2007 - 2008 IQ SNOWMOBILE SERVICE MANUAL

FOREWORD

This service manual is designed primarily for use by certified Polaris Master Service Dealer technicians in a properly equipped shop and should be kept available for reference. All references to left and right side of the vehicle are from the operator's perspective when seated in a normal riding position.

Some procedures outlined in this manual require a sound knowledge of mechanical theory, tool use, and shop procedures in order to perform the work safely and correctly. Technicians should read the text and be familiar with service procedures before starting the work. Certain procedures require the use of special tools. Use only the proper tools as specified.

Comments or suggestions about this manual may be directed to: Service Publications Dept. @ Polaris Sales Inc. 2100 Hwy 55 Medina Minnesota 55340.

2007 - 2008 IQ Snowmobile Service Manual PN 9921044

UNDERSTANDING MANUAL SAFETY LABELS AND DIRECTIONS

Throughout this manual, important information is brought to your attention by the following symbols:

⚠ WARNING

SAFETY ALERT WARNING indicates a potential hazard that may result in severe injury or death to the operator, bystander or person(s) inspecting or servicing the vehicle.

⚠ CAUTION

SAFETY ALERT CAUTION indicates a potential hazard that may result in minor personal injury or damage to the vehicle.

CAUTION

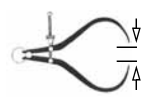
CAUTION indicates special precautions that must be taken to avoid vehicle damage or property damage.

NOTE:

NOTE provides key information by clarifying instructions.

IMPORTANT:

IMPORTANT provides key reminders during disassembly, assembly and inspection of components.

 **= In. / mm.**

MEASUREMENT provides a key for a determined measurement specification.

 **= T**

TORQUE provides a key for a required torque value.

TRADEMARKS

POLARIS ACKNOWLEDGES THE FOLLOWING PRODUCTS MENTIONED IN THIS MANUAL:

Loctite, Registered Trademark of the Loctite Corporation
Nyogel, Trademark of Wm. F. Nye Co.
Fluke, Registered Trademark of John Fluke Mfg. Co.
Mity-Vac, Registered Trademark of Neward Enterprises, Inc.
Torx, Registered Trademark of Textron
M-10, Registered Trademark of FAST Inc.
WD-40, Registered Trademark of WD-40 Company
Rapid Reaction Driven Clutch, Registered Trademark of Team Industries Inc.
VM and TM Carburetors, Registered Trademarks of Mikuni American Corporation
Fox and Fox PS-5 Registered Trademark of Fox Racing Shox, Inc.
Ryde FX and Air 2.0, Registered Trademark of Arvin Meritor, Inc.
Walker Evans Air Shock, Registered Trademark of Walker Evans Racing, Inc.

WINNING PERFORMANCE

POLARIS®

2007 - 2008 IQ Snowmobile
Service Manual Chapters

CHAPTER 1

Model Specifications

SPECIFICATIONS

2007 600 HO IQ

Model Number: S07PP6FS (A) (B)

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3273-6044-PF6F
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.004 - .006 / .105 - .159
Installed Ring Gap (inches / mm)	.014 - .020 / .356 - .508
Operating RPM ±200	8100
Idle RPM	1500
Engagement RPM ±200	3800
Exhaust Valve Spring	Pink

Carburetor Settings

Type	Mikuni TM38
Main Jet	420
Pilot Jet	50
Jet Needle/Clip position	9DGN6-57 / 2
Needle Jet	P-8
Throttle Gap (Under Cutaway) (in/mm)	0.08 / 2.1
Cutaway	1.5 Notch
Valve Seat	1.5
Starter Jet	145
Pilot Air Jet	.6
Fuel screw (Turns Out)	1.25
Recommended Fuel Octane (R+M/2)	91 (Non-Oxygenated)

Carburetor Jetting

Altitude Meters (feet)	Ambient Temperature							
	< -25°F/<-35°C	-30°F to -10°F/-34°C to -23°C	-15°F to +5°F/-26°C to -15°C	0°F to +20°F/-18°C to -7°C	+15°F to +35°F/-9°C to +2°C	+30°F to +50°F/-1°C to +10°C	+45°F to +65°F/+7°C to +18°C	>+60°F/>+16°C
0-600 (0-2000)	440 #3	430 #3	420 #2	400 #2	390 #2	380 #2	370 #2	360 #1
600-1200 (2000-4000)	410 #3	400 #3	390 #2	370 #2	360 #2	350 #2	340 #1	330 #1
1200-1800 (4000-6000)	370 #3	360 #2	350 #2	340 #2	330 #2	320 #1	310 #1	300 #1
1800-2400 (6000-8000)	340 #3	320 #2	310 #2	300 #2	280 #2	280 #1	270 #1	260 #1
2400-3000 (8000-10000)	310 #2	300 #2	290 #2	280 #1	270 #1	260 #1	250 #1	240 #1
3000-3700 (10000-12000)	290 #2	280 #2	270 #1	250 #1	240 #1	230 #1	220 #1	210 #1

When using non oxygenated fuel with a RON greater than 93, decrease the main jet number in the above chart by 10 and raise the E-clip one position. If the chart recommends clip #1, install washer on top when using RON 93.

Clutch Settings

<table>
<tr><th rowspan="2">ALTITUDE meters (feet)</th><th colspan="2">DRIVE CLUTCH</th><th colspan="3">DRIVEN CLUTCH</th></tr>
<tr><th>Shift Weight</th><th>Clutch Spring</th><th>Clutch Spring</th><th>Driven Helix</th><th>Gearing</th></tr>
<tr><td>0-600 (0-2000)</td><td>10-62</td><td rowspan="6">BLK / GRN (120 / 340) (7042083)</td><td rowspan="6">RED/BLK (140 / 240) (7043058)</td><td>64/42.36 LW ER</td><td>23:39-76</td></tr>
<tr><td>600-1200 (2000-4000)</td><td>10-60</td><td rowspan="5">56/42 - .36 LW ER</td><td>22:39-76</td></tr>
<tr><td>1200-1800 (4000-6000)</td><td>10-58</td><td rowspan="2">22:40-76</td></tr>
<tr><td>1800-2400 (6000-8000)</td><td>10-56</td></tr>
<tr><td>2400-3000 (8000-10000)</td><td>10-54</td><td rowspan="2">20:41-76</td></tr>
<tr><td>3000-3600 (10000-12000)</td><td>10-AL</td></tr>
<tr><td colspan="6">Drive Clutch Bolt Torque: 50 lb.ft. (68Nm)</td></tr>
</table>

General

Width (in/cm)	48 / 121.9
Length (in/cm)	115 / 292.1
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	475 / 215.7
Fuel (Gallons / Liters)	10.8 / 40.9
Oil (Quarts / Liters)	3.4 / 3.2
Cooling System Capacity (Quarts / Liters)	6.3 / 6
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211080 1.438 / 3.65 28_ 46.625 / 118.4 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 23 39 76 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 280
Ignition Timing	26_ @3500 RPM (TPS Un-plugged)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC
CDI Marking	4011033
Flywheel Marking	4010677

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	121 (307)
Lug Height - Inches (cm)	1.0 / (2.5) 1.25 (3.175) - Option
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	7/8″ - 1-1/8″(2.2 - 2.9cm)

Front Suspension

Suspension Type	IQ 42.5
Shocks	Ryde FX HPG w/IFP (STD.) (Rebuidlable) Fox Compression Adj. Remote Resevoir HPG (OPT.) (Rebuidable)
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Spring Installed Length Inches (cm)	10.55 (26.8)
Front Vertical Travel Inches (cm)	10 (25.4)
Suspension Setup Width Inches (cm)	41.16 (104.54)
Camber Inches (cm)	2.25 ± 0.31 (57 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	IQ 121
Front Track Shock (FTS)	Ryde FX HPG w/IFP (STD.) (Rebuildable) Fox HPG w/IFP (OPT.) (Rebuildable)
FTS Spring Rate lbs/in (N/mm)	130 - 270 (23 - 47)
FTS Spring Installed Length Inches (cm)	7.97 (20.2)
Rear Track Shock (RTS)	Fox PS5 w/IFP (STD.) (Rebuildable) Fox Compression Adjustable Remote Resevoir HPG (OPT.) (Rebuildable)
Torsion Spring Diameter Tail Angle	.374 80_
Rear Travel Inches (cm)	13.9 (35.3)

2007 600 HO Switchback

Model Number: S07PS6FS (A)

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3273-6044-PF6F
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.004 - .006 / .105 - .159
Installed Ring Gap (inches / mm)	.014 - .020 / .356 - .508
Operating RPM ±200	8100
Idle RPM	1500
Engagement RPM ±200	3800
Exhaust Valve Spring	Pink

Carburetor Settings

Type	Mikuni TM38
Main Jet	420
Pilot Jet	50
Jet Needle/Clip position	9DGN6-57 / 2
Needle Jet	P-8
Throttle Gap (Under Cutaway) (in/mm)	0.08 / 2.1
Cutaway	1.5 Notch
Valve Seat	1.5
Starter Jet	145
Pilot Air Jet	.6
Fuel screw (Turns Out)	1.25
Recommended Fuel Octane (R+M/2)	91 (Non-Oxygenated)

Carburetor Jetting

Altitude Meters (feet)	Ambient Temperature							
	< -25°F/<-35°C	-30°F to -10°F/-34°C to -23°C	-15°F to +5°F/-26°C to -15°C	0°F to +20°F/-18°C to -7°C	+15°F to +35°F/-9°C to +2°C	+30°F to +50°F/-1°C to +10°C	+45°F to +65°F/+7°C to +18°C	>+60°F/>+16°C
0-600 (0-2000)	440 #3	430 #3	420 #2	400 #2	390 #2	380 #2	370 #2	360 #1
600-1200 (2000-4000)	410 #3	400 #3	390 #2	370 #2	360 #2	350 #2	340 #1	330 #1
1200-1800 (4000-6000)	370 #3	360 #2	350 #2	340 #2	330 #2	320 #1	310 #1	300 #1
1800-2400 (6000-8000)	340 #3	320 #2	310 #2	300 #2	280 #2	280 #1	270 #1	260 #1
2400-3000 (8000-10000)	310 #2	300 #2	290 #2	280 #1	270 #1	260 #1	250 #1	240 #1
3000-3700 (10000-12000)	290 #2	280 #2	270 #1	250 #1	240 #1	230 #1	220 #1	210 #1

When using non oxygenated fuel with a RON greater than 93, decrease the main jet number in the above chart by 10 and raise the E-clip one position. If the chart recommends clip #1, install washer on top when using RON 93.

Clutch Settings

<table>
<tr><th rowspan="2">ALTITUDE meters (feet)</th><th colspan="2">DRIVE CLUTCH</th><th colspan="3">DRIVEN CLUTCH</th></tr>
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<tr><td colspan="6">Drive Clutch Bolt Torque: 50 lb.ft. (68Nm)</td></tr>
</table>

General

Width (in/cm)	48 / 121.9
Length (in/cm)	125 / 317.5
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	483 / 219.3
Fuel (Gallons / Liters)	10.8 / 40.9
Oil (Quarts / Liters)	3.4 / 3.2
Cooling System Capacity (Quarts / Liters)	6.3 / 6
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211080 1.438 / 3.65 28_ 46.625 / 118.4 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 22 39 76 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 280
Ignition Timing	26_ @3500 RPM (TPS Un-plugged)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC
CDI Marking	4011033
Flywheel Marking	4010677

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	144 (366)
Lug Height - Inches (cm)	1.25 (3.175) (STD.) 1.50 (3.8) (OPT.)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	3/8″- 1/2″ (1 - 1.3cm)

Front Suspension

Suspension Type	IQ 42.5
Shocks	Fox HPG w/IFP (STD.) (Rebuidlable) Fox Compression Adj. Remote Resevoir HPG (OPT.) (Rebuidable)
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Spring Installed Length Inches (cm)	10.55 (26.8)
Front Vertical Travel Inches (cm)	10 (25.4)
Ski Center Distance Inches (cm)	42.5 (108)
Camber Inches (cm)	2.25 ± 0.31 (57 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	IQ 144
Front Track Shock (FTS)	Fox HPG w/IFP (Rebuildable)
FTS Spring Rate lbs/in (N/mm)	170 (30)
FTS Spring Installed Length Inches (cm)	7.25 (18.4)
Rear Track Shock (RTS)	Fox Compression Adjustable Remote Resevoir HPG (Rebuildable)
Torsion Springs	.359 Square / 77_ (Stock) .347 / 77_ / (Soft) - PN 7041627 - 067 - PN 7041628 - 067 .375 / 77_ / (Firm) - PN 7041942 - 067 - PN 7041943 - 067
Rear Travel Inches (cm)	13.9 (35.3)

2007 600 HO RMK

Model Number:
144 = S07PK6FS / S07PK6FE
155 = S07PM6FS (A)

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3273-6044-PF6F
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.004 - .006 / .105 - .159
Installed Ring Gap (inches / mm)	.014 - .020 / .356 - .508
Operating RPM ±200	8100
Idle RPM	1500
Engagement RPM ±200	3800
Exhaust Valve Spring	Pink

Carburetor Settings

Type	Mikuni TM38
Main Jet	280
Pilot Jet	50
Jet Needle/Clip position	9DGN6-57 / 1
Needle Jet	P-8
Throttle Gap (Under Cutaway) (in/mm)	0.13 / 3.2
Cutaway	2.5
Valve Seat	1.5
Starter Jet	145
Pilot Air Jet	.6
Fuel screw (Turns Out)	1
Recommended Fuel Octane (R+M/2)	91 (Non-Oxygenated)

Carburetor Jetting

Altitude Meters (feet)	Ambient Temperature							
	< -25°F/<-35°C	-30°F to -10°F/-34°C to -23°C	-15°F to +5°F/-26°C to -15°C	0°F to +20°F/-18°C to -7°C	+15°F to +35°F/-9°C to +2°C	+30°F to +50°F/-1°C to +10°C	+45°F to +65°F/+7°C to +18°C	>+60°F/>+16°C
0-600 (0-2000)	440 #3	430 #3	420 #2	400 #2	390 #2	380 #2	370 #2	360 #1
600-1200 (2000-4000)	410 #3	400 #3	390 #2	370 #2	360 #2	350 #2	340 #1	330 #1
1200-1800 (4000-6000)	370 #3	360 #2	350 #2	340 #2	330 #2	320 #1	310 #1	300 #1
1800-2400 (6000-8000)	340 #3	320 #2	310 #2	300 #2	280 #1	280 #1	270 #1	260 #1
2400-3000 (8000-10000)	310 #2	300 #2	290 #2	280 #1	270 #1	260 #1	250 #1	240 #1
3000-3700 (10000-12000)	290 #2	280 #2	270 #1	250 #1	240 **	230 **	220 **	210 **

** = Clip in # 1 position with washer placed on top of clip. When using non-oxygenated fuel with a RON greater than 93, decrease the main jet number in the above chart by 10 and raise the E-clip one position. If the chart recommends **, do nothing with the clip when using RON 93.

Clutch Settings

ALTITUDE meters (feet)	DRIVE CLUTCH		DRIVEN CLUTCH		
	Shift Weight	Clutch Spring	Clutch Spring	Driven Helix	Gearing
0-600 (0-2000)	10-62	BLK / GRN (120 / 340) (7042083)	RED/BLK (140 / 240) (7043058)	64/42-.36 LW ER	19:41-76
600-1200 (2000-4000)	10-60			56/42 - .36 LW ER	
1200-1800 (4000-6000)	10-58				
1800-2400 (6000-8000)	10-56				
2400-3000 (8000-10000)	10-54				
3000-3600 (10000-12000)	10-AL				
Drive Clutch Bolt Torque: 50 lb.ft. (68Nm)					

General

Width (in/cm)	46.5 / 118.1
Length (in/cm)	144 = 125 / 318 155 = 130 / 330.2
Height (in/cm)	49 / 124.5
Estimated Dry Weight (lb/kg)	144 = 472 / 214.3 155 = 478 / 217
Fuel (Gallons / Liters)	12 / 45.4
Oil (Quarts / Liters)	3.4 / 3.2
Cooling System Capacity (Quarts / Liters)	6.3 / 6
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26_ 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 19 41 76 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 280
Ignition Timing	26_ @3500 RPM (TPS Un-plugged)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC
CDI Marking	4011033
Flywheel Marking	4010677

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	144 (325) 155 (393.7)
Lug Height - Inches (cm)	2.0(5) or 2.4(6.1)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	3/8″- 1/2″ (1 - 1.3cm)

Front Suspension

Suspension Type	IQ RMK Adjustable
Shocks	Ryde FX Compression Adjustable (STD.) Walker Evans Air (OPT.) (Rebuidable)
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Spring Installed Length Inches (cm)	10.35 (26.3)
WE Air Oil Volume	95cc
WE Air Nitrogen Charge Stock Optional	 215 psi 220 - 225 psi
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm)	39(99.1) / 40(101.6) / 41(104.1)
Camber Inches (cm)	2.17 ± 0.31 (55 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	IQ 144 / 155
Front Track Shock (FTS)	Ryde FX (STD.) Walker Evans Air (OPT.)
FTS Spring Rate lbs/in (N/mm)	190 (33)
FTS Spring Installed Length Inches (cm)	7.4 (18.8)
Rear Track Shock (RTS)	Ryde FX (STD.) Walker Evans Air (OPT.) (Rebuildable)
WE Air Oil Volume	70cc
WE Air Nitrogen Charge Stock Optional	 215 psi 210 - 220 psi
Torsion Springs	.359 Square / 77_ (Stock) .347 / 77_ / (Soft) - PN 7041627 - 067 - PN 7041628 - 067 .375 / 77_ / (Firm) - PN 7041942 - 067 - PN 7041943 - 067
Rear Travel Inches (cm)	144 = 14.5(36.8) 155 = 15.5(39.4)

2007 600 HO IQ CFI

Model Number: S07PP6HS (A) (B)

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3206-6044-PF6H
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.004 - .006 / .105 - .159
Installed Ring Gap (inches / mm)	.014 - .020 / .356 - .508
Operating RPM ±200	8250
Idle RPM	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple

Fuel Delivery

Type	Cleanfire Direct Injection
Throttle Body Marking	1203213
Throttle Body Bore	46mm
TPS Voltage @ Idle	0.95 +/- 0.01 Vdc
Fuel Pressure - PSI (bar)	58 (4.0)
Recommended Fuel Octane (R+M/2)	91 Non-Oxygenated

Clutch Settings

<table>
<tr><th rowspan="2">ALTITUDE
meters
(feet)</th><th colspan="2">DRIVE CLUTCH</th><th colspan="3">DRIVEN CLUTCH</th></tr>
<tr><th>Shift Weight</th><th>Clutch Spring</th><th>Clutch Spring</th><th>Driven Helix</th><th>Gearing</th></tr>
<tr><td>0-600
(0-2000)</td><td>10-62</td><td rowspan="6">BLK / GRN
(120 / 340)
(7042083)</td><td rowspan="6">RED/BLK
(140 / 240)
(7043058)</td><td>64/42.36
LW ER</td><td>23:39-76</td></tr>
<tr><td>600-1200
(2000-4000)</td><td>10-60</td><td rowspan="5">56/42 - .36
LW ER</td><td>22:39-76</td></tr>
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(4000-6000)</td><td>10-58</td><td rowspan="2">22:40-76</td></tr>
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(6000-8000)</td><td>10-56</td></tr>
<tr><td>2400-3000
(8000-10000)</td><td>10-54</td><td rowspan="2">20:41-76</td></tr>
<tr><td>3000-3600
(10000-12000)</td><td>10-AL</td></tr>
<tr><td colspan="6">Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)</td></tr>
</table>

General

Width (in/cm)	48 / 121.9
Length (in/cm)	115 / 292.1
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	485 / 220.2
Fuel (Gallons / Liters)	11.7 / 44.3
Oil (Quarts / Liters)	3.4 / 3.2
Cooling System Capacity (Quarts / Liters)	6.3 / 6
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211080 1.438 / 3.65 28_ 46.625 / 118.4 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 23 39 76 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 400
Ignition Timing	18_ @1700 RPM Coolant Temp = 120_F (49_C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	121 (307)
Lug Height - Inches (cm)	1.0 (5) (STD.) 1.25 (3.175) (OPT.)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	7/8″ - 1-1/8″(2.2 - 2.9cm)

Front Suspension

Suspension Type	IQ 42.5
Shocks	Ryde FX HPG w/IFP (STD.) (Rebuidlable) Fox Compression Adj. Remote Resevoir HPG (OPT.) (Rebuidable)
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Spring Installed Length Inches (cm)	10.55 (26.8)
Front Vertical Travel Inches (cm)	10 (25.4)
Ski Center Distance Inches (cm)	42.5 (108)
Camber Inches (cm)	2.25 ± 0.31 (57 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	IQ 121
Front Track Shock (FTS)	Ryde FX HPG w/IFP (STD.) (Rebuildable) Fox HPG w/IFP (OPT.) (Rebuildable)
FTS Spring Rate lbs/in (N/mm)	130 - 270 (2.3 - 4.8)
FTS Spring Installed Length Inches (cm)	7.97 (20.2)
Rear Track Shock (RTS)	Fox PS5 w/IFP (STD.) (Rebuildable) Fox Compression Adjustable Remote Resevoir HPG (OPT.) (Rebuildable)
Torsion Spring Diameter Tail Angle	.374 80_
Rear Travel Inches (cm)	13.9 (35.3)

2007 600 HO Switchback CFI

Model Number: S07PS6HS (A) (B)

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3206-6044-PF6H
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.004 - .006 / .105 - .159
Installed Ring Gap (inches / mm)	.014 - .020 / .356 - .508
Operating RPM ±200	8250
Idle RPM	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple

Fuel Delivery

Type	Cleanfire Direct Injection
Throttle Body Marking	1203213
Throttle Body Bore	46mm
TPS Voltage @ Idle	0.95 +/- 0.01 Vdc
Fuel Pressure - PSI (bar)	58 (4.0)
Recommended Fuel Octane (R+M/2)	91 Non-Oxygenated

Clutch Settings

<table>
<tr><th rowspan="2">ALTITUDE meters (feet)</th><th colspan="2">DRIVE CLUTCH</th><th colspan="3">DRIVEN CLUTCH</th></tr>
<tr><th>Shift Weight</th><th>Clutch Spring</th><th>Clutch Spring</th><th>Driven Helix</th><th>Gearing</th></tr>
<tr><td>0-600 (0-2000)</td><td>10-62</td><td rowspan="6">BLK / GRN (120 / 340) (7042083)</td><td rowspan="6">RED/BLK (140 / 240) (7043058)</td><td>64/42.36 LW ER</td><td rowspan="2">22:39-76</td></tr>
<tr><td>600-1200 (2000-4000)</td><td>10-60</td><td rowspan="5">56/42 - .36 LW ER</td></tr>
<tr><td>1200-1800 (4000-6000)</td><td>10-58</td><td>22:40-76</td></tr>
<tr><td>1800-2400 (6000-8000)</td><td>10-56</td><td rowspan="3">20:41-76</td></tr>
<tr><td>2400-3000 (8000-10000)</td><td>10-54</td></tr>
<tr><td>3000-3600 (10000-12000)</td><td>10-AL</td></tr>
<tr><td colspan="6">Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)</td></tr>
</table>

General

Width (in/cm)	48 / 121.9
Length (in/cm)	125 / 317.5
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	485 / 220.2
Fuel (Gallons / Liters)	11.7 / 44.3
Oil (Quarts / Liters)	3.4 / 3.2
Cooling System Capacity (Quarts / Liters)	6.3 / 6
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211080 1.438 / 3.65 28_ 46.625 / 118.4 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 22 39 76 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 400
Ignition Timing	18_ @1700 RPM Coolant Temp = 120_F (49_C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	144 (366)
Lug Height - Inches (cm)	1.25 (3.175) (STD.) 1.50 (3.8) (OPT.)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	3/8″- 1/2″ (1 - 1.3cm)

Front Suspension

Suspension Type	IQ 42.5
Shocks	Fox HPG w/IFP (STD.) (Rebuidlable) Fox Compression Adj. Remote Resevoir HPG (OPT.) (Rebuidable)
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Spring Installed Length Inches (cm)	10.55 (26.8)
Front Vertical Travel Inches (cm)	10 (25.4)
Ski Center Distance Inches (cm)	42.5 (108)
Camber Inches (cm)	2.25 ± 0.31 (57 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	IQ 144
Front Track Shock (FTS)	Fox HPG w/IFP (Rebuildable)
FTS Spring Rate lbs/in (N/mm)	170 (29.75)
FTS Spring Installed Length Inches (cm)	7.25 (18.4)
Rear Track Shock (RTS)	Fox Compression Adjustable Remote Resevoir HPG (Rebuildable)
Torsion Springs	.359 Square / 77_ (Stock) .347 / 77_ / (Soft) - PN 7041627 - 067 - PN 7041628 - 067 .375 / 77_ / (Firm) - PN 7041942 - 067 - PN 7041943 - 067
Rear Travel Inches (cm)	13.9 (35.3)

2007 600 HO IQ LX CFI

Model Number: S07PD6HS / S07PD6HE

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3206-6044-PF6H
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.004 - .006 / .105 - .159
Installed Ring Gap (inches / mm)	.014 - .020 / .356 - .508
Operating RPM ±200	8250
Idle RPM	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple

Fuel Delivery

Type	Cleanfire Direct Injection
Throttle Body Marking	1203213
Throttle Body Bore	46mm
TPS Voltage @ Idle	0.95 +/- 0.01 Vdc
Fuel Pressure - PSI (bar)	58 (4.0)
Recommended Fuel Octane (R+M/2)	91 Non-Oxygenated

Clutch Settings

<table>
<tr><th rowspan="2">ALTITUDE
meters
(feet)</th><th colspan="2">DRIVE CLUTCH</th><th colspan="3">DRIVEN CLUTCH</th></tr>
<tr><th>Shift Weight</th><th>Clutch Spring</th><th>Clutch Spring</th><th>Driven Helix</th><th>Gearing</th></tr>
<tr><td>0-600
(0-2000)</td><td>10-62</td><td rowspan="6">BLK / GRN
(120 / 340)
(7042083)</td><td rowspan="6">RED/BLK
(140 / 240)
(7043058)</td><td>64/42.36
LW ER</td><td rowspan="2">22:39-76</td></tr>
<tr><td>600-1200
(2000-4000)</td><td>10-60</td><td rowspan="5">56/42 - .36
LW ER</td></tr>
<tr><td>1200-1800
(4000-6000)</td><td>10-58</td><td rowspan="2">22:40-76</td></tr>
<tr><td>1800-2400
(6000-8000)</td><td>10-56</td></tr>
<tr><td>2400-3000
(8000-10000)</td><td>10-54</td><td rowspan="2">20:41-76</td></tr>
<tr><td>3000-3600
(10000-12000)</td><td>10-AL</td></tr>
<tr><td colspan="6">Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)</td></tr>
</table>

General

Width (in/cm)	48 / 121.9
Length (in/cm)	115 / 292.1
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	505 / 229.3
Fuel (Gallons / Liters)	11.7 / 44.3
Oil (Quarts / Liters)	3.4 / 3.2
Cooling System Capacity (Quarts / Liters)	6.3 / 6
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211080 1.438 / 3.65 28_ 46.625 / 118.4 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 22 39 76 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 400
Ignition Timing	18_ @1700 RPM Coolant Temp = 120_F (49_C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	128 (325)
Lug Height - Inches (cm)	1 (2.5)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	7/8″ - 1-1/8″(2.2 - 2.9cm)

Front Suspension

Suspension Type	IQ 42.5
Shocks	Ryde FX Gas Bag Compression Adjustable
IFS Spring Rate lbs/in (N/mm)	120 (21)
Spring Installed Length Inches (cm)	9.95 (25.3)
Front Vertical Travel Inches (cm)	9.92 (25.2)
Ski Center Distance Inches (cm)	42.5 (108)
Camber Inches (cm)	2.25 ± 0.31 (57 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	Fast M-10 128
Front Track Shock (FTS)	Ryde FX Gas Bag
FTS Spring Rate lbs/in (N/mm)	180 (31)
FTS Spring Installed Length Inches (cm)	8.5 (21.6)
Rear Track Shock (RTS)	Fox HPG w/IFP (Rebuildable)
Lower Outer Spring Rate lbs/in (N/mm)	715 (125)
Lower Inner Spring Rate lbs/in (N/mm)	425 (74.4)
Upper Spring Rate lbs/in (N/mm)	273 (48)
Rear Travel Inches (cm)	13 (33)

2007 600 HO IQ Touring CFI

Model Number: S07PT6HS / S07PT6HE

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3206-6044-PF6H
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.004 - .006 / .105 - .159
Installed Ring Gap (inches / mm)	.014 - .020 / .356 - .508
Operating RPM ±200	8250
Idle RPM	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple

Fuel Delivery

Type	Cleanfire Direct Injection
Throttle Body Marking	1203213
Throttle Body Bore	46mm
TPS Voltage @ Idle	0.95 +/- 0.01 Vdc
Fuel Pressure - PSI (bar)	58 (4.0)
Recommended Fuel Octane (R+M/2)	91 Non-Oxygenated

Clutch Settings

<table>
<tr><th rowspan="2">ALTITUDE meters (feet)</th><th colspan="2">DRIVE CLUTCH</th><th colspan="3">DRIVEN CLUTCH</th></tr>
<tr><th>Shift Weight</th><th>Clutch Spring</th><th>Clutch Spring</th><th>Driven Helix</th><th>Gearing</th></tr>
<tr><td>0-600 (0-2000)</td><td>10-62</td><td rowspan="6">BLK / GRN (120 / 340) (7042083)</td><td rowspan="6">RED/BLK (140 / 240) (7043058)</td><td>64/42.36 LW ER</td><td rowspan="3">22:43-78</td></tr>
<tr><td>600-1200 (2000-4000)</td><td>10-60</td><td rowspan="5">56/42 - .36 LW ER</td></tr>
<tr><td>1200-1800 (4000-6000)</td><td>10-58</td></tr>
<tr><td>1800-2400 (6000-8000)</td><td>10-56</td><td rowspan="3">21:44-78</td></tr>
<tr><td>2400-3000 (8000-10000)</td><td>10-54</td></tr>
<tr><td>3000-3600 (10000-12000)</td><td>10-AL</td></tr>
<tr><td colspan="6">Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)</td></tr>
</table>

General

Width (in/cm)	48 / 121.9
Length (in/cm)	129 / 327.7
Height (in/cm)	53 / 134.6
Estimated Dry Weight (lb/kg)	574 / 260.6
Fuel (Gallons / Liters)	11.7 / 44.3
Oil (Quarts / Liters)	3.4 / 3.2
Cooling System Capacity (Quarts / Liters)	6.3 / 6
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211080 1.438 / 3.65 28_ 46.625 / 118.4 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 22 43 78 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 400
Ignition Timing	18_ @1700 RPM Coolant Temp = 120_F (49_C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	136 (345)
Lug Height - Inches (cm)	1 (2.5)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	3/4″ - 1.0″(1.9 - 2.5cm)

Front Suspension

Suspension Type	IQ 42.5
Shocks	Ryde FX Gas Bag Compression Adjustable
IFS Spring Rate lbs/in (N/mm)	120 (21)
Spring Installed Length Inches (cm)	9.95 (25.3)
Front Vertical Travel Inches (cm)	10 (25.4)
Ski Center Distance Inches (cm)	42.5 (108)
Camber Inches (cm)	2.25 ± 0.31 (57 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	Fast M-10 136
Front Track Shock (FTS)	Ryde FX Gas Bag
FTS Spring Rate lbs/in (N/mm)	220 (38.5)
FTS Spring Installed Length Inches (cm)	8.5 (21.6)
Rear Track Shock (RTS)	Fox HPG w/IFP (Rebuildable)
Lower Outer Spring Rate lbs/in (N/mm)	715 (125)
Lower Inner Spring Rate lbs/in (N/mm)	425 (74.4)
Upper Spring Rate lbs/in (N/mm)	273 (48)
Rear Travel Inches (cm)	14 (35.6)

2007 700 HO IQ Dragon

Model Number: S07PC7JS / S07PC7JE

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3305-7044-PF7J
Displacement / # Cylinders	700cc / 2
Bore (inches/mm)	3.19 / 81
Stroke (inches/mm)	2.68 / 68
Piston to Cylinder Clearance (inches/mm)	.0044 - .0059 / .112 - .151
Installed Ring Gap (inches / mm)	.017 - .026 / .44 - .650
Operating RPM ±200	8250
Idle RPM	1700
Engagement RPM ±200	3800
VES Spring Color	Purple

Fuel Delivery

Type	Cleanfire Direct Injection
Throttle Body Marking	1203213
Throttle Body Bore	46mm
TPS Voltage @ Idle	0.95 +/- 0.01 Vdc
Fuel Pressure - PSI (bar)	58 (4.0)
Recommended Fuel Octane (R+M/2)	91 Non-Oxygenated

Clutch Settings

<table>
<tr><th rowspan="2">ALTITUDE meters (feet)</th><th colspan="2">DRIVE CLUTCH</th><th colspan="3">DRIVEN CLUTCH</th></tr>
<tr><th>Shift Weight</th><th>Clutch Spring</th><th>Clutch Spring</th><th>Driven Helix</th><th>Gearing</th></tr>
<tr><td>0-600 (0-2000)</td><td>10-64</td><td rowspan="2">DK BLU/WHT</td><td rowspan="6">RED/BLK (140 / 240) (7043058)</td><td rowspan="2">66/44-.46 LW ER</td><td rowspan="3">23:39-76</td></tr>
<tr><td>600-1200 (2000-4000)</td><td>10-62</td></tr>
<tr><td>1200-1800 (4000-6000)</td><td>10-62</td><td rowspan="4">BLK / GRN (120 / 340) (7042083)</td><td rowspan="2">64/42-.36 LW ER</td></tr>
<tr><td>1800-2400 (6000-8000)</td><td>10-60</td><td>22:39-76</td></tr>
<tr><td>2400-3000 (8000-10000)</td><td>10-58</td><td rowspan="2">56/42 - .36 LW ER</td><td rowspan="2">20:41-76</td></tr>
<tr><td>3000-3600 (10000-12000)</td><td>10-56</td></tr>
<tr><td colspan="6">Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)</td></tr>
</table>

General

Width (in/cm)	48 / 121.9
Length (in/cm)	115 / 292.1
Height (in/cm)	47 / 119.4
Estimated Dry Weight (lb/kg)	476 / 216.1
Fuel (Gallons / Liters)	10.8 / 40.9
Oil (Quarts / Liters)	3.4 / 3.2
Cooling System Capacity (Quarts / Liters)	6.3 / 6
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26_ 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 23 39 76 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 400
Ignition Timing	18_ @1700 RPM Coolant Temp = 120_F (49_C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	121 (307)
Lug Height - Inches (cm)	1.25 (3.2)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	7/8″ - 1-1/8″(2.2 - 2.9cm)

Front Suspension

Suspension Type	IQ 42.5
Shocks	Walker Evans w/IFP Remote Resevoir Compression Adjustable (Rebuildable)
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Spring Installed Length Inches (cm)	10.30 (28.4)
Front Vertical Travel Inches (cm)	10.55 (26.8)
Ski Center Distance Inches (cm)	42.5 (108)
Camber Inches (cm)	2.25 ± 0.31 (57 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	IQ 121
Front Track Shock (FTS)	Walker Evans w/IFP Remote Resevoir Compression Adjustable (Rebuildable)
FTS Spring Rate lbs/in (N/mm)	130 - 270 (23 - 47)
FTS Spring Installed Length Inches (cm)	7.97 (20.2)
Rear Track Shock (RTS)	Walker Evans w/IFP Remote Resevoir Compression Adjustable (Rebuildable)
Torsion Spring Tail Angle	.347” 80_
Rear Travel Inches (cm)	13 (33)

2007 700 HO RMK Dragon

Model Number: S07PL7JS / S07PL7JE

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3322-7044-PF7J
Displacement / # Cylinders	700cc / 2
Bore (inches/mm)	3.19 / 81
Stroke (inches/mm)	2.68 / 68
Piston to Cylinder Clearance (inches/mm)	.0042 - .006 / .109 - .163
Installed Ring Gap (inches / mm)	Upper: .010 - .018 / .25 - .45 Lower: .014 - .020 / .35 - .50
Operating RPM ±200	8250
Idle RPM	1700
Engagement RPM ±200	3800
VES Spring Color	Purple

Fuel Delivery

Type	Cleanfire Direct Injection
Throttle Body Marking	1203213
Throttle Body Bore	46mm
TPS Voltage @ Idle	0.95 +/- 0.01 Vdc
Fuel Pressure - PSI (bar)	58 (4.0)
Recommended Fuel Octane (R+M/2)	91 Non-Oxygenated

Clutch Settings

ALTITUDE meters (feet)	DRIVE CLUTCH		DRIVEN CLUTCH		
	Shift Weight	Clutch Spring	Clutch Spring	Driven Helix	Gearing
0-600 (0-2000)	10-66	BLK / GRN (120 / 340) (7042083)	BLACK (155 / 222)	56/42 .36 LWT ER	20:41-76
600-1200 (2000-4000)	10-64				
1200-1800 (4000-6000)	10-62				
1800-2400 (6000-8000)	10-60				
2400-3000 (8000-10000)	10-58				
3000-3600 (10000-12000)	10-56				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)					

General

Width (in/cm)	46.5 / 118.1
Length (in/cm)	130 / 330.2
Height (in/cm)	49 / 124.5
Estimated Dry Weight (lb/kg)	478 / 217
Fuel (Gallons / Liters)	12 / 45.4
Oil (Quarts / Liters)	3.4 / 3.2
Cooling System Capacity (Quarts / Liters)	6.3 / 6
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26_ 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 20 41 76 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 400
Ignition Timing	18_ @1700 RPM Coolant Temp = 120_F (49_C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	155 (393.7)
Lug Height - Inches (cm)	2.4 (6.1)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	3/8″- 1/2″ (1 - 1.3cm)

Front Suspension

Suspension Type	IQ RMK
Shocks	Walker Evans Air
Oil Volume	95cc
Nitrogen Charge Stock Optional	215 psi 220 - 225 psi
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39(99.1) / 40(101.6) / 41(104.1) 38.67 (98.2)
Camber Inches (cm)	2.17 ± 0.31 (55 ± 0.79)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	IQ RMK 155
Front Track Shock (FTS)	Walker Evans Air
Oil Volume	70cc
FTS Nitrogen Charge Stock Optional	215 psi 210 - 220 psi
Rear Track Shock (RTS)	Walker Evans w/IFP
RTS Nitrogen Charge	200 psi
Torsion Springs	.359 Square / 77_ (Stock) .347 / 77_ / (Soft) - PN 7041627 - 067 - PN 7041628 - 067 .375 / 77_ / (Firm) - PN 7041942 - 067 - PN 7041943 - 067
Rear Travel Inches (cm)	15.5 (39.4)

2008 IQ Shift

Model Number: S08PB6FS / S08PB6FE

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3466-6044-PU6F
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.004 - .006 / .105 - .159
Installed Ring Gap (inches / mm)	.014 - .020 / .0356 - .508
Operating RPM ±200	8100
Idle RPM	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Pink

Carburetor Settings

Type	Mikuni TM38
Main Jet	400
Pilot Jet	45
Jet Needle/Clip position	9DGN6-57 / 3
Needle Jet	P-8
Throttle Gap (Under Cutaway) (in/mm)	.082 / 2.1
Cutaway	2.0
Valve Seat	1.5
Starter Jet	145
Pilot Air Jet	1.0
Fuel screw (Turns Out)	1.0
Recommended Fuel Octane (R+M/2)	91 (Non-Oxygenated)

Carburetor Jetting

Altitude Meters (feet)	Ambient Temperature							
	< -25°F/<-35°C	-30°F to -10°F/-34°C to -23°C	-15°F to +5°F/-26°C to -15°C	0°F to +20°F/-18°C to -7°C	+15°F to +35°F/-9°C to +2°C	+30°F to +50°F/-1°C to +10°C	+45°F to +65°F/+7°C to +18°C	>+60°F/>+16°C
0-600 (0-2000)	440 #3	430 #3	420 #3	400 #3	390 #3	380 #2	370 #2	360 #1
600-1200 (2000-4000)	410 #3	400 #3	390 #3	370 #3	360 #2	350 #2	340 #1	330 #1
1200-1800 (4000-6000)	370 #3	360 #2	350 #2	340 #2	330 #2	320 #1	310 #1	300 #1
1800-2400 (6000-8000)	340 #3	320 #2	310 #2	300 #2	280 #2	280 #1	270 #1	260 #1
2400-3000 (8000-10,000)	310 #2	300 #2	290 #2	280 #1	270 #1	260 #1	250 #1	240 #1
3000-3700 (10,000-12,000)	290 #2	280 #2	270 #1	250 #1	240 #1	230 #1	220 #1	210 #1

When using non oxygenated fuel with a RON greater than 93, decrease the main jet number in the above chart by 10 and raise the E-clip one position. If the chart recommends clip #1, install washer on top when using RON 93.

Clutch Settings

<table>
<tr><th rowspan="2">ALTITUDE meters (feet)</th><th colspan="2">DRIVE CLUTCH</th><th colspan="3">DRIVEN CLUTCH</th></tr>
<tr><th>Shift Weight</th><th>Clutch Spring</th><th>Clutch Spring</th><th>Driven Helix</th><th>Gearing</th></tr>
<tr><td>0-600 (0-2000)</td><td>10-62</td><td rowspan="6">BLK / GRN (120 / 340) (7042083)</td><td rowspan="6">RED/BLK (140 / 240) (7043058)</td><td>64/42.36 LW ER</td><td>23:39-76</td></tr>
<tr><td>600-1200 (2000-4000)</td><td>10-60</td><td rowspan="5">56/42 - .36 LW ER</td><td>22:39-76</td></tr>
<tr><td>1200-1800 (4000-6000)</td><td>10-58</td><td rowspan="2">22:40-76</td></tr>
<tr><td>1800-2400 (6000-8000)</td><td>10-56</td></tr>
<tr><td>2400-3000 (8000-10,000)</td><td>10-54</td><td rowspan="2">20:41-76</td></tr>
<tr><td>3000-3600 (10,000-12,000)</td><td>10-AL</td></tr>
<tr><td colspan="6">Drive Clutch Bolt Torque: 50 lb.ft. (68Nm)</td></tr>
</table>

General

Width (in/cm)	48.5 / 123.2
Length (in/cm)	115 / 292.1
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	466 / 211.6
Fuel (Gallons / Liters)	11.7 / 44.3
Oil (Quarts / Liters)	3 / 2.8
Cooling System Capacity (Quarts / Liters)	8.5 / 8
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26_ 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 23 39 76 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 280
Ignition Timing	26_ @3500 RPM (TPS Un-plugged)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC
CDI Marking	4011033
Flywheel Marking	4010677

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	121 (307)
Lug Height - Inches (cm)	.91 / (2.3)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	7/8″ - 1-1/8″(2.2 - 2.9cm)

Front Suspension

Suspension Type	IQ 42.5
Shocks	Ryde FX MPV
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Spring Installed Length Inches (cm)	10.5 (26.67)
Front Vertical Travel Inches (cm)	10 (25.4)
Ski Center Distance Inches (cm) Setup Width (cm)	42.5 (108) 41.16 (104.5)
Camber Inches (cm)	2.25 ± 0.31 (57 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	IQ 121
Front Track Shock (FTS)	Ryde FX MPV
FTS Spring Rate lbs/in (N/mm)	170 (29.75)
Rear Track Shock (RTS)	Ryde FX MPV
Torsion Springs	.347 Square / 80_ (Stock) - PN 7043070 - 067 - PN 7043071 - 067 .347 Square / 77_ (Soft) - PN 7043240 - 067 - PN 7043241 - 067 .359 Square / 12.5# (Firm) - PN 7043079 - 067 - PN 7043080 - 067
Rear Travel Inches (cm)	13.9 (35.3)

2008 600 RMK 144 / 600 RMK Shift 155

Model Number:
600 RMK 144: S08PK6FS / S08PK6FE
600 RMK Shift 155: S08PM6FS

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3467-6044-PU6F
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.004 - .006 / .105 - .159
Installed Ring Gap (inches / mm)	.014 - .020 / .0356 - .508
Operating RPM ±200	8100
Idle RPM	1500
Engagement RPM ±200	3800
Exhaust Valve Spring	Pink

Carburetor Settings

Type	Mikuni TM38
Main Jet	280
Pilot Jet (Pj)	50
Jet Needle/Clip position	9DGN6-57 / 2
Needle Jet	P-8
Throttle Gap (Under Cutaway) (in/mm)	.125 / 3.2
Cutaway	2.5
Valve Seat	1.5
Starter Jet	145
Pilot Air Jet	.9
Fuel screw (Turns Out)	.5
Recommended Fuel Octane (R+M/2)	91 (Non-Oxygenated)

Carburetor Jetting

Altitude Meters (feet)	Ambient Temperature							
	< -25°F/<-35°C	-30°F to -10°F/-34°C to -23°C	-15°F to +5°F/-26°C to -15°C	0°F to +20°F/-18°C to -7°C	+15°F to +35°F/-9°C to +2°C	+30°F to +50°F/-1°C to +10°C	+45°F to +65°F/+7°C to +18°C	>+60°F/>+16°C
0-600 (0-2000)	440 #3	430 #3	420 #2	400 #2	390 #2	380 #2	370 #2	360 #1
600-1200 (2000-4000)	410 #3	400 #3	390 #2	370 #2	360 #2	350 #2	340 #2	330 #1
1200-1800 (4000-6000)	370 #3	360 #2	350 #2	340 #2	330 #2	320 #2	310 #1	300 #1
1800-2400 (6000-8000)	340 #3	320 #2	310 #2	300 #2	280 #2	280 #1	270 #1	260 #1
2400-3000 (8000-10,000)	310 55Pj #2	300 55Pj #2	290 55Pj #2	280 55Pj #2	270 55Pj #2	260 55Pj #1	250 55Pj #1	240 55Pj #1
3000-3700 (10,000-12,000)	290 55Pj #2	280 55Pj #2	270 55Pj #2	250 55Pj #1	240 55Pj #1	230 55Pj #1	220 55Pj #1	210 55Pj #1

When using non oxygenated fuel with a RON greater than 93, decrease the main jet number in the above chart by 10 and raise the E-clip one position. If the chart recommends clip #1, install washer on top when using RON 93.

Clutch Settings

ALTITUDE meters (feet)	DRIVE CLUTCH		DRIVEN CLUTCH		
	Shift Weight	Clutch Spring	Clutch Spring	Driven Helix	Gearing
0-600 (0-2000)	10-62	140 / 330 (7043342)	BLACK (155 / 222)	56/42 - .36 LW ER	19:41-76
600-1200 (2000-4000)	10-60				
1200-1800 (4000-6000)	10-58				
1800-2400 (6000-8000)	10-56				
2400-3000 (8000-10,000)	10-54				
3000-3600 (10,000-12,000)	10-AL				

Drive Clutch Bolt Torque: 50 lb.ft. (68Nm)

General

Width (in/cm)	46.5 / 115.6
Length (in/cm)	124 / 315 (144) 129 / 327.7 (155)
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	472 / 214.3 (144) 478 / 216.8 (155)
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3 / 2.8
Cooling System Capacity (Quarts / Liters)	144 = 6.25 / 6 155 = 6.5 / 6.1
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26_ 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 19 41 76 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 280
Ignition Timing	26_ @3500 RPM (TPS Un-plugged)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC
CDI Marking	4011033
Flywheel Marking	4010677

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	144 (365.7) 155 (393.7)
Lug Height - Inches (cm)	2.0 (5.08) (144) 2.4 (6) (155)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/40cm ahead of rear idler shaft	3/8″- 1/2″ (1 - 1.3cm)

Front Suspension

Suspension Type	IQ RMK
Shocks	Ryde FX
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Spring Installed Length Inches (cm)	10.35 (26.2)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39 - 40 - 41 (99.1 - 101.6 - 104.1) 38.67 (98.2)
Camber Inches (cm)	2.17 ± 0.31 (55 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	IQ RMK 144 / 155
Front Track Shock (FTS)	Ryde FX
FTS Spring Rate lbs/in (N/mm)	190 (33)
Rear Track Shock (RTS)	Ryde AFX Compression Adjustable
Torsion Springs	.359 Square / 77_ (Stock) .347 / 77_ / (Soft) - PN 7041627 - 067 - PN 7041628 - 067 .375 / 77_ / (Firm) - PN 7041942 - 067 - PN 7041943 - 067
Rear Travel Inches (cm)	14.5 (36.8) (144) 15.5 (39.4) (155)

2008 600 Dragon IQ

Model Number:
S08PP6HS / S08PP6HE

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3468-6044-PU6H
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.004 - .006 / .105 - .159
Installed Ring Gap (inches / mm)	.014 - .020 / .356 - .508
Operating RPM ±200	8250
Idle RPM	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple

Fuel Delivery

Type	Cleanfire Direct Injection
Throttle Body Marking	1203213
Throttle Body Bore	46mm
TPS Voltage @ Idle	0.95 +/- 0.01 Vdc
Fuel Pressure - PSI (bar)	58 (4.0)
Recommended Fuel Octane (R+M/2)	91 Non-Oxygenated

Clutch Settings

ALTITUDE meters (feet)	DRIVE CLUTCH		DRIVEN CLUTCH		
	Shift Weight	Clutch Spring	Clutch Spring	Driven Helix	Gearing
0-600 (0-2000)	10-64	BLK / GRN (120 / 340) (7042083)	RED/BLK (140 / 240) (7043058)	56/42 - .36 LW-ER	23:39-76
600-1200 (2000-4000)	10-62				22:39-76
1200-1800 (4000-6000)	10-60				22:40-76
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10000)	10-56				20:41-76
3000-3600 (10000-12000)	10-AL				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)					

General

Width (in/cm)	48 / 121.9
Length (in/cm)	115 / 292.1
Height (in/cm)	48.5 / 123.2
Estimated Dry Weight (lb/kg)	476 / 216.1
Fuel (Gallons / Liters)	11.7 / 44.3
Oil qts/l	3/2.8
Cooling System Capacity (Quarts / Liters)	8.5 / 8
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26_ 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 23 39 76 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 400
Ignition Timing	18_ @1700 RPM Coolant Temp = 120_F (49_C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	121 (307.3)
Lug Height - Inches (cm)	1.25 (3.175)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	7/8″ - 1-1/8″(2.2 - 2.9cm)

Front Suspension

Suspension Type	IQ 42.5
Shocks	Ryde FX Air 2.0
Air 2.0 Nitrogen Pressure 36mm Cylinder 47mm Cylinder	 145 psi 60 psi
Front Vertical Travel Inches (cm)	10 (25.4)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.16 (104.5)
Camber Inches (cm)	2.25 ± 0.31 (57 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	IQ 121
Front Track Shock (FTS)	Ryde FX HPG w/IFP
FTS Spring Rate lbs/in (N/mm)	130 - 270 (23 - 47)
FTS Spring Installed Length (inches / cm)	7.97
Rear Track Shock (RTS)	Ryde FX Compression Adjustable w/Remote Res.
Torsion Springs	.347 Square / 80_ (Soft) - PN 7043070 - 067 - PN 7043071 - 067 .347 Square / 77_ (Softest) - PN 7043240 - 067 - PN 7043241 - 067 .359 Square / 12.5# (Stock) - PN 7043079 - 067 - PN 7043080 - 067
Rear Travel Inches (cm)	13.9 (35.3)

2008 600 Switchback
600 Dragon Switchback

Model Number:
Base = S08PR6HS / S08PR6HE
Dragon = S08PS6HS / S08PS6HE

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3468-6044-PU6H
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.004 - .006 / .105 - .159
Installed Ring Gap (inches / mm)	.014 - .020 / .356 - .508
Operating RPM ±200	8250
Idle RPM	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple

Fuel Delivery

Type	Cleanfire Direct Injection
Throttle Body Marking	1203213
Throttle Body Bore	46mm
TPS Voltage @ Idle	0.95 +/- 0.01 Vdc
Fuel Pressure - PSI (bar)	58 (4.0)
Recommended Fuel Octane (R+M/2)	91 Non-Oxygenated

Clutch Settings

ALTITUDE meters (feet)	DRIVE CLUTCH		DRIVEN CLUTCH		
	Shift Weight	Clutch Spring	Clutch Spring	Driven Helix	Gearing
0-600 (0-2000)	10-64	BLK / GRN (120 / 340) (7042083)	RED/BLK (140 / 240) (7043058)	56/42 - .36 LW-ER	22:39-76
600-1200 (2000-4000)	10-62				
1200-1800 (4000-6000)	10-60				22:40-76
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10000)	10-56				20:41-76
3000-3600 (10000-12000)	10-AL				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)					

General

Width (in/cm)	48 / 121.9
Length (in/cm)	120 / 308.4
Height (in/cm)	48.5 / 123.2
Estimated Dry Weight (lb/kg)	490 (222.5) 494 (224.3) Dragon
Fuel (Gallons / Liters)	11.7 / 44.3
Oil qts/l	3/2.8
Cooling System Capacity (Quarts / Liters)	9.0 / 8.5
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26_ 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 23 39 76 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 400
Ignition Timing	18_ @1700 RPM Coolant Temp = 120_F (49_C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	136 (345.4)
Lug Height - Inches (cm)	1.25 (3.175)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	7/8″ - 1-1/8″(2.2 - 2.9cm)

Front Suspension

Suspension Type	IQ 42.5
Shocks Base Dragon	 Ryde FX HPG w/IFP Ryde FX Air 2.0
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Spring Installed Length Inches (cm)	10.55 (26.8)
Air 2.0 Nitrogen Pressure 36mm Cylinder 47mm Cylinder	 145 psi 60 psi
Front Vertical Travel Inches (cm)	10 (25.4)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.16 (104.5)
Camber Inches (cm)	2.25 ± 0.31 (57 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	IQ 136 Coupled
Front Track Shock (FTS)	Ryde HPG w/IFP
FTS Spring Rate lbs/in (N/mm)	130 - 270 (23 - 47)
FTS Spring Installed Length (inches / cm)	7.97
Rear Track Shock (RTS) Base Dragon	 Fox PS5 Ryde FX Compression Adjustable w/Remote Res.
Torsion Springs	.347 Square / 80_ (Soft) - PN 7043070 - 067 - PN 7043071 - 067 .347 Square / 77_ (Softest) - PN 7043240 - 067 - PN 7043241 - 067 .359 Square / 12.5# (Stock) - PN 7043079 - 067 - PN 7043080 - 067
Rear Travel Inches (cm)	14 (35.5)

2008 600 IQ LX

Model Number: S08PD6HS

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3468-6044-PU6H
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.004 - .006 / .105 - .159
Installed Ring Gap (inches / mm)	.014 - .020 / .356 - .508
Operating RPM ±200	8250
Idle RPM	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple

Fuel Delivery

Type	Cleanfire Direct Injection
Throttle Body Marking	1203213
Throttle Body Bore	46mm
TPS Voltage @ Idle	0.95 +/- 0.01 Vdc
Fuel Pressure - PSI (bar)	58 (4.0)
Recommended Fuel Octane (R+M/2)	91 Non-Oxygenated

Clutch Settings

ALTITUDE meters (feet)	DRIVE CLUTCH		DRIVEN CLUTCH		
	Shift Weight	Clutch Spring	Clutch Spring	Driven Helix	Gearing
0-600 (0-2000)	10-64	BLK / GRN (120 / 340) (7042083)	RED/BLK (140 / 240) (7043058)	56/42 - .36 LW-ER	22:39-76
600-1200 (2000-4000)	10-62				
1200-1800 (4000-6000)	10-60				22:40-76
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10000)	10-56				20:41-76
3000-3600 (10000-12000)	10-54				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)					

General

Width (in/cm)	48 / 121.9
Length (in/cm)	115 / 292.1
Height (in/cm)	48.5 / 129.5
Estimated Dry Weight (lb/kg)	475 / 218.2
Fuel (Gallons / Liters)	11.7 / 44.3
Oil qts/l	3/2.8
Cooling System Capacity (Quarts / Liters)	8.5 / 8
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26_ 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 23 39 76 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 400
Ignition Timing	18_ @1700 RPM Coolant Temp = 120_F (49_C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	128 (325)
Lug Height - Inches (cm)	1 (2.54)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	7/8″ - 1-1/8″(2.2 - 2.9cm)

Front Suspension

Suspension Type	IQ 42.5
Shocks	Ryde FX MPV
IFS Spring Rate lbs/in (N/mm)	120 (21)
Spring Installed Length Inches (cm)	9.95 (25.3)
Front Vertical Travel Inches (cm)	10 (25.4)
Ski Center Distance Inches (cm) Setup Width	42.5 (108) 41.16 (104.5)
Camber Inches (cm)	2.25 ± 0.31 (57 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	Fast M-10 128
Front Track Shock (FTS)	Ryde FX MPV
FTS Spring Rate lbs/in (N/mm)	160 (28)
FTS Spring Installed Length Inches (cm)	8 (20.3)
Rear Track Shock (RTS)	Fox Zero Pro
Lower Outer Spring Rate lbs/in (N/mm)	715 (125)
Lower Inner Spring Rate lbs/in (N/mm)	425 (74.4)
Upper Spring Rate lbs/in (N/mm)	273 (48)
Rear Travel Inches (cm)	13 (33)

2008 600 IQ Touring

Model Number: S08PT6HS / S08PT6HE

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3468-6044-PU6H
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.004 - .006 / .105 - .159
Installed Ring Gap (inches / mm)	.014 - .020 / .356 - .508
Operating RPM ±200	8250
Idle RPM	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple

Fuel Delivery

Type	Cleanfire Direct Injection
Throttle Body Marking	1203213
Throttle Body Bore	46mm
TPS Voltage @ Idle	0.95 +/- 0.01 Vdc
Fuel Pressure - PSI (bar)	58 (4.0)
Recommended Fuel Octane (R+M/2)	91 Non-Oxygenated

Clutch Settings

<table>
<tr><th rowspan="2">ALTITUDE
meters
(feet)</th><th colspan="2">DRIVE CLUTCH</th><th colspan="3">DRIVEN CLUTCH</th></tr>
<tr><th>Shift Weight</th><th>Clutch Spring</th><th>Clutch Spring</th><th>Driven Helix</th><th>Gearing</th></tr>
<tr><td>0-600
(0-2000)</td><td>10-64</td><td rowspan="6">BLK / GRN
(120 / 340)
(7042083)</td><td rowspan="6">RED/BLK
(140 / 240)
(7043058)</td><td rowspan="6">56/42 - .36
LW-ER</td><td rowspan="3">22:43 - 78</td></tr>
<tr><td>600-1200
(2000-4000)</td><td>10-62</td></tr>
<tr><td>1200-1800
(4000-6000)</td><td>10-60</td></tr>
<tr><td>1800-2400
(6000-8000)</td><td>10-58</td><td rowspan="3">21:44 - 78</td></tr>
<tr><td>2400-3000
(8000-10000)</td><td>10-56</td></tr>
<tr><td>3000-3600
(10000-12000)</td><td>10-54</td></tr>
<tr><td colspan="6">Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)</td></tr>
</table>

General

Width (in/cm)	48 / 121.9
Length (in/cm)	129 / 327.7
Height (in/cm)	53 / 134.6
Estimated Dry Weight (lb/kg)	574 / 260.6
Fuel (Gallons / Liters)	11.7 / 44.3
Oil qts/l	3/2.8
Cooling System Capacity (Quarts / Liters)	TBD
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26_ 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 23 37 76 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 400
Ignition Timing	18_ @1700 RPM Coolant Temp = 120_F (49_C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	136 (345.4)
Lug Height - Inches (cm)	1 (2.54)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	7/8″ - 1-1/8″(2.2 - 2.9cm)

Front Suspension

Suspension Type	IQ 42.5
Shocks	Ryde FX MPV
IFS Spring Rate lbs/in (N/mm)	140 (24.5)
Spring Installed Length Inches (cm)	9.95 (25.3)
Front Vertical Travel Inches (cm)	10 (25.4)
Ski Center Distance Inches (cm) Setup Width	42.5 (108) 41.16 (104.5)
Camber Inches (cm)	2.25 ± 0.31 (57 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	IQ 136 Comfort
Front Track Shock (FTS)	Ryde FX MPV
FTS Spring Rate lbs/in (N/mm)	275 (48)
FTS Spring Installed Length (inches / cm)	8.74 (21)
Rear Track Shock (RTS)	Ryde FX MPV
Torsion Springs	.405 / 16# (Stock) - PN 7043347 - 067 - PN 7043346 - 067 .421 / 18# (Firm) - PN 7043369 - 067 - PN 7043368 - 067
Rear Travel Inches (cm)	14 (35.6)

2008 600 RMK 155

Model Number: S08PM6HS / S08PM6HE

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3468-6044-PU6H
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.004 - .006 / .105 - .159
Installed Ring Gap (inches / mm)	.014 - .020 / .356 - .508
Operating RPM ±200	8250
Idle RPM	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple

Fuel Delivery

Type	Cleanfire Direct Injection
Throttle Body Marking	1203213
Throttle Body Bore	46mm
TPS Voltage @ Idle	0.95 +/- 0.01 Vdc
Fuel Pressure - PSI (bar)	58 (4.0)
Recommended Fuel Octane (R+M/2)	91 Non-Oxygenated

Clutch Settings

<table>
<tr><th rowspan="2">ALTITUDE
meters
(feet)</th><th colspan="2">DRIVE CLUTCH</th><th colspan="3">DRIVEN CLUTCH</th></tr>
<tr><th>Shift Weight</th><th>Clutch Spring</th><th>Clutch Spring</th><th>Driven Helix</th><th>Gearing</th></tr>
<tr><td>0-600
(0-2000)</td><td>10-64</td><td rowspan="6">140 / 330
(7043342)</td><td rowspan="6">BLK/PUR
(160 / 240)
(7043363)</td><td rowspan="6">56/42 - .36
LW-ER</td><td rowspan="6">20:41-76</td></tr>
<tr><td>600-1200
(2000-4000)</td><td>10-62</td></tr>
<tr><td>1200-1800
(4000-6000)</td><td>10-60</td></tr>
<tr><td>1800-2400
(6000-8000)</td><td>10-58</td></tr>
<tr><td>2400-3000
(8000-10000)</td><td>10-56</td></tr>
<tr><td>3000-3600
(10000-12000)</td><td>10-54</td></tr>
<tr><td colspan="6">Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)</td></tr>
</table>

