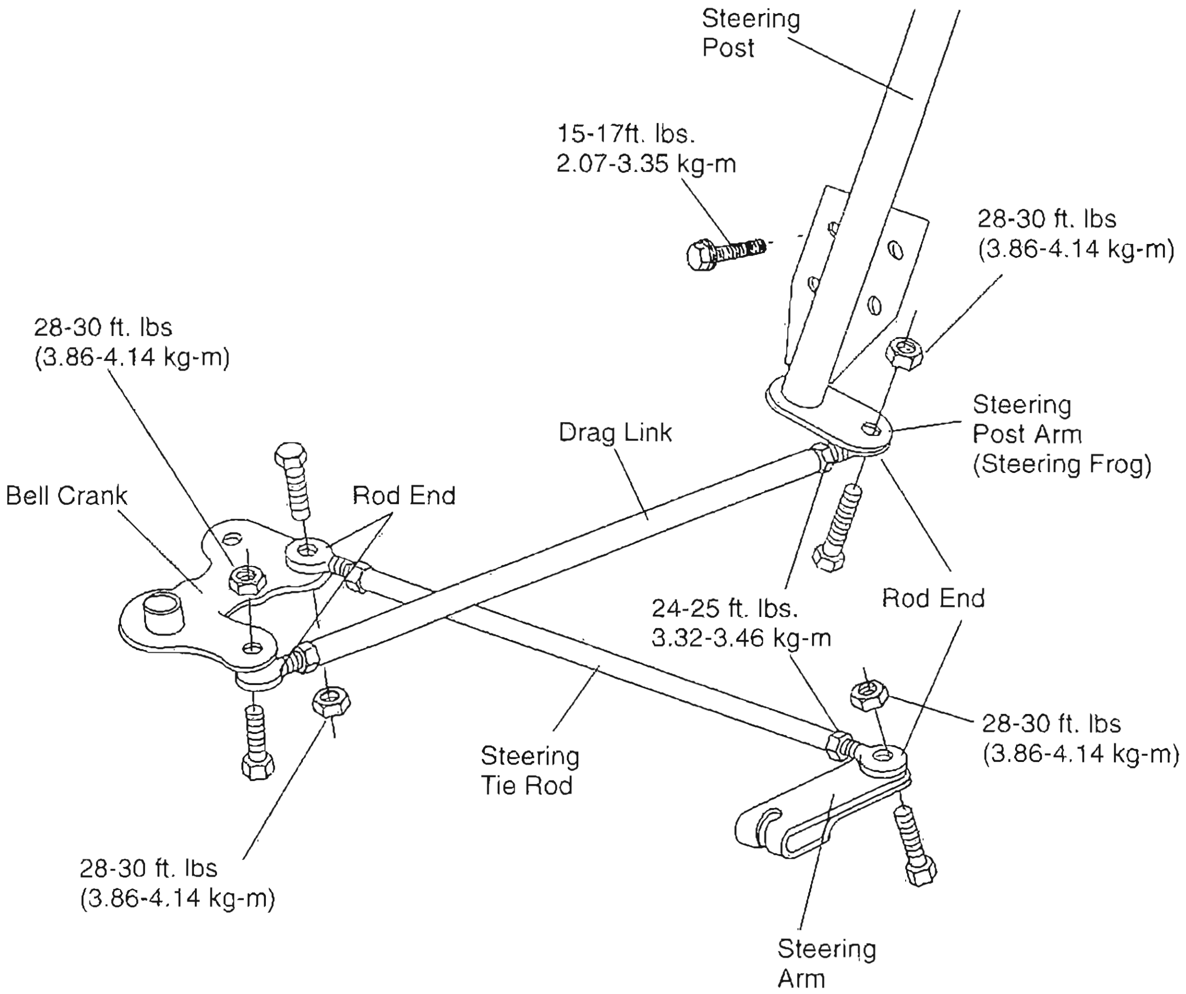
Camber: Adjusted with suspension fully extended - front end elevated.

Toe-in/Toe-out: Adjusted at Normal Ride Height

NOTE: Precision camber and toe setup can be performed on models equipped with Xtra-10 CRC or XC-10 front suspension. Refer to page 7.18a.

1996 to Current Indy Lite/GT/Deluxe

Illustration depicts proper orientation of rod ends and bolts on steering components.

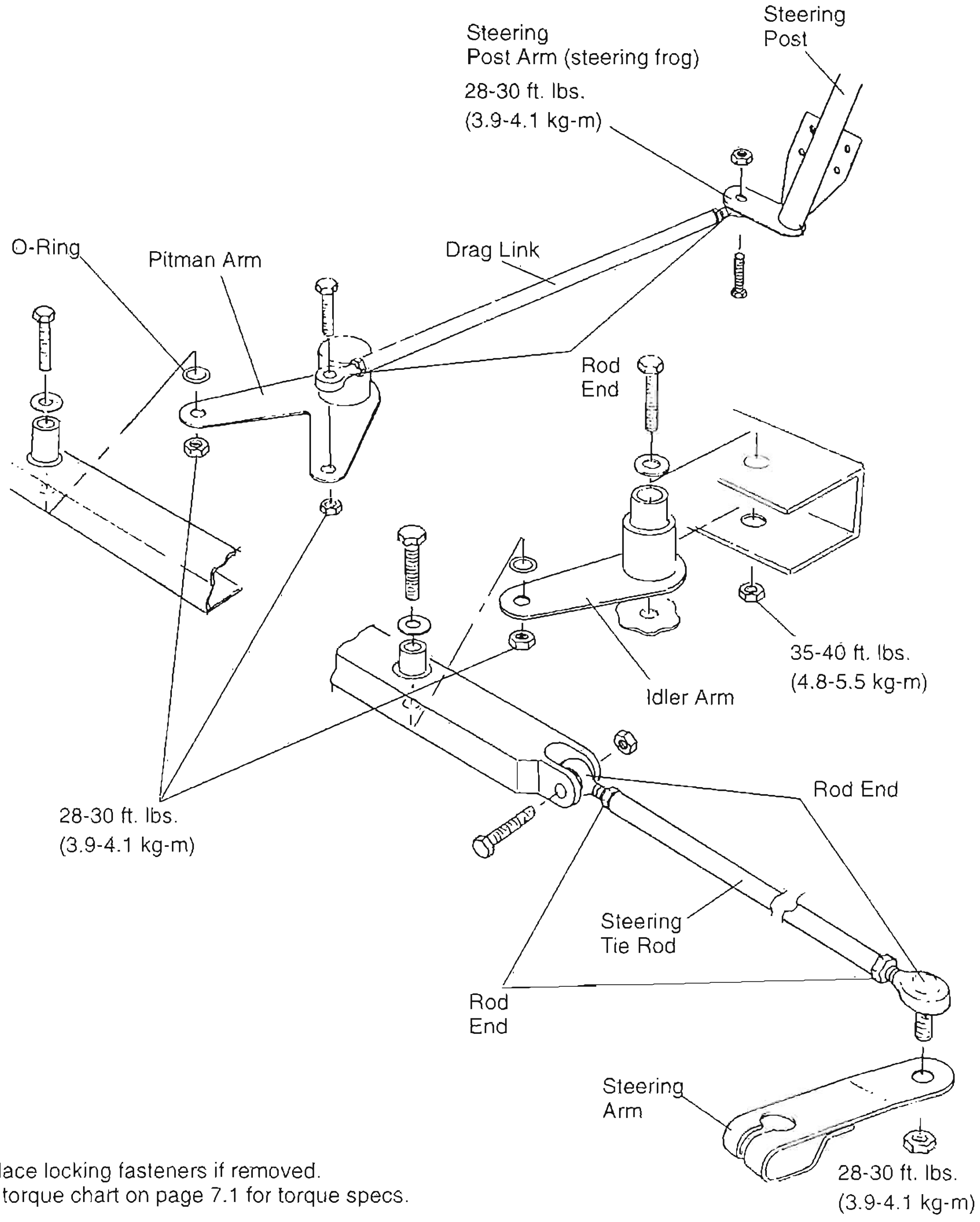


- Replace locking fasteners if removed.
- See torque chart on page 7.1 for torque specs.

1996 CRC Steering Assembly Exploded View

1996 440 XCR/440 XCR SP

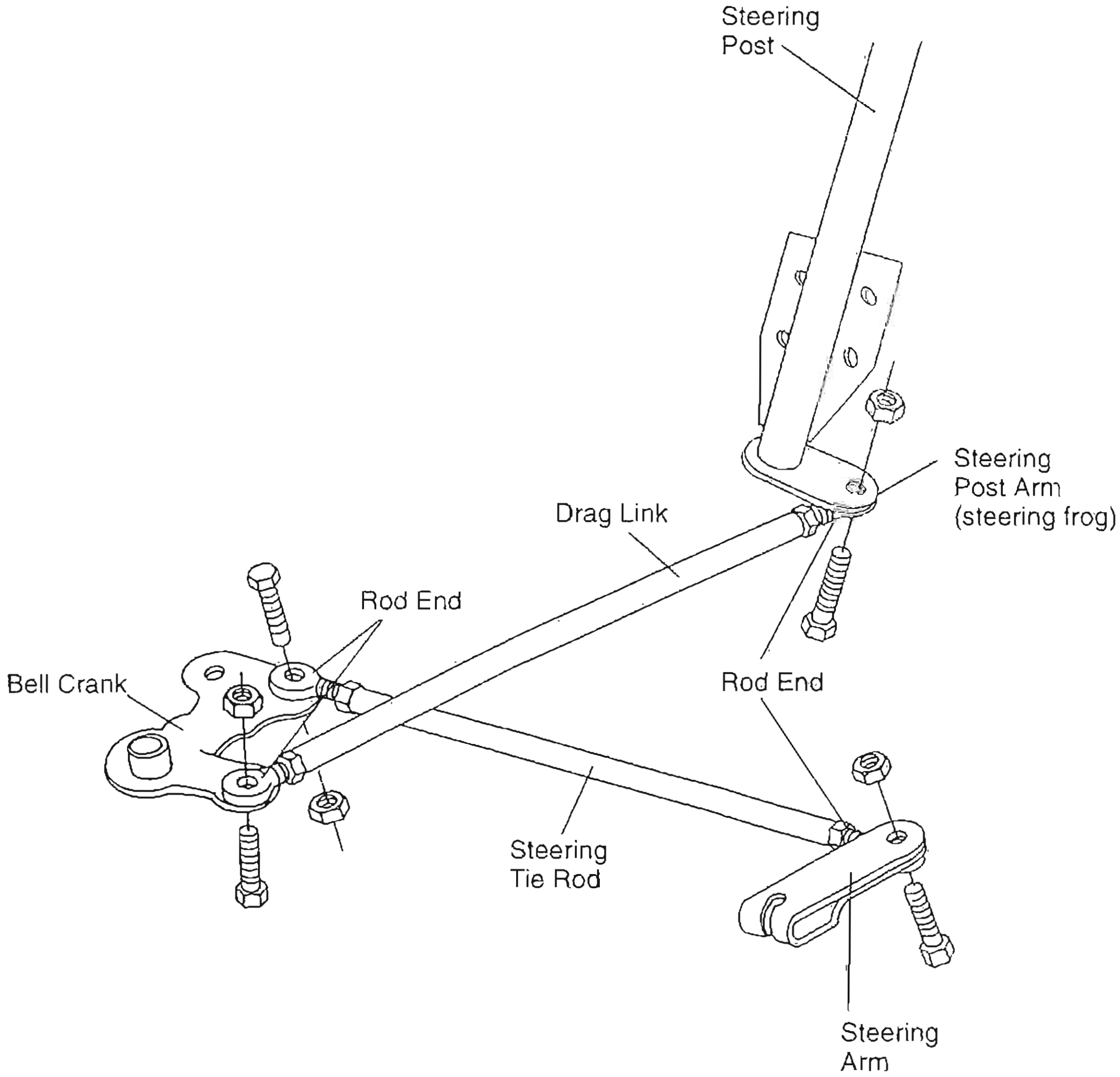
Illustration depicts proper orientation of rod ends and bolts on steering components.



- ◆ Replace locking fasteners if removed.
- ◆ See torque chart on page 7.1 for torque specs.

1996 WideTrak GT/LX

Illustration depicts proper orientation of rod ends and bolts on steering components.

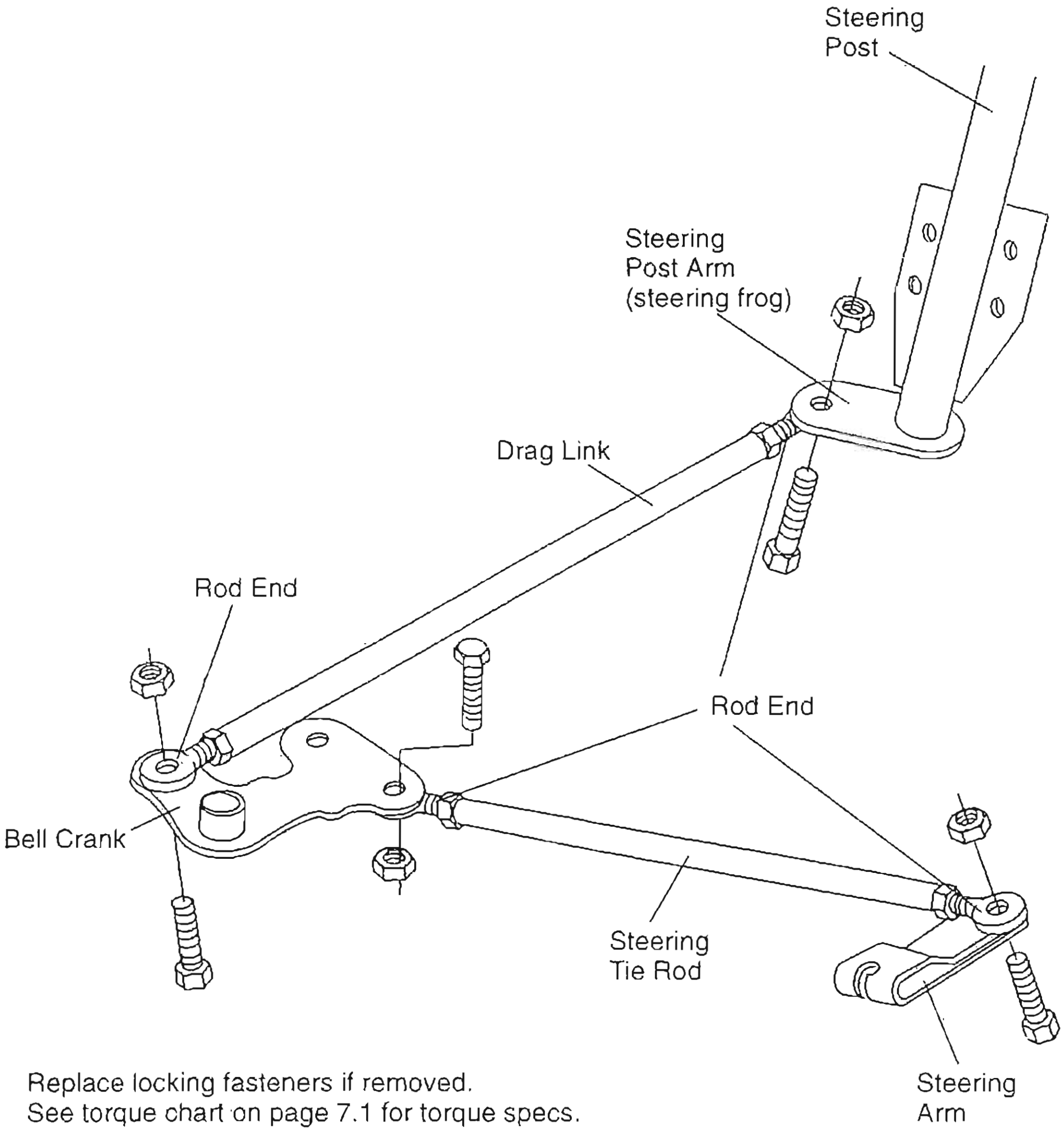


- Replace locking fasteners if removed.
- See torque chart on page 7.1 for torque specs.

Steering Assembly Exploded View

1996 Indy 440 LC/Super Sport/500/Trail

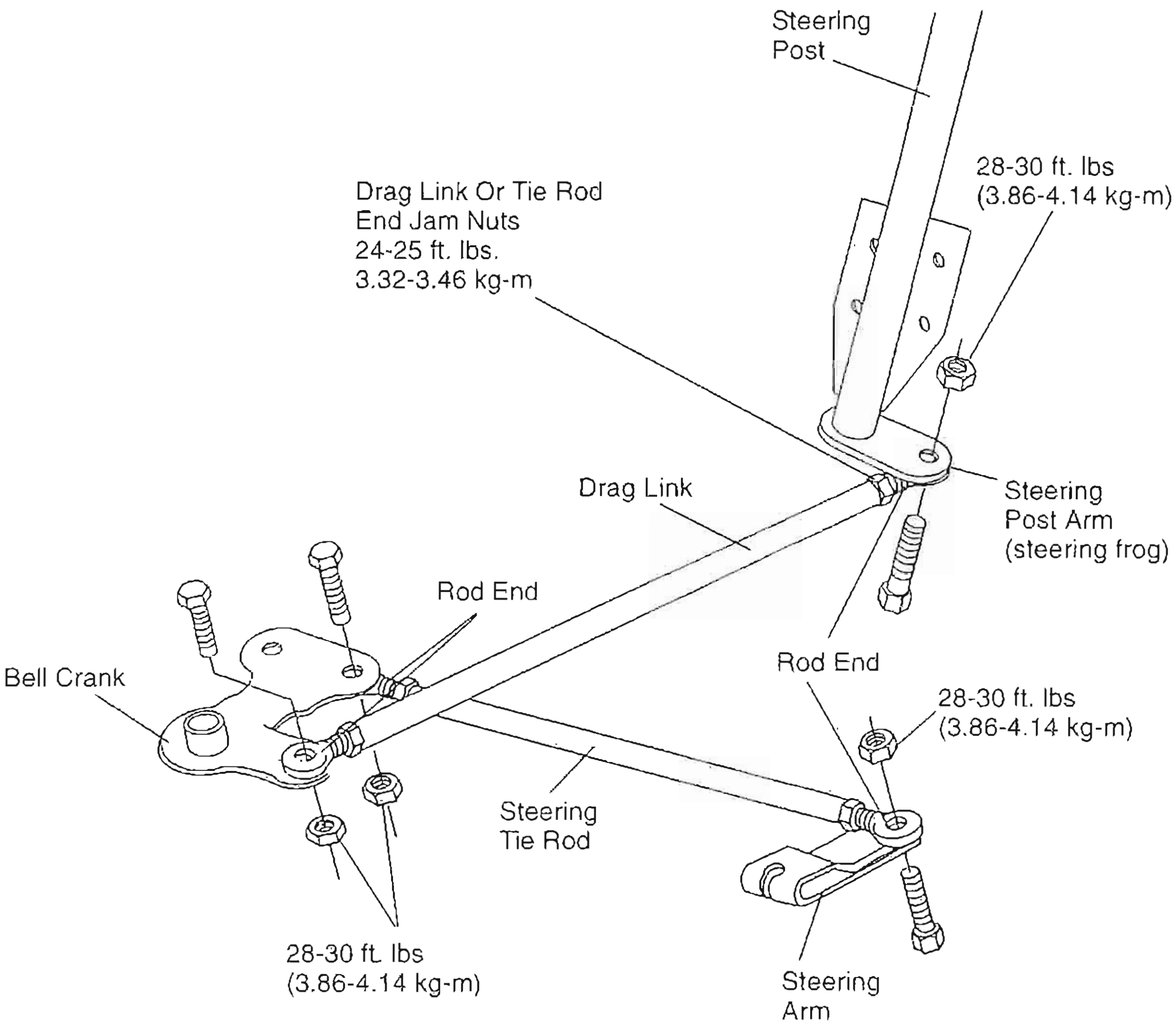
Illustration depicts proper orientation of rod ends and bolts on steering components.



- Replace locking fasteners if removed.
- See torque chart on page 7.1 for torque specs.

1996 Indy 600XCR/600 XCR SP/Ultra SP/Storm/Storm SKS

Illustration depicts proper orientation of rod ends and bolts on steering components on models listed above.



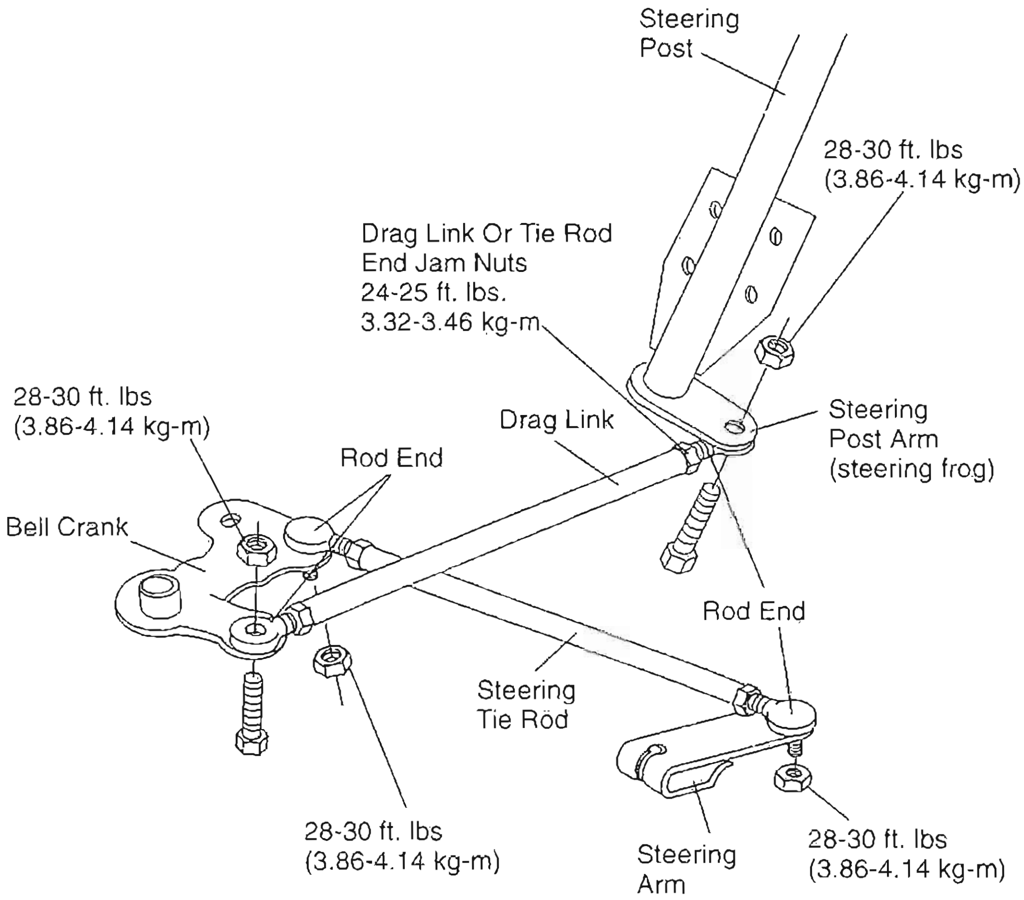
- Replace locking fasteners if removed.
- See torque chart on page 7.1 for torque specs.

Steering Assembly Exploded View

1996 XTRA-10
1996 - Current XTRA-12 Models

Illustration depicts proper orientation of rod ends and bolts on steering components on models listed above. Refer to chart on page 8.1 for suspension type.

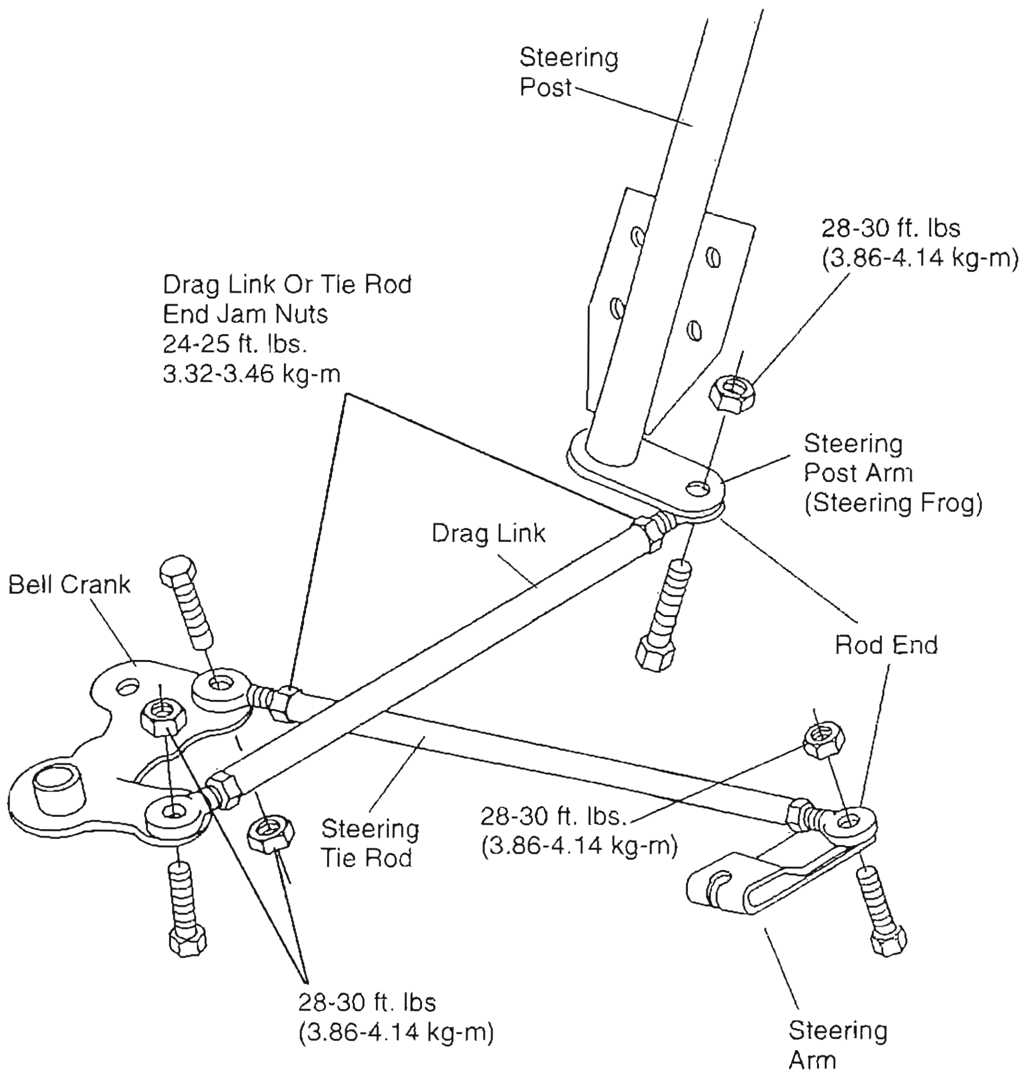
NOTE: On Xtra 10 and Xtra 12 three cylinder models the drag link is on the left side. On twin cylinder models the drag link is on the right side with the same rod end configuration. *Three cylinder configuration shown.*



- Replace locking fasteners if removed.
- See torque chart on page 7.1 for torque specs.

All 1997 to Current Models Except XTRA-12 Front Suspension or CRC

Illustration depicts proper orientation of rod ends and bolts on steering components.

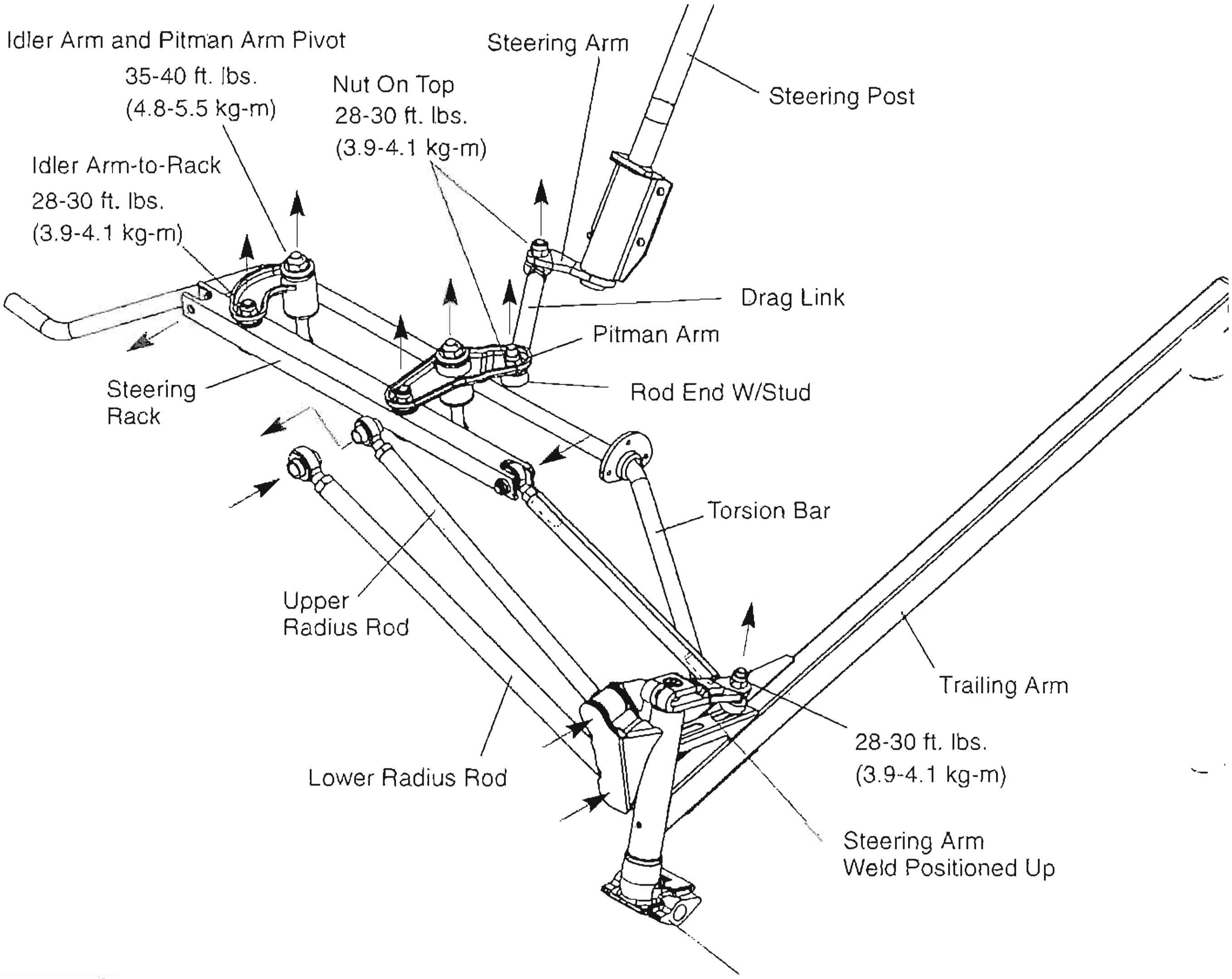


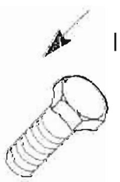
- Replace locking fasteners if removed.
- See torque chart on page 7.1 for torque specs.

Steering Assembly Exploded View

Models: 1997 XCF, 440 XC, 600 XC, 600 XCR, 700 SKS, 700 RMK, Ultra SPX, Ultra SP
1998 XCF, 500, XLT SP, 600 XCR, 600 RMK, 700 XCR, 700 RMK

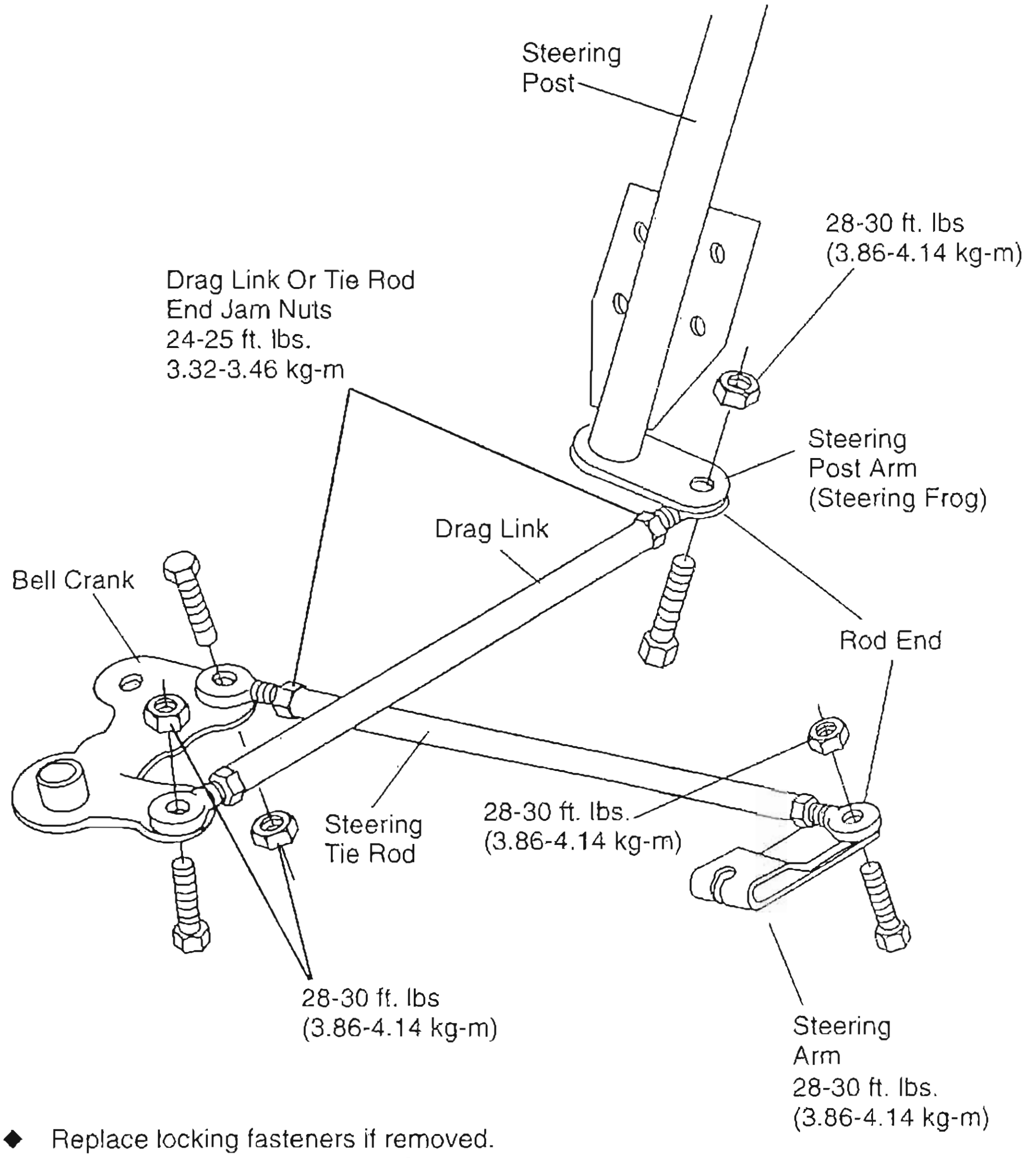
Illustration depicts proper orientation of rod ends and bolts on steering components.





All 1997 to Current XTRA-10 and 38 Wide (Non-CRC) Models

Illustration depicts proper orientation of rod ends and bolts on steering components.

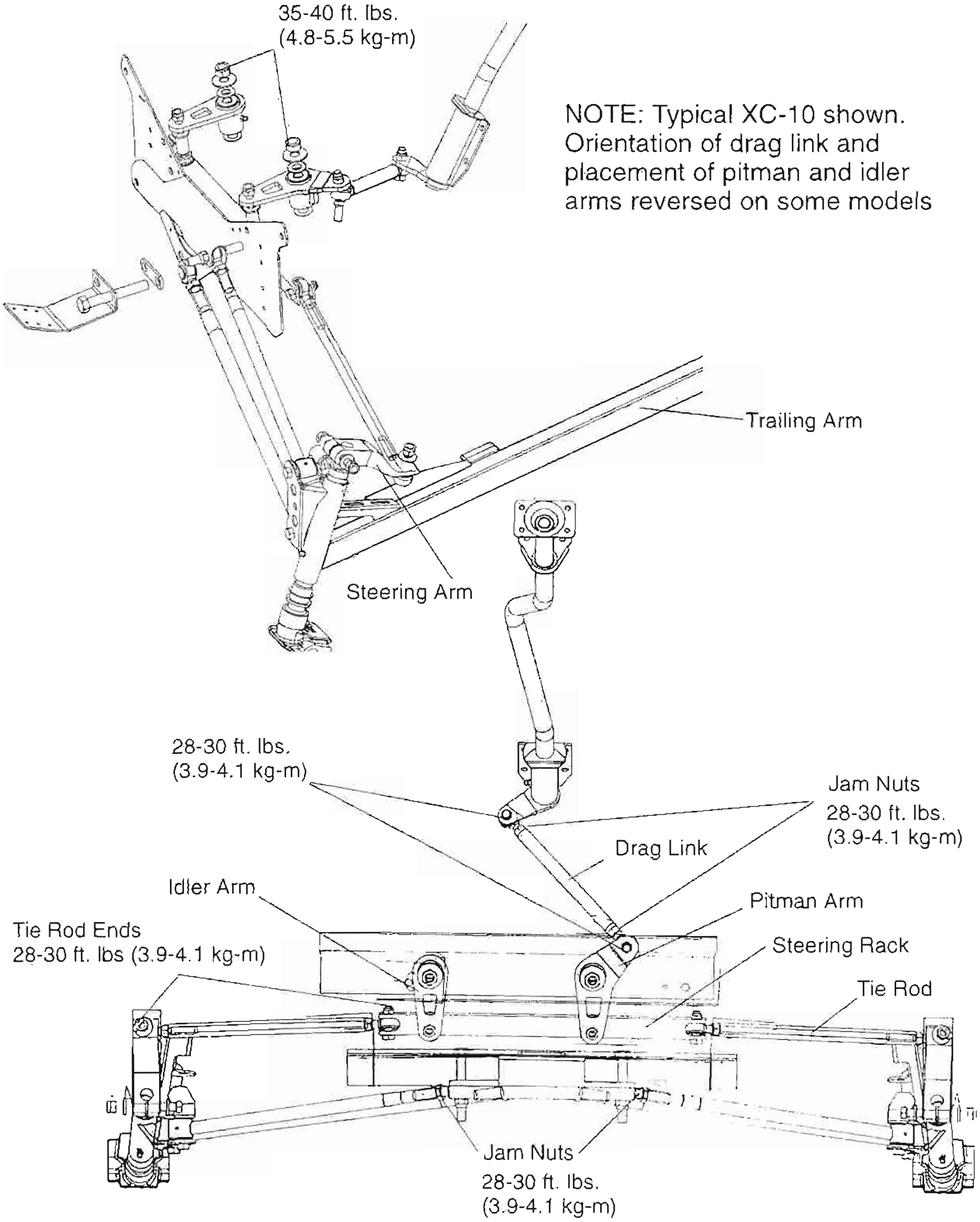


- Replace locking fasteners if removed.
- See torque chart on page 7.1 for torque specs.

XC-10 CRC Steering Assembly Exploded View

1997 440 XCR, 700 XC; 1998 440 XCR, 600 XC, 700 XC

Illustration depicts proper orientation of rod ends and bolts on steering components for most models.



Steering Inspection

Inspection

Prior to performing steering alignment, inspect all steering and suspension components for wear or damage and replace parts as necessary. Refer to steering assembly exploded views in this chapter for identification of components and torque values of fasteners. While disassembling, make notes of what direction a bolt goes through a part, what type of nut is used in an application, in which direction do the steering arms go on - weld up or weld down, etc.

Some of the fasteners used in the IFS are special and cannot be purchased at a hardware store. Always use genuine Polaris parts and hardware when replacing front end components.

The following components must be inspected at this time:

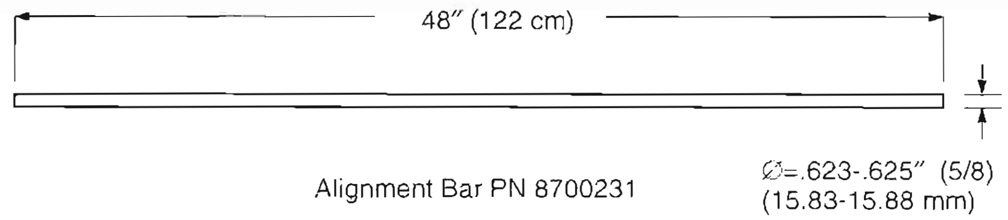
NOTE: Always follow rod end engagement guidelines found on page 7.11. Maximum setup width must be checked on 1997 to Current models whenever front suspension components are adjusted or replaced.

- ☐ Tie rods and tie rod ends
- ☐ Radius rods and radius rod ends
- ☐ Torsion bar and bushings / linkage (where applicable)
- ☐ Handlebars and steering post assembly
- ☐ Spindles and bushings
- ☐ Trailing arms and bushings
- ☐ Skis and skags
- ☐ Bell crank / Pitman Arm / Idler Arm
- ☐ Steering arms
- ☐ Shock absorbers, shock mounts, springs
- ☐ All related fasteners - check torque. Refer to steering exploded views at the end of this section.

Alignment Bar Specifications

Material:	**C-1018**
Diameter:	**.623″ - .625″ (5/8″)**
. . . .	**(15.82 - 15.87 mm)**
Length:	**48″ (122 cm)**

PN 8700231 See General Information Chapter or Service Tool Catalog for ordering information.



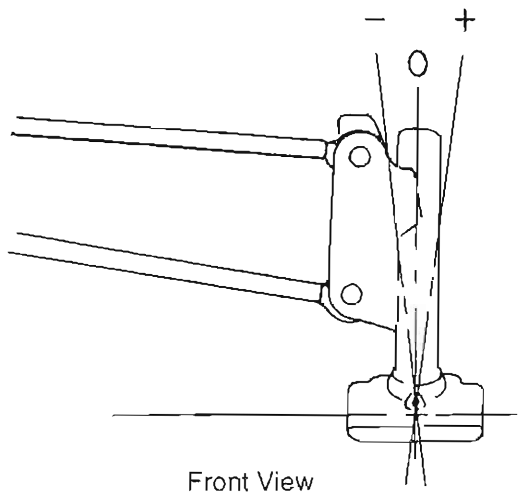
Alignment Bar PN 8700231

Camber Definition - All IFS

The following definitions of camber use automotive terminology to describe positive and negative positions. Refer to the illustration at right.

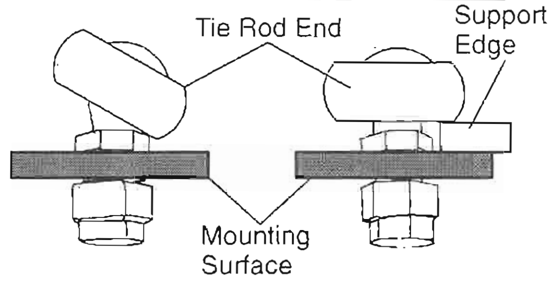
- *0 (Neutral) Camber* - Spindle is 90° (perpendicular) to ground
- *+ (Positive) Camber* - Spindle bottom is canted inward toward chassis
- *– (Negative) Camber* - Spindle bottom is canted outward from chassis

Positive, Negative, and Neutral (0°) Camber



Radius Rod and Tie Rod End Torque Procedure

Radius rod and tie rod ends must be parallel to their respective mounting surface after tightening jam nut as shown at right. Hold tie rod or radius rod and tighten jam nut. If possible, support the edge of the rod end as shown to keep it from rotating out of position until jam nut is tight. When tie rod ends are properly tightened, the tie rod should rotate freely approximately 1/8 turn.

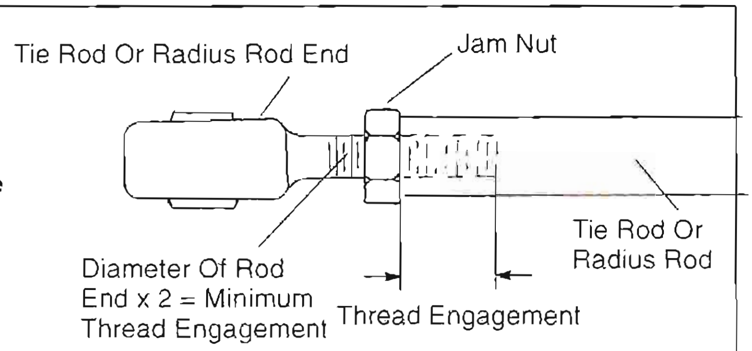


Rod End Engagement Guidelines - All IFS

Tie Rod Or Radius Rod End Must Engage Rod A Minimum Of 2x Thread Diameter When Adjustment Is Complete

<u>EXAMPLE</u>
7/16″ Rod End x 2 = 7/8″
Minimum Thread Engagement =7/8″

11mm x 2 = 22mm
Minimum Thread Engagement =22mm



Quick Reference Camber / Toe Chart - All IFS

Use the General Instructions and illustrations on following pages to adjust camber and toe. Refer to tables below for specifications.

Suspension Type	Adjustment	Specification*	Method	Maximum Setup Width ± 1/4″ (6mm)	
Lite	Toe	1/8 - 1/4″ Toe Out	Ride Height	36 1/2″ (92.70 cm)	NON CRC MODELS
	Camber	0	Front Elevated		
Standard IFS	Toe	1/8 - 1/4″ Toe Out	Ride Height	Refer to rod end engagement guidelines Page 7.11	
	Camber	0	Front Elevated		
XTRA-10	Toe	1/8 - 1/4″ Toe Out	Ride Height	40 1/2″ (102.90 cm)	
	Camber	0	Front Elevated		
XTRA-12	Toe	1/8 - 1/4″ Toe Out	Ride Height	40 1/2″ (102.90 cm)	
	Camber	0	Front Elevated		
IFS-38x7	Toe	1/8 - 1/4″ Toe Out	Ride Height	37 3/8″ (94.90 cm)	
	Camber	1/2″ (12.7 mm)	Front Elevated		
38-RMK	Toe	1/8 - 1/4″ Toe Out	Ride Height	36 3/4″ (93.35 cm)	
	Camber	0	Front Elevated		

***NOTE:** All camber specifications are ± 5/16″ (± 8mm)

Use the General Instructions and illustrations on following pages to adjust camber and toe. Refer to tables below for specifications.

Suspension Type	Adjustment	Specification*	Method	Maximum Setup Width ± 1/4″ (6mm)	
38-RMK CRC	Toe	1/8 - 1/4″ Toe Out	Ride Height	37″ (94.00 cm)	CRC MODELS
	Camber	3/8″ (9.5 mm)	Front Elevated		
XTRA-10 CRC (•)	Toe	1/8 - 1/4″ Toe Out	Ride Height	39 1/4″ (99.70 cm)	
	Camber	3/4″ (19 mm)	Front Elevated		
XC-10 CRC (•)	Toe	1/8 - 1/4″ Toe Out	Ride Height	39″ (99.00 cm)	
	Camber	1″ (25.4 mm)	Front Elevated		

***NOTE:** All camber specifications are ± 5/16″ (± 8mm)

- An alternate method of alignment using the Camber and Toe Alignment Travel Bars (Kit PN 2871537) can be performed on snowmobiles equipped with XTRA-10 CRC or XC-10 CRC front suspension. The travel bars are not intended for use on 38 RMK CRC or non-CRC models. Refer to page 7.18a.

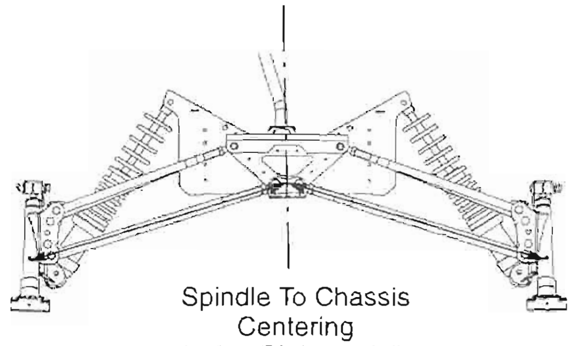
Prior to performing steering alignment, the suspension should be inspected for damage or wear and replacement parts installed as required. See inspection on page 7.10.

⚠ WARNING

A maximum set up width is listed for 1997 to Current models. Maximum set up width is the maximum allowable distance between ski spindle centers with front end of vehicle off the ground and suspension fully extended. The Maximum Set Up Width specifications listed on page 7.2a and 7.2b are maximum width measurements, and are critical to ensure adequate torsion bar engagement with the trailing arm. If the suspension is set too wide on 1997-current models, **the torsion bar can come loose and interfere with steering.** Do not attempt to set the suspension wider than the specified Maximum Set Up Width. On 1996 and earlier models, be sure to follow thread engagement guidelines for steering tie rod and radius rod ends as shown on page 7.11.

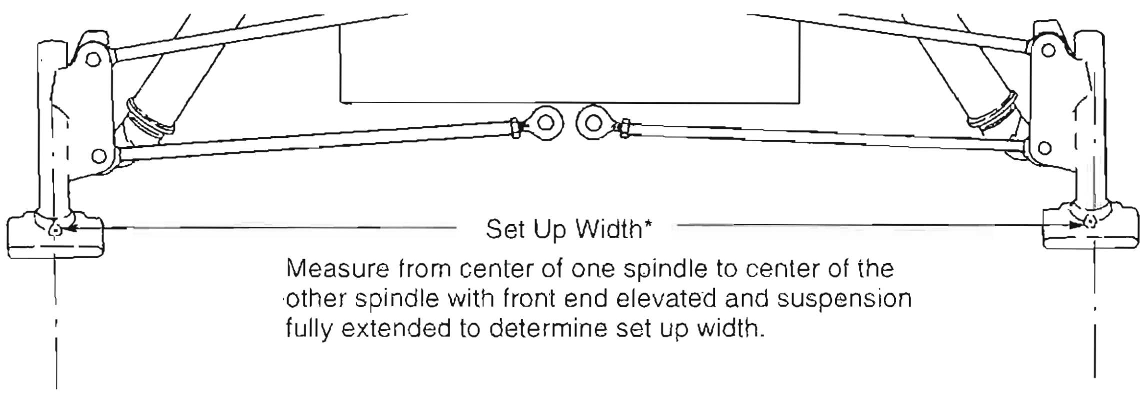
Spindle Centering / Set Up Width

1. Make sure the track is properly aligned. Refer to Maintenance Chapter for procedure. This will be used as a reference point for final toe out measurement.
2. Support the front of the machine 1-2" (2.5-5.1 cm) off the floor.
3. Remove skis and ski pivot bushings.
4. Disconnect adjustable torsion bar linkage where applicable.
5. Measure spindle to chassis centering as shown and record measurement. Both spindles should be an equal distance +/- 1/8" (3 mm) from the center of the chassis after adjusting camber, width, and toe alignment. This measurement is controlled by adjusting radius rod length.



Spindle To Chassis Centering
Left = Right ± 1/8".

6. On 1996 models - adjust camber first and then verify adequate thread engagement of rod ends as shown on page 7.11. On 1997 to current models, measure set up width and record. This measurement is controlled by adjusting radius rod length, and must not exceed the Maximum Setup Width listed in the appropriate table (at the front of this section) after all steering adjustments are complete. See illustration below for procedure.

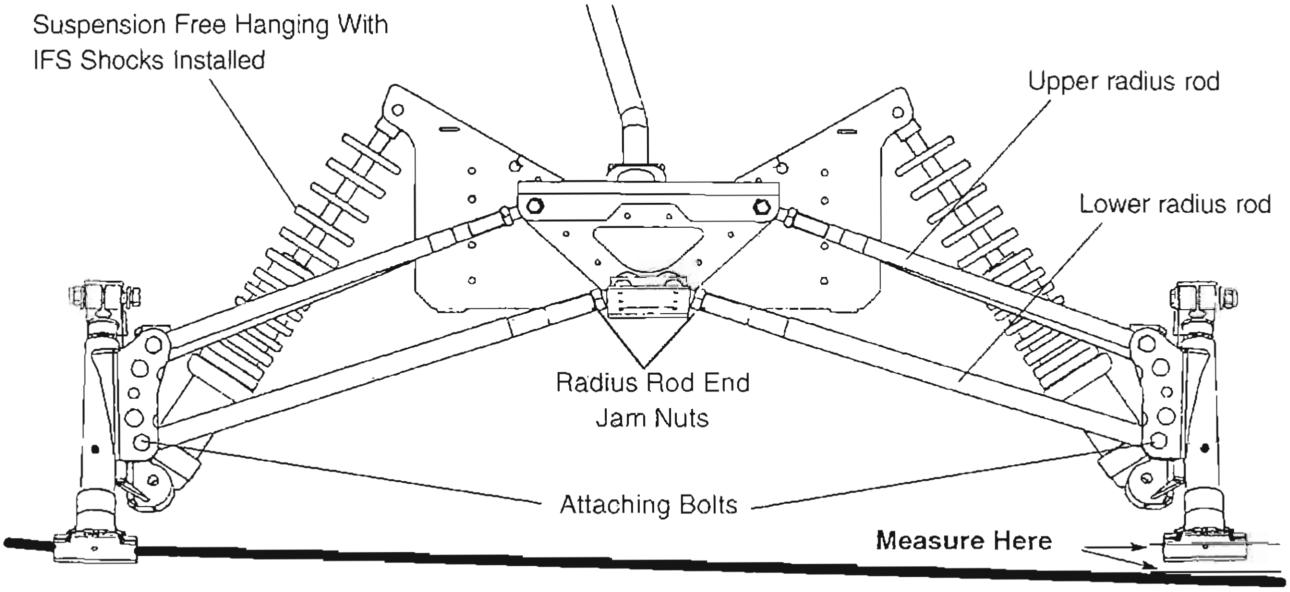


***Do not exceed maximum**

CAMBER INSPECTION

All Models - Elevate Front End - Shocks Installed

Typical CRC Shown - Style varies by model



Refer to specifications for:
- IFS type
- Specified amount of camber

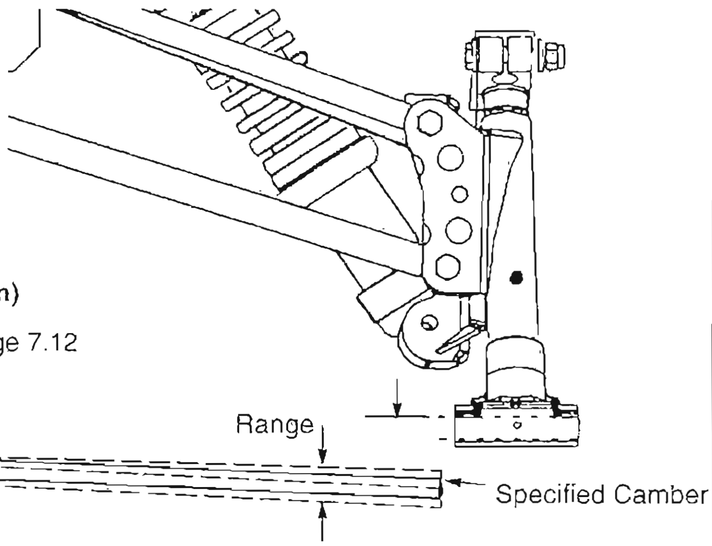
See page 7.2 - 7.2b or page 7.12

❑ To adjust, lengthen or shorten appropriate lower radius rod until top of bar is within specified camber distance. Measurement should be taken from top of alignment bar to top of ski pivot bushing hole in spindle (bushing removed). Radius rod must be re-attached to trailing arm before measuring.

CAMBER - ACCEPTABLE RANGE

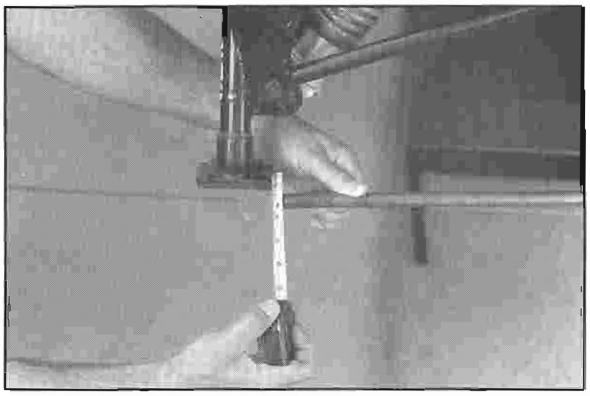
EXAMPLE:
Specified Camber = 3/4″ (19mm)
Specified Tolerance = ± 5/16″ (8mm)
Acceptable Range = 7/16 - 1 1/16″ (11-27mm)

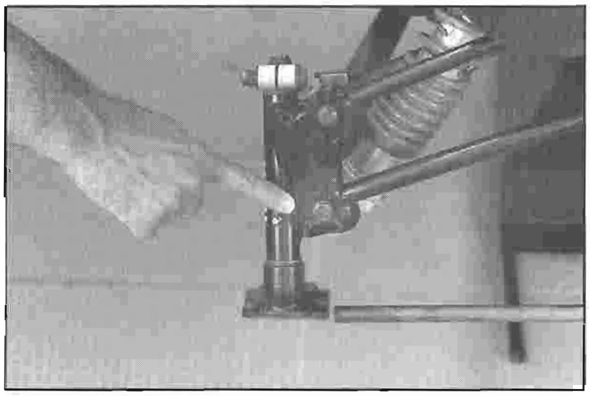
Refer to specifications on page 7.2 - 7.2b or page 7.12




Camber Adjustment

1. Determine which spindle requires the greatest amount of correction by installing the alignment bar through one side to the opposite spindle. Remove the bar and install it through the other side to the opposite spindle.

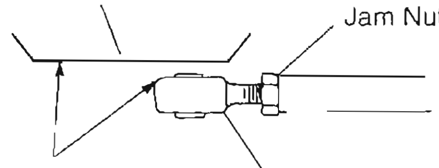




2. Using a 3/8″ (1 cm) drive 11/16″ (1.7 cm) crow foot wrench and 20″ (51 cm) long 3/8″ (1 cm) drive extension, loosen the radius rod end jam nut and remove the lower radius rod bolt from the spindle requiring the most camber correction. Adjust the opposite side next.
3. To adjust camber, change lower radius rod length until alignment bar measurement is within specified range for each spindle. Refer to charts on page 7.12 for camber specifications. On models with neutral camber (0) the bar should slide freely through both spindles (± 5/16″).

CAUTION:

Radius rod ends must remain parallel to the bulkhead after rod end jam nuts are tightened to specified torque. See illustration at right.



4. Tighten all jam nuts. Torque radius rod attaching bolts to specification. Reinstall adjustable torsion bar linkage (where applicable). On 1996 models - verify adequate thread engagement of rod ends as shown on page 7.11.

⚠ WARNING

After camber adjustment is complete, be sure to measure set up width on 1997 models as outlined on page 7.13 and compare to specifications listed on page 7.2a - 7.2b. Do not attempt to set suspension wider than the specified maximum set up width. If set up width exceeds maximum, adjust upper and lower radius rods equally to maintain camber adjustment.

Radius Rod End Jam Nut Torque -

25 ft. lbs. (3.45 kgm)

Adjustable Torsion Bar Attaching Bolt Torque -

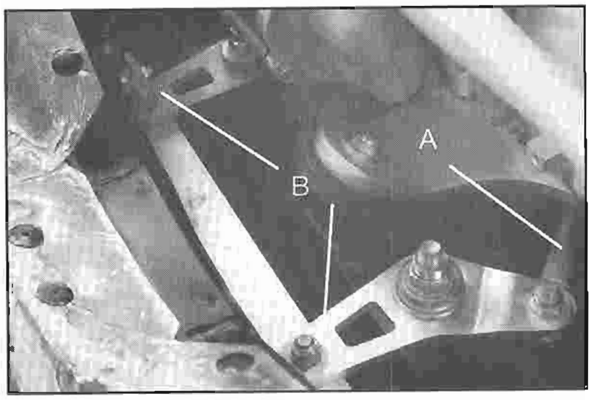
15 ft. lbs. 2.07 kgm)

Radius Rod Attaching Bolt Torque -

3/8″(outer) 28-30 ft. lbs. (3.86-4.14 kg-m)
7/16″ (inner top) 35-40 ft. lbs. (4.83-5.52 kg-m)
1/2″ (inner bottom) 40-50 ft. lbs. (5.52-6.9 kg-m)

Handlebar Centering

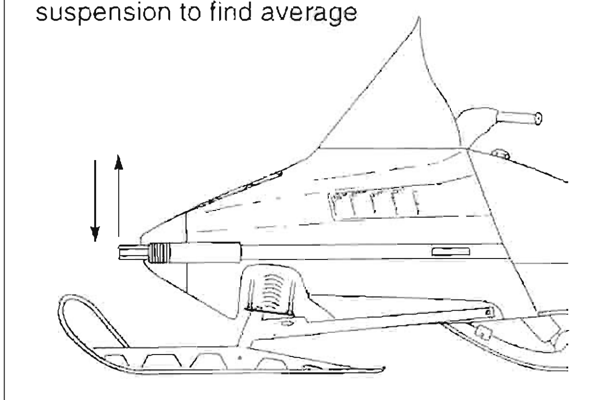
5. With alignment bar installed through spindles (on 0 camber models), center handlebars by adjusting drag link length (A). On models with negative camber, the alignment bar cannot be installed through spindles. On these models, the pitman and idler arm (B) (or bellcrank on non-CRC models) should be pointed straight forward.
6. Lubricate ski pivot bushings with Polaris Premium All Season Grease and install in spindle. Follow procedure in Illustration A for steel or B for composite skis. Torque ski bolts to specification. Install new cotter pin in castle nut.
7. Perform Toe Adjustment on page 7.17.



Toe Adjustment, All Models

Toe adjustment on all models must be performed with the vehicle weight on the suspension (no rider), at Normal Ride Height. An alternate method of toe alignment (using the travel bars) can be used set toe on models equipped with XTRA-10 CRC and XC-10 CRC front suspension. Refer to page 7.18d.

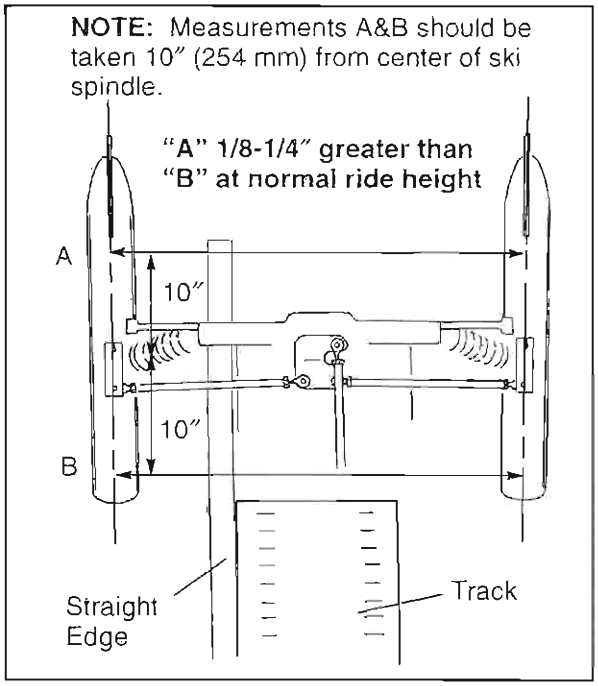
1. Make sure the track is properly aligned. This will be used as a reference point for toe out measurement.



Toe Adjustment
Normal Ride Height

2. To obtain normal ride height of the front suspension, lift the front end 3-5" (7.6-12.7 cm) with the front bumper. Lift the machine several times, working the suspension and front skis until an average is obtained.

NOTE: To prevent carbide skags from grabbing, make sure the surface under the skis will allow full side-to-side movement. Avoid rough concrete, asphalt, or carpet which may cause carbide skags to grab or catch and restrict movement.



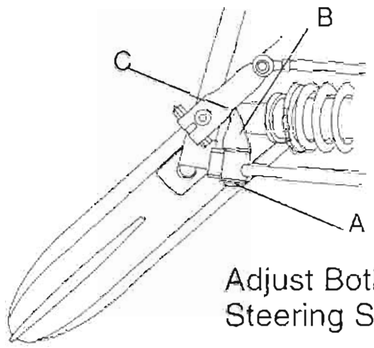
SERVICE HINT: Before final measurement is taken, skis should be pushed together lightly at the tips to remove play in the steering components. This will help achieve accurate measurement. If a strap is used be sure it is not *too tight* or it will alter measurement (this is most important on models with composite skis).

> **Toe Alignment: All Models**
>
> **Measurement "A" should be 1/8" - 1/4" (3.17 - 6.35 mm) greater than measurement "B" at normal ride height.**

Steering Stop Adjustment

1996 Models

1. Remove alignment bar and turn handlebars fully to the right. Loosen upper radius rod bolt (A) and adjust steering stop (B) so it contacts steering arm squarely at (C). Torque bolt (A) to specification. Verify stop is correctly adjusted after bolt is tight. Repeat procedure for left side, turning bars fully left.



Upper Radius Rod Bolt to Spindle Torque
28 ft. lbs. (3.86 kgm)

1997 Models

Steering stops are not adjustable on 1997-current models.

XTRA-10 CRC and XC-10 CRC Steering Alignment

The following steering alignment procedure can be performed on XTRA-10 CRC or XC-10 CRC front suspensions *only*, and should not be used for 38-RMK CRC or non-CRC front suspensions. Note: Use 1996 adjustment procedure for 1995 XCR 440 SP.

General Set Up Tips

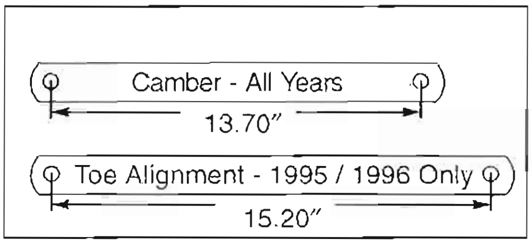
Before adjustments are performed on CRC steering, inspect all front suspension and steering components. See page 7.10. While disassembling, make notes of what direction a bolt goes through a part, what type of nut is used in an application, in which direction do the steering arms go on - weld up or weld down, etc.

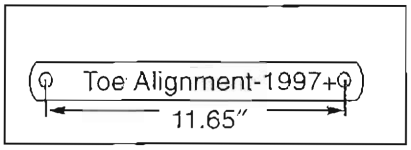
Some of the bolts used in the IFS are special, and cannot be purchased at a hardware store. Always use genuine Polaris parts and hardware when replacing front end components.

Tools

Tools required:

- 5/8″ alignment bar – PN 5333508
- 6′ tape measure
- Travel location bars -13.70″ long (PN 5211714)
- Travel location bars -15.20″ long (PN 5211713)
- Travel location bars -11.65″ long (PN 5211822)
- Chassis stand or blocking





NOTE: The CRC Travel Location Bars are included in kit PN 2871537, along with a 46″ alignment bar, and assorted hardware. Kit components are also available separately. See Chapter 1 for tool ordering information.

Refer to the chart below for travel bar application for width, camber, and toe adjustments on XTRA-10 CRC and XC-10 CRC models. See text on following pages for specific procedures.

1995 - 1996 CRC Models			
	When Measuring Set Up Width*	**To Inspect / Adjust Camber**	**To Inspect / Adjust Toe**
Travel Location Bar Length	Suspension Fully Extended - Shocks Installed	Install 13.70 Bars	Install 15.20 Bars
1997 - Current XTRA-10 CRC and XC-10 CRC Models			
	When Measuring Set Up Width*	**To Inspect / Adjust Camber**	**To Inspect / Adjust Toe**
Travel Location Bar Length	Suspension Fully Extended - Shocks Installed	Install 13.70 Bars	Install 11.65 Bars

⚠ WARNING

A maximum set up width is listed for 1997 to Current models. Maximum set up width is the maximum allowable distance between ski spindle centers with front end of vehicle off the ground and suspension fully extended. The Maximum Set Up Width specifications listed on page 7.2a and 7.2b are maximum width measurements, and are critical to ensure adequate torsion bar engagement with the trailing arm. If the suspension is set too wide on 1997-current models, **the torsion bar can come loose and interfere with steering.** Do not attempt to set the suspension wider than the specified Maximum Set Up Width. On 1996 and earlier models, be sure to follow thread engagement guidelines for steering tie rod and radius rod ends as shown on page 7.11.

CRC Steering Adjustment

To ensure accurate adjustment of the CRC steering mechanism, all steps listed below must be performed in sequential order.

- Spindle to Chassis Centering (must also be checked after adjustment)
- Set-Up Width adjustment(must also be checked after adjustment)
- Camber Adjustment
- Handlebar Centering
- Toe Adjustment
- Verify Spindle to Chassis Centering and Set-up width are within limits

1. Securely support the front of the machine high enough to remove the skis. Make sure machine is level.
2. Remove skis.

Spindle to Chassis Centering

3. Follow procedure on page 7.13.

Set Up Width Measurement

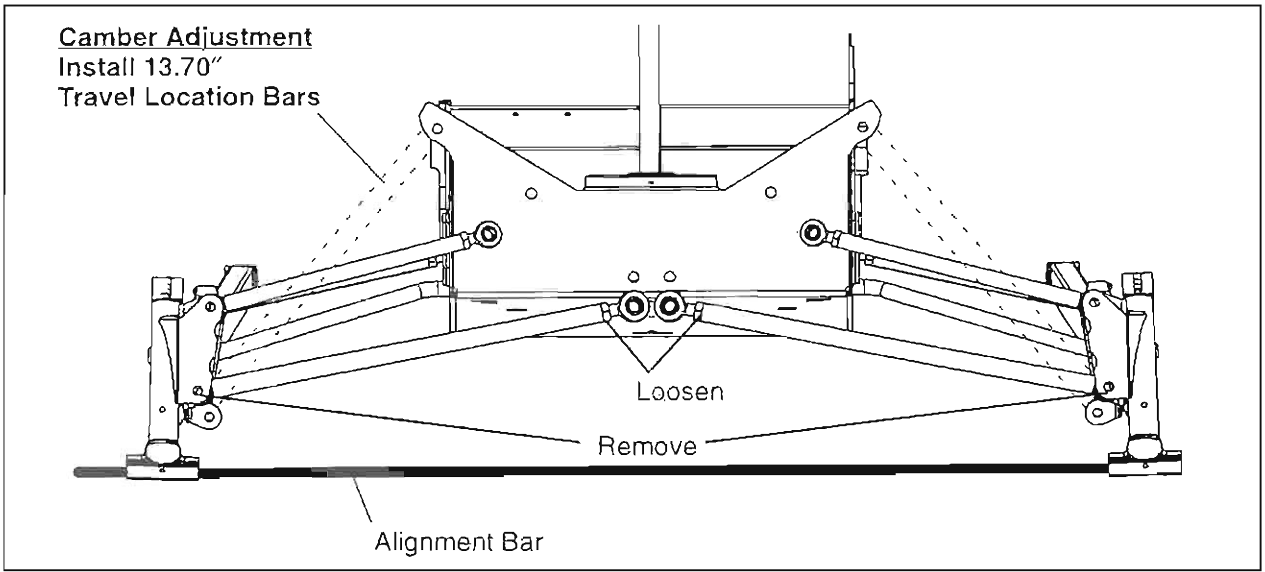
4. Follow procedure on page 7.13.

⚠ WARNING

*A maximum set up width is listed for 1997 - Current models. This is the maximum allowable distance between ski spindle centers with front end of vehicle off the ground and suspension fully extended. The maximum set up width specifications listed on page 7.2a-7.2b are <u>maximum</u> width measurements, and are critical to ensure adequate thread engagement of steering tie rod and radius rod ends. If the suspension is set too wide on 1997-current models, the torsion bar can come loose and interfere with steering. Do not attempt to set the suspension wider than the specified Maximum Set Up Width. For 1995-1996 models, use rod end thread engagement guidelines as shown on page 7.11.

Camber Adjustment - XTRA-10 CRC and XC-10 CRC

5. Remove IFS shocks and install 13.70″ travel location bars. The travel location bars will locate the IFS at a given point of travel where the camber should be neutral (0°).
6. Disconnect tie rods from steering arms. **NOTE:** If toe adjustment is correct, the spindles will *not* be horizontally aligned with the 13.70″ travel location bars installed. Disconnecting the tie rods will eliminate bind on the alignment bar and allow for more precise camber adjustment. It may also be helpful to secure the tie rods so they don't interfere with inspection or adjustment.
7. Determine which spindle requires the greatest amount of correction by installing the alignment bar through one side to the opposite spindle, then remove the bar and install it through the other side to the opposite spindle.

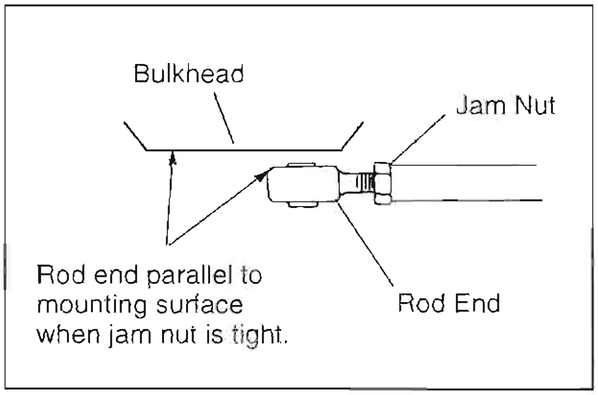


Camber Adjustment - XTRA-10 CRC and XC-10 CRC, (Cont.)

8. Using a 3/8″ drive 11/16″ (1.7 cm) crow foot wrench and 20″ (51 cm) long 3/8″ (1 cm) drive extension, loosen the radius rod end jam nut and remove the lower radius rod bolt from the spindle requiring the most camber correction. Adjust the opposite side next. Change radius rod length until alignment bar slides freely through both spindles.
9. When adjustment is correct, tighten jam nuts to 24-25 ft. lbs. (3.31-3.45 kg-m). Torque radius rod attaching bolts to 28-30 ft. lbs. (3.86-4.14 kg-m).

CAUTION:

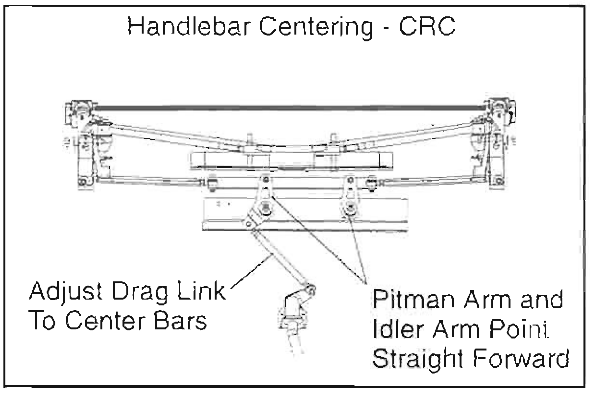
Radius rod ends must remain parallel to the mounting brackets after the rod end jam nuts are tightened to the specified torque. See illustration at right.



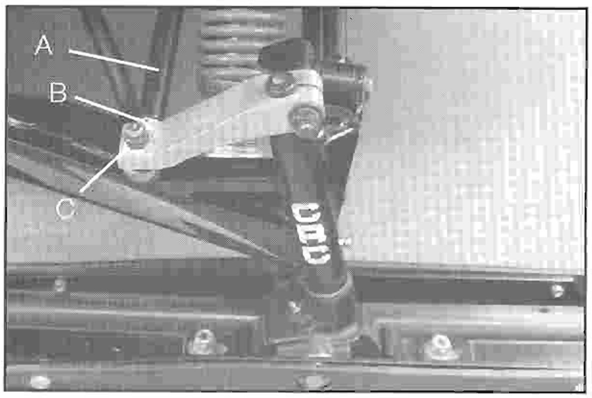
10. Tighten all jam nuts. Torque radius rod attaching bolts to specification.
11. Re-check set up width and compare to specifications.

Handlebar Centering-CRC

12. With alignment bar in spindles and tie rod ends disconnected, center the steering rack by pointing the pitman arm and idler arm straight forward.
13. Center the handlebars by adjusting drag link length. Tighten jam nuts to 24-25 ft. lbs. (3.31-3.45 kg-m).
14. The steering arms should be parallel to the ski centerline or slightly inward. Refer to steering arm orientation on page 7.18g.



15. Re-attach steering tie rod ends (C) to steering arms. It may be necessary to loosen the tie rod adjustment jam nuts (B) and adjust tie rod length (A) as required until rod end studs can be installed in steering arm. Torque tie rod end attaching nuts to 28-30 ft. lbs. (3.86-4.14 kg-m). If tie rod adjustment was necessary, do not tighten them until toe adjustment is complete.
16. Perform toe adjustment on following page.



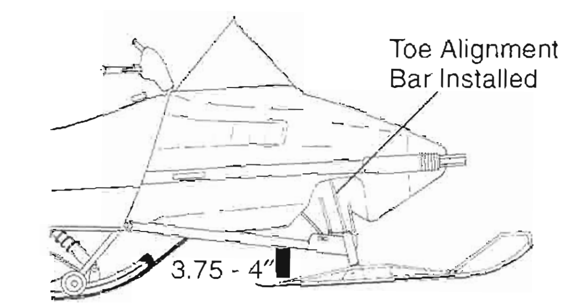
Toe Adjustment- XTRA-10 CRC / XC-10 CRC

17. Remove alignment bar from spindles.
18. Remove 13.70″ travel location bars and install correct toe alignment bar.

1996 Models - Install 15.20″ Toe Alignment travel bars.

1997 to Current Models - Install 11.65″ Toe alignment travel bars.

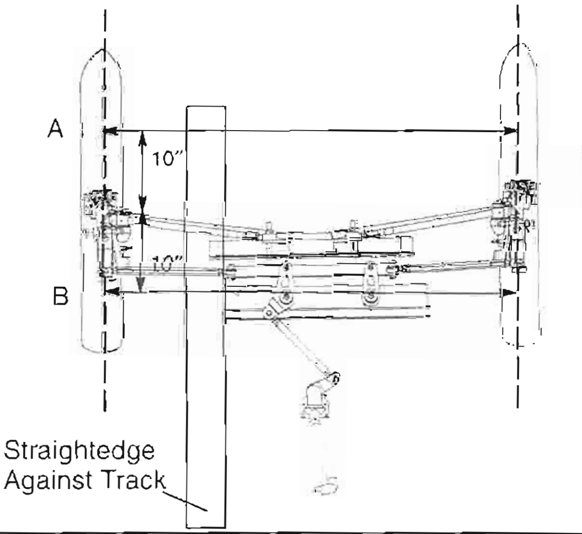
19. Install skis.
20. With the front of the machine still securely supported off the ground, install a block or spacer between the rear of the ski frame and the bottom of the trailing arm. The block should be 3.75″ - 4.0″ long. The blocks will keep ski-to-ground surface orientation correct for more accurate toe adjustment.



Ill. 1

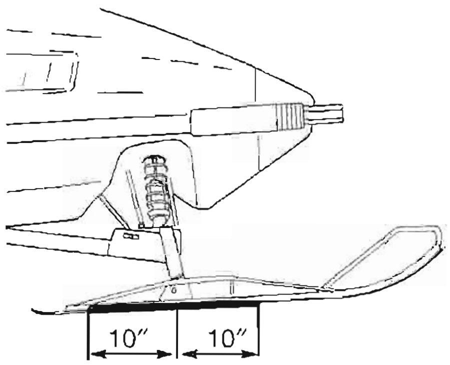
21. Adjust toe so skis / carbides are parallel - zero toe out or toe in with toe alignment travel bar installed. Measure from equal point on ski to straightedge to determine the amount of adjustment required per ski.

NOTE: Measurements A&B should be equal and taken 10″ (254 mm) fore and aft of spindle center as shown with toe alignment travel bars installed.



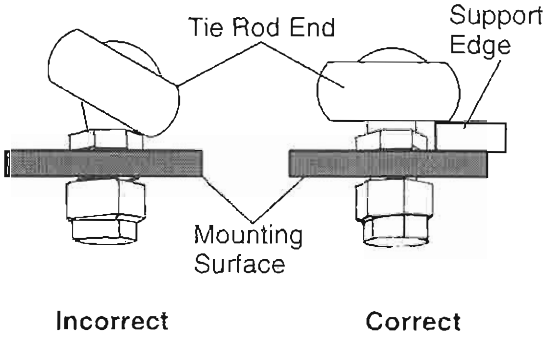
Toe Adjustment - XTRA-10 CRC and XC-10 CRC, cont.

22. To adjust toe, hold tie rod flats or support edge of tie rod end with a wrench or flat stock to keep it from rotating. Loosen jam nuts on each end of both tie rods. Turn tie rod as required to adjust toe.



Toe Measurement - CRC

23. Hold tie rod and tighten jam nuts. Be sure to position inner and outer tie rod ends parallel to their respective mounting surface as shown. When tie rod ends are properly tightened, the tie rod should rotate freely approximately 1/8 turn.



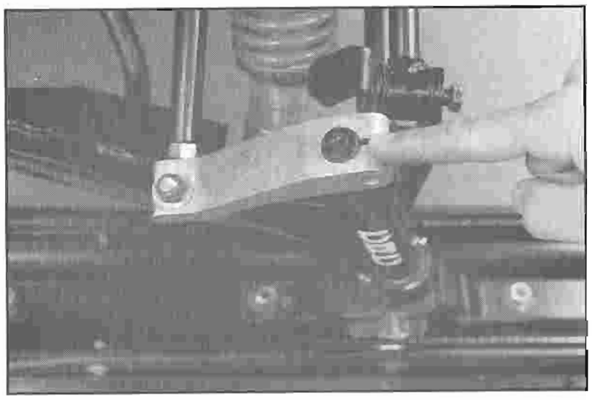
Tie Rod Jam Nut Torque -

28-30 ft. lbs. (3.86 - 4.14 kg-m)

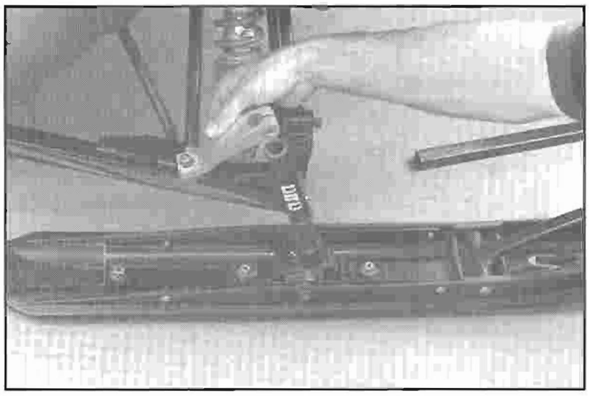
Ski Spindle Bushing Replacement

Ski Spindle Bushing Removal

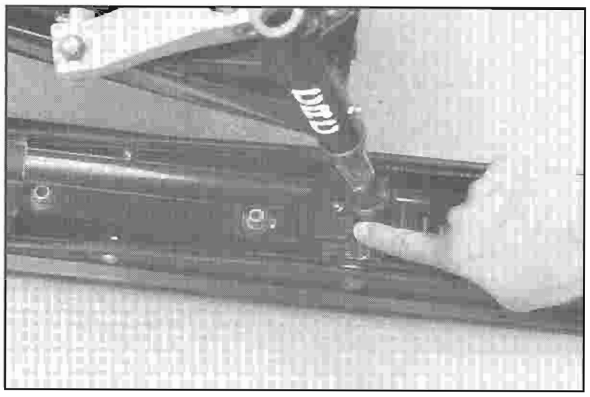
1. Using a a scribe, center punch, or paint, mark the spindle and steering arm for reference during reassembly. Note direction of steering arm bolt and remove. Also note orientation of grease fitting for ski pivot bushing. The fitting faces forward on models with leading spindle, and rearward on trailing spindles.



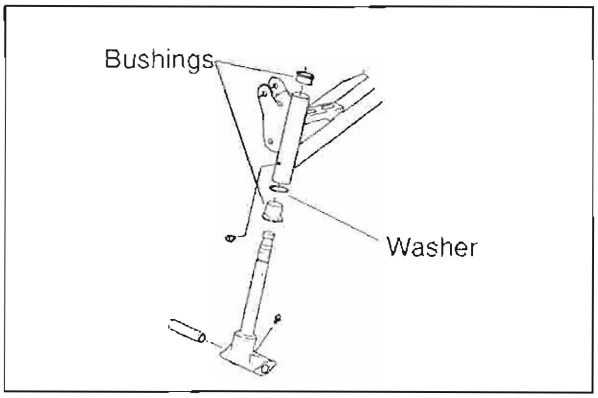
2. Remove steering arm.



3. Slide spindle and ski assembly out bottom of trailing arm. Inspect spindle for wear or damage.

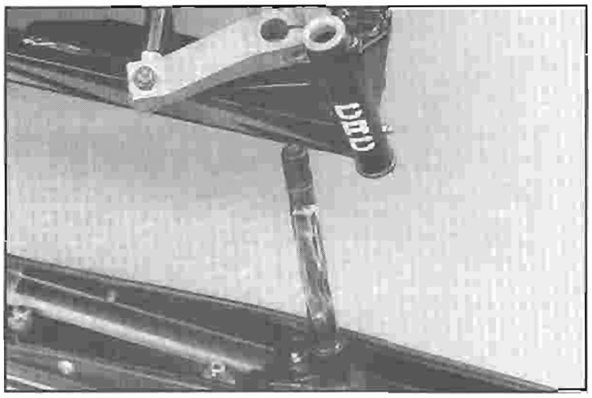


4. Remove old bushings and washer from bottom of spindle tube with a drift punch. Inspect condition of washer and replace if worn. Install new bushings, tapered end first.



Ski Spindle Bushing Installation

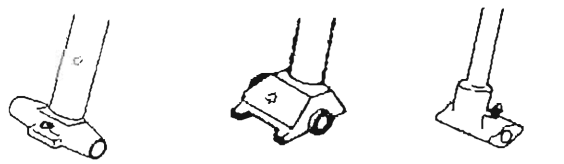
5. Grease spindle shaft and new bushings with Polaris All Season Grease.



All Season Grease

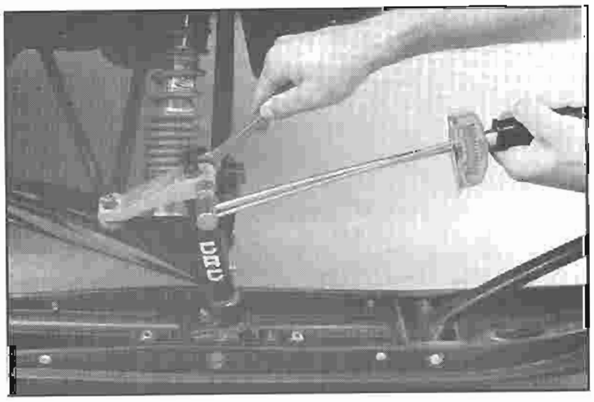
PN 2871322 (3 oz.)
PN 2871423 (14 oz.)

6. Install spindle into trailing arm with grease fitting facing forward (standard and leading spindles) or rearward (trailing spindles).



7. With ski facing straight forward, attach steering arm. Align with marks made in step 1, or refer to page 7.18h.

8. Install steering arm bolt and torque to specification.



Spindle Bolt Torque

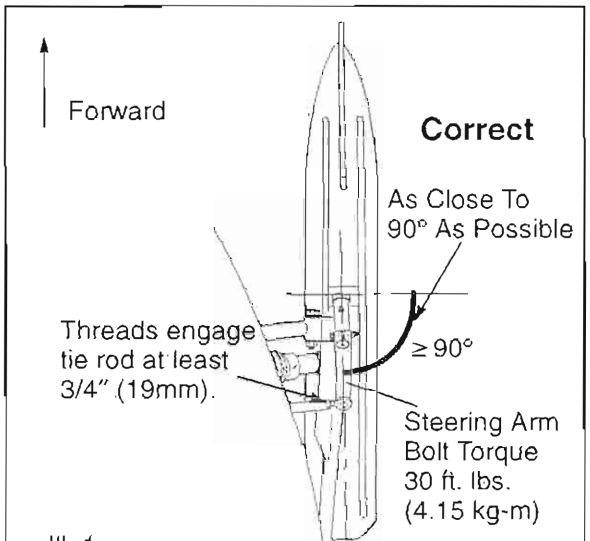
28-30 ft. lbs. (3.86-4.14 kg-m)

Steering Arm Orientation

⚠ WARNING

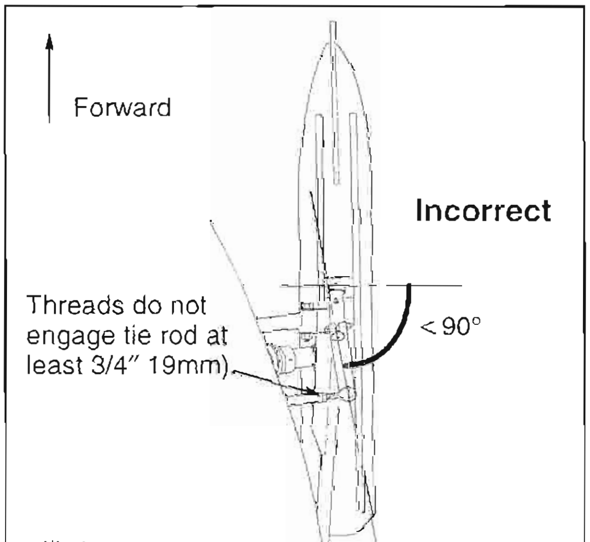
Steering arm orientation is important to ensure proper steering tie rod end thread engagement and steering performance. Always mark steering arms and spindles before removal for reference upon reassembly. When installing new parts or after steering arm installation, refer to the illustrations and text below. Always verify proper steering operation after completing adjustments or repairs.

1. The steering arms on each spindle should be parallel to slightly inward in relation to each ski. When correctly installed (Ill. 1) the centerline of the ski and centerline of the ski bolt hole in the spindle will form (approximately) a 90° angle or slightly greater.



Ill. 1

2. If the steering arm is installed incorrectly the threads of the steering tie rod end will not engage the tie rod sufficiently, and the angle formed between ski and ski bolt centerlines is considerably less than 90° as shown at right.



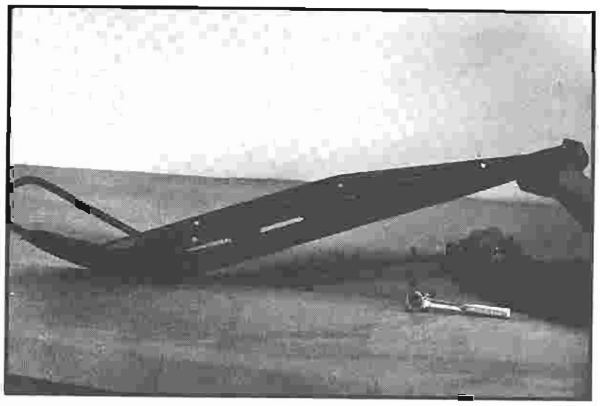
Ill. 2

3. Reinstall torsion bar linkage (where applicable). Torque attaching bolts to specification.

When performing normal maintenance or tune-up, check the ski skags for wear. To prevent damage to the skis, and for greater steering control, replace all skags which are half worn or greater.

Ski Skag Removal

1. Remove retaining nuts as shown.
2. Push bolt down through ski.
3. Pull rear of skag from ski as shown. This frees the skag for removal from the ski.



Ski Skag Installation

1. Push skag forward, then up into position.
2. Reinstall nuts and torque to specification.

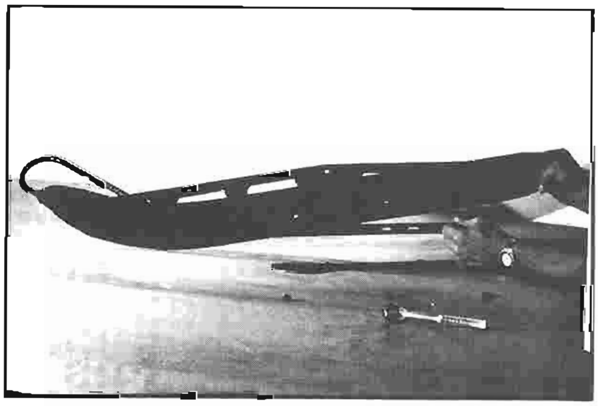
Ski Skag Retaining Nut Torque -

Steel Ski, Steel w/skins, Aluminum - 15 ft. lbs. (2.1 kg-m)

Plastic Ski - 20-25 ft. lbs. (2.76-3.45 kg-m)

Ski Skag Removal - EZ Steer

1. Remove the three nuts from the skag.
2. Pull down and rearward to remove the skag.



Ski Skag Installation - EZ Steer

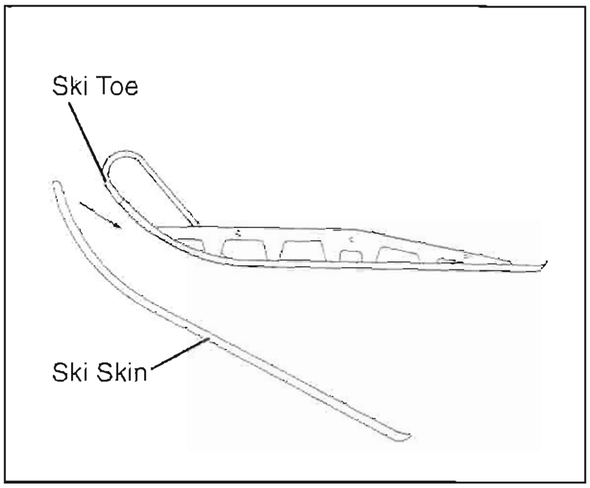
1. Install flat bar as shown.
2. Install IFS carbide skag.
3. Reinstall nuts and torque to specification.

Ski Skag Retaining Nut Torque -

15 ft. lbs. (2.1 kgm)

Ski Skin Installation

1. Lift and support front end of machine for easier access to skis.



⚠ WARNING

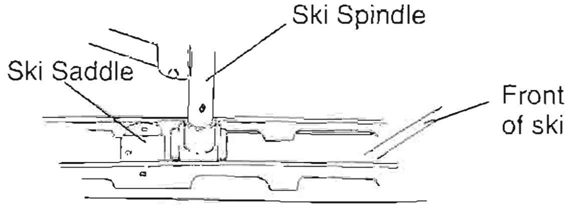
Be sure the machine is stable and solidly supported before proceeding. Serious injury may result if machine tips or falls.

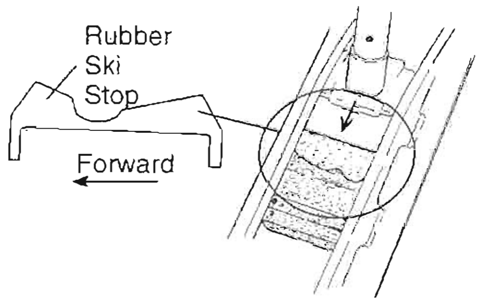
2. Remove cotter pin from ski bolt.
3. Remove ski bolt and take off ski. Note direction of rubber ski stop.
4. Remove the bolts from the skag. Pry the back of the skag downward from the ski and remove from the front slot.
5. Place heel of ski on a solid surface and slide plastic ski skin onto toe of ski as shown.
6. Tap ski skin toe with plastic mallet to be sure it has snapped completely onto the toe. Check to see that the skag holes line up.
7. Working from the toe of the ski, continue snapping ski skin onto ski. **NOTE:** Clamps may be used if the skin is difficult to install.
8. Replace skag removed in step 4.
9. Replace ski removed in steps 2 and 3. Refer to Page 7.19b.
10. Repeat procedure for second ski.

Ski Installation

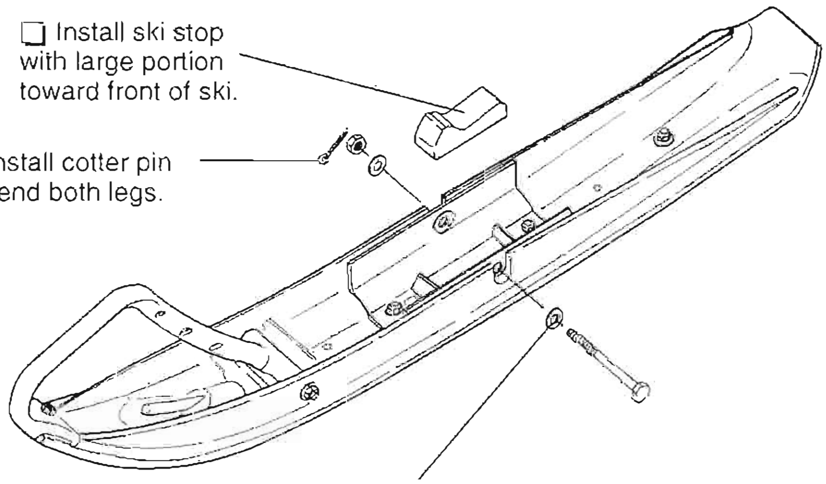
SKI INSTALLATION - STEEL SKIS

- [ ] Install ski over spindle, slightly in front of ski saddle with ski pointing outside.
- [ ] Slide ski forward until spindle is just behind ski saddle and turn to the forward position.
- [ ] Slide ski forward so spindle is behind ski saddle.
- [ ] Apply soapy water solution to the rear portion of the rubber ski stop. Install ski stop on top of ski saddle with large portion forward.
- [ ] Push ski back to slide spindle into place. From outside of ski, install bolt and castle nut. Torque to 36 ft. lbs. Install cotter pin and bend both legs





SKI INSTALLATION - COMPOSITE



- [ ] Install ski to spindle. From outside of ski, install bolt, washers and castle nut. Torque to 36 ft. lbs. (4.97 kg-m).
- [ ] Carefully lower machine

Handlebar Torque and Sequence - Indy Style

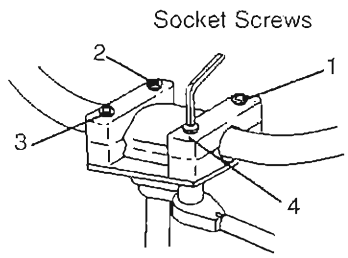
1. Remove handlebar cover and foam.
2. Using a 7/16" (11 mm) wrench, loosen four nuts on bottom of adjuster block. **NOTE:** Turn handlebar to left or right for access to back nuts.
3. Adjust handlebar to the desired height. Be sure that handlebars, brake lever and throttle lever operate smoothly and do not hit the fuel tank, windshield or any other part of the machine when turned fully to the left or right.

IMPORTANT: When adjusting the handlebar, be sure the serrations in handlebar and adjuster block match before torquing.

4. Torque the handlebar adjuster block bolts to specification following sequence shown. The gap should be equal at front and rear.
5. Replace handlebar cover and foam.

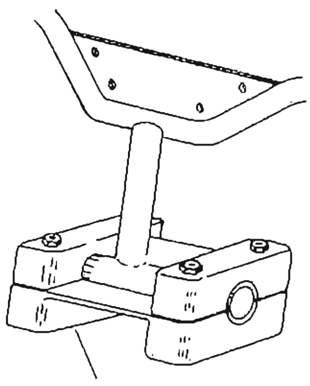
Handlebar Adjuster Block Bolt Torque -

11-13 ft. lbs. (1.5 - 1.8 kgm)



Handlebar Torque and Sequence - Evolved and Aggressive Style

1. Remove two plastic fasteners holding console cover located below handlebar cover on hood side of steering post.
2. Using a 7/16" (11 mm) wrench, loosen four nuts on bottom of adjuster block. **NOTE:** Turn handlebar to left or right for access to rear nuts.
3. Adjust handlebar to the desired height. Be sure that handlebars, brake lever and throttle lever operate smoothly and do not hit the gas tank, windshield or any other part of the machine when turned fully to the left or right.
4. Torque the handlebar adjuster block bolts evenly to specification. The gap should be equal at the front and rear.
5. Replace console cover.



Handlebar Adjuster Block Bolt Torque -

11-13 ft. lbs. (1.5 - 1.8 kgm)

⚠ WARNING

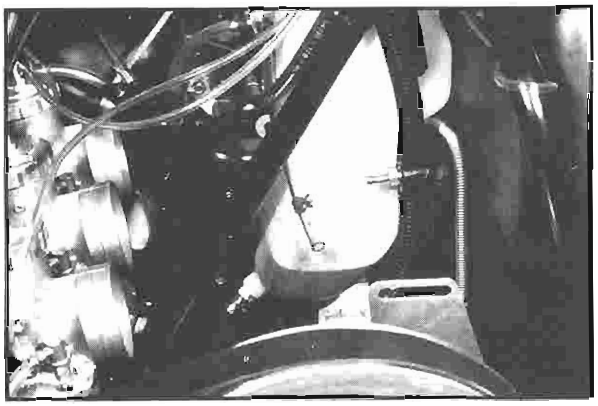
Improper adjustment of the handlebars, or incorrect torquing of the adjuster block tightening bolts can cause limited steering or loosening of the handlebars which could result in loss of control.

⚠ WARNING

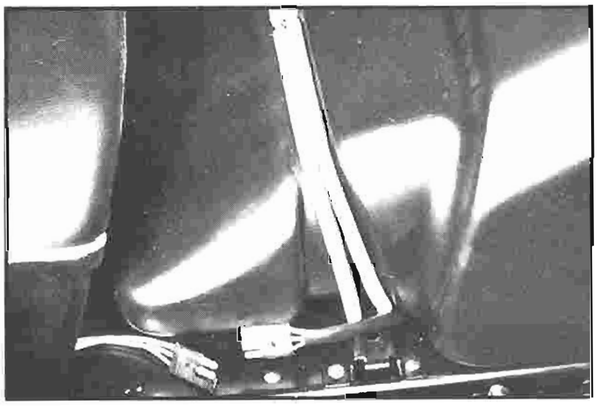
Gasoline is extremely flammable and explosive under certain conditions. Do not smoke or allow open flames or sparks in or near the area where work is being performed. If you should get gasoline in your eyes or if you should swallow gasoline, see your doctor immediately. If you should spill gasoline on your skin or clothing, immediately wash it off with soap and water and change clothing. Prolonged exposure to petroleum based products may cause paint failures. Always protect finished surfaces and wipe up any spills immediately.

Two Piece Fuel Tank/Seat Removal

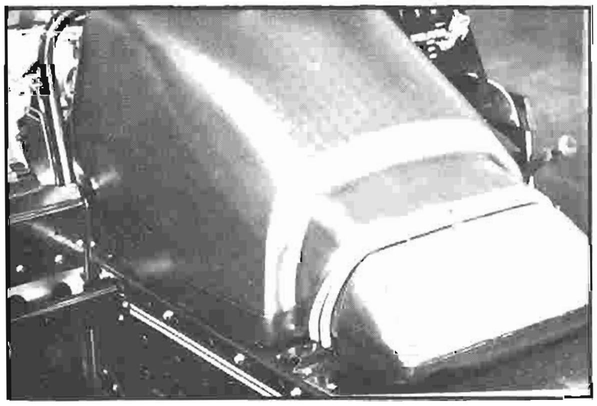
1. Remove tank cover by disconnecting snaps.
2. Remove vent line at front LH side of tank.
3. Remove gas cap and rubber grommet.
4. Remove air silencer box.
5. Disconnect fuel line from fuel pump and plug line to prevent fuel spillage from tank. See photo one at right.
6. Roll front tank hold-down spring forward off tank saddle.
7. If machine is equipped with a fuel gauge connector, this should be unplugged.
8. Remove two bolts holding rear of seat to tunnel.



9. Slide seat rearward enough to gain access to taillight connector at RH side of fuel tank. Unplug connector. Slide seat off machine and set aside.

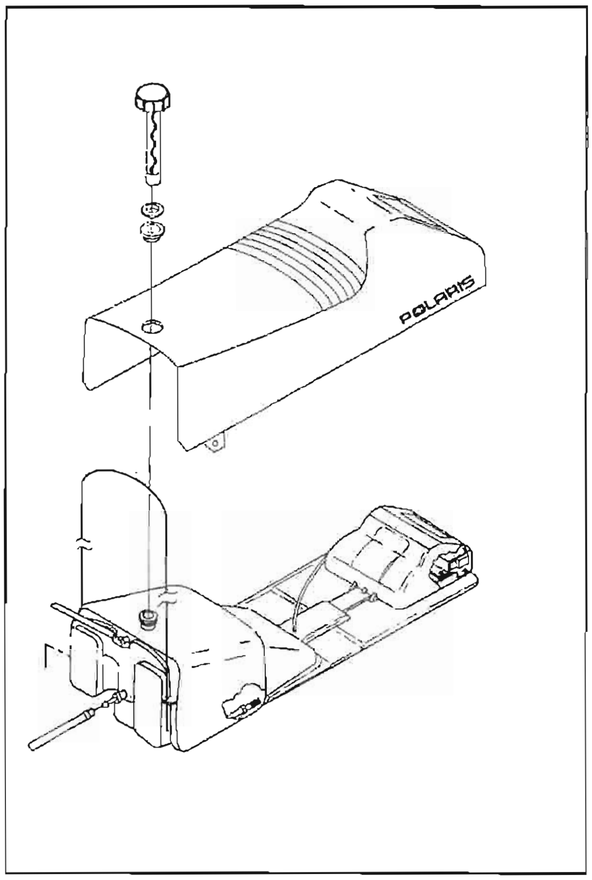


10. Fuel tank can now be removed from chassis by disconnecting two springs at center of fuel tank.



One Piece Fuel Tank/Seat Removal

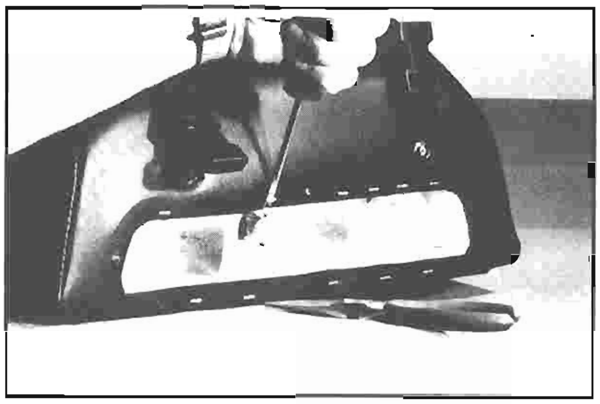
1. Remove front tank retaining spring located behind driven clutch area.
2. Remove fuel cap and grommet.
3. Remove fuel lines.
4. If machine is equipped with gauges, unplug gauge wires.
5. Remove two bolts in tool box.
6. Disconnect taillight wiring.
7. Remove two console bolts attaching console to tunnel.
8. Remove two console bolts located under hood.
9. Remove fuel cap and lift console up. Replace fuel cap.
10. Lift up at rear of seat and slide out.



Seat Cover Replacement

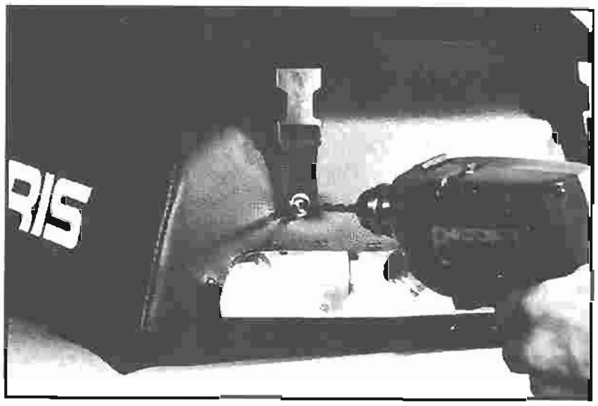
1. Remove seat cushion assembly as outlined on page 7.22.

2. Remove seat and seat covering to be replaced. Carefully remove staples by loosening with a small flat blade screwdriver. Pull each staple straight out with a pliers.



3. On some models, it will be necessary to drill out the rivets holding the strap buckles. Reach Inside the tool box and rotate the "D" ring buckle which secures the center hold down strap. Push the "D" ring through the slot in the tool box and carefully pull it through the foam cushion.

Reassembly Note: For ease of assembly, hook a wire to the center strap. This will allow you to pull the center strap back through the foam and into the storage box.

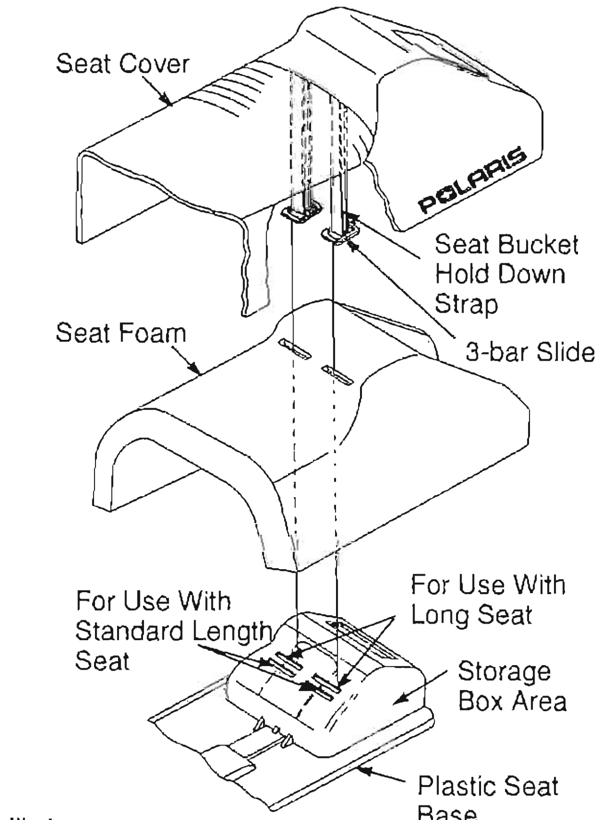


4. Place the seat foam on the seat base assembly as shown in Ill. 1.

5. Drape the seat cover over the seat foam.

6. Insert and pull the two seat bucket hold down straps, attached to the seat cover, through the two holes in the seat foam and the routed-out holes located in the storage box area on the plastic seat base. **HINT:** A stiff wire attached to the 3 bar slide on the hold down strap will aid in this process.

NOTE: Use the rear two holes for a longer length seat and the forward two holes for the standard length seat.



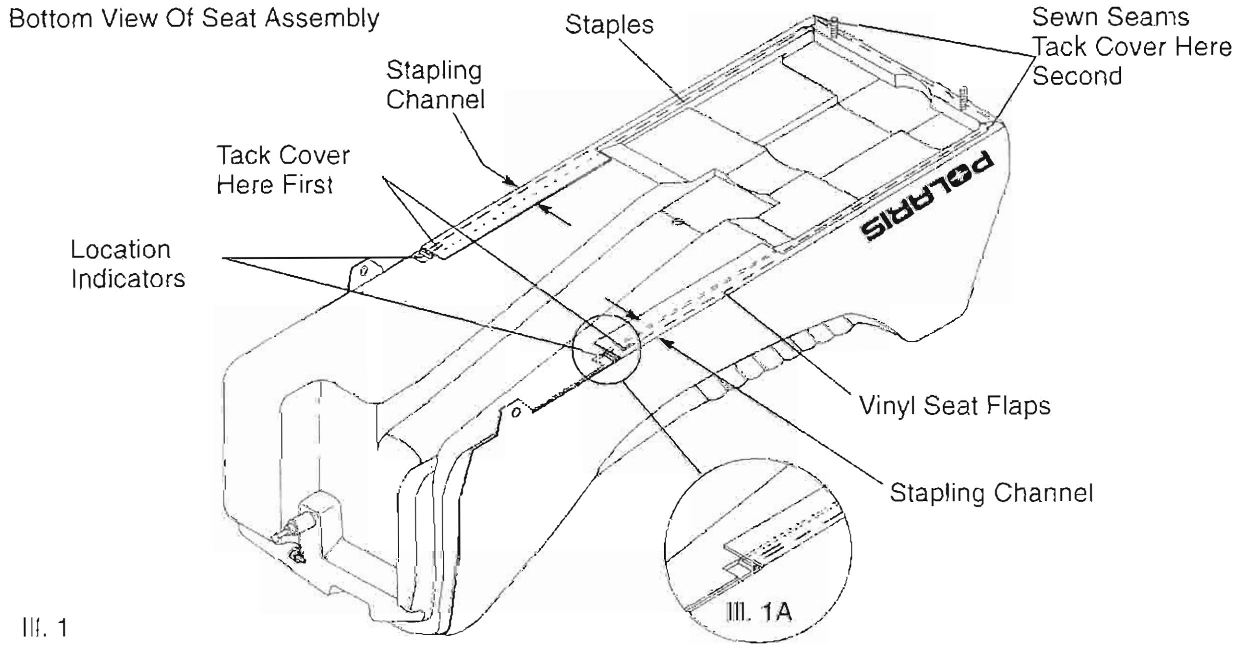
Ill. 1

4. Turn the assembly over and begin upholstering by lining up the seat cover vinyl side flaps with the indented square location indicators located on the plastic seat base as shown in Ill. 1A.

CAUTION:

Apply staples in the stapling channel only. See Ill 1. If you apply staples outside the channel, you will damage the fuel tank reservoir in the seat base. If this happens you must replace the entire seat base assembly.

5. Using a staple gun, tack each side of the vinyl cover in place using two staples. If cover has a Polaris emblem carefully align emblem with bottom edge of seat. This will help ensure that the cover is positioned properly.
6. Align the two sewn seams located at the rear of the seat cover with the two back corners of the seat base. See Ill. 1. Pull the vinyl tight and tack the seat cover to the plastic seat base in each corner. Use two or three staples per corner.
7. Now that the seat cover is correctly positioned, and tacked to the plastic seat base in four places, turn the assembly over and inspect it. If the seat cover seems to fit correctly and everything looks straight, including the tool compartment flap, continue with step 11.

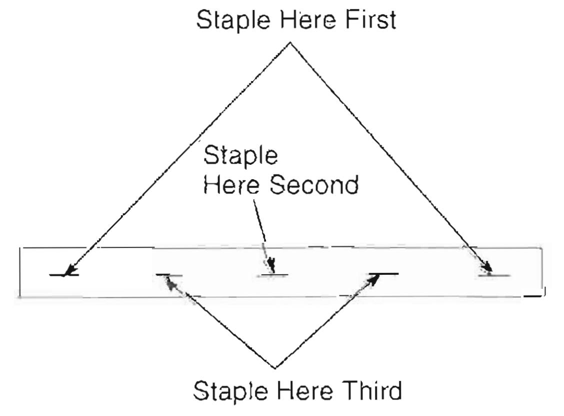


Ill. 1

8. Staple the remainder of the unattached seat cover to the plastic seat base as shown in Ill. 1. **HINT:** Always staple between two existing staples and follow this procedure until the seat cover is completely stapled to the seat base. See Ill. 2.
9. Turn the seat cushion assembly over and inspect for wrinkles or imperfections. If imperfections are visible, remove the staples in the affected area and staple correctly.

Staple PN 9810341

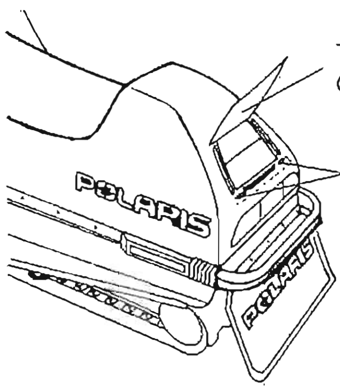
Stainless Steel



Staple Sequence Ill. 2

Models With Twist-Lock Fasteners In Tool Flap

10. Close tool flap cover, making sure it is aligned properly, and mark grommet holes.
11. Align twist lock with mark from step 10. Verify alignment with grommet in tool flap.
12. Using twist lock as a template, drill two .160″ to .164″ holes through vinyl and seat base.
13. Rivet twist lock to seat base using rivets provided.



All Models

14. Trim excess vinyl from the bottom around the back of the seat area only after a satisfactory fit is obtained. See Ill. 1, page 7.24.
15. Reinstall seat by reversing disassembly steps as they apply to your particular model.

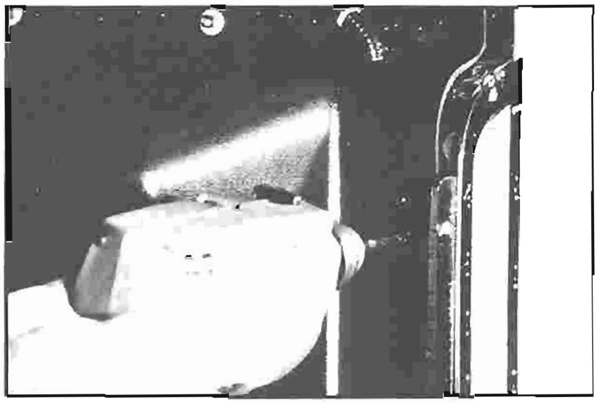
Seat Cover Installation Instructions

One/Two Piece Seat and Tank Covering Instructions PN 9912521

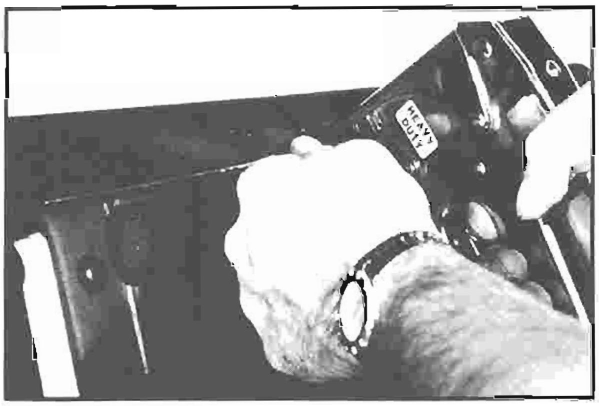
440 & 600 XCR Seat Covering Instructions PN 9912842

Taillight Assembly Replacement - Standard Indy

1. After removal of seat cover, drill out three rivets from top of taillight.
2. Remove taillight assembly and wire harness.
3. Install new taillight assembly and rivet into place.
4. Connect taillight wire harness. **NOTE:** Taillight harness wires must be routed away from any possible contact with seat cover staples to prevent electrical shorts.



5. Pull seat cover tightly and evenly into position and re-staple to seat pan.
6. Inspect cover for a wrinkle-free finish before reinstalling on the snowmobile.



Seat Length Matrix, 1996

The following chart lists seat interchangeability for 1996 models. Arrows indicate interchangeability. For production seats only.

1 Up Lite	Standard Length	Mid Length	Long Length	2 Up Lite	XCR Performance	Deluxe 2 Up Touring	Standard 2 Up Touring	2 Up WideTrak
Lite	Sport	Storm	Trail		440 XCR	Classic Trg.	Sport Trg.	WideTrak GT
Lite Deluxe	Super Sport	Storm SKS/ RMK		Lite GT	600 XCR	XLT Trg.	TranSport	WideTrak LX
	Indy 440	600 XCR SP						
	Indy 500	↔	500 SKS/RMK					
	500 EFI SKS/ RMK	↔	500 EFI					
			Classic					
	XLT	↔	XLT SP					
		↔	XLT SKS/RMK					
			RXL					
	Ultra SP	↔	Ultra SKS					
		↔	Ultra RMK					

Seat Length Matrix, 1997

The following chart lists seat interchangeability for 1997 models. Arrows indicate interchangeability. For production seats only.

1 Up Lite	Standard Length	Mid Length	Long Length	2 Up Lite	XC Performance	Deluxe 2 Up Touring	Standard 2 Up Touring	2 Up WideTrak
Lite	Sport	Storm/SE	500 EFI	Lite GT	440 XC	Classic Trg.	Sport Trg.	WideTrak GT
Lite Deluxe	Super Sport	Storm RMK	700 SKS/RMK		600 XC	XLT Trg.	TranSport	WideTrak LX
	Ultra SP	600 XCR/SE	XLT LTD		XCF (no side pads)	Ultra Trg.	Trail Trg.	
		Ultra SPX/SE	Ultra					
			RXL					
	Trail RMK	↔	Trail					
	440	↔	Classic					
	500	↔	500 SKS/RMK					
	XLT	↔	XLT Special					
			XLT SKS/RMK					

Seat Length Matrix, 1998

The following chart lists seat interchangeability for 1998 models. Arrows indicate interchangeability. For production seats only.

1 Up Lite	Standard Length	Mid Length	Long Length	2 Up Lite	XC Performance	Deluxe 2 Up Touring	Standard 2 Up Touring	2 Up WideTrak
Lite	Sport	XLT Special	500 (Option 2)	Lite Trg	XCF (w/o pads)	Trail Trg.	Sport Trg.	WideTrak LX
Lite Deluxe	Super Sport	600 XC	Classic		440 XCR	Classic Trg.	TranSport	
	XLT LTD	700 XC	XLT Classic			XLT Trg.		
		600/700 XCR				Ultra Trg.		
		Storm						
	Trail		Trail RMK					
	440		500 (Option 3)					
	500 (Option 3)		500 RMK					
	Ultra		600/700 RMK					

Nosepan Replacement Procedure - Standard Indy/Aggressive Body Styles

When installing a replacement ABS nosepan, the following procedures must be closely observed to ensure correct fit to the frame and maximum strength. ABS material is not rigid. Consequently, it must be installed in such a manner that it can expand or contract with temperature changes.

1. Remove damaged nosepan by drilling out rivet heads. Engine mountings and other mountings attached to the forward part of the machine should be removed for ease of installation.

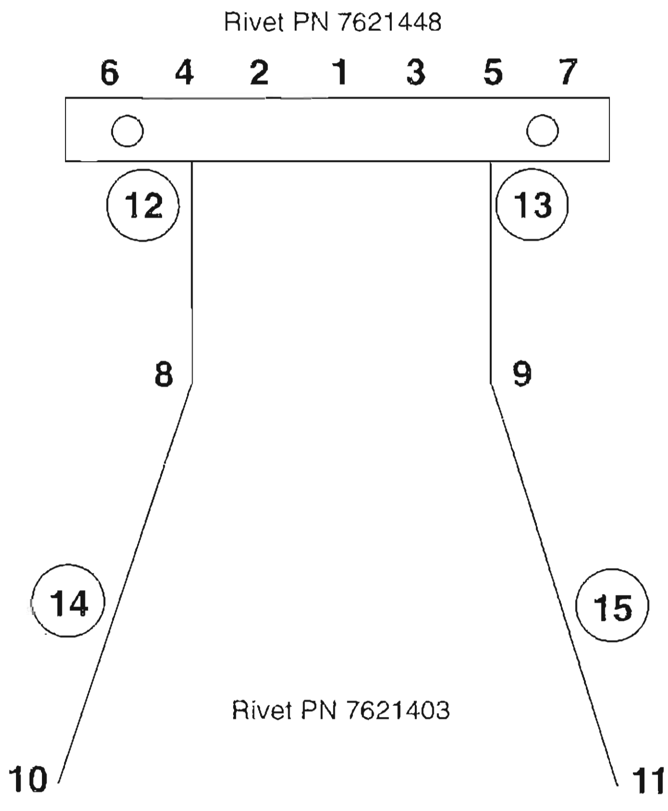
2. The following aluminum rivets must be used to attach nosepan:
   - PN 7621448, 3/16 x .652, Quantity required - 7
   - PN 7621403, 3/16 x .527, Quantity required - 39

All holes are to be drilled into the nosepan using a 7/32″ drill bit (.218″). **NOTE:** This will be larger than the diameter of the 3/16″ rivet.

3. Position new nosepan in place and attach to bulkhead at the top using (7) 3/16 x .652″ rivets (PN 7621448). See illustration below. All remaining holes require 3/16 x .527″ rivets (PN 7621403).