General

Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.7
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	484 / 219.5
Fuel (Gallons / Liters)	11.5 / 33.5
Oil qts/l	3/2.8
Cooling System Capacity (Quarts / Liters)	6.5 / 6.1
Brake Fluid	DOT 4
Drive Belt	
Part Number	3211115
Width (inches / cm)	1.460 / 3.7
Side Angle	26_
Circumference (inches / cm)	46.77 / 118.8
Center Distance (inches / cm)	11.5 / 29.2
Chaincase	
Center Distance (inches)	8.373
Top Gear (Stock)	20
Bottom Gear (Stock)	41
Chain (Stock)	76
Gear Lube	Polaris Synthetic
Capacity (oz / ml)	11 / 325.3
Reverse System	Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	13.5 - 14.5 Vdc 400
Ignition Timing	18_ @1700 RPM Coolant Temp = 120_F (49_C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	155 (393.7)
Lug Height - Inches (cm)	2.4 (6.1)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	3/8″- 1/2″ (1 - 1.3cm)

Front Suspension

Suspension Type	IQ RMK
Shocks	Ryde FX
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Spring Installed Length Inches (cm)	10.35 (26.3)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39 - 40 - 41 (99.1 - 101.6 - 104.1) 38.67 (98.2)
Camber Inches (cm)	2.17 ± 0.31 (55 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	IQ RMK 155
Front Track Shock (FTS)	Ryde FX
FTS Spring Rate lbs/in (N/mm)	190 (33.25)
Rear Track Shock (RTS)	Ryde AFX
Torsion Springs	.359 Square / 77_ (Stock) .347 / 77_ / (Soft) - PN 7041627 - 067 - PN 7041628 - 067 .375 / 77_ / (Firm) - PN 7041942 - 067 - PN 7041943 - 067
Rear Travel Inches (cm)	15.5 (39.4)

2008 700 IQ / 700 Dragon IQ

Model Number:
Base = S08PB7JS / S08PB7JE
Dragon = S08PP7JS / S08PP7JE

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3470-7044-PU7J
Displacement / # Cylinders	700cc / 2
Bore (inches/mm)	3.19 / 81
Stroke (inches/mm)	2.68 / 68
Piston to Cylinder Clearance (inches/mm)	.0044 - .0059 / .112 - .151
Installed Ring Gap (inches / mm)	.017 - .026 / .44 - .650
Operating RPM (+0 / -300)	8250
Idle RPM	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Pink

Fuel Delivery

Type	Cleanfire Direct Injection
Throttle Body Marking	1203213
Throttle Body Bore	46mm
TPS Voltage @ Idle	0.95 +/- 0.01 Vdc
Fuel Pressure - PSI (bar)	58 (4.0)
Recommended Fuel Octane (R+M/2)	91 Non-Oxygenated

Clutch Settings

ALTITUDE meters (feet)	DRIVE CLUTCH		DRIVEN CLUTCH		
	Shift Weight	Clutch Spring	Clutch Spring	Driven Helix	Gearing
0-600 (0-2000)	10-66	BLK / GRN (120 / 340) (7042083)	RED/BLK (140 / 240) (7043058)	42 Straight (5136255)	25:41-76
600-1200 (2000-4000)	10-64				
1200-1800 (4000-6000)	10-62				23:39-76
1800-2400 (6000-8000)	10-60				
2400-3000 (8000-10,000)	10-58				20:41-76
3000-3600 (10,000-12,000)	10-56				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)					

General

Width (in/cm)	48 / 121.9
Length (in/cm)	115 / 292.1
Height (in/cm)	48.5 / 123.2
Estimated Dry Weight (lb/kg) Base Dragon	 476 / 216.1 480 / 217.9
Fuel (Gallons / Liters)	11.7 / 44.3
Oil qts/l	3/2.8
Cooling System Capacity (Quarts / Liters)	8.5 / 8
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 25 41 76 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120°F (49°C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	121 (307.3)
Lug Height - Inches (cm)	1 (2.54) 1.25 (3.175) - Dragon
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	7/8″ - 1-1/8″(2.2 - 2.9cm)

Front Suspension

Suspension Type	IQ 42.5
Shocks Base Dragon	 Ryde FX PRO HPG w/IFP Ryde FX Air 2.0
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Spring Installed Length Inches (cm)	10.55 (26.8)
Air 2.0 Nitrogen Pressure 36mm Cylinder 47mm Cylinder	 145 psi 60 psi
Front Vertical Travel Inches (cm)	10 (25.4)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.16 (104.5)
Camber Inches (cm)	2.25 ± 0.31 (57 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	IQ 121
Front Track Shock (FTS)	Ryde FX HPG w/IFP
FTS Spring Rate lbs/in (N/mm)	130 - 270 (23 - 47)
FTS Spring Installed Length (inches / cm)	7.97
Rear Track Shock (RTS) Base Dragon	 Fox PS5 Ryde FX Compression Adj. w/ Remote Res.
Torsion Springs	.347 Square / 80_ (Soft - Dragon / Stock IQ) - PN 7043070 - 067 - PN 7043071 - 067 .347 Square / 77_ (Softest - Dragon / Soft - IQ) - PN 7043240 - 067 - PN 7043241 - 067 .359 Square / 12.5# (Stock - Dragon) - PN 7043079 - 067 - PN 7043080 - 067
Rear Travel Inches (cm)	13.9 (35.3)

2008 700 Switchback
700 Dragon Switchback

Model Number:
Base = S08PR7JS / S08PR7JE
Dragon = S08PS7JS / S08PS7JE

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3470-7044-PU7J
Displacement / # Cylinders	700cc / 2
Bore (inches/mm)	3.19 / 81
Stroke (inches/mm)	2.67 / 68
Piston to Cylinder Clearance (inches/mm)	.0044 - .0059 / .112 - .151
Installed Ring Gap (inches / mm)	.017 - .026 / .44 - .650
Operating RPM (+0 / -300)	8250
Idle RPM	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Pink

Fuel Delivery

Type	Cleanfire Direct Injection
Throttle Body Marking	1203213
Throttle Body Bore	46mm
TPS Voltage @ Idle	0.95 +/- 0.01 Vdc
Fuel Pressure - PSI (bar)	58 (4.0)
Recommended Fuel Octane (R+M/2)	91 Non-Oxygenated

Clutch Settings

<table>
<tr><th rowspan="2">ALTITUDE meters (feet)</th><th colspan="2">DRIVE CLUTCH</th><th colspan="3">DRIVEN CLUTCH</th></tr>
<tr><th>Shift Weight</th><th>Clutch Spring</th><th>Clutch Spring</th><th>Driven Helix</th><th>Gearing</th></tr>
<tr><td>0-600 (0-2000)</td><td>10-66</td><td rowspan="6">BLK / GRN (120 / 340) (7042083)</td><td rowspan="6">RED/BLK (140 / 240) (7043058)</td><td rowspan="6">42 Straight (5136255)</td><td rowspan="4">22:40-76</td></tr>
<tr><td>600-1200 (2000-4000)</td><td>10-64</td></tr>
<tr><td>1200-1800 (4000-6000)</td><td>10-62</td></tr>
<tr><td>1800-2400 (6000-8000)</td><td>10-60</td></tr>
<tr><td>2400-3000 (8000-10,000)</td><td>10-58</td><td rowspan="2">20:41-76</td></tr>
<tr><td>3000-3600 (10,000-12,000)</td><td>10-56</td></tr>
<tr><td colspan="6">Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)</td></tr>
</table>

General

Width (in/cm)	48 / 121.9
Length (in/cm)	120 / 308.4
Height (in/cm)	48.5 / 123.2
Estimated Dry Weight (lb/kg) Base Dragon	 494 / 224.3 498 / 226.1
Fuel (Gallons / Liters)	11.7 / 44.3
Oil qts/l	3/2.8
Cooling System Capacity (Quarts / Liters)	9.0 / 8.5
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26_ 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 22 40 76 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 400
Ignition Timing	18_ @1700 RPM Coolant Temp = 120_F (49_C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	136 (345.4)
Lug Height - Inches (cm)	1.25 (3.175)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	7/8″ - 1-1/8″(2.2 - 2.9cm)

Front Suspension

Suspension Type	IQ 42.5
Shocks Base Dragon	 Ryde FX PRO HPG w/IFP Ryde FX Air 2.0
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Spring Installed Length Inches (cm)	10.55 (26.8)
Air 2.0 Nitrogen Pressure 36mm Cylinder 47mm Cylinder	 145 psi 60 psi
Front Vertical Travel Inches (cm)	10 (25.4)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.16 (104.5)
Camber Inches (cm)	2.25 ± 0.31 (57 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	IQ 136 Coupled
Front Track Shock (FTS)	Ryde FX HPG w/IFP
FTS Spring Rate lbs/in (N/mm)	130 - 270 (23 - 47)
FTS Spring Installed Length (inches / cm)	7.97
Rear Track Shock (RTS) Base Dragon	 Fox PS5 Ryde FX Compression Adj. w/ Remote Res.
Torsion Springs	.347 Square / 80_ (Soft - Dragon / Stock IQ) - PN 7043070 - 067 - PN 7043071 - 067 .347 Square / 77_ (Softest - Dragon / Soft - IQ) - PN 7043240 - 067 - PN 7043241 - 067 .359 Square / 12.5# (Stock - Dragon) - PN 7043079 - 067 - PN 7043080 - 067
Rear Travel Inches (cm)	14 (35.6)

2008 700 RMK 155
700 Dragon RMK 155 / 163

Model Number:
Base 155 = S08PM7JS
Dragon 155 = S08PG7JS / S08PG7JE
Dragon 163 = S08PH7JS / S08PH7JE

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3471-7044-PU7J
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.19 / 81
Stroke (inches/mm)	2.67 / 68
Piston to Cylinder Clearance (inches/mm)	.0044 - .0059 / .112 - .151
Installed Ring Gap (inches / mm)	.017 - .026 / .44 - .650
Operating RPM (+0 / -300)	8250
Idle RPM	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Pink

Fuel Delivery

Type	Cleanfire Direct Injection
Throttle Body Marking	1203213
Throttle Body Bore	46mm
TPS Voltage @ Idle	0.95 +/- 0.01 Vdc
Fuel Pressure - PSI (bar)	58 (4.0)
Recommended Fuel Octane (R+M/2)	91 Non-Oxygenated

Clutch Settings

ALTITUDE meters (feet)	DRIVE CLUTCH		DRIVEN CLUTCH		
	Shift Weight	Clutch Spring	Clutch Spring	Driven Helix	Gearing
0-600 (0-2000)	10-66	140 / 330 (7043342)	BLACK (155 / 222) (7043063)	56/42 - .36 LW-ER	20:41-76
600-1200 (2000-4000)	10-64				
1200-1800 (4000-6000)	10-62				
1800-2400 (6000-8000)	10-60				
2400-3000 (8000-10,000)	10-58				
3000-3600 (10,000-12,000)	10-56				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)					

General

Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.7
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg) Base 155 Dragon 155 Dragon 163	 489 / 221.8 484 / 219.5 489 / 221.8
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3 / 2.8
Cooling System Capacity (Quarts / Liters)	155 = 6.5 / 6.1 163 = 6.625 / 6.3
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26_ 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 20 41 76 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 400
Ignition Timing	18_ @1700 RPM Coolant Temp = 120_F (49_C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	155 (393.7) 163 (414)
Lug Height - Inches (cm)	2.4 (6.1)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	3/8″- 1/2″ (1 - 1.3cm)

Front Suspension

Suspension Type	IQ RMK
Shocks Base Dragon	 Ryde FX Walker Evans Air
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Spring Installed Length Inches (cm)	10.35 (26.3)
WE Air Oil Volume	95cc
WE Air Nitrogen Charge	220 psi
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 39(99.1) / 40(101.6) / 41(104.1) 38.67 (98.2)
Camber Inches (cm)	2.17 ± 0.31 (55 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	IQ RMK 155 / 163
Front Track Shock (FTS) Base Dragon	 Ryde FX Walker Evans Air
FTS Spring Rate lbs/in (N/mm)	190 (33.25)
WE Air Oil Volume	60cc
WE Air Nitrogen Charge	217.5 psi
Rear Track Shock (RTS) Base Dragon	 Ryde AFX Walker Evans w/IFP
Maximum Nitrogen Charge	200 psi
Torsion Springs	.359 Square / 77_ (Stock) .347 / 77_ / (Soft) - PN 7041627 - 067 - PN 7041628 - 067 .375 / 77_ / (Firm) - PN 7041942 - 067 - PN 7041943 - 067
Rear Travel Inches (cm)	15.5 (39.4) - 155 16.5 (41.9) - 163

2008 800 Dragon RMK 155 / 163

Model Number:
Dragon 155 = S08PG8ES / S08PG8EE
Dragon 163 = S08PH8ES

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S3489-8044-PU8E (155) S3741-8044-PU8E (163)
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance inches / (mm)	.0037 - .0053 (.095 - .135)
Installed Ring Gap inches / (mm)	.017 - .025 (.45 - .65)
Operating RPM (+0 / -300)	8250
Idle RPM	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Pink

Fuel Delivery

Type	Cleanfire Direct Injection
Throttle Body Marking	1203505
Throttle Body Bore	48 mm
TPS Voltage @ Idle	.93 +/- 0.01 Vdc
Fuel Pressure - PSI (bar)	58 (4.0)
Recommended Fuel Octane (R+M/2)	91 Non-Oxygenated

Clutch Settings

ALTITUDE meters (feet)	DRIVE CLUTCH		DRIVEN CLUTCH		
	Shift Weight	Clutch Spring	Clutch Spring	Driven Helix	Gearing
0-600 (0-2000)	10-68	140 / 330 (7043342)	BLK/PUR (160 / 240) (7043363)	56/42 - .36	20:41 - 76
600-1200 (2000-4000)	10-66				
1200-1800 (4000-6000)	10-64				
1800-2400 (6000-8000)	10-62				
2400-3000 (8000-10,000)	10-60				
3000-3600 (10,000-12,000)	10-58				
Drive Clutch Bolt Torque: 80 lb.ft. (108 Nm)					

General

Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.7
Height (in/cm)	49.5 / 125.7
Estimated Dry Weight (lb/kg) 155 163	 487 / 220.9 487 / 220.9
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3 / 2.8
Cooling System Capacity (Quarts / Liters)	155 = 6.5 / 6.1 163 = 6.625 / 6.3
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26_ 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 8.373 20 41 76 Polaris Synthetic 11 / 325.3 Perc

Electrical

Alternator Output Operating Voltage Watts @ 13.5 Vdc (Total)	 13.5 - 14.5 Vdc 400
Ignition Timing	18_ @1700 RPM Coolant Temp = 120_F (49_C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	Champion RN57YCC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	155 (393.7) 163 (414)
Lug Height - Inches (cm)	2.4 (6.1)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	3/8″- 1/2″ (1 - 1.3cm)

Front Suspension

Suspension Type	IQ RMK
Shocks	Walker Evans Air
Oil Volume	95cc
Nitrogen Charge	220 psi
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39(99.1) / 40(101.6) / 41(104.1) 38.67 (98.2)
Camber Inches (cm)	2.17 ± 0.31 (55 ± 7.9)
Toe Out Inches (cm)	0 - 0.12 (0 - 0.31)

Rear Suspension

Suspension Type	IQ RMK 155 / 163
Front Track Shock (FTS)	Walker Evans Air
Oil Volume	60cc
Nitrogen Charge	217.5 psi
Rear Track Shock (RTS)	Walker Evans w/IFP
Nitrogen Charge	200 psi
Torsion Springs	.359 Square / 77_ (Stock) .347 / 77_ / (Soft) - PN 7041627 - 067 - PN 7041628 - 067 .375 / 77_ / (Firm) - PN 7041942 - 067 - PN 7041943 - 067
Rear Travel Inches (cm)	15.5 (39.4) - 155 16.5 (41.9) - 163

NOTES

CHAPTER 2

General Information

SNOWMOBILE NUMBER DESIGNATIONS

Model Number Designation

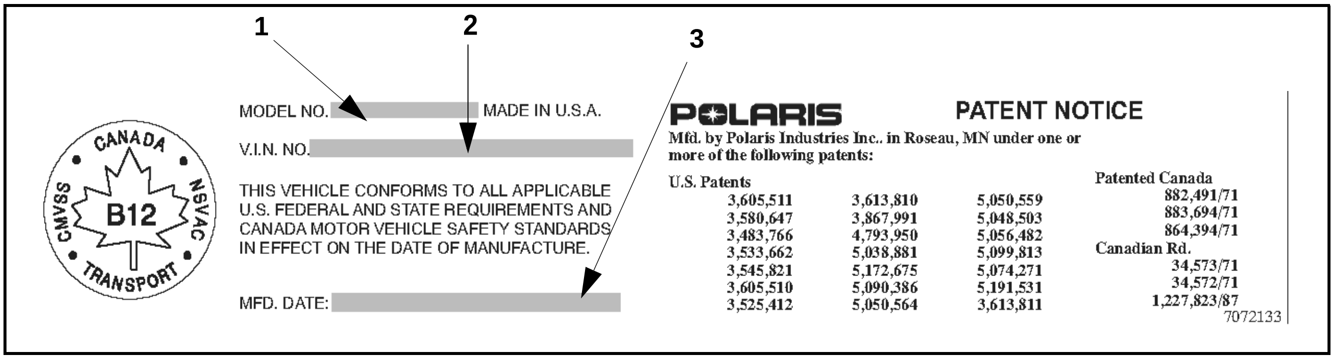
Example: S08MX6FS

GROUP	MODEL YEAR	MODEL LINE	MODEL TYPE	ENGINE MODIFIER		VIN IDENTIFIER	OPTION IDENTIFIER
1st digit	2/3rd digit	4th digit	5th digit	6th digit*	7th digit*	8th digit	9th digit**
S	08	M	X	6	F	S	
S=Snow	08 = 2008 09 = 2009 10 = 2010 11 = 2011 12 = 2012 13 = 2013 14 = 2014 15 = 2015	M=Race IQ N=Edge P= IQ S=Gen II W=Mini Indy	B = Basic D = LX G = 155 RMK H = 163 RMK J = 136 RMK K = 144 RMK M = 155 STD. N = 163 STD. P = Performance R = Switchback S = Switchback Prem. T = Touring U = Utility X = Race Y = Touring LTD.	1A=121 F/C OHV 4 Cycle Fuji 3A=340 F/C Piston Port 4B=488 L/C Piston Port 5B=544 F/C Cylinder Reed 6F=600 EV L/C Case Reed 6H=600 EV L/C Case Reed CFI 6J = 600 EV L/C Case Reed Race 7E=750 Four Stroke 7F=750 Four Stroke Turbo 7J=700 EV L/C Case Reed CFI 8E = 795 EV L/C Case Reed CFI		E=Europe M=Military R=Rolling Chassis S=Standard	Option
*=digits that would transfer to 17 digit VIN and are used in digits 4-8 respectively **=9th digit will be used on color/featured versions of models (not including the base) First 3 digits and 9th digit are sued in model number only. They are not used with the 17 digit VIN.							

VEHICLE IDENTIFICATION NUMBER (VIN)

Tunnel Decal

The Tunnel Decal has the Model Number (1), V.I.N. Number (2), and the Manufactured Date (3).These numbers should be referred to in any correspondence regarding warranty, service or replacement parts.The machine model and V.I.N. number identification decal is located on the right front side of the tunnel. The V.I.N (2) number is permanently stamped into the tunnel. The model number is embossed on the decal.



VIN Number Designation

World Mfg. ID			Vehicle Descriptors						Vehicle Identifiers							
			Body Style	Type	Engine Size	Engine Modifier	Series	Check Digit	Model Year	Mfg. Location	Individual Serial No.					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
S	N	1	S	B	5	B	S	0	2	2	0	0	0	0	0	0

PUBLICATION PART NUMBERS

2008 Publications

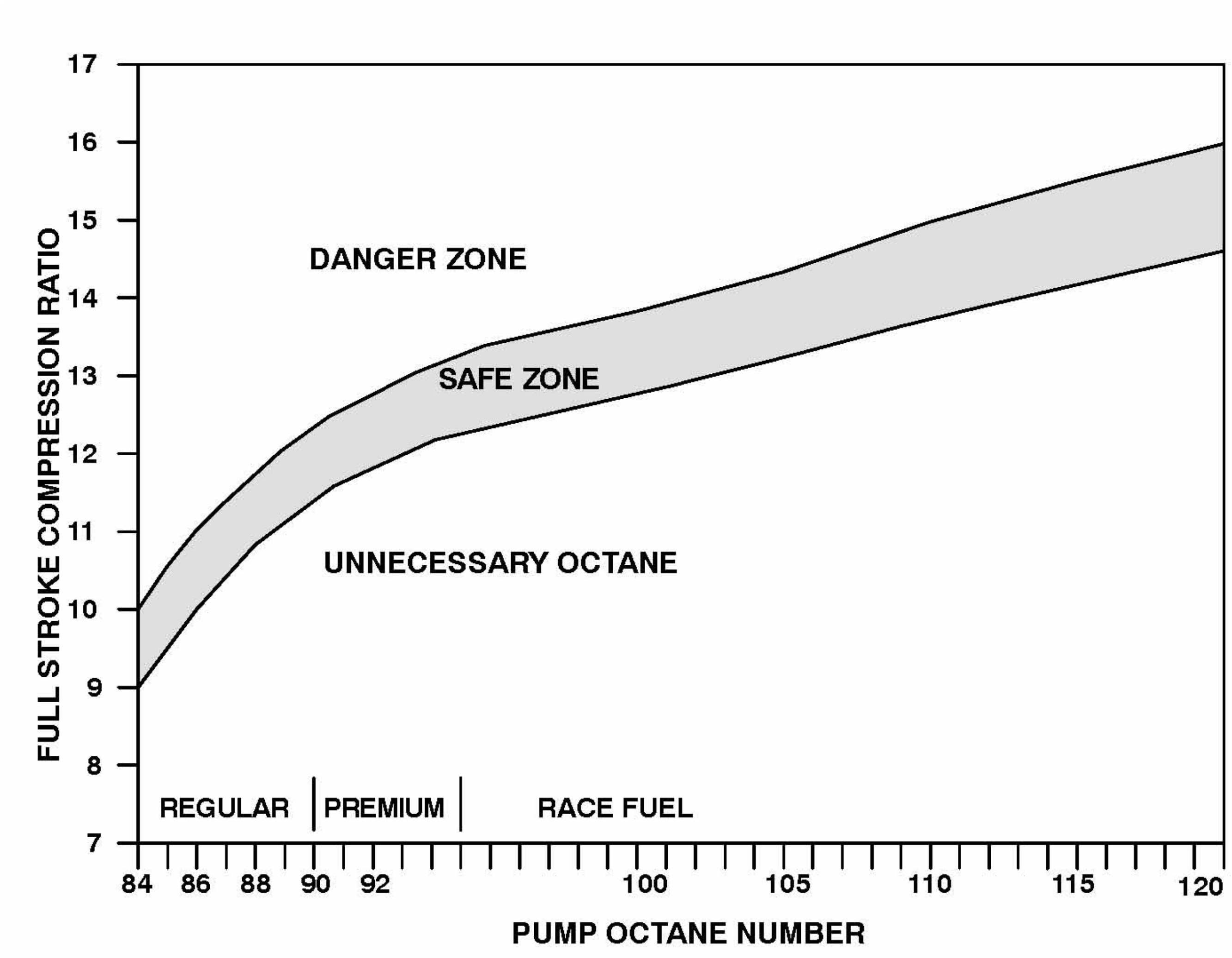
<table>
<tr><th>MODEL</th><th>OWNER'S MANUAL</th><th>SUPPLEMENT</th><th>PARTS BOOK
(ONLINE PART MANUALS AVAILABLE ONLINE AT WWW.POLARISINDUSTRIES.COM)</th></tr>
<tr><td>IQ Shift</td><td>9921427</td><td>9921067</td><td>9921068</td></tr>
<tr><td>600 RMK 144</td><td rowspan="2">9921102</td><td>9921108</td><td rowspan="2">9921112</td></tr>
<tr><td>600 RMK Shift 155</td><td>9921545</td></tr>
<tr><td>600 Dragon IQ</td><td rowspan="5">9921065</td><td>9921069</td><td>9921075</td></tr>
<tr><td>600 Switchback</td><td rowspan="2">9921076</td><td rowspan="2">9921081</td></tr>
<tr><td>600 Dragon Switchback</td></tr>
<tr><td>600 IQ LX</td><td>9921072</td><td>9921070</td></tr>
<tr><td>600 IQ Touring</td><td>9921082</td><td>9921083</td></tr>
<tr><td>600 RMK 155</td><td>9921102</td><td>9921109</td><td>9921549</td></tr>
<tr><td>700 IQ</td><td rowspan="4">9921065</td><td rowspan="2">9921071</td><td rowspan="2">9921070</td></tr>
<tr><td>700 Dragon IQ</td></tr>
<tr><td>700 Switchback</td><td rowspan="2">9921078</td><td rowspan="2">9921081</td></tr>
<tr><td>700 Dragon Switchback</td></tr>
<tr><td>700 RMK 155</td><td rowspan="3">9921102</td><td>9921104</td><td rowspan="2">9921549</td></tr>
<tr><td>700 Dragon RMK 155 / 163</td><td>9921104 / 9921106</td></tr>
<tr><td>800 Dragon RMK 155 / 163</td><td>9921301 / 9921107</td><td>9921114</td></tr>
</table>

2007 Publications

<table>
<tr><th>MODEL</th><th>OWNER’S MANUAL</th><th>SUPPLEMENT</th><th>PARTS BOOK
(ONLINE PART MANUALS AVAILABLE ONLINE AT WWW.POLARISINDUSTRIES.COM)</th></tr>
<tr><td>600 HO IQ</td><td rowspan="2">9920459</td><td>9920460</td><td>9920461</td></tr>
<tr><td>600 HO Switchback</td><td>9920597</td><td>9920598</td></tr>
<tr><td>600 HO RMK</td><td>9920476</td><td>9920477 / 9920483</td><td>9920478</td></tr>
<tr><td>600 HO IQ CFI</td><td rowspan="4">9920464</td><td>9920487</td><td>9920466</td></tr>
<tr><td>600 HO Switchback CFI</td><td>9920495</td><td>9920496</td></tr>
<tr><td>600 HO IQ LX CFI</td><td>9920465</td><td>9920466</td></tr>
<tr><td>600 HO IQ Touring CFI</td><td>9920501</td><td>9920502</td></tr>
<tr><td>700 HO IQ Dragon</td><td>9920648</td><td>9920910</td><td>9921200</td></tr>
<tr><td>700 HO RMK Dragon</td><td>9920476</td><td>9920484</td><td>9920912</td></tr>
</table>

ENGINE DATA FORMULAS

Compression Ratio



$$R = \frac{(IHV + DISP)}{IHV}$$

$$I = \frac{S}{(DISP \times 25.4)}$$

$$DISP = \frac{(PI \times B^2 \times S)}{4}$$

IHV= INSTALLED HEAD VOLUME (cc)
DISP= CYLINDER DISPLACEMENT (cc)
R= COMPRESSION RATIO
S= FULL ENGINE STROKE (cm)
I= INCHES PER cc OF IHV
B= CYLINDER BORE (cm)
PI= 3.1416

Compression Ratio Example

Bore = 6.5cm

Stroke = 6.0 cm

IHV = 17.1cc

Displacement = 3.1416 (PI) x 42.25 (Bore squared) x 6.0 (stroke) / 4 = 199.098cc

Displacement = 199.098cc

R= 17.1 + 199.098 / 17.1 = 12.643 Full Stroke Compression Ratio

To calculate the Effective Compression Ratio, substitute the exhaust port height for the stroke in the formulas above:

Exhaust = 2.95cm (exhaust port height is 29.5mm)

Effective Displacement = 3.1416 (PI) x 42.25 (bore squared) x 2.95 (exhaust port height cm) / 4 = 97.89cc

Effective Displacement = 97.89cc

Effective Compression Ratio = 17.1 (IHV cc) + 97.89 (Effective Displacement cc) / 17.1 (IHV cc) = 6.725

Effective Compression Ratio = 6.725

In order to increase the Full Stroke Compression Ratio to 13.6, how much material do you need to remove from the cylinder head?

You know that: R = IHV + Displacement / IHV, and you want to find out IHV.

Displacement = 199.098cc, and we want R to = 13.6, so then IHV (desired) = Displacement (199.098cc) / R (13.6) - 1 = (12.6)

IHV (desired) = 15.801cc desired IHV to have 13.6:1 Full Compression Ratio

Head cc Removal Example

The total number of cc's to remove from the head = Old IHV (17.1) - Desired IHV (15.801) = 1.299cc's

Removed cc's = 1.299cc's

I = Stroke (6.0cm) / (Displacement (199.098) x 2.54

I= 0.01186 inches

To find out how much to machine off, multiply the number of cc's you need to remove by the number of inches to remove per cc.

Thickness to remove = I (0.01186) x 1.299cc = 0.015"

Port Opening Duration

Port open = 81.5° This indicates the degrees after TDC that the exhaust port opens, and also the degrees before TDC that the port closes.

Duration closed = 2 x 81.5 (port open)

Duration closed = 163°

Total Duration = 360°

Duration Open = Total Duration (360) - Duration Closed (163)

360-163=197

Duration Open = 197°

Percent Open = Duration Open (197) / Total Duration (360) x 100

197/360 = 0.54722 x 100 = 54.722

Percent Open = 54.722

TORQUE CONVERSION

US to Metric

ft.lb - Nm

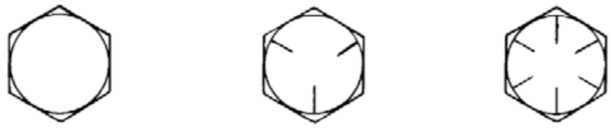
FT.LB	NM	FT.LB	NM
1	1.4	46	62.4
2	2.7	47	63.7
3	4.1	48	65.1
4	5.4	49	66.4
5	6.8	50	67.8
6	8.1	51	69.2
7	9.5	52	70.5
8	10.8	53	71.9
9	12.2	54	73.2
10	13.6	55	74.6
11	14.9	56	75.9
12	16.3	57	77.3
13	17.6	58	78.6
14	19.0	59	80.0
15	20.3	60	81.4
16	21.7	61	82.7
17	23.1	62	84.1
18	24.4	63	85.4
19	25.8	64	86.8
20	27.1	65	88.1
21	28.5	66	89.5
22	29.8	67	90.9
23	31.2	68	92.2
24	32.5	69	93.6
25	33.9	70	94.9
26	35.3	71	96.3
27	36.6	72	97.6
28	38.0	73	99.0
29	39.3	74	100.3
30	40.7	75	101.7
31	42.0	76	103.1
32	43.4	77	104.4
33	44.7	78	105.8
34	46.1	79	107.1
35	47.5	80	108.5
36	48.8	81	109.8
37	50.2	82	111.2
38	51.5	83	112.5
39	52.9	84	113.9
40	54.2	85	115.3
41	55.6	86	116.6
42	57.0	87	118.0
43	58.3	88	119.3
44	59.7	89	120.7
45	61.0	90	122.0

ft.lb - Nm

FT.LB	NM	FT.LB	NM
91	123.4	96	130.2
92	124.8	97	131.5
93	126.1	98	132.9
94	127.5	99	134.2
95	128.8	100	135.6

GENERAL REFERENCE

Standard Bolt Torque Specification



Grade 2 Grade 5 Grade 8

BOLT SIZE	THREADS/IN	GRADE 2 FT-LB(N-M)	GRADE 5 FT-LB(N-M)	GRADE 8 FT-LB(N-M)
1/4	20	5 (7)	8 (11)	12 (16)
1/4	28	6 (8)	10 (14)	14 (19)
5/16	18	11 (15)	17 (23)	25 (35)
5/16	24	12 (16)	19 (26)	29 (40)
3/8	16	20 (27)	30 (40)	45 (62)
3/8	24	23 (32)	35 (48)	50 (69)
7/16	14	30 (40)	50 (69)	70 (97)
7/16	20	35 (48)	55 (76)	80 (110)
1/2	13	50 (69)	75 (104)	110 (152)
1/2	20	55 (76)	90 (124)	120 (166)
FT-LB X 1.356 = N-M N-M X.7376 = FT-LB				

Fuel / Oil Premix Ratios

FUEL (GALLONS)	20:1 RATIO (OUNCES OF OIL)	32:1 RATIO (OUNCES OF OIL)
1	6.4	4
5	32	20
10	64	40

Formula:

- 1 Gallon = 128 Ounces
- 128 ÷ (Desired Ratio) = Ounces of oil for every 1 gallon of fuel.
- 128 ÷ 20 (20:1 Ratio) = 6.4 ounces of oil for every 1 gallon of fuel.

Always mix ratio in 5 gallon increments.

Gasoline Volatility

MAXIMUM REID VAPOR		AMBIENT AIR TEMP RANGE	
CLASS	PRESSURE	LOW	HIGH
A	7.0 psi (0.5 bar)	60°F (16°C)	110°F+ (43°C+)
B	9.0 psi (0.6 bar)	50°F (10°C)	110°F (43°C)
C	10.5psi (0.7 bar)	40°F (4°C)	97°F (36°C)
D	12.0psi (0.8 bar)	30°F (-1°C)	85°F (29°C)
E	13.5psi (0.9 bar)	20°F (-7°C)	69°F (21°C)
Add 2.45°F for each 1000 ft (305m) above sea level			

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. RVP 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 in their local area.

When the weather is very cold, gasoline must be able to vaporize very quickly in order for an engine to start and warm up properly. If summer blend fuel is being used in the winter, 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 drive ability problems and hard starting when warm.

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
3x.50	#39	0.0995	3/32
3x.60	3/32	0.0937	3/32
4x.70	#30	0.1285	1/8
4x.75	1/8	0.125	1/8
5x.80	#19	0.166	11/64
5x.90	#20	0.161	5/32
6x1.00	#9	0.196	13/64
7x1.00	16/64	0.234	15/64
8x1.00	J	0.277	9/32
8x1.25	17/64	0.265	17/64
9x1.00	5/16	0.3125	5/16
9x1.25	5/16	0.3125	5/16
10x1.25	11/32	0.3437	11/32
10x1.50	R	0.339	11/32
11x1.50	3/8	0.375	3/8
12x1.50	13/32	0.406	13/32
12x1.75	13/32	0.406	13/32

Decimal Equivalents

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 - - 5mm= .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 - - 8mm= .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 - - - - - - - - - - - - - - - - - 13mm = .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 - - - - - - - - - - - - - - - - 16mm=. 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

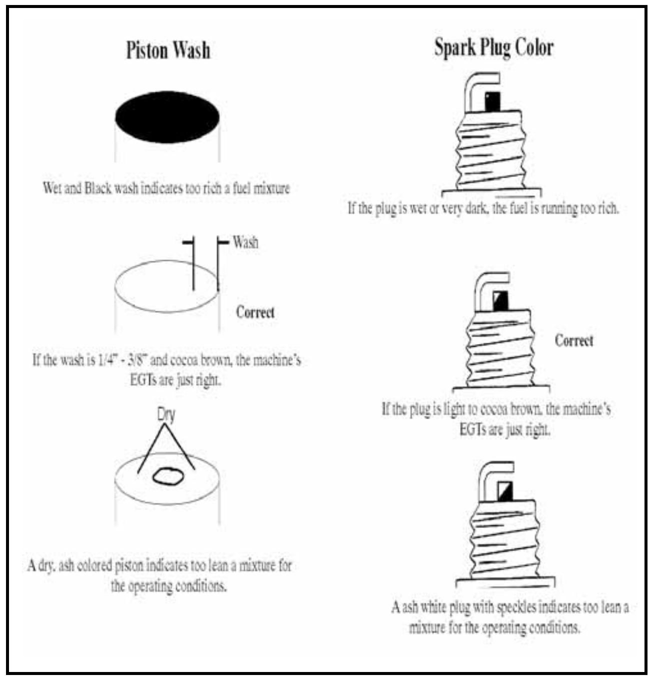
Measurement Conversion Chart

UNIT OF MEASURE	MULTIPLIED BY	CONVERTS TO
ft-lb	x 12	= in-lb
in-lb	x.0833	= ft-lb
ft-lb	x 1.356	= N-m
in-lb	x.0115	= kg-m
N-m	x.7376	= ft-lb
kg-m	x 7.233	= ft-lb
kg-m	x 86.796	= in-lb
kg-m	x 10	= N-m
in	x 25.4	= mm
mm	x.03937	= in
in	x 2.54	= cm
mile	x 1.6	= km
km	x.6214	= mile
Ounces (oz)	x 28.35	= grams (g)
grams (g)	x.035	= Ounces (oz)
cc's	x.03381	= Fluid Ounces (oz)
lbs	x.454	= kg
kg	x 2.2046	= lbs
Cubic Inches	x 16.387	= Cubic Centermeters
Cubic Centimeters	x.061	= Cubic Inches
Imperial pints	x.568	= liters (l)
liters (l)	x 1.76	= Imperial pints
Imperial quarts	x 1.137	= liters (l)
liters (l)	x.88	= Imperial quarts
Imperial quarts	x 1.201	= US quarts
US quarts	x.833	= Imperial quarts
US quarts	x.946	= liters
liters	x 1.057	= US quarts
US gallon	x 3.785	= liter
liter	x.264	= US gallon
Pounds force per square inch (psi)	x 6.895	= Kilo pascals (kPa)
Kilo pascals (kPa)	x.145	= Pounds force per square inch (psi)

Piston Wash / Spark Plug Reading

Changing temperature, barometer, altitude, and fuel supply are just a few of the factors that can affect the day to day performance of your engine. That is why using Exhaust Gas Temperatures (EGT) are important for maintaining optimum performance. There are two methods for helping you determine what the EGTs are for your machine. Piston wash and the coloring of your spark plug.The piston wash is by far the most valuable tool in concluding EGTs, with the spark plug color running a distant second. Use the illustrations below to help you establish the EGTs for your machine.

Once the proper jetting is established, you can reference the EGT gauge for your baseline numbers. Then, if there is a rise or fall of 25 degrees, you must jet accordingly to return your EGTs to the baseline numbers.



SERVICE PRECAUTIONS

GENERAL PRECAUTIONS

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. Photographs 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.

CAUTION

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.

CAUTION

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.

CAUTION

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.

CAUTION

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

CAUTION

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).

CAUTION

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.

CAUTION

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.

CAUTION

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.

CAUTION

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

CAUTION

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.

CAUTION

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

NOTES

CHAPTER 3
Maintenance

3

PERIODIC MAINTENANCE

Periodic Maintenance Schedule

Periodic Maintenance Table

Item	Frequency				
	150 mi. (240 km)	500 mi. (800 km)	1000 mi. (1600 km)	2000 mi. (3200 km)	Pre-Season
Drive / Driven Clutch					
Clutch Alignment / Offset		I	I	I	I
Drive Belt Condition		I	I	I	I
Drive / Driven Clutch Condition		I / C	I / C	I / C	I / C
Drive Belt Tension		I	I	I	I
Clutch Sheaves		I	I	I	I
Engine					
Engine Mounts		I	I	I	I
Recoil Handle / Rope / Function		I	I	I	I
Engine Torque Stop / Engine Isolator		I	I	I	I
Cylinder Head Bolts	I	I	I	I	
Cylinder Base Nuts		I	I	I	
Ignition Timing				I	I
Spark Plug Condition	I	I	I	R	I
Exhaust System / Retaining Springs		I	I	I	I
VES Valves / Solenoid		I / C	I / C	I / C	I / C
Cooling System / Hoses / Coolant Level / Heat Exchangers				I	I
Oil Filter				I	I
Brake System					
Hose Condition / Routing		I	I	I	I
Fluid Level / Leaks / Fluid Condition		I	I	I	I
Brake Pads / Brake Disc		I	I	I	I
Parking Brake		I	I	I	I
Brake Fluid				R	
Fuel System					
Idle RPM		I	I	I	
Carburetor Adjustments		I	I	I	
Throttle Lever / Chock Lever	I	L	L	L	L
Oil Pump Arm				I	I
Throttle / Choke Cables	I	L	L	L	L

Periodic Maintenance Table

Item	Frequency				
	150 mi. (240 km)	500 mi. (800 km)	1000 mi. (1600 km)	2000 mi. (3200 km)	Pre-Season
Fuel / Vent Hoses	I	I	I	I	I
Oil Hoses	I	I	I	I	I
Air Box	I		I		I
Carburetor Drains / Water Traps		I	I	I	I
Electrical System					
Auxiliary Shut-Off	I	I	I	I	I
Throttle Safety Switch	I	I	I	I	I
Ignition Switch	I	I	I	I	I
Headlights / Brake light / Taillights	I	I	I	I	I
Hand / Thumbwarmers	I	I	I	I	I
Perc Reverse System	I	I	I	I	I
Chassis					
Ski Toe Alignment		I	I	I	
Suspension Mounting Bolts	I	I	I	I	I
Steering Fasteners / Linkage / Handlebars	I	I	I	I	I
Driveshaft / Jackshaft Bearings		L	L	L	L
Ski Fasteners		I	I	I	I
Drive Chain Tension	I	I	I	I	I
Chaincase / Gearcase Oil	I	I	I	R	I
Track Alignment / Track Tension	I	I	I	I	I
Rail Slide Condition	I	I	I	I	I
Bogie / Wheel Condition / Fastener Bolts	I	I	I	I	I
Hood / Seat / Chassis / Engine Compartment		C			C

L = Lubricate / I = Inspect or Adjust / R = Replace / C = Clean

MAINTENANCE PRODUCTS

Engine Oils / Lubricants / Misc.

DESCRIPTION	PART NUMBER
Premium 2-Cycle Oil Quart Gallon 2.5 Gallon 16 Gallon 55 Gallon 330 Gallon	 2875035 2875036 2874037 2875038 2875039 2875040
VES Gold 2-Cycle Oil Quart Gallon 2.5 Gallon 16 Gallon 55 Gallon 330 Gallon	 2874438 2874439 2874443 2874440 2874441 2874442
Racing 2-Cycle Oil Quart Gallon 16 Gallon	 2873025 2873023 2873919
PS-4 4-Cycle 0W-50 Oil Quart 55 Gallon	 2874865 2874867
PS-4 4-Cycle 2W-50 Oil Quart Gallon 16 Gallon 55 Gallon	 2876244 2876245 2876247 2876246
Synthetic Chaincase Lubricant Quart Gallon 2.5 Gallon	 2873105 2873106 2872952
Antifreeze 60/40 Premix Quart Gallon 55 Gallon	 2871534 2871323 2872278
Shock Oil - 5W - Walker Evans	2874522
Shock Oil - Fox Quart Gallon	 2870995 2872279
Shock Oil - Ryde FX / Arvin	2873716
Brake Fluid - DOT 4	2872189
Fogging Oil Aerosol Quart	 2870791 2871517

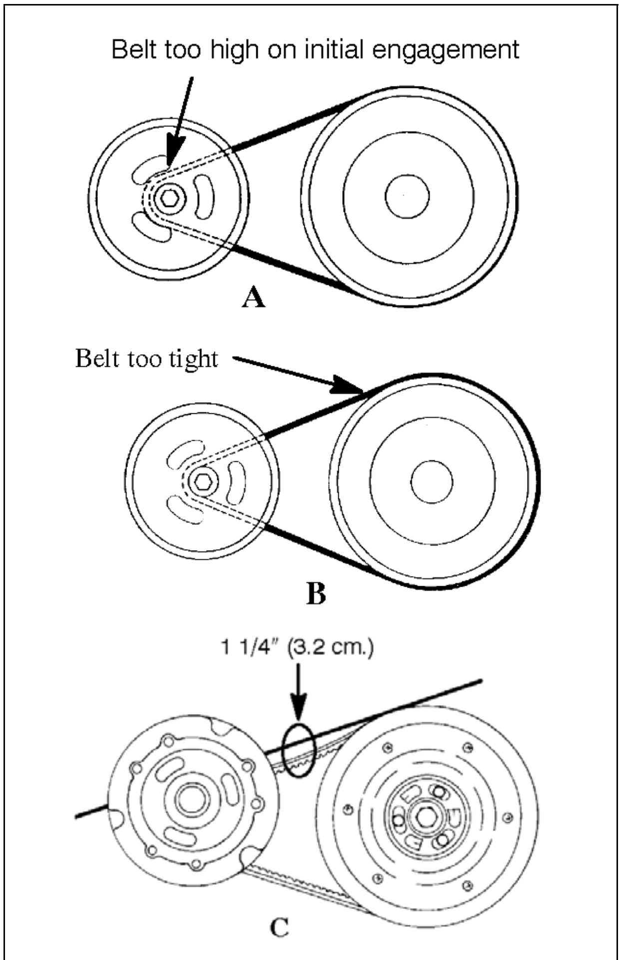
DESCRIPTION	PART NUMBER
Premium All Season Grease 3oz. Grease Gun Kit 14oz.	 2871312 2871423
Starter Grease	2871460
Carbon Clean Plus	2871326
Isopropyl	2870505
Fuel Stabilizer Quart 2.5 Gallon	 2870652 2872280
Cross Shaft Assembly Lubricant 8oz. 2.5 Gallon	 2872435 2872436
Three Bond Sealant 5oz.	2871557
Loctite 242	2871950

DRIVE / DRIVEN CLUTCHES

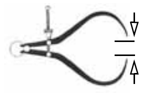
Belt Deflection Inspection

Too much belt deflection is when the belt is too long or the center distance is 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 (A).

Not enough belt deflection (B) is when the belt is too short or the center distance is too long. The initial starting ratio will be too low. In addition, the machine may creep when the engine idles, causing damage to the internal face of the drive belt.



1. Measure the belt deflection with both clutches at rest and in their full neutral position.
2. Place a straight edge across the tow clutches, on top the belt.
3. Apply downward pressure to the belt and measure the distance at point (D).
4. The measurement should be 1 1/4" (3.2cm).


= In. / mm.

Belt Deflection: 1.25" (3.2cm)

5. If the measurement is not correct adjust driven clutch.

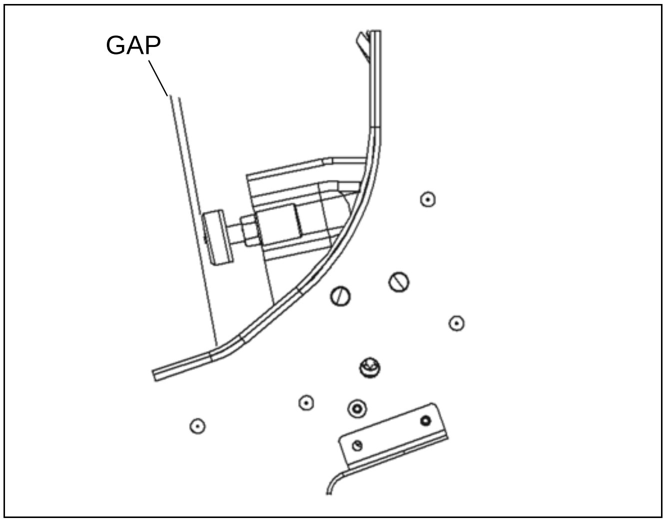
Deflection Adjustment - Team Driven

1. Verify the drive system is FWD drive by rotating the driven clutch forward.
2. While holding the set screw with an Allen wrench, loosen the jam nut.
3. Turn the set screw clockwise while holding the jam nut stationary to increase the distance between the clutch sheaves (increase belt deflection).
4. Turn the set screw counter-clockwise while holding the jam nut stationary to decrease the distance between the clutch sheaves (decrease belt deflection).
5. Secure the jam nut while holding the set screw stationary.
6. Raise the rear of the snowmobile using a track stand to allow the track to spin.
7. Start the engine and apply enough throttle to spin the track.
8. Turn off then engine, then re-check the belt deflection.

NOTE: Do not adjust the belt deflection to the point where the drive belt cord line is visible when the belt is seated in the driven clutch.

3

Torque Stop Adjustment



Set torque stop bumper gap to specification after aligning drive and driven clutches.

= In. / mm.
Torque Stop Bumper-to-Engine Gap .010 - .030 (.25 - .75mm)

After setting gap, torque jam nut to specification.

= T
Torque Stop Jam Nut: 15-17 ft-lb. (21-24 Nm)

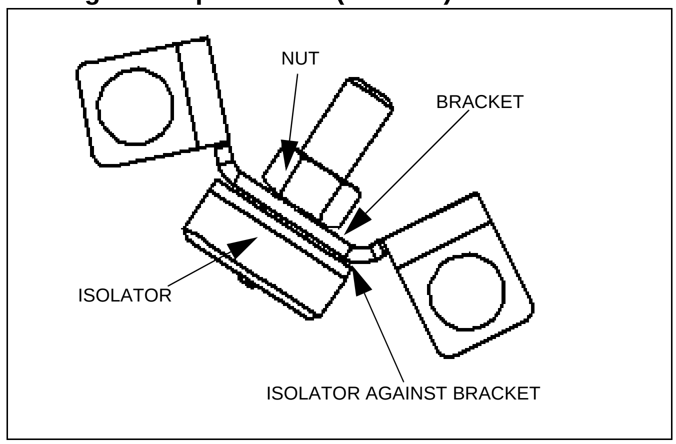
NOTE: Where applicable, when installing a new torque stop, position bumper so the tip is just touching crankcase.

Engine Isolator Limiter Setting

Some models use an engine mount strap isolator. The isolator is located on left-front corner of the bulkhead. The isolator should not make contact with the engine strap.

If the isolator requires adjustment or replacement, hold the isolator so it is against the bracket, then torque the nut to specification.

NOTE: Do not adjust this engine isolator limiter as a torque stop or damage may occur. The approximate distance from the face of the isolator to the face of the engine strap is 0.107" (2.72mm).

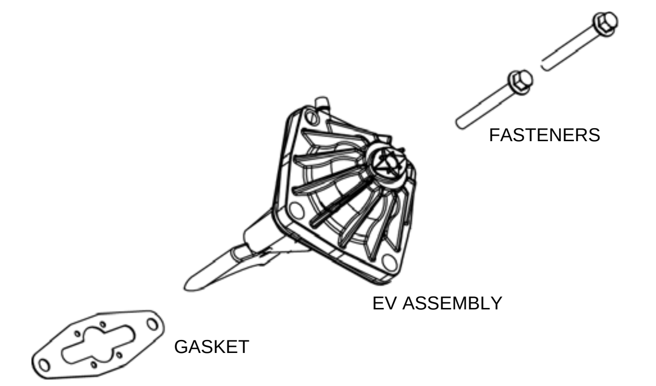


= T
Jam Nut: 15-17 ft-lb. (21-24 Nm)

ENGINE MAINTENANCE

Exhaust Valve Cleaning

The exhaust valve guillotines must be cleaned to ensure maximum engine performance and throttle response.



1. Remove the vent hose from the EV base fitting.
2. Remove the two fasteners that secure the valve assembly to the cylinder, but not the two screws that secure the cover to the EV base.
3. Carefully extract the guillotine out of the cylinder. Discard the gasket.
4. Using a clean rag or shop towel, remove the oil residue from the cylinder, guillotine, and EV base.
5. Inspect the guillotine for signs of damage. Replace guillotine if damage is found, and inspect the cylinder and piston for damage.
6. Clean the guillotine with brake cleaner and a piece of fine steel wool. Clean only to remove hardened carbon deposits.
7. Once clean, rinse blade with mild detergent and water. Dry completely.
8. Install a new gasket, then reinstall the EV assembly. Apply Loctite 242 to the fastener threads, then torque to specification.
9. Reconnect the vent hose.

NOTE: To obtain maximum exhaust valve performance, Polaris recommends using Polaris VES Gold Synthetic Two-Stroke engine oil.
Never mix different brands of engine oil.

= T
Exhaust Valve Housing Fasteners 12 Ft.Lbs. (16 Nm) - Apply Loctite 242

Surge Tank

Keep the level of the coolant inside the surge tank at the FULL COLD level mark when the coolant is at room temperature.

Always add coolant when the cooling system is COLD.

CAUTION
Never remove the surge tank pressure cap when the cooling system is warm. Severe burns to skin may occur from escaping coolant or steam.

Recommended Coolant

Use Polaris Premium 60 / 40 pre-mix antifreeze. This premium antifreeze is rated for temperatures down to -62°F (-52°C).

Cooling System Bleeding

1. Allow the cooling system to cool completely.
2. Verify the coolant level in the surge tank is at the COLD mark. Fill the surge tank if required. Loosely install the pressure cap.
3. Open the thermostat housing bleed screw. Wrap a clean shop towel around the housing to absorb any coolant that may flow out of the bleed screw.
4. Elevate the front of the machine slightly.
5. Apply the parking brake and start the engine.
6. Allow the engine idle time to stabilize.
7. Immediately add coolant to the surge tank if the coolant level dropped significantly after the engine started. Watch the level and add more coolant until the level stops dropping.

NOTE: Squeeze the coolant hoses to purge air from the cooling system.

8. Secure the pressure cap and bleed screw after the thermostat begins to open and coolant begins to flow out of the bleed screw.
9. Verify the tunnel coolers begin to warm up as the engine continues to run.
10. To remove air from the tunnel cooling system, the vehicle should be pivoted upwards in four directions (nose up, left side up, rear bumper up, and right side up) to move any air pockets in the system to the surge tank.

3

11. Verify that all of the coolers are warm, including the tunnel-length cooling system. Turn off the engine once the tunnel coolers are sufficiently warmed-up. Release the parking brake.

CAUTION

Always verify all tunnel coolers / radiator are warm to the touch. A tunnel cooler or return hose that is significantly "colder" than another cooler or hose is an indication of trapped air within the cooling system.

12. Allow time for the coolant temperature to cool. Re-check the coolant level in the surge tank. Add more coolant if required.

Oil Pump Adjustment - Carbureted Models

NOTE: Before adjusting oil pump, always verify the throttle lever free play and idle speed RPM are set to specification.

1. Always verify the throttle cable free play is set to specification (.010″ - .030″).

NOTE: The oil pump lever arm line mark MUST be aligned with the oil pump boss index mark at the exact moment when the throttle slides begin to lift from the idle position.

2. Remove the air box, drive belt, drive clutch and driven clutch from the engine compartment.
3. Remove the rear engine torque stop plate from the bulkhead the bulkhead.
4. Remove the 2 left-hand console mounting screws and electrical center cover piece.
5. Remove the rear 2 lower clutch guard mounting screws and 3 forward mounting nuts and plate.
6. Remove the 3 screws securing the lower clutch guard to the upper plate leaving the electrical center components in place.
7. Loosen and remove the throttle body assembly and set aside.
8. Using a mirror or a bore scope and a light, visually inspect the current oil pump setting.

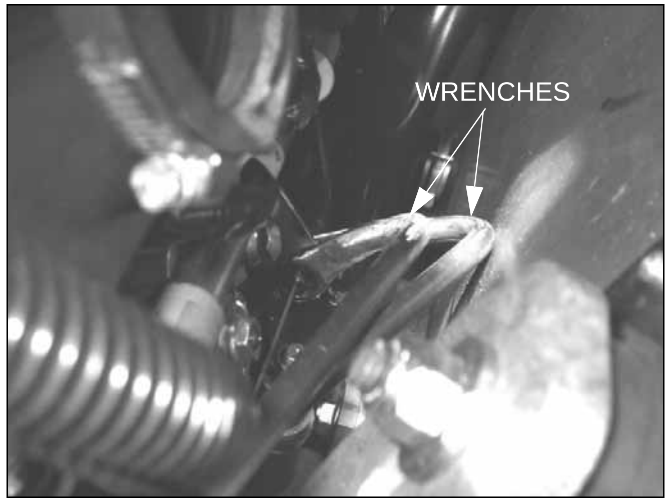
CAUTION

The oil pump lever and pump boss marks must be observed straight-on to yield accurate results.

NOTE: The oil pump jam nuts can be manipulated using the special tool set part number: PS-49001 (Oil Pump Cable Wrenches).

9. If the oil pump lever requires adjustment or the cable is going to be replaced, insert the two oil pump cable wrenches between the bulkhead and the rear of the engine.
10. If the oil pump lever requires adjustment or the cable is going to be replaced, insert the two oil pump cable wrenches between the bulkhead and the rear of the engine.

NOTE: The wrench with the large opening is designed to fit around the cable sheath, while the wrench with the small opening is designed to fit around the inner cable wire.

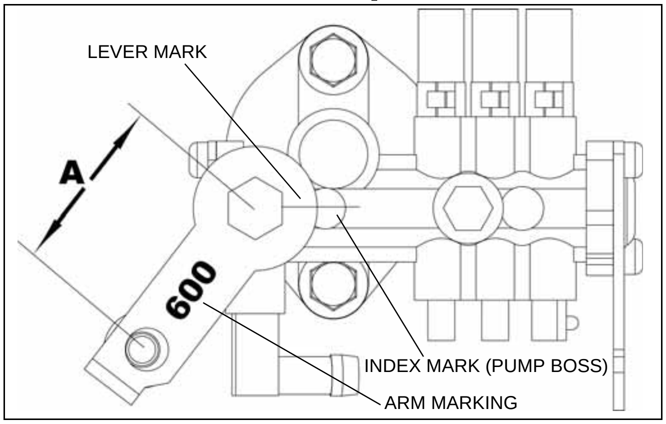


11. When adjusting the lever, make adjustments in small increments, then re-check the timing mark alignment.
12. After setting the oil pump lever correctly, apply a small drop of Loctite 242 to the cable barrel threads, then secure the jam nuts.
13. Re-check the oil pump alignment marks after securing the jam nuts to verify the marks are set correctly.
14. Re-assemble the removed components in the reverse they were removed. Reference the appropriate service manual chapter for component assembly fastener torques.

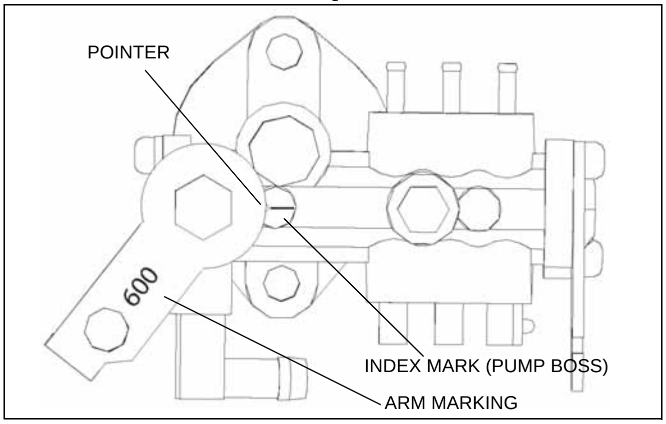
Oil Pump Adjustment - CFI Models

NOTE: Before adjusting oil pump, always verify the throttle lever free play and idle speed RPM are set to specification.

33mm Lever - No Pointer Oil Pump



28mm Lever - Pointer Oil Pump



1. Always verify the throttle cable free play is set to specification (.010″ - .030″) and the throttle lever is synchronized to the throttle plates.

NOTE: The oil pump lever arm MUST begin to move at the exact moment the throttle plates move from the throttle stop position.

2. The oil pump part number and/or lever marking determines where to set the oil pump lever.

Oil Pump Adjustment Settings (CFI Models Only)

PART NUMBER	ARM MARKING / LENGTH (A) (MM)	LEVER SETTING
2520552	600 / 33mm - No Pointer (Lever will not clear engine strap.) Pump used on all 2007 600 CFIs and some early-build 2008 600 CFIs.	Set lever line mark to 1 full line width (.050″) above original oil pump boss index mark.
2520831	600 / 28mm - w/Pointer (Lever will clear engine strap.) Pump phased in for 2008 600 CFIs. Service replacement pump for ALL 600 CFIs.	Lever mark is a pointer. Oil pump lever pointer is set POINTER-TO-LINE.
2520622	700 / 33mm - No Pointer (Lever will not clear engine strap.) Pump used on all 2007 700 CFIs and some early-build 2008 700 CFIs.	Set lever line mark set to 1 full line width (.050″) above original oil pump boss index mark. Some 2007 700 CFI models had 2nd line scribed above original pump boss mark and were marked with red paint.
2520832	700 / 28mm - w/Pointer (Lever will clear engine strap.) Pump phased in for 2008 600 CFIs. Service replacement pump for ALL 600 CFIs.	Lever mark is a pointer. Oil pump lever pointer is set POINTER-TO-LINE.
2520833	800 / 28mm - w/Pointer (Lever will clear engine strap.)	Early Build Engines: Oil pump index mark boss is scribed with 2 lines from the factory. Oil pump lever pointer is set BETWEEN the 2 scribe lines. Late Build Engines: Oil pump index mark boss features 1 scribe line. Oil pump lever pointer is set POINTER-TO-LINE.

NOTE: Some 2008 600 and 700 CFI engines were manufactured with model year 2007 oil pumps (PNs 2520552 and 2520622). Always reference the oil pump adjustment chart to determine the oil pump lever setting based on the oil pump and not the engine model year.
All service parts will be the 28mm w/Pointer oil pumps.

CAUTION
Failure to properly set the oil pump lever arm may cause severe engine damage.

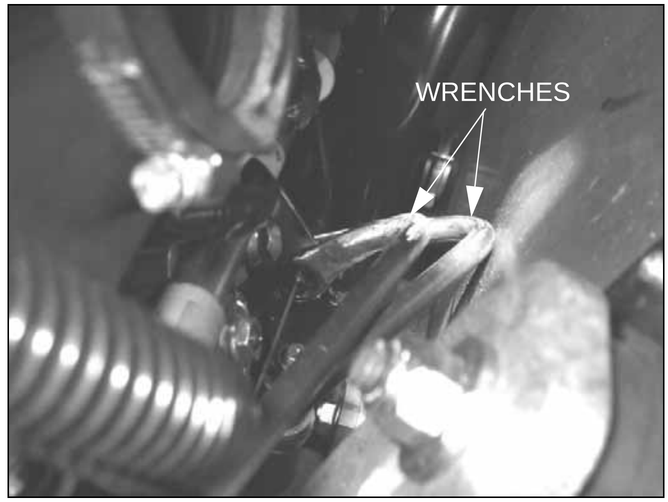
3. Remove the air box, throttle body adapter plate, drive belt, drive clutch and driven clutch from the engine compartment.
4. Remove the rear engine torque stop plate from the bulkhead the bulkhead.
5. Remove the 2 left-hand console mounting screws and electrical center cover piece.
6. Remove the rear 2 lower clutch guard mounting screws and 3 forward mounting nuts and plate.
7. Remove the 3 screws securing the lower clutch guard to the upper plate leaving the electrical center components in place.
8. Loosen and remove the throttle body assembly and set aside.
9. Using a mirror or a bore scope and a light, visually inspect the current oil pump setting.

CAUTION
The oil pump lever and pump boss marks must be observed straight-on to yield accurate results.

NOTE: The oil pump jam nuts can be manipulated using the special tool set part number: PS-49001 (Oil Pump Cable Wrenches).

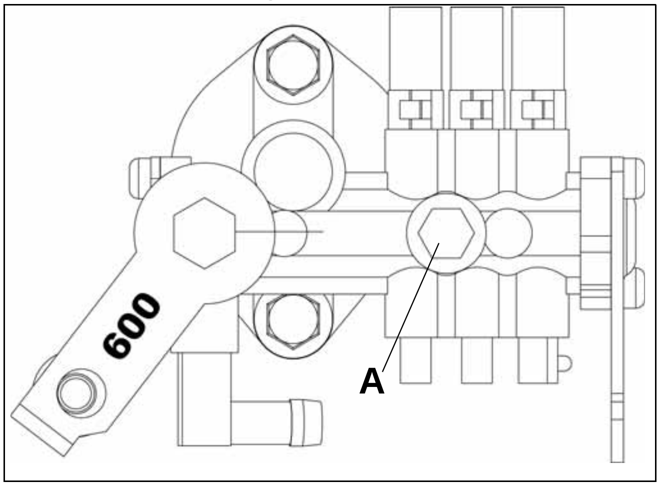
10. If the oil pump lever requires adjustment or the cable is going to be replaced, insert the two oil pump cable wrenches between the bulkhead and the rear of the engine.

NOTE: The wrench with the large opening is designed to fit around the cable sheath, while the wrench with the small opening is designed to fit around the inner cable wire.



11. When adjusting the lever, make adjustments in small increments, then re-check the timing mark alignment. Reference the OIL PUMP ADJUSTMENT SETTING TABLE to verify where the oil pump lever is set in relation to the oil pump boss index mark.
12. After setting the oil pump lever correctly, apply a small drop of Loctite 242 to the cable barrel threads, then secure the jam nuts.
13. Re-check the oil pump alignment marks after securing the jam nuts to verify the marks are set correctly.
14. Re-assemble the removed components in the reverse they were removed. Reference the appropriate service manual chapter for component assembly fastener torques.

Oil Pump Bleeding



1. Verify oil tank is filled with oil.
2. Loosen the bleed screw (A). Verify a stream of oil flows from the bleed screw.
3. After bleeding oil pump, secure bleed screw and wipe up oil residue.

NOTE: Any time that the engine is disassembled or repaired, it is important to purge air within the hoses and oil pump.

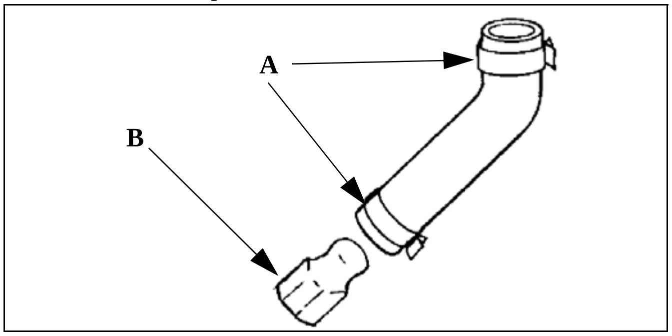
FUEL / INTAKE SYSTEM

Water Sediment Trap

WARNING

When draining the traps, fuel spillage will occur. Be sure to work in a well ventilated area away from anything which may cause the fuel to ignite such as an open flame, heaters, trouble lights or cigarettes.

Vehicles with carburetors incorporate a patented float bowl water / sediment traps located at the bottom of each carburetor.



1. Turn the fuel tank supply valve to the “OFF” position.
2. Position a container or shop towels under the work area to help catch some of the contaminated gasoline.
3. Slide the clamp (A) away from the drain plug (B) and remove it from the sediment tube and drain the contaminated material from the bowl. Repeat for each carburetor.
4. Wipe off the residue from the plug and reinstall the clamps.

Fuel Filter - Carbureted Models

CAUTION

The in-tank fuel filter and fuel lines should be inspected regularly. Special attention should be given to the fuel line condition after periods of storage.
Normal deterioration from weather and fuel can occur during this storage period. Do not damage fuel lines when removing them. If a fuel line has been damaged or kinked it must be replaced.

All models feature a fuel pick with filter located inside the fuel tank. To inspect and replace:

1. Remove the gas cap.
2. Use a coat hanger to carefully pickup the fuel hose inside the tank.
3. Inspect and replace the pickup/filter at the end of the hose.

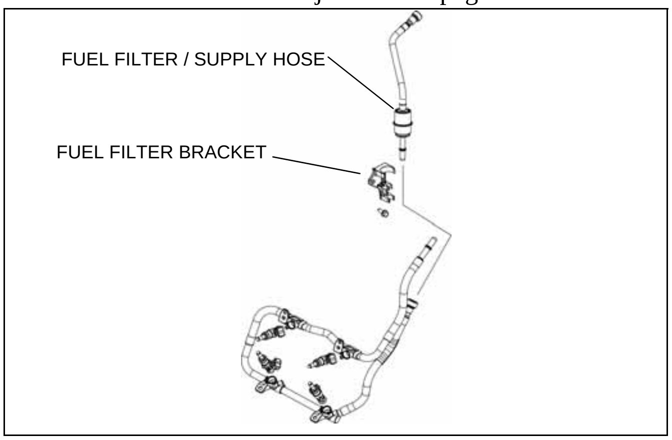
3

Fuel Filter - CFI Models

⚠ WARNING

When removing the fuel filter fuel spillage will occur. Be sure to work in a well ventilated area away from anything which may cause the fuel to ignite such as an open flame, heaters, trouble lights or cigarettes.

1. The fuel filter should be replaced as outlined in the periodic maintenance table. For information involving de-pressurizing the fuel system and disconnecting fuel hoses, See “Cleanfire™ Fuel Injection” on page 4.15.

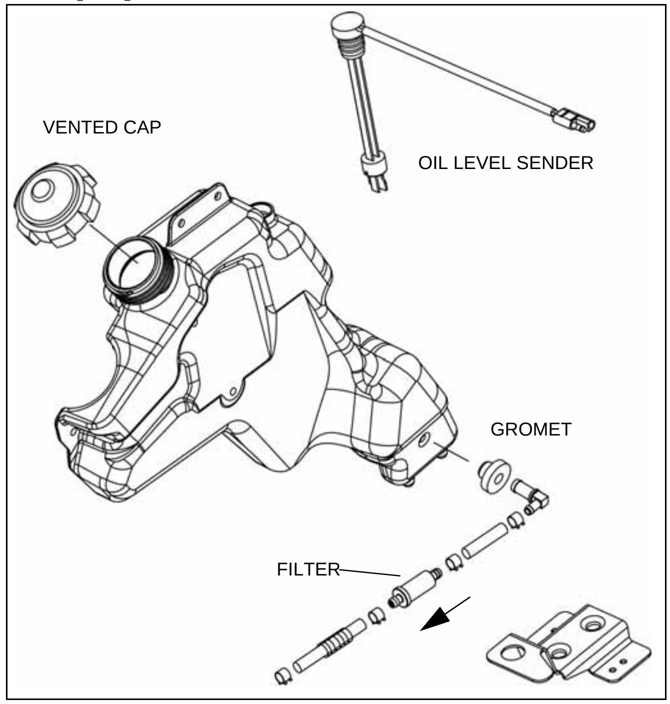


2. After de-pressurizing the fuel system and disconnecting the fuel hoses, remove the fuel filter cartridge from the bracket. Dispose of any fuel in an appropriate container, then discard assembly.
3. When re-connecting the fuel hoses, verify the connections are secure by firmly pulling on the two hose connections. Push the filter cartridge back into the bracket.
4. To prime the fuel system after installing a new filter, connect a 12 volt Vdc battery to the fuel pump prime plug. See “Diagnostic Plugs” on page 11.18.

Oil Filter

All models feature an inline oil filter located between the oil reservoir and oil pump. Always bleed the oil supply hose and oil pump of air after replacing the filter.

Install the oil filter so that the directional arrow points towards the oil pump.

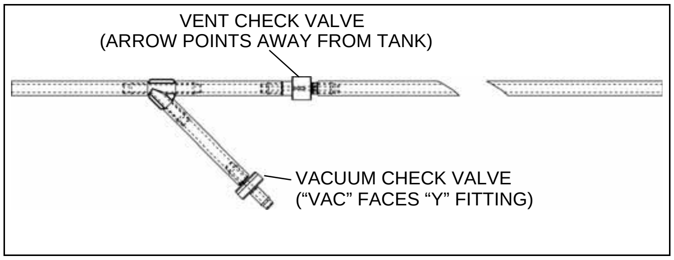


Fuel Tank Vent System

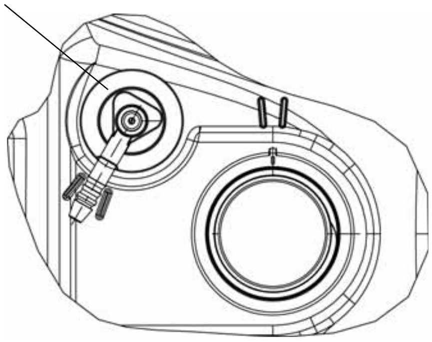
All models feature a fuel tank vent / vacuum check valve system. There are two systems used depending on the model year of the snowmobile.

On some models, the vent / vacuum check valve system resembles the illustration below.

When inspecting the system, verify the hoses are not cut or kinked.



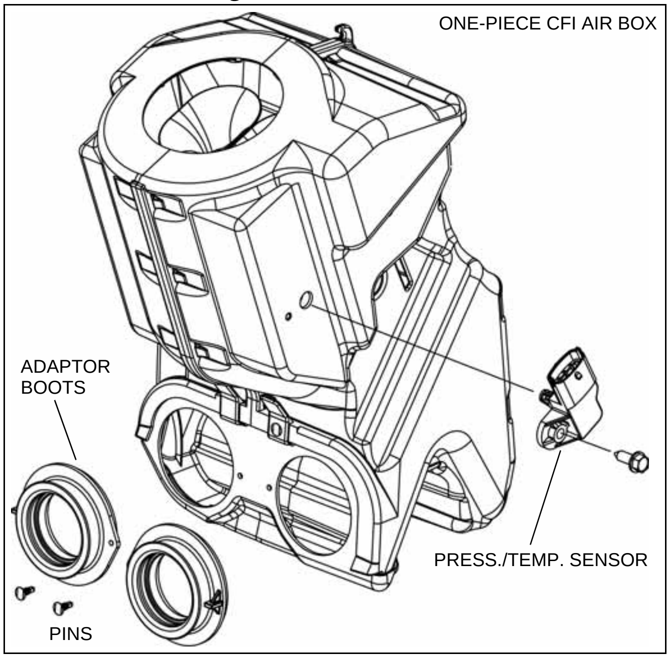
Some models feature a rollover check valve / vent / vacuum check valve assembly bonded to the inside of the fuel tank. The rollover check valve prevents fuel from escaping the tank in the event of a vehicle rollover.



The rollover check valve is not serviceable. When inspecting the system, verify the hose is not kinked.

Air Intake Box / Pre-Filters

Inspect the inside of the air intake box and pre-filters for foreign material and/or damage.

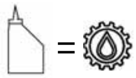


NOTE: All 2007 and some 2008 CFI models were manufactured with a two-piece airbox where an adapter plate was secured to the throttle body. The airbox then snapped into the adapter plate to make the airbox assembly.
The two-piece air box is no longer available. A one-piece air box is the direct replacement. The new air box features adaptor boots that are pinned to the air box. A set of gear clamps secure the boots to the throttle body assembly.

Inspect the console-mounted pre-filters for damage, and foreign material. Replace filter(s) or clean if required.

CHASSIS LUBRICATION

Chassis, suspension and mechanical grease points should be lubricated Polaris Premium All Season Grease.

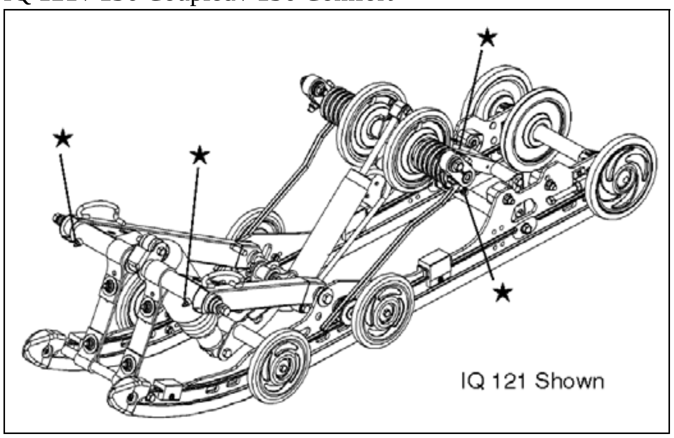


Polaris Premium All Season Grease
Part Numbers:
3oz. Grease Gun Kit = 2871312
14oz. Tube = 2871423

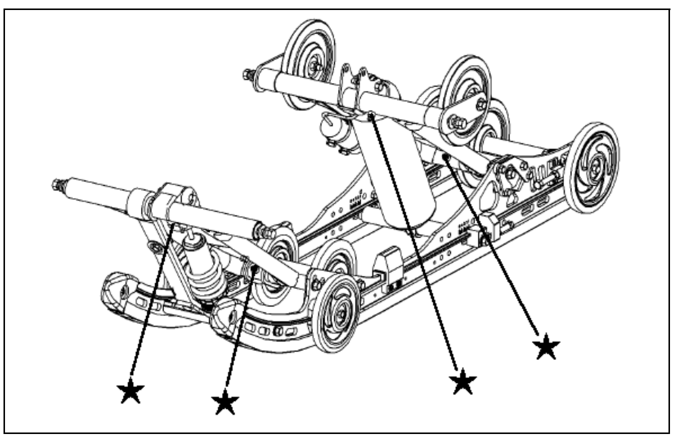
Rear Suspension

Lubricate grease zerks with Premium All Season Grease.

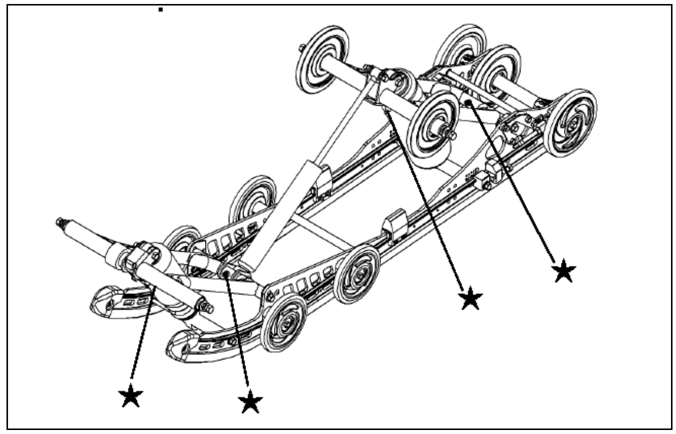
IQ 121 / 136 Coupled / 136 Comfort



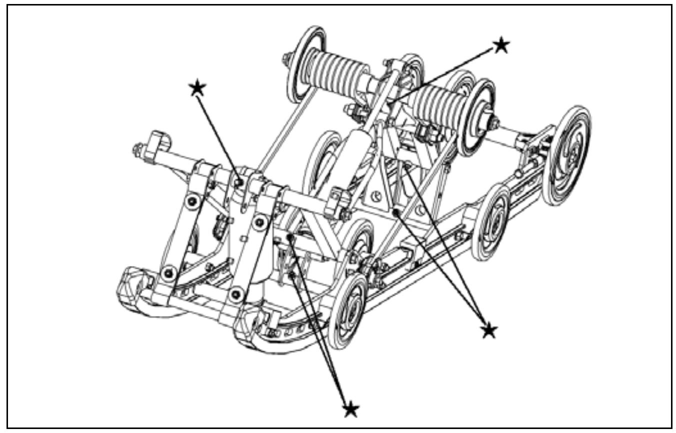
M-10 128



M-10 136

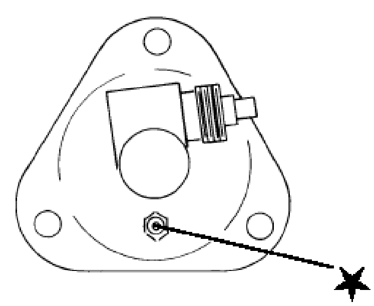


IQ RMK



Driveshaft Bearing

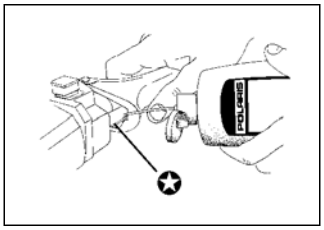
Lubricate with Premium All Season Grease.



IQ Shift Shown

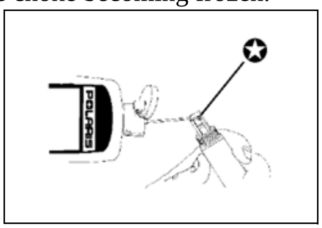
Throttle Cable

Lubricate the throttle cable lightly with fresh oil. With the engine off, turn the handlebars to the left and lubricate well as shown.



Choke And Choke Cable

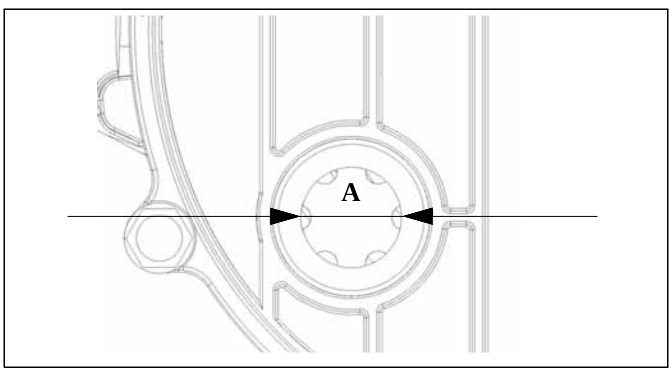
Lubricate the choke slide and cables lightly with oil or grease. Before turning the engine off, operate the choke intermittently to draw moisture out of the choke plunger area and reduce the possibility of the choke becoming frozen.



Chaincase Oil Level Check

Maintain the oil level at the mid-point of the sight glass.

1. Position the vehicle on a level surface.
2. Verify the oil level is in the middle of the sight glass.
3. Add the recommended oil as needed at the fill plug. Do not overfill.



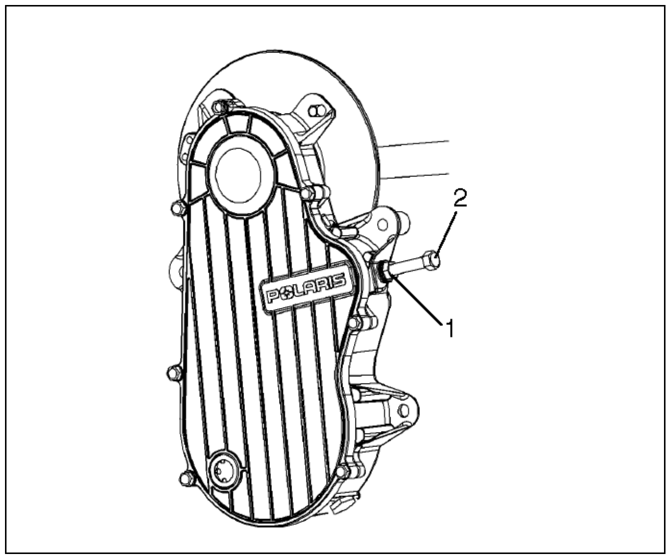
Chaincase Oil Replacement

1. Locate the chaincase drain plug on the bottom of the nosepan.
2. Place an oil catch pan under the drain plug.
3. Remove the drain plug and drain the oil into the catch pan.
4. Clean the magnetic plug to remove metal shavings.
5. Install drain plug and hand-tighten. Do not over-tighten the drain plug.
6. Fill chaincase with oil at the fill plug location.

Chaincase Oil Capacity = 11oz. (325.3 ml)
Recommended Lubricants:
Chaincase = Polaris Synthetic Chaincase Lubricant

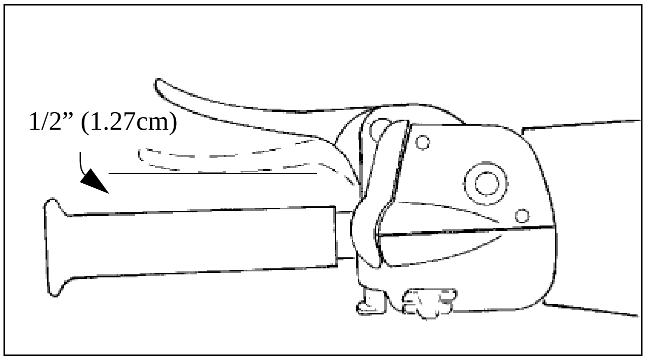
Drive Chain Tension Adjustment

1. Rotate the driven clutch counterclockwise to move all of the slack in the chain to the tensioner side. Lock the parking brake, or have an assistant hold the brake lever.
2. Loosen the adjuster bolt jam nut (1).
3. Finger tighten the adjuster bolt (2) until it con no longer be adjusted by hand, then back 1/4 turn.
4. Tighten the jam nut while holding the adjuster bolt. torque to 21 ft.lbs. (28 Nm).
5. Release the brake lever lock.



BRAKE SYSTEM MAINTENANCE

Brake Lever Travel



The gap between the brake lever and handlebar grip should be equal to or more than 1/2″ (1.27cm) when depressing the brake lever.

If the gap is less than 1/2″ (1.27cm), the brake system should be inspected and bled of any air within the fluid.

Brake Fluid

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

Inspect the reservoir to be sure it contains the correct amount of fluid. Use only Polaris DOT 4 high temperature brake fluid. Change fluid every 2 years or whenever the fluid is dark or contamination is suspected.

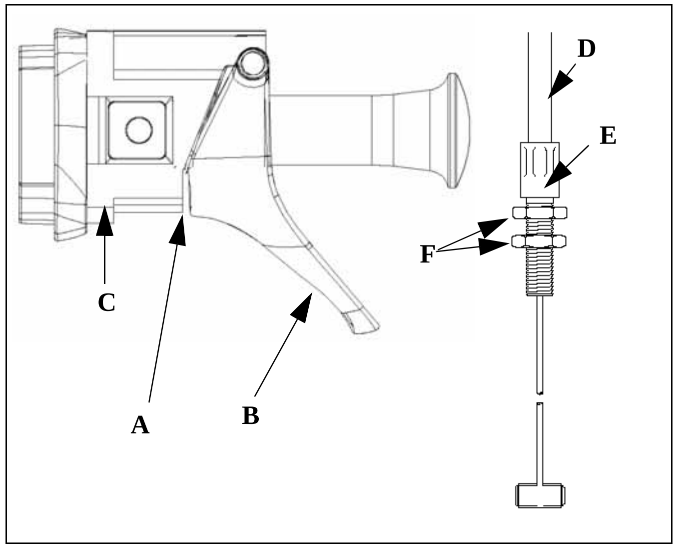
NOTE: A low brake fluid level can be indicated through the sight glass on the cover. If the fluid is low this sight glass will glow a brighter. color.

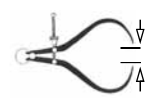
LOW

FULL

THROTTLE AND CHOKE CABLE ADJUSTMENTS

Throttle Lever Free Play - Non CFI





Throttle Lever Free Play: 0.010"-0.030" (.25-.8mm)

CAUTION

When adjusting throttle lever free-play, always verify the engine RPM does not rise with bars in the full low and full upright Rider Select positions (if applicable) and while turning the handlebars to the full left and full right positions.

Throttle lever free play must always be at a specified clearance (A) 0.010″-0.030″ (0.25-0.80 mm) between the throttle lever (B) and the throttle block (C). This clearance is controlled by the throttle cable (D).

If adjustment is needed follow these steps:

CAUTION

After any idle speed adjustments are made, the throttle lever clearance and the oil pump adjustment must be checked and adjusted.

1. Check the idle RPM and verify it is within the specified range.
2. Shut off engine.
3. Locate the throttle cable that is attached to the carburetors and adjust the throttle free play by adjusting the barrel nut (E) and lock nuts (F).

4. Once you achieve the proper free play of 0.010″-0.030″ (.25-.80mm), tighten the lock nuts.
5. Verify the oil pump index marks are within specification.
6. Check the idle RPM and verify it is within the specified range.

NOTE: If the idle speed screw is adjusted inward and the cable sleeve is not adjusted to take up the throttle lever clearance, the engine may misfire or kill upon initial throttle opening.

Throttle Lever Free-Play - CFI Models

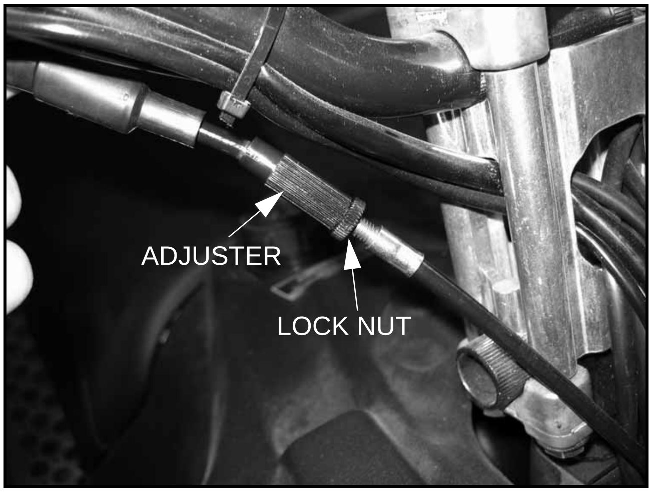
CAUTION

When adjusting throttle lever free-play, always verify the engine RPM does not rise with bars in the full low and full upright Rider Select positions (if applicable) and while turning the handlebars to the full left and full right positions.


= In. / mm.

Throttle Lever Free Play: 0.010″-0.030″ (.25-.8mm)

The inline adjuster should only be used to set free play and to remove cable slack that occurs if the cable has stretched over time.



NOTE: Never use the in-line adjuster to adjust engine idle speed and never adjust the cable so that the throttle plate cam on the throttle body no longer rests against the idle air gap screw.

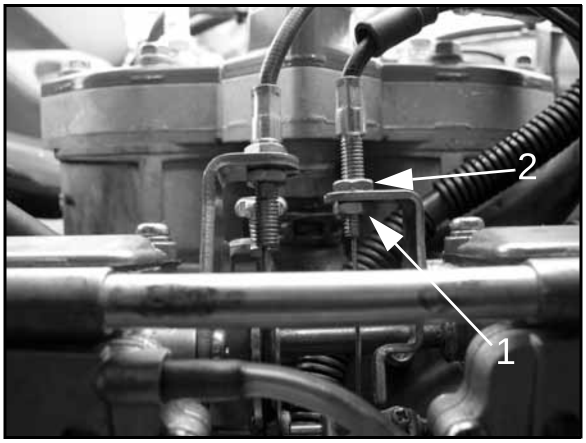
Turning the in-line adjuster inwards (clockwise) will increase throttle lever free-play.

Turning the in-line adjuster outwards (counter-clockwise) will decrease throttle lever free-play.

After setting the throttle lever free play, always verify the oil pump adjustment is set correctly.

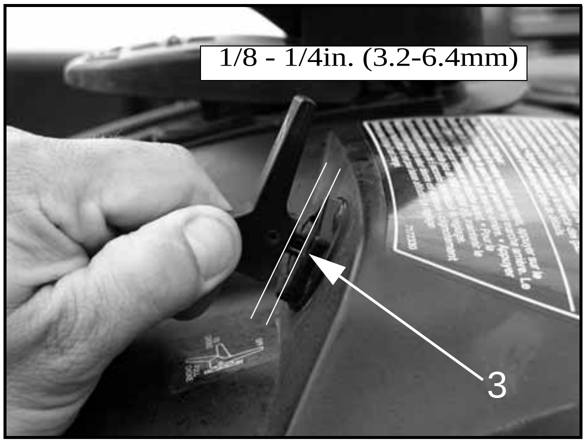
Choke Adjustment

1. Flip the choke toggle to the “OFF” position.
2. Loosen locknuts (1) on the carburetor.



3. Turn sleeve adjusting nut (2) counter-clockwise until the choke toggle shows no free play when pulled, then rotate it clockwise until there is between 1/8 - 1/4in (3.2-.6.4mm) free play (3).

NOTE: Verify the cable does not lift the plungers when checking the free play.

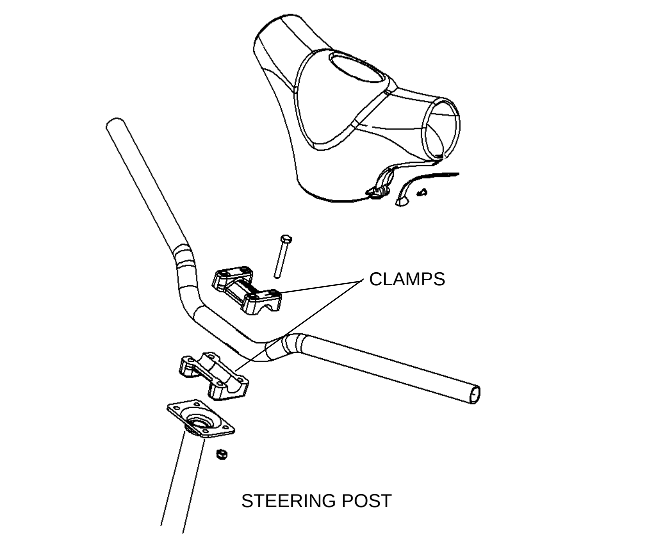


4. Tighten adjustment locknut (2).

STEERING / SUSPENSION MAINTENANCE

Handlebars

Periodically inspect the torque of the handlebar clamp fasteners.

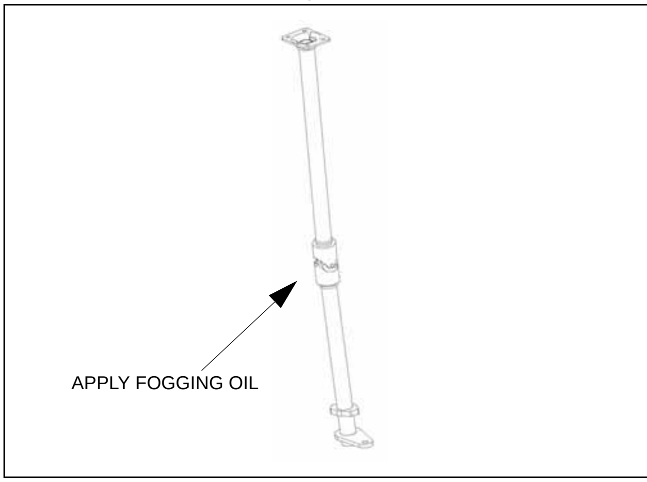


1. To adjust the handlebar angle, remove the handlebar cover to expose the clamp.
2. Loosen the four clamp fasteners. Slightly pry the upper clamp up with a flat blade screwdriver.
3. Adjust handlebars to desired position. Verify the wiring harness, brake hose, and throttle cable do not kink.
4. Secure the front clamp fasteners first to specification. Finish by securing the two rear clamp fasteners to the same torque setting.

= T
Handlebar Clamp Fastener Torque 16 Ft.Lbs. (21 Nm)

5. If equipped, reinstall the handlebar cover.

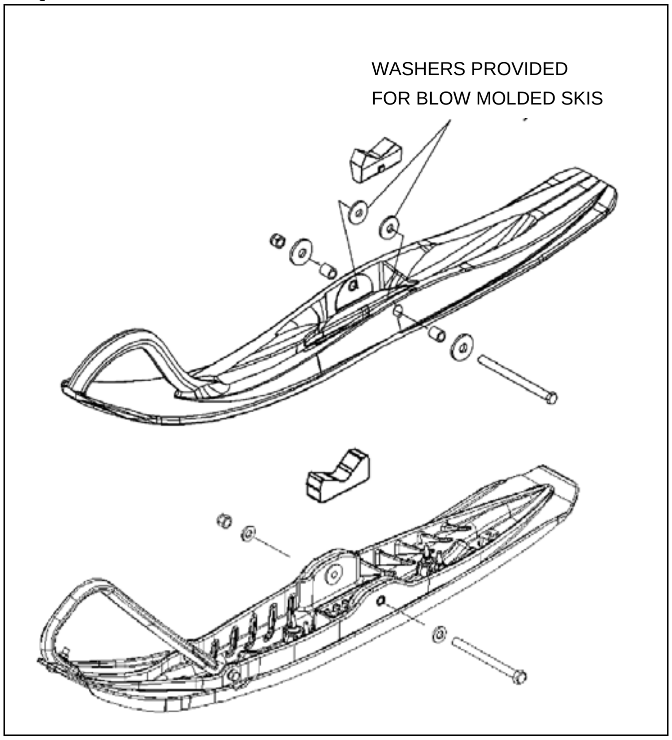
Rider Select Steering U-Joint



The rider select steering U-joint should be lubricated with Polaris fogging oil (PN 2870791).

Ski / Ski Skag Fasteners

Periodically inspect the ski-to-spindle fasteners for proper torque.



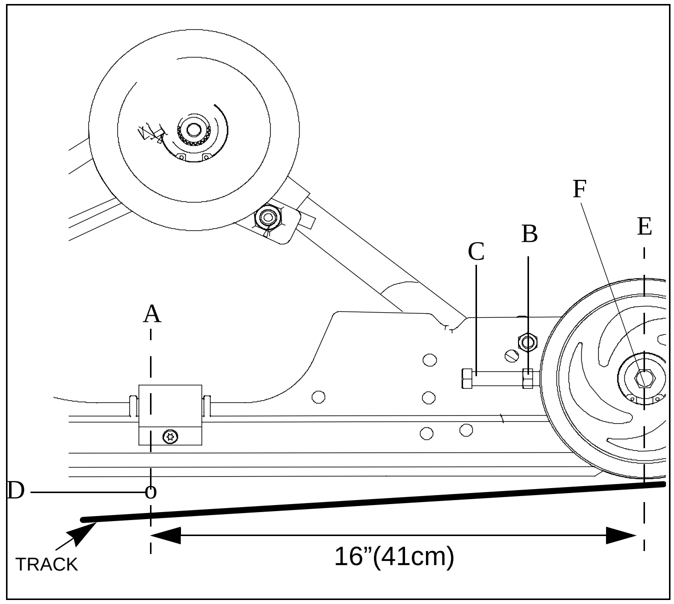
= T
Ski-to-Spindle Fastener Torque 36 Ft.Lbs. (49 Nm)

Inspect ski skags and skag fasteners for abnormal wear and tear. Replace skags when carbide edge is worn away.

Always use new Nylock nuts and secure hand tight.

Track Tension

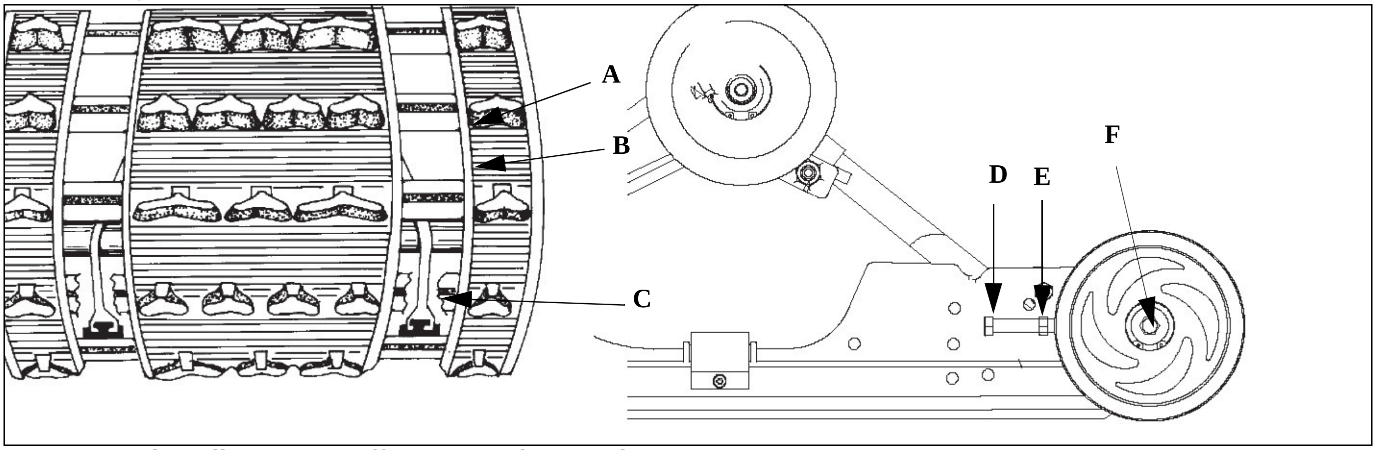
Track tension is critical for maintaining correct suspension operation. If the track tension is too loose it may cause the track to slip or “ratchet”. If the track is too tight it will wear down the rail slides, reduce top speeds, cause rear suspension vibration and cause track and rear suspension durability problems.



1. Lift the rear of the machine and place a jack stand or secure the rear of the machine so that the track is off of the ground.
2. Start the engine and slowly let the engine turn the track over. This will warm up the track for a correct measurement.
3. Shut off the engine.
4. Place a 10 lb. (4.54kg) weight at point (A). Point (A) is 16” (41cm) ahead of the rear idler shaft (E).
5. Measure the distance (D) between the rail slider and the track. This measurement should fall with in the measurement range for the appropriate vehicle, see chart o this page.
6. If adjustment is needed, loosen up the lock nuts (B) on each side.
7. Loosen up the idler shaft bolts (F).
8. Turn each adjuster bolt (C) clockwise to tighten track. Turn the adjuster bolt counterclockwise to loosen track tension.
9. Torque the lock nuts (B) and idler shaft bolts on each side to 35 ft-lb (48 N-m).

SUSPENSION	MEASUREMENT
IQ 121 136 Coupled 136 Comfort	7/8″ - 1-1/8″ (2.2 - 2.9cm)
M-10 128	7/8″ - 1-1/8″ (2.2 - 2.9cm)
M-10 136	3/4″ - 1.0″ (1.9 - 2.5cm)
IQ RMK / Switchback	3/8″ - 1/2″ (1 - 1.3cm)

Track Alignment



NOTE: ***Track alignment affects track tension. Misalignment of the track will cause excessive wear to the track, rail slides, and rail.***

NOTE: ***Excessive rail slide wear occurs due to running in inadequate snow conditions.***

Periodically check that the track is centered and running evenly on the slide rails. Misalignment will cause excessive wear to the track and slide rails.

1. Safely lift and support the rear of the snowmobile off the ground.
2. Rotate the track by hand to check for any possible damage.
3. Inspect the track rods (A) carefully and examine the track along the entire length of each rod, bending the track edge and inspecting it for breakage. If any rod damage is found, the track should be replaced.
4. Warm up the track by starting the engine and apply a small amount of throttle so the track runs slowly at least five complete revolutions.
5. Stop the engine and turn the ignition off.
6. Inspect track alignment by carefully looking through the track window (B) to make sure the rails (C) are evenly spaced on each side.
7. If the track runs to the left, loosen the left locknut and tighten the left adjusting bolt (D). If the track runs to the right, loosen the right locknut and tighten the right adjusting bolt. It may be necessary to check this with the engine rotating the track. Be sure to SHUT THE MACHINE OFF before making any further adjustments.
8. Loosen up the rear idler shaft (F).
9. After any adjustments are complete, be sure to torque the locknuts (E) to 35 ft-lb (48 N-m).

= T
Adjuster Lock Nuts: 35 ft-lb (48 N-m)

10. Torque both idler shaft bolts (F) to 35 ft-lb (48 N-m).

= T
Idler Shaft Bolt: 35 Ft.Lbs. (48 Nm)

WARNING

Broken track rods can cause a rotating track to come off the machine. Never operate or rotate a damaged track under power with a broken rod. Serious injury or death may occur.

Stay clear of all moving parts to avoid personal injury. Never make any adjustments with the engine running, as serious personal injury can result.

ELECTRICAL SYSTEMS

Headlight Bulb Replacement

NOTE: Do not touch the bulb with your fingers. The grease from body oil will cause a hot spot on the bulb and cause bulb failure. If you do touch the bulb clean the bulb with isopropyl alcohol.

1. Push in on the “PUSH” section of the plenum.
2. Slide the access panel down to gain access to the bulb.
3. Squeeze and move the bulb clip up.
4. Replace the bulb, clip and access panel.

OFF-SEASON STORAGE

Chassis And Hood

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.

Clutch And Drive System

Remove drive belt and store in a cool dry location. Lubricate sheave faces and ramps of drive and driven clutches with light oil or rust inhibitor. All lubrication applied as a rust preventative measure must be cleaned off before installing belt for service and operating machine.

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. Force a small amount of lubricant down cables.

Electrical Connections

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

Carburetor/Throttle Body

Fog engine with Polaris Fogging Oil (aerosol type) according to directions on can.

Fuel System

Treat the fuel system with Polaris Carbon Clean. If Polaris Carbon Clean is not used, fuel tank, fuel lines, and carburetor should be completely drained of gasoline.

Corrosion

To prevent corrosion, always grease jackshaft and drive shaft (clutch side) bearings with Polaris Premium all season 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 the bearing seal. Lubricate both front ski pivots at bushings and spindles.

Shocks

Use T-9 Metal Protectant (or equivalent) on shock absorber shafts to help prevent corrosion.

Battery

Disconnect and remove the battery. Clean the terminals and cables. Apply dielectric grease to the terminals. Store in a cool dry place for storage.

NOTES

CHAPTER 4
Fuel Systems

SERVICE WARNINGS AND PRECAUTIONS

Service Warnings

When servicing the fuel system, it is important to heed the following warnings.

WARNING

PROPOSITION 65 WARNING
Snowmobile engines discharge fuel and exhaust which contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm, onto the snow on which they operate. Keep this engine properly tuned and avoid unnecessary idling and spillage during fueling.

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 past the bottom of the filler neck.

If you get gasoline in your eyes or if you swallow gasoline, see your doctor immediately.

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.

If you spill gasoline on your skin or clothing, immediately wash it off with soap and water and change clothing.

CAUTION

A main jet that is too small will cause a lean operating condition and may cause serious engine damage. Jet according to the jetting charts provided for each snowmobile.

Most Polaris snowmobile engines are calibrated to run using 91 octane (oxygenated) or 89 octane (non-oxygenated) fuels. Polaris snowmobiles requiring higher octane fuel have the required octane level noted on the fuel tank filler cap.

Never use fuel containing more than 10% ethanol or E85 fuels.

All four fuel injectors must share the same color code (Yellow, Blue, or Red).

800 CFI engines use high flow injectors regardless of color coding. Always verify the fuel injector part number prior to installation.

CARBURETOR FUEL SYSTEMS

Mikuni Main Jets

MAIN JET	PART NUMBER	MAIN JET	PART NUMBER	MAIN JET	PART NUMBER	MAIN JET	PART NUMBER
95	3130102	175	3130118	310	3130134	470	3130147
100	3130103	180	3130119	320	3130135	490	3130148
105	3130104	185	3130120	330	3130136	500	3130149
110	3130105	190	3130121	340	3130137	510 N	3131400
115	3130106	195	3130122	350	3130138	520 N	3131401
120	3130107	200	3130123	360	3130139	530 N	3131402
125	3130108	210	3130124	370	3130290	540 N	3131408
130	3130109	220	3130125	380	3130140	550 N	3131409
135	3130110	230	3130126	390	3130480	560 N	3131410
140	3130111	240	3130127	400	3130141		
145	3130112	250	3130637	410	3130599		
150	3130113	260	3130129	420	3130142		
155	3130114	270	3130130	430	3130143		
160	3130115	280	3130131	440	3130144		
165	3130116	290	3130132	450	3130145		
170	3130117	300	3130133	460	3130146		

Mikuni Pilot Jets

PILOT JET NUMBER	PART NUMBER
25	3130064
30	3130065
35	3130066
40	3130067
45	3130068
50	3130629
55	3130070
60	3130071

Mikuni Starter Jets

STARTER JET	PART NUMBER
130	3130805
135	3130767
140	3130768
145	3130769
150	3130770
155	3130771
160	3130772

Mikuni Jet Needles

JET NEEDLE	PART NUMBER
J8-9FH04-57	3130794
J8-9EH01-57	3130795
J8-9DH01-54	3130796
J8-8BEY01	3131250
J8-9DFH06-57	3131253
J8-9EFH01-60	3131207
J8-9DFH07-60	3131268
J8-9DFH10-57	3131313
J8-9DGI01-60	3131377
J8-9DGJ02-57	3131378
J8-9EFY02-61	3131202
J8 - 9DGN6-57	3131438

Mikuni (Short) Pilot Air Jets

AIR JET	PART NUMBER
0.5	3130773
0.6	3130774
0.7	3130775
0.8	3130776
0.9	3130777
1.0	3130778
1.1	3130799
1.2	3130780
1.3	3130781
1.4	3130782
1.5	3130783
1.6	3130784
1.7	3130785
1.8	3130786
1.9	3130787
2.0	3130788

Mikuni (Long) Pilot Air Jets

AIR JET	PART NUMBER
0.5	3131255
0.6	3131249
0.7	3131256
0.8	3131254
0.9	3131203

AIR JET	PART NUMBER
1.0	3131257
1.1	3131258
1.2	3131259
1.3	3131260
1.4	3131261
1.5	3131262
1.6	3131263
1.7	3131264
1.8	3131265
1.9	3131266
2.0	3131267

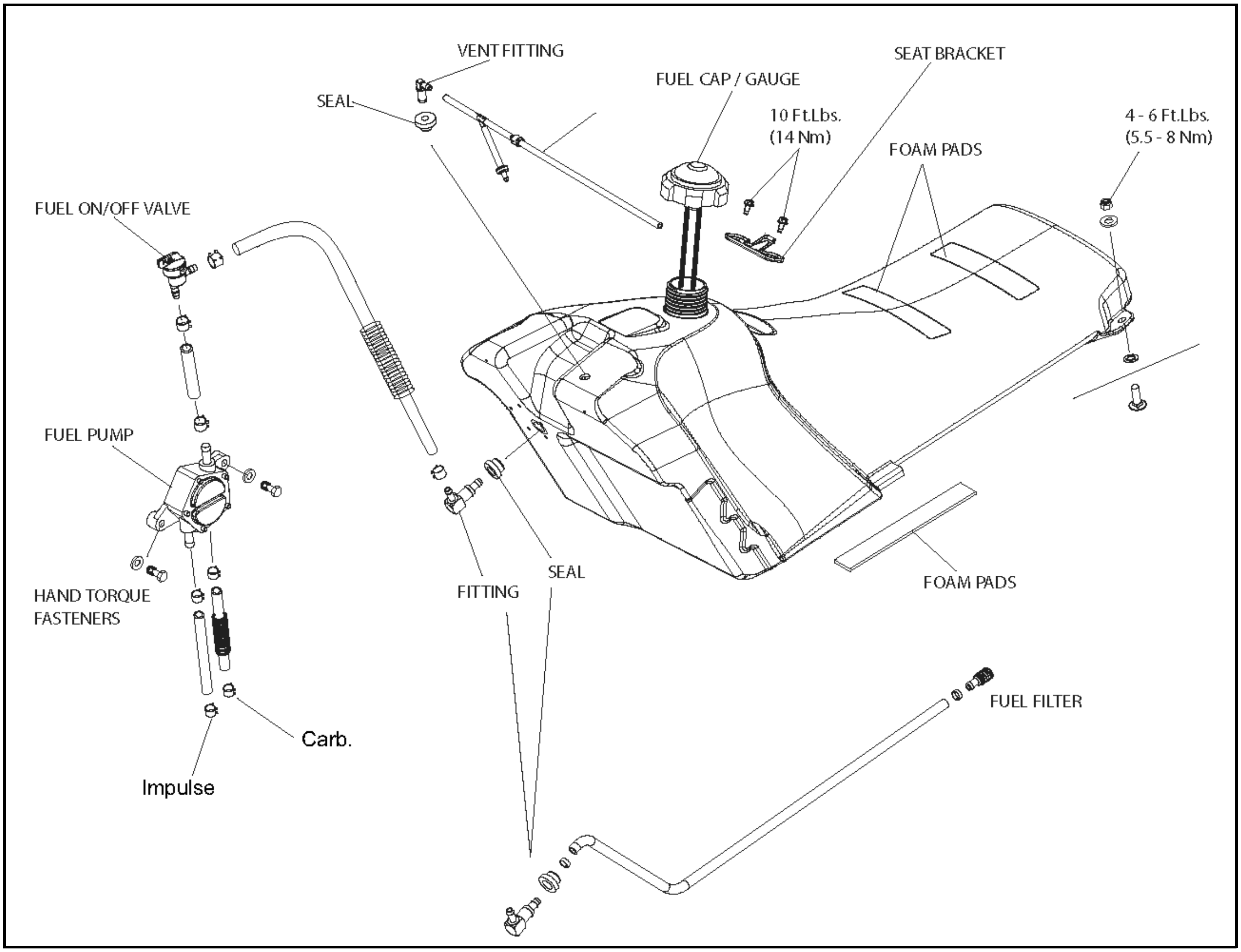
Mikuni TM Piston Valves

PISTON VALVE	PART NUMBER
1.5	3130940
2.0	3131252
2.5	3130790
3.0	3130791
3.5	3130792
4.0	3130793

Mikuni TM (Notched) Piston Valves

PISTON VALVE	PART NUMBER
1.5	3131216
2.0	3131206
2.5	3131217
3.0	3131218
3.5	3131219
4.0	3131220

Carbureted Fuel System (Typical)



MIKUNI TM CARBURETOR

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.

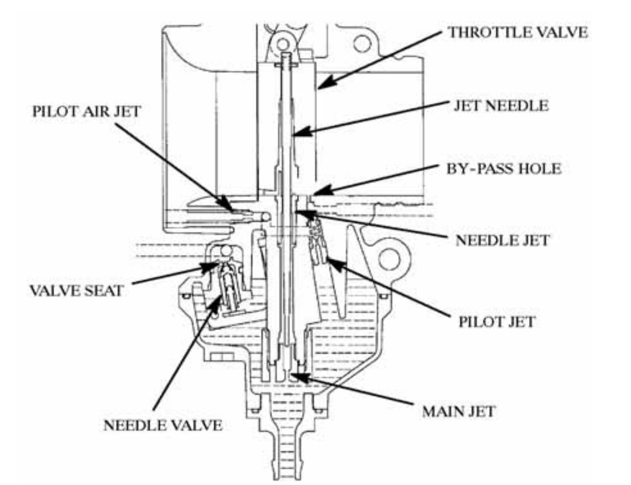
The engine of a vehicle is operated under a wide range of conditions, from idling with the throttle valve remaining almost closed, to full load or maximum output with the throttle valve fully opened. In order to meet the requirements for the proper mixture ratio under these varying conditions, a low speed fuel system, or pilot system, and a main fuel system are provided in Mikuni 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.

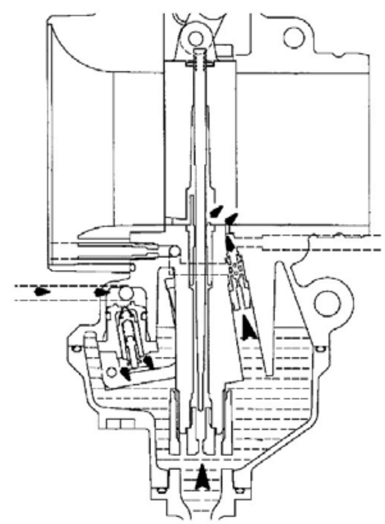
Fuel Metering



Mikuni carburetors use a starter enricher 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

Fuel Delivery

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 DELIVERY

Fuel for the pilot jet is drawn from the float bowl, mixed with air jet, and delivered to the engine through the pilot outlet.

The mixture is regulated to some degree by adjusting the fuel screw.

The main system is designed to deliver 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.

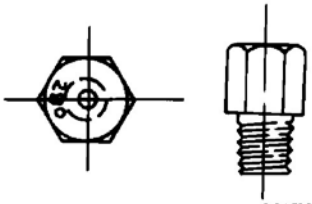
Pilot Jet

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.

Fuel Screw

The fuel screw controls the fuel mixture from idle to low speeds. The tapered tip of the fuel screw projects into the passage leading to the by pass out let. By turning the screw in or out, the cross sectional area of the air passage is varied, in turn varying the fuel screw varies the amount of air/fuel.

Main Jet


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 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.

Jetting Guidelines

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.

Verify the production setting for your specific model. 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. Refer to the jetting cart in the Specifications Chapter of this manual for correct jetting for altitude/ temperature ranges.

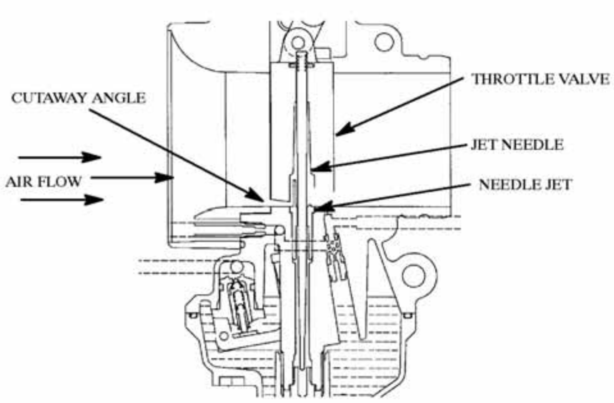
NOTE: It is the owner's responsibility to ensure that the correct jets are installed in the machine for a geographical area. Be very careful when jetting down in warm weather. As the weather turns colder it will be necessary to re-jet upward to prevent engine damage. When selecting the proper main jet always use the lowest elevation and temperature that is likely to be encountered.

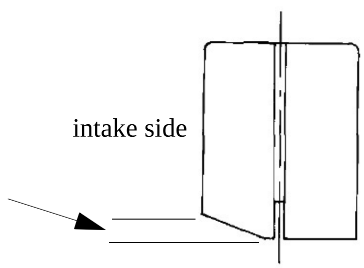
CAUTION

A Main Jet that is too small will cause a lean operation condition and may cause serious engine damage. Jet the carburetors carefully for elevation and temperature according to the jetting charts in the, Specifications Chapter of this manual or the models Owner’s Manual Supplements.

4

Piston Valve Or 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 in millimeters. The higher the number, the leaner the gasoline/air mixture.

Jet Needle

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.

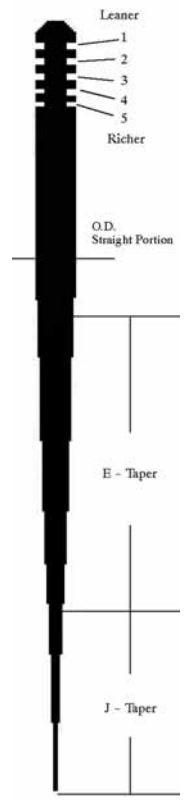
This needle (example) is a 9DH01-57. The first number is the approximate overall length in 10mm increments of the jet needle. The 9 indicates the needle is approximately 90mm but less that 100mm in length.

The letters on the jet needle indicate the angle of both tapers. The first letter designates the taper angle of the top section (closest to the grooves) and the second letter designates the angle of the bottom taper. The taper angles are graduated in 15' (15 minute) increments. The jet needle marked 9DH01-57 would have a top taper of 1_0' and a bottom taper of 2_0'.

The number following the letters on the jet needle is the serial number and it varies with individual jet needles.

The last number, 57 indicates that the outside diameter is 2.57mm. The smaller the O.D., the richer the mixture.

9DH01-57

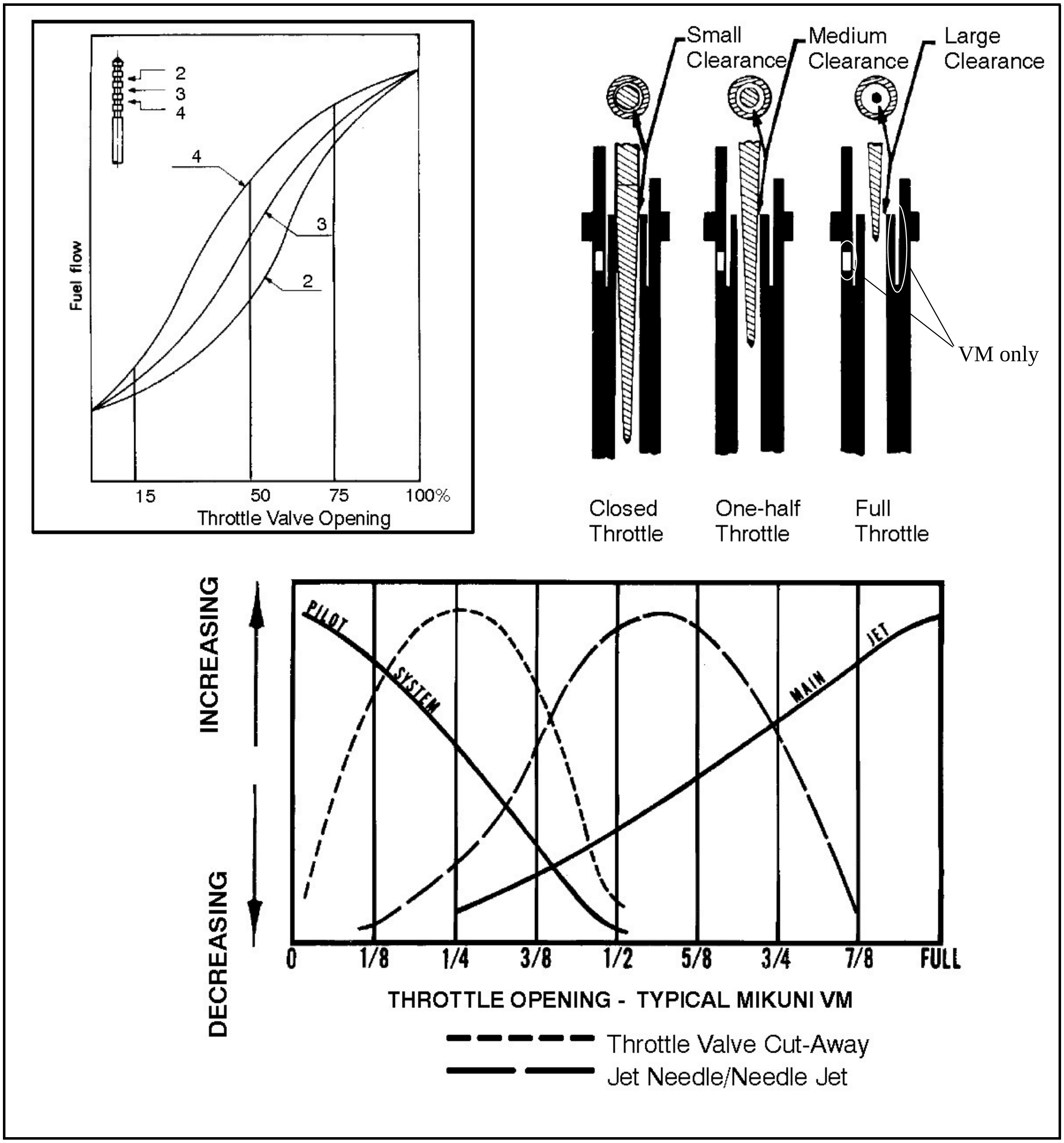


DESIGNATOR	DESCRIPTION
9	Overall length in 10mm increments
D	Taper of the **top** section of the needle
H	taper of the **bottom** section of the needle
01	Serial number
-57	Outside diameter (O.D.) of the straight portion

Needle Jet

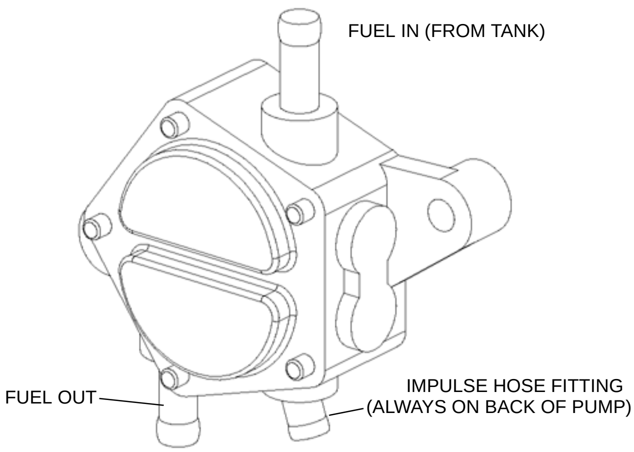
The needle jet works in conjunction with the jet needle.

Throttle Opening Vs. Fuel Flow



FUEL PUMP

Fuel Pump Overview



The impulse-powered fuel pump on carbureted engines works by using the positive and negative pressure pulses generated by the movement of the pistons inside the engine crankcase.

When the MAG piston is on the upward stroke, negative (vacuum) pressure pulse is applied to the fuel pump. This action draws fuel into the pump from the fuel tank.

When the MAG piston is on the downward stroke, a positive pressure pulse is applied to the fuel pump. This action forces fuel from the intake-side of the pump to the supply-side, then to the carburetors.

A series of check valves prevents fuel from being drawn out of the carburetors on the vacuum stroke or forced back into the fuel tank during the pressure stroke.

Maintenance

The impulse operated-powered 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 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 a Mity Vac to impulse fitting (or line) and apply 4-6 PSI pressure. Diaphragm should hold pressure indefinitely.

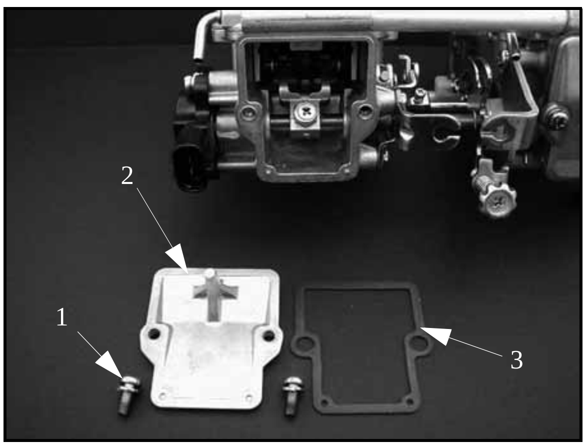
CARBURETOR SERVICE

Disassembly

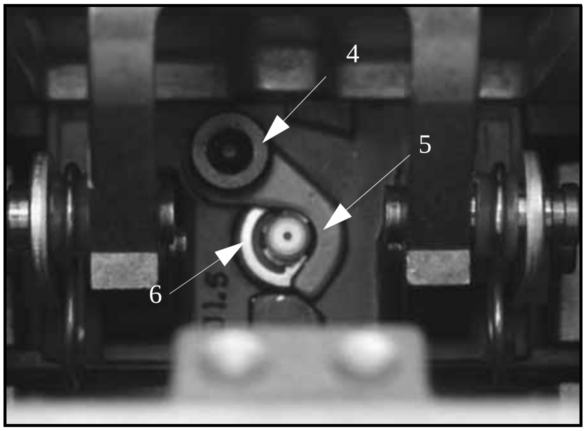
⚠ CAUTION

WEAR EYE PROTECTION WHEN USING COMPRESSED AIR OR WHEN USING CLEANING SOLVENTS. REVIEW ALL FUEL SYSTEM WARNINGS LOCATED AT THE BEGINNING OF THIS CHAPTER BEFORE PROCEEDING.

1. Remove the carburetor from the engine before disassembling. Clean the outside of the carburetor thoroughly with solvent. Do not use compressed air to dry at this time.
2. Remove all top cap screws (1), top cap (2) and gasket (3).