4. Make sure there is 1/4″ (.6 cm) clearance around the exhaust outlet.

5. Install foil (PN 5810108) in the same location as the original part.

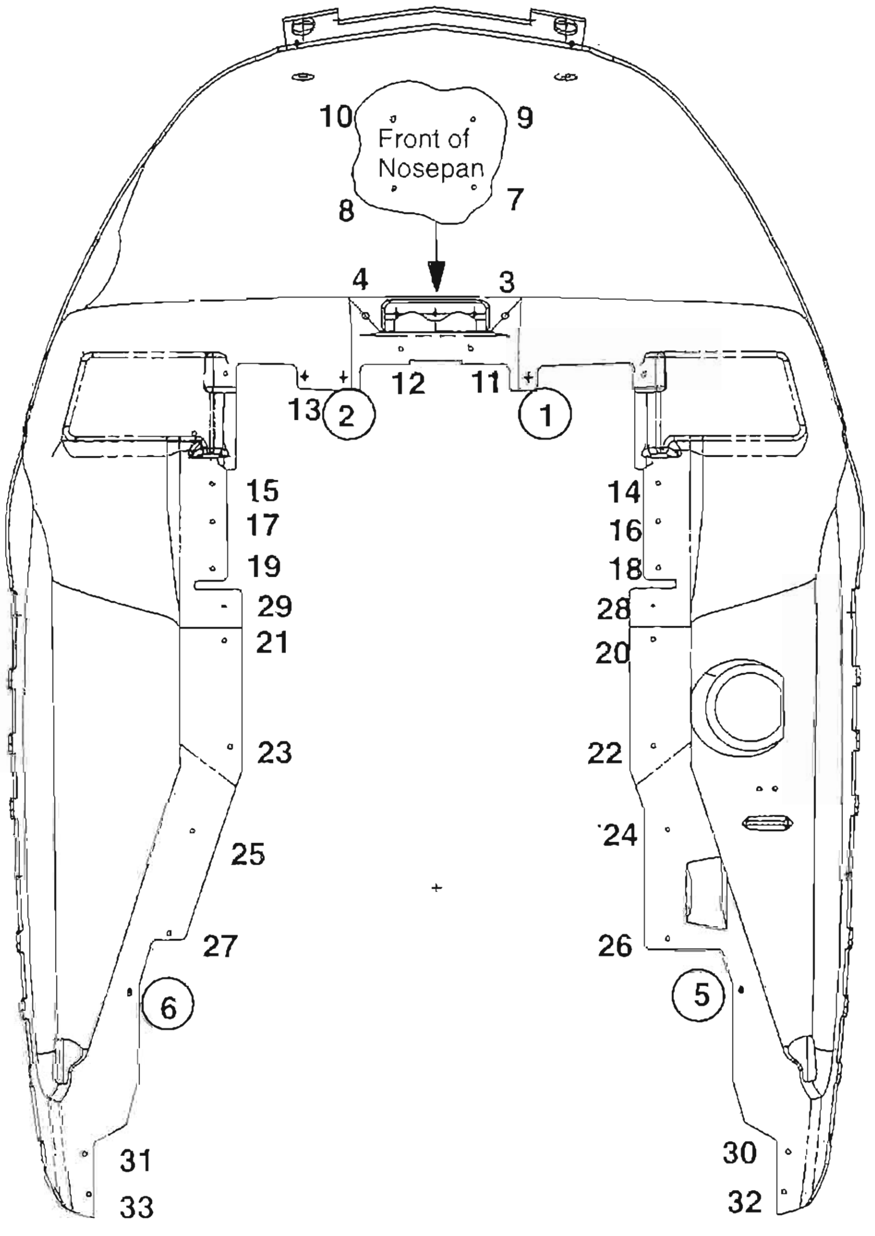


Nosepan Replacement Procedure - Evolved Style

IMPORTANT: When installing a replacement nosepan, this rivet sequence must be followed correctly in order to ensure proper nosepan and body panel fit.

NOTE: The rivet for polyethylene nosepans is PN 7621467.

NOTE: Rivet holes 14 through 19 may require drilling into the bulkhead. Circled rivet numbers 1, 2, 5 and 6 are locating holes used for proper alignment.



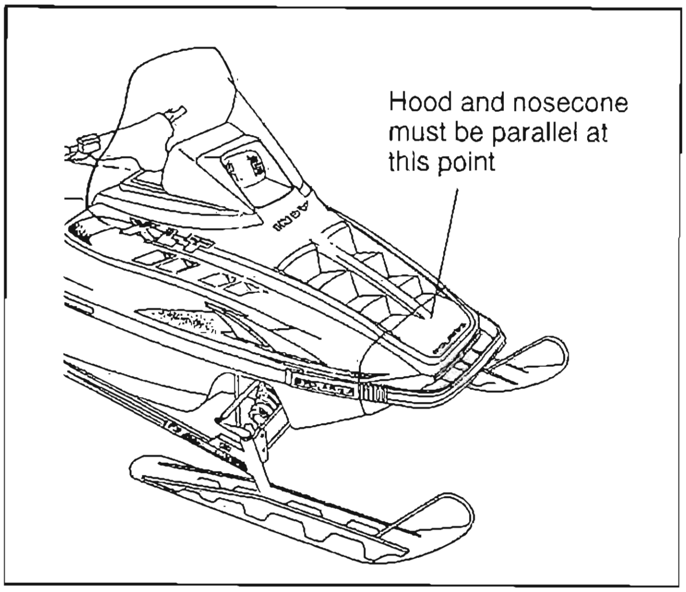
NOTE:
1. When transfer drilling holes do not force pan into a position which is not uniform with the other side. (Use the same method to drill both sides)

2. Rivet holes across from one another in unison.

Nosecone Alignment - Indy Style

To check nosecone alignment, place the nosecone in its mounting position. Look at the center extruded portion of the hood and nosecone to see if they are parallel. If adjustment is necessary, use the following procedure.

1. Remove nosecone and close hood.
2. Loosen six hood mounting bracket nuts located on bulkhead.
3. Slide hood to right or left depending on centering of nosecone.
4. Position nosecone on front of machine.

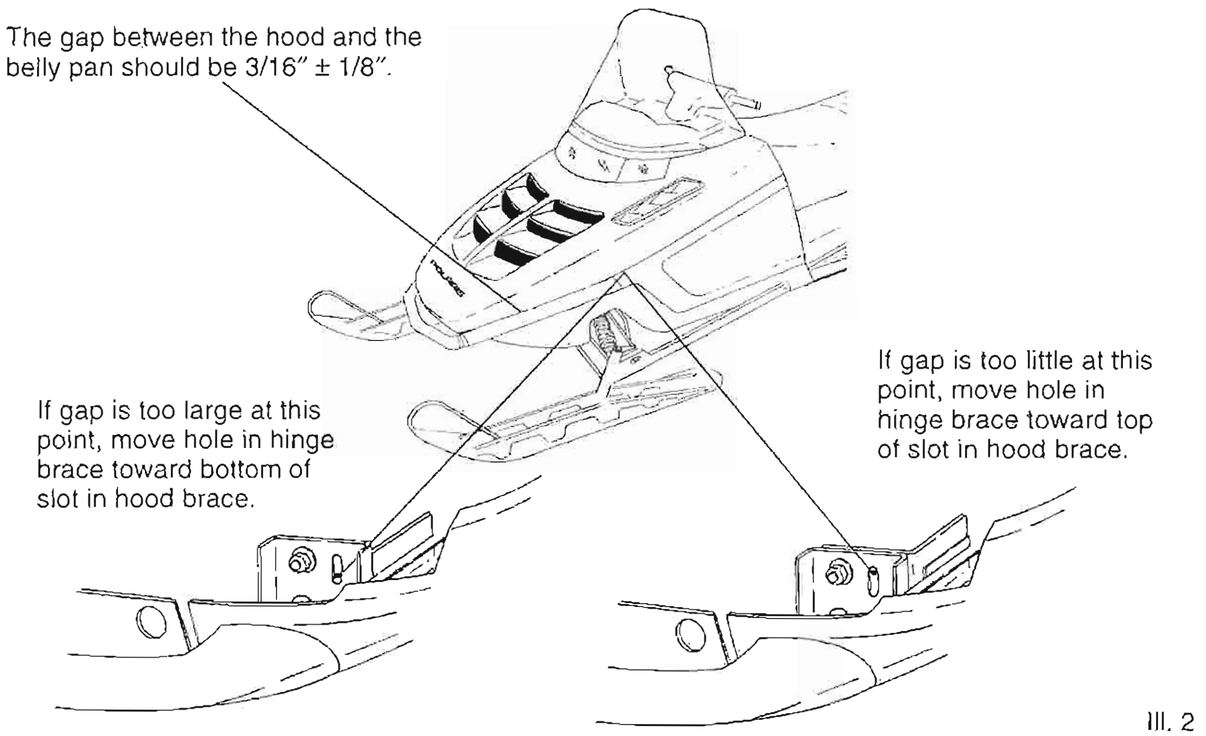


5. If proper alignment has been achieved, remove nosecone, tighten nuts loosened in step 2.
6. Install nosecone and secure with five mounting bolts and locknuts.
7. If proper alignment was not achieved, repeat step 3.

Hood to Belly Pan Alignment - Evolved Style

The gap between the hood and belly pan should always be 3/16″ ± 1/8″(4.8 mm ± 3 mm). Refer to Ill. 2 for adjustment procedures.

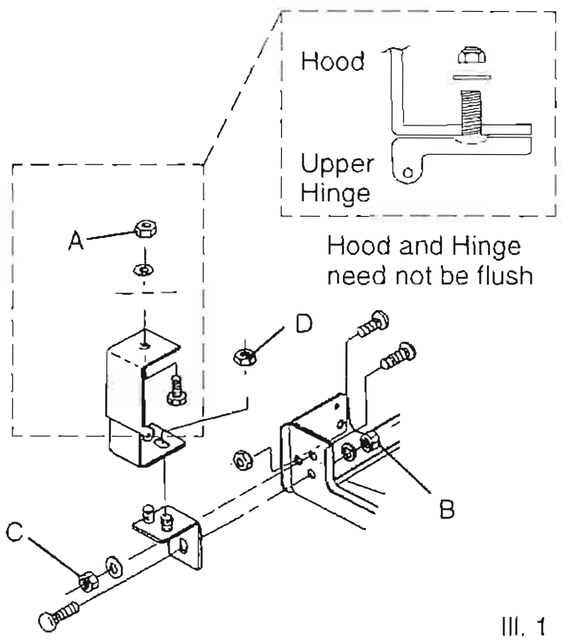
NOTE: Hood may have to be removed to make this adjustment.



Ill. 2

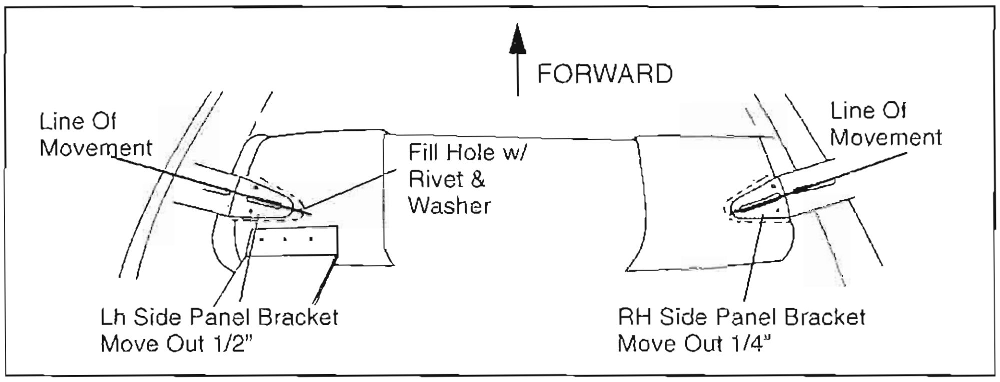
Hood Adjustment - Evolved Style

1. Check to see that hood and upper hood hinge are properly aligned. To adjust, loosen nuts (A) and align properly. Tighten nuts. See Ill. 1.
2. With hood open, loosen nut (B). See Ill. 1.
3. Close hood and remove both rubber plugs. Then, using a 7/16" (.4 cm) socket with an 8" (20 cm) extension, loosen nut (C). Adjust hood to pan gap. Tighten nuts.
4. Check outer perimeter alignment and front and rear alignment of hood, side bumpers and side panels. There should be 3/16"(.5cm) + 1/8"(.3cm) -0 clearance between hood to side panels and side bumpers. If adjustment is required, open hood and loosen nuts (D). Adjust and re-tighten one nut per hinge. Close hood and recheck alignment.
5. After correct alignment is achieved, tighten all nuts.



Ill. 1

Nosepan, Front Bumper and Side Bumper Adjustment - Evolved Style

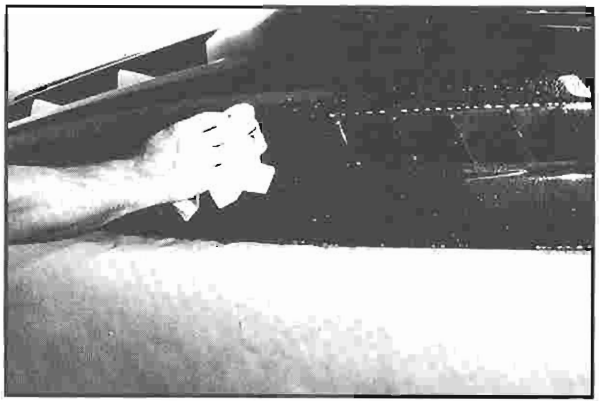


1. Open hood and remove side panels.
2. Remove foil tape covering right side nose pan bracket.
3. Drill out rivets (3) and slide bracket outward 1/4″ (6.35 mm) as shown in the illustration below. Be sure to mount the bracket at the same angle as before, so the side panel fits squarely against the mounting bracket.
4. Transfer drill holes in bracket to 3.16″ (.1875″ or 4.75 mm) and rivet in new location using rivet PN 7621485.
5. Apply a new section of foil tape (PN 5810908) over the bracket.
6. Repeat this procedure for the left side with the following exceptions: move the bracket outward **1/2″ (12.7 mm)**. Fill the open hole at the tip of the bracket with a rivet and washer.

Decal Removal and Installation

Decal Removal

1. Before removing old decal, it is important to note its position by marking it in several locations.
2. Remove old decal completely. **NOTE:** A small amount of solvent will aid in removing the old decal.
3. The decals are UV based. If heat will not remove decal, gently buff area with a mild abrasive. Use 3M Scotch Brite™ Graphics Removal Discs with a No. 1 Roloc and holder, or an equivalent low RPM buffing disc.



CAUTION:

Maintain 2500-3500 RPM to prevent damage to hood caused by excessive heat.

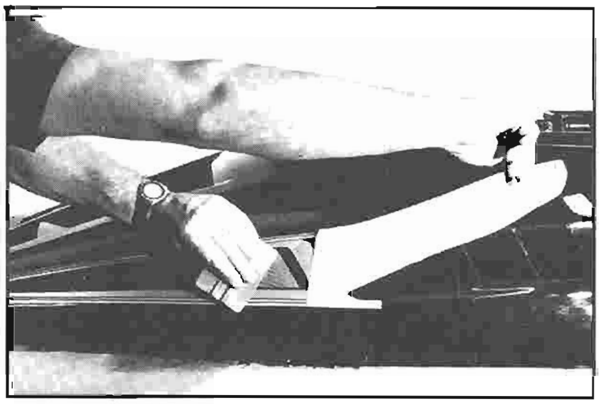
4. Remove any remaining decal adhesive with a citrus based cleaner or equivalent non-solvent based cleaner.
5. *Thoroughly clean* area where the new decal will be installed using a solution of mild soap (such as dishwashing liquid) and clean water. **NOTE:** Use approximately four ounces soap to one gallon water.

3M Scotchbrite™ Graphics Removal Disc
3M PN 048011-16855

No. 1 Roloc and holder
3M PN 048011-15408

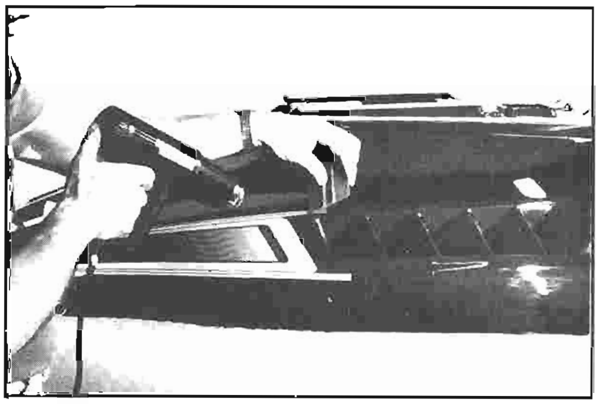
Decal Installation

1. Apply a solution of mild soap mixed with clean water to the area where the new decal is to be applied. Do not wipe off.
2. Carefully remove decal backing and apply new decal.
3. If decal does not have a pre-mask, apply additional soapy water solution to top of decal after it is in position.
4. Holding decal in position, remove all trapped air and soapy water solution from under decal using a clean, soft rubber squeegee to prevent scratching of decal surface.
5. If decal has a pre-mask, carefully remove.



NOTE: If the decal being applied needs to be stretched around a radius, follow these recommendations:

6. Fasten a straight edge to tail end of decal.
7. Pull or stretch remaining portion of decal around radius and into position. **NOTE:** A small amount of heat applied to the decal will aid in forming it to the radius. The mass of the decal which was secured in previous steps will hold it in position while pulling.
8. Again, apply soapy water solution to top of decal and remove trapped air using a clean, soft rubber squeegee. Use care to prevent scratching the decal surface.
9. Apply a small amount of heat to the decal to fasten it securely.
10. Carefully remove excess decal material.



Troubleshooting

Problem	Possible Cause	Solution
*Machine darts from side to side	-Incorrect ski toe alignment -Incorrect camber -Loose or worn steering components or fasteners -Cracked or broken skis, skags, or carbides	-Adjust to correct toe alignment -Adjust to correct camber -Tighten or replace -Replace if necessary
Tie rod hits trailing arm	-Steering arm installed incorrectly -Tie rod ends worn	-Index correctly in relation to -spindle -Replace if necessary
Steering has excessive freeplay	-Steering bellcrank bushing worn or loose -Drag link worn or loose -Steering post loose -Steering post bushings worn -Tie rod ends worn -Spindle bushings worn	-Tighten or replace if necessary -Tighten or replace if necessary -Tighten as needed -Replace if necessary -Tighten as needed -Replace if necessary
Front end bounces or sags	-IFS shock spring preload too soft -Improper shock charge or valving (if so equipped)	-Adjust spring tension on shocks -Recharge, service, or replace -shocks
Nosecone is not centered	-Hood misaligned	-Remove nosecone and center -hood

*Some machines with a wide front end may experience darting while following narrower machines on a trail. This is caused by the skis moving in and out of the narrower track left by the previous machine.

CHAPTER 8
SUSPENSION

1996 Independent Front Suspension (IFS)

Model	Front Suspension	Shock PN	Shock Description	IFS Spring PN*	Spring Rate
Indy Lite/GT/Deluxe	IFS 37	7041284	Hyd	7041261	105#/in
Indy Sport	IFS 38	7041284	Hyd	7041261	105#/in
Indy Sport Touring	IFS 38	7041285	Hyd	7041261	105#/in
Indy TranSport	IFS 38	7041284	Hyd	7041261	105#/in
Indy Super Sport	IFS 41	7041473	Air/Hyd/Cam	7041261	105#/in
Indy 440 XCR	IFS Xtra 10 CRC	7041401	IFP/Thread Adj.	7041396	50#/in
Indy 440 XCR SP	IFS Xtra 10 CRC	7041494	IFP/Thread Adj.	7041489	74/125 #/in.
Indy 600 XCR	IFS 41	7041474	IFP/Cam	7041252	120#/in
Indy 600 XCR SP	IFS 41	7041474	IFP/Cam	7041358	160#
Indy WideTrak GT/LX	IFS 38.5	7041284	Hyd	7041261	105#/in
Indy Trail	IFS 41	7041388	Air/Hyd/Cam	7041261	105#/in
Indy Trail Touring	IFS 41 Xtra 10	7041423	Air/Hyd/Cam	7041405	65#/in
Indy 440 LC	IFS 41	7041388	Air/Hyd/Cam	7041261	105#/in
Indy 500	IFS 41	7041388	Air/Hyd/Cam	7041261	105#/in
Indy 500 SKS	IFS 41 Xtra 10	7041423	Air/Hyd/Cam	7041405	65#/in
Indy 500 RMK	IFS 41 Xtra 10	7041423	Air/Hyd/Cam	7041405	65#/in
Indy 500 EFI	IFS 42.5 Xtra 12	7041424	Air/Hyd/Cam	7041396	50#/in
Indy 500 EFI SKS	IFS 41 Xtra 10	7041423	Air/Hyd/Cam	7041405	65#/in
Indy 500 EFI RMK	IFS 38	7041423	Air/Hyd/Cam	7041405	65#/in
Indy Classic	IFS 42.5 Xtra 12	7041424	Air/Hyd/Cam	7041396	50#/in
Indy Classic Touring	IFS 42.5 Xtra 12	7041427	Air/Hyd/Cam	7041396	50#/in
Indy XLT	IFS 42.5 Xtra 12	7041424	Air/Hyd/Cam	7041396	50#/in
Indy XLT SP	IFS 42.5 Xtra 12	7041385	IFP	7041396	50#/in
Indy XLT SKS	IFS 41 Xtra 10	7041423	Air/Hyd/Thread Preload Adj	7041405	65#/in
Indy XLT RMK	IFS 38	7041427	Air/Hyd/Thread Preload Adj	7041396	50#/in
Indy XLT Touring	IFS 42.5 Xtra 12	7041427	Air/Hyd/Cam	7041396	50#/in
Indy RXL	IFS 42.5 Xtra 12	7041385	Air/Hyd/Thread Preload Adj	7041398	75#/in
Indy Ultra SP	IFS 41	7041474	IFP	7041405	65#/in
Indy Ultra RMK	IFS 38	7041427	Air/Hyd/Thread Preload Adj	7041396	50#/in
Indy Ultra SKS	IFS 41 Xtra 10	7041423	Air/Hyd/Thread Preload Adj	7041405	65#/in
Indy Storm/SKS	IFS 41	7041474	IFP	7041358	160#/in
Indy Storm RMK	IFS 38	7041494	IFP	7041358	160#/in

KEY: Hyd - Hydraulic Standard Shock   Gas IFP - Gas Charged Internal Floating Piston, Fox Shock
Select - Gabriel Select Adjustable Shock **NOTE:** All pounds referred to in the spring rate column are ± 10%

* Add a suffix of "-067" to spring part number when ordering

1996 Rear Suspension

Model	Rear Suspen-sion	Front Track Shock PN	Front Track Shock Desc.	Spring PN*	Spring Rate	Rear Track Shock PN	Rear Track Shock Desc.	Spring PN*	Spring Rate	Torsion Spring Dia.
Indy Lite/GT/Dlx	Sport Style	7041142	Hyd	7041127	181#/in	7041154	Hyd	N/A	N/A	.393
Indy Sport	Sport Style	7041142	Hyd	7041127	181#/in	7041154	Hyd	N/A	N/A	.393
Indy Sport Trg.	Xtra 10	7041430	Hyd	7041253	200/var	7041438	Indy Select	N/A	N/A	.421
Indy TranSport	Sport Style	7041142	Hyd	7041127	181#/in	7041154	Hyd	N/A	N/A	N/A
Indy Super Sport	Xtra 10	7041430	Hyd	7041253	200/var	7041441	Indy Select	N/A	N/A	.406
Indy 440 XCR	Xtra 10	7041402	IFP Gas	7041253	200/var	7041444	Fox IFP Gas	N/A	N/A	.406
Indy 440 XCR SP	Xtra 10	7041507	Fox™ Re-mote	7041508	190#/in	7041492	Fox IFP Gas	N/A	N/A	.421
Indy 600 XCR	Xtra 10	7041402	IFP Gas	7041253	200/var	7041444	Fox IFP Gas	N/A	N/A	.406
Indy 600 XCR SP	Xtra 10	7041402	IFP Gas	7041253	200/var	7041444	Fox IFP Gas	N/A	N/A	.406
Indy WideTrak GT	WideTrak Style	7041281	Hyd	7041140	181#/in	7041290	Hyd (2)	N/A	N/A	.468
Indy WideTrak LX	WideTrak Style	7041281	Hyd	7041140	181#/in	7041280	Hyd (2) Cam Adj	7041261	105#/in	.468
Indy Trail	Xtra 10	7041430	Hyd	7041253	200/var	7041441	Indy Select	N/A	N/A	.406
Indy Trail Trg.	Xtra 10	7041430	Hyd	7041253	200/var	7041438	Indy Select	N/A	N/A	.421
Indy 440 LC	Xtra 10	7041430	Hyd	7041253	200/var	7041441	Indy Select	N/A	N/A	.406
Indy 500	Xtra 10	7041430	Hyd	7041253	200/var	7041441	Indy Select	N/A	N/A	.406
Indy 500 SKS/ RMK	Xtra 10	7041430	Hyd	7041253	200/var	7041438	Indy Select	N/A	N/A	.406
Indy 500 EFI	Xtra 12	7041433	Indy Select Thread Adj	7041351	75-125 #/in	7041440	Nitrogen Cell	7041253	200/var #/in	.406
Indy 500 EFI SKS/RMK	Xtra 10	7041430	Hyd	7041253	200/var	7041438	Indy Select	N/A	N/A	.406
Indy Classic	Xtra 12	7041433	Indy Select Thread Adj	7041351	75-125 #/in	7041440	Nitrogen Cell	7041253	200/var #/in	.406
Indy Classic Trg.	Xtra 12	7041485	Indy Select Thread Adj	7041404	90-150 #/in	7041481	Nitrogen Cell	7041482	250#/in	.437
Indy XLT	Xtra 12	7041433	Indy Select Thread Adj	7041351	75-125 #/in	7041440	Nitrogen Cell	7041253	200/var #/in	.406
Indy XLT SP	Xtra 12	7041386	Fox IFP Gas Thread Adj	7041351	75-125 #/in	7041480	Fox IFP Gas	7041253	200/var #/in	.406
Indy XLT SKS/ RMK	Xtra 10	7041430	Hyd	7041253	200/var	7041438	Indy Select	N/A	N/A	.406
Indy XLT Trg.	Xtra 12	7041486	Ryde AFX Thread Adj	7041404	90-150 #/in	7041481	Nitrogen Cell	7041482	250#/in	.437
Indy RXL	Xtra 12	7041386	Fox IFP Thread Adj	7041351	75-125 #/in	7041480	Fox IFP Gas	7041253	200/var #/in	.406
Indy Ultra SP	Xtra 10	7041402	Fox IFP Gas	7041253	200/var	7041444	Fox IFP Gas	N/A	N/A	.406
Indy Ultra SKS/ RMK	Xtra 10	7041430	Hyd	7041253	200/var	7041438	Indy Select	N/A	N/A	406
Indy Storm/ SKS/RMK	Xtra 10	7041402	Fox IFP Gas	7041253	200/var	7041444	Fox IFP Gas	N/A	N/A	.406

* Add a suffix of "-067" to spring part number when ordering

1997 Independent Front Suspension (IFS)

Model	Front Suspension	Shock PN	Shock Description	IFS Spring PN*	Spring Rate
Indy Lite/GT/Deluxe	Lite	7041284	Hyd	7041261	105#/in
Indy Sport	IFS 38x7	7041535	Hyd	7041261	105#/in
Indy Sport Touring	IFS 38x7	7041562	Hyd	7041261	105#/in
Indy TranSport	IFS 38x7	7041535	Hyd	7041261	105#/in
Indy Super Sport	IFS Xtra-10	7041496	Nitrogen Cell Thread Adj.	7041396	50#/in
Indy XCF	IFS Xtra-10 CRC	7041523	Indy Select Thread Adj.	7041552	80#/in
Indy Trail/Trail Touring	IFS Xtra-10	7041496	Nitrogen Cell Thread Adj.	7041552	80#/in
Indy Trail RMK	IFS 38 RMK	7041544	Nitrogen Cell Thread Adj.	7041552	80#/in
Indy WideTrak GT/LX	IFS 38x7	7041535	Hyd	7041261	105#/in
Indy 440 LC	IFS Xtra-10	7041496	Nitrogen Cell Thread Adj.	7041552	80#/in
Indy 440 XC	IFS Xtra-10 CRC	7041593	Gas IFP Thread Adj.	7041489	120#/in
Indy 440 XCR	IFS XC-10 CRC	7041494	Gas IFP Thread Adj.	7041489	120#/in
Indy 500/SKS	IFS Xtra-10	7041496	Nitrogen Cell Thread Adj.	7041552	80#/in
Indy 500 RMK	IFS 38 RMK	7041544	Nitrogen Cell Thread Adj.	7041552	80#/in
Indy Classic	IFS Xtra-12	7041539	Nitrogen Cell Thread Adj.	7041398	75#/in
Indy Classic Touring	IFS Xtra-12	7041503	Indy Select Thread Adj.	7041551	100#/in
Indy 500 EFI	IFS Xtra-12	7041539	Nitrogen Cell Thread Adj.	7041398	75#/in
Indy XLT/SKS	IFS Xtra-10	7041538	Nitrogen Cell Thread Adj.	7041552	80#/in
Indy XLT LTD/LTD SP	IFS Xtra-12	7041503	Indy Select Thread Adj.	7041552	80#/in
Indy XLT Touring	IFS Xtra-12	7041503	Indy Select Thread Adj.	7041551	100#/in
Indy XLT RMK	IFS 38 RMK	7041543	Nitrogen Cell Thread Adj.	7041552	80#/in
Indy XLT SP	IFS Xtra-12	7041537	Gas IFP Thread Adj.	7041552	80#/in
Indy 600 XC	IFS Xtra-10 CRC	7041536	Gas IFP Thread Adj.	7041550	120#/in
Indy 600 XCR/SE	IFS Xtra-10 CRC	7041540	Gas IFP Thread Adj.	7041575	120#/in
Indy RXL	IFS Xtra-12	7041524	Ryde AFX Thread Adj.	7041550	120#/in
Indy Ultra	IFS Xtra-12	7041503	Indy Select Thread Adj.	7041550	120#/in
Indy Ultra Touring	IFS Xtra-12	7041524	Ryde AFX Thread Adj.	7041549	140#/in
Indy Ultra SP	IFS Xtra-10 CRC	7041523	Indy Select Thread Adj.	7041550	120#/in
Indy Ultra SPX/SE	IFS Xtra-10 CRC	7041540	Gas IFP Thread Adj.	7041575	120#/in
Indy 700 XC	IFS XC-10 CRC	7041494	Gas IFP Thread Adj.	70411489	120#/in
Indy 700 SKS	IFS Xtra-10 CRC	7041538	Nitrogen Cell Thread Adj.	7041552	80#/in
Indy 700 RMK	IFS 38 RMK	7041543	Nitrogen Cell Thread Adj.	7041552	80#/in
Indy Storm/SE	IFS Xtra-10	7041540	Gas IFP Thread Adj.	7041575	120#/in
Indy Storm RMK	IFS 38 RMK	7041545	Gas IFP Thread Adj.	7041574	140#/in

KEY: Hyd - Hydraulic Standard Shock Gas IFP - Gas Charged Internal Floating Piston, Fox Shock Select - Gabriel Select Adjustable Shock **NOTE:** All pounds referred to in the spring rate column are ± 10%

* Add a suffix of "-067" to spring part number when ordering

1997 Rear Suspension

Model	Rear Suspension	Front Track Shock PN	Front Track Shock Desc.	Spring PN*	Spring Rate	Rear Track Shock PN	Rear Track Shock Desc.	Spring PN*	Spring Rate	Torsion Spring Dia.
Indy Lite/Dlx	Xtra Lite	7041516	Hyd	7041570	80#/in	7041515	Hyd	N/A	N/A	.393
Indy Lite GT	Xtra Lite	7041516	Hyd	7041127	181#/in	7041154	Hyd	N/A	N/A	.393
Indy Sport	Xtra Lite	7041516	Hyd	7041569	60#/in	7041515	Hyd	N/A	N/A	.393
Indy Sport Trg.	Xtra 10 133.5	7041430	Hyd	7041253	200/var	7041438	Indy Select	N/A	N/A	.421
Indy TranSport	Sport Style	7041142	Hyd	7041127	181#/in	7041154	Hyd	N/A	N/A	.406
Indy Super Sport	Xtra 10 121	7041430	Hyd	7041253	200/var	7041441	Indy Select	N/A	N/A	.406
Indy XCF	Xtra 10 121	7041596	Ryde AFX	7041253	200/var	7041597	Ryde AFX	N/A	N/A	.406
Indy Trail	Xtra 10 121	7041430	Hyd	7041253	200/var	7041441	Indy Select	N/A	N/A	.406
Indy Trail Trg.	Xtra 10 133.5	7041430	Hyd	7041253	200/var	7041438	Indy Select	N/A	N/A	.421
Indy Trail RMK	Xtra 10 133.5	7041430	Hyd	7041253	200/var	7041577	Indy Select	N/A	N/A	.421
Indy WideTrak GT	WideTrak Style	7041281	Hyd	7041140	181#/in	7041290	Hyd (2)	N/A	N/A	.468
Indy WideTrak LX	WideTrak Style	7041281	Hyd	7041140	181#/in	7041280	Hyd (2) Cam Adj	7041261	105#/in	.468
Indy 440 LC	Xtra 10 121	7041430	Hyd	7041253	200/var	7041441	Indy Select	N/A	N/A	.406
Indy 440 XC	Xtra 10 Fox™	7041507 or 7041641	IFP Gas RA	7041508	190#/in	7041492	IFP Gas	N/A	N/A	.421
Indy 440 XCR	Xtra 10 Fox™	7041641	IFP Gas RA	7041508	190#/in	7041599	IFP Gas	N/A	N/A	.421
Indy 500	Xtra 10 121	7041430	Hyd	7041253	200/var	7041441	Indy Select	N/A	N/A	.406
Indy 500 SKS	Xtra 10 133.5	7041430	Hyd	7041253	200/var	7041567	Indy Select	N/A	N/A	.406
Indy 500 RMK	Xtra 10 133.5	7041430	Hyd	7041253	200/var	7041577	Indy Select	N/A	N/A	.421
Indy Classic	Xtra 12 121	7041586	Hyd	7041351	75/125 #/in	7041587	Gas Bag	7041561	85#/in	.406
Indy Classic Trg.	Xtra 12 133.5	7041485	Indy Select	7041404	90/150 #/in	7041481	Indy Select	7041484	275#/in	.437
Indy 500 EFI	Xtra 12 121	7041586	Indy Select	7041351	75/125 #/in	7041587	Gas Bag	7041561	85#/in	.406
Indy XLT	Xtra 10 121	7041590	Hyd	7041253	200/var	7041567	Indy Select	N/A	N/A	.421
Indy XLT LTD/ LTD SP	Xtra 12 121	7041586	Indy Select	7041351	75/125 #/in	7041587	Gas Bag	7041561	85#/in	.406
Indy XLT Trg.	Xtra 12 133.5	7041486	Indy Select	7041404	90/150 #/in	7041481	Indy Select	7041484	275#/in	.437
Indy XLT SKS	Xtra 10 133.5	7041430	Hyd	7041253	200/var	7041567	Indy Select	N/A	N/A	.406
Indy XLT RMK	Xtra 10 133.5	7041430	Hyd	7041253	200/var	7041577	Indy Select	N/A	N/A	.421
Indy XLT SP	Xtra 12 121 Fox™	7041386	IFP Gas	7041351	75/125 #/in	7041480	IFP Gas	7041561	85#/in	.406

* Add a suffix of "-067" to spring part number when ordering

1997 Rear Suspension Cont.

Model	Rear Suspension	Front Track Shock PN	Front Track Shock Desc.	Spring PN*	Spring Rate	Rear Track Shock PN	Rear Track Shock Desc.	Spring PN*	Spring Rate	Torsion Spring Dia.
Indy 600 XC	Xtra 10 121 Fox™	7041584	IFP Gas	7041253	200/var	7041585	IFP Gas	N/A	N/A	.421
Indy 600 XCR/ SE	Xtra 10 121 Fox™	7041589	IFP Gas	7041253	200/var	7041595	IFP Gas	N/A	N/A	.421
Indy RXL	Xtra 12 121	7041559	AFX	7041351	75/125 #/in	7041560	Ryde AFX	7041561	85 #/in	.406
Indy Ultra	Xtra 12 121	7041433	Indy Select	7041351	75/125 #/in	7041440	Gas Bag	7041364	126#/in	.406
Indy Ultra SP	Xtra 10 121	7041590	Hyd	7041253	200/var	7041567	Indy Select	N/A	N/A	.421
Indy Ultra Trg.	Xtra 12 133.5	7041594	AFX	7041404	90/150 #/in	7041548	Ryde AFX	7041484	275#/in	.437
Indy Ultra SPX/ SE	Xtra 10 121 Fox™	7041589	IFP Gas	7041253	200/var	7041595	IFP Gas	N/A	N/A	.421
Indy 700 SKS/ RMK	Xtra 10 133.5	7041606	Hyd	7041253	200/var	7041438	Indy Select	N/A	N/A	.421
Indy Storm/SE	Xtra 10 121 Fox™	7041589	IFP Gas	7041253	200/var	7041595	IFP Gas	N/A	N/A	.421
Indy Storm RMK	Xtra 10 133.5	7041589	IFP Gas	7041253	200/var	7041588	IFP Gas	N/A	N/A	.421

* Add a suffix of "-067" to spring part number when ordering

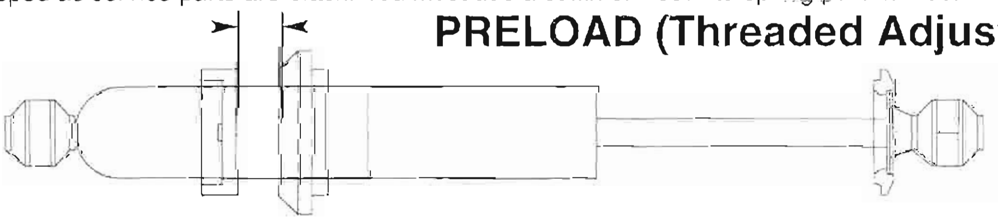
1998 IFS Data - Set-Up & Adjustment

1998 Model	Front Suspension Type	Shock Description	IFS Shock PN	IFS Spring PN*	Spring Rate	Spring Pre-Load
Lite/Lite Dlx/Lite Trg	Lite	Hyd	7041284	7041261	105#/in	3 Shims
Sport	IFS 38x7	Hyd	7041535	7041261	105#/in	1 Shim
TranSport	IFS 38x7	Hyd	7041535	7041261	105#/in	3 Shims
Sport Touring	IFS 38x7	N Cell Thr Adj.	7041562	7041598	105#/in	.13″
XCF	IFS Xtra-10 CRC	Select Thr Adj.	7041523	7041552	80#/in	1.0″
Super Sport	IFS Xtra-10	N Cell Thr Adj.	7041496	7041552	80#/in	1.0″
Trail	IFS Xtra-10	N Cell Thr Adj.	7041496	7041552	80#/in	.75″
Trail Touring	IFS Xtra-10	N Cell Thr Adj.	7041496	7041683	80#/in	.13″
Trail RMK	IFS 38 RMK	N Cell Thr Adj.	7041544	7041552	80#/in	.3″
WideTrak LX	IFS 38x7	Hyd	7041535	7041261	105#/in	3 Shims
440 LC	IFS Xtra-10	N Cell Thr Adj.	7041496	7041552	80#/in	.8″
440 XCR	IFS XC-10 CRC	Gas IFP Thr Adj.	7041692	7041489	74/120#	.625
500	IFS Xtra-10 CRC	N Cell Thr Adj.	7041496	7041552	80#/in	.8″
500 RMK	IFS 38 RMK	N Cell Thr Adj.	7041544	7041552	80#/in	.6″
Classic	IFS Xtra-12	N Cell Thr Adj.	7041539	7041405	65#/in	.75″
Classic Touring	IFS Xtra-12	Select Thr Adj.	7041503	7041551	100#/in	.4″
XLT LTD	IFS Xtra-12	Select Thr Adj.	7041503	7041398	75#/in	.25″
XLT Touring	IFS Xtra-12	Select Thr Adj.	7041503	7041550	120#/in	.13″
XLT SP	IFS Xtra-10 CRC	Select Thr Adj.	7041523	7041405	65#/in	.75″
XLT Classic	IFS XTRA-12	Select Thr Adj.	7041503	7041398	75#/in	.75
600 XC	IFS XC-10 CRC	Gas IFP Thr Adj.	7041697	7041613	75#/in	.75″
600 XCR	IFS Xtra-10 CRC	Gas IFP Thr Adj.	7041540	7041575	120#/in	1.5″
600 RMK	IFS 38 RMK CRC	N Cell Thr Adj.	7041543	7041551	100#/in	.13″
Ultra	IFS Xtra-12	Select Thr Adj.	7041503	7041550	120#/in	.13″
Ultra Touring	IFS Xtra-12	Ryde AFX Thr Adj.	7041524	7041549	140#/in	.63″
700 XC	IFS XC-10 CRC	Gas IFP Thr Adj.	7041697	7041613	75#/in	.75″
700 XCR	IFS Xtra-10 CRC	Gas IFP Thr Adj.	7041540	7041575	120#/in	1.5″
700 RMK	IFS 38 RMK CRC	N Cell Thr Adj.	7041543	7041551	100#/in	.13″
Storm	IFS Xtra-10	Gas IFP Thr Adj.	7041540	7041575	120#/in	1.55″

KEY: **Hyd** - Hydraulic Standard Shock; **Gas IFP** - Gas Charged Internal Floating Piston, Fox Rebuildable Shock; **Select** - Gabriel Select Adjustable Shock, non-rebuildable; **Ryde AFX**; Ryde AFX Adjustable Shock, non-rebuildable; **N Cell** - Nitrogen Cell; **Thr Adj.** - Threaded Adjuster; **NOTE:** All pounds referred to in the spring rate column are ± 10%

*All springs shipped as service parts are black. You must add a suffix of "-067" to spring part number when ordering

PRELOAD (Threaded Adjusters)



Model	Rear Suspension	Front Track Shock PN	Front Track Shock (Type)	Front Track Shock Spring PN*	Front Track Shock Spring Rate (lb./in.)	Rear Track Shock PN	Rear Track Shock Desc.	Torsion Spring Part Number* Left / Right (Rear Track Shock Spring)	Torsion Spring Diameter / Angle (Rear Shock Spring Rate)	
Lite/Dlx	Xtra Lite	7041516	Hyd	7041570	80#/in	7041665	Hyd	7041557/7041558	.393	80°
Lite Trng	Xtra Lite-133	7041516	Hyd	7041570	80#/in	7041666	Hyd	7041461/7041462	.421	77°
Sport	Xtra Lite	7041516	Hyd	7041569	60#/in	7041665	Hyd	7041521/7041522	.406	82°
Sport Trng	Xtra Lite 133	7041516	Hyd	7041570	80#/in	7041666	Hyd	7041461/7041462	.421	77°
TranSport	141 GT	7041719	Hyd	7041710	181#/in	7041154	Hyd	7041320/7041321	.406	75°
XCF	Xtra-10	7041596	Ryde AFX	7041253	200/var	7041667	Ryde AFX	7041463/7041464	.406	77°
440 LC	Xtra-10	7041430	Hyd	7041253	200/var	7041441	Select	7041463/7041464	.406	77°
440 XCR	Xtra 10	7041706	FOX IFP	7041508	190#/in	7041707	FOX IFP	7041461/7041462	.421	77°
Trail	Xtra 10	7041430	Hyd	7041253	200/var	7041441	Select	7041463/7041464	.406	77°
Trail Trng	Xtra 10 133.5	7041430	Hyd	7041253	200/var	7041438	Select	7041465/7041466	.437	77°
Trail RMK	Xtra 10 133.5	7041430	Hyd	7041253	200/var	7041577	Select	7041461/7041462	.421	77°
Super Sport	Xtra 10	7041430	Hyd	7041253	200/var	7041441	Select	7041463/7041464	.406	77°
WideTrak LX	WideTrak 156	7041711	Hyd	7041712	181#/in	7041280	Hyd	7041239/7041240	.468	74°
500	Xtra 10	7041430	Hyd	7041253	200/var	7041441	Select	7041463/7041464	.406	77°
500 RMK	Xtra 10 133.5	7041430	Hyd	7041253	200/var	7041577	Select	7041461/7041462	.421	77°
Classic	Xtra 12	7041586	Select	7041351	75/125	7041587	Gas Bag	7041394/7041395 (7041561)	.406 (85#/in)	55° –
Classic Trg	Xtra 12 133.5	7041485	Select	7041404	90/150 #/in	7041481	Select	7041487/7041488 (7041484)	.437 (275#/in)	77° –
XLT SP	Xtra-10	7041639	Ryde FX	7041253	200/var	7041694	Ryde AFX	7041461/7041462	.421	77°
XLT LTD	Xtra 12	7041586	Select	7041351	75/125	7041587	Gas Bag	7041394/7041395 (7041561)	.406 (85#/in)	55° –
XLT Trng	Xtra 12 133.5	7041486	Select	7041404	90/150	7041481	Select	7041487/7041488 (7041484)	.437 (275#/in)	77° –
XLT Classic	Xtra 12	7041559	AFX/Elect	7041351	75/125	7041560	Ryde AFX	7041394/7041395 (7041561)	.406 (85#/in)	55° –
600 XC	Xtra 10	7041639	Ryde FX	7041253	200/var	7041640	Ryde AFX	7041461/7041462	.421	77°
600 RMK	Xtra-10 136	7041606	Hyd	7041253	200/var	7041438	Select	7041461/7041462	.421	77°
600 XCR	Xtra 10	7041642	FOX IFP	7041253	200/var	7041695	FOX IFP	7041461/7041462	.421	77°
Ultra	Xtra 12	7041433	Select	7041351	75/125	7041440	Gas Bag	7041394/7041395 (7041364)	.406 (126#/in)	55° –
Ultra Trng	Xtra 12 133.5	7041594	Select	7041404	90/150	7041548	Ryde AFX	7041487/7041488 (7041484)	.437 (275#/in)	77°
700 XC	Xtra-10	7041639	Ryde FX	7041253	200/var	7041640	Ryde AFX	7041461/7041462	.421	77°
700 XCR	Xtra 10	7041642	FOX IFP	7041253	200/var	7041695	FOX IFP	7041461/7041462	.421	77°
700 RMK	Xtra 10 136	7041606	Hyd	7041253	200/var	7041438	Select	7041461 7041462	.421	77°
Storm	Xtra 10	7041642	FOX IFP	7041253	200/var	7041695	FOX IFP	7041461/7041462	.421	77°

*All springs shipped as service parts are black. You must add a suffix of "-067" to spring part number when ordering.

Adjustable Torsion Bar

Operation: For high performance applications the torsion bar can be adjusted for any number of varying conditions.

Adjustment: Each side is individually adjustable.

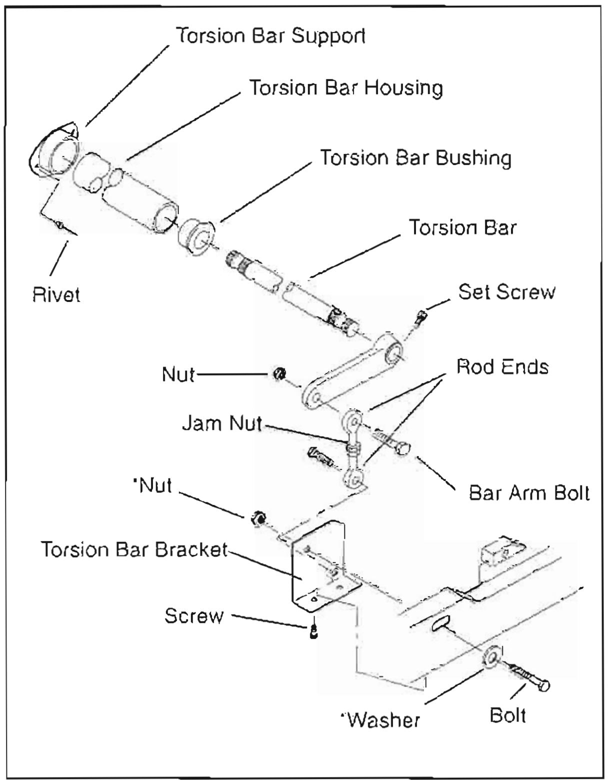
1. Rider must be in position on the machine.
2. Loosen rod end jam nuts on both left and right sides.
3. Adjust rod until there is a small amount of free play detectable on all rod ends.
4. Tighten jam nuts securely.

Maintenance: Periodic inspection of the support area, set screw and bar arm bolts is recommended to prevent arm to spline loosening. Periodic lubrication of the bushings is required using Polaris Low Temp or Premium All Season grease.

NOTE: Refer to kit instructions for proper assembly.

Polaris Low Temp Grease PN 2870577
Polaris Premium All Season Grease PN 2871423

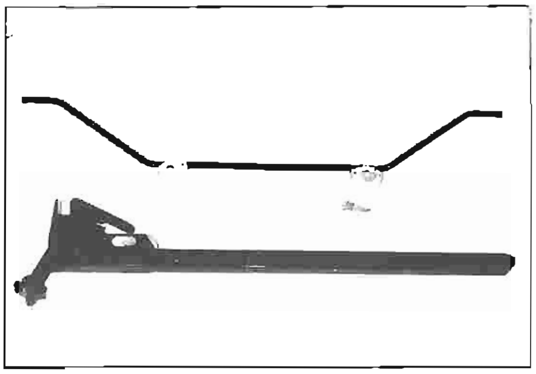
Adjustable Torsion Bar Kit
PN 2871035



*Parts for new style liquid twin models.

Torsion Bar Removal

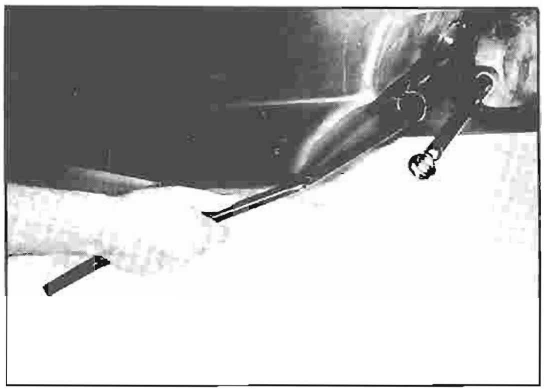
1. Remove trailing arm assembly.
2. Using a small pin punch, tap out the rivet mandrels in the center of the torsion bar support rivets.



3. Using a 1/4″ bit, drill out the center portion of the rivets.
4. Punch out the rivet body.
5. Remove support and torsion bar.
6. Repeat procedure for second torsion bar.

Torsion Bar Installation

1. Rivet support in place using Polaris PN 7621449 rivets. **NOTE:** *These high strength "Q" rivets are the only replacement rivets recommended for this application.*



Torsion Bar Support Rivets
PN 7621449

2. Reinstall torsion bar.
3. Reinstall trailing arm assembly.
4. Check camber and toe adjustments. Refer to Chapter 2.

NOTE: Accurate set up is critical for proper function of front suspension. Refer to Body and Steering, Chapter 7, for set up dimensions.

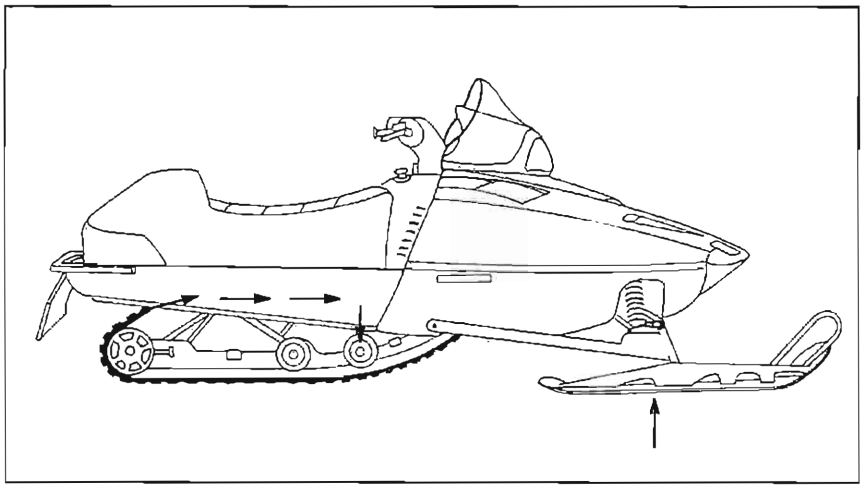
Rear Suspension Operation

The primary function of the rear suspension is to provide a comfortable ride in all types of riding conditions. It separates the rider from the ground, while allowing for complete vehicle control. The rear suspension also must provide weight transfer and maintain track tension.

The rear suspension has many adjustable features for fine tuning to achieve optimum comfort. The suspension can be adjusted to suit rider preference and deliver excellent performance for a given set of conditions. It should be noted, however, that suspension adjustments involve a compromise or trade off. A machine set up to perform well in the moguls would not suit the preference of a groomed trail rider.

Weight Transfer

The shifting of weight from the skis to the track is called weight transfer. As engine torque is applied to the drive axle the torque is transferred to the track, pulling it forward. This energy also tries to pull the suspension forward. The front torque arm reacts to this force by pushing down on the front of the track, in effect applying more weight to the track and reducing the weight on the skis. It is important to note that energy used to lift the front of the machine is not available to push the vehicle forward.



Changing the angle of the front torque arm changes the suspension's reaction to the force. Adjusting the length of the limiter strap will change the front torque arm angle. Shortening the strap limits the extension of the front of the suspension; reducing the angle of the torque arm and increasing ski pressure. Lengthening the strap allows the front of the suspension to extend further; increasing the angle of the torque arm and decreasing ski pressure. Limiter strap adjustment has a great affect on weight transfer. It is important to check track tension whenever limiter strap length is changed.

Front track shock spring preload also affects weight transfer. A stiffer spring and/or more preload on the spring transfers more weight to the track. A softer spring and/or less preload keeps more weight on the skis. Keep your riding application in mind when choosing springs and setting spring preload. Soft springs/preload will increase ski pressure, but may bottom out. Stiff springs/preload will provide more track pressure (reduced ski pressure), but may result in a less comfortable ride.

During acceleration, the rear of the suspension will compress and the IFS will extend, pivoting the machine. Because of this pivoting effect, rear spring and spring preload also have some effect on weight transfer. Softer rear springs, or less preload, allow more weight transfer to the track and reduce ski pressure. Stiffer rear springs, or increased preload, allow less weight transfer to the track and increase ski pressure. The main function of the rear torque arm is to support the weight of the vehicle and rider, as well as to provide enough travel to absorb bumps and jumps.

Shock valving also has an effect on weight transfer. Refer to shock tuning information beginning on page 8.83.

Springs

Two types of springs are employed in Polaris suspensions, coil springs and torsion springs. Following is some of the terminology used when referring to coil springs.

- *Free length* - the length of a coil spring with no load applied to the spring
- *Installed length* - the length of the shock absorber between the spring retainers. If the installed length of the spring is less than the free length, it will be pre-loaded.
- *Spring rate* - the amount of force required to compress a coil spring one inch. For example, if 150 pounds of force are required to compress a spring 1 inch, the spring rate would be 150 #/in.

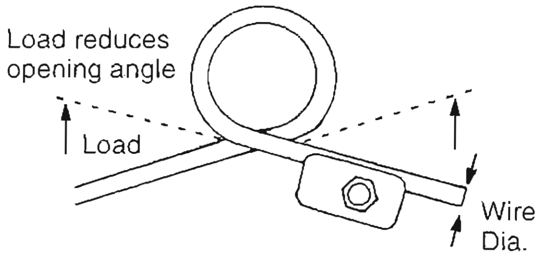
Coil Spring

- *Straight rate spring* - the spring requires the same amount of force to compress the last one inch of travel as the first one inch of travel. For example, if a 150 #/in. spring requires 150 pounds of force to compress it one inch, 300 pounds of force would compress it two inches, 450 pounds of force would compress it three inches, etc.
- *Progressively wound spring* - the rate of the spring increases as it is compressed. For example, a 100/200 #/in. rate spring requires 100 pounds of force to compress the first one inch, but requires 200 additional pounds to compress the last one inch.

When a bump is encountered by the suspension, the force of the bump compresses the spring. If the force were 450 pounds, a 100 #/in. spring would compress 4.5 inches. A 150 #/in. spring would only compress 3 inches. If the suspension had 4 inches of spring travel the 100 #/in. spring would bottom out, while the 150 #/in. spring would have one inch of travel remaining.

Torsion springs are much like coil springs, although shaped differently. The rate of the torsion spring is controlled by the free opening angle, the installed opening angle, and the wire diameter of the spring.

Torsion Spring



SUSPENSION
Rear Suspension Tuning

Many factors influence the overall handling characteristics of snowmobile suspensions. Rider weight, riding style, course conditions, and the condition of suspension components are some of the things that you have to consider when tuning a suspension.

On new machines, or whenever new suspension parts are installed, the sled should be ridden for at least one tank of fuel to allow moving parts in the shocks and suspension to wear in. The shock springs will also take their initial set and the setup will be more accurate.

Suspension Tuning

To begin suspension tuning, check the condition of shocks and other suspension parts.

Begin by taking the shocks apart, inspecting all parts for damage, and changing the oil. Even new shocks should get an oil change after break in to clean break-in material from the shocks and valve body.

If oil is low, inspect seal cap O-Ring and seals for damage. If air or foam is evident in the oil, the O-Ring in the floating piston must be replaced. After changing the oil reassemble shocks, making sure oil level, floating piston depth (IFP), and nitrogen pressure are correct.

The use of nitrogen in Fox™ shocks provides consistent damping at extreme temperatures. Don't overcharge the shocks. Excess nitrogen pressure may cause seal "stiction" and prevent proper shock action. If too much oil is added, or if the IFP depth is set incorrectly (too low) shock travel will be limited.

Inspect and grease all suspension parts, making sure they pivot freely. All suspension components should be greased when disassembled. Regular maintenance greasing should be done with no weight on the component to allow grease to reach important contact areas.

When everything is working correctly, set the preload on the springs for the correct sag. There should be 1 1/2″ of sag on the rear suspension when you sit on the snowmobile, measured at the rear bumper. Bounce on the suspension a couple of times to overcome any "stiction" and settle the sled to an accurate reference point. The rider should have their weight placed correctly on the machine. Adjust spring preload to achieve the 1 1/2″ sag dimension.

When they get off the machine it should return to 1/2″ of sag. If the sag is less than 1/2″ stiffer springs may be needed. If it is greater than 1/2″ softer springs may be needed. This may seem backwards at first, but if the spring is too soft, the preload must be greatly increased to prevent excess sag. This shows up in the form of less unloaded sag. Therefore, a stiffer spring is required. If the spring is too stiff, the preload will have to be backed off, and unloaded sag will be excessive. This is a very important step because the proper spring will also help ensure proper weight transfer.

The front suspension should sag about 1″ (measured at the front bumper) with the weight of the sled on it. Use stiffer or softer springs as needed to keep from bottoming too hard, to ensure using all the travel.

Shock Tuning

The shocks work in two directions. Compression damping prevents the shock from bottoming hard while rebound damping keeps the shock from springing back too fast. Both compression and rebound damping can be adjusted for high and low speed damping characteristics. **NOTE:** When we refer to high and low speed, we are referring to the speed of the shock shaft or valve, ***not*** vehicle speed.

To check low speed shock valving, drive the machine through rounded, soft bumps. Feel what each area of the snowmobile is doing so you can tell which shocks need to be adjusted. Low speed valving may also be checked on small chatter bumps, but the machine's reactions will be more difficult to feel.

The ideal low speed rebound valving allows the machine to return to full up position quickly, but not so fast that it pushes you off the seat or bounces the skis up. The ideal low speed compression valving uses most or all of the travel, without bottoming out. The idea is to keep the skis and the track on the ice or snow without bouncing or a harsh ride.

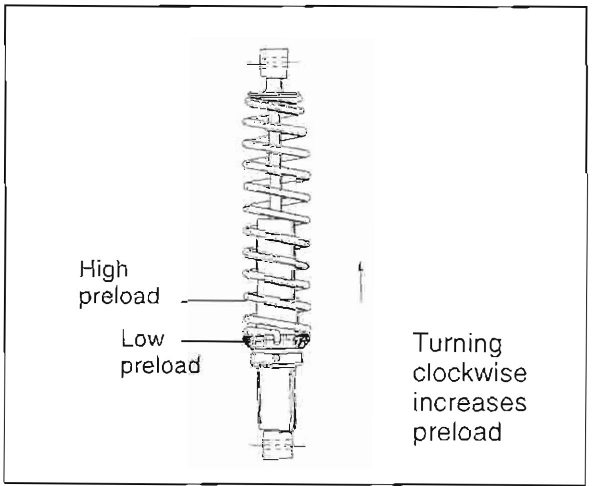
Front Shock Spring Preload Adjustment

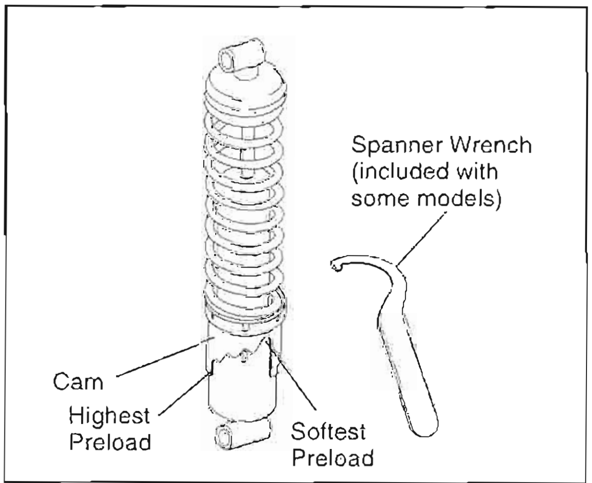
The XTRA 10 and XTRA 12 suspension systems on Polaris snowmobiles have been designed to provide the rider with a wide range of adjustment.

Generally, the softest spring and spring preload adjustment give the best ride and also the best traction. Front shock spring preload will affect the ride height of the machine, the amount of rear suspension sag, and ski pressure or steering effort.

Spring preload should be adjusted equally on both sides of the machine. Ski pressure must be equal to prevent undesirable handling characteristics. The front shock spring preload can be adjusted by grasping the spring and turning in a clockwise direction, (as viewed from the bottom), to increase preload.

NOTE: Access to the cam with the spanner wrench is easiest from the inside of the ski.

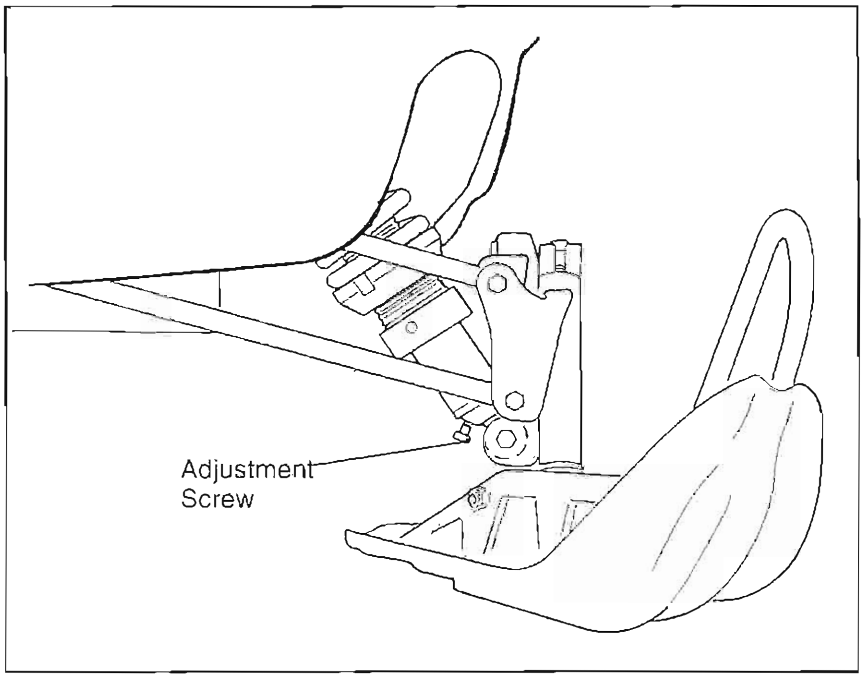




Indy Select / Ryde AFX IFS Shock

Snowmobiles equipped with adjustable compression damping IFS shocks, will allow the driver to make adjustments to the compression valving of the front shocks by turning the screws located near the base of the shocks.

By turning the screw clockwise, the compression of the shock is increased, stiffening the ride. By turning counter clockwise, the compression is decreased, softening the ride. The factory setting is in the softest position. (Screw all the way out - counterclockwise). If bottoming occurs, the compression damping should be used in conjunction with the spring preload to achieve the desired ride affect. 1/2 of a turn will affect the ride considerably. There are approximately 3 turns of adjustment available.

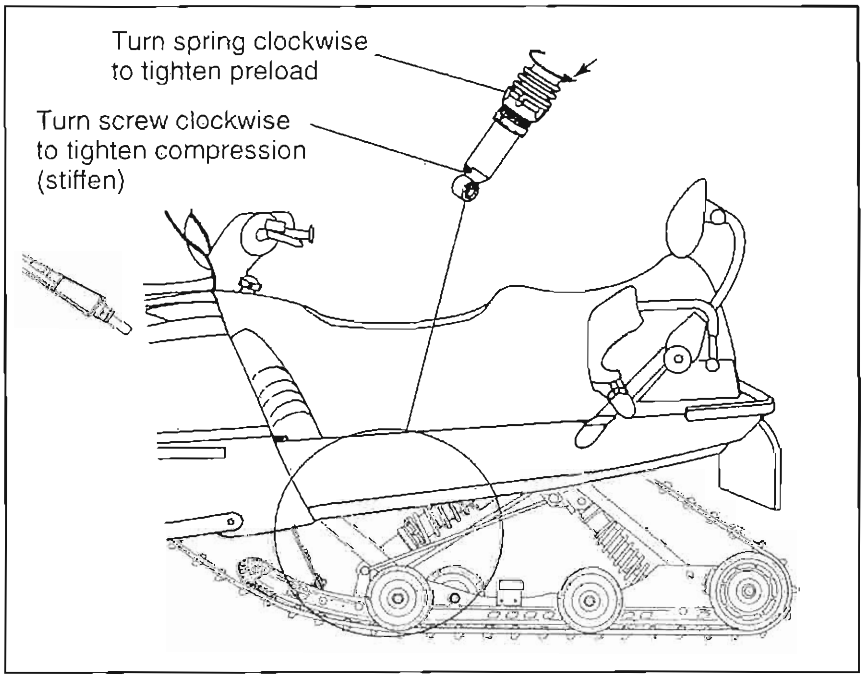


Indy Select / Ryde AFX Rear Track Shock

Snowmobiles equipped with rear adjustable compression damping rear track shocks will allow the driver to make adjustments to the compression valving of the rear shock by turning the screw located near the base of the shock.

Adjustment

Locate the adjustment screw near the base of the shock. **NOTE:** This adjustment is easiest to make with the machine tipped on its side.



⚠ WARNING

Be sure to shut off the fuel supply before tipping the machine to prevent fuel spillage and flooding of the carburetors.

By turning the screw clockwise (a small screwdriver or dime work well), the compression valving is increased, stiffening the ride. To soften the ride, reduce the compression by turning the screw counter-clockwise. A great deal of ride performance is accomplished with a mere 1/2 to 1 turns. There are approximately 3 full turns of adjustment available.

The primary function of the rear suspension is to provide a comfortable ride in all types of riding conditions. The rear suspension has many adjustable features for fine tuning to achieve optimum comfort.

The suspension can be adjusted to suit rider preference and deliver excellent performance for a given set of conditions. It should be noted, however, that suspension adjustments involve a compromise or trade off. A machine set up to perform well in the moguls would not suit the preference of a groomed trail rider.

The secondary function is to provide superb handling and stability, such as adjustments to vary ski pressure for steering and controlling the snowmobile's center of gravity.

Refer to the suspension identification chart on page 8.3 to identify suspension type (e.g. 1996 Indy Classic - Xtra 12). Adjustment procedures for each type are explained later in this section.

Adjustable Features and Adjustment Options

Following is a list of possible adjustment features and options. Not all features apply to all suspension types.

Independent Front Suspension (IFS)

- Front shock spring preload
- Optional springs
- Optional shock valving
- Indy Select / Ryde AFX adjustable compression rate

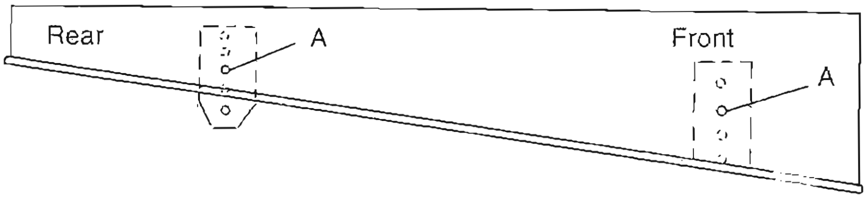
Rear Suspension

- Spring preload - front track shock
- Spring preload - rear track shock
- Rear torsion spring
- Front rear scissor stop (FRSS)
- Rear rear scissor stop (RRSS)
- Optional coil springs
- Optional torsion springs
- Optional shock valving
- Limiter strap - front
- Limiter strap - rear
- Indy Select / Ryde AFX adjustable compression rate

Tunnel Mounting Positions for Deep Snow Operation

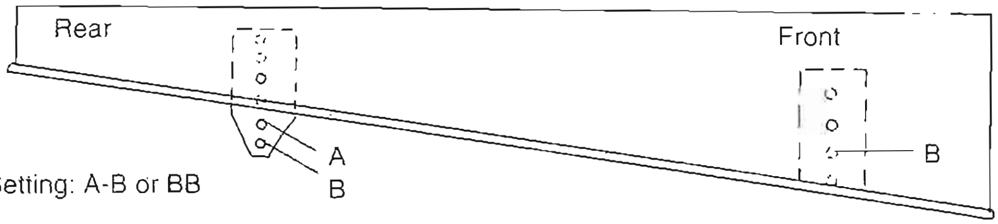
Suspension Mounting Bolt Torque:	
7/16″	60 ft.lbs. (8.28 Kg-m)
3/8″	40 ft.lbs. (5.52 Kg-m)

121″ Standard Length Tunnel All Models



Factory Setting: A-A
Any Other Combination will Result in Tunnel Damage

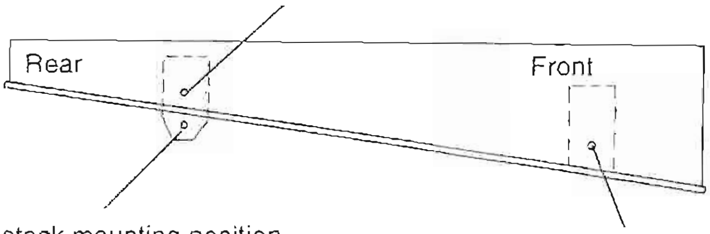
133″ SKS Length Tunnel All Models



Factory Setting: A-B or BB

Tunnel Mounting Positions - XTRA 10 133″

133″ SKS stock mounting position.
Optional position - lower hole.



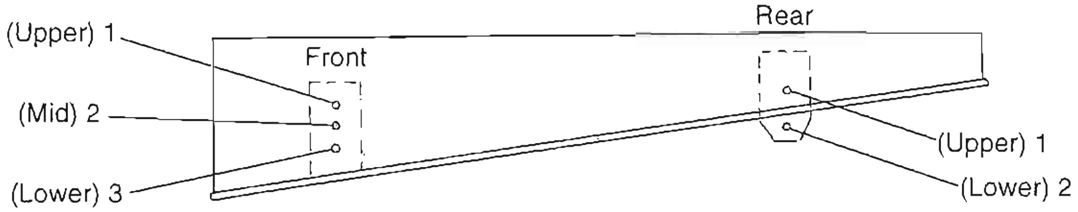
133″ RMK stock mounting position.
No optional positions for maximum deep snow performance.

Front torque arm
stock mounting position.
No optional positions.

For improved deep snow performance, tighten the front limiter strap 5/8 - 3/4″ (1.59 - 1.91 cm).

NOTE: XTRA 10 121″, XTRA 12 121″, and XTRA 12 133″ *have no optional tunnel mounting positions.* XTRA 12 front limiter strap may be shortened for more ski pressure and lower track approach angle.

1997 Model Tunnel Mounting Positions



Suspension Mounting Bolt Torque:
7/16″ 60 ft.lbs. (8.28 Kg-m)
3/8″ 40 ft.lbs. (5.52 Kg-m)

Model	Front Torque Arm Tunnel Position	Rear Mount Location	Optional Positions* (Front/Rear)
Indy Lite/Deluxe/GT	Fixed	Fixed	None
Indy Sport/TranSport	Fixed	Fixed	None
Indy Sport Touring	Mid	Upper	1/2
Indy Super Sport / XCF	Upper	Fixed	2/1
Indy Trail	Upper	Fixed	2/1
Indy Trail Touring	Mid	Upper	1/2
Indy Trail RMK	Mid	Lower	1/1, 2/1, 3/2
WideTrak GT/LX	Fixed	Fixed	None
Indy 440 / 440 XC	Upper	Fixed	2/1
Indy 500	Upper	Fixed	2/1
Indy 500 SKS	Upper	Upper	2/1, 2/2, 3/2
Indy 500 RMK	Mid	Lower	1/1, 2/1, 3/2
Indy 500 Classic/Touring/EFI	Fixed	Fixed	None
Indy XLT	Upper	Fixed	2/1
Indy XLT LTD/Touring/SP/ LTD SP	Fixed	Fixed	None
Indy XLT SKS	Upper	Upper	2/1, 2/2, 3/2
Indy XLT RMK	Mid	Lower	1/1, 2/1, 3/2
Indy 600 XC	Upper	Fixed	2/1
Indy 600 XCR/SE	Mid	Fixed	1/1
Indy RXL	Fixed	Fixed	None
Indy Ultra/Touring	Fixed	Fixed	None
Indy Ultra SP	Upper	Fixed	2/1
Indy Ultra SPX/SE	Mid	Fixed	1/1
Indy 700 SKS	Mid	Upper	1/1, 2/2, 3/2
Indy 700 RMK	Mid	Lower	1/1, 2/1, 3/2
Indy Storm/SE	Mid	Fixed	1/1
Indy Storm RMK	Mid	Lower	1/1, 2/1, 3/2

* **CAUTION:** Use only combinations specified to prevent track and drive train damage. Always install bolts (PN 7517289) and nuts (PN 7542453) in open mounting holes to prevent tunnel damage.

1998 Rear Suspension Set Up / Tunnel Mounting Positions

Model	Front Track Shock Mount	Front Torque Arm Tunnel Position	Rear Torque Arm Tunnel Mount	Options
Lite/Dlx	N/A	#3	Fixed	No Optional Mounting Positions
Lite Trng	N/A	#2	Fixed (Below)	
Sport	N/A	#3	Fixed	
Sport Trng	N/A	#1	Fixed (Below)	
TranSport	N/A	#2	Fixed	
XCF	Lower	#1	Fixed	
440 LC	Lower	#1	Fixed	
440 XCR	Lower	#1	Fixed	
Trail	Lower	#1	Fixed	
Trail Trng	Lower	#1	Fixed (Below)	
Trail RMK	Upper	#2	Fixed (Below)	
Super Sport	Lower	#1	Fixed	
WideTrak LX	N/A	#3	Fixed	
500	Lower	#1	Fixed	
500 RMK	Upper	#2	Fixed (Below)	
Classic	N/A	Fixed	Fixed	
Classic Trg	N/A	Fixed	Fixed	
XLT SP	Lower	#2	Fixed	
XLT LTD	N/A	Fixed	Fixed	
XLT Trng	N/A	Fixed	Fixed	
XLT Classic	N/A	Fixed	Fixed	
600 XC	Lower	#2	Fixed	
600 RMK	Upper	#2	Fixed (Below)	
600 XCR	Lower	#2	Fixed	
Ultra	N/A	Fixed	Fixed	
Ultra Trng	N/A	Fixed	Fixed	
700 XC	Lower	#2	Fixed	
700 XCR	Lower	#2	Fixed	
700 RMK	Upper	Fixed	Fixed (Below)	
Storm	Lower	#2	Fixed	

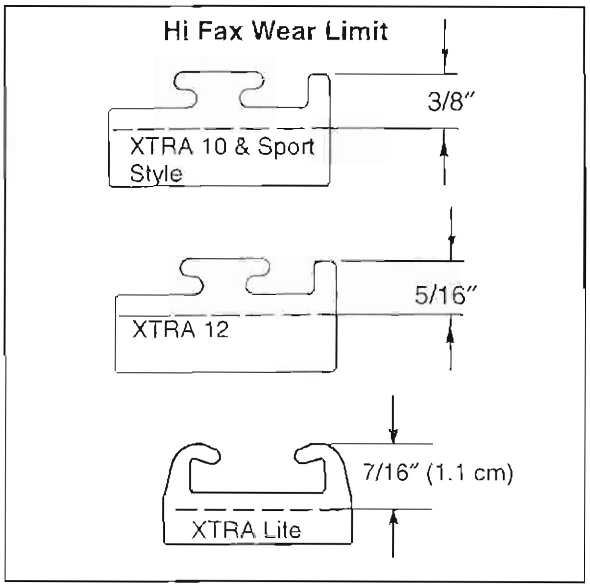
NOTE: There are no optional front torque arm mounting positions. Do not re-locate the front torque arm.

Hi-Fax Replacement - All Models

Hi-Fax replacement on all Polaris models is similar. When any area of the Hi-Fax is worn to 1/8″ (.3 cm), it should be replaced. This will save wear on other vital components.

The slide rail is designed to operate in conditions with adequate snow cover to provide sufficient lubrication. Excessive wear may be due to improper alignment, improper track adjustment or machine operation on surfaces without snow.

Replace Hi-Fax when worn to 5/16″ (.79 cm) on XTRA 12 suspensions; 3/8″ (.95 cm) on XTRA 10 and Sport style suspensions; 7/16″ (1.1 cm) on XTRA Lite style suspensions.



Suggested Hi Fax Wear Limit:

XTRA 12 - 5/16″ (.79 cm)

XTRA 10 & Sport Style - 3/8″ (.95 cm)

XTRA Lite - 7/16″ (1.1 cm)

Hi-Fax wear patterns are somewhat different on machines equipped with the XTRA 12 suspension than on conventional models. *(The rear of the rail will wear rapidly at first.)* After reaching a certain point, this rapid wear will cease. This area should be checked frequently, however, replacement is not necessary until a thickness of 5/16″ (.79 cm) is reached.

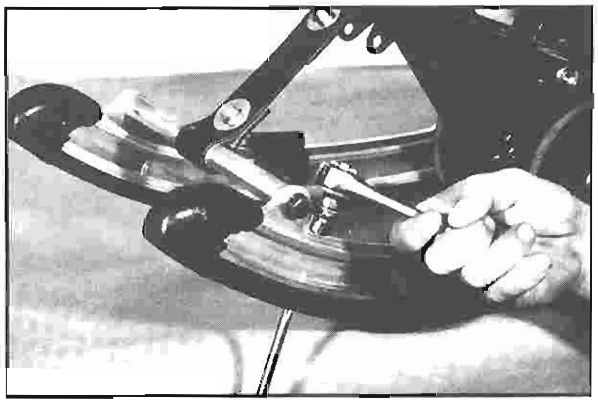
New Hi-Fax are best used in deep snow conditions. Marginal snow or hard-pack conditions are better suited to worn Hi-Fax, or Hi-Fax which have been cured or broken in.

Hi-Fax Removal

1. Remove suspension from machine.

NOTE: Some models may allow HI Fax to be removed by sliding it through track windows with the suspension mounted in the machine.

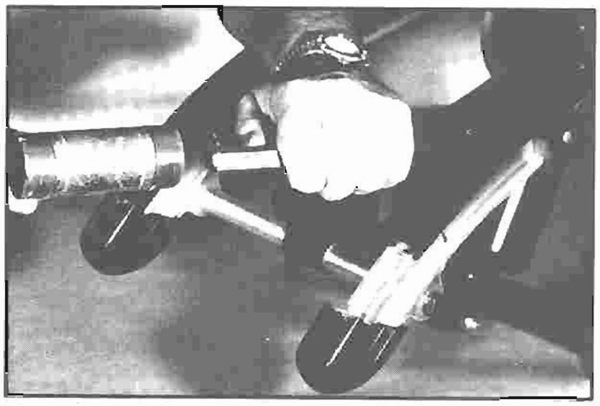
2. Remove front Hi-Fax retaining bolt as shown.



3. Use a block of wood or a drift punch and hammer to drive Hi-Fax rearward off the slide rail.
4. With Hi-Fax material at room temperature, install new Hi-Fax by reversing steps 1 - 3.

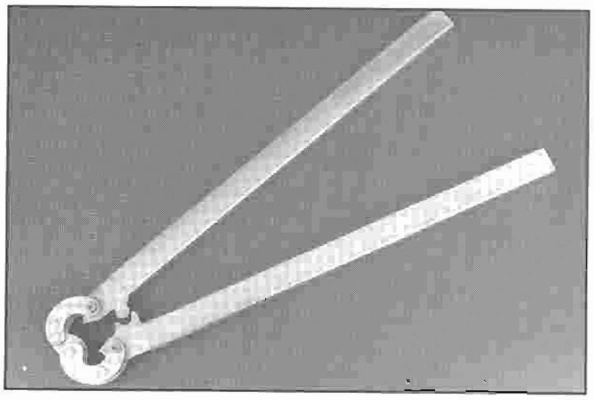
NOTE: Lightly coat Hi-Fax track clip area with a lubricant such as LPS2 or WD-40 to ease installation.

NOTE: Wide Hi-Fax should be narrowed on the leading sides to allow it to fit through narrow windows.



Track Clip Removal - All Types

1. Position removal tool jaws on edge of clip.
2. Squeeze handles together to spread clip.
3. Remove clip.

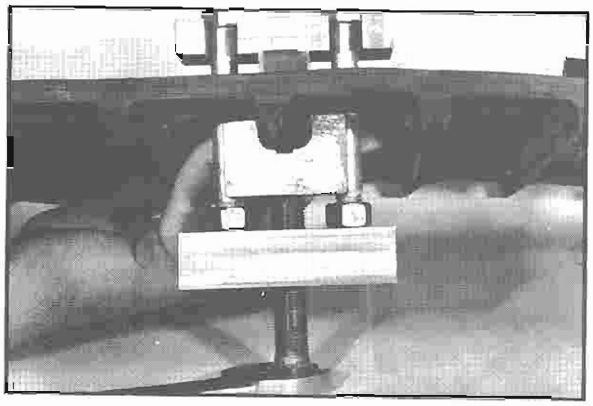


Track Clip Replacement - Yokohama

1. Install replacement clip and clipping tool as shown.

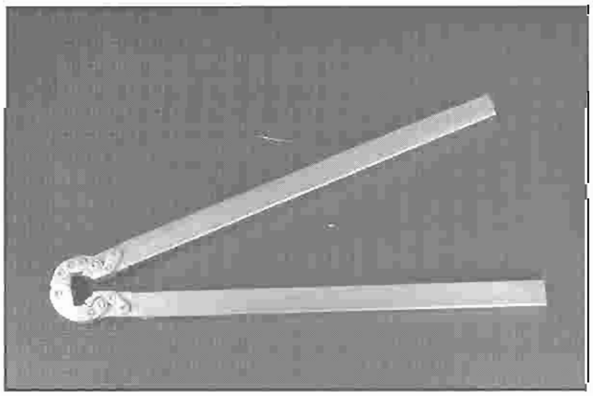
NOTE: For ease of operation, the tool may be placed in a vise.

2. Tighten drive bolt against forming die until clip is formed.



Track Clip Replacement - Camoplast

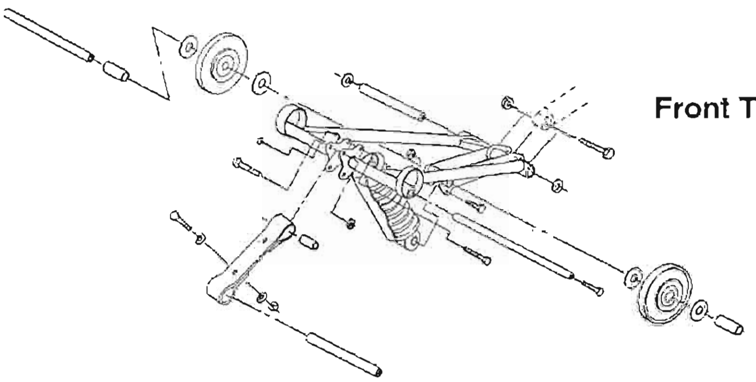
1. Place new clip in position on track.
2. Connect clip installation tool on top of clip.
3. Squeeze handles together to crimp new clip.



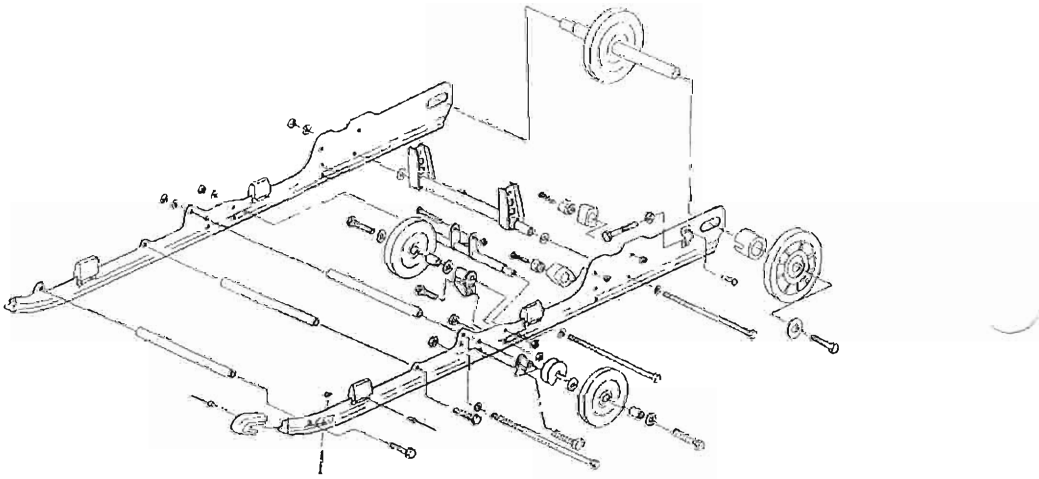
Track Clip Installation Tool (Camoplast) PN 2871041

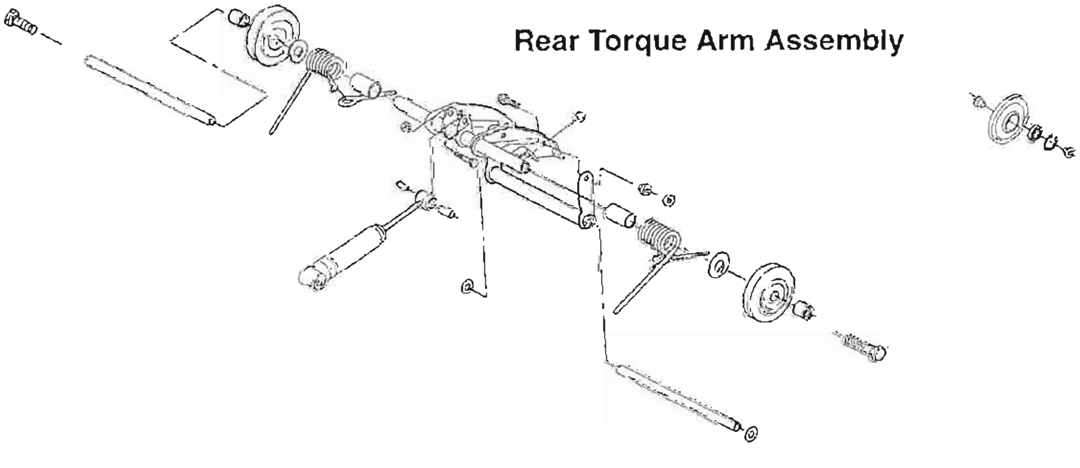
Track Clip Installation Tool (Yokohama) PN 2870380

Rear Suspension Exploded View - 1996 Sport Style

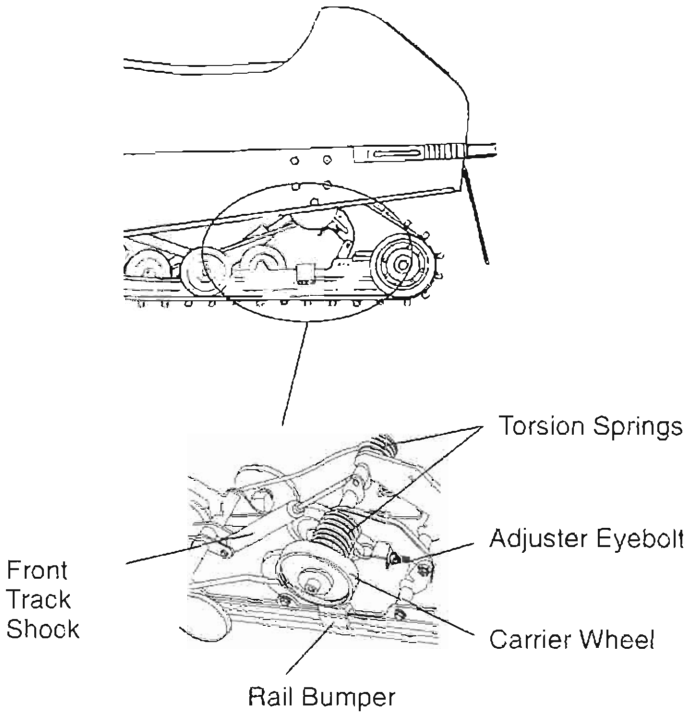


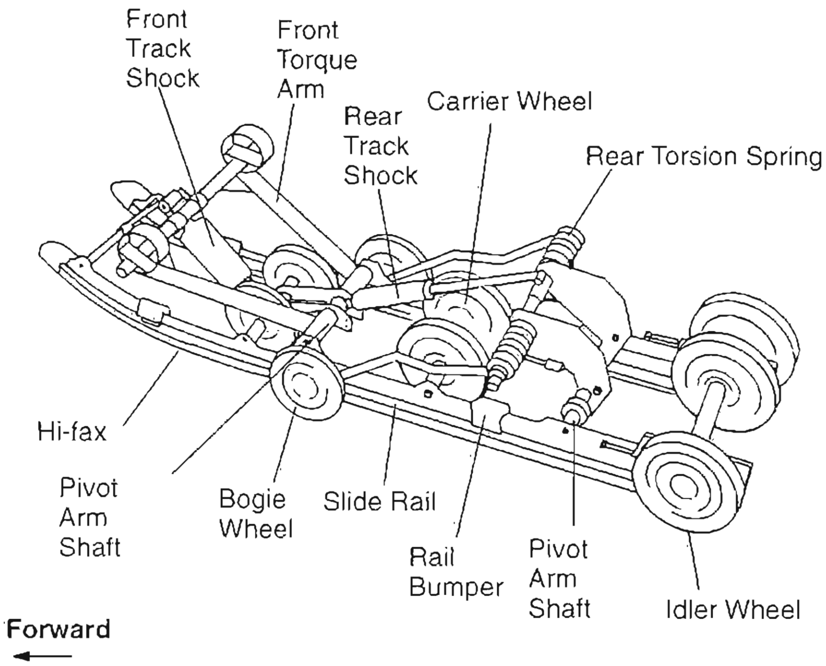
Front Torque Arm Assembly





Rear Torque Arm Assembly


Torsion Springs
Adjuster Eyebolt
Front
Track
Shock
Carrier Wheel
Rail Bumper


Front
Track
Shock
Front
Torque
Arm
Rear
Track
Shock
Carrier Wheel
Rear Torsion Spring
Hi-fax
Pivot
Arm
Shaft
Bogie
Wheel
Slide Rail
Rail
Bumper
Pivot
Arm
Shaft
Idler Wheel
Forward

Suspension Adjustment - 1996 Sport Style

The Polaris Sport Style suspension has been designed and set up to deliver a soft ride under average riding conditions. Rider weight, riding styles, trail conditions, and vehicle speed each affect suspension action.

The suspension can be adjusted to suit rider preference and deliver excellent performance for a given set of conditions. It should be noted, however, that suspension adjustments involve a compromise or trade off. A machine set up to perform well in the moguls would not suit the preference of a groomed trail rider.

Adjustable Features and Adjustment Options

- IFS compression spring preload
- Rear torsion spring preload
- Rear shock compression (if equipped with Indy Select / Ryde AFX shock)
- Optional coil springs for front track shock
- Optional torsion springs

Adjustment Procedures

It is a good idea to have customers break the suspension in for approximately 150 miles (240 km) before fine tuning adjustments are made.

All settings will vary from rider to rider, depending on rider weight, vehicle speed, riding style, and trail conditions. We recommend starting with factory settings and then customizing each adjustment individually to suit rider preference. The machine should be methodically tested under the same conditions after each adjustment (trail and snow conditions, vehicle speed,riding position, etc.) until a satisfactory ride is achieved. Adjustments should be made to one area at a time, in order to properly evaluate the change.

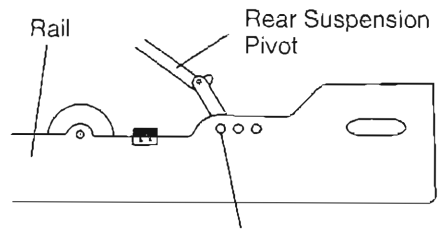
The purpose of the front track shock coil spring is to control ride height. If you find that in order to obtain the desired ride effect the spring preload is at its maximum, consider removing the existing spring and installing the next highest rate spring. See the chart on page 8.21.

IFS Adjustments

IFS spring preload is one of the adjustment options which affects ride. Preload is the initial compression placed on the spring. The longer the installed length of the spring, the less the amount of preload; the shorter the installed length of the spring, the more the amount of preload. Increasing preload on the IFS spring will result in more bite on the skis, but will require more effort to turn. The IFS compression spring preload can be increased by adding shims (PN 5210953) under the spring.

Always verify ski alignment before making adjustments to the IFS. See Body and Steering, Chapter 7 to check alignment. If the skis are misaligned, we recommend the camber adjustment be checked as this may also be affected.

The Indy Lite Deluxe model comes from the factory with the rear suspension pivot mounted in the forwardmost hole in the rail. *Do not* change this mounting position. The other holes in the rail are for use on different machines utilizing the same rail.



Optional Suspension Adjustment Springs

Torsion Springs

Although your snowmobile suspension has the capability of providing you with the best ride possible, the following accessory rear springs are available to better suit individual riding preference.

	Soft		.... Firm
Part No. LH	7041318	7041119	7041320
Part No. RH	7041319	7041120	7041321
Wire Size	.375	.393	.406
Sport	Option	Standard	Option
TranSport	Option	Standard	Option
Indy Lite	Option	Standard	Option
Indy Lite Deluxe	Option	Standard	Option
Indy Lite GT	Option	Standard	Option

Shock Coil Springs

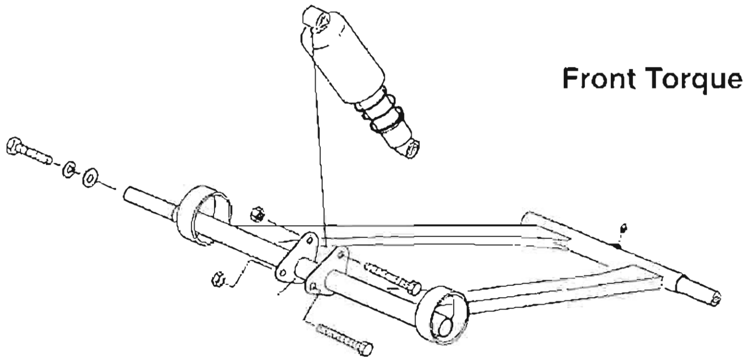
Changing the rate of the front track shock coil spring can affect handling.

Heavier springs will reduce darting and require less effort to steer. However, they will stiffen the ride and give the machine a tendency to push through corners.

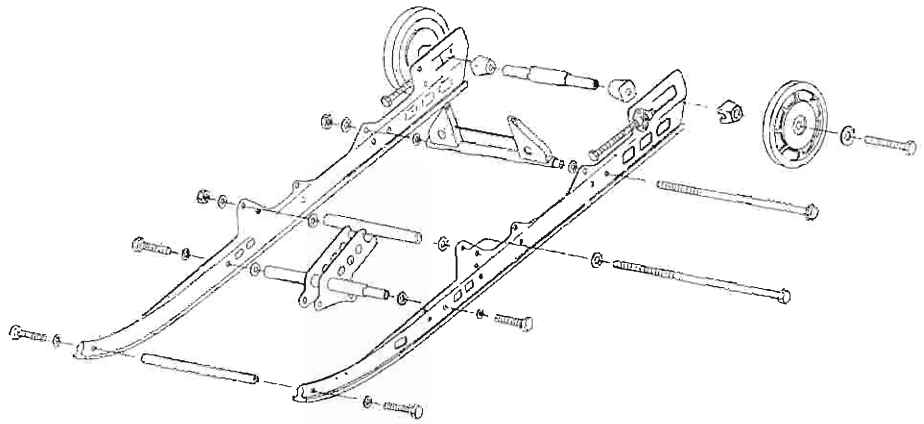
Lighter springs will increase ski pressure for positive pressure through curves.

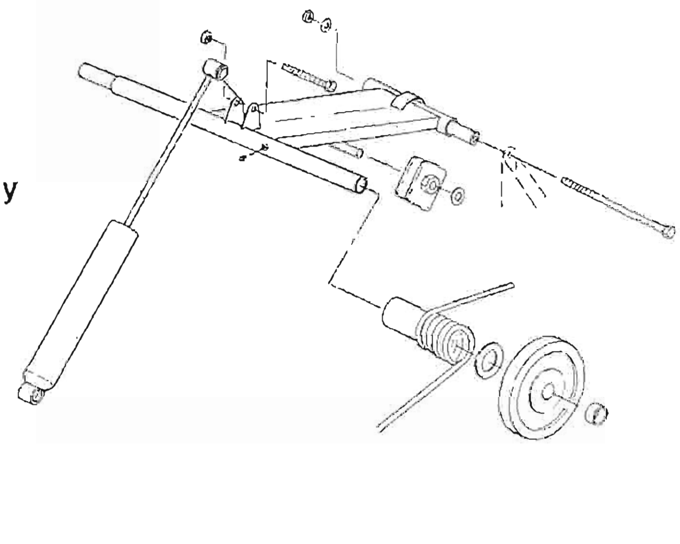
PN 7041127	Standard	Light	181 #/in
PN 7041140	Option	Medium	181 #/in (longer free length than above)
PN 7041289	Option	Heavy	200#/Variable

1997 XTRA Lite Style Exploded View



Front Torque Arm Assembly





Rear Torque Arm Assembly

Suspension Adjustment - 1997 XTRA Lite

Suspension Adjustment

The Polaris suspension has been designed and set up to deliver a soft ride under average riding conditions. Rider weight, riding styles, trail conditions, and vehicle speed each affect suspension action.

The suspension can be adjusted to suit rider preference and deliver excellent performance for a given set of conditions. It should be noted, however, that suspension adjustments involve a compromise or trade off. A machine set up to perform well in the moguls would not suit the preference of a groomed trail rider.

Adjustable Features and Adjustment Options

- IFS compression spring preload
- Rear torsion spring preload
- Optional coil springs for front track shock
- Optional torsion springs

Adjustment Procedures

It is a good idea to break the suspension in for approximately 150 miles (240 km) before fine tuning adjustments are made.

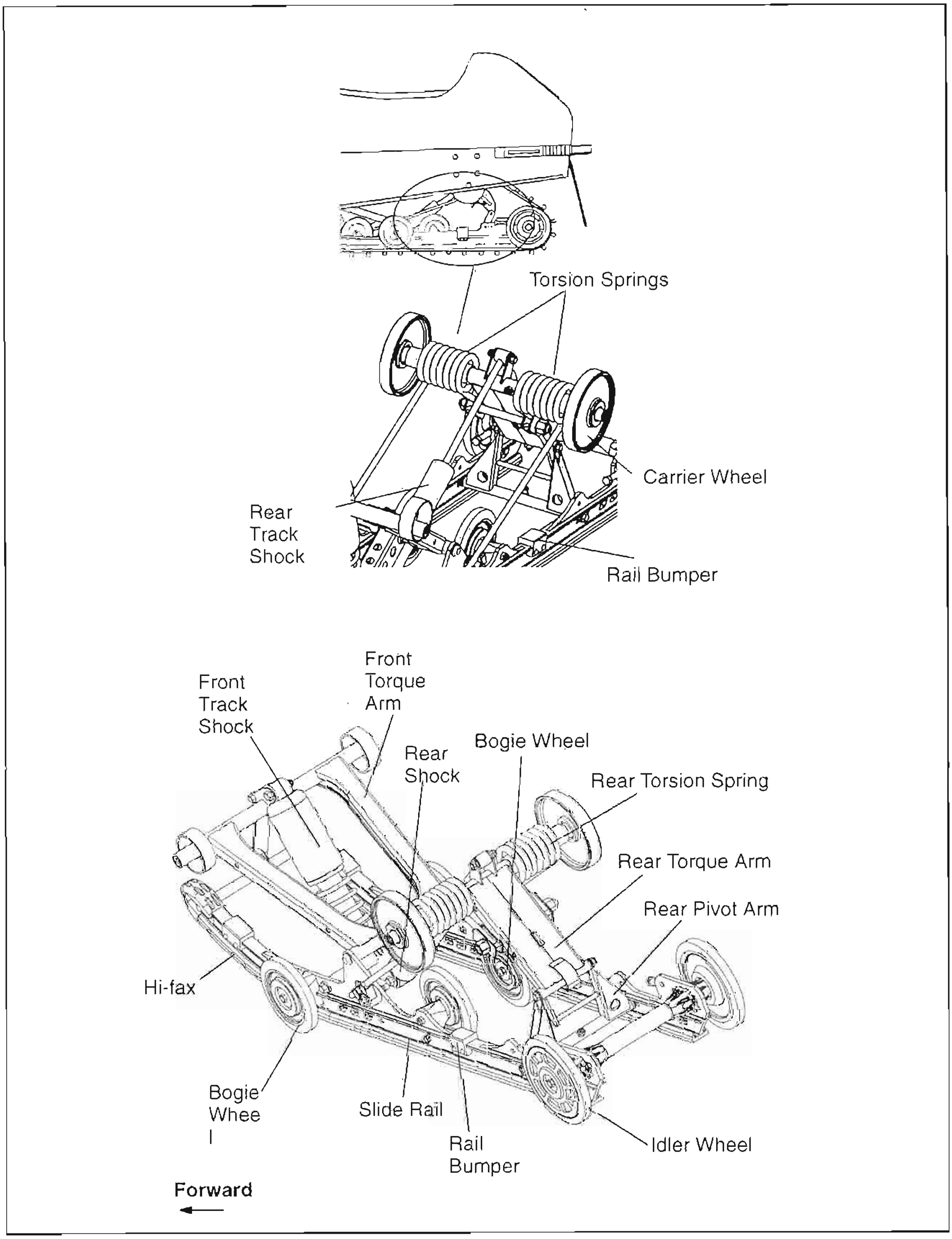
All settings will vary from rider to rider, depending on rider weight, vehicle speed, riding style, and trail conditions. We recommend starting with factory settings and then customizing each adjustment individually to suit rider preference. The machine should be methodically tested under the same conditions after each adjustment (trail and snow conditions, vehicle speed,riding position, etc.) until a satisfactory ride is achieved. Adjustments should be made to one area at a time, in order to properly evaluate the change.

The purpose of the front track shock coil spring is to control ride height and front IFS preload. If you find that in order to obtain the desired ride effect the spring preload is at its maximum, consider removing the existing spring and installing the next highest rate spring. See the chart on page 8.26.

IFS Adjustments

IFS spring preload is one of the adjustment options which affects ride. Preload is the initial compression placed on the spring. The longer the installed length of the spring, the less the amount of preload; the shorter the installed length of the spring, the more the amount of preload. Increasing preload on the IFS spring will result in more bite on the skis, but will require more effort to turn. The IFS compression spring preload can be increased by adding shims (PN 5210953) under the spring.

Always verify ski alignment before making adjustments to the IFS. If the skis are misaligned, correct the camber adjustment first.


Torsion Springs
Carrier Wheel
Rear Track Shock
Rail Bumper
Front Track Shock
Front Torque Arm
Rear Shock
Bogie Wheel
Rear Torsion Spring
Rear Torque Arm
Rear Pivot Arm
Hi-fax
Bogie Whee l
Slide Rail
Rail Bumper
Idler Wheel
Forward

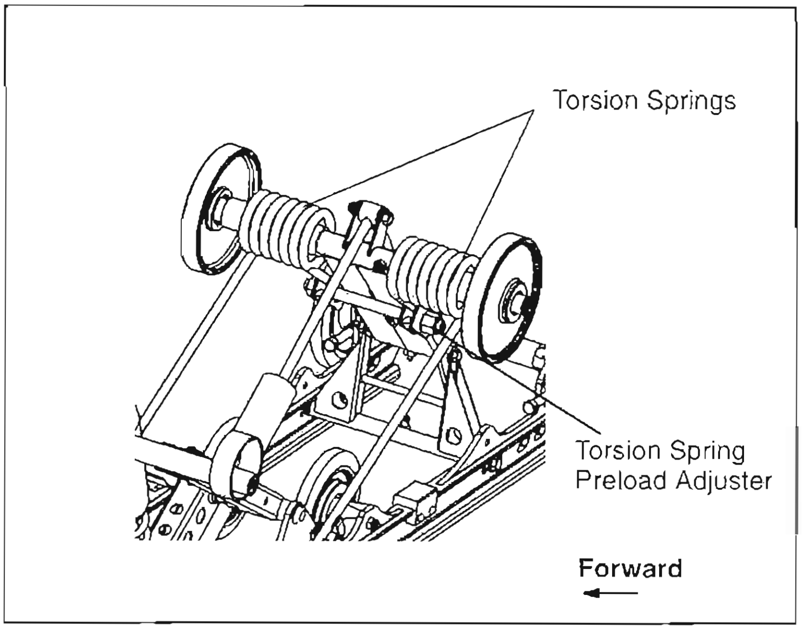
Rear Suspension Adjustments

The primary adjustment for riding comfort is rear torsion spring preload adjustment. To check for the recommended settings:

1. Lift the rear of the machine to relieve the rear springs.
2. Slowly lower the machine and measure the distance between the ground and the running board at the rear of the tunnel.
3. Without letting the suspension settle, the rider should carefully mount the snowmobile.
4. Measure the distance between the ground and the same spot on the running board.

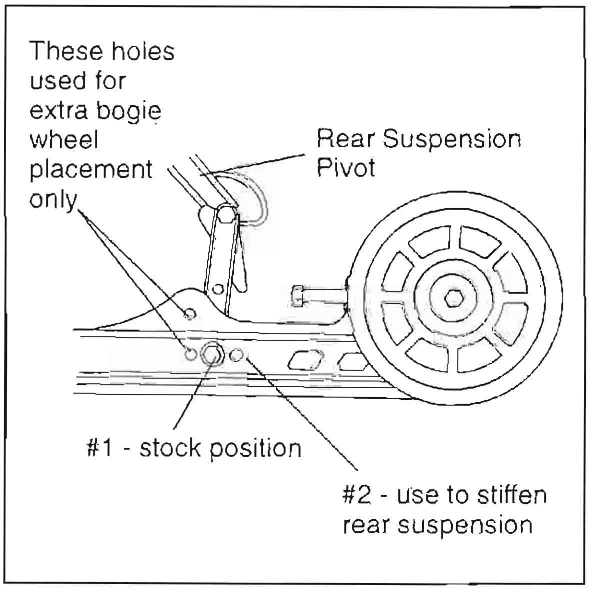
If the difference is greater than 1 1/2″, the rear spring should be adjusted equally on both sides until the desired 1 1/2″ drop is obtained. See adjustment information below.

Compensating adjustments for heavy or light drivers or cargo loads can be made by adjusting the preload adjuster.



NOTE: Rear torsion spring settings will affect ski-to-ground pressure. It may be desirable to tighten rear torsion springs for an increase in ski-to-ground pressure. If ski pressure is too light, the machine will be hard to steer around curves and will tend to push, or drive straight through curves.

The XTRA Lite suspension comes from the factory with the rear suspension pivot mounted in the second hole from the front of the rail. *Do not* change this mounting position. The other holes in the rail are for use on different machines utilizing the same rail.



Accessory Springs

Although this snowmobile suspension has the capability of providing the best ride possible, the following accessory rear springs are available to better suit individual riding preferences.

	Soft	....	Firm
Part No. LH	7041555	7041557	7041521
Part No. RH	7041556	7041558	7041522
Wire Size	.393/77°	.393/80°	.406/82°
Indy Lite	Option	Standard	Option
Indy Lite Deluxe	Option	Standard	Option
Indy Sport	Standard	Option	Option

Shock Coil Springs

Changing the rate of the front track shock coil spring can affect handling.

Heavier springs will reduce darting and require less effort to steer. However, they will stiffen the ride and give the machine a tendency to push through corners.

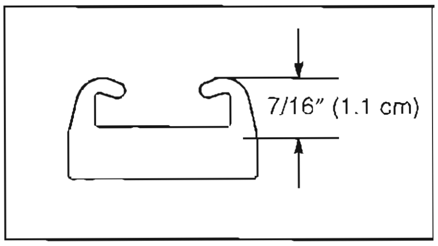
Lighter springs will increase ski pressure for positive pressure through curves.

PN 7041569	Standard	Light	60 #/in	Sport
PN 7041570	Standard	Medium	80 #/in	Lite/Lite Deluxe
PN 7041520	Option	Heavy	90 #/in.	All
PN 7041571	Option	Light	70 #/in.	All

Maintenance

A visual inspection of the following items should be done on a weekly basis or before any long distance trip:

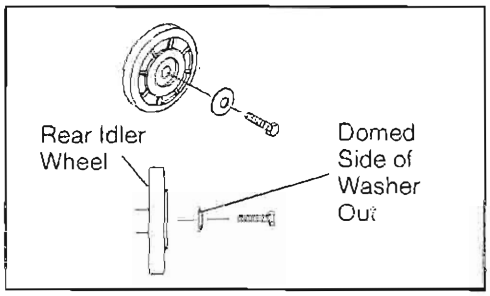
- Suspension pivot arm bolts for tightness
- Rear idler wheel bolts for tightness
- Rear idler adjusting bolt locknuts for tightness
- Bogie wheels and attaching bolts for tightness
- Front torque arm limiter strap condition
- Slide rail hi-fax thickness - replace when worn to 7/16″ (1.1 cm).



CAUTION:

If suspension bolts are removed, the threaded shaft must be cleaned thoroughly with a brake parts type cleaner. A new bolt, which must have a locking patch on the threads, must be installed.

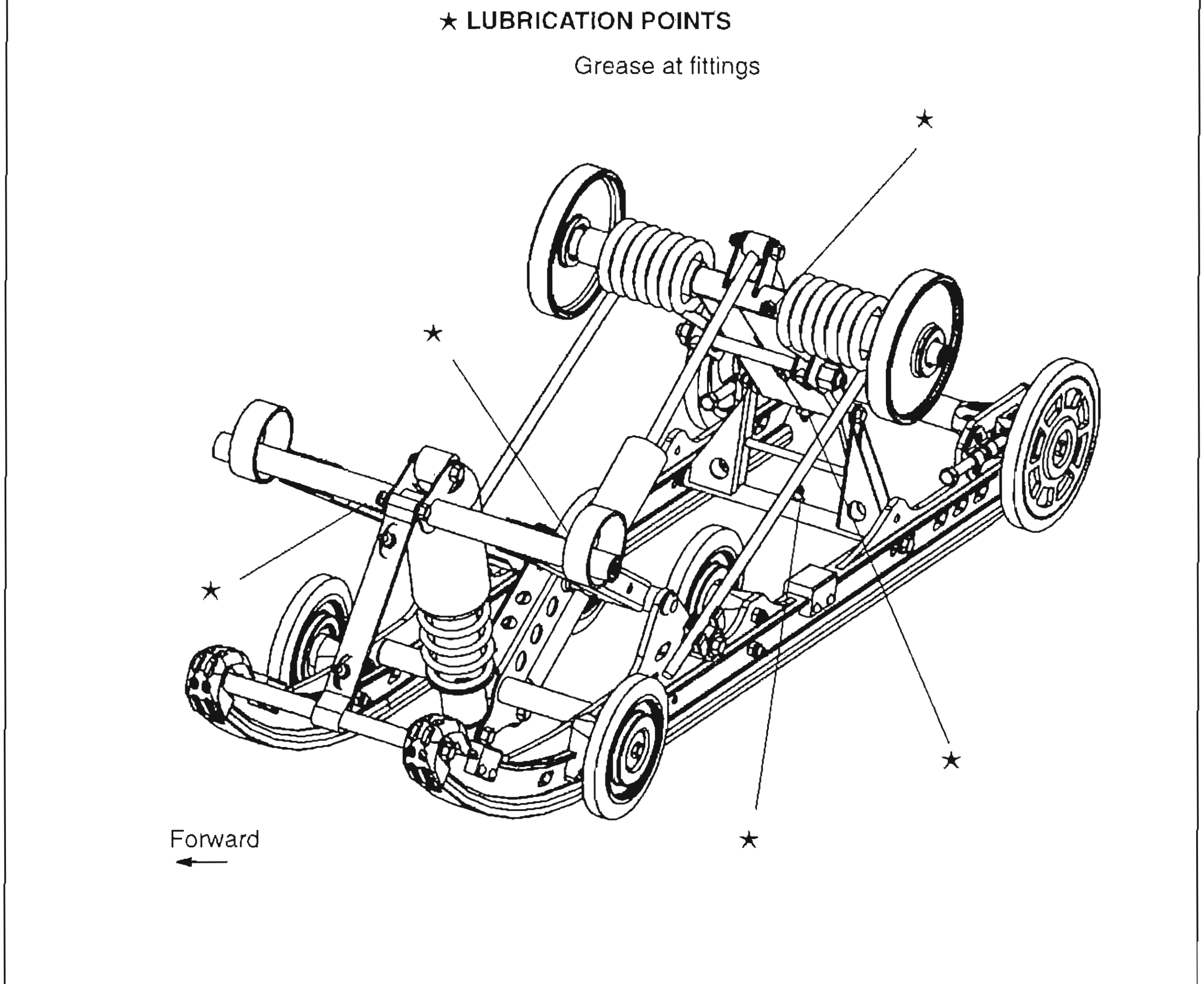
If rear idler wheel assembly washers are removed, be sure they are reinstalled with the domed side of the washer facing out as shown.



Suspension Lubrication

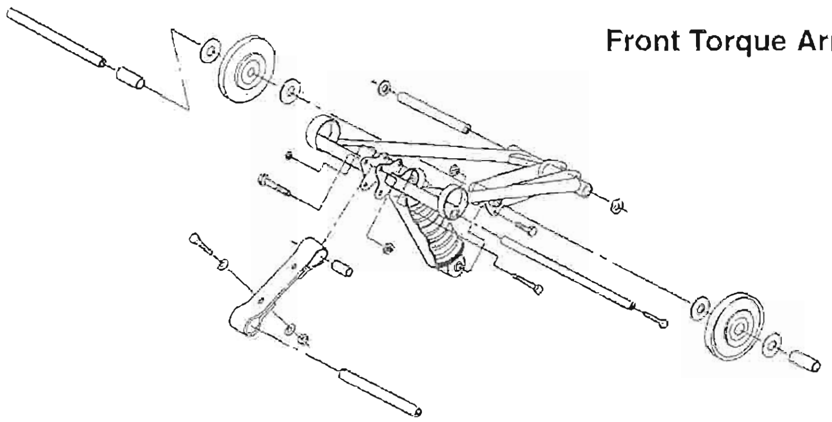
To maintain rider comfort and to retard wear of the pivot shafts, the suspension pivot shafts should be lubricated with Polaris Premium All Season Grease, PN 2871066, at 500 miles (800 km) initially; 1000 miles (1600 km) and before summer storage each year. The riding characteristics of the snowmobile will be affected by lack of lubrication of these shafts. **NOTE:** A grease gun kit complete with grease and adaptors is available to lubricate all fittings on Polaris snowmobiles. Order PN 2871312.

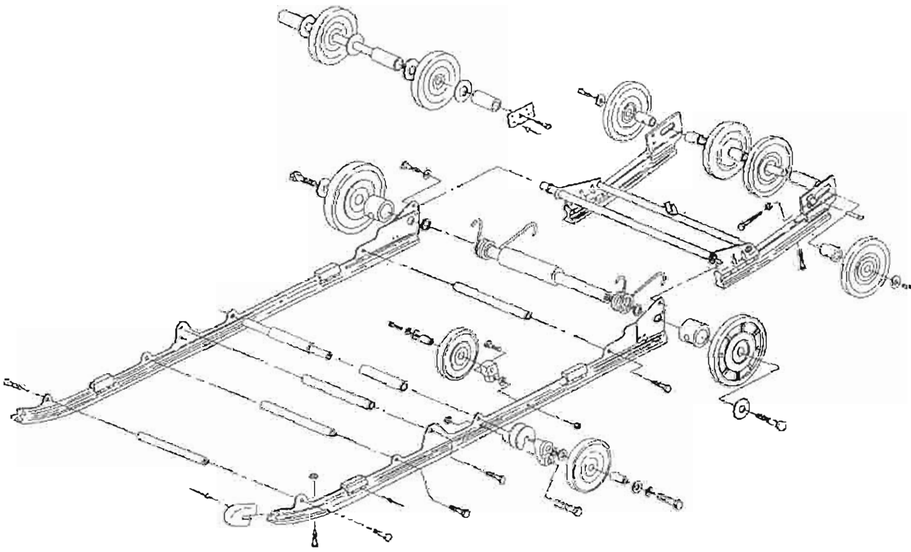
Refer to the diagram below for suspension lubrication points.



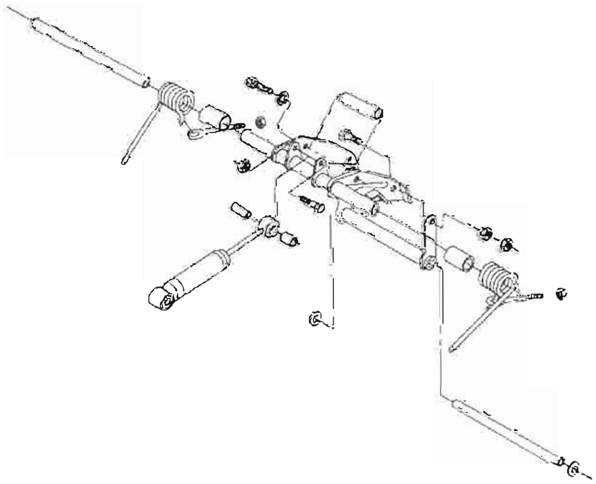
1996 WideTrak Style Exploded View

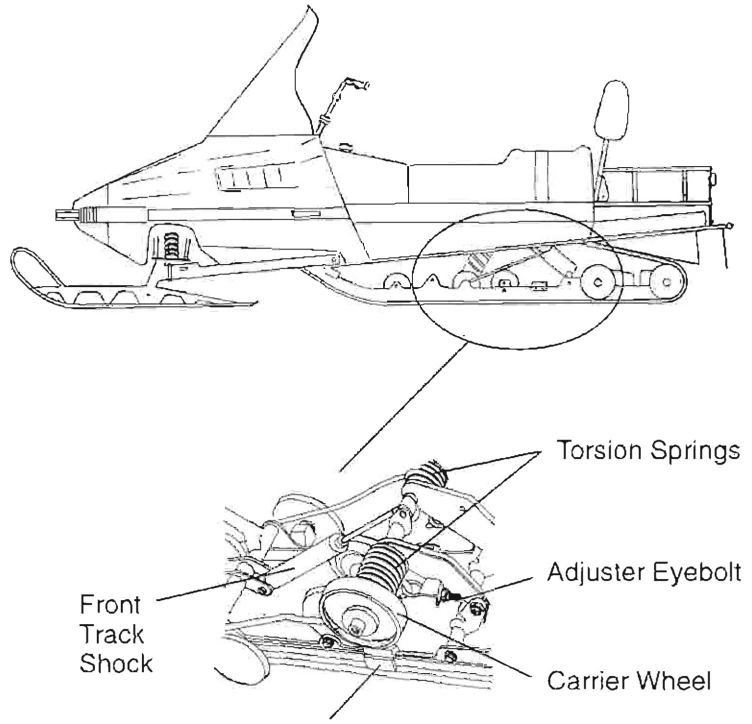
Front Torque Arm Assembly

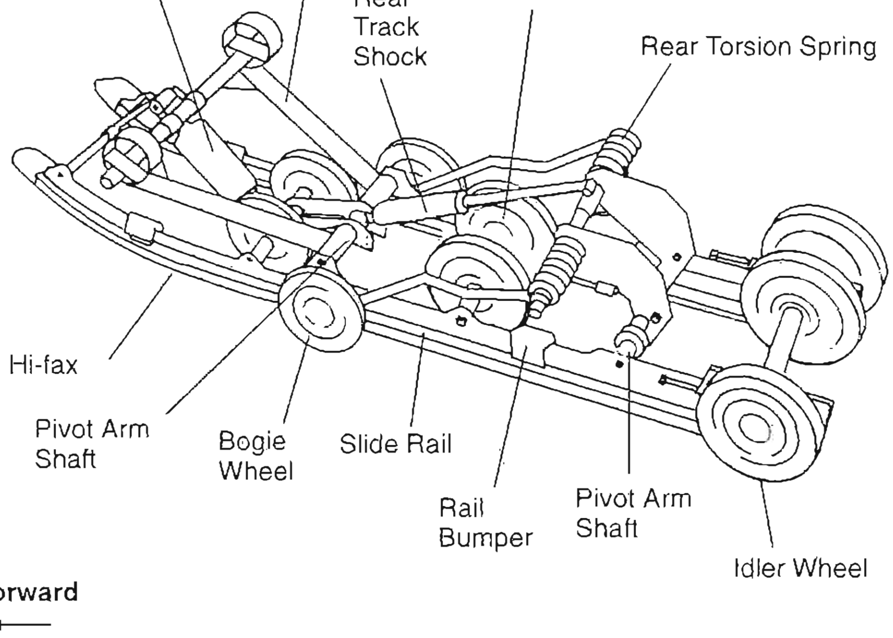




Rear Torque Arm Assembly







NOTE: General representation only. Models may differ.

Suspension Adjustment - 1996 WideTrak Style Models

The Polaris WideTrak style suspension has been designed and set up to deliver a soft ride under average riding conditions. Rider weight, riding styles, trail conditions, and vehicle speed each affect suspension action.

The suspension can be adjusted to suit rider preference and deliver excellent performance for a given set of conditions. It should be noted, however, that suspension adjustments involve a compromise or trade off. A machine set up to perform well in the moguls would not suit the preference of a groomed trail rider.

Adjustable Features and Adjustment Options

- IFS compression spring preload
- Rear torsion spring preload
- Optional coil springs for front track shock

Adjustment Procedures

It is a good idea to have customers break the suspension in for approximately 150 miles (240 km) before fine tuning adjustments are made.

All settings will vary from rider to rider, depending on rider weight, vehicle speed, riding style, and trail conditions. We recommend starting with factory settings and then customizing each adjustment individually to suit rider preference. The machine should be methodically tested under the same conditions after each adjustment (trail and snow conditions, vehicle speed,riding position, etc.) until a satisfactory ride is achieved. Adjustments should be made to one area at a time, in order to properly evaluate the change.

The purpose of the front track shock coil spring is to control ride height. If you find that in order to obtain the desired ride effect the spring preload is at its maximum, consider removing the existing spring and installing the next highest rate spring. See the chart on page 8.37.

IFS Adjustments

IFS spring preload is one of the adjustment options which affects ride. Preload is the initial compression placed on the spring. The longer the installed length of the spring, the less the amount of preload; the shorter the installed length of the spring, the more the amount of preload. Increasing preload on the IFS spring will result in more bite on the skis, but will require more effort to turn. The IFS compression spring preload can be increased by adding shims (PN 5210953) under the spring.

Always verify ski alignment before making adjustments to the IFS. See Body and Steering, Chapter 7 to check alignment. If the skis are misaligned, we recommend the camber adjustment be checked as this may also be affected.

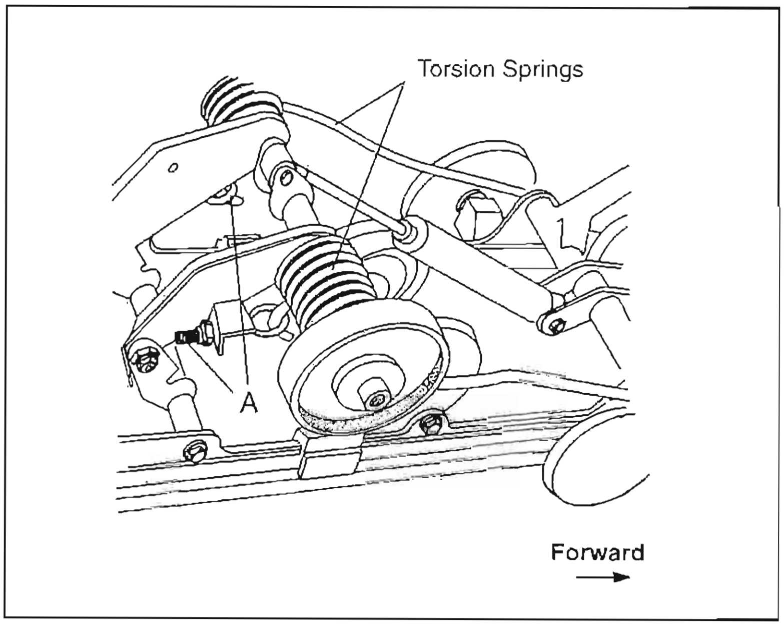
The primary adjustment for riding comfort is rear torsion spring preload adjustment. To check for the recommended settings:

1. Lift the rear of the machine to relieve the rear springs.
2. Slowly lower the machine and measure the distance between the ground and the running board at the rear of the tunnel.
3. Without letting the suspension settle, the rider should carefully mount the snowmobile.
4. Measure the distance between the ground and the same spot on the running board.

If the difference is greater than 1 1/2", the rear spring should be adjusted equally on both sides until the desired 1 1/2" drop is obtained.

Compensating adjustments for heavy or light drivers or cargo loads can be made by adjusting the rear torsion spring eye bolt (A) length. Adjust spring tension so there is equal tension on the long leg of each spring.