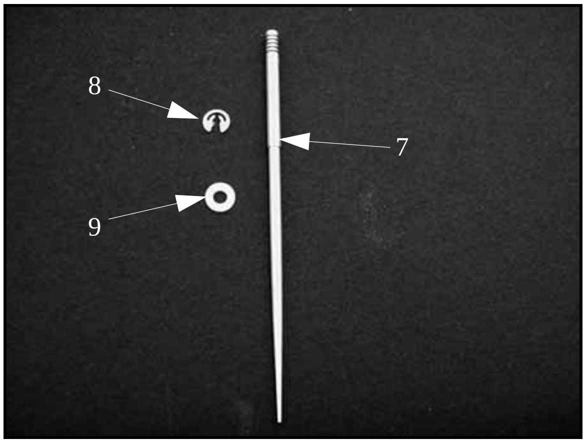


3. Locate the arm screw (4) and loosen it just enough to move the arm (5) out of the way so that you can remove the needle (6) e-clip and the plastic washer from the throttle slide.

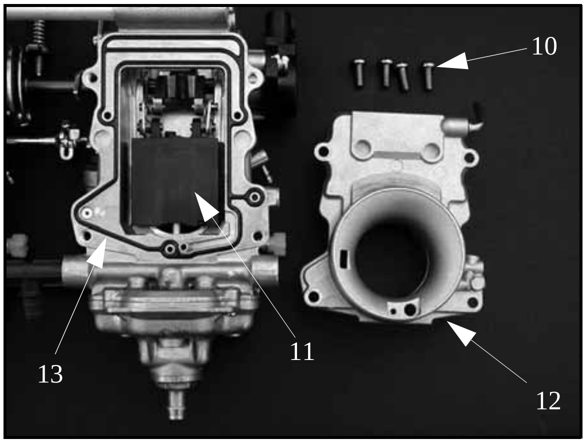


NOTE: Keep track of the plastic washer (9), and place it so it is on the top of the throttle valve when installing the needle and e-ring back into the carburetor.

4. Inspect the needle (7), e-clip (8), and plastic washer (9) for wear.



5. Remove the four screws (10) on the funnel face.
6. Turn throttle shaft so the throttle slide (11) slides open all the way.
7. With slide fully open, pull funnel (12) out from the bottom first. Inspect the gasket (13).
8. Check for wear on the faces of the slides.



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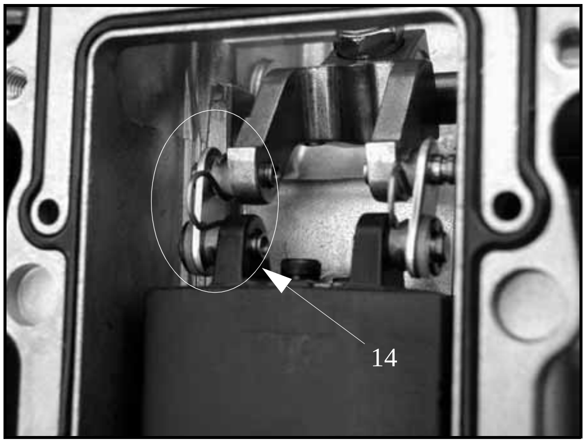
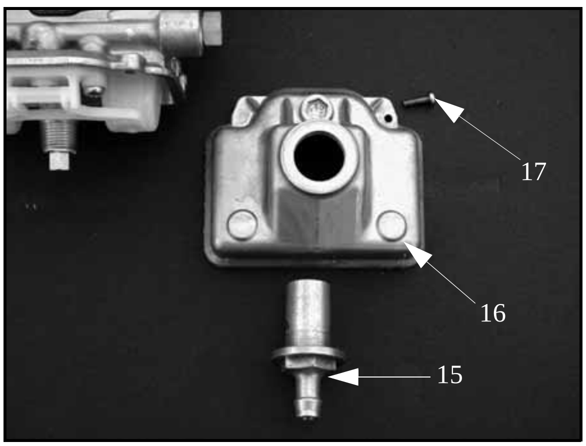
9. Inspect e-rings, plate, spring, and rings (14) connecting the slide to the lever if needed.

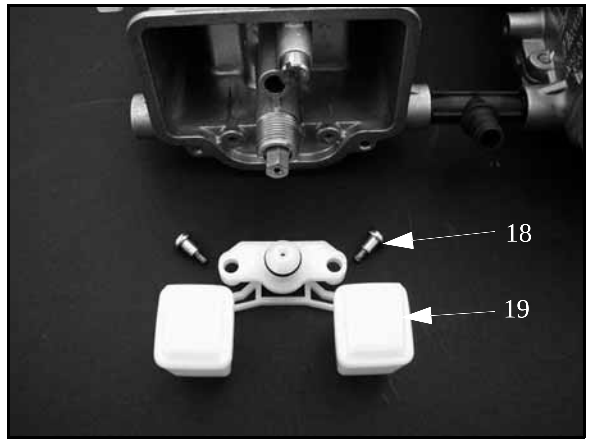


10. Remove water trap/drain plug (15) and single screw (16) on the bottom of the carburetor.
11. Remove and drain the float bowl (17).

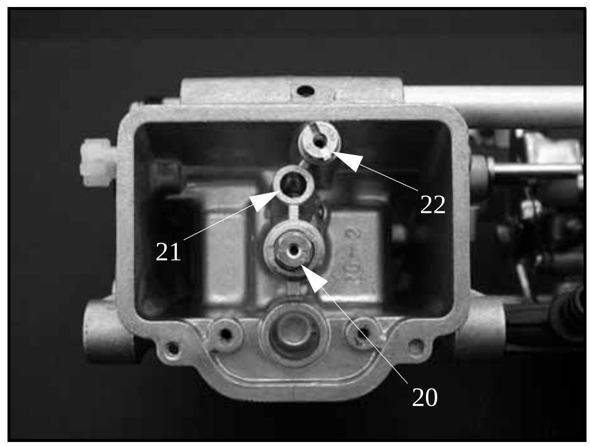
NOTE: Float bowl will not come off unless the water trap/drain plug and screw are removed.



12. Remove the two screws (18) holding the float/needle and seat assembly (19) in position and remove this assembly.
13. Inspect the contents for wear and debris.



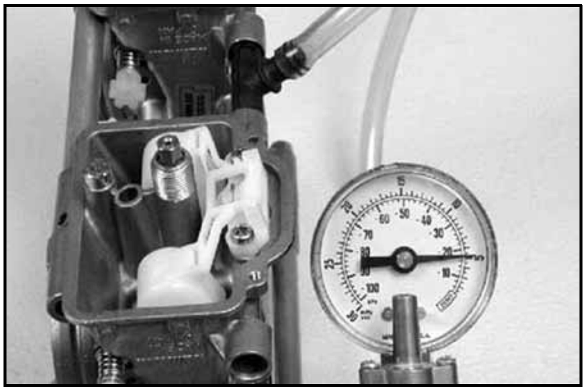
14. Remove and inspect the main jet (20), pilot jet (21), and starter jet (22). Clean them out.
15. Remove the air jet screw if so equipped.



16. Clean out all passages in carburetor body with carburetor cleaner. Dry all passages and jets with compressed air.
17. Replace gaskets and any parts that show wear or damage.
18. Repeat steps 1-18 for disassembly for the other carburetor if needed.

Assembly

1. Install the main jet (20), pilot jet (21), and starter jet (22).
2. Install float/needle & seat assembly (19).
3. Place carburetor in an inverted position.
4. Connect a pressure tester (PN 2870975) 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 (needle supplied with float and seat).



5. Carefully inspect float bowl gasket and replace if necessary.
6. Install float bowl (16) on carburetor with water trap/drain plug (15) and single screw (16) on the bottom of the carburetor.
7. If throttle slide was removed, install throttle slide (11) so that the wider face is facing the engine side of the carburetor.
8. Install the funnel gasket (13) and funnel (12) onto the carburetor. You will have to lift the throttle slide up and place the smaller face into the funnel area.
9. Install funnel screws (10).
10. Install the e-clip (8) in the desired position on the jet needle (7).
11. Slide the plastic washer (9) on the jet needle so that it is positioned to rest on top of the throttle valve when assembled.
12. Install carburetors on engine.
13. Replace top cap gaskets (3), cover (2) and screws (1).
14. Check throttle lever free play.

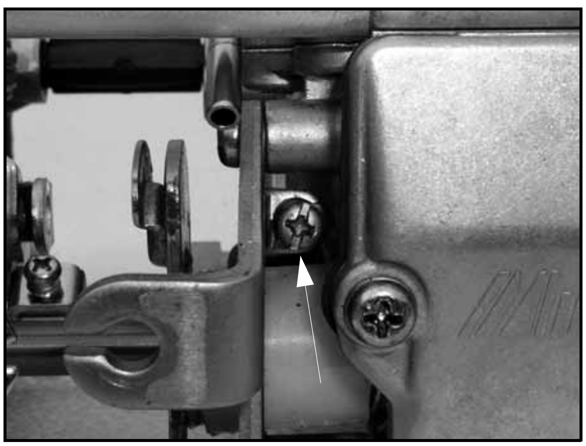
CARBURETOR ADJUSTMENT

Throttle Valve Synchronization

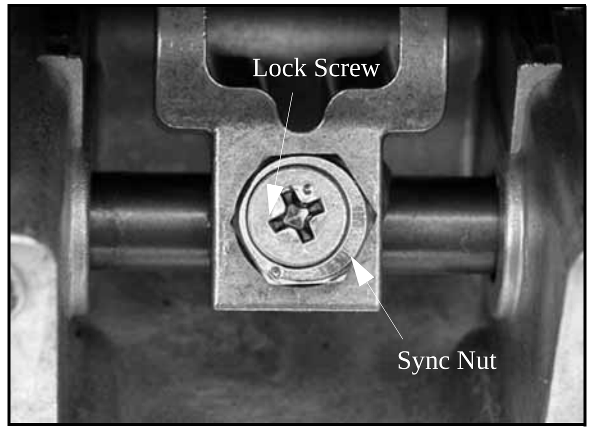
All throttle valve synchronization adjustments are made to the MAG throttle valve. The PTO throttle valve is non-adjustable and considered the base throttle valve.

Throttle valve synchronization can be performed with the carburetor rack installed or removed from the engine.

1. If running, turn off engine. Remove the air box.
2. Remove the carburetor covers.
3. Hold the throttle bell crank wide open on the carburetor.
4. The bottoms of each throttle valve should be flush with the top of the intake bores.
5. If adjustment is required, hold the PTO carburetor flush with the top of intake bore. Turn the throttle stop screw in or out to set the PTO throttle slide flush with the intake bore.



6. Once the PTO carburetor slide is flush, loosen the Phillips head screw, located under the top cover on the MAG carburetor.
7. While holding the PTO carburetor slide flush to the top of the carburetor, rotate the synchronization nut clockwise to raise the slide and counterclockwise to lower the slide.



8. Adjust the synchronization nut until it is even with the PTO slide.
9. Once this is flush, lock the locking screw.
10. Replace the carburetor covers.
11. If removed, reinstall the fuel, vent, throttle, and choke hose and cable connections.
12. Verify and set throttle cable free play.

CLEANFIRE™ FUEL INJECTION

System Overview

The Cleanfire™ fuel Injection system is a battery-less engine management, capacitive discharge ignition, four fuel injector engine management system.

System components include:

- ECU: The ECU controls the ignition / fuel injection angles, chassis / battery relays, and supplies the MFD gauge with tachometer / water temp. / PERC / HOT / DET / diagnostic information.
- Stator: The stator consists of a lighting charge coil, ignition exciter coil, fuel injector charge coil and two independent external crank position (two and five pulse) coils.
- Flywheel: The CFI flywheel houses the magnets for energizing the stator windings as well as two independent encoder ribs. The set of two encoder ribs are spaced 180 degrees apart from each other and provide RPM information required at engine start up. A set of five encoder ribs is responsible for crank angle detection, speed, and direction information.
- Regulator / Rectifier: Responsible for converting Vac to Vdc for the chassis and battery (electric start) circuits. Regulates voltage to 14.5 Vdc. Also supplies fuel injector “boost” power when engine RPM is 700 RPM or less.
- Capacitor: The capacitor suppresses voltage spikes and ensures consistent voltage throughout the chassis (RED/WHT) circuit.
- Chassis Relay: The chassis relay is activated by the ECU at approximately 950 RPM. Below 950 RPM, all power supplied by the regulator / rectifier (RED circuit) is used to power the ECU and fuel pump.
- Ignition Coils: Provide ignition energy to each spark plug. Both coils are fired at the same time.
- Fuel Injectors: CFI uses one set of full load injectors (located in the crankcase), and one set of part load injectors (located in each cylinder’s transfer port). The full load injectors are used at idle and high RPM speeds, while the part load injectors are used at low to mid engine speeds.
- Detonation Sensor: Located on the cylinder head, the detonation sensor transforms internal acoustic information into a signal the ECU uses to determine the amount of engine knock.
- Exhaust Valve Solenoid: Activated by the ECU, the solenoid controls the VES venting. When powered, the solenoid is open, allowing cylinder pressure to vent thus keeping the exhaust valves closed. When power is removed, the solenoid closes and the exhaust valves are allowed to open.
- Throttle Position Sensor (TPS): The TPS relays the position of the throttle plates (operator throttle input) to the ECU.
- Coolant Temperature Sensor: Relays the engine temperature to the ECU.
- Exhaust Temperature Sensor: Relays the temperature of the exhaust pipe to the ECU.
- Temperature / Barometric Air Pressure (T-BAP) Sensor: Relays the current intake air temperature and ambient air pressure to the ECU. The sensor is located on the airbox.
- Vehicle Speed Input: The ECU monitors the vehicle speed supplied by the vehicle speed sensor.
- Fuel Pump: Supplies fuel to the fuel injectors. Power to the fuel pump is supplied by the regulator / rectifier.
- Diagnostic Connector: The ECU can communicate with the Polaris Digital Wrench software and can be re-flashed, monitored and will display trouble codes.

Diagnostic Trouble Codes (DTCs)

CFI Diagnostic Trouble Codes

TROUBLE CODE	P-CODE	MFD BLINK CODE	DESCRIPTION
Throttle Position Sensor Unrealistic Transition	P0120	1	TPS signal changes too rapidly to be correct. Can be caused by faulty connections or a faulty TPS.
Throttle Position Sensor Voltage High	P0123		TPS signal is above 4.39 Vdc. Can be caused by a faulty wire connection or faulty TPS.
Throttle Position Sensor Voltage Low	P0122		TPS signal is below 0.7 Vdc. Can be caused by a faulty wire connection or faulty TPS.
Engine Coolant Temperature Sensor Voltage High	P0118	2	Sensor signal is above 4.8 Vdc. Can be caused by a faulty wire connection or faulty temperature sensor.
Engine Coolant Temperature Sensor Voltage Low	P0117		Sensor signal is below 0.1 Vdc. Can be caused by a faulty wire connection or faulty temperature sensor.
Intake Air Temperature Circuit Voltage High	P0113	3	Sensor signal is above 4.9 Vdc. Can be caused by a faulty wire connection or faulty TBAP.
Intake Air Temperature Circuit Voltage Low	P0112		Sensor signal is below 0.19 Vdc. Can be caused by a faulty wire connection or faulty TBAP.
Barometric Pressure Sensor Voltage High	P0108	4	Sensor signal is above 3.23 Vdc. Can be caused by a faulty wire connection or faulty TBAP.
Barometric Pressure Sensor Voltage Low	P0107		Sensor signal is below 1.25 Vdc. Can be caused by a faulty wire connection of faulty TBAP.
Exhaust Temperature Sensor Circuit Voltage High	P0546	5	Sensor signal is above 4.9 Vdc for at least 2 minutes and the engine has been running at or above 3000 RPM.
Exhaust Temperature Sensor Circuit Voltage Low	P0545		Sensor signal is below 0.06 Vdc for at least 2 minutes and the engine has been running at or above 3000 RPM.
Detonation Sensor Circuit Voltage High	P0328	6	Engine speed is above 6000 RPM and the sensor signal is above 4.3 Vdc for at least 2 seconds.
Detonation Sensor Circuit Voltage Low	P0327		Engine speed is above 6000 RPM and the sensor signal is below 1.23 Vdc for at least 2 seconds.
Exhaust Valve Solenoid Circuit Malfunction	P1477	8	Solenoid control circuit is OPEN. Can be caused by faulty wiring, solenoid, or ECU.

CFI Diagnostic Trouble Codes

Trouble Code	P-Code	MFD Blink Code	Description
MAG Part Load Injector Circuit Open	P0261	7	OPEN circuit or short to ground. Can be caused by faulty wiring, injector, stator or ECU.
MAG Full Load Injector Circuit Open	P1261		
PTO Part Load Injector Circuit Open	P0264		
PTO Full Load Injector Circuit Open	P1264		
Fuel Injector Voltage Too High	P2148		Engine is running, but the injector voltage is above the acceptable limit. Can be caused by faulty wiring, ECU or stator.
Fuel Injector Voltage Too Low	P2147		Engine is running, but the injector voltage is below the acceptable limit. Can be caused by faulty wiring, ECU or stator.
MAG Ignition Coil Circuit Malfunction	P0351	9	Failure within the primary circuit. Can be caused by faulty wiring, ignition coil, or ECU.
PTO Ignition Coil Circuit Malfunction	P0352		
5 Tooth CPS Signal Missing	P0335	10	Engine is running, but there is no signal from the 5 tooth CPS. Can be caused by a faulty stator, wiring or ECU.
5 Tooth CPS Signal Intermittent	P0336	Steady LED	Engine is running, but the pulses from the 5 tooth CPS are incorrect. Can be caused by a faulty stator, wiring harness or there is no 2 tooth CPS signal. If there is no 2 tooth CPS signal, the engine will not run, but the P0336 code will be set because the ECU receives extra 5 tooth signals without any 2 tooth signals.
5 VDC Sensor Supply Voltage Low	P0643		Sensor supply voltage is below an acceptable limit. Can be caused by faulty wiring or ECU.
Chassis Voltage High	P0563		System voltage is too high. Can be caused by faulty wiring or regulator / rectifier.
Chassis Voltage Low	P0562		System voltage is too low. Can be caused by a faulty wiring or regulator rectifier.
Ignition Voltage Circuit Malfunction	P0350		Engine is running but a problem is found with the ignition coil power circuit. Can be caused by faulty wiring or ECU.
Chassis Relay Coil Open Circuit	P1611		The chassis relay control circuit is open. Can be caused by faulty wiring or a faulty relay.

4

MFD Blink Codes

The check engine LED will display a blink code whenever the ECU determines there is a current problem with one or more of the sensors. Use Digital Wrench to troubleshoot, fix and clear the codes.

When a blink code is displayed, the CHECK ENGINE light will illuminate for 1/2 second "on" and 1/2 second "off" with a 1 second "off" interval between close, except for exhaust temperature sensor codes where the engine has to run over 3000 RPM for 60 to 90 seconds depending on model to trigger a blink code.

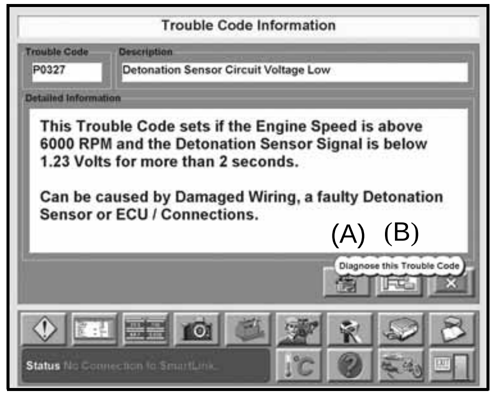
DTC Troubleshooting

Always use the Digital Wrench diagnostic software program to troubleshoot DTCs, MFD blink codes, and overall performance problems.

Digital Wrench can be used to display trouble codes and offers guided diagnostics. Guided diagnostics allows the technician to perform diagnostic checks in an attempt to isolate the root problem.

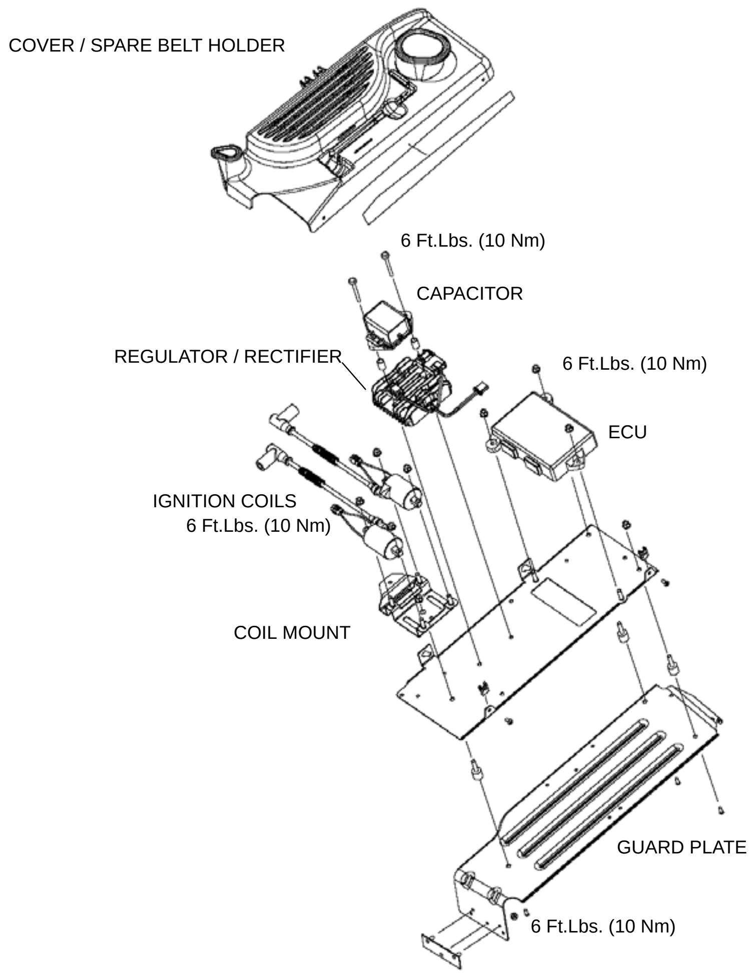
1. To access trouble codes, click on the "!" button. If any codes are listed, select a code to proceed.

2. To access guided diagnostics, click on the "SPECIAL TESTS" (toolbox) button. Then click "DIAGNOSTIC PROCEDURES".
3. Select a code or system in the 'SYSTEM CHARTS" menu. A description of the DTC or system will be displayed.

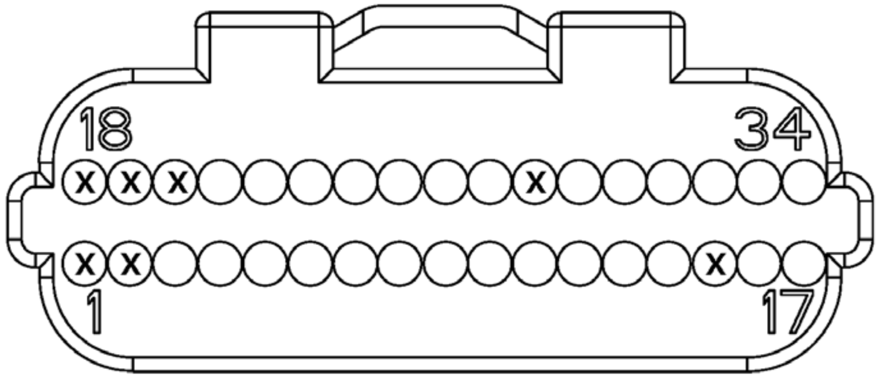


4. Click on (A) to activate guided diagnostics.
5. Click on (B) to view a wiring schematic of the component or system.
6. Click on "X" to exit the current screen.

CFI Clutch Guard Electrical Center



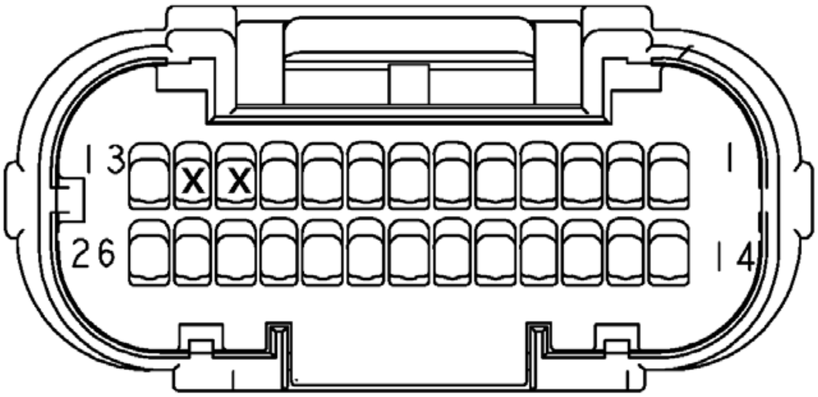
34 Pin CNA ECU Connector



NOTE: Wire Entry View

PIN	COLOR	GOES TO CONNECTOR	FUNCTION
3	RED/BLUE	SPLICE	K LINE POWER
4	ORANGE	ECU POWER	EXTERNAL POWER
5	WHITE/BLACK	EXHAUST TEMP. SENSOR	SIGNAL
6	BLUE	TBAP	AIR TEMP SIGNAL
7	GREEN/BLUE	IGNITION SWITCH	STARTER LOCKOUT
8	RED/WHITE	TBAP	5 VDC POWER SUPPLY
9	GREEN/RED	GROUND SPEED SENSOR SPLICE	SPEED SIGNAL
10	RED/BLACK	ELECTRIC START	BATTERY VOLTAGE
11	WHITE/BLUE	CHASSIS RELAY	COIL GROUND
12	RED/BLACK	THROTTLE FLIPPER SAFETY SWITCH	SOFTWARE BASED IGNITION KILL SIGNAL
13	BROWN	ECU GROUND SPLICE	ECU GROUND
14	RED/BLUE	CHASSIS / HOOD #2	WATER TEMP. SIGNAL
16	YELLOW/RED	CHASSIS / HOOD #1	TACHOMETER SIGNAL
17	ORANGE	REGULATOR / RECTIFIER	VOLTAGE BOOST POWER
21	PINK	DIAGNOSTIC	K-LINE
22	GRAY	GRAY SPLICE	MODE SELECT
23	WHITE	CHASSIS/HOOD #1	PERC LED
24	GREEN	TBAP	PRESSURE SENSOR SIGNAL
25	BLUE/WHITE	CHASSIS / HOOD #1	OVERHEAT / DET LED
26	ORANGE/GREEN	ELECTRIC START	CHARGE RELAY COIL GROUND
27	BLACK/WHITE	DIAGNOSTIC SPLICE - CHASSIS / HOOD #1	DIAGNOSTICS / CHECK ENGINE LED
29	BLACK	TETHER / IGN. SWITCH / SAFETY SLAP SWITCH	HARDWARE STOP - IGNITION KILL SIGNAL
30	BLACK/BLUE	SENSOR GROUND SPLICE #1	SENSOR GROUND
31	GRAY	LH CONTROL	PERC SIGNAL
32	RED	REGULATOR POWER SPLICE	REGULATED POWER
33	ORANGE	REGULATOR / RECTIFIER	VOLTAGE BOOST POWER
34	ORANGE	REGULATOR / RECTIFIER	VOLTAGE BOOST POWER

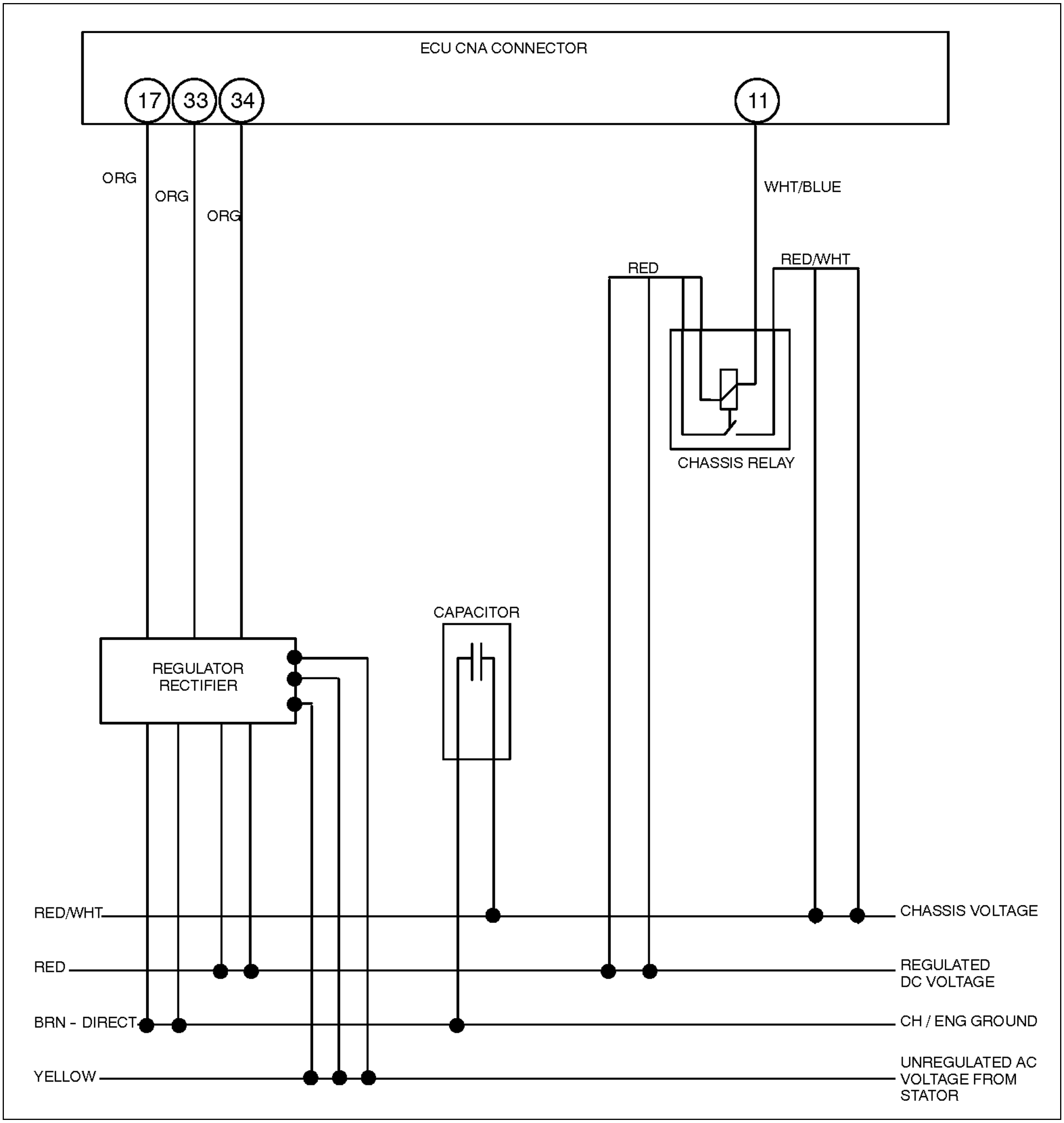
26 Pin CNB ECU Connector



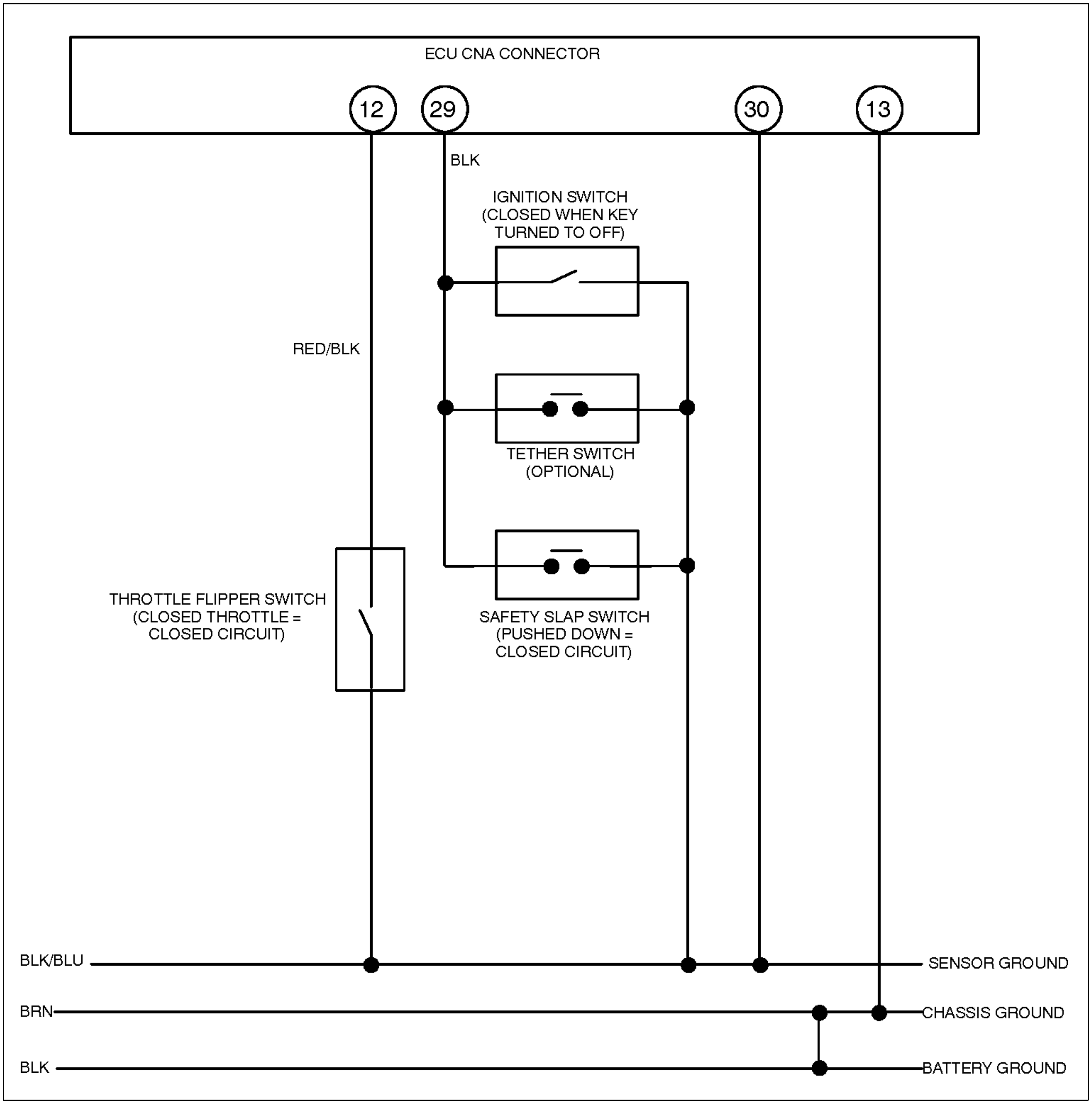
NOTE: Wire Entry View

Pin	Color	Goes To Connector	Function
1	ORANGE	PTO IGNITION COIL	COIL POWER
2	BLUE / YELLOW	STATOR - FUEL INJECTOR COIL	FUEL INJECTOR POWER COIL
3	BLUE / YELLOW	STATOR - FUEL INJECTOR COIL	FUEL INJECTOR POWER COIL
4	GREEN	STATOR - CRANK POSITION SENSOR	5 TOOTH COIL SIGNAL
5	WHITE	STATOR - CRANK POSITION SENSOR	2 TOOTH COIL SIGNAL
6	YELLOW	MAG FULL LOAD INJECTOR	INJECTOR CONTROL GROUND
7	YELLOW / WHITE	MAG PART LOAD INJECTOR	INJECTOR CONTROL GROUND
8	GREEN	PTO FULL LOAD INJECTOR	INJECTOR CONTROL GROUND
9	GREEN / WHITE	PTO PART LOAD INJECTOR	INJECTOR CONTROL GROUND
10	RED / WHITE	TPS	5 VDC POWER SUPPLY
13	WHITE / YELLOW	EV SOLENOID	SOLENOID CONTROL GROUND
14	BROWN	MAG IGNITION COIL / STATOR / STATOR	GROUND
15	GREEN / RED	STATOR - EXCITER COIL	EXCITER COIL
16	GREEN / YELLOW	STATOR - EXCITER COIL	EXCITER COIL
17	WHITE / GREEN	CRANK POSITION SENSOR	5 TOOTH COIL GROUND
18	WHITE / RED	CRANK POSITION SENSOR	2 TOOTH COIL GROUND
19	BLACK / BLUE	DETONATION SENSOR	GROUND
20	PURPLE	DETONATION SENSOR	SENSOR SIGNAL
21	RED / BLUE	MAG / PTO FULL LOAD INJECTOR	INJECTOR POWER SUPPLY
22	RED / BLUE	MAG / PTO PART LOAD INJECTOR	INJECTOR POWER SUPPLY
23	AQUA	TPS	SENSOR SIGNAL RETURN
24	BLACK / BLUE	COOLANT TEMP. SENSOR / TPS	SENSOR GROUND
25	YELLOW	COOLANT TEMP. SENSOR	SENSOR SIGNAL RETURN
26	RED	EV SOLENOID	REGULATED VOLTAGE

Chassis Relay



Throttle / Ignition Kill System

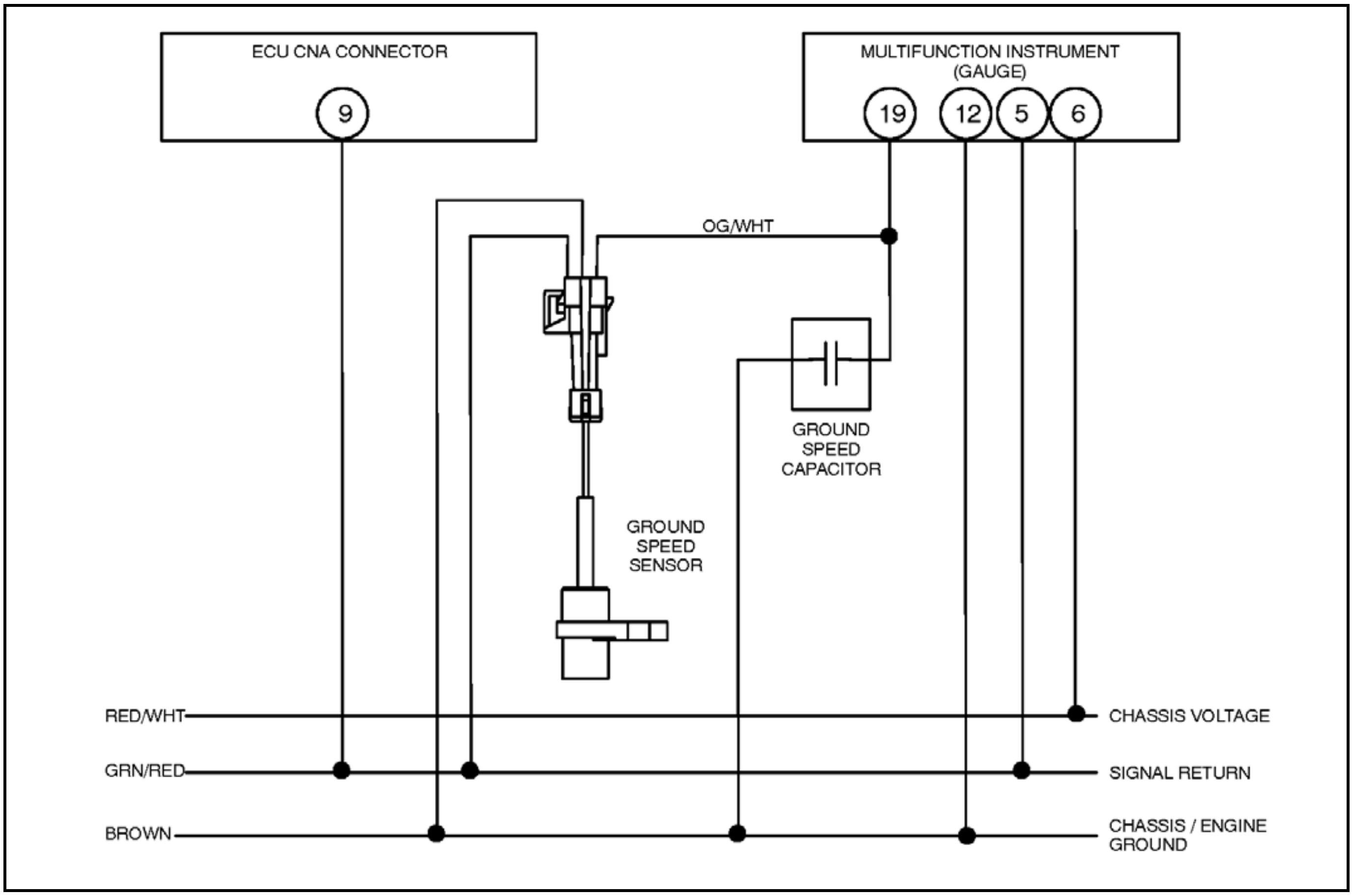


System Overview

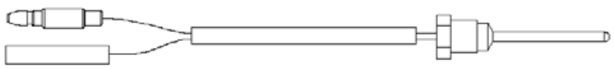
There are two methods for cutting the ignition on CFI systems. The first is the software stop system. The software stop system only applies to the throttle flipper switch. The software stop system is activated when the throttle flipper switch is closed (closed throttle), but the TPS (throttle plate position) is still above idle. When this occurs, the ECU software will determine the throttle cable is “stuck” and kill the ignition system.

The second system is the hardware stop system. The hardware stop system is a direct ignition kill system. That is, whenever the operator turns the key to off, pulls the tether, or pushes the safety slap switch down, the ignition system is immediately killed.

Vehicle Speed Sensor



Exhaust Temperature Sensor

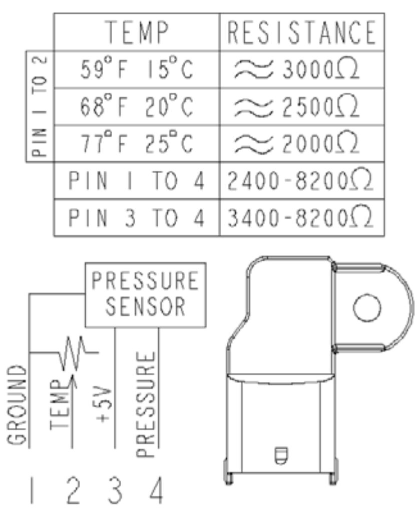


Sensor Specifications

Resistance Values	2.3MΩ @ 392_F (200_C) - 76Ω @ 1652_F (900_C)

= T
Exhaust Temperature Sensor Torque 32 Ft.Lbs. (44 Nm)

Temperature / Air Pressure Sensor (TBAP)



Sensor Specifications

Pins 1 to 2 (Temperature)	59_F (15_C) = 3000Ω 68_F (20_C) = 2500Ω 77_F (25_C) = 2000Ω
Pins 1 to 4 (Pressure) Pins 3 to 4 (Pressure)	2400 - 8200Ω 3400 - 8200Ω

Crankshaft Position Sensors (CPS)

The 5 tooth crank position sensor picks up all 5 flywheel teeth.

The 2 tooth crank position sensor picks up 2 flywheel teeth.

Both crank position sensors will have a gap to the flywheel pick up of 0.031" (0.8mm).

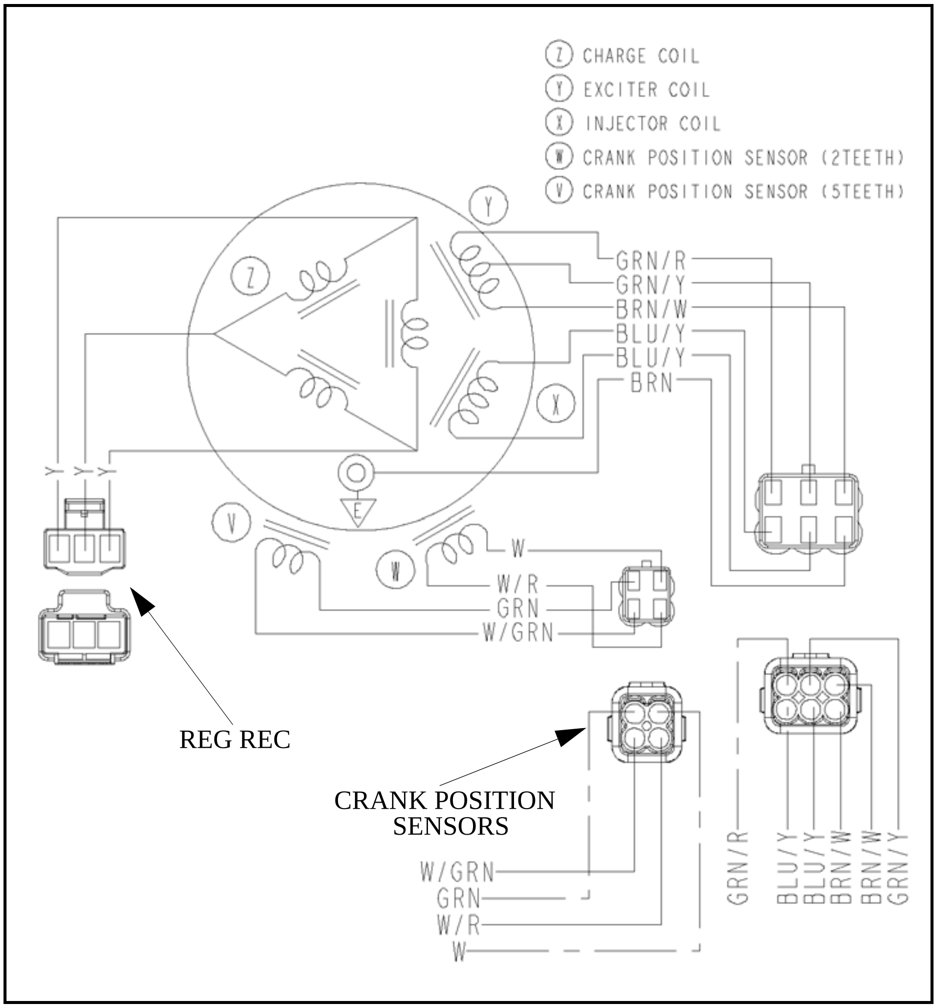
These sensors must be in the correct position or the engine will not run as expected. A sheared flywheel key will cause the engine to not start or kill if running.

The 2 tooth pick up detects the crank angle and obtains minimal information of the crank angle when control enters into limp home mode.

5 tooth pickup is to obtain the following information in combination with the 2 tooth pickup.

- Judge direction of rotation (forward and backward)
- Ignition advance angle control
- Injector drive angle control
- Excess advance ignition control at reverse
- MAG / PTO cylinder detection

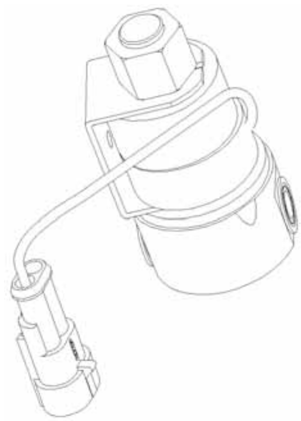
Stator Assembly



Stator Specifications

ITEM	COLOR	SYSTEM FUNCTION	RESISTANCE +/- 15% @68°F (20°C)
CHARGE / LIGHTING COIL	YELLOW	CHASSIS / BATTERY POWER	YEL TO YEL = 0.13Ω NO CONTINUITY TO GROUND
CRANK POSITION SENSOR (CPS)	GRN to WHT/GRN	Crank Position Sensor (5 Tooth) Ignition timing.	GRN to WHT/GRN = 190Ω
	WHT to WHT/RED	Crank Position Sensor (2 Tooth) Locates TDC and RPM.	WHT to WHT/RED = 190Ω
COILS	GRN/RED	Exciter Coil - Powers the Ignition Coils / ECU	GRN/RED to GRN/YEL = 15Ω
	GRN/YEL		GRN/RED to BRN/WHT = 30Ω
	BRN/WHT		BRN/WHT to Ground = 0Ω
INJECTOR POWER COIL	BLU/YEL TO BLU/YEL	Supplies power to fuel injectors.	BLU/YEL to BLU/YEL = 2.4Ω
ENGINE GROUND	BROWN	ENGINE GROUND	0Ω

Exhaust Valve Solenoid



Specifications

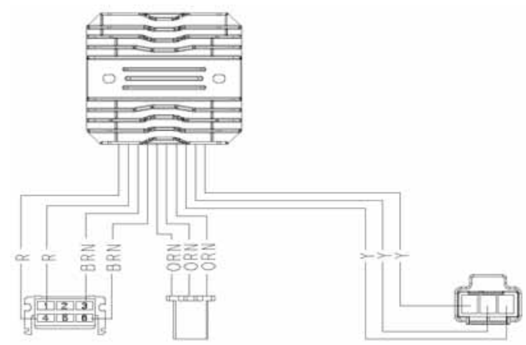
Coil Resistance (WHT/YEL to RED)	15Ω +/- 15% @ 68°F (20°C)

CFI Ignition Coils

Specifications

Primary Coil Resistance (Black to White)	0.45Ω +/- 15% @ 68°F (20°C)
Secondary Coil Resistance (Without Plug Cap) (Black to High Tension Lead)	18,000Ω +/- 15% @ 68°F (20°C)
Plug Cap Resistance	4,000Ω - 6,000Ω

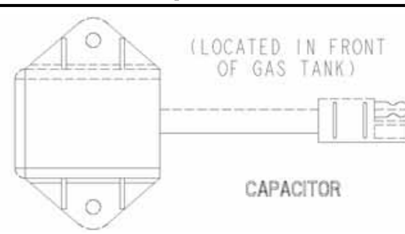
Regulator / Rectifier



Regulator / Rectifier Connections

CONNECTOR	WIRE COLORS	ITEM
STATOR	YELLOW	Vac from stator charge coils.
ECU	ORANGE	Vdc supplied to ECU to boost power to fuel injectors during engine start-up.
CHASSIS	BROWN	14.5 Vdc chassis power supply.
	RED	

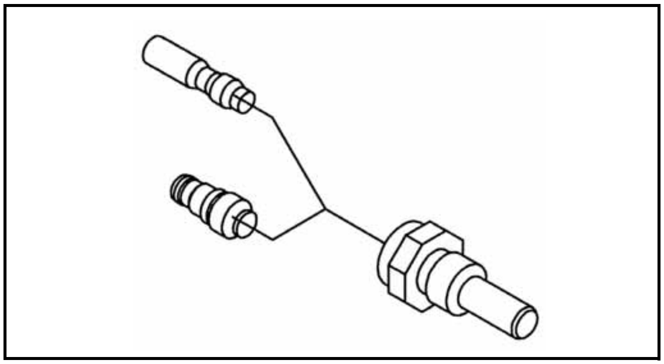
Chassis Power Capacitor



Capacitor Testing

1. Charge the capacitor for 10 seconds using a 12 volt battery by connecting the positive (+) lead to the Red/White wire and the negative (-) lead to the brown wire.
2. Monitor the capacitor voltage with a multimeter. The voltage should slowly drain down from the initial charge. If the cap does not hold a charge or drains rapidly, replace the component.

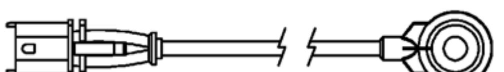
Engine Coolant Temperature Sensor



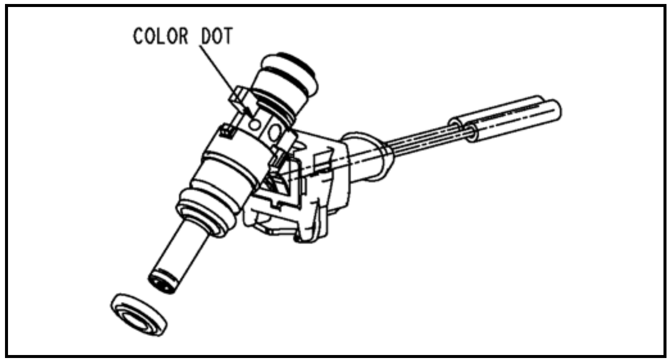
Sensor Specifications

Operating Temperature Range	-22_F - +248 _F (-30_C - 120_C)
Resistance	2.4 - 2.6KΩ@ 68_F (20_C) (Measure in stirred water)
Installation Torque	29 ft.lbs. (39.2Nm)

Knock Sensor



Fuel Injectors



Specifications

Resistance	12Ω @ 68_F (20_C)

Fuel injectors are flow tested and then color coded (RED, BLUE, or YELLOW) based on how much fuel the injector flows during the test.

800 CFI fuel injectors (all colors) are a high flow version of the fuel injectors used on 600 / 700 CFI engines.

When replacing a faulty fuel injector, always verify the part number of the injector for the engine application and use the same color code. If replacing an injector with a different color code, all four fuel injectors must be replaced with the new color so all four injectors are the same color.

After replacing all four injectors, the ECU must be re-flashed so the fuel calibration map matches the new color coded fuel injectors.

CAUTION

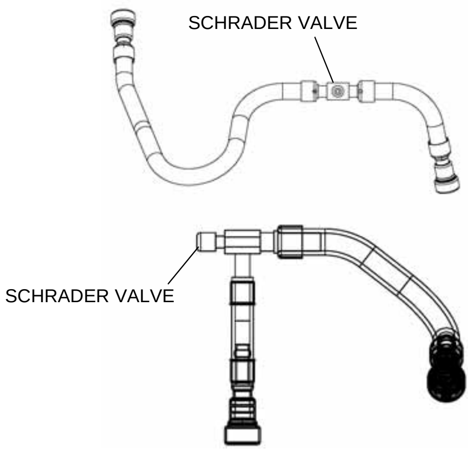
800 CFI ENGINES USE HIGH FLOW FUEL INJECTORS. ALWAYS CHECK THE INJECTOR PART NUMBER TO VERIFY ENGINE APPLICATION REGARDLESS OF COLOR CODE.

NEVER RUN THE ENGINE WITH DIFFERENT COLOR-CODED FUEL INJECTORS. SEVERE ENGINE DAMAGE WILL OCCUR.

ALWAYS VERIFY THE ECU CALIBRATION FILE MATCHES THE FUEL INJECTOR COLOR CODES.

Fuel Rail Bleeding / Pressure Testing

All CFI engine fuel return hoses feature an inline Schrader valve that can be used to bleed the fuel system pressure and observe running system pressure using a fuel pressure gauge.



The model year and engine model will determine which fuel pressure tool adaptor is required to complete both tasks.

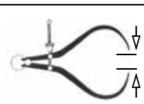
Pressure Bleed / Testing Tools

YEAR / MODEL	PRESSURE / BLEED TOOL	ADAPTOR
2007 600 CFI Shallow Core Deep Core	PV-43506-A	None PS-48617
2007 700 CFI		None
2008 ALL CFI		PS-48762

1. Select the appropriate adaptor.
2. Connect the adaptor to the fuel return hose Schrader valve.
3. Connect the adaptor to the fuel pressure / bleed tool gauge.

PV-43506-A

4. To observe running fuel system pressure, start the engine and compare reading to the specification.

 = In. / mm.

600 / 700 / 800 CFI Fuel System Pressure
58 PSI (4 bar)

5. To bleed the fuel system pressure after the engine is stopped, place the tool's bleed hose into an appropriate fuel-handling container. Open the valve to release the pressure and residual fuel.
6. Close the valve, then remove the gauge and adaptor from the fuel hose Schrader valve. Replace the Schrader valve dust cap.

Disconnect Fittings

The fuel hoses on CFI engines feature disconnect fittings that require special tools to remove.

The fuel line disconnect tool kit, PS-47152, supplies one 5/16″ and one 3/8″ quick disconnect tool. These tools are also commercially available at local auto parts stores.

PS-47152

1. To disconnect a fuel hose from the fuel pump, or fuel rail, insert the tapered end of either the 5/16″ or 3/8″ tool into the female housing.
2. Firmly press the tool into the housing while carefully pulling the male hose outwards.
3. Reconnect the fuel hoses by coating each hose end with a light film of two stroke engine oil.
4. Carefully install the male end of the hose into the center of the female housing. Firmly push the hoses together until the male nozzle fully seats behind the spring tabs.
5. Grasp both hoses and gently pull to verify positive engagement.

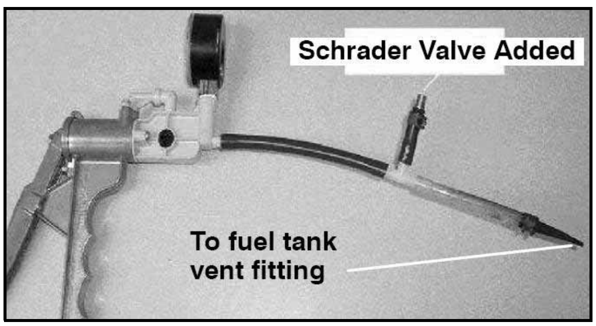
Fuel Tank Pressure Test

1. Connect a Mity Vac hand pump to the fuel tank vent fitting.
2. Connect a eight-inch piece of 5/16″ fuel hose and two gear clamps across the fuel supply and return fittings at the fuel pump flange.
3. Pressurize the tank to 5 PSI.

NOTE: Fuel tank deformation will occur when the tank is pressurized.

WARNING
Do not over-pressurize the fuel tank past 6 PSI.

NOTE: Using a hand pump to pressurize the fuel tank may take a very long time. The installation of an in-line Schrader Valve (PN: 2872602) and the use of a low pressure pump (bicycle tire pump) is recommended.



4. Once the tank is pressurized, saturate the area around the PFA gasket with a mixture of water and mild detergent.
5. If any bubbles form, re-check the PFA nut torque. If bubble formation continues, the PFA gasket will have to be replaced, or tank replacement is required.

NOTE: There may be bubbles present from the initial application of leak detector. Slightly blow on the bubbles to pop them. Watch for new bubble formation. New bubble formation may very small so look closely. Apply additional water/detergent solution if required.

CFI Fuel Rail/Injector(s) Removal/Installation

NOTE: Keep the red protective cap on the end of the injector to prevent damage when installed. Follow the steps and remove when instructed to do so.

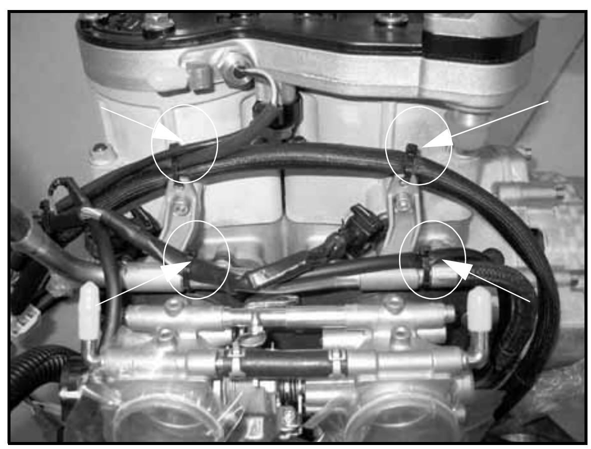
600 / 700 CFI INJECTOR KITS

INJECTOR KITS	COLOR
2203325-053	Yellow
2203325-027	Blue
2203325-015	Red

800 CFI INJECTOR KITS

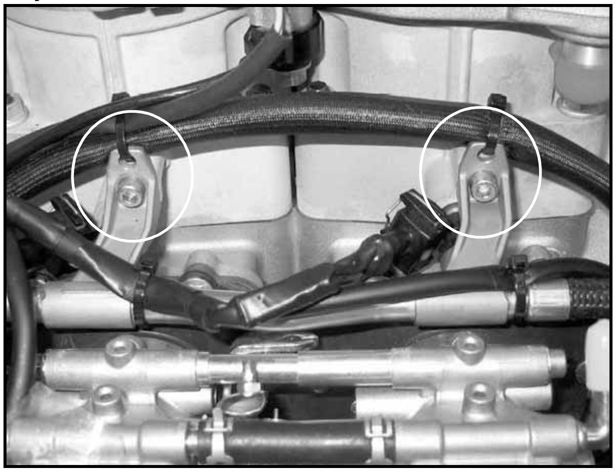
INJECTOR KITS	COLOR
2203575-053	Yellow
2203575-027	Blue
2203575-015	Red

1. Depressurize the fuel rail. See “Fuel Rail Bleeding / Pressure Testing” on page 4.29.
2. Remove the panduit straps as shown.



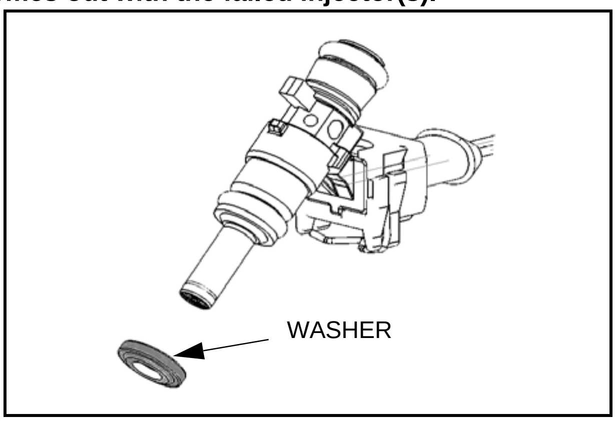
NOTE: The engine must be removed from the engine compartment to access the lower two fuel injectors.

3. Remove the hex screws securing the fuel rail it to the cylinders.

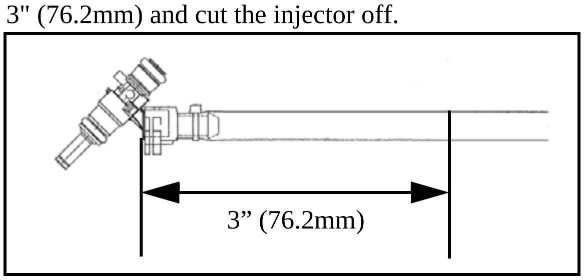


4. If replacing a lower injector, remove the two bottom screws bolts from the lower fuel rail.
5. Remove the failed injector(s).

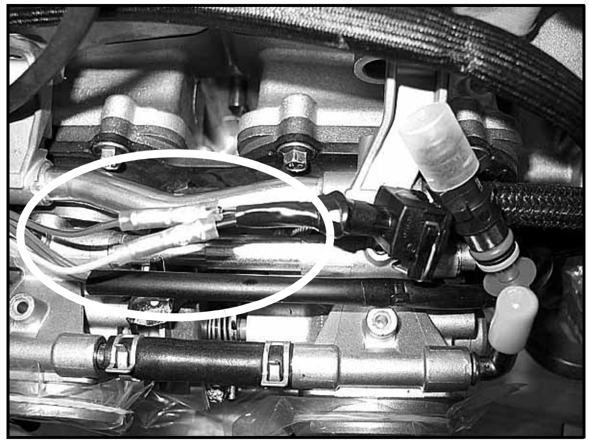
NOTE: Make sure that the green rubber washer comes out with the failed injector(s).



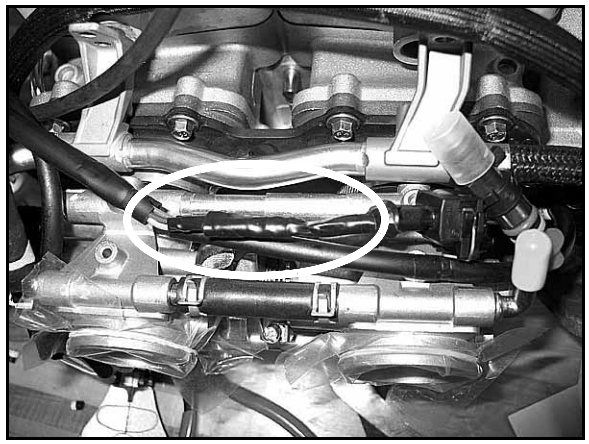
6. Measure from the end of the injector (as shown below) 3" (76.2mm) and cut the injector off.



7. Strip the harness end injector wire covering .25" - .375" (6.35 - 9.525mm).
8. Crimp the ends of the new injector firmly on to the wire harness.



9. Tape exposed wire and splices (11).



10. Apply 2-stroke oil to the fuel injector o-rings, seal and mating surfaces (fuel rail & case sides).
11. Remove the fuel injector cap.
12. Insert the fuel rail, with injectors into the engine.
13. Apply a light amount of 262 Loctite® to the fuel rail fasteners and torque to specification.

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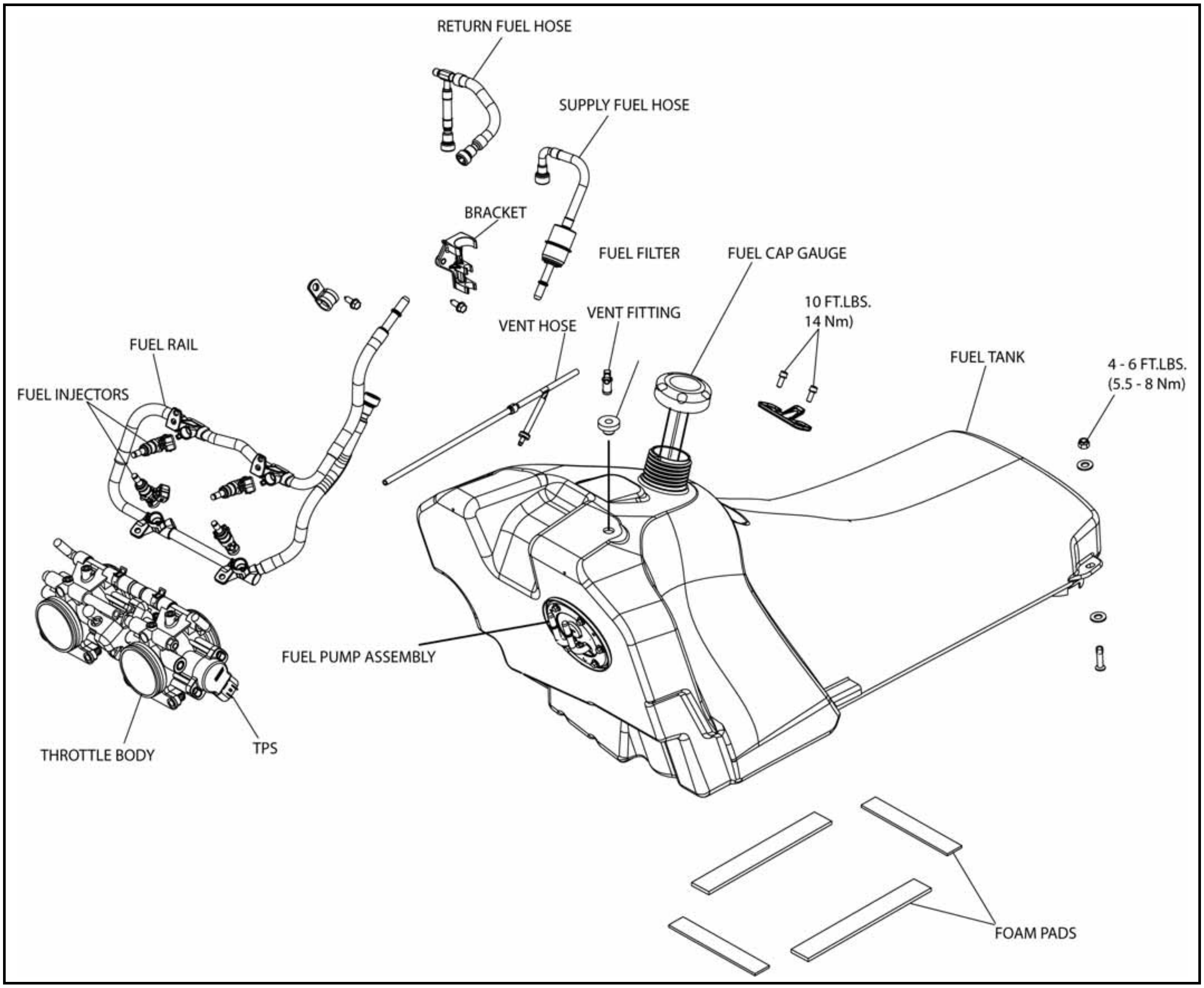
Fuel Rail Hex Screw Torque: 9 ft-lb (12N-m)

14. Replace the harness to the original routing and apply panduit straps back to the original locations, making sure they are not applied over any mesh part of the fuel rail.

NOTE: Refer to Step 2 for proper routing and strap location.

15. Install the engine if it was removed.
16. If different color injectors were installed you will need to re-flash the ECU to accept the new colors.

2007 700 CFI Fuel System



2007 700 CFI Fuel Pump Service

The fuel pump flange assembly (PFA) can be removed and replaced without replacing the entire fuel tank assembly.

Note that the 2007 700 CFI fuel pump does not feature a fuel level sender.

PIN	COLOR	ITEM
1	Red	Pump Power
2	N/A	N/A
3	Black	Pump Ground
4	Brown	Chassis Ground

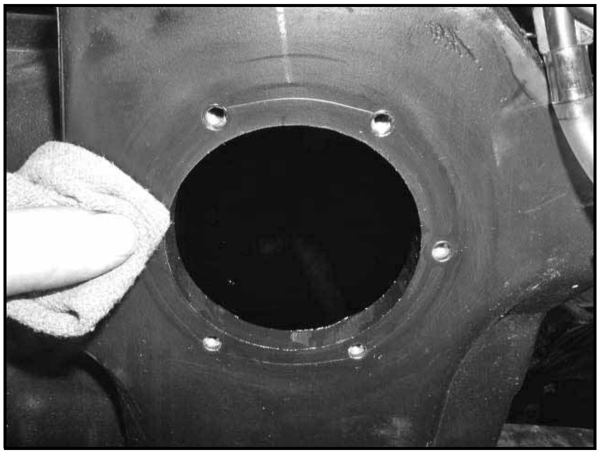
1. Remove the fuel from the fuel tank. Store the fuel is an appropriate fuel-holding container.
2. Remove the following components:
   - Seat Assembly
   - Console (Loosen fasteners, then lift console away from tank and set to the side.)
   - Air box.
3. If electric start is installed, disconnect the negative (-) cable, the positive (+) cable from the battery.
4. Relieve the fuel pressure.See “Fuel Rail Bleeding / Pressure Testing” on page 4.29.
5. Unplug the fuel pump electrical connector.
6. Remove the fuel hoses from the fuel pump. See “Disconnect Fittings” on page 4.29.
7. Remove the fasteners securing the fuel tank to the tunnel.

8. Remove the fuel tank from the chassis.
9. Place the fuel tank is a well-ventilated area.
10. Remove and discard the six fuel pump flange screws.
11. Carefully extract the fuel pump assembly out of the tank.
12. Discard the fuel pump flange gasket. If the pump has failed, discard the fuel pump. If the fuel tank is to be replaced, obtain the new fuel tank.

⚠ CAUTION

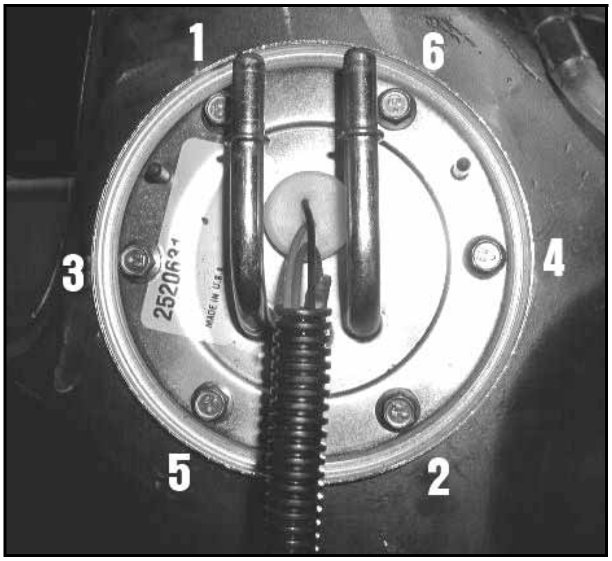
NEVER RE-USE THE FUEL PUMP FLANGE GASKET. ALWAYS INSTALL FUEL PUMP USING A NEW FALNGE GASKET.

13. Saturate a clean rag with isopropyl alcohol and clean the surface of the fuel pump flange area, and the fuel pump flange. Dry all surfaces with a clean rag. Allow adequate drying time for the alcohol.



14. Install a new, clean gasket by carefully sliding it over the fuel lines, and pump components. Position the gasket with the barbs/locating pins facing the flange. Align the pins/ barbs with the holes, then push and pull the barbs/pins through the holes in the flange.

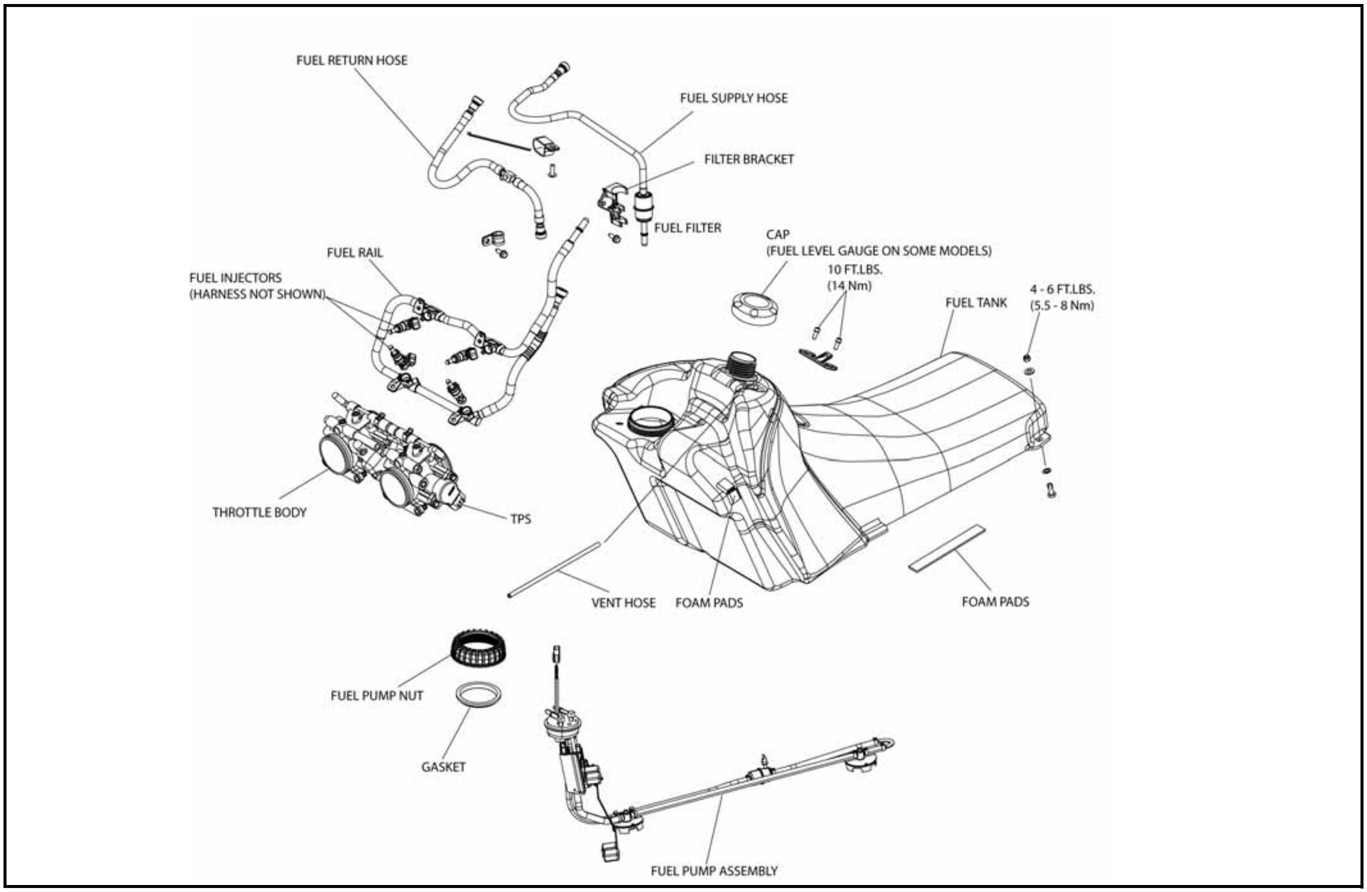
15. Carefully slide the pump assembly into the fuel tank until the gasket rests on the tank.
16. Using new screws, supplied with the new gasket, thread in one of the top two screws to locate the gasket and flange in the fuel tank. A few turns of the screw is sufficient.
17. Thread the remaining five screws in by hand.
18. Using a nut driver or socket and following the specified torque sequence, sequentially turn each screw a few revolutions at a time until the gasket is just seated between the flange and the fuel tank.
19. Using a torque wrench and the specified torque sequence, tighten all screws to 10 in.lbs. (1.13 Nm). Tighten each screw in one continuous, quick motion.
20. After completing the initial torque sequence, tighten each screw to 23 in.lbs. (2.6 Nm) in one continuous, quick motion.



21. After installing the fuel pump assembly, the fuel tank must be tested for leaks by pressurizing the tank.See “Fuel Tank Pressure Test” on page 4.30.

CFI “Drop In Pump” Fuel Supply (Typical)

NOTE: 2008 fuel system shown. 2007 models similar.



Drop In Fuel Pump Service

Some models feature drop in fuel pump and fuel level sender assemblies. Reference the fuel level sender resistance table for models that display the fuel level on the MFD gauge.

NOTE: The fuel pump may be mounted on the right-side or left-side of the fuel tank depending on model.

	Ω	PINS	COLOR	FUNCTION
Full	≤ 8 ±1	1	Red	Pump PWR
1/2	40 +/-3	2	WHT/BLU	Fuel Level Sender
Empty	85 +/- 4	3	Black	Pump Ground
		4	Pink/Black	Sender Ground

Drop In Fuel Pump Replacement

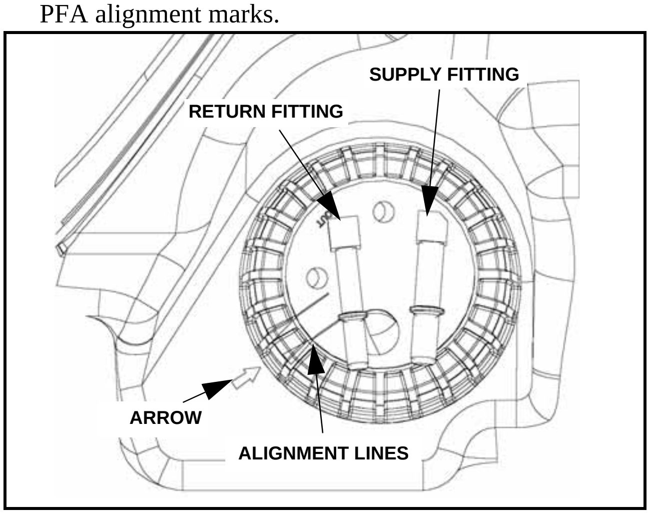
1. Siphon the fuel out of the fuel tank into a suitable container.
2. Remove the console and the seat assembly.
3. Disconnect the positive (+) battery cable from the battery if applicable.
4. Remove the fasteners securing the fuel tank to the tunnel.
5. Bleed the pressure from the fuel rail. See “Fuel Rail Bleeding / Pressure Testing” on page 4.29.
6. Lift and move the tank back to gain access to the fuel lines. Disconnect the fuel supply and return hoses from the pump flange. See “Disconnect Fittings” on page 4.29.
7. Disconnect the wiring harness, then remove the tank from the snowmobile. Place tank in a well-ventilated area.

8. Using the PFA spanner wrench and nut socket (PS-48459), carefully remove the PFA nut.

9. Carefully extract the PFA out of the tank making sure the float and fuel hoses do not become kinked or bent.
10. Remove the old gasket and destroy.

WARNING
Never re-use a used PFA gasket.

11. Clean the tank’s gasket mating surface with isopropyl alcohol. Allow the surface to dry completely.
12. Install a new gasket ensuring the inside portion of the gasket hooks onto the bead on the inside diameter of the neck.
13. Remove any containments from the gasket with isopropyl alcohol.
14. Carefully place the PFA back into the tank. Push the float assembly against the hoses to fit it into the hole.
15. Hand tighten the PFA nut keeping the arrow between the PFA alignment marks.



16. Using the PFA spanner wrench and nut socket (PS48459), tighten the PFA to specification.

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PFA Nut Torque = 21 Ft.Lbs. (28 Nm)

17. Fuel tank installation is the reverse of removal. Always test the PFA gasket seal before tank installation by performing a pressure check.

Throttle Body Removal

1. Remove the air box.
2. Remove the throttle body air box adapter.
3. Pinch off the coolant lines with the hose pincher tool PN PU-45149.
4. Remove the coolant lines from the throttle body.
5. Loosen the intake boot clamps and pull the throttle body upward, enough to gain access to the throttle cable and TPS connector.
6. Loosen the throttle cable lock nut and remove the cable from the throttle body.
7. Disconnect the TPS from the throttle body.
8. Remove throttle body.

DIGITAL WRENCH DIAGNOSTIC SOFTWARE

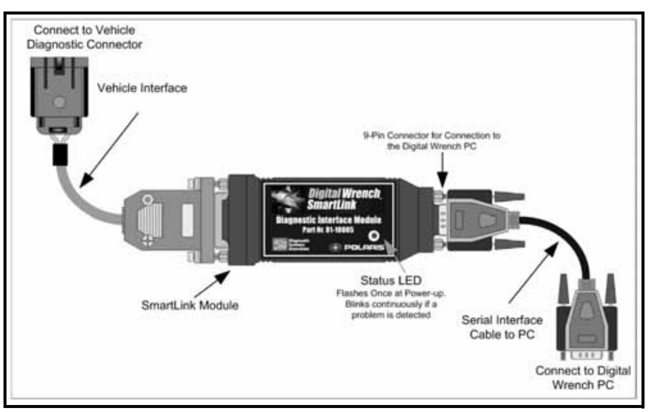
Overview

The Digital Wrench diagnostic software allows the technician to perform the following tests and observations:

- View / clear trouble codes
- Analyze real-time engine data
- Reflash ECU calibration files
- Guided diagnostics
- Create customer service account records

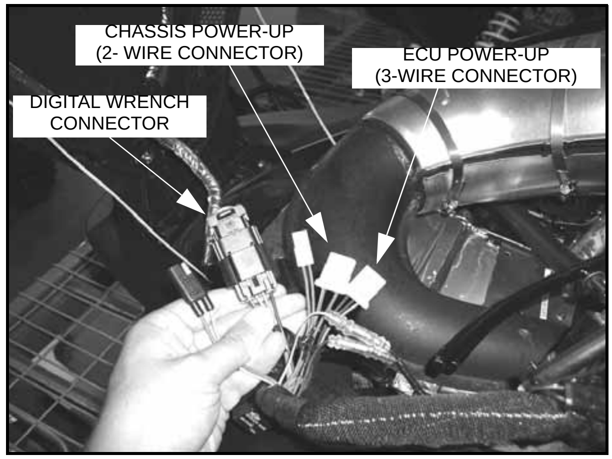
The following components are required to use the Digital Wrench software:

- PC or laptop with Microsoft Windows operating system
- Digital Wrench software, part number PU-47063
- Smart Link Module, part number PU-47468
- Interface Cable, part number PU-47469
- PC Interface Cable, part number PU-47470
- Smart Link Module Kit (Includes PU-47468, PU-47469, and PU-47470 in one kit), part number PU-47471
- M-10 ACE / ECU-Chassis Power-Up Cable, part number PA-46355
- 12-volt battery



Digital Wrench Connections

The access point for the ECU power-up and Digital Wrench connectors is located in the front, left-side of the nosepan.



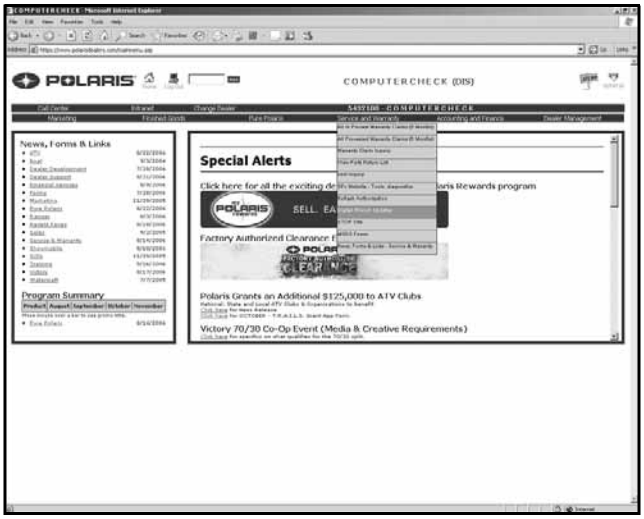
Follow these steps to connect the diagnostic and power-up cables to the snowmobile:

1. Assemble the Smart Link cables and module as shown in the illustration.
2. Open the hood and locate the connectors. Remove the protective cap from the diagnostic connector.
3. Connect the vehicle interface cable to the diagnostic connector.
4. Using the power-up cable, part number PA-46355, and a fully charged 12-volt battery, connect the power-up cable to the ECU connector.

NOTE: To verify the 12-volt battery and power-up cable are working, connect the cable to the chassis power-up connector. If working correctly, the headlights should illuminate.

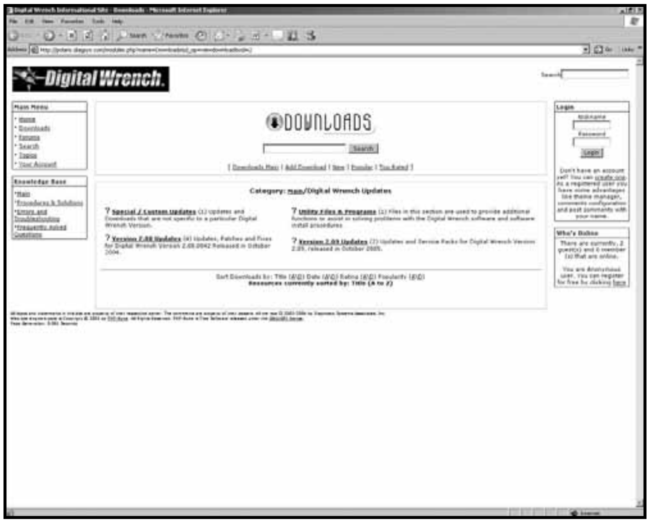
Updating Digital Wrench

Fileset updates and service packs are released for Digital Wrench via the Internet. The Digital Wrench update website can be found by accessing the dealer Internet site at: www.polarisdealers.com.



NOTE: Only authorized Polaris dealers and distributors can access the dealer Internet website.

1. Log on to www.polarisdealers.com.
2. Locate the “SERVICE AND WARRANTY” drop-down menu.
3. Click on “DIGITAL WRENCH UPDATES”.
4. The next screen is the Digital Wrench portal website.



The following selections can be made on the update website:

- Home - Digital Wrench Home Page
- Downloads - Listing of current filesets and Digital Wrench downloadable updates
- Forums - Member generated knowledge base
- Search - Website search engine
- Topics - Vehicle-specific Digital Wrench information

5. Locate the version of Digital Wrench currently running on the PC or laptop.
6. Locate and click on the fileset or service pack required to update the software. Save the file(s) to the PC or laptop’s desktop.
7. Locate the update file(s) on the desktop. Double-click and select “RUN” on the icon to install the update.
8. Delete the file after performing the update.

NOTE: Delete the update file from the desktop when finished.

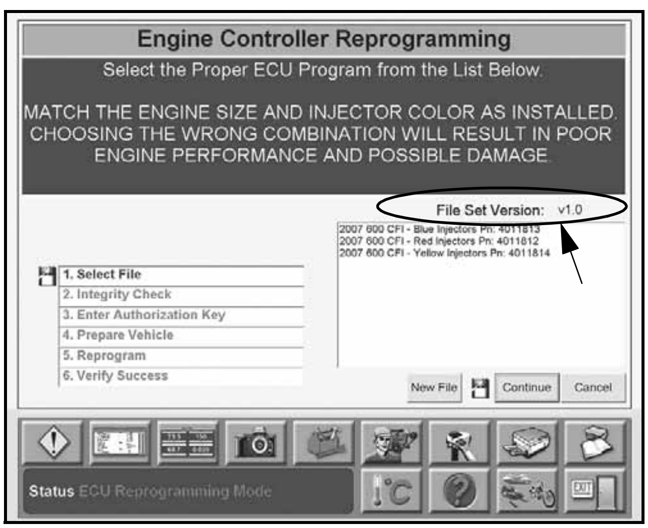
Version / Fileset Identification

Knowing what Digital Wrench or fileset versions are installed will help determine which updates are required.

NOTE: Version and fileset versions are subject to change.

1. Start the Digital Wrench software.
2. Locate the version ID on the title screen.

3. Click on the “SPECIAL TESTS” icon (toolbox).
4. Click on “ENGINE CONTROLLER REPROGRAMMING”.
5. Locate the fileset version number.



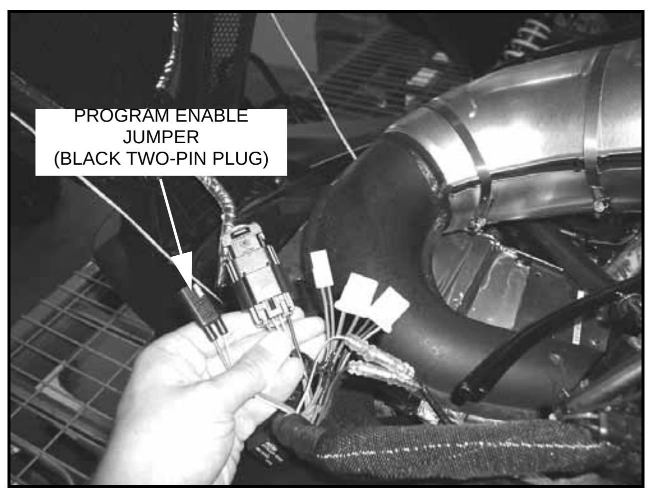
Engine Controller Reprogramming (Reflash)

NOTE: New service replacement ECUs are programmed as “no-start” and require a reflash in able to work.

1. Verify the most current service packs, updates and filesets are downloaded and loaded into Digital Wrench. See “Version / Fileset Identification” on page 4.38.
2. Connect the communication cables to the snowmobile connectors. See “Digital Wrench Connections” on page 4.36.
3. Start Digital Wrench. Select the model year and machine using the “CHANGE VEHICLE TYPE” button.
4. Click on the “SPECIAL TESTS” icon.
5. Click on “ENGINE CONTROLLER REPROGRAMMING”.
6. Select the engine model and color of the injectors installed on the engine.Record the 7 digit injector part number. Click “CONTINUE”.
7. All

NOTE: four fuel injectors must share the same color code.

8. Locate the “program enable” or “mode change jumper connector. Jump the two pins using a short length of wire. Click “CONTINUE”.

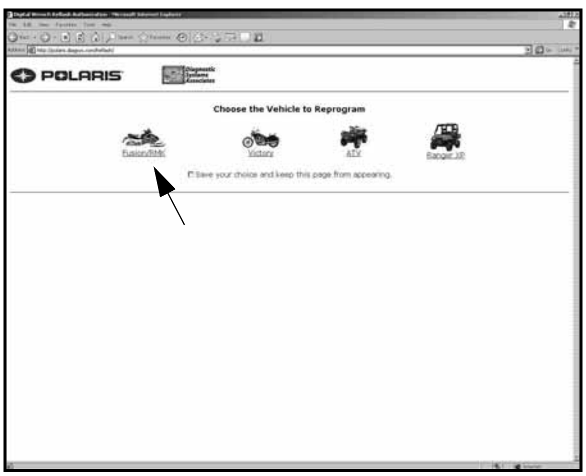


CAUTION

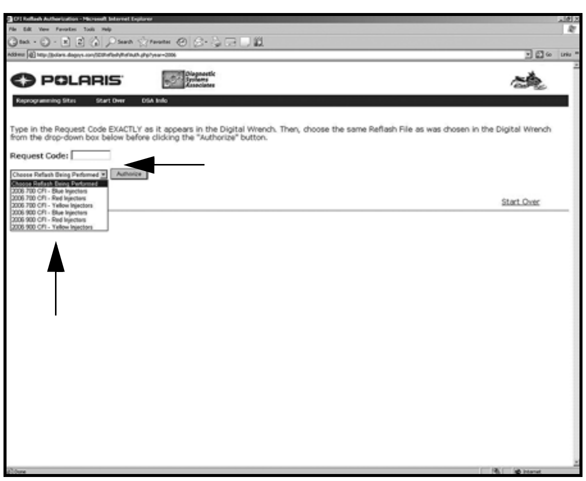
Do not allow the jumper wire to touch the exhaust pipe or any other grounded metal. ECU damage may occur.

9. A request code will be generated. Record the code.

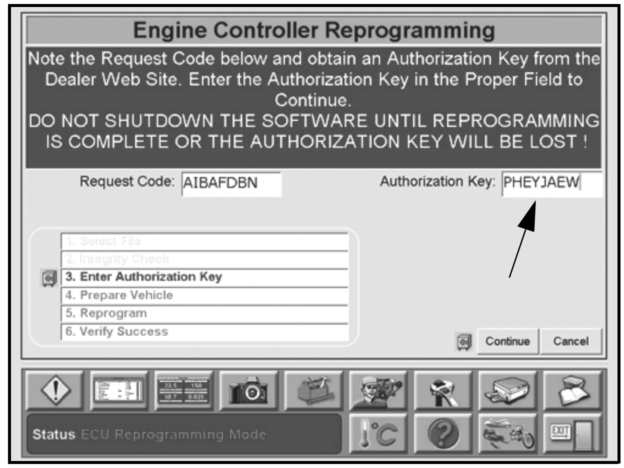
10. Access www.polarisdealers.com. Locate "REFLASH AUTHORIZATION" under the "SERVICE AND WARRANTY" drop-down menu.
11. Locate and click on the product requiring the reflash. Click on the model year.



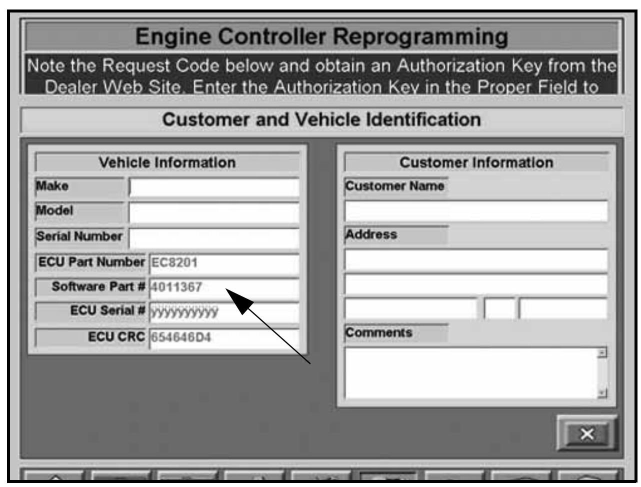
12. Enter the request code generated by Digital Wrench. Select the fuel injector color and model year/engine from the drop-down menu.



13. The website will generate an authorization code. Record the code.
14. Enter the authorization number in the box on Digital Wrench. Click on "CONTINUE".



15. The reflash process will begin. Verify all connections are properly made. Do not touch anything during the process.
16. Verify the reflash was a success by comparing the software ID number listed under the "CUSTOMER AND VEHICLE IDENTIFICATION" button with the number recorded in step 6.



NOTES

CHAPTER 5

Engine and Cooling Systems

ENGINE SPECIFICATIONS

Fastener Torque Guide

<table>
<tr><th>COMPONENT</th><th>600 / 700 CFI</th><th>800 CFI</th><th>600 HO CARBURETED</th><th>NOTE</th></tr>
<tr><td>Spark Plug</td><td colspan="3">18 Ft. Lbs. (24 Nm)</td><td>Apply Nyogel</td></tr>
<tr><td>Head Cover</td><td colspan="3">25 Ft.Lbs. (34 Nm)</td><td>Loctite 242</td></tr>
<tr><td>Cylinder Head Bypass Fitting</td><td colspan="2">7 Ft.Lbs. (9.5 Nm)</td><td>N/A</td><td></td></tr>
<tr><td>Bleed Screw</td><td colspan="3">70 In.Lbs. (8 Nm)</td><td></td></tr>
<tr><td>Knock Sensor</td><td colspan="3">168 In.Lbs. (19 Nm)</td><td>Clean and Dry</td></tr>
<tr><td>Temp. Sensor</td><td colspan="3">18 Ft.Lbs. (24 Nm)</td><td></td></tr>
<tr><td>EV Housing Base / Cover</td><td colspan="3">12 Ft.Lbs. (16 Nm)</td><td>Loctite 242</td></tr>
<tr><td>EV Bellows Nut</td><td colspan="3">16 Ft.Lbs. (22 Nm)</td><td>Apply Loctite 2760 to the first 3 guillotine threads.</td></tr>
<tr><td>Cylinder Base Nuts</td><td>37 Ft.Lbs. (50 Nm)</td><td>N/A</td><td>37 Ft.Lbs. (50 Nm)</td><td></td></tr>
<tr><td>Cylinder Bolts</td><td>N/A</td><td>42 Ft.Lbs. (57 Nm)</td><td>N/A</td><td></td></tr>
<tr><td>PTO Crank Seal Guard</td><td>N/A</td><td>12 Ft.Lbs. (16 Nm)</td><td>N/A</td><td></td></tr>
<tr><td>Intake Boots</td><td colspan="3">9 Ft.Lbs. (12 Nm)</td><td></td></tr>
<tr><td>Exhaust Manifold</td><td colspan="3">22 Ft.Lbs. (30 Nm)</td><td></td></tr>
<tr><td>Oil Pump</td><td colspan="3">7 Ft.Lbs. (9.5 Nm)</td><td></td></tr>
<tr><td>Water Pump Cover</td><td colspan="3">9 Ft.Lbs. (12 Nm)</td><td></td></tr>
<tr><td>Recoil Housing</td><td colspan="3">9 Ft.Lbs. (12 Nm)</td><td></td></tr>
<tr><td>Recoil Hub</td><td colspan="3">9 Ft.Lbs. (12 Nm)</td><td></td></tr>
<tr><td>Flywheel Nut</td><td colspan="3">90 Ft.Lbs. (122 Nm)</td><td>Loctite 242</td></tr>
<tr><td>Magneto</td><td colspan="2">12 Ft.Lbs. (16 Nm)</td><td>5 Ft.Lbs. (7 Nm)</td><td>Loctite 242</td></tr>
<tr><td>Crankcase
M6

M8</td><td colspan="2">22 Ft.Lbs. (30 Nm)</td><td>9 Ft.Lbs. (12 Nm)
Apply Loctite 242

22 Ft.Lbs. (30 Nm)
Apply Loctite 242</td><td></td></tr>
<tr><td>Engine Straps</td><td colspan="2">30 Ft.Lbs. (41 Nm)</td><td>45 Ft.Lbs. (61 Nm)</td><td>Loctite 242</td></tr>
<tr><td>Water Pump Impeller</td><td colspan="3">10 Ft.Lbs. (13 Nm)</td><td></td></tr>
<tr><td>Fuel Rail</td><td colspan="2">9 Ft.Lbs. (12 Nm)</td><td>N/A</td><td></td></tr>
<tr><td>Crankcase Drain Plugs</td><td colspan="3">60 In.Lbs. (7 Nm)</td><td>Apply Pipe Sealant</td></tr>
<tr><td>Air Intake Gear Clamps</td><td colspan="3">11 In.Lbs. (1.2 Nm)</td><td></td></tr>
</table>

Engine Specifications

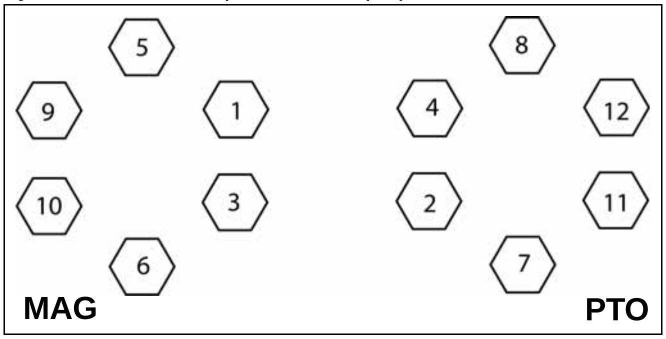
<table>
<tr><th>ENGINE MODEL NUMBER</th><th>INSTALLED HEAD VOLUME (CC)</th><th>HEAD SQUISH INCHES (MM)</th><th>PISTON-TO-CYLINDER CLEARANCE INCHES (MM)</th><th>PISTON RING END GAP INCHES (MM)</th><th>TRIGGER-TO-FLYWHEEL GAP (MM)</th></tr>
<tr><td>S3273-6044-PU6F
S3274-6044-PU6F
S3466-6044-PU6F
S3467-6044-PU6F</td><td>27.6 - 28.9</td><td>.050 - .060
(1.283 - 1.544)</td><td rowspan="2">.004 - .006
(.105 - .159)</td><td rowspan="2">.014 - .020
(.356 - .508)</td><td>.4 - .8</td></tr>
<tr><td>S3206-6044-PU6H
S3468-6044-PU6H
S3469-6044-PU6H</td><td>26.65 - 28.15</td><td>.045 - .058
(1.143 - 1.482)</td><td rowspan="4">.36 - 1.34</td></tr>
<tr><td>S3305-7044-PF7J
S3470-7044-PU7J
S3471-7044-PU7J</td><td rowspan="2">29.3 - 30.85</td><td rowspan="2">.046 - .059
(1.17 - 1.51)</td><td>.0044 - .0059
(.112 - .151)</td><td>.017 - .026
(.44 - .650)</td></tr>
<tr><td>S3322-7044-PF7J</td><td>.0042 - .006
(.109 - .163)</td><td>Upper
.010 - .018
(.25 - .45)
Lower
.014 - .020
(.35 - .50)</td></tr>
<tr><td>S3489-8044-PU8E
S3741-8044-PU8E</td><td>33.3 - 35.3</td><td>.049 - .065
(1.25 - 1.64)</td><td>.0037 - .0053
(.095 - .135)</td><td>.017 - .025
(.45 - .65)</td></tr>
</table>

Engine Service Specifications - All Engines

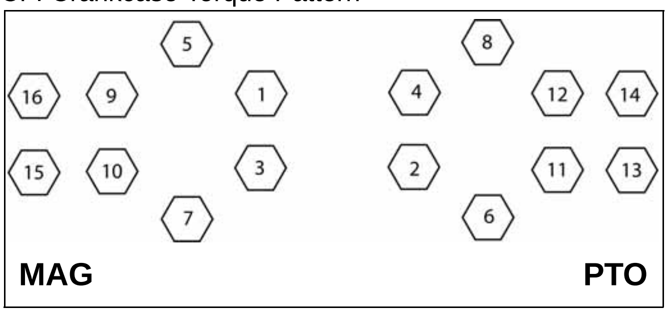
- Cylinder Head Warp Limit = .006" (.015mm)
- Cylinder Taper Limit = .002" (.051mm)
- Cylinder Out-of-Round Limit = .002" (.051mm)
- Main Bearing Interference Fit:
  Carbureted = .001" - .002" (.026 - .051mm)
  CFI = .0014 - .0024 (.036 - .061mm)
- Connecting Rod Side Clearance = .0114" - .0295" (.289 - .749mm)
- Crankshaft Runout Deflection Limit = .0025" (.07mm)

Component Torque Sequences

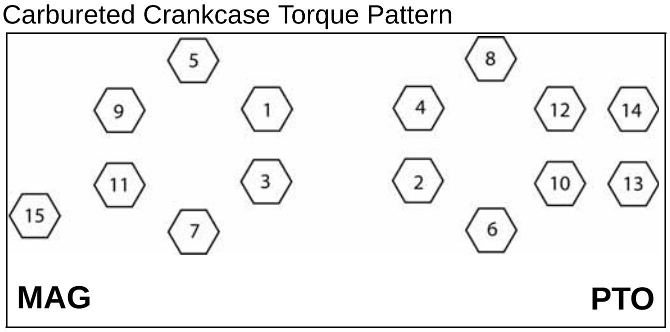
Cylinder Head Torque Pattern (All)



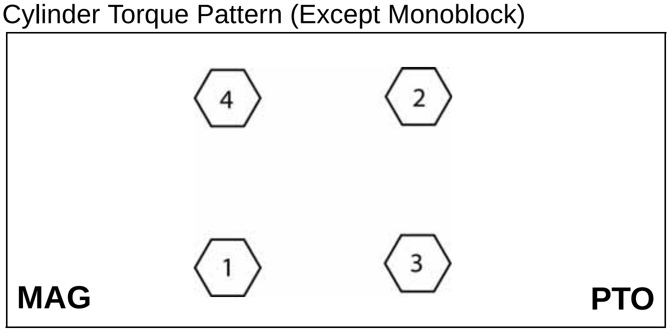
CFI Crankcase Torque Pattern



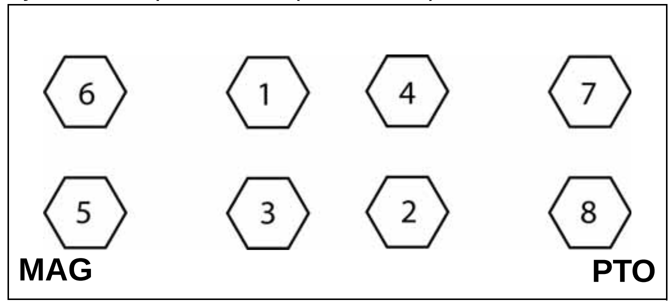
Carbureted Crankcase Torque Pattern



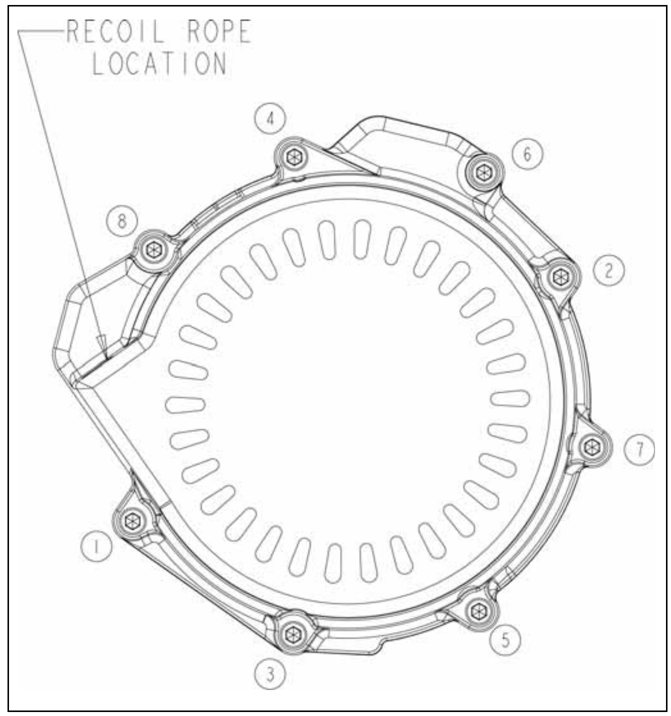
Cylinder Torque Pattern (Except Monoblock)



Cylinder Torque Pattern (Monoblock)

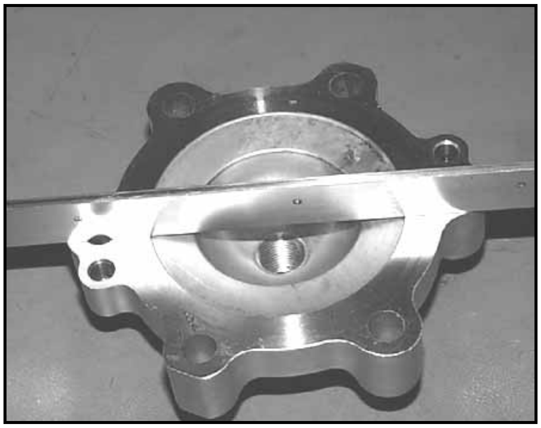


CFI Recoil Cover

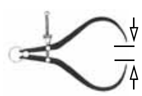


ENGINE INSPECTIONS

Cylinder Head Inspection



Using a flat bar and a feeler gauge, inspect each cylinder head for warping. Replace head if warping exceeds .003" (.08mm).

 = In. / mm.

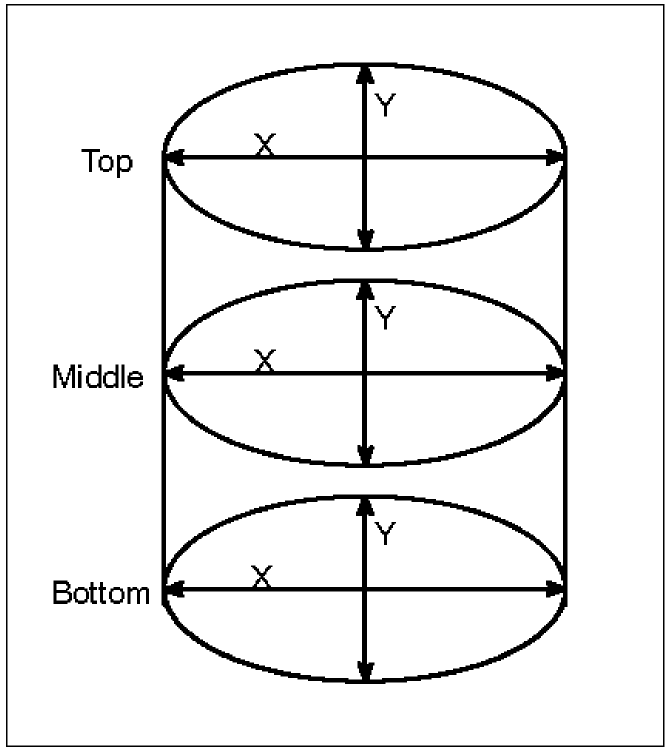
Cylinder Head Warp Limit
.006" (.015mm)

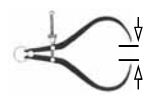
Cylinder Measurement

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 middle and bottom of the cylinder. Use the chart below and record all measurements.

Cylinder Measurement Worksheet

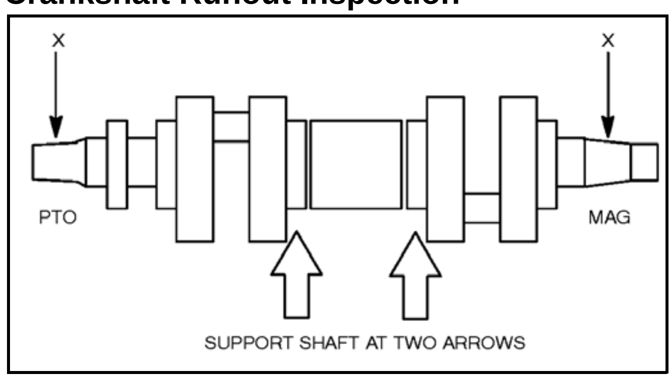
TOP	
X	Y
MIDDLE	
X	Y
BOTTOM	
X	Y
Out-of-Round = Top X - Top Y and Bottom Y - Bottom X	
Taper = Top Y - Bottom Y and Top X - Bottom X	



 = In. / mm.

Taper Limit = .002" (.051mm)
Out-of-Round Limit = .002" (.051mm)

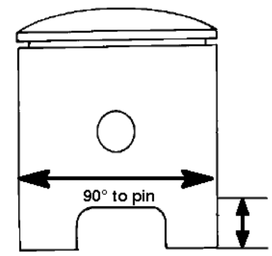
Crankshaft Runout Inspection



1. Support the crankshaft in a set of "V" blocks as shown.
2. Use a dial indicator to measure the runout at the following locations:
   - PTO end = First taper after bearing flat.
   - MAG end = 1/2" from bearing flat.
3. Runout deflection cannot exceed .0025" (.07mm).
4. If the runout deflection exceeds the maximum specification, crankshaft trueing may correct the deflection.

Piston Inspection

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. On Fuji engines, measure piston outside diameter at a point that is 1/2" (12.7mm) up form the bottom of the skirt at a 90° angle to the direction of the piston pin.

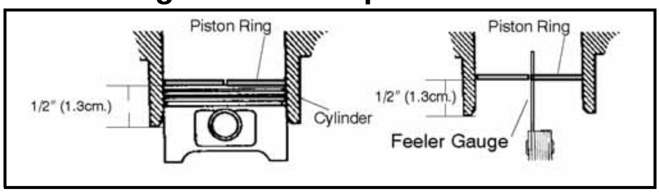


DOMESTIC ENGINES - Measure 3/8" (10.0mm) up from bottom of skirt

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

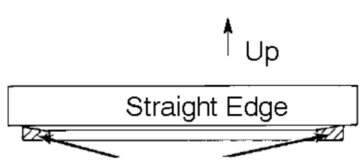
Subtract this measurement from the minimum cylinder measurement (90° to the pin). If clearance exceeds the service limit, the cylinder should be re-bored (replaced if Nicasil-lined) and new pistons and rings installed.

Piston Ring Installed Gap



Position the 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. Always check piston ring installed gap after re-boring a cylinder or when installing new rings.



Keystone Piston Ring Cutaway

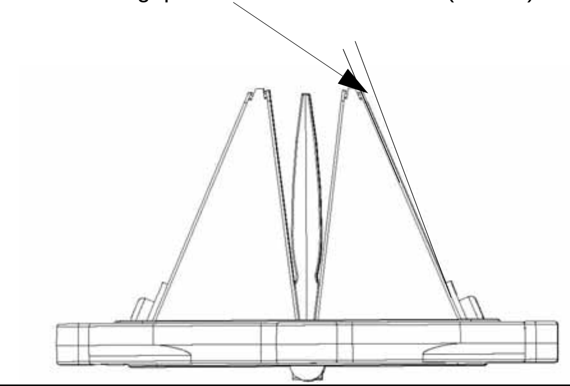
Piston rings are installed with marking or beveled side up.

Reed Valve Inspection

1. Loosen he hose clamps
2. Remove the carburetor or the throttle body from the intake boots.
3. Remove the intake boot fasteners and hose holders (if applicable).
4. Remove the intake assembly.
5. Separate the intake boot(s) from the reed cage.
6. Separate the reed stuffer(s) from the reed cage and inspect the reeds before they are removed from the reed cage.

NOTE: Measure the air gap between the fiber reed and the reed block. The air gap should not exceed .015" (.38mm). If clearance is excessive DO NOT attempt to reverse the reeds to reduce the air gap. Always replace them if damaged or worn. Check each fiber reed for white stress marks or missing material.

The air gap should not exceed .015" (.30mm)



7. If damaged remove and replace the reeds on the reed cage.

Bearing Fit

Any time crankshaft bearing failure occurs and the case is reused, check the bearing fit into the case halves using the following procedure.

With case halves cleaned, reinstall the main bearings with a piece of Plastigage between the bearing race and crankcase.

Install and torque the crankcase fasteners to specification. Take the crankcase apart, and then measure the Plastigage. Compare Plastigage width to interference fit specification.


= In. / mm.

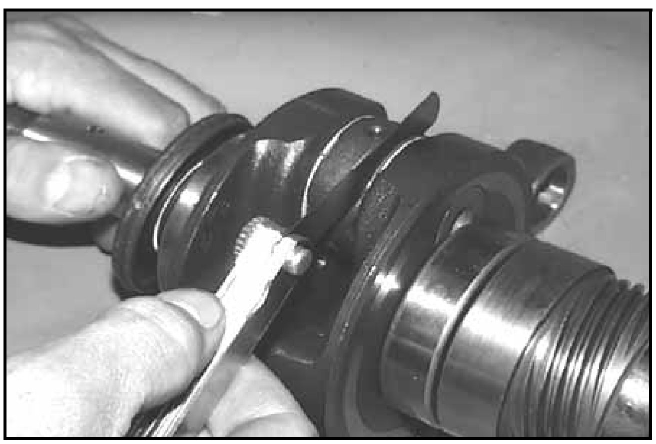
Bearing Interference Fit:
Carbureted = .001"-.002" (.026 -.051mm)
CFI = .0014" - .0024" (.061mm)

Main Bearing

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

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 Lower Bearing



Measure connecting rod big end side clearance with a feeler gauge on both sides of the connecting rod. The side clearance on either side of the connecting rod cannot exceed the connecting rod side clearance specification. The difference between the two clearance measurements cannot exceed the maximum clearance differential specification.


= In. / mm.

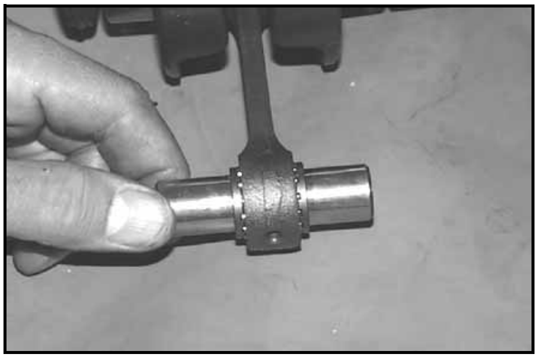
Connecting Rod Side Clearance:
.0114"-.0295" (.289-.749mm)
Maximum Clearance Differential
.002" (.051mm)

Rotate the connecting rod on the crankshaft and feel for any 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.

Piston Needle Bearing

1. Clean the end of the connecting rod and inspect inner bore with a magnifying glass. Look for any surface irregularities including pitting, wear, or dents.
2. Run a 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.
4. Rotate pin slowly and check for rough spots or any resistance to movement.
5. Slide pin back and forth through bearing while rotating and

check for rough spots.



6. With pin and bearing centered in rod, twist ends back and forth in all directions to check for excessive axial play.
7. Pull up and down evenly on both ends of pin to check for radial play.
8. 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.

Crankshaft Index

Polaris crankshafts are pressed together. The connecting rod journal center lines are indexed 180° 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. Some causes for a “out of index” crankshaft include but are not limited to the following:

- Hydrolock from water or fuel
- Impact to drive clutch from object or accident
- Abrupt piston or other mechanical failure
- Engine lock-up due to drive belt failure

Symptoms of an out of index crankshaft can include but are not limited to the following:

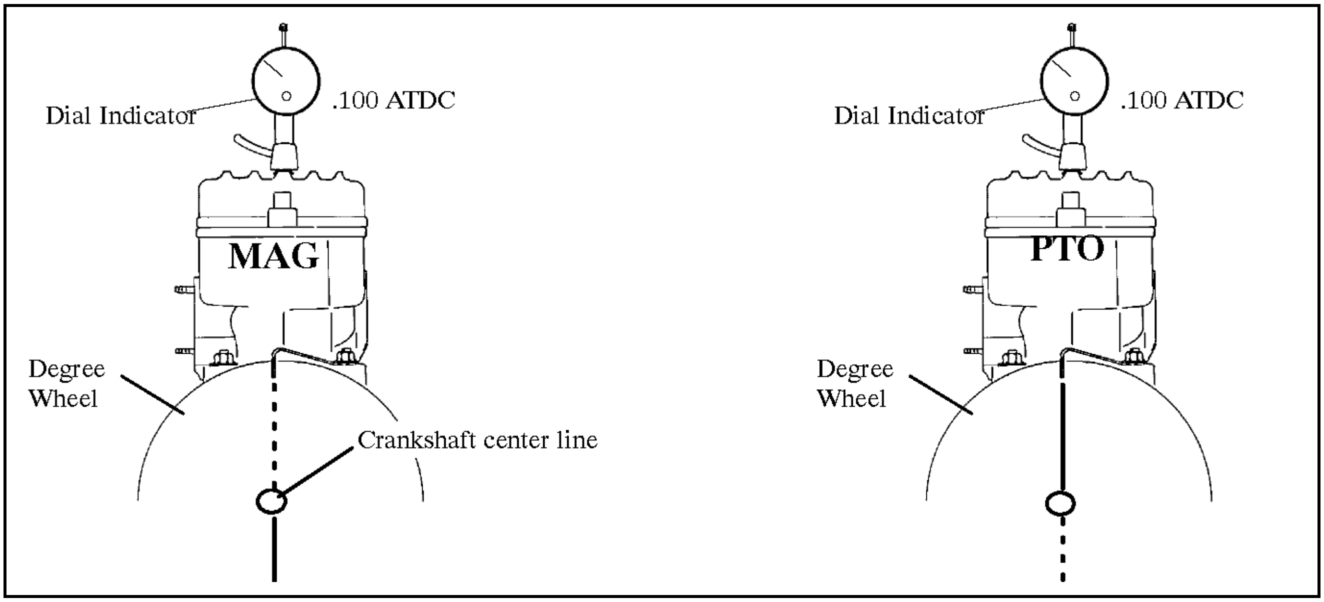
- Difficulty calibrating carburetor (repetitive plug fouling on one cylinder with no other cause)
- Unexplained piston failure on one cylinder (i.e. severe detonation, broken ring lands, etc.)
- Excessive vibration of engine, back-firing, etc.
- Rough idle, poor top speed.

Checking Crankshaft Index

1. Remove the drive belt and drive clutch.
2. Securely fasten a large degree wheel on the flywheel or PTO end of the crankshaft. Make sure that it is mounted concentrically with the crankshaft center line.
3. With a section of wire (wire coat hanger), anchor it to a convenient spot. Bend one end at the outer perimeter of the degree wheel as shown below.
4. Install a dial indicator into the magneto end cylinder spark plug hole. The ignition timing is referenced by the magneto end.
5. Locate TDC as accurately as possible by finding the center of the point where there is no piston movement note the “Zero” the dial indicator at this point.
6. Continue to rotate the crankshaft in the normal direction of rotation until the dial indicator reads .100" (2.54mm) after top dead center (ATDC).
7. Bend the pointer or move the degree wheel until the pointer aligns with a 180° mark on the degree wheel.
8. 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 a few times. The pointer should align with the 180° mark when the dial indicator reads .100” (2.54mm) ATDC.

NOTE: Do not move the crankshaft, degree wheel or pointer after the initial setting on the MAG end cylinder - simply read the wheel and dial indicator.

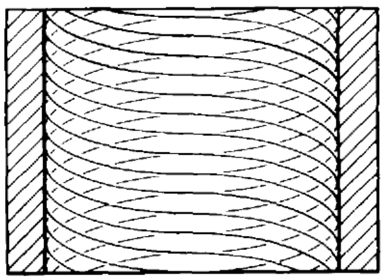
9. Remove the dial indicator and install in PTO cylinder. Repeat finding TDC process. Note the degree wheel indication when the dial indicator reads .100" ATDC. It should be 180° (+/-2°) from the MAG cylinder mark.



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 the 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.

NOTE: A Nicasil cylinder can be lightly honed with a soft stone hone but an not be oversized.



EXAMPLE OF A CROSS HATCH PATTERN

Honing Procedure

1. Wash the cylinder with cleaning solvent.
2. Clamp the cylinder in a soft jawed vise by the cylinder studs.
3. 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 .50" (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 .5" (1.2 cm) beyond the bore at the end of each stroke.
4. Release the hone at regular intervals to inspect bore size and finish.

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.

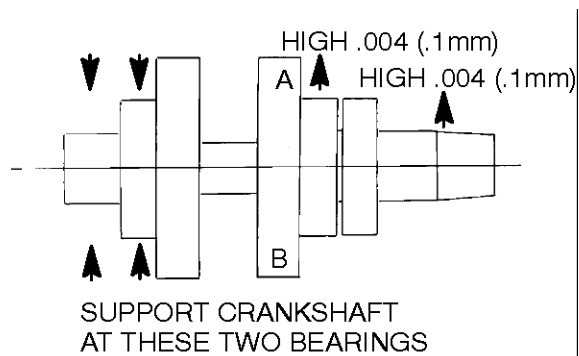
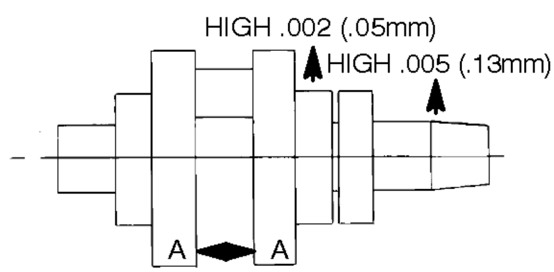
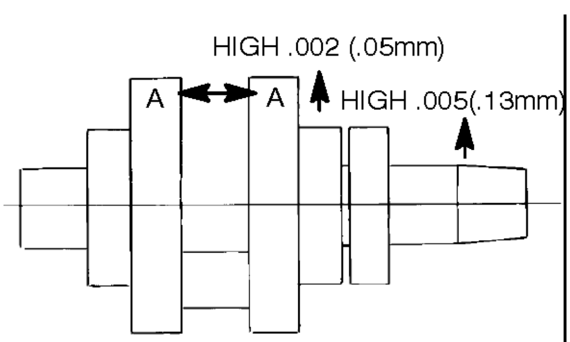
NOTE: Always check piston to cylinder clearance and piston ring installed gap after honing or boring is complete.

Crankshaft Truing

Lubricate the bearings and clamp the crankshaft securely in the holding fixture. 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. Use Crankshaft alignment kit PN 2870569.