NOTE: Rear torsion spring settings will affect ski-to-ground pressure. It may be desirable to tighten rear torsion springs for an increase in ski-to-ground pressure. If ski pressure is too light, the machine will be hard to steer around curves and will tend to push, or drive straight through curves.



Optional Suspension Adjustment Springs - 1996 - Current WideTrak Style

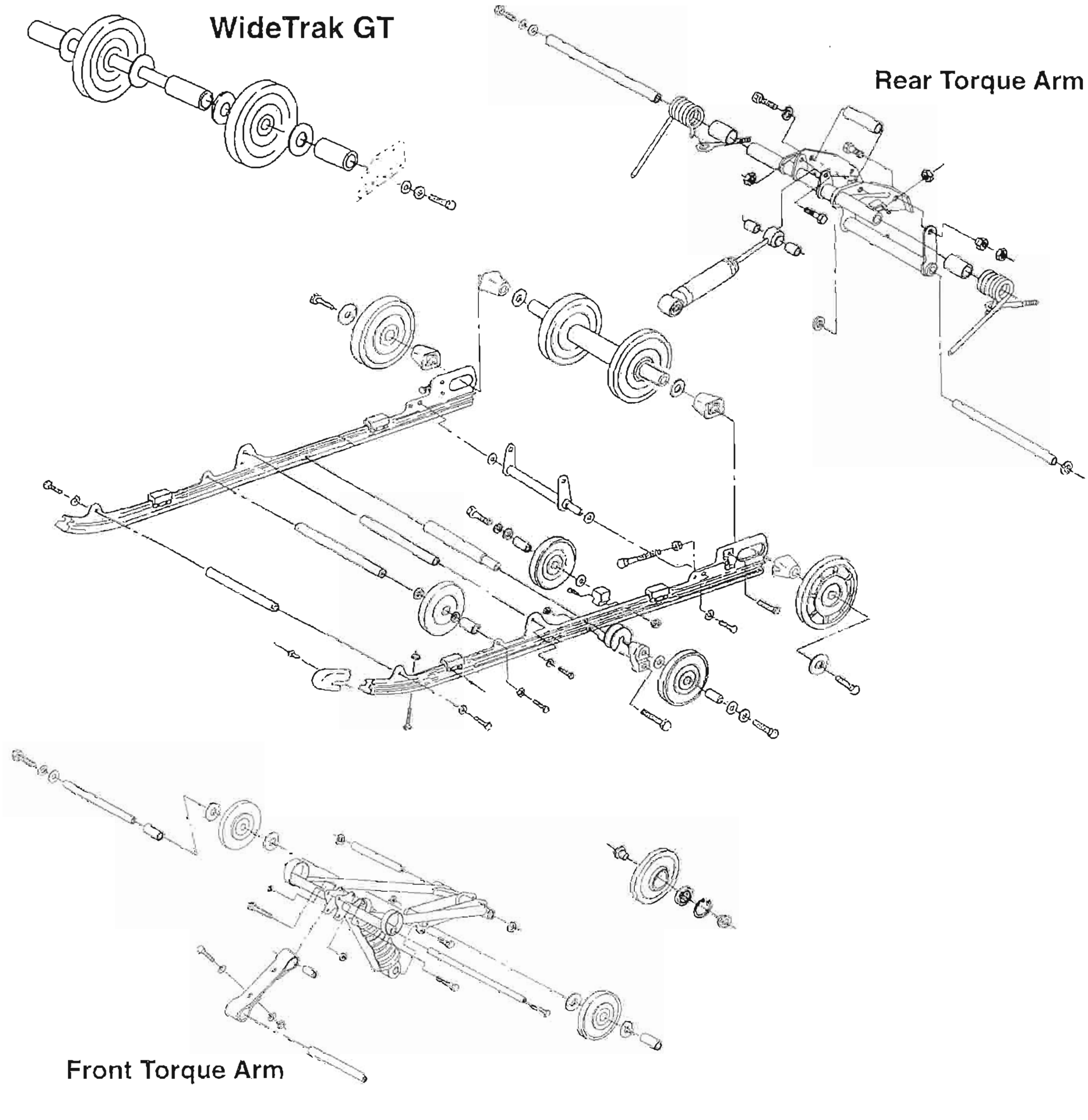
Front Track Shock Coil Springs

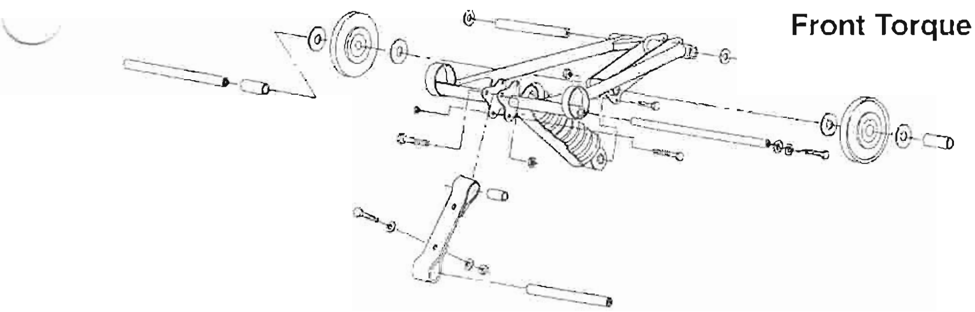
Changing the rate of the front track shock coil spring can affect handling.

Heavier springs will reduce darting and require less effort to steer. However, they will stiffen the ride and give the machine a tendency to push through corners.

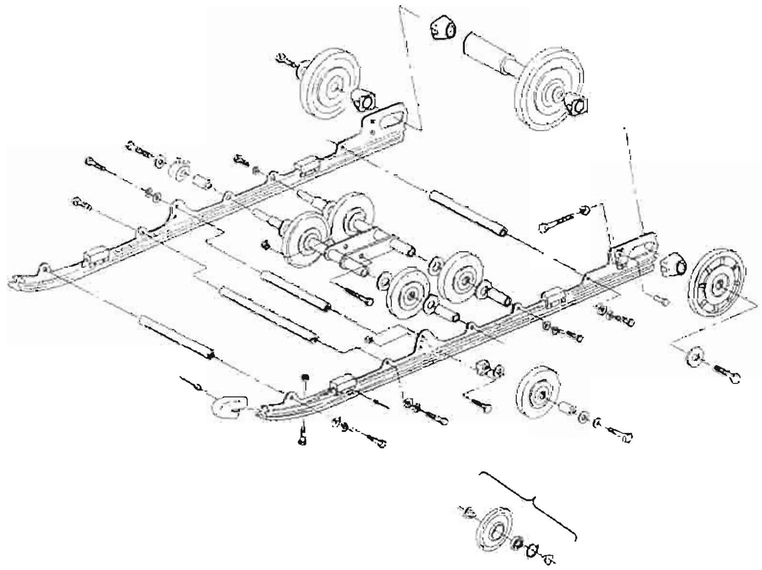
Lighter springs will increase ski pressure for positive pressure through curves.

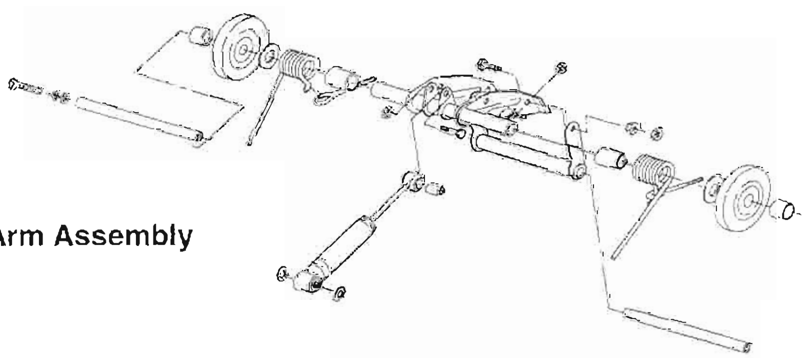
PN 7041127	Option	Light	181 #/in (6.88″ free length)
PN 7041140	Standard	Medium	181 #/in (7.50″ free length)
PN 7041289	Option	Heavy	200#/Variable





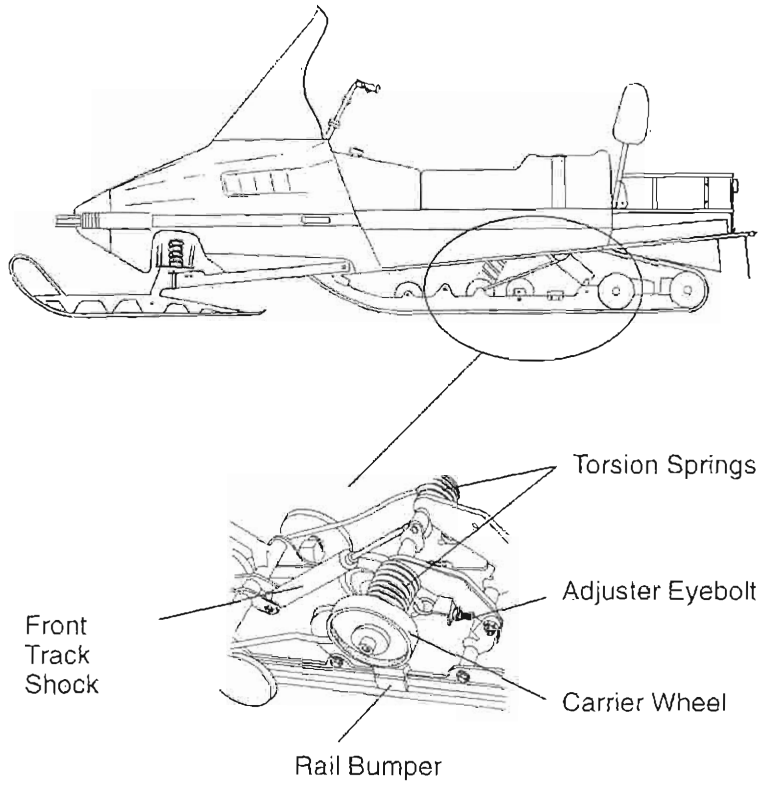
Front Torque Arm Assembly

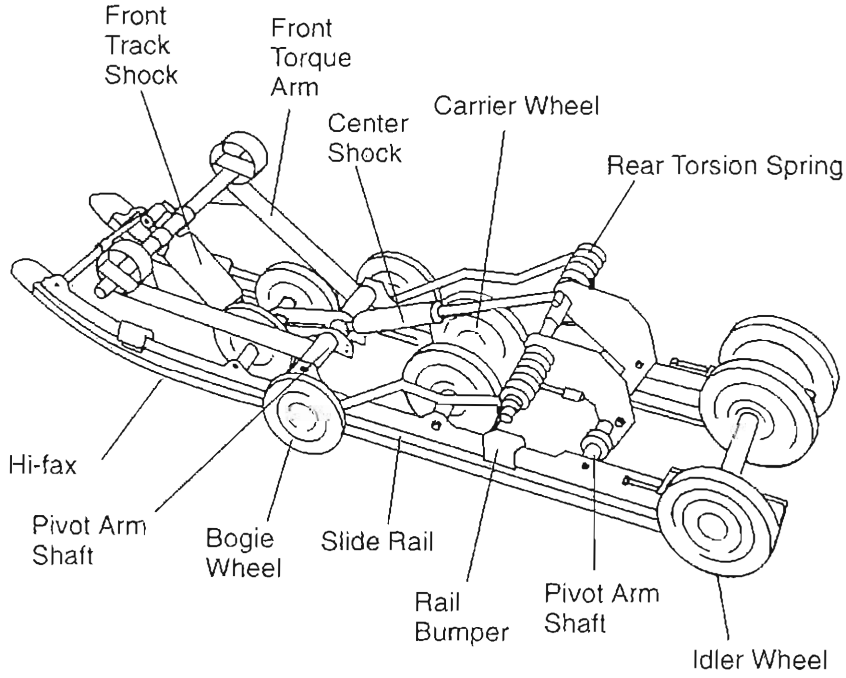




Rear Torque Arm Assembly

1997 Standard Indy 133.5″ / 141″ Exploded View





Suspension Adjustment - 1997 Standard Indy 133.5″ / 141″

The Polaris suspension has been designed and set up to deliver a soft ride under average riding conditions. Rider weight, riding styles, trail conditions, and vehicle speed each affect suspension action.

The suspension can be adjusted to suit rider preference and deliver excellent performance for a given set of conditions. It should be noted, however, that suspension adjustments involve a compromise or trade off. A machine set up to perform well in the moguls would not suit the preference of a groomed trail rider.

Adjustable Features and Adjustment Options

- IFS compression spring preload
- Rear torsion spring preload
- Optional coil springs for front track shock

Adjustment Procedures

It is a good idea to have customers break the suspension in for approximately 150 miles (240 km) before fine tuning adjustments are made.

All settings will vary from rider to rider, depending on rider weight, vehicle speed, riding style, and trail conditions. We recommend starting with factory settings and then customizing each adjustment individually to suit rider preference. The machine should be methodically tested under the same conditions after each adjustment (trail and snow conditions, vehicle speed,riding position, etc.) until a satisfactory ride is achieved. Adjustments should be made to one area at a time, in order to properly evaluate the change.

The purpose of the front track shock coil spring is to control ride height. If you find that in order to obtain the desired ride effect the spring preload is at its maximum, consider removing the existing spring and installing the next highest rate spring. See the chart on page 8.37.

IFS Adjustments

IFS spring preload is one of the adjustment options which affects ride. Preload is the initial compression placed on the spring. The longer the installed length of the spring, the less the amount of preload; the shorter the installed length of the spring, the more the amount of preload. Increasing preload on the IFS spring will result in more bite on the skis, but will require more effort to turn. The IFS compression spring preload can be increased by adding shims (PN 5210953) under the spring.

Always verify ski alignment before making adjustments to the IFS. See Body and Steering, Chapter 7 to check alignment. If the skis are misaligned, we recommend the camber adjustment be checked as this may also be affected.

Rear Suspension Adjustments - 1997 Standard Indy 133.5″ / 141″

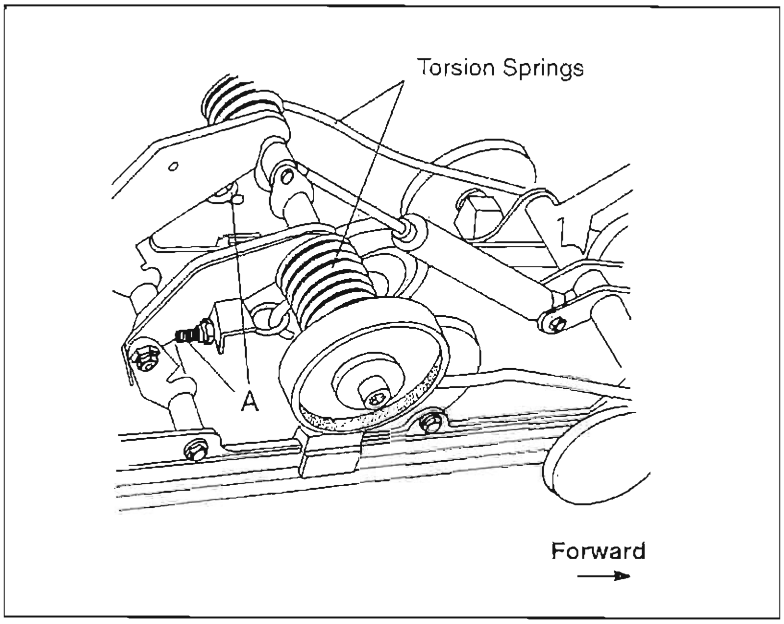
The primary adjustment for riding comfort is rear torsion spring preload adjustment. To check for the recommended settings:

1. Lift the rear of the machine to relieve the rear springs.
2. Slowly lower the machine and measure the distance between the ground and the running board at the rear of the tunnel.
3. Without letting the suspension settle, the rider should carefully mount the snowmobile.
4. Measure the distance between the ground and the same spot on the running board.

If the difference is greater than 1 1/2″, the rear spring should be adjusted equally on both sides until the desired 1 1/2″ drop is obtained.

Compensating adjustments for heavy or light drivers or cargo loads can be made by adjusting the rear torsion spring eye bolt (A) length. Adjust spring tension so there is equal tension on the long leg of each spring.

NOTE: Rear torsion spring settings will affect ski-to-ground pressure. It may be desirable to tighten rear torsion springs for an increase in ski-to-ground pressure. If ski pressure is too light, the machine will be hard to steer around curves and will tend to push, or drive straight through curves.



Shock Coil Springs

Changing the rate of the front track shock coil spring can affect handling.

Heavier springs will reduce darting and require less effort to steer. However, they will stiffen the ride and give the machine a tendency to push through corners.

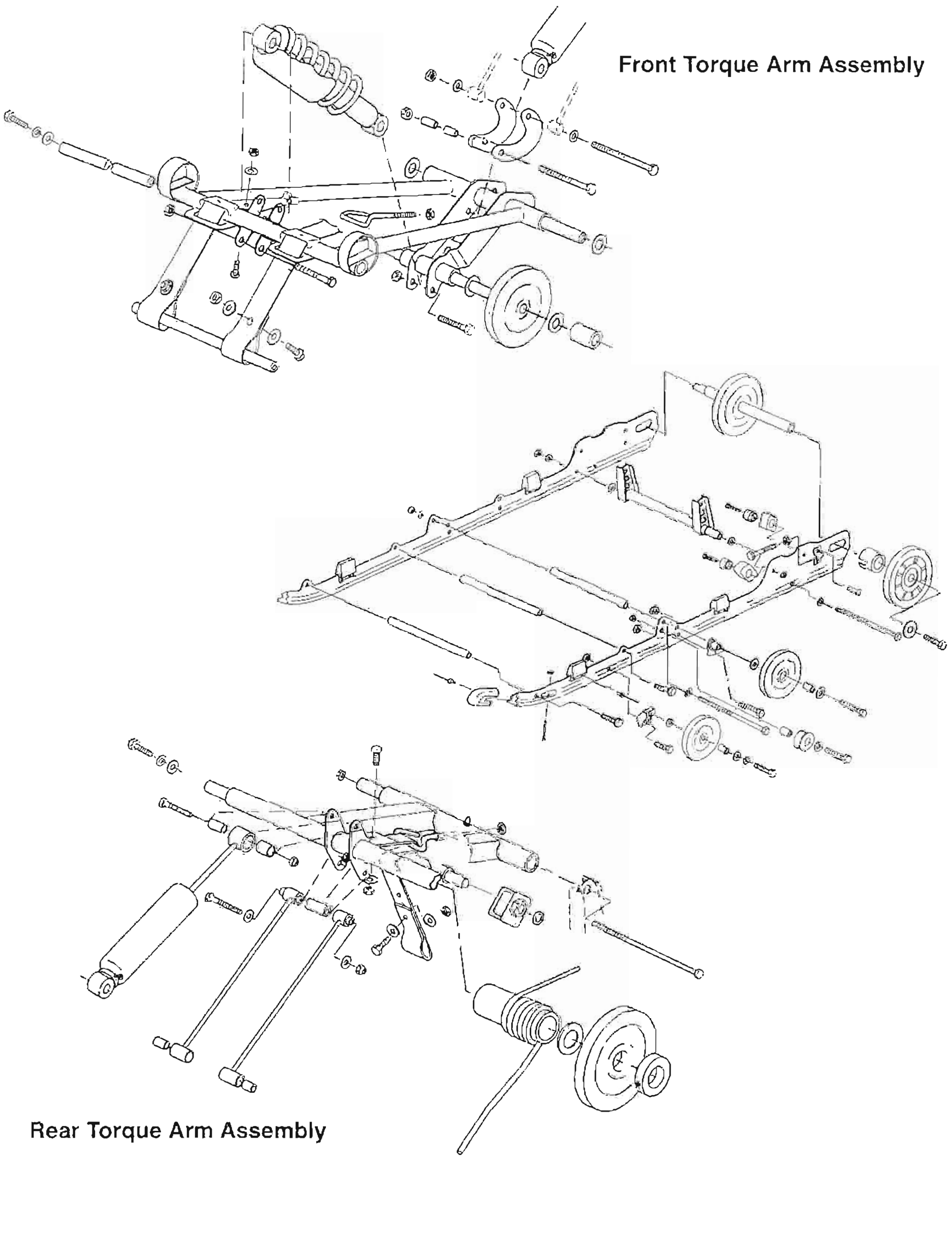
Lighter springs will increase ski pressure for positive pressure through curves.

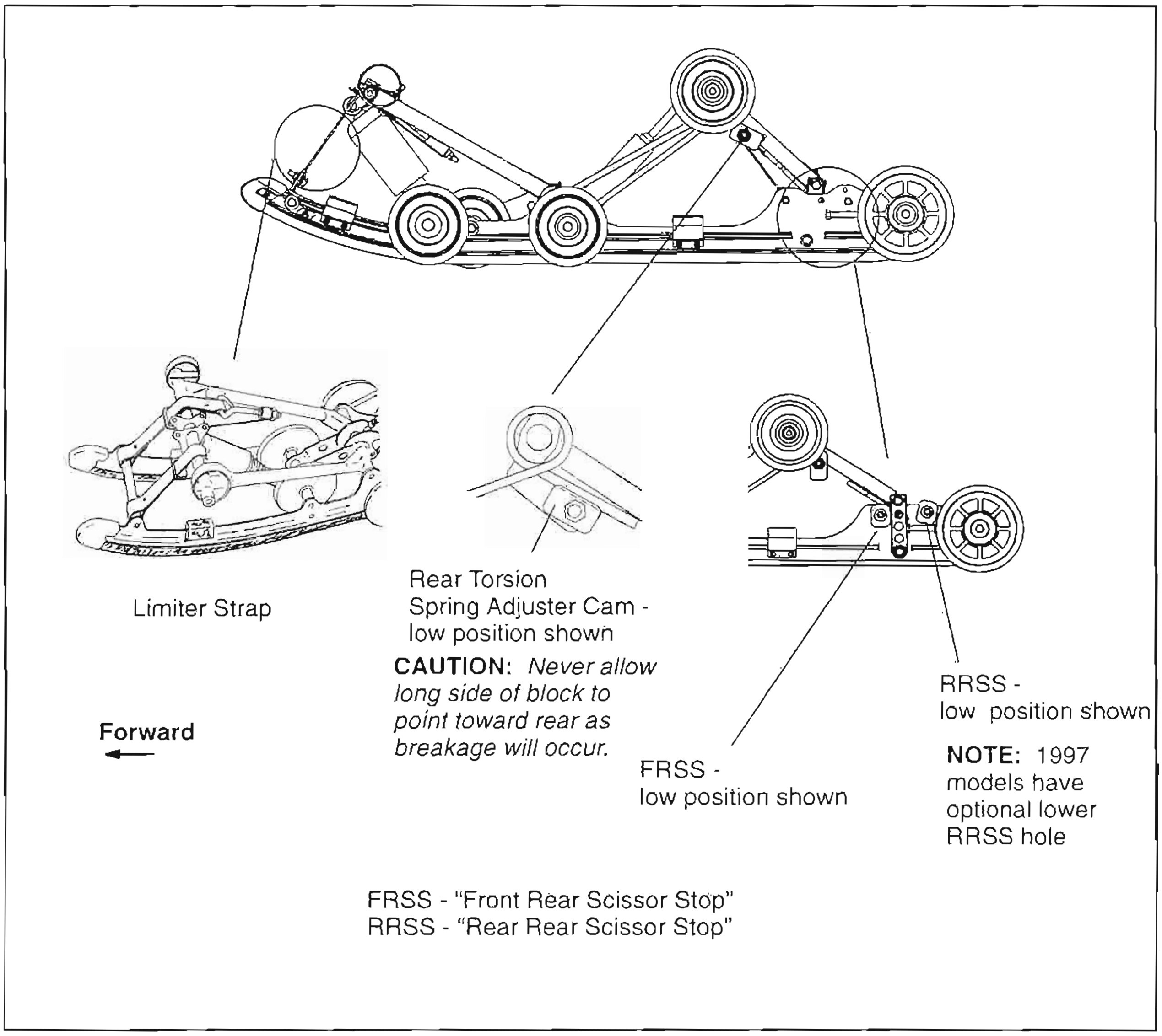
1997 Models

PN 7041127	Option	Light	181 #/in
PN 7041140	Standard	Medium	181 #/in (longer free length than above)
PN 7041289	Option	Heavy	200#/Variable

An optional shock/spring assembly is available for the rear track shock. Order PN 2871042.

Rear Suspension Exploded View - XTRA 10 Style





The rear shock rod has two positions. The hole closer to the tube is less progressive than the lower one. This effectively changes the damping effect of the rear shock absorber in relation to vertical displacement of suspension.

CAUTION: The rear torsion spring block should never have the long side pointing toward the rear or block breakage will occur.

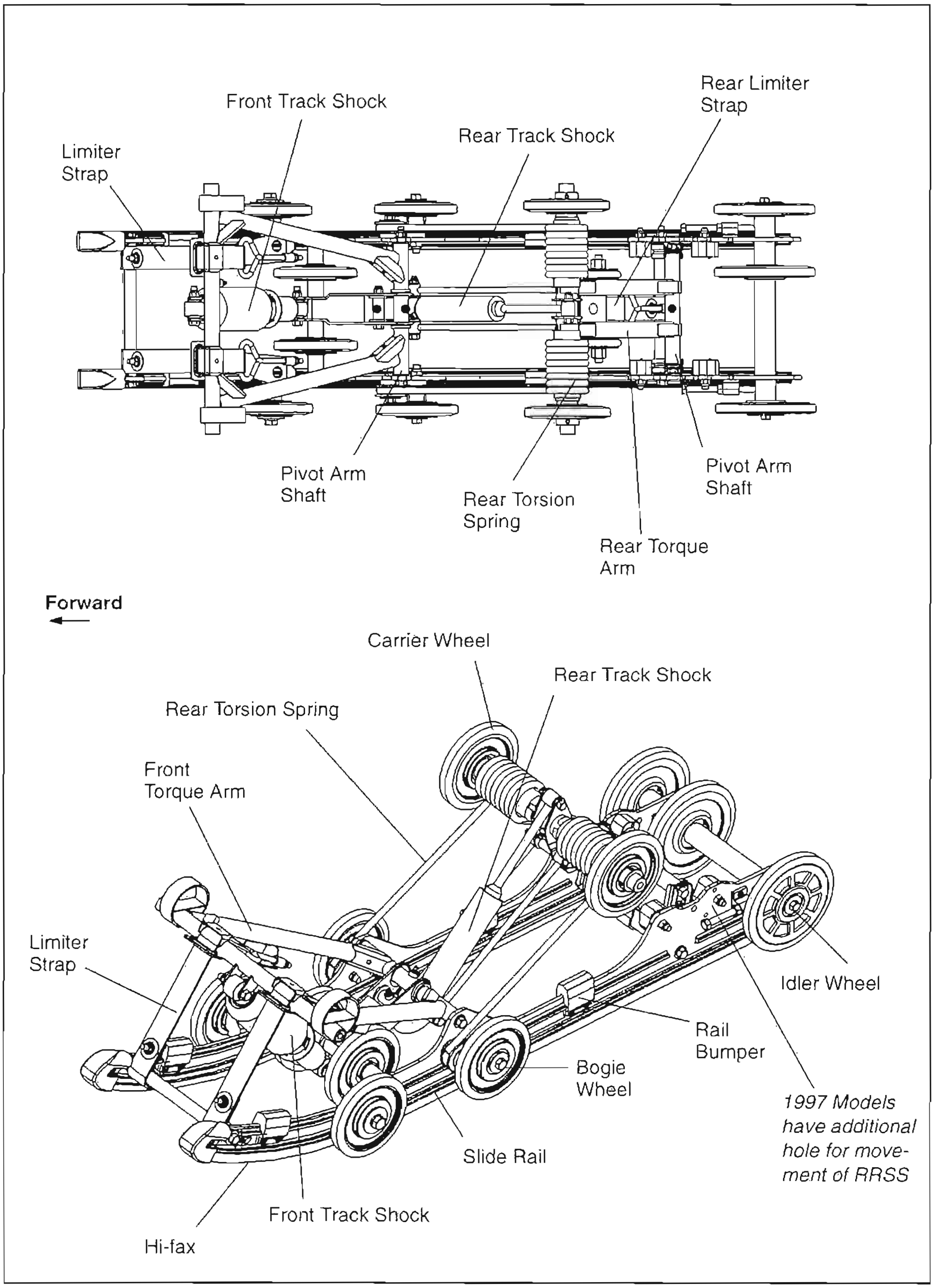
Front Limiter

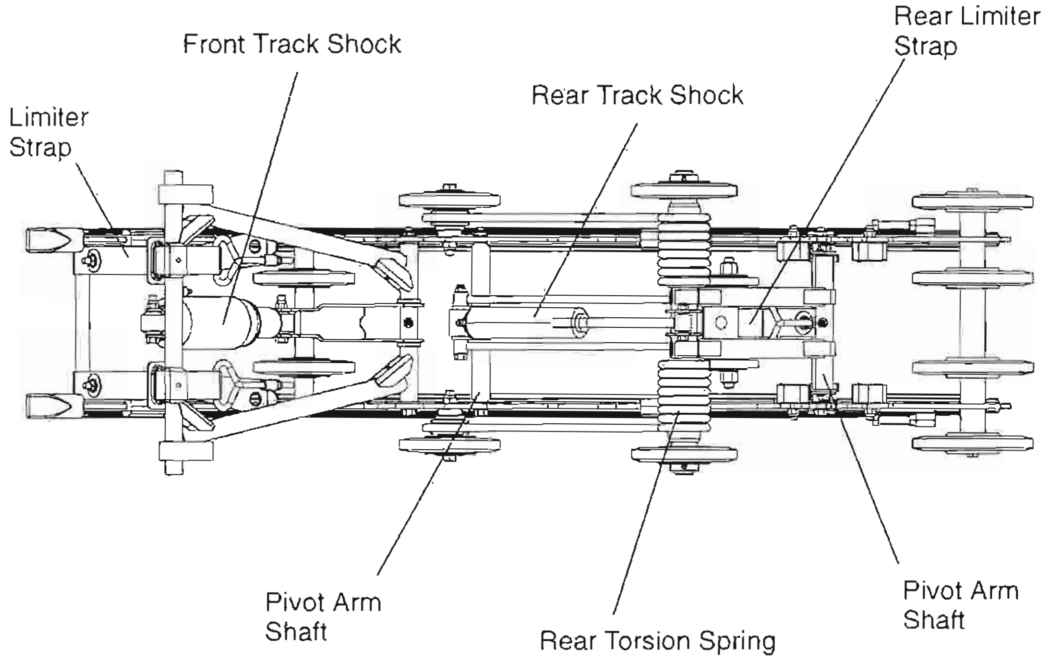
The front limiter strap controls the amount of weight transfer, ski pressure, and to some degree the ride height. The rear limiter controls ride height and increases preload on the rear springs when tightened, which also decreases transfer (i.e. the lighter the torsion spring preload, the more weight transfer).

Setting	Ski Pressure	Weight Transfer
Longer	Decreased	Increased
Shorter	Increased	Decreased

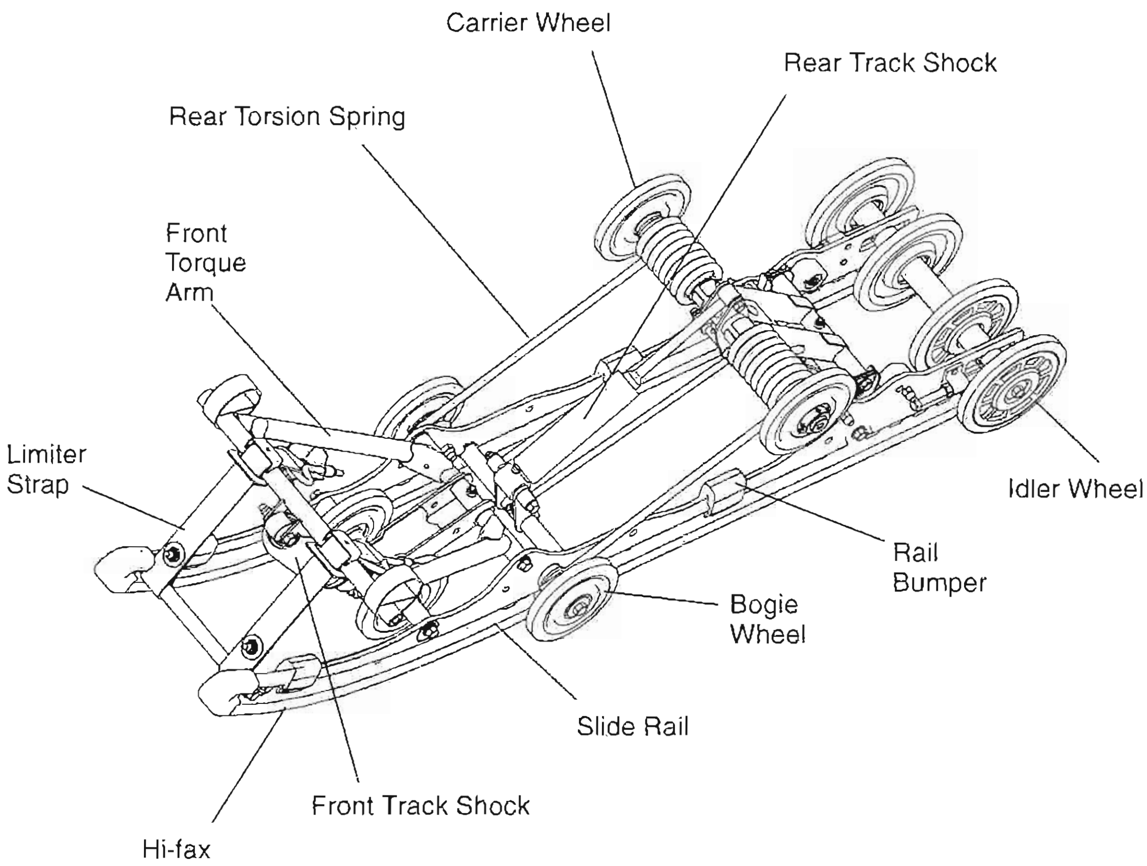
NOTE: RRSS has greatest affect on weight transfer on XTRA 10 suspensions.

Rear Suspension Components - XTRA 10 121″ Style




Front Track Shock
Rear Limiter Strap
Rear Track Shock
Limiter Strap
Pivot Arm Shaft
Rear Torsion Spring
Pivot Arm Shaft

Forward ←


Carrier Wheel
Rear Track Shock
Rear Torsion Spring
Front Torque Arm
Limiter Strap
Idler Wheel
Rail Bumper
Bogie Wheel
Slide Rail
Front Track Shock
Hi-fax

Suspension Adjustment - XTRA 10 Style

The XTRA™ 10 suspension has been designed and set up to deliver a soft ride under average riding conditions. Rider weight, riding styles, trail conditions, and vehicle speed each affect suspension action.

The suspension can be adjusted to suit rider preference and deliver excellent performance for a given set of conditions. It should be noted, however, that suspension adjustments involve a compromise or trade off. A machine set up to perform well in the moguls would not suit the preference of a groomed trail rider.

Adjustable Features and Adjustment Options

Independent Front Suspension (IFS)

- Front shock spring preload
- Optional springs
- Adjustable compression valving via Ryde AFX / Indy Select shock

Rear Suspension

- Rear torsion springs
- Front rear scissor stop (FRSS)
- Rear rear scissor stop (RRSS)
- Optional coil springs for front track shock
- Optional torsion springs
- Adjustable compression via Ryde AFX / Indy Select shock rear track shock
- Limiter straps - front and rear

Adjustment Procedures

It is a good idea to have customers break the suspension in for approximately 150 miles (240 km) and grease all suspension pivots before fine tuning adjustments are made. Use Polaris Premium All Season Grease.

All settings will vary from rider to rider, depending on rider weight, vehicle speed, riding style, and trail conditions. We recommend starting with factory settings and then customizing each adjustment individually to suit rider preference. The machine should be methodically tested under the same conditions after each adjustment (trail and snow conditions, vehicle speed,riding position, etc.) until a satisfactory ride is achieved. Adjustments should be made to one area at a time, in order to properly evaluate the change.

Compression Damping Adjustable Shock

Snowmobiles equipped with compressinon damping adjustable rear shocks allow the driver to make adjustments to the compression valving of the rear shock by turning the screw located near the base of the shock.

Adjustment

Locate the adjustment screw near the base of the shock. **NOTE:** This adjustment is easiest to make with the machine tipped on its side.

⚠ WARNING

Be sure to shut off the fuel supply before tipping the machine to prevent fuel spillage and flooding of the carburetors.

By turning the screw clockwise (a small screwdriver or dime work well), the compression valving is increased, stiffening the ride. To soften the ride, reduce the compression by turning the screw counter-clockwise. An adjustment of 1/2 to 1 turn usually makes a noticeable difference in ride. There are approximately 3 full turns of adjustment available.

How to Adjust

If the suspension is "bottoming," tighten the compression screw clockwise in 1/2 turn increments until the bottoming stops. Backing off 1/4 turn counter-clockwise at this point should give you the best possible ride ensuring use of the full travel of the suspension. The opposite procedure should be used if the suspension is too stiff upon initial set-up.

If bottoming continues after the screw is bottomed out, the torsion spring should be adjusted using the adjustment block. Back the screw out to the original starting position after torsion spring preload has been increased.

Riding conditions are ever changing. Keep in mind the Indy Select / Ryde AFX shocks can be adjusted at any time to achieve the best possible ride in any condition.

NOTE: Whenever shocks are replaced or reinstalled for any reason, the adjustment screw should be located toward the forward right side of the suspension. Access to the adjuster is not possible if reversed. Fox™ Shocks should be installed with the charge fitting up.

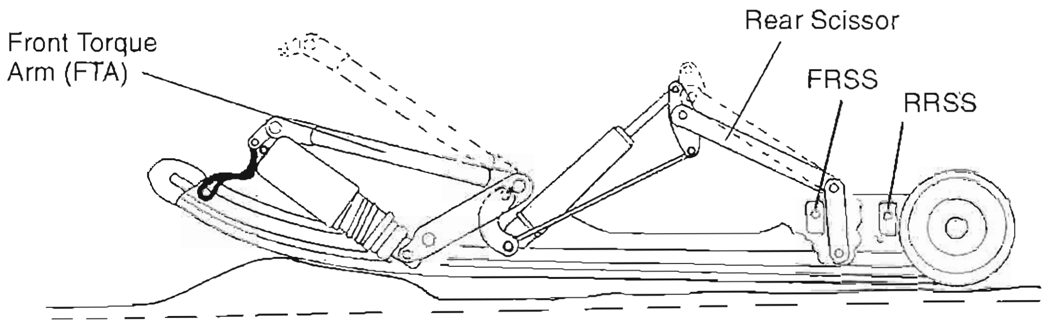
Front Rear Scissor Stop (FRSS) - XTRA 10 Style

The purpose of the front rear scissor stop (FRSS) is to control the bump attitude of the rear suspension. As the front torque arm (FTA) hits the bump, it forces the rear scissor to collapse a predetermined amount, depending on the FRSS block position.

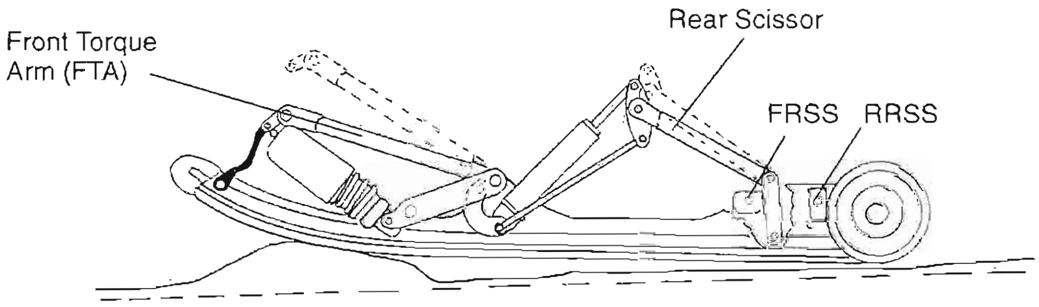
This accomplishes two important things, it allows a lighter spring rate on the FTA because it can borrow spring rate from the rear torsion springs; and it prepares the rear portion of the suspension for the bump.

The FRSS is made of a resilient material allowing smooth action and preventing any suspension component damage.

This unique feature is applied to the XTRA™ 10 rear suspension. Patents are pending.



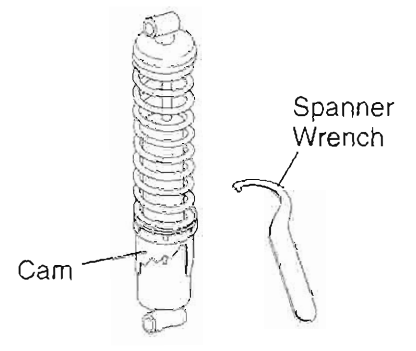
FRSS with short (low) leg to rear. Note the FTA comes up higher before rear scissor begins to collapse.



FRSS with long (high) leg to rear. Note this forces rear scissor to collapse with less FTA movement than when in short position.

Front Suspension Setup and Adjustments

Spring preload is one of the adjustment options which affects ride. Preload is the amount of load the spring provides in the installed position. The longer the installed length of the spring, the less the amount of pre-load; the shorter the installed length of the spring, the more the amount of pre-load. An increase in IFS shock spring pre-load will result in an increase in ski pressure.

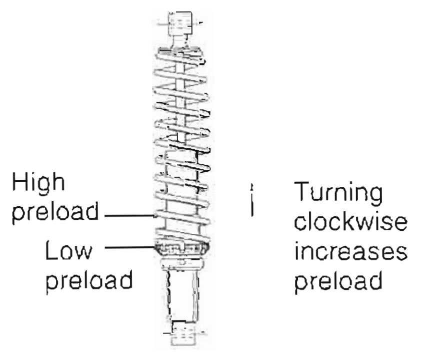


The front spring preload can be adjusted by using the spanner wrench (PN 2871095) provided in the tool kit. As the cam is rotated, spring length will be either increased or decreased. **NOTE:** The Sport Touring front spring is not adjustable, except by adding shims.

To adjust front spring preload on threaded adjust models, grasp the spring and turn in a clockwise direction (as viewed from the bottom of the shock) to increase the preload. Turn in a counterclockwise direction to decrease preload.

NOTE: Access to the cam with the spanner wrench is easiest from the inside of the ski.

When adjusting, be sure springs on both the left and right sides of the machine are at the same adjustment.



For the best ride the spring preload should be as low as possible. Set the preload to use the full travel of the ski shock with occasional light bottoming.

The purpose of the shock coil spring is to control ride height. The purpose of shock valving is to control damping. If you find that in order to obtain the desired ride effect the spring preload is at its maximum, consider removing the existing spring and install the next highest rate spring.

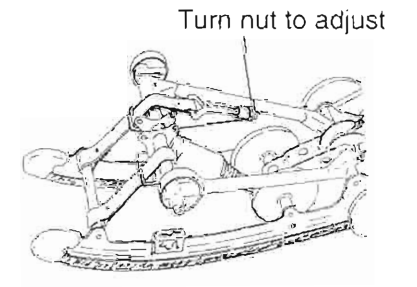
Front Torque Arm Limiter Strap Adjustment

One method of changing ski-to-snow pressure is to change the length of the front torque arm limiter straps. The limiter strap is normally mounted in the fully extended position.

- Lengthening the straps decreases ski pressure under acceleration.
- Shortening the straps increases ski pressure under acceleration.

To adjust models with quick adjust front limiter straps,turn the eyebolt nut to lengthen or shorten the straps. To shorten the strap, turn the nut clockwise. To lengthen the strap, turn the nut counterclockwise.

NOTE: Both limiter straps must be adjusted evenly and remain equal in length to avoid improper Hi-Fax and track wear.

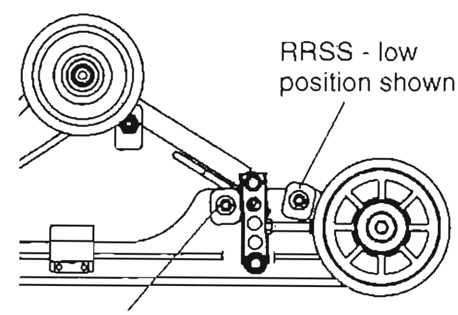


Turning clockwise shortens strap.
Turning counterclockwise lengthens strap.

SUSPENSION
Rear Rear Scissor Stop (RRSS) - XTRA 10 Style

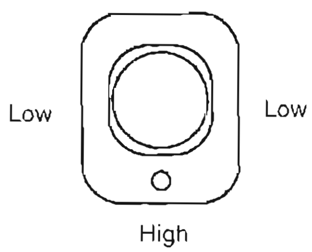
The RRSS controls weight transfer from the rear suspension to the skis. It also influences the stiffness of the ride by controlling the amount of coupling action between the front and rear torque arms. To increase the stiffness of the suspension, the RRSS should be set in the high position.

NOTE: The RRSS can be totally removed for maximum weight transfer. However, unless the torsion springs and rear shock valving are changed, the ride will be compromised. Always maintain equal adjustment on both sides.



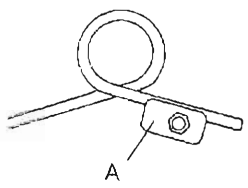
Be sure rear scissor stop face is square with the face of the scissor arm to ensure complete contact.

Scissor Stop Block Position

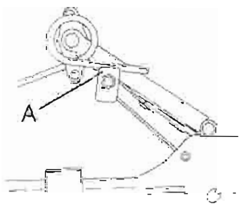


Rear Spring Tension

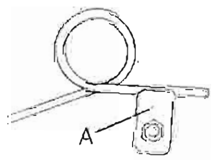
Rear spring tension adjustments are made by rotating the eccentric spring block (A) as shown with the engine spark plug tool. The block provides three spring tension positions. This adjustment is easier if the long spring leg is lifted over the roller and replaced after the block is properly positioned. Always maintain equal adjustment on both sides.



Soft Tension Long End to Front



Medium Tension (Short End Up)



Firm Tension (Long End Up)

Optional Springs - 1996 - Current XTRA 10 Style

The following optional springs are available to better suit individual riding preference. **NOTE:** There are no options for the front ski springs.

The following optional springs are available to better suit individual riding preference.

Front Track Spring Part No.	Spring Wire Dia. x Free Length - Rate
7041361-067	.343 x 7.0 - 243 #/in.
7041253-067	.312 x 7.5 - 200/Var.
7041362-067	.261 x 7.0 - 85 #/in.
7041364-067	.283 x 7.5 - 126 #/in.

Torsion Spring Part No.	Wire Dia./Degrees
7041463-067 Left	.406/77°
7041464-067 Right	.406/77°
7041461-067 Left	.421/77°
7041462-067 Right	.421/77°
7041465-067 Left	.437/77°
7041466-067 Right	.437/77°

The following optional front ski springs are available for the **440 XCR**.

Front Ski Spring Part No.	Spring Wire Dia. x Free Length - Rate
7041396-067	.283 x 11.88 - 50#/in.
7041398-067	.312 x 11.88 - 75#/in.
7041351-067	.331 x 11.88 - 75-125#/in.
7041405-067	.283 x 11.88 - 65#/in.

NOTE: Springs on the front ski shocks and front (center) track shock are interchangeable.
The following optional front ski springs are available for the **600 XCR**.

Front Ski Spring Part No.	Spring Wire Dia. x Free Length - Rate
7041358-067	.331 x 9.5 - 160#/in.
7041359-067	.312 x 9 - 146#/in.
7041360-067	.331 x 9 - 120/170#/in.
7041366-067	.331 x 9 - 110/140#/in.

The following optional front track springs are available for the **440 XCR SP**.

Front Track Spring Part No.	Spring Wire Dia. x Free Length - Rate
7041509-067	.343 x 6.18 - 140/240#/in
7041510-067	.362 x 6.25 - 165/245#/in.
7041511-067	.225 x 5.25 - 50#/in.
7041512-067	.263 x 5.25 - 85#/in.
7041513-067	.295 x 5.25 - 135#/in.
7041514-067	.297 x 5.25 - 100/180#/in.

CAUTION: Springs on front skis must be the same rate. Valving in shocks may have to be changed in some cases or loss of control could result.

Ryde AFX shocks also available as an accessory for the IFS or rear track. These shocks offer more tuning ability. See the accessory section at the back of this manual.

SUSPENSION
Optional Springs - 1997 XTRA 10 Style

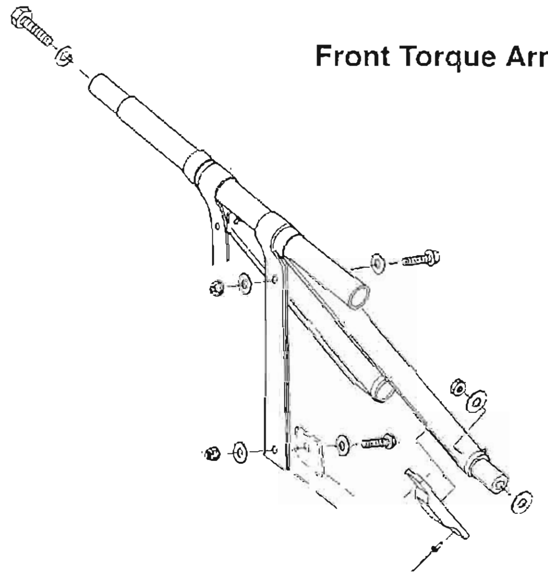
Following is a list of all available springs for the XTRA 10 front and rear suspension. These springs can be used to better suit individual riding preference.

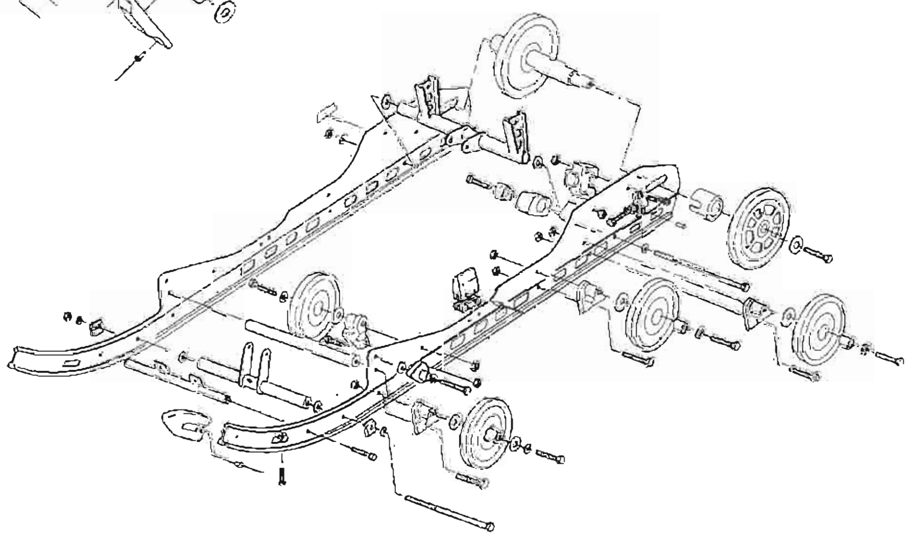
Torsion Spring Part No.	Wire Dia./Degrees
7041463-067 LH	.406/77°
7041464-067 RH	.406/77°
7041461-067 LH	.421/77°
7041462-067 RH	.421/77°
7041465-067 LH	.437/77°
7041466-067 RH	.437/77°

Front Ski Spring Part No.	Length/Rate - Application
7041554-067	80# Fox
7041576-067	100# Fox
7041575-067	120# Fox
7041574-067	140# Fox
7041573-067	160# Fox
7041553-067	60# Gabriel/Arvin
7041552-067	80# Gabriel/Arvin
7041551-067	100# Gabriel/Arvin
7041550-067	120# Gabriel/Arvin
7041549-067	140# Gabriel/Arvin

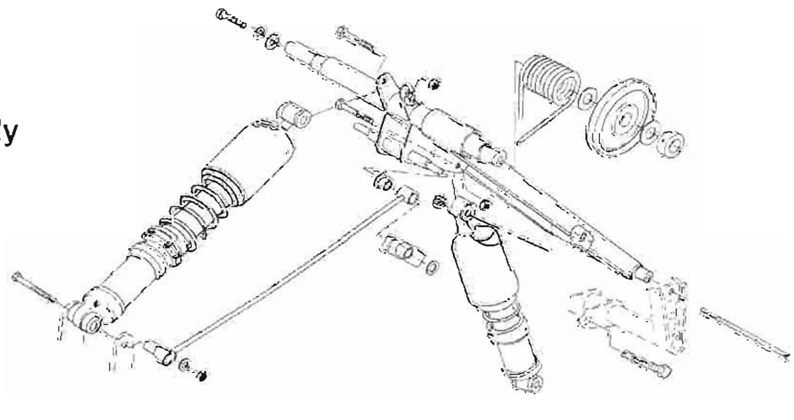
Front Track Spring Part No.	Spring Wire Dia. x Free Length - Rate
7041361-067	.343 x 7.0 - 243 #/in
7041253-067	.312 x7.5 - 200/Var
7041362-067	.261 x 7.0 - 85 #/in
7041364-067	.283 x 7.5 - 126 #/in

Front Torque Arm Assembly

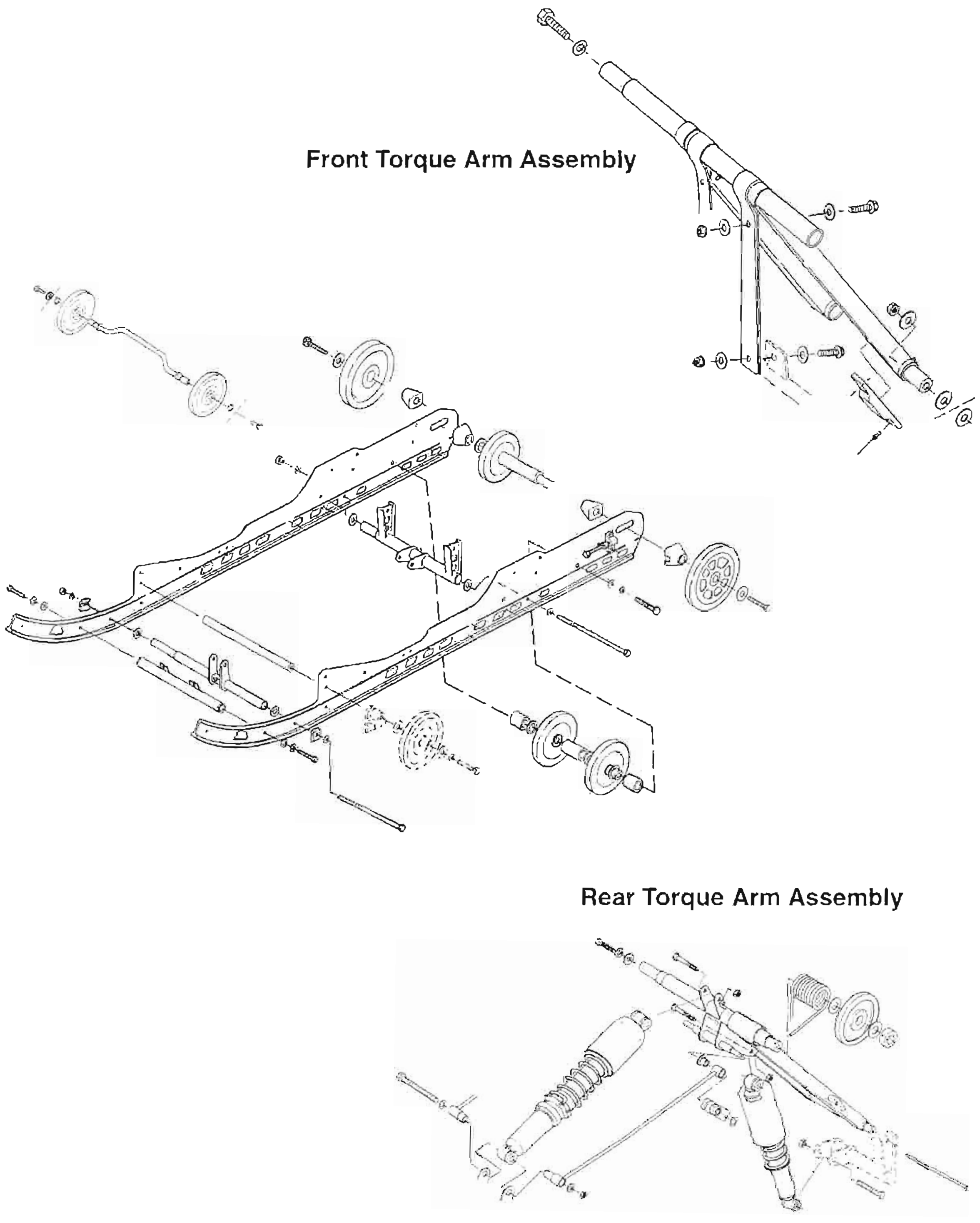


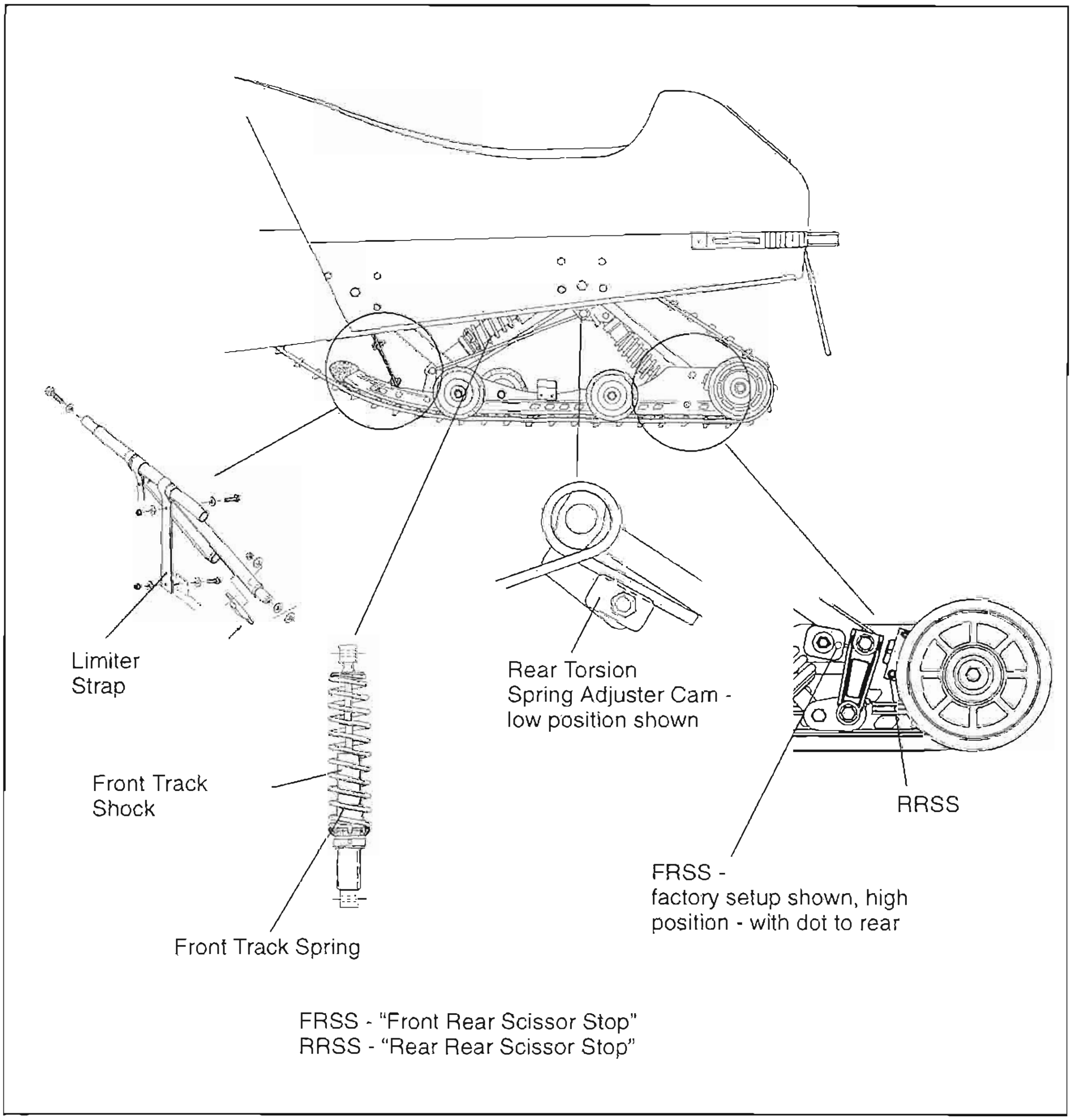


Rear Torque Arm Assembly

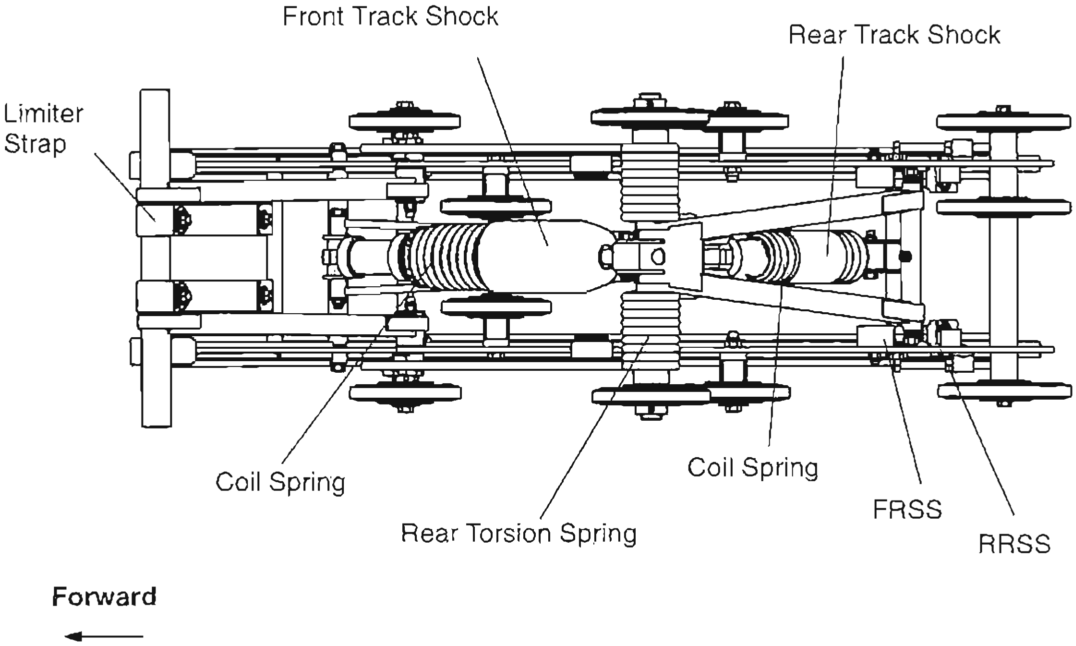


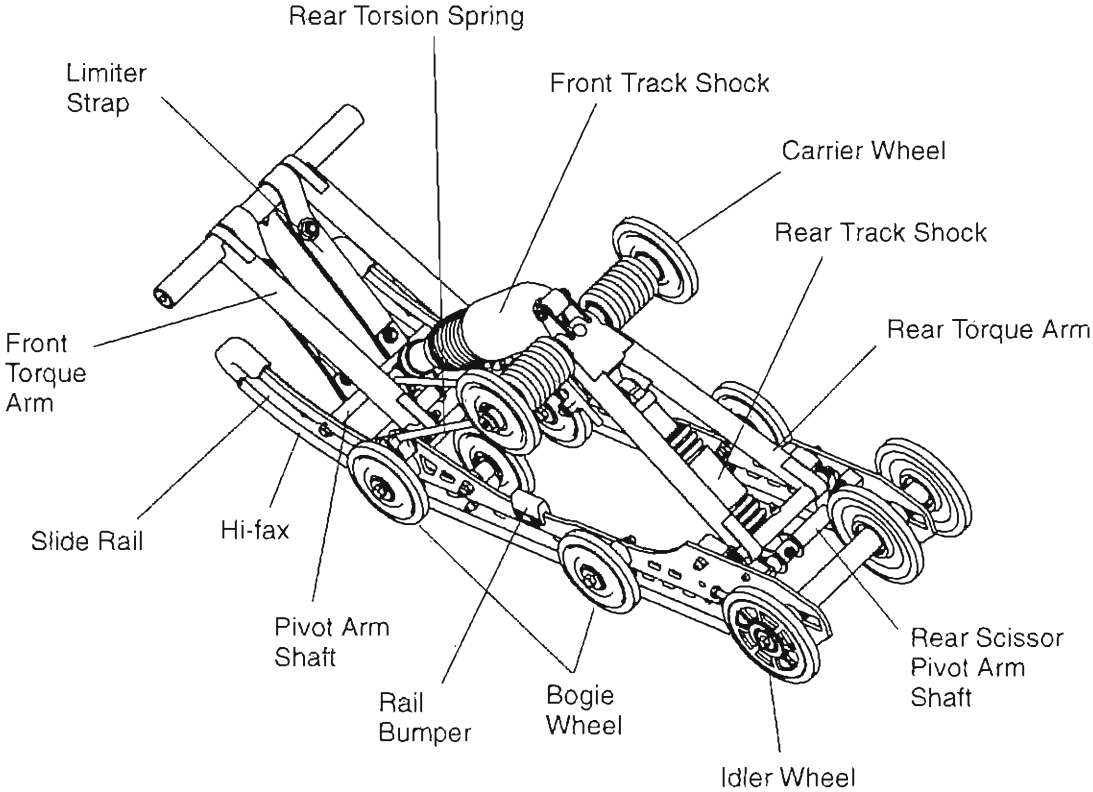
Rear Suspension Exploded View - XTRA 12 133.5″ Style




Limiter
Strap
Front Track
Shock
Front Track Spring
Rear Torsion
Spring Adjuster Cam -
low position shown
RRSS
FRSS -
factory setup shown, high
position - with dot to rear
FRSS - "Front Rear Scissor Stop"
RRSS - "Rear Rear Scissor Stop"

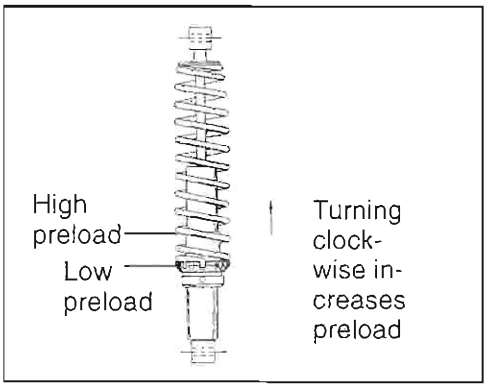
Rear Suspension Components - XTRA 12 Style





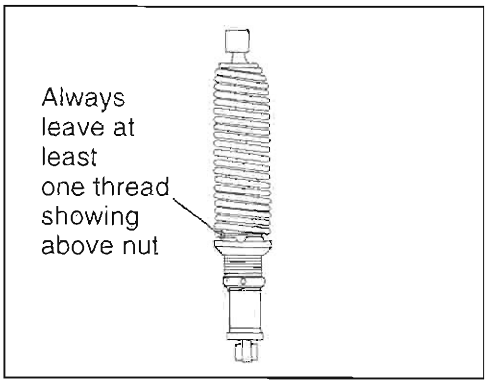
Spring preload is one of the adjustment options which affects ride. Preload is the amount of pressure at which the spring is held. The longer the installed length of the spring, the less the amount of preload; the shorter the installed length of the spring, the more the amount of preload.

To adjust spring preload on the ski, grasp the spring and turn in a clockwise direction (as viewed from the bottom of the shock) to increase the preload. Turn in a counterclockwise direction to decrease preload.



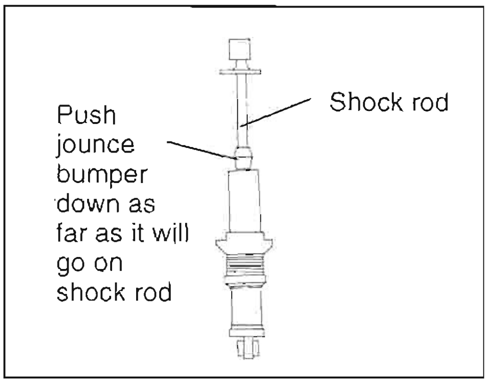
CAUTION:

If the plastic nut is unscrewed from the threaded body the nut will break. Always leave one thread showing above the plastic nut or the spring coils will stack, resulting in damage.



For the best ride the spring preload should be as low as possible. Set the preload to use the full travel of the ski shock with occasional light bottoming. To determine if your machine is using full travel, push the shock jounce bumper down as far as it will go on the shock rod and test ride the machine.

The bumper will move up on the rod in direct relation to the amount of travel. For example, if the shock travel is full, the bumper will be seated at the top of the shock.



The purpose of the shock coil spring is to control ride height. The purpose of shock valving is to control damping. If you find that in order to obtain the desired ride effect the spring preload is at its maximum, consider one of these options:

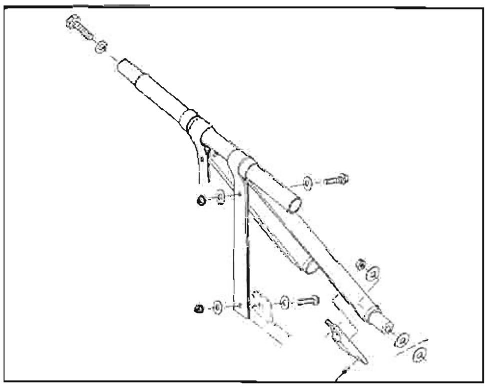
- Remove the existing spring and install the next highest rate spring, or
- Reduce the preload on the existing spring and change the shock valving to obtain the desired effect. **NOTE:** Shock valving can only be adjusted or changed on models equipped with Indy Select or Fox™ shocks.

⚠ WARNING

Changing shock valving requires special tools and a sound knowledge of mechanical theory, tool use, and shop procedures in order to perform the work safely and correctly. Shocks contain high pressure nitrogen gas. Extreme caution should be observed when handling and working with high pressure service equipment. See Fox™ Shock rebuilding information later in this chapter.

Always verify ski alignment before making adjustments to the IFS. See page 7.17 to check alignment. If the skis are misaligned, we recommend the camber adjustment be checked as this may also be affected.

IFS Front Torque Arm Limiter Strap Adjustment - XTRA 12 Style



One method of changing ski-to-snow pressure is to change the length of the front torque arm limiter straps using the holes provided. The limiter strap is normally mounted in the fully extended position. It is important to note that decreasing limiter strap length will stiffen the whole suspension.

- Lengthening the straps decreases ski pressure.
- Shortening the straps increases ski pressure.

The preferred method for changing ski pressure is to move the FRSS to the forwardmost hole. See page 8.56.

The XTRA™ 12 suspension has been designed and set up to deliver a soft ride under average riding conditions. Rider weight, riding styles, trail conditions, and vehicle speed each affect suspension action.

The suspension can be adjusted to suit rider preference and deliver excellent performance for a given set of conditions. It should be noted, however, that suspension adjustments involve a compromise or trade off. A machine set up to perform well in the moguls would not suit the preference of a groomed trail rider.

Adjustable Features and Adjustment Options

Independent Front Suspension (IFS)

- Front shock spring preload
- Optional springs
- Optional shock valving
- Compression adjust Indy Select / Ryde AFX shock (see page 8.62)

Rear Suspension

- Spring preload - front track shock
- Spring preload - rear track shock
- Rear torsion spring pre-load
- Front rear scissor stop (FRSS)
- Optional coil springs
- Optional torsion springs
- Optional shock valving
- Limiter strap - front
- Compression adjust Indy Select Ryde AFX shock (see page 8.62)

Adjustment Procedures

It is a good idea to have customers break the suspension in for approximately 150 miles (240 km) and grease all suspension pivots before fine tuning adjustments are made. Use Polaris Premium All Season Grease.

All settings will vary from rider to rider, depending on rider weight, vehicle speed, riding style, and trail conditions. We recommend starting with factory settings and then customizing each adjustment individually to suit rider preference. The machine should be methodically tested under the same conditions after each adjustment (trail and snow conditions, vehicle speed,riding position, etc.) until a satisfactory ride is achieved. Adjustments should be made to one area at a time, in order to properly evaluate the change.

Rear Suspension Adjustments - XTRA 12 Style

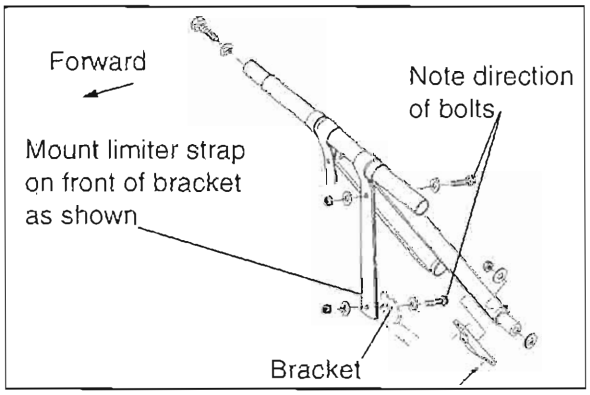
The primary rear suspension adjustments are the front track spring preload and the rear torsion spring preload. It is important to note that adjusting the limiter strap does not change weight transfer from the rear suspension to the skis as in a conventional suspension. Instead it will increase the entire rear suspension preload and decrease travel. To *increase* ski pressure the front rear scissor stop (FRSS) should be set to low. To *decrease* ski pressure the FRSS should be set to high.

To properly adjust the rear suspension, start with the lightest preload setting that will prevent heavy bottoming. Adjustments should be made to one area at a time, in order to properly evaluate the change.

NOTE: Rear spring settings will affect ski-to-ground pressure. If ski pressure is too light it may be desirable to tighten rear springs for an increase in ski-to-ground pressure. It is also possible to reposition the FRSS for increased ski pressure.

Front Track Shock Spring

Front track shock spring preload is adjusted by grasping the spring and turning in a clockwise direction to *increase* the preload. Turn in a counterclockwise direction to *decrease* preload.

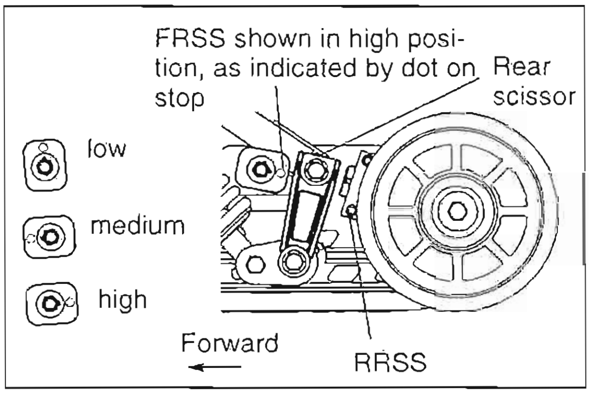


Rear Track Shock Spring

The rear track shock coil spring does not have a threaded adjuster. One option to *decrease* preload for *less aggressive riders* is removal of the rear track shock spring.

Front Rear Scissor Stop (FRSS)

To adjust the FRSS compress the rear suspension until the rear scissor pivots away from the FRSS. Turn adjuster to desired position. The dot on the stop indicates the high position. High position is with the dot located toward the rear of the machine
. (See illustration) Medium position is with the dot toward the front of the machine.

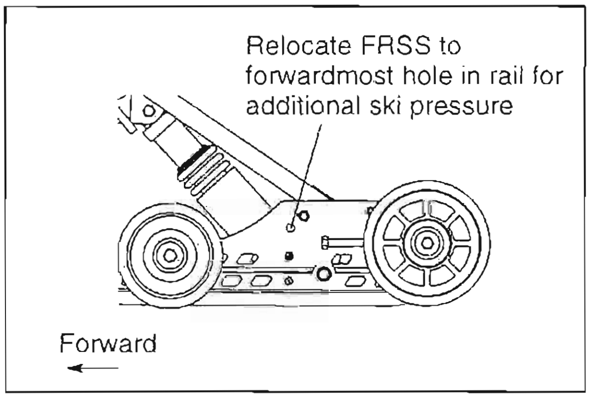


CAUTION:

Be sure both blocks are in the same position or suspension damage may occur.

NOTE: It may be necessary to loosen the FRSS mounting bolts to adjust the position. Tighten after adjustment.

If the FRSS is in the low position but additional ski pressure is desired, move the FRSS to the optional front hole. Remove the attaching bolts and relocate the FRSS blocks in the forwardmost hole. Reinstall bolts and tighten.



Rear Rear Scissor Stop (RRSS)

The RRSS is not adjustable but can be changed to provide less weight transfer on 121″ models. See chart below.

XTRA 12 RRSS Production Settings

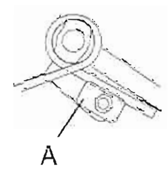
Suspension	Length	Color	Part Number
121″	Short	Black	5410937
133″	Long	Gray	5411041

NOTE: For less weight transfer on XTRA 12 121″ use long (gray) RRSS block.

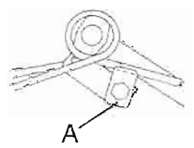
Rear Torsion Spring

Rear torsion spring preload is adjusted by turning the two position cam (A) on the short leg of the spring as shown with the engine spark plug tool. This adjustment is easier if the long spring leg is lifted over the roller and replaced after the cam is properly positioned.

NOTE: See charts on page 8.60 for suggested set up for rider's weight and/or carrying capacity.



Soft Tension Long End to Front



Firm Tension (Long End Up)

Optional Springs - 1996 XTRA 12 Style

The following optional springs are available to better suit individual riding preference.

Coil Spring Part No. For Use on Ski or Front Track Shocks	Spring Wire Dia. x Free Length - Rate
7041405-067	.306 x 11.88 - 65 #/in.
7041398-067	.312 x 11.88 - 75 #/in.
7041404-067	.343 (or .362) x 11.88 - 90/150 #/in.

Rear Track Spring Part No.	Spring Wire Dia. x Free Length - Rate
7041362-067	.261 x 7.0 - 85#/in.
7041364-067	.283 x 7.5 - 126#/in.
7041361-067	.343 x 7.0 - 243 #/in.

Torsion Spring Part No.	Wire Dia./Degrees
7041406-067 Left	.421/55°
7041407-067 Right	.421/55°
7041467-067 Left	.437/55°
7041468-067 Right	.437/55°

Coil Spring Part No. For Use on Ski (or Classic Front Track)	Spring Wire Dia. x Free Length - Rate
7041405-067	.306 x 11.88 - 65 #/in.
7041398-067	.312 x 11.88 - 75 #/in.
7041404-067	.343 x 11.88 - 90/150 #/in.

Rear Track Spring Part No. *Classic Only*	Spring Wire Dia. x Free Length - Rate
7041362-067	.261 x 7.0 - 85#/in.
7041364-067	.283 x 7.5 - 126#/in.
7041361-067	.343 x 7.0 - 243 #/in.

NOTE: A front track spring option kit is available for Classic Touring and XLT Touring Models. Order part number 2871349. This kit is included in the optional rear rack kit. See your dealer for more information.

Torsion Spring Part No. Classic, Classic Trg. & XLT Trg.	Wire Dia./Degrees
7041406-067 Left	.421/55°
7041407-067 Right	.421/55°
7041467-067 Left	.437/55°
7041468-067 Right	.437/55°

NOTE: Springs on the front ski shocks and front (center) track shock are interchangeable.

CAUTION: Springs on front skis must be the same rate. Valving in shocks may have to be changed in some cases or loss of control could result.

Optional Springs - 1997 XTRA 12 Style

Following is a list of all available springs for the XTRA 12 front and rear suspension. These springs can be used to better suit individual riding preference.

Torsion Spring Part No.		Wire Dia./Degrees
7041394-067 LH	More Pre-load	.406/65°
7041395-067 RH	More Pre-load	.406/65°
7041487-067 LH		.406/77°
7041488-067 RH		.406/77°
7041406-067 LH	More Pre-load	.421/55°
7041407-067 RH	More Pre-load	.421/55°
7041487-067 LH		.437/77°
7041488-067 RH		.437/77°

IFS Spring Part No.	Length/Rate - Application
7041554-067	80# Fox
7041576-067	100# Fox
7041575-067	120# Fox
7041574-067	140# Fox
7041573-067	160# Fox
7041553-067	60# Gabriel/Arvin
7041552-067	80# Gabriel/Arvin
7041551-067	100# Gabriel/Arvin
7041550-067	120# Gabriel/Arvin
7041549-067	140# Gabriel/Arvin

Front Track Shock Spring Part No.	Spring Wire Dia. x Free Length - Rate
7041404-067	.343 x 11.88 - 90/150 #/in
7041396-067	.283 x 11.88 - 50 #/in
7041484-067	.406 x 9.0 - 275 #/in
7041405-067	.306 x 11.88 - 65 #/in
7041398-067	.312 x 11.88 - 75 #/in

Rear Track Shock Spring Part No.	Spring Wire Dia. x Free Length - Rate
7041362-067	.261 x 7.0 - 85 #/in
7041364-067	.283 x 7.5 - 126 #/in
7041361-067	.343 x 7.0 - 243 #/in
7041561-067	.261 x 7.5 - 85 #/in

XTRA 12 Rear Suspension Set Up

Rear Suspension Suspension Set Up

The following charts are only guidelines to be used for initial suspension set up. Set up may vary based on your desired riding style.

XTRA 12 121″

Rider Weight	Front Track Shock Spring	Torsion Spring	Rear Track Shock Spring**	
110-160 lbs. (50-73 kg)	75 #/in.	.406 Low Setting	85 #/in.	Ultra 126 #/in.
*160-210 lbs. (73-95 kg)	75/125 #/in Low-Medium Preload	.406 Low Setting	85 #/in.	Ultra 126 #/in.
210-260 lbs. (95-118 kg)	75/125 #/in High Preload	.421 Low Setting	85 #/in.	Ultra 126 #/in.
260+ lbs. (118+ kg)	90/150 #/in Low Preload	.421 High Setting	126 #/in.	Ultra 200 #/in. Variable

*Indicates production set up for average rider/ average conditions.
** May be removed if ride is too stiff after other adjustments or changed to a lighter rate spring. See Rear Track Spring Options, page 8.58.

XTRA 12 133″

Rider Weight		Front Track Spring (1)	Torsion Spring	Rear Track Spring (2)	Front Track Shock (3)	Rear Track Shock (3)
110-160	Soft	75-125 #/in. 90/150 #/in.	.421 x 55 low .437 x 77 low	275 #/in. 275 #/in.	3/4	3/4
With rack plus 30 lbs.		190 #/in.	.437 x 77 low	275 #/in.	1.75	1.75
160-200		90-150 #/in.	.437 x 77 low	275 #/in.	1	1
with rack plus 30 lbs.		190 #/in.	.437 x 55 high	275 #/in.	2	2
200-260		90-150 #/in.	.437 x 77 low	275 #/in.	1.5	1.5
with rack plus 30 lbs.		190 #/in. w/1.0 ″ pre-load	.437 x 77 high	275 #/in.	2.5	2.5
260+		90-150 #/in.	.437 x 77 high	275 #/in.	2.5	2.5
with rack plus 30 lbs.		190 #/in. w/1.0 ″pl	.437 x 77 high	275 #/in.	3	3

(1) Note: The front track spring preload may be adjusted using the threaded adjuster to the desired setting in combination with the listed configurations.

(2) Note: For extreme conditions up to one inch of preload can be added to the rear track shock spring using spacers (PN 5210953).

(3) Note: This setting refers to the compression adjust screw in Indy Select shocks. Setting indicates number of turns in clockwise direction.

Compression Damping Adjustable Shocks

Snowmobiles equipped with the Indy Select / Ryde AFX rear shocks allow the driver to make adjustments to the compression valving of the rear shock by turning the screw located near the base of the shock.

Adjustment

Locate the adjustment screw near the base of the shock. **NOTE:** This adjustment is easiest to make with the machine tipped on its side.

⚠ WARNING

Be sure to shut off the fuel supply before tipping the machine to prevent fuel spillage and flooding of the carburetors.

By turning the screw clockwise (a small screwdriver or dime work well), the compression valving is increased, stiffening the ride. To soften the ride, reduce the compression by turning the screw counter-clockwise. A great deal of ride performance is accomplished with a mere 1/2 to 1 turns. There are approximately 3 full turns of adjustment available.

How to Adjust

If the suspension is "bottoming," tighten the compression screw clockwise in 1/2 turn increments until the bottoming stops. Backing off 1/4 turn counter-clockwise at this point should give you the best possible ride ensuring use of the full travel of the suspension. The opposite procedure should be used if the suspension is too stiff upon initial set-up.

The adjustment of the front track shock should be used in conjunction with the shock spring preload. To adjust spring, see page 8.60.

If bottoming continues after the screw is bottomed out, the torsion spring should be adjusted per the adjustment block. See page 8.60. Back the screw out to the original starting position after the torsion spring has been tightened.

Riding conditions are ever changing. Keep in mind the compression damping adjustable can be adjusted at any time to achieve the best possible ride in any condition.

NOTE: Whenever shocks are replaced or reinstalled for any reason, the adjustment screw should be located toward the forward right side of the suspension. Access to the adjuster is not possible if reversed. Fox™ Shocks should be installed with the charge fitting up.

XTRA 12 Suspension Shock Removal

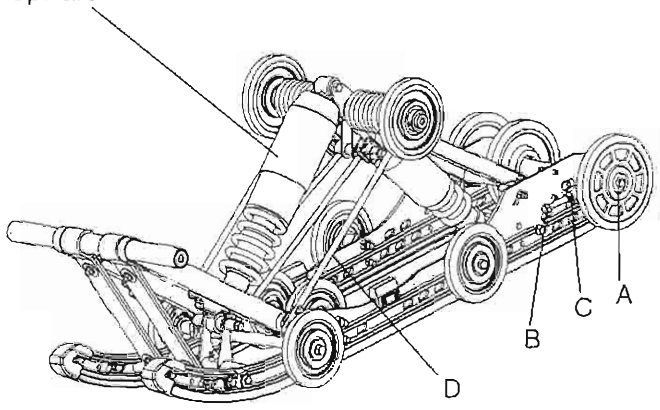
Steps 1-4 (immediately below) may be used for either front or rear track shock removal.

1. Turn fuel valve to off position.
2. Loosen rear idler bolts (A), lock nuts (C), and track adjuster bolts (B).
3. Remove (4) suspension mounting bolts.
4. Place a protective mat along side of machine. Tip the machine on its side onto protective mat.
5. Note orientation of shocks before removal - gas valve (Fox) or adjuster screw (Select) up or down.
6. Remove suspension.
7. Lift rear torsion springs (D) from their lower mounts.
8. Remove top bolt from front track shock.
9. Remove lower front track shock bolt (lift torque arm to gain access).
10. With front track shock removed, loosen and remove top and bottom bolts from rear track shock.

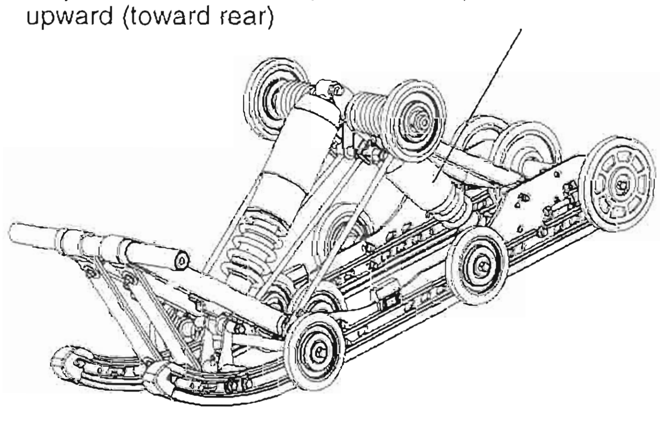
XTRA 12 Suspension Shock Installation

1. Reverse steps above for assembly, with the following notes:
   - Use new Flex-Loc™ nuts for installation. Tighten shock bolts to 15-18 ft. lbs. (2.07-2.48 kg/m). Be sure the shock still pivots freely.
   - Position torsion springs on top eccentric and lower mount.
   - Readjust and align track. See pages 2.12-2.16.
   - Torque suspension mounting bolts to 60 ft. lbs. (8.28 kg-m).
   - Secure jam nuts and tighten rear idler bolts.

Front Track Shock Installation
Fox Shocks - Gas fitting positioned downward (toward track)
Indy Select Shocks - Adjuster screw positioned upward

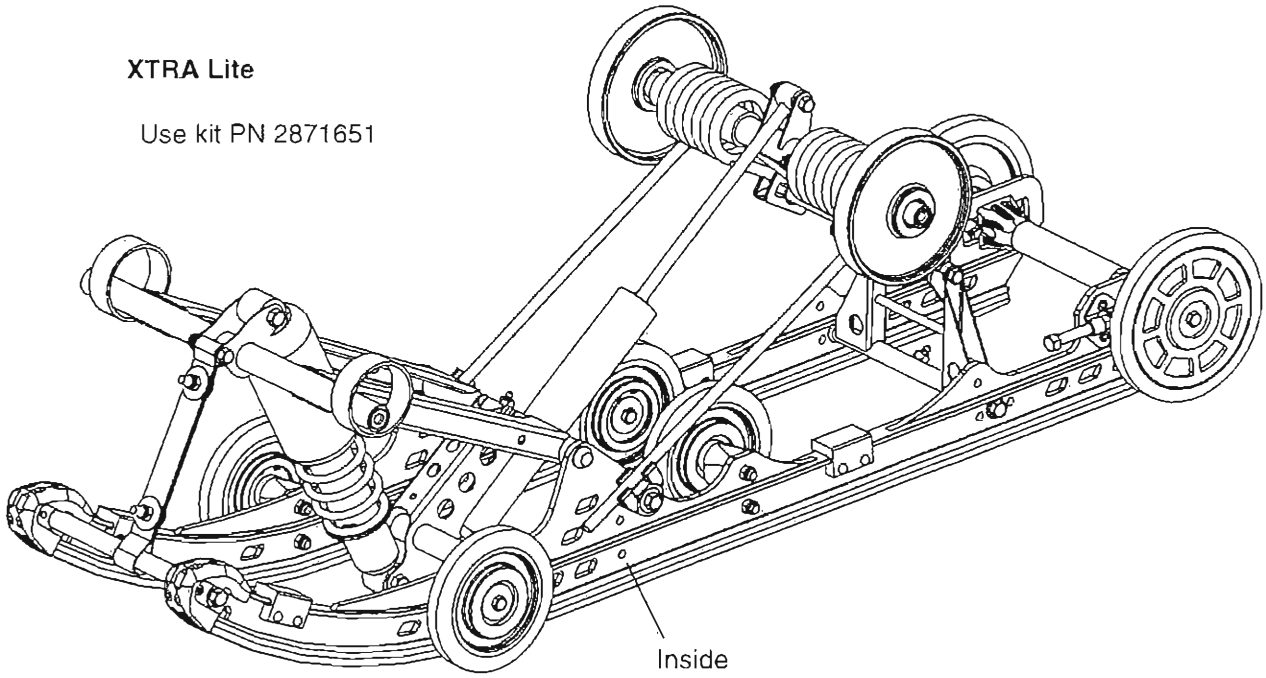


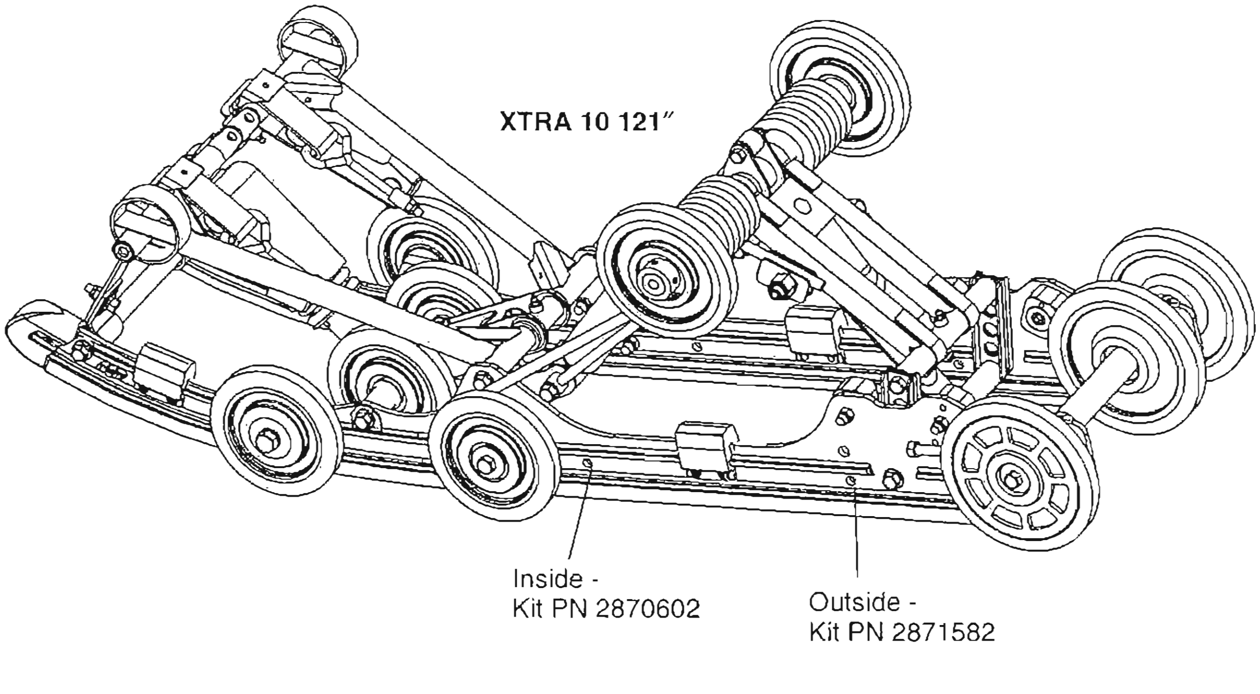
Rear Track Shock Installation
Fox Shocks - Gas fitting positioned upward (toward rear)
Indy Select Shocks - Adjuster screw positioned upward (toward rear)



Wheel Kit Mounting Recommendations

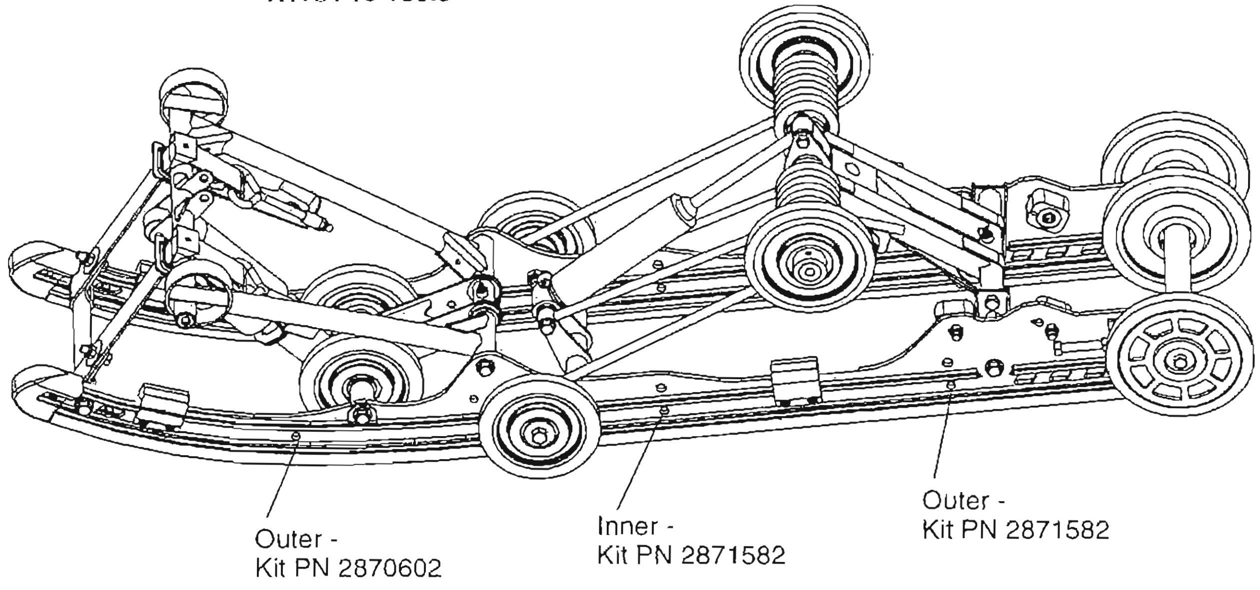
The following illustrations indicate proper installation of optional wheel kits.



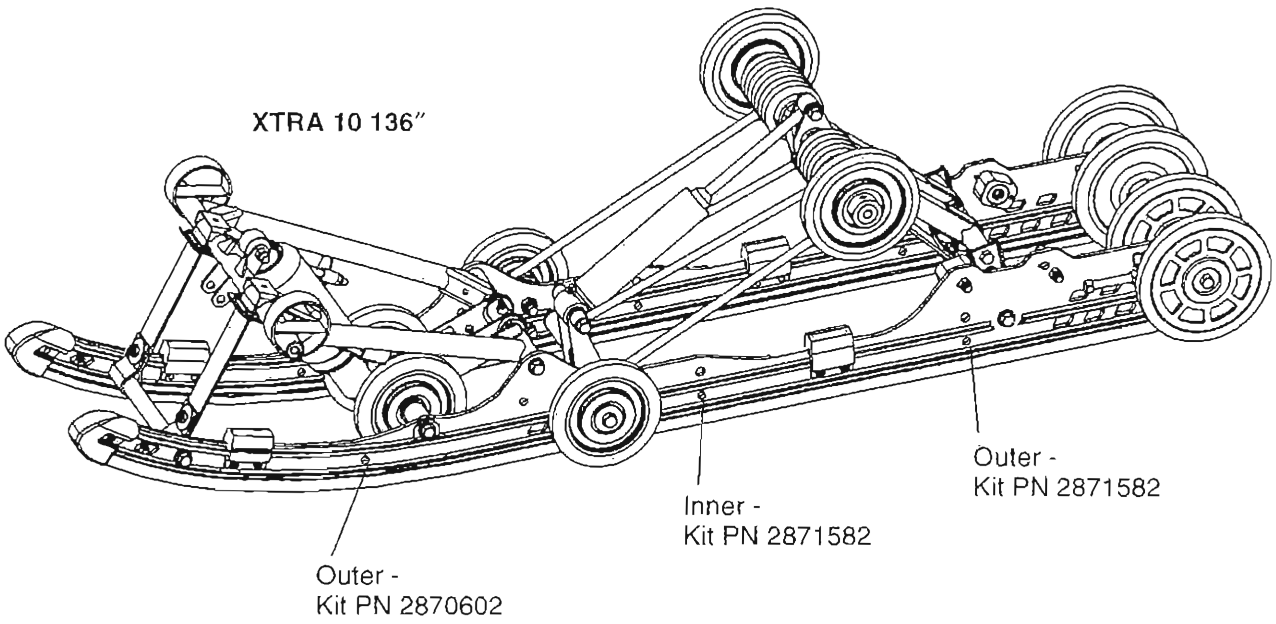


Wheel Kit Mounting Recommendations

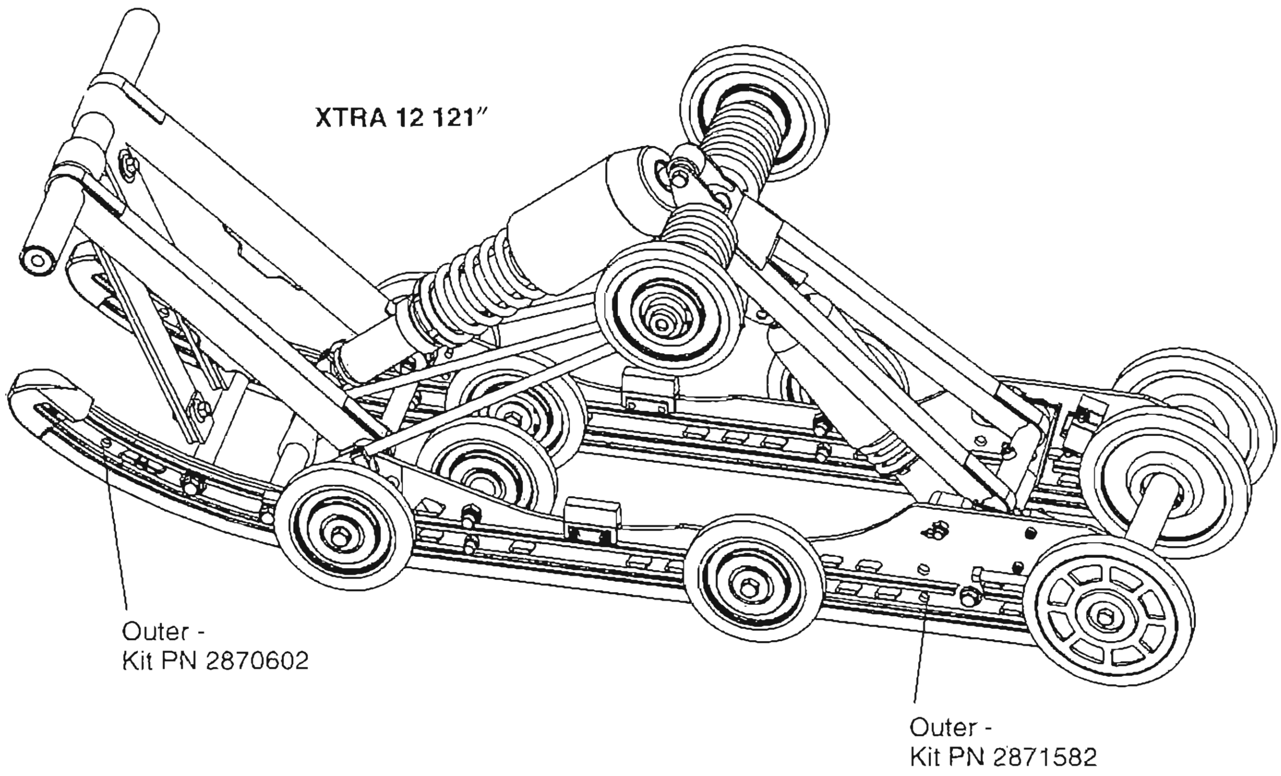
XTRA 10 133.5″

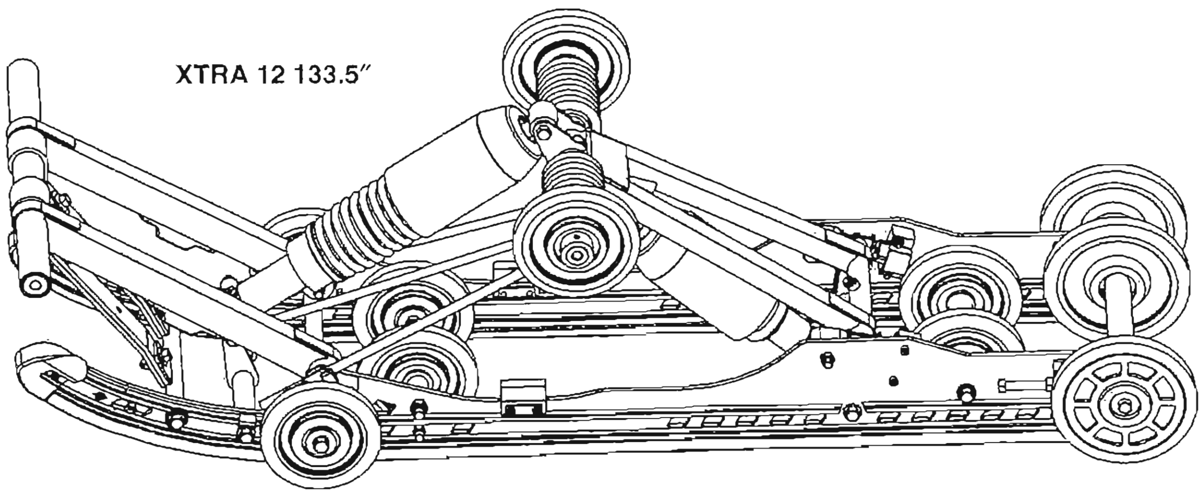


XTRA 10 136″



Wheel Kit Mounting Recommendations





No Wheel Kits recommended for this suspension

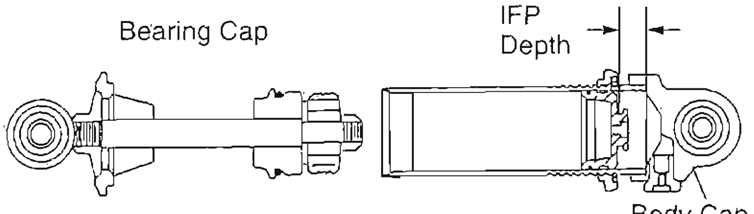
FOX™ Shock Specifications

Shock PN	Extended Length (in.)	Compression (in)	Stroke (in)	IFP Depth (in) ± .025 (See NOTE:)
7041385	18.15	11.78	6.37	1.142
7041386	18.15	11.78	6.37	1.142
7041387	12.32	8.67	3.65	.633
7041401	16.56	10.75	5.81	1.139
7041402	11.07	8.00	3.07	.586
7041403	13.56	9.21	4.35	.795
7041444	14.52	9.82	4.70	.835
7041474	13.25	9.21	4.04	.728
7041480	12.32	8.67	3.65	.633
7041490	12.71	8.86	3.85	.700
7041492	14.52	9.82	4.7	.835
7041494	15.70	10.47	5.23	1.00
7041507	11.06	7.9	3.15	.25 (Reservoir)
7041536	15.70	10.47	5.23	1.00
7041537	16.14	11.29	4.85	2.00
7041540	15.70	10.47	5.23	1.00
7041545	13.64	9.29	4.35	.675
7041584	11.07	8.00	3.07	.586
7041585	14.52	9.82	4.70	.835
7041588	14.52	9.82	4.70	.835
7041589	11.07	8.00	3.07	.586
7041593	15.70	10.47	5.23	1.00
7041595	14.52	9.82	4.70	.835
7041599	14.52	9.82	4.70	1.50 (Reservoir)
7041612				1.00
7041641	10.97	7.90	3.07	.600
7041642	10.97	7.90	3.07	.600
7041692	15.70	10.47	5.23	1.00
7041695	14.52	9.82	4.70	.835
7041697	15.70	10.47	5.23	1.00
7041706	10.85	7.78	3.07	.600
7041707	14.52	9.82	4.70	1.50 (Reservoir)

Measure IFP depth from flat of piston as shown using IFP depth tool or dial caliper. IFP depths for non-current Fox shocks and kits are listed on page 8.89.

IFP Depth Tool PN 2871351

NOTE: IFP depth listed applies to full travel set-up only (production shock travel). Refer to page 8.83 for IFP adjustment for limited travel.



Part number stamped on body cap on some shocks.

Changing oil on Fox™ Shocks is recommended annually and should be included when performing end of season storage preparation. This oil change is necessary to avoid any chance of corrosion which could be caused by moisture contamination. For competition use, shocks should be disassembled, inspected and serviced more frequently.

When performing maintenance on Fox™ Shocks, use Gas Shock Recharging Kit PN 2200421. It consists of the necessary valves, pressure gauge, and fittings to deflate and pressurize the shocks. The Body Holder Tool, Internal Floating Piston (IFP), and Shock Rod Holding Tool are not included in the Recharging Kit and must be ordered separately. Refer to General Tools, Chapter 1 for part numbers.

Gas Shock Recharging Kit

PN 2200421

⚠ WARNING

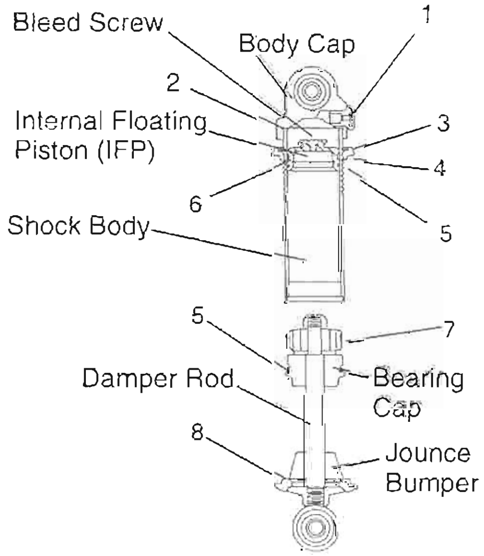
Extreme caution should be observed while handling and working with high pressure service equipment. Wear a face shield, safety glasses, and ear protection during service of these shocks.

Care should be observed while handling the inflater needle and pressure gauges. Maintain your equipment and keep it in good condition. If injury should occur, consult a physician immediately.

Extreme cleanliness is of utmost importance during all disassembly and reassembly operations to prevent any dirt or foreign particles from getting into the shocks.

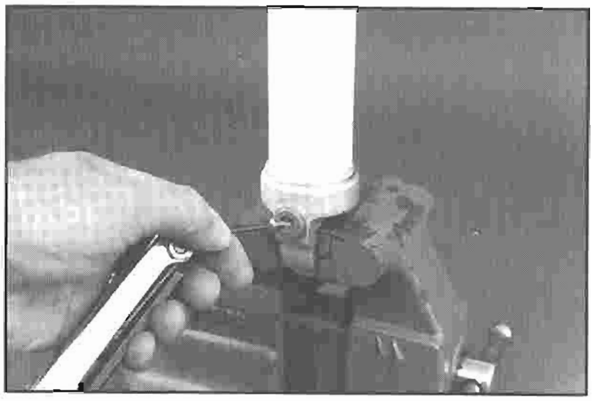
Keep the parts in order as they are disassembled. Note the direction and position of all internal parts for reassembly.

Ref. #	Part No.	Qty.	Description
1	1500005	1	Pressure Valve
2	1500004	2	O-Ring
3	7710424	1	Retaining Ring
4	5020617	1	Spring Retainer Body
5	1500003	2	O-Ring
6	1500006	1	Piston Ring (Floating)
7	1500002	1	Piston Ring (Damping)
8	5020618	1	Spring Retainer, Slotted



Disassembly

1. Remove spring and bushings from shock eyes. Thoroughly wash shocks in a parts washer or with soap and water to remove dirt and other debris. Dry thoroughly with compressed air. Position and clamp body cap of shock in soft jaws (aluminum or brass) of vise. Remove Allen screw from pressure valve.

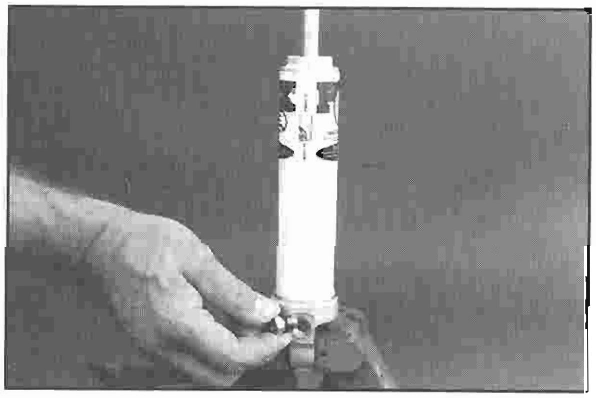


2. With valve outlet pointed in a safe direction, insert red tip of safety needle assembly into recess in shock pressure valve. Depress safety pin on safety needle and push gauge and needle assembly slowly toward shock, inserting needle. Be sure to push needle completely into shock valve. Release nitrogen in a safe direction away from everyone by turning T-handle clockwise (if equipped) or by depressing Schrader valve pin.

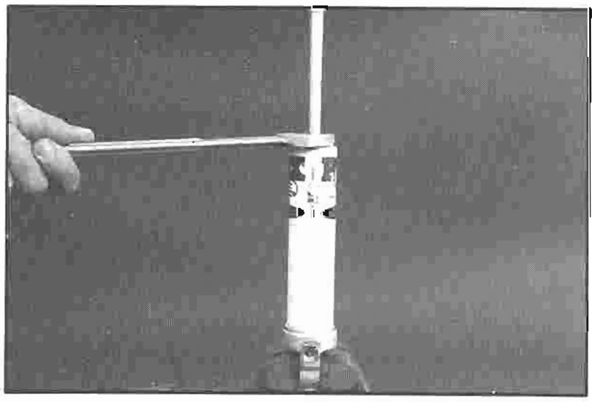
CAUTION:

It is possible for some residual pressure to remain in the shock regardless of the gauge reading. *Always* completely remove valve from body cap before further disassembly of shock.

3. Remove valve and sealing O-ring from body cap.

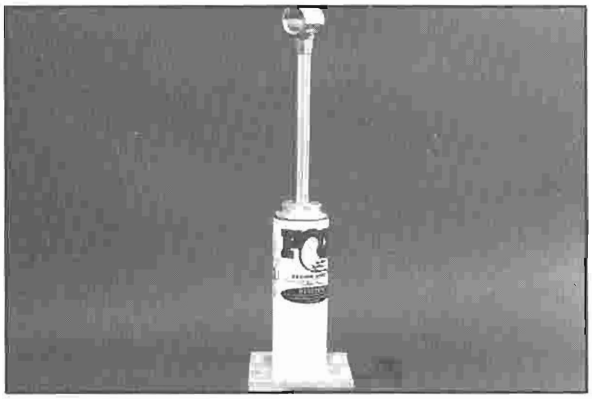


4. Extend shock shaft by pulling up on shock eyelet. Using a 1″ (25 mm) wrench, loosen shaft bearing cap.



Disassembly, Cont.

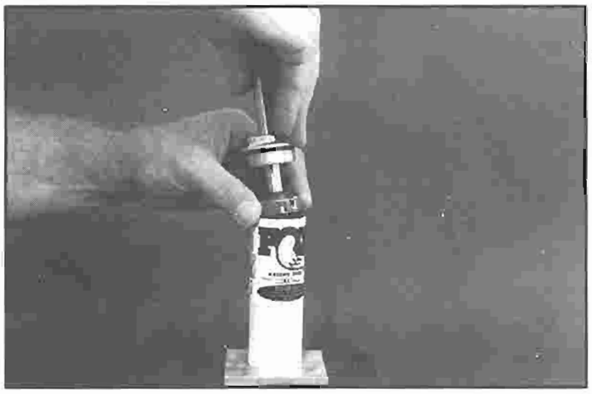
5. If body of shock starts to unscrew from body, tighten and try again. To keep body from turning, it may be necessary to use Body Clamp Tool clamped lightly around body in soft jaws of vise as shown.



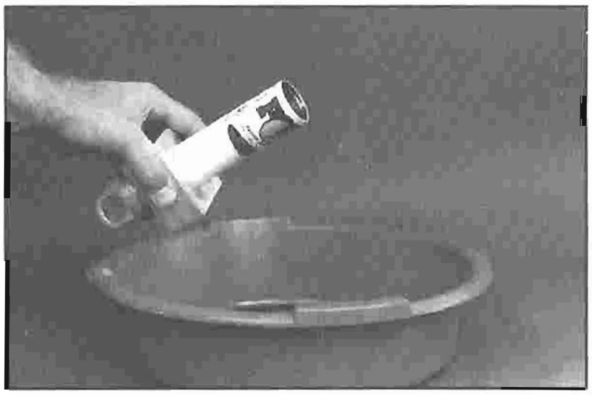
NOTE: Position body clamp at least 1 1/2" below bearing cap.

Shock Body Clamp Tool
PN 2871071

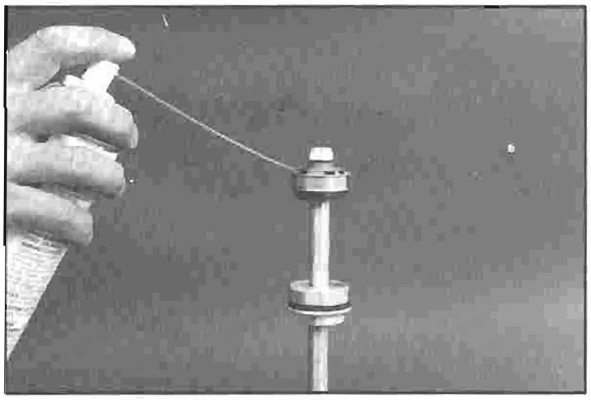
6. Pull shock rod and piston straight out to avoid seal or valve damage. Be prepared to catch piston ring when removing the damper rod/valve piston.



7. Remove shock from vise and dispose of used oil properly in suitable container. Set shock body aside.



8. Mount damper rod in soft-jawed vise as shown. Loosen valve nut and clean the valve piston and valving washers with electrical contact cleaner. Dry thoroughly with compressed air. Tighten nut and torque to 12 ft. lbs. (1.66 kg-m).



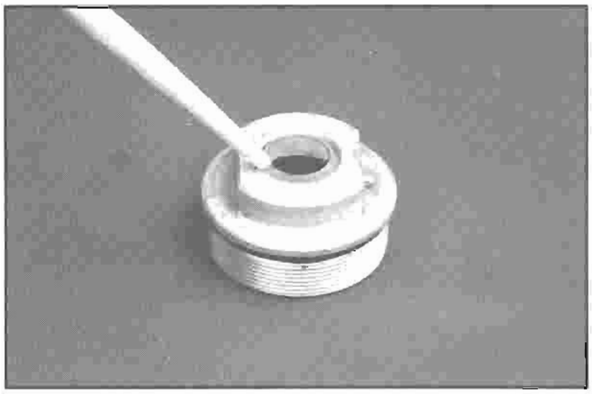
Valve Nut Torque -
12 ft. lbs. (1.66 kg-m)

9. If bearing cap and/or seals are to be replaced, remove nut, washer, and valve piston with valving washers and set aside. Keep washers in order and note orientation of slots in piston for proper re-installation. The side with the greater number of slots must face the damper rod nut (toward IFP).

Seal Replacement

1. Remove bearing cap from damper rod. Inspect seals, o-ring, and bushing inside cap. Inspect cap O-ring and replace if torn or damaged.

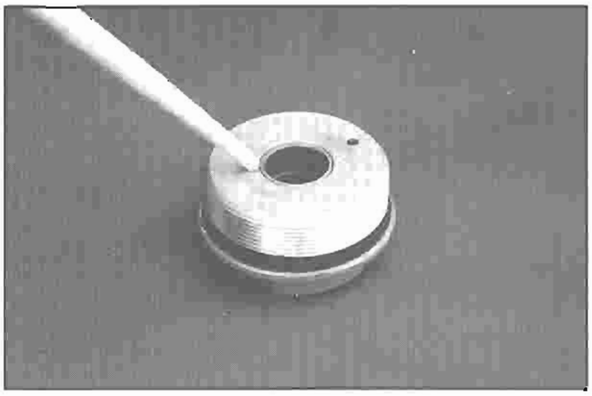
2. Using a small screwdriver or scribe pry upper seal, main seal, and O-ring out of bearing cap. Use care to avoid scratching the seal cavity.



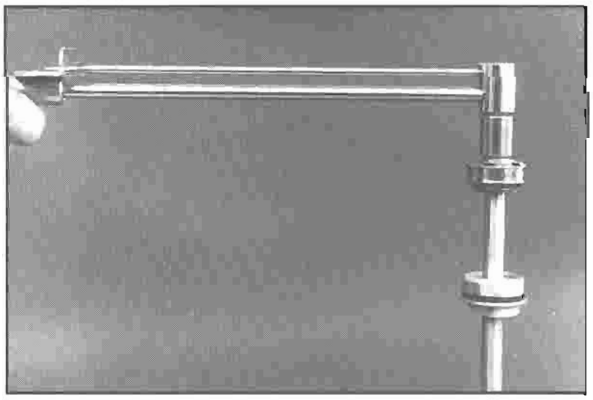
3. Clean seal cavity and inspect bushing for wear or damage and replace bearing cap if necessary.

4. Lubricate new seals and O-ring with Polaris shock oil and install. Be sure the seals are seated completely in the seal cavity.

5. Inspect jounce bumper (where applicable) and replace if damaged.



6. Inspect damper rod for nicks, scratches or abrasion. Install bearing cap and thick backing washer on damper rod. Install compression valve washer stack in same order as disassembly. Install valve piston with greater number of slots facing damper rod nut (toward IFP). Install rebound stack, washer, and a new nut. Torque nut to 12 ft. lbs.

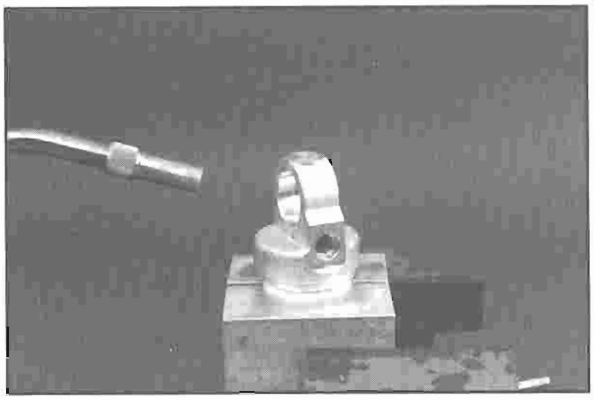


Valve Nut Torque -

12 ft. lbs. (1.66 kg-m)

Seal Replacement, Cont.

7. Inspect valve piston ring for wear. The outer surface of the ring should be even in color. Set aside damper rod assembly for reinstallation.

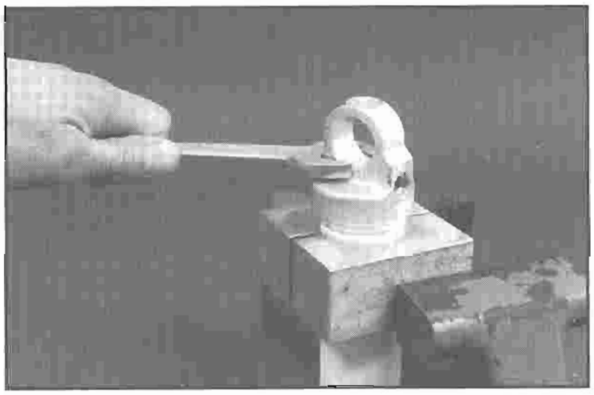


8. Position shock in vise with Body Clamp Tool positioned as shown. Clean body clamp tool before installing. Lightly heat threaded area of body cap with a butane or propane torch to loosen Loctite™ sealant.

CAUTION:

Never apply heat to shock body without first depressurizing shock and removing bearing cap and oil. Do not over heat. Damage to internal seals or personal injury could result.

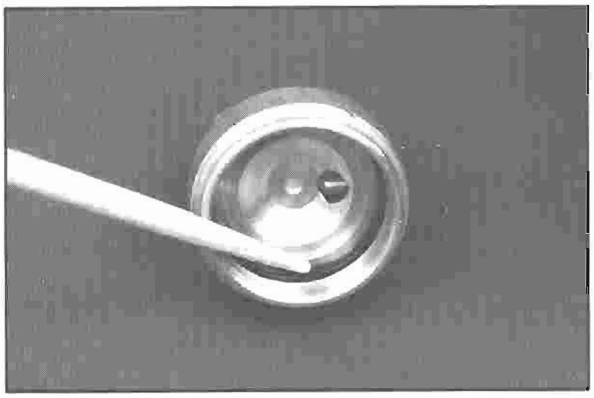
Shock Body Clamp Tool
PN 2871071



9. Using an open end or large adjustable wrench, unscrew the body cap from the body.

CAUTION:

If parts are hot, wear leather gloves to avoid burns.



10. Inspect O-ring in body cap for damage.

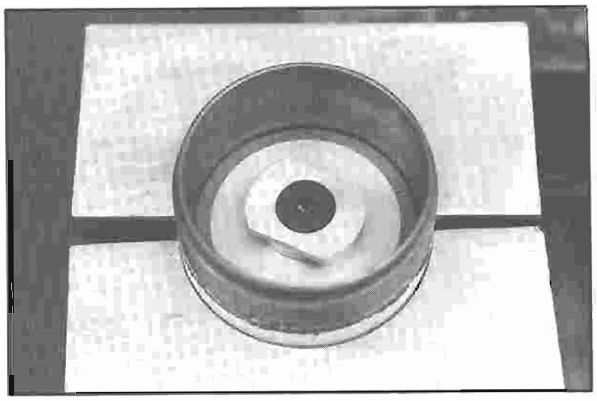
11. Note location of Allen screw in internal floating piston (IFP) for reassembly in body tube. Remove IFP by pushing with handle of hammer against piston toward body cap end (external threaded end). Be prepared to catch piston ring and piston as it comes out. Remove Allen screw from center of piston. Inspect bleeder screw O-ring and IFP sealing O-ring for wear or damage. Replace O-rings upon reassembly.

12. Carefully clean *all* parts thoroughly with electrical contact cleaner or solvent and dry with compressed air. Inspect shock body for scratches or wear.

Reassembly

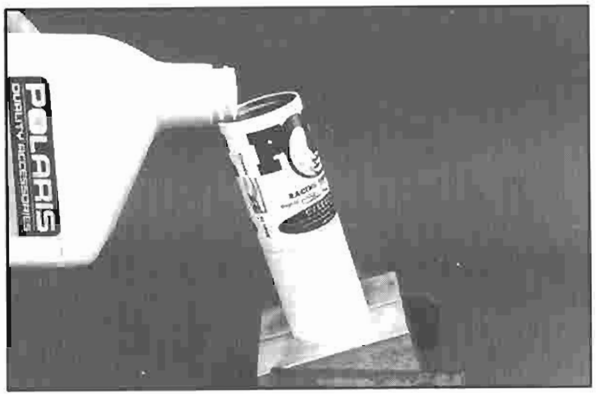
1. Install bleeder screw in IFP until O-ring is lightly seated.