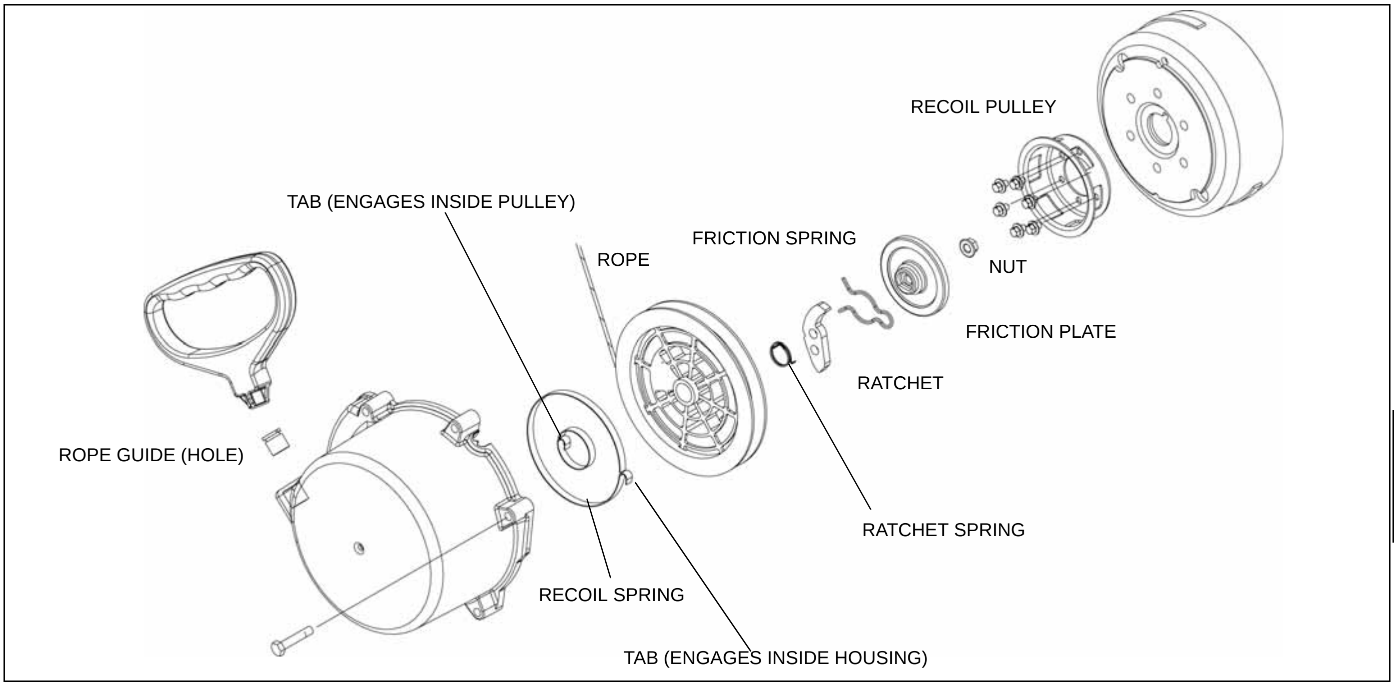
NOTE: The rod pin position in relation to the dial indicator tells you what action is required to straighten the shaft.

Truing Examples

To correct a situation like this. Strike the shaft at point A with a brass hammer.	
To correct a situation like the one shown in this. Squeeze the crankshaft at point A. You will use the tool from the alignment kit PN 2870569.	
If the crank rod pin location is 180° from the dial indicator (opposite of above), it will be necessary to spread the crankshaft at the A position as shown in illustration 3. When rebuilding and straightening a crankshaft, straightness is of utmost importance. Runout must be as close to zero as possible.	

RECOIL ASSEMBLY

Rope Removal and Installation



CAUTION

Recoil spring under high tension. Always wear eye protection when working with recoil housing components.

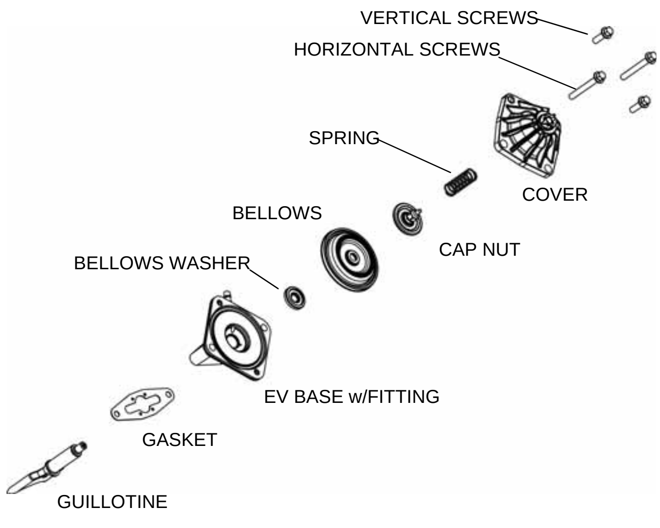
1. With the recoil housing removed from the engine, un-tie any knots (handle) in the recoil rope and allow the pulley to slowly unwind.
2. Remove the nut, friction plate, friction spring, ratchet and ratchet spring from the pulley.
3. Lift the pulley straight out of the housing making sure the spring is no longer connected to the backside of the pulley.

NOTE: If all of the recoil spring tension was removed, the spring should stay inside the housing when the pulley is removed.

4. Inspect all components for signs of abnormal wear and tear. Replace components as required. If replacing the rope, tie a small square knot at one end. Push the knot firmly into the pocket on the pulley.
5. If the pulley recoil spring was removed during disassembly, install the spring by spiraling the spring counterclockwise toward the center of the housing.
6. Lubricate the center shaft and spring with Premium grease.
7. Wind the rope counterclockwise around the pulley as viewed from the ratchet-side of the pulley.
8. Pass the end of the rope through the hole in the housing. If the rope guide was removed from the housing, reinstall it before attaching the rope handle.
9. Slide the pulley down the center shaft and into the housing making sure the recoil spring re-engages the pulley tab.
10. Install the ratchet spring and ratchet into the pulley face. The ratchet spring leg fits in the notch on the ratchet and holds the ratchet in (retracted).
11. Install friction spring with one leg inserted in the bottom hole on the ratchet.
12. Install nut and torque to 5 ft.lbs. (7 Nm).
13. Pull rope out to its full extension and align pulley notch with rope hole in housing.
14. Using a needle nose pliers or hooked wire, pull a loop of rope through the notch in the pulley.
15. Prevent the rope from being retracted by tieing a knot in the rope on the outside of the housing at the rope guide hole.
16. Wind the recoil pulley counterclockwise until the spring begins to bind. Unwind the pulley clockwise two revolutions.
17. Pull on the rope to disengage it from the notch in the pulley. Un-tie the knot in the rope and allow it to retract into the housing.
18. Pull on the handle to verify proper operation.

EXHAUST VALVE MAINTENANCE

Exhaust Valve Assembly



Exhaust Valve Disassembly

CAUTION

EV spring under tension. Use care when removing housing from assembly base.

1. Remove the vent hose from the base.
2. Remove the two horizontal cover fasteners securing the valve assembly to the cylinder.
3. Remove exhaust valve assembly from cylinder.
4. Remove the gasket and discard. Remove the two vertical cover screws to access the spring and bellows.
5. Secure the guillotine, then apply heat to remove the bellows cap nut.
6. Separate the cap nut, bellows and bellows washer from the guillotine.
7. Remove the guillotine from the base.

Exhaust Valve Assembly

1. Clean the threads of the guillotine with Primer N.
2. Insert the base into the clean guillotine.
3. Apply Loctite 2760 to the first 3 threads on the guillotine.
4. Place the bellows washer, bellows and cap nut onto the guillotine.
5. Torque the cap nut to specification.

= T

Guillotine Cap Nut Torque: 16 Ft.Lbs. (22 Nm)

6. Lubricate the guillotine blade and shaft with engine oil.
7. Actuate the guillotine to ensure full and free motion.
8. Install the spring, and cover.
9. Torque the vertical cover fasteners to specification.

= T

Cover/Base Fastener Torque: 12 Ft.Lbs. (16 Nm)

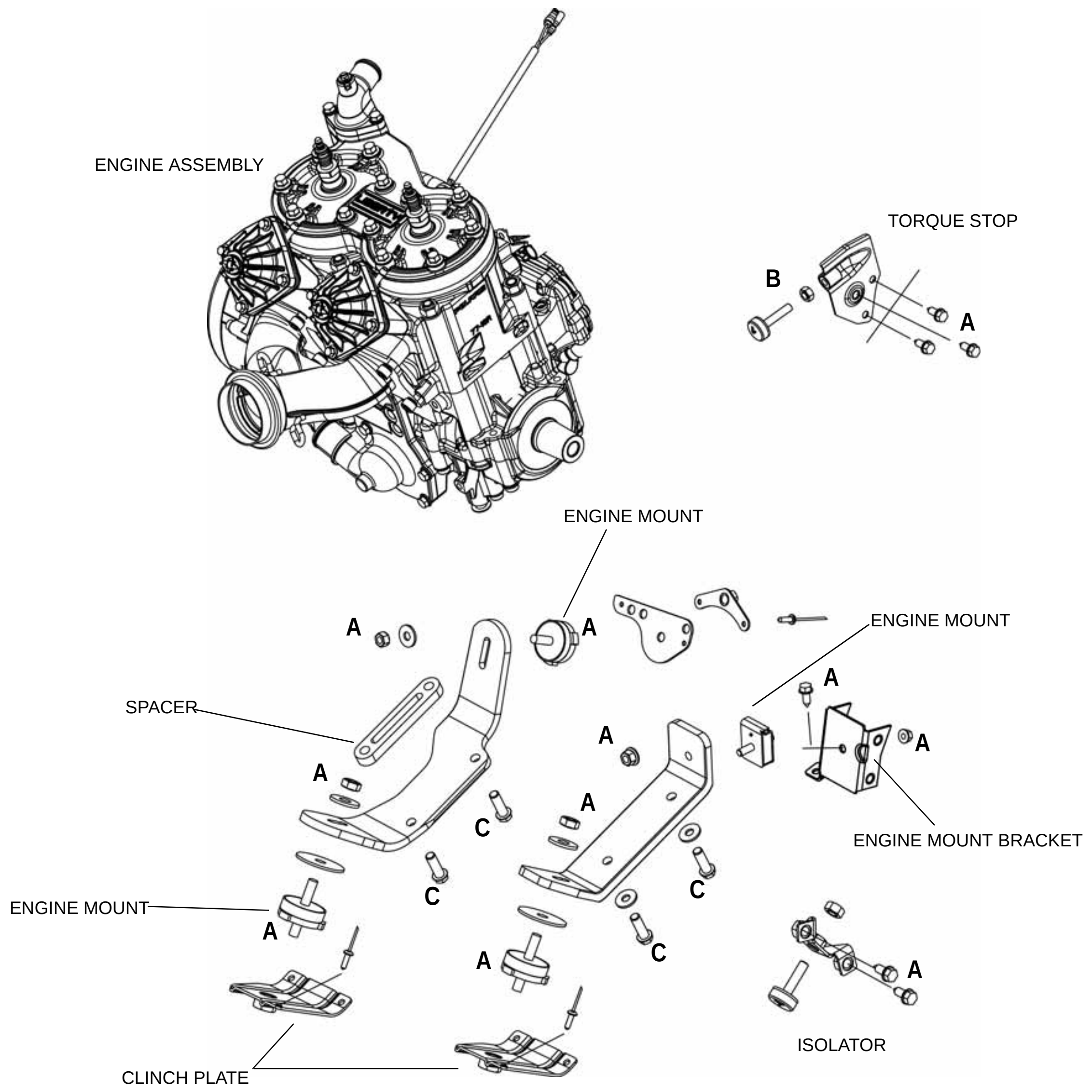
10. Install a new gasket on the cylinder, then install the EV assembly. The guillotine shaft will only fit into the cylinder the correct way. If the shaft will not slide in, verify it is installed correctly.
11. Torque the horizontal cover screws to specification.

Optional Exhaust Valve Springs

SPRING	COLOR	LOAD @ 1 INCH (LBS.)	LOAD @ .630 INCHES (LBS.)
7041704-01	Blue	4.0	6.0
7041704-02	Orange	5.5	8.3
7041704-03	Pink	4.7	7.1
7041704-04	Purple	3.1	4.7
7041704-05	Yellow	2.4	3.6
7041704-06	White	1.6	2.8

ENGINE MOUNTING SYSTEMS

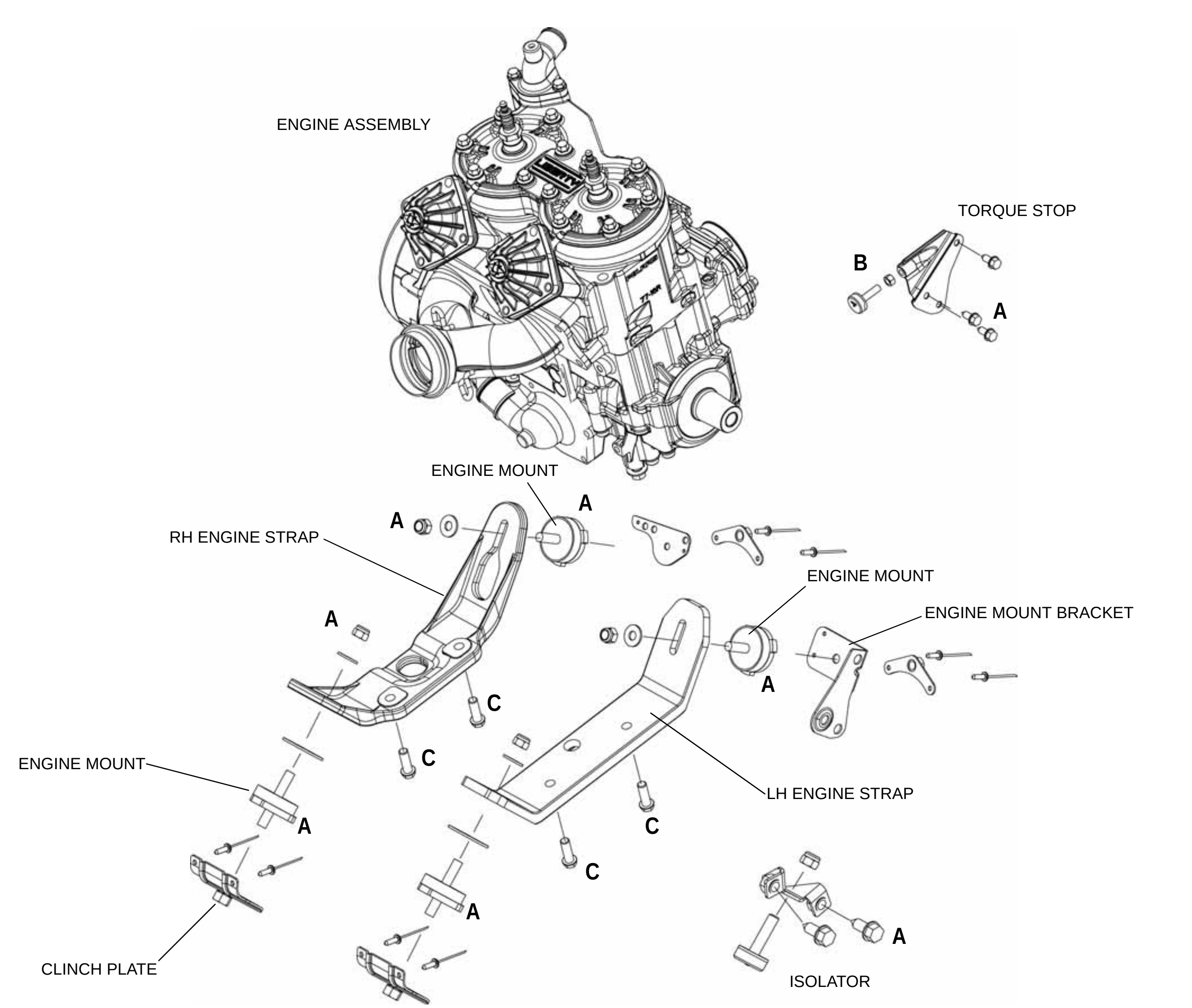
2007 IQ Carbureted Engine Mounting



= T
A = 28 Ft.Lbs. (38 Nm) B = 15 Ft.Lbs. (20 Nm) C = 45 Ft.Lbs. (61 Nm)

NOTE: Use an engine mount socket, PN: 2871989 to remove the engine mounts from the bulkhead.

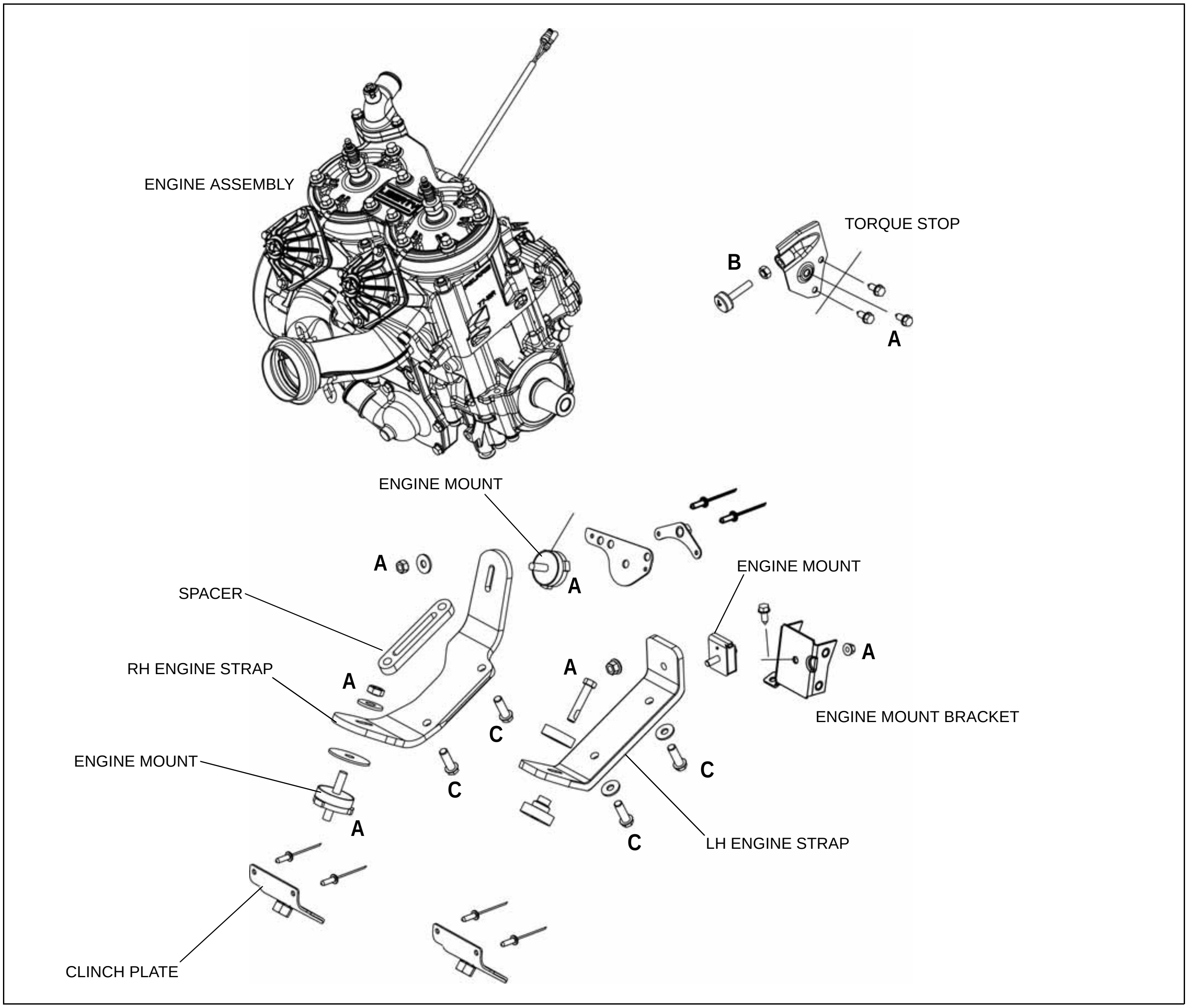
2007 IQ 600 CFI Engine Mounting



= T
A = 28 Ft.Lbs. (38 Nm) B = 15 Ft.Lbs. (20 Nm) C = 30 Ft.Lbs. (41 Nm)

NOTE: Use an engine mount socket, PN: 2871989 to remove the engine mounts from the bulkhead.

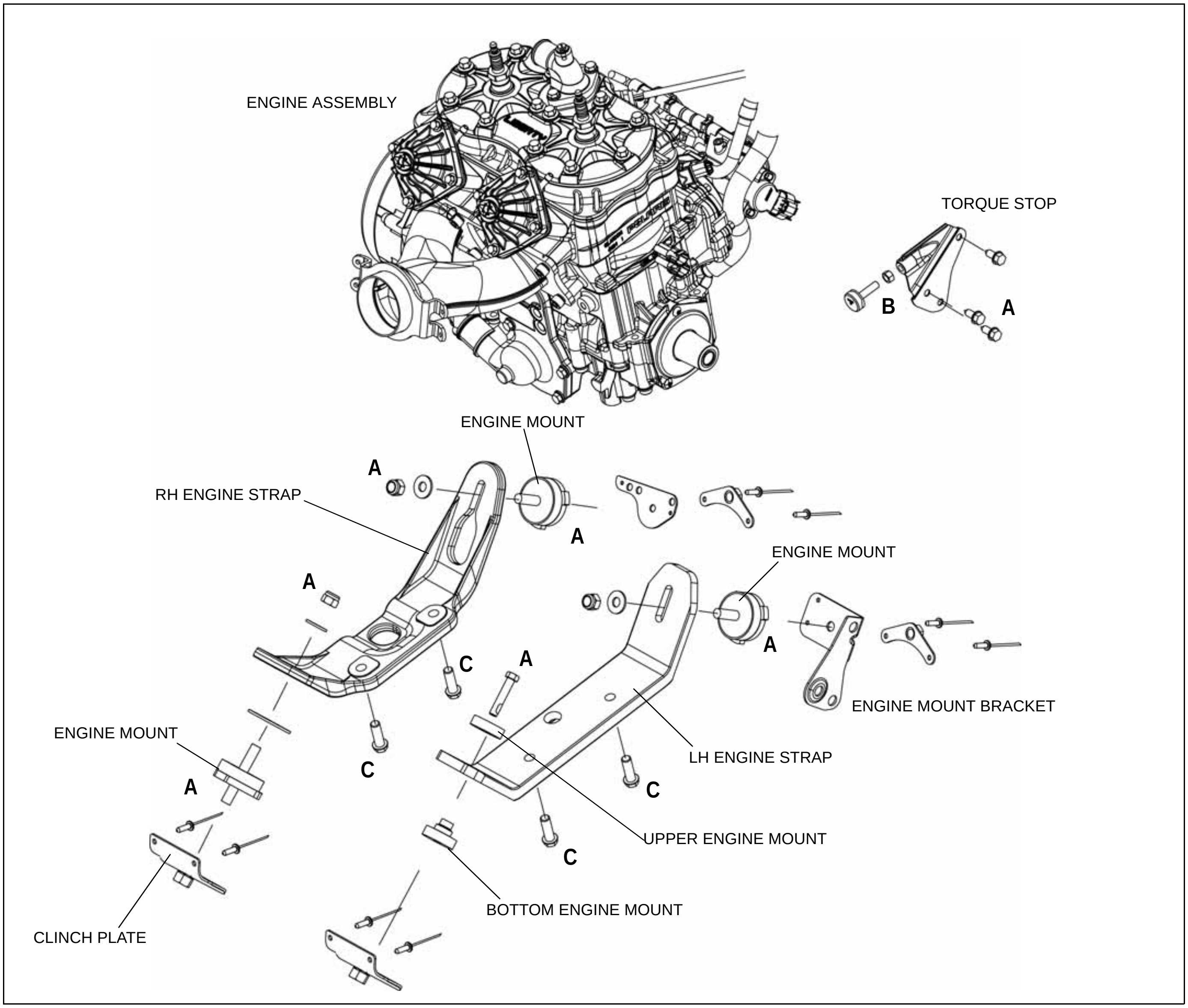
2008 IQ Carbureted Engine Mounting



= T
A = 28 Ft.Lbs. (38 Nm) B = 15 Ft.Lbs. (20 Nm) C = 45 Ft.Lbs. (61 Nm)

NOTE: Use an engine mount socket, PN: 2871989 to remove the engine mounts from the bulkhead.

2007 700 CFI / 2008 IQ CFI Engine Mounting

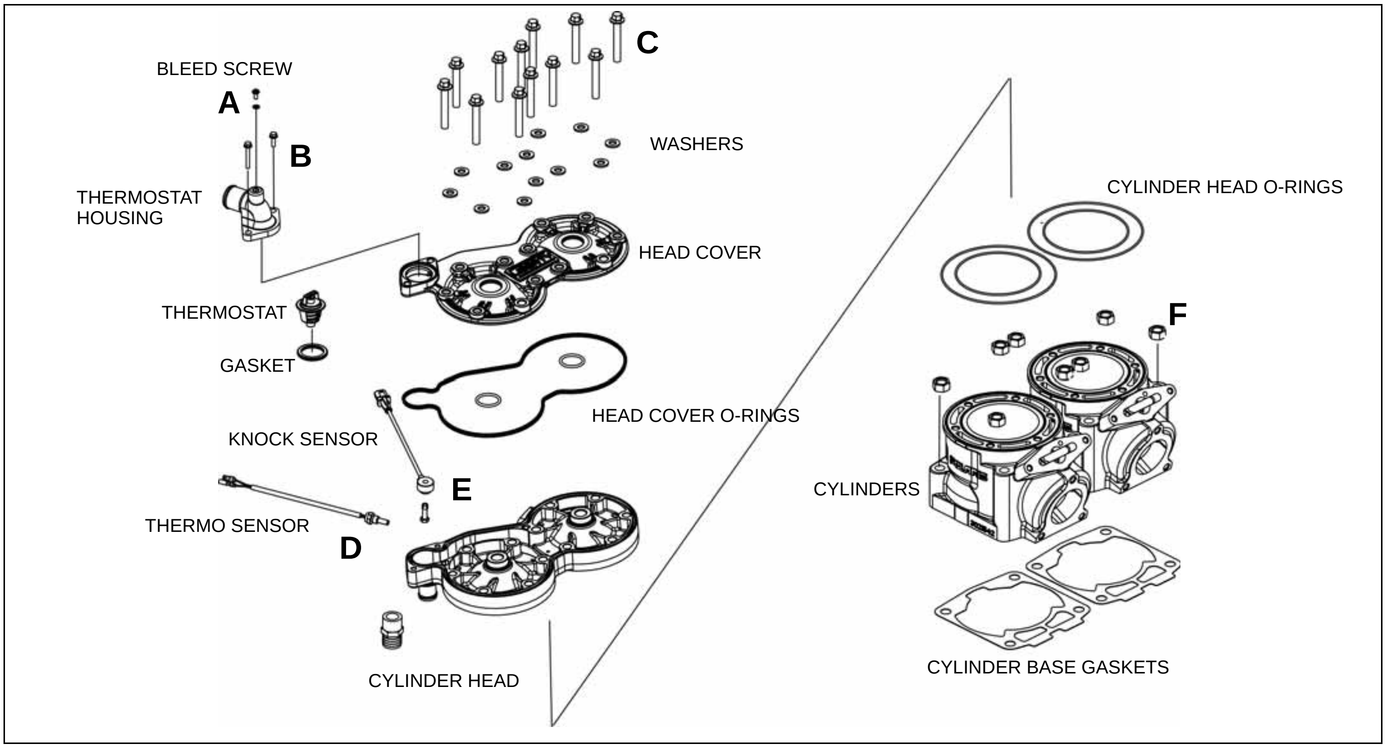


= T
A = 28 Ft.Lbs. (38 Nm) B = 15 Ft.Lbs. (20 Nm) C = 30 Ft.Lbs. (41 Nm)

NOTE: Use an engine mount socket, PN: 2871989 to remove the engine mounts from the bulkhead.

ENGINE COMPONENT ASSEMBLIES

600 HO Carbureted Cylinders / Cylinder Head

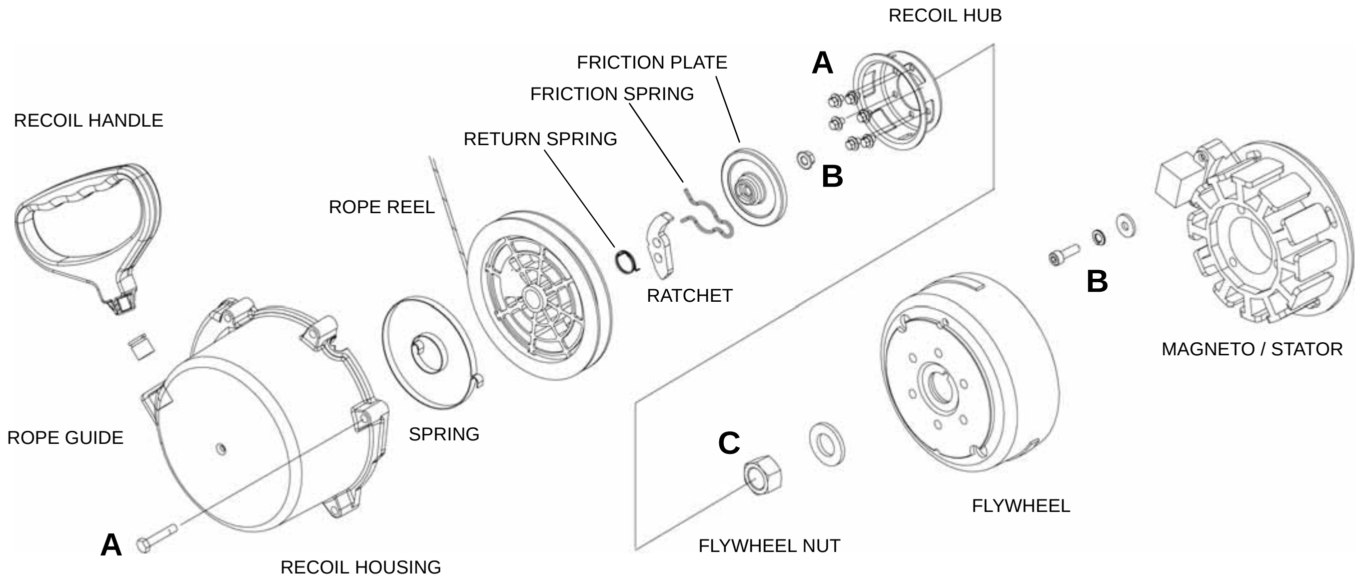


= T
A = 70 In.Lbs. (8 Nm)
B = 9 Ft.Lbs. (12 Nm) - Apply Loctite 242
C = 25 Ft.Lbs. (34 Nm) - Apply Loctite 242
D = 18 Ft.Lbs. (24 Nm) - Apply Pipe Sealant
E = 168 In.Lbs. (19 Nm) - Clean and Dry
F = 37 Ft.Lbs. (50 Nm)

Disassembly / Assembly Process

1. Remove the coolant from the engine using a siphon, wet/ dry vac, or drain pan.
2. Remove the air box, exhaust pipe and resonator from the engine compartment.
3. Remove the high tension wires and spark plugs from the cylinder head.
4. Remove the thermostat housing outlet cooling hose from the housing.
5. Loosen all, then remove all head cover fasteners. Clean the fastener threads to remove any thread locking residue.
6. Discard the head cover and cylinder head o-rings. Always use new o-rings during assembly.
7. Inspect the cylinder head / combustion domes for any damage. Measure cylinder head flatness. Replace cylinder head if required.
8. Loosen all, then remove the cylinder bolts. Clean the bolt threads to remove any thread locking residue.
9. Carefully pull each cylinder upwards taking care not to drop the piston and rod abruptly against the crankcase.
10. Remove the cylinder base gaskets. Use a gasket scraper to clean the gasket residue from the crankcase and cylinder bases.
11. Inspect the cylinder walls. Nicasil cylinders can only be lightly honed. Damage that cannot be removed with a light hone requires cylinder replacement or re-lining.
12. The assembly process is the reverse of disassembly.
13. Always use new gaskets and o-rings during assembly. Liberally coat the inside of each cylinder and the outside of each piston with Polaris two-stroke engine oil.
14. When installing a piston into a cylinder, verify each piston ring opening is located at each piston ring locating pin. Squeeze the top ring, then carefully slide the cylinder over the compressed ring. Do the same with the bottom ring.
15. Follow the torque specifications and torque sequences located at beginning of chapter when tightening fasteners.

600 HO Carbureted Recoil / Magneto



= T
A = 9 Ft.Lbs. (12 Nm) B = 5 Ft.Lbs. (7 Nm) - Apply Loctite 242 (Stator) C = 90 Ft.Lbs. (122 Nm) - Apply Loctite 242

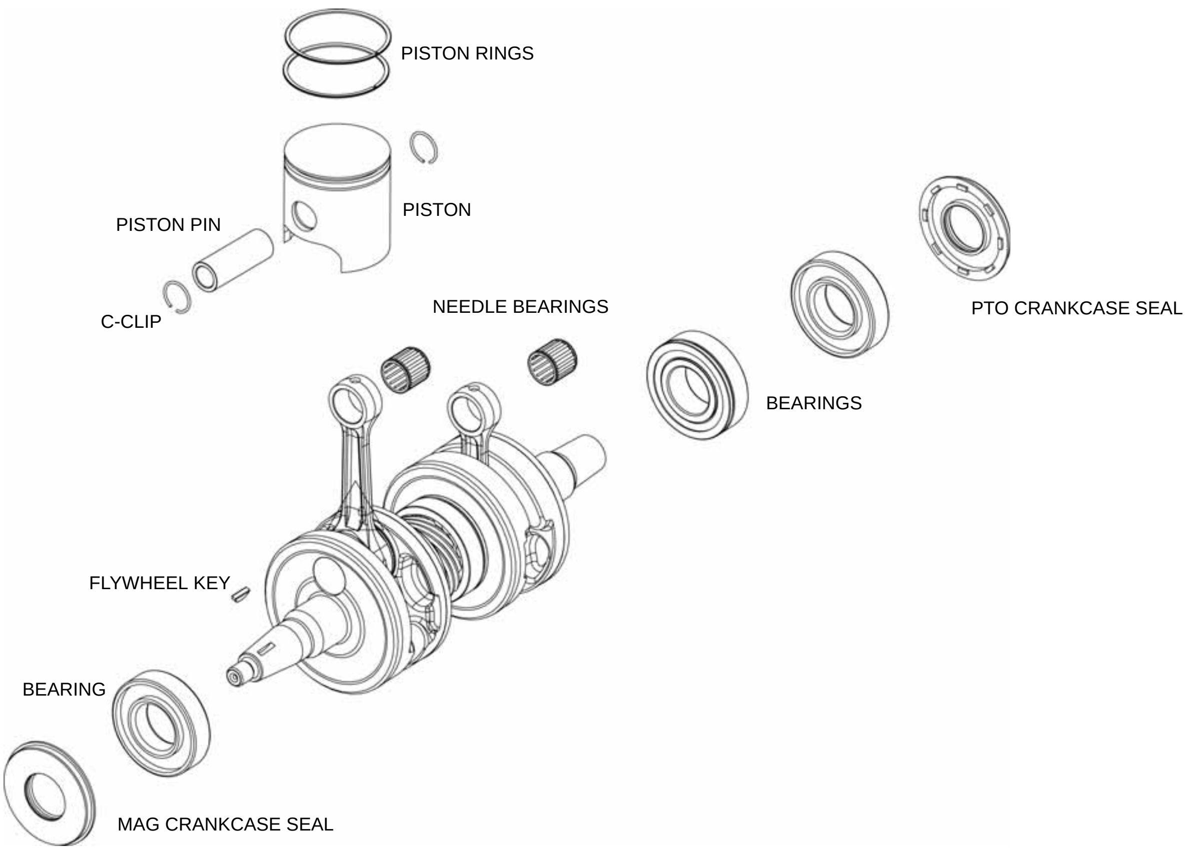
Disassembly / Assembly Process

1. Remove the exhaust pipe and resonator.
2. If the recoil assembly does not require attention, the recoil rope can remained attached to the handle. If recoil component work is desired, reference the Recoil Assembly section. See “Recoil Assembly” on page 5.11.
3. Remove the recoil / magneto housing cover. The recoil assembly is located inside the housing.
4. Remover the recoil hub from the flywheel. Secure the flywheel with a strap wrench, PN PU-45419. Remove the flywheel nut and washer.
5. Using the flywheel puller tool, PN 2871043, insert the puller’s three screws into the flywheel.

NOTE: Do not thread the puller screws into the magneto/stator located behind the flywheel.

6. Turn the puller center bolt in until the flywheel “pops” off of the crankshaft.
7. Mark the location of the magneto / stator plate in several places using a scribe.
8. Remove the magneto / stator from the crankcase.
9. Clean the crankshaft and flywheel tapers with a solvent such as clutch cleaner.
10. Assembly is reverse of disassembly. Reference the fastener torque specifications at the beginning of the chapter.
11. Do not use an impact wrench to install the flywheel nut.

600 HO Carbureted Pistons / Crankshaft



Piston Matrix

Engine Model	Piston PN	Piston ID
S3273-6044-PF6F	2202258 (Subs to 2203319)	EK-2202b
S3274-6044-PF6F		
S3466-6044-PU6F	2203319	EK-2202c
S3467-6044-PU6F		

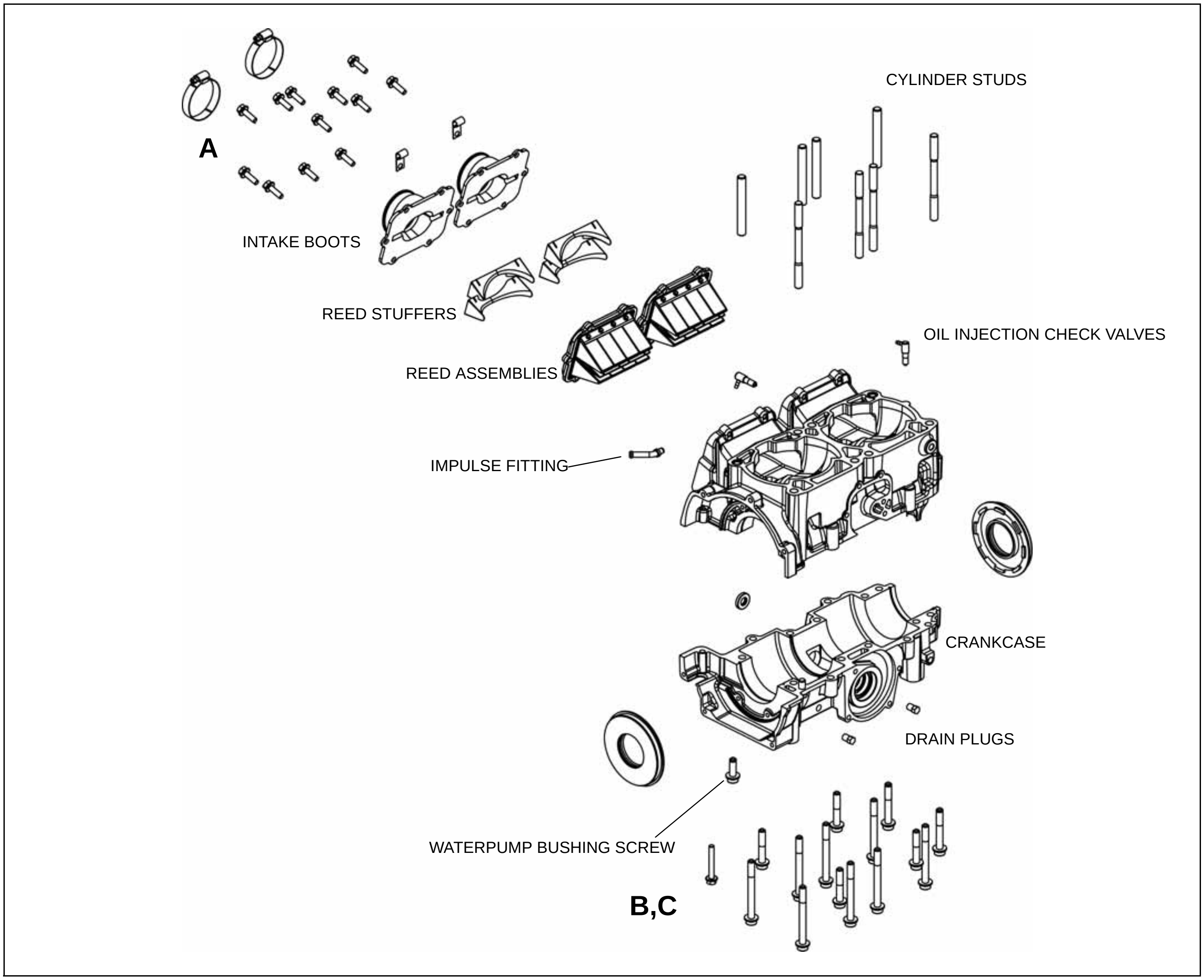
Disassembly / Assembly Process

1. To remove the pistons, follow the process for removing the cylinder head and cylinders from the engine.
2. To remove the crankshaft, follow the process for disassembling the crankcase assembly.
3. With the piston out of the cylinder, remove one of the c-clips and discard. Never re-use piston c-clips.
4. Push the piston pin out of the piston and upper rod bearings. Inspect the pin for galling and abnormal wear. Inspect the needle bearing by feel and replace as required.
5. New pistons are supplied with new rings and a piston pin. It is recommended that new needle bearings be installed as well.
6. When installing a new piston, insert one c-clip into the piston making sure the open end is 180° opposite of the groove opening.
7. Apply a liberal amount of Polaris two-stroke engine oil to the needle bearings, piston pin and piston assembly.
8. Push the pin in to the piston, then through the needle bearing. Install the remaining c-clip with the open end is 180° opposite of the groove opening.

NOTE: Always use new cylinder base gaskets.

9. Apply a liberal amount of Polaris two-stroke oil to the cylinder wall. Align the piston ring gaps around the piston locating pins. Compress the upper ring, then carefully slide the cylinder down over the ring.
10. Compress the lower ring, then slide the cylinder down over the ring.

600 HO Carbureted Crankcase



= T

A = 9 Ft.Lbs. (12 Nm)
B = (M8) - 22 Ft.Lbs. (30 Nm) - Apply Loctite 242
C = (M6) - 9 Ft.Lbs. (12 Nm) - Apply Loctite 242

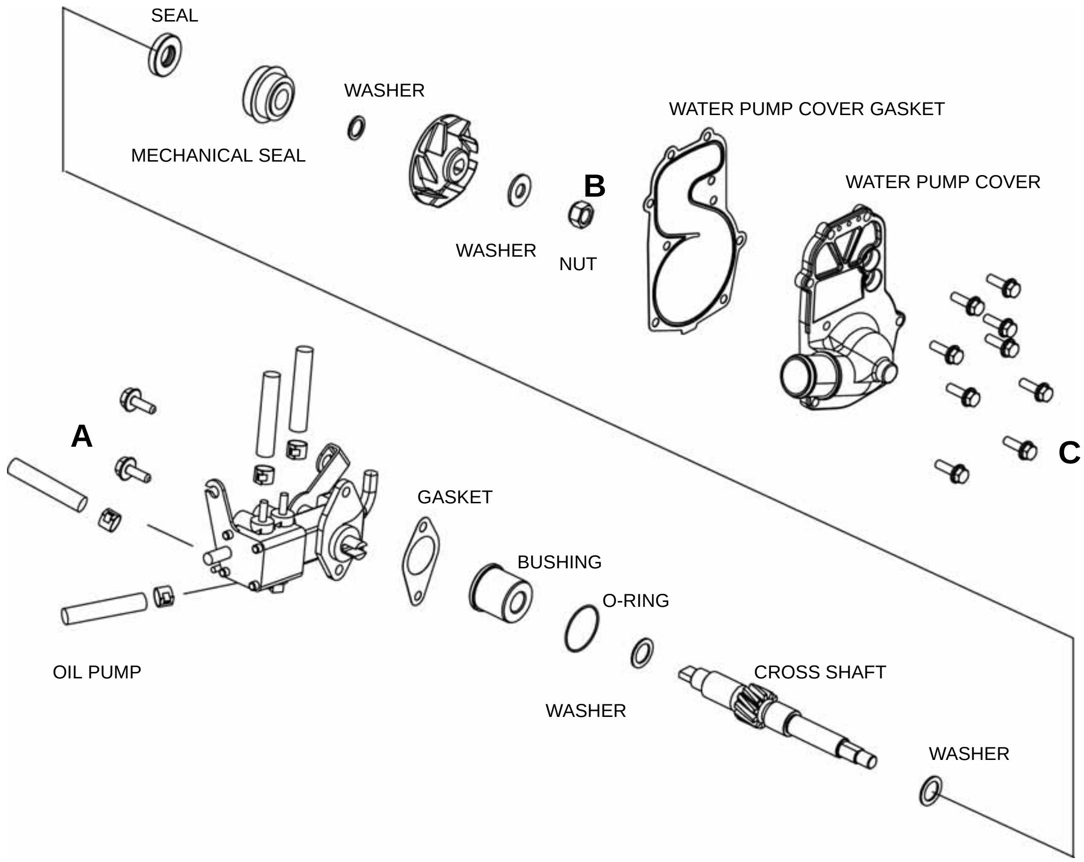
= In. / mm.

Long Studs Height (Exhaust side) = 3.66'' (93mm)
Small Stud Height (Intake side) = 2.16'' (55mm)

Disassembly / Assembly Process

1. Remove the engine from the engine compartment.
2. Follow the process for removing the cylinder head, cylinders, pistons, flywheel / recoil housing, and the water / oil pump.
3. Remove the intake boots, and reed assemblies. Discard any seals or gaskets.
4. Remove the crankcase fasteners then carefully pry apart the crankcase halves. Discard the PTO and MAG crankshaft seals.
5. Clean the two crankcase mating surfaces with carburetor cleaner and a gasket remover. Flush out the crankcase.
6. Reinstall the crankshaft back into the lower crankcase using two new crankcase seals.
7. Apply a thin bead of Three Bond 1215 to the lower crankcase mating surface. Install the upper crankcase.
8. Loosely install the crankcase fasteners, then torque to the specifications at the beginning of the chapter. Use the correct torque sequence when tightening the screws.

600 HO Carbureted Water / Oil Pump



= T
A = 7 Ft.Lbs. (9.5 Nm) B = 10 Ft.Lbs. (13 Nm) C = 9 Ft.Lbs. (12 Nm)

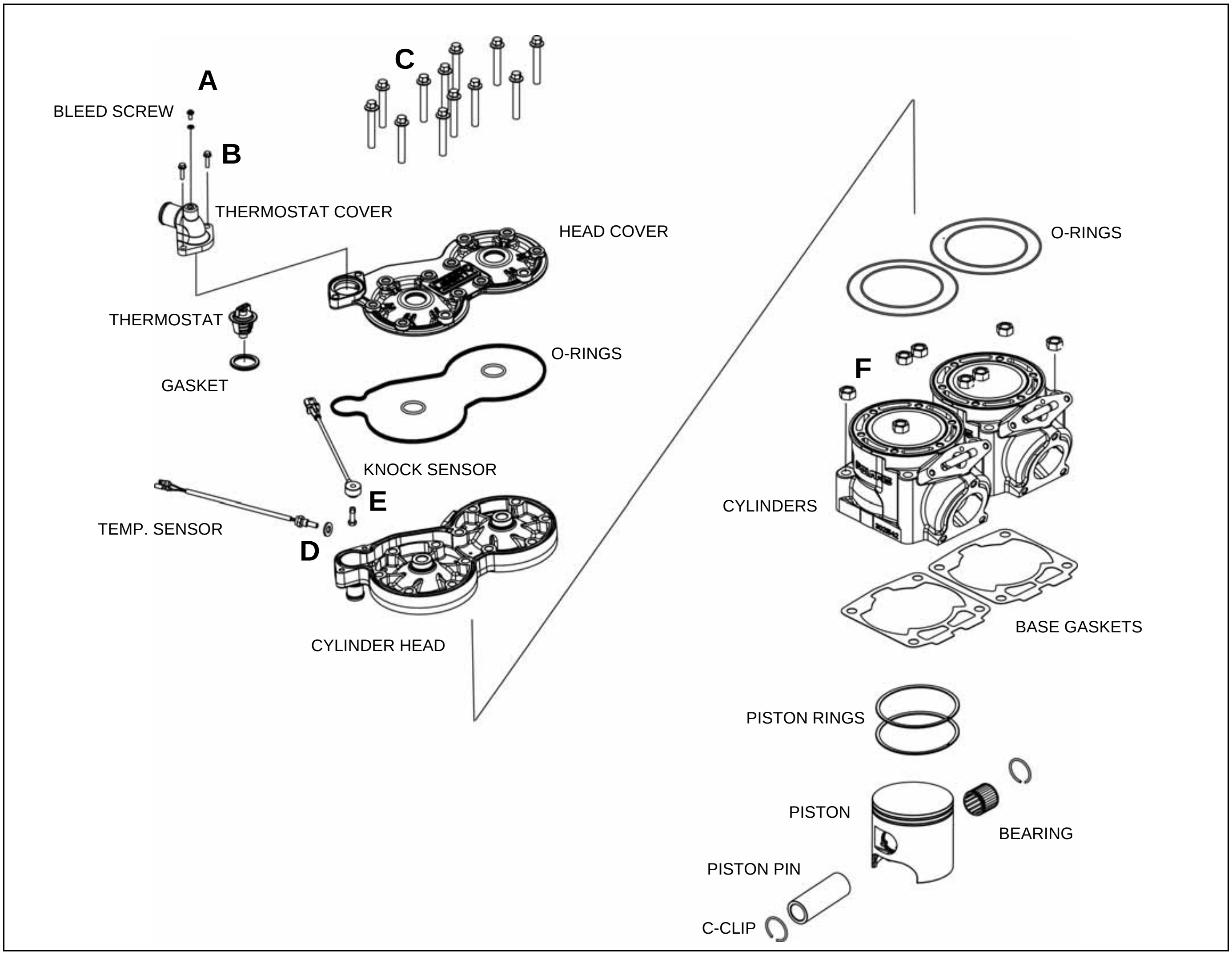
Disassembly / Assembly Process

IMPORTANT: Use the mechanical seal installation tool to install the water pump seal, PN: 2872010.

1. Remove the coolant from the engine using a siphon, wet/ dry vac. or a drain pan.
2. Remove the airbox, exhaust pipe and resonator. Remove the hose connected to the water pump cover.
3. To access the impeller and mechanical seal, remove the water pump cover. Discard the water pump cover gasket.
4. Remove the impeller nut, impeller and washers from the cross shaft.
5. Carefully pry the mechanical seal and seal out of the crankcase.
6. Water pump assembly is the reverse of disassembly. Always use new seals and gaskets during assembly.
7. To remove the oil pump / cover, remove the two fasteners then pull the pump / cover out of the crankcase bore. Discard the gasket.
8. The cross shaft can be extracted from the water pump side of the crankcase.
9. Assembly is the reverse of disassembly. Always use new o-rings, seals and gaskets during assembly.
10. Install a new seal onto the shaft from the water pump side.
11. To install a new water pump seal, use the seal installation tool, PN 2872010. Verify the seal lips are facing the cross shaft gear.

5

2007 - 2008 600 / 700 CFI Cylinder Head / Cylinders / Pistons



= T

A = 70 In.Lbs. (8 Nm)
B = 9 Ft.Lbs. (12 Nm) - Apply Loctite 242
C = 25 Ft.Lbs. (34 Nm) - Apply Loctite 242
D = 18 Ft.Lbs. (24 Nm) - Apply Pipe Sealant
E = 168 In.Lbs. (19 Nm) - Clean and Dry
F = 37 Ft.Lbs. (50 Nm)

Piston Matrix

Engine Model	Piston PN	Piston ID
S3206-6044-PF6G	2203319	EK-22202c
S3468-6044-PU6H		
S3469-6044-PU6H		
S3305-7044-PF7J	2203512	2922-06

Piston Matrix

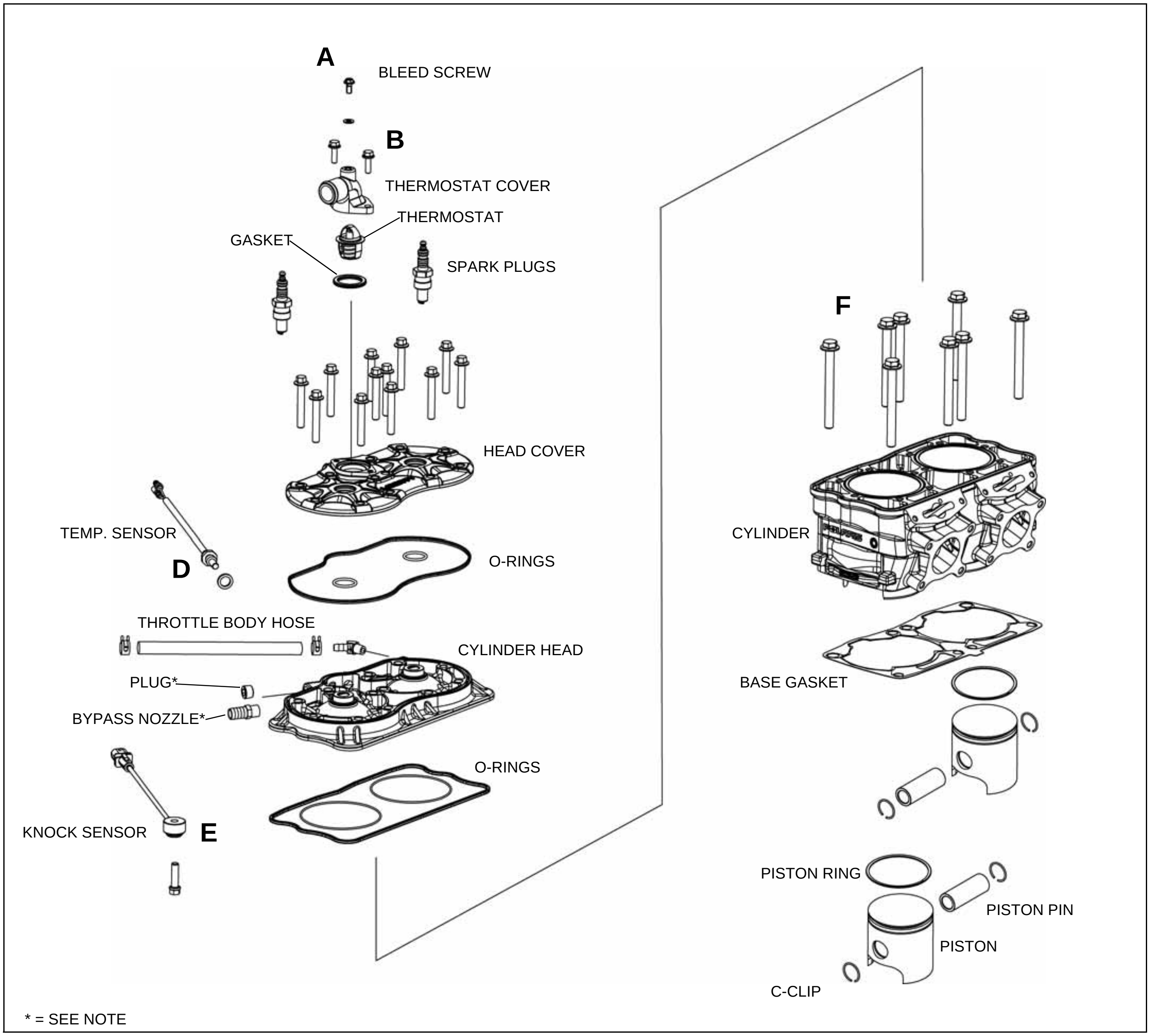
S3322-7044-PF7J	2203312 (Subs to 2203512)	EK-2486a
S3470-7044-PU7J	2203707	3050-00
S3471-7044-PU7J	2203606 (Single Ring)	2975-01

Disassembly / Assembly Process

1. Remove the coolant from the engine using a siphon, wet/dry vac, or drain pan.
2. Remove the air box, exhaust pipe and resonator from the engine compartment.
3. Remove the high tension wires and spark plugs from the cylinder head.

4. Remove the thermostat housing outlet cooling hose from the housing.
5. Loosen all, then remove all head cover fasteners. Clean the fastener threads to remove any thread locking residue.
6. Discard the head cover and cylinder head o-rings. Always use new o-rings during assembly.
7. Inspect the cylinder head / combustion domes for any damage. Measure cylinder head flatness. Replace cylinder head if required.
8. If only the cylinders are going to be removed, remove the fuel rail from the upper fuel injectors. See “CFI Fuel Rail/ Injector(s) Removal/Installation” on page 4.30.
9. Loosen all, then remove the cylinder bolts. Clean the bolt threads to remove any thread locking residue.
10. Carefully pull each cylinder upwards taking care not to drop the piston and rod abruptly against the crankcase.
11. Remove the cylinder base gaskets. Use a gasket scraper to clean the gasket residue from the crankcase and cylinder bases.
12. Inspect the cylinder walls. Nicasil cylinders can only be lightly honed. Damage that cannot be removed with a light hone requires cylinder replacement or re-chroming.
13. The assembly process is the reverse of disassembly.
14. Always use new gaskets and o-rings during assembly. Liberally coat the inside of each cylinder and the outside of each piston with Polaris two-stroke engine oil.
15. When installing a piston into a cylinder, verify each piston ring opening is located at each piston ring locating pin. Squeeze the top ring, then carefully slide the cylinder over the compressed ring. Do the same with the bottom ring.
16. Follow the torque specifications and torque sequences located at beginning of chapter when tightening fasteners.

2008 800 CFI Cylinder Head / Cylinder / Pistons



* = SEE NOTE

= T

A = 70 In.Lbs. (8 Nm)
B = 9 Ft.Lbs. (12 Nm) - Apply Loctite 242
C = 25 Ft.Lbs. (34 Nm) - Apply Loctite 242
D = 18 Ft.Lbs. (24 Nm) - Apply Pipe Sealant
E = 168 In.Lbs. (19 Nm) - Clean and Dry
F = 42 Ft.Lbs. (57 Nm)

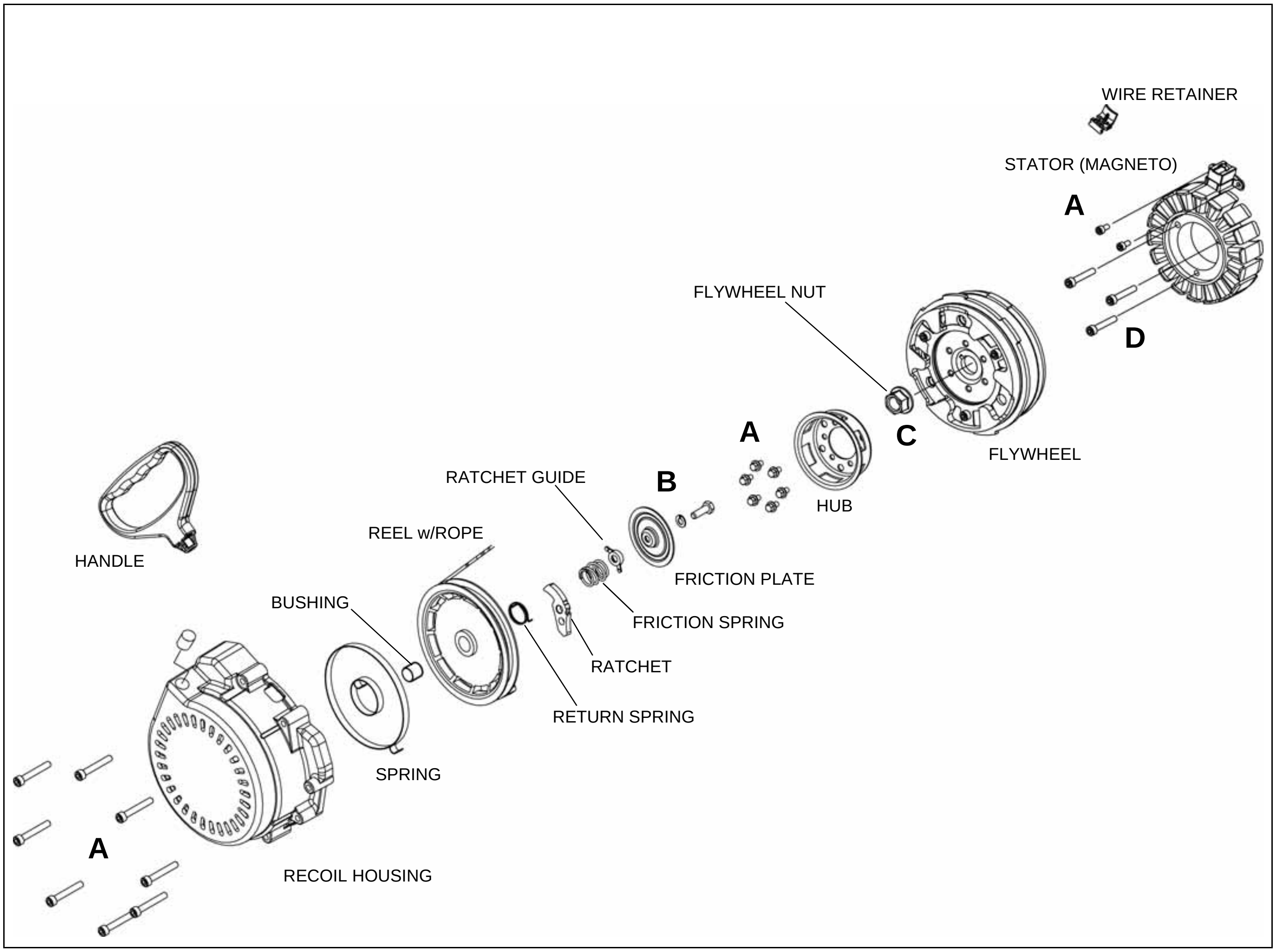
NOTE: Engines with serial number beginning with S3489 feature a bypass nozzle.
Engines with serial number beginning with S3471 feature a plug.

Engine Model	Piston PN	Piston ID
S3489-8044-PU8E	2203605 (Single Ring)	2923-07
S3471-8044-PU8E		

Disassembly / Assembly Process - 2008 800 CFI Cylinder Head / Cylinder / Pistons

1. Remove the coolant from the engine using a siphon, wet/dry vac, or drain pan.
2. Remove the air box, exhaust pipe and resonator from the engine compartment.
3. Remove the high tension wires and spark plugs from the cylinder head.
4. Remove the thermostat housing outlet cooling hose from the housing.
5. Loosen all, then remove all head cover fasteners. Clean the fastener threads to remove any thread locking residue.
6. Discard the head cover and cylinder head o-rings. Always use new o-rings during assembly.
7. Inspect the cylinder head / combustion domes for any damage. Measure cylinder head flatness. Replace cylinder head if required.
8. If only the cylinder is going to be removed, remove the fuel rail from the upper fuel injectors. See "CFI Fuel Rail/ Injector(s) Removal/Installation" on page 4.30.
9. Loosen all, then remove the cylinder bolts. Clean the bolt threads to remove any thread locking residue.
10. Carefully pull the cylinder upwards taking care not to drop the pistons and rods abruptly against the crankcase.
11. Remove the cylinder base gasket. Use a gasket scraper to clean the gasket residue from the crankcase and cylinder base.
12. Inspect the cylinder walls. Nicasil cylinders can only be lightly honed. Damage that cannot be removed with a light hone requires cylinder replacement or re-chroming.
13. Inspect the crankcase and cylinder mating surfaces for warping.
14. The assembly process is the reverse of disassembly.
15. Always use new gaskets and o-rings during assembly. Liberally coat the inside of each cylinder bore and the outside of each piston with Polaris two-stroke engine oil.
16. When installing a piston into a cylinder, verify each piston ring opening is located at each piston ring locating pin. Squeeze the top ring, then carefully slide the cylinder over the compressed ring. Do the same with the bottom ring.
17. Follow the torque specifications and torque sequences located at beginning of chapter when tightening fasteners.