2. Lubricate IFP O-ring and piston ring with shock oil. Wrap piston ring around IFP and install into shock body to a depth of approximately 1/4″ (.6 cm). Do not install the IFP to a depth greater than 1/4″ (.6 cm) at this time.



NOTE: Bleeder screw must be positioned toward body cap (externally threaded) end of shock body.

3. Mount shock in soft jaws of vise using body clamp as shown. Slowly pour suspension fluid into the body of the shock until it comes within 1/4″ (6 mm) from the top of the body. Allow time for air bubbles to rise to the surface.



Suspension Fluid PN 2870995

4. Position bearing cap on damper rod against valve piston. Submerge valve piston in a clean container of suspension fluid and rotate to remove as much air as possible.

5. Compress flexible piston ring around valve piston and install piston into shock body with three closely spaced slots (on nut side) at the highest point. Rock the damper rod lightly back and forth while installing to allow air to escape through the low speed orifice in the piston.

Reassembly, Cont.

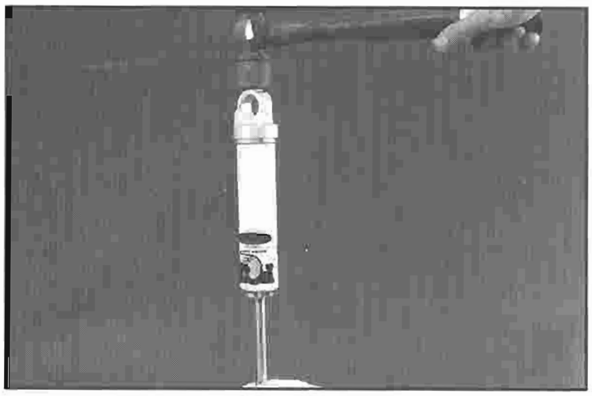
6. Wrap a shop towel around shock body and screw bearing cap in until hand tight - enough to seat O-ring.

7. Invert shock and mount bearing cap flats lightly in vise. Caution: Be sure damper rod is fully extended. Pour shock fluid on top of IFP until covered to a depth of about 1/4" (6mm). Do not remove bleeder screw at this time. Install body cap until O-ring is lightly seated.

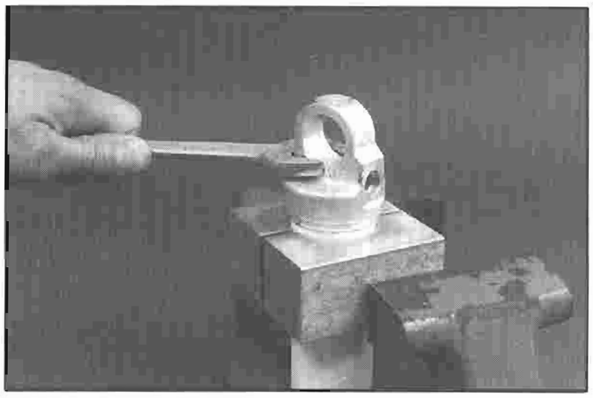
CAUTION:

Do not over-tighten vise or bearing cap may be damaged.

8. Mount shock in vise by top eyelet as shown. Support shock and strike body cap end 2-3 times with a soft faced hammer to remove all air trapped inside the valve piston. Allow shock to stand for 3-5 minutes.

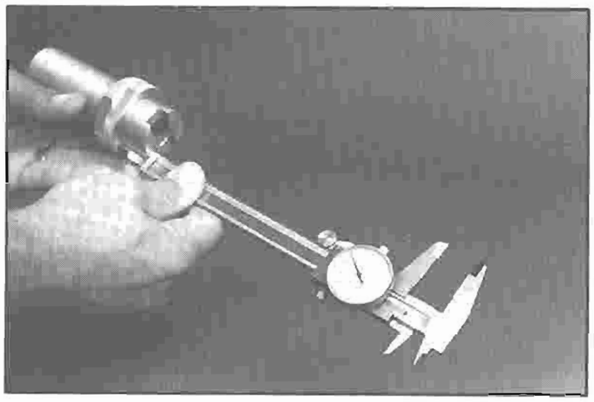


9. Unscrew body cap and remove bleeder screw from the IFP. *Slowly* stroke shock to force air through piston orifice. Move the shock body slowly to prevent aeration of the oil. Allow all air to purge through the bleeder screw hole.



Reassembly, Cont.

10. Mount shock in vise by bearing cap flats. **IMPORTANT:** Fully extend damper rod. Set IFP tool to specified depth with a dial caliper as shown.

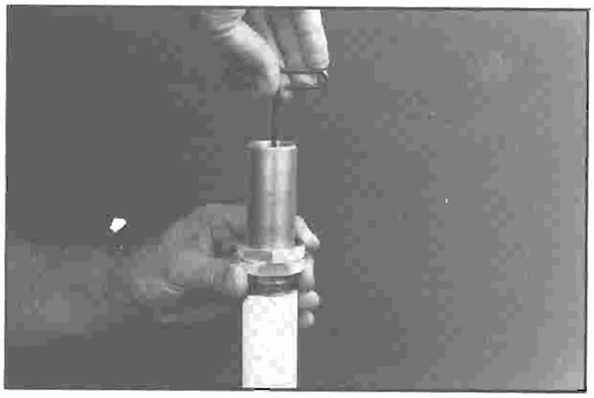


IFP Tool PN 2871351

11. Place a shop towel over the end of IFP tool and slowly push IFP to specified depth.

12. Install the bleeder screw with a new O-ring and tighten securely using the flats on the tool to prevent the IFP from turning. Pour out excess oil. It is not necessary to completely clean all oil from the nitrogen chamber, a small amount of oil will lubricate the IFP. Verify the proper IFP depth to within ± .025" (.63mm) with a dial caliper. Be sure to measure to the flat portion of the IFP, not to the tapered outer edge.

13. Reinstall body cap with a new O-ring and tighten by hand. Mount shock with body cap end down in the soft jaws of a vise. Torque bearing cap to 8-10 ft. lbs. (1.10-1.38 kg/m). This will also tighten the body into the body cap.



CAUTION:

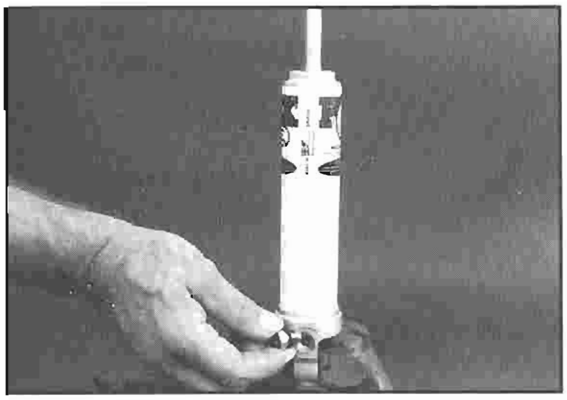
Do not over tighten or damage to the bearing may result.

Bearing Cap Torque -

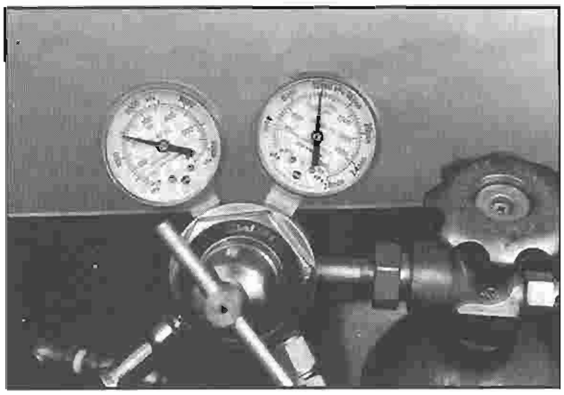
8-10 ft. lbs. (1.10-1.38 kg-m)

Reassembly, Cont.

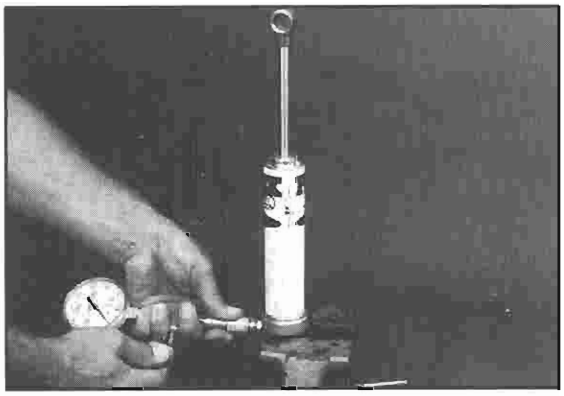
14. Install pressurizing valve with new O-ring and tighten securely.



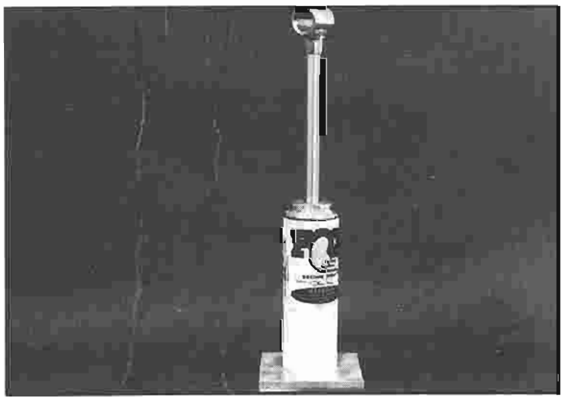
15. Set the nitrogen tank pressure regulator to 200 - 205 PSI.



16. Insert the Fox™ Safety Needle and charge with nitrogen to 200 PSI. Pull the needle straight outward and remove from the pressurizing valve while holding the pressure hose on the fitting. Do not insert the needle again to check pressure as the volume inside the gauge will reduce pressure in the shock.



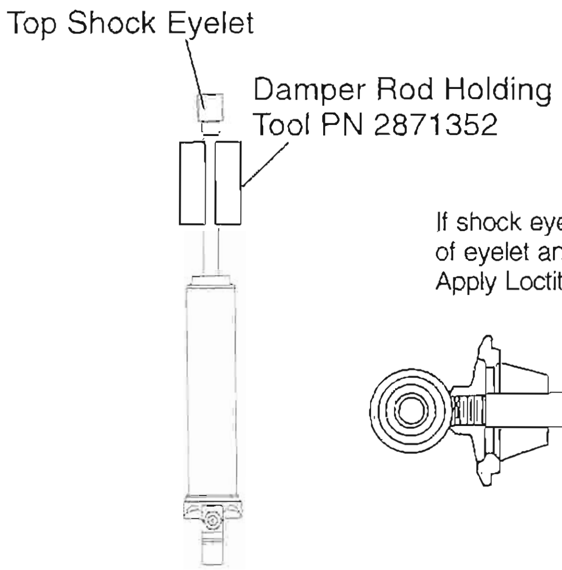
17. As a final check, push the damper rod through a full stroke. The damper rod must bottom out at full travel, and then slowly rise to full extension. Shaft movement must be smooth and consistent throughout the entire compression and rebound stroke. without binding or loss of damping.



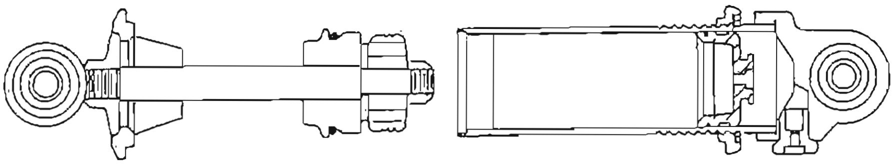
Reassembly, Cont.

18. To check for leaks, submerge the shock in water and look for bubbles or oil seepage around the bearing and body caps.
19. When reinstalling shocks on the machine, torque only to required specifications. If the shock is over tightened it will not pivot, possibly resulting in damage to shaft and seals.
20. When installing IFS shocks, tighten top mount first. Pivot shock body into lower mount and determine if spacer washers are necessary to prevent twist or side loading of shock. Suspension assemblies should always be moved through entire travel without springs to verify free movement and proper alignment of all components.

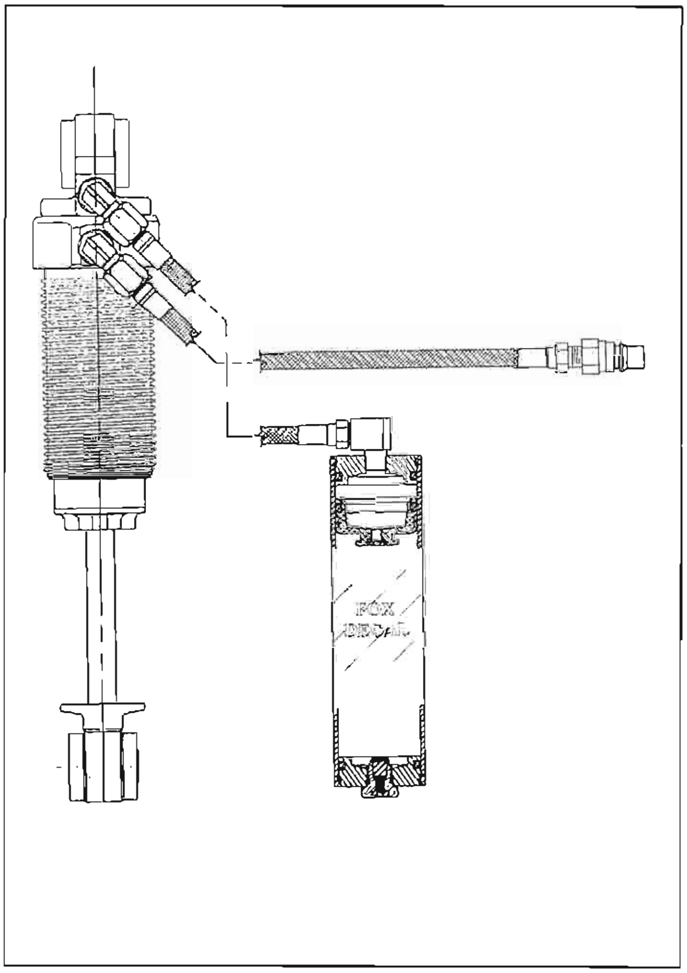
Shock Eyelet Replacement



If shock eyelet is removed for damper rod replacement, clean threads of eyelet and damper rod thoroughly with Loctite™ Primer N. Apply Loctite™ 262 to threads before assembly.



1996 Fox™ Remote Shock



The 1996 Indy 440 XCR SP features a remote shock limiter assembly. The shock length is adjusted by a variable volume of oil between the damping piston and the shock bearing end cap. The assembly has two separate and isolated oil reservoirs. One reservoir system provides damping, while the other system limits the extended shock length. The systems are kept independent of one another by means of the separator piston. Both systems use the same type of oil.

NOTE: When servicing the remote shock limiter assembly, cleanliness is of utmost importance. Be prepared to set disassembled items on a clean surface. Clean cloth or paper towels are recommended.

Disassembly

1. Clean the self-sealing quick-disconnect coupler near the remote limiter knob assembly to avoid contamination. Uncouple the connector.
2. Remove the remote limiter knob assembly and shock from the snowmobile.

CAUTION:

The hoses bend freely. Be careful not to twist, crush, or kink the hose.

3. Thoroughly wash shocks in a clean parts washer or with soap and water. Dry with compressed air to remove sand, dirt, and other debris.
4. Inspect hoses for damage. Replace if necessary.
5. Position the main shock reservoir in a vise with the air valve facing up. Using the body cap tool clamp lightly near the hose end, taking care not to crush the reservoir.

Body Cap Tool PN 2871071

6. Remove the Allen screw from the air valve.
7. With valve outlet pointed in a safe direction, insert red tip of safety needle assembly into recess in shock pressure valve. Depress safety pin on safety needle and push gauge and needle assembly slowly toward shock, inserting needle. Be sure to push needle completely into shock valve. Release nitrogen in a safe direction away from everyone by turning T-handle clockwise (if equipped) or by depressing Schrader valve pin.

CAUTION:

It is possible for some residual pressure to remain in the shock regardless of the gauge reading. *Always* completely remove valve from body cap before further disassembly of shock.

8. Push the reservoir cap into the reservoir until the wire retaining ring is exposed. Lightly tap the cap inward to break it loose if necessary. Using a scribe, remove the wire ring. Be careful not to scratch the bore of the reservoir since the reservoir cap O-ring must seal on this surface.
9. Lightly lubricate the reservoir bore to ease removal of the reservoir cap and O-ring. Remove the reservoir cap by grabbing the air valve and gently working the cap out of the reservoir. Try to keep the cap straight with the reservoir, being especially careful when passing over the groove. Do not remove the air valve.
10. Insure that the reservoir is secure in the vise. Remove the bleed screw from the internal floating piston (IFP) located inside the reservoir. Lightly lubricate the reservoir bore to ease removal of the IFP. Gently work the IFP out of the reservoir, catching the piston ring just after the O-ring is clear. Be especially careful when passing over the groove.
11. Drain the oil out of the reservoir into a suitable container. Suspend the reservoir over a container. With the main shock positioned shaft up above the reservoir, stroke the shaft to force most of the damping oil out of the shock body and hose. Do not disconnect the hoses. The remote limiter knob assembly does not need to be connected at this time.
12. Push a clean cloth or paper towel into the reservoir.
13. Secure the aluminum body cap in a vise with the shaft pointing up. Position the remote limiter knob assembly below the level of the body cap. Using a 1″ wrench, unscrew the shaft bearing cap. The bearing must loosen before the body cap. If the body cap loosens first, tighten and try again. Disassembly via the body cap is not recommended.
14. Gently pull the shock rod and piston straight out to avoid seal or valving damage. Be prepared to catch the piston ring and some oil, using a clean cloth or paper towel held around the body at the bearing cap. Set the shaft assembly on a clean towel.

NOTE: The aluminum body cap and external threaded by-pass sleeve do not need to be removed for general shock service or revalving. If they are being removed for replacement, do so now.

NOTE: Do not attempt to drain the oil out of the remote limiter knob assembly. This oil does not need to be replaced.

15. Clean the shock and reservoir internal surfaces by wiping with clean towels and flushing the surfaces with clean shock oil. Put 1″ to 2″ of shock oil in the reservoir and flush all surfaces. Pour into the shock body and flush all surfaces. Repeat. Discard oil into a suitable container.

CAUTION:

Do not clean the internal portions of the shock body, reservoir, hoses, or adjuster assembly with solvents. It is difficult to ensure that residual solvent is flushed from the hoses without complete disassembly.

16. Clean the shaft assembly (bearing cap, separator piston, and valving) in a suitable solvent. Dry thoroughly. Inspect the damping piston and valving for damage and contamination. Inspect the shaft seals and shaft bearing (sleeve) for damage or wear. If condition is in doubt, replace O-ring seals on bearing cap and separator piston. Revalve at this time if applicable.
17. Reassemble shaft assembly with valving. Do not over torque the damping piston nut.

Damping Piston Nut Torque -

15 ft. lbs. (2.07 kg-m)

Assembly

1. Position the shock with the aluminum body cap in a vice with the bearing cap end facing up. Put the Allen screw and O-ring seal into the IFP. Insure that the main IFP O-ring is in place and in good condition. Have a new IFP piston ring ready. While holding the reservoir below the level of the aluminum body cap, insure that the reservoir cap at the hose end is in position against the wire retaining ring. *After removing the towel from the reservoir*, fill the reservoir to the groove with new shock oil.
2. Insert the IFP (with piston ring) into the reservoir. Slowly push the IFP into the reservoir until it bottoms out. This will purge the air from the reservoir and hose. Make sure the shock does not overfill with oil.
3. Letting the reservoir hang freely, fill the shock body to about 1.5″ from the end. Prepare the fully assembled shaft bearing cap assembly by sliding the bearing cap and separator piston against the eyelet. Using a new piston ring on the damping piston, slowly and carefully slip the damping piston into the shock. Be careful not to drag the piston ring over the threads and contaminate the oil.
4. Slowly push the damping piston into the oil. Excessive speed will displace the IFP in the reservoir. Lightly tap the end of the shaft so the valves open enough to fill the piston cavities with oil. Stroke the shaft slowly to force air trapped below the piston through the piston orifice. Do not let the piston come out of the oil.
5. Add enough oil to keep the piston submerged when the top out plate is even with the internal threads on the body. Slide the bearing and separator piston down to the top out plate. Wrap a towel around the shock body at the bearing.
6. While pushing down on the bearing cap, gently work the separator piston into the shock past the threads, being careful not to damage the O-ring seal on the separator piston. Use a towel to catch overflowing oil.
7. Continue to push down on the bearing cap and tighten the bearing cap into place. Torque to specification. Do not push the shaft in until the shock is pressurized. To fully extend the shaft, push in on the IFP.

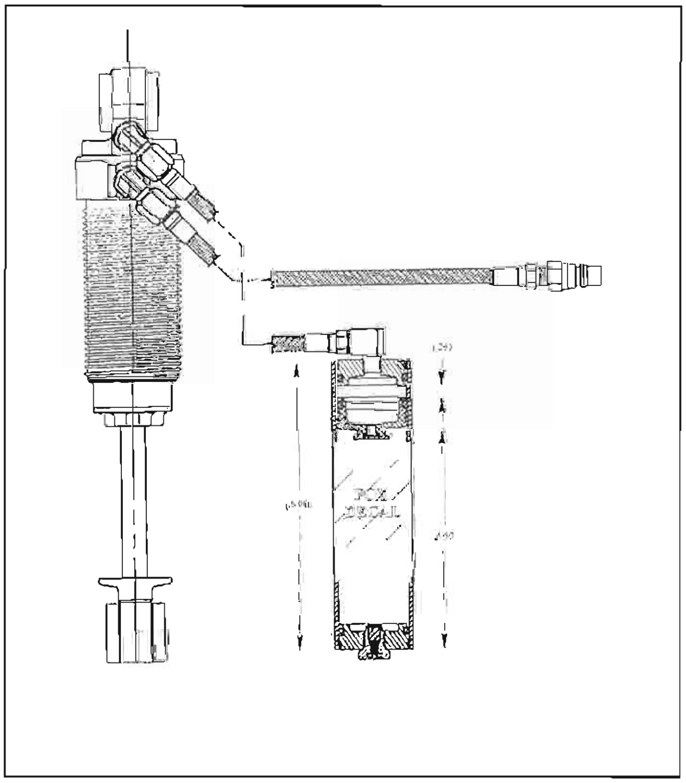
Bearing Cap Torque -

8 - 10 ft. lbs. (1.10 - 1.38 kg-m)

8. Check the IFP depth. IFP depth can be changed by removing the bleed screw and adding oil through the reservoir. However, it is difficult to keep the IFP from rotating while tightening the sealing Allen screw.

Shock IFP Depth -

4.57″ (11.6 cm) from end of reservoir



9. Using a clean reservoir cap with a good O-ring, carefully insert the reservoir cap into the reservoir past the groove. Install the wire ring into the groove. Using the Fox safety needle pressurize the shock to 200 PSI.
10. Test the shock for smooth and consistent damping. Inspect for leaks.

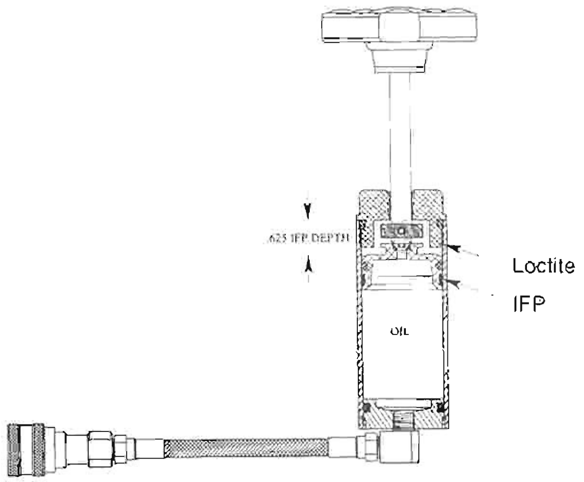
Recharging the Remote Limiter Knob Assembly

1. Hold the remote limiter knob assembly in a vise using the body cap tool. Clamp lightly near the hose end. Remove the knob assembly using a 1 1/4″ wrench. If necessary, apply heat lightly to soften the Loctite™.

CAUTION:

Do not overheat. The knob or seals may melt.

Body Cap Tool PN 2871071



2. Holding the remote limiter knob assembly below the shock bearing end cap, remove the bleed screw and steel ball from the bearing end cap. The separator piston will keep the pressurized damping oil from leaking out of the bearing end cap. Any pressurized leakage at this time indicates a damaged or missing seal on the separator piston.
3. Position the shock, shaft end up, over a container suitable to catch oil. Holding the remote limiter knob assembly below the bearing end cap, push the IFP inside the remote limiter knob assembly in until the oil bleeding out of the bearing end cap appears free of air bubbles, or until the IFP bottoms out. Use a wooden dowel or hammer handle to avoid damage to the internal bore. Be prepared to collect the oil purged out of the shock. Install the ball and set screw into the bearing end cap and seal so that no air gets back into the hole.
4. Secure the remote limiter knob assembly in a vice using the body cap tool. Clamp lightly. Position the shock below the level of the remove limiter knob assembly. **NOTE:** It may hang freely.
5. Remove the Allen screw and O-ring seal from the IFP in the remote limiter knob assembly. Remove the IFP, being careful not to damage to O-ring and piston rings as they pass over the threads.
6. Fill the remote limiter knob assembly with shock oil to about 1/2″ from the reservoir end. Insert the IFP to a depth of .625″ from the end of the reservoir to the main flat part of the IFP. The IFP should be completely submerged in oil. The oil under the IFP should be free of air bubbles.

Remove Limiter Knob Assembly IFP Depth - .625″ from end of reservoir

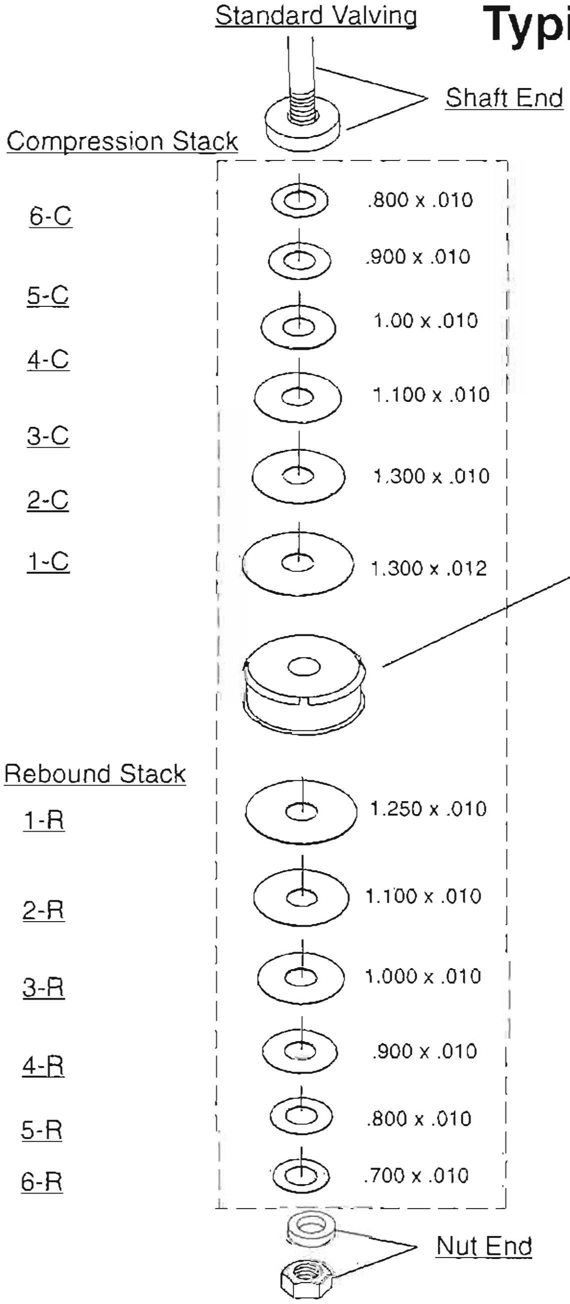
7. Install the Allen screw and O-ring into the IFP. Check the IFP depth.
8. Back the knob all the way out of the knob assembly. Install the knob assembly into the remote limiter knob assembly reservoir. Apply blue Loctite™ to the threads prior to assembly.
9. Test the adjuster system by tightening the knob and reducing the extended length of the shock.
10. Inspect for leaks.

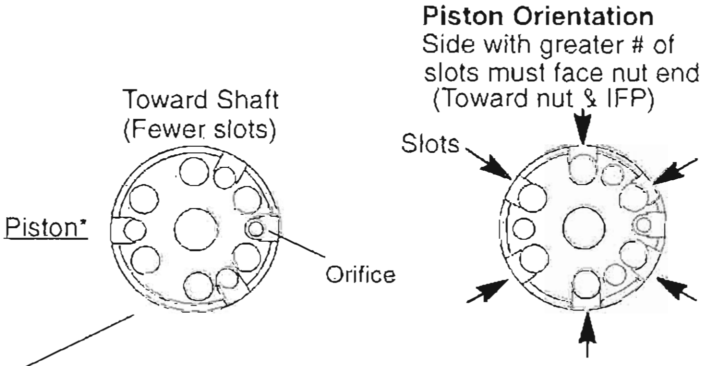
Shown below is an example of how valving stacks are arranged. The tables on page 8.84 contain production valving specifications and piston orifice sizes for 1996-current FOX™ shocks. Optional valving (by shock part number) is listed in the tables on following pages. Refer to

Parts in box are an example of standard valving.

* Note direction of valve piston before disassembly. The side with the greater number of slots should face the IFP (nut end of the shaft).

Typical Valve Stack





Orifice must be drilled to required size on replacement valve pistons.

IFP Depth Adjustment For Limited Travel Setup	
Spacer Thickness	**IFP Depth Modifier**
.25	.029 (Subtract)
.50	.058
.75	.088
1.0	.117
1.25	.146
1.50	.175
1.75	.204
2.00	.234
2.25	.263
2.50	.292
2.75	.321
3.00	.350
3.25	.380
3.50	.409
3.75	.438
4.00	.467
4.25	.496
4.50	.526
4.75	.555
5.00	.584

Spacer PN 5431355

Changing oil on Fox™ Shocks is recommended annually and should be included when performing end of season storage preparation. For competition use, shocks should be disassembled, inspected and serviced more frequently.

1996 Production Valving Specifications

Shock PN		7041385 IFS	7041386 Front Track X 12	7041401 IFS	7041402 Front Track X 10	7041403 Rear Track X 10	7041444 IFP, Rear Track X 10	7041474 IFS, IFP, Cam	7041480 IFP, Rear Track X 12	7041490 IFP
Compression Stack	6C	0.700X.008	0.700X.006	1.250X.010	1.250X.010	1.250X.012	N/A		0.700X.006	N/A
	5C	0.800X.008	0.800X.006	0.800X.008	0.800X.008	0.800X.012	0.800X.008	0.800X.008	0.800X.006	0.800X.008
	4C	0.900X.008	0.900X.006	0.900X.010	0.900X.010	0.900X.015	0.900X.008	0.900X.008	0.900X.006	0.900X.008
	3C	1.000X.008	1.000X.006	1.000X.010	1.000X.010	1.000X.012	1.000X.008	1.000X.008	1.000X.006	1.000X.008
	2C	1.100X.008	1.100X.006	1.100X.008	1.100X.010	1.100X.012	1.100X.006	1.100X.008	1.100X.006	1.100X.008
	1C	1.300X.008	1.300X.006	1.300X.008	1.300X.012	1.300X.012	1.300X.008	1.300X.010	1.300X.006	1.300X.010
Orifice		0.078	0.078	0.089	0.075	0.072	0.067	0.078	0.067	N/A
Rebound Stack	1R	1.250X.008	1.250X.012	1.250X.008	1.250X.010	1.250X.012	1.250X.008	1.250X.010	1.250X.010	1.250X.010
	2R	1.100X.008	1.250X.012	1.300X.012	1.100X.010	1.100X.012	1.100X.008	1.100X.010	1.100X.010	1.100X.010
	3R	1.000X.008	1.100X.010	1.300X.012	1.000X.010	1.000X.012	1.000X.008	1.000X.010	1.000X.010	1.000X.010
	4R	0.900X.008	1.000X.010	1.300X.012	0.900X.010	0.900X.012	0.900X.008	0.900X.010	0.900X.010	0.900X.010
	5R	0.800X.008	0.900X.010	1.300X.012	0.800X.010	0.800X.012	0.800X.008	0.800X.008	0.800X.010	0.800X.008
	6R	0.700X.008	0.800X.010	0.700X.008	0.700X.010	0.700X.012	N/A	0.700X.008	0.700X.010	0.700X.008

Shock PN		7041385 IFS	7041494 IFS	7041536 IFS	7041537 IFS	7041540 IFS	7041545 IFS	7041593 IFS	7041692 IFS
Compress. Stack	8C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.250x.010
	7C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	.800x.008
	6C	0.700X.008	1.250x.010	N/A	.700x.008	N/A	N/A	1.250x.010	.900x.010
	5C	0.800X.008	.800x.010	.800x.008	.800x.008	.800x.008	.800x.008	.800x.010	1.000x.010
	4C	0.900X.008	.900x.010	.900x.008	.900x.008	.900x.008	.900x.008	.900x.010	1.100x.008
	3C	1.000X.008	1.000x.010	1.00x.008	1.000x.008	1.000x.010	1.000x.008	1.000x.010	1.300x.010
	2C	1.100X.008	1.00x.010	1.100x.008	1.100x.008	1.100x.008	1.100x.008	1.100x.010	1.000x.006
	1C	1.300X.008	1.300x.010	1.300x.010	1.300x.008	1.300x.010	1.300x.010	1.300x.010	1.300x.008
Orifice		0.078	0.081	0.078	0.078	0.078	0.078	0.081	0.081
Rebound Stack	1R	1.250X.008	1.250x.010	1.250x.010	1.250x.008	1.250x.015	1.250x.010	1.250x.010	1.250x.010
	2R	1.100X.008	1.100x.008	1.100x.010	1.100x.008	1.100x.012	1.100x.010	1.100x.008	1.100x.010
	3R	1.000X.008	1.000x.008	1.000x.010	1.000x.008	1.000x.010	1.000x.010	1.000x.008	1.000x.008
	4R	0.900X.008	.900x.008	.900x.010	.900x.008	.900x.008	.900x.010	.900x.008	.900x.008
	5R	0.800X.008	.800x.008	.800x.008	.800x.008	.800x.008	.800x.008	.800x.008	.800x.008
	6R	0.700X.008	.700x.008	.700x.008	.700x.008	N/A	.700x.008	.700x.008	.700x.008

Shock PN		7041697 IFS	7041507 Front Track	7041584 Front Track	7041589 Front Track	7041641 Front Track	7041642 Front Track	7041706 Front Track
Compress. Stack	8C	1.250x.010	N/A	N/A	N/A	N/A	N/A	1.250x.010
	7C	.800x.008	N/A	1.250x.010	.700x.010	N/A	.700x.010	.800x.010
	6C	.900x.010	1.250x.010	.900x.010	.800x.010	1.250x.010	.800x.010	.900x.012
	5C	1.000x.008	.800x.008	1.000x.012	.900x.010	.800x.008	.900x.010	1.000x.012
	4C	1.100x.008	.900x.012	1.100x.012	1.000x.010	.900x.012	1.000x.010	1.100x.010
	3C	1.300x.008	1.000x.012	1.300x.012	1.100x.010	1.000x.012	1.100x.010	1.300x.012
	2C	1.000x.006	1.100x.012	.900x.006	1.250x.012	1.100x.012	1.250x.012	1.000x.006
	1C	1.300x.008	1.300x.012	1.300x.008	1.300x.012	1.300x.012	1.300x.012	1.300x.010
Orifice		0.086	0.075	0.075	0.075	0.075	0.075	0.075
Rebound Stack	1R	1.250x.010	1.250x.010	1.250x.010	1.250x.010	1.250x.010	1.250x.010	1.250x.010
	2R	1.100x.008	1.100x.010	1.100x.010	1.100x.010	1.100x.010	1.100x.010	1.100x.010
	3R	1.000x.008	1.000x.010	1.000x.010	1.000x.012	1.000x.010	1.000x.012	1.000x.010
	4R	.900x.008	.900x.010	.900x.010	.900x.010	.900x.010	.900x.010	.900x.010
	5R	.800x.008	.800x.010	.800x.010	.800x.010	.800x.010	.800x.010	.800x.010
	6R	.700x.008	.700x.010	.700x.010	.700x.010	.700x.010	.700x.010	.700x.010

Shock PN		7041480 Rear Track	7041492 Rear Track	7041585 Rear Track	7041588 Rear Track	7041595 Rear Track	7041599 Rear Track	7041695 Rear Track	7041707 Rear Track
Compress. Stack	8C	N/A	1.250x.010	N/A	N/A	N/A	1.250x.010	1.250x.010	1.250x.010
	7C	N/A	.900x.010	1.250x.010	.700x.008	1.250x.010	.900x.010	.900x.012	.900x.010
	6C	0.700X.006	1.000x.012	.900x.010	.800x.008	.900x.010	1.000x.012	1.000x.008	1.000x.012
	5C	0.800X.006	1.100x.015	1.000x.010	.900x.010	1.000x.012	1.100x.015	1.000x.012	1.100x.015
	4C	0.900X.006	1.250x.010	1.100x.015	1.000x.008	1.100x.015	1.250x.010	1.100x.015	1.250x.010
	3C	1.000X.006	1.300x.015	1.300x.015	1.100x.008	1.300x.015	1.300x.015	1.300x.015	1.300x.012
	2C	1.100X.006	1.000x.006	1.000x.006	1.250x.008	.900x.012	1.000x.006	.900x.012	1.000x.006
	1C	1.300X.006	1.300x.012	1.300x.010	1.300x.008	1.300x.012	1.300x.012	1.300x.012	1.300x.012
Orifice		0.067	0.072	0.086	0.078	0.086	0.072	.086	.072
Rebound Stack	1R	1.250X.010	1.250x.010	1.250x.012	1.250x.012	1.250x.012	1.250x.010	1.250x.012	1.250x.010
	2R	1.100X.010	1.100x.012	1.100x.012	1.100x.012	1.100x.012	1.100x.012	1.100x.012	1.250x.010
	3R	1.000X.010	1.000x.012	1.000x.012	1.000x.012	1.100x.012	1.000x.012	1.100x.012	1.100x.012
	4R	0.900X.010	.900x.012	.900x.012	.900x.012	1.000x.012	.900x.012	1.000x.012	1.000x.012
	5R	0.800X.010	.800x.012	.800x.012	.800x.012	.900x.012	.800x.012	.900x.012	.900x.012
	6R	0.700X.010	.700x.012	.700x.012	.700x.012	.800x.012	.700x.012	.800x.012	.800x.012
	7R	N/A	N/A	N/A	N/A	.700x.012	N/A	.700x.012	.700x.012

1996/1997 Optional Valving Specifications - Light

Shock PN		7041385 IFS	7041386 Front Track X 12	7041401 IFS	7041402 Front Track X 10 [1]	7041403 Rear Track X 10	7041444 IFP, Rear Track X 10	7041474 IFS, IFP, Cam[4]	7041480 IFP, Rear Track X 12	7041490 IFP
Compression Stack	8C	N/A	N/A	N/A	N/A	N/A				N/A
	7C	N/A	N/A	N/A	N/A	N/A				N/A
	6C	N/A	N/A	1.250x.008	N/A	1.250x.010	N/A	*	N/A	N/A
	5C	0.800X.006	*	.800x.008	*	.800x.012	*	*	*	.800x.008
	4C	0.900X.006	*	.900x.008	*	.900x.015	*	*	*	.900x.008
	3C	1.000X.006	*	1.000x.008	*	1.000x.012	*	*	*	1.000x.008
	2C	*	*	1.100x.008	*	1.100x.010	*	*	*	1.100x.008
	1C	*	*	1.300x.008	*	1.300x.010	1.300X.006	1.300X.008	*	1.300x.008
Orifice		0.078	0.081	.089	.075	.072	0.067	0.078	.081	.081
Rebound Stack	1R	1.250X.006	1.250X.010	1.250x.008	*	1.250x.012	*	*	1.250X.008	1.250x.010
	2R	1.100X.006	1.100X.010	1.100x.008	*	1.100x.012	*	*	1.100X.008	1.100x.010
	3R	*	*	1.000x.008	*	1.000x.012	*	*	*	1.000x.010
	4R	*	*	.900x.008	*	.900x.012	*	*	*	.900x.010
	5R	*	*	.800x.008	*	.800x.012	*	*	*	.800x.010
	6R	*	*	.700x.008	*	.700x.012	N/A	*	*	.700x.010

* Use existing washer here (no change)   N/A = Not Applicable

[1] Spring In Third Groove

[4] Install Springs PN 7041252 – 8.5″ Installed Length

1996/1997 Optional Valving Specifications - Extra Light

Shock PN		7041385 IFS	7041386 Front Track X 12	7041401 IFS	7041402 Front Track X 10	7041403 Rear Track X 10	7041444 IFP, Rear Track X 10	7041474 IFS, IFP, Cam	7041480 IFP, Rear Track X 12	7041490 IFP
Compression Stack	8C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	7C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6C	N/A	N/A	1.250x.008	1.250X.010	1.250x.010	N/A	*	N/A	N/A
	5C	0.800X.006	*	.800x.008	0.800X.008	.800x.010	*	*	*	.800x.008
	4C	0.900X.006	*	.900x.008	0.800X.008	.900x.012	*	*	*	.900x.006
	3C	1.000X.006	*	1.000x.008	1.000X.008	1.000x.010	1.000X.006	1.000X.006	*	1.000x.008
	2C	1.100X.006	*	1.100x.006	1.100X.008	1.100x.008	1.100X.006	1.100X.006	*	1.100x.008
	1C	1.300X.006	*	1.300x.008	1.250X.008	1.300x.008	1.300X.006	1.300X.006	*	1.300x.008
Orifice		0.078	0.089	.093	0.075	.081	0.067	0.078	.089	.086
Rebound Stack	1R	1.250X.006	1.250X.008	1.250x.008	*	1.250x.010	*	*	1.250X.006	1.250x.010
	2R	1.100X.006	1.100X.008	1.100x.008	*	1.100x.010	*	*	1.100X.006	1.100x.010
	3R	1.000X.006	1.000X.008	1.000x.008	*	1.000x.012	*	*	1.000X.006	1.000x.008
	4R	0.900X.006	0.900x.008	.900x.008	*	.900x.012	*	*	*	.900x.008
	5R	0.800X.006	0.800x.008	.800x.008	*	.800x.012	*	*	*	.800x.008
	6R	0.700X.006	*	.700x.008	*	.700x.012	N/A	*	*	.700x.008

* Use existing washer here (no change)   N/A = Not Applicable

1996/1997 Optional Valving Specifications - Heavy

Shock PN		7041385 IFS	7041386 Front Track X 12	7041401 IFS	7041402 Front Track X 10	7041403 Rear Track X 10	7041444 IFP Rear Track X 10	7041474 IFS, IFP, Cam	7041480 IFP, Rear Track X 12	7041490 IFP[2]
Compression Stack	7C	N/A	N/A	N/A	1.250x.010	N/A	1.250x.010	N/A	N/A	N/A
	6C	N/A	N/A	1.250x.010	.900x.010	1.250x.012	.900x.010	1.25x.010	N/A	N/A
	5C	*	N/A	.800x.010	1.000x.012	.800x.012	1.000x.010	.800x.010	.800X.008	.800x.008
	4C	*	*	.900x.012	1.100x.012	.900x.015	1.100x.015	.900x.010	.900X.008	.900x.010
	3C	*	1.000X.008	1.00x.010	1.300x.012	1.000x.015	1.300x.015	1.000x.010	1.000X.008	1.00x.010
	2C	1.100X.010	1.100X.008	1.100x.008	.900x.006	1.100x.012	1.000x.006	1.100x.008	1.100X.012	1.100x.008
	1C	1.300X.010	1.300X.008	1.300x.008	1.300x.008	1.300x.012	1.300x.010	1.300x.008	1.300X.012	1.300x.010
Orifice		0.078	0.078	.081	.075	.072	.072	.078	.067	.078
Rebound Stack	1R	*	*	1.250x.008	No change	1.250x.012	1.250x.010	1.250x.010	*	1.250x.010
	2R	1.100X.010	*	1.100x.008	No change	1.100x.012	1.100x012	1.100x.008	*	1.100x.010
	3R	*	1.100X.012	1.000x.008	No change	1.000x.012	1.000x.012	1.000x.008	*	1.000x.010
	4R	*	1.000X.012	.900x.008	No change	.900x.012	.900x.012	.900x.008	1.000X.012	.900x.010
	5R	*	0.900X.012	.800x.008	No change	.800x.012	.800x.012	.800x.008	.900X.012	.800x.008
	6R	*	0.800X.012	.700x.008	No change	.700x.012	.700x.012	.700x.008	.800X.012	.700x.008

* Use existing washer here (no change) N/A = Not Applicable

1996/1997 Optional Valving Specifications - Extra Heavy

Shock PN		7041385 IFS	7041386 Front Track X 12	7041401 IFS	7041402 Front Track X 10	7041403 Rear Track X 10	7041444 IFP, Rear Track X 10	7041474 IFS, IFP, Cam	7041480 IFP, Rear Track X 12	7041490 IFP
Compression Stack	8C	N/A	N/A	N/A	N/A	N/A	1.250x.010	N/A	N/A	N/A
	7C	N/A	N/A	N/A	N/A	N/A	.900x.010	N/A	N/A	N/A
	6C	N/A	N/A	1.250x.010	1.250X.010	1.250x.012	1.000X.012	1.250X.010	N/A	1.250x.010
	5C	0.800X.010	0.800X.010	.800x.010	0.800X.008	.800x.012	1.100X.015	0.800X.010	.800X.008	.800x.010
	4C	0.900X.010	0.900X.010	.900x.012	0.900X.012	.900x.015	1.250X.010	0.900X.010	.900X.008	.900x.010
	3C	1.000X.010	1.000X.010	1.000x.012	1.000X.012	1.000x.015	1.300X.015	1.000X.010	1.000X.008	1.000x.010
	2C	1.100X.010	1.100X.010	1.100x.010	1.100X.012	1.100x.012	1.000X.006	1.100X.010	1.100X.012	1.100x.010
	1C	1.300X.010	1.300X.010	1.300x.010	1.300X.012	1.300x.012	1.300X.012	1.300X.010	1.300X.012	1.300x.010
Orifice		0.078	0.067	.081	0.075	.067	0.067	0.078	.067	.072
Rebound Stack	1R	1.250X.010	1.250X.015	1.250x.010	1.250X.010	1.250x.012	1.250X.010	1.250X.010	1.250X.012	1.250x.012
	2R	1.100X.010	1.250X.015	1.100x.008	1.100X.010	1.100x.012	1.100X.012	1.100X.008	1.250X.012	1.100x.012
	3R	*	1.100X.012	1.000x.008	1.000X.010	1.000x.015	1.000X.012	1.000X.008	1.100X.012	1.000x.010
	4R	*	1.000X.012	.900x.008	0.900X.010	.900x.012	0.900X.012	0.900X.008	*	.900x.010
	5R	*	0.900X.012	.800x.008	0.800X.010	.800x.012	0.800X.012	0.800X.008	*	.800x.010
	6R	*	0.800X.010	.700x.008	0.700X.010	.700x.012	0.700X.012	0.700X.008	*	.700x.010

* Use existing washer here (no change) N/A = Not Applicable

1997/1998 Optional Valving Listed By Shock Part Number

Shock PN		LIGHT			HEAVY		
		7041593 IFS X-10 CRC	7041706 Front Track	7041707 Rear Track	7041593 IFS X-10 CRC	7041706 Front Track	7041707 Rear Track
Compression Stack	8C	N/A	1.25X.010*	1.25X.010*	NA	1.25x.010*	N/A
	7C	N/A	0.8x.010	0.9x.008	0.8X.010	0.8X.012	1.25X.010*
	6C	N/A	0.9X.010	1.0X.010	0.9X.010	0.9X.012*	0.9X.012
	5C	0.8X.008	1.0X.010	1.1X.010	1.0X.010	1.0X.015	1.0X.012*
	4C	0.9X.008	1.1X.008	1.25X.008	1.1X.012	1.1X.015	1.1X.015*
	3C	1.0X.006	1.3X.010	1.3X.010	1.3X.012	1.3X.012*	1.3X.015*
	2C	1.1X.008	1.0X.006	1.0X.006*	1.0X.006	1.0X.006	1.0X.006*
	1C	1.3X.006	1.3X.008	1.3X.008	1.3X.010*	1.3X.010	1.3X.012*
Orifice		0.078	0.081	0.075	0.078	0.075	0.075
Rebound Stack	1R	1.25X.010*	1.25X.010*	1.25X.010*	1.25X.010*	1.25X.012	1.25X.010*
	2R	1.1X.010	1.1X.010*	1.1X.010	1.1X.012	1.1X.012	1.25X.012
	3R	1.0X.008*	1.0X.010*	1.0X.012*	1.0X.012	1.0X.012	1.1X.012*
	4R	0.9X.008*	0.9X.010*	0.9X.012*	0.9X.010	0.9X.010*	1.0X.012*
	5R	0.8X.008*	0.8X.010*	0.8X.012*	0.8X.010	0.8X.010*	0.9X.012*
	6R	0.7X.008*	0.7X.010*	0.7X.012*	0.7X.010	0.7X.010*	0.8X.012*
	7R	N/A	N/A	N/A	N/A	N/A	0.7X.012*

* Use production washer here (no change)

Shock PN		LIGHT			HEAVY		
		7041692 IFS	7041641 Front Track	7041599 Rear Track	7041692 IFS	7041641 Front Track	7041599 Rear Track
Compression Stack	8C	1.25X.008	1.25X.010*	1.25X.010*	1.25X.010*	1.25X.010*	1.25X.010*
	7C	.8X.008*	0.8X.010*	.9X.008	0.8X.010*	0.8X.012	0.9X.012
	6C	.9X.008	0.9X.010	1.0X.010	0.9X.012	0.9X.012*	1.0X.012*
	5C	1.0X.008	1.0X.010	1.1X.010	1.0X.010*	1.0X.015	1.1X.015*
	4C	1.1X.008*	1.1X.008	1.25X.008	1.1X.010*	1.1X.015	1.25X.012
	3C	1.3X.010*	1.3X.010	1.3X.010	1.3X.012	1.3X.012*	1.3X.015
	2C	1.0X.008	1.0X.006*	1.0X.006*	1.0X.006*	1.0X.006*	1.0X.006*
	1C	1.3X.008*	1.3X.008	1.3X.008	1.3X.010*	1.3X.010*	1.3X.012*
Orifice		0.081	0.081	0.075	0.081	0.075	0.075
Rebound Stack	1R	1.25X.010*	1.25X.010*	1.25X.010*	1.25X.010*	1.25X.012	1.25X.010*
	2R	1.1X.008*	1.1X.010*	1.1X.010	1.1X.010*	1.1X.012	1.25X.012
	3R	1.0X.008*	1.0X.010*	1.0X.012*	1.0X.008*	1.0X.012	1.1X.012*
	4R	0.9X.008*	0.9X.010*	0.9X.012*	0.9X.008*	0.9X.010*	1.0X.012*
	5R	0.8X.008*	0.8X.010*	0.8X.012*	0.8X.008*	0.8X.010*	0.9X.012*
	6R	0.7X.008*	0.7X.010*	0.7X.012*	0.7X.008*	0.7X.010*	0.8X.012*
	7R	N/A	N/A	N/A	N/A	N/A	0.7X.012*

* Use production washer here (no change)

Shock PN		LIGHT 7041540 IFS	LIGHT 7041595 Rear Track	LIGHT 7041642 Front Track	LIGHT 7041695 Rear Track	HEAVY 7041540 IFS	HEAVY 7041595 Rear Track	HEAVY 7041642 Front Track	HEAVY 7041695 Rear Track
Comp. Stack	8C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	7C	N/A	1.25X.010*	0.7X.008	1.25X.010	N/A	1.25X.010*	0.7X.010*	1.25X.010
	6C	N/A	0.9X.008	0.8X.008	0.9X.008	N/A	0.9X.012	0.8X.012	0.9X.012
	5C	0.8X.008	1.0X.008	0.9X.008	1.0X.008	0.8X.010*	1.0X.010	0.9X.012	1.0X.010
	4C	0.9X.008	1.1X.010	1.0X.008	1.1X.010	0.9X.010*	1.10X.015*	1.0X.012	1.10X.015*
	3C	1.0X.008*	1.3X.012	1.1X.010*	1.3X.012	1.0X.012*	1.3X.015*	1.1X.015	1.3X.015*
	2C	1.1X.006*	0.9X.012*	1.25X.010	0.9X.012*	1.1X.012*	0.9X.008	1.25X.012*	0.9X.008
	1C	1.3X.008*	1.3X.010	1.3X.008	1.3X.010	1.3X.012*	1.3X.012*	1.3X.012*	1.3X.012*
Orifice		0.078	0.086	0.075	0.086	0.078	0.086	0.075	0.086
Reb. Stack	1R	1.25X.012	1.25X.012*	1.25X.010*	1.25X.012	1.25X.015	1.25X.012*	1.25X.010*	1.25X.012*
	2R	1.1X.012	1.1X.010	1.1X.010*	1.1X.010	1.1X.012	1.10X.012*	1.1X.010*	1.10X.012*
	3R	1.0X.012	1.0X.010	1.0X.012*	1.0X.010	1.0X.012	1.0X.012*	1.0X.012*	1.0X.012*
	4R	0.9X.010	0.9X.010	0.9X.010*	0.9X.010	0.9X.010	0.9X.012*	0.9X.010*	0.9X.012*
	5R	0.8X.008	0.8X.010	0.8X.010*	0.8X.010	0.8X.008	0.8X.012*	0.8X.010*	0.8X.012
	6R	0.7X.008	0.7X.010	0.7X.010*	0.7X.010	0.7X.008	0.7X.012*	0.7X.010*	0.7X.012
	7R	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

* Use production washer here (no change)

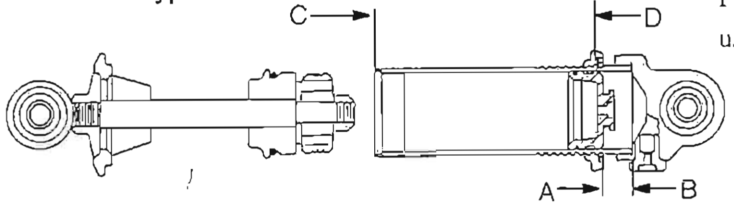
Shock PN		LIGHT 7041589 Front Track	LIGHT 7041584 Front Track	LIGHT 7041585 Rear Track	HEAVY 7041589 Front Track	HEAVY 7041584 Front Track	HEAVY 7041585 Rear Track
Compression Stack	8C	N/A	N/A	N/A	N/A	N/A	N/A
	7C	0.7X.008	1.25x.010*	1.25X.010*	0.7X.010*	1.25x.010*	1.25X.010*
	6C	0.8X.008	.9x.010*	0.9X.010*	0.8X.012	.9x.012	0.9X.012
	5C	0.9X.008	1.0X.010	1.0X.010*	0.9X.012	1.0X.012*	1.0X.010*
	4C	1.0X.008	1.1X.010	1.1X.012	1.0X.012	1.1X.015	1.1X.015*
	3C	1.1X.010*	1.3X.010	1.3X.010	1.1X.015	1.3X.012*	1.3X.015*
	2C	1.25X.010	.9X.008	0.9X.006	1.25X.012*	.9X.006*	1.0X.006*
	1C	1.3X.008	1.3X.008*	1.3X.008	1.3X.012*	1.3X.010	1.3X.012
Orifice		0.075	0.075	0.086	0.075	0.075	0.086
Rebound Stack	1R	1.25X.010*	1.25X.010*	1.25X.012*	1.25X.010*	1.25X.012	1.25X.012*
	2R	1.1X.010*	1.1X.008	1.1X.010	1.1X.010*	1.1X.010*	1.1X.012*
	3R	1.0X.012*	1.0X.010*	1.0X.010	1.0X.012*	1.0X.010*	1.0X.012*
	4R	0.9X.010*	0.9X.010*	0.9X.010	0.9X.010*	0.9X.010*	0.9X.012*
	5R	0.8X.010*	0.8X.010*	0.8X.010	0.8X.010*	0.8X.010*	0.8X.012*
	6R	0.7X.010*	0.7X.010*	0.7X.010	0.7X.010*	0.7X.010*	0.7X.012*
	7R	N/A	N/A	N/A	N/A	N/A	N/A

* Use production washer here (no change)

Fox IFP Depth 1992-1995 and Kit Shocks

The following chart lists all Pre-1996 Fox™ Shock IFP depths by model and part number for quick reference. Measure as shown in the illustration using IFP depth/removal tool PN 2871351 or vernier caliper.

Typical Shock Shown



For welded dome IFP shocks measure C–D using a dial caliper to center of IFP.

For body style IFP measure from point A–B using IFP depth tool PN 2871351

IFS Shocks			
Model	Part Number	IFP Depth	Measurement Point
1992 440 XCR	7041266	2″ oil (no IFP)	Oil level from top of shock body (C)
1993/1994 440 XCR; 1993/1994 XLT SP	LH 7041291 RH 7041292	.728" (18.5 mm)	A–B
1994 440 XCR SP & 600 XCR 1994 XLT SP 1995 440 XCR & 600 XCR	7041346	.728" (18.5 mm)	A–B
1995 RXL & XLT SP	7041385	1.142″(29.0 mm)	A–B
1995 440 XCR SP.	7041401	1.139″(28.9 mm)	A–B

Front Track Shocks			
Model	Part Number	IFP Depth	
1992 XCR	7041254	4.150″ (105.40 mm)	C–D
1993 440 XCR & XLT SP 1994 440 XCR	7041294	4.150″ (105.40 mm)	C–D
1994 440 XCR SP & 600 XCR 1994 XLT SP 1995 440 XCR & 600 XCR	7041344	4.150″ (105.40 mm)	C-D
1995 440 XCR SP	7041402	.586″(14.9 mm)	A–B
1995 XLT SP & RXL	7041386	1.142″(28.9 mm)	A–B

Rear Track Shocks			
Model	Part Number	IFP Depth	A–B
1992 440 XCR and 1993 XLT SP	7041267 (s/s to 2870979)	.835" (21.2 mm)	A–B
1993 440 XCR	7041295	.835" (21.2 mm)	A–B
1994 440 XCR, XLT SP	7041347	.835" (21.2 mm)	A–B
1994 440 XCR SP & 600 XCR 1995 440 XCR & 600 XCR	7041345	.835" (21.2 mm)	A–B
1995 440 XCR SP	7041403	.795″(20.2 mm)	A–B
1995 XLT SP & RXL	7041387	.633″(16.1 mm)	A–B

Kit Shocks				
Kit Part Number / Model		Shock Part Number	IFP Depth	Measurement Point
2871711	38 - 41″ Widening Kit	7041612	1.000″ (25.4mm)	A–B
2871401	XTRA-10 - IFS Shocks	7041401	1.139″(28.9mm)	A–B
2871396	XTRA-12 - IFS Shocks.	7041385	1.142″(29.0mm)	A–B
2871399	XTRA-12 121 / 133.5 Track Shocks	7041386-(Fr Track) 7041480-(RrTrack)	1.142″(2.89cm) .633″(16.0mm)	A–B A–B
2871077	ITS; XC100; XC101 Rear Track Shock	7041293	.835″(21.2mm)	A–B
2870978	ITS; XC100; XC101 Front Track Shock	7041294	4.150″ (105.40 mm)	C–D
2870979	1988-1991 Dial Adjust Rear Shock	7041347	.835" (21.2mm)	A–B

Refer to the appropriate parts manual for a complete listing of Fox shock parts. Fox, Registered Trademark of FOX Shox.

Valve Washer Part Numbers

Part No.	Description
1500052	1.300 x 0.006
1500050	1.250 x 0.006
1500049	1.100 x 0.006
1500048	1.000 x 0.006
1500053	0.900 x 0.006
1500054	0.800 x 0.006
1500055	0.700 x 0.006
1500030	1.300 x 0.008
1500051	1.250 x 0.008
1500031	1.100 x 0.008
1500032	1.000 x 0.008
1500033	0.900 x 0.008
1500028	0.800 x 0.008
1500029	0.700 x 0.008
1500062	1.300 x 0.010
1500026	1.250 x 0.010
1500027	1.100 x 0.010
1500045	1.000 x 0.010
1500046	0.900 x 0.010
1500047	0.800 x 0.010
1500044	0.700 x 0.010

Part No.	Description
1500079	1.300 x 0.012
1500078	1.250 x 0.012
1500060	1.100 x 0.012
1500059	1.000 x 0.012
1500058	0.900 x 0.012
1500057	0.800 x 0.012
1500056	0.700 x 0.012
1500087	1.300 x 0.015
1500086	1.250 x 0.015
1500085	1.100 x 0.015
1500084	1.000 x 0.015
1500083	0.900 x 0.015
1500082	0.800 x 0.015
1500081	0.700 x 0.015

SHOCK SHAFT (POLARIS PART NUMBER)	SHAFT LENGTH (INCHES)	SHOCK PART NUMBER
1500068	9.125	7041385 7041386
1500076	6.35	7041387 7041480 7041490
1500153	5.57	7041402 7041493 7041584 7041589
1500133	6.85	7041255 7041403 7041545
1500140	7.60	7041537
1500152	7.45	7041256 7041267 7041295 7041293 7041347 7041444 7041492 7041585 7041588 7041595 7041599
1500136	7.73	7041593 7041540 7041612 7041494 7041536

Shock Travel Limiting Spacer (1/4″) - Part Number 5431355

Note: Subtract .029″ from IFP depth for each 1/4 inch spacer added to the shock damper rod for limiting.

For example: If standard (full shock travel) IFP depth is .835″, and 6 spacers are added to reduce shock travel by 1.5 inches, multiply .029 x 6 to calculate the amount to subtract from IFP depth.
.835 – .174 = .661 (± .025″) New IFP Depth

Suspension Troubleshooting - WideTrak Style

Problem	Solution
Rear suspension bottoms too easily	-Increase torsion spring preload -Increase rear shock compression valving by turning screw clockwise (if equipped with optional Indy Select / Ryde AFX shock) -Install overload kit PN 2871042 for extreme use
Rides too stiff in rear	-Check for binding suspension shafts and grease all pivot points -Decrease torsion spring preload adjustments -Decrease rear shock compression valving by turning screw counterclockwise (if equipped with optional Indy Select / Ryde AFX shock) -Check for proper track tension
Machine darts from side to side	-Make sure skis are aligned properly (straight forward with rider on machine) -Make sure spindles and all steering components are free turning -Make sure skags are straight on skis -Check hi-fax and replace if worn -Reduce ski pressure: •Increase front track spring preload •Reduce IFS spring preload if shims have been added •Reduce rear torsion spring preload
Front end pushes	-Check for worn skags -Check for binding suspension shafts and grease all pivot points -Increase IFS spring preload by adding shims
Steering is heavy	-Check ski alignment -Check skags and skis for damage -Reduce ski pressure: •Increase front track spring preload •Reduce IFS spring preload if shims have been added •Reduce rear torsion spring preload
Setting up for deep snow operation	-Change worn hi-fax -Lower front and rear torque arms (see Performance section at the back of this manual)

Problem	Solution
Rear suspension bottoms too easily	-Increase torsion spring preload -Increase rear shock compression valving by turning screw clockwise (if equipped with optional Indy Select / Ryde AFX shock)
Rides too stiff in rear	-Check for binding suspension shafts and grease all pivot points -Decrease torsion spring preload adjustments -Decrease rear shock compression valving by turning screw counterclockwise (if equipped with optional Indy Select / Ryde AFX shock)
Machine darts from side to side	-Make sure skis are aligned properly (straight forward with rider on machine) -Make sure spindles and all steering components are free turning -Make sure skags are straight on skis -Check hi-fax and replace if worn -Reduce ski pressure: •Increase front track spring preload •Reduce IFS spring preload if shims have been added •Reduce rear torsion spring preload
Front end pushes	-Check for worn skags -Check for binding suspension shafts and grease all pivot points -Increase IFS spring preload by adding shims
Steering is heavy	-Check ski alignment -Check skags and skis for damage -Reduce ski pressure: •Increase front track spring preload •Reduce IFS spring preload if shims have been added •Reduce rear torsion spring preload
Setting up for deep snow operation	-Change worn hi-fax -Lower front and rear torque arms (see Performance section at the back of this manual)

Suspension Troubleshooting - XTRA Lite Style

Problem	Solution
Rear suspension bottoms too easily	-Increase torsion spring preload -Install optional torsion springs
Rides too stiff in rear	-Check for binding suspension shafts and grease all pivot points -Decrease torsion spring preload adjustments
Machine darts from side to side	-Make sure skis are aligned properly (1/8-1/4″ toe out at ride height) -Make sure spindles and all steering components are free turning -Make sure skags are straight on skis -Check hi-fax and replace if worn -Reduce ski pressure: ●Increase front track spring preload (requires shims) ●Reduce IFS spring preload ●Reduce rear torsion spring preload ●Lengthen front limiter strap
Front end pushes	-Check for worn skags -Check for binding suspension shafts and grease all pivot points -Increase IFS spring preload by adding washers -Shorten front limiter strap
Steering is heavy	-Check ski alignment -Check skags and skis for damage -Reduce ski pressure: ●Increase front track spring preload ●Reduce IFS spring preload ●Reduce rear torsion spring preload
Setting up for deep snow operation	-Change worn hi-fax -Increase front limiter strap length -Increase front track spring preload by adding washers

Problem	Solution
Rear suspension bottoms too easily	-Increase torsion spring preload -Increase rear shock compression valving by turning screw clockwise (if equipped with optional Indy Select / Ryde AFX shock) or refer to optional valving on Suspension Wallchart for Fox equipped models -Change RRSS to highest setting -Install optional torsion springs (stiffer)
Rides too stiff in rear	-Check for binding suspension shafts and grease all pivot points -Decrease torsion spring preload adjustments -Decrease rear shock compression valving by turning screw counterclockwise (if equipped with optional Indy Select / Ryde AFX shock) or refer to optional valving on Suspension Wallchart for Fox equipped models -Set RRSS to lowest position or totally remove -Install optional torsion springs (softer)
Machine darts from side to side	-Make sure skis are aligned properly (1/8-1/4″ toe out at ride height) -Make sure spindles and all steering components are free turning -Make sure skags are straight on skis -Check hi-fax and replace if worn -Reduce ski pressure: •Increase front track spring preload (requires shims) •Reduce IFS spring preload by adjusting cam •Reduce rear torsion spring preload •Lengthen front limiter strap
Front end pushes	-Check for worn skags -Check for binding suspension shafts and grease all pivot points -Increase IFS spring preload by adjusting cam or adding washers -Shorten front limiter strap -Install optional carbide skags
Steering is heavy	-Check ski alignment -Check skags and skis for damage -Reduce ski pressure: •Increase front track spring preload •Reduce IFS spring preload by adjusting cam •Reduce rear torsion spring preload
Setting up for deep snow operation	-Change worn hi-fax -Lower rear torque arms -Increase front limiter strap length -Based on rider preference, RRSS may be removed to increase weight transfer -Increase front track spring preload -Move front track shock to upper mounting position

Suspension Troubleshooting - XTRA 12 Style

Problem	Solution
Rear suspension bottoms too easily	-Check to be sure FRSS block is in highest position -Adjust torsion spring blocks to highest position -Adjust coil over spring on front track shock to increase preload -Install optional (stiffer) torsion springs -Install next heavier coil spring (e.g. 75/125 #/in. to 90/150 #/in. -Increase compression damping on models equipped with Indy Select or Ryde AFX shocks -Check nitrogen pressure in shocks (models equipped with Fox™ shocks) -Change shock valving to heavier setting (models equipped with Fox™ shocks)
Rides too stiff in rear	-Check for binding suspension shafts and grease all pivot points -Decrease spring preload adjustments -Remove rear track shock spring or reduce rate of spring (refer to wallchart) -Change front track shock to lighter spring -Change to lighter shock valving on models equipped with Fox™ or Indy Select / Ryde AFX shocks (refer to wallchart)
Machine darts from side to side	-Make sure skis are aligned properly (1/8-1/4" toe out at normal ride height) -Make sure spindles and all steering components are free turning -Make sure skags are straight on skis and in good condition
Front end pushes	-Check for worn skags -Check for binding suspension shafts and grease all pivot points -Increase front IFS preload -Change FRSS to low setting or move to forwardmost hole -Install optional carbide skags
Steering is heavy	-Check ski alignment -Check skags and skis for damage -Change FRSS to high setting -Decrease IFS spring preload
Setting up for deep snow operation	-Rotate FRSS to lowest setting, depending upon rider preference -Decrease preload on front track spring -Move FRSS to forwardmost hole -Tighten limiter strap one hole

CHAPTER 9
BRAKES / FINAL DRIVE

1996 Brake Specifications

Model	Brake Type	Polaris Chaincase Lube Amount	Chaincase Sprocket/ Chain Length	Reverse	* Jackshaft Spline	Brake Pads
Indy Lite	M3	9 fl. oz.	16/39/64	Acc	13	Std
Indy Lite Deluxe	M3	9 fl. oz.	16/39/64	Acc	13	Std
Indy Lite GT	M3	9 fl. oz.	16/39/64	Acc	13	Std
Indy Sport	H4	9 fl. oz.	16/35/62	Acc	13	Std
Indy Super Sport	H4	9 fl. oz.	17/35/62	Acc	13	Std
Indy TranSport	H4	9 fl. oz.	15/39/64	Acc	13	Std
Indy Sport Touring	H4	9 fl. oz.	16/39/64	Acc	13	Std
Indy Trail	H4	9 fl. oz.	21/39/66	Acc	15	Std
Indy Trail Touring	H4	11 fl. oz.	20/39/66	Std	15	Std
Indy 440 LC	H4	9 fl. oz.	21/39/66	Acc	15	Std
Indy 440 XCR	H5LC	9 fl. oz.	21/39/66	Acc	15	HD
Indy 440 XCR SP ***	H5LC	9 fl. oz.	21/39/66	Acc	15	Race***
Indy 600 XCR	H5LC	9 fl. oz.	21/39/66	Acc	15	HD
Indy 600 XCR SP **	H5LC	9 fl. oz.	21/35/64W	Acc	15	Std
Indy WideTrak GT **	WT	11 fl. oz.	18/41/66	Std	22	Std
Indy WideTrak LX **	WT	11 fl. oz.	18/41/66	Std	22	Std
Indy Classic	H4	11 fl. oz.	21/39/66W	Std	15	Std
Indy Classic Touring	H4	11 fl. oz.	20/39/66W	Std	15	Std
Indy 500	H4	9 fl. oz.	21/39/66	Acc	15	Std
Indy 500 RMK	H4	9 fl. oz.	18/39/66	Acc	15	HD
Indy 500 SKS	H4	9 fl. oz.	20/39/66	Acc	15	Std
Indy 500 EFI	H4	9 fl. oz.	21/39/66W	Acc	15	Std
Indy 500 EFI SKS	H4	9 fl. oz.	20/39/66	Acc	15	Std
Indy 500 EFI RMK	H4	9 fl. oz.	18/39/66	Acc	15	HD
Indy XLT	H4	9 fl. oz.	21/39/66W	Acc	15	Std
Indy XLT SKS	H4	9 fl. oz.	20/39/66W	Acc	15	Std
Indy XLT RMK	H4	9 fl. oz.	18/39/66W	Acc	15	HD
Indy XLT SP	H4	9 fl. oz.	21/39/66W	Acc	15	Std
Indy XLT Touring	H4	11 fl. oz.	20/39/66W	Std	15	Std
Indy RXL	H5LC	9 fl. oz.	20/35/64W	Acc	15	Std
Indy Ultra SP **	H5LC	9 fl. oz.	21/35/64W	Acc	15	Std
Indy Ultra SKS **	H4	9 fl. oz.	20/35/64W	Acc	15	Std
Indy Ultra RMK **	H5LC	9 fl. oz.	20/39/66W	Acc	15	Std
Indy Storm **	H5LC	9 fl. oz.	23/37/66W	Acc	15	Std
Indy Storm SKS **	H5LC	9 fl. oz.	20/35/64W	Acc	15	Std
Indy Storm RMK **	H5LC	9 fl. oz.	20/39/66W	Acc	15	HD

Brake type I.D. - M=Mechanical, H=Hydraulic, LC=Liquid Cooled, WT=WideTrak
"W" denotes a 13 link wide chain and wide sprocket; others are 11 link wide.
* Requires 2871296 Installation Tool for 15 tooth. 2870974 Installation Tool for 13 tooth
** Denotes jackshafts with pressed on left side bearings (no lock collar)
*** Race pad 440 XCR SP can only be used with special caliper assembly and Magura master cylinder assembly

1997 Brake Specifications

Model	Brake Type	Polaris Chaincase Lube Amount	Chaincase Sprocket/ Chain Length	Sprocket/ Chain Width	Reverse	* Jackshaft Spline	Brake Pads
Indy Lite, Deluxe, GT	M3	9 fl. oz.	16/39/64	11	Acc	13	Std
Indy Sport	H4	9 fl. oz.	17/35/62	11	Acc	13	Std
Indy Sport Touring	H4	9 fl. oz.	16/39/64	11	Acc	13	Std
Indy TranSport	H4	9 fl. oz.	15/39/64	11	Acc	13	Std
Indy XCF	H4	9 fl. oz.	20/39/66	11	Acc	15	Std
Indy 440 LC	H4	9 fl. oz.	21/39/66	11	Acc	15	Std
Indy 440 XC	H5LC	9 fl. oz.	21/39/66	13	Acc	15	HD
Indy 440 XCR	H5LC	9 fl. oz.	22/41/70	3/4	Acc	15	HD
Indy Super Sport	H4	9 fl. oz.	21/39/66	11	Acc	15	Std
Indy Trail	H4	9 fl. oz.	21/39/66	11	Acc	15	Std
Indy Trail Touring	H4	11 fl. oz.	20/39/66	11	Std	15	Std
Indy Trail RMK	H4	11 fl. oz.	19/40/66	11	Acc	15	Std
Indy WideTrak GT / LX	WT-2	20 fl. oz.	19/41/66	13	Std/LR	19	Std
Indy Classic	H4	11 fl. oz.	21/39/66	13	Std	15	Std
Indy Classic Touring	H4	11 fl. oz.	19/39/66	13	Std	15	Std
Indy 500	H4	9 fl. oz.	21/39/66	13	Acc	15	Std
Indy 500 SKS	H4	9 fl. oz.	20/39/66	13	Acc	15	Std
Indy 500 RMK	H4	9 fl. oz.	19/40/66	13	Acc	15	HD
Indy 500 EFI	H4	9 fl. oz.	21/39/66	13	Acc	15	Std
Indy XLT	H4	9 fl. oz.	21/39/66	13	Acc	15	Std
Indy XLT SKS	H4	9 fl. oz.	20/39/66	13	Acc	15	Std
Indy XLT RMK	H4	9 fl. oz.	18/40/66	13	Acc	15	HD
Indy XLT SP	H4	9 fl. oz.	21/39/66	13	Acc	15	Std
Indy XLT LTD / SP	H4	9 fl. oz.	21/39/66	15	Acc	15	Std
Indy XLT Touring	H4	11 fl. oz.	20/40/66	13	Std	15	Std
Indy 600 XC	H5LC	9 fl. oz.	21/39/66	13	Acc	15	HD
Indy 600 XCR	H5LC	9 fl. oz.	21/35/64	13	Acc	15	HD
Indy RXL	H5LC	9 fl. oz.	20/35/64	15	Acc	15	Std
Indy Ultra / Ultra SP	H5LC	9 fl. oz.	21/35/64	13	Acc	15	Std
Indy Ultra SPX/SE	H5LC	9 fl. oz.	21/35/64	13	Acc	15	Std
Indy Ultra Touring	H5LC	9 fl. oz.	20/35/64	13	Std	15	Std
Indy 700 SKS	H5LC	9 fl. oz.	20/35/66	13	Acc	15	Std
Indy 700 RMK	H5LC	9 fl. oz.	20/39/68	13	Acc	15	HD
Indy 700 XC	H5LC	9 fl. oz.	24/40/70	3/4	Acc	15	HD
Indy Storm / SE	H5LC	9 fl. oz.	23/37/66	15	Acc	15	Std
Indy Storm RMK	H5LC	9 fl. oz.	20/39/66	15	Acc	15	HD

Brake type I.D. - M=Mechanical, H=Hydraulic, LC=Liquid Cooled, WT=WideTrak
* Requires 2871296 Installation Tool for 15 tooth, 2870974 Installation Tool for 13 tooth

1998 Chain Case / Brake Specifications

Model	Polaris Chaincase Lube Amount**	Chaincase Sprocket/ Chain Length	Sprocket/ Chain Width	Reverse	Jackshaft Splines*	Brake Pads	Brake Type
Indy Lite	7 fl. oz.	16/39/64	13	Opt.	13	Std	M3
Indy Lite Deluxe	7 fl. oz.	16/39/64	13	Opt.	13	Std	M3
Indy Lite Touring	7 fl. oz.	16/39/64	13	Opt.	13	Std	M3
Indy Sport	7 fl. oz.	17/35/62	13	Opt.	13	Std	H4
Indy Sport Touring	7 fl. oz.	17/41/66	13	Opt.	13	Std	H4
Indy TranSport	9 fl. oz.	15/39/64	13	Std.	13	Std	H4
Indy XCF	7 fl. oz.	19/39/66	3/4″	Opt.	15	Std	H4
Indy 440 LC	7 fl. oz.	22/41/68	3/4″	Opt.	15	Std	H4
Indy 440 XCR	7 fl. oz.	21/39/68	3/4″	Opt.	15		H5LC
Indy Super Sport	7 fl. oz.	22/41/68	3/4″	Opt.	15	Std	H4
Indy Trail	7 fl. oz.	22/41/68	3/4″	Opt.	15	Std	H4
Indy Trail Touring	9 fl.oz.	20/40/66	3/4″	Std.	15	Std	H4
Indy Trail RMK	7 fl. oz.	18/41/66	3/4″	Opt.	15	HD	H4
Indy WideTrak LX	20 fl. oz.	19/41/66	3/4″	Std.w/H-L	19	Std	WT-2
Indy Classic	9 fl. oz.	22/41/68	3/4″	Std.	15	Std	H4
Indy Classic Touring	9 fl. oz.	19/40/66	3/4″	Std.	15	Std	H4
Indy 500	7 fl. oz.	22/41/68	3/4″	Opt.	15	Std	H4
Indy 500 RMK	7 fl. oz.	17/41/66	3/4″	Opt.	15	HD	H4
Indy XLT Classic	9 fl.oz.	22/41/68	3/4″	Std.	15	Std	H4
Indy XLT SP	7 fl. oz.	22/41/68	3/4″	Opt.	15	Std	H4
Indy XLT LTD	7 fl. oz.	22/41/68	3/4″	Opt.	15	Std	H4
Indy XLT Touring	9 fl. oz.	20/40/66	3/4″	Std.	15	Std	H4
Indy 600 XC	7 fl. oz.	22/40/70	3/4″	Opt.	15	Std	H5LC
Indy 600 XCR	7 fl. oz.	23/40/68	3/4″	Opt.	15	HD	H5LC
Indy 600 RMK	7 fl. oz.	19/40/68	3/4″	Opt.	15	HD	H5LC
Indy Ultra	7 fl. oz.	23/40/68	3/4″	Opt.	15	Std	H5LC
Indy Ultra Touring	9 fl. oz.	22/40/68	3/4″	Std.	15	Std	H5LC
Indy 700 XC	7 fl. oz.	24/40/70	3/4″	Opt.	15	Std	H5LC
Indy 700 XCR	7 fl. oz.	24/40/68	3/4″	Opt.	15	HD	H5LC
Indy 700 RMK	7 fl. oz.	21/41/70	3/4″	Opt.	15	HD	H5LC
Indy Storm	7 fl. oz.	25/40/70	3/4″	Opt.	15	Std	H5LC

Brake type I.D. - M=Mechanical, H=Hydraulic, LC=Liquid Cooled, WT=WideTrak
* Requires 2871296 Installation Tool for 15 tooth, 2870974 Installation Tool for 13 tooth

All 1998 Models with P85 Clutch System use HYVO™ Chain and Sprockets (3/4″ wide)

** 7 fl.oz. = 210cc

** 9 fl.oz. = 265cc

** 20 fl.oz. = 590cc

INDY JACKSHAFT SPEED VS. MILES PER HOUR
SPROCKET COMBINATION/GEAR RATIO/CHAIN PITCH – STD. CHAINCASE

The following chart should be used to select optimum gearing for special applications. The chart is calculated for models with the P85 drive clutch at a 1 to 1 ratio between drive clutch and driven clutch front drive sprocket diameter is 7.06 inches. To use the chart, select the jackshaft rpms (equal to engine rpm). MPH is shown to the right of jackshaft rpm. Shown on top is optimum gearing for mph and engine rpms.

										20/41					
Gearing	23/37	20/33	21/35	20/35	19/35	21/37	21/39	18/35	20/39	19/39	17/35	19/40	19/41	18/39	16/35
Ratio	1.61	1.65	1.67	1.75	1.84	1.76	1.86	1.94	1.95	2.05	2.06	2.11	2.16	2.17	2.19
Pitch	66	64	64	64	64	66	66	64	66	66	62	68	66	66	62
Jackshaft RPM	MILES PER HOUR														
6500	85.5	83.4	82.4	78.7	74.8	78.2	74.0	70.9	70.6	67.1	66.8	65.2	63.7	63.4	62.8
6600	86.8	84.7	83.7	79.9	76.0	79.4	75.1	72.0	71.7	68.2	67.8	66.2	64.7	64.4	63.8
6700	88.1	86.0	85.0	81.1	77.1	80.6	76.3	73.1	72.8	69.2	68.9	67.2	65.7	65.4	64.8
6800	89.4	87.3	86.2	82.3	78.3	81.8	77.4	74.2	73.8	70.2	69.9	68.2	66.7	66.4	65.7
6900	90.8	88.6	87.5	83.5	79.4	83.0	78.6	75.3	74.9	71.3	70.9	69.2	67.6	67.3	66.7
7000	92.1	89.8	88.8	84.7	80.6	84.2	79.7	76.4	76.0	72.3	72.0	70.2	68.6	68.3	67.7
7100	93.4	91.1	90.0	85.9	81.7	85.4	80.8	77.5	77.1	73.3	73.0	71.3	69.6	69.3	68.7
7200	94.7	92.4	91.3	87.1	82.9	86.6	82.0	78.6	78.2	74.4	74.0	72.3	70.6	70.3	69.6
7300	96.0	93.7	92.6	88.3	84.0	87.8	83.1	79.7	79.3	75.4	75.0	73.3	71.6	71.2	70.6
7400	97.3	95.0	93.8	89.5	85.2	89.0	84.2	80.8	80.4	76.4	76.1	74.3	72.5	72.2	71.6
7500	98.6	96.3	95.1	90.8	86.3	90.2	85.4	81.9	81.4	77.5	77.1	75.3	73.5	73.2	72.5
7600	100.0	97.5	96.4	92.0	87.5	91.4	86.5	83.0	82.5	78.5	78.1	76.3	74.5	74.2	73.5
7700	101.3	98.8	97.6	93.2	88.6	92.6	87.7	84.0	83.6	79.5	79.2	77.3	75.5	75.1	74.5
7800	102.6	100.1	98.9	94.4	89.8	93.8	88.8	85.1	84.7	80.6	80.2	78.3	76.5	76.1	75.4
7900	103.9	101.4	100.2	95.6	90.9	95.0	89.9	86.2	85.8	81.6	81.2	79.3	77.4	77.1	76.4
8000	105.2	102.7	101.4	96.8	92.1	96.3	91.1	87.3	86.9	82.6	82.2	80.3	78.4	78.1	77.4
8100	106.5	104.0	102.7	98.0	93.2	97.5	92.2	88.4	88.0	83.7	83.3	81.3	79.4	79.0	78.3
8200	107.8	105.2	104.0	99.2	94.4	98.7	93.4	89.5	89.0	84.7	84.3	82.3	80.4	80.0	79.3
8300	109.2	106.5	105.2	100.4	95.5	99.9	94.5	90.6	90.1	85.7	85.3	83.3	81.4	81.0	80.3
8400	110.5	107.8	106.5	101.6	96.7	101.1	95.6	91.7	91.2	86.8	86.3	84.3	82.3	82.0	81.2
8500	111.8	109.1	107.8	102.9	97.8	102.3	96.8	92.8	92.3	87.8	87.4	85.3	83.3	82.9	82.2
8600	113.1	110.4	109.0	104.1	99.0	103.5	97.9	93.9	93.4	88.8	88.4	86.3	84.3	83.9	83.2
8700	114.4	111.7	110.3	105.3	100.1	104.7	99.0	95.0	94.5	89.9	89.4	87.3	85.3	84.9	84.1
8800	115.7	112.9	111.6	106.5	101.3	105.9	100.2	96.1	95.6	90.9	90.5	88.3	86.3	85.9	85.1
8900	117.1	114.2	112.9	107.7	102.4	107.1	101.3	97.1	96.6	91.9	91.5	89.3	87.2	86.8	86.1
9000	118.4	115.5	114.1	108.9	103.6	108.3	102.5	98.2	97.7	93.0	92.5	90.3	88.2	87.8	87.0
9100	119.7	116.8	115.4	110.1	104.7	109.5	103.6	99.3	98.8	94.0	93.5	91.3	89.2	88.8	88.0
9200	121.0	118.1	116.7	111.3	105.9	110.7	104.7	100.4	99.9	95.0	94.6	92.3	90.2	89.8	89.0
9300	122.3	119.4	117.9	112.5	107.0	111.9	105.9	101.5	101.0	96.1	95.6	93.3	91.2	90.8	89.9
9400	123.6	120.6	119.2	113.7	108.2	113.1	107.0	102.6	102.1	97.1	96.6	94.3	92.2	91.7	90.9
9500	124.9	121.9	120.5	115.0	109.3	114.3	108.2	103.7	103.2	98.1	97.7	95.3	93.1	92.7	91.9
9600	126.3	123.2	121.7	116.2	110.5	115.5	109.3	104.8	104.2	99.2	98.7	96.3	94.1	93.7	92.8
9700	127.6	124.5	123.0	117.4	111.6	116.7	110.4	105.9	105.3	100.2	99.7	97.3	95.1	94.7	93.8
9800	128.9	125.8	124.3	118.6	112.8	117.9	111.6	107.0	106.4	101.2	100.7	98.3	96.1	95.6	94.8
9900	130.2	127.1	125.5	119.8	113.9	119.1	112.7	108.1	107.5	102.3	101.8	99.4	97.1	96.6	95.7
10000	131.5	128.3	126.8	121.0	115.1	120.3	113.8	109.2	108.6	103.3	102.8	100.4	98.0	97.6	96.7

Gearing	18/41	17/39	15/35	17/40	17/41	16/39	16/40	14/35	16/41	15/39	15/40	15/41	14/39	14/40	14/41
Ratio	2.28	2.29	2.33	2.35	2.41	2.44	2.50	2.50	2.56	2.60	2.67	2.73	2.79	2.86	2.93
Pitch	68	66	62	66	66	64	66	62	66	64	64	66	64	64	64
Jackshaft RPM	MILES PER HOUR														
6500	60.4	60.1	59.1	58.6	57.1	56.4	55.1	55.1	53.8	52.9	51.6	50.4	49.3	48.1	47.0
6600	61.3	61.0	60.0	59.5	58.0	57.3	55.9	55.9	54.6	53.8	52.3	51.2	50.1	48.9	47.7
6700	62.2	62.0	60.9	60.4	58.9	58.1	56.7	56.7	55.4	54.6	53.1	52.0	50.9	49.6	48.4
6800	63.2	62.9	61.8	61.3	59.7	59.0	57.6	57.6	56.2	55.4	53.9	52.7	51.6	50.3	49.1
6900	64.1	63.8	62.7	62.2	60.6	59.9	58.4	58.4	57.1	56.2	54.7	53.5	52.4	51.1	49.9
7000	65.0	64.7	63.6	63.1	61.5	60.7	59.3	59.3	57.9	57.0	55.5	54.3	53.1	51.8	50.6
7100	65.9	65.7	64.5	64.0	62.4	61.6	60.1	60.1	58.7	57.8	56.3	55.1	53.9	52.6	51.3
7200	66.9	66.6	65.4	64.9	63.3	62.5	61.0	61.0	59.6	58.6	57.1	55.8	54.6	53.3	52.0
7300	67.8	67.5	66.3	65.8	64.1	63.4	61.8	61.8	60.4	59.5	57.9	56.6	55.4	54.0	52.8
7400	68.7	68.4	67.3	66.7	65.0	64.2	62.7	62.7	61.2	60.3	58.7	57.4	56.2	54.8	53.5
7500	69.7	69.4	68.2	67.6	65.9	65.1	63.5	63.5	62.0	61.1	59.5	58.2	66.9	55.5	54.2
7600	70.6	70.3	69.1	68.5	66.8	66.0	64.4	64.4	62.9	61.9	60.3	58.9	57.7	56.3	54.9
7700	71.5	71.2	70.0	69.4	67.7	66.8	65.2	65.2	63.7	62.7	61.1	59.7	58.4	57.0	55.6
7800	72.4	72.1	70.9	70.3	68.5	67.7	66.1	66.1	64.5	63.5	61.9	60.5	59.2	57.8	56.4
7900	73.4	73.0	71.8	71.2	69.4	68.6	66.9	66.9	65.3	64.3	62.7	61.3	60.0	58.5	57.1
8000	74.3	74.0	72.7	72.1	70.3	69.4	67.8	67.8	66.2	65.2	63.4	62.1	60.7	59.2	57.8
8100	75.2	74.9	73.6	73.0	71.2	70.3	68.6	68.6	67.0	66.0	64.2	62.8	61.5	60.0	58.5
8200	76.2	75.8	74.5	73.9	72.0	71.2	69.5	69.5	67.8	66.8	65.0	63.6	62.2	60.7	59.3
8300	77.1	76.7	75.4	74.8	72.9	72.0	70.3	70.3	68.7	67.6	65.8	64.4	63.0	61.5	60.0
8400	78.0	77.7	76.3	75.7	73.8	72.9	71.1	71.1	69.5	68.4	66.6	65.2	63.8	62.2	60.7
8500	78.9	78.6	77.2	76.6	74.7	73.8	72.0	72.0	70.3	69.2	67.4	65.9	64.5	62.9	61.4
8600	79.9	79.5	78.2	77.5	75.6	74.6	72.8	72.8	71.1	70.0	68.2	66.7	65.3	63.7	62.2
8700	80.8	80.4	79.1	78.4	76.4	75.5	73.7	73.7	72.0	70.9	69.0	67.5	66.0	64.4	62.9
8800	81.7	81.4	80.0	79.3	77.3	76.4	74.5	74.5	72.8	71.7	69.8	68.3	66.8	65.2	63.6
8900	82.7	82.3	80.9	80.2	78.2	77.2	75.4	75.4	73.6	72.5	70.6	69.0	67.5	65.9	64.3
9000	83.6	83.2	81.8	81.1	79.1	78.1	76.2	76.2	74.4	73.3	71.4	69.8	68.3	66.6	65.0
9100	84.5	84.1	82.7	82.0	80.0	79.0	77.1	77.1	75.3	74.1	72.2	70.6	69.1	67.4	65.8
9200	85.4	85.1	83.6	82.9	80.8	79.8	77.9	77.9	76.1	74.9	73.0	71.4	69.8	68.1	66.5
9300	86.4	86.0	84.5	83.8	81.7	80.7	78.8	78.8	76.9	75.7	73.8	72.1	70.6	68.9	67.2
9400	87.3	86.9	85.4	84.7	82.6	81.6	79.6	79.6	77.8	76.6	74.5	72.9	71.3	69.6	67.9
9500	88.2	87.8	86.3	85.6	83.5	82.4	80.5	80.5	78.6	77.4	75.3	73.7	72.1	70.3	68.7
9600	89.2	88.8	87.2	86.5	84.3	83.3	81.3	81.3	79.4	78.2	76.1	74.5	72.9	71.1	69.4
9700	90.1	89.7	88.2	87.4	85.2	84.2	82.2	82.2	80.2	79.0	76.9	75.2	73.6	71.8	70.1
9800	91.0	90.6	89.1	88.3	86.1	85.0	83.0	83.0	81.1	79.5	77.7	76.0	74.4	72.6	70.8
9900	91.9	91.5	90.0	89.2	87.0	85.9	83.9	83.9	81.9	80.6	78.5	76.8	75.1	73.3	71.5
10000	92.9	92.5	90.9	90.1	87.9	86.8	84.7	84.7	82.7	81.4	79.3	77.6	75.9	74.0	72.3

Jackshaft Speed vs. MPH Chart (Long Chain Case)

1997 700 XC, 440 XCR; 1998 440 XCR, 600 & 700 Domestic Twins (Longer Chain Case)

Top Sprokect	25	23	23	23	22	22	20	21	19	19	18	18	17
Lower Sprokel	41	39	40	41	40	41	39	41	39	40	40	41	41
Ratio	1.64	1.70	1.74	1.78	1.82	1.86	1.95	1.95	2.05	2.11	2.22	2.28	2.41
Chain Length	72	70	70	70	70	70	68	70	68	68	68	68	68
Jackshaft RPM	MILES PER HOUR												
6000	76.8	74.3	72.5	70.7	69.3	67.6	64.6	64.5	61.4	59.9	56.7	55.3	52.3
6100	78.1	75.6	73.7	71.9	70.5	68.7	65.7	65.6	62.4	60.9	57.7	56.2	53.1
6200	79.4	76.8	74.9	73.1	71.6	69.9	66.8	66.7	63.4	61.9	58.6	57.2	54.0
6300	80.7	78.0	76.1	74.2	72.8	71.0	67.9	67.8	64.5	62.9	59.5	58.1	54.9
6400	82.0	79.3	77.3	75.4	73.9	72.1	68.9	68.9	65.5	63.9	60.5	59.0	55.7
6500	83.2	80.5	78 5	76.6	75.1	73.3	70.0	69.9	66.5	64.8	61.4	59.9	56.6
6600	84.5	81.8	79.7	77.8	76.2	74.4	71.1	71.0	67.5	65.8	62.4	60.9	57.5
6700	85.8	83.0	80.9	78.9	77.4	75.5	72.2	72.1	68.6	66.8	63 3	61.8	58.3
6800	87.1	84.2	82.1	80.1	78.6	76.6	73.2	73.2	69.6	67.8	64.3	62.7	59.2
6900	88.4	85.5	83.3	81.3	79.7	77.8	74.3	74.2	70.6	68.8	65.2	63.6	60.1
7000	89.6	86.7	84.5	82.5	80.9	78.9	75.4	75.3	71.6	69.8	66.2	64.5	61.0
7100	90.9	87.9	65.7	83.7	82.0	80.0	76.5	76.4	72.7	70.8	67.1	65.5	61.8
7200	92.2	89.2	87.0	84.8	83.2	81.1	77.6	77.5	73.7	71.8	68.1	66.4	62.7
7300	93.5	90.4	88.2	86.0	84.3	82.3	78.6	78.5	74.7	72.8	69.0	67.3	63.6
7400	94.8	91.7	89.4	87.2	85.5	83.4	79.7	79.6	75.7	73.8	69.9	68.2	64.4
7500	96.1	92.9	90.6	88.4	86.6	84.5	80.8	80.7	76.7	74.8	70.9	69.2	65.3
7600	97.3	94.1	91.8	89.5	87.8	85.7	81.9	81.8	77.8	75.8	71.8	70.1	66.2
7700	98.6	95 4	93 0	90.7	88.9	86.8	82.9	82.8	78.8	76.8	72.8	71.0	67.1
7800	99.9	96.6	94.2	91.9	90.1	87.9	84.0	83.9	79.8	77.8	73.8	71.9	67.9
7900	101.2	97.9	95.4	93.1	91.3	89.0	85 1	85.0	80.8	78.8	74.7	72.8	68.8
8000	102.5	99.1	98.6	94.3	92.4	90.2	86.2	86.1	81.9	79.8	75 6	73.8	69.7
8100	103.7	100.3	97.8	95.4	93.6	91.3	87.2	87.1	82.9	80.8	76.6	74.7	70.5
8200	105.0	101.6	99.0	96.6	94.7	92.4	88.3	88.2	83.9	81.8	77.5	75.6	71.4
8300	106.3	102.8	100.2	97.8	95.9	93.5	89.4	89.3	84.9	82.8	78.4	76.5	72.3
8400	107.6	104.0	101.4	99.0	97.0	94.7	90.5	90.4	86.0	83.8	79.4	77.5	73.2
8500	108 9	105.3	102.7	100.2	98.2	95.8	91.6	91.4	87.0	84.8	80.3	78.4	74.0
8600	110.1	106.5	103.9	101.3	99.3	96.9	92.6	92.5	88.0	85.8	81.3	79.3	74.9
8700	111.4	107.8	105.1	102.5	100.5	98.1	93.7	93.6	89.0	86.8	82 2	80 2	78 5
8800	112.7	109.0	106.3	103.7	101.7	99.2	94.8	94.7	90.0	87.8	83.2	81.1	76.6
8900	114.0	110.2	107.5	104.9	102.8	100 3	95.9	95.7	91.1	88.8	84.1	82.1	77.5
9000	115.3	111.5	108.7	106.0	104.0	101.4	96.9	96.8	92.1	89.8	85.1	83.0	78.4
9100	116.5	112.7	109.9	107.2	105.1	102.6	98.0	97.9	93.1	90.8	86.0	83.9	79.2
9200	117.8	114.0	111.1	108.4	106.3	103.7	99.1	99.0	94.1	91.8	87.0	84.8	80.1
9300	119.1	115.2	112.3	109.6	107.4	104.8	100.2	100.0	95.2	92.8	87.9	85.8	81.0
9400	120.4	116.4	113.5	110.8	108.6	105.9	101.2	101.1	96.2	93.8	88.8	86.7	81.9
9500	121 7	117.7	114.7	111.9	109.7	107.1	102.3	102.2	97.2	94.8	89.8	87.6	82.7
9600	122.9	118.9	115.9	113.1	110.9	108.2	103.4	103.3	98.2	95.8	90.7	88.5	83.6
9700	124.2	120.2	117 1	114.3	112 1	109.3	104.5	104.4	99.3	96.8	91.7	89.4	84.5
9800	125.5	121.4	118.4	115.5	113.2	110.4	105.6	105.4	100.3	97.8	92.6	90.4	85.3
9900	126.8	122.6	119.6	116.6	114.4	111.6	106.6	106.5	101.3	98.8	93.6	91 3	86.2
10000	128.1	123.9	120.8	117.8	115.5	112.7	107.7	107.8	102.3	99.8	94.5	92.2	87.1

Chain Case Sprocket Part Numbers

Top Sprockets - 13 Spline (Except Large Diameter Jackshaft)

11L Drive System		13L Drive System	
13T	3222059	19T	3221059
14T	3221036	20T	3221055
15T	3221031	21T	3221054
16T	3221032	22T	3221056
17T	3221033	23T	3221057
18T	3221037		
19T	3221034		
20T	3221053		
21T	3221035		

Top Sprockets - 15 Spline (Large Diameter) Jackshaft

11L Drive System		13L Drive System		15L Drive System	
15T	3221067	17T	3221075	20T	3221080
16T	3221068	18T	3221076	21T	3222077
17T	3221069	19T	3221060	22T	3222078
18T	3221079	20T	3221061	23T	3222079
19T	3221071	21T	3221062		
20T	3221065	22T	3221063		
21T	3221066	23T	3221064		
22T	3221072				
23T	3221073				

Bottom Sprockets

11L Drive System		11L Reverse		13L Drive System		13L Reverse Gear		15L Drive System		15L Reverse	
33T	3222039	35T	1341054	35T	3222053	35T	1341110	35T	3222073	35T	1341173
35T	3222036	39T Steel 39T PM	1341053 1341163	37T	3222066	37T	1341114	37T	3222074	37T	1341172
39T	3222034	40T	1341198	39T	3222052	39T Steel 39T PM	1341111 1341163	39T	3222075	39T	1341171
41T	3222037	41T	1341112			40T	1341197			41T	1341117

Drive Chain

11L Drive System		13L Drive System		15L Drive System	
64P	3224023	64P	3224052	64P	3224057
66P	3224024	66P	3224051	66P	3224058
68P	3224025				

HYVO™ Sprocket Part Numbers

Top Sprockets For 3/4″ HYVO™ Drive Systems

17T	3221084
18T	3221085
19T	3221086
20T	3221087
21T	3221088
22T	3221089
23T	3221090
24T	3221091
25T	3221092

HYVO™ Drive Chain

Chain Length (Pitch)	Part Number
66P	3224071
68P	3224070
70P	3224069

Bottom Sprockets For 3/4″ HYVO™ Drive Systems

Standard Bottom Sprockets		Reverse Sprockets	
39T	3222105	40T	1341224
40T	3222094	41T	1341225
41T	3222095		

Sprocket / Chain Combinations – 6.625 Chain Case

Acceptable gearing / chain combinations are listed below for the 6.625 (center distance) chaincase. Do not use this chart for 1997 - 1998 models with domestic twin cylinder engines (7.050 chaincase), refer to page 9.2e. Combinations listed as "not recommended" should not be installed.

Upper Sprocket (# of Teeth)	Lower Sprocket (# of Teeth)	Chain Length (6.625 Chain Case)	
16	35	62	
16	37	64	NOT RECOMMENDED
16	39	64	
16	40	66	NOT RECOMMENDED
16	41	66	
17	35	62	
17	37	64	
17	39	64	
17	40	66	NOT RECOMMENDED
17	41	66	
18	35	64	NOT RECOMMENDED
18	37	64	
18	39	66	NOT RECOMMENDED
18	40	66	
18	41	66	
19	35	64	NOT RECOMMENDED
19	37	64	
19	39	66	
19	40	66	
19	41	66	
20	35	64	
20	37	66	NOT RECOMMENDED
20	39	66	
20	40	66	
20	41	68	NOT RECOMMENDED
21	35	64	
21	37	66	NOT RECOMMENDED
21	39	66	
21	40	68	NOT RECOMMENDED
21	41	68	
22	35	64	
22	37	66	
22	39	68	NOT RECOMMENDED
22	40	68	
22	41	68	
23	35	66	NOT RECOMMENDED
23	37	66	
23	39	68	NOT RECOMMENDED
23	40	68	
23	41	68	
24	39	68	
24	40	68	
24	41	70	NOT RECOMMENDED
25	39	68	
25	40	70	NOT RECOMMENDED
25	41	70	NOT RECOMMENDED

Sprocket / Chain Combinations – 7.050 Center Distance Chain Case

Acceptable gearing / chain combinations are listed below for the 7.050 (center distance) chaincase used on all 1997 - 1998 models with domestic twin cylinder engines (440 XCR, 600 and 700 XC, SKS, and RMK). Combinations listed as "not recommended" should not be installed. Refer to page 9.2d for 6.625 (center distance) chaincase gearing/chain recommendations.

Upper Sprocket (# of Teeth)	Lower Sprocket (# of Teeth)	Chain Length	
16	35	64	
16	37	66	NOT RECOMMENDED
16	39	66	
16	40	68	NOT RECOMMENDED
16	41	68	
17	35	64	NOT RECOMMENDED
17	37	66	
17	39	68	NOT RECOMMENDED
17	40	68	
17	41	68	
18	35	66	NOT RECOMMENDED
18	37	66	
18	39	68	NOT RECOMMENDED
18	40	68	
18	41	68	
19	35	66	
19	37	66	NOT RECOMMENDED
19	39	68	
19	40	68	
19	41	70	NOT RECOMMENDED
20	35	66	
20	37	68	NOT RECOMMENDED
20	39	68	
20	40	70	NOT RECOMMENDED
20	41	70	NOT RECOMMENDED
21	35	66	
21	37	68	
21	39	70	NOT RECOMMENDED
21	40	70	NOT RECOMMENDED
21	41	70	
22	35	68	NOT RECOMMENDED
22	37	68	
22	39	70	NOT RECOMMENDED
22	40	70	
22	41	70	
23	35	68	
23	37	68	
23	39	70	
23	40	70	
23	41	70	NOT RECOMMENDED
24	39	70	
24	40	70	
24	41	72	NOT RECOMMENDED
25	39	70	
25	40	72	NOT RECOMMENDED
25	41	72	

1996 Track Drive Data

Model	No. of Drive Sprockets	Drive Type	Drive Shaft Bearing Lock	Drive Sprocket Diameter	DRIVE SPROCKET POSITION Reference Page 9.4			
Indy Lite	2	3	Set Screw	6.94	A	B	C	D
Indy Lite Deluxe	2	3	Set Screw	6.94	7.48	12.32	All 1996 models, sprocket positions are measured to sprocket hub and not idler center. See page 9.4.	
Indy Lite GT	2	3	Set Screw	6.94	7.48	12.32		
Indy Sport	2	3	Set Screw	6.94	7.48	12.32		
Indy Super Sport	2	3	Set Screw	6.94	7.48	12.32		
Indy TranSport	2	3	Set Screw	6.94	7.48	12.32		
Indy Sport Touring	2	3	Set Screw	6.94	7.48	12.32		
Indy Trail	2	3	Set Screw	6.94	7.48	12.32		
Indy Trail Touring	2	3	Set Screw	6.94	7.48	12.32		
Indy 440 LC	2	3	Set Screw	6.94	7.48	12.32		
Indy 440 XCR	2	3	Set Screw	6.94	7.48	12.32		
Indy 440 XCR SP	2	3	Skwez-loc™	6.94	7.48	12.32		
Indy 600 XCR	2	3	Set Screw	6.94	7.48	12.32		
Indy 600 XCR SP	2	3*	Pressed	6.94	7.48	12.32		
Indy WideTrak GT	2	4	Set Screw	6.86	4.41	15.97		
Indy WideTrak LX	4	4	Set Screw	6.86	1.26	4.41	15.97	17.47
Indy Classic	2	3	Set Screw	6.94	7.48	12.32		
Indy Classic Touring	2	3	Set Screw	6.94	7.48	12.32		
Indy 500	2	3	Set Screw	6.94	7.48	12.32		
Indy 500 RMK	2	3	Set Screw	6.94	7.48	12.32		
Indy 500 SKS	2	3	Set Screw	6.94	7.48	12.32		
Indy 500 EFI	2	3	Set Screw	6.94	7.48	12.32		
Indy 500 EFI SKS	2	3	Set Screw	6.94	7.48	12.32		
Indy 500 EFI RMK	2	3	Set Screw	6.94	7.48	12.32		
Indy XLT	4	3	Set Screw	6.94	4.35	7.48	12.32	16.32
Indy XLT SKS	2	3	Set Screw	6.94	7.48	12.32		
Indy XLT RMK	2	3	Set Screw	6.94	7.48	12.32		
Indy XLT SP	4	3	Set Screw	6.94	4.35	7.48	12.32	16.32
Indy XLT Touring	4	3	Set Screw	6.94	4.35	7.48	12.32	16.32
Indy RXL	4	3	Skwez-loc™	6.94	4.35	7.48	12.32	16.32
Indy Ultra SP	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32
Indy Ultra SKS	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32
Indy Ultra RMK	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32
Indy Storm	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32
Indy Storm SKS	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32
Indy Storm RMK	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32

* Denotes driveshafts with pressed on left side bearings (no lock collar) with welded flangette bolts.

1997 Track Drive Data

Model	No. of Drive Sprockets	Drive Type	Drive Shaft Bearing Lock	Drive Sprocket Diameter	DRIVE SPROCKET POSITION Reference Page 9.4			
					A	B	C	D
Indy Lite	2	3	Set Screw	6.94				
Indy Lite Deluxe	2	3	Set Screw	6.94	7.48	12.32	All 1996 models, sprocket positions are measured to sprocket hub and not idler center. See page 9.4.	
Indy Lite GT	2	3	Set Screw	6.94	7.48	12.32		
Indy Sport	2	3	Set Screw	6.94	7.48	12.32		
Indy XCF	2	3	Set Screw	6.94	7.48	12.32		
Indy TranSport	2	3	Set Screw	6.94	7.48	12.32		
Indy Sport Touring	2	3	Set Screw	6.94	7.48	12.32		
Indy Super Sport	2	3	Set Screw	6.94	7.48	12.32		
Indy Trail	2	3	Set Screw	6.94	7.48	12.32		
Indy Trail Touring	2	3	Set Screw	6.94	7.48	12.32		
Indy Trail RMK	2	3	Set Screw	6.94	7.48	12.32		
Indy 440 LC	2	3	Set Screw	6.94	7.48	12.32		
Indy 440 XC	2	3	Set Screw	6.94	7.48	12.32		
Indy 600 XC	2	3	Set Screw	6.94	7.48	12.32		
Indy 600 XCR	2	3*	Pressed	6.94	7.48	12.32		
Indy WideTrak GT	2	4	Pressed	6.86	4.41	15.97		
Indy WideTrak LX	4	4	Pressed	6.86	1.26	4.41	15.97	17.47
Indy Classic	2	3	Set Screw	6.94	7.48	12.32		
Indy Classic Touring	2	3	Set Screw	6.94	7.48	12.32		
Indy 500	2	3	Set Screw	6.94	7.48	12.32		
Indy 500 RMK	2	3	Set Screw	6.94	7.48	12.32		
Indy 500 SKS	2	3	Set Screw	6.94	7.48	12.32		
Indy 500 EFI	2	3	Set Screw	6.94	7.48	12.32		
Indy XLT	4	3	Set Screw	6.94	4.35	7.48	12.32	16.32
Indy XLT SKS	2	3	Set Screw	6.94	7.48	12.32		
Indy XLT RMK	2	3	Set Screw	6.94	7.48	12.32		
Indy XLT SP	4	3	Set Screw	6.94	4.35	7.48	12.32	16.32
Indy XLT Touring	4	3	Set Screw	6.94	4.35	7.48	12.32	16.32
Indy RXL	4	3	Skwez-loc™	6.94	4.35	7.48	12.32	16.32
Indy Ultra	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32
Indy Ultra SP	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32
Indy Ultra SPX/SE	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32
Indy Ultra Touring	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32
Indy 700 SKS	4	3*	Set Screw	6.94	4.35	7.48	12.32	16.32
Indy 700 RMK	4	3*	Set Screw	6.94	4.35	7.48	12.32	16.32
Indy Storm	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32
Indy Storm SKS	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32
Indy Storm RMK	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32

* Denotes driveshafts with pressed on left side bearings (no lock collar) with welded flangette bolts.

1998 Track Drive Data

Model	No. of Drive Sprockets	Drive Type	Drive Shaft Bearing Lock	Drive Sprocket Diameter	DRIVE SPROCKET POSITION Reference Page 9.4			
Indy Lite	2	3*	Pressed	6.94	A	B	C	D
Indy Lite Deluxe	2	3*	Pressed	6.94	7.48	12.32	All 1998 models, sprocket positions are measured to sprocket hub and not idler center. See page 9.4.	
Indy Lite Touring	2	3*	Pressed	6.94	7.48	12.32		
Indy Sport	2	3*	Pressed	6.94	7.48	12.32		
Indy XCF	2	3*	Pressed	6.94	7.48	12.32		
Indy TranSport	2	3*	Pressed	6.94	7.48	12.32		
Indy Sport Touring	2	3*	Pressed	6.94	7.48	12.32		
Indy Super Sport	2	3*	Pressed	6.94	7.48	12.32		
Indy Trail	2	3*	Pressed	6.94	7.48	12.32		
Indy Trail Touring	2	3*	Pressed	6.94	7.48	12.32		
Indy Trail RMK	2	3*	Pressed	6.94	7.48	12.32		
Indy 440 LC	2	3*	Pressed	6.94	7.48	12.32		
Indy 440 XCR	2	3*	Pressed	6.94	6.95	11.79		
Indy WideTrak LX	4	4*	Pressed	6.94	1.26	4.41	15.97	17.47
Indy Classic	2	3*	Pressed	6.94	7.48	12.32		
Indy Classic Touring	2	3*	Pressed	6.94	7.48	12.32		
Indy 500	2	3*	Pressed	6.94	7.48	12.32		
Indy 500 RMK	2	3*	Pressed	6.94	7.48	12.32		
Indy XLT LTD	2 (wide)	3*	Pressed	6.94	6.95	11.79		
Indy XLT Classic	2 (wide)	3*	Pressed	6.94	6.95	11.79		
Indy XLT SP	2 (wide)	3*	Pressed	6.94	6.95	11.79		
Indy XLT Touring	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32
Indy 600 XC	2 (wide)	3*	Pressed	6.94	6.95	11.79		
Indy 600 XCR	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32
Indy 600 RMK	2 (wide)	3*	Pressed	6.94	6.95	11.79		
Indy Ultra	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32
Indy Ultra Touring	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32
Indy 700 XC	2 (wide)	3*	Pressed	6.94	6.95	11.79		
Indy 700 XCR	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32
Indy 700 RMK	2 (wide)	3*	Pressed	6.94	6.95	11.79		
Indy Storm	4	3*	Pressed	6.94	4.35	7.48	12.32	16.32

* Denotes driveshafts with press-fit bearings on left side (no lock collar) and flangette studs (welded).

1996 Track Specifications

Model	Length x Width	Contact Length	Pattern	Lug Height	Wheels Bogie/ Idler	Wear Strips
Indy Lite/Deluxe	121 x 15″	35″	Block	.66″	6/3	N/A
Indy Lite GT	133.5 x 15″	41″	Lightning	.82″	6/3	N/A
Indy Sport	121 x 15″	35″	Block	.71″	6/3	Acc
Indy Sport Touring	133.5 x 15″	41″	Lightning	.82″	6/3	Acc
Indy TranSport	141 x 15″	45″	Wiper	1.13″	8/3	Acc
Indy Super Sport	121 x 15″	35″	Lightning	.82″	6/3	Acc
Indy 440 XCR	121 x 15″	44″	Logo	.73″	8/4	Std
Indy 440 XCR SP	121 x 15″	44″	Logo	.73″	6/4	Std
Indy 600 XCR/SP	121 x 15″	44″	Lightning	.82″	8/4	Std
Indy WideTrak GT	141 x 20″	45″	Wiper	.91″	/4	Std
Indy WideTrak LX	156 x 20″	52.5″	Block	.71″	/4	Std
Indy Trail	121 x 15″	44″	Lightning	.82″	6/3	Acc
Indy Trail Touring	133.5 x 15″	50″	Lightning	.82″	6/3	Acc
Indy 440 LC	121 x 15″	44″	Lightning	.82″	6/3	Acc
Indy 500	121 x 15″	44″	Lightning	.82″	6/3	Acc
Indy 500 SKS	133.5 x 15″	50″	Lightning	1.0″	6/3	Acc
Indy 500 RMK	133.5 x 15″	50″	Deep Lug	1.25″	4/3	N/A
Indy 500 EFI	121 x 15″	35″	Lightning	.82″	6/3	Acc
Indy 500 EFI SKS	133.5 x 15″	50″	Lightning	1.0″	6/3	Acc
Indy 500 EFI RMK	133.5 x 15″	41″	Deep Lug	1.25″	4/3	N/A
Indy Classic	121 x 15″	35″	Lightning	.82″	6/3	Acc
Indy Classic Touring	133.5 x 15″	41″	Lightning	.82″	6/3	Acc
Indy XLT/SP	121 x 15″	35″	Lightning	1.0″	6/3	Std
Indy XLT SKS	133.5 x 15″	41″	Lightning	1.0″	6/3	Acc
Indy XLT RMK	133.5 x 15″	41″	Deep Lug	1.5″	4/3	N/A
Indy XLT Touring	133.5 x 15″	44″	Lightning	.82″	6/3	Acc
Indy RXL	121 x 15″	35″	Lightning	1.0″	6/4	Std
Indy Ultra SP	121 x 15″	35″	Lightning	.82″	8/4	Std
Indy Ultra RMK	133.5 x 15″	41″	Deep Lug	1.5″	4/4	N/A
Indy Ultra SKS	133.5 x 15″	41″	Lightning	1.0″	6/4	Acc
Indy Storm	121 x 15″	44″	Wiper	.91″	8/4	Std
Indy Storm SKS	133.5 x 15″	50″	Wiper	.91″	8/4	Acc
Indy Storm RMK	133.5 x 15″	50″	Deep Lug	1.5″	6/4	N/A

1997 Track Specifications

Model	Length x Width	Part No.	Pattern	Lug Height	Wheels-Bogie/ Idler	Wear Strips
Indy Lite/Deluxe	121 x 15″	5410792	Block	.66″	6/2	Acc
Indy Lite GT	133.5 x 15″	5411171	Lightning	.82″	6/3	Acc
Indy Sport	121 x 15″	5410736	Block	.71″	6/2	Acc
Indy Sport Touring	133.5 x 15″	5411171	Lightning	.82″	6/3	Acc
Indy TranSport	141 x 15″	5410801	Wiper	1.13″	8/3	Acc
Indy XCF	121 x 15″	5411183	Lightning	.725″	6/3	Std
Indy Super Sport	121 x 15″	5411168	Lightning	.82″	6/3	Acc
Indy Trail	121 x 15″	5411168	Lightning	.82″	6/3	Acc
Indy Trail Touring	133.5 x 15″	5411171	Lightning	.82″	6/3	Acc
Indy Trail RMK	133.5 x 15″	5411021	Deep Lug	1.25″	4/3	N/A
Indy WideTrak GT	141 x 20″	5410748	Wiper	.91″	6/4	Std
Indy WideTrak LX	156 x 20″	5411040	Lightning	1.0″	6+2/4	Std
Indy 440 LC	121 x 15″	5411168	Lightning	.82″	6/3	Acc
Indy 440 XC	121 x 15″	5411168	Lightning	.82″	6/4	Std
Indy 500	121 x 15″	5411168	Lightning	.82″	6/3	Acc
Indy 500 SKS	133.5 x 15″	5411166	Lightning	1.0″	6/3	Acc
Indy 500 RMK	133.5 x 15″	5411021	Deep Lug	1.25″	4/3	N/A
Indy Classic	121 x 15″	5411168	Lightning	.82″	6/3	Acc
Indy Classic Touring	133.5 x 15″	5411091	Lightning	.82″	6/3	Acc
Indy 500 EFI	121 x 15″	5411168	Lightning	.82″	6/3	Acc
Indy XLT/LTD	121 x 15″	5411167	Lightning	.82″	6/3	Acc
Indy XLT Touring	133.5 x 15″	5411091	Lightning	.82″	6/3	Acc
Indy XLT SKS	133.5 x 15″	5411166	Lightning	1.0″	6/3	Acc
Indy XLT RMK	133.5 x 15″	5410921	Deep Lug	1.5″	4/3	N/A
Indy XLT SP	121 x 15″	5411167	Lightning	.82″	6/3	Std
Indy 600 XC/XCR	121 x 15″	5411167	Lightning	.82″	6/4	Std
Indy RXL	121 x 15″	5411167	Lightning	.82″	6/4	Std
Indy Ultra/SP/SPX	121 x 15″	5411057	Lightning	.82″	6/4	Std
Indy Ultra Touring	133.5 x 15″	5411176	Lightning	.82″	6/4	Acc
Indy Ultra SPX SE	121 x 15″	5411183	Lightning	.725″	6/4	Std
Indy 700 SKS	136 x 15″	5411193	Lightning	1.0″	6/4	Acc
Indy 700 RMK	136 x 15″	5411194	Deep Lug	1.5″	4/4	N/A
Indy Storm	121 x 15″	5411057	Lightning	.82″	6/4	Std
Indy Storm SE	121 x 15″	5411183	Lightning	.725″	6/4	Std
Indy Storm RMK	133.5 x 15″	5410921	Deep Lug	1.5″	6/4	N/A

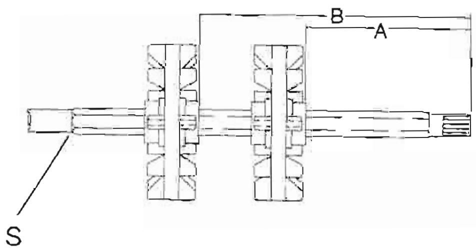
Track Specifications

1998 Track

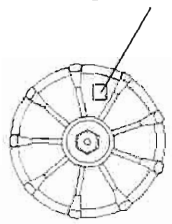
Model	Length x Width	Part No.	Pattern	Lug Height	Wheels-Bogie/ Idler	Wear Strips	Window
Indy Lite	121″ x 15″	5410792	Block	.66″	4/2	.75″ Acc	1.25″
Indy Lite Deluxe	121″ x 15″	5410792	Block	.66″	4/2	.75″ Acc	1.25″
Indy Lite Touring	133.5″ x 15″	5411171	Lightning	.82″	6/2	.75″ Acc	1.5″
Indy Sport	121″ x 15″	5410736	Block	.71″	4/2	1.05″Acc	1.5″
Indy XCF	121″ x 15″	5411183	Lightning	.725″	6/4	1.05″Acc	1.25″
Indy TranSport	141″ x 15″	5410801	Wiper	1.125″	8/3	N/A	1.25″
Indy Sport Touring	133.5″ x 15″	5411171	Lightning	.82″	6/2	.75″ Acc	1.5″
Indy Super Sport	121″ x 15″	5411168	Lightning	.82″	6/3	.75″ Acc	1.25″
Indy Trail	121″ x 15″	5411168	Lightning	.82″	6/3	.75″ Acc	1.25″
Indy Trail Touring	133.5″ x 15″	5411171	Lightning	.82″	6/3	.75″ Acc	1.5″
Indy Trail RMK	133.5″ x 15″	5411021	Deep Lug	1.25″	4/3	N/A	1.25″
Indy 440 LC	121″ x 15″	5411168	Lightning	.82″	6/3	.75″ Acc	1.25″
Indy 440 XCR	121″ x 15″	5411475	Lightning	.82″	6/4	Coolers	1.25″
Indy WideTrak LX	156″ x 20″	5411040	Lightning	1.0″	6+2/4	N/A	1.25″
Indy 500	121″ x 15″	5411168	Lightning	.82″	6/3	.75″ Acc	1.25″
Indy 500 RMK	133.5″ x 15″	5411021	Deep Lug	1.25″	4/3	N/A	1.25″
Indy Classic	121″ x 15″	5411168	Lightning	.82″	6/3	.75″ Acc	1.25″
Indy Classic Touring	133.5″ x 15″	5411091	Lightning	.82″	6/3	.75″ Acc	1.5″
Indy 600 XC	121″ x 15″	5411369	New	.91″	6/4	Coolers	1.25″
Indy 600 XCR	121″ x 15″	5411344	New	.82″	6/4	.75″ Std	1.25″
Indy XLT LTD	121″ x 15″	5411167	Lightning	.82″	6/3	.75″ Acc	1.25″
Indy XLT Classic	121″ x 15″	5411167	Lightning	.82″	6/3	.75″ Acc	1.25″
Indy XLT SP	121″ x 15″	5411379	New	.82″	6/4	.75″ Std	1.25″
Indy XLT Touring	133.5″ x 15″	5411091	Lightning	.82″	6/3	.75″ Acc	1.5″
Indy 600 RMK	136″ x 15″	5411237	Deep Lug	1.75″	4/3	N/A	1.25″
Indy Ultra	121″ x 15″	5411344	New	.82″	6/4	.75″ Std	1.25″
Indy Ultra Touring	133.5″ x 15″	5411176	Lightning	.82″	6/3	.75″ Acc	1.5″
Indy 700 XC	121″ x 15″	5411369	New	.91″	6/4	Coolers	1.25″
Indy 700 XCR	121″ x 15″	5411344	New	.82″	6/4	.75″ Std	1.25″
Indy 700 RMK	136″ x 15″	5411237	Deep Lug	1.75″	4/3	N/A	1.25″
Indy Storm	121″ x 15″	5411344	New	.82″	6/4	.75″ Std	1.25″

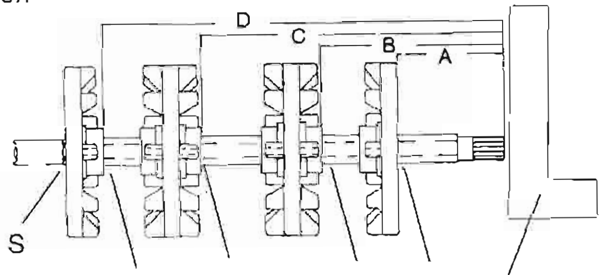
Driveshaft Sprocket Installation

- All models, except WideTraks, have a longer spline on the chaincase end of the jackshaft and drive shaft.
- Sprockets must be started from the end that has a smooth entry onto the hex portion of the shaft (indicated on illustration below by "S").
- To ensure proper sprocket tooth alignment, be sure the vendor logos are oriented in the same position on all sprockets.
- Drive shaft sprocket positions are measured to sprocket hub edge. Not idler center.

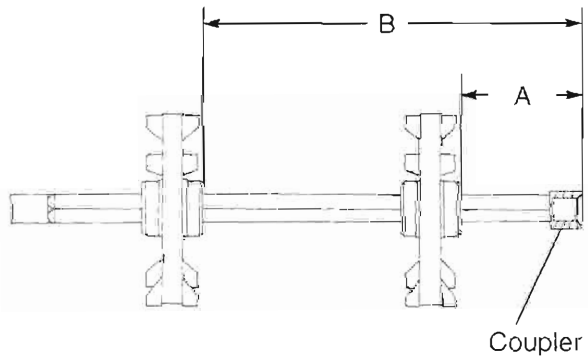


2 Drive Sprocket

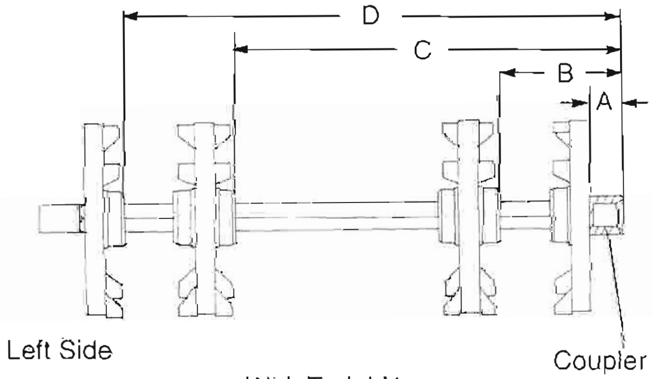




4 Drive Sprocket

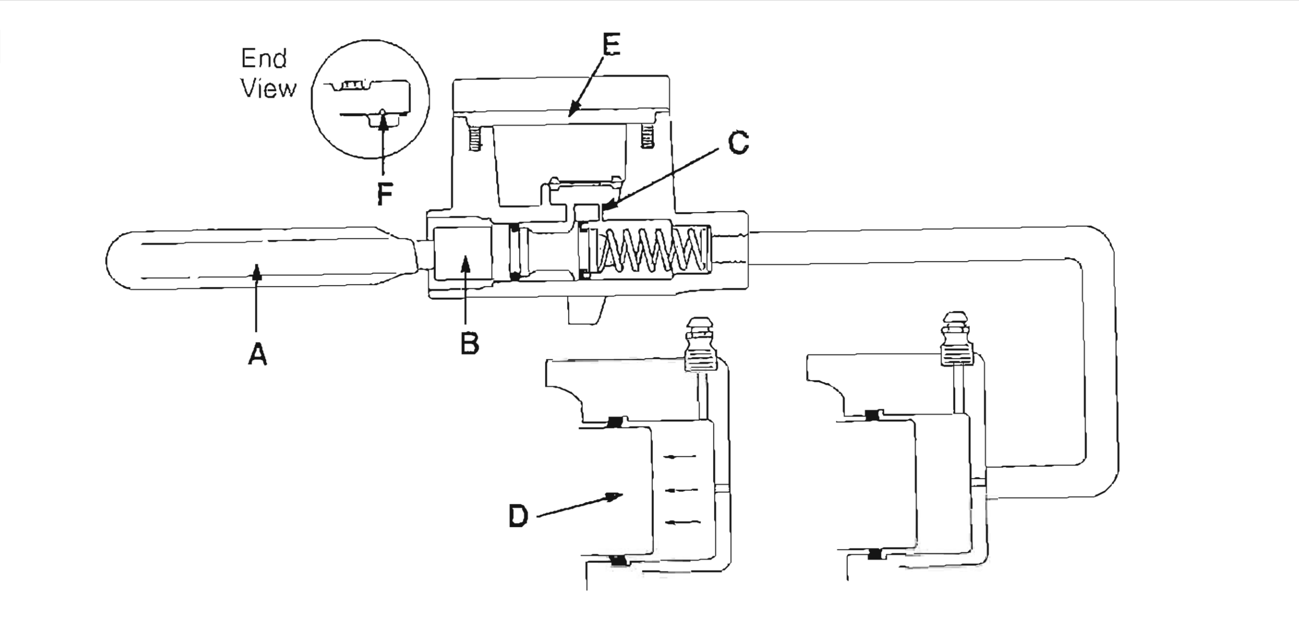


WideTrak GT



WideTrak LX

NOTE: When installing drive sprockets, all dimensions are indicated as the shaft is being pressed onto the sprockets. Mark the shaft with a Dykem™ and a machinist scribe, or a fine line permanent marker for proper sprocket placement. Allow mark to thoroughly dry prior to assembly. Verify proper placement using a straight edge and square on sprocket hub and shaft as shown. On WideTraks, measure from coupler.



The Polaris snowmobile hydraulic brake system consists of the following components or assemblies: brake lever, master cylinder, hydraulic hose, brake caliper (slave cylinder), brake pads, and a brake disc which is secured to the drive line. **NOTE:** The Magura master cylinder system used on the 440 XCR SP is similar to this system. It has a see through housing, different piston, and longer lever. Refer to page 9.7 for information on the Magura system.

When the hand activated brake lever (A) is applied, it contacts a piston (B) within the master cylinder. As the master cylinder piston moves inward it closes a small opening called a compensating port (C) within the cylinder and starts to build pressure within the brake system. As the pressure within the system is increased, the piston (D) located in the brake caliper moves outward and applies pressure to the moveable brake pad. This pad contacts the brake disc, moves the caliper in its floating bracket and pulls the stationary pad into the brake disc. As the lever pressure is increased, the braking effect is increased.

The friction applied to the brake pads will cause the pads to wear. As the pads wear, the piston within the caliper self-adjusts and moves further outward.

Brake fluid level is critical to proper system operation. A low fluid level allows air to enter the system causing the brakes to feel spongy.

Compensating Port

Located within the master cylinder is a small compensating port (C) which is opened and closed by the master cylinder piston assembly. The port is open when the brake lever is released and the piston is outward. As the temperature within the hydraulic system changes, this port compensates for fluid expansion caused by heat, or contraction caused by cooling. During system service, be sure this port is open. Due to the high temperatures created within the system during heavy braking, it is very important that the master cylinder reservoir have adequate space to allow for the brake fluid to expand. Master cylinder reservoirs should be filled to the top of the fluid level mark on the inside of the reservoir, 1/4″ - 5/16″ (.6 - .8 cm) below lip of reservoir opening.

⚠ WARNING

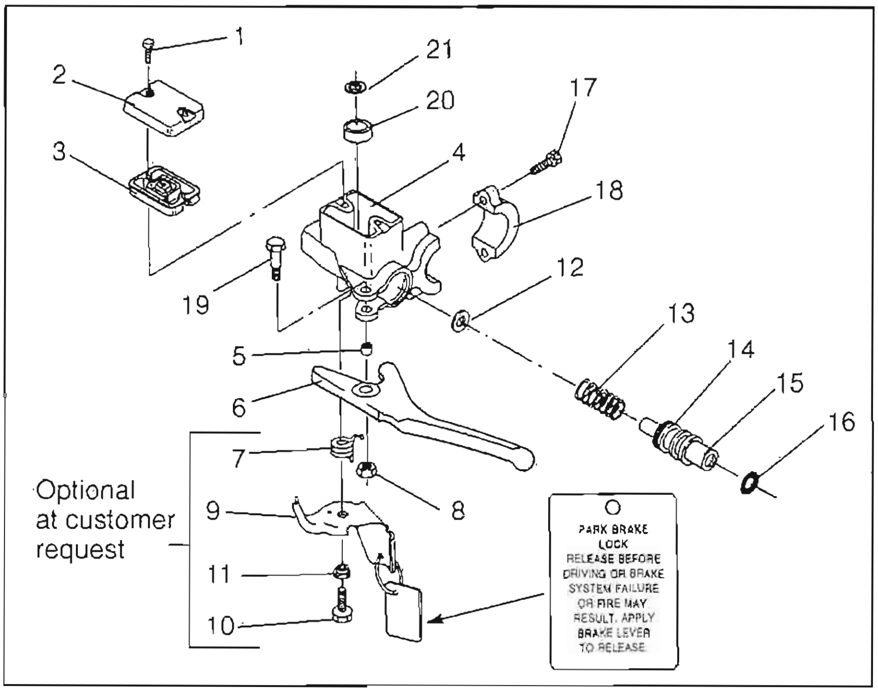
Never overfill the reservoir. This could alter brake function, resulting in system component damage or sever personal injury or death.

This system also incorporates a diaphragm (E) as part of the cover gasket and a vent port (F) located between the gasket and the cover. The combination diaphragm and vent allow for the air above the fluid to equalize pressure as the fluid expands or contracts. Be sure the vent is open and allowed to function. If the reservoir is overfilled or the diaphragm vent is plugged, the expanding fluid may build pressure in the brake system and lead to brake failure.

Type 3 Master Cylinder

The Type 3 master cylinder assembly is easily recognized by the longer (centered) brake line mount.

1. Cover Screw
2. Cover
3. Cover Gasket
4. Cylinder Housing
5. Brake Lever Bushing
6. Brake Lever
7. Park Lever Return Spring
8. Pivot Bolt Nut
9. Park Lever
10. Park Lever Pivot Bolt
11. Park Lever Pivot Bushing
12. Spring Seat Washer
13. Compression Spring
14. U-Pack Seal
15. Piston
16. O-Ring Seal
17. Clamp Bolt
18. Attaching Clamp
19. Lever Pivot Bolt
20. Baffle
21. Baffle Washer



Park Brake Lever Lock

⚠ WARNING

Release park brake lock before driving or brake system failure or fire may result. Apply brake lever to release.

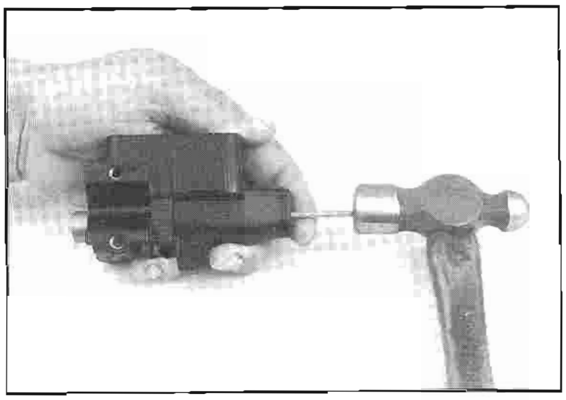
Type 3 Master Cylinder Removal

1. Position clean shop cloths to catch spilled fluid and remove brake hose.

CAUTION:

Brake fluid will damage finished surfaces. Do not allow brake fluid to come in contact with finished surfaces.

2. Remove brake clamp attaching bolts (Item 17).
3. Remove park brake lever (Item 9) and brake master cylinder lever (Item 6), noting position of bushing, spring, etc., for proper reassembly.
4. Using the master cylinder service tool, position push rod through small hole in spring seat washer (Item 12) as shown. Remove piston assembly, spring and washer.



Master Cylinder Service Tool Kit
PN 2870962

1996 440 XCR SP Brake System Description

Component	Part Number	Difference from Standard Brake System
Magura Master Cylinder	2050074	-5/8″compared to 3/4″ -Requires less hand effort for the same braking
Brake Line	1930773	-Uses a flare fitting instead of threaded fitting
Caliper Assembly	1930772	-.080″ shorter castle piston for use with thicker pads and disc
Caliper/Piston Kit	2200764	-For installing shorter piston into an existing caliper
Brake Pads	2200763	-.060″ thick for longer wear -Very aggressive
Disc	1910197	-.250″ thick with vents compared to .179″ thick without vents -Less runout (.008″)

The Magura master cylinder must be used with the correct brake line. To upgrade to the Magura master cylinder, order the following:

- PN 2050074 Master Cylinder
- PN 1930773 Brake Line

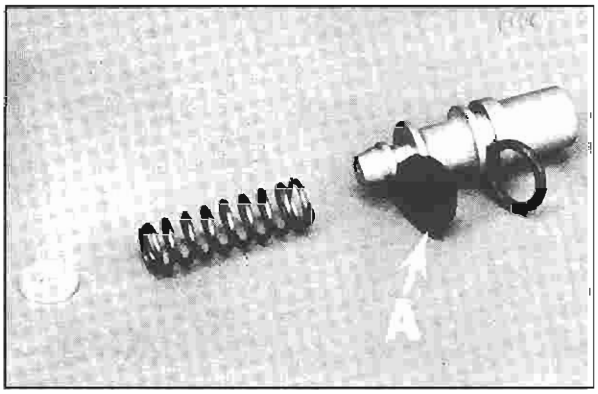
The heavier race pads, vented disc, and short piston kit must be used together as a package. To upgrade to the race pads/vented disc, order the following:

- PN 2200763 Race Pads
- PN 1910197 Vented Disc
- PN 2200764 Shortened Piston

Inspection

NOTE: Due to the critical nature of these parts and procedures, be sure you have thoroughly read and understand Hydraulic Brake Operation, page 9.5.

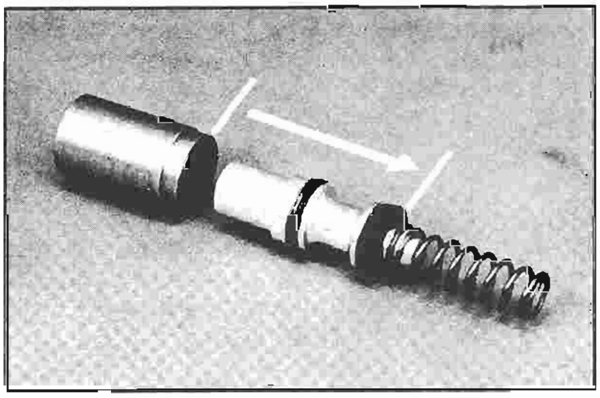
1. Thoroughly clean all brake parts with isopropyl alcohol. Inspect piston for wear, scratches, or corrosion. Check master cylinder bore for scratches, score marks, or corrosion and replace any worn or damaged parts.



Assembly

1. Always replace O-Ring seal, U-pack seal and cover gasket (diaphragm) upon reassembly. Use only genuine Polaris service parts.
2. Apply clean DOT 3 brake fluid on piston, piston seals and cylinder bore. Install seals onto piston positioning U-pack seal lip (A) towards spring. Snap spring into place on piston.

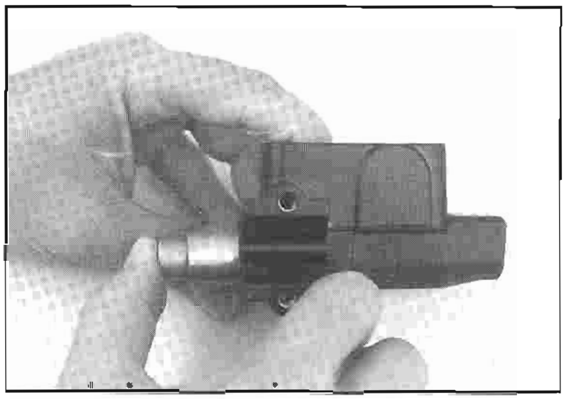
> **Polaris DOT 3 Brake Fluid**
>
> **PN 2870990**



3. Install piston assembly into master cylinder service tool until U-pack seal is covered by tool as shown. **NOTE:** This tool is used to guide the seal lip into the cylinder bore without damage.

Assembly, Cont.

4. Install spring seat washer into bore. Insert piston, still installed in tool, into bore. Push piston through special tool. Remove tool.
5. Reinstall brake lever with bushing, bolt and nut.
6. Reinstall master cylinder onto handlebar and reconnect brake line. Partially insert fittings (one to two threads) and apply Loctite™ 242 to remaining threads of fittings. Torque brake line fittings to specification.



Brake Line Fitting Torque -

Master Cylinder End - Finger tight plus 2 turns

Caliper End -
12-14 ft. lbs. (1.66 - 1.93 kg-m)

7. Adjust master cylinder to a level position on handlebar. Torque clamp screws to specification.

Master Cylinder Clamp Torque -

45-55 in. lbs. (.52 - .63 kg-m)

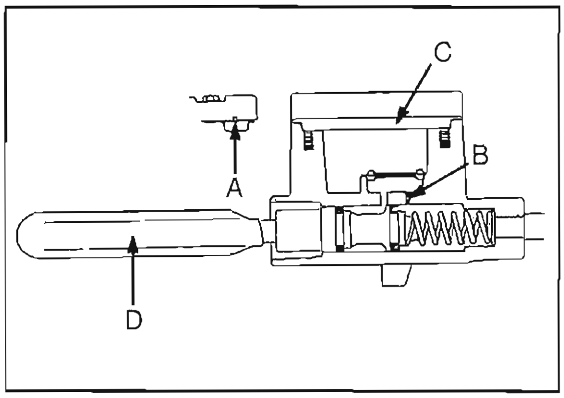
8. Bleed brake system. Maintain fluid level in reservoir at 1/4" - 5/16" (.6 - .8 cm) below lip of reservoir opening while bleeding brakes. Do not allow air into system while bleeding. See bleeding procedure on page 9.10.

Master Cylinder Fluid Level

1/4" - 5/16" (.6 - .8 cm) below top of master cylinder

Brake Bleeding - Fluid Change

This procedure should be used to change fluid or bleed brakes during regular maintenance. If system has been disassembled for repair or parts replacement, follow Bleeding Procedure - System Rebuild, on page 9.11. Brake fluid may damage painted or plastic surfaces. Take care not to spill, and wipe up any spills immediately. Cover parts to avoid damage.



1. Clean reservoir cover thoroughly.
2. Remove screws, cover, and diaphragm from reservoir.
3. Inspect vent slots (A) in cover and remove any debris or blockage.
4. If changing fluid, remove fluid from reservoir with a Mity Vac™ pump or similar tool.

NOTE: Do not remove brake lever when reservoir fluid level is low.

> **Mity Vac™ PN 2870975**

5. Add brake fluid to within 1/4-5/16″ (.6-.8 cm) of reservoir top.

> **Polaris DOT 3 Brake Fluid**
>
> **PN 2870990**

6. Install a box end wrench on caliper bleeder screw fitting. Attach a clean, clear hose to fitting and place the other end in a clean container. Be sure the hose fits tightly on fitting.

NOTE: Fluid may be forced from compensation port (B) when brake lever is pumped. Place diaphragm (C) in reservoir to prevent spills. Do not install cover.

7. *Slowly* pump lever (D) until pressure builds and holds.
8. While maintaining lever pressure, open bleeder screw. Close bleeder screw and release brake lever. Do not release lever before bleeder screw is tight or air may be drawn into caliper.
9. Repeat procedure until clean fluid appears in bleeder hose and all air has been purged. Add fluid as necessary to maintain level in reservoir.

CAUTION:

Maintain at least 1/2″ (1.27 cm) of brake fluid in the reservoir to prevent air from entering the master cylinder.

10. Tighten bleeder screw securely and remove bleeder hose.
11. Add brake fluid to the proper level.
12. Install diaphragm, cover, and screws. Tighten screws to specification.

> **Reservoir Cover Torque -**
>
> **43 in. lbs. (.49 kg-m)**

Assembly, Cont.

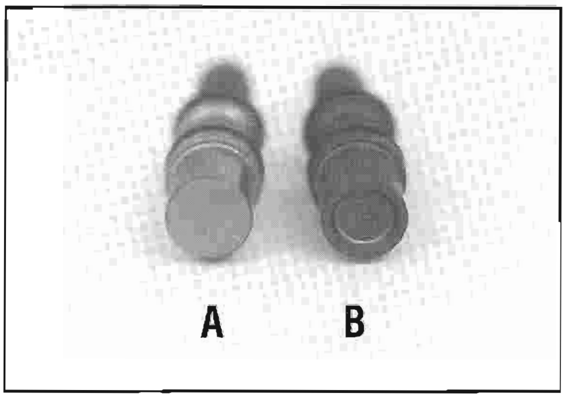
9. Field test machine before putting into service. Check for proper braking action and lever reserve. With lever firmly applied, lever reserve should be no less than 1/2″ (1.3 cm) from handlebar.

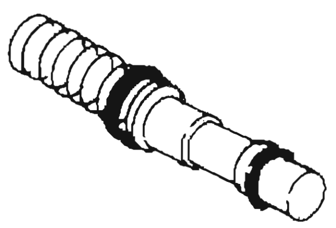
> **Brake Lever Reserve Limit**
>
> **Not less than 1/2″ (1.3 cm) from handlebar**

10. Check brake system for fluid leaks.

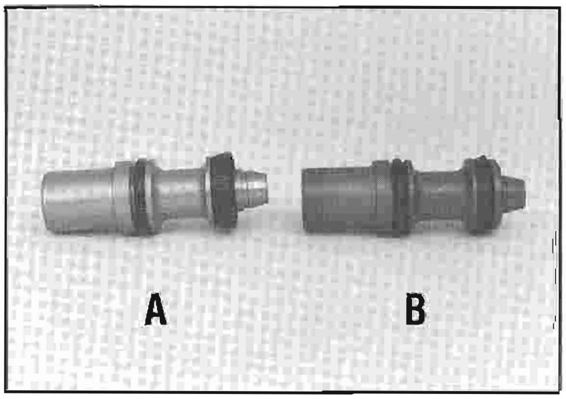
⚠ WARNING

Although snowmobile and ATV master cylinder pistons are very similar, they are not interchangeable. Piston (A) is an ATV piston. Piston (B) is a snowmobile piston. Notice the difference on the lever end of the piston. Using the wrong piston will cause a build up of pressure in the brake system and could result in a fire.





440 XCR SP Magura

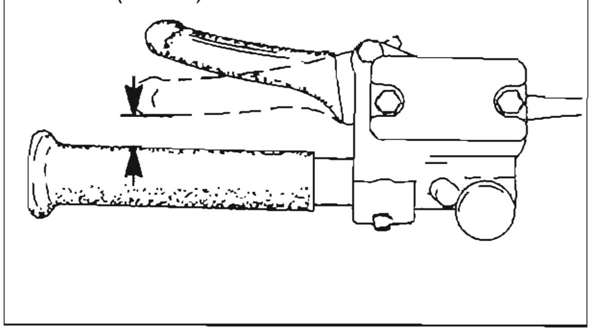


Brake Bleeding - Fluid Change, Cont.

13. Field test machine before putting into service. Check for proper braking action and lever reserve. With lever firmly applied, lever reserve should be no less than 1/2″ (1.3 cm) from handlebar.

Brake Lever Reserve Limit

Not less than 1/2″ (1.3 cm) from handlebar



14. Check brake system for fluid leaks.

Brake Bleeding - System Rebuild

When the brake system is disassembled for rebuild or component replacement, follow this procedure to ensure all air is quickly and completely purged from system. Maintain level of brake fluid in reservoir while performing bleeding procedure or air may enter system.

1. Add Polaris DOT 3 brake fluid to proper level.
2. Wrap a clean shop towel around master cylinder brake line fitting.
3. Loosen brake line fitting and tighten lightly.
4. Pump brake lever slowly 2-3 times.
5. Loosen fitting and tighten.
6. Repeat procedure as necessary to bleed master cylinder.

NOTE: If master cylinder will not pump fluid, use the following procedure:

A). Remove brake line.

B). Place a finger firmly over end of master cylinder.

C). Pump brake lever until pressure forces fluid out end of master cylinder.

D). Reinstall brake line and torque to specification.

Brake Line Fitting Torque -

Master Cylinder End - Finger tight plus 2 turns

Caliper End - 12-14 ft. lbs. (1.66 - 1.93 kg-m)

7. Bleed caliper as outlined in Fluid Change on page 9.10. It may be necessary to bleed lower line connection at caliper to purge air from brake lines.
8. When all air has been purged from line and caliper, tighten all connections and add brake fluid to proper level.

Brake Bleeding - Fluid Change, Cont.

9. Install diaphragm, cover, and screws and torque to specification.

Reservoir Cover Torque -
43 in. lbs. (.49 kg-m)

10. Field test machine before putting into service. Check for proper braking action and lever reserve. With lever firmly applied, lever reserve should be no less than 1/2" (1.3 cm) from handlebar.

Brake Lever Reserve Limit
Not less than 1/2" (1.3 cm) from handlebar

11. Check brake system for fluid leaks.

Type H4 Friction Pad Replacement, Cont.

6. Place new pads with friction material facing each other into housing. Hold in place using clips. See illustration on page 9.13.
7. Slide brake assembly into bracket until both clips snap into grooves in bracket.
8. Clean brake mount on top of chaincase.
9. Separate pads for installation over disc. If brake assembly does not slide easily over the disc with loose pads, the piston is not compressed far enough into the caliper. Caliper assembly must fit freely onto disc and chaincase.
10. Replace 3/8 bolts, washers, and rope guide. Torque to specification.

> **Caliper Bolt Torque -**
>
> **25-30 ft. lbs. (3.45-4.14 kg-m)**

11. Actuate brake several times to set brake pads to proper operating position.
12. Check for proper fluid level in master cylinder and replace cover Torque cover bolts to specification.

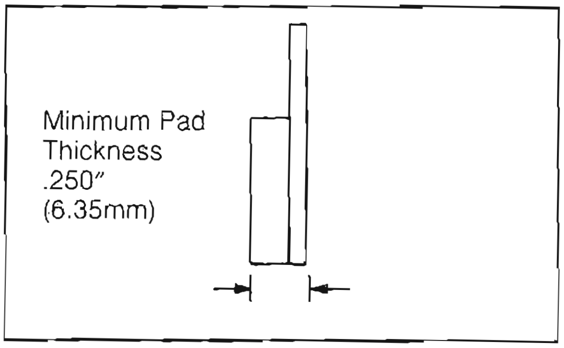
> **Reservoir Cover Torque -**
>
> **43 in. lbs. (.49 kg-m)**

13. Field test at low speeds and verify proper brake action. If pads drag on disc, check caliper and pad assembly.

The Type H4 system is a hydraulic brake type. The caliper assembly is mounted on the chaincase, which allows ease of brake pad and caliper service. Measure brake pads from the back of the backing plate to the surface of the friction material as shown in illustration.

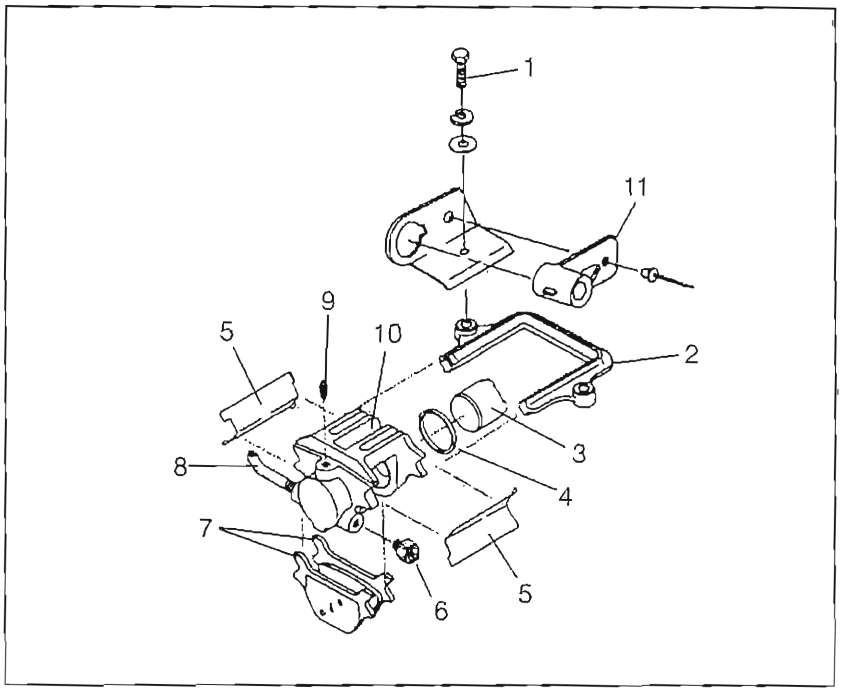
NOTE: Replace pads when worn beyond service limit.

Brake Pad Thickness - Type H4
Service Limit .250″ (6.35mm)



Type H4 Friction Pad Replacement

1. Carrier Bracket Attaching Bolts
2. Carrier Bracket
3. Piston
4. Piston Seal
5. Spring Clip
6. Stop Light Switch
7. Brake Pads
8. Brake Line
9. Bleeder Screw
10. Caliper
11. Rope Guide



⚠ WARNING

The rider's safety depends on correct installation. Follow procedures carefully.

CAUTION:

Protect eyes from brake fluid.

1. Clean any dirt from mount bracket and bolts. Brake cleaner may be used to aid in cleaning of components.
2. With a 9/16″ socket, remove two 3/8 hex bolts and washers from bracket. Remove rope guide. **NOTE:** *Do not* disconnect brake line.
3. Lift bracket and brake assembly off vehicle. Remove all dirt from caliper assembly using brake cleaner and clean shop cloths.
4. Use a drop cloth to protect surfaces from brake fluid spillage. Remove reservoir cover from master cylinder assembly. Using a large hardwood dowel, or a C clamp vise grip on the center of the old pads, apply pressure toward the caliper piston. Compress piston back into caliper assembly. Apply pressure slowly to prevent excessive spillage from master cylinder assembly.

NOTE: Pushing the piston back into the bore will cause the fluid level to rise in the reservoir and possibly overflow. Remove excess fluid and discard.

CAUTION:

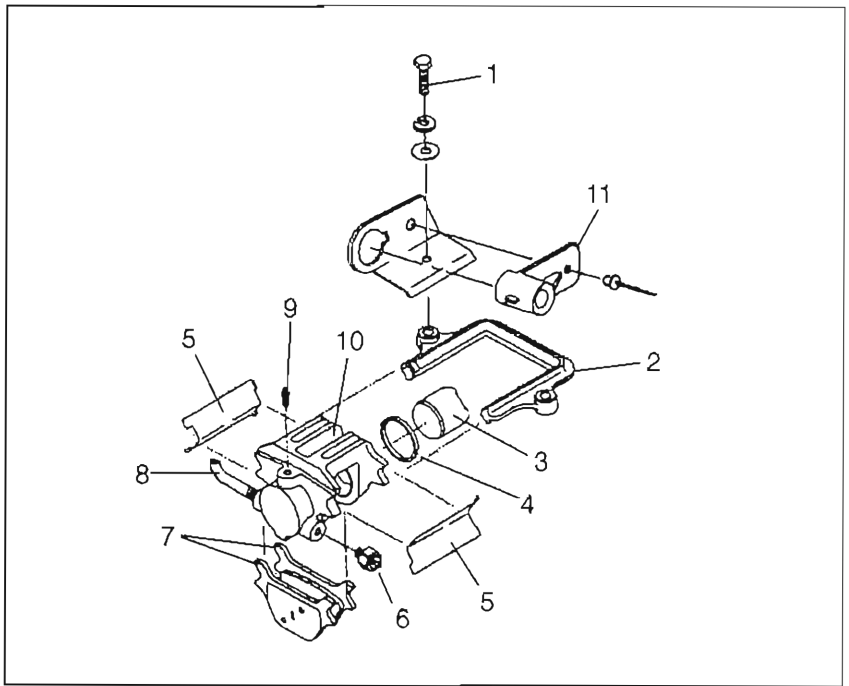
Piston must not be forced back into the caliper at an angle or bore damage may occur.

5. Slide caliper and brake pads out of bracket. Discard old pads and clips.

NOTE: Pad and holders must be replaced as a set.

Type H4 Caliper Disassembly

1. Carrier Bracket Attaching Bolts
2. Carrier Bracket
3. Piston
4. Piston Seal
5. Spring Clip
6. Stop Light Switch
7. Brake Pads
8. Brake Line
9. Bleeder Screw
10. Caliper
11. Rope Guide



⚠ WARNING

The rider's safety depends on correct installation. Follow procedures carefully.

Refer to the exploded view above while performing the following steps.

1. Remove bracket bolts.
2. Disconnect brake line. Drain brake fluid into appropriate container and dispose of properly.
3. Disassemble on a clean bench.
4. Open bleeder screw and drain brake fluid from caliper assembly into appropriate container. Dispose of properly.

CAUTION:

Protect eyes from brake fluid at all times.

5. Slide brake assembly out of bracket and remove old pads and clips.
6. Place caliper on bench with piston down.
7. Remove piston from caliper using a caliper piston pliers (commercially available) or by covering the piston with a shop cloth and applying compressed air to the hydraulic inlet port.

CAUTION:

Use only enough air to remove piston. Too much pressure may damage piston or bore.

8. Using a small wooden or plastic stick, work piston seal out from its groove in the piston bore.

CAUTION:

To avoid scratching bore or burring edge of seal groove, do not use a metal tool such as a screwdriver.

9. Discard old seal.

Type H4 Cleaning and Inspection

Check all parts for wear or damage and replace as required. Always replace caliper piston seal and dust seal (where applicable).

1. Clean all parts with denatured alcohol and wipe dry with a clean, lint free cloth.
2. Using compressed air, blow out the drilled passages and piston bore. Be sure piston seal groove is thoroughly clean and free from corrosion or brake fluid build up.
3. Inspect piston bore for scoring, pitting or corrosion. A corroded or deeply scored casting should be replaced. Light scores and stains may be removed by polishing with a *crocus cloth only*. Use finger pressure and rotate the crocus cloth in the cylinder bore. Do not slide the cloth in and out of the bore under pressure. Do not use any other kind of abrasive cloth.
4. Check piston to see if it is pitted, scored or worn. If so, discard and replace the piston.

CAUTION:

Do not attempt to polish or sand piston.

5. Clean piston with denatured alcohol and wipe dry with a clean, lint free cloth. Using compressed air, blow dry.
6. Check inlet and bleeder hole threads for damage. Be sure bleeder screw is clear.
7. Inspect brake line seat for damage and replace caliper if necessary.

Type H4 Assembly

1. Reassemble by reversing disassembly process. Be sure all parts are clean and serviceable before reassembling the unit.
2. Coat a new piston seal in clean DOT 3 brake fluid and place in groove in the caliper piston bore. Seal should be positioned at one point in groove and then gently worked around the groove by hand until properly seated.

CAUTION:

Never reuse an old seal.

3. Coat piston thoroughly with brake fluid and work down into bore by hand carefully until bottomed.

CAUTION:

Apply even pressure to avoid cocking the piston in the bore.

Type H4 Assembly, Cont.

4. Examine pads for wear or damage. If pad thickness is less than 1/32″ (.08 cm) install new pad holder assemblies. If pads are not worn or damaged, they may be reused. Be sure pads are reinstalled in their original positions. If pads are replaced, replace in sets and make sure the new pads have the same friction material type code number as the old set.
5. Connect hose or line to caliper.
6. Place new pads with friction material facing each other into housing. Hold in place using clips.
7. Slide brake assembly into bracket until both clips snap into grooves in bracket.
8. Separate pads for installation over disc.
9. Place brake assembly over disc and push bracket into chaincase.
10. Replace 3/8″ bolts, rope guide, and washers. Torque to specification.

Caliper Bolt Torque -

25-30 ft. lbs. (3.45-4.14 kg-m)

11. Perform brake bleeding procedure as outlined after System Rebuild, page 9.11.

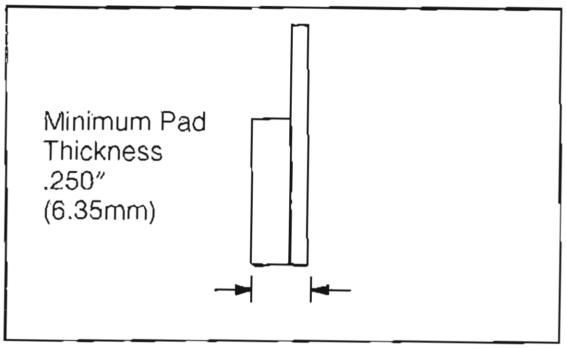
BRAKES/FINAL DRIVE

Type H5LC Brake System

The Type H5LC system, like the Type H4, is a top mounted hydraulic brake system. The difference between the two systems is the the H5LC is equipped with a brake cooler.

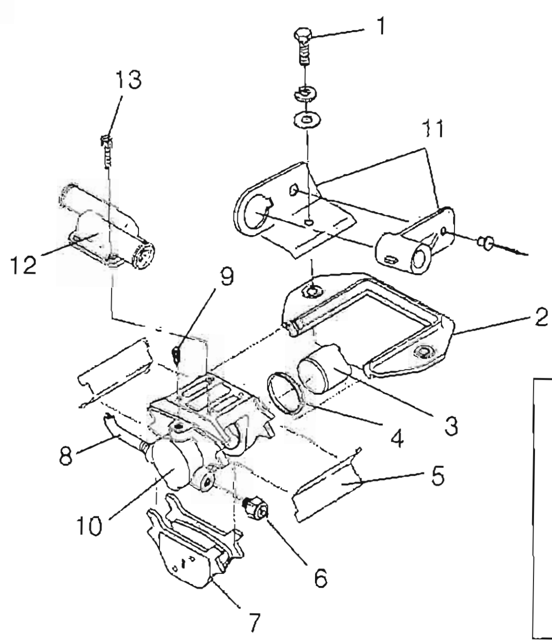
NOTE: Replace pads when worn beyond service limit.

Brake Pad Thickness - Type H5LC
Service Limit .250″ (6.35mm)



Type H5LC Friction Pad Replacement

1. Carrier Bracket Attaching Bolts
2. Carrier Bracket
3. Piston
4. Piston Seal
5. Spring Clip
6. Stop Light Switch
7. Brake Pads
8. Brake Line
9. Bleeder Screw
10. Caliper (Liquid Cooled)
11. Rope Guide
12. Water Cooler Manifold
13. Screws (Cooler Manifold)



NOTE:

1996 440 XCR SP - items 3&7 are unique to this model

⚠ WARNING

The rider's safety depends on correct installation. Follow procedures carefully.

CAUTION:

Protect eyes from brake fluid.

1. Clean any dirt from mount bracket and bolts.
2. With a 9/16″ socket, remove two 3/8 hex bolts and washers from bracket. Remove rope guide. **NOTE:** *Do not* disconnect brake line.
3. Remove hose clamp from *engine side of cooler.* Twist and remove hose from cooler, catching and disposing of antifreeze properly.
4. Use a drop cloth to protect surfaces from brake fluid spillage. Remove reservoir cover. Using a large hardwood dowel, or a C clamp vise grip on the center of the old pads, apply pressure toward the caliper piston. Compress piston back into caliper assembly. Apply pressure slowly to prevent excessive spillage from master cylinder assembly.

NOTE: Pushing the piston back into the bore will cause the fluid level to rise in the reservoir and possibly overflow. Remove excess fluid and discard.

5. Lift bracket and brake assembly off vehicle. Raise open end of cooler and pad assembly to trap antifreeze in cooler and plug the opening of both cooler and engine hose open end.

Type H5LC Friction Pad Replacement, Cont.

6. Place new pads with friction material facing each other into housing. Hold in place using clips. See illustration above.
7. Slide brake assembly into bracket until both clips snap into grooves in bracket.
8. Clean top of chaincase where brake mounts.
9. Separate pads for installation over disc. If brake assembly does not slide easily over the disc with loose pads the piston is not compressed far enough into the caliper. The caliper assembly must fit freely onto the disc and chaincase.
10. Remove plugs. Install coolant hose and clamp on cooler assembly.
11. Replace 3/8″ bolts, washers, and rope guide. Torque to specification.

Caliper Bolt Torque -

25-30 ft. lbs. (3.45-4.14 kg-m)

12. Actuate brake several times to set brake pads to proper operating position.
13. Check for proper fluid level in master cylinder and replace cover. Torque to specification.

Master Cylinder Fluid Level

1/4″ - 5/16″ (.6 - .8 cm) below top of master cylinder

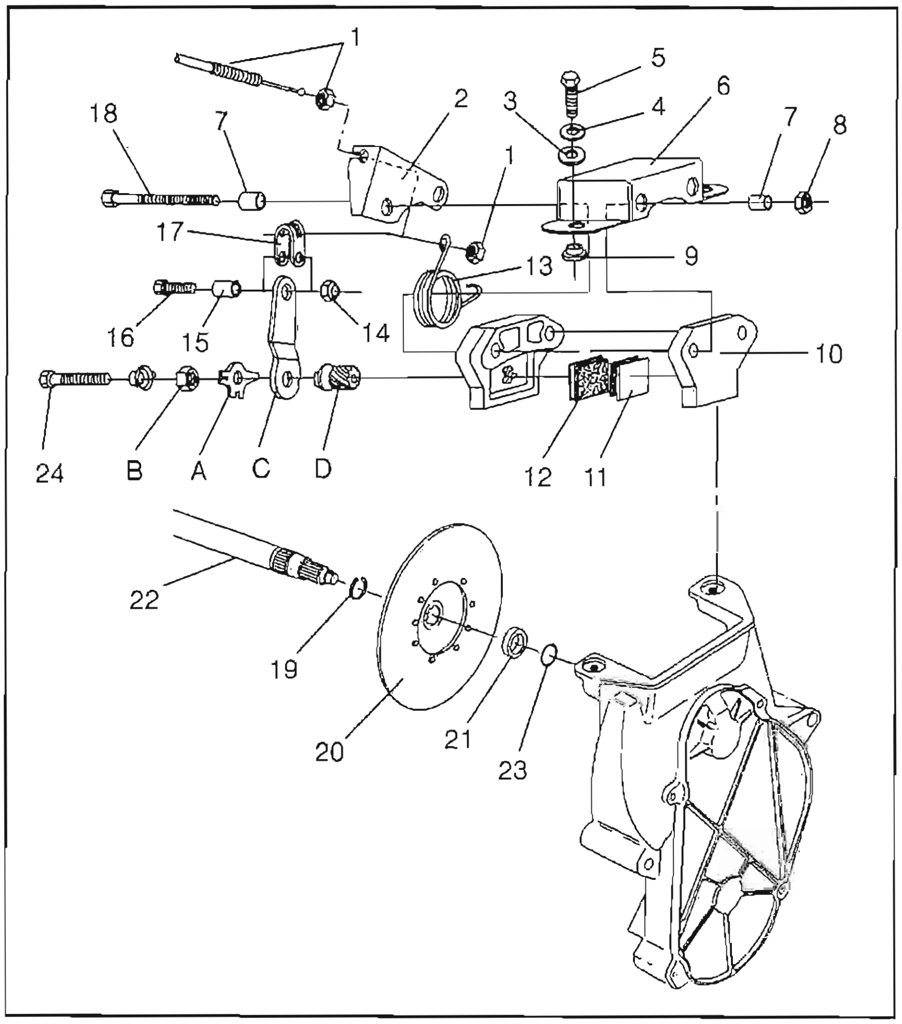
Reservoir Cover Torque -

43 in. lbs. (.49 kg-m)

14. Be sure to bleed coolant system as outlined in Engine section.
15. Field test at low speeds before putting into regular service.

Type M3 Mechanical Brake System

1. Brake Cable and Jam Nuts
2. Bracket, Brake
3. Washer
4. Washer, Spring Lock
5. Bolt, Top Mount
6. Bracket, Brake Top Mounting
7. Bushing
8. Nut, Bi-Lock
9. Spacer, Alignment
10. Caliper, Stationary, Cast
11. Pad, Brake
12. Puck, Moveable Brake
13. Spring, Brake Return
14. Nut
15. Bushing, Brake Arm
16. Bolt, Cable Swivel
17. Clevis, LT
18. Bolt, Caliper
19. Retaining Ring
20. Brake Disc
21. Seal
22. Jackshaft
23. O-Ring
24. Adjuster Bolt



Type M3 Assembly to Chaincase

1. Clip moveable brake pad into position under holder clip. Hold moveable and stationary pads in place with a rubber band while placing assembly over rotor disc and mounting to chaincase. Remove rubber bands once system is bolted into place.
2. Install alignment spacers (Item 9), washers (Items 3 and 4) and bolts (Item 5). Torque assembly to specification.

> **Caliper Mounting Torque -**
>
> **25-30 ft. lbs. (3.45-4.14 kg-m)**

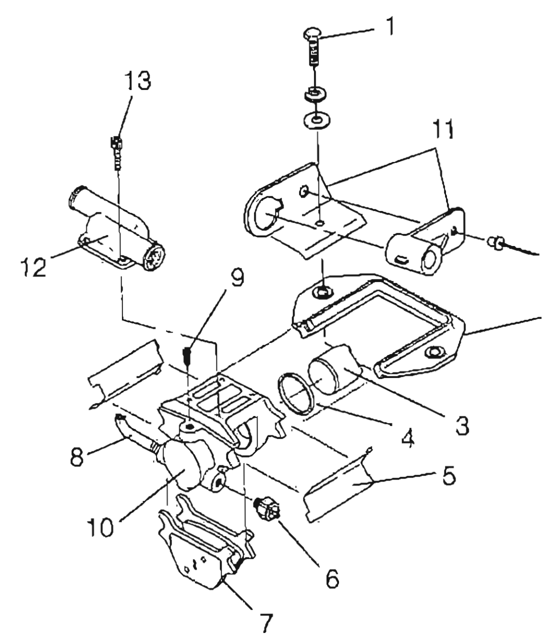
3. Loosen cable sleeve jam nuts (Item 1) and adjust brake cable sleeve to its shortest position.

Type H5LC Caliper Disassembly

1. Carrier Bracket Attaching Bolts
2. Carrier Bracket
3. Piston
4. Piston Seal
5. Spring Clip
6. Stop Light Switch
7. Brake Pads
8. Brake Line
9. Bleeder Screw
10. Caliper (Liquid Cooled)
11. Rope Guide
12. Water Cooler Manifold
13. Screws (Cooler Manifold)

⚠ WARNING

The rider's safety depends on correct installation. Follow procedures carefully.



NOTE:
440 XCR SP items 3&7 are unique to this model

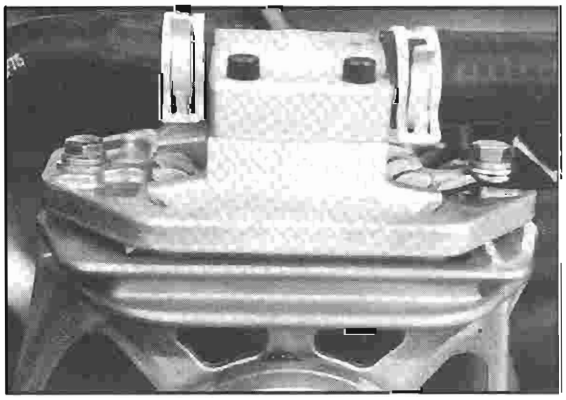
Refer to the exploded view above while performing the following steps.

1. Remove bracket bolts.
2. Disconnect brake line. Drain brake fluid into appropriate container and dispose of properly.
3. Disconnect and plug coolant lines, catching and disposing of antifreeze properly.
4. Disassemble on a clean bench.
5. Open bleed screw. Drain brake fluid into appropriate container and dispose of properly.

CAUTION:

Protect eyes from brake fluid.

6. Slide brake assembly out of bracket and remove old pads and clips.
7. Place caliper on bench with piston down.
8. Remove piston from caliper using a caliper piston pliers (commercially available) or by covering the piston with a shop cloth and applying compressed air to the hydraulic inlet port.



CAUTION:

Use only enough air to remove piston. Too much pressure may damage piston or bore.

9. Using a small wooden or plastic stick, work piston seal out from its groove in the piston bore.

CAUTION:

To avoid scratching bore or burring edge of seal groove, do not use a metal tool such as a screwdriver.

10. Discard old seal.

Type H5LC Cleaning and Inspection

Check all parts for wear or damage and replace any found to be defective.

1. Clean all parts with denatured alcohol and wipe dry with a clean, lint free cloth.
2. Using compressed air, blow out the drilled passages and bores.
3. Inspect casting cylinder bore for scoring, pitting or corrosion. A corroded or deeply scored casting should be replaced. Light scores and stains may be removed by polishing with a *crocus cloth only.* Use finger pressure and rotate the crocus cloth in the cylinder bore. Do not slide the cloth in and out of the bore under pressure. Do not use any other kind of abrasive cloth.
4. Check piston to see if it is pitted, scored or worn. If so, discard and replace the piston.

CAUTION:

Do not attempt to polish or sand piston.

5. Clean piston with denatured alcohol and wipe dry with a clean, lint free cloth. Using compressed air, blow dry.
6. Check inlet and bleeder hole threads for damage.
7. Inspect seat insert for damage and replace if necessary.

Type H5LC Assembly

1. Reassemble by reversing disassembly process. Be sure all parts are clean and serviceable before reassembling the unit.
2. Coat a new piston seal in clean DOT 3 brake fluid and place in groove in the caliper bore. Seal should be positioned at one point in groove and then gently worked around the groove by hand until properly seated.

CAUTION:

Never reuse an old seal.

3. Coat piston thoroughly with brake fluid and work down into bore by hand carefully until bottomed.

CAUTION:

Apply even pressure to avoid cocking the piston in the bore.

4. Examine pads for wear or damage. If pad thickness is less than 1/32″ (.08 cm) install new pads and spring clip assemblies. If pads are not worn or damaged, they may be reused. Be sure pads are reinstalled in their original positions. If pads are replaced, replace in sets and make sure the new pads have the same friction material type code number as the old set.
5. Connect hose or line to caliper.
6. Place new pads with friction material facing each other into housing. Hold in place using clips.
7. Slide brake assembly into bracket until both clips snap into grooves in bracket.
8. Separate pads for installation over disc.
9. Place brake assembly over disc and push bracket into chaincase.

Type M3 Brake Adjustment

⚠ WARNING

The following step is critical for proper positioning of the actuating arm to the caliper helix shaft. Improper positioning will result in minimal resistance and ineffective brakes.

4. With brake lever bottomed on handlebar (as if brakes were applied) and helix shaft (D) bottomed in caliper, install actuating arm, jam nut locking tab, jam nut and adjuster bolt. Release brake arm slightly to index lever for installation on helix shaft.
5. Insert a .015″ (.04 cm) feeler gauge between brake disc and moveable brake pad. Release brake lever. Install return spring (Item 13) and finger tighten bolt (Item 24). Set adjuster bolt jam nut, bend locking tab and remove feeler gauge.

Friction Pad Air Gap -

.015″ (.38 mm)

6. Field test machine for proper braking action before putting into service. If braking action is soft, re-index helix shaft and repeat steps 3. - 6.

Type H5LC Assembly, Cont.

10. Install coolant lines and hose clamps and tighten securely.
11. Replace 3/8″ bolts, rope guide, and washers. Torque to specification.

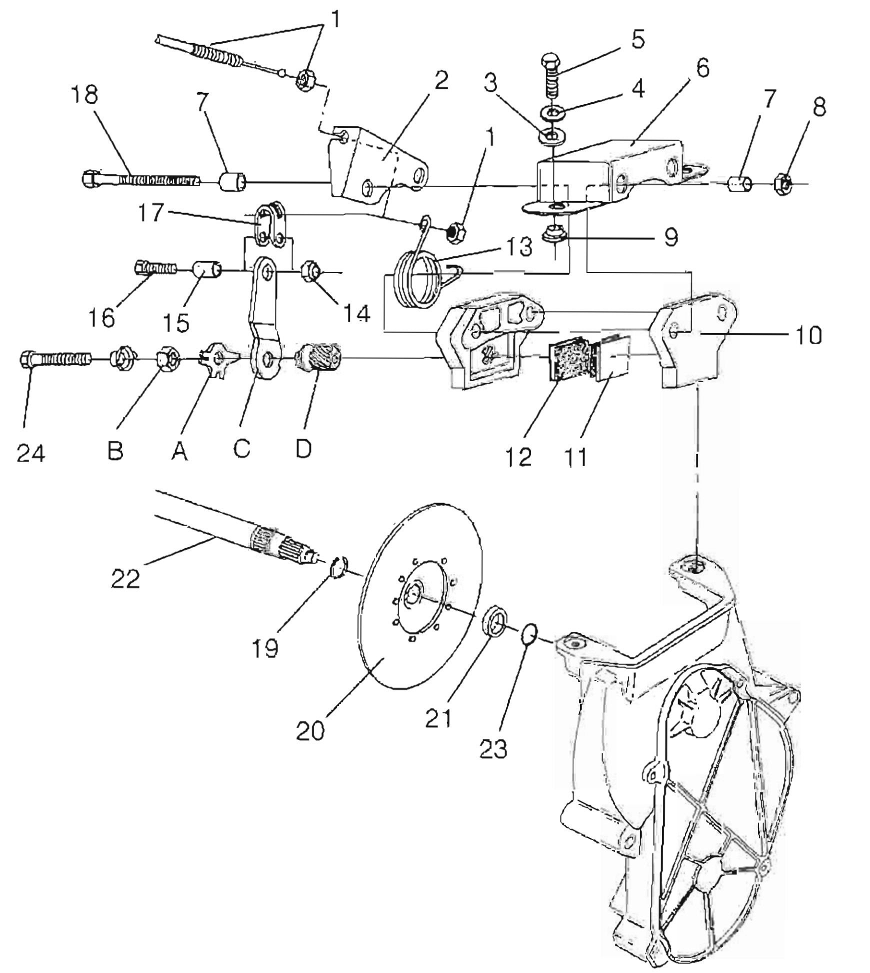
> **Caliper Bolt Torque -**
>
> **25-30 ft. lbs. (3.45-4.14 kg-m)**

12. Perform brake bleeding procedure as outlined after System Rebuild, page 9.11.

Type M3 Mechanical Brake System

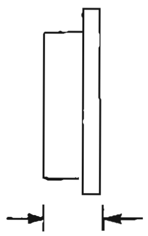
The Type M3 system is the mechanical brake system used only on Indy Lite models. See Maintenance Section for adjustment procedure.

1. Brake Cable and Jam Nuts
2. Bracket, Brake
3. Washer
4. Washer, Spring Lock
5. Bolt, Top Mount
6. Bracket, Brake Top Mounting
7. Bushing
8. Nut, Bi-Lock
9. Spacer, Alignment
10. Caliper, Stationary, Cast
11. Pad, Brake
12. Puck, Moveable Brake
13. Spring, Brake Return
14. Nut
15. Bushing, Brake Arm
16. Bolt, Cable Swivel
17. Clevis, LT
18. Bolt, Caliper
19. Retaining Ring
20. Brake Disc
21. Seal
22. Jackshaft
23. O-Ring
24. Adjuster Bolt



NOTE: Replace pads when worn beyond service limit.

Brake Pad Thickness - Type M3
Service Limit .250″ (6.35mm)



Type M3 Brake Disassembly

CAUTION:

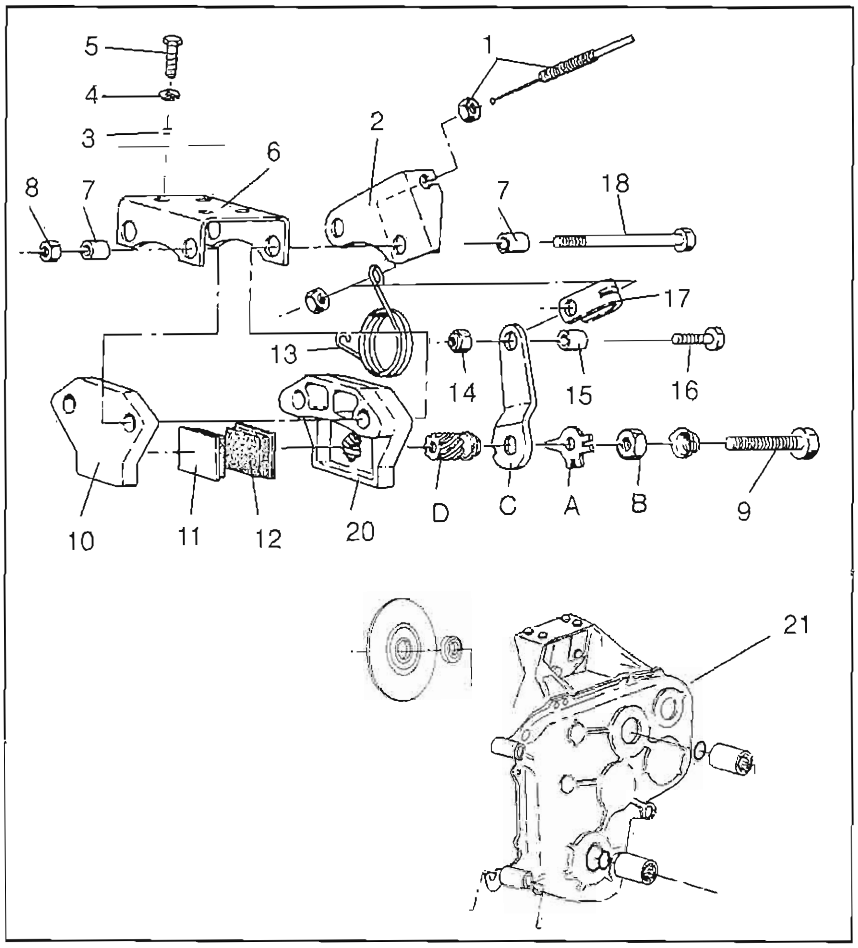
Whenever inspection reveals worn, damaged or defective parts, replacement is necessary in order to avoid serious damage to the machine or injury to the operator.

1. Open adjuster bolt jam nut locking tab (A). Loosen jam (B)nut and remove adjuster bolt (Item 24).
2. Mark location of actuating lever (C) and worm gear (D).
3. Remove actuating lever (C) and return spring (13). Do not detach cable from lever arm.
4. Remove top mount bracket and brake assembly mounting bolts (Item 5). Remove washers (Items 3 and 4) and alignment spacers (Item 9). Remove brake assembly. **NOTE:** Be prepared to catch brake pads as assembly is lifted out.
5. Remove brake pads and inspect for wear and damage. Replace if necessary.
6. Inspect rotor disc and replace if worn, galled, or warped.

Type WT Mechanical Brake System

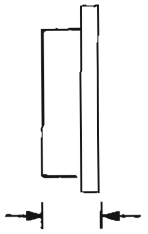
The Type WT system is the mechanical brake system used only on Indy WideTrak models.

1. Brake Cable and Jam Nuts
2. Bracket, Brake Cable
3. Washer
4. Washer, Spring Lock
5. Bolt, Top Mount
6. Bracket, Brake Top Mounting
7. Bushing
8. Nut, Bi-Lock
9. Adjuster Bolt
10. Caliper, Stationary, Cast
11. Pad, Brake
12. Puck, Moveable Brake
13. Spring, Brake Return
14. Nut
15. Bushing, Brake Arm
16. Bolt, Cable Swivel
17. Clevis, LT
18. Bolt, Caliper
19. Brake Disc
21. Seal
20. Caliper (Moveable Puck)
21. Transmission



NOTE: Replace pads when worn beyond service limit.

Brake Pad Thickness - Type WT
Service Limit .250″ (6.35mm)



Type WT Brake Disassembly

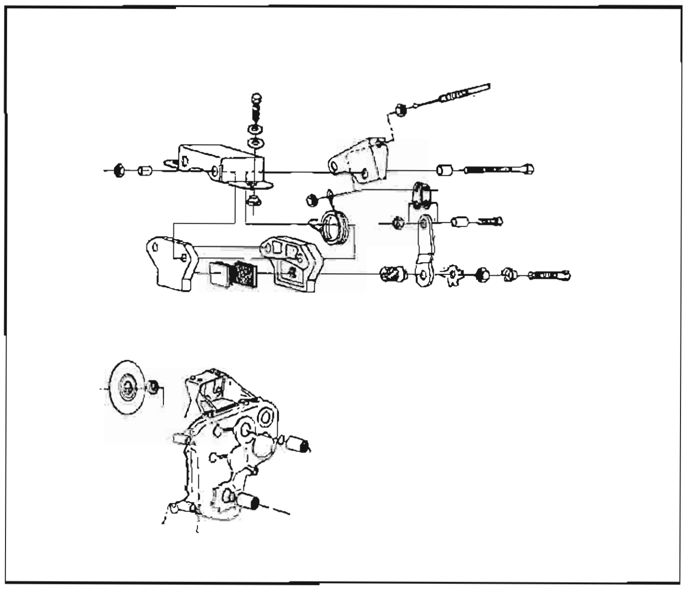
CAUTION:

Whenever inspection reveals worn, damaged or defective parts, replacement is necessary in order to avoid serious damage to the machine or injury to the operator.

1. Open adjuster bolt jam nut locking tab (A). Loosen jam nut (B) and remove adjuster bolt (9).
2. Mark location of actuating lever (C) and worm gear (D).
3. Remove actuating lever (C) and return spring. Do not disconnect lever arm from cable.
4. Remove caliper bolts, spacers, bracket nuts (Items 18, 2, 7, & 8). Remove stationary caliper casting and stationary pad (Items 10 & 11).
5. Remove top mounting bolts and washers (Items 3, 4, & 5). Pull outward on disc with the balance of the caliper assembly. Once disc is free of shaft separate components.
6. Remove brake pads and inspect for wear and damage. Replace if necessary. If stationary pad (Item 11) is stuck to stationary casting, tap on the side of the pad with a punch and hammer to break it loose.
7. Inspect rotor disc and replace if worn, galled or warped.

Type WT Assembly and Installation to Transmission

1. Clip moveable brake pad into position under holder clip. Hold moveable and stationary pads in place with a rubber band while placing assembly over rotor disc and mounting to transmission. Remove rubber bands once system is bolted into place.
2. Apply a light coating of RTV silicone to transmission shaft. Position moveable caliper pad assembly along with mounting bracket (Item 6) and brake disc onto transmission as a unit. Slide disc fully over shaft.
3. Assemble bolts, spring washer, and flat washers to transmission and top mounting bracket (Items 3, 4, 5, & 6). Finger tighten.
4. Assemble bolts, spacers, and cable bracket to top mounting bracket and moveable caliper pad assembly (Items 18, 7, 2, 6, & 20). Position stationary caliper pad assembly inside top mounting bracket pushing bolts through stationary assembly. Install spacers and lock nuts on bolts and torque to specification.



Caliper Bolt Torque

8 ft. lbs. (1.10 kg-m)

Type WT Adjustment

1. Loosen cable sleeve jam nuts (Item 1) and adjust brake cable sleeve to its shortest position.

⚠ WARNING

The following step is critical for proper positioning of the actuating arm to the caliper helix shaft. Improper positioning will result in minimal resistance and ineffective brakes.

2. With brake lever bottomed on handlebar (as if brakes were applied) and helix shaft (D) bottomed in caliper, install actuating arm, jam nut locking tab, jam nut and adjuster bolt. Release brake arm slightly to index lever for installation on helix shaft.
3. Insert a .015″ (.04 cm) feeler gauge between brake disc and moveable brake pad. Release brake lever. Install return spring (Item 13) and finger tighten bolt (Item 9). Set adjuster bolt jam nut, bend locking tab and remove feeler gauge.

Friction Pad Air Gap -

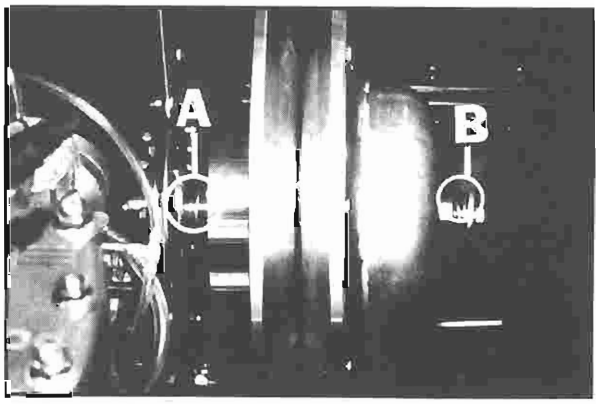
.015″ (.38 mm)

4. Field test machine for proper braking action before putting into service. If braking action is soft, re-index helix shaft and repeat steps 1. - 4.

Type 3 Drive System Disassembly (Except WideTrak)

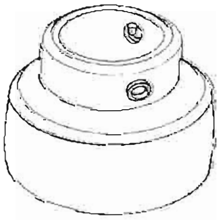
The Type 3 drive system is used on all models except the WideTrak. This system consists of a right side mounted chaincase with right side mounted brake assembly.

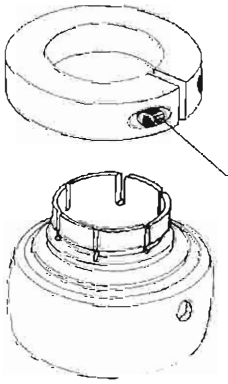
1. Mark hood hinges for ease of alignment when reassembling. Remove hood, air silencer, exhaust system and battery, if so equipped. Place drip pan under chaincase and remove drain plug from chaincase. Dispose of used chaincase oil properly.
2. Turn fuel valve off.
3. Remove drive belt and driven clutch. Note position of washers for controlling drive to driven offset (A) and washers to control clutch free floating (B).



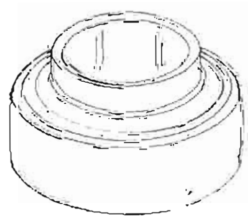
4. Loosen jackshaft bearing lock set screws.

NOTE: Some models are equipped with set screw or Skwez-loc™ style jackshaft bearings; Some models are equipped with press-fit bearings which have no locking device.


Set Screw Style Bearing



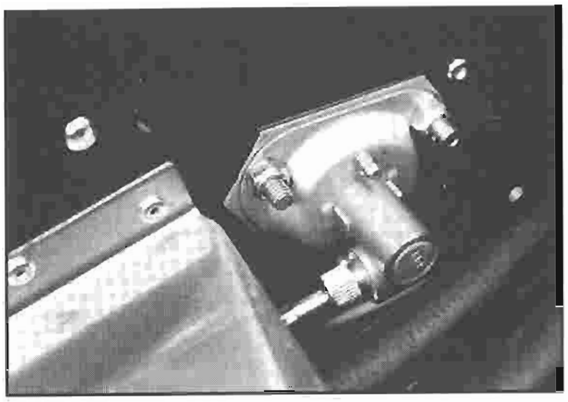
Skwez-loc™ Bearing


Press-Fit Bearing

5. Remove two upper flangette attaching bolts.

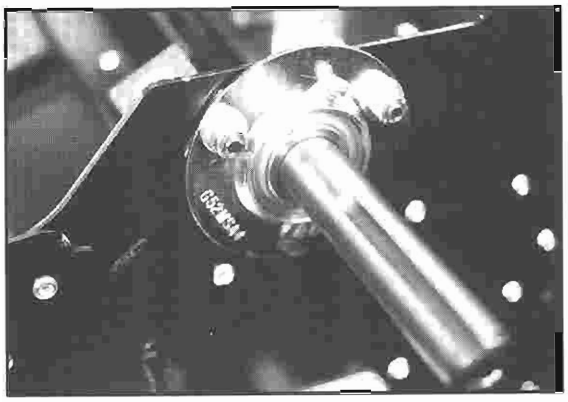
Type 3 Drive System Disassembly, Cont.

6. Remove three bolts, nuts, and washers securing angle drive (if so equipped) and bearing flangettes. Remove and discard adaptor key if equipped with angle drive.
7. Remove four suspension mounting bolts.
8. Place a protective mat on floor and tip machine onto left side.
9. Remove rear suspension by pulling rear of track outward and sliding suspension forward. Lift out rear of suspension first.



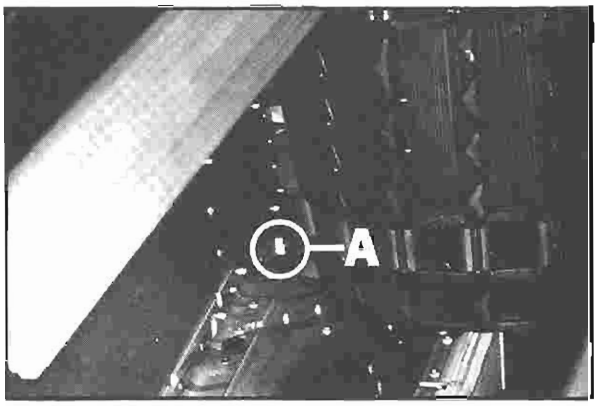
NOTE: On some models it may be necessary to unhook the rear torsion springs to relieve pressure on the torque arm for ease of removal.

10. Position track as shown and remove third jackshaft flangette attaching bolt (A). Remove bearing.
11. Loosen drive shaft lock set screws and remove bearing. Use emery cloth if necessary to aid in removal of corrosion and/or burrs.

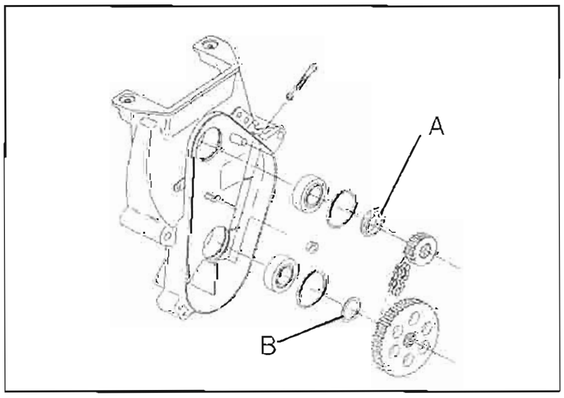


NOTE: Some models are equipped with set screw or Skwez-loc™ style driveshaft bearings; Some models are equipped with press-fit bearings which have no locking device. On these models the bearing must be removed after the drive shaft has been removed from the unit. If replacing the bearing only, the drive shaft must be removed from the chaincase entirely to allow bearing puller access.

12. Remove chaincase cover attaching bolts and remove cover.
13. Remove cotter pin and nut.
14. Loosen chain adjustment bolt and remove chain tensioner assembly.
15. Remove bottom sprocket attaching bolt, chain and sprockets.



16. Note position of top sprocket spacer (A) and sprocket alignment washers (B). Remove spacer and washers. These spacers are used to square the sprockets for true alignment, providing increased chain and sprocket life as well as increasing performance by eliminating drag.



NOTE: The top sprocket spacer (A) is not used with Hyvo top sprockets. Hyvo top sprockets have the spacer width built in to the sprocket width.

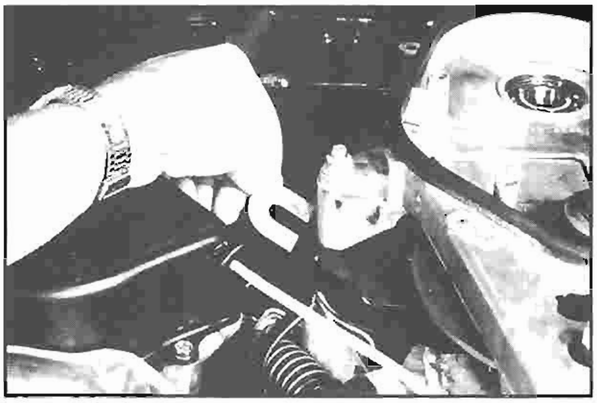
Type 3 Drive System Disassembly, Cont.

17. Remove two bolts securing caliper carrier bracket to chaincase (A).

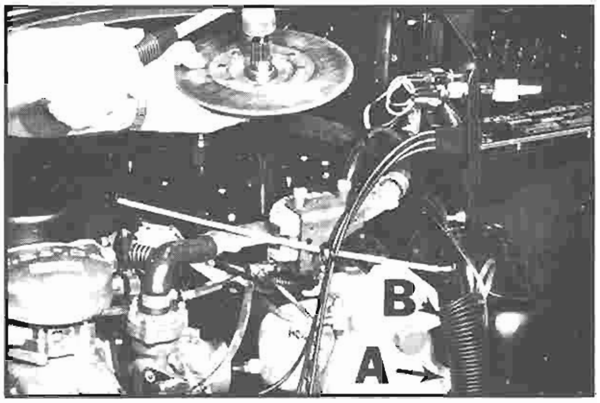
NOTE: Inspect brake pad condition and replace if worn to less than 1/2 the original thickness. See Brake Pad Replacement in this chapter.

18. Remove three chaincase to bulkhead attaching nuts and bolts.

NOTE: On some machines it may be necessary to remove the rear exhaust bracket prior to lifting chaincase or removing drive shaft assembly. Watch for alignment shims between chaincase and bulkhead. Save for realignment of chaincase and jackshaft assembly to bulkhead during reassembly.

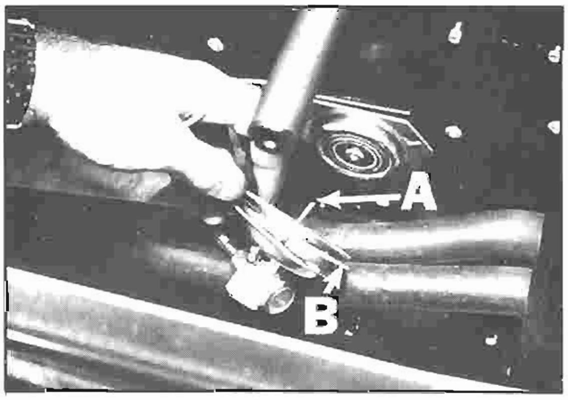


19. Remove chaincase.



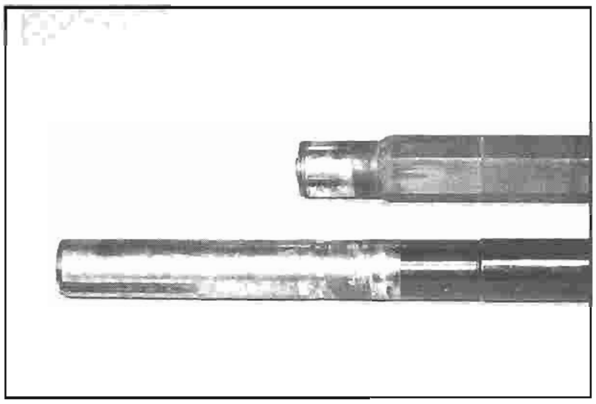
20. Remove oil tank attaching bolt (A). On liquid cooled models, remove coolant recovery tank bolt (B).
21. Raise jackshaft assembly as shown.
22. Remove O-Ring, seal sleeve and brake disc by tapping on jackshaft end with a soft face hammer as shown.
23. Remove jackshaft and drive shaft.

NOTE: On models with pressed bearing on jackshaft, shaft will have to be brought through bulkhead slot in order to remove from unit.



Type 3 Drive System Disassembly, Cont.

24. For set screw and Skwez-loc bearings, inspect drive shaft and jackshaft in bearing contact area. If diameter is .001″ (.025 mm) less than non-contact area, shafts should be replaced.

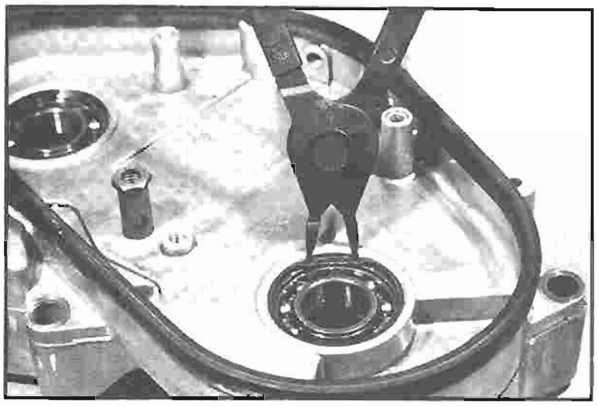


Jackshaft and Driveshaft Service Limit - .001″ (.025 mm)

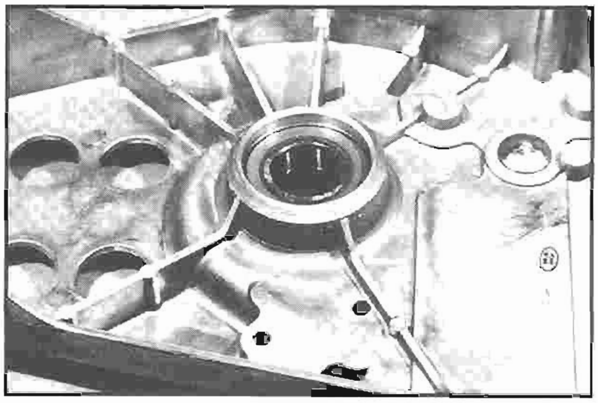
25. After drive shaft has been removed, inspect condition of drive sprockets and replace if required.

NOTE: On models with pressed bearings on jackshaft and drive shaft, if bearings are loose internally or rough they should be replaced. If bearings are loose on the shaft the shaft must be replaced.

26. Remove bearing retaining snap rings.
27. Pry out old seal from back side of chaincase.

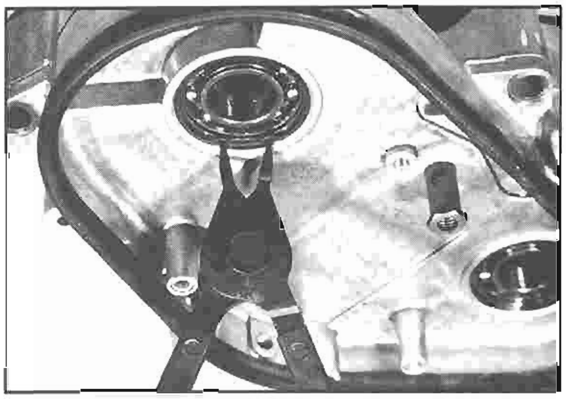


28. Press out old bearing from side shown. If bearing appears tight, use heat to expand chaincase bore. Always press bearing toward snap ring side of chaincase when removing. Inspect chaincase for any damage and replace if required.



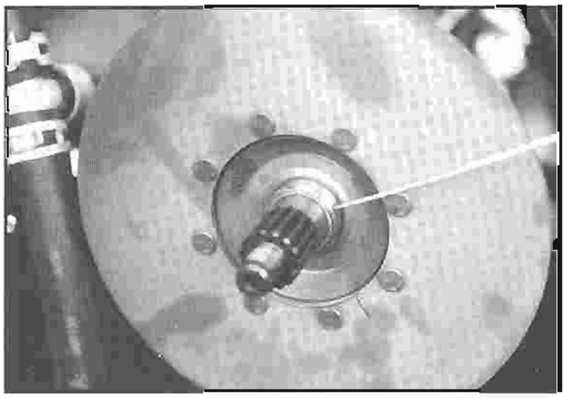
Type 3 Drive System Assembly (Except WideTrak)

1. Apply Loctite 680 to outer race of bearing and press into position.



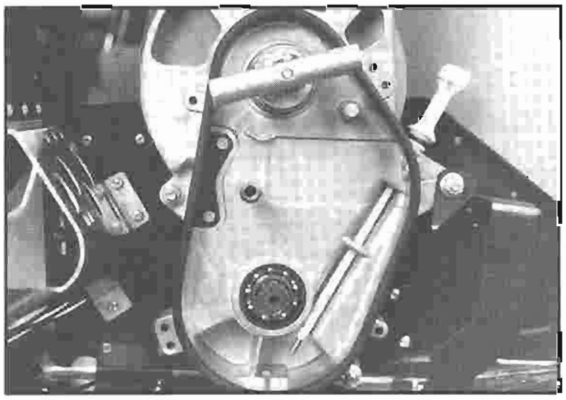
Loctite™ 680
PN 2870584

2. Reinstall snap rings.
3. Press new seals in until outer edge is flush with chaincase shoulder. New seals must be installed from outside of case with lip side in.
4. Install drive shaft and jackshaft as shown with new seal sleeves (A) and O-Rings.



NOTE: Recessed area on seal sleeve is positioned outward and O-Ring rests in this recess.

5. Grease seal sleeves and O-Rings.



6. Install chaincase.

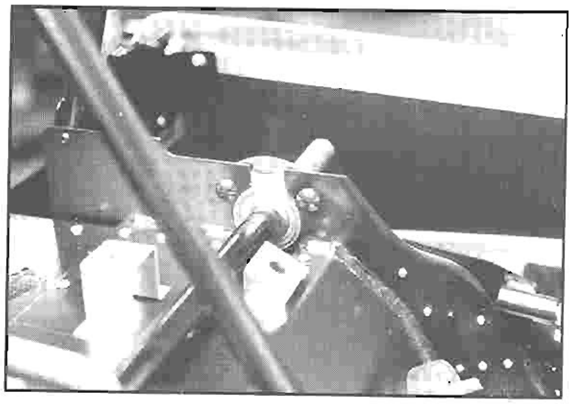
NOTE: On some models, prior to installing the drive shaft it will be necessary to install the chaincase to bulkhead attaching bolts.

7. Install jackshaft alignment tool (B) and secure with castle nut and flat washer. Tighten jackshaft nut securely to ensure positive bearing and jackshaft seating to chaincase. **NOTE:** The photo shown has a handle added to the retainer nut.

Jackshaft Alignment Tool
PN 2870399 - 13 Tooth Jackshafts PN 2871535 - 15 Tooth Jackshafts

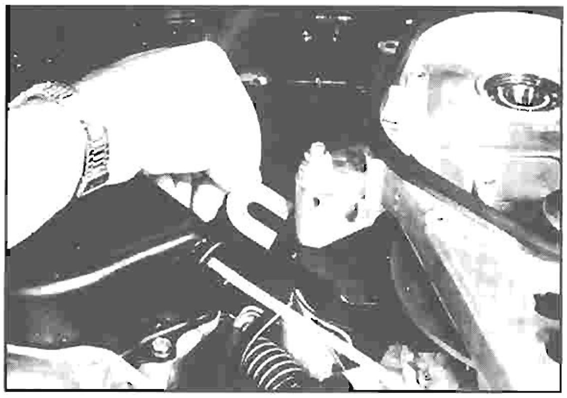
Type 3 Drive System Assembly, Cont.

8. Slide a bearing onto driven clutch end and check shaft alignment to bulkhead opening (A). Models with pressed jackshaft bearings will require the chaincase to be shimmed since the bearings cannot be moved for alignment. Equal spacing around the bearing is critical.



NOTE: This step is critical to the prevention of bearing pre-load, which can cause premature bearing and/or jackshaft failure.

9. If alignment is not correct, shims may be added between any of the chaincase to bulkhead attaching points. Tighten chaincase securely to ensure proper alignment.



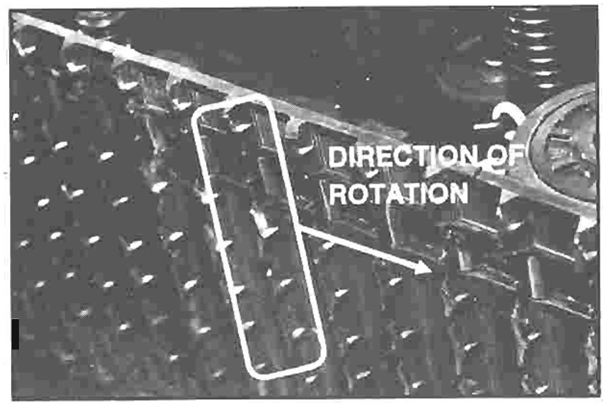
NOTE: Use of a standard nut and flat washer for this alignment process will simplify the process as well as preserve the locking features of the lock nut for reassembly.

Shim Kit PN 2200126

10. Once correct jackshaft alignment has been achieved, install lock nuts on chaincase retention bolts and torque to specification. Remove alignment tool from chaincase.

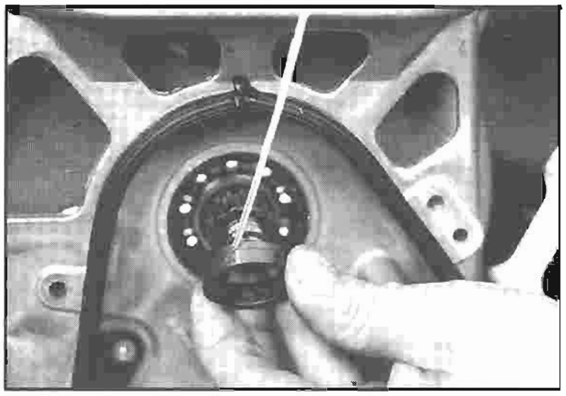
Chaincase Retention Bolt Torque -
28-30 ft. lbs. (3.86 - 4.14 kg-m)

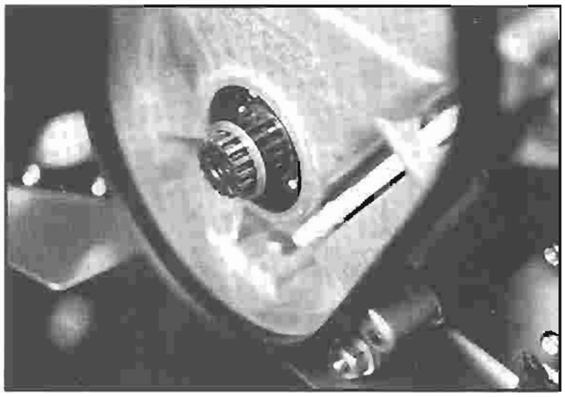
11. Install track and drive shaft into unit. Pull jackshaft into chaincase and seat in bearing. Install track in proper direction of travel.



Type 3 Drive System Assembly, Cont.

12. Install alignment washers and sprocket spacer on drive shaft and jackshaft. Install top and bottom sprockets and secure. Using a straight, flat piece of 1/4″ (6mm) bar stock 9″ (22.86 cm) long check sprocket alignment. Add or subtract washers to bottom sprocket to achieve alignment.

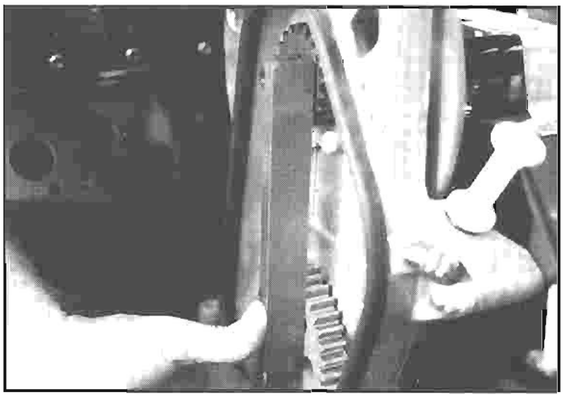




13. Once alignment has been achieved, install sprockets with chain. Finger tighten nut and turn in bottom sprocket bolt until snug.

NOTE: The bearings on the opposite end must be in place before torquing.

14. Install chain tensioner. Finger tighten adjustment bolt.
15. Install brake caliper assembly in chaincase.



CAUTION:

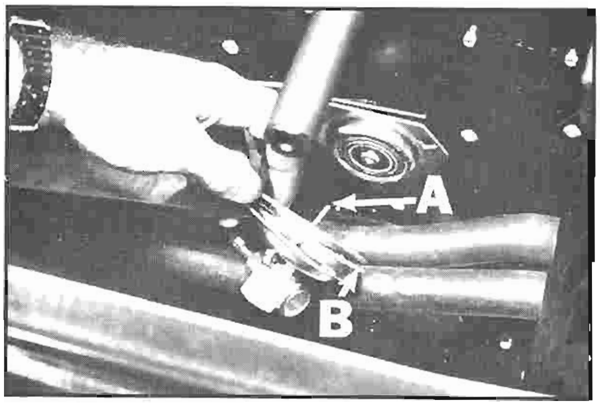
On models with hydraulic brakes, make sure caliper piston is fully retracted into caliper to prevent brake binding from preload of pads. On models equipped with mechanical brakes make sure cam is fully retracted.

16. Torque caliper mounting bolts to specification.

Caliper Mounting Bolt Torque -
28 - 30 ft. lbs. (3.86 - 4.14 kg-m)

Type 3 Drive System Assembly, Cont.

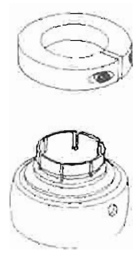
12. Install jackshaft bearing, flangettes, and gasket. Align grease hole (A) in bearing with hole or fitting in flangette (B) to within .100″ to ensure greasability. Torque nuts to specification. *Do not* lock set screws on retainer ring (if so equipped).



NOTE: Ultra, Storm, and 600 XCR SP models do not have set screws. RXL models have a Skwez-loc™ type retaining ring.

Flangette Nut Torque -
15 - 17 ft. lbs. (2.07 - 2.35 kg-m)

13. Install drive shaft bearing, flangettes, a new speedometer drive key, flangette gasket, and angle drive (if so equipped) to shaft and bulkhead. Torque retaining nuts to specification. *Do not* lock set screws on retaining ring (if so equipped).



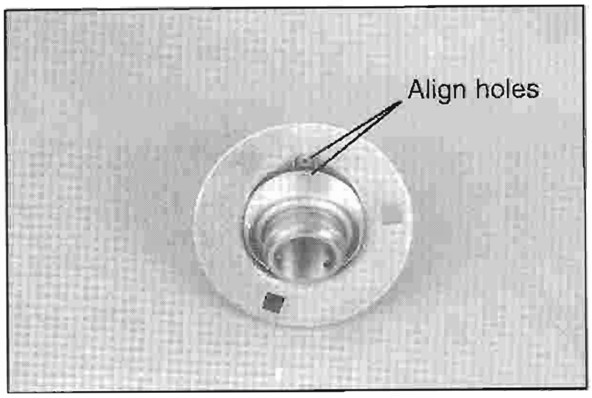
Skwez-loc™ Bearing

Flangette Nut Torque -
15 - 17 ft. lbs. (2.07 - 2.35 kg-m)

NOTE: On Ultra, Storm, and 600 XCR models with pressed bearings, place inner flangettes with welded bolts inside tunnel, install gasket flangette and angle drive with new adaptor key into assembly. Install Flex Loc™ nuts and torque to specification. Flangette with studs must be assembled on driveshaft prior to pressing bearing on shaft and assembly of driveshaft into unit.

Flex Loc™ Nut Torque -
15 - 17 ft. lbs. (2.07 - 2.35 kg-m)

14. When reinstalling drive shaft flangettes and speedometer angle drive, always replace drive key (A) and install a new gasket (B).



Type 3 Drive System Assembly, Cont.

20. Check cable routing and lubricate with Polaris cable lube.

Polaris Cable Lube
PN 2870510

21. Grease angle drive and bearing with Polaris grease.

Polaris Premium All Season Grease
PN 2871423

22. Torque bottom chaincase sprocket bolt to specification.

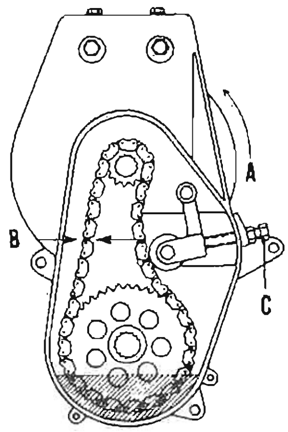
Bottom Chaincase Sprocket Bolt Torque -
19 ft. lbs. (2.62 kg-m)

23. Torque jackshaft nut to specification. On models with castle nut, if cotter pin does not align, tighten nut until it does. It may be necessary to apply brake to hold jackshaft while torquing.

Castle Nut Torque -   **50 ft. lbs. (6.9 kg-m)**
Flex Loc™ Nut Torque   **65 ft. lbs. (8.97 kg-m)**

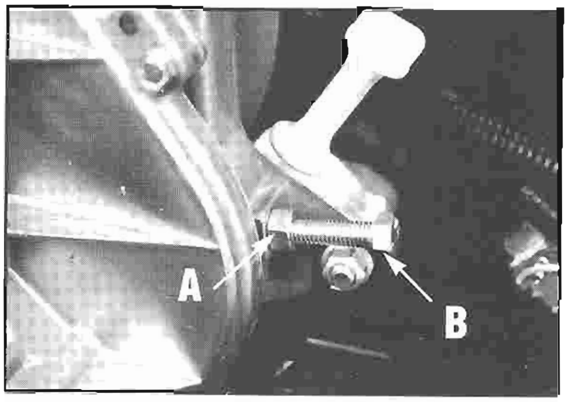
24. To obtain correct chain tension, place a slight reverse tension on the chain as indicated in the illustration at right (A).
25. There should be approximately 1/4-3/8″ (.6-.95 cm) total deflection on the chain at point (B). Loosen adjuster bolt locknut and turn adjuster bolt (C) until correct chain deflection is obtained.

Chain Deflection -   **1/4-3/8″ (.6 - .95 cm)**

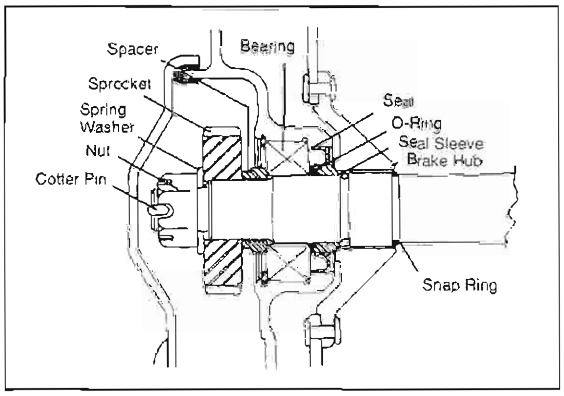


Type 3 Drive System Assembly, Cont.

15. Lock adjuster bolt locknut (A) while holding a wrench on the adjuster bolt (B).



16. The illustration at right shows a cross section view of the upper chaincase. Always replace seals and O-Rings. Check seal sleeve for wear and/or nicks. Replace if any are noticed.



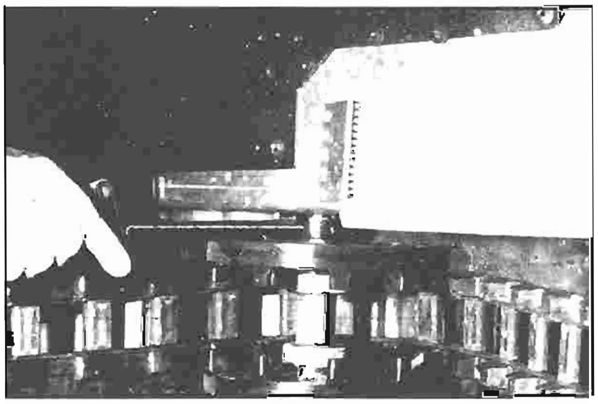
17. With unit on its right side, add 9 oz. (11 oz. on models equipped with reverse) of Polaris chaincase oil to the chaincase.

Polaris Synthetic Gearcase Lube PN 2871477 (Gallon) PN 2871478 (12 ounces)

18. Install chaincase cover gasket in chaincase with gap at the top. Install chaincase cover and torque cover bolts to specification.

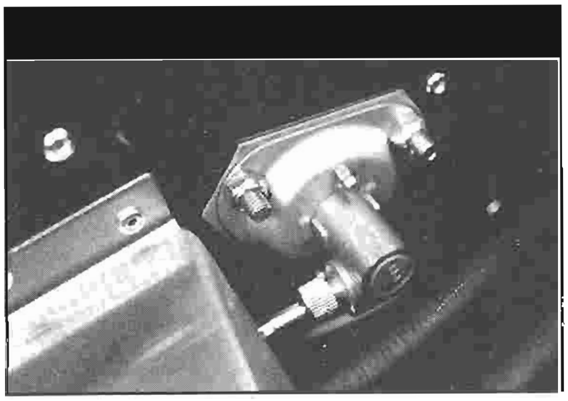
Chaincase Cover Bolt Torque - 8 - 10 ft. lbs. (1.10 - 1.38 kg-m)

19. Torque bearing driveshaft and jackshaft set screws to specification (if so equipped).



Driveshaft and Jackshaft Bearing Set Screw Torque - 80 in. lbs. (.92 kg-m)

20. Lubricate bearing with Polaris Premium All Season grease.



Polaris Premium All Season Grease PN 2871423

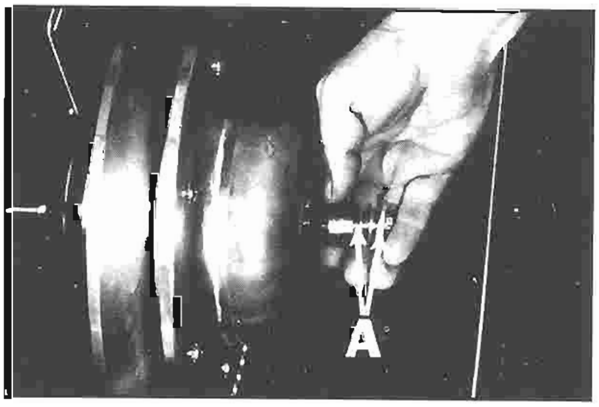
Type 3 Drive System Assembly, Cont.

32. Reinstall clutch offset washers on jackshaft and install driven clutch. Using the clutch alignment tool adjust driven clutch to achieve proper offset.

Clutch Alignment Tool P90 - PN 2870914 P85 - PN 2870426

P90 Offset 21/32″ P85 Offset 5/8″

33. With proper offset achieved, the driven clutch must float on the jackshaft. This is done by adding or subtracting spacer washers (PN 7555734) to the clutch retaining bolt. When properly adjusted, the driven clutch will have .020 - .100″ (.5 - 2.5 mm) float.

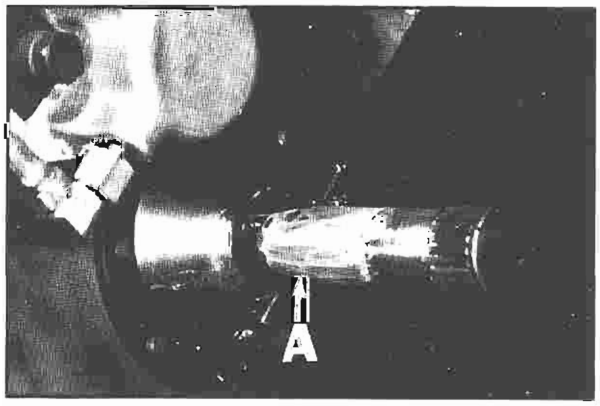


CAUTION:

Incorrect float can cause jackshaft bearings to be side loaded, resulting in premature bearing failure.

34. Torque driven clutch retaining bolt to specification.

Driven Clutch Retaining Bolt Torque - 12 ft. lbs. (1.66 kg-m)



35. If only the jackshaft needs service, loosen left rear nosepan to foot rest mounting bolts and slide shaft out left side without removing chaincase.
36. For reassembly, use jackshaft installation tool (A). Grease tool and guide jackshaft through brake disc hub, seal sleeve, O-Ring and bearing.

NOTE: Jackshaft with tool installed must slide freely. If not, remove brake caliper and disc to access O-ring and reposition O-ring.

Jackshaft Installation Tool PN 2870974 - 13 Tooth Spline PN 2871206 - 15 Tooth Spline

37. Reinstall suspension and torque to specification.

> **3/8" Suspension Bolt Torque -
> 35-40 ft. lbs (4.83-5.52 kg-m)**
>
> **7/16" Suspension Bolt Torque -
> 45-50 ft. lbs. (6.21-6.9 kg-m)**

38. Reinstall air box, adjusting box properly. Route throttle cable through hold down clamp as shown.
39. Reinstall battery (if so equipped). Always attach ground cable last to prevent sparks.
40. Replace exhaust system sealing ball and socket with high temp RV silicone.
41. Install hood, aligning with marks made during disassembly. Ensure proper hood closure and readjust if necessary See Hood Alignment, Chapter 7. Torque bolts to specification.

> **Hood Bolt Torque -**
>
> **8-10 ft. lbs. (1.10-1.38 kg-m)**

42. Align track. See Track Alignment Procedure, Chapter 8.
43. Test ride the unit to ensure all components are functioning properly before putting into service.

Transmission, Suspension and Track Removal - WideTrak Models

1. Mark hood hinges for ease of alignment when reassembling unit. Remove hood assembly and set aside to prevent damage.

2. Remove battery (if so equipped).

3. Turn off fuel valve. Move oil tank for access.

4. Remove air intake and coolant recovery bottle from its mounting (WideTrak LX models only - do not remove entirely).

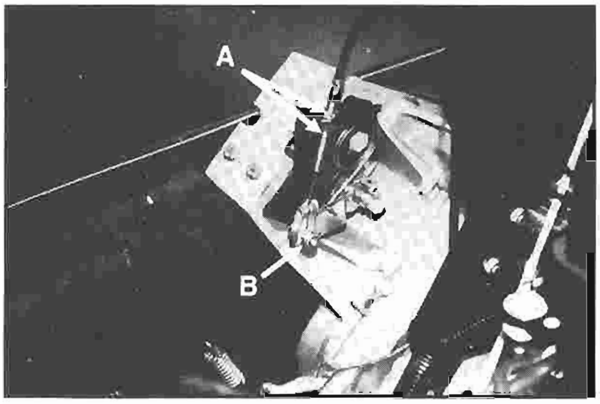
5. Remove drive belt.

6. Remove driven clutch retaining bolt assembly and drive clutch. Note number of spacers which are behind driven clutch for installation during reassembly procedures.

7. Remove muffler springs and muffler from unit.

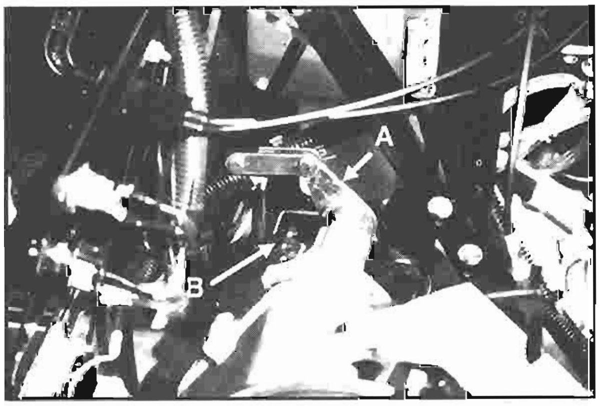
8. Loosen brake cable jam nut (A) and remove cable bolt, nut and spacer (B). Use care not to loose spacer.

9. Remove cable from transmission.

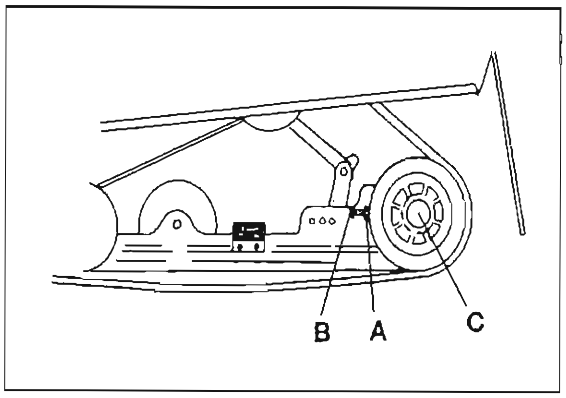


10. Note location of shift linkage on transmission (A) to assure proper location during reassembly. Remove cotter pin, washers, and pin from transmission arm.

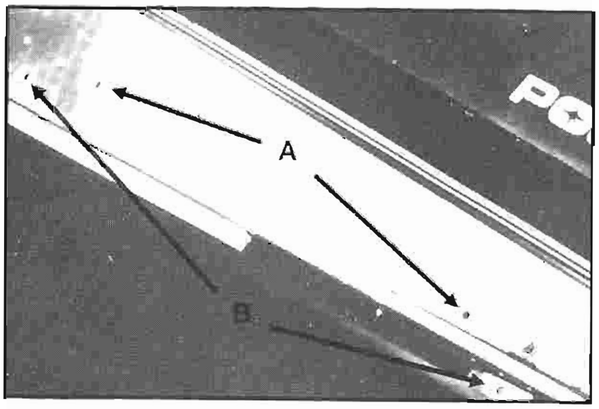
11. Remove brake light wire connector from sensor.



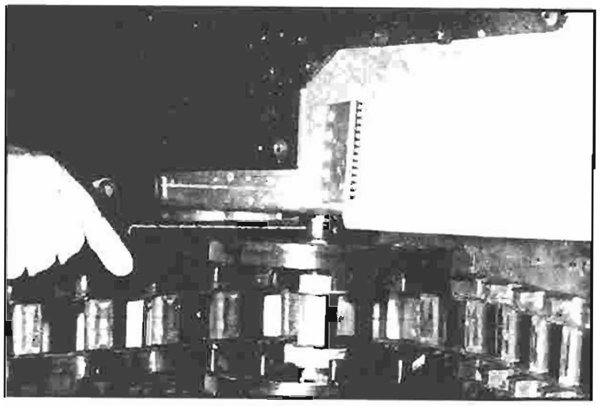
12. Loosen rear idler wheels and bolts.
13. Loosen jam nuts on adjustment bolts on both sides. Back out adjustment bolts to allow rear idler assembly to come forward, relieving track tension.
14. Tighten idler wheel bolts so that spacers on shafts do not rotate and lose alignment.



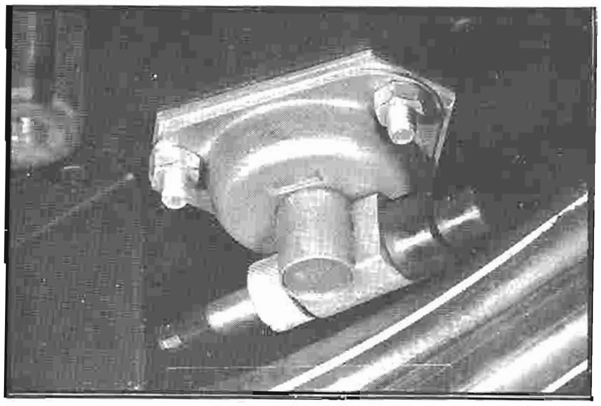
15. Remove front and rear carrier shaft bolts (A), and front and rear suspension bolts from both sides (B).
16. Place a protective mat on the floor. Tip unit onto right side and remove suspension.



17. Using "T" handle Allen wrench, loosen set screws on lock collar.
18. Remove (2) bolts, nuts, and flangettes supporting jackshaft bearing. Loosen and slide back lock ring from transmission end of jackshaft.
19. Remove jackshaft by pulling towards driven clutch side and lifting upward through bulkhead. It may be necessary to lightly tap on bearing collar to free coupler of jackshaft from transmission end.
20. Inspect bearing. If loose on the shaft the shaft must be replaced. If bearing is rough when turned, the bearing must be replaced. The bearing is pressed onto the shaft and will require a puller for removal.



Transmission, Suspension and Track Removal - WideTrak Models - 1996

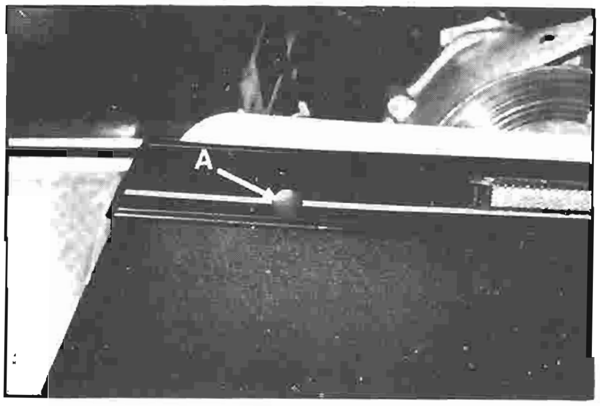


1. Loosen and remove three carriage bolts and nuts retaining angle drive housing and flangettes.

2. Remove angle drive housing, adaptor key, flangettes, gasket, and bearing from drive shaft and tunnel.

NOTE: It is not necessary to remove speedometer cable from angle drive. Replace adaptor key any time drive train assembly is serviced.

3. Tip machine back onto floor.



4. Remove right side bumper plug (A).

5. Remove bolt retaining rear of bumper to foot rest.

6. Bend muffler mount out of the way to allow transmission removal.

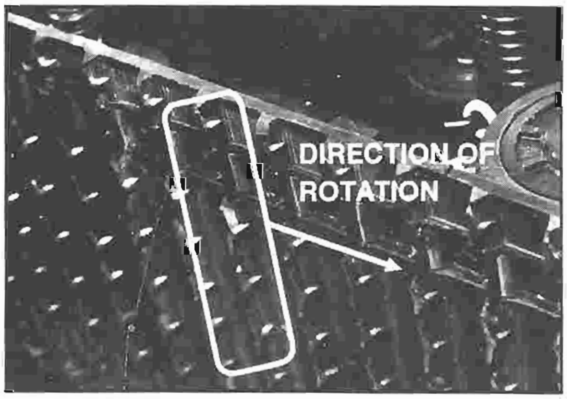
7. Remove three transmission retaining bolts. Note all alignment shim quantities and locations for reassembly.

NOTE: Retaining bolts have to be held in place from underside while removing nuts. The lower front bolt cannot be removed at this time. It must be lowered to the drive sprocket.

8. Lift and maneuver transmission to free drive shaft coupler.

9. Lower drive shaft and remove lower front bolt.

10. Maneuver transmission until it can be removed from the unit. Use care not to damage coolant lines on LX models.



11. With transmission removed, tip unit onto right side. Notice direction of track rotation for reassembly. The arrow in the photo at right indicates track bottom, rear of unit.

12. Remove front and rear carrier shafts..

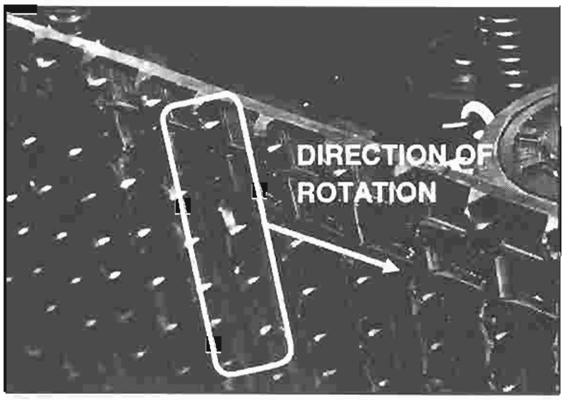
13. Remove suspension by pulling rear of track out of tunnel. Slide suspension forward to driveshaft. Lift up and out at the rear.

NOTE: On some models it may be necessary to unhook rear torque arm springs to allow torque arm to lower.

14. Inspect transmission, brakes, suspension and track for excessive wear. Check bearings for excessive movement or rough feeling. Replace if necessary.

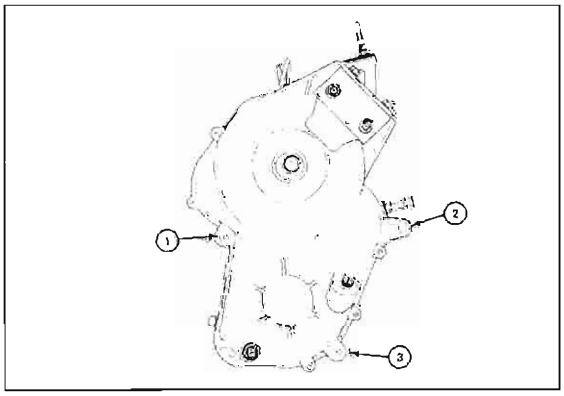
Assembly

1. Tip unit onto right side.
2. Insert track in unit, making sure direction of rotation is correct.
3. Place drive shaft in unit, aligning drive sprockets and track drive lugs.
4. Install lock collar, flangette, bearing, gasket, and flangette on drive shaft, positioning bearing flush with end of drive shaft.
5. Lightly tighten set screws to hold bearing in place.
6. Align flangette holes with tunnel.
7. Replace adaptor key in drive shaft. Install angle drive housing aligning adaptor key with angle drive.
8. Install nuts and finger tighten.
9. Tip machine onto its left side.
10. Replace O-rings on input and output shafts. Apply Polaris All Purpose Grease to drive shaft coupler splines.



Polaris All Purpose Grease PN 2871423

11. Reinstall transmission, using care not to damage coolant hoses on LX models. Be sure transmission shift linkage is properly located.
12. Install lower front mounting bolt (3) before coupling to shaft. Once bolt is started into transmission housing, align coupling with drive shaft and jack shaft splines. Keep transmission flat and lower gradually to prevent binding of couplers.
13. Install remaining transmission mounting bolts. Reinstall shim washers in original positions and tighten bolts securely.



NOTE: Use of a standard nut and flat washer for this alignment process will simplify the process as well as preserve the locking features of the lock nut for reassembly.

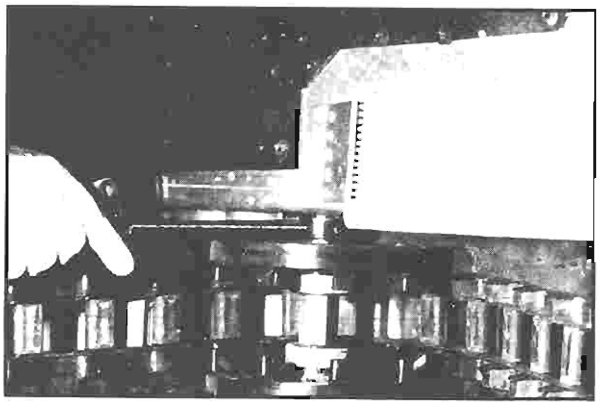
14. Tip machine onto its right side.

Assembly, Cont.

15. Loosen set screws and seat drive shaft in transmission coupler stub shaft. For ease of assembly, make sure track has no pressure against drive shaft.
16. Tighten nuts retaining angle drive housing to tunnel. Torque to specification.

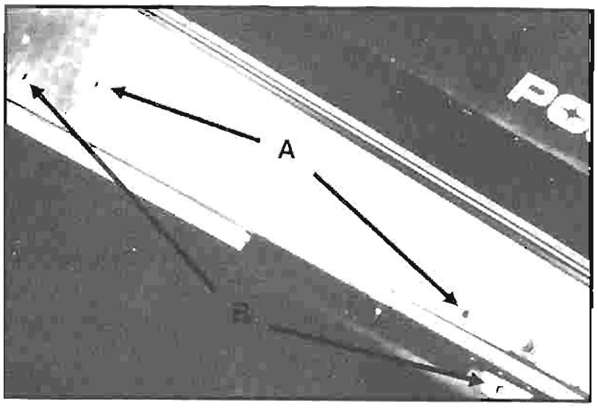
Angle Drive Housing Retaining Nut Torque -
15 - 17 ft. lbs. (2.07 - 2.35 kg-m)

17. Using "T" handle Allen wrench, torque set screws to specification.



Set Screw Torque
80 in. lbs. (.92 kg-m)

18. Reinstall suspension inside track and align with tunnel mounting holes.
19. Install and hand tighten suspension bolts (B).

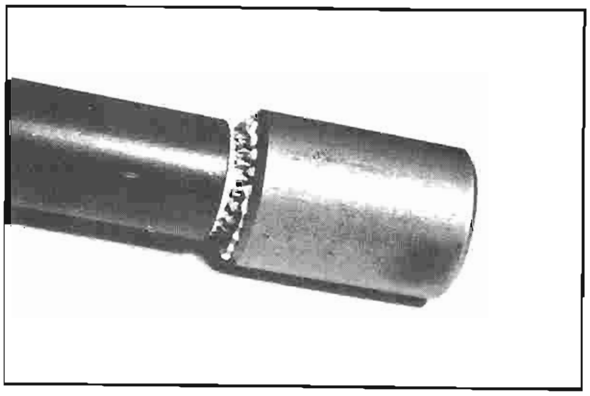


20. Install front carrier shaft assembly inside track and mount to tunnel with bolts. Hand tighten bolts.
21. Install rear carrier shaft assembly. Make sure bolts are not cross threaded and hand tighten (A).
22. Tip machine back onto floor and tighten all suspension bolts to specification.

Suspension Bolt Torque -
35-40 ft. lbs (4.83-5.52 kg-m)

Assembly, Cont.

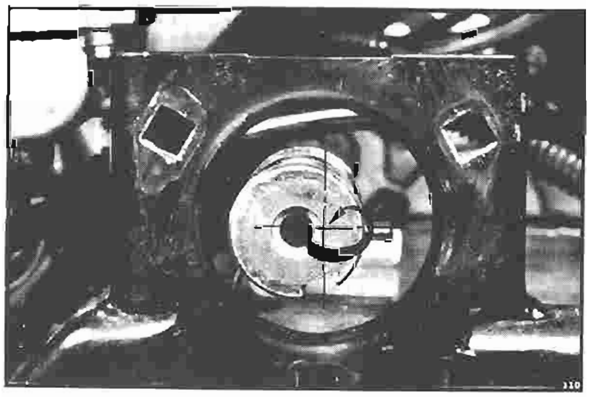
23. If jackshaft was removed from unit, grease coupler spline with Polaris Premium All Season Grease and install on transmission.



Polaris Premium All Season Grease

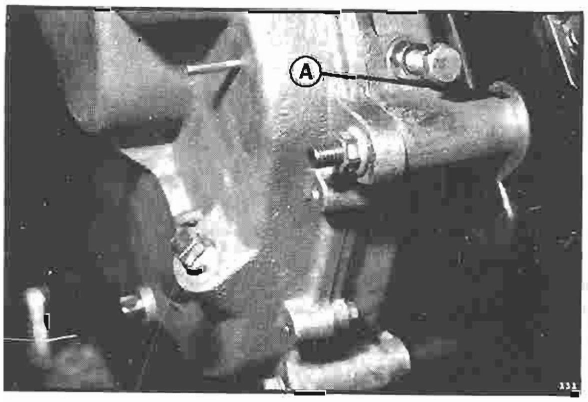
PN 2871423

24. Check for bearing to bulkhead alignment and shim transmission as required to center jackshaft in bulkhead mount. Shims may be required between transmission and bulkhead. Seat jackshaft firmly.



Shim Kit PN 2200126

25. Once properly aligned, install flangettes. Align grease holes in bearing and flangette.
26. Replace nuts holding transmission in place with proper lock nuts and torque to specification.



Transmission Retaining Nut Torque -

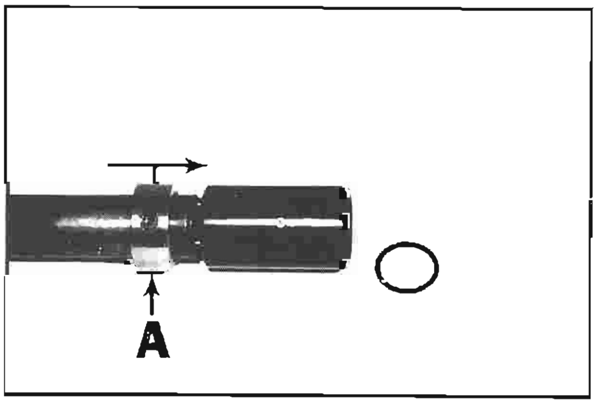
28-30 ft. lbs. (3.86-4.14 kg-m)

27. Install bolts and nuts securing flangettes to bulkhead. Torque to specification.

Bearing Flangette Nut Torque -

15-17 ft. lbs. (2.07-2.35 kg-m)

28. Set lock ring at transmission coupler and torque to specification.



Lock Ring Torque -

80 in. lbs. (.92 kg-m)

Assembly, Cont.

29. Reattach transmission shift linkage and brake light connector. Check transmission fluid level and fill if necessary.

Synthetic Oil	PN 2871477 Gallons
	PN 2871478 12 oz.
or Chaincase Oil PN 2870337	

30. Attach brake cable to transmission mounting with bolt, nut and spacer.
31. Install bumper onto footrest bolt and tighten.
32. Reinstall bumper plug.
33. Reinstall and secure muffler.
34. Install battery (if so equipped), air box, oil tank, and coolant recovery bottle (if so equipped).
35. Loosen rear idler bolts.
36. Reinstall driven clutch and spacers onto jackshaft and tighten.
37. Reinstall clutch offset washers on jackshaft and install driven clutch. Using the clutch alignment tool adjust driven clutch to achieve proper offset.

Clutch Alignment Tool

P85 - PN 2870426

P85 Offset 5/8″

38. WideTrak models have no float on driven clutches. Use shim washers (PN 7555734) to create gap between shaft and cover washer *only.*

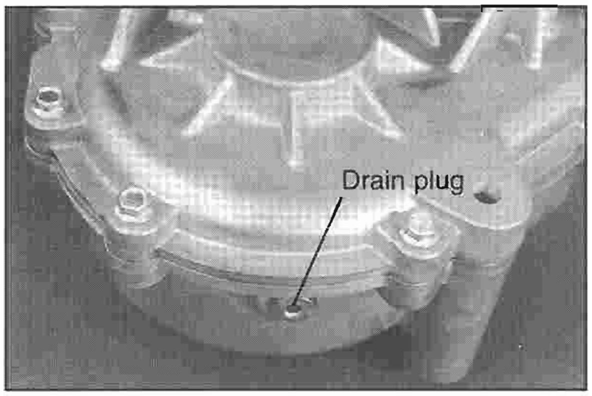
39. Torque driven clutch retaining bolt to specification.

Driven Clutch Retaining Bolt Torque -
12 ft. lbs. (1.66 kg-m)

40. Lift and support rear of unit and align track to specifications found in the Maintenance section on page 2.12. Make sure rear idler wheel spacer location is correct before tightening idler wheels.
41. Reinstall hood.

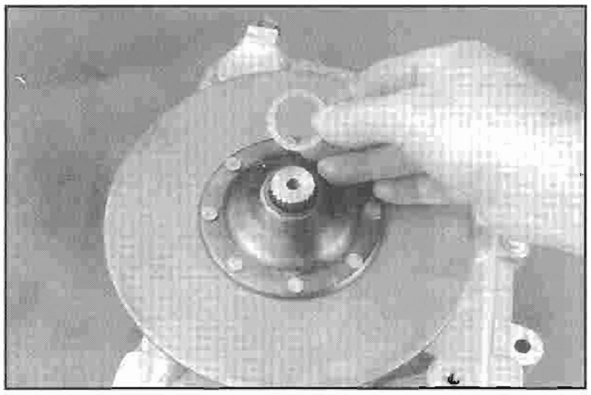
Disassembly/Inspection

1. Drain transmission oil into suitable container.

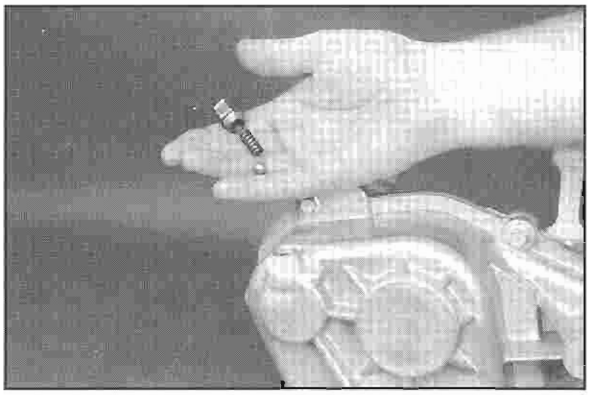


2. Remove snap ring, spacer washer, and brake disc.

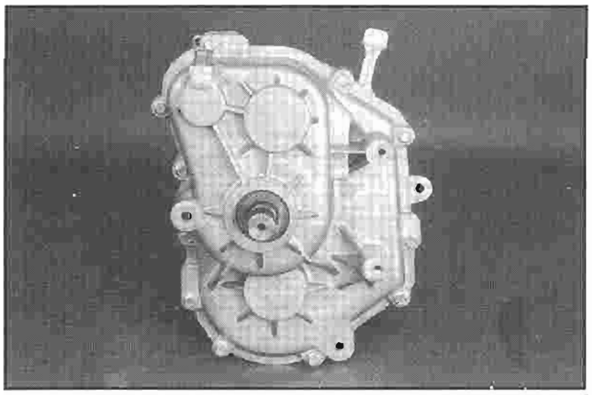
NOTE: Note position of spacer washers behind disc for proper alignment upon reassembly.



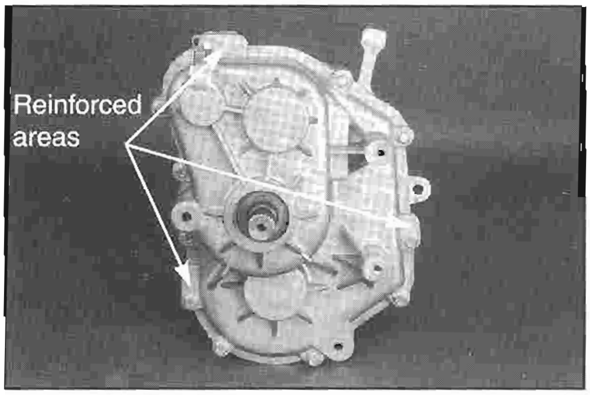
3. Remove detent spring and ball.



4. Remove case bolts evenly in a criss-cross pattern.

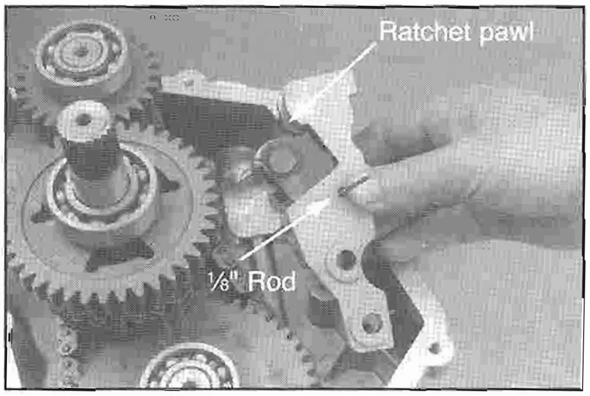


5. Tap cases apart with soft faced hammer in the reinforced areas indicated in photo at right. Tap end of brake shaft to be sure it remains in case.

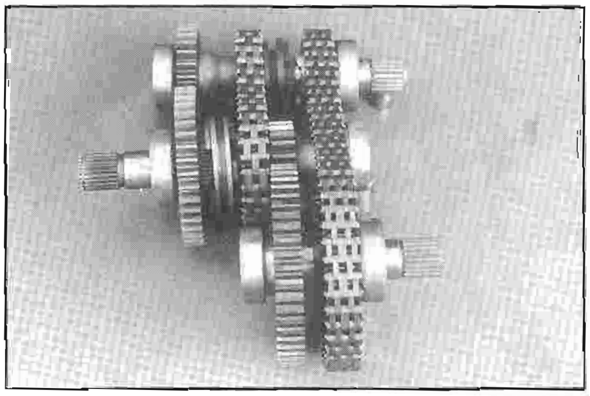


6. Hold chain tensioner ratchet pawl off ratchet teeth and push tensioner plunger all the way in. Insert a 1/8" diameter rod as shown to hold tensioner in released position. Remove tensioner assembly. Inspect for cracks, chipped, broken, or rounded teeth.