2007 - 2008 600 / 700 / 800 CFI Recoil / Stator Assembly



= T
A = 9 Ft.Lbs. (12 Nm) B = 5 Ft.Lbs. (7 Nm) C = 90 Ft.Lbs. (122 Nm) - Apply Loctite 242 D = 12 Ft.Lbs. (16 Nm) - Apply Loctite 242

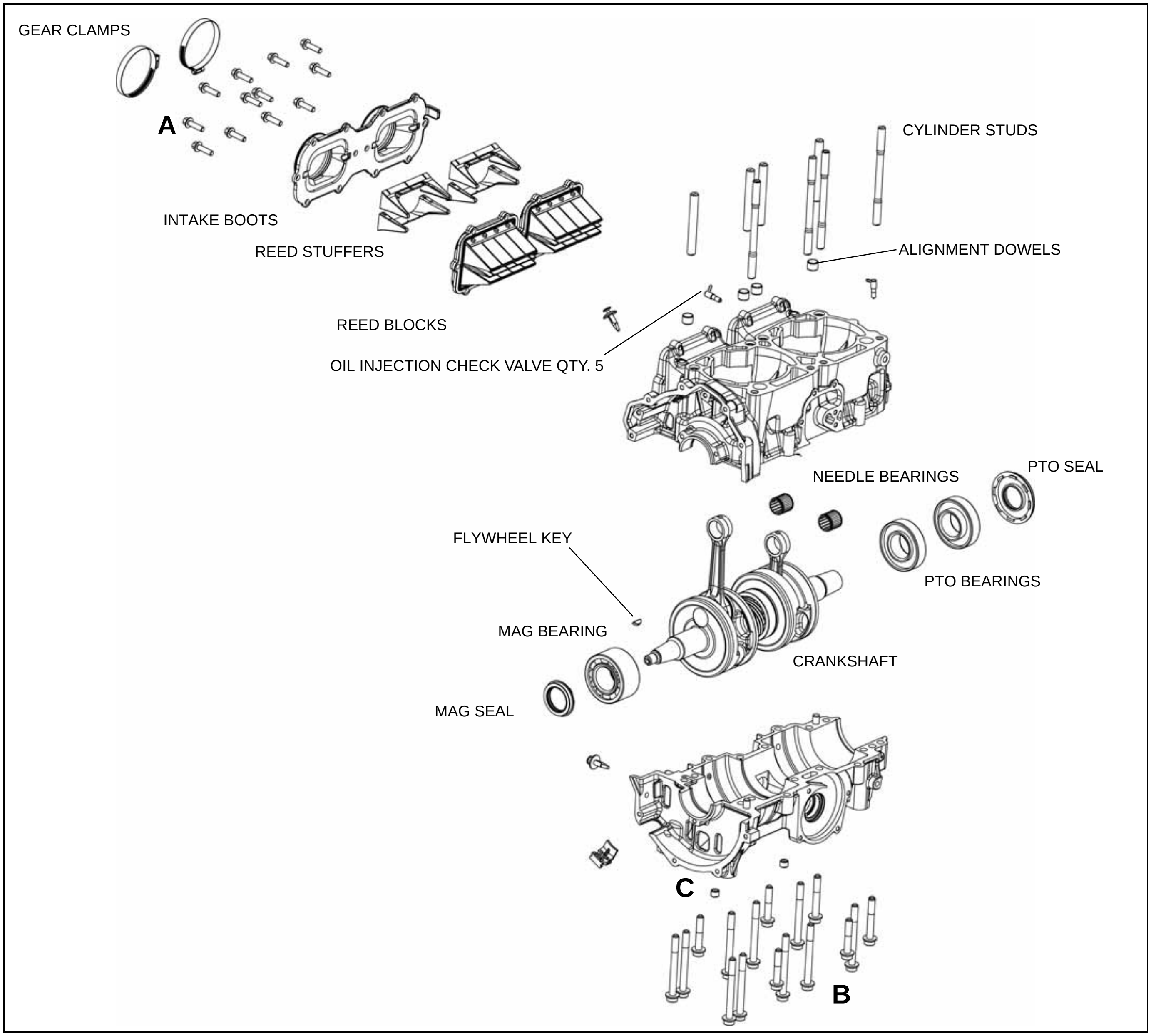
Disassembly / Assembly Process

1. Remove the exhaust pipe and resonator.
2. If the recoil assembly does not require attention, the recoil rope can remained attached to the handle. If recoil component work is desired, reference the Recoil Assembly section.
3. Remove the recoil / magneto housing cover. The recoil assembly is located inside the housing.
4. Remover the recoil hub from the flywheel. Secure the flywheel with a strap wrench, PN PU-45419. Remove the flywheel nut and washer.
5. Using the flywheel puller tool, PN 2871043, insert the puller's three screws into the flywheel.

NOTE: Do not thread the puller screws into the magneto/stator located behind the flywheel.

6. Turn the puller center bolt in until the flywheel "pops" off of the crankshaft.
7. Mark the location of the magneto / stator plate in several places using a scribe.
8. Remove the magneto / stator from the crankcase.
9. Assembly is reverse of disassembly. Reference the fastener torque specifications at the beginning of the chapter.
10. Do not use an impact wrench to install the flywheel nut.

2007 - 2008 600 / 700 CFI Crankcase / Crankshaft Assembly



= In. / mm.

Long Stud Height (Exhaust side) = 4.13" (105mm)
Small Stud Height (Intake side) = 2.16" (55mm)

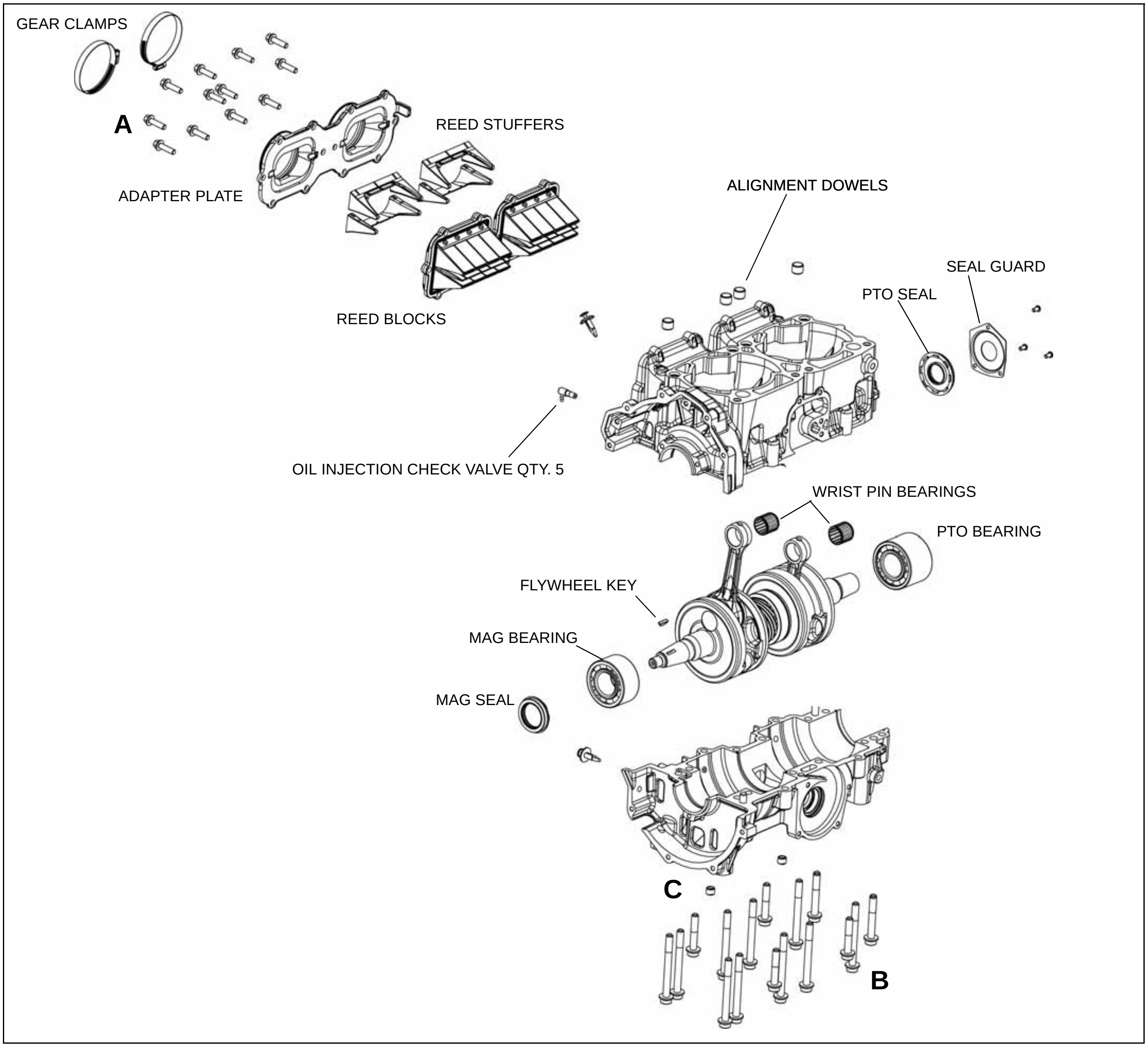
= T

A = 9 Ft.Lbs. (12 Nm)
B = 22 Ft.Lbs. (30 Nm)
C = 10 Ft.Lbs. (13 Nm) - Apply Pipe Sealant

1. Remove the engine from the engine compartment.
2. Follow the process for removing the cylinder head, cylinders, pistons, flywheel / recoil housing, and the water / oil pump.
3. Remove the intake boots, reed stuffers, and reed assemblies from the intake tracks. Discard any seals or gaskets.
4. Remove the fasteners from the bottom of the crankcase. Carefully pry apart the crankcase halves. Discard the PTO and MAG crankshaft seals.
5. Remove the crankshaft. Inspect as required.
6. Thoroughly clean the two crankcase mating surfaces with carburetor cleaner and a gasket remover. Flush out the crankcase galleries.

7. Reinstall the crankshaft back into the lower crankcase using two new crankcase seals.
8. Apply a thin bead of Three Bond 1215 to the lower crankcase mating surface. Install the upper crankcase.
9. Loosely install the crankcase fasteners, then torque to the specifications at the beginning of the chapter. Use the correct torque sequence when tightening the screws.
10. Liberally coat the crankshaft bearings and components with Polaris two-stroke engine oil.

2008 800 CFI Crankcase / Crankshaft

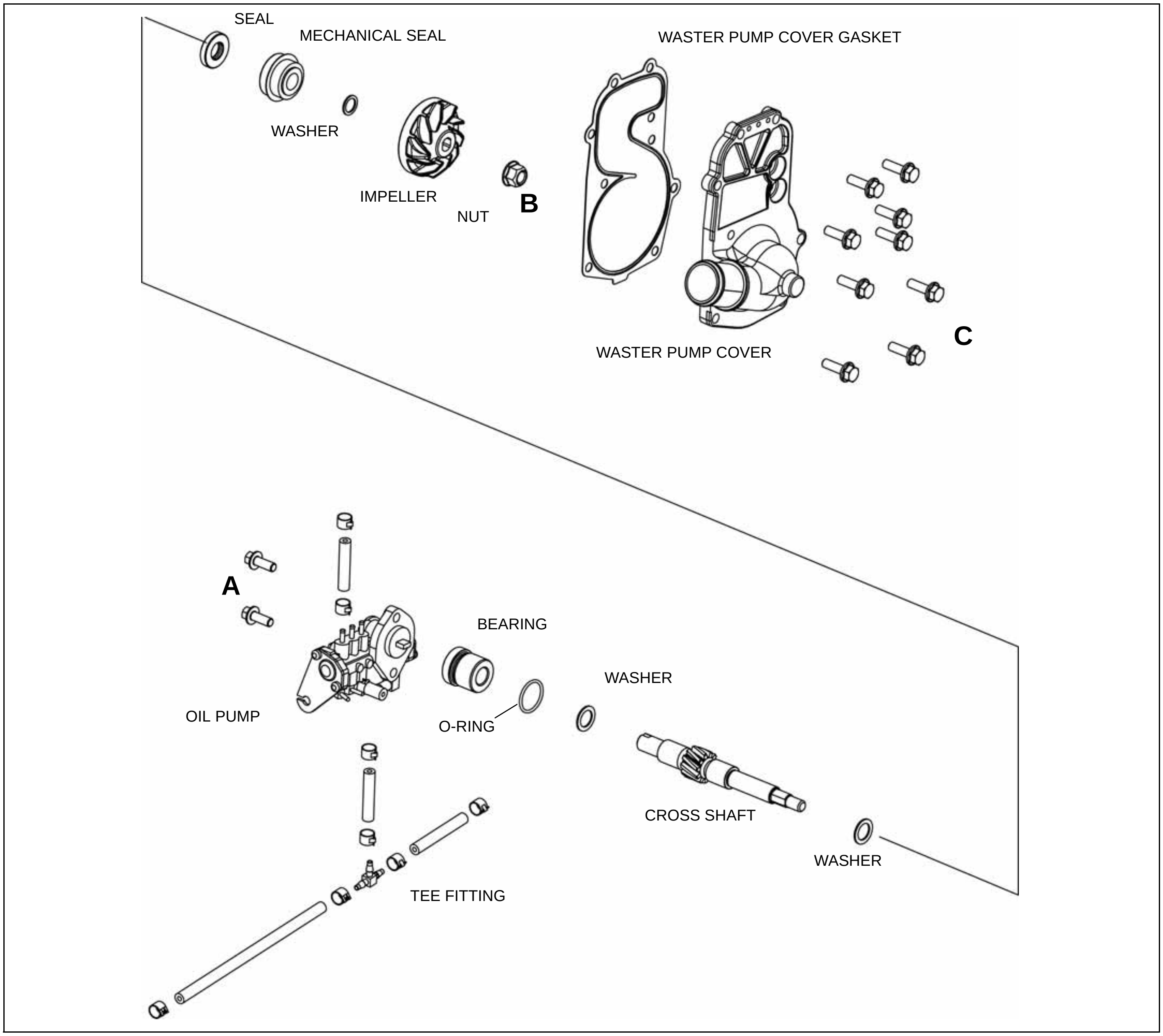


= T
A = 9 Ft.Lbs. (12 Nm) B = 22 Ft.Lbs. (30 Nm) - Apply Loctite 242 C = 10 Ft.Lbs. (13 Nm) - Apply Pipe Sealant

Disassembly / Assembly Process - 2008 800 CFI Crankcase / Crankshaft

1. Remove the engine from the engine compartment.
2. Follow the process for removing the cylinder head, cylinders, pistons, flywheel / recoil housing, and the water / oil pump.
3. Remove the intake boots, reed stuffers, and reed assemblies from the intake tracks. Discard any seals or gaskets.
4. Remove the fasteners from the bottom of the crankcase. Carefully pry apart the crankcase halves. Discard the PTO and MAG crankshaft seals.
5. Remove the crankshaft. Inspect as required.
6. Thoroughly clean the two crankcase mating surfaces with carburetor cleaner and a gasket remover. Flush out the crankcase galleries.
7. Reinstall the crankshaft back into the lower crankcase using two new crankcase seals.
8. Apply a thin bead of Three Bond 1215 to the lower crankcase mating surface. Install the upper crankcase.
9. Loosely install the crankcase fasteners, then torque to the specifications at the beginning of the chapter. Use the correct torque sequence when tightening the screws.
10. Liberally coat the crankshaft bearings and components with Polaris two-stroke engine oil.

2007 - 2008 600 / 700 / 800 CFI Water / Oil Pump Assembly



= T
A = 7 Ft.Lbs. (9.5 Nm) B = 10 Ft.Lbs. (13 Nm) C = 9 Ft.Lbs. (12 Nm)

Disassembly / Assembly Process

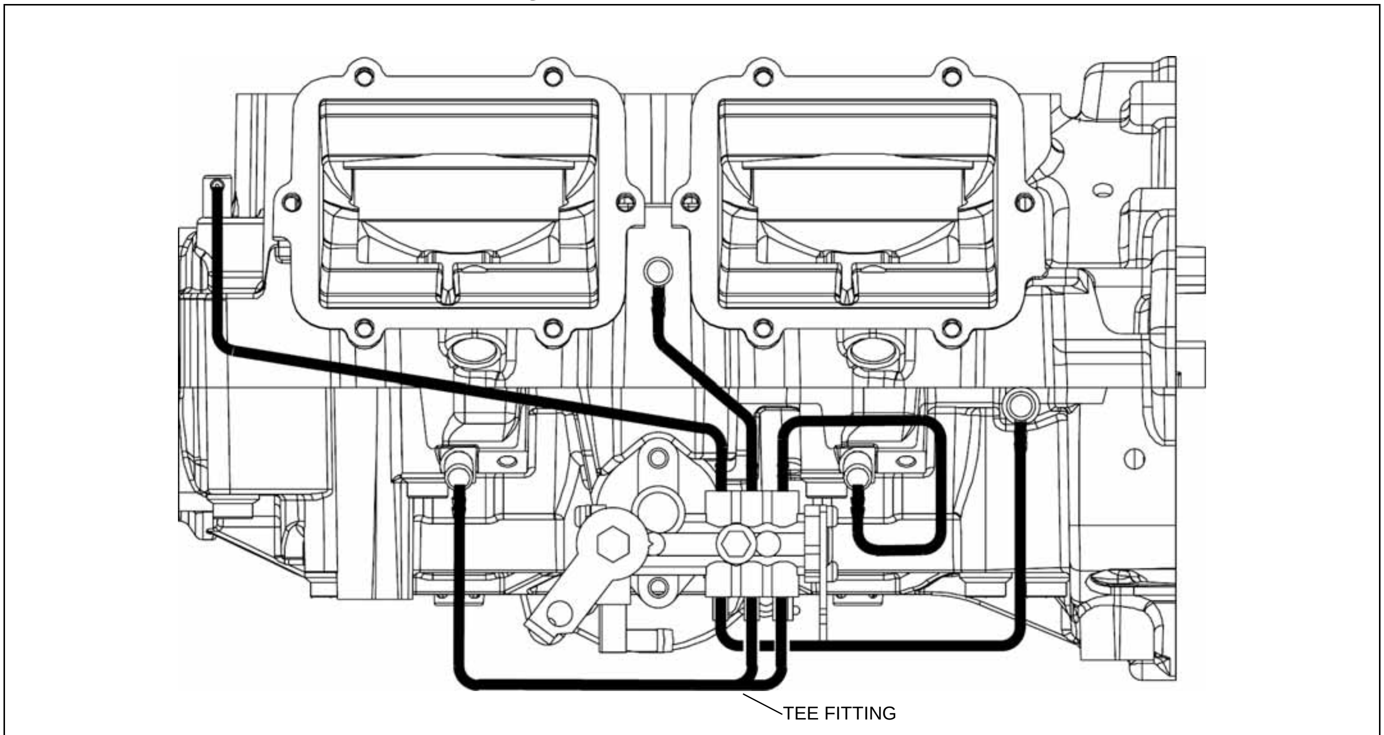
IMPORTANT: Use the mechanical seal installation tool to install the water pump seal, PN: 2872010.

1. Remove the coolant from the engine using a siphon, wet/ dry vac. or a drain pan.
2. Remove the airbox, exhaust pipe and resonator. Remove the hose connected to the water pump cover.
3. To access the impeller and mechanical seal, remove the water pump cover. Discard the water pump cover gasket.
4. Remove the impeller nut, impeller and washers from the cross shaft.
5. Carefully pry the mechanical seal and seal out of the crankcase.
6. Water pump assembly is the reverse of disassembly. Always use new seals and gaskets during assembly.
7. To remove the oil pump, remove the two fasteners then pull the pump / cover out of the crankcase bore. Discard the

gasket.

8. To remove the oil pump / cover, remove the two fasteners then pull the pump / cover out of the crankcase bore. Discard the gasket.
9. The cross shaft can be extracted from the water pump side of the crankcase.
10. Assembly is the reverse of disassembly. Always use new o-rings, seals and gaskets during assembly.
11. Install a new seal onto the shaft from the water pump side.
12. To install a new water pump seal, use the seal installation tool, PN 2872010. Verify the seal lips are facing the cross shaft gear.

600 / 700 / 800 CFI Oil Hose Routing



Engine Removal (Typical)

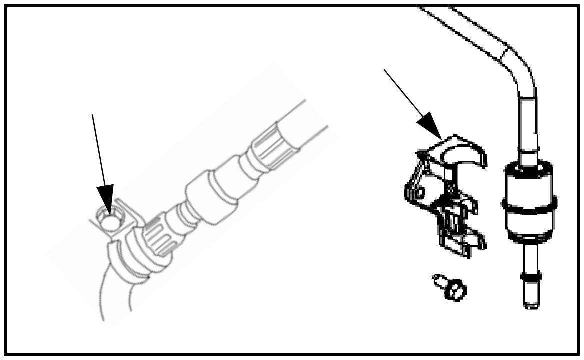
NOTE: Inspect all parts for wear or damage during disassembly. Replace all seals, o-rings, and gaskets with Genuine Pure Polaris parts during assembly.

NOTE: The following removal and installation process involves a CFI engine. Carbureted engines do not use throttle bodies or the electrical components housed in the drive clutch cover electrical center.

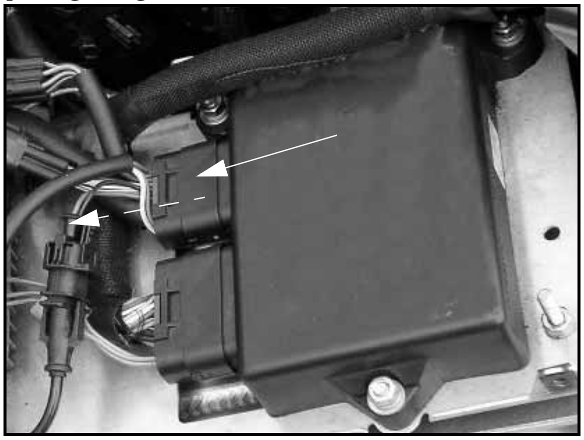
1. Open the hood, and remove the side panels.
2. Disconnect the battery ground (-) cable from the battery if equipped.
3. If equipped, unplug exhaust temperature sensor and remove the exhaust system.
4. Remove the spark plug leads from the spark plugs.
5. If equipped, remove the belt cover/electrical center cover.

6. On CFI models, disconnect the intake air sensor located on the MAG side of the airbox.

7. On CFI models, remove the return fuel line "P" holder located on the MAG side of the airbox.
8. On CFI models, separate the fuel filter from the filter clip that is on the MAG side of the airbox.



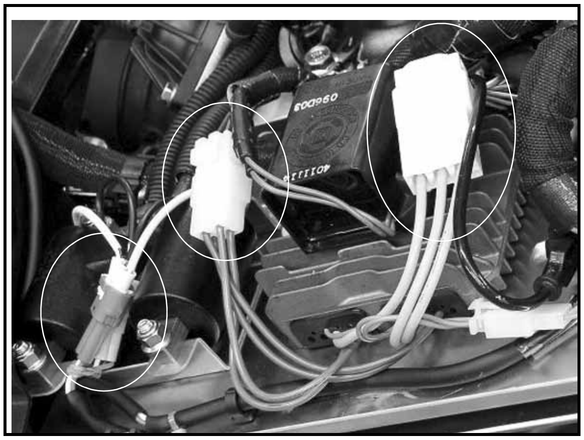
9. Remove the airbox by removing the gear clamps, then pulling the airbox assembly out of the engine compartment.
10. On CFI models, disconnect the main harness at the ECU. This is the smaller of the two plugs located on the ECU. Remove it by pressing up on the underside of the plug and pulling straight off.



11. Disconnect the regulator/rectifier connections.

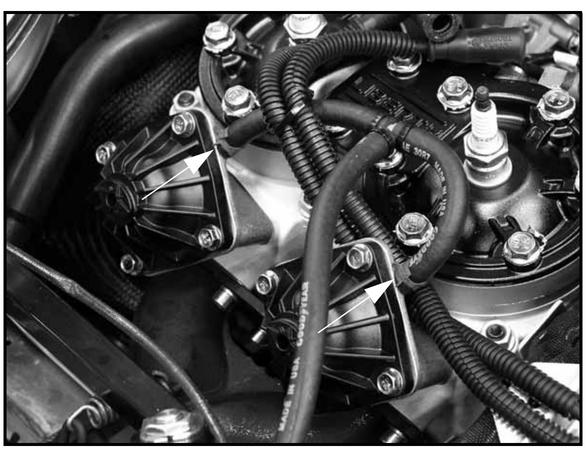
5

12. Disconnect the ignition coil connections and EV solenoid from the ECU harness on CFI models.



13. Disconnect the EV solenoid from the ECU harness.

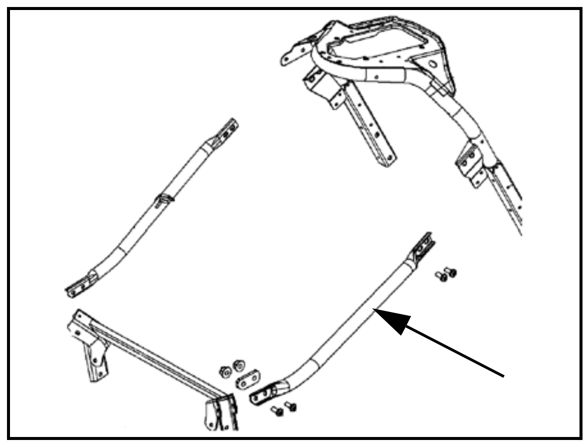
14. Disconnect the EV vent lines from the EV base and secure the vent lines out of the way.



15. Remove the drive belt, driven and drive clutches. See Chapter 6.

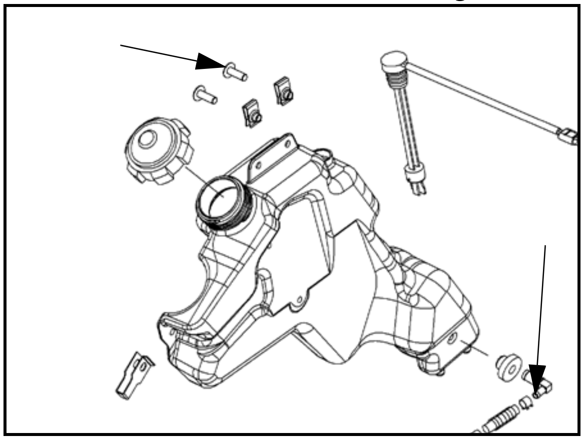
16. Remove the recoil rope from the handle and route rope through the guide on the chassis brace and secure the recoil rope by tying a knot so that it does not go into the recoil housing.

17. Drain the coolant from the engine into a suitable container.
18. Remove all coolant hoses from the coolant bottle and secure the loose hoses out of the way for engine removal.
19. Remove the four right hand chassis brace fasteners and remove the brace from the chassis.

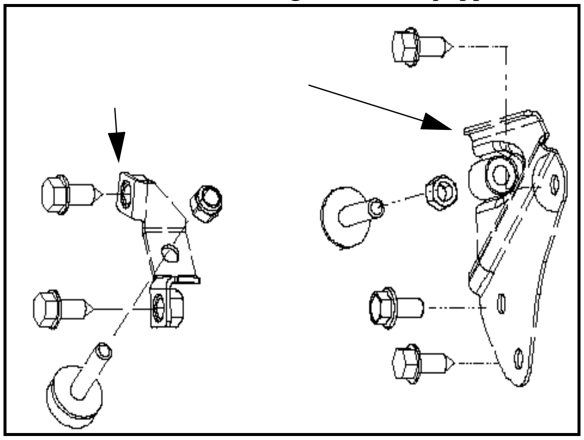


20. Drain the oil from oil tank.
21. Remove the oil tank fasteners that hold the top of the oil tank to the chassis.
22. Disconnect the oil supply line from the oil tank, located at the bottom portion of the oil tank. Plug and secure the loose

oil line so that it can come out with the engine.

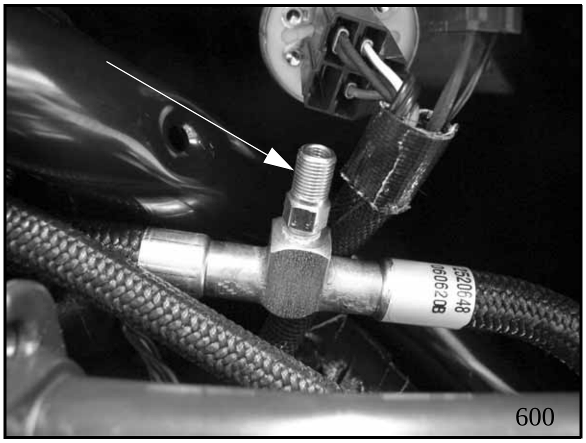


23. Remove the engine isolator and rear torque stop located on the left hand side of the engine where equipped.



24. Remove the four engine mounting fasteners located on the engine straps.

25. On CFI models, remove the Schrader valve cover located under the steering hoop, and depressurize the fuel rail. See “Fuel Rail Bleeding” on page 4.20.



26. Using the fuel line disconnection tool (PN PS-47152) (20), separate the fuel filter and the fuel return line.

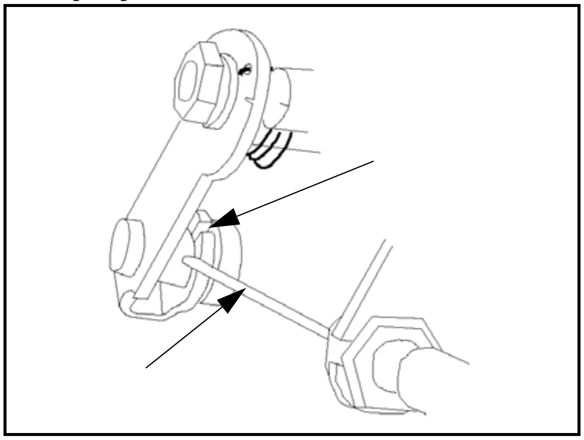
27. Secure the loose fuel lines out of the way for engine removal.

NOTE: A helper will be needed for the following steps.

28. Lift engine out of chassis and carefully place engine on shock tower brace.
29. While holding the engine remove the throttle bodies by loosening up the intake boot clamps and separating the throttle bodies from the intake boots.
30. Remove the cable located in the center of the throttle bodies.
31. Remove the oil cable lock nut from the threads on the cable housing.
32. Remove the throttle cable from the oil pump bracket.

5

33. Remove the oil cable from the oil pump lever by holding the pump open and rotating the cable and keeper to the slot in the pump arm.



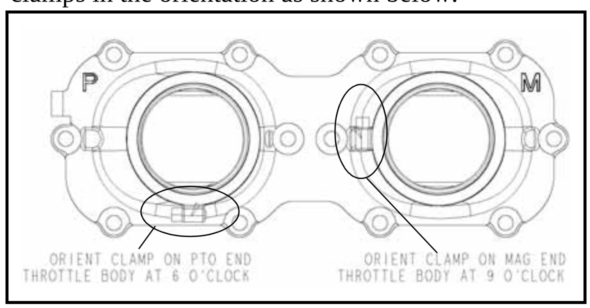
34. Remove the cable from the oil pump bracket.
35. Remove the engine from the chassis.
36. Inspect the motor mounts and replace if needed.

Engine Installation (Typical)

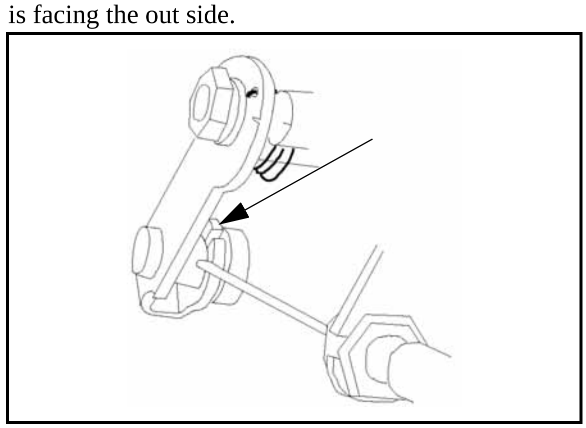
1. Make sure that you have the engine assembled in the state that it was when it was removed. This includes all the coolant hoses, oil lines, and electrical wires.
2. Fill oil lines with 2 stroke engine oil when assembling.
3. Clean the oil residue and debris out of the engine compartment.
4. To assure a smooth transition of the engine into the engine compartment, secure all loose hoses that are inside the engine compartment.

NOTE: You may need a helper with the installation of the throttle and oil cables.

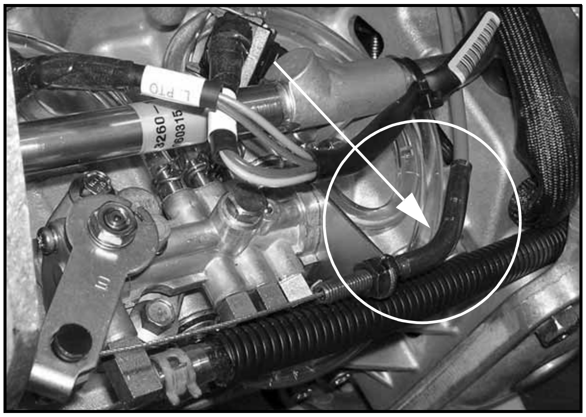
5. Place the engine on the shock tower brace.
6. With the throttle body or carburetor rack separated from the intake adapters, route the throttle cable behind the fuel rail, or under the carburetor rack and insert the throttle cable into the throttle pulley located in the center of the throttle bodies.
7. Insert the throttle body into the adapters and tighten the clamps in the orientation as shown below.



8. Adjust the throttle cable adjuster nut so that you have the correct throttle free play.
9. Place the oil cable into the oil pump arm. The oil pump arm has a slot in the back to slide the cable through for installation. The plastic end of the throttle cable is inserted so that the large flat is facing the engine and the small end is facing the out side.



10. Using a 10mm open end wrench tighten the lock nut while holding the other nut with a 10mm open end wrench. Make sure that the oil cable angle is tilted slightly toward the engine.

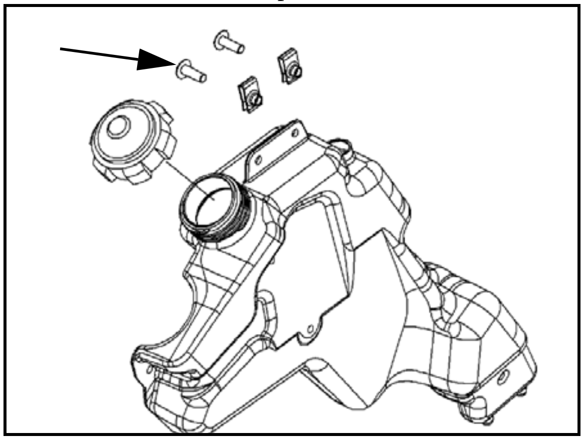


11. Thread on the adjuster nut and adjust the oil pump and adjust the oil pump.
12. Carefully place the engine into the engine compartment and line up the engine mount studs with the engine straps on the engine.

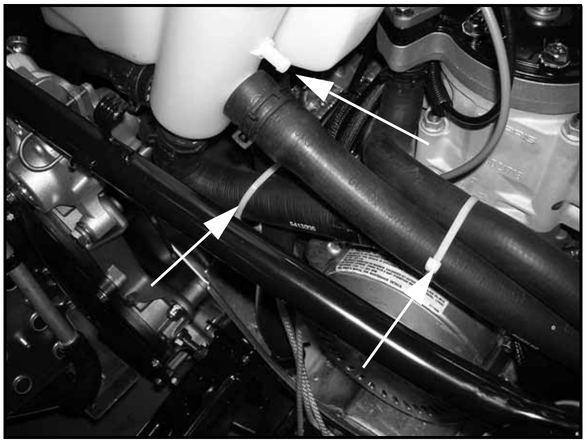
NOTE: Make sure that all hoses, lines and wires are not pinched or interfere with installation.

13. Route the oil supply line from the engine through the hose guide.
14. Install the oil bottle and hook up the supply line. Open and slide the hose clamp onto the hose and oil bottle fittings.

15. Secure the oil bottle to the chassis by installing the two torx fasteners located at the top of the bottle.



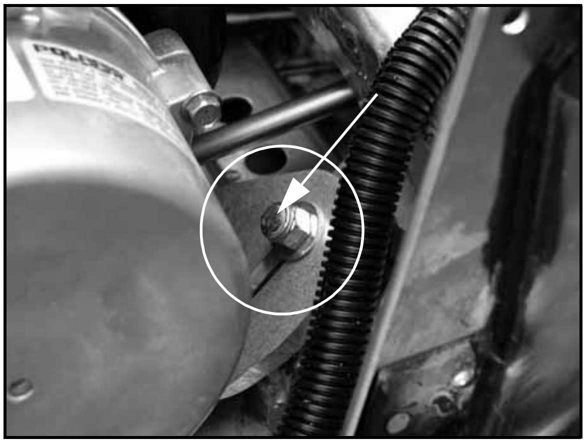
16. Connect the oil sender (Yellow and Purple wires) to the chassis connection (Purple and Brown wires).
17. Connect all the coolant hoses.
18. Place panduit straps in the locations shown.
19. If applicable, place the coolant hose from the throttle bodies to the coolant bottle.



20. Secure the hose clamp over all coolant hose and fittings.

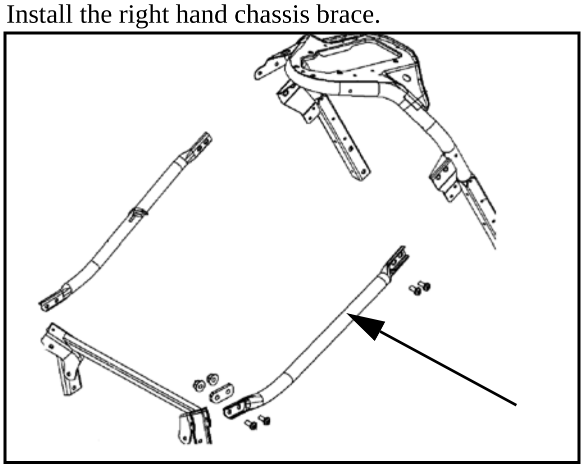
5

21. Place the engine mount washers and fasteners (8) onto the engine mount studs. Torque to specification.

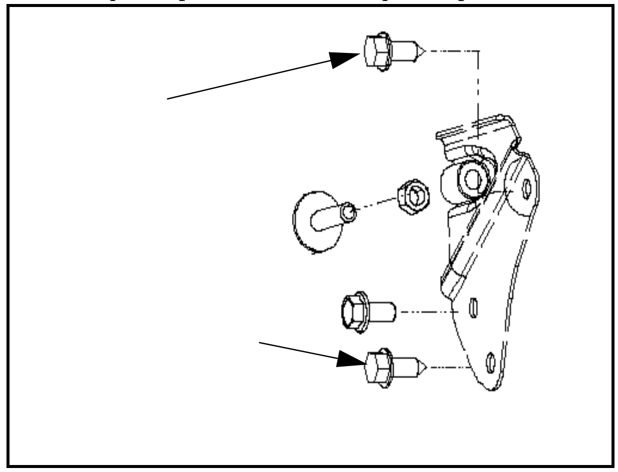


= T
Engine Mount Fasteners: 28 ft.lb (37.9 N-m)

22. Install the right hand chassis brace.



23. Apply Blue Loctite™ to the rear fasteners, install all the rear torque stop fasteners and torque to specification.



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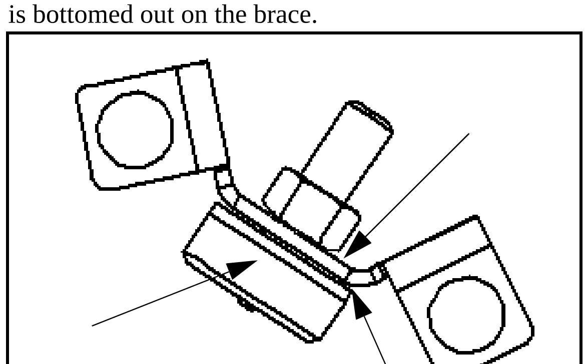
Rear Torque Stop Fasteners: 28 ft.lb (37.9 N-m)

24. Adjust the rear torque stop so that you have a clearance of .010”-.030” (.25-.75mm) from the face of the torque stop to the surface of the engine.

= In. / mm.
Rear Torque Stop Clearance: .010"-.030" (.25-.75mm)

NOTE: If a new torque stop is installed, install it so that the nub is touching the engine. This nub is .030" (.75mm) long.

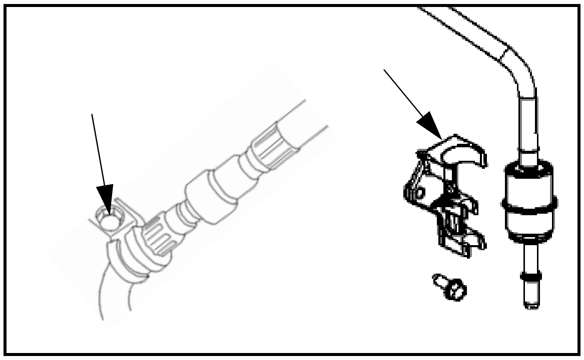
25. Adjust the engine isolator limiter (if equipped) so the stop is bottomed out on the brace.



26. Install the front torque stop assembly and torque the plate fasteners to specification.

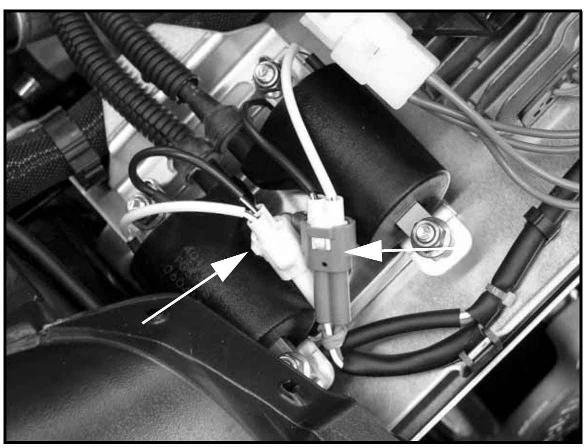
= T
Front Torque Stop Fasteners: 28 ft.lb (37.9 N-m)

27. Install the air box onto the carburetor rack. Make sure to line up the air box tabs with the air box plate.
28. Install the drive clutch. See “Drive Clutch Installation” on page 6.20.
29. Install the driven clutch. See “Driven Clutch Installation” on page 6.21.
30. Install the drive belt.
31. On FI models, connect he fuel filter and fuel return line by pushing them together until you hear a audible “click”.
32. Secure the fuel return line “P” clamp onto the side of the airbox.
33. Place the fuel filter back into the airbox-mounted holder.

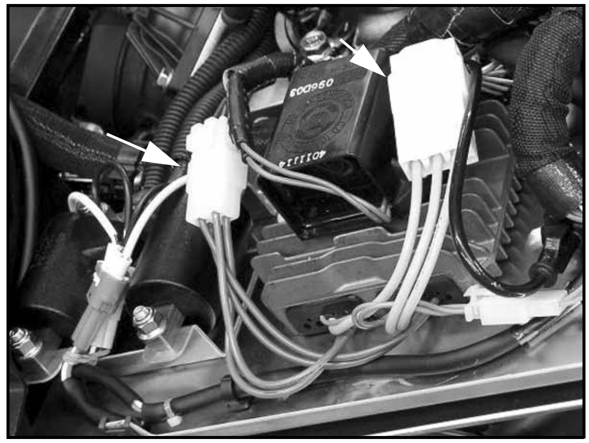


34. Connect the ECU connection into the ECU.
35. Connect the EV solenoid connection to the EV solenoid.
36. Connect the coil connections to the coils.

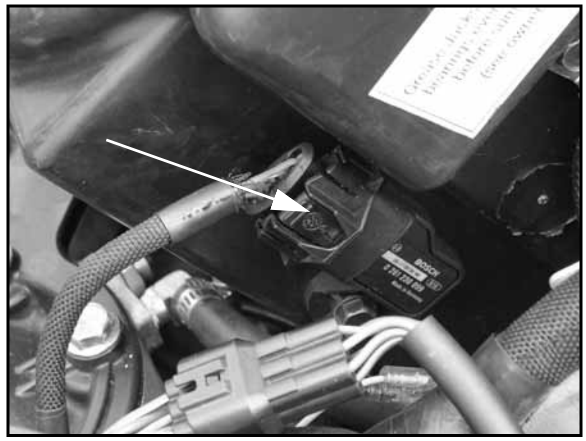
NOTE: The WHITE connector goes to the MAG coil (upper). The BLUE connector goes to the PTO coil (lower).



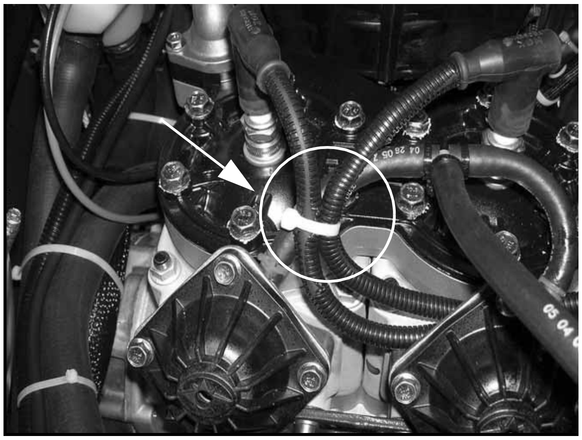
37. Connect the regulator rectifier connections.



38. Connect intake air sensor to the air box.



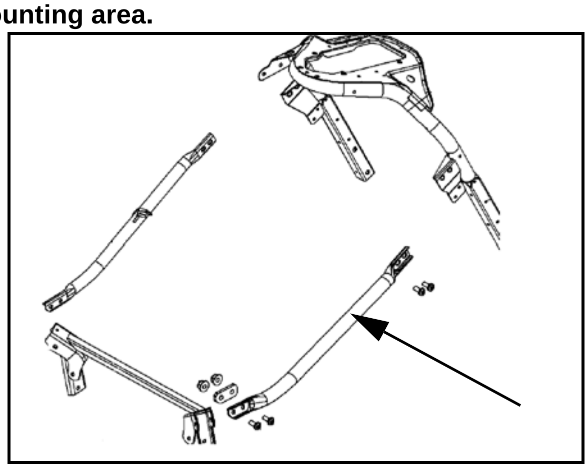
39. Connect the EV solenoid vent lines back onto the EV bases and install the panduit strap around the spark plug wires as shown.



40. Install the electrical center/belt holder over the electrical center by aligning the rear buttons to the rear of the clutch cover and installing the two fasteners.

41. Install the Nylock nuts and two T40 Torx bolts to the front and the two T40 to the rear of the LH and RH chassis brace and install the braces.

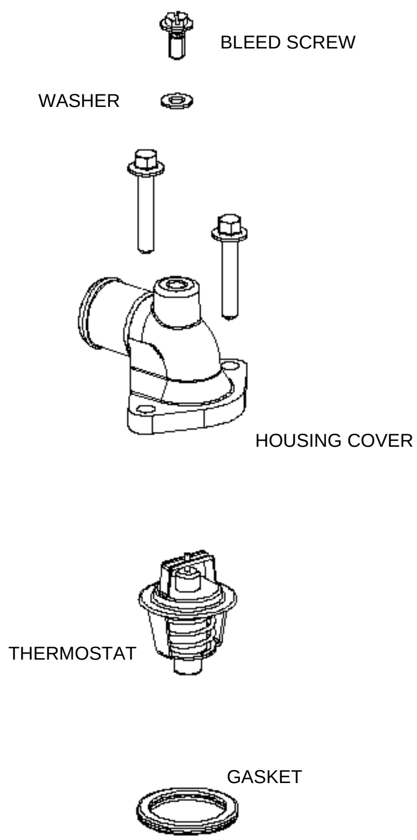
NOTE: Install the long bolts and the spacer on the front portion of the bar before inserting it into the mounting area.



42. Replace the nosepan plugs were removed to access the front chassis brace fasteners.
43. Route the recoil rope through the eyelet on the chassis brace and secure handle once past the console.
44. Install the exhaust system.
45. Add coolant and bleed system. See "Cooling System Bleeding" on page 3.6.
46. Premix the first tank of fuel. See "2 Stroke Gasoline / Oil Pre Mix" on page 2.7.
47. Test run the unit and clear any codes with Digital Wrench.
48. After test running check drive and driven clutch torque.

COOLING SYSTEMS

Thermostat Replacement



CAUTION

Allow engine to cool completely before working with the engine cooling system.
Engine coolant can be under pressure and hot. Escaping steam and/or coolant may cause severe burns to exposed skin.

1. Remove the housing cover, by removing the cover bolts.
2. Check the gasket condition and replace if damaged.
3. Replace the thermostat. Make sure that the spring side is facing downward or toward the engine.
4. Replace cover. Torque the cover fasteners to specification.

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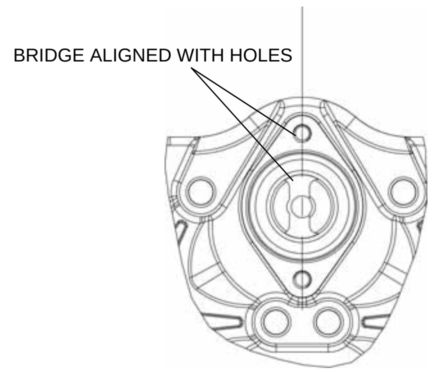
Cover Fasteners: 9 Ft.Lbs. (12 Nm)

5. Verify the bleed screw and washer are installed.

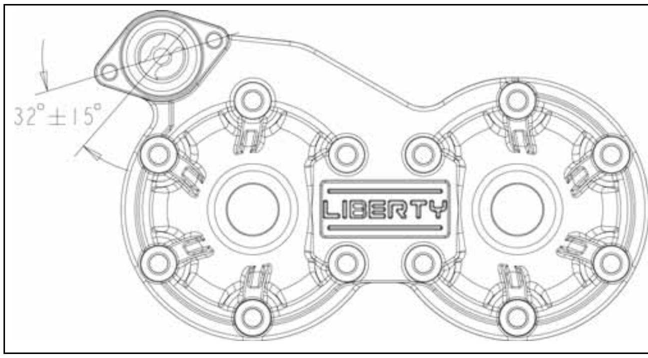
Thermostat Orientation

The thermostat must be installed in the cylinder head has shown in the illustrations.

Center Thermostat Location



Offset Thermostat Location



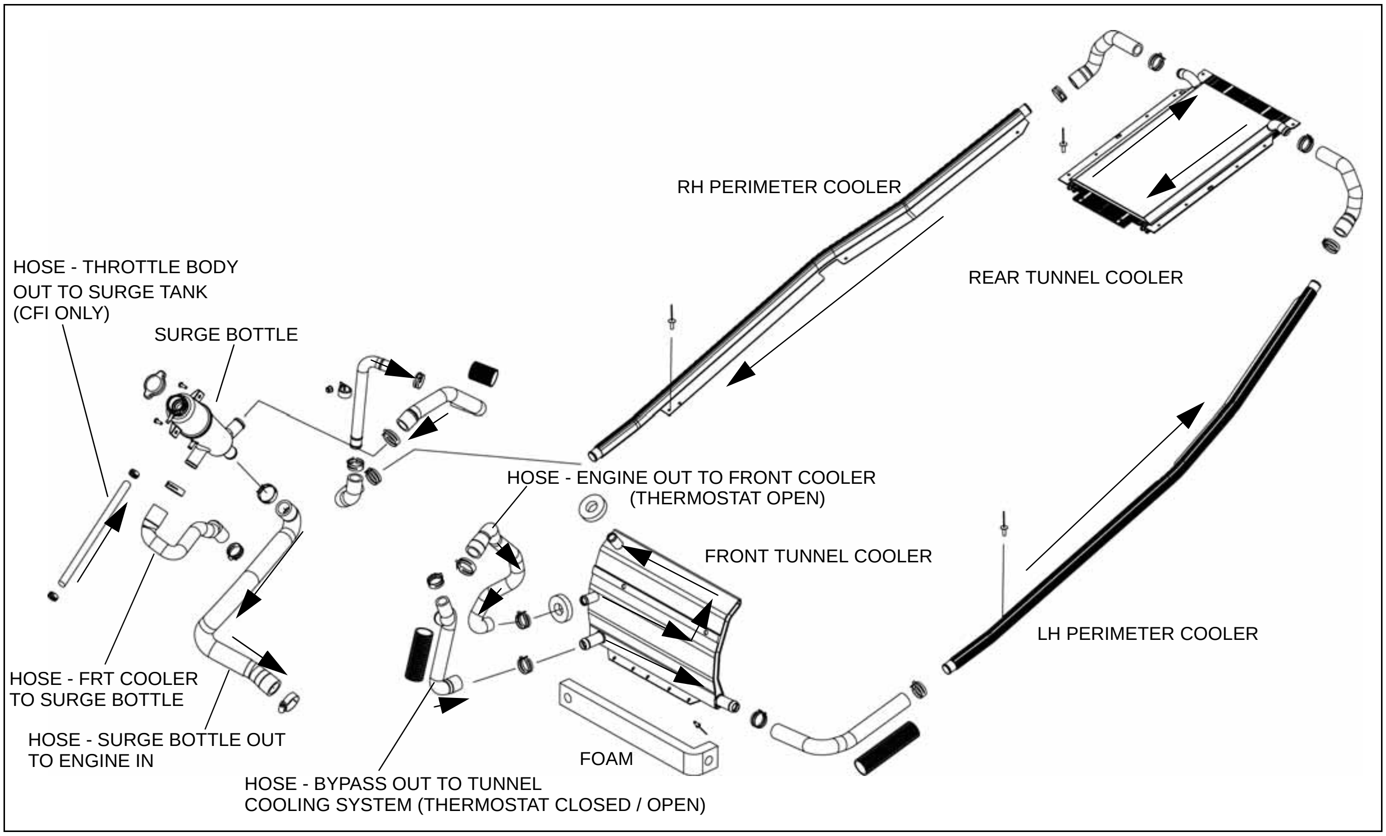
800 CFI Thermostats

There are two different thermostats used depending on the engine model number.

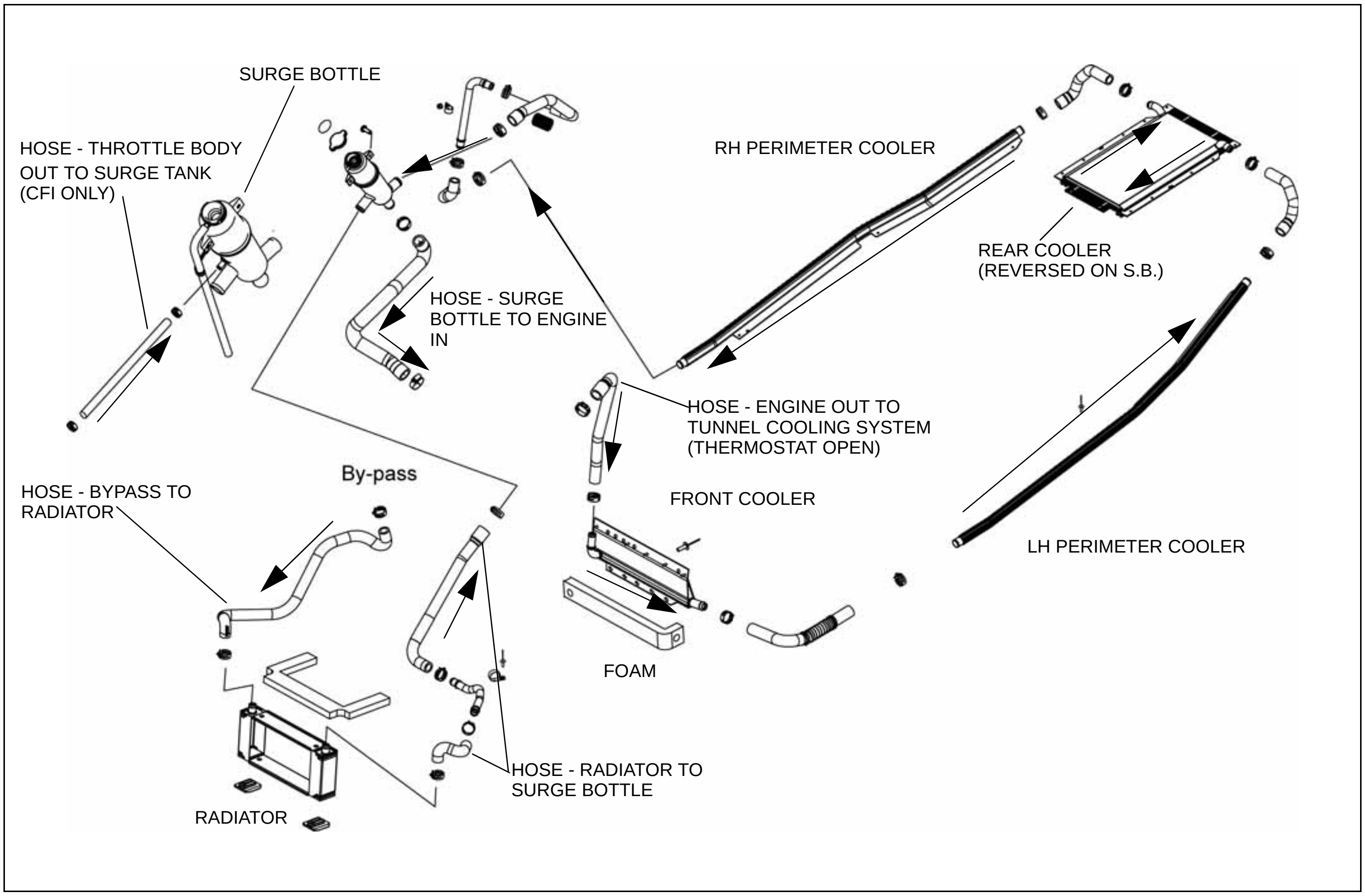
Engine Model	Thermostat PN	Bleed Hole ID
S3489-8044-PU8E	7052433	2 mm
S3471-8044-PU8E	7052452	3.5 mm

The larger bleed hole thermostat is designed for cooling systems that do not feature a bypass circuit in the cooling system.