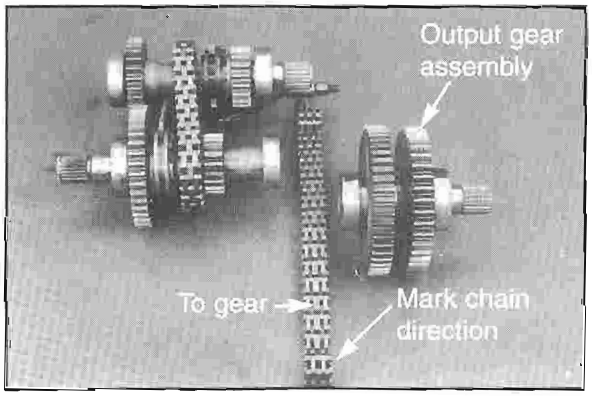
7. Remove shift arm



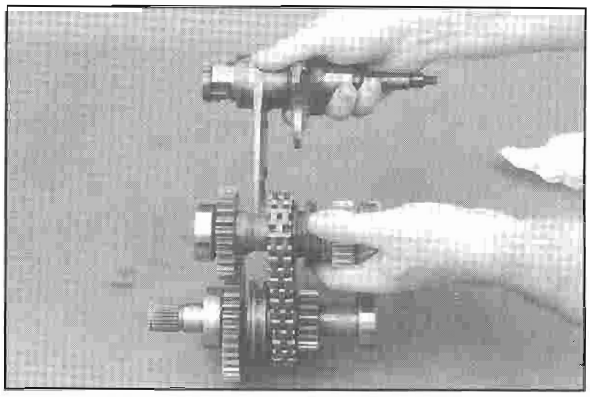
8. Remove shaft and gear assembly from case by tapping with a soft faced hammer evenly on end of shafts.



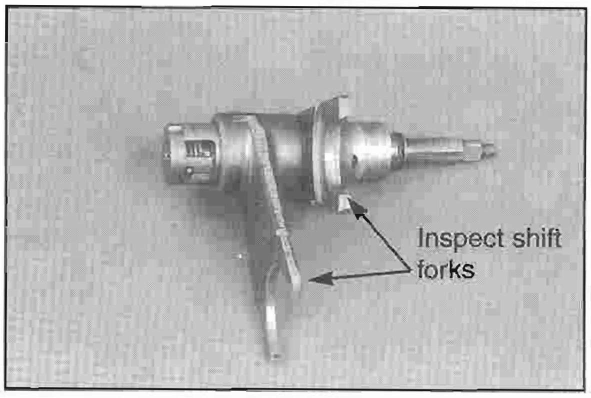
9. Remove output gear assembly and chain. Mark chain direction for reference during reassembly. Inspect gear teeth for damage. Inspect chain for worn, cracked, or broken link plates.



10. Remove shift fork shaft from gear cluster. Inspect surface of fork for wear or bending.

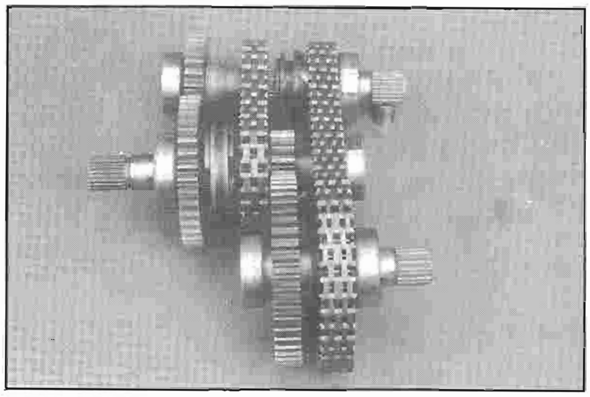


11. Remove chain from input and reverse shaft. Inspect gear teeth for damage. Inspect chain for worn, cracked, or broken link plates.

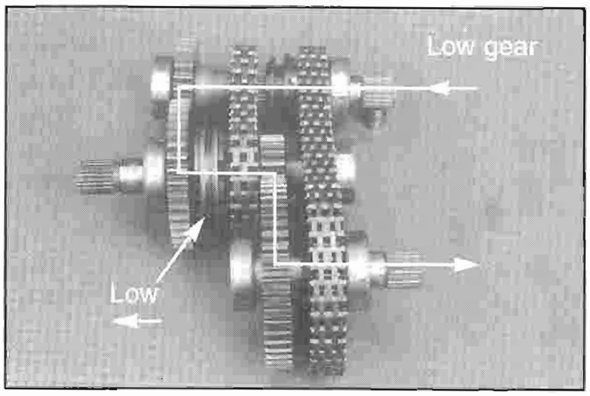


12. Inspect dog gears and slots in mating gears closely. Rounded edges will cause gears to disengage under load. Replace both dog gear and mating gear if edge of dog and/or slot is rounded. Inspect gears for chipped, cracked, or broken teeth.

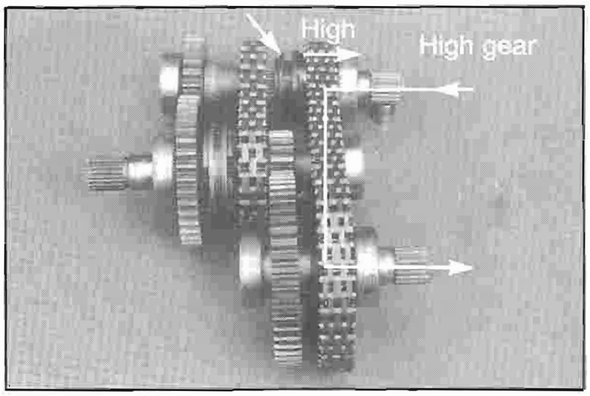
Gear, shaft, and chain cluster assembly shown.



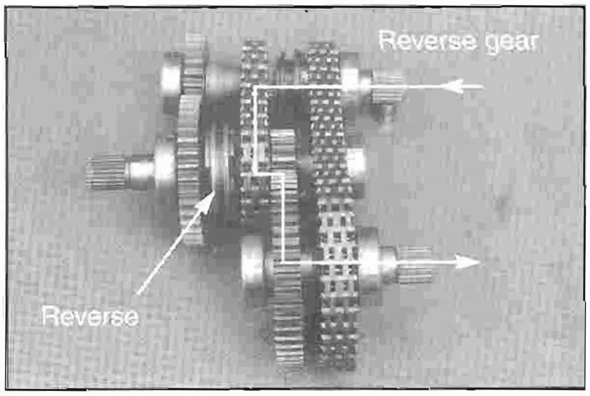
Low gear output power flow...



High gear output power flow...

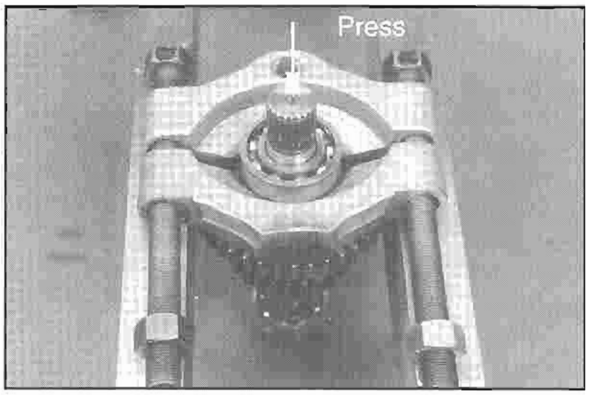


Reverse output power flow...

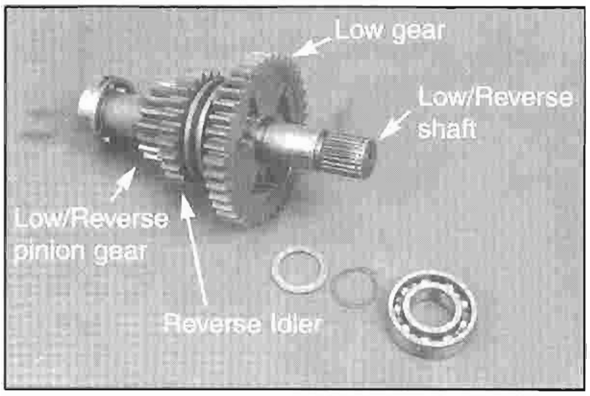


Low / Reverse Shaft Disassembly

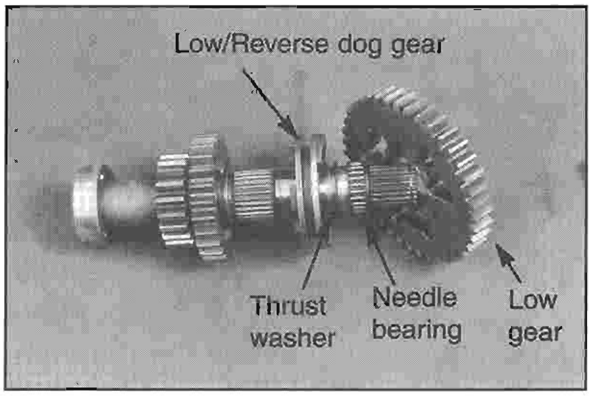
13. Press bearing from end of shaft using a bearing separator.



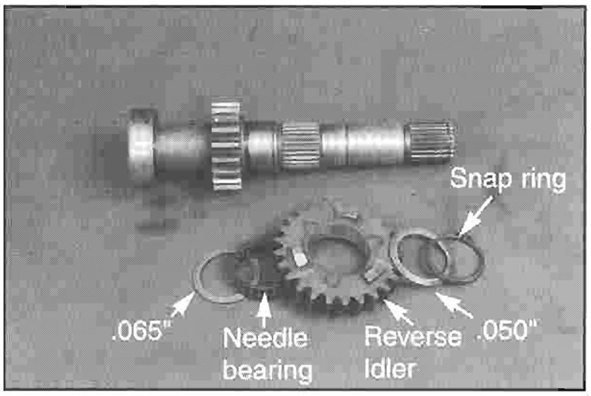
14. Remove snap ring and spacer washer.



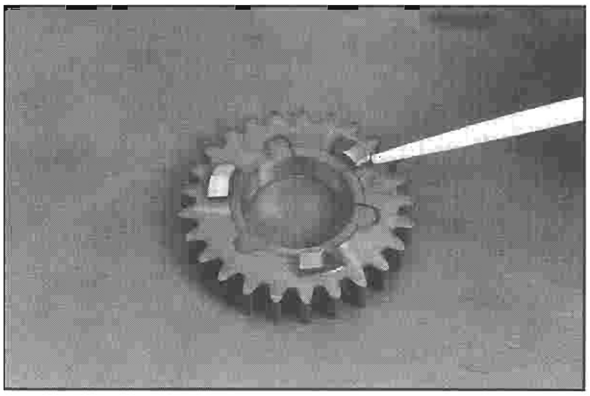
15. Remove low reverse shaft low gear...



needle bearing, thrust washer, low/reverse dog gear...



snap ring, thrust washer (.050"), reverse idler, needle bearing, and thrust washer (.065").



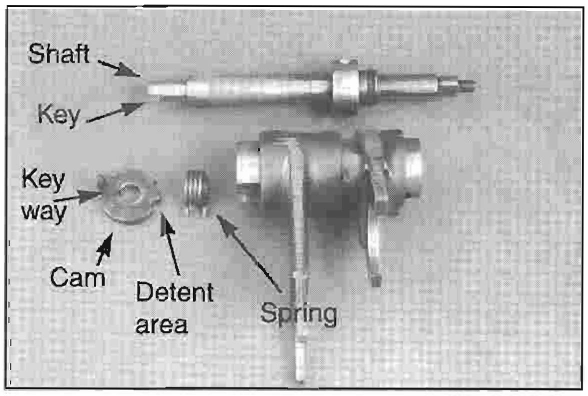
16. Closely inspect drive dogs. Replace gear and mating gear if rounded, chipped or broken.

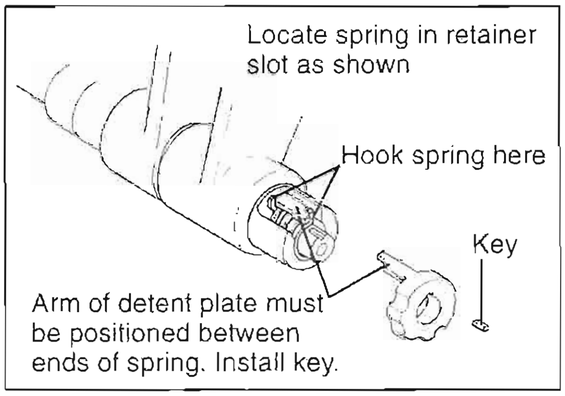
17. Inspect needle bearings for wear or cracks on cage. Shiny spots on cage indicate wear and the bearing should be replaced. Inspect shaft and thrust washers for galling or wear. Always replace snap rings if removed.

Transmission Disassembly 1997 to Current WideTrak

Shift Fork Disassembly

1. Remove the detent cam, spring and shaft.
2. Check condition of key way and key. Inspect indicator, spring legs and detent areas for wear. Replace parts as required. NOTE: The spring must be pre-loaded upon installation. Refer to photo and illustration below.





Transmission Assembly

Lubricate all parts before assembly with Premium Synthetic Chaincase Lubricant.

1. Install chain on input and reverse shaft. Photo 1.
2. Add output gear assembly with chain. Photo 2.

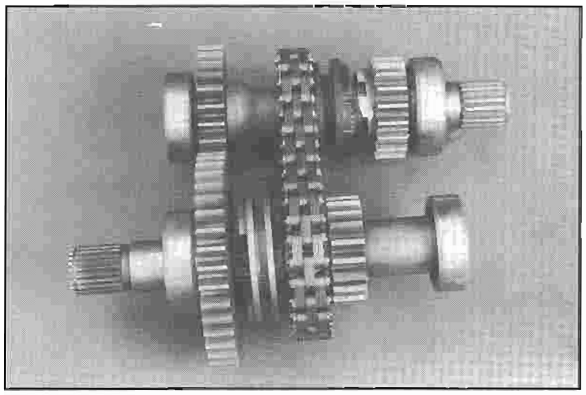


Photo 1

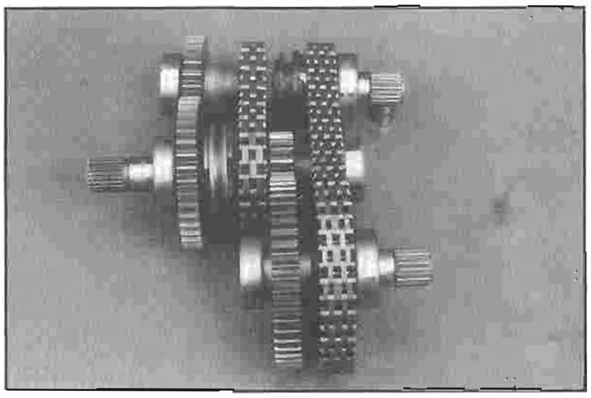
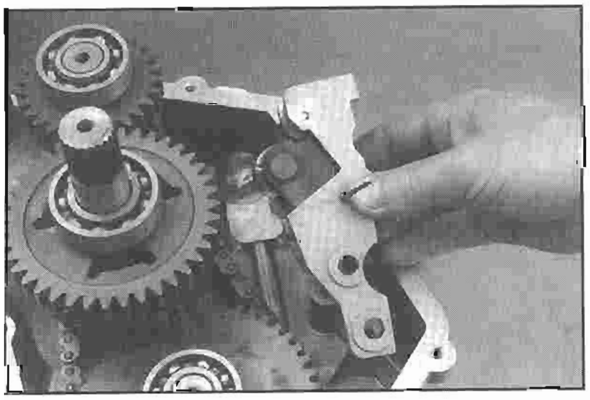


Photo 2

3. Add shift fork assembly.
4. Install entire assembly in case half.
5. Lock tensioner plunger in retracted position before installation by installing a 1/8″ dowel as shown in photo at right (where applicable). If washers were removed upon disassembly, re-install them between tensioner and case. Torque bolts to 10 ft.lbs. (1.38 kg-m).
6. Apply 3 Bond™ 1215 Sealant to case halves.
7. Install outer case half and replace brake cable bracket. Torque bolts in three steps to 8-10 ft. lbs. (1.10-1.38 kg-m) using a criss-cross pattern. Remove dowel from tensioner and install access plug (where applicable).
8. Install transmission. Add 20 oz. Premium Synthetic Chaincase Lubricant.



Transmission Case Bolt Torque-

8-10 ft. lbs. (1.10-1.38 kg-m)

8. Install seals, shift arm, brake disc and caliper. Install detent ball, spring, and spring guide. Fill with 20 ounces (600cc) Polaris Premium Synthetic Transmission Oil.

Synthetic Chaincase Lubricant -
Gallon PN2871477 12 oz. PN 2871478

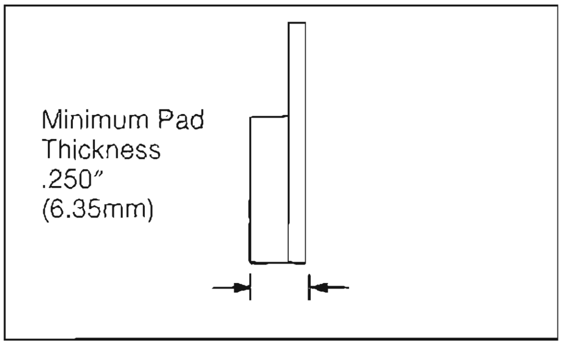
Brake Caliper Removal - Type WT2

1. Remove brake cable.
2. Remove retaining bolts, making note of location of hex head bolt (with flat washer) and recessed Allen bolt.

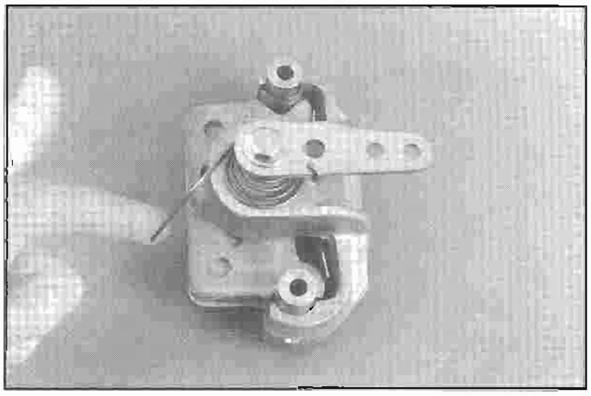
NOTE: Before performing next step, note position of two spring clips.

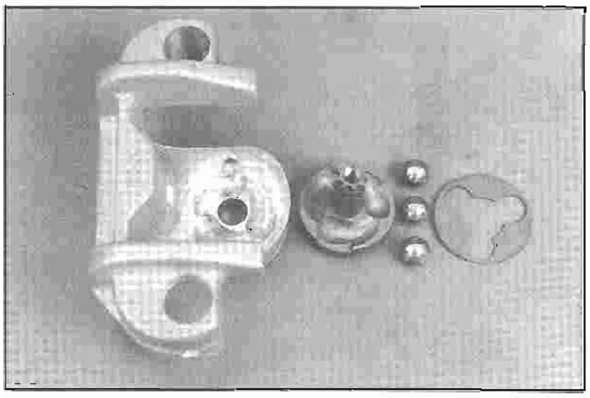
3. Remove upper guide bushing and pads. Remove lower guide bushing. Inspect pads and replace if worn beyond service limit.

Brake Pad Thickness - Type WT2
Service Limit .250″ (6.35mm)



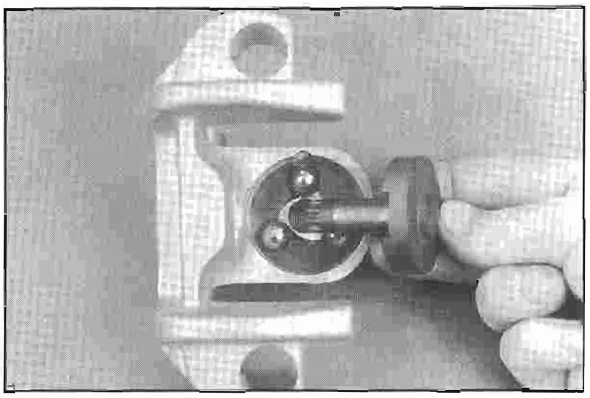
4. With actuating arm facing up, carefully remove tension from the return spring.
5. Remove the arm using care not to lose the balls, ball spacer, or lifter ramp.
6. Inspect balls, ball spacer, lifter ramp and caliper housing for galling or wear. Replace if necessary.



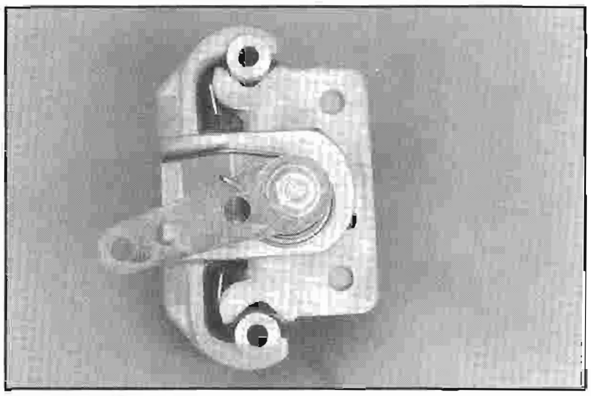


Assembly

1. Apply a light film of grease to balls and ball spacer. Install in caliper housing.
2. Install lifter ramp. **NOTE:** Ramp may be installed in any position.

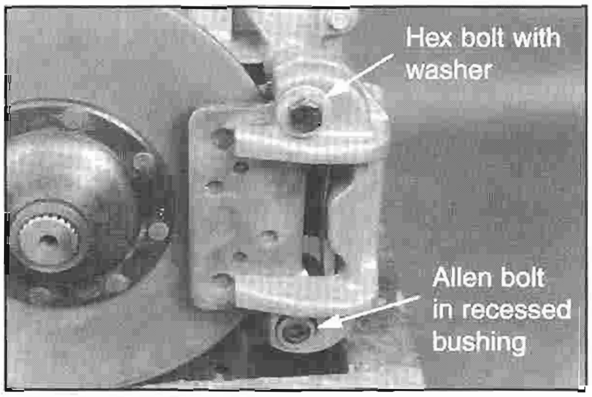


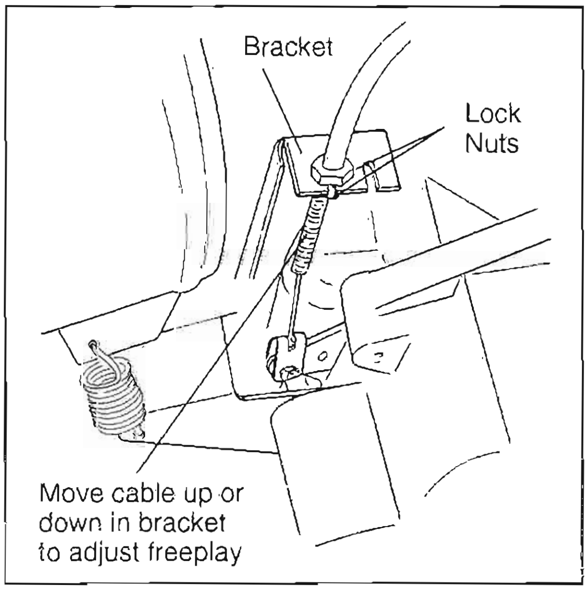
3. Install spring and arm with arm located in 8:00 position as shown in photo at right.
4. Install lower guide bushing and both spring clips. Place pads against lower bushing spring clip and tip into position.
5. Install upper guide bushing.



Installation

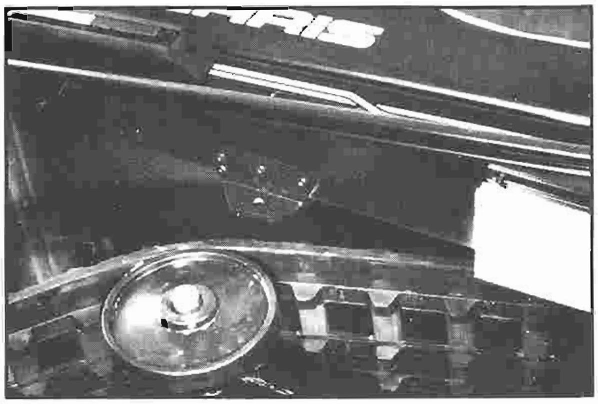
6. Install hex head bolt with washer in top guide bushing. Install Allen head bolt in recessed bushing as shown.
7. Reinstall brake actuating cable and adjust as outlined on page 2.25a of the Maintenance Section. Tighten cable lock nuts securely.



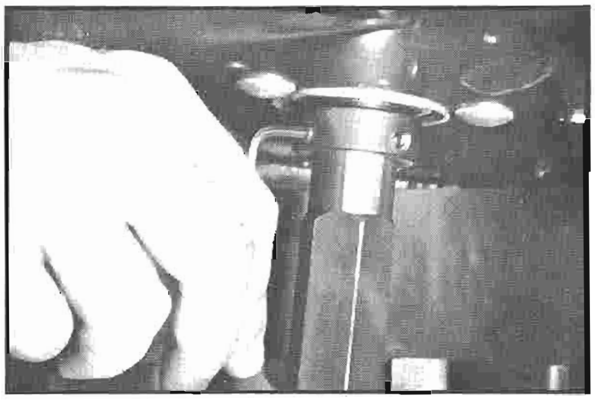


Track Removal - Two Sprocket Drive Shaft

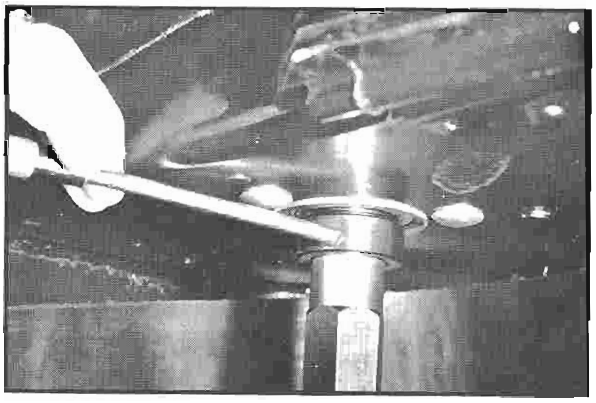
1. Remove rear suspension bolts.
2. Remove front suspension bolts.
3. Place a protective mat on the floor and tip the machine on its side.



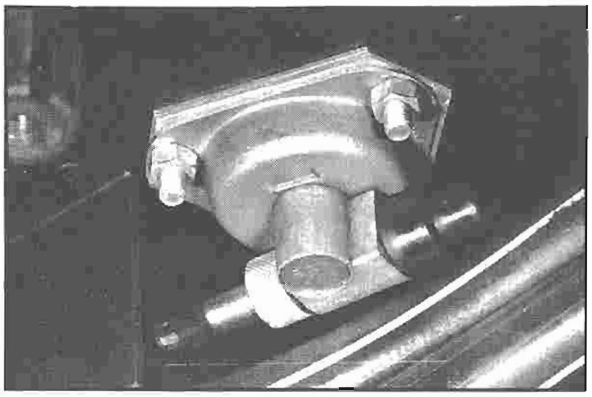
4. Using an Allen wrench, loosen set screw on lock collar on left side drive shaft bearing.



5. Tap lock collar with a hammer and punch to loosen it. Rotate lock collar against the normal direction of rotation to loosen, with normal direction of rotation to tighten.



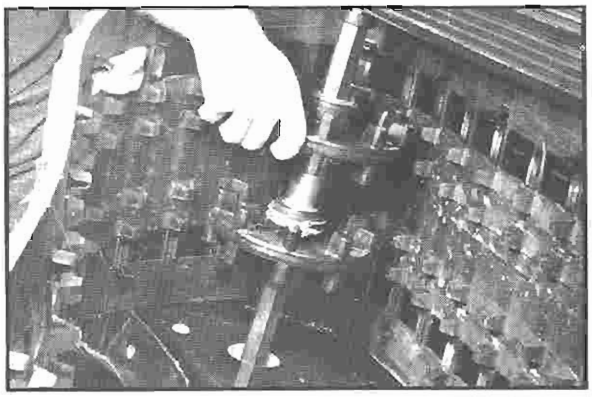
Track Removal - Two Sprocket Drive Shaft



1. Remove three cap screws holding flangette and bearing in place on left side of machine.
2. Remove bearing and lock collar from drive shaft.
3. Remove chaincase cover.
4. Loosen chain adjuster bolt lock nut and back off adjuster bolt until chain has maximum slack.
5. Remove bottom sprocket in chaincase.
6. Remove drive shaft by pulling shaft first from chaincase and then from left side of machine.
7. Reverse process for reassembly. Be sure to install and torque lower chaincase sprocket before locking lock collar.

NOTE: Cotter pin must be positioned so it will not hit the chaincase cover.

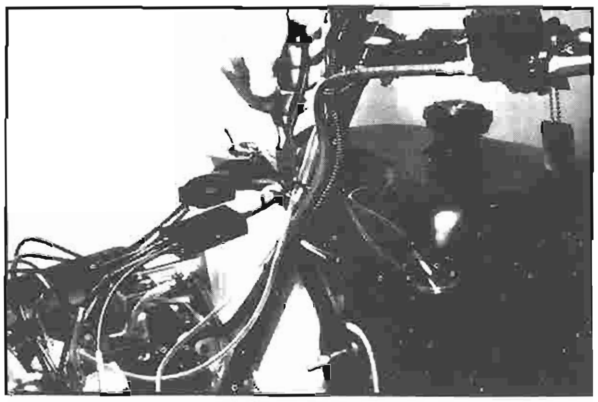
Lower Chaincase Sprocket Torque -
50 ft. lbs (6.9 kg-m)



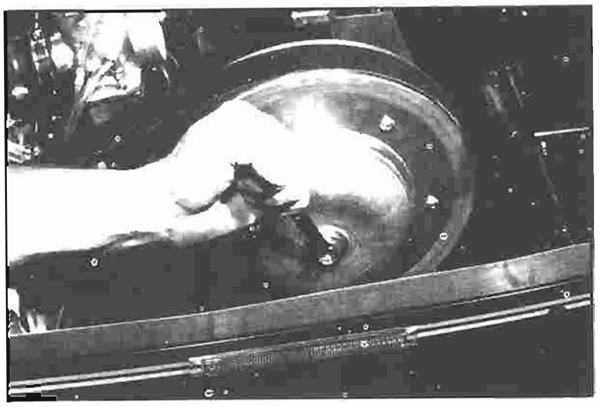
Track Removal - Four Sprocket Drive Shaft

1. Follow steps 1-7 of Two Sprocket Drive Shaft Removal pages 9.48-9.49.

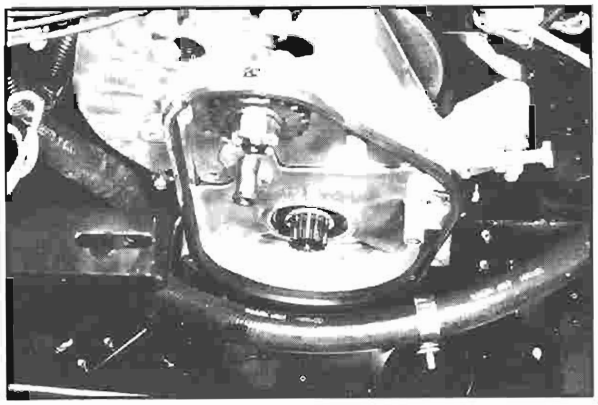
2. Remove handlebar cover. Remove cable tie on steering post securing throttle cable and brake hose. Remove two phillips screws securing air intake silencer. Taking care not to damage throttle cable, lift silencer out.



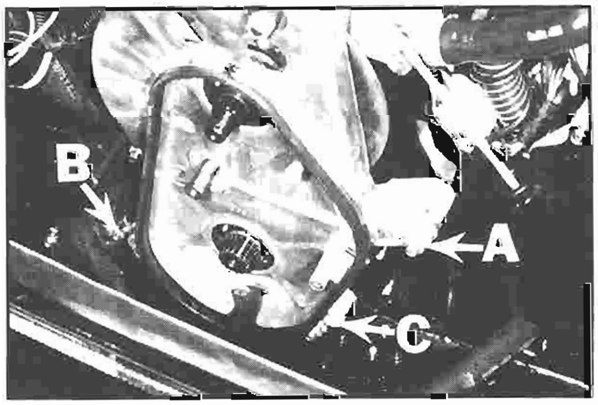
3. Remove secondary clutch and loosen jackshaft lock collar set screw. Using a hammer and punch, unlock the lock collar. Remove three cap screws holding jackshaft left hand bearing and flangettes in place. Remove bearing from jackshaft.



4. Remove chaincase cover, loosen chain adjuster and remove lower sprocket and drive chain. Use care not to damage gasket. Inspect for cracks or damage. Replace gasket if necessary.



5. Remove three mounting bolts (A, B, C) securing chaincase to chassis. Carefully tip machine on its left side onto a mat. Lift chaincase up until drive shaft is out of lower chaincase bearing. Lift drive shaft up until it clears tunnel on LH side (bottom) and can be pulled out of tunnel. Remove drive shaft and track.



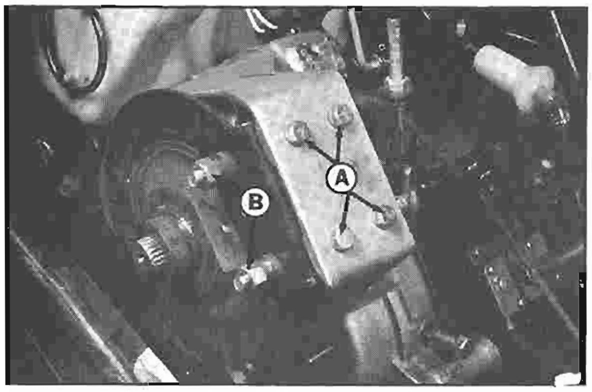
CAUTION:

Whenever inspection reveals worn, damaged or defective parts, replacement is necessary in order to avoid serious damage to the machine or injury to the operator.

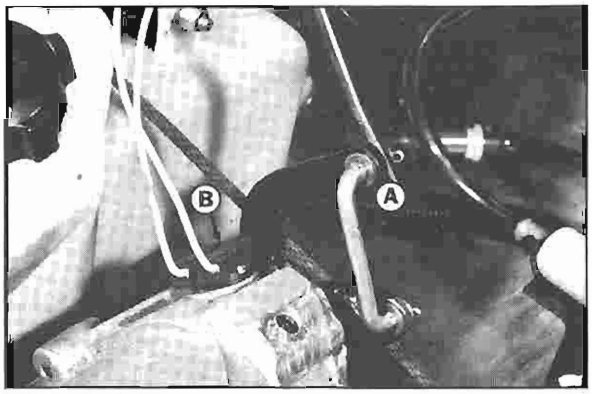
6. After inspecting all parts, reverse process for reassembly. The lower forward chaincase mount bolt (C) must be in place before installing drive shaft. Drive sprocket interference will not permit installation after drive shaft is installed. The lower chaincase sprocket must be installed and torqued before locking lock collar.

Transmission overhaul should also include drive system overhaul. After removing drive shaft and jackshaft, proceed as indicated below.

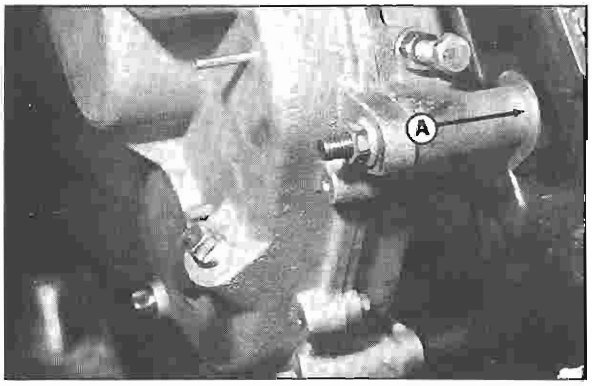
1. Remove four caliper carrier attaching bolts (A).
2. Remove two caliper bridge bolts (B).
3. Remove brake caliper and brake disc.



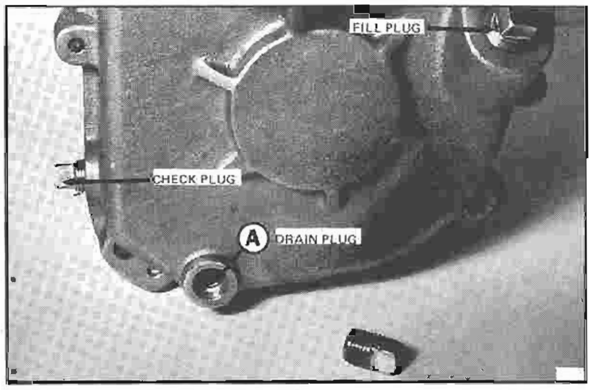
4. Remove shift linkage (A) and stop light switch wires (B).
5. Remove exhaust system.



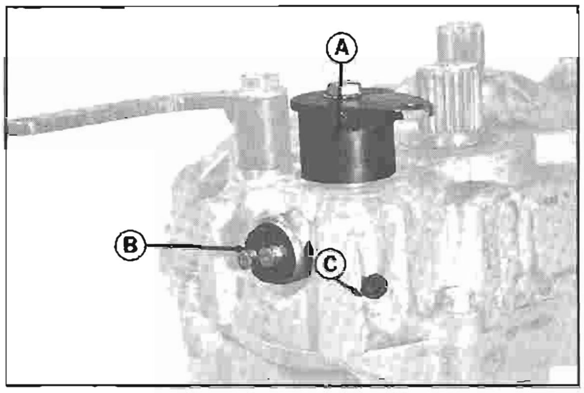
6. Remove three nuts securing transmission to front bulkhead. Remove transmission. **NOTE:** Note position of transmission shims for reassembly (A). these shims control jackshaft alignment.



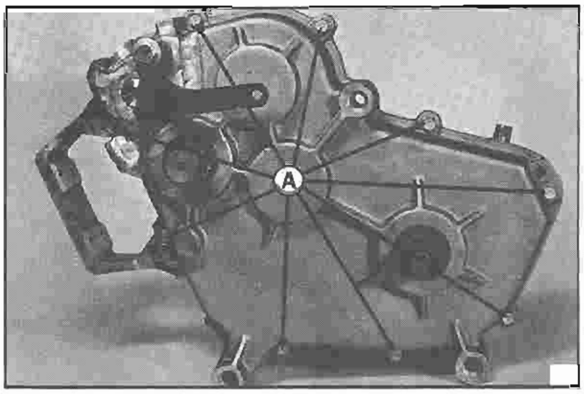
7. Remove transmission drain plug (A) and drain oil.



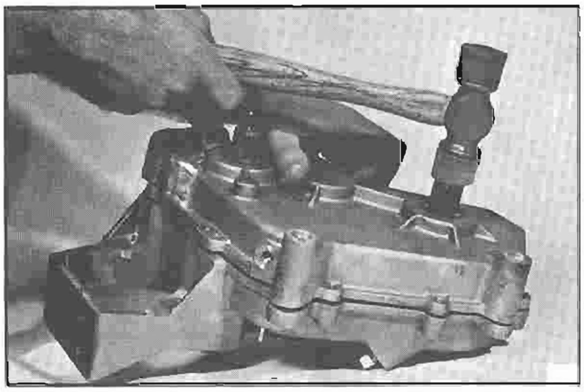
8. Place transmission as shown and remove shift lever and key (A), neutral light switch (B), detent set screw, spring, and ball (C).
9. Loosen chain tensioner jam nut and remove tensioner bolt.



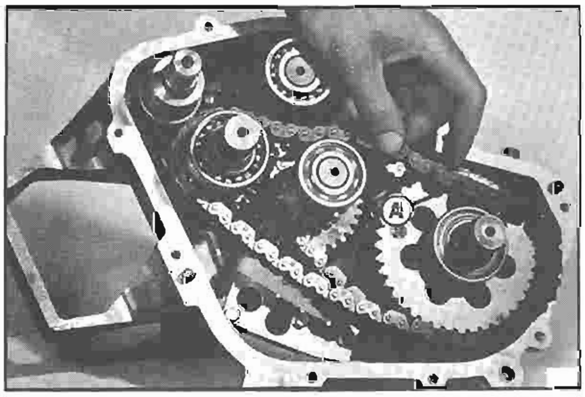
10. Remove transmission housing attaching bolts (A).



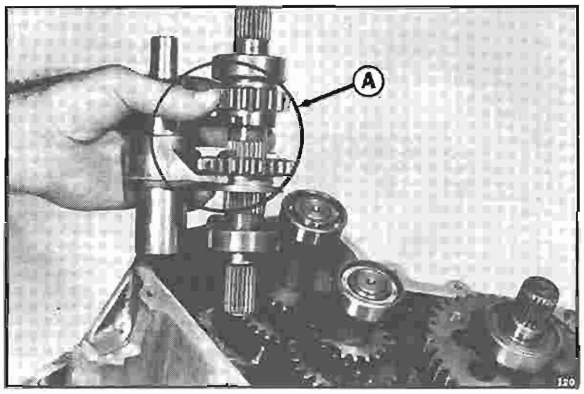
11. Lift upwards on inner housing and tap with a soft face hammer on input shaft, output shaft, and shift shaft.



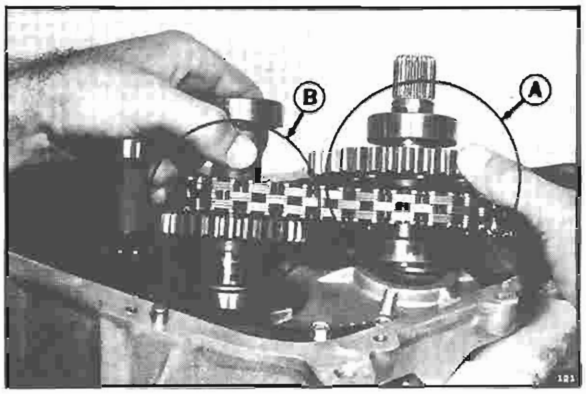
12. Remove high range long silent chain (A).

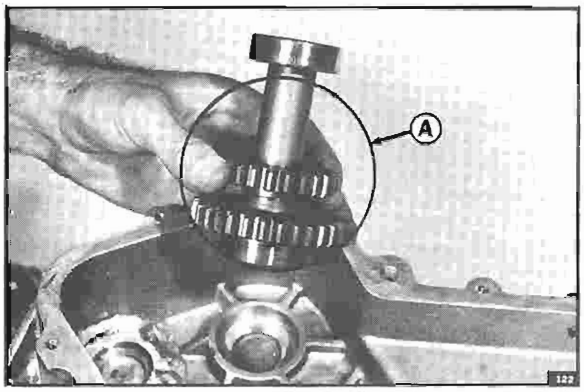


13. Remove input cluster and shift cluster as an assembly (A).

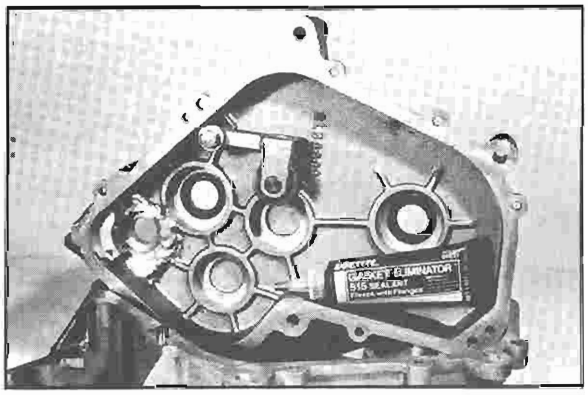


14. Remove output cluster (A), reverse cluster (B) and silent chain as an assembly.





15. Remove low range cluster (A).
16. Thoroughly clean and inspect all parts. Remove old oil seals and replace during reassembly.
17. Assemble transmission in reverse order of disassembly.
18. Be sure the case half mating surfaces are clean and free of any nicks or scratches. Place a small amount of Loctite™ 515 Gasket Eliminator on one of the case halves.

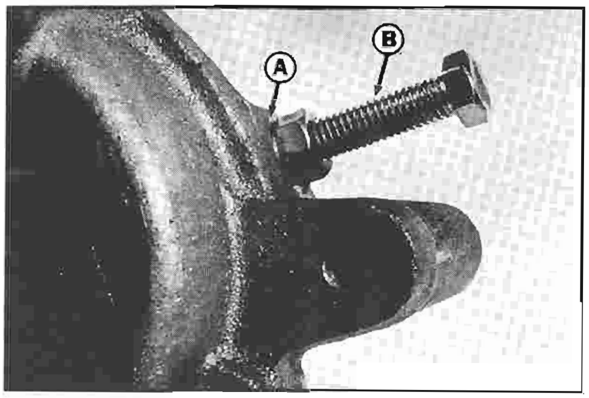


Loctite™ 515 Gasket Eliminator
PN 2870587

6. Assemble case halves using a rubber or plastic mallet to tap halves together. Install cover bolts and torque to specification.

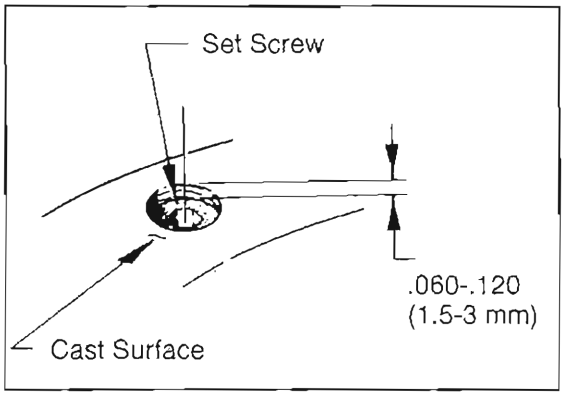
Transmission Case Attaching Bolt Torque-
8-10 ft. lbs. (1.10-1.38 kg-m)

7. Install chain adjuster bolt and jam nut in transmission.
8. Turn brake disc in the opposite direction of normal rotation (counterclockwise) to place a slight reverse tension on chain. Tighten adjuster bolt (B) to specification. Back bolt off 1 1/4 to 1 1/2 turns. Tighten jam nut while holding adjuster bolt.

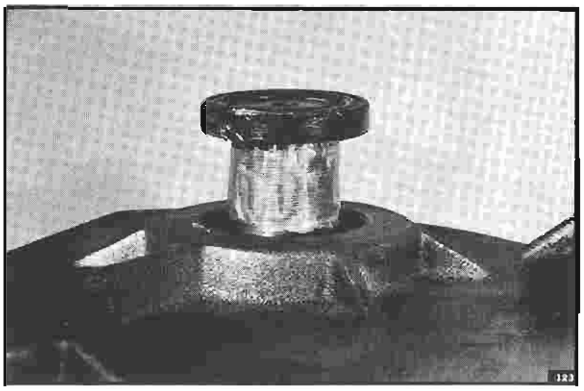


9. Replace detent ball, spring, and set screw in transmission. Apply a small amount of Loctite™ Primer "T" to threads of case. Apply Loctite™ 242 Blue to threads of transmission. turn screw in to a depth of .060-.120" (1.5-3 mm) below the casting surface.

NOTE: If the detent is adjusted too tightly the unit will become hard to shift. If the detent is too loose, it will affect the operator's perception of the shift pattern.



23. Install oil seals. Apply tape to shafts, covering shoulder and splines of shaft to prevent seal damage.

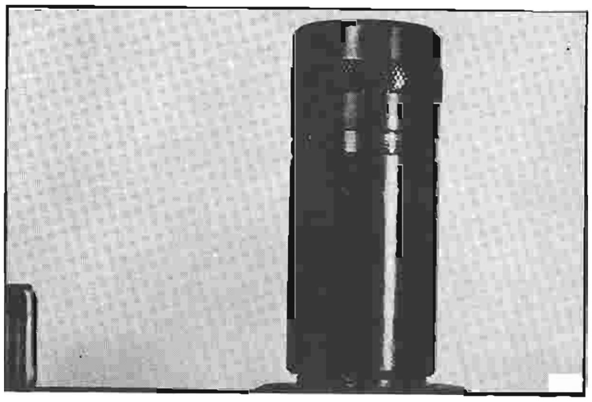


24. Grease inner and outer surfaces of seal as well as shift shaft O-ring. Slide seals over shaft to transmission using bearing installation tool. Tap seals into place.

NOTE: Seal will bottom when properly installed.

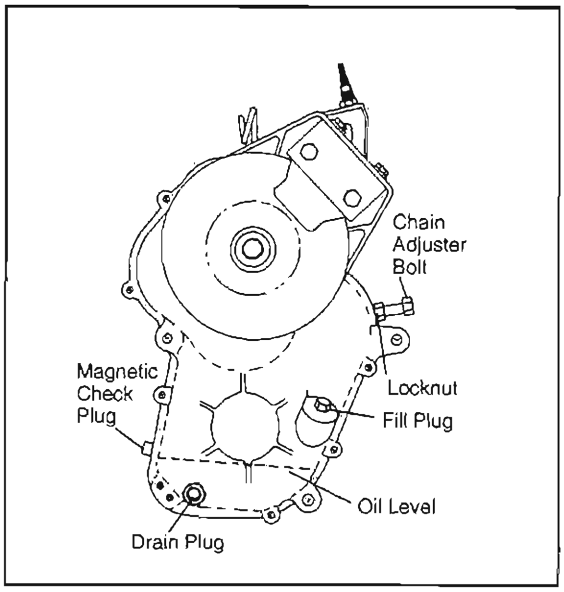
Bearing Installation Tool

PN 2870676



25. Install shift lever and cotter key.
26. With transmission installed on unit, fill transmission to correct level. Use only Polaris chaincase oil.

Synthetic Oil	**PN 2871477 Gallons**
	PN 2871478 12 oz.
or Chaincase Oil PN 2870337	

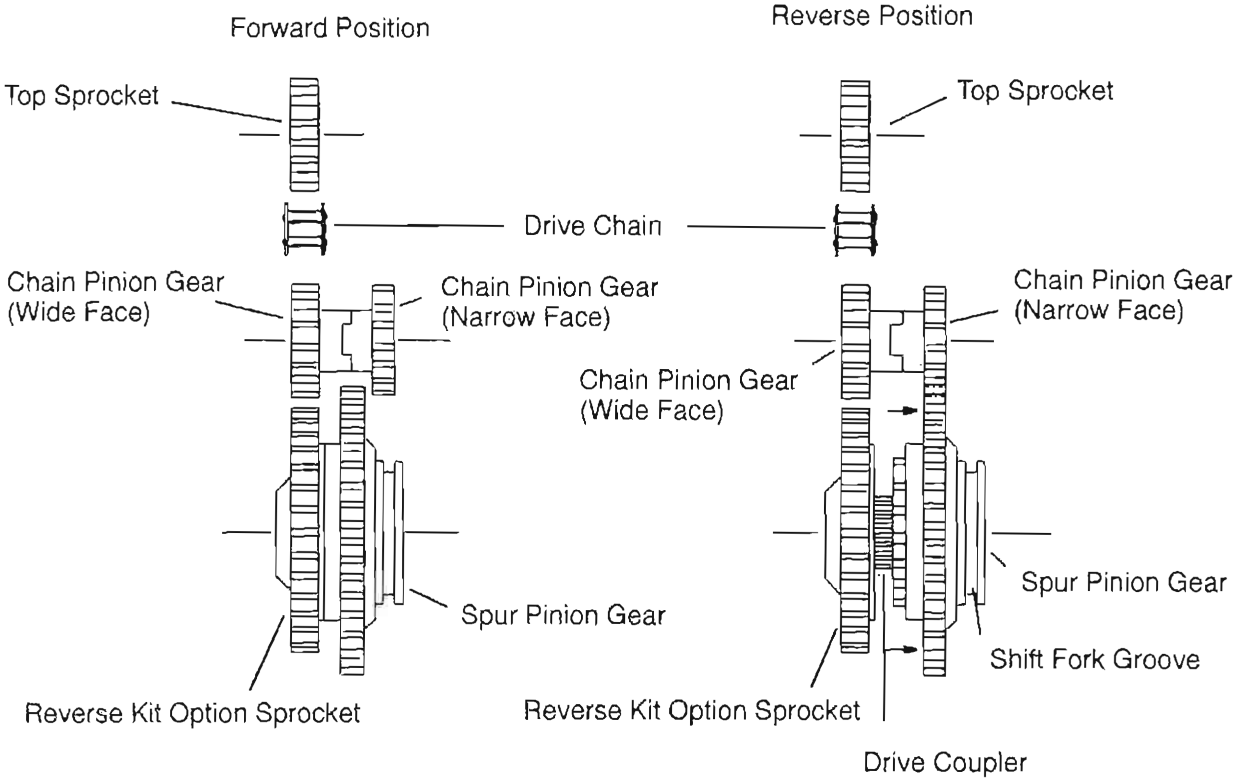


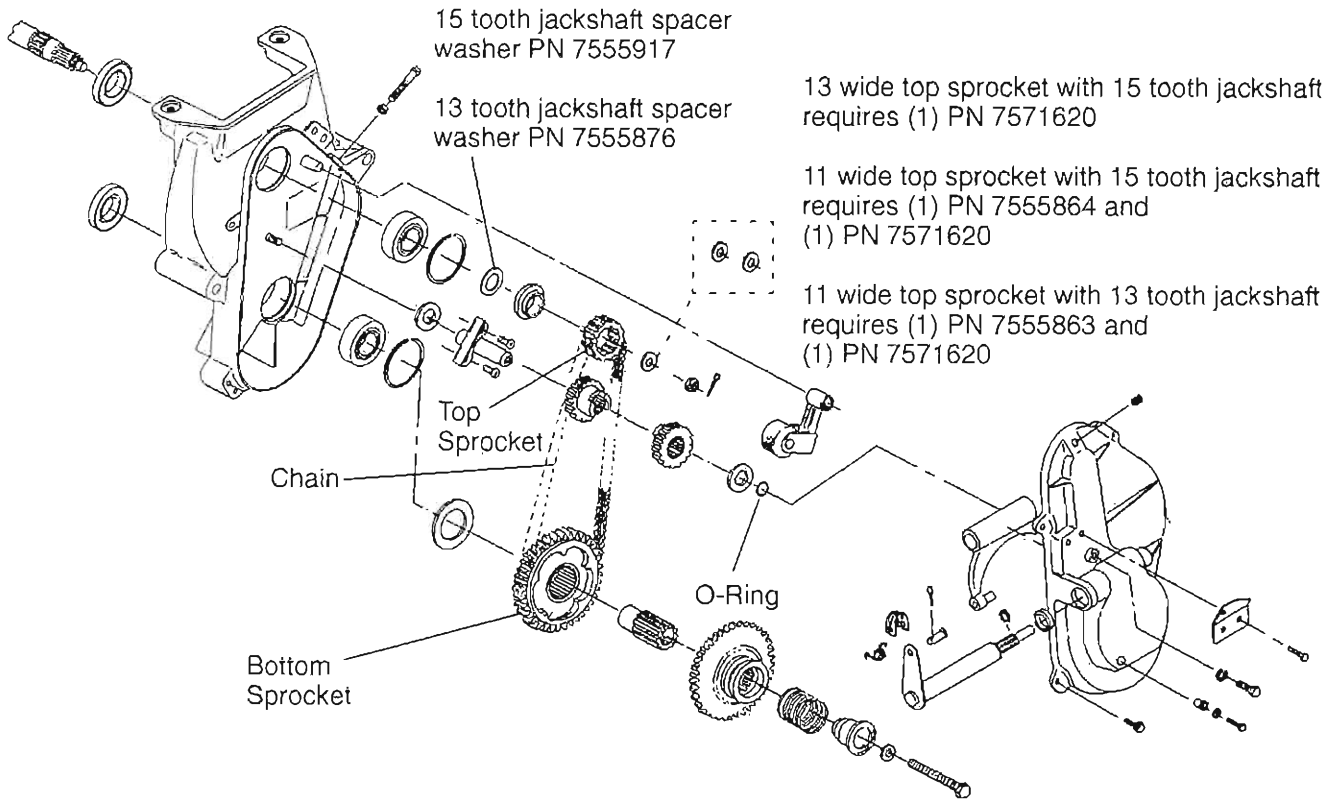
Reverse Kit Service Tips

The following illustration indicates sprocket position with the Polaris Reverse Kit in the forward and reverse selection.

Installation Tips (Refer to Illustration on page 9.57)

- When installing pinion shaft, be sure the chamfered end of pinion shaft is toward case cover.
- Install chain, top sprocket, bottom option sprocket and wide face pinion gear into case at the same time.
- When installing case cover, be sure that shift fork has slipped into fork groove of reverse gear.





Supplied with Options B & C (Top Sprocket, Chain, Bottom Sprocket)
Supplied with Options A & D (Bottom Sprocket Only)

Chain Tension

1. Maintain proper chain tension by loosening lock nut and torque adjuster bolt.

Adjuster Bolt Torque -
20 in. lbs. (.23 kg-m)

2. Loosen adjuster bolt 1/2 turn.
3. Hold adjuster bolt in position and tighten locknut.

Oil Level

1. Using Polaris chaincase lubricant, maintain proper oil level. Proper level is checked by removing dipstick.

Polaris Synthetic Gearcase Lube **PN 2871477 (Gallon)** **PN 2871478 (12 ounces)**

8. Wipe off any metal particles from the dipstick. Small amounts of particles will be common.
9. Add lubricant until the level is in the "safe" zone on the dipstick (11 oz.) Do not mix or use other types of lubricant.

Oil Change

1. Change annually, prior to off season storage.

Adjustment

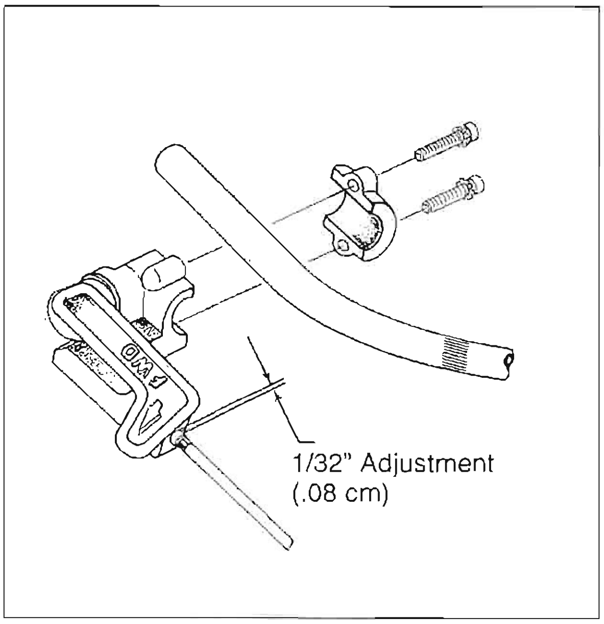
Due to break-in or replacement of components, the reverse shift mechanism may require adjustment. Adjust with the shifter in the forward position.

Standard Indy Style

1. Loosen jam nuts on lower end of cable.
2. Adjust cable until endplay movement of cable housing at the handlebar bracket is 1/32″ (.08 cm). Do not adjust beyond this point.
3. Tighten jam nuts and re-check adjustment.

Reverse Cable End Play -

1/32″ (.08 cm)

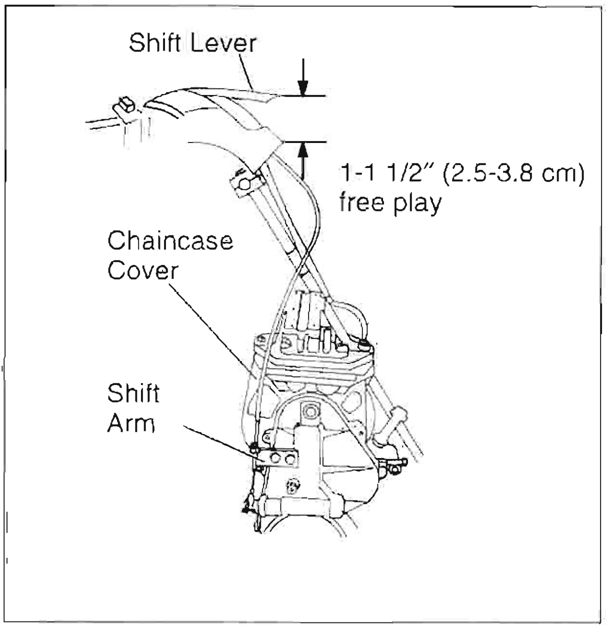


Evolved and Aggressive Style

1. Lift shift lever slowly while observing shift arm on transmission.
2. If adjustment is correct, shift will move 1 - 1 1/2″ before the shift arm begins to move. If adjustment is required, proceed with step 3.
3. Loosen jam nuts on lower end of cable.
4. Adjust cable end at transmission until the end of the shift lever has 1 - 1 1/2″ (2.5 - 3.8 cm) of freeplay before the cable starts to move the shift arm. Do not ad
5. Ti

Reverse Shift Lever Freeplay -

1 - 1 1/2″ (2.5 - 3.8 cm) measured at end of shift lever



The amount of traction required varies depending upon the type of riding and the snowmobile's horsepower.

Studs are designed specifically for each riding category. They're made in various lengths, shapes, and materials. Improperly applied studs can cause poor traction and premature wear. Studs which are too long can cause damage to the tunnel and heat exchangers.

Stud points fall into two categories: conical and scoopers. Conical studs (or picks) penetrate into the ground for increased traction. Scoopers use a flat surface to hold more ground for traction. Generally, a penetrating point is used for hard ground surfaces and ice. Scoopers are used on softer surfaces.

Material contributes more to stud life and cost than to functionality. Carbide is the most durable and lasts much longer than steel. Studs should be installed no closer than 1″from the edges of the track. Avoid the center of the track because there is poor support in this area. The track's center belt controls acceleration. The two smaller outside track belts contribute to acceleration, but the more studs installed in these belts, the harder it is to corner. The chart on page 9.60 is a guideline for the quantity of studs to install.

- Be sure to check allowable clearance between the track and tunnel or heat exchangers, factoring in suspension travel.
- Do not place studs under the tunnel protector strips (directly above slide rails on underside of tunnel). Tunnel protectors are vital components and must not be subjected to stud damage.
- V-shaped stud patterns with the least repetition work best. Studs should cover as many different lines in the ice as possible.
- Studs closest to the slide rails provide the most effectiveness, because the weight of the sled is concentrated in this area.

Polaris Push-Through Stud and Skag Recommendations

				Trail			Aggressive Trail		
Model	Track Length	Lug Height	Tunnel Protector	Stud Size	Stud Qty.	Skag*	Stud Size	Stud Qty.	Skag*
Lite	121 x 15″	0.66	2871689	0.750	48	B	0.750	72	D
Lite Deluxe	121 x 15″	0.66	2871689	0.750	48	C	0.750	72	N
Lite GT	133.5 x 15″	0.82	2871543	1.000	53	D	1.000	80	D
Sport	121 x 15″	0.71	2871544	0.750	48	D	0.750	72	D
Sport Touring	133.5 x 15″	0.82	2871543	1.000	53	D	1.000	80	D
TranSport	141 x 15″	1.125	N/A			D or M			
XCF	121 x 15″	0.725	Std	0.875	48	D	0.875	72	D
440 XC	121 x 15″	0.82	Std	1.000	48	R	1.000	72	R
Super Sport	121 x 15″	0.82	2871544	1.000	48	D	1.000	72	D
Trail	121 x 15″	0.82	2871544	1.000	48	N	1.000	72	N
Trail Touring	133.5 x 15″	0.82	2871543	1.000	53	N	1.000	80	N
Trail RMK	133.5 x 15″	1.25	N/A	N/A	-	N/A	N/A	-	N/A
WideTrak GT	141 x 20″	0.91	Std			J or N			
WideTrak LX	156 x 20″	0.91	Std			J or N			
440	121 x 15″	0.82	2871544	1.000	48	N	1.000	72	N
500	121 x 15″	0.82	2871544	1.000	48	D	1.000	72	D
500 SKS	133.5 x 15″	1.00	2871545	1.175	53	D	1.175	80	P
500 RMK	133.5 x 15″	1.25	N/A	N/A	-	N/A	N/A	-	N/A
Classic	121 x 15″	0.82	2871544	1.000	48	N	1.000	72	N
Classic Touring	133.5 x 15″	0.82	2871541	1.000	53	N	1.000	80	N
500 EFI	121 x 15″	0.82	2871544	1.000	48	N	1.000	72	N
XLT	121 x 15″	0.82	2871545	1.000	96	D	1.000	120	P
XLT Touring	133.5 x 15″	0.82	2871541	1.000	80	N	1.000	106	J
XLT SKS	133.5 x 15″	1.00	2871542	1.175	80	D	1.175	106	P
XLT RMK	133.5 x 15″	1.50	N/A	N/A	-	N/A	N/A	-	N/A
XLT SP	121 x 15″	0.82	Std	1.000	96	N	1.000	120	J
XLT LTD	121 x 15″	0.82	2871544	1.000	96	N	1.000	120	J
600 XC/XCR	121 x 15″	0.82	Std	1.000	96	D	1.000	120	P
600 XCR SE	121 x 15″	0.725	Std	0.875	96	R	0.875	120	S
700 SKS	136 x 15″	1.00	2871542	1.175	80	D	1.175	106	P
700 RMK	136 x 15″	1.50	N/A	N/A	-	N/A	N/A	-	N/A
RXL	121 x 15″	0.82	Std	1.000	96	N	1.000	120	J
Ultra	121 x 15″	0.82	Std	1.000	96	N	1.000	120	J
Ultra SP/SPX	121 x 15″	0.82	Std	1.000	96	D	1.000	120	P
Ultra SPX SE	121 x 15″	0.725	Std	0.875	96	R	0.875	120	S
Ultra Touring	133.5 x 15″	0.82	2871541	1.000	80	N	1.000	106	J
Storm	121 x 15″	0.82	Std	1.000	96	D	1.000	120	P
Storm SE	121 x 15″	0.725	Std	0.875	96	R	0.875	120	S
Storm RMK	133.5 x 15″	1.50	N/A	N/A	-	N/A	N/A	-	N/A

* Refer to chart on page 9.62.

1998 Push-Through Stud & Skag Recommendations

				Trail			Aggressive Trail			Performance		
Model	Track Length	Lug Height	Tunnel Protector	Stud Size	Stud Qty.	Skag	Stud Size	Stud Qty.	Skag	Stud Size	Stud Qty	Skag
Lite	121 x 15"	0.66	2871689	0.750	48	B	0.750	72	D	0.750	96	D
Lite Deluxe	121 x 15"	0.66	2871689	0.750	48	C	0.750	72	N	0.750	96	J
Sport	121 x 15"	0.71	2871911	0.750	48	D	0.750	72	D	0.750	96	P
Super Sport	121 x 15"	0.82	2871544	1.000	48	D	1.000	72	D	1.000	96	P
Trail	121 x 15"	0.82	2871544	1.000	48	N	1.000	72	N	1.000	96	J
440	121 x 15"	0.82	2871544	1.000	48	N	1.000	72	N	1.000	96	J
500	121 x 15"	0.82	2871544	1.000	48	D	1.000	72	D	1.000	120	P
Classic	121 x 15"	0.82	2871544	1.000	48	N	1.000	72	N	1.000	120	J
XLT SP	121 x 15"	0.82	Std	1.000	96	R	1.000	120	S	1.000	144	S
XLT LTD	121 x 15"	0.82	2871544	1.000	96	N	1.000	120	J	1.000	144	J
XLT Classic	121 x 15"	0.82	2871544	1.000	96	N	1.000	120	J	1.000	144	J
Ultra	121 x 15"	0.82	Std	1.000	96	N	1.000	120	J	1.000	144	J
XCF	121 x 15"	0.725	2871911	0.875	48	R	0.875	72	R	0.875	96	R
600 XC	121 x 15"	0.91	Std	1.075	96	R	1.075	120	S	1.075	144	S
600 XCR	121 x 15"	0.82	Std	1.000	96	R	1.000	120	S	1.000	144	S
700 XC	121 x 15"	0.91	Std	1.075	96	R	1.075	120	S	1.075	144	S
700 XCR	121 x 15"	0.82	Std	1.000	96	R	1.000	120	S	1.000	144	S
Storm	121 x 15"	0.82	Std	1.000	96	R	1.000	120	S	1.000	144	S
Lite Touring	133.5 x 15"	0.82	2871543	1.000	48	C	1.000	72	N	1.000	96	J
Sport Touring	133.5 x 15"	0.82	2871543	1.000	53	D	1.000	80	D	1.000	106	P
Trail Touring	133.5 x 15"	0.82	2871543	1.000	53	N	1.000	80	N	1.000	106	J
Classic Touring	133.5 x 15"	0.82	2871541	1.000	53	R	1.000	80	R	1.000	106	S
XLT Touring	133.5 x 15"	0.82	2871541	1.000	80	R	1.000	106	S	1.000	132	S
Ultra Touring	133.5 x 15"	0.82	2871541	1 000	80	R	1.000	106	S	1.000	132	S
Trail RMK	133.5 x 15"	1.25	N/A	N/A	-	*R	N/A	-	*R	N/A	-	S
500 RMK	133.5 x 15"	1.25	N/A	N/A	-	*R	N/A	-	*R	N/A	-	S
600 RMK	136 x 15"	1.75	N/A	N/A	-	*R	N/A	-	*R	N/A	-	S
700 RMK	136 x 15"	1.75	N/A	N/A	-	*R	N/A	-	*R	N/A	-	S
TranSport	141 x 15"	1.125	N/A			D or M						
WideTrak LX	156 x 20"	1.0	N/A			J or P						

* Standard on RMK Models

⚠ WARNING

A proper balance of traction products on the skis and track must be maintained to obtain proper vehicle control on hard packed snow and ice. Loss of control can result in severe personal injury or death.

Track studding will enhance braking control on hard packed snow or ice, but extreme caution is still required on such surfaces. Use extra caution when track studding is employed as steering ability may be reduced on hard packed snow or ice. The addition of carbide skags (if not already installed) is recommended with studded tracks to aid in maintaining proper vehicle steering and control. Proper balance must be maintained between the number of studs and the length and sharpness of carbide on skags.

If you are adding studs to the track of a machine it will probably be advisable to add carbide skags or change to more aggressive skags in order to maintain proper vehicle control while turning on hard packed snow or ice. If the machine is equipped with carbide skags or if you are adding them or changing to more aggressive skags than standard equipment, it may also be necessary to add track studs in order to maintain proper vehicle control while turning on hard packed snow or ice.

As a rule of thumb, the more studs, the longer and sharper the carbide on the skags should be. The recommendations in the chart on page 9.60 should be used as guidelines in achieving a proper balance of ski and track traction products on Polaris snowmobiles.

Polaris Push-Through Stud and Skag Recommendations

B 7/16 x 3″ 120°, 2870693

C 7/16 x 3″ 120° EZ, 2870997

D 7/16 x 4″ 60°, 2871288

J 7/16 x 6″ 60° EZ, 2871416

N 7/16 x 4″ 60° EZ, 2871603

P 1/2 x 6″ 60°, 2871601

1/2 x 8″ 60°, 2871602

Polaris Composite Ski

R 7/16 x 4″ 60°, 2871688

S 1/2 x 6″ 60°, 2871687

SLP Ski

7/16 x 4″ 60°, 2871717

1/2 x 6″ 60°, 2871718

Wear Strip Kits**

2871540	1 piece tunnel SKS .625
2871541	1 piece tunnel SKS .75
2871544	121″ .75
2871542	2 piece tunnel SKS .625
2871543	2 piece tunnel SKS .75
2871545	121″ .625
2871689	.75 Indy Lite

Stud Kits

2871112 Traction Master Carbide Push Through .75 (Pkg of 24 w/backers)

*2871404 Traction Master Carbide Push Through .875 (Pkg of 24 w/backers)

*2871405 Traction Master Carbide Push Through 1.0 (Pkg of 24 w/backers)

*2871414 Traction Master Carbide Push Through 1.075 (Pkg of 24 w/backers)

*2871649 Traction Master Carbide Push Through 1.175 (Pkg of 24 w/backers)

2871243 Traction Master Carbide Push Through .75 (Pkg of 96 no backers, use 7mm washer)

*2871244 Traction Master Carbide Push Through .875 (Pkg of 96 no backers, use 7mm washer)

*2871245 Traction Master Carbide Push Through 1.0 (Pkg of 96 no backers, use 7mm washer)

*2871415 Traction Master Carbide Push Through 1.075 (Pkg of 96 no backers, use 5/16 washer)

*2871650 Traction Master Carbide Push Through 1.175 (Pkg of 96 no backers, use 5/16 washer)

2871598 Traction Master Push Through Carbide Wedge .875 (Pkg of 24 w/backers)

2871599 Traction Master Push Through Carbide Wedge1.0 (Pkg of 24 w/backers)

2871241 Traction Master Backer Plates, Aluminum, 7mm (Pkg of 48)

2871242 Traction Master Backer Plates, Steel, 7mm (Pkg of 48)

2871430 Traction Master Backer Plates, Aluminum, 5/16″ (Pkg of 48)

2871431 Traction Master Backer Plates, Steel, 5/16″ (Pkg of 48)

2871374 Drill Bits, Track Studding, 7mm and 5/16″

2870768 Track Studding Kit (T Nut Puller)

* Patent Pending Carbide 60° Point

** Production set up of wear strips will be located over the windows of the track. An optional position is available for using hooker plates. Only the outer end holes are punched in the tunnel. The wear strip will serve as the template for drilling the remaining holes.

Stud Installation

1. Mark the stud pattern on the track.
2. Drill stud holes with a 1/4″ (or 7mm) hollow-core drill bit. Make sure the drill is sharp for a clean hole.
3. Spin the non-cutting portion of the drill shank in the hole at high speed to melt the cords together, or melt them with a 1/4-9/32″ heated probe. This will prolong track life.

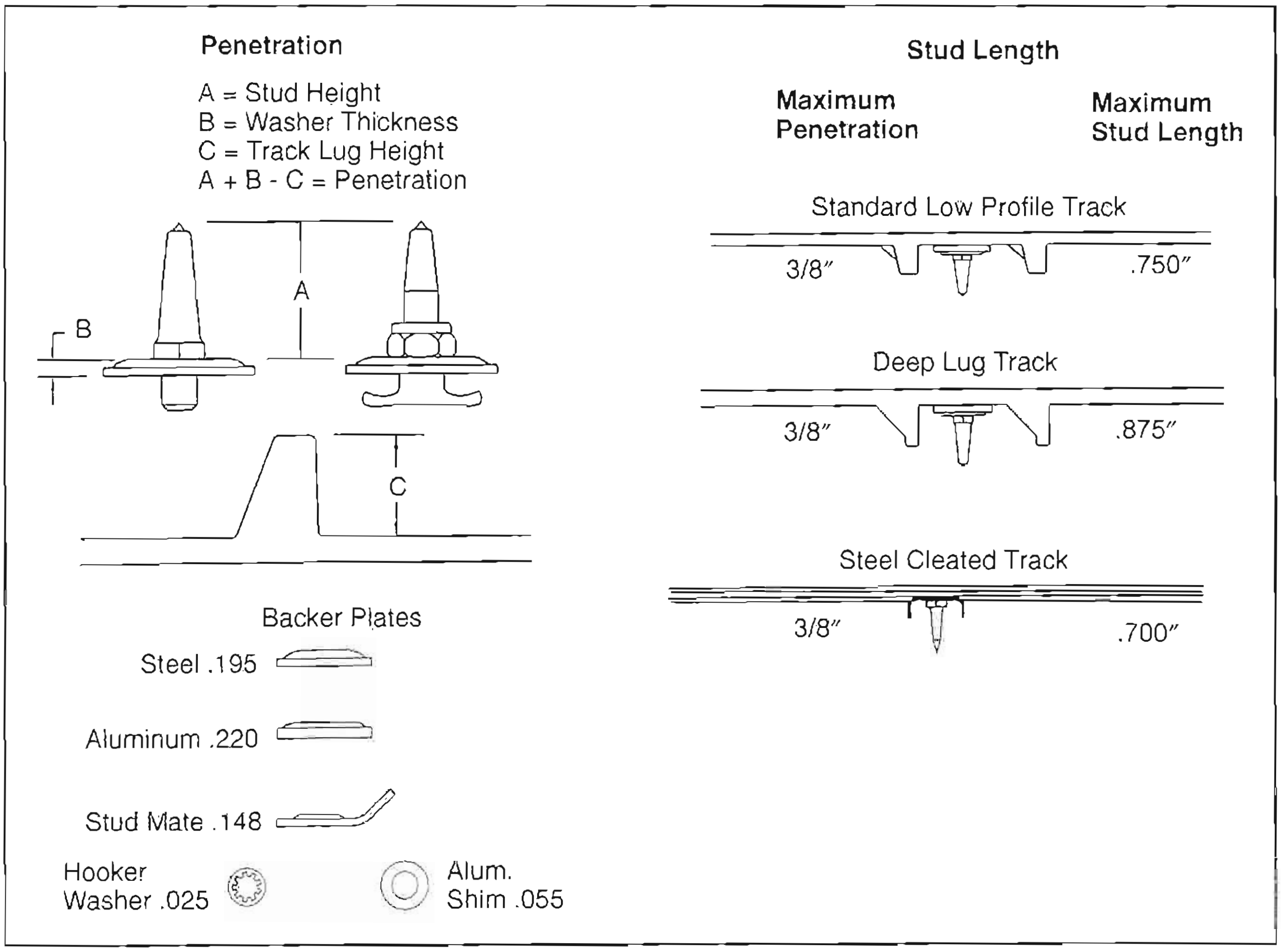
T-nut Studs

1. Push a T-nut tool through the hole from the outside of the track.
2. With the barrel end of the T-nut toward the track, spin a T-nut onto the tool. Pull the T-nut into the track until the head is flush with the track.
3. Remove the tool and put a drop of Loctite™ 262 or 271 on the nut threads and stud threads.
4. Secure the T-nut, slide a support washer onto the stud, and screw the stud into the T-nut
5. Torque to 80-100 in. lbs. and let dry for 24 hours at room temperature.
6. Check for loose studs after each event.

Push Through Studs

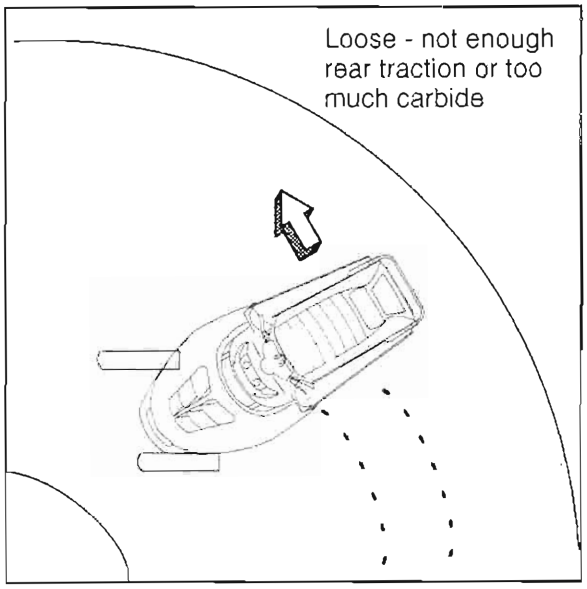
1. Push stud through track hole from inside track. Hand tighten domed support plate and Nyloc nut on the exposed stud.
2. Tighten with a socket on the nut and a 5.32″ Allen wrench on the stud head. Tighten nut until the domed washer bottoms out on the stud shoulder. If tightened beyond this point, the threads will be stripped.
3. Inspect for loose nuts after each event.

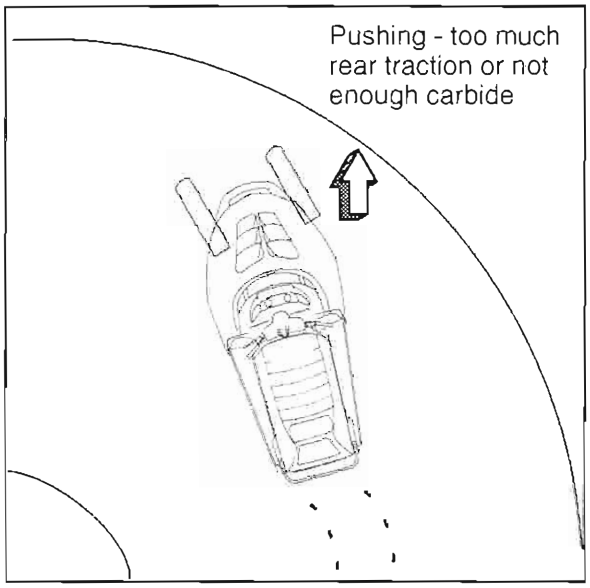
Refer to the diagrams below for stud length recommendations.

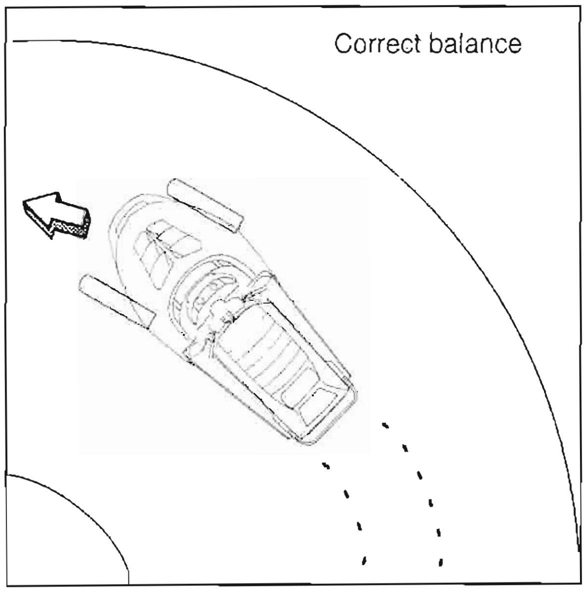


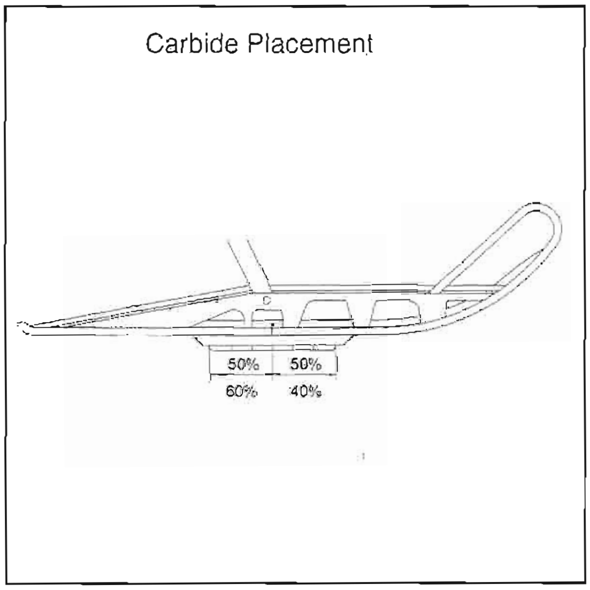
Ideally when going through a turn, the vehicle should be kept as flat as possible without the skis or track losing contact with the surface. When entering a corner and turning the skis the rest of the snowmobile will want to continue straight ahead. If the skis do not bite into the surface they will slip, and the turn will not be as tight as desired. This is called pushing. If the skis bite well and the track starts to slide out, the vehicle is said to be loose. Both ski and track traction must be balanced to maintain a good line through the corner.

Too few studs will allow the track to spin, resulting in excessive wear or damage to the studs. A loose condition can result from too many dull studs. Front end pushing can result from too many sharp studs. After studs are installed, it's important to install carbide skags to ensure maximum steering control. See the diagrams below.









CHAPTER 10
ELECTRICAL

1996 Models

Model	Headlight		Taillight	Brake Light	Handwarmer	Voltage Reg.
	Type	Watts Hi/Low	Watts	Watts	Watts Hi/Low	
Indy Lite/Deluxe	Incan	60/60	2 @ 2.7	13.3	Acc	LR9
Indy Lite GT	Incan	60/60	1 @ 8.3	23.0	15	LR9
Indy Sport	Incan	60/60	2 @ 2.7	13.3	15	LR9
Indy TranSport	Incan	60/60	2 @ 2.7	13.3	15	LR9
Indy Super Sport	Incan	60/60	2 @ 2.7	13.3	15	LR9
Indy Sport Touring	Incan	60/60	2 @ 2.7	13.3	15	LR9
Indy 440 XCR/600 XCR	Halogen	60/55	2 @ 2.7	13.3	15/7.5	LR9
Indy 440 XCR SP	Halogen	60/55	2 @ 2.7	13.3	15/7.5	LR9
Indy 600 XCR SP	Dual Halogen	2x60/ 2x55	2 @ 2.7	13.3	15/7.5	LR7
Indy WideTrak LX/GT	Halogen	60/55	1 @ 8.3	26.9	15/7.5	LR9
Indy Trail/Touring Indy 440 LC	Halogen	2x37.5	2 @ 2.7	13.3	15/7.5	LR9
Indy XLT Touring	Halogen	2x37.5	2 @ 2.7	13.3	15/7.5	LR7
Indy 500/SKS/RMK	Halogen	2x37.5	2 @ 2.7	13.3	15/7.5	LR9
Indy 500 EFI/SKS/RMK	Halogen	2x37.5	2 @ 2.7	13.3	15/7.5	LR9
Indy Classic/Touring	Halogen	2x37.5	2 @ 2.7	13.3	15/7.5	LR9
Indy XLT/SP/SKS/RMK	Halogen	60/55	2 @ 2.7	13.3	15/7.5	LR9
Indy RXL	Halogen	60/55	2 @ 2.7	13.3	15/7.5	LR9
Indy Ultra SP/SKS/RMK	Halogen	60/55	2 @ 2.7	13.3	15/7.5	LR7
Indy Storm/SKS/RMK	Dual Halogen	2x60/ 2x55	2 @ 2.7	13.3	15/7.5	LR7

1997 Models

Model	Headlight		Taillight	Brake Light	Handwarmer	Voltage Reg.
	Type	Watts Hi/Low	Watts	Watts	Watts Hi/Low	
Indy Lite/Deluxe	Incan	60/60	2 @ 2.7	13.3	Acc	LR9
Indy Lite GT	Incan	60/60	1 @ 8.3	23.0	15	LR9
Indy Sport	Incan	60/60	2 @ 2.7	13.3	15	LR9
Indy TranSport	Incan	60/60	2 @ 2.7	13.3	15	LR9
Indy Super Sport	Incan	60/60	2 @ 2.7	13.3	15	LR9
Indy Sport Touring	Incan	60/60	2 @ 2.7	13.3	15	LR9
Indy 440 XC/600 XC	Halogen	60/55	2 @ 2.7	13.3	15/7.5	LR9
Indy XCF	Incan	60/55	2 @ 2.7	13.3	15/7.5	LR9
Indy 600 XCR/SE	Dual Halogen	2x60/ 2x55	2 @ 2.7	13.3	15/7.5	LR7
Indy WideTrak LX/GT	Halogen	60/55	1 @ 8.3	26.9	15/7.5	LR9
Indy Trail/Touring Indy 440 LC	Halogen	2x37.5/60	2 @ 2.7	13.3	15/7.5	LR9
Indy Trail RMK	Incan	2x37.5/60	2 @ 2.7	13.3	15/7.5	LR9
Indy XLT Touring	Halogen	2x37.5/60	2 @ 2.7	13.3	15/7.5	LR7
Indy 500/SKS/RMK	Halogen	2x37.5/60	2 @ 2.7	13.3	15/7.5	LR9
Indy 500 EFI	Halogen	2x37.5/60	2 @ 2.7	13.3	15/7.5	LR9
Indy Classic/Touring	Halogen	2x37.5/60	2 @ 2.7	13.3	15/7.5	LR9
Indy XLT/SP/LTD/SP LTD/SKS/RMK	Halogen	60/55	2 @ 2.7	13.3	15/7.5	LR9
Indy 700 SKS/RMK	Halogen	60/55	2 @ 2.7	13.3	15/7.5	LR7
Indy RXL	Halogen	60/55	2 @ 2.7	13.3	15/7.5	LR9
Indy Ultra/SP	Halogen	60/55	2 @ 2.7	13.3	15/7.5	LR7
Indy Ultra Touring	Dual Halogen	2x45/ 2x45	2 @ 9	2 @ 18	15/7.5	LR7
Indy Ultra SPX/SPX SE	Dual Halogen	60/55	2 @ 2.7	13.3	15/7.5	LR7
Indy Storm/SE/RMK	Dual Halogen	2x60/ 2x55	2 @ 2.7	13.3	15/7.5	LR7

1998 Models

Model	Headlight		Taillight	Brake Light	Alternator Output (In Watts) @ 4000 RPM	Voltage Reg.
	Type	Watts Hi/Low	Watts	Watts		
Indy Lite	Incandescent	60/60	2 x 3 Watts	18	150	LR9
Indy Lite Deluxe	Incandescent	60/60	2 x 3 Watts	18	150	LR9 (LR2)
Indy Lite Touring	Incandescent	60/60	8 Watts	29	150	LR9
Indy Sport	Incandescent	60/60	2 x 3 Watts	18	200	LR9
Indy Sport Touring	Incandescent	60/60	2 x 3 Watts	18	200	LR9
Indy Transport	Incandescent	60/60	8 Watts	29	200	LR9
Indy XCF	Incandescent	60/60	2 x 3 Watts	18	200	LR9
Indy 440 L/C	Halogen	2 x 38 / 1 x 60	2 x 3 Watts	18	200	LR9
Indy 440 XCR	Halogen	60/55	2 x 3 Watts	18	280	LR7
Indy Trail	Halogen	2 x 38 / 1 x 60	2 x 3 Watts	18	200	LR9
Indy Trail Touring	Halogen	2 x 38 / 1 x 60	2 x 3 Watts	18	200	LR9 (LR2)
Indy Trail RMK	Incandescent	60/60	2 x 3 Watts	18	200	LR9
Indy SuperSport	Incandescent	60/60	2 x 3 Watts	18	200	LR9
Indy WideTrak LX	Halogen	60/55	8 Watts	29	200	LR9 (LR2)
Indy 500	Halogen	2 x 38 / 1 x 60	2 x 3 Watts	18	200	LR9
Indy 500 Classic	Halogen	2 x 38 / 1 x 60	2 x 3 Watts	18	200	LR9 (LR2)
Indy 500 RMK	Halogen	2 x 38 / 1 x 60	2 x 3 Watts	18	200	LR9
Indy Classic Touring	Halogen	2 x 38 / 1 x 60	2 x 9 Watts	2 x 18	200	LR9 (LR2)
Indy XLT SP	Halogen	2 x 60 / 2 x 55	2 x 9 Watts	2 x 18	280	LR7
Indy XLT LTD	Halogen	2 x 38 / 1 x 60	2 x 3 Watts	18	280	LR7
Indy XLT Touring	Halogen	2 x 38 / 1 x 60	2 x 9 Watts	2 x 18	280	LR7 (LR2)
Indy XLT Classic	Halogen	2 x 38 / 1 x 60	2 x 3 Watts	18	280	LR7
Indy 600 XC	Halogen	60/55	2 x 9 Watts	2 x 18	280	LR7
Indy 600 RMK	Halogen	60/55	2 x 3 Watts	18	280	LR7
Indy 600 XCR	Halogen	2 x 60 / 2 x 55	2 x 9 Watts	2 x 18	280	LR7
Indy Ultra	Halogen	60/55	2 x 3 Watts	18	280	LR7 (LR56)
Indy Ultra Touring	Halogen	2 x 45 / 2 x 45	2 x 9 Watts	2 x 18	280	LR7 (LR2 & LR56)
Indy 700 XC	Halogen	60/55	2 x 9 Watts	2 x 18	280	LR7
Indy 700 XCR	Halogen	2 x 60 / 2 x 55	2 x 9 Watts	2 x 18	280	LR7
Indy 700 RMK	Halogen	60/55	2 x 3 Watts	18	280	LR7
Indy Storm	Halogen	2 x 60 / 2 x 55	2 x 9 Watts	2 x 18	200	LR7

LR7: Full Wave Voltage Regulator

LR9: 1/2 Wave Voltage Regulator

LR2: Rectifier Only, For Battery Charging

LR56: For Exhaust Thermal Sensing System (ETSS)

1996 Models

Machine Model	Engine Model	Alternator Wattage	Spark Plug NGK	Spark Plug Champion	Plug Gap MM/Inches	CDI Box Identification Number	Fly-wheel ID #
Indy Lite Models	EC34-2PM02/E02	150	BR8ES	RN-3C	0.7/.028	CU6409	FP5439
Indy Sport Models	EC44-3PM01/02	200	BR8ES	RN-3C	0.7/.028	CU6416	FP5446
Indy Trail Models	EC50PM04/E04	200	BR8ES	RN-3C	0.7/.028	CU6413	FP5441
Indy WideTrak GT	EC50PM03	200	BR8ES	RN-3C	0.7/.028	CU6413	FP5441
Indy 440 LC	EC45PL06	200	BR8ES	RN-3C	0.7/.028	CU6417	FP5445
Indy 440 XCR	EC45PL07	200	BR9ES	RN-2C	0.7/.028	CU6417	FP5510
Indy 440 XCR SP	EC45PL08	200	BR9ES	RN-2C	0.7/.028	CU6418	FP5517
Indy 500/SKS/RMK/Classic	EC50PLE11/11/14/15	200	BR8ES	RN-3C	0.7/.028	CU6417	FP5445
Indy WideTrak LX	EC50PLE12	200	BR8ES	RN-3C	0.7/.028	CU6417	FP5445
Indy 500 EFI	EC50PL13	250	BR8ES	RN-3C	0.7/.028	CU6417	FP5508
Indy XLT (Except Touring)	EC58PL02/03/07	170	BR8ES	RN-3C	0.7/.028	CU2194	FP8312
Indy XLT Touring	EC58PLE05	200	BR8ES	RN-3C	0.7/.028	CU2194	FP8314
Indy XCR 600 / XLT SP	EC5802	170	BR9ES	RN-2C	0.7/.028	CU2194	FP8312
Indy 600 XCR SP	EC59PL01	200	BR9ES	RN-2C	0.7/.028	CU7303	FP9306
Indy RXL	EC65PL05	180	BR9ES	RN-2C	0.7/.028	CU2193	FP6392
Indy Ultra SP/SKS/RMK	EC68PL01/04	200	BR9ES	RN-2C	0.7/.028	CU7301	FP9304
Indy Storm/SKS/RMK	EC80PL04/05	200	BR9ES	RN-2C	0.7/.028	CU7302	FP9305

Running Ignition Timing at 3000 RPM *						Operating Timing °BTDC RPM
Engine Model	MM BTDC	Inches BTDC	Degrees BTDC	Acceptable Variances MM	Acceptable Variances Inches	
EC34-2PM02/E02	3.67	.145	26.5±1.5	3.28-4.08	.129-.161	15.5° @ 7000
EC44-3PM01/02	3.81	.150	26±1.5	3.39-4.25	.133-.167	16° @ 6500
EC50PM04/E04	3.81	.150	26±1.5	3.39-4.25	.133-.167	16° @ 6500
EC50PM03	4.71	.185	29±1.5	4.25-5.20	.167-.204	19° @ 7500
EC45PL06/07	4.40	.173	28±1.5	3.91-4.87	.156-.191	16° @ 7500
EC45PL08	5.69	.224	32±1.5	5.18-6.22	.217-.242	16° @ 7500
EC50PLE11/11/E12/14/15	4.40	.173	28±1.5	3.91-4.87	.156-.191	16° @ 7500
EC50PL13	4.71	.185	29±1.5	4.25-5.20	.167-.204	17° @ 7500
EC58PL02/03/E05/07	4.40	.173	28±1.5	3.91-4.87	.156-.191	20° @ 7500
EC65PL05	3.53	.139	25±1.5	3.13-4.01	.123-.156	19° @ 7500

Running Ignition Timing at 3500 RPM *						Operating Timing °BTDC RPM
Engine Model	MM BTDC	Inches BTDC	Degrees BTDC	Acceptable Variances MM	Acceptable Variances Inches	
EC59PL01	4.74	.187	28±1.5	4.26-5.24	.168-.200	10° @ 8500
EC68PL01	4.10	.162	26±1.5	3.66-4.57	.144-.180	16° @ 8000
EC68PL04	4.10	.162	26±1.5	3.66-4.57	.144-.180	16° @ 8000
EC80PL04	4.10	.162	26±1.5	3.66-4.57	.144-.180	16° @ 8000
EC80PL05	4.10	.162	26±1.5	3.66-4.57	.144-.180	16° @ 8000

* Engine at room temperature

1997 Models

Machine Model	Engine Model	Alternator Wattage	Spark Plug		Plug Gap MM/Inches	CDI Box Identification Number	Fly-wheel ID #
			NGK	Champion			
Indy Lite Models	EC34-2PM02(-S)	150	BR8ES	RN-3C	0.7/.028	CU6409	FP5439
Indy Sport/TranSport/Sport Touring	EC44-3PM02	200	BR8ES	RN-3C	0.7/.028	CU6416	FP5446
Indy XCF	EC44-3PM02	200	BR8ES	RN-3C	0.7/.028	CU6416	FP5446
Indy WideTrak GT	EC50PM03	200	BR8ES	RN-3C	0.7/.028	CU6413	FP5441
Indy Trail/Trail Touring	EC50PM04(-S)	200	BR8ES	RN-3C	0.7/.028	CU6413	FP5441
Indy Trail RMK	EC50PM05	200	BR8ES	RN-3C	0.7/.028	CU6413	FP5441
Indy Super Sport	EC50PM06	200	BR8ES	RN-3C	0.7/.028	CU6413	FP5441
Indy 440 XC	EC45PL08	200	BR9ES	RN-2C	0.7/.028	CU6418	FP5517
Indy 440 XCR	SN44LCDCSP-01	200	BR9ES	RN-2C	0.7/.028	4060163	4060141
Indy 440 LC	EC45PL09	200	BR8ES	RN-3C	0.7/.028	CU6417	FP5445
Indy 500 RMK	EC50PL16	200	BR8ES	RN-3C	0.7/.028	CU6417	FP5445
Indy 500/SKS	EC50PLE17	200	BR8ES	RN-3C	0.7/.028	CU6417	FP5445
Indy Classic	EC50PL11	200	BR8ES	RN-3C	0.7/.028	CU6417	FP5445
Indy 500 EFI	EC50PL18	250	BR8ES	RN-3C	0.7/.028	CU6417	FP5508
Indy Classic Touring	EC50PL19	200	BR8ES	RN-3C	0.7/.028	CU6417	FP5445
Indy WideTrak LX	EC50PL20	200	BR8ES	RN-3C	0.7/.028	CU6417	FP5445
Indy XLT/SKS	EC58PL03	170	BR8ES	RN-3C	0.7/.028	CU2194	FP8312
Indy XLT RMK	EC58PL07	170	BR8ES	RN-3C	0.7/.028	CU2194	FP8312
Indy 600 XC	EC58PL08	170	BR9ES	RN-2C	0.7/.028	CU2194	FP8312
Indy XLT Touring/LTD	EC58PL09	200	BR8ES	RN-3C	0.7/.028	CU2194	FP8314
Indy XLT SP	EC58PL12	170	BR9ES	RN-2C	0.7/.028	CU2194	FP8312
Indy 600 XCR/SE	EC59PL01	200	BR9ES	RN-2C	0.7/.028	CU7303	FP9306
Indy RXL	EC65PL05	180	BR9ES	RN-2C	0.7/.028	CU2193	FP6392
Indy Ultra/SP/Touring	EC68PL01	200	BR9ES	RN-2C	0.7/.028	CU7301	FP9304
Indy Ultra SPX/SPX SE	EC68PL03	200	BR9ES	RN-2C	0.7/.028	CU7307	FP9104
Indy Storm/SE	EC80PL05	200	BR9ES	RN-2C	0.7/.028	CF7302	FP9305
Indy Storm RMK	EC80PL04	200	BR9ES	RN-2C	0.7/.028	CF7302	FP9305
Indy 700 SKS	SN70LCDCSP-01	280	BR9ES	RN-2C	0.7/.028	4060144	4060141
Indy 700 RMK	SN70LCDCSP-02	280	BR9ES	RN-2C	0.7/.028	4060144	4060141
Indy 700 XC	SN70LCDCSP-01	280	BR9ES	RN-2C	0.7/.028	4060144	4060141

1997 Models

Engine Model	Running Ignition Timing at 3000 RPM * MM BTDC	Inches BTDC	Degrees BTDC	Acceptable Variances MM	Acceptable Variances Inches	Operating Timing °BTDC RPM
EC34-2PM02(-S)	3.67	.145	26.5±1.5	3.28-4.08	.129-.161	15.5° @ 7000
EC44-3PM02	3.81	.150	26±1.5	3.39-4.25	.133-.167	16° @ 6500
EC50PM03	4.71	.185	29±1.5	4.25-5.20	.167-.204	19° @ 7500
EC50PM04(-S)	3.81	.150	26±1.5	3.39-4.25	.133-.167	16° @ 6500
EC50PM05	3.81	.150	26±1.5	3.39-4.25	.133-.167	16° @ 6500
EC50PM06	3.81	.150	26±1.5	3.39-4.25	.133-.167	16° @ 6500
EC45PL08	5.36	.211	31±1.5	4.87-5.86	.192-.231	13.5° @ 7500
EC45PL09	4.40	.173	28±1.5	3.91-4.87	.156-.191	16° @ 7500
EC50PL16	4.40	.173	28±1.5	3.91-4.87	.156-.191	16° @ 7500
EC50PL17	4.40	.173	28±1.5	3.91-4.87	.156-.191	16° @ 7500
EC50PL18	4.71	.185	29±1.5	4.25-5.20	.167-.204	17° @ 7500
EC50PL19	4.40	.173	28±1.5	3.91-4.87	.156-.191	16° @ 7500
EC50PL20	4.40	.173	28±1.5	3.91-4.87	.156-.191	16° @ 7500
EC58PL03	4.40	.173	28±1.5	3.91-4.87	.156-.191	20° @ 7500
EC58PL07	4.40	.173	28±1.5	3.91-4.87	.156-.191	20° @ 7500
EC58PL08	4.40	.173	28±1.5	3.91-4.87	.156-.191	20° @ 7500
EC58PL09	4.40	.173	28±1.5	3.91-4.87	.156-.191	20° @ 7500
EC58PL12	4.40	.173	28±1.5	3.91-4.87	.156-.191	20° @ 7500
EC65PL05	3.53	.139	25±1.5	3.13-4.01	.123-.156	19° @ 7500

Engine Model	Running Ignition Timing at 3500 RPM * MM BTDC	Inches BTDC	Degrees BTDC	Acceptable Variances MM	Acceptable Variances Inches	Operating Timing °BTDC RPM
EC59PL01	4.74	.187	28±1.5	4.26-5.24	.168-.200	13° @ 8000
EC68PL01	4.10	.162	26±1.5	3.66-4.57	.144-.180	16° @ 7500
EC68PL03	1.78	.070	17±1.5	1.49-2.11	.059-.087	18° @ 8000
EC80PL04	4.10	.162	26±1.5	3.66-4.57	.144-.180	14° @ 8000
EC80PL05	4.10	.162	26±1.5	3.66-4.57	.144-.180	14° @ 8000
SN70LCDCSP-01	.9268	.0365	12±1.5	.71-1.17	.028-.046	16° @ 8000
SN70LCDCSP-02	.9268	.0365	12±1.5	.71-1.17	.028-.046	16° @ 8000

* Engine at room temperature

1998 Engine Electrical

Machine Model	Engine Model	Alternator Wattage	Spark Plug		Plug Gap MM/Inches	CDI Box Identification Number	Fly-wheel ID #
			NGK	Champion			
Lite Models	EC34-2PM02A	150	BR8ES	RN-3C	0.7/.028	CU6409	FP5439
Sport/TranSport/ Sport Touring/XCF	EC44-3PM024	200	BR8ES	RN-3C	0.7/.028	CU6416	FP5446
Super Sport	EC50PM061	200	BR8ES	RN-3C	0.7/.028	CU6413	FP5441
Trail/Trail Touring	EC50PM043	200	BR8ES	RN-3C	0.7/.028	CU6413	FP5441
Trail RMK	EC50PM051	200	BR8ES	RN-3C	0.7/.028	CU6413	FP5441
440 XCR	SN44–44LCDCSP-01	200	BR9ES	RN-2C	0.7/.028	4060190	4060141
440 LC	EC45PL091	200	BR8ES	RN-3C	0.7/.028	CU6417	FP5445
500 RMK	EC50PL161	200	BR8ES	RN-3C	0.7/.028	CU6417	FP5445
500	EC50PL171	200	BR8ES	RN-3C	0.7/.028	CU6417	FP5445
Classic	EC50PL171	200	BR8ES	RN-3C	0.7/.028	CU6417	FP5445
Classic Touring	EC50PL191	200	BR8ES	RN-3C	0.7/.028	CU6417	FP5445
WideTrak LX	EC50PL201	200	BR8ES	RN-3C	0.7/.028	CU6417	FP5445
XLT SP	EC58PL140	280	BR9ES	RN-2C	0.7/.028	CU2552	FP9102
XLT LTD	EC58PL130	280	BR8ES	RN-3C	0.7/.028	CU2552	FP9102
XLT Touring	EC58PL130	280	BR8ES	RN-3C	0.7/.028	CU2194	FP8314
XLT Classic	EC58PL150	280	BR9ES	RN-2C	0.7/.028	CU2552	FP9102
600 XC	SN60-70LCDCSP-01	280	BR9ES	RN-2C	0.7/.028	4060186	4060141
600 RMK	SN60-70LCDCSP-02	280	BR9ES	RN-2C	0.7/.028	4060186	4060141
600 XCR	EC59PL020	280	BR9ES	RN-2C	0.7/.028	CU7308	
Ultra/Touring	EC68PL050	280	BR9ES	RN-2C	0.7/.028	CU7306	FP9103
700 XCR	EC68PL060	280	BR9ES	RN-2C	0.7/.028	CU7307	FP9104
700 XC	SN70-70LCDCSP-02	280	BR9ES	RN-2C	0.7/.028	4060181	4060141
700 RMK	SN70-70LCDCSP-01	280	BR9ES	RN-2C	0.7/.028	4060189	4060141
Storm	EC80PL052	200	BR9ES	RN-2C	0.7/.028	CU7302	FP9305

1998 Ignition Timing Specifications

Running Ignition Timing at 3000 RPM *						Operating Timing °BTDC RPM
Engine Model	MM BTDC	Inches BTDC	Degrees BTDC	Acceptable Variances		
				MM	Inches	
EC34-2PM02A	3.67	.145	26.51±.5	3.28-4.08	.129-.161	15.5° @ 7000
EC44-3PM024	3.81	.150	26±1.5	3.39-4.25	.133-.167	16° @ 6500
EC50PM043	3.81	.150	26±1.5	3.39-4.25	.133-.167	16° @ 6500
EC50PM051	3.81	.150	26±1.5	3.39-4.25	.133-.167	16° @ 6500
EC50PM061	3.81	.150	26±1.5	3.39-4.25	.133-.167	16° @ 6500
EC45PL091	4.40	.173	28±1.5	3.91-4.87	.156-.191	16° @ 7500
EC50PL161	4.40	.173	28±1.5	3.91-4.87	.156-.191	16° @ 7500
EC50PL171	4.40	.173	28±1.5	3.91-4.87	.156-.191	16° @ 7000
EC50PL191	4.40	.173	28±1.5	3.91-4.87	.156-.191	16° @ 7500
EC50PL201	4.40	.173	28±1.5	3.91-4.87	.156-.191	16° @ 7500
EC58PL130	4.40	.173	28±1.5	3.91-4.87	.156-.191	20° @ 7500
EC58PL140	4.40	.173	28±1.5	3.91-4.87	.156-.191	20° @ 7500
EC58PL150	4.40	.173	28±1.5	3.91-4.87	.156-.191	20° @ 7500

Running Ignition Timing at 3500 RPM *						Operating Timing °BTDC RPM
Engine Model	MM BTDC	Inches BTDC	Degrees BTDC	Acceptable Variances		
				MM	Inches	
SN44LCDCSP-01	3.72	.146	25±1.5	3.29-4.16	.130-.164	
EC59PL020	4.74	.187	28±1.5	4.26-5.24	.168-.200	13° @ 8000
EC68PL050	4.10	.162	26±1.5	3.66-4.57	.144-.180	16° @ 7500
EC68PL060	1.78	.070	17±1.5	1.49-2.11	.059-.087	18° @ 8000
EC80PL052	4.10	.162	26±1.5	3.66-4.57	.144-.180	14° @ 8000
SN70-70LCDCSP-02	.93	.037	12±1.5	.71 - 1.17	.028-.045	16° @ 8000

Running Ignition Timing at 1500 RPM *						Operating Timing °BTDC RPM
Engine Model	MM BTDC	Inches BTDC	Degrees BTDC	Acceptable Variances		Operating Timing °BTDC RPM
SN60-70LCDCSP-01/02	.22	.009	6±1.5	.13-.34	.005-.014	11° @ 8000
SN70-70LCDCSP-01	.22	.009	6±1.5	.13-.34	.005-.014	15° @ 8000

* Engine at room temperature

Ignition system components can be individually tested by measuring their internal resistance and insulation to ground. These checks **must** be done with a digital volt/ohm meter. Compare the readings obtained to the values listed on the chart. Actual values may vary up to ± 10% between like components. Any readings outside the span should be considered questionable.

NOTE: The stator coils can be checked without removing them from the engine. Simply disconnect the connector, plug in the stator-to-CDI wire, and check the resistance values between the wire colors listed below. For further information, consult the wiring diagrams at the end of this chapter.

Model	Exciter Coil		Trigger Coil		Light Coil		Charge Coil		Ignition Coil	
1996	Wire Color	Ohms	Wire Color	Ohms	Wire Color	Ohms	Wire Color	Ohms	Primary	Secondary **
EC34PM	Brn/W to Blk/R	164	-	-	Y to Brn	0.3-0.6	-	-	-	5700*
EC44PM	Brn/W to Blk/R	164	-	-	Y to Y/R	0.2-0.5	-	-	-	5700*
EC50PM	Brn/W to Blk/R	164	-	-	Y to Y/R	0.2-0.5	-	-	-	5700*
EC45PL	Brn/W to Blk/R	164	-	-	Y to Y/R	0.2-0.5	-	-	-	5700*
EC50PL-11, 12, 14, 15	Brn/W to Blk R	164	-	-	Y to Y/R	0.2-0.5	-	-	-	5700*
EC50PL13	Brn/W to Blk/R	164	-	-	Y to Y/R	0.2-0.5	Gry to Gry/W & Brn/W to Gry/W	0.4-0.8 & 0.2-0.4	-	5700*
EC58PL-02, 03, 07	Blk/R to R	4.6	W to W/R	100	Y to Y/R	0.2-0.5	-	-	0.4	4000
EC58PL05	Blk/R to R	4.6	W to W/R	100	Y to Y/R	0.2-0.5	-	-	0.4	4000
EC65PL05	Blk/R to Grn & R to Grn	288 & 20	W to W/R	96	Y to Brn	0.2-0.4	Gry to Gry/W & Brn/W to Gry/W	0.4-0.8 & 0.3-0.5	0.4	7500
EC68PL-01, 04	Grn to Blk/R & Grn to R	500 & 15.5	W to W/R	100	Y to Y/R	0.17	-	-	0.34	7900
EC80PL-04, 05	Grn to Blk/R & Grn to R	500 & 15.5	W to W/R	100	Y to Y/R	0.17	-	-	0.34	7900

Resistance should be checked with the coil at room temperature

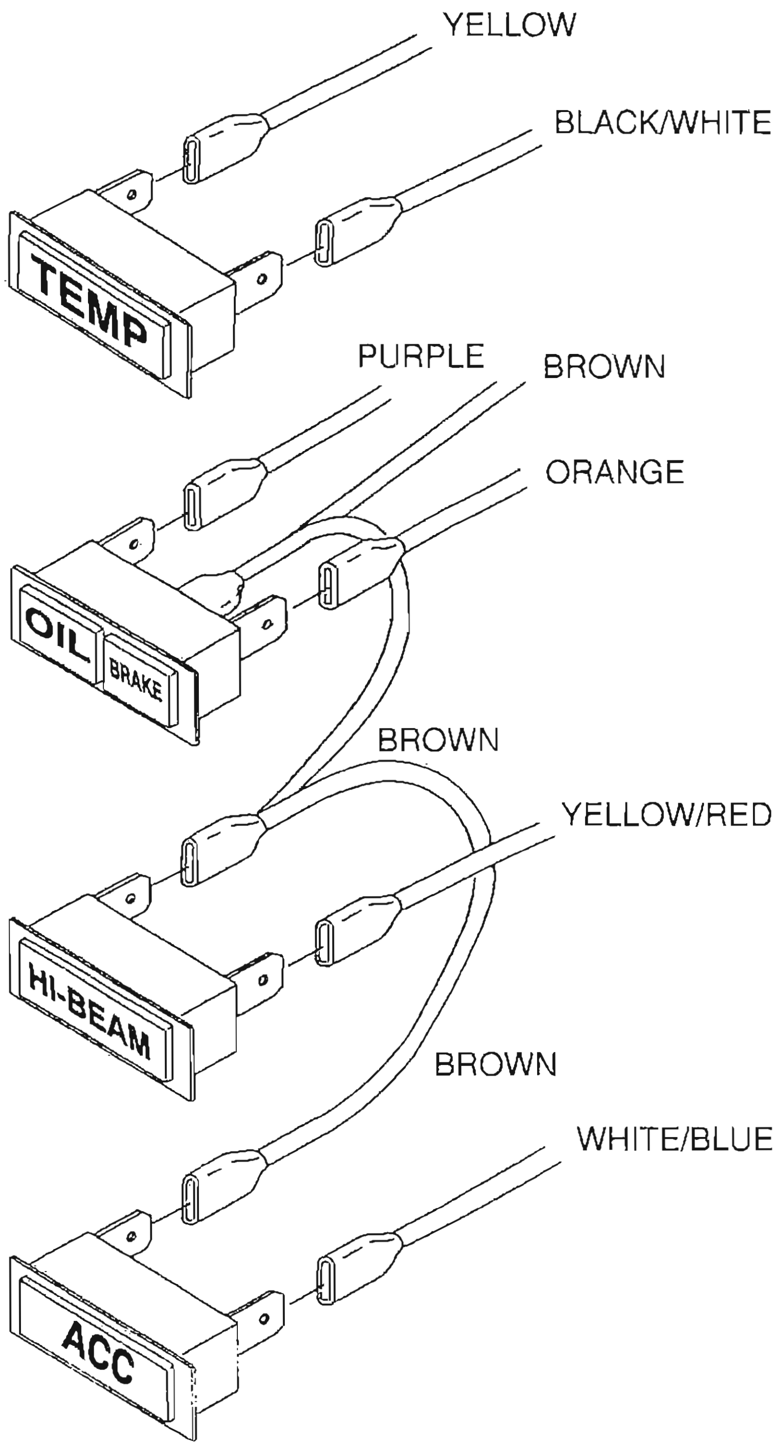
Coils must be isolated from the system to check resistance

Plug cap resistance is 3700-6300 Ohms (measured separately)

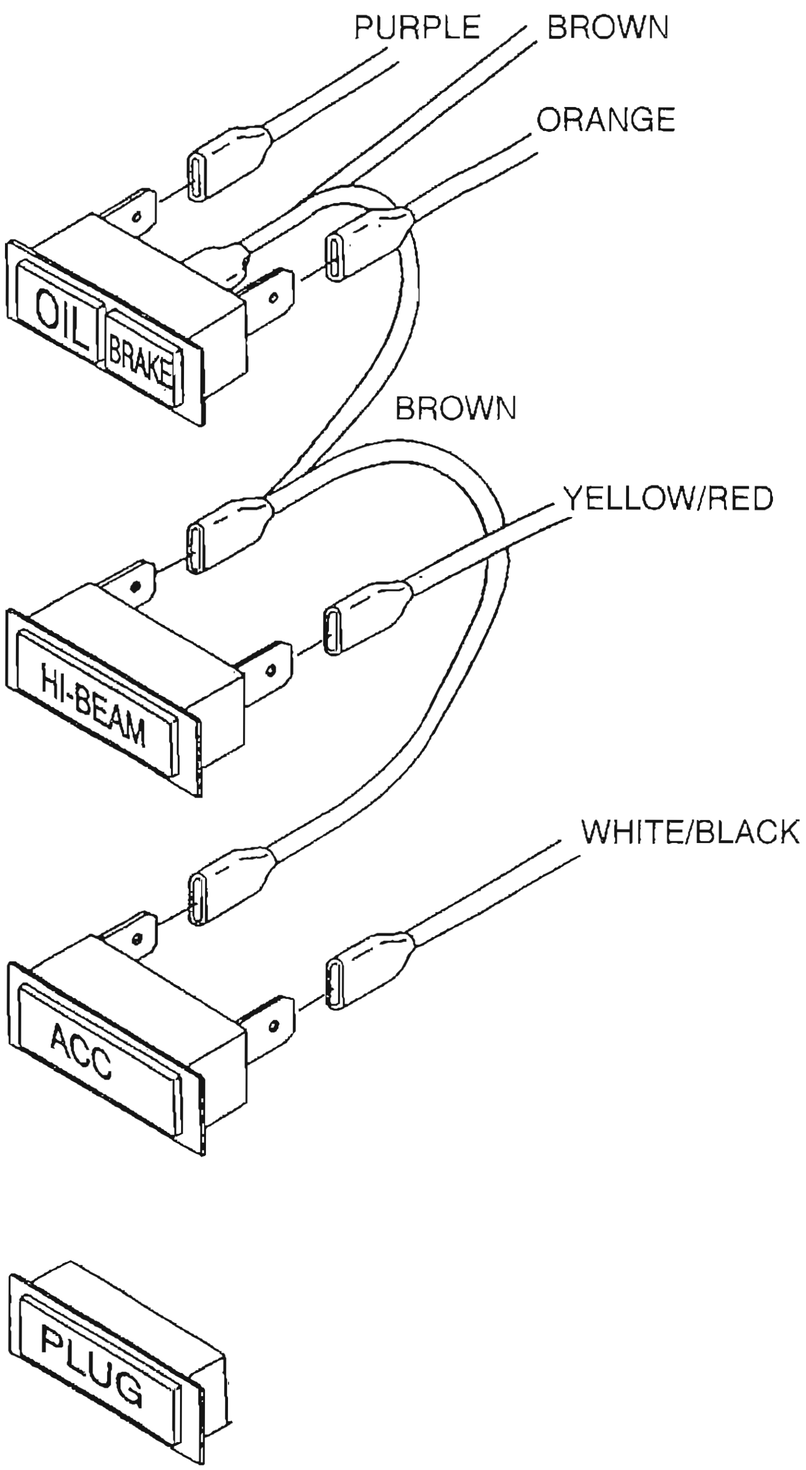
*Measure resistance from Mag plug lead to PTO plug lead

**Secondary coil resistance is measured with the plug cap *off*

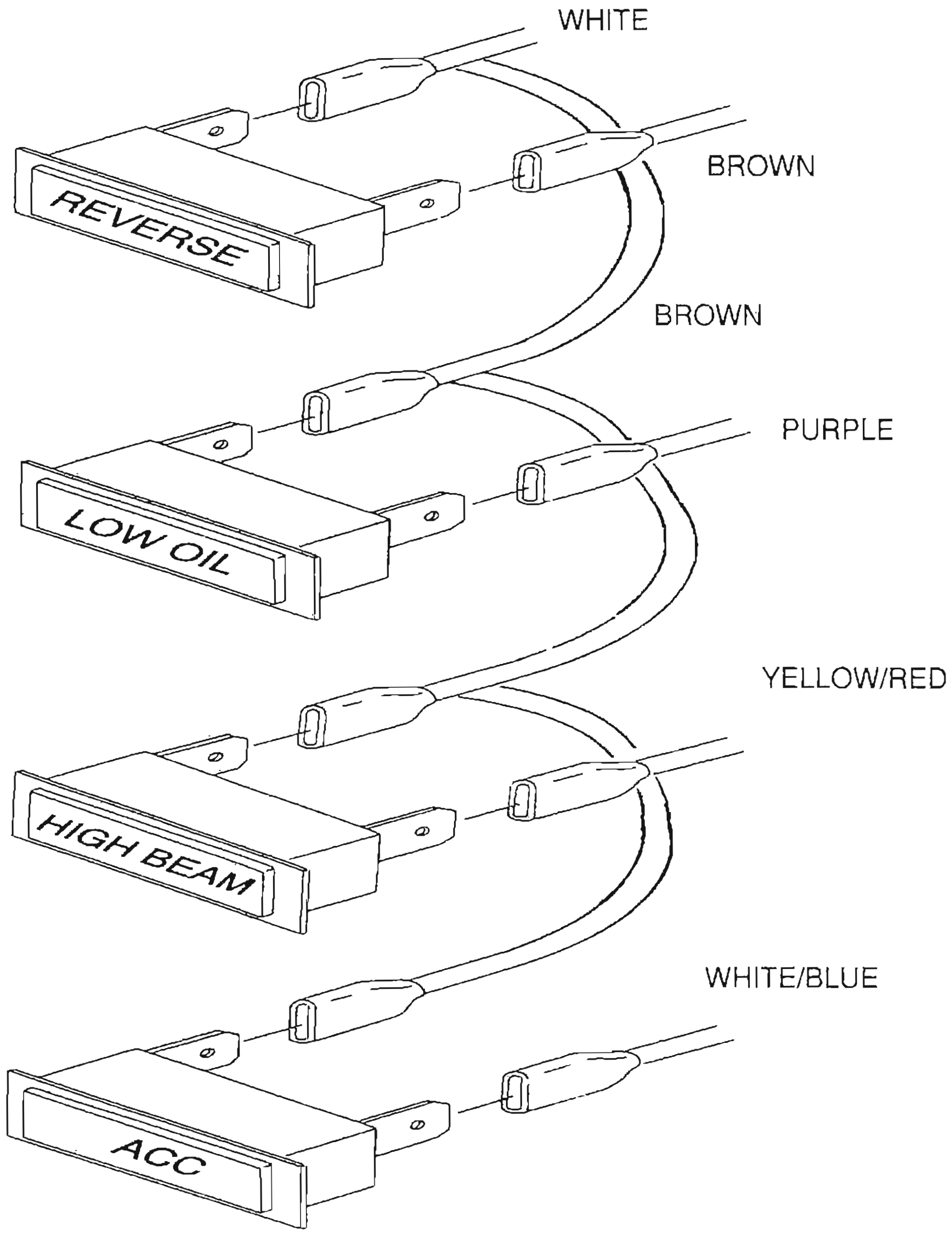
1996 RXL/440 XCR/600 XCR/XLT/XLT SKS/XLT RMK Models



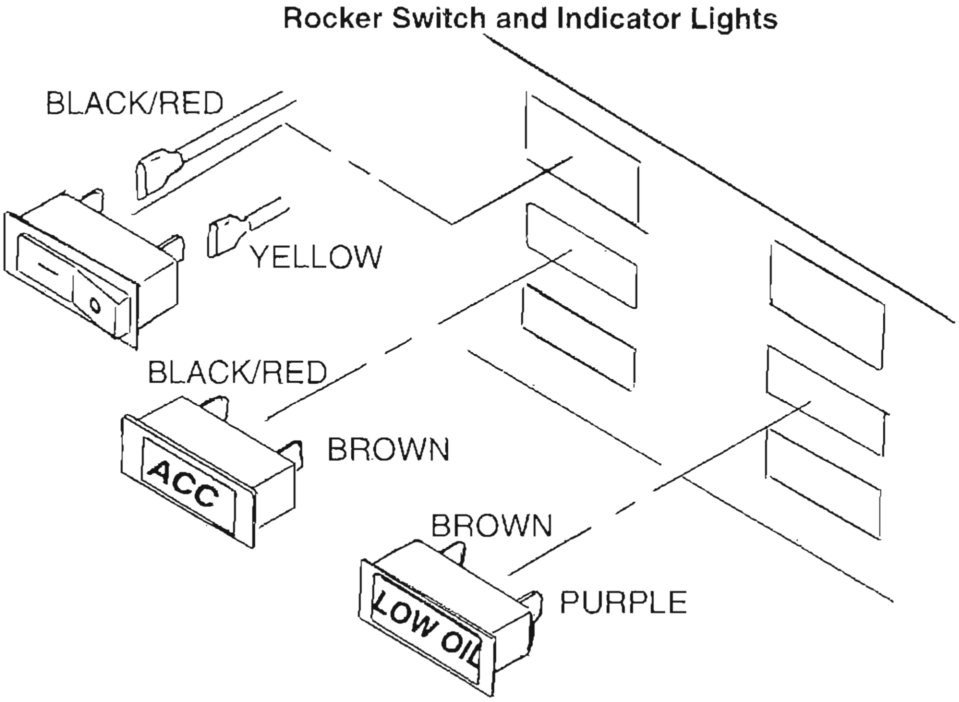
1996 WideTrak LX/Sport/TranSport/Super Sport/Sport Touring Models



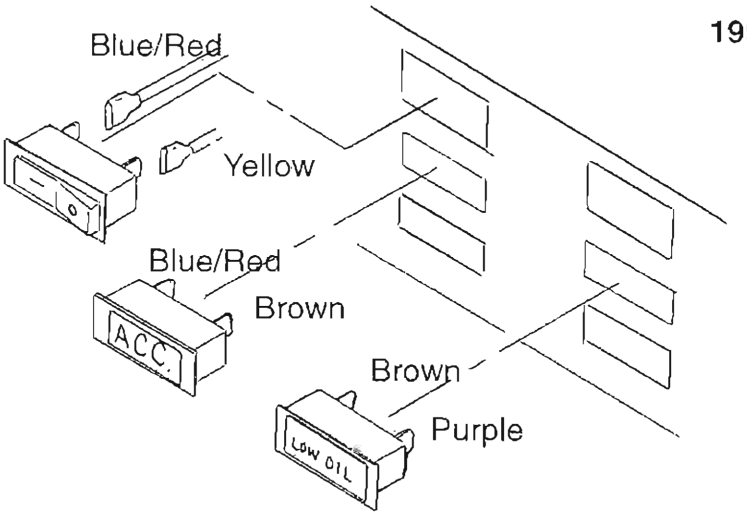
1996 WideTrak GT Models



1996 Lite GT Models



1998 Lite Deluxe



Multimeter Usage

The easiest and most accurate method for testing modern electrical components is with a digital multitester. Any good quality multitester will work. However, due to ease of operation and durability, Polaris recommends the Fluke Model 73 (PN 2870659), or Tektronix DMM155. See photo at right. This instrument will provide a digital readout of the measured value of the test being performed.

Listed below are the dial symbols, their meaning and what the dial setting can be used for.

Off = Instrument Off

V~ = Volts AC - measuring alternator output

Used to measure AC voltage in an electrical system. AC voltage is produced from every coil on the stator plate when a magnet is passed by it.

Test Method

1. Connect black lead to Com (–) meter terminal.
2. Connect red lead to VΩ (+) meter terminal.
3. Turn selector dial to V~ setting.
4. Connect test leads parallel with test component. The polarity of the leads is not important.

Usage

- Test unregulated voltage output of a stator coil
- Test regulated voltage to the lights and handwarmers

V ⎓ = Volts DC - measuring battery voltage, volt drop, etc.

Used to measure DC voltage produced by a battery or rectifier.

Test Method

1. Connect black lead to Com (–) meter terminal
2. Connect red lead to VΩ (+) meter terminal.
3. Turn selector dial to V ⎓ setting.
4. Connect test leads parallel with test component. Observe polarity.

Usage

- Test battery voltage
- Test DC regulator
- Test voltage drop for bad connections
- Test supply voltage to electric fuel gauge
- EFI electrical testing

Ω = Ohms, resistance - measuring component resistance values - testing coils, wiring, etc.

Used to test resistance to the flow of electricity in a circuit or component. A reading of OL means an open circuit or infinite resistance. Sometimes the leads themselves will have some resistance. Touch the leads together and subtract this resistance from the component reading to achieve the actual reading.

Test Method

1. Connect black lead to Com (–) meter terminal
2. Connect red lead to VΩ (+) meter terminal.
3. Turn selector dial to Ω setting.
4. Isolate test component from the rest of the electrical circuit by disconnecting wires from harness.
5. Connect test leads to the circuit to be tested.

Usage

- Testing coil resistance
- Testing switch operation
- Testing wire continuity

A ~ = Amps AC - used to test lighting coil output

Used to test the power of an alternator coil.

Test Method

1. Discconnect engine harness from system.
2. Connect red lead to 10A (+) meter terminal.
3. Connect black lead to Com (–) meter terminal.
4. Start engine and let it idle.
5. Observe and record the meter reading.

150 Watt Alternators: The reading should exceed 8 amps.

200 Watt Alternators: The reading should exceed 12 amps.

NOTE: Amperage readings are not dependent upon engine RPM. The reading you obtain at idle is essentially the same as the reading that would be obtained at higher RPMs.

NOTE: Although the meter connection is labeled 10A it will correctly read higher AC amperage (without damage to your meter) for periods of time not exceeding 10 seconds.

A ⎓ = Amps DC - used to check battery charge rate, system draws, etc.

Used to check the current flow to and from the battery.

Test Method

1. Make sure red lead is in the 10A terminal of the meter and the black lead is in the Com (–) terminal of the meter.
2. Disconnect battery ground wire(s) from battery (–) terminal.
3. Connect red meter lead to battery (–) terminal.
4. Connect black meter lead to harness ground wires and cable.

CAUTION:

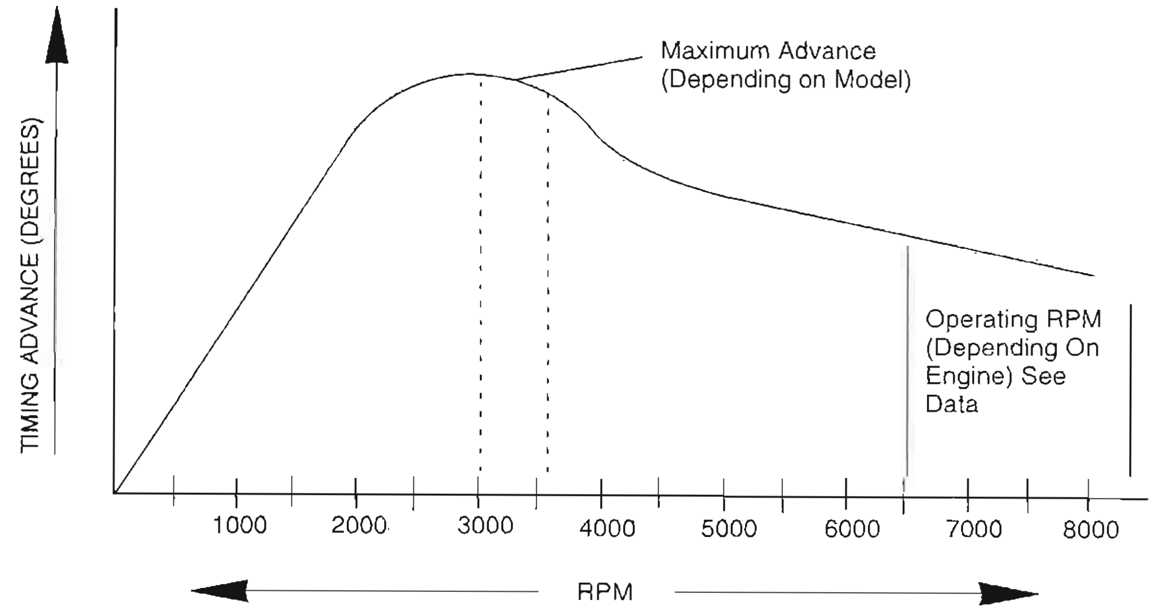
Do not operate electric starter (if equipped) or meter damage may occur.

Usage

- Testing key off current draw
- Testing key on current draw
- Testing charging system break even RPM
- Testing DC current flow (direction), is battery charging?

NOTE: When using the DC Amp settings, the red test lead must be moved to the 10A socket on the front of the instrument.

Ignition Timing



NOTE: Always verify timing of engine at room temperature only (68° F / 20° C) and at the proper RPM.

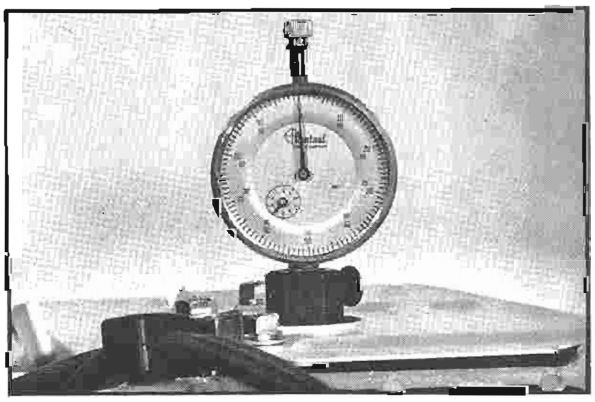
To obtain the best ignition timing accuracy and reduce the chance of error, the ignition timing specification is given at a "flat" portion of the advance curve. This flat portion on the curve is at 1500, 3000 or 3500 RPM on all current style ignition systems. Ignition timing must be checked at the specified RPM, or inaccurate timing will result. Refer to timing specifications at the beginning of this chapter.

If engine damage has occurred due to a suspected ignition related problem, verify the ignition timing is correct at the specified *operating* RPM as outlined on page 10.18.

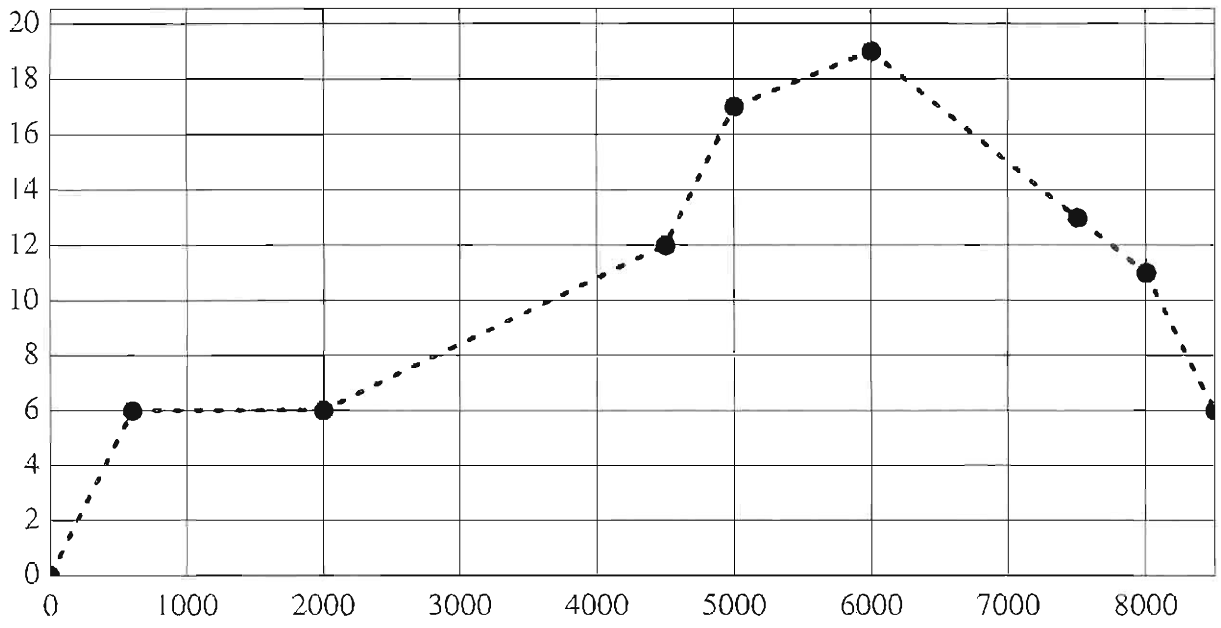
Dial Indicating The Timing Marks

Due to differences between engines, it is necessary to dial indicate the timing marks on all engines before attempting to adjust the ignition timing. To indicate the marks:

1. Remove the mag cylinder spark plug and install the dial indicator.
2. Rotate the crankshaft by hand while observing the dial indicator. As the piston touches the indicator plunger, the dial will begin to rotate. Find the point where the pointer stops rotating and reverses direction. This will be TDC (Top Dead Center).
3. While holding the crankshaft with the piston at TDC, zero the indicator by rotating the bezel until the O on the dial and the pointer align.
4. Rotate the crankshaft opposite the direction of rotation about .250 BTDC (2 1/2 pointer revolutions).
5. Determine the correct ignition timing position from the ignition data charts and rotate the crankshaft in the normal direction of rotation to that position. (**Example:** If engine timing is .150 BTDC, the crankshaft must be rotated in the normal direction of rotation so that the dial indicator pointer does one complete revolution and stops on 50. This should be 1 1/2 pointer revolutions before top center, or .150 BTDC.
6. While holding the crankshaft at the correct timing position, mark the flywheel (with chalk or a white marker) directly in-line with the stationary pointer (or line) on the fan or recoil housing through the timing inspection window.

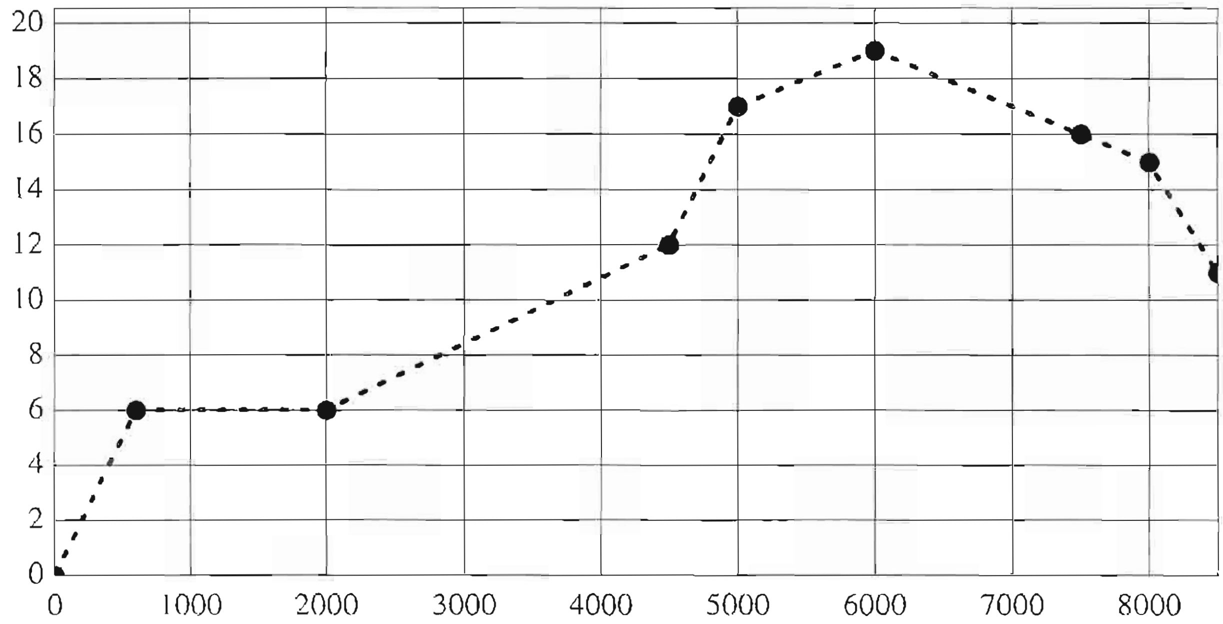


Timing Curve 1998 Domestic 600 Twins



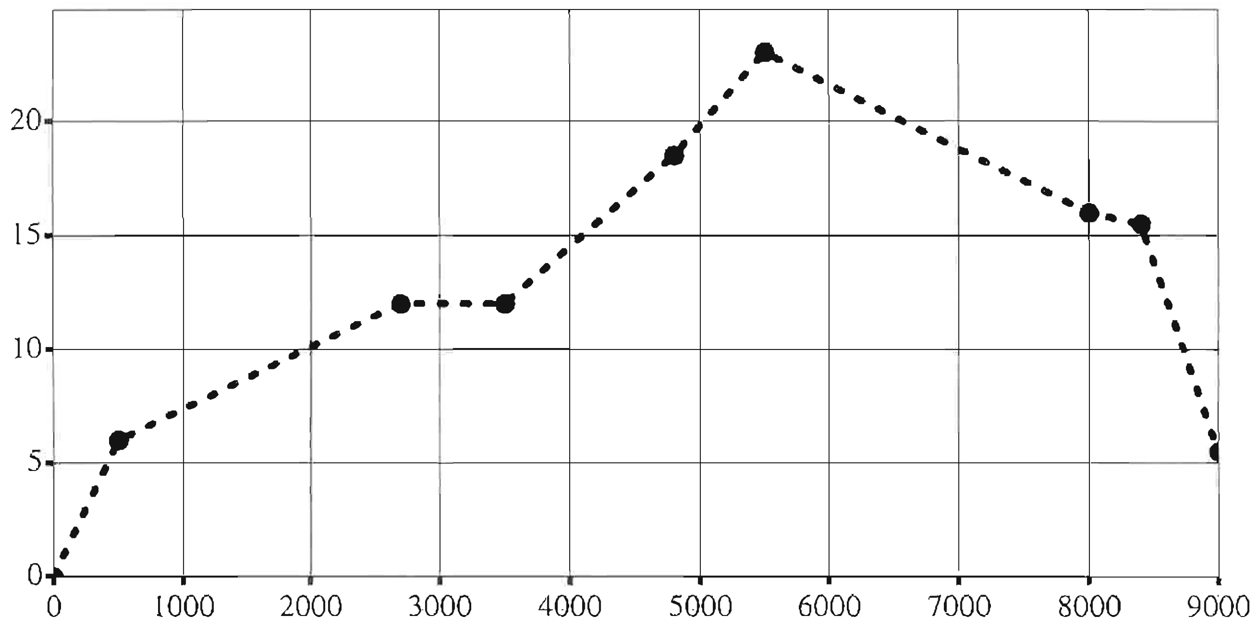
Timing Table	
1998 600 Twin	
RPM	Degrees
600	6°
2000	6°
4500	12°
5000	17°
6000	19°
7500	13°
8000	11°
8500	6°

Timing Curve 1998 700 XC

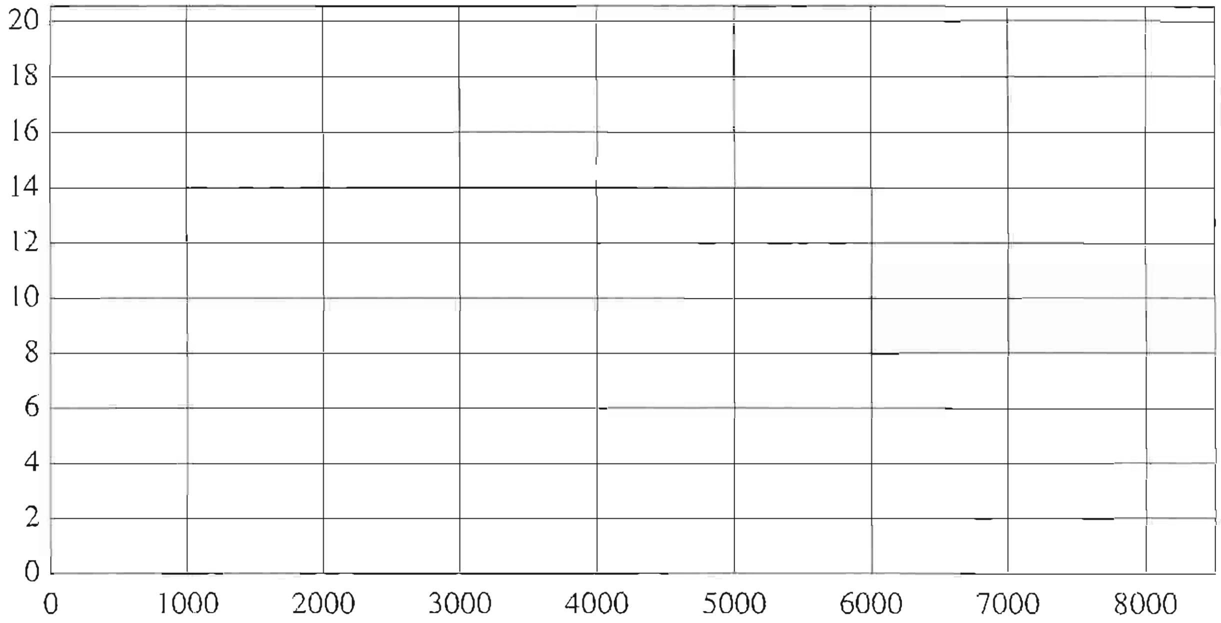


Timing Table	
1998 700 XC	
RPM	Degrees
600	6°
2000	6°
4500	12°
5000	17°
6000	19°
7500	16°
8000	15°
8500	11°

Timing Curve 1998 700 RMK



Timing Table	
1998 700 RMK	
RPM	Degrees
500	6°
2700	12°
3500	12°
4800	18.5°
5500	23°
8000	16°
8400	15.5°
9000	5.5°

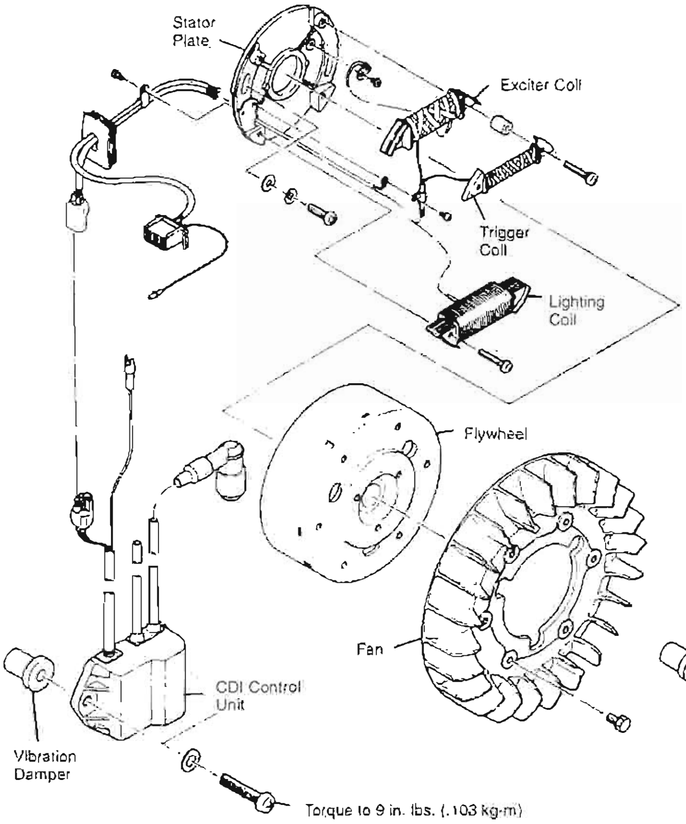


Timing Table	
RPM	Degrees

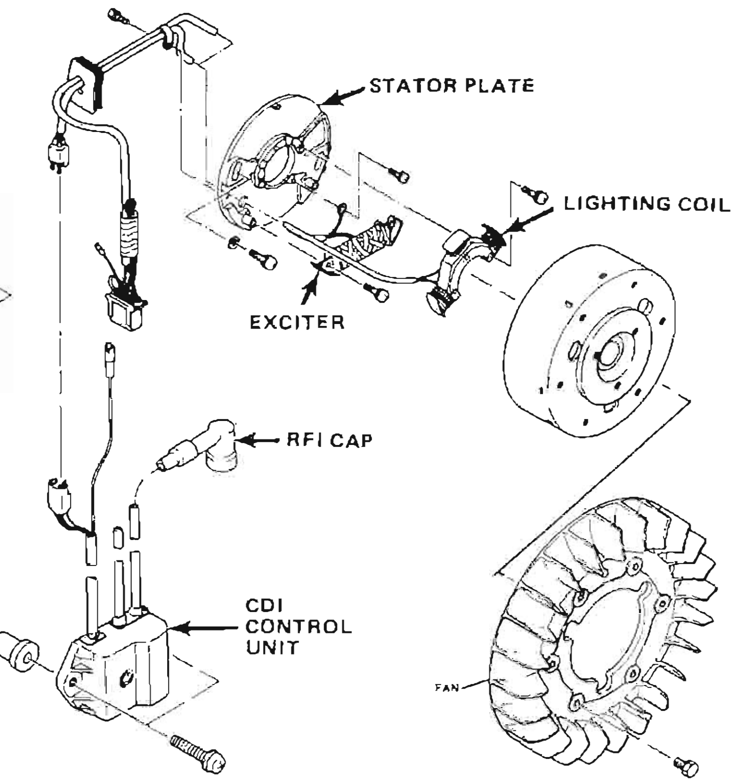
Conversion Chart - Degrees to Piston Position - B.T.D.C.

Engine Model	EC44-3PM EC50PM EC45PL EC58PL EC50PL EC65PL		EC59PL EC68PL EC80PL		EC34-2PM		SN44LCDCSP-01 SN44-44LCDCSP-01		SN70LCDCSP-01/02 SN60-70LCDCSP-01/02 SN70-70LCDCSP-01/02	
DEG. BTDC	112 MM ROD 60 MM STROKE		125 MM ROD 65 MM STROKE		103 MM ROD 55.6 MM STROKE		128 MM ROD 64 MM STROKE		136 MM ROD 68 MM STROKE	
	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES
1	0.0058	0.0002	0.0062	0.0002	0.0054	0.0002	0.0061	0.0002	0.0065	0.0003
2	0.0232	0.0009	0.0249	0.0010	0.0215	0.0008	0.0244	0.0010	0.0259	0.0010
3	0.0521	0.0021	0.0561	0.0022	0.0484	0.0019	0.0548	0.0022	0.0582	0.0023
4	0.0926	0.0036	0.0997	0.0039	0.0860	0.0034	0.0974	0.0038	0.1035	0.0041
5	0.1447	0.0057	0.1558	0.0061	0.1343	0.0053	0.1522	0.0060	0.1617	0.0064
6	0.2083	0.0082	0.2242	0.0088	0.1933	0.0076	0.2190	0.0086	0.2327	0.0092
7	0.2833	0.0112	0.3050	0.0120	0.2630	0.0104	0.2979	0.0117	0.3166	0.0125
8	0.3698	0.0146	0.3981	0.0157	0.3432	0.0135	0.3889	0.0153	0.4132	0.0163
9	0.4677	0.0184	0.5036	0.0198	0.4341	0.0171	0.4919	0.0194	0.5226	0.0206
10	0.5770	0.0227	0.6212	0.0245	0.5355	0.0211	0.6068	0.0239	0.6448	0.0254
11	0.6976	0.0275	0.7510	0.0296	0.6474	0.0255	0.7336	0.0289	0.7795	0.0307
12	0.8294	0.0327	0.8930	0.0352	0.7698	0.0303	0.8723	0.0343	0.9268	0.0365
13	0.9724	0.0383	1.0470	0.0412	0.9025	0.0355	1.0227	0.0403	1.0867	0.0428
14	1.1265	0.0444	1.2129	0.0478	1.0456	0.0412	1.1849	0.0466	1.2589	0.0496
15	1.2917	0.0509	1.3908	0.0548	1.1989	0.0472	1.3586	0.0535	1.4435	0.0568
16	1.4678	0.0578	1.5804	0.0622	1.3624	0.0536	1.5439	0.0608	1.6404	0.0646
17	1.6548	0.0652	1.7818	0.0701	1.5359	0.0605	1.7406	0.0685	1.8494	0.0728
18	1.8526	0.0729	1.9948	0.0785	1.7195	0.0677	1.9487	0.0767	2.0705	0.0815
19	2.0611	0.0811	2.2193	0.0874	1.9130	0.0753	2.1681	0.0854	2.3036	0.0907
20	2.2802	0.0898	2.4552	0.0967	2.1163	0.0833	2.3986	0.0944	2.5485	0.1003
21	2.5098	0.0988	2.7024	0.1064	2.3294	0.0917	2.6402	0.1039	2.8052	0.1104
22	2.7497	0.1083	2.9608	0.1166	2.5521	0.1005	2.8927	0.1139	3.0735	0.1210
23	3.0000	0.1181	3.2303	0.1272	2.7843	0.1096	3.1560	0.1243	3.3532	0.1320
24	3.2603	0.1284	3.5107	0.1382	3.0260	0.1191	3.4300	0.1350	3.6444	0.1435
25	3.5307	0.1390	3.8019	0.1497	3.2769	0.1290	3.7146	0.1462	3.9467	0.1554
26	3.8110	0.1500	4.1038	0.1616	3.5370	0.1393	4.0096	0.1579	4.2602	0.1677
27	4.1010	0.1615	4.4161	0.1739	3.8062	0.1498	4.3149	0.1699	4.5846	0.1805
28	4.4007	0.1733	4.7389	0.1866	4.0843	0.1608	4.6303	0.1823	4.9197	0.1937
29	4.7098	0.1854	5.0719	0.1997	4.3712	0.1721	4.9558	0.1951	5.2655	0.2073
30	5.0282	0.1980	5.4149	0.2132	4.6667	0.1837	5.2911	0.2083	5.6218	0.2213
31	5.3559	0.2109	5.7679	0.2271	4.9708	0.1957	5.6361	0.2219	5.9884	0.2358
32	5.6926	0.2241	6.1306	0.2414	5.2832	0.2080	5.9907	0.2359	6.3651	0.2506
33	6.0381	0.2377	6.5028	0.2560	5.6039	0.2206	6.3546	0.2502	6.7518	0.2658
34	6.3924	0.2517	6.8845	0.2710	5.9326	0.2336	6.7278	0.2649	7.1482	0.2814
35	6.7552	0.2660	7.2754	0.2864	6.2693	0.2468	7.1099	0.2799	7.5543	0.2974
36	7.1263	0.2806	7.6753	0.3022	6.6138	0.2604	7.5010	0.2953	7.9698	0.3138
37	7.5057	0.2955	8.0840	0.3183	6.9658	0.2742	7.9007	0.3111	8.3945	0.3305
38	7.8931	0.3108	8.5015	0.3347	7.3253	0.2884	8.3089	0.3271	8.8282	0.3476
39	8.2883	0.3263	8.9274	0.3515	7.6920	0.3028	8.7254	0.3435	9.2708	0.3650
40	8.6912	0.3422	9.3616	0.3686	8.0659	0.3176	9.1501	0.3602	9.7220	0.3828

Timing Procedure



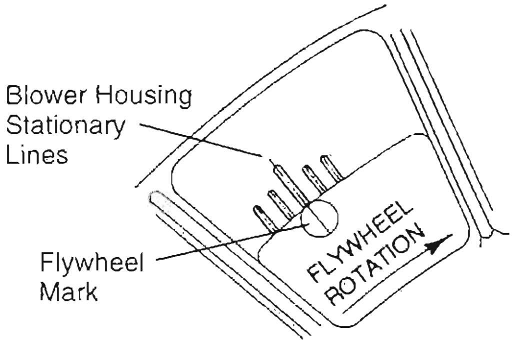
120 Watt Pulse Type



150 and 200 Watt Pulseless

NOTE: Always verify timing of engine at room temperature only (68° F/20° C).

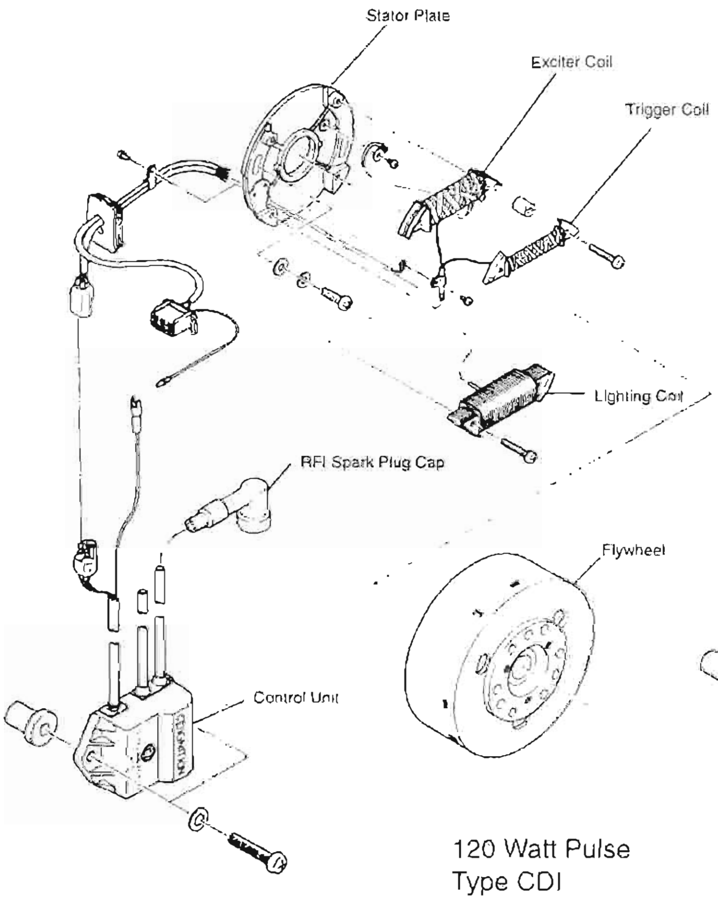
Refer to ignition timing procedure on page 10.17.



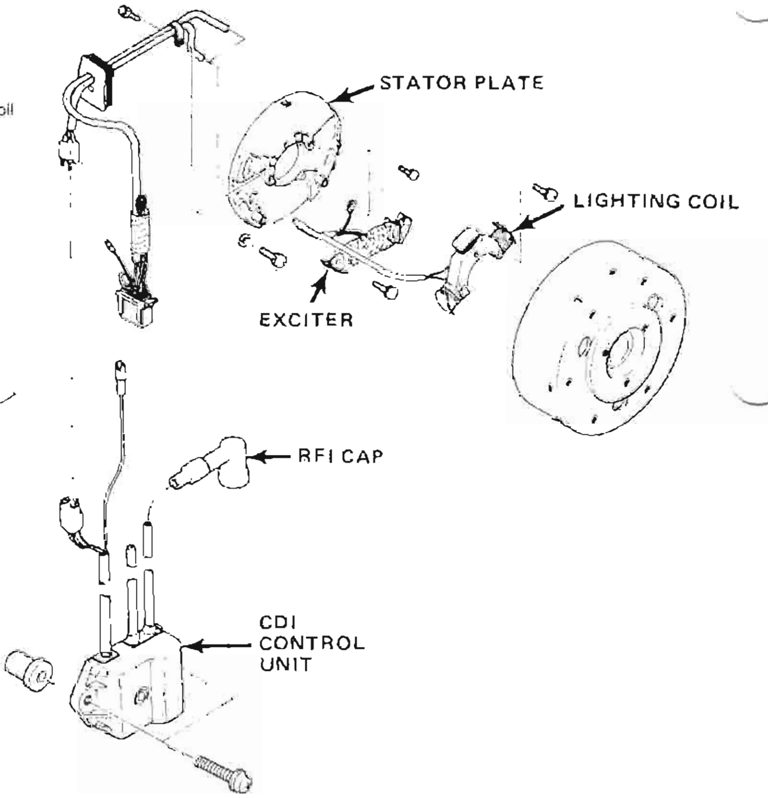
NOTE: Acceptable variance is usually one line on either side of the dial indicated blower housing stationary line.

Twin Cylinder Liquid CDI Ignition (Pulse, Pulseless) - Exploded View - Timing

Timing Procedure



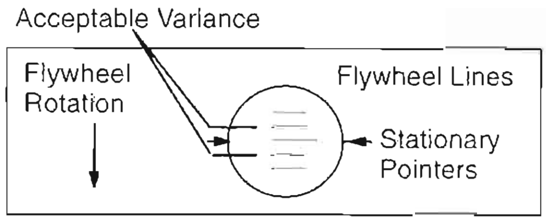
120 Watt Pulse
Type CDI



200 Watt
Pulseless CDI

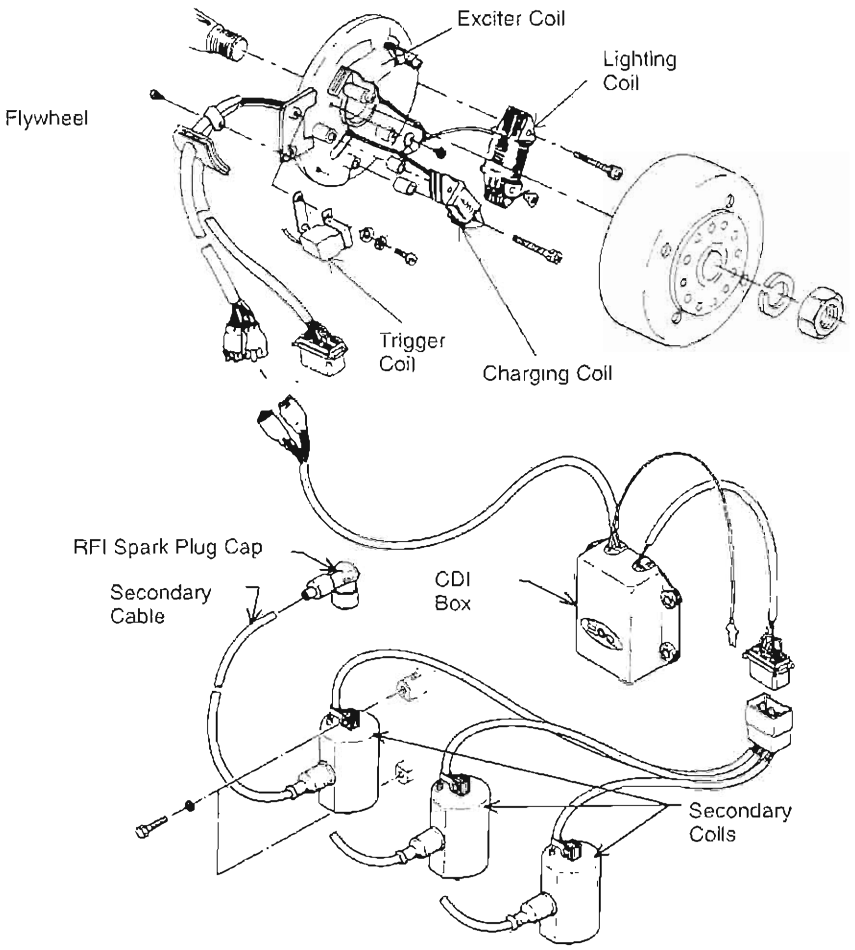
NOTE: Always verify timing of engine at room temperature only (68° F/20° C).

Refer to ignition timing procedure on page 10.17.



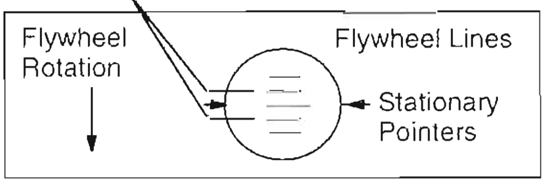
NOTE: Acceptable variance is usually one line on either side of the dial indicated timing mark.

Three Cylinder CDI Ignition Timing - Exploded View (Typical)



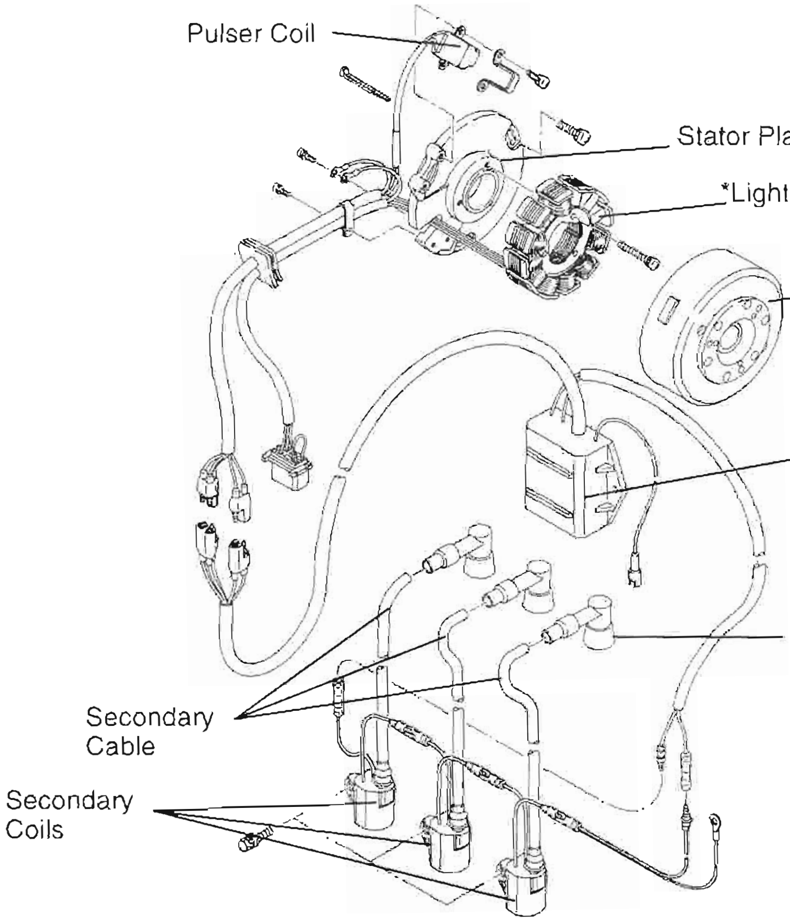
NOTE: Always verify timing of engine at room temperature only (68° F/20° C).

Refer to ignition timing procedure on page 10.17.



NOTE: Acceptable variance is usually one line on either side of the dial indicated timing mark.

Three Cylinder CDI Ignition - Exploded View



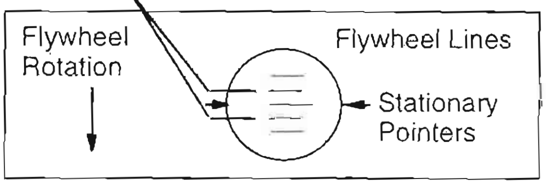
170 Watt

* The Exciter Coil can be identified by wire color, and smaller windings.

NOTE: Always verify timing of engine at room temperature only (68° F/20° C).

Refer to ignition timing procedure on page 10.17.

Acceptable Variance



NOTE: Acceptable variance is usually one line on either side of the dial indicated timing mark.

Timing Procedure - All Models

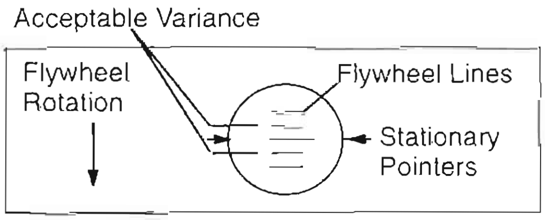
NOTE: Always verify timing of engine at room temperature only (20°C/68°F).

1. Refer to the timing specification charts at the beginning of this section to determine the proper ignition timing for the engine you are working on.
2. Use a dial indicator to place the piston in the proper timing position and mark the flywheel at this point (follow procedure on page 10.11).
3. Connect an accurate tachometer and a good quality timing light to the engine according to manufacturer's instructions.
4. Start engine and increase RPM to the point specified in the timing specification charts (1500, 3000, or 3500). Hold the throttle or set idle screws to maintain specifieed timing RPM.
5. Point the timing light at the timing inspection hole.
6. With your head positioned so there is a straight line between your eye, the stationary pointer and the crankshaft center line, note the relative position between the marked flywheel line and the stationary pointer. If the stationary pointer is aligned with the mark made in Step 2, (or within the acceptable ± variance) the timing is correct.
7. If the pointer is outside the variance, the stator will have to be rotated either <u>with</u> crankshaft rotation (to retard the timing) or *against* rotation to advance it.

NOTE: Rotate stator plate approximately the same distance as the marks must move.

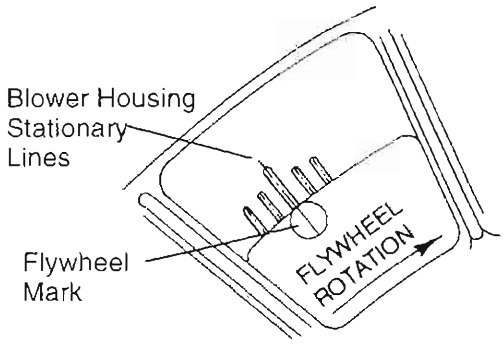
NOTE: In most cases, the recoil starter housing, recoil drive hub, and flywheel must be removed to loosen the stator bolts and change the timing. On some engines, the stator plate retaining screws can be accessed through the flywheel.

8. Torque stator plate screws and flywheel nut to specified torque. Apply Loctite 262 (red) to crankshaft flywheel taper if required. Refer to the Engine section for torque specifications and flywheel installation procedure for engine type.



NOTE: Acceptable variance is usually one line on either side of the dial indicated timing mark.

Liquid Cooled



Fan Cooled

Operating RPM Timing Check - All Models

CAUTION:

Due to the high RPM necessary and the possible danger involved, special care must be observed whenever performing an operating RPM timing check to avoid serious personal injury.

This check need not be performed unless symptoms leading to poor performance and possible engine damage are present.

- Never operate the engine with the clutch guard open or removed.
- Do not stand over or around the clutch while performing this test.
- Perform the test as quickly as possible. Avoid prolonged periods of engine free-rev.

Operating RPM Timing Test Procedure

1. Using the charts at the beginning of this unit, determine the ignition advance BTDC at the operating RPM.
2. Remove the mag side spark plug and install a dial indicator in that cylinder.
3. Zero the dial indicator as explained on page 10.11.
4. Turn the crankshaft in the opposite direction of rotation to a point approximately .100″ (2.5 mm) before the operating ignition timing point.
5. Turn the crankshaft in the proper direction of rotation until the dial indicator shows the proper piston position BTDC for operating RPM ignition timing. **NOTE:** The charts only indicate degrees BTDC. This figure must be converted using the tables on page 10.12. Example: The operating timing and RPM for an engine is 16° at 7500 RPM. Using the chart, 16° on this engine is .058 BTDC at 7500 RPM. Using a properly installed and zeroed dial indicator, back the engine up to approximately .150 BTDC. Then rotate the crank in the proper direction of rotation to .058 BTDC.
6. While holding the crankshaft at the operating RPM ignition timing point, make some timing marks on the flywheel or blower housing using a piece of chalk or marker.
7. Remove the dial indicator and reinstall spark plug.
8. Start the engine. Advance and hold the throttle at the operating RPM specified on the charts. View the timing mark with the timing light. The marks should be between the allowable +/- variance indicated on the operating RPM timing specification.
9. If the operating RPM timing greatly varies from the specification, but the 3000 or 3500 RPM ignition is correct, refer to the ignition troubleshooting section in this unit for corrective action.

Preparing a New Battery for Service

To ensure maximum service life and performance from a battery, it must have proper initial servicing. To service a new battery, the following steps must be taken. **NOTE:** Do not service the battery unless it will be put into regular service within 30 days.

1. Remove vent plug from vent fitting.
2. Fill battery with electrolyte to the upper level marks on the case.
3. Set battery aside and allow it to cool and stabilize for 30 minutes.
4. Add electrolyte to bring the level back to the upper level mark on the case. **NOTE:** This is the last time that electrolyte should be added. If the level becomes low after this point, add only distilled water.
5. Charge battery at 1/10 of its amp/hour rating.
   Example:1/10 of 9 amp battery = .9 amps, 1/10 of 14 amp battery = 1.4 amps, 1/10 of 18 amp battery = 1.8 amps (recommended charging rates).
6. Check specific gravity of each cell with a hydrometer to ensure each has a reading of.1.270 or higher.

Battery Testing

There are three easy tests which can determine battery condition. Whenever the complaint is related to either the starting or charging systems, the battery should be checked first.

Lead-acid batteries should be kept at or as near full charge as possible. If the battery is stored or used in a partially charged condition, hard crystal sulfation will form on the plates, reducing their efficiency and possibly ruining the battery.

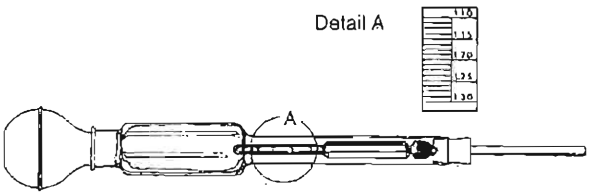
Open Circuit Voltage Test (OCV)

Battery voltage should be checked with a digital multitester. Readings of 12.6 or less require further battery testing and charging.

Specific Gravity Test

A tool such as the battery hydrometer (PN 2870836) can be used to measure electrolyte strength or specific gravity. As the battery goes through the charge/discharge cycle, the electrolyte goes from a heavy , more acidic state at full charge to a light, more water state when discharged. The hydrometer can measure state of charge and differences between cells in a multi-cell battery. Readings of 1.270 or greater should be observed in a fully charged battery. Differences of more than .025 between the lowest and highest cell readings indicate a need to replace the battery.

State Of Charge	Conventional Lead-acid	Yumacron Type
100% Charged	12.60V	12.70V
75% Charged	12.40V	12.50V
50% Charged	12.10V	12.20V
25% Charged	11.90V	12.0V
0% Charged	Less Than 11.80V	Less Than 11.9V



State Of Charge*	Conventional Lead-acid	Yumacron Type
100% Charged	1.265	1.275
75% Charged	1.210	1.225
50% Charged	1.160	1.175
25% Charged	1.120	1.135
0% Charged	Less Than 1.100	Less Than 1.115

*at 80° F

NOTE: Subtract .01 from the specific gravity for electrolyte at 40° F and compare these values to the chart.

Load Test

NOTE: This test can only be performed on machines equipped with electric start. This test cannot be performed if the engine or starting system is not working properly.

A battery may indicate a fully charge condition on the OCV test and the specific gravity test, but still not have the storage capacity necessary to properly function in the electrical system. For this reason, a battery capacity or load test should be conducted whenever poor battery performance is encountered.

To perform the test, hook a multitester to the battery in the same manner as in the OCV test. The reading should be 12.6 volts or greater. Engage the electric starter and view the registered battery voltage while cranking the engine. Continue the test for 15 seconds. During this cranking period, the observed voltage should not drop below 9.5 volts. If the beginning voltage is 12.6 or higher and the cranking voltage drops below 9.5 volts during the test, replace the battery.

Refilling a Low Battery

The normal charge/discharge cycle of a battery causes the cells to give off gases. These gases, hydrogen and oxygen, are the components of water. Because of the loss of these gases and the lowering of the electrolyte level, it will be necessary to add pure, clean distilled water to bring the fluid to the proper level. After filling, charge the battery to raise the specific gravity to the fully charged position (1.270 or greater).

Off Season Storage

To prevent battery damage during extended periods of non-use, the following basic maintenance items must be performed.

1. Remove battery from machine and wash the case and battery tray with a mild solution of baking soda and water. Rinse with lots of fresh water after cleaning. **CAUTION:** Do not allow any of the baking soda solution to enter the battery or the acid will be neutralized.
2. Using a wire brush or knife, remove any corrosion from the cables and terminals.
3. Make sure the electrolyte is at the proper level. Add distilled water if necessary.
4. Charge at a rate no greater than 1/10 of the battery's amp/hr capacity until the electrolyte's specific gravity reaches 1.270 or greater.
5. The battery may be stored either in the machine with the cables disconnected, or on a piece of wood in a cool place. **NOTE:** Stored batteries lose their charge at the rate of 1% per day. They should be fully recharged every 30 to 60 days during a non-use period. If stored during winter months, the electrolyte will freeze at higher temperatures as the battery discharges. The chart indicates freezing points by specific gravity.

Specific Gravity of Electrolyte	Freezing Point
1.265	-75° F
1.225	-35° F
1.200	-17° F
1.150	+5° F
1.100	+18° F
1.050	+27° F

Charging Procedure

Charge battery with a charger no larger than 1/10 of the battery's amp/hr rating for as many hours as needed to raise the specific gravity to 1.270 or greater.

⚠ WARNING

The gases given off by a battery are explosive. Any spark or open flame near a battery can cause an explosion which will spray battery acid on anyone close to it. If battery acid gets on anyone, wash the affected area with large quantities of cool water and seek immediate medical attention.

⚠ WARNING

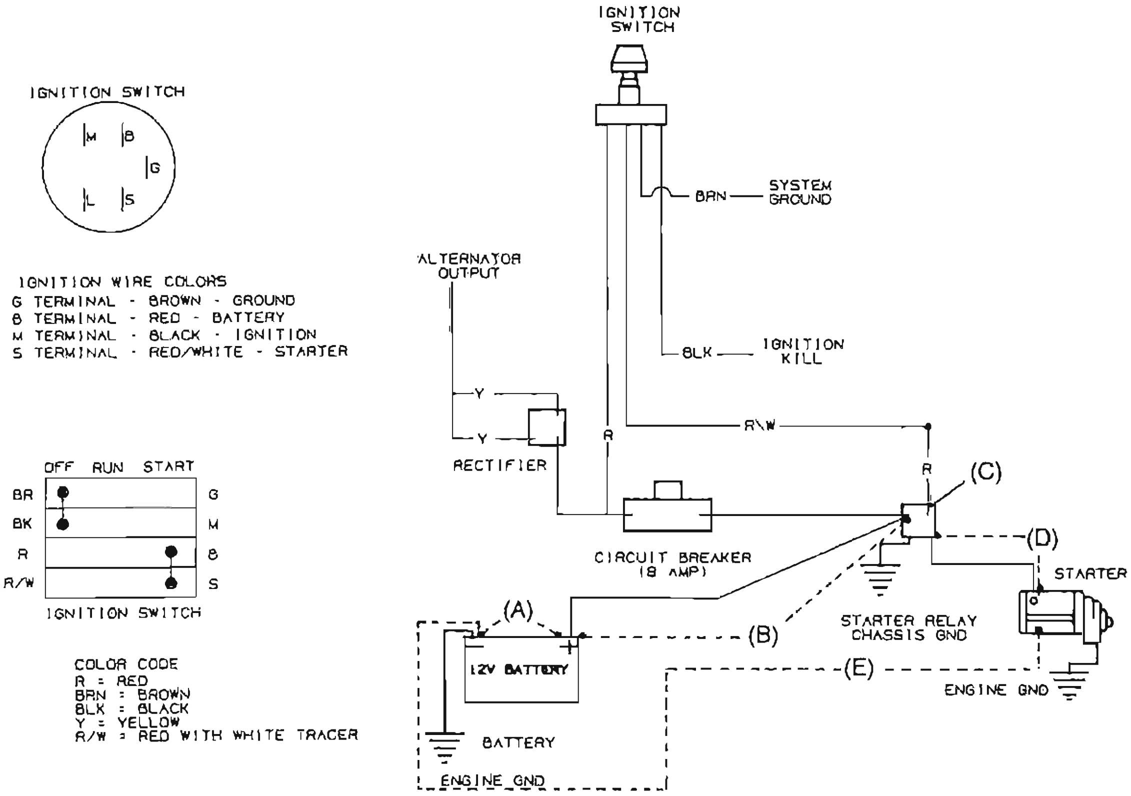
Battery electrolyte is poisonous. It contains acid!
Serious burns can result from contact with the skin, eyes, or clothing.
ANTIDOTE:
EXTERNAL: Flush with water.
INTERNAL: Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call physician immediately.
EYES: Flush with water for 15 minutes and get prompt medical attention.
Batteries produce explosive gases. Keep sparks, flame, cigarettes, etc. away. Ventilate when charging or using in closed space. Always shield eyes when working near batteries.
KEEP OUT OF REACH OF CHILDREN.

Condition: Starter fails to turn motor or motor turns slowly.

NOTE: Be sure the engine crankshaft is free to turn before proceeding. For this test a digital multitester must be used.

With tester on VDC, place tester black lead on battery negative (-) terminal and tester red lead on battery positive (+) terminal. Reading should be 12.6V or greater. Is it? No→ Yes↓ (A) Page 10.22	Remove battery, test and/or service. Install a fully charged shop battery to continue the test. (Continue with left column)
Disconnect red engagement coil wire from start solenoid. Connect black tester wire to an appropriate ground and red lead to red harness wire at solenoid. Rotate ignition key to the start position. Meter should read battery voltage. Does it? No→ Yes↓	With black tester lead on ground, check for voltage at large relay in terminal,, circuit breaker in and out terminals, and across both sides (red and red/white) of the ignition switch with switch on start. Repair or replace any defective parts.
Reconnect solenoid, connect tester black lead to battery positive terminal and red tester lead to solenoid end of battery to solenoid cable. Turn key to start position. The reading must be less than .1V DC. Is it? No→ Yes↓ (B) Page 10.22	Clean battery to solenoid cable ends or replace cable.
Connect black tester lead to solenoid end of battery to solenoid cable and red tester lead to solenoid end of solenoid to starter cable. Turn key to start position. The reading must be less than .1V DC. Is it? No→ Yes↓ (C) Page 10.22	Replace starter solenoid.
Connect black tester lead to solenoid end of solenoid to starter cable and red tester lead to starter end of same cable. Turn key to start position. The reading must be less than .1V DC. Is it? No→ Yes↓ (D) Page 10.22	Clean solenoid to starter cable ends or replace cable.
Connect black tester lead to starter frame. Connect red tester lead to battery negative (-) terminal. Turn key to start position. The reading should be less than .1V DC. Is it? No→ Yes↓ (E) Page 10.22	Clean ends of engine to battery negative cable or replace cable.
If all these tests indicate a good condition, yet the starter still fails to turn, or turns slowly, the starter must be remove for static testing and inspection.	

Starter Motor Static Testing



A-E See page 10.21

1. Remove starter motor and disassemble. Mark end covers and housing for proper reassembly.
2. Remove pinion retaining snap ring, spring and pinion gear.
3. Remove brush end bushing dust cover.
4. Remove housing through bolts.
5. Slide brush end frame off end of starter. **NOTE:** The electrical input post must stay with the field coil housing.
6. Slide positive brush springs to the side, pull brushes out of their guides and remove brush plate.
7. Clean and inspect starter components. **NOTE:** Some cleaning solvents may damage the insulation in the starter. Care should be exercised when selecting an appropriate solvent. The brushes must slide freely in their holders. If the commutator needs cleaning, use only an electrical contact cleaner and/or a non-metallic grit sandpaper. Replace brush assembly when worn to 5/16″ (.8 cm) or less.

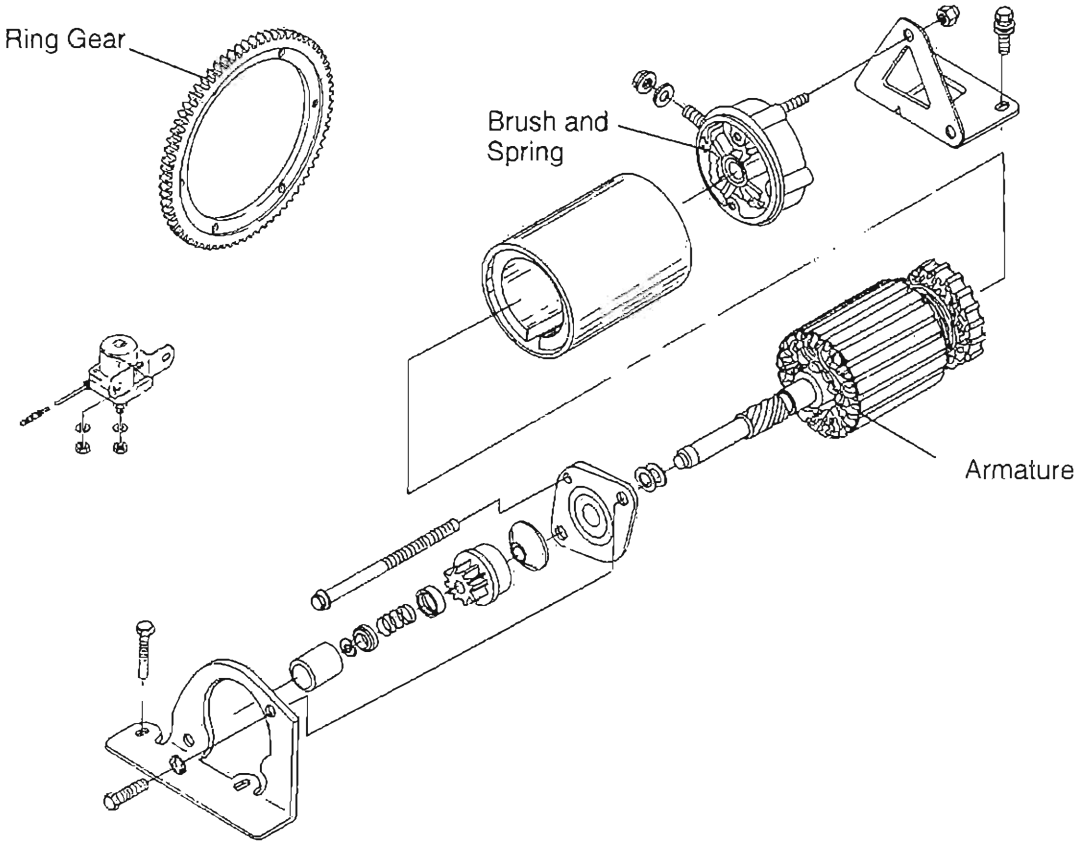
Starter Housing and Field Coil Inspection

1. Using a digital multitester, measure resistance between starter input terminal and insulated brushes. The reading should be .3 ohms or less.
2. Measure resistance between insulated brushes and field coil housing. The reading should be infinite.
3. Inspect insulated brush wire and field coil insulation for damage. Repair or replace components as required.

Armature Testing

1. Using a digital multitester, measure resistance between each of the segments of the commutator. The reading should indicate .3 ohms or less.
2. Measure resistance between commutator and armature shaft. Reading should be infinity.
3. Place armature in a growler. With the growler on, position a hacksaw blade lengthwise 1/8″ (.03 cm) above armature coil laminates. Rotate armature 360°. If hacksaw blade is drawn to the armature on any pole, the armature is shorted and must be replaced.

Starter Assembly



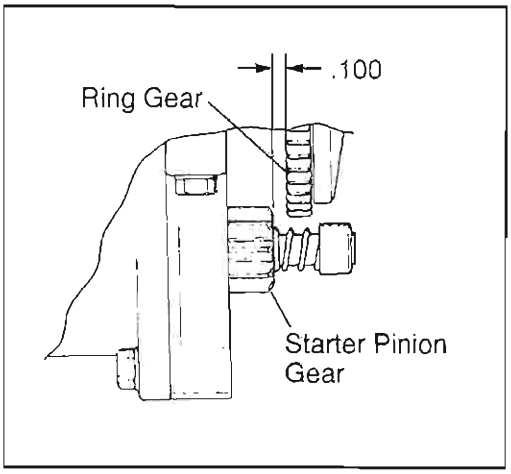
1. Slide armature into field coil housing.
2. Lightly grease drive end bushing and install drive end frame on armature.
3. Mount starter vertically in a vice with brush end up.
4. While holding negative brushes out against their springs, slide brush plate down onto the commutator.
5. While holding positive brush springs to the side, slide positive brushes into their holders and correctly position the springs on top of the brushes.
6. Using a non-petroleum grease, lubricate brush end bushing and slide it onto end of armature.
7. Align threaded holes in brush plate and install dust cover and screws.
8. Reinstall through bolts and properly tighten all screws.
9. Lightly grease pinion shaft and install pinion, spring stopper and snap ring.

Starter Solenoid Bench Test

It is difficult to test the high amp side of the solenoid accurately on the bench. The only test which can be done on the bench is the pull in coil resistance, which should read 3.4 ohms.

Starter Installation

1. Position starter motor so there is no less than .100″ clearance between the ring gear and the starter motor pinion gear.
2. Torque 8mm drive end mount bolts to specification.
3. Torque 6mm brush end mount bracket to engine bolts to specification.



8mm Drive End Mount Bolt Torque - 15 ft. lbs. (2.07 kgm)

6mm Drive End Mount Bolt Torque - 5 ft. lbs. (.69 kgm)

4. Torque through bolt mount bracket nuts to specification.

Mounting Bracket Nut Torque -

30-42 in. lbs. (.34-.48 kgm)

Unregulated Voltage

1. Turn the multitester dial to the Volts AC (V~) position.
2. Disconnect the alternator to main harness connector at engine.
3. Connect one of the tester leads to the yellow alternator wire and the other lead to the brown alternator wire.
4. Start the engine. While observing the voltage reading, increase the engine speed to about 3000 RPM. Readings of between 15 and 45 VAC are considered normal. **NOTE:** Higher readings may occur on Ultra models.

A~= Amps AC - used to test lighting coil output

Test Method

1. Discconnect engine harness from system.
2. Connect red lead to 10A (+) meter terminal.
3. Connect black lead to Com (–) meter terminal.
4. Start engine and let it idle.
5. Observe and record the meter reading.

150 Watt Alternators: The reading should exceed 8 amps.

200 Watt Alternators: The reading should exceed 12 amps.

NOTE: Amperage readings are not dependent upon engine RPM. The reading you obtain at idle is essentially the same as the reading that would be obtained at higher RPMs.

NOTE: Although the meter connection is labeled 10A it will correctly read higher AC amperage (without damage to your meter) for periods of time not exceeding 10 seconds.

Regulated Voltage

Due to the internal construction of the LR modules and the way they function, it is not possible to accurately measure regulated voltage with most VOMs.

There are two possible problems that can occur with voltage regulators: Not enough output or too much output.

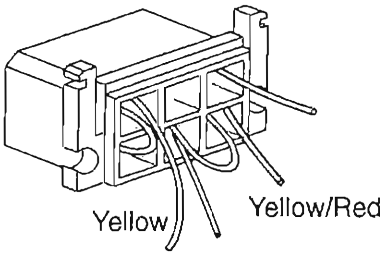
Not enough output would show itself because of low output from the lights.

1. Disconnect the yellow wire from the regulator.
2. Start the engine and observe the headlight at idle.
3. Slowly increase engine RPM a slight amount.
4. If the light output increases above what you observed when the regulator was connected, the regulator or regulator ground is probably at fault.
5. If the light output does not change when the regulator is not connected (and the lights excessively dim), this would indicate excessive system loads, poor flywheel magnets, lighting coil problems, or wiring harness problems.
6. The other possibility is too much voltage. Light bulbs that continually burn out would be an indication of too much voltage reaching the headlights.
7. Before you change the regulator due to too much voltage reaching the lights, make sure that you inspect all connections and grounds. Poor connections can cause voltage spikes which could damage the lights.

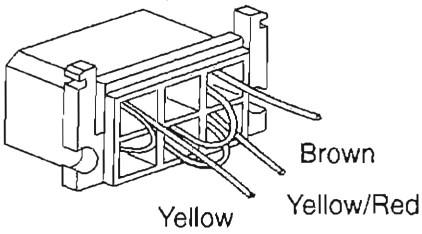
NOTE: Fuel injected models have two regulators; one for lighting and one for charging the battery. Battery charging is discussed on page 10.20.

Lighting System Identification - Test between labeled wires.

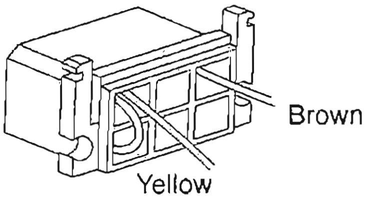
150 Watt Twins
200 Watt Twins

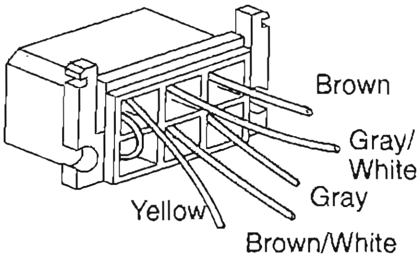


180 Watt 3 Cyl. (Carb.)
170 Watt 3 Cyl. (Carb.)



250 Watt Twin - 500 EFI

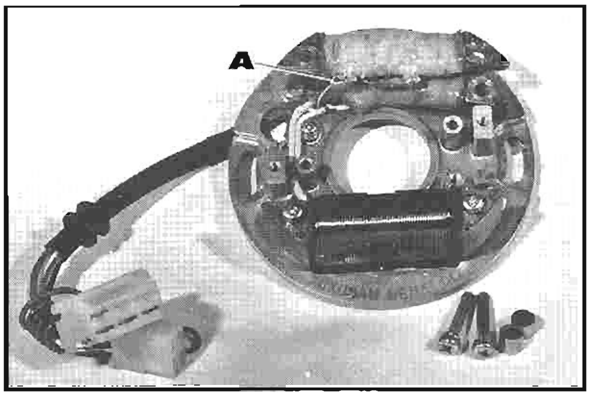




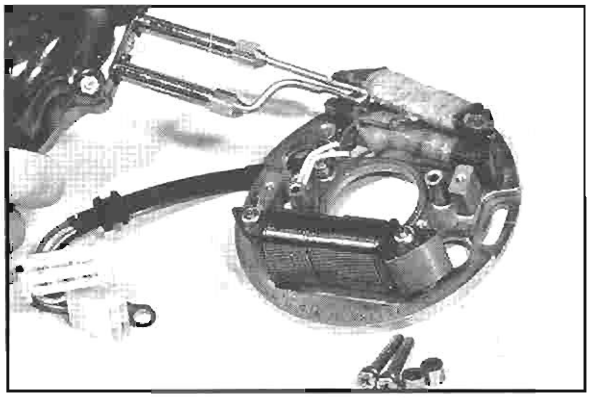
Check Lighting Coil Between
Yellow and Brown.
Check Battery Charging
Between Gray and Brown/White
and Gray/White and Brown/White.

NOTE: Gray, Gray/White, Brown/White are Bullet Type Connectors

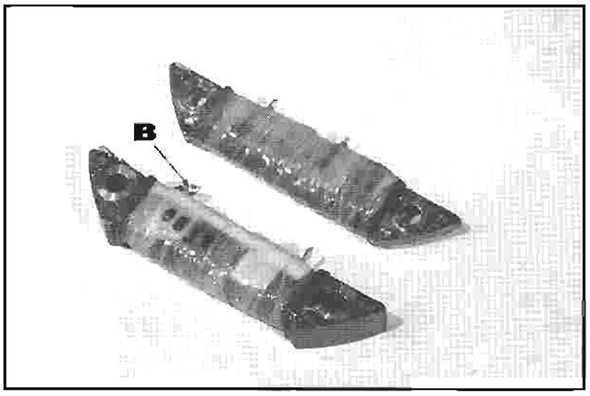
1. Remove coil retaining screws and spacers.
2. Using a pliers, remove epoxy from solder joints (A) on the coil to be replaced.



3. Unsolder connection from coil.



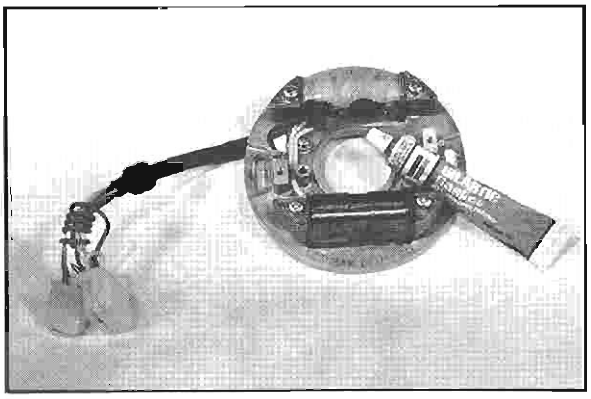
4. Clean solder terminals (B) on the replacement coil and re-solder to their proper wires. **NOTE:** Always position with numbers towards the *outside.*



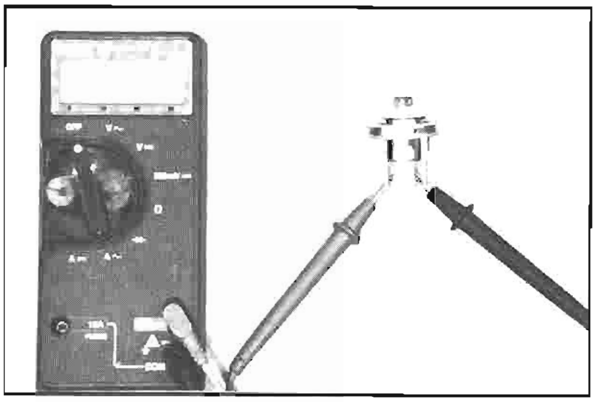
5. Reinstall retaining screws and spacers.
6. Using a moisture-proof sealant, seal solder joints as shown. **NOTE:** All soldering must be done using rosin core solder.
7. Test resistance of each coil prior to stator plate installation.

NOTE: Lighting and pulseless coils are replaced in a similar manner.

IMPORTANT: After the stator plate is reinstalled on the engine, check placement of all coil leads to prevent possible contact with the flywheel.

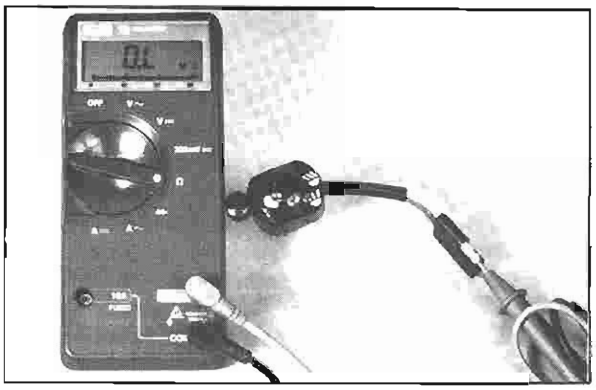


Headlight Bulb Filament Continuity Test

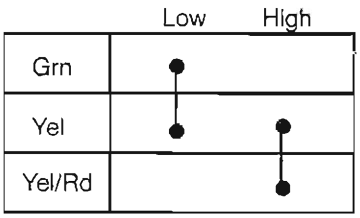


1. Turn the Multitester dial to the ohms (Ω) position.
2. Disconnect the wire harness from the headlight bulb.
3. Viewing the end of the bulb with the terminal blades at the 9, 12 and 3 o'clock position, connect the black multitester lead to the 9 o'clock blade.
4. Touch the red tester lead to the 12 o'clock terminal and then to the 3 o'clock terminal, noting the resistance value of each. A reading of between 2 and 5 ohms is good. An open reading indicates a bad element.

Hi/Lo Beam Switch Testing

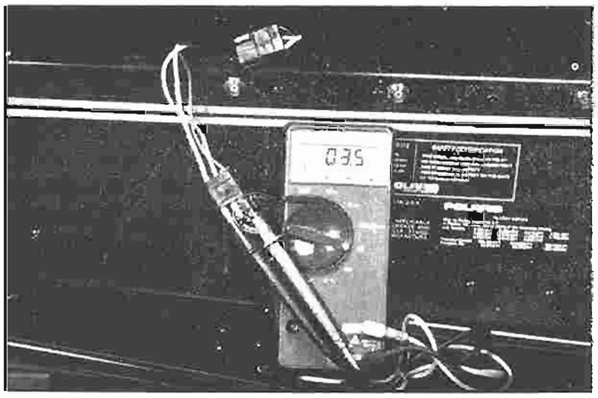


1. Set the multitester dial to the ohms (Ω) position.
2. If the Hi/Lo switch has not been removed from the machine, disconnect the switch to harness plug in connector.
3. With the Hi/Lo switch in the *Lo beam* position, check the resistance between the yellow and the green switch wires. The reading should be less than .4 ohms.
4. Turn the Hi/Lo switch to the *Hi beam* position and the multitester should indicate an open circuit (OL) reading.
5. Move one of the tester leads from the green to the red switch wire. The multitester should now read less than .4 ohms.
6. Turn the Hi/Lo Switch back to the *Lo beam* position and the meter should again read an open circuit (OL).



High/Low Switch

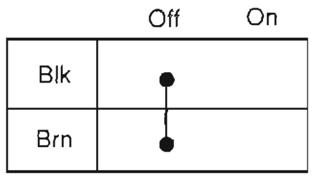
Seat Harness Troubleshooting



1. Remove the taillight lens.
2. Remove the two taillight bulbs and the brakelight bulb.
3. Separate the seat harness from the main harness by unplugging the connector at the right rear of the tank.
4. With the multitester dial set on ohms (Ω) connect either meter test lead to the brown seat harness wire.
5. Touch the other tester lead to first the yellow wire and then the orange wire. Observe the readings. Readings other than an open circuit indicate a shorted harness or bulb socket. **NOTE:** The bulb socket tangs sometimes short to ground with the bulb removed.
6. Check between the yellow and orange wires in the same manner to check for a short between the brake and running lights. If damaged wiring is found, remove the seat.
7. Tip the seat over and remove the right side seat cover staples. Locate and repair the harness problem.
8. Reinstall the staples and re-check the seat harness.

Ignition Switch Testing (Non-Electric Start)

1. Set the multitester dial to the ohms (Ω) position. Connect one of the tester leads to either of the switch terminals and the other tester lead to the other switch terminal.
2. With the switch off, the reading should be less than .4 ohms. With the switch on, the reading must be an open circuit (OL).
3. Check the resistance between each of the switch terminals and the switch body. With the switch still in the on position, there must be an open circuit (OL) reading. Readings other than those listed indicate a defective switch.

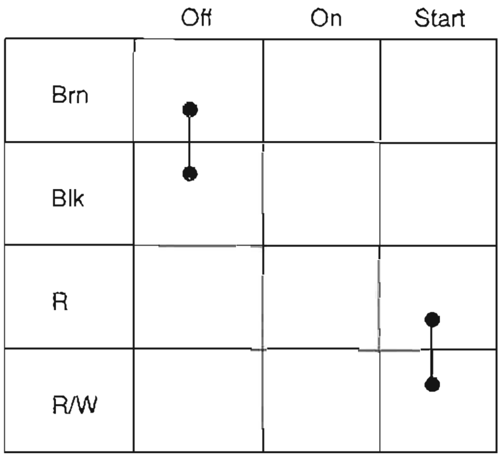


Ignition Switch

Ignition Switch Testing (Electric Start Models)

NOTE: Refer to the appropriate model and year wiring diagram for ignition switch wire colors and connections.

1. Disconnect wires. Set the multitester dial to the ohms (Ω) position.
2. With the key in the off position, check the resistance between the G (Ground, brown) terminal and the M (Mag, black) terminal. This reading must be less than .4 ohms.
3. Turn the key to the on position. The multitester should now read an open circuit (OL).
4. Move the tester lead from the G terminal to the switch housing and re-check the reading. It should also be an open circuit (OL).
5. Place one of the tester leads on the B (Battery, red) terminal and the other tester lead on the S (Starter, blue) terminal. With the key in the on position, there must be an open circuit (OL) reading.
6. Turn the key to the start position. The reading should be less than .4 ohms. Readings other than the ones listed indicate a defective switch.

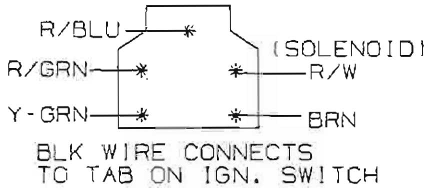


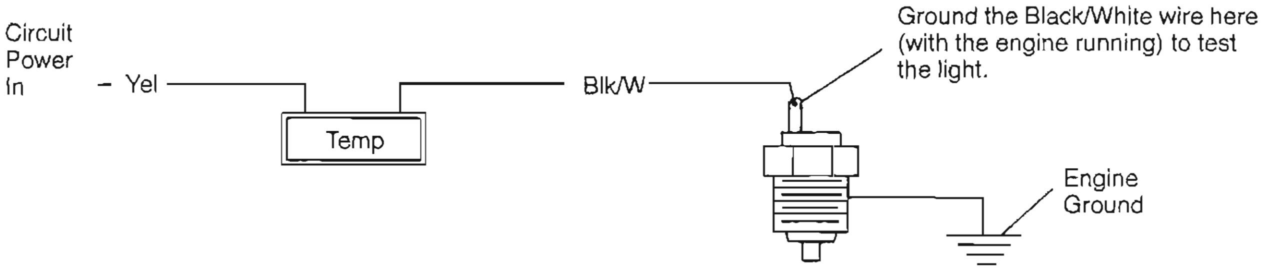
Ignition Switch - Electric Start

Ignition Switch Testing (Fuel Injected Models)

1. Disconnect wires. Set the multitester dial to the ohms (Ω) position.
2. With the key in the off position, connect one of the tester leads to the G terminal.
3. Randomly connect the other tester lead to the other terminals. The only terminal that should show other than an open circuit (OL) is the M terminal. The M terminal should read less than .4 ohms.
4. Turn the key switch to the run position. Check the resistance between the M terminal and each of the other terminals, and the M terminal and the switch housing. All of these readings must be an open circuit (OL).
5. Return the key to the off position.
6. Connect a tester lead to the B terminal. Randomly connect the other tester lead to each terminal. The readings must be an open circuit (OL).
7. Turn the key to the run position and repeat the test. All of the readings must be an open circuit (OL), except between the B and L terminals. This reading must be less than .4 ohms.
8. With one tester lead connected to the B terminal and the other to the S terminal and with the switch in any position except start, the reading should be an open circuit (OL). In the start position, the reading must be less than .4 ohms.

	Off	On	Start
R/Grn			●
Y/Grn			●
Brn	●	●	
Blk	●		
R/W		●	●
R/Blu			●





The indicator light is controlled by a temperature/warning switch installed into the engine cooling system. When engine coolant temperature reaches approximately 205° F, the switch closes, completing the circuit through the indicator light to ground. The system should be tested periodically for proper operation.

Lamp Circuit Test

1. Remove wire from temperature sensing switch located under thermostat housing.
2. With engine idling, ground wire to engine. The temperature warning lamp on the console should light. If not, replace the lamp assembly or inspect wiring for shorts or open circuit.

Temp Light Temperature Sensor Test

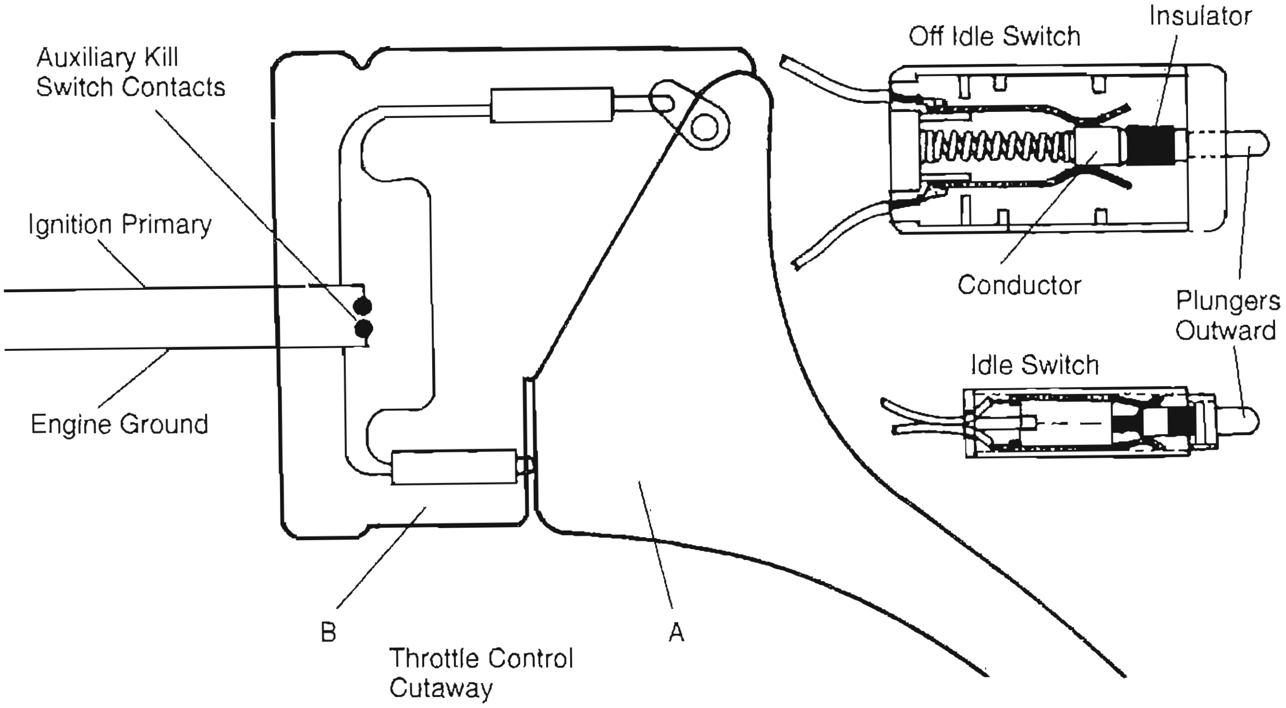
The temperature/warning switch is normally open.

1. Set the multitester on the ohms (Ω) scale.
2. Disconnect the lamp wire.
3. Connect one test probe to the switch terminal and the other to engine ground. The meter should show an open circuit (OL). This indicates a normally open switch. If the switch were heated to approximately 205° F, the contact in the switch would close and the reading would be less than .4 ohms.

CAUTION:

If attempting to heat the sensor to close the contacts, heat only in a water bath. Never subject the sensor to an open flame to attempt to close the contacts as sensor damage will result.

Speed Control Assurance Operation



The speed control assurance consists of two series connected switches. If one or both switch plungers are positioned inward, the circuit is open and the engine will run.

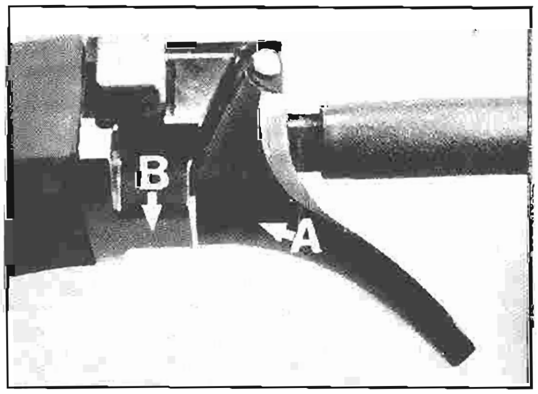
At idle, with the throttle lever properly adjusted, the bottom switch circuit is open and the plunger is inward. The top switch circuit is closed, and the plunger is outward. The speed control circuit is open, allowing the engine to run.

As the throttle lever is actuated to an off idle position, the top switch circuit is opened (plunger in) and the bottom switch circuit is closed (plunger out). The speed control circuit is still open, allowing the engine to run.

In the event the carburetor or controls malfunction and allow the throttle cable to become slack, the circuit will close (both switch plungers out), grounding the ignition system and causing the engine to stop.

Speed Control Assurance Adjustment

Throttle lever free play must always provide a specified clearance between throttle lever (A) and throttle block (B). This clearance is controlled by the throttle cable sleeve(s) and the idle speed screw(s).



Throttle Lever Freeplay -

Regular Throttle - .010 - .030" (.25 - .8 mm)
EZ Throttle - .050 - .060" (1.27 - 1.5 mm)

If the idle speed screw(s) is adjusted inward and the cable sleeve(s) is not adjusted to take up the throttle lever to throttle block clearance, the engine may misfire or kill upon initial throttle opening.

CAUTION:

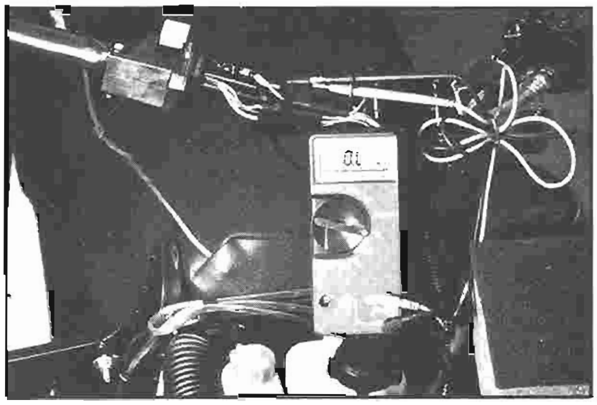
After any idle speed adjustments are made, the throttle lever to throttle block clearance and oil pump adjustment must be checked and adjusted.

NOTE: When adjustments are made on models which have more than one carburetor, refer to Section 6, Carburetion, for proper carburetor synchronization adjustments.

1. Set the multitester in the ohms (Ω) position.
2. Disconnect the switch harness from the main wire harness.
3. Connect the two multitester test leads to the two switch wires.

Test 1 - Open Circuit - Run

With the auxiliary shut-off switch in the **ON** position, the multitester should read an open circuit (OL). As the throttle lever is moved from idle to off idle, the tester should continue to read an open circuit. If the tester fluctuates and the throttle lever to throttle block clearance is adjusted properly, the switch assembly must be replaced.



Test 2 - Closed Circuit - Kill

The two speed control switches must make a complete circuit to kill the engine. To check the switches, pull the throttle lever out away from the throttle block. With the switch plungers outward and the auxiliary shut-off switch in the **ON** position, the multitester must read less than .4 ohms resistance. Inspect wires and repair if damaged, or replace switch assembly.

Test 3 - Auxiliary Shut-Off

The multitester should read less than .4 ohms in the **OFF** position and an open circuit in the the **ON** position. Inspect wires and repair if damaged, or replace switch assembly.

Speed Control Assurance Replacement

Auxiliary shut-off and speed control assurance switches are connected and replaced as a unit from the back side of the throttle block.

1. Remove the handlebar pad and/or throttle block backing plate.
2. Slide out the auxiliary shut-off portion of the switch.
3. Remove the two screws securing the two speed control assurance switches.
4. Remove the switches noting their placement in the throttle block.
5. Replace the assembly and check its operation.

1996 RXL Model

Use the multitester's ohmmeter to test the resistance of the fuel sender.

Position	Ohms	Range
Empty	0 Ω	0 - 3 Ω
Full	90 Ω	85.5 - 94.5 Ω

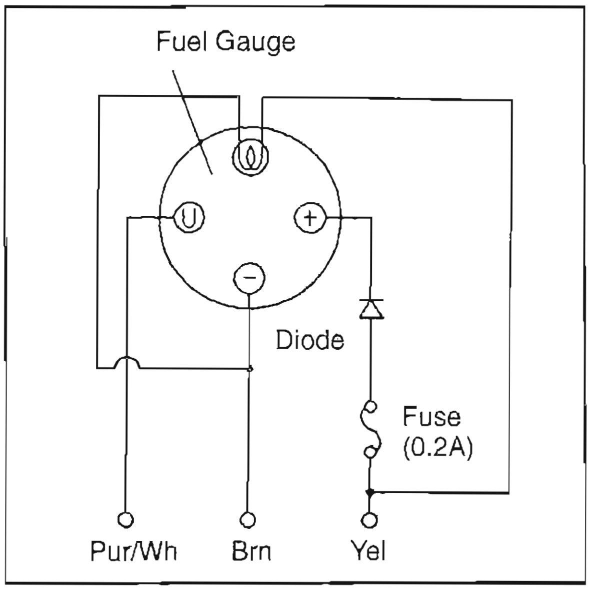
The supply voltage on the Red/White sender wire should be higher than 2 VDC, and less than 5 VDC.

All Other Models

Use the multitester ohmmeter to test the resistance of the fuel sender.

Position	Ohms	Range
Empty	95 Ω	90 - 97.5 Ω
Full	7 Ω	4.5 - 13 Ω

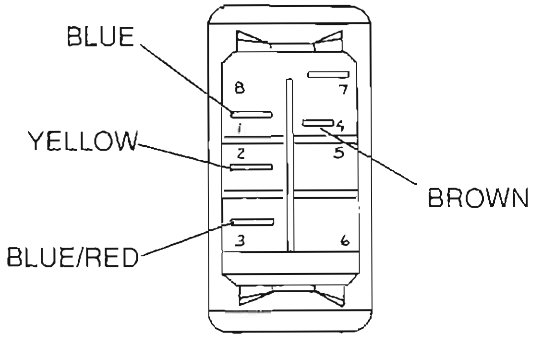
The supply voltage to the gauge should be 13.5 VAC.



High-Low Handwarmer Toggle Switch

Below are the correct wire to PIN numbers:

1. Blue – High Circuit
2. Yellow – Regulated Power (A.C.)
3. Blue/Red – Low Circuit
4. Blank
5. Blank
6. Blank
7. Brown – Ground Circuit
8. Blank



SWITCH – HANDWARMER
HI – LOW

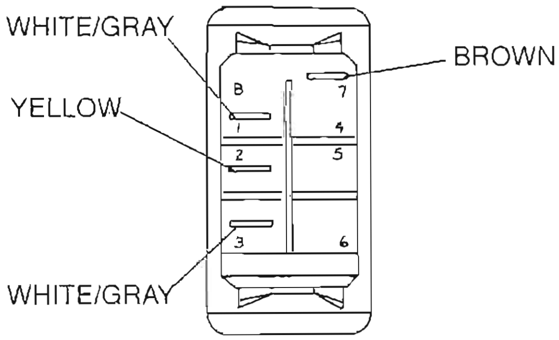
Testing

1. Disconnect handwarmer connector at the handwarmer.
2. Measure the low range resistance between the Blue and Brown wires. The resistance should be 19.2 Ω.
3. Measure the high range resistance between the Brown and Blue/Red. The resistance should be 9.6 Ω.

Thumbwarmer Toggle Switch

Below are the correct wire to PIN numbers:

1 White/Gray – To Thumbwarmer
2. Yellow – Regulated Power (A.C.)
3. White/Gray – To Thumbwarmer
4. Blank
5. Blank
6. Blank
7. Brown – Ground Circuit
8. Blank



SWITCH – THUMBWARMER

Testing

Disconnect handwarmer and check resistance at handwarmer. The resistance between the Blue/Red and Brown wires is 9.6 Ω.

Ultra ETSS Diagnostic Chart

Condition: Engine misfire, weak yellow or no spark at plug wires.

Test Procedure:

Check all ETSS system electrical connections. **NOTE:** The exhaust stop system module must have wires properly connected to the exhaust probe molded connector. White/Red wire to RW indicated female position and White/Yellow wire connected to YW indicated female position.

↓

Disconnect black wire from stop system module. Re-test spark condition. Is proper spark being generated?

- No → Failure is not with ETSS system. Reference ignition system troubleshooting.
- Yes ↓

Disconnect temperature probe from stop system module and check continuity between probe wires. **NOTE:** Probe does not have to be removed from exhaust silencer. They should have continuity. Check continuity between probe wire and ground. Must be open. Set meter at 300 mv scale. Connect red meter lead to YW, and black meter lead to RW. Use a soldering iron to warm probe at exhaust end. Voltage should rise when heat is applied to the exhaust probe end. Does it?

- No → Replace exhaust probe.
- Yes ↓

Replace exhaust stop system module.

↓

Test for normal operation by starting engine and accelerating to 3500 RPM. Disconnect probe from module wires and lower rpms to 3000 ± 200 rpm). The engine should stop. Reconnect probe to module. Engine should start and idle normally. For system to operate properly there must be voltage (AC) to yellow module wire. the module must be grounded, and the black wire connected to the CDI box black kill wire.

Exhaust Thermal Sensing System (ETSS)

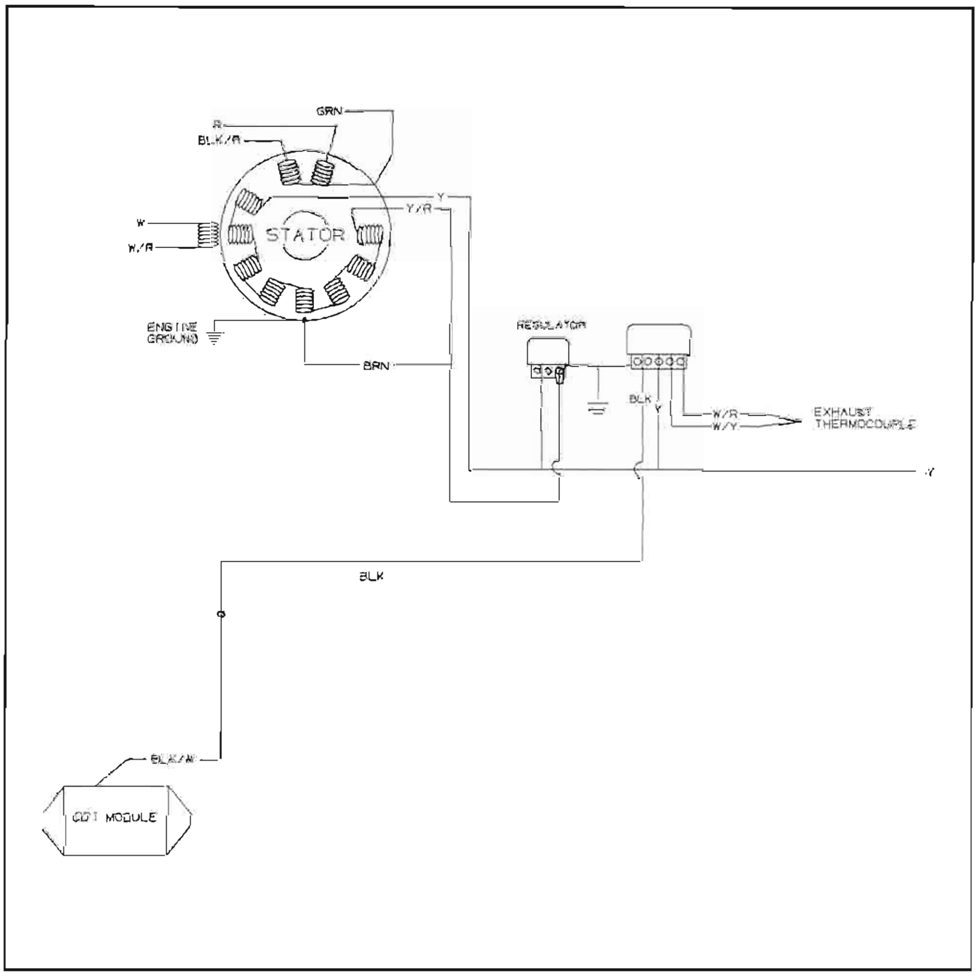
Indy Ultra models come equipped with a thermal sensing device. This device will prevent engine operation below 3000 RPM if the exhaust system's internal temperature is too high. When the exhaust temperature is high at low RPM, the potential exists for an exhaust flame being emitted from the exhaust outlet.

The condition, which causes the engine to stop operating, is rare and generally results after prolonged wide open throttle operation with a rapid return to idle.

In the event that the device is activated, the engine will restart immediately, but may not continue to idle until the exhaust system cools down. the exhaust system usually cools down within one minute of shut down.

CAUTION:

Disconnect black wire for testing purposes only. Do not operate the snowmobile with the ETSS system disconnected.



Condition: No Spark

Disconnect the single black (black/white) wire from the CDI Module to the ignition kill circuit. Does it have a spark? Yes→ No↓	Check the ignition switch, wire harness, throttle safety switches and kill switch for proper adjustment or short to ground. Repair or replace as necessary.
Disconnect the stator to CDI module wires. Test the resistance values of the stator coils as per the charts on page 10.3. Are the resistance values within specs? Yes→ No↓	All except 3 cylinders: If the parts of the ignition system under the flywheel check OK, the only remaining component is the coil/CDI module assembly. Replace the module with another with the same CU number. (See ignition data) All 3 cylinders: Disconnect and check the secondary ignition coil resistances. Refer to the resistance values listed on page 10.3. If the coil resistance values are within specs, replace the CDI module.
Isolate which component's resistance is not within specs. Remove the flywheel and stator. Recheck the resistances; look for pinched or bare harness wires; or replace the coil. Refer to page 10.27 for coil replacement procedures.	

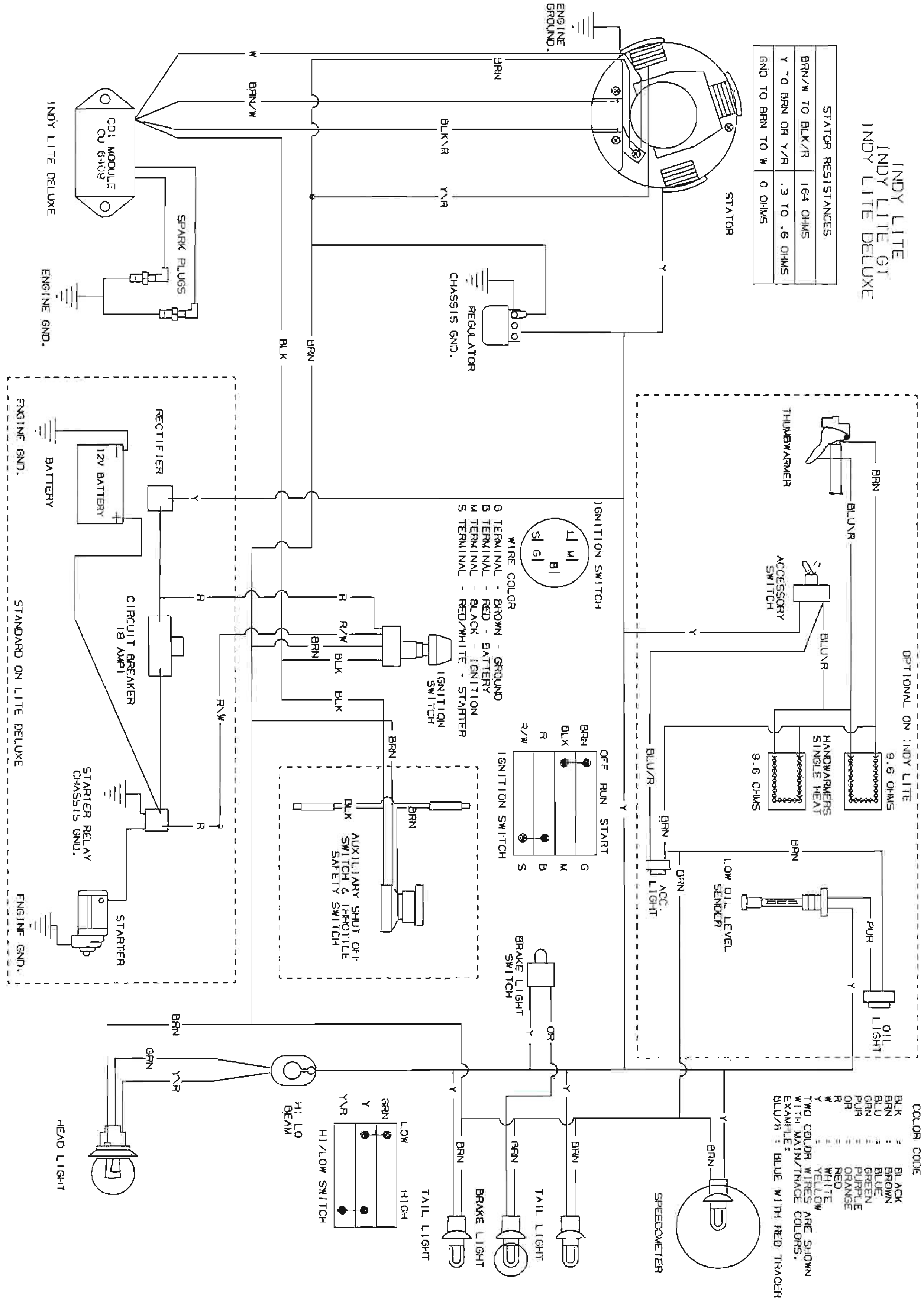
Condition: Incorrect Advance/Retard

Follow the engine timing procedure for checking running timing at 3000 RPM. Is the timing within limits? No→ Yes ↓	Adjust the ignition timing by rotating the stator plate to correct the timing. After adjusting the 3000 RPM timing, continue with operating RPM timing if poor performance exists. (Continue on with left column.) See ignition timing page 10.11.
Follow the engine timing procedure for checking operating RPM timing from page 10.18. Is the timing within limits? Yes→ No↓	If the 3000 and operating RPM timing are within limits, no other testing is necessary.
Remove the ignition kill circuit by disconnecting the single black wire between the CDI module and the machine harness. Is the timing now correct? Yes→ No↓	Check the ignition switch, throttle safety switches, kill switch and harness for damage which can cause intermittent shorting problems. Correct the problem.
Verify the correct CDI module by comparing the CU code on the box to the information listed in the ignition data charts at the beginning of this section. Is it the right module? No→ Yes↓	Replace the module with the correct part and readjust the ignition timing.
Check the resistance of the coils under the flywheel. Compare these values to the charts on page 10.3. Are they within limits? No→ Yes↓	Check the wiring connecting the coils and/or replace the coils as necessary.
If the 3000 RPM timing is within limits but the operating RPM timing is not acceptable, replace the CDI module.	

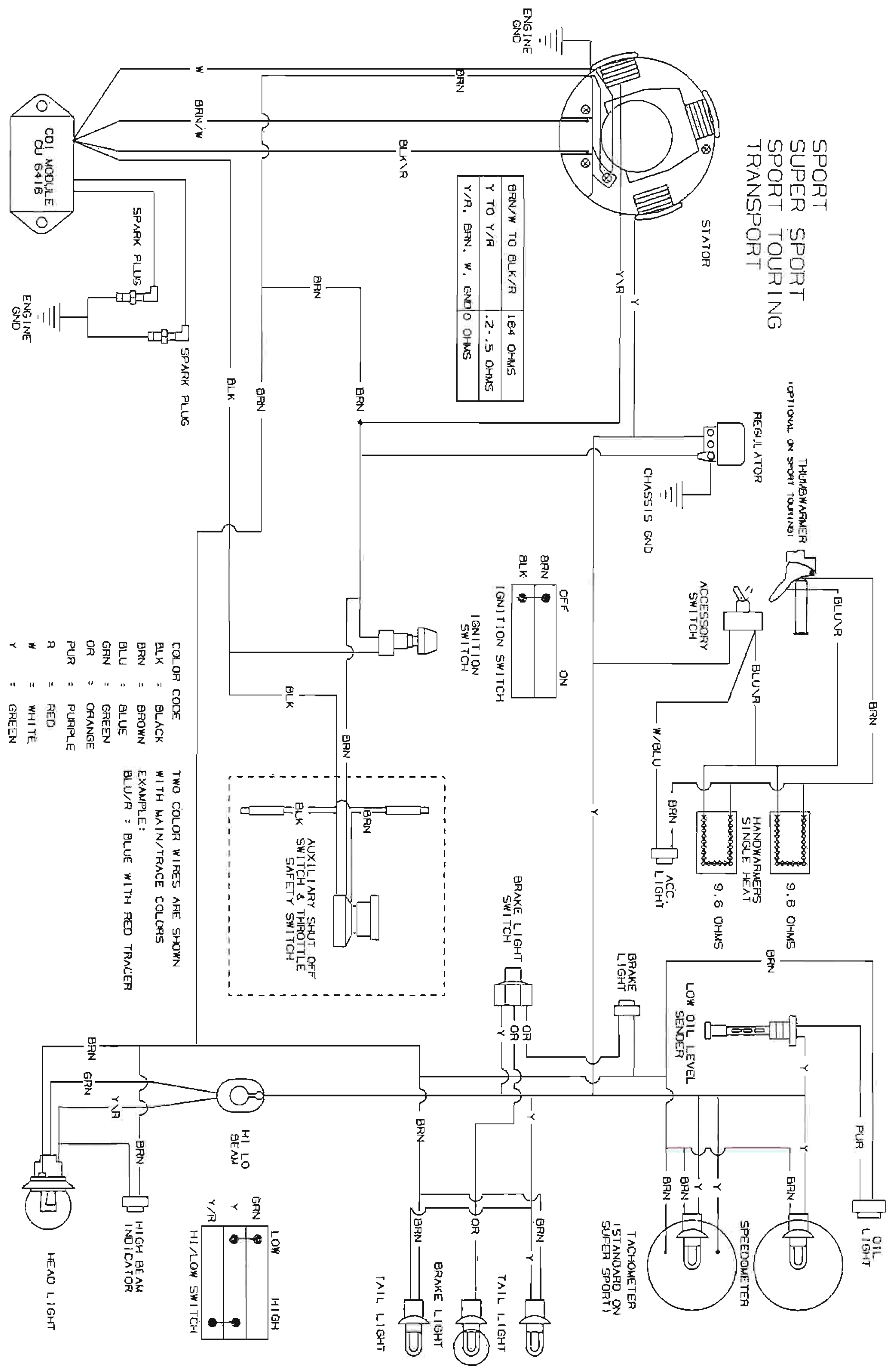
NOTE: 3 cylinder engines fire three times per revolution. At 7500 RPM the ignition is firing 21,500 times per minute. Use of a timing light not capable of handling these RPMs may provide an incorrect operating RPM timing reading. Use timing light PN 2870630 or equivalent.

Timing Light PN 2870630

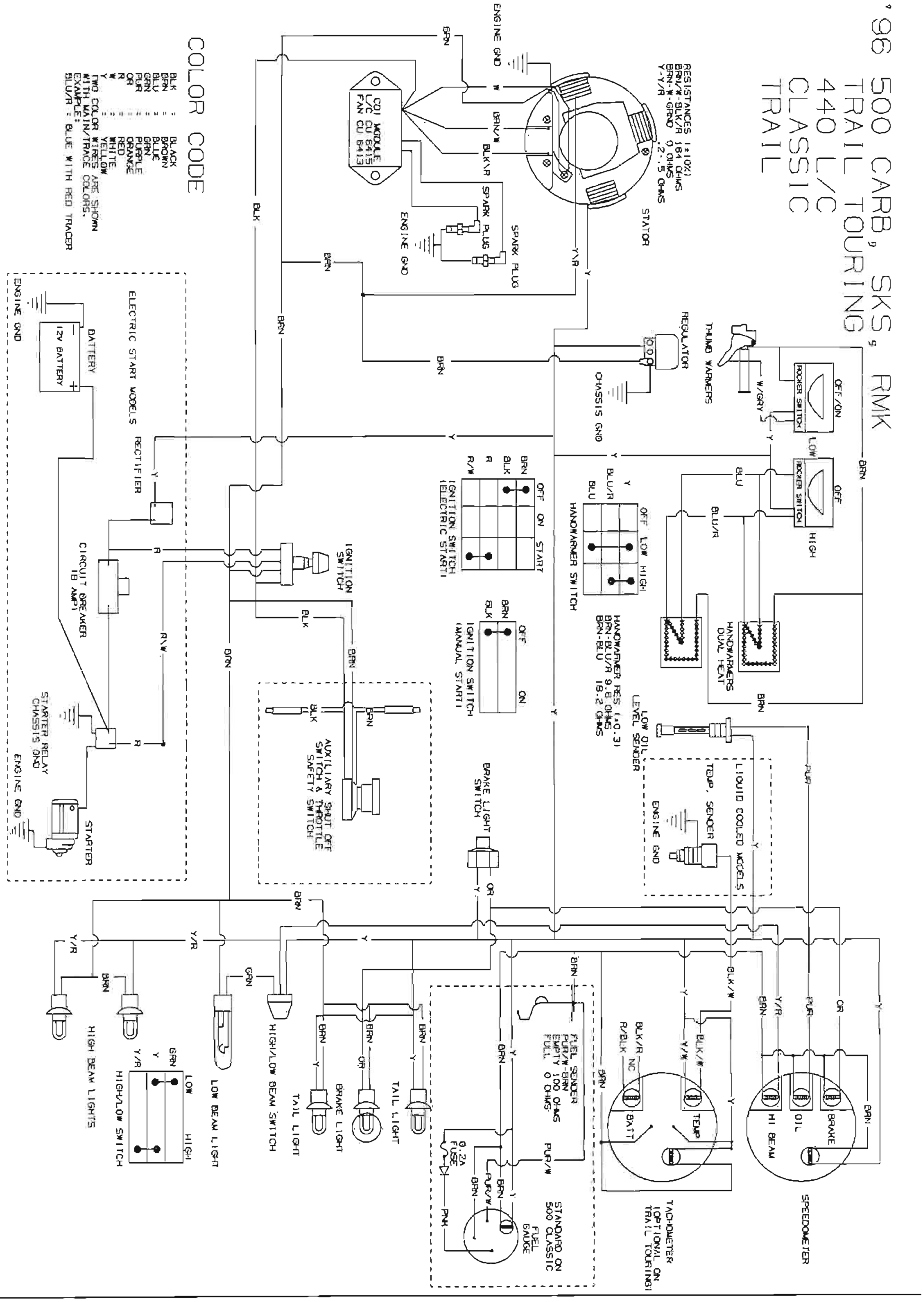
1996 Wiring Diagram - Indy Lite / GT / Lite Deluxe



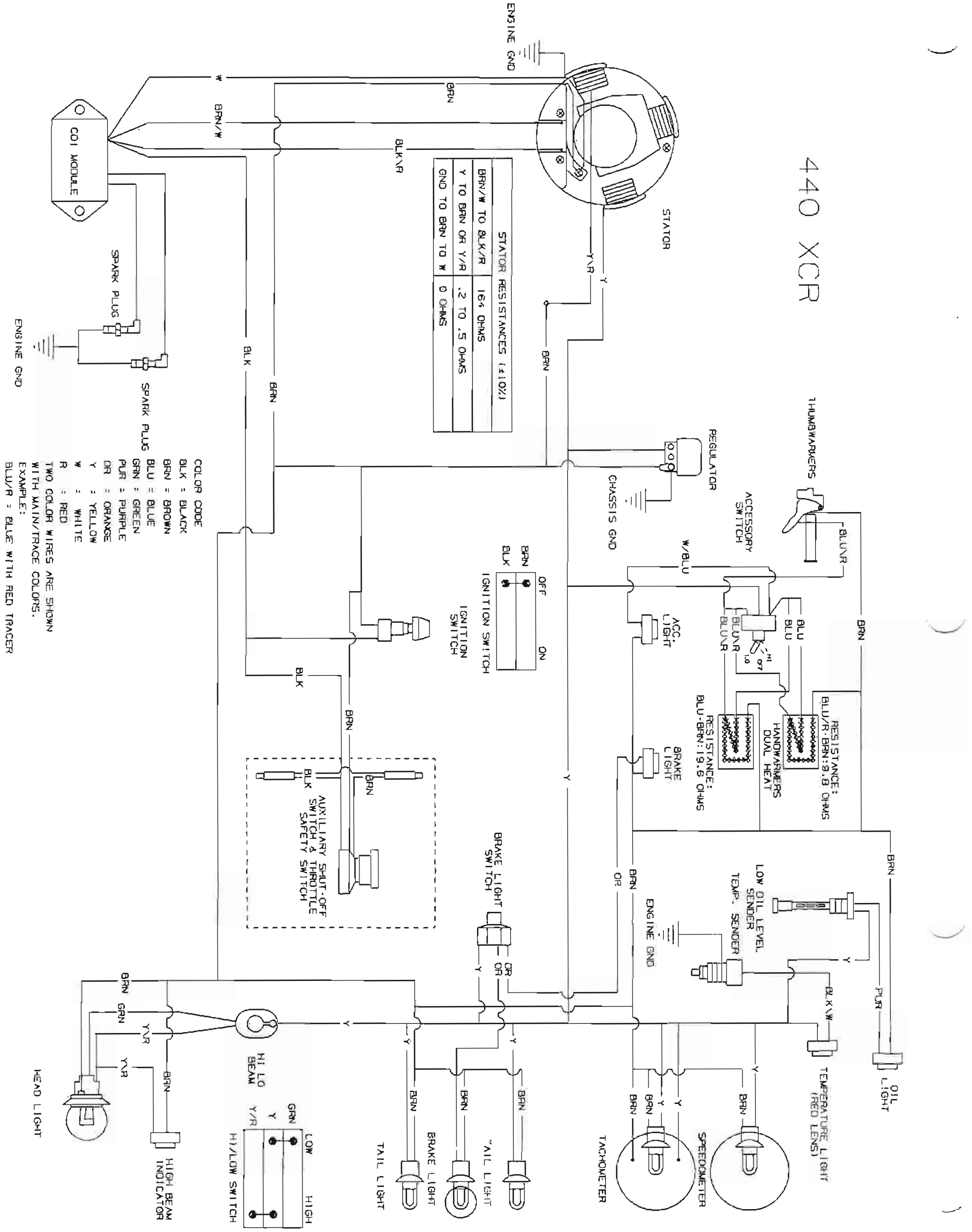
1996 Wiring Diagram - Indy Sport / Super Sport / Sport Touring / TranSport

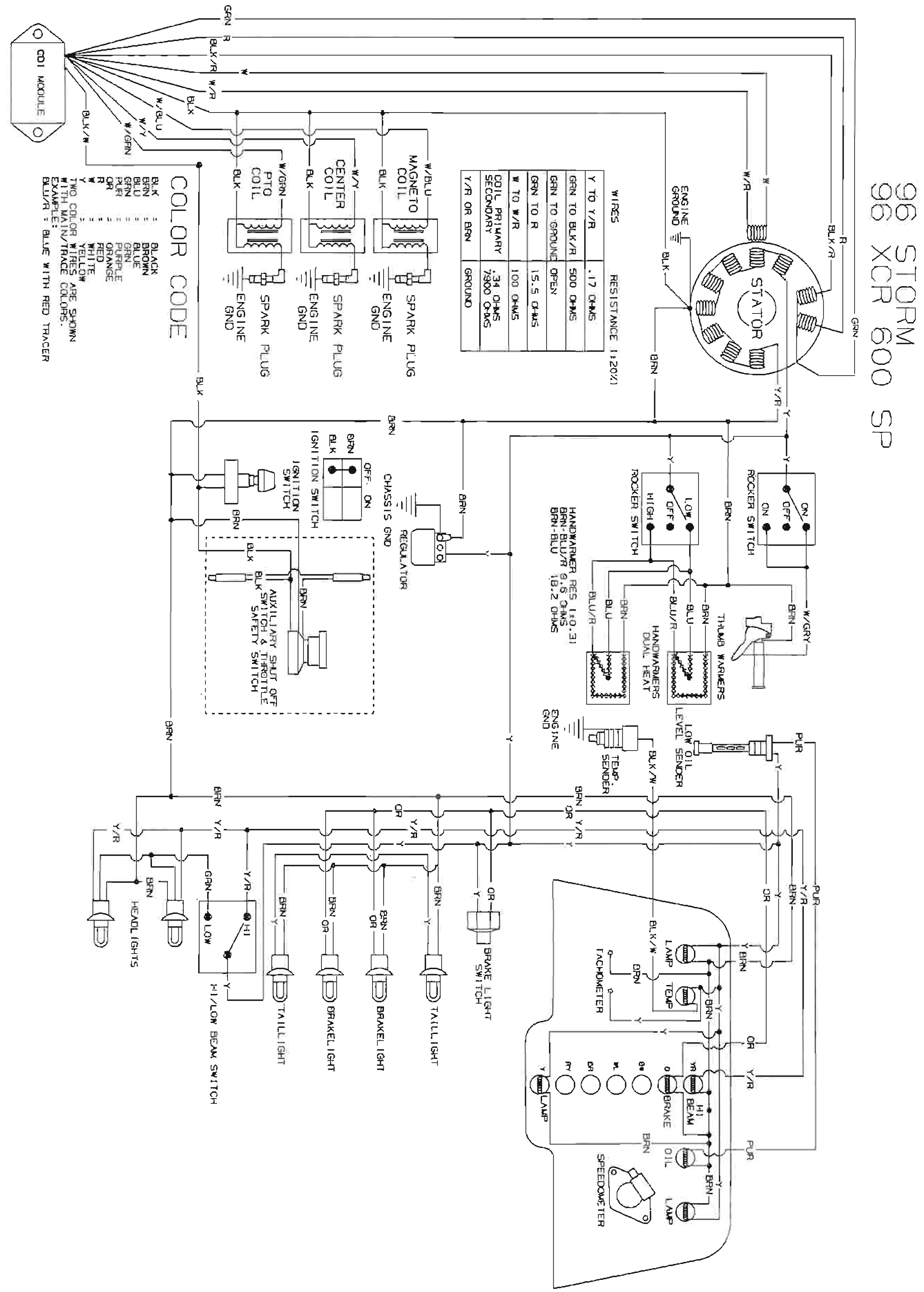


1996 Wiring Diagram - Indy 440 LC / Trail / Trail Touring / 500 Carb, SKS, RMK / Classic / Classic Touring

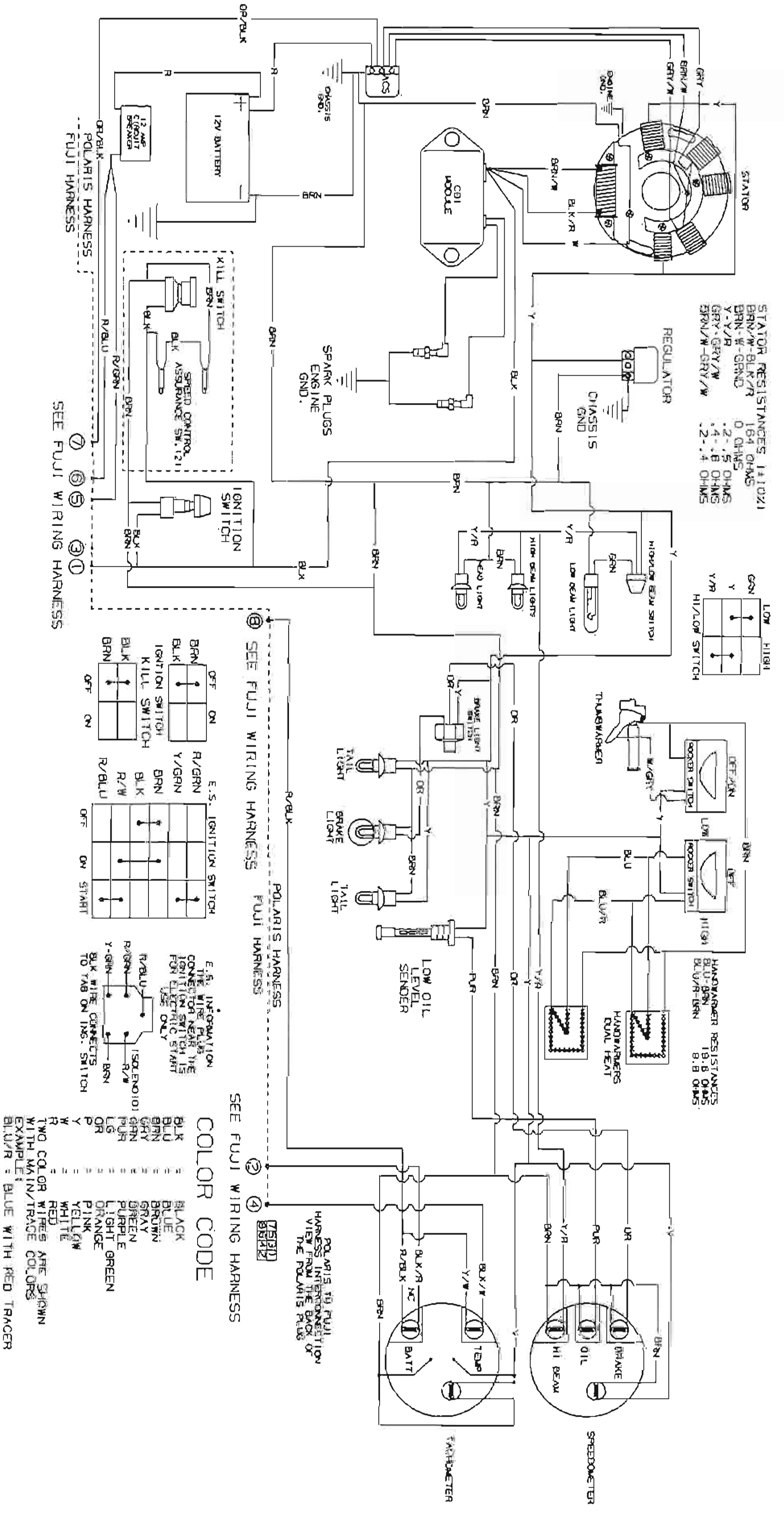


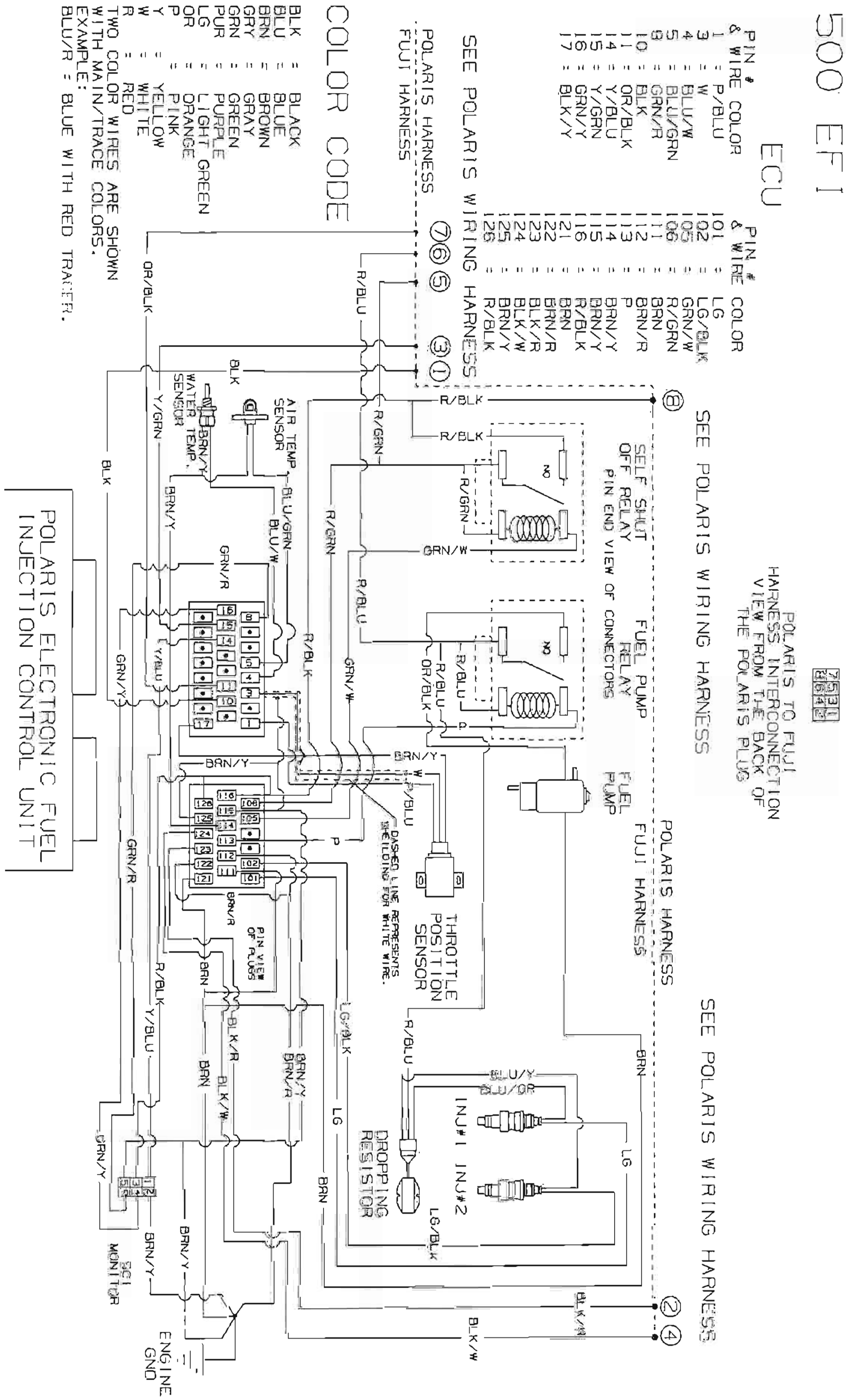
1996 Wiring Diagram - Indy 440 XCR / 440 XCR SP



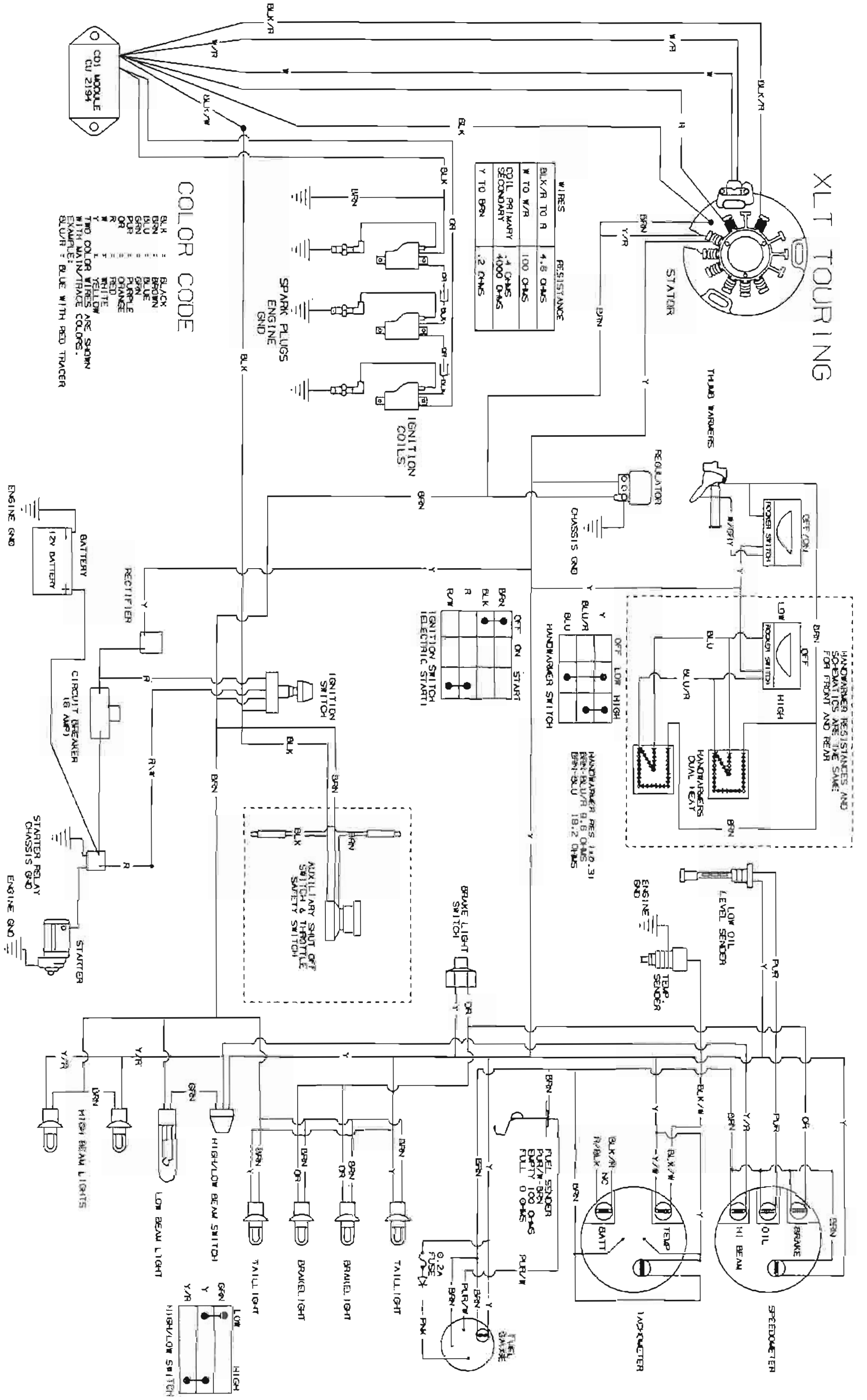

96 STORM
96 XCR 600 SP
CDI MODULE
STATOR
MAGNETO COIL
CENTER COIL
PTO COIL
SPARK PLUG
ENGINE GND
ENGINE GROUND
WIRES
RESISTANCE (±20%)
Y TO Y/R .17 OHMS
GRN TO BLK/R 500 OHMS
GRN TO GROUND OPEN
GRN TO R 15.5 OHMS
W TO W/R 100 OHMS
COIL PRIMARY SECONDARY .34 OHMS 7900 OHMS
Y/R OR BRN GROUND
COLOR CODE
BLK = BLACK
BRN = BROWN
BLU = BLUE
GRN = GRN
PUR = PURPLE
OR = ORANGE
R = RED
W = WHITE
Y = YELLOW
TWO COLOR WIRES ARE SHOWN WITH MAIN/TRACE COLORS.
EXAMPLE:
BLU/R = BLUE WITH RED TRACER
IGNITION SWITCH
OFF ON
CHASSIS GND
REGULATOR
AUXILIARY SHUT OFF SWITCH & THROTTLE SAFETY SWITCH
ROCKER SWITCH
HIGH OFF LOW
ON OFF ON
HANDWARMER RES (±0.3)
BRN-BLU/R 9.6 OHMS
BRN-BLU 18.2 OHMS
HANDWARMERS DUAL HEAT
THUMB WARMERS
LOW OIL LEVEL SENDER
TEMP SENDER
HEADLIGHTS
HI/LOW BEAM SWITCH
TAILLIGHT
BRAKELIGHT
BRAKE LIGHT SWITCH
TACHOMETER
SPEEDOMETER
LAMP
TEMP
HI BEAM
BRAKE
OIL

1996 Wiring Diagram (1 of 2) - Indy 500 EFI / SKS / RMK

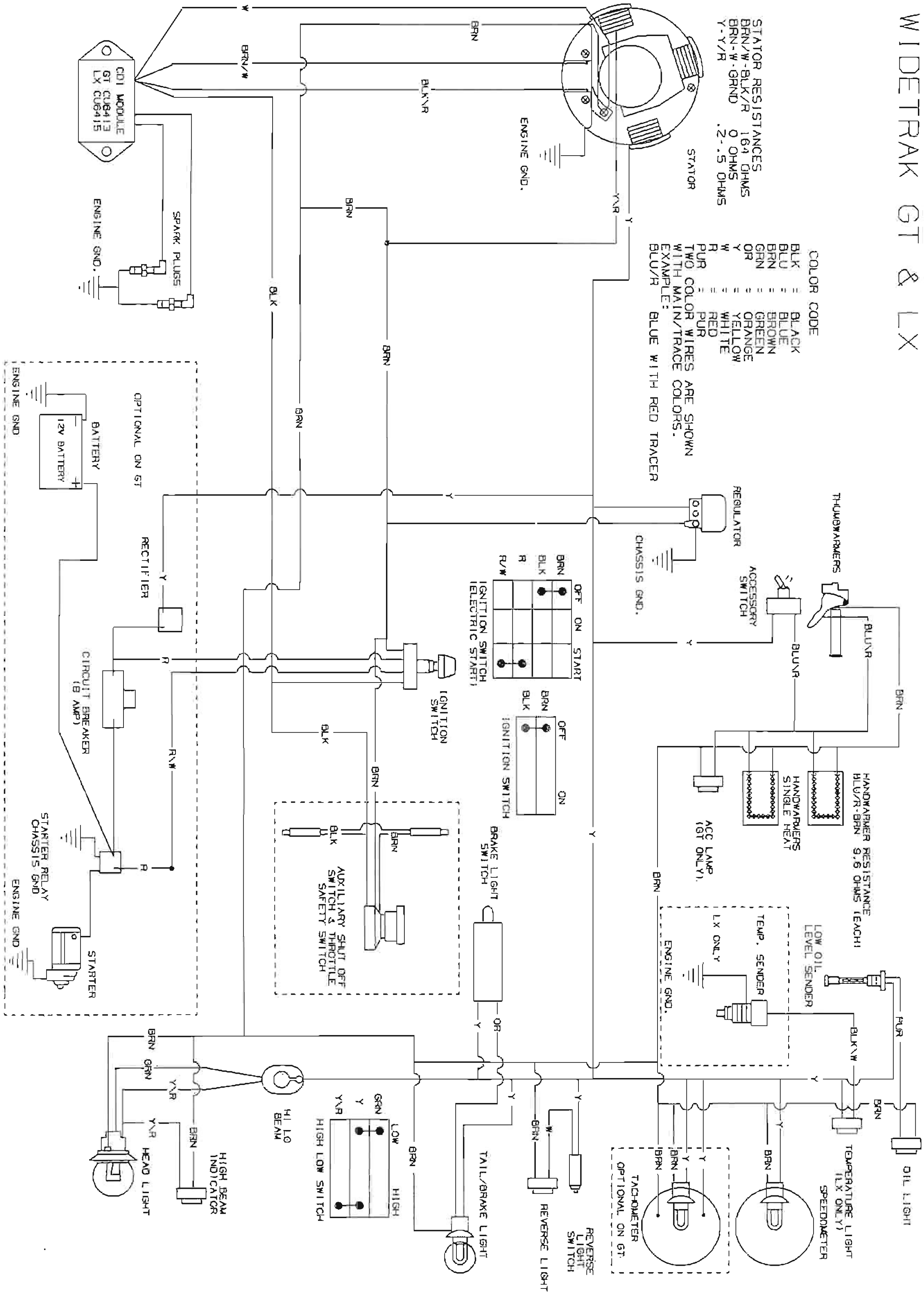



500 EFI
ECU
PIN # & WIRE COLOR
1 = P/BLU
3 = W
4 = BLU/W
5 = BLU/GRN
8 = GRN/R
10 = BLK
11 = OR/BLK
14 = Y/BLU
15 = Y/GRN
16 = GRN/Y
17 = BLK/Y
PIN # & WIRE COLOR
101 = LG
102 = LG/BLK
105 = GRN/W
106 = R/GRN
111 = BRN
112 = BRN/R
113 = P
114 = BRN/Y
115 = BRN/Y
116 = R/BLK
121 = BRN
122 = BRN/R
123 = BLK/R
124 = BLK/W
125 = BRN/Y
126 = R/BLK
SEE POLARIS WIRING HARNESS
POLARIS HARNESS
FUJI HARNESS
COLOR CODE
BLK = BLACK
BLU = BLUE
BRN = BROWN
GRY = GRAY
GRN = GREEN
PUR = PURPLE
LG = LIGHT GREEN
OR = ORANGE
P = PINK
Y = YELLOW
W = WHITE
R = RED
TWO COLOR WIRES ARE SHOWN WITH MAIN/TRACE COLORS.
EXAMPLE:
BLU/R = BLUE WITH RED TRACER.
POLARIS TO FUJI HARNESS INTERCONNECTION VIEW FROM THE BACK OF THE POLARIS PLUG
SELF SHUT OFF RELAY
PIN END VIEW OF CONNECTORS
FUEL PUMP RELAY
FUEL PUMP
AIR TEMP. SENSOR
WATER TEMP. SENSOR
THROTTLE POSITION SENSOR
DASHED LINE REPRESENTS SHIELDING FOR WHITE WIRE.
PIN VIEW OF PLUGS
POLARIS ELECTRONIC FUEL INJECTION CONTROL UNIT
INJ#1 INJ#2
DROPPING RESISTOR
ECI MONITOR
ENGINE GND

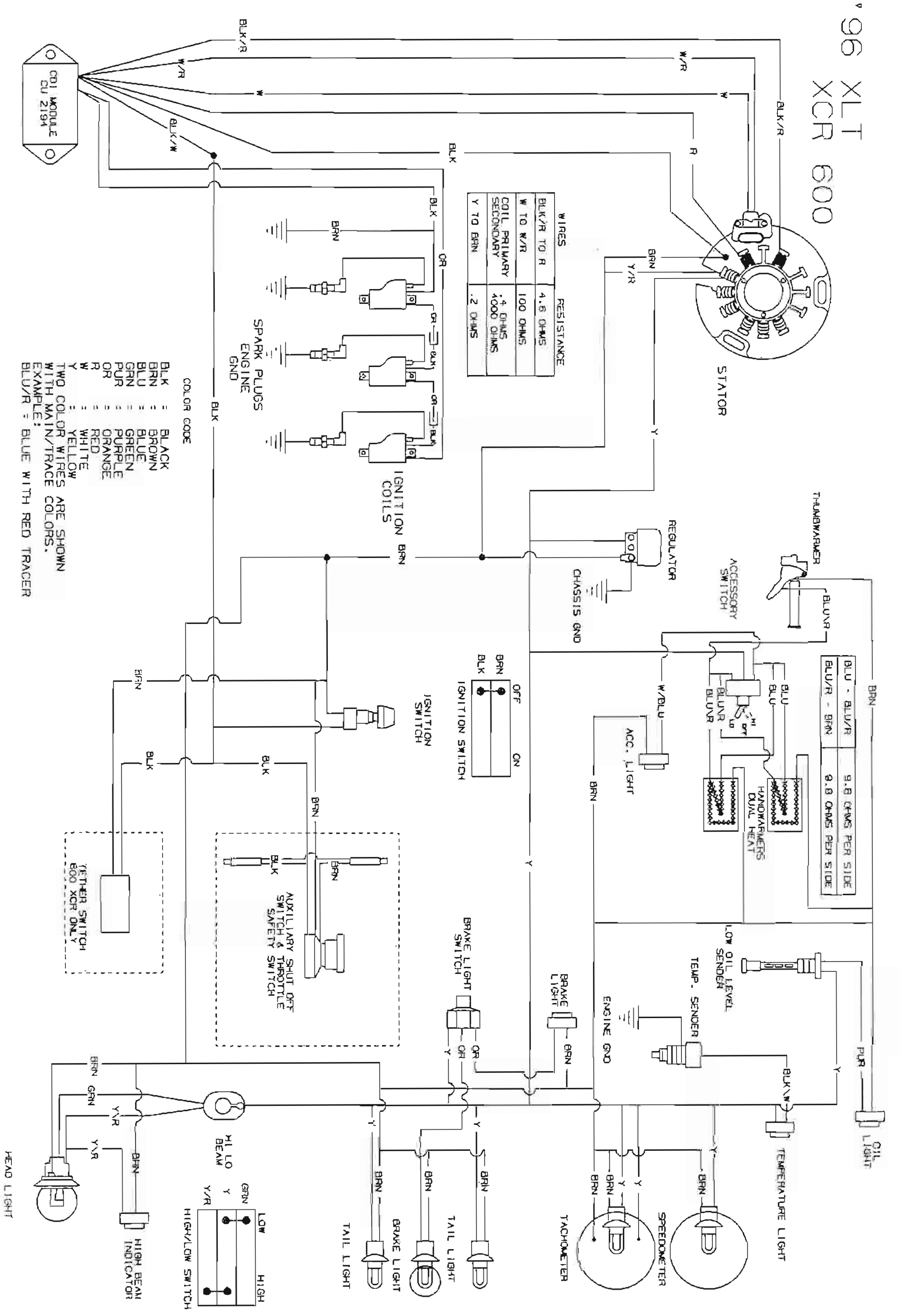
1996 Wiring Diagram - Indy XLT Touring

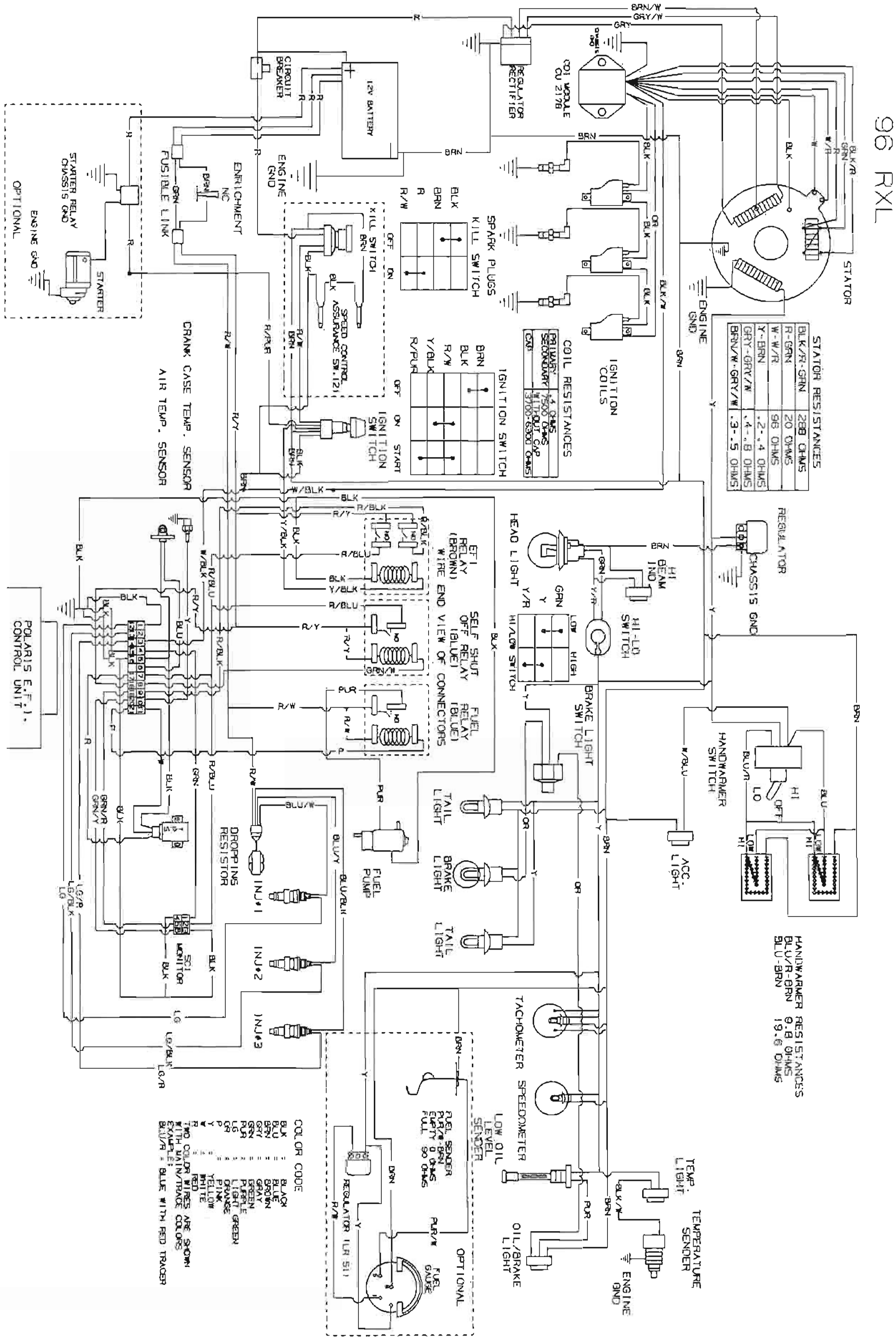


1996 Wiring Diagram - Indy WideTrak GT/ WideTrak LX

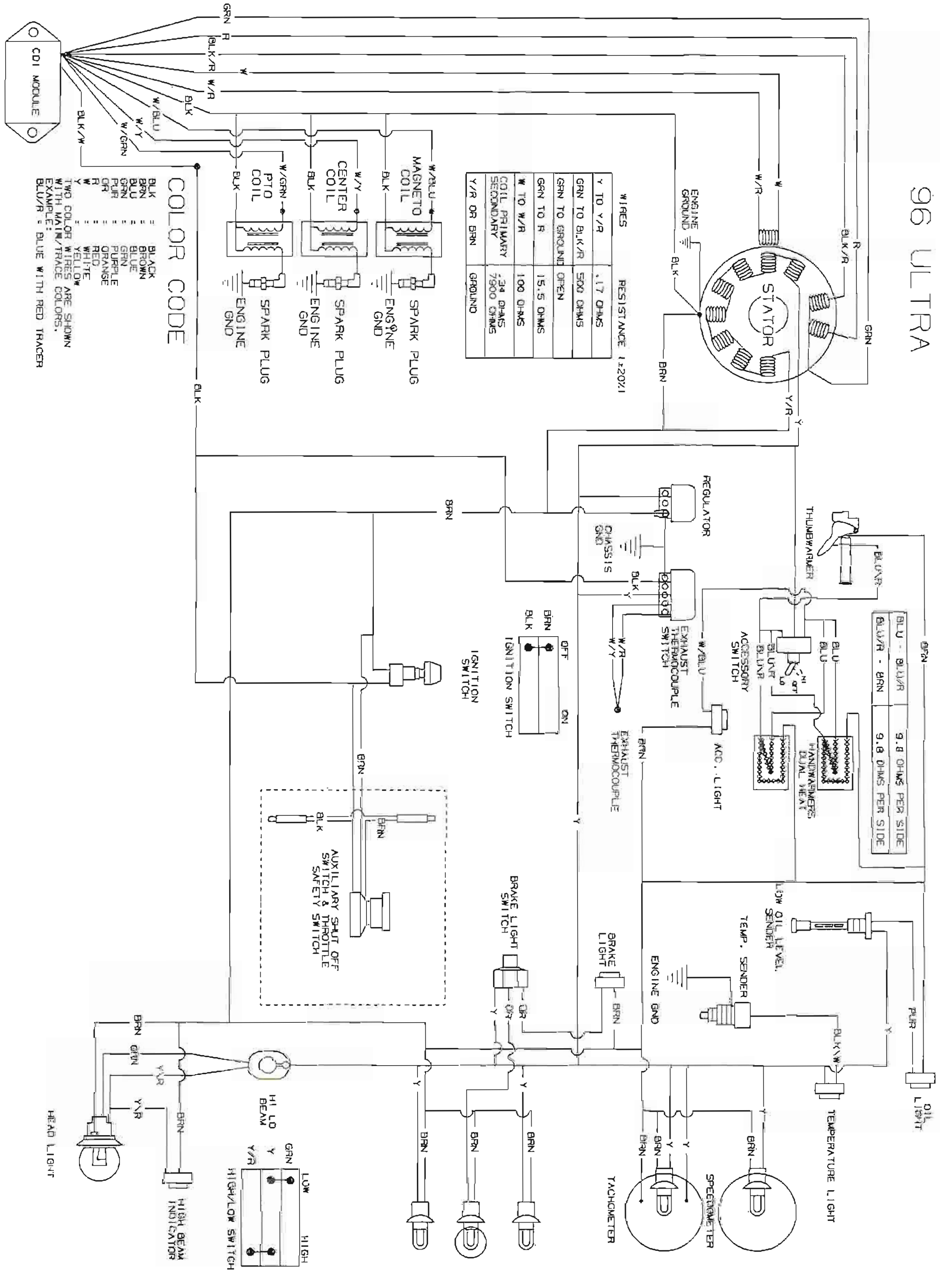


1996 Wiring Diagram - Indy XLT / XLT SP / XLT SKS / XLT RMK / 600 XCR

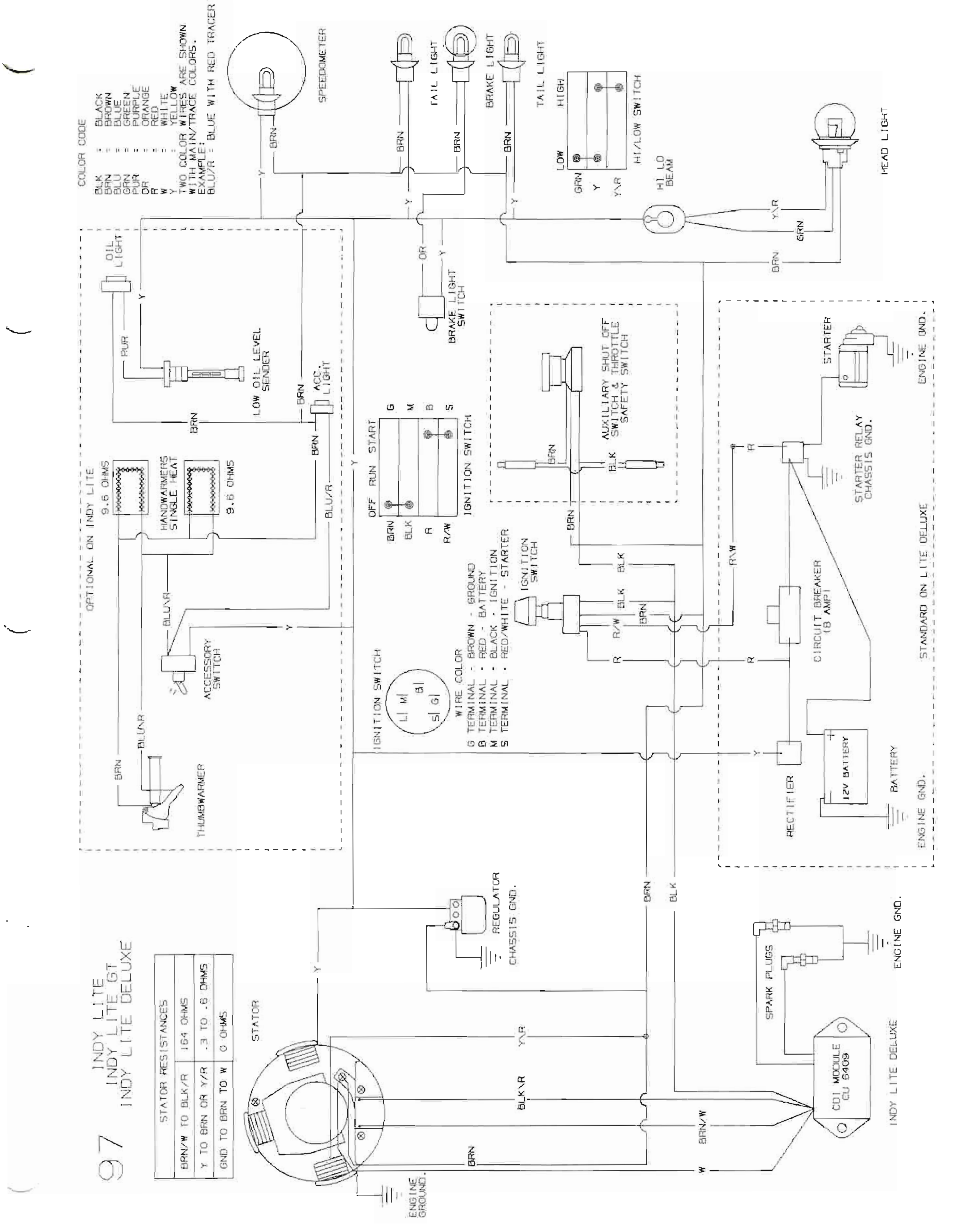



96 RXL
STATOR
STATOR RESISTANCES
IGNITION COILS
COIL RESISTANCES
SPARK PLUGS KILL SWITCH
IGNITION SWITCH
12V BATTERY
CIRCUIT BREAKER
REGULATOR RECTIFIER
CDI MODULE
ENGINE GND
ENRICHMENT
FUSIBLE LINK
STARTER RELAY CHASSIS GND
STARTER
OPTIONAL
KILL SWITCH
SPEED CONTROL ASSURANCE SW.
CRANK CASE TEMP. SENSOR
AIR TEMP. SENSOR
POLARIS E.F.I. CONTROL UNIT
EFI RELAY (BROWN)
SELF SHUT OFF RELAY (BLUE)
FUEL RELAY (BLUE)
WIRE END VIEW OF CONNECTORS
HEAD LIGHT
HI BEAM IND
HI-LO SWITCH
REGULATOR
CHASSIS GND
BRAKE LIGHT SWITCH
HANDWARMER SWITCH
TAIL LIGHT
BRAKE LIGHT
ACC. LIGHT
DROPPING RESISTOR
FUEL PUMP
INJ #1
INJ #2
INJ #3
HANDWARMER RESISTANCES
TACHOMETER
SPEEDOMETER
LOW OIL LEVEL SENSOR
TEMP. LIGHT
TEMPERATURE SENDER
OIL/BRAKE LIGHT
FUEL GAUGE
COLOR CODE

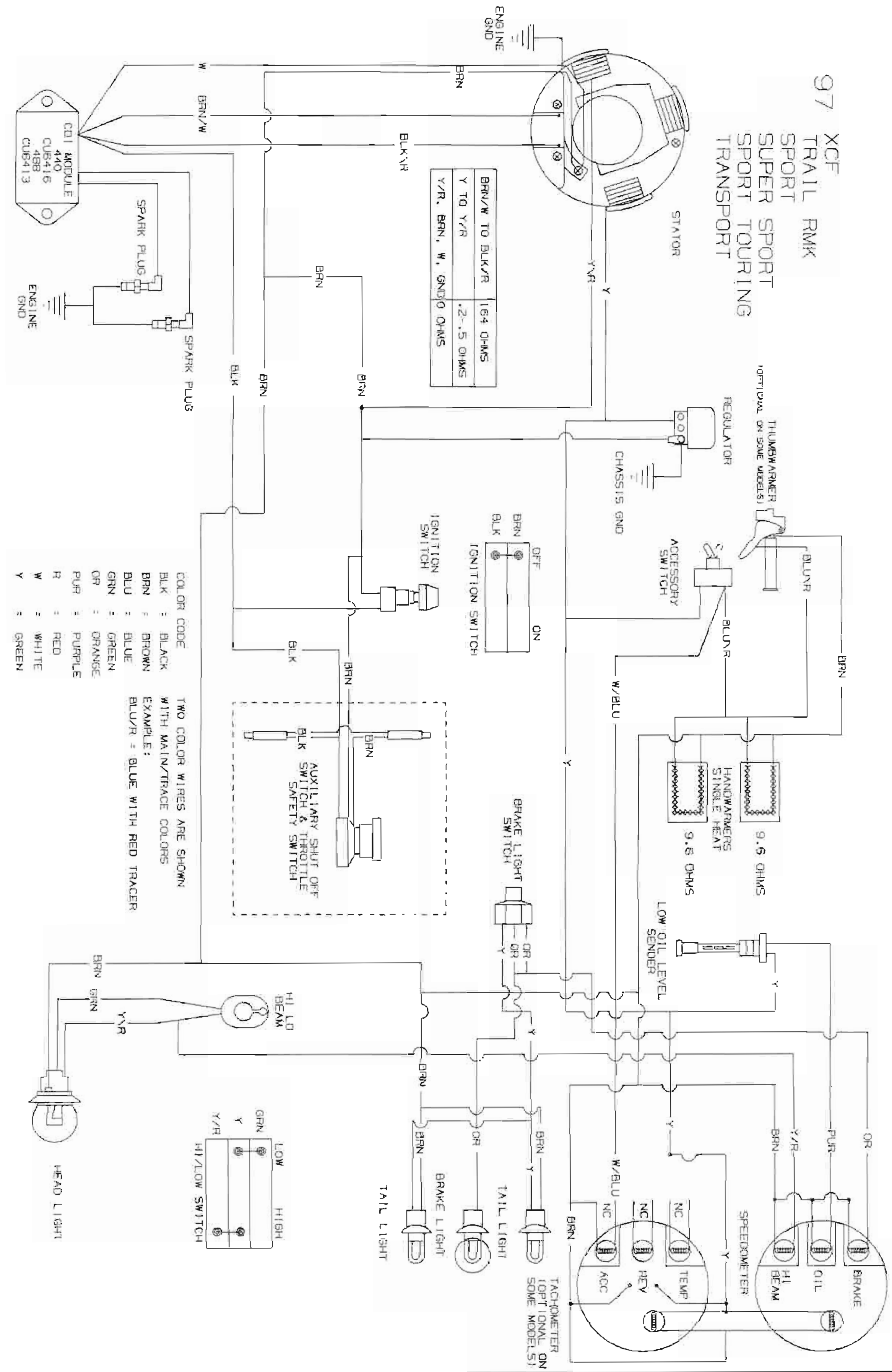
1996 Wiring Diagram - Indy Ultra SP / SKS / RMK



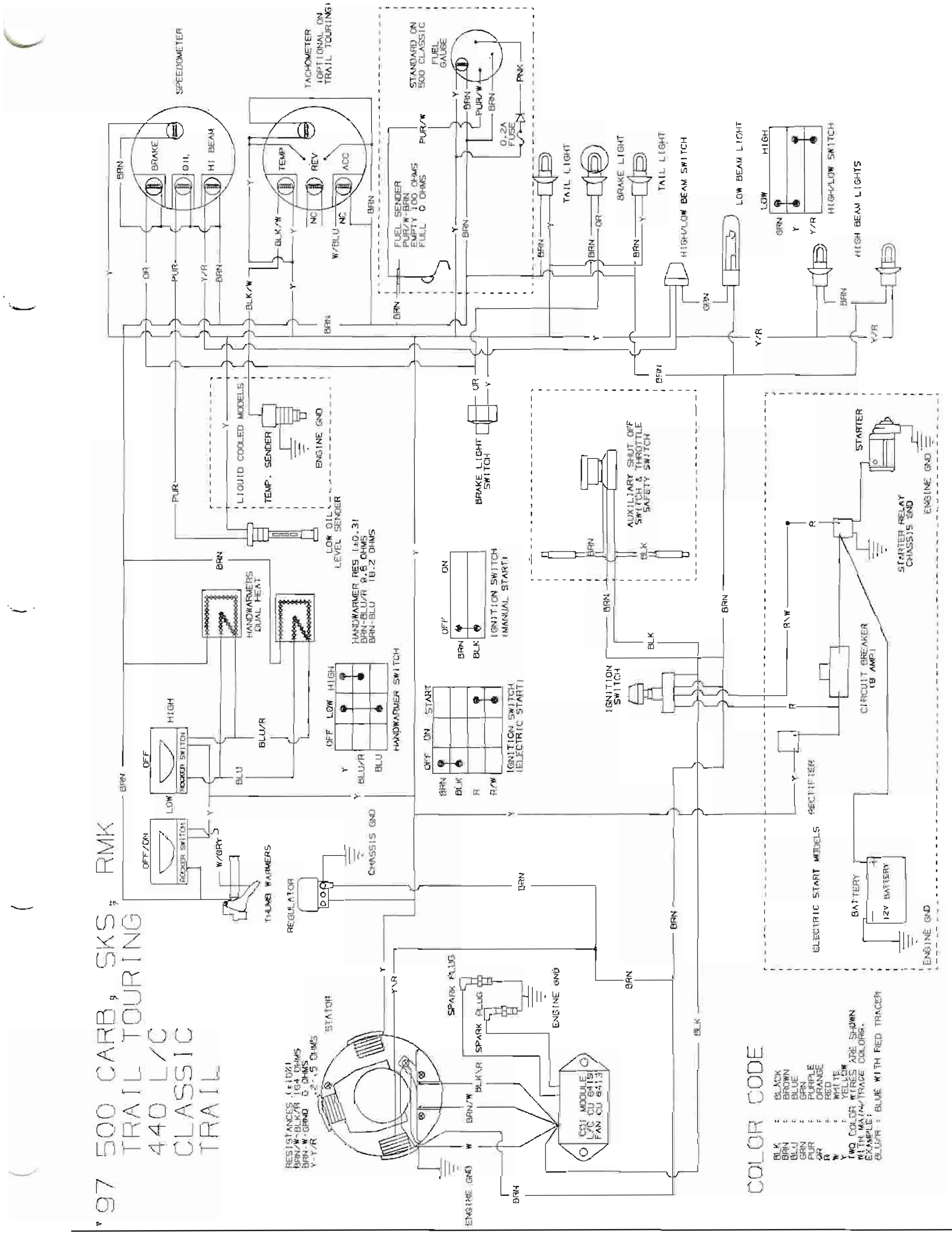
1997 Wiring Diagram - Indy Lite / Lite GT / Lite Deluxe



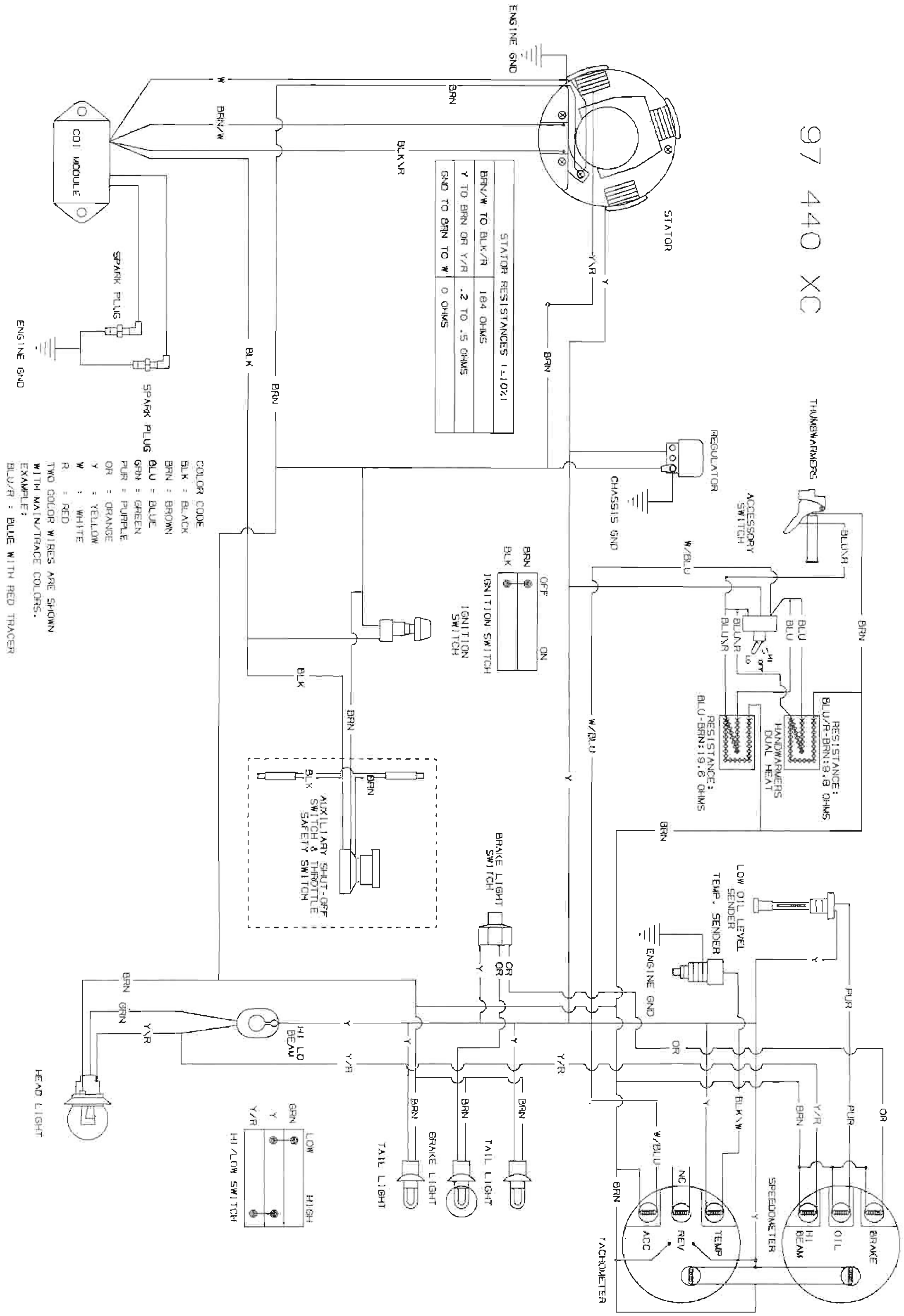
1997 Wiring Diagram - Indy XCF / Trail RMK / Sport / Super Sport / Sport Touring / TranSport



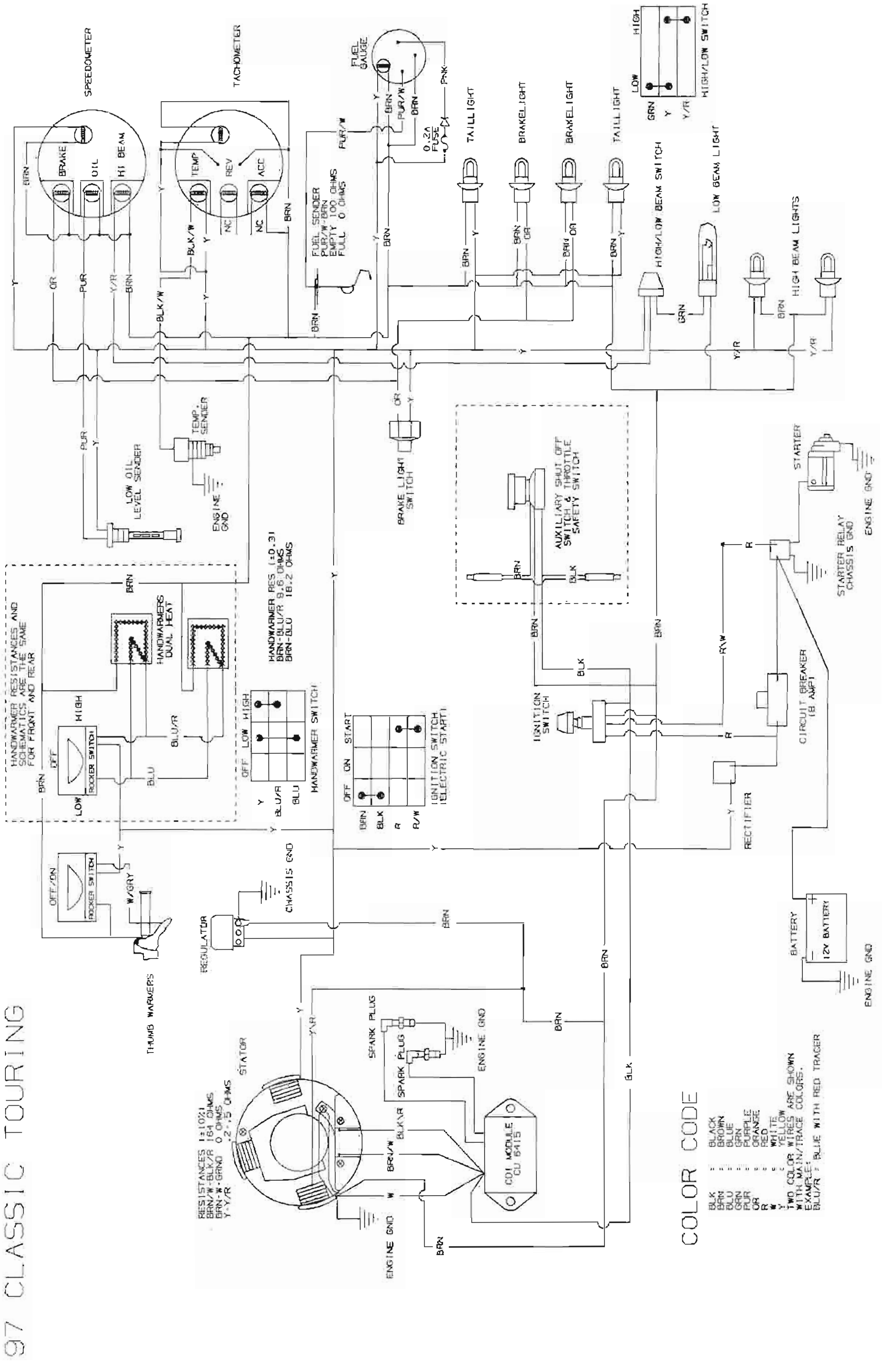
1997 Wiring Diagram - Indy 500 / 500 SKS / 500 RMK / Trail Touring / 440 L/C / Classic / Trail



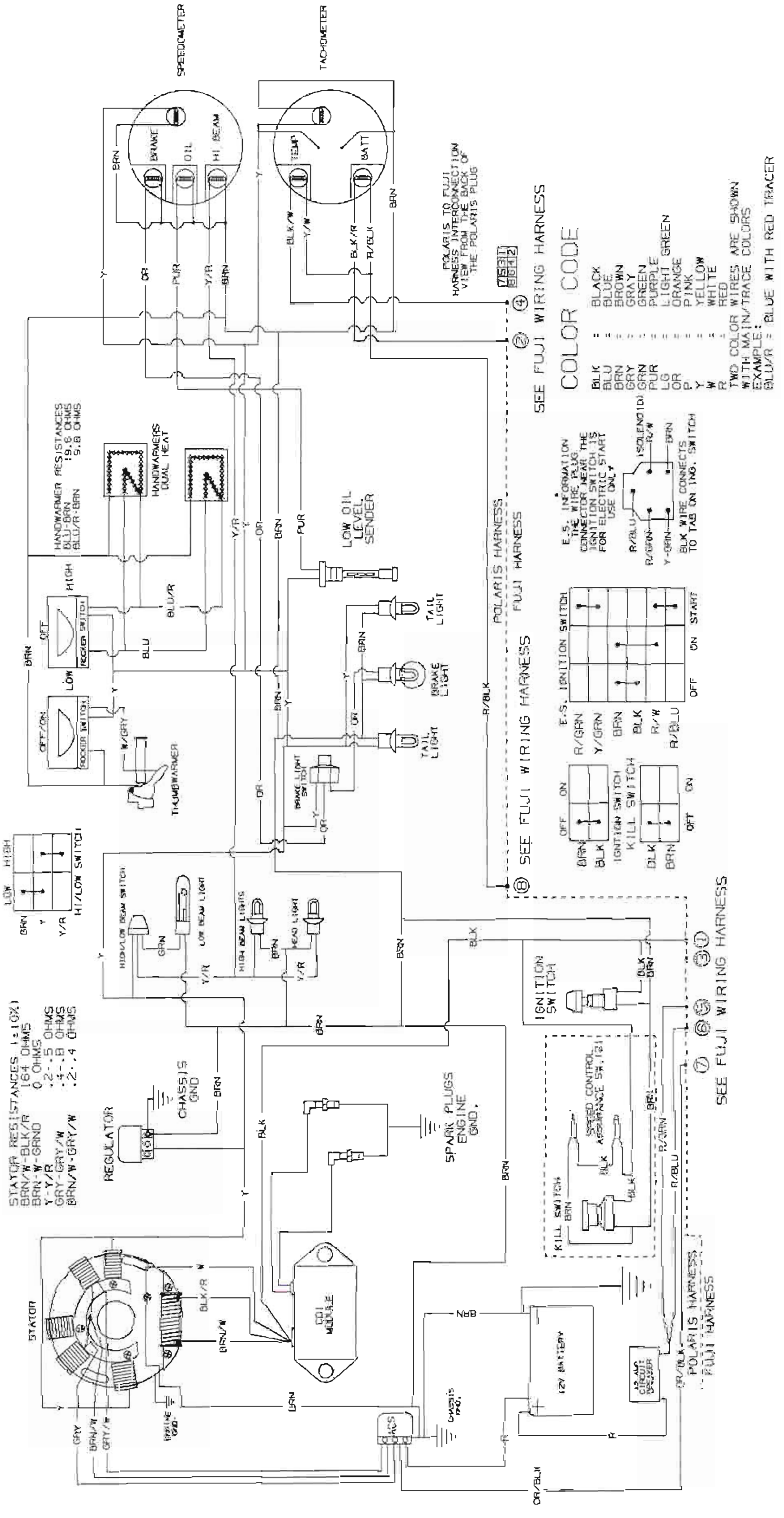
1997 Wiring Diagram - Indy 440 XC

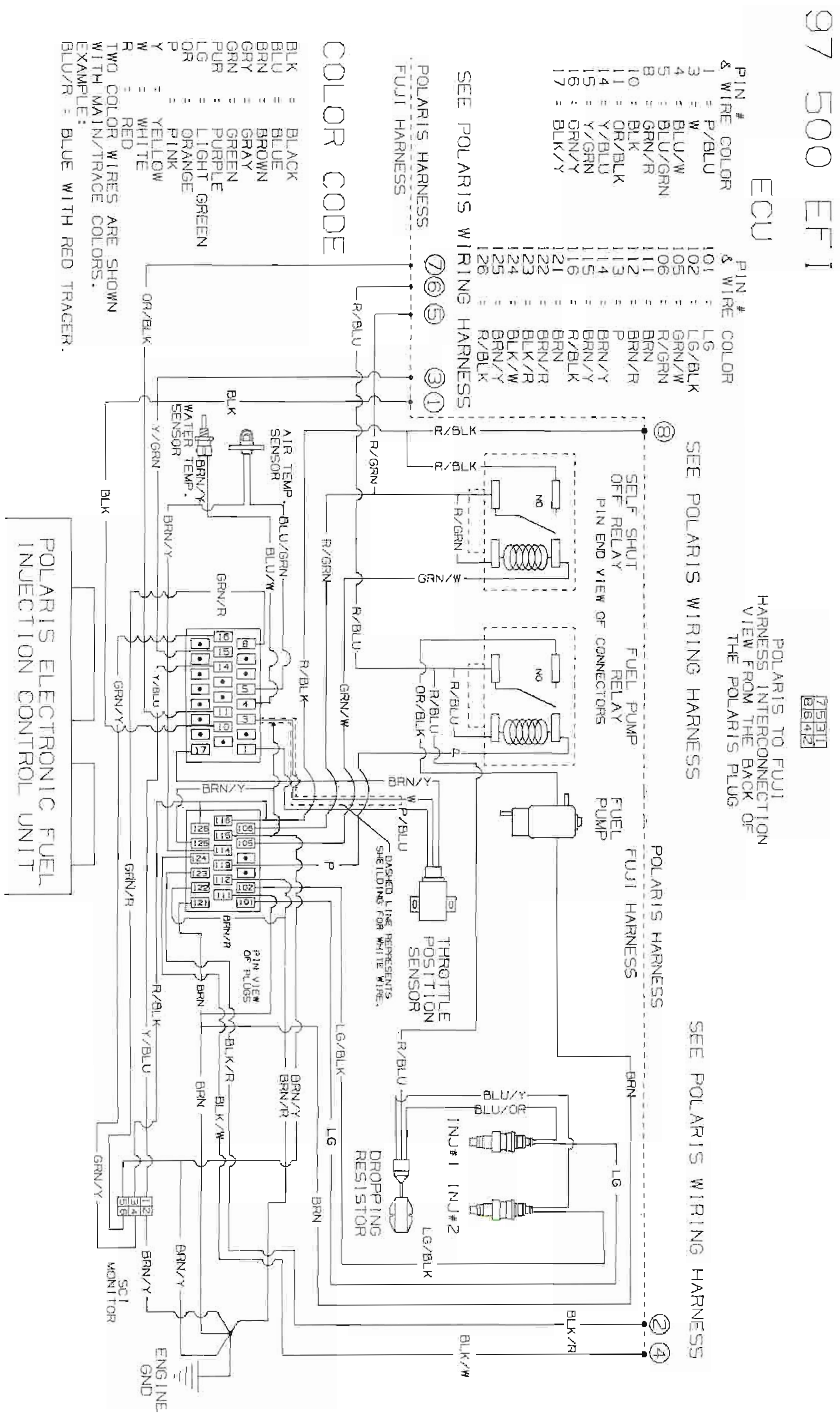


1997 Wiring Diagram - Indy Classic Touring

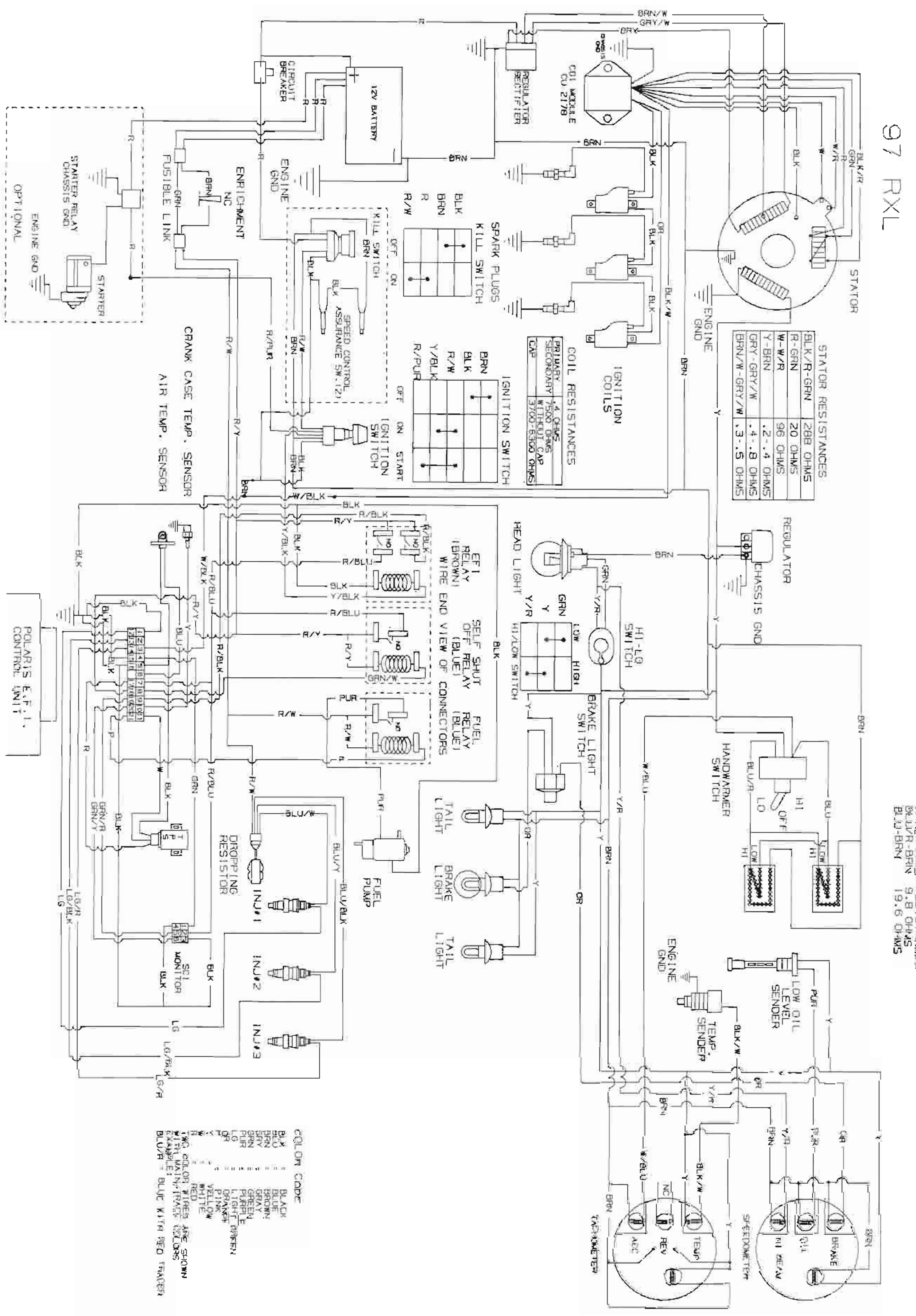


1997 Wiring Diagram - Indy 500 EFI (1 of 2)

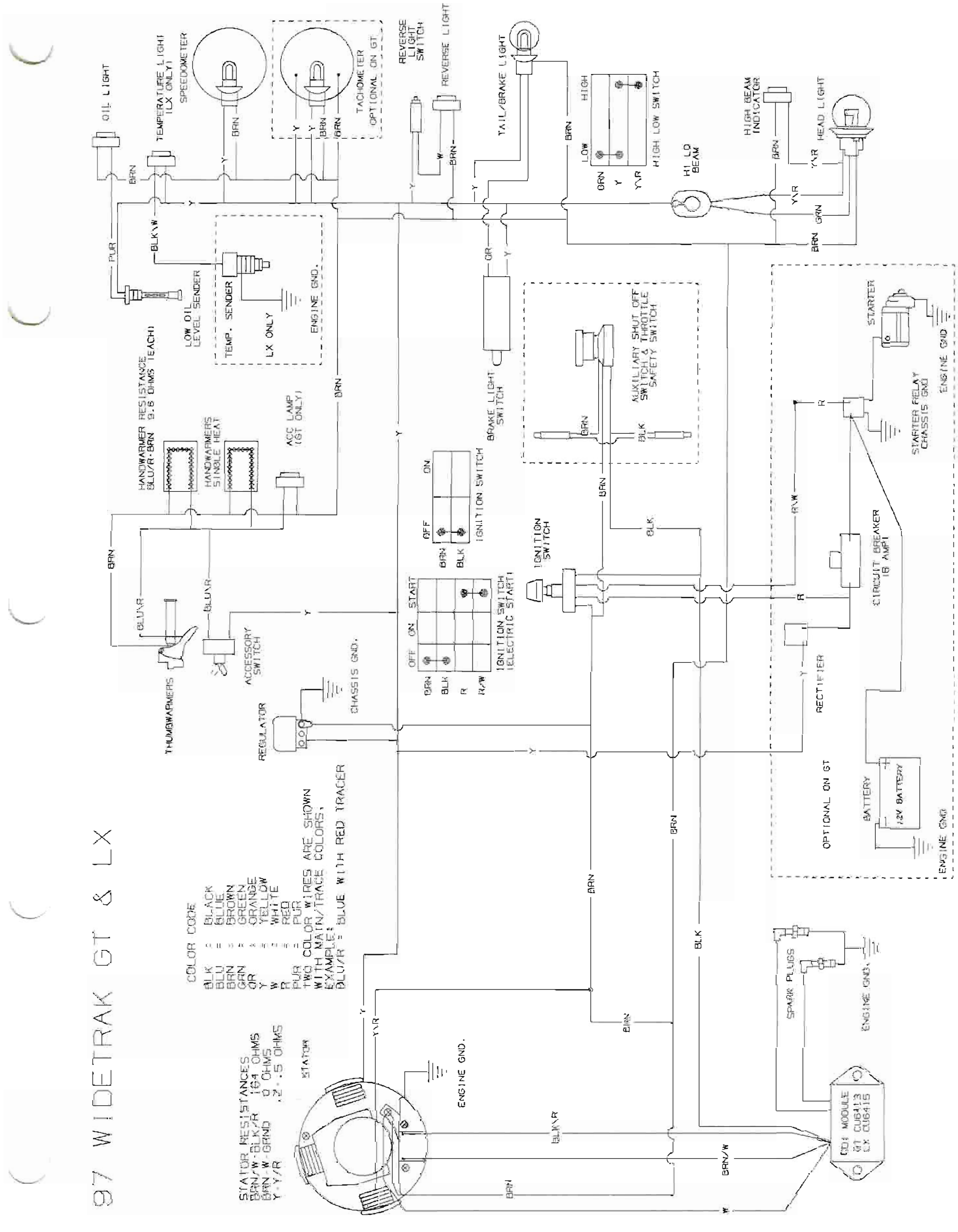



97 500 EFI
ECU
PIN # & WIRE COLOR
1 = P/BLU
3 = W
4 = BLU/W
5 = BLU/GRN
8 = GRN/R
10 = BLK
11 = OR/BLK
14 = Y/BLU
15 = Y/GRN
16 = GRN/Y
17 = BLK/Y
PIN # & WIRE COLOR
101 = LG
102 = LG/BLK
105 = GRN/W
106 = R/GRN
111 = BRN
112 = BRN/R
113 = P
114 = BRN/Y
115 = BRN/Y
116 = R/BLK
121 = BRN
122 = BRN/R
123 = BLK/R
124 = BLK/W
125 = BRN/Y
126 = R/BLK
SEE POLARIS WIRING HARNESS
POLARIS HARNESS
FUJI HARNESS
COLOR CODE
BLK = BLACK
BLU = BLUE
BRN = BROWN
GRY = GRAY
GRN = GREEN
PUR = PURPLE
LG = LIGHT GREEN
OR = ORANGE
P = PINK
Y = YELLOW
W = WHITE
R = RED
TWO COLOR WIRES ARE SHOWN WITH MAIN/TRACE COLORS.
EXAMPLE:
BLU/R = BLUE WITH RED TRACER.
POLARIS TO FUJI HARNESS INTERCONNECTION VIEW FROM THE BACK OF THE POLARIS PLUG
SELF SHUT OFF RELAY
PIN END VIEW OF CONNECTORS
FUEL PUMP RELAY
FUEL PUMP
POLARIS HARNESS
FUJI HARNESS
AIR TEMP. SENSOR
WATER TEMP. SENSOR
POLARIS ELECTRONIC FUEL INJECTION CONTROL UNIT
DASHED LINE REPRESENTS SHIELDING FOR WHITE WIRE.
PIN VIEW OF PLUGS
THROTTLE POSITION SENSOR
INJ#1
INJ#2
DROPPING RESISTOR
SCI MONITOR
ENGINE GND

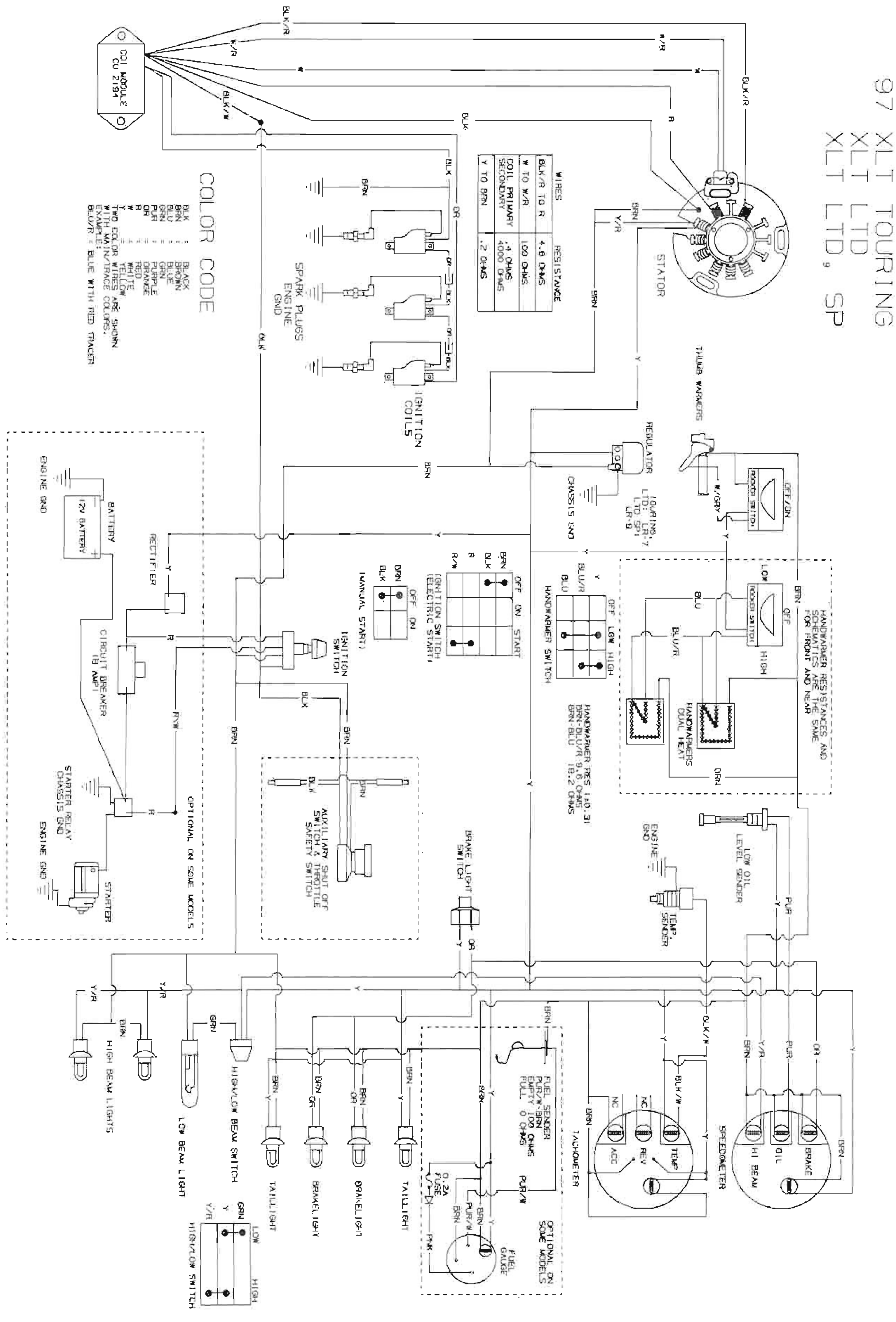
1997 Wiring Diagram - Indy RXL



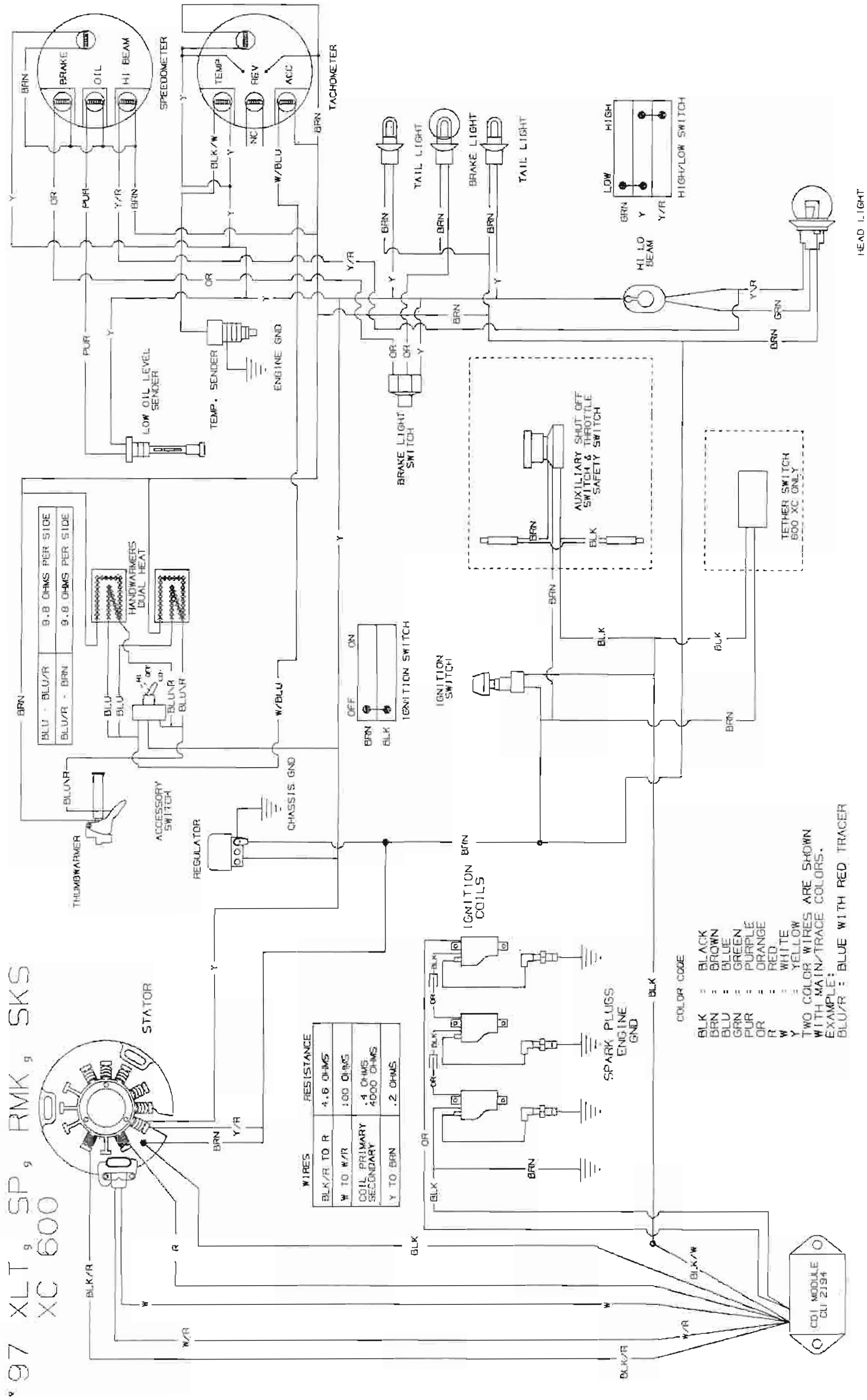
1997 Wiring Diagram - Indy WideTrak GT / WideTrak LX



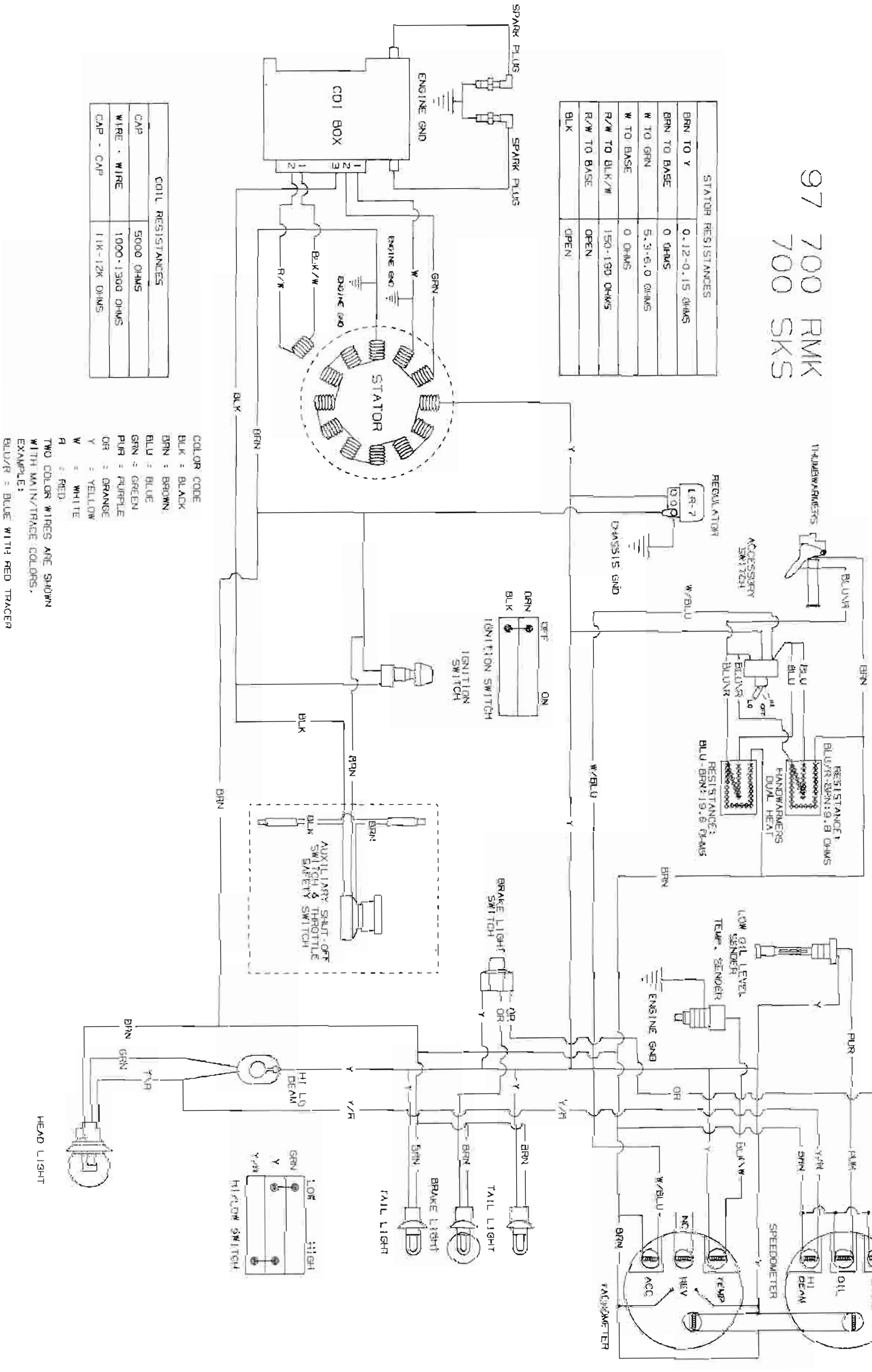
1997 Wiring Diagram - Indy XLT Touring / XLT LTD / XLT LTD SP

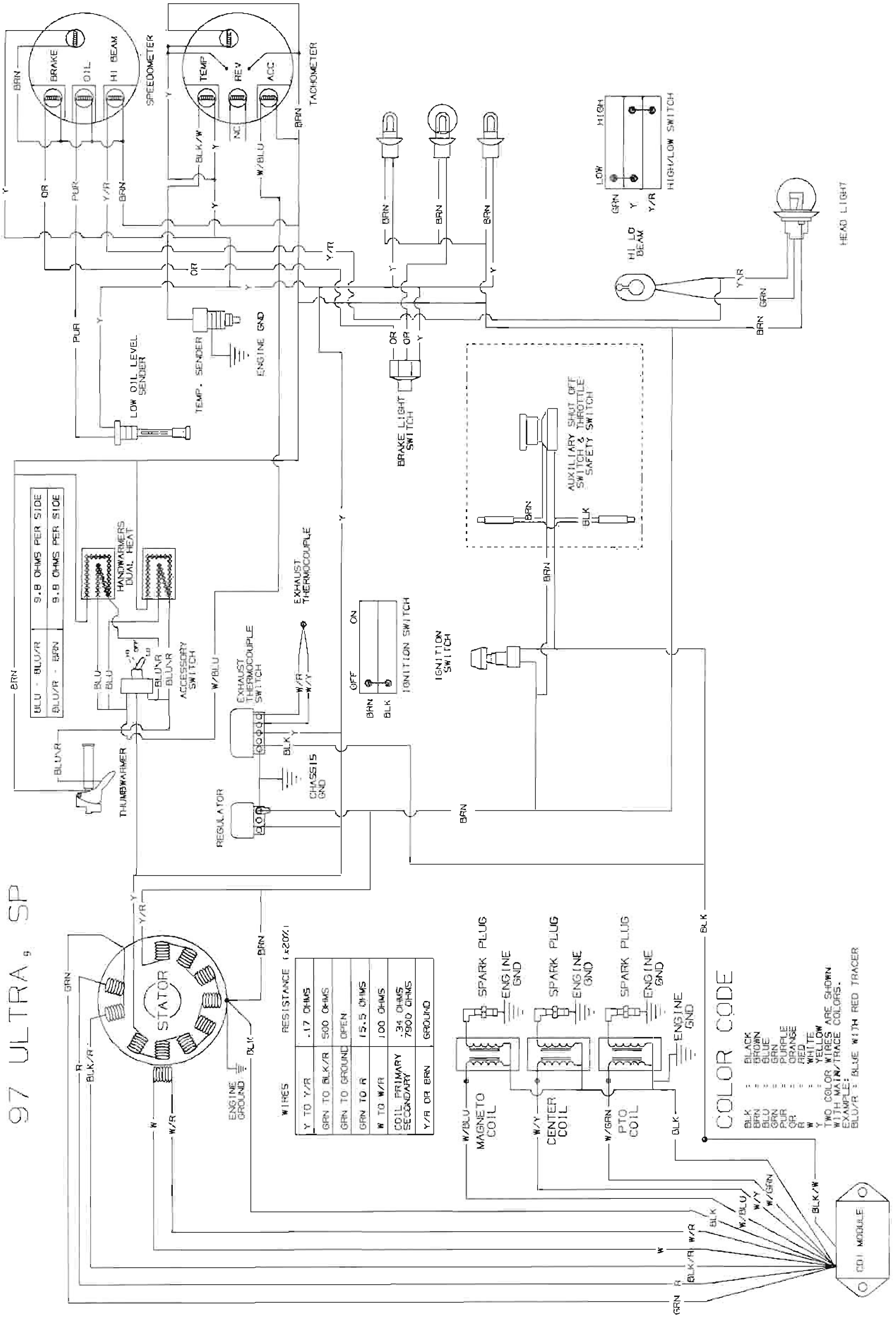


1997 Wiring Diagram - Indy XLT SP / XLT RMK / XLT SKS / 600 XC

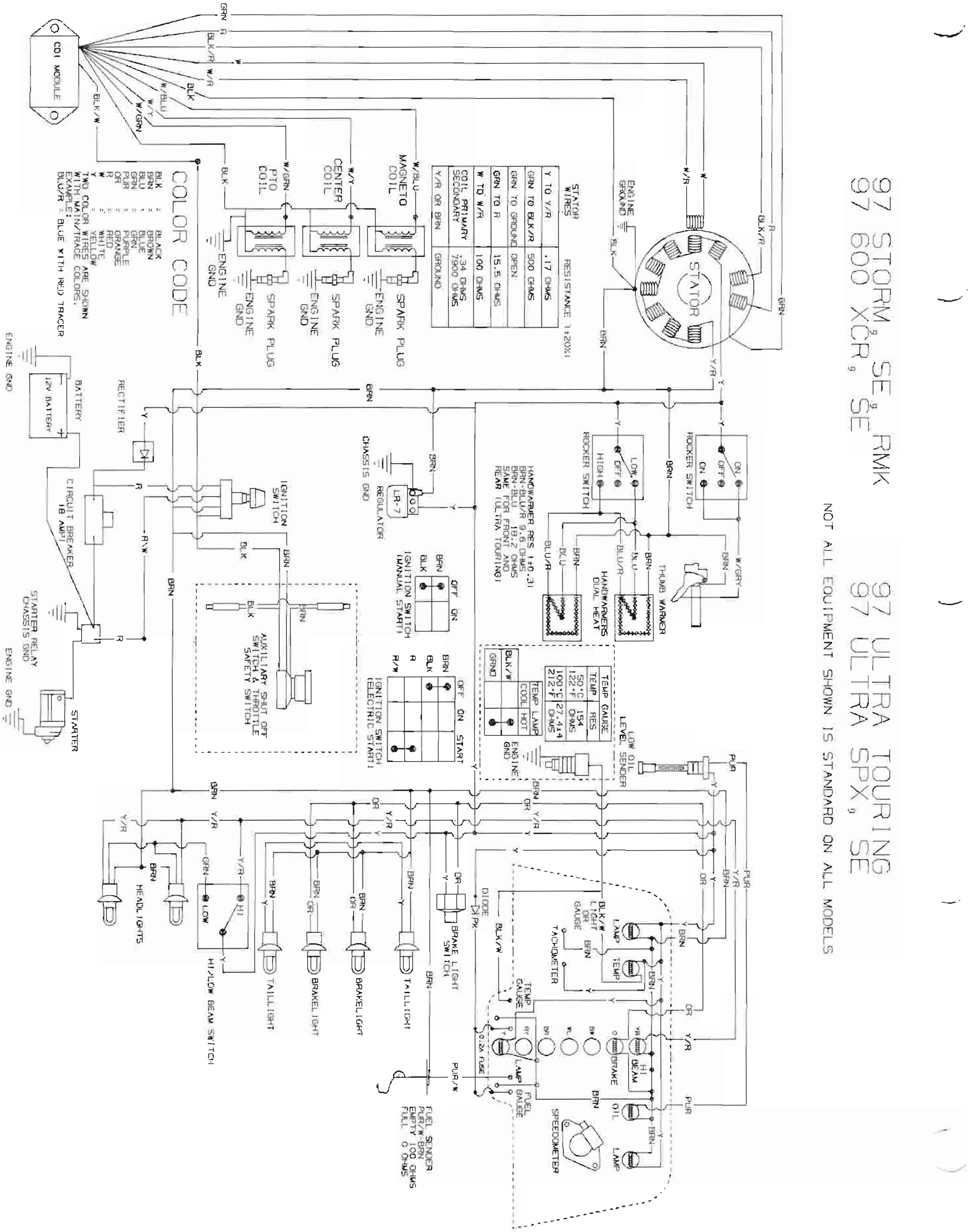


1997 Wiring Diagram - Indy 700 RMK / 700 SKS

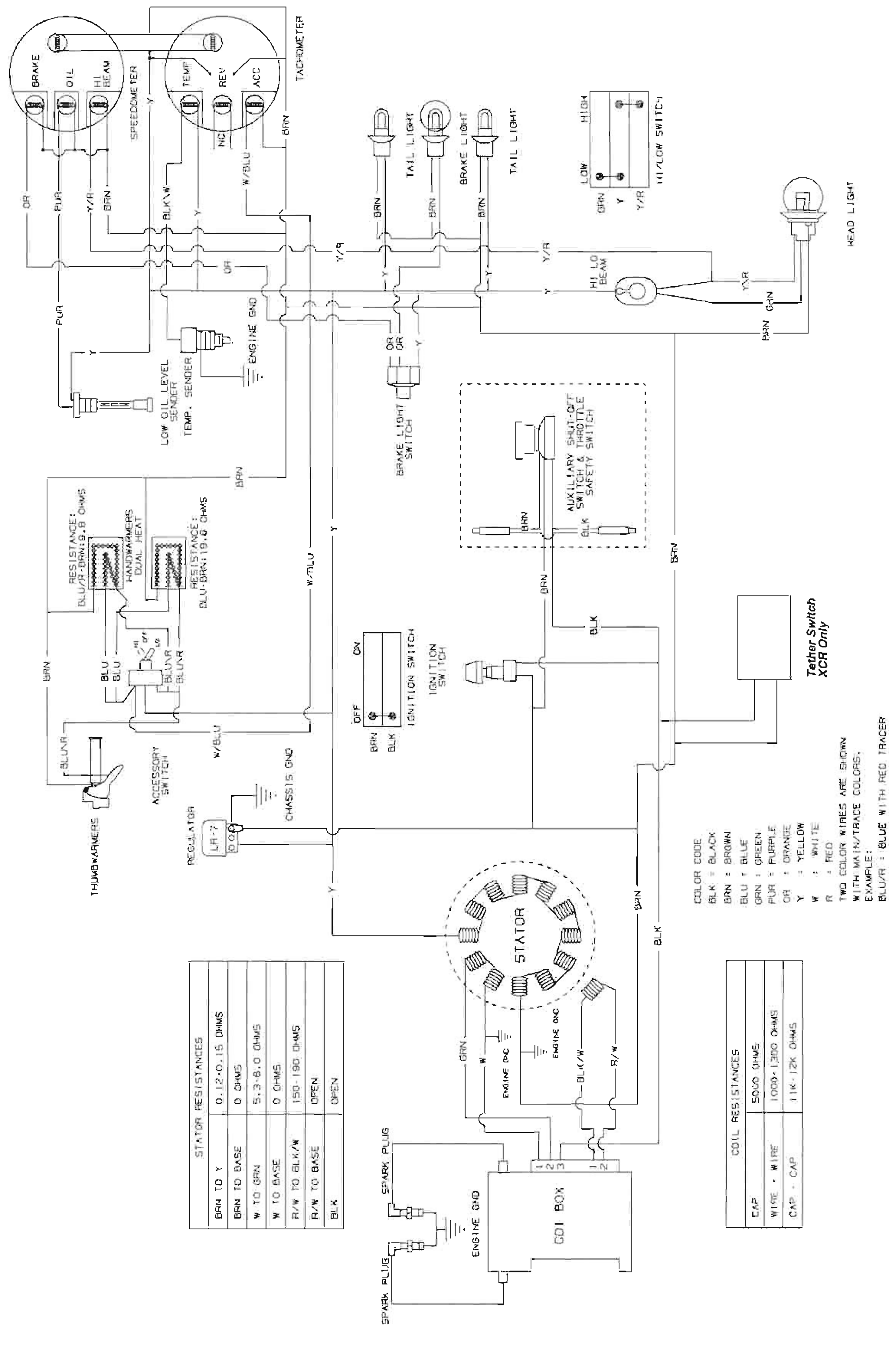



97 ULTRA, SP
SPEEDOMETER
TACHOMETER
BRAKE
OIL
HI BEAM
TEMP
REV
ACC
HIGH/LOW SWITCH
HEAD LIGHT
HI LO BEAM
LOW OIL LEVEL SENDER
TEMP. SENDER
ENGINE GND
BRAKE LIGHT SWITCH
AUXILIARY SHUT OFF SWITCH & THROTTLE SAFETY SWITCH
HANDWARMERS DUAL HEAT
ACCESSORY SWITCH
EXHAUST THERMOCOUPLE
EXHAUST THERMOCOUPLE SWITCH
IGNITION SWITCH
THUMBWARMER
CHASSIS GND
REGULATOR
STATOR
ENGINE GROUND
SPARK PLUG
MAGNETO COIL
CENTER COIL
PTO COIL
CDI MODULE
COLOR CODE

1997 Wiring Diagram - Indy 600 XCR / 600 XCR SE / Ultra Touring / Ultra SPX SE / Storm / Storm SE / Storm RMK



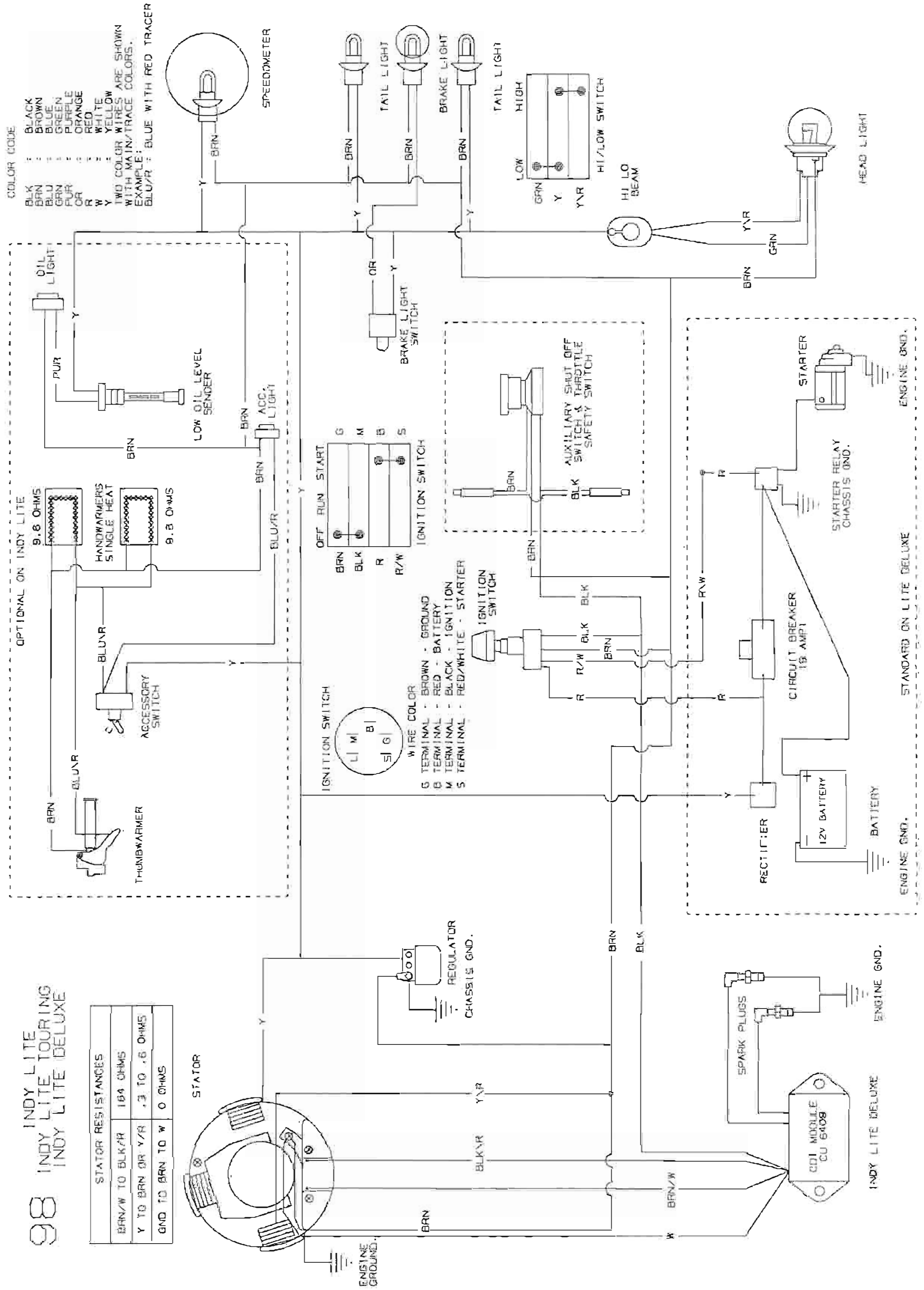
1997 Wiring Diagram - 700 XC and 440 XCR



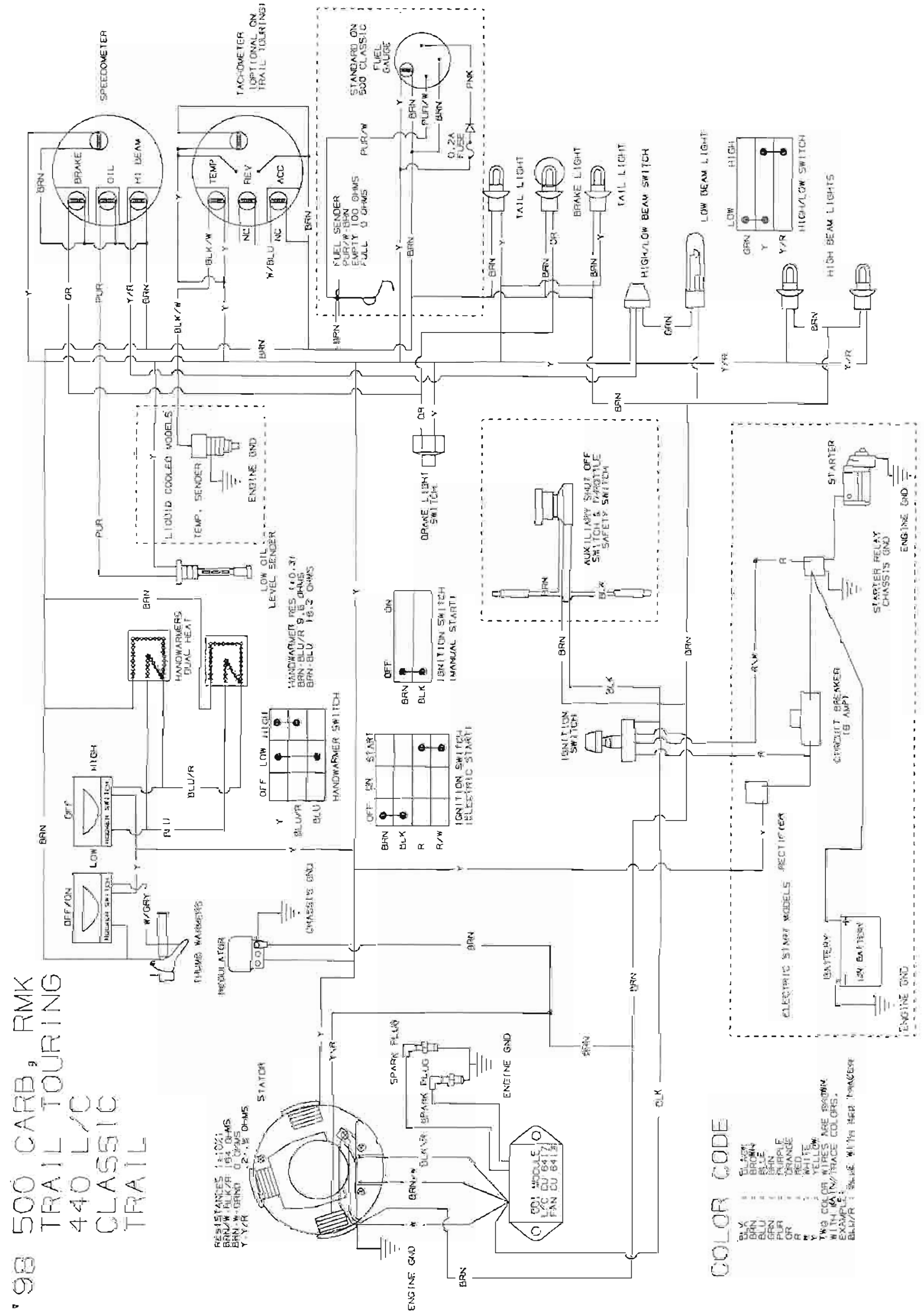
STATOR RESISTANCES	
BRN TO Y	0.12-0.15 OHMS
BRN TO BASE	0 OHMS
W TO GRN	5.3-6.0 OHMS
W TO BASE	0 OHMS
R/W TO BLK/W	150-190 OHMS
R/W TO BASE	OPEN
BLK	OPEN

COIL RESISTANCES	
CAP	5000 OHMS
WIRE - WIRE	1000-1300 OHMS
CAP - CAP	11K-12K OHMS

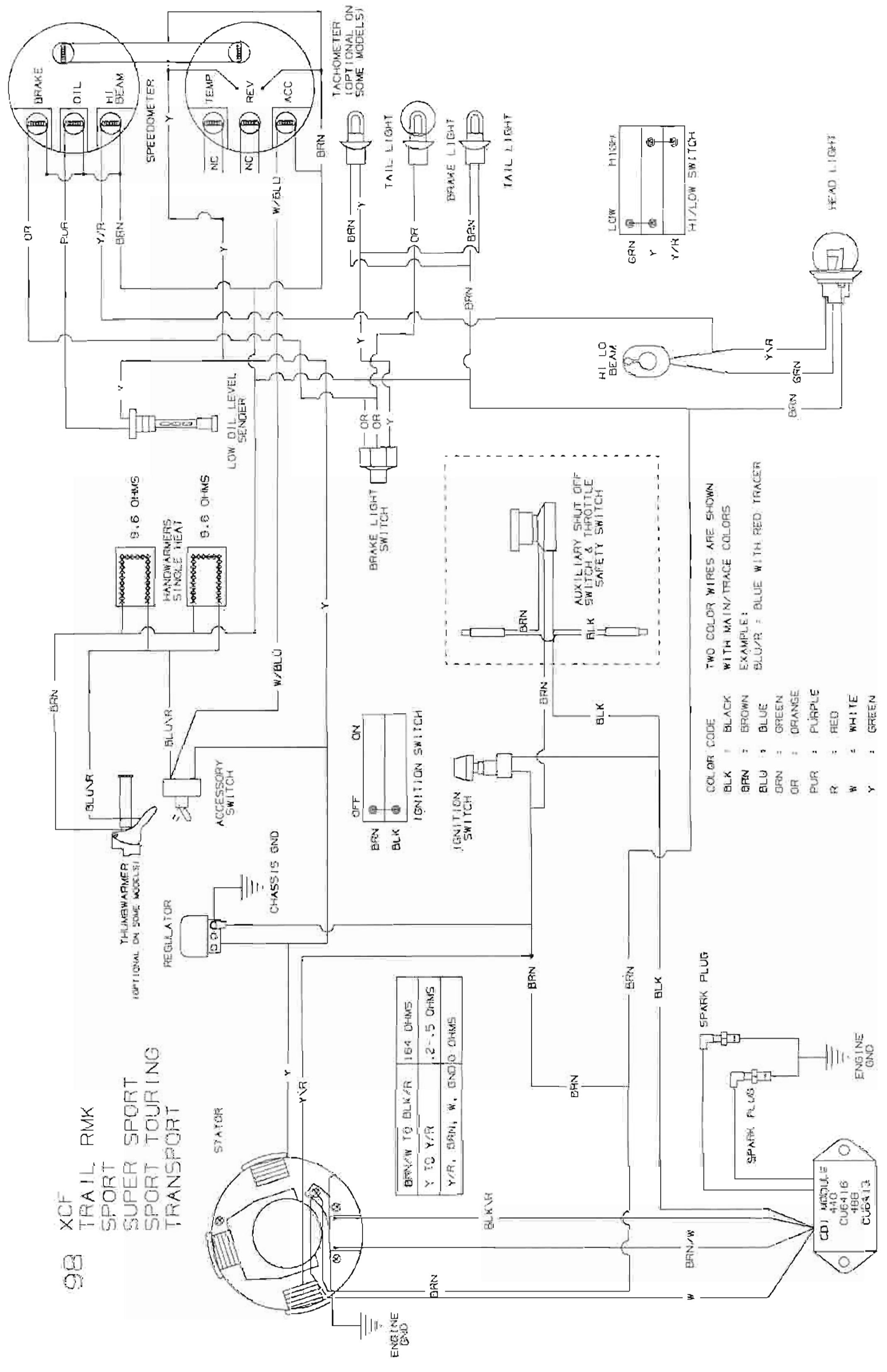
1998 Wiring Diagram - Indy Lite / Lite Touring / Lite Deluxe



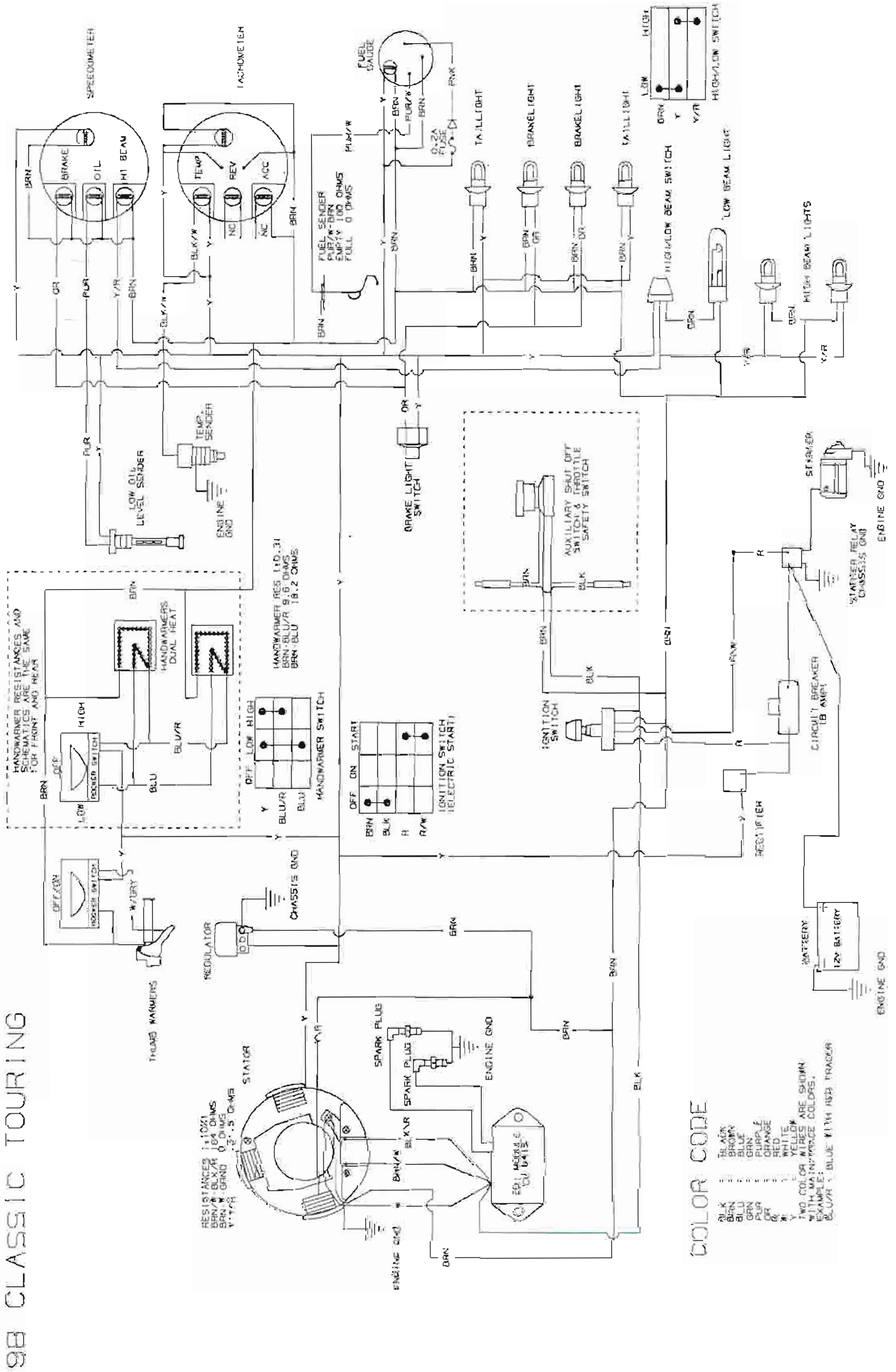
1998 Wiring Diagram - Indy 500 Carb, RMK, Trail Touring 440 L/C, Classic, Trail



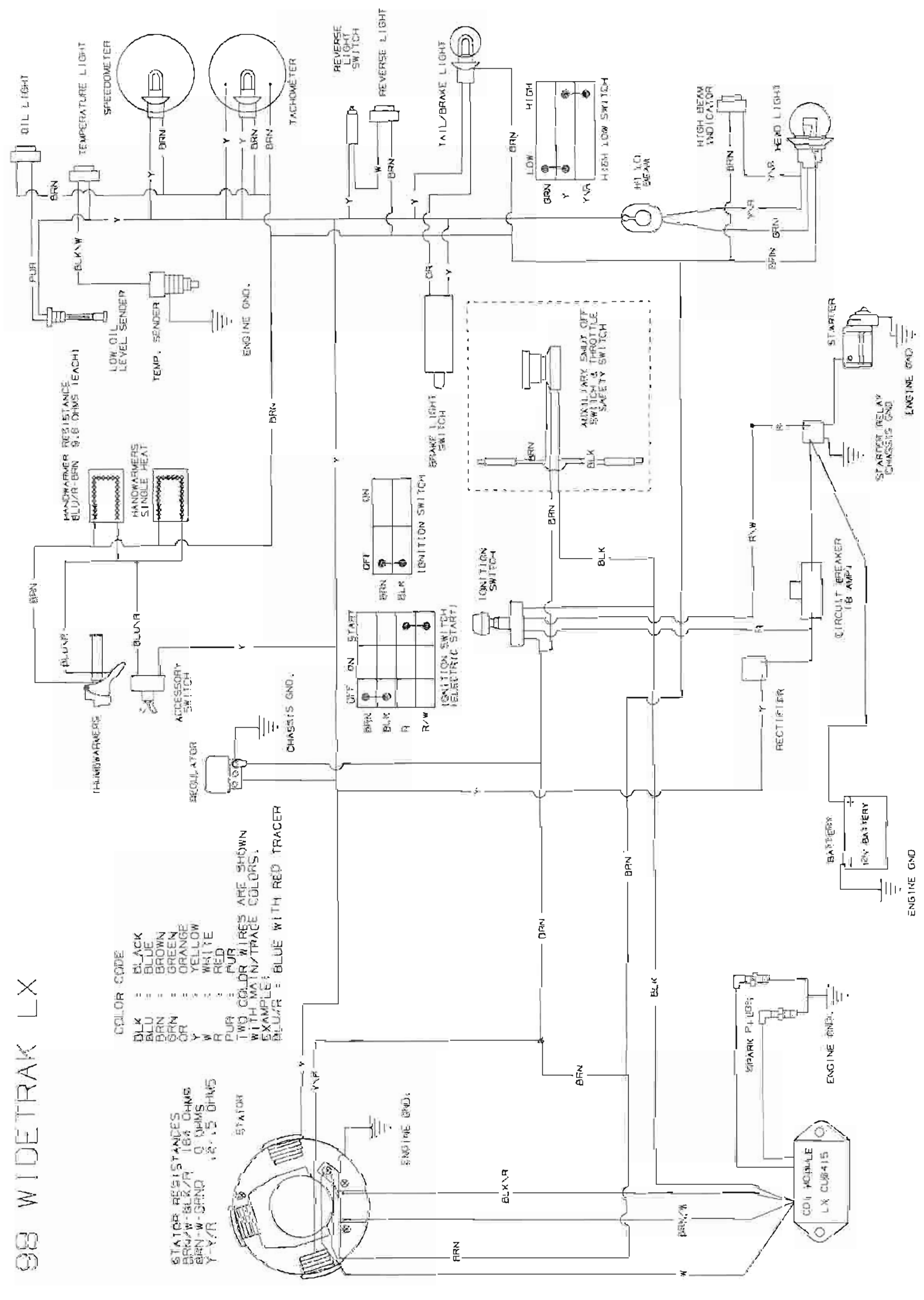
1998 Wiring Diagram - Indy XCF, Trail RMK, Sport, Super Sport Sport Touring, Transport



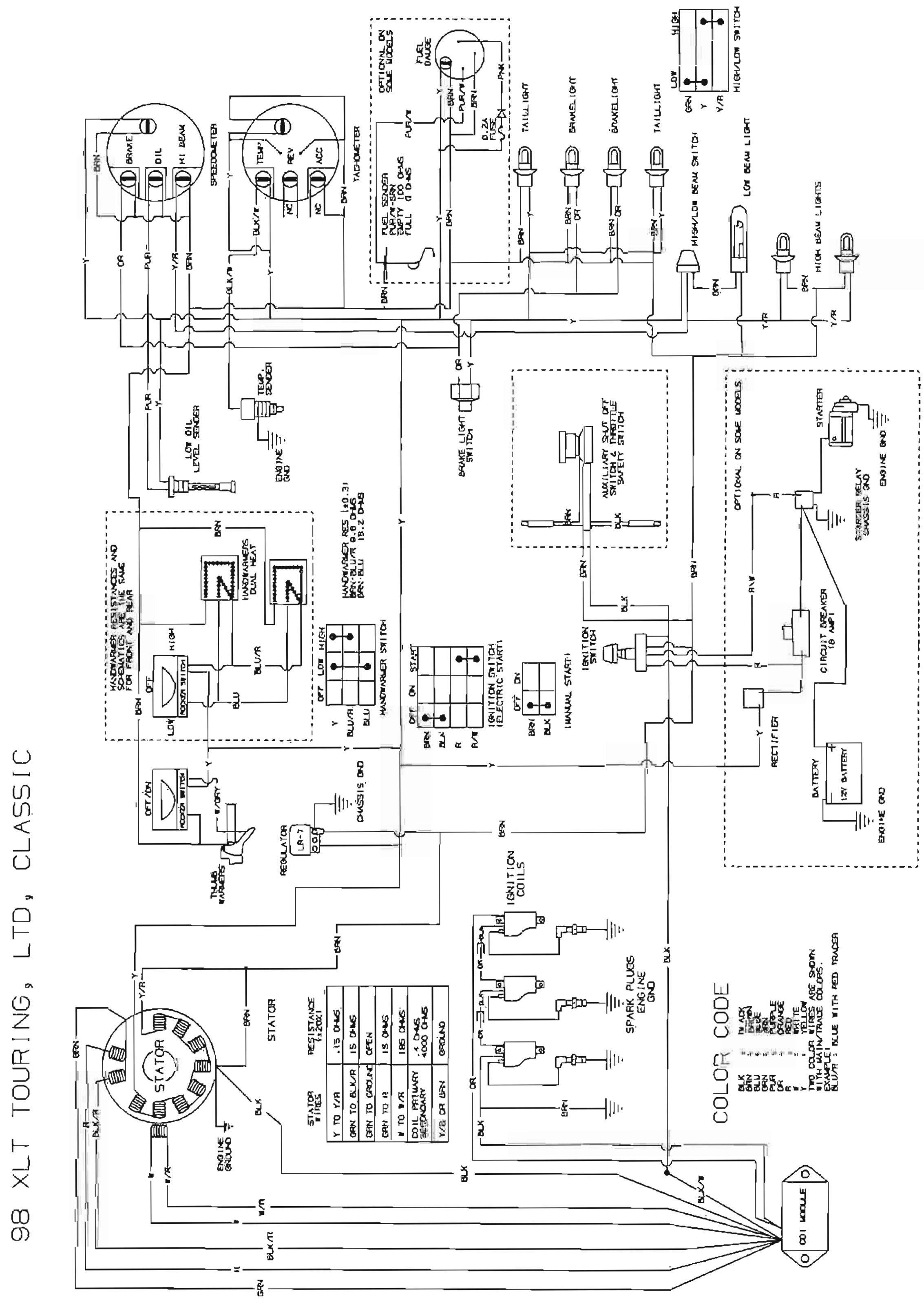
1998 Wiring Diagram - Indy Classic Touring

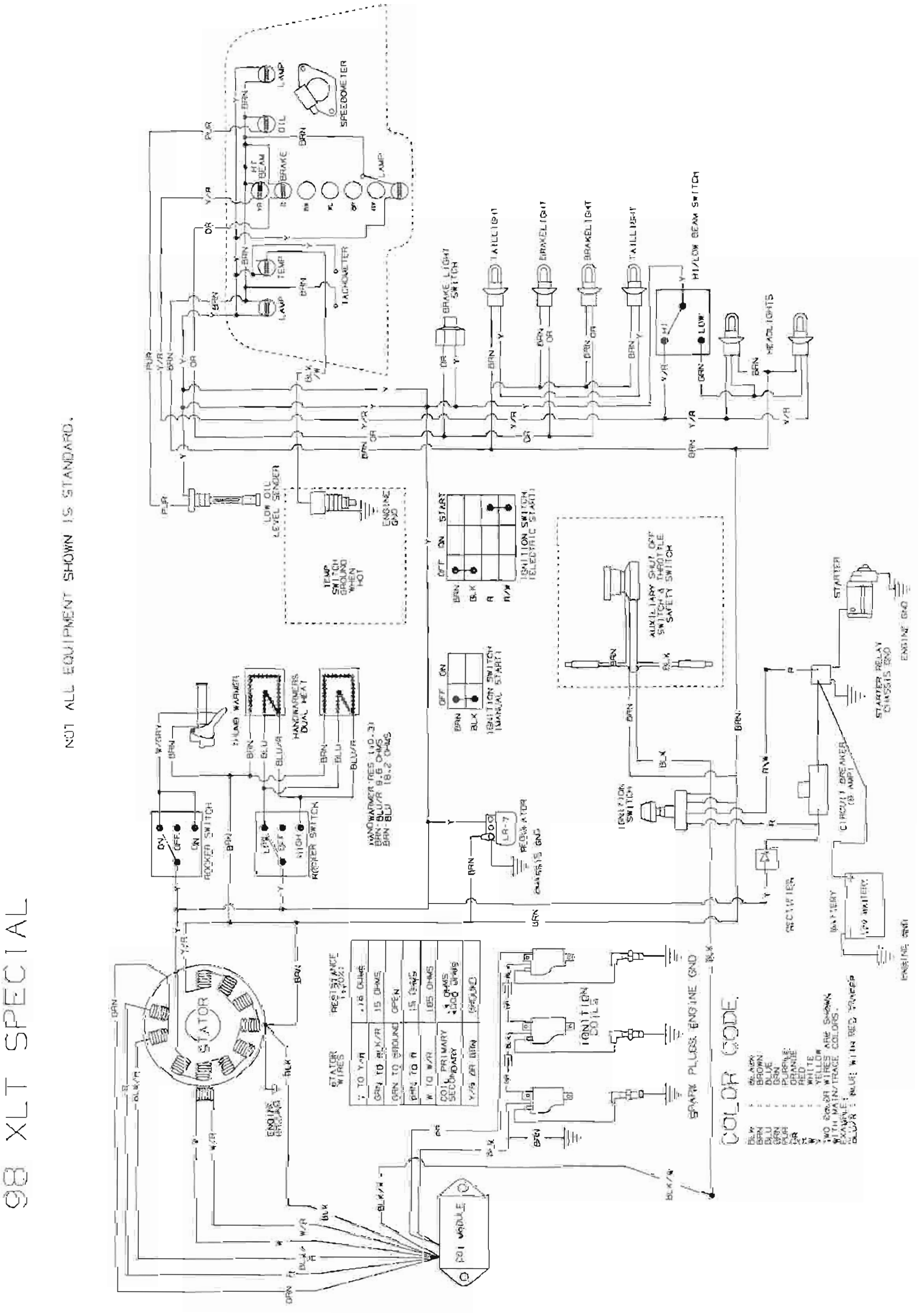


1998 Wiring Diagram - Indy WideTrak LX

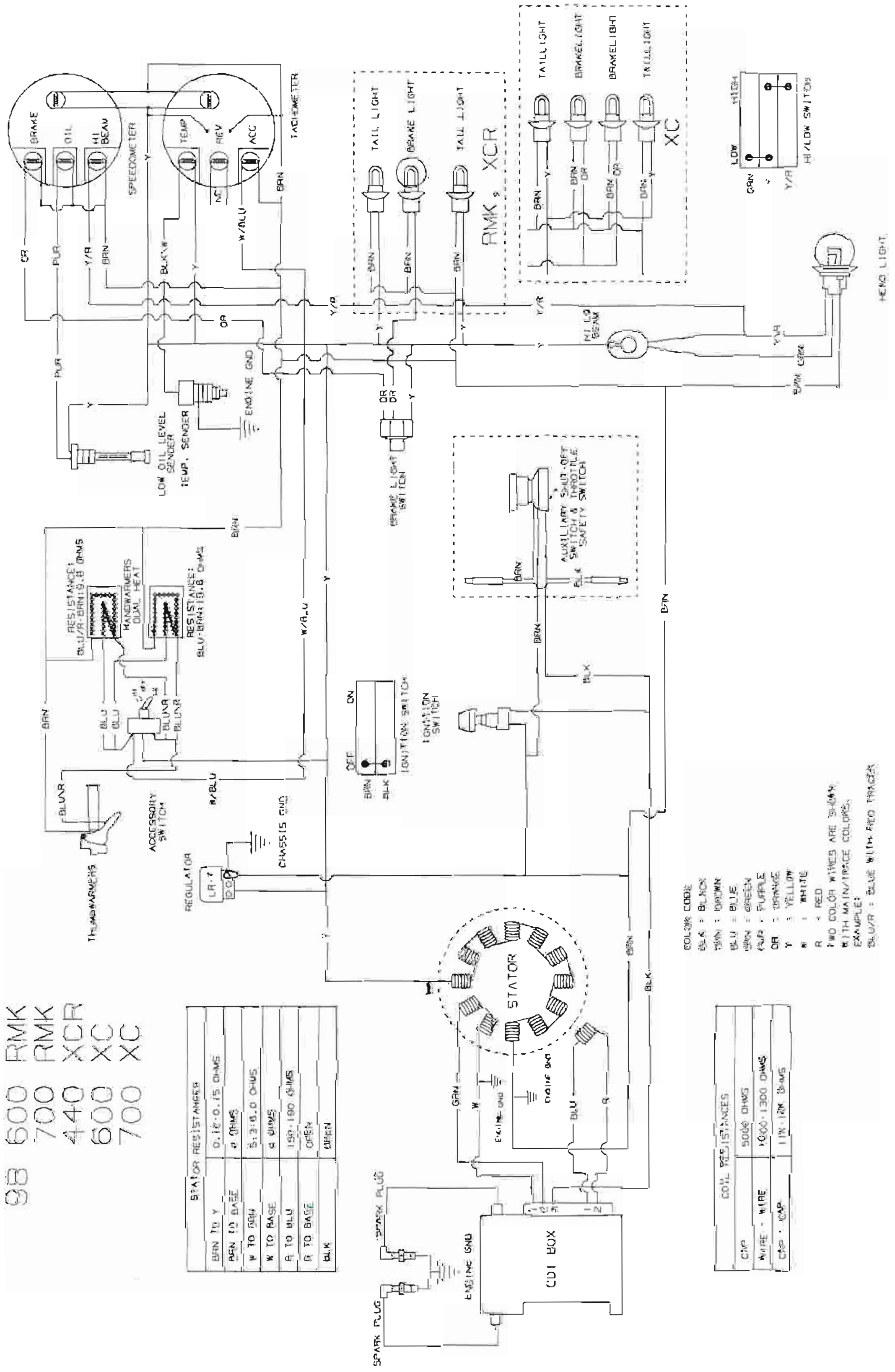


1998 Wiring Diagram - Indy XLT Touring, LTD, Classic



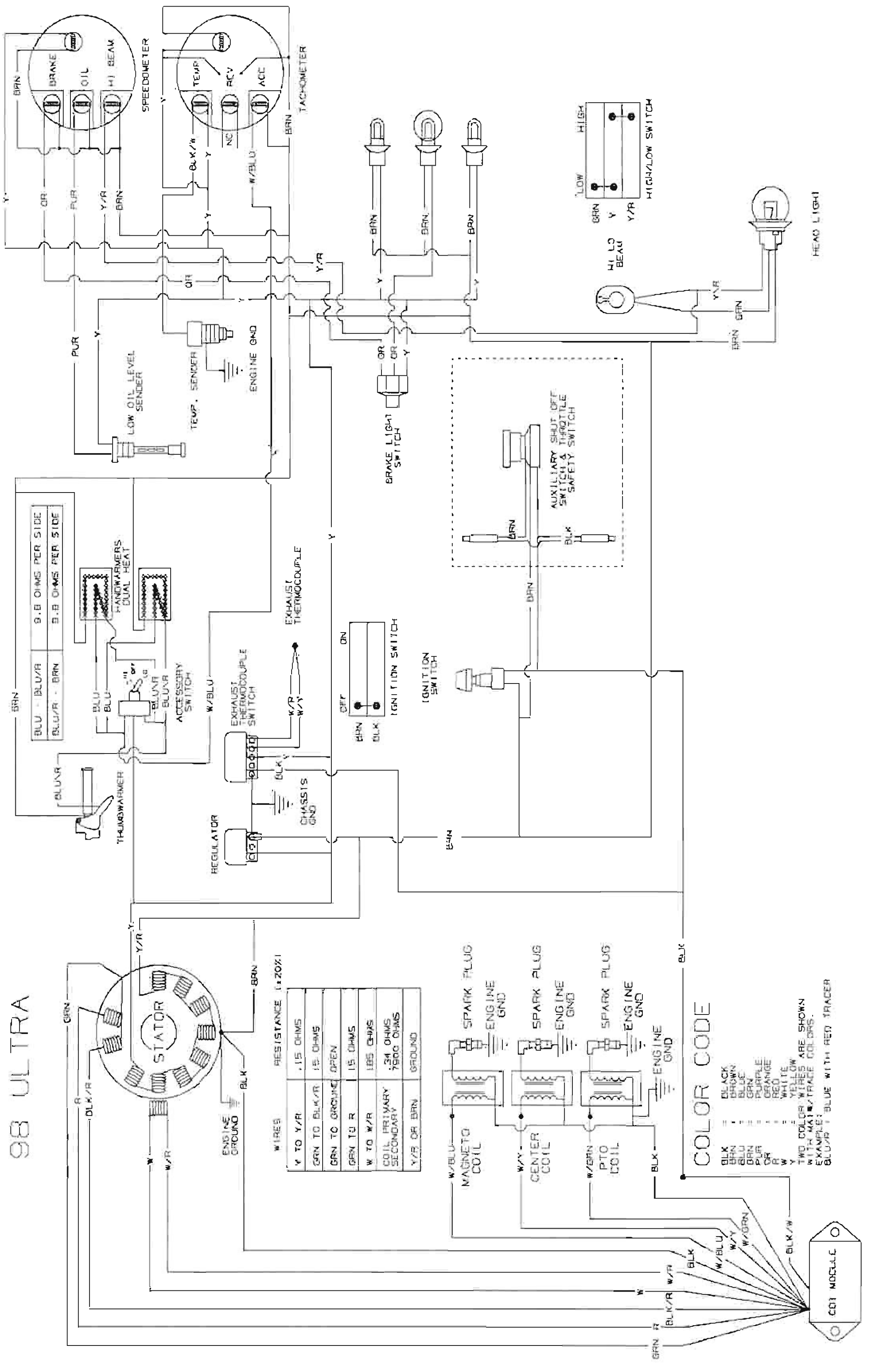

98 XLT SPECIAL
NOT ALL EQUIPMENT SHOWN IS STANDARD.
STATOR
CDI MODULE
COLOR CODE
SPEEDOMETER
TACHOMETER
HEADLIGHTS
TAILLIGHT
BRAKELIGHT
STARTER
BATTERY
RECTIFIER
REGULATOR

1998 Wiring Diagram - Indy 600 RMK, 700 RMK, 440 XCR, 600 XC, 700 XC



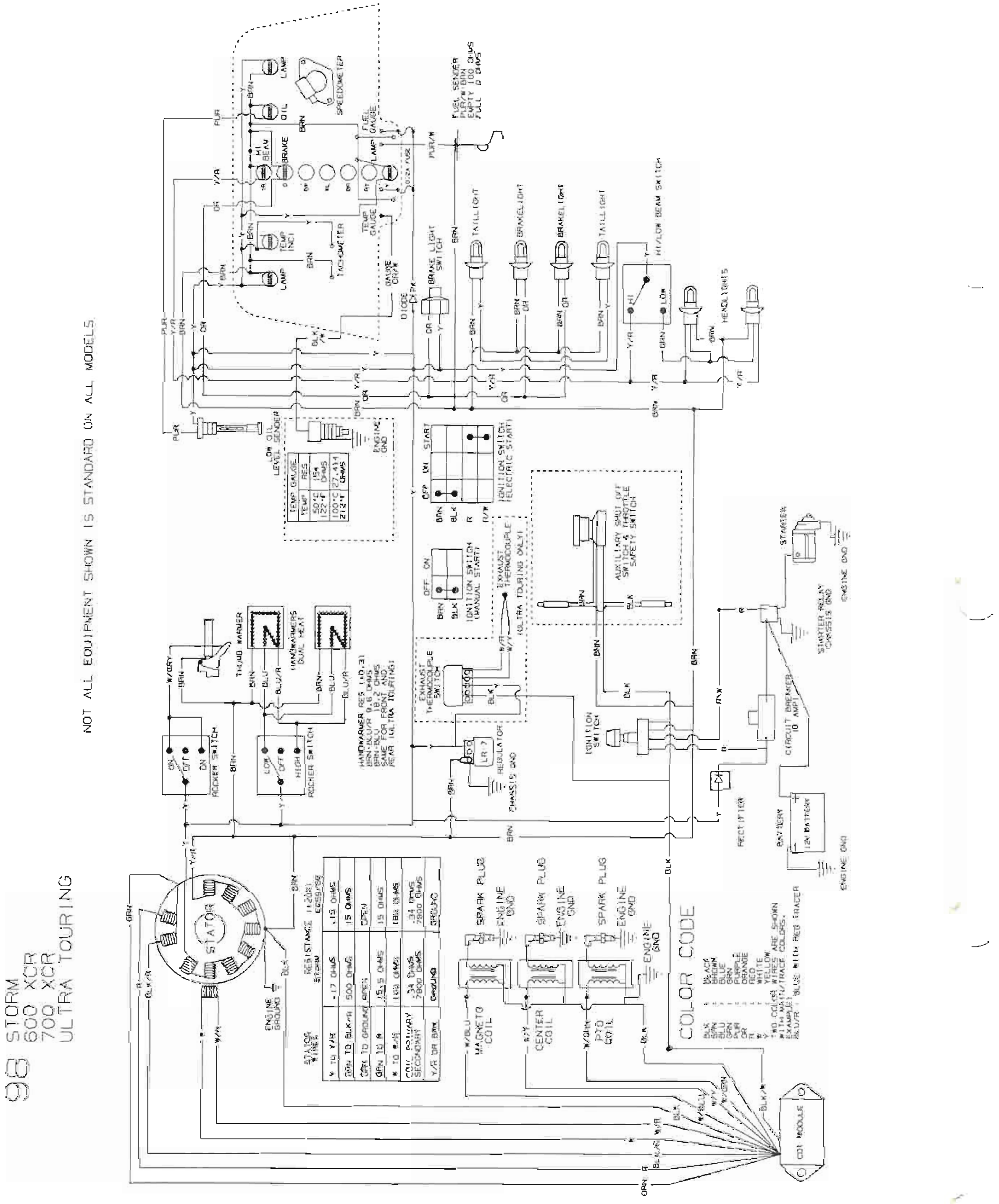
STATOR RESISTANCES	
BRN TO Y	0.10-0.15 OHMS
BRN TO BASE	0 OHMS
W TO BRN	5.3-6.0 OHMS
W TO BASE	0 OHMS
R TO BLU	150-180 OHMS
R TO BASE	OPEN
BLK	OPEN

COIL RESISTANCES	
CAP	5000 OHMS
WIRE - WIRE	1000-1300 OHMS
CAP - CAP	11K-12K OHMS



98 ULTRA
SPEEDOMETER
TACHOMETER
HI/LOW SWITCH
HEAD LIGHT
LOW OIL LEVEL SENDER
TEMP. SENDER
ENGINE GND
BRAKE LIGHT SWITCH
AUXILIARY SHUT OFF SWITCH & THROTTLE SAFETY SWITCH
HANDWARMERS DUAL HEAT
ACCESSORY SWITCH
THUMBWARMER
EXHAUST THERMOCOUPLE
EXHAUST THERMOCOUPLE SWITCH
IGNITION SWITCH
CHASSIS GND
REGULATOR
STATOR
ENGINE GROUND
SPARK PLUG
MAGNETO COIL
CENTER COIL
PTO COIL
COLOR CODE
CDI MODULE

1998 Wiring Diagram - Indy 600 XCR, 700 XCR, Ultra Touring, Storm



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