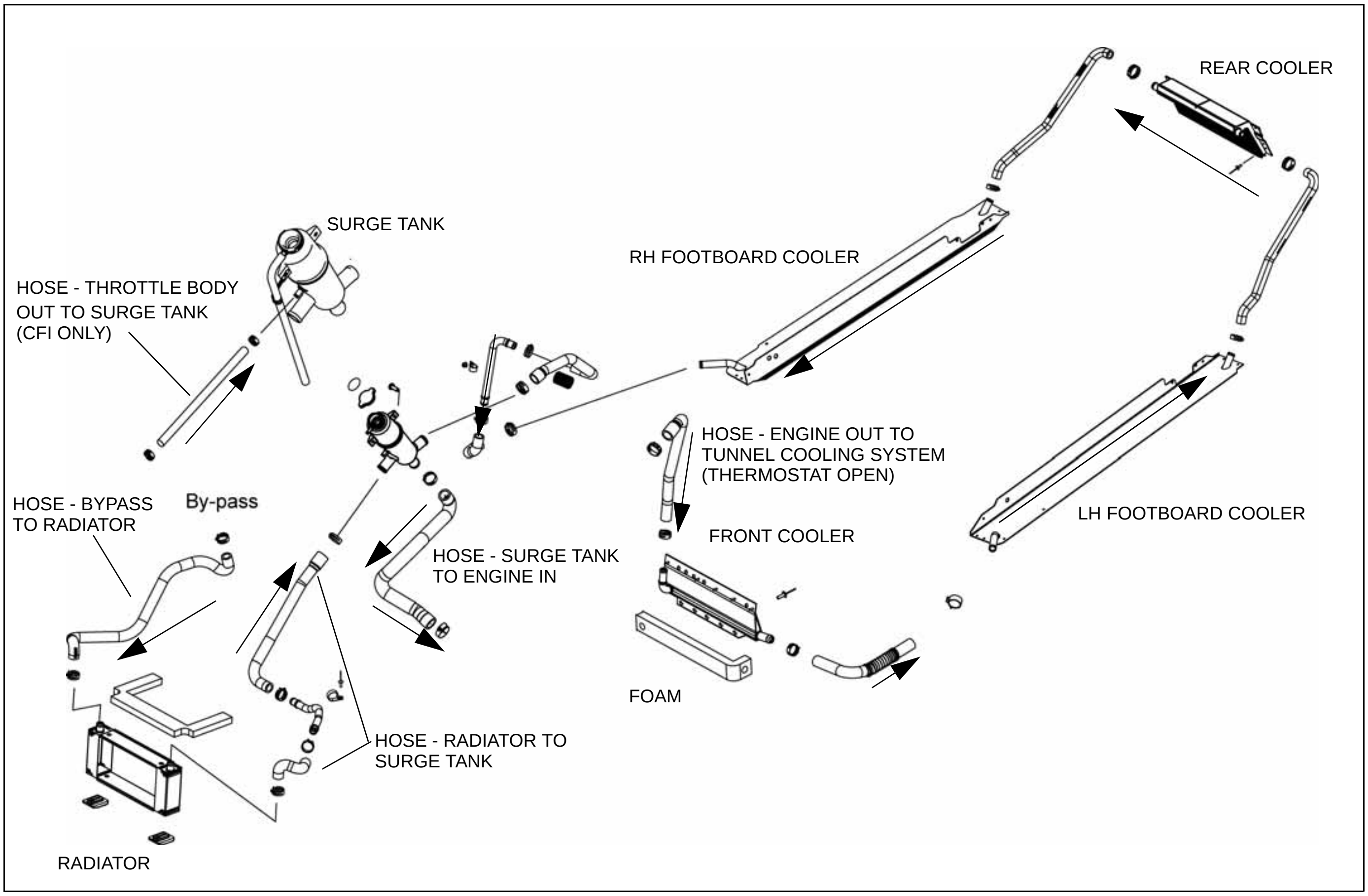
2007 700 Dragon IQ Cooling System



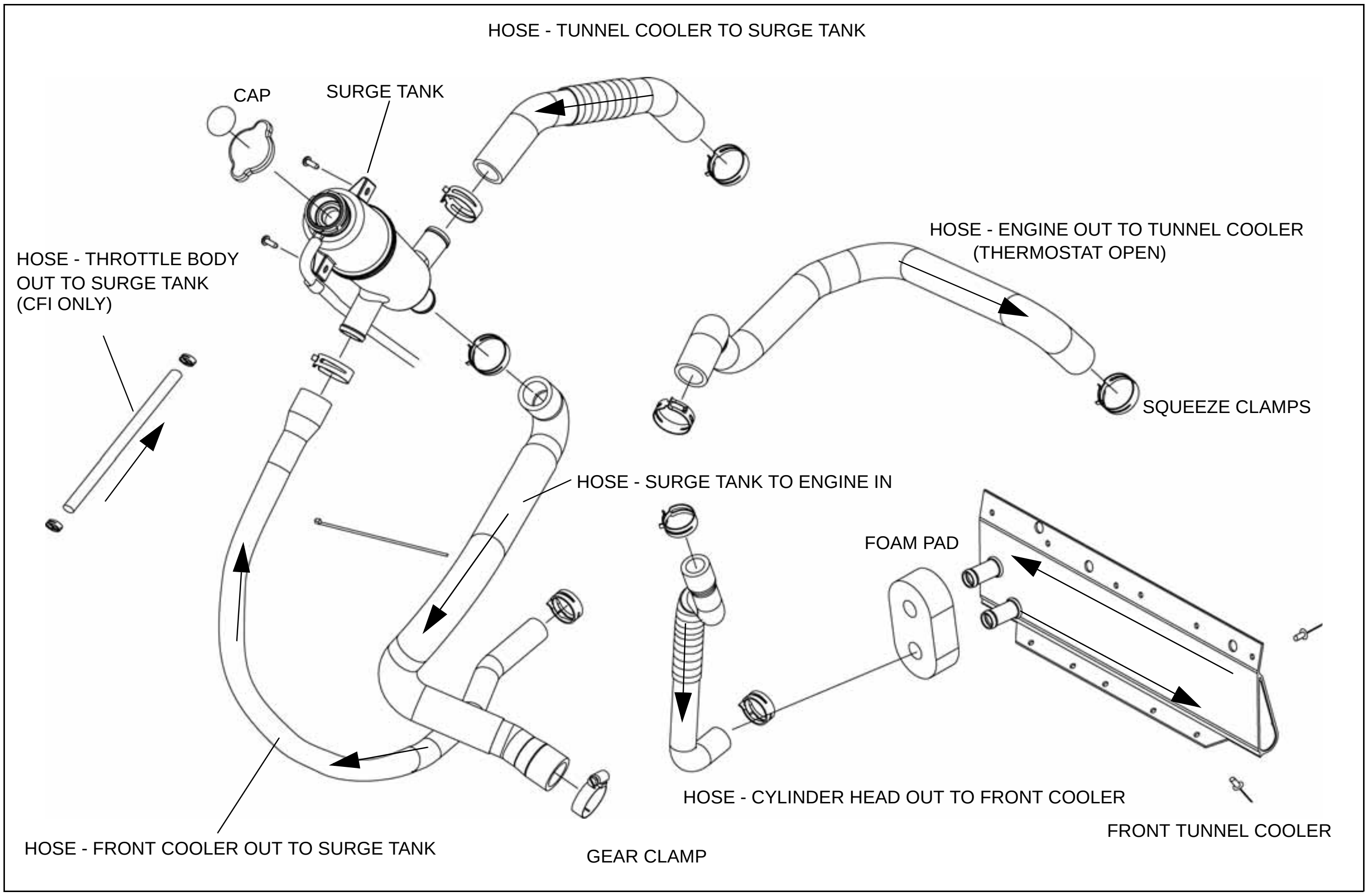
2007 600 IQ / Switchback / LX - 2008 CFI LX Cooling System



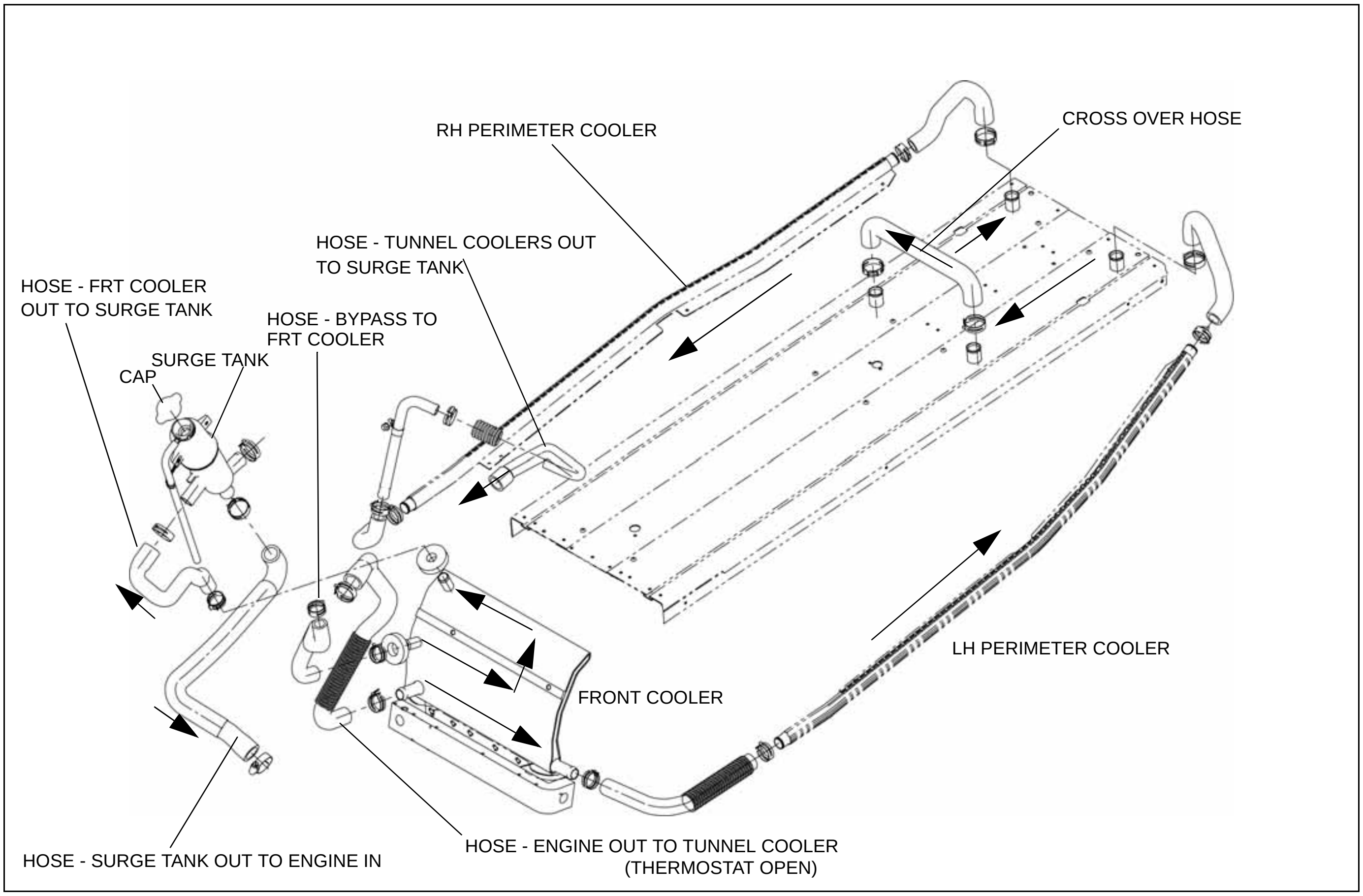
2007 - 2008 CFI Touring Cooling System



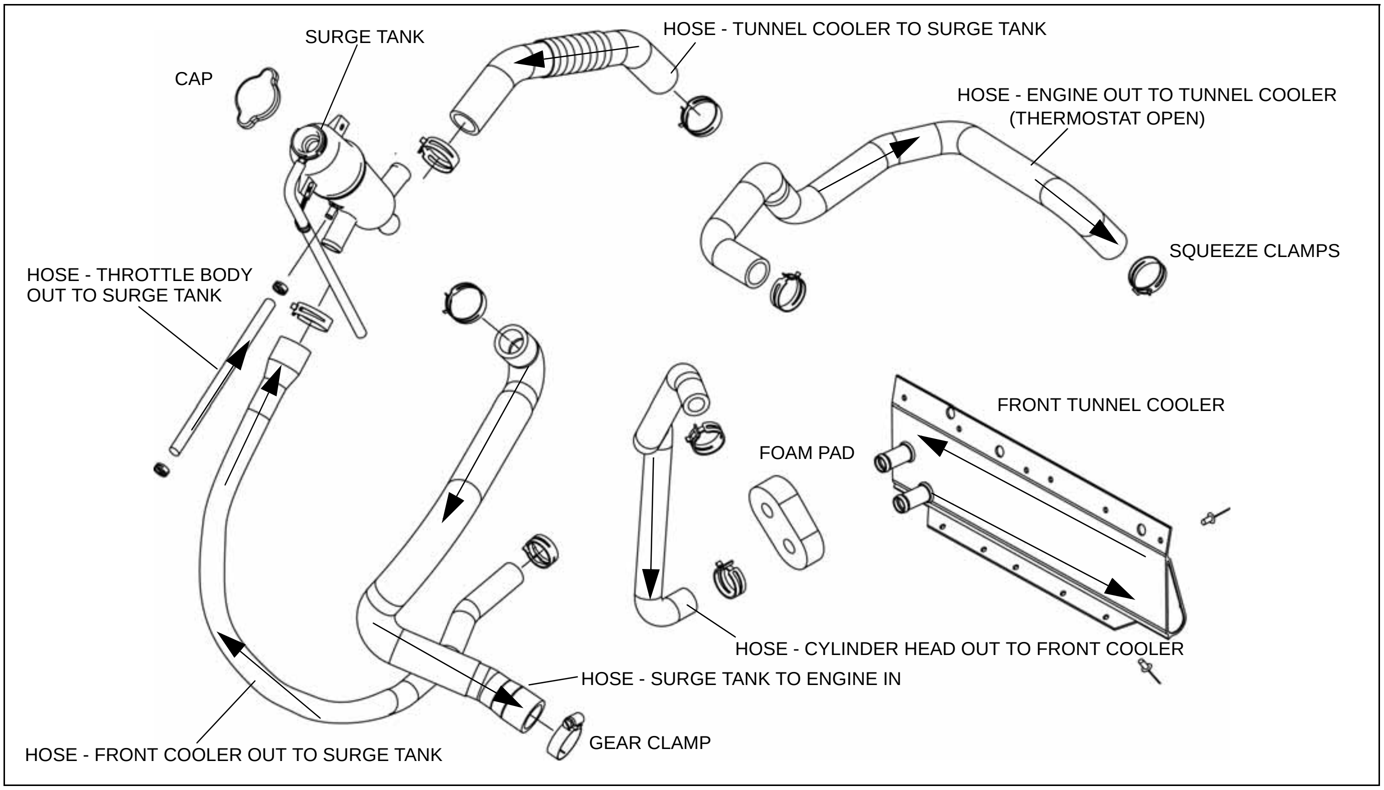
2007 - 2008 600 / 700 RMK Cooling System



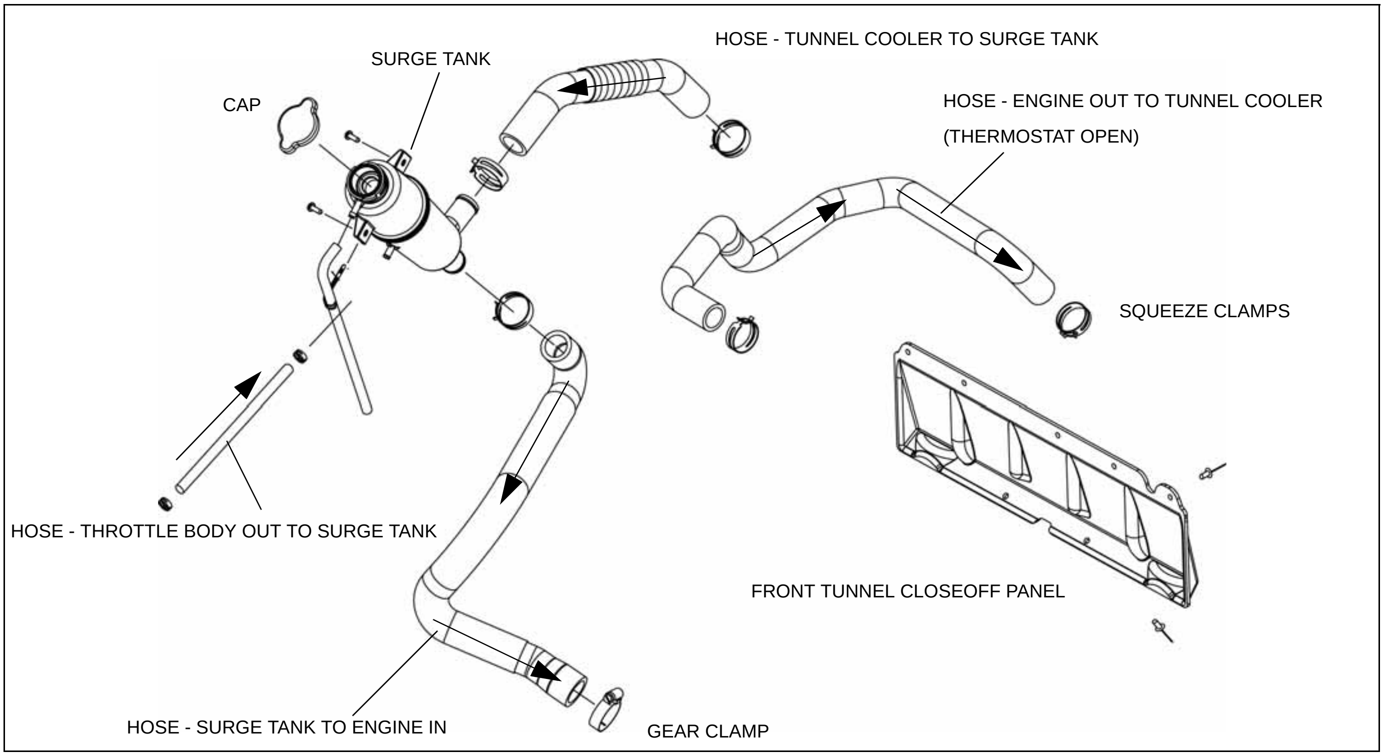
2008 IQ Shift - CFI 600 / 700 121 and Switchback Cooling System



2008 800 CFI RMK 155 Cooling System

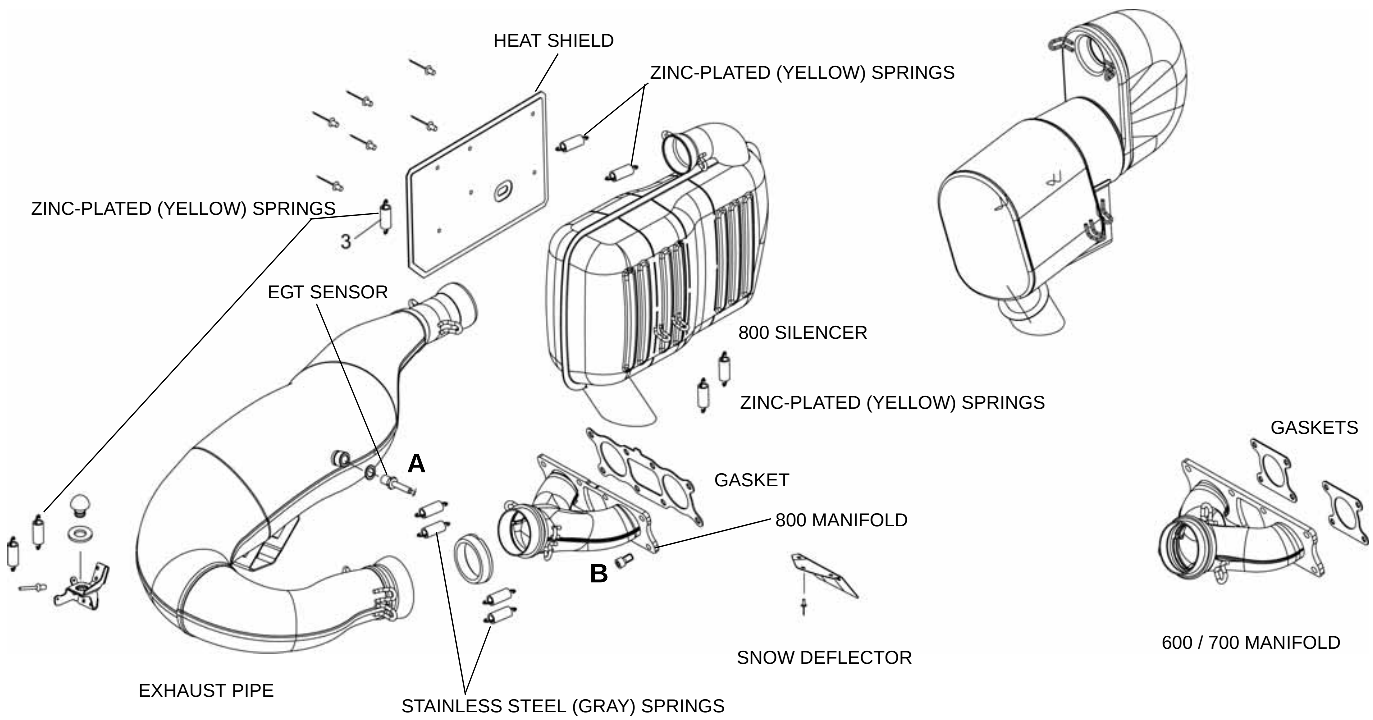


2008 800 CFI RMK 163 (No Bypass) Cooling System



EXHAUST SYSTEMS

Assembly View (Typical)



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A = EGT Sensor: 32 Ft.Lbs. (44 Nm) B = Exhaust Manifold Fasteners: 22 Ft. Lbs. (30 Nm)

NOTE: Always use the stainless steel (gray) springs to connect the exhaust pipe to the exhaust manifold.

CHAPTER 6

Final Drive and Brakes

GEAR RATIO SPEED CHARTS

8.373 CD Chaincase Speed Charts

Top Gear	26	26	25	25	25	25	25	24	24	23	23	22	22	22	21	21	21	20	20	19	19	19	19
Bottom Gear	36	40	36	37	40	41	44	41	42	39	42	39	40	43	40	41	44	41	45	38	41	42	46
Chain	76	78	76	76	78	78	80	78	78	76	78	76	76	78	76	76	78	76	78	74	76	76	78
Gear Ratio	1.38	1.54	1.44	1.48	1.60	1.64	1.76	1.71	1.75	1.70	1.83	1.77	1.82	1.95	1.90	1.95	2.10	2.05	2.25	2.00	2.16	2.21	2.42
Jackshaft RPM	MPH at 1 : 1 Clutch Ratio																						
6000	93	84	89	87	81	79	73	75	74	76	71	73	71	66	68	66	62	63	57	64	60	58	53
6250	97	87	93	91	84	82	76	79	77	79	74	76	74	69	70	69	64	65	60	67	62	61	55
6500	101	91	97	94	87	85	79	82	80	82	76	79	77	71	73	72	67	68	62	70	65	63	58
6750	105	94	101	98	91	88	82	85	83	85	79	82	80	74	76	74	69	71	64	72	67	66	60
7000	109	98	104	102	94	92	85	88	86	89	82	85	83	77	79	77	72	73	67	75	70	68	62
7250	112	101	108	105	97	95	88	91	89	92	85	88	86	80	82	80	74	76	69	78	72	70	64
7500	116	105	112	109	101	98	92	94	92	95	88	91	89	82	85	83	77	79	72	81	75	73	67
7750	120	108	116	112	104	101	95	97	95	98	91	94	92	85	87	85	79	81	74	83	77	75	69
8000	124	112	119	116	107	105	98	101	98	101	94	97	95	88	90	88	82	84	76	86	80	78	71
8250	128	115	123	120	111	108	101	104	101	104	97	100	97	91	93	91	85	86	79	89	82	80	73
8500	132	119	127	123	114	111	104	107	104	108	100	103	100	93	96	94	87	89	81	91	85	83	75
8750	136	122	131	127	117	115	107	110	107	111	103	106	103	96	99	96	90	92	84	94	87	85	78
9000	140	126	134	131	121	118	110	113	110	114	106	109	106	99	101	99	92	94	86	97	90	87	80
9250	143	129	138	134	124	121	113	116	114	117	109	112	109	102	104	102	95	97	88	99	92	90	82
9500	147	133	142	138	128	124	116	119	117	120	112	115	112	104	107	105	97	100	91	102	95	92	84
9750	151	136	145	141	131	128	119	123	120	123	115	118	115	107	110	107	100	102	93	105	97	95	86
10,000	155	140	149	145	134	131	122	126	123	127	118	121	118	110	113	110	103	105	95	107	100	97	89

DRIVE GEARS AND CHAINS

Drive Gears

PART NUMBER	DESCRIPTION
3221107	16T. 3/4W, 15 SPL, HYVO, PM
3221093	17T, 3/4W, 15 SPL, HYVO, PM
3221094	18T, 3/4W, 15 SPL, HYVO, PM
3221095	19T, 3/4W, 15 SPL, HYVO, PM
2900003	19T, 3/4W, 15 SPL, HYVO, CM
3221096	20T, 3/4W, 15 SPL, HYVO, PM
2900004	20T, 3/4W, 15 SPL, HYVO, CM
3221097	21T, 3/4W, 15 SPL, HYVO, PM
2900005	21T, 3/4W, 15 SPL, HYVO, CM
3221098	22T, 3/4W, 15 SPL, HYVO, PM
3221099	23T, 3/4W, 15 SPL, HYVO, PM
3221101	24T, 3/4W, 15 SPL, HYVO, PM
3221102	25T, 3/4W, 15 SPL, HYVO, PM
2900009	25T, 3/4W, 15 SPL, HYVO, CM
3222127	26T, 3/4W, 15 SPL, HYVO, PM
3222126	36T, 3/4W, 15 SPL, HYVO, PM
2900010	37T, 3/4W, 15 SPL, HYVO, CM
3222125	37T, 3/4W, 15 SPL, HYVO, PM
2900144	37T, 3/4W, 15 SPL, HYVO, Light Weight
3222129	38T, 3/4W, 15 SPL, HYVO, PM
2900143	38T, 3/4W, 15 SPL, HYVO, Light Weight
3222108	39T, 3/4W, 15 SPL, HYVO, PM
2900012	39T, 3/4W, 15 SPL, HYVO, CM
2900142	39T, 3/4W, 15 SPL, HYVO, Light Weight
3222099	40T, 3/4W, 15 SPL, HYVO, PM
2900141	40T, 3/4W, 15 SPL, HYVO, Light Weight
3222101	41T, 3/4W, 15 SPL, HYVO, PM
2900140	41T, 3/4W, 15 SPL, HYVO, Light Weight
2900139	42T, 3/4W, 15 SPL, HYVO, Light Weight
2900016	43T, 3/4W, 15 SPL, HYVO, CM
3221188	43T, 3/4W, 15 SPL, HYVO, PM
2900138	43T, 3/4W, 15 SPL, HYVO, Light Weight
3222126	45T, 3/4W, 15 SPL, HYVO, Light Weight

CM = Cut Metal Sprocket   PM = Powder Metal Sprocket

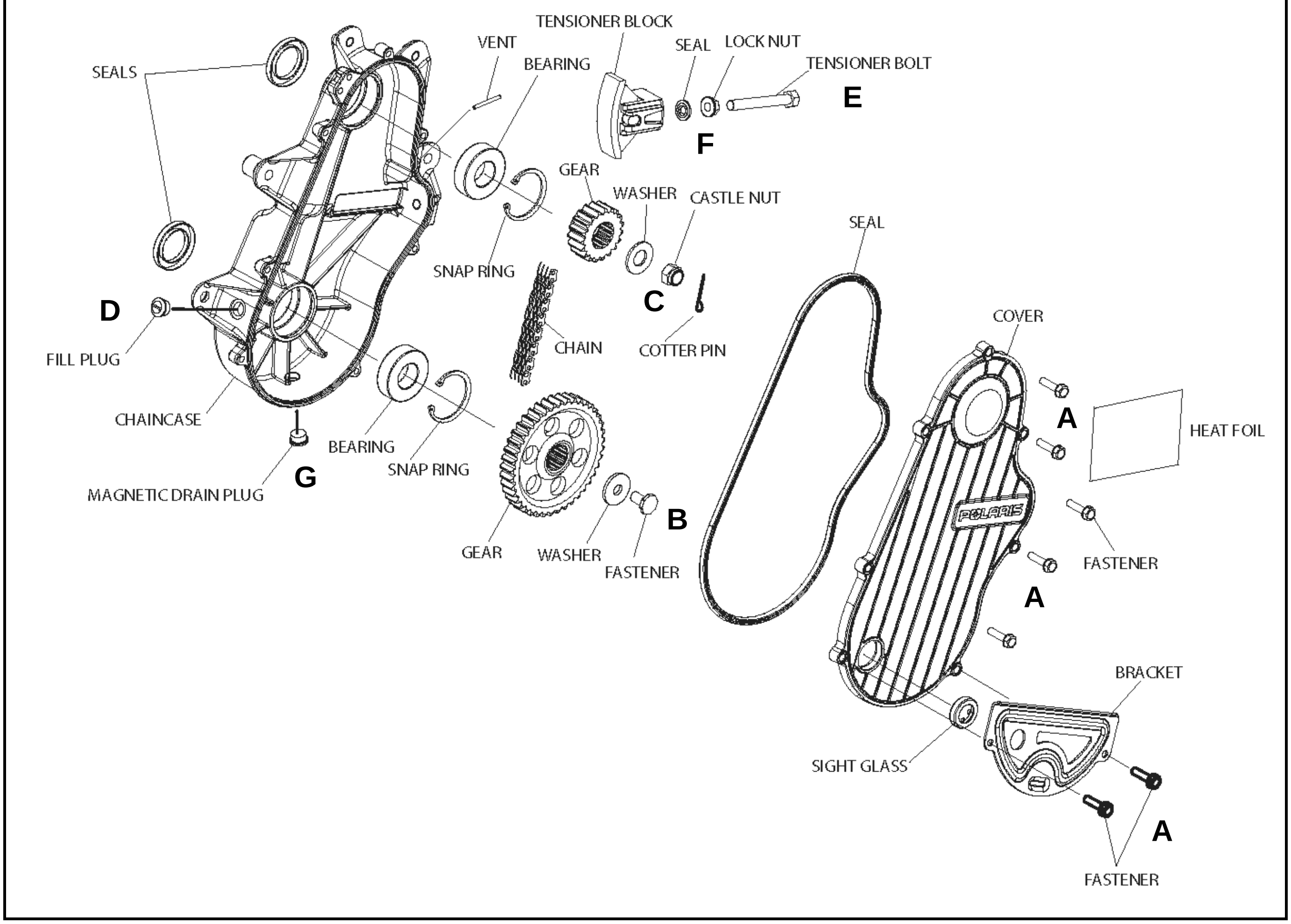
Drive Chains

PART NUMBER	DESCRIPTION
3221114	64P, 3/4W, HYVO CHAIN
3221113	66P, 3/4W, HYVO CHAIN
3221112	68P, 3/4W, HYVO CHAIN
3221115	70P, 3/4W, HYVO CHAIN
3221110	72P, 3/4W, HYVO CHAIN
3221109	74P, 3/4W, HYVO CHAIN
3221108	76P, 3/4W, HYVO CHAIN
3222110	78P, 3/4W, HYVO CHAIN

6

8.373 CHAINCASE

Assembly View



= T

A = Cover Fasteners = 10 Ft.Lbs. (12 Nm)
B = Lower Gear Fastener = 19 Ft.Lbs. (26 Nm)
C = Upper Gear Castle Nut = 50 Ft.Lbs. (62 Nm)
D = Fill Plug = 18 - 25 In.Lbs.
E = Tensioner Bolt = Hand Tight
F = Tensioner Lock Nut = 21 Ft.Lbs. (28 Nm)
G = Drain Plug = 8 Ft.Lbs. (11 Nm)

WARNING

Incorrect chain tension may cause the chain to break which may result in the loss of braking control.

CAUTION

Never re-use Cotter pins. Always replace with new parts.
Incorrect chain tension may cause the chain to break, causing severe chaincase damage.

Installing gear sets not listed on the Gear Ratio Speed chart may cause premature gear / chain wear.

NOTE: Verify tensioner bolt seal is flush with mating surface prior to securing lock nut.
Maintain gear oil level at mid-point of sight glass with vehicle on level ground.
Install lower gear washer with beveled side out.

Chaincase Disassembly

1. Position the vehicle on level ground. Drain the oil out of the chaincase into a suitable container. Replace the drain plug.
2. Remove the right-side door panel, and exhaust silencer.
3. Remove the chaincase cover. Un-screw the chain tensioner bolt.
4. Remove the cotter pin from the upper gear castle nut and discard. Lock the parking brake, then remove the castle nut.
5. Remove the lower gear fastener and washer. Note that beveled side of the washer faces out.
6. Remove the chain and upper / lower gears from the chaincase.
7. Remove the brake caliper from the chaincase. Secure the caliper up and away from the chaincase.

CAUTION
Do not kink or bend the brake hose.

8. Remove the drive belt from the clutches. Remove the driven clutch.
9. Raise the rear of the vehicle on a track stand. Loosen the rear idler wheels and track tension adjusters. Slide the rear idler shaft completely forward.
10. Remove the speedometer flange / housing from the bulkhead.
11. Slide the driveshaft out of the chaincase towards the clutch-side of the vehicle.

NOTE: On some models, it may be necessary to remove the left-side console storage bucket.

12. Remove the nuts securing the chaincase to the frame. Carefully pull the chaincase away from the jackshaft, then out of the engine compartment.
13. To replace the seals and bearings, carefully pry out the seals from the backside of the chaincase and discard.
14. Remove the two snap rings securing the bearings inside the case.
15. Press on the outer race of each bearing from the backside of the case to remove each bearing.

CAUTION
Always press on the outer race of the bearings.

16. To install the bearing, press on the bearing outer race from the inside of the cover until fully seated. Install the snap ring making sure it is seated in the groove.
17. Lightly coat the outer edge of each new seal with oil, then install with the seal lips facing each bearing from the backside of the case.
18. Inspect the jackshaft seal sleeve for abnormal wear and tear. Replace the o ring with a new part.

Chaincase Assembly

1. Install a the jackshaft seal sleeve and a new o ring on the jackshaft.
2. Install the jackshaft installation tool, PN 2871296, on to the end of the jackshaft, or wrap electrical tape over the jackshaft splines.
3. Carefully re-install the chaincase. Install the chaincase fasteners and nuts. Hand-tighten the nuts so that the chaincase can still be moved.
4. Install the driveshaft back into the chaincase.
5. Remove the jackshaft installation tool from the jackshaft, then install the jackshaft alignment tool, PN 2871535, on to the jackshaft.
6. Torque all of the chaincase fasteners to specification using a criss-cross pattern.

= T
Chaincase Mounting Fasteners 28 Ft.Lbs. (38 Nm) DO NOT OVER-TORQUE FASTENERS

7. Remove the jackshaft alignment tool. Install the brake caliper and torque fasteners to specification.

= T
Brake Caliper Mounting Fasteners 19 - 21 Ft.Lbs. (26 - 28 Nm)

8. Torque speedometer / driveshaft flange nuts and torque to specification.

= T
Speedometer / Driveshaft Nuts 17 Ft.Lbs. (23 Nm)

9. Torque speedometer housing nuts to specification.
10. Lock the parking brake.

= T
Speedometer Housing Nuts 17 Ft.Lbs. (23 Nm)

11. Reinstall the chain and upper / lower gears. Install the lower gear washer with the beveled side facing out. Torque castle nut and lower gear fastener to specifications.

= T
Upper Gear Castle Nut 50 Ft.Lbs. (68 Nm) (Back nut off only to align cotter pin holes with nut.) Lower Gear Fastener 19 Ft.Lbs. (26 Nm)

12. Turn the chain tensioner bolt in until there is 0.25 in. (6.35mm) deflection between the backside of the chain and the chaincase.

= In. / mm.
Drive Chain Deflection 0.25in. (6.35mm)

13. Turn the tensioner bolt seal down into the chaincase. Torque the tensioner bolt jam nut to specification.

= T
Tensioner Jam Nut 21 Ft.lbs. (28 Nm)

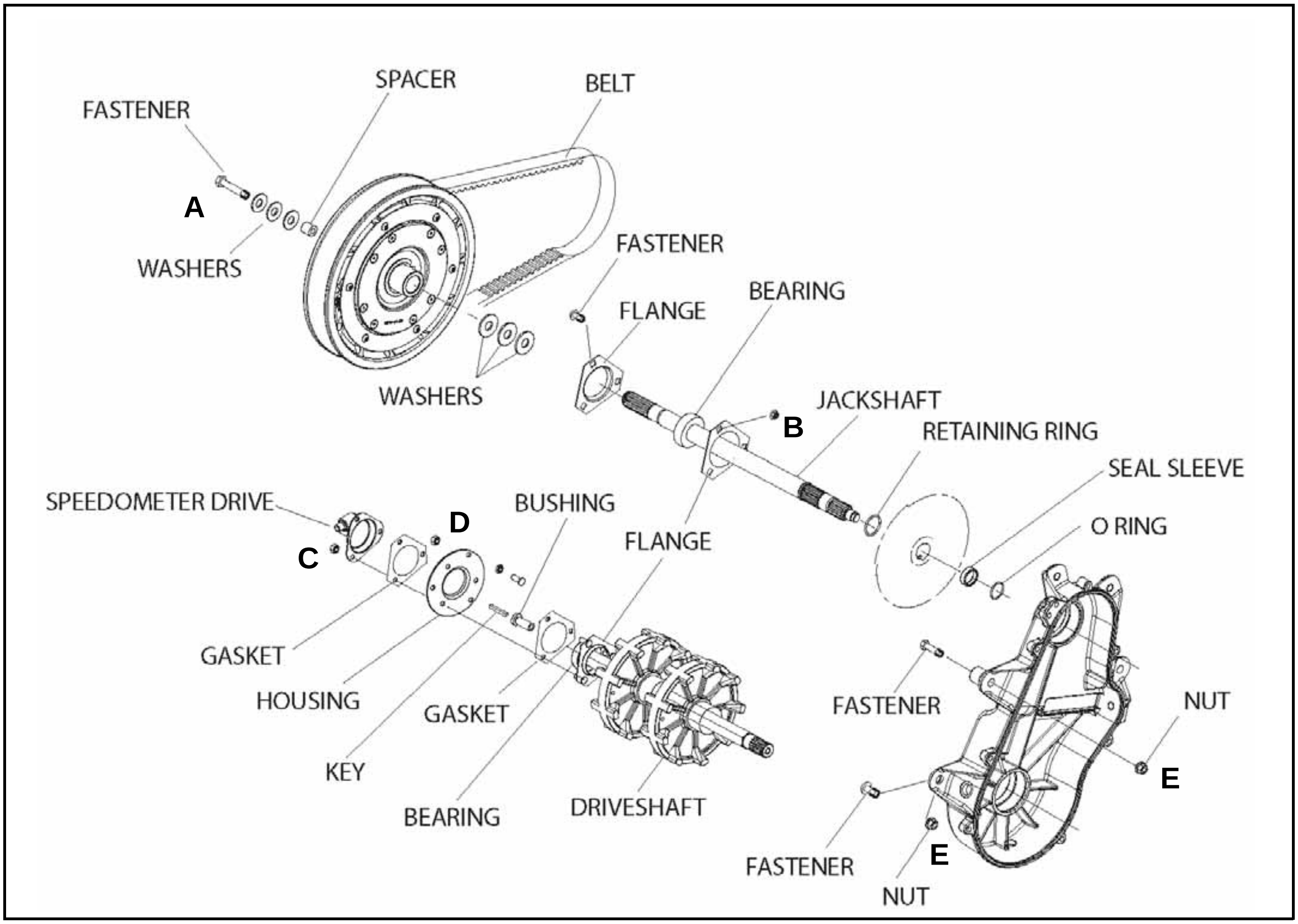
14. Verify the cover seal is in good condition. Install the cover and bracket. Torque fasteners to specification using a criss-cross pattern.

= T
Chaincase Cover Fasteners 10 Ft.Lbs. (13 Nm)

15. Fill the chaincase with new chaincase oil until the level is at the mid point of the sight glass.
16. Reinstall the exhaust silencer and door panel.
17. Reference the PVT System and Front and Rear Suspensions chapters for idler shaft torque and PVT system assembly information.

DRIVE TRAIN

Speedometer Cable Type Drive Train Assembly



= T
A = Driven Clutch Fastener = 17 Ft.Lbs. (23 Nm) B = Jackshaft Flange Nuts = 17 Ft.Lbs. (23 Nm) C = Speedometer Housing Nuts = 17 Ft.Lbs. (23 Nm) D = Driveshaft Housing Nuts = 17 Ft.Lbs. (23 Nm) E = Chaincase Mounting Nuts = 28 Ft.Lbs. (38 Nm)

CAUTION
Do not over-torque the chaincase mounting nuts.

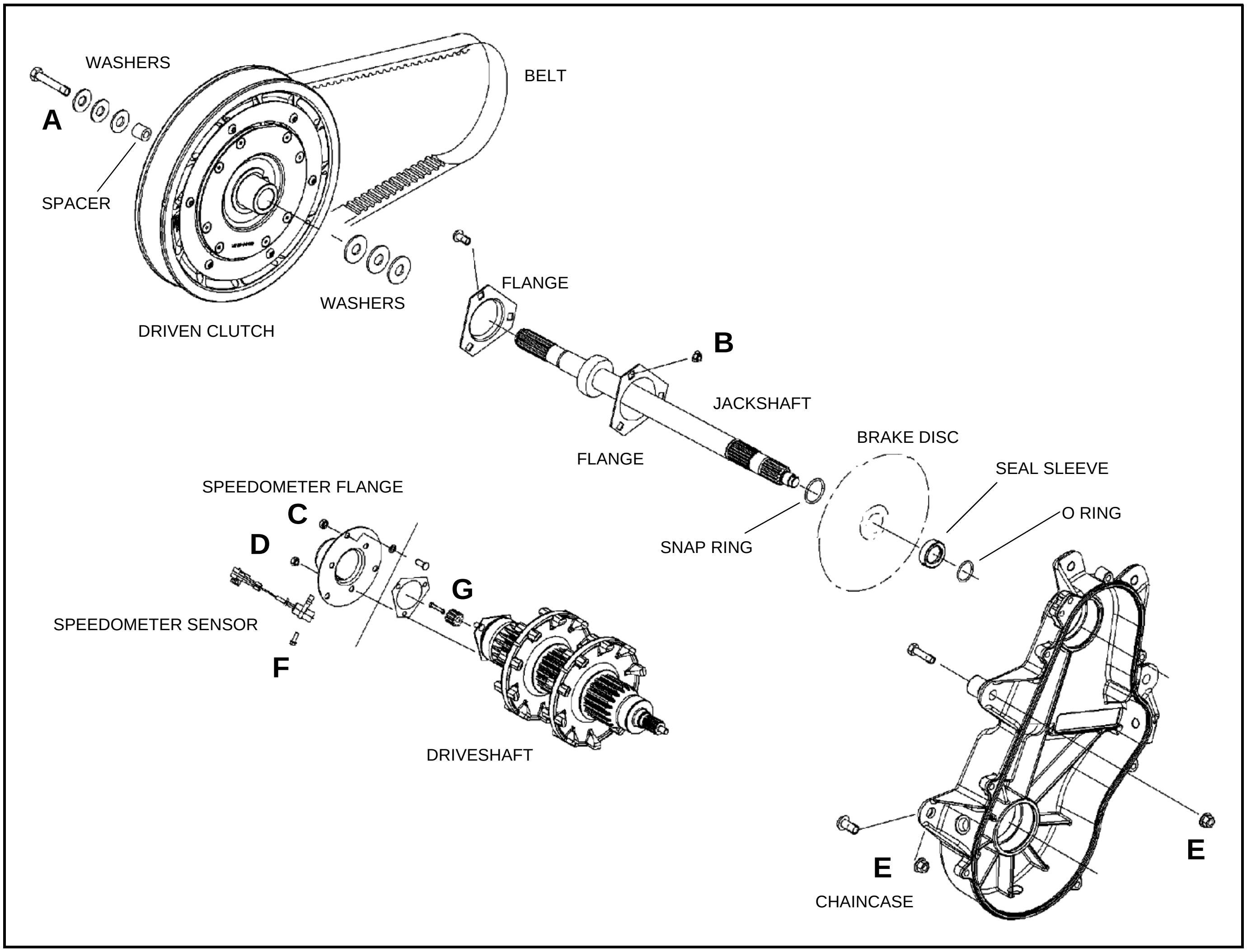
NOTE: Set driven clutch offset following procedure in the PVT System Chapter.

Lubricate components as outlined in the Periodic Maintenance Table.

Tighten chaincase mounting nuts using a criss-cross pattern.

Install jackshaft seal sleeve with beveled edge towards brake disc, then install o ring inside sleeve.

Electronic Speedometer Drive Train Assembly



= T
A = Driven Clutch Fastener = 17 Ft.Lbs. (23 Nm)
B = Jackshaft Flange Nuts = 17 Ft.Lbs. (23 Nm)
C = Speedometer Housing Nuts = 17 Ft.Lbs. (23 Nm)
D = Driveshaft Housing Nuts = 17 Ft.Lbs. (23 Nm)
E = Chaincase Mounting Nuts = 28 Ft.Lbs. (38 Nm)
F = Speedometer Sensor Screw = 5 Ft.Lbs. (7 Nm)
G = Speedometer Gear Screw = 15 Ft.Lbs. (11 Nm)

CAUTION
Do not over-torque the chaincase mounting nuts.

NOTE: Set driven clutch offset following procedure in the PVT System Chapter.

Lubricate components as outlined in the Periodic Maintenance Table.

Tighten chaincase mounting nuts using a criss-cross pattern.

Install jackshaft seal sleeve with beveled edge towards brake disc, then install o-ring inside sleeve.

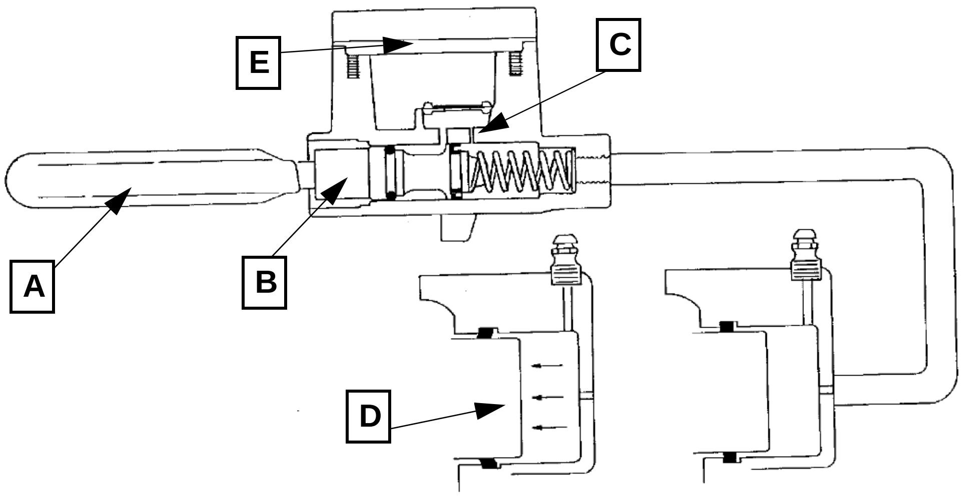
Driveshaft Removal/Installation

1. Remove the side panels.
2. Remove the intake plenum.
3. Remove the drain plug and drain the chaincase fluid.
4. Replace the chaincase drain plug and torque it to 8 ft-lb (11 N-m).

= T
Drain Plug: 8 ft-lb (11 N-m)

5. Remove the chaincase cover.
6. Loosen the tensioner.
7. Remove the lower sprocket bolt and washer.
8. Shut off the fuel valve if so equipped.
9. Remove the exhaust system.
10. Remove the speedo drive pickup.
11. Remove the speedo drive housing.
12. Remove the rear skid.
13. With the sled over on its left side and the rear skid removed, remove the drive shaft.
14. Assemble in reverse order

BRAKE SYSTEM



Overview

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.

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 pistons (D) located in the brake caliper move toward the disc and applies pressure to the moveable brake pads. 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.

This system also incorporates a diaphragm (E) as part of the cover gasket and a vent port (on cover) 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.

General Guidelines

WARNING

An unsafe condition exists when air is trapped in the hydraulic brake system. Air in the brake hydraulic system acts like a soft spring and absorbs a large percentage of the pressure developed by the master cylinder. Without this pressure, the braking system cannot develop full braking force to allow for safe, controlled stops. It is extremely important to bleed the brakes properly after any brake system work has been performed or when inspection reveals spongy brakes.

A soft, spongy feeling in the brake lever and/or brake pedal could indicate a hazardous condition in the brake system. Do not operate the vehicle until the failure in the brake system is corrected.

Keep brake fluid tightly sealed and out of reach of children. Brake fluid can accumulate moisture, reducing it's effectiveness.

Contaminated brake discs or brake pads greatly reduce braking performance and increase stopping distance. Do not attempt to clean contaminated pads. Replace them. Clean the brake disc with brake cleaner.

This brake system requires ethylene-glycol based fluid (DOT 4). Do not use or mix different types of fluid such as silicone-based or petroleum-based.

Do not use brake fluid taken from old, used or unsealed containers. Never reuse brake fluid.

CAUTION

Pressure bleeding is not recommended. When fluid surges through the fittings, it is possible to cavitate the fluid and create air in the system. In addition, the fluid stored in a pressure bleeder may be contaminated. Always use fresh DOT 4 brake fluid from a sealed container.

Keep these points in mind when bleeding hydraulic brakes:

- The master cylinder reservoirs have limited capacities. It is easy to empty them during the bleeding procedure. This introduces air into the system which you are trying to purge. Watch the reservoir closely and add fluid when necessary to prevent air from entering the system.
- Apply only light to moderate pressure to the lever or pedal when bleeding the brake system. Extreme pressure will cause a surge of fluid through the small orifices of the brake system when the bleeder screw is opened and introduce air into the system by means of cavitation.
- Small amounts of air can become trapped in the banjo bolt fittings at the master cylinder(s) and junction points of brake lines. These fittings can be purged of air by following a standard bleeding procedure at these fittings (instead of the bleed screw on caliper) if necessary to speed the bleeding process. This is usually only needed if system was completely drained of fluid. Bleed each line connection, starting with the fitting closest to the master cylinder, working toward the caliper, and ending with the bleed screw.
- Always torque banjo bolts and other brake system fittings to specified torque.
- Change fluid every 2 years, or when fluid is dark or contamination is suspected.

Brake Fluid Replacement & Bleeding

This procedure should be used to change fluid or bleed brakes during regular maintenance, or after complete brake service. 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 the reservoir cover.

2. Remove the two T-15 Torx™ screws from the cover.
3. Carefully remove the cover and diaphragm assembly from the reservoir.
4. Under the cover, inspect the vent slots under the bellows and remove any debris or blockage.
5. Bleed or replace the fluid by attaching a clear hose from the caliper bleeder fitting to a clean container. Be sure the hose fits tightly on the bleeder fitting.
6. Pump the brake lever a few times and hold.
7. Slowly open the bleeder fitting and let the old fluid or air

escape. You will feel the lever release as you let the fluid or air escape.

8. Pump the brake lever a few times and hold it again.
9. Repeat steps 7 and 8 until you see new brake fluid coming from the caliper bleeder fitting or if you are bleeding the air, repeat this step until you see only fluid coming out. This may take several intervals.

10. Torque the bleeder screw to 8-11 ft-lb (11-15 N-m).

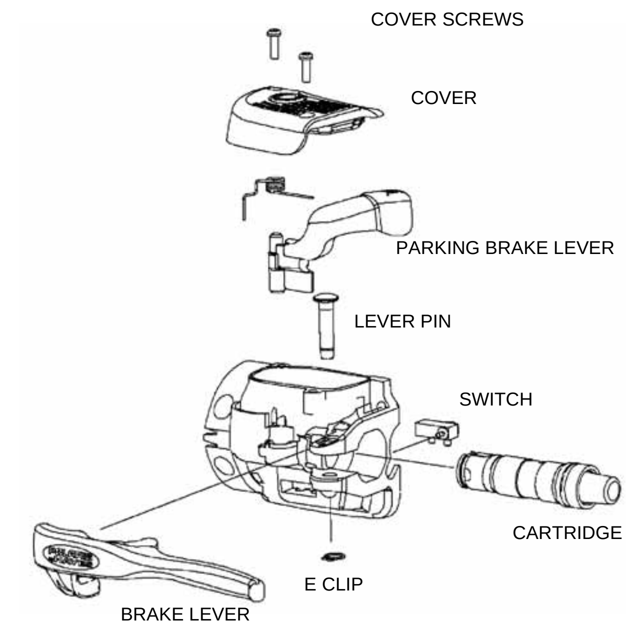
= T
Bleeder Screw: 8-11 ft-lb (11-15 N-m)

11. When adding fluid, add DOT 4 brake fluid to 1/4-5/16" (.6-.8 cm) from the reservoir top.
12. Install cover and diaphragm assembly.
13. Tighten the cover screws to 16-20 in-lb (1.8-2.3 N-m).

= T
Cover Screws: 16-20 in-lb (1.8-2.3 N-m)

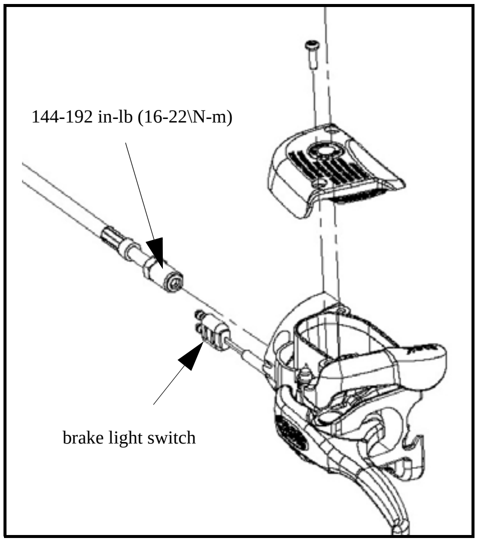
14. Field test machine before putting into service. Check for proper braking action and lever reserve. Lever reserve is when the lever is firmly applied, the lever reserve should be no less than 1/2" (1.3 cm) from the handlebar.
15. Verify that the sight glass indicates a full reservoir.
16. Check brake system for any fluid leaks.

Master Cylinder / Lever Service



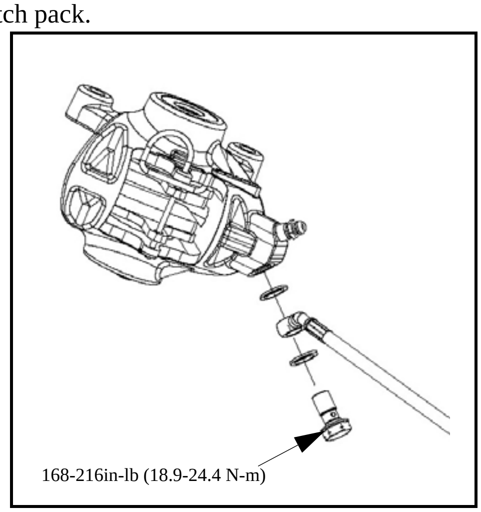
1. To remove the brake lever, remove the E clip from the lever pin.
2. Extract the pin from the housing, then remove the lever.
3. To remove the parking brake lever, the housing cover must be removed. Once removed, carefully extract the spring noting it its position inside the housing. Remove the parking brake lever.
4. To remove the cartridge, completely drain the brake fluid from the housing. Remove the brake and parking brake levers.
5. Disconnect the brake hose from the cartridge. Carefully pop the cartridge out of the housing.
6. To install the cartridge, lubricate the entire surface with DOT 4 brake fluid.
7. Align the cartridge with the housing tabs, then firmly press the cartridge back into the housing until the cartridge is engaged with the tabs.
8. Refill and bleed the brakes system as outlined in this chapter. See “Brake Fluid Replacement & Bleeding” on page 6.11.

Brake Line Replacement



Follow these steps if the brake line is to be replaced.

1. If needed bleed the brake system by attaching a clear hose to the caliper bleed fitting.
2. Attach the other end to a Mity Vac or similar vacuum tool.
3. Bleed the system of brake fluid.
4. Note the orientation of the brake line. The brake line will need to be replaced in the same orientation.
5. Remove the brake line from the caliper. Cap or cover the end to catch any brake fluid that may still be in the line.
6. Loosen the brake line from the master cylinder 1/4 to 1/2 turn.
7. Remove the 4 screws that hold the master cylinder to the handlebar. This will separate the master cylinder from the switch pack.



8. Unplug the brake light switch harness from the master cylinder.
9. Remove the brake line from the master cylinder.
10. Install new brake line on caliper and orientate it as noted in step 4.
11. Torque the caliper banjo bolt to 168-216 in-lb (19-24 N-m).

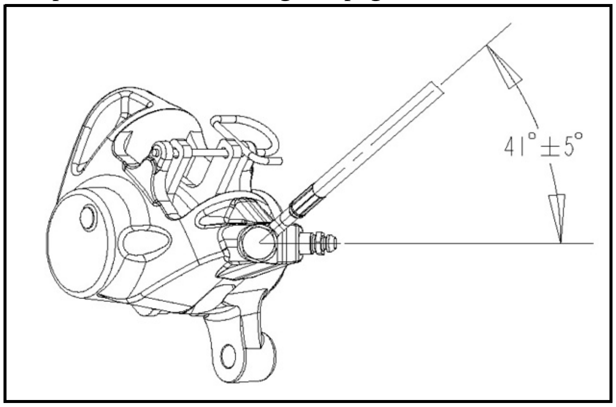
= T
Caliper Banjo Bolt: 168-216 in-lb (18-24 N-m)

12. Insert the new brake line and install into the master cylinder. Torque the brake line to 144-192 in-lb (16-21 N-m).

= T
Brake Line: 144-192 in-lb (16-22 N-m)

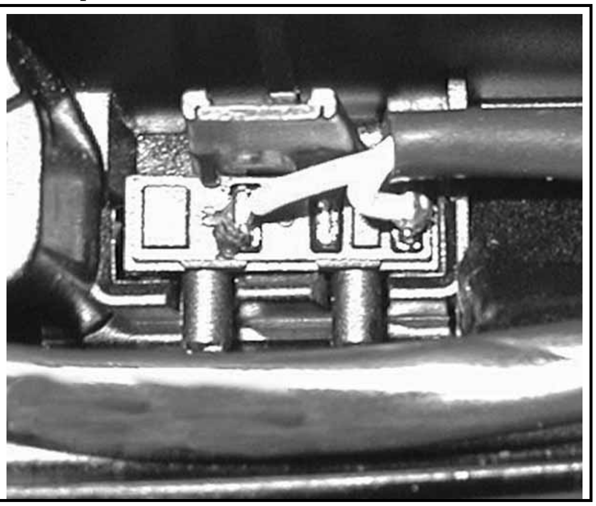
13. Tighten the brake line into the master cylinder in an orientation so that the line does not have any sharp bends when it is installed on the handlebar.
14. Route the brake light switch in the harness correctly.
15. Place the switch pack with the master cylinder onto the handle bar. Two smaller screws should be placed on the top and the longest screw is placed on the lower right.

16. Follow the bleeding procedure. See “Brake Fluid Replacement & Bleeding” on page 6.11.



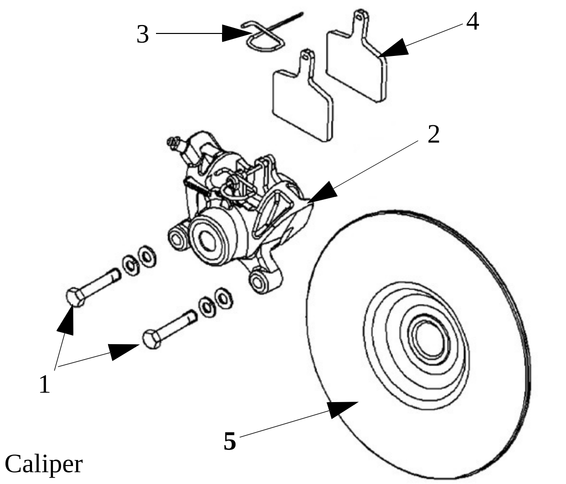
Brake Light Switch Replacement

1. Remove the 4 screws that hold the master cylinder to the handlebar. This will separate the master cylinder from the switch pack.



2. Unplug the brake light switch harness from the master cylinder.
3. Unplug the brake light switch from the master cylinder.
4. Replace faulty brake light switch into the master cylinder and route wires correctly.
5. Plug the brake switch back into the harness.
6. Replace the master cylinder to the switch pack and insert the smaller screws on the top, the longest one goes into the lower right side.

Caliper Removal



Caliper

1. Remove the two caliper bolts that hold the caliper to the chaincase.
2. Remove the caliper from the brake disc.

Caliper Replacement

The only serviceable item in the brake caliper is the brake pads, piston and seals. If any service is required of the caliper a new caliper is available.

1. The brake line will need to go in the same orientation as it was when it is replaced. Note the orientation of the brake line before removing it.
2. Remove the banjo bolt from the brake line and tie up so that all the brake fluid does not leak out.
3. On a liquid cooled caliper, you will need to drain the coolant from the coolant hoses.
4. Remove the two bolts (1) holding the caliper (2) to the chaincase.
5. Remove the caliper from the chaincase.

Caliper Assembly

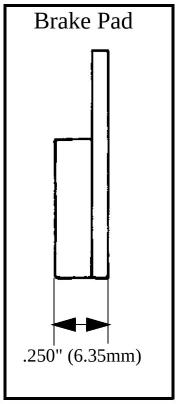
1. Replace caliper bolts (1) and torque them to 18-20 ft-lb (24-27 N-m).

= T
Caliper Bolts: 18-20 ft-lb (24-27 N-m)

2. On a liquid cooled caliper, hook up the coolant lines.
3. Place the brake line on the caliper in the same orientation as it was before it was removed.
4. Clean the threads of the banjo bolt and the threads in the caliper.
5. Follow Brake Line Replacement. See “Brake Line Replacement” on page 6.13.
6. Install banjo bolt into the caliper and torque it to 168-216 in-lb (19-24 N-m).
7. Bleed the brakes. See “Brake Fluid Replacement & Bleeding” on page 6.11.
8. On a liquid cooled caliper you will need to bleed the cooling system of any trapped air.

Brake Pad Replacement

Brake pads need to be replaced if the total thickness of the pads and backing are less than .250" (6.35mm).



1. Remove brake pad retaining pin (3).
2. Remove the brake pads (4).
3. Inspect the brake disc (5) for any wear.
4. Replace brake pads in reverse order of removal.

Brake Disc Replacement

The brake disc should be replaced if the thickness of the disc is below .193"(.49cm).

1. Remove the chaincase.
2. Slide the brake disc from the jackshaft.
3. Check the jackshaft for any damage.
4. Replace the o-ring on the jackshaft
5. Replace the brake disk.
6. Assemble the chaincase.

NOTES

CHAPTER 7
PVT System

PVT SYSTEM

Overview

CAUTION

Because of the critical nature and precision balance incorporated into the PVT system, it is absolutely essential that no attempt at clutch disassembly and/or repair be made without factory authorized special tools and service procedures. Polaris recommends that only authorized service technicians that have attended a Polaris-sponsored service training seminar and understand the proper procedures perform adjustments or repairs.

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 clutch setup and adjustments of existing components must be the primary objective in clutch operation diagnosis.

Drive Spring

The drive spring opposes the shift force generated by the clutch weights, and determines the neutral RPM, engagement RPM, and wether the engine RPM remains flat, rises, or falls during shift out. When changing only the drive spring, installing a spring with a lower pre-load rate will result in a lower engagement RPM speed, while installing a spring with a higher pre-load rate will result in a higher engagement RPM.

Clutch Weight

The clutch weights generate centrifugal force as the drive clutch rotates. The force generated changes in relation to the engine RPM and with specified weight of each clutch weight. When changing only the clutch weights, a lighter weight will result in a higher engagement RPM, lower shifting force, and higher shift out RPM. Installing heavier weights has the opposite effect

Neutral Speed

Engine RPM when the force generated by the clutch weights is less than the pre-load force generated by the drive spring. In this mode, the drive clutch is disengaged.

Engagement RPM

Engine RPM when the force generated by the clutch weights overcomes the drive spring pre-load force and the moveable sheave begins to close or “pinch” the drive belt. The engagement mode continues until no more belt slippage occurs in the drive clutch. Once 100% belt engagement is achieved, the sled will accelerate along the low ratio line until the drive clutch up shift force overcomes the opposing shift force generated by the driven clutch.

Shift Out Over-Rev

Engine RPM that spikes above the desired operating RPM speed. The shift out RPM should come down to the desired operating RPM, but never below, after the driven clutch begins to open.

Shift Out RPM

Engine RPM at which the up shift force generated by the drive clutch overcomes the shift force within the driven clutch. In this mode, the drive clutch will move the belt outwards, and the driven clutch will allow the drive belt to be pulled down into the sheaves.

During WOT operation, the shift out RPM can be seen as the maximum, sustained RPM displayed on the tachometer. <u>The shift out RPM should be the same RPM as the recommended engine operating RPM</u>. If the shift out RPM is above the recommended engine operating RPM, install heavier drive clutch weights. If the shift out RPM is below the recommended engine operating RPM, install lighter drive clutch weights.

The shift out RPM should remain constant during both the upshift and back shift modes.

Driven Spring

A compression spring (Team driven clutch) or torsional spring (Polaris P-85 driven clutch) works in conjunction with the helix, and controls the shift rate of the driven clutch. The spring must provide enough side pressure to grip the belt and prevent slippage during initial acceleration. A higher spring rate will provide more side pressure and quicker back shifting but decreases drive system efficiency. If too much spring tension exists, the driven clutch will exert too much force on the belt and can cause premature belt failure.

Back-Shifting

Back-shifting occurs when the track encounters an increased load (demand for more torque). Back-shifting is a function of a higher shift force within the driven clutch then within the drive clutch. Several factors, including riding style, snowmobile application, helix angles, and vehicle gearing determine how efficient the drive system back-shifts. The desired engine operating RPM should never fall below 200 RPM when the drive system back-shifts.

Final Gearing

The final drive gear ratio plays an important role in how much vehicle load is transmitted back to the helix. A tall gear ratio (lower numerical number) typically results in lower initial vehicle acceleration, but a higher top-end vehicle speed. A lower gear ratio (higher numerical number) typically results in a higher initial vehicle acceleration, but a lower top-end vehicle speed.

Choosing the proper gear ratio is important to overall drive system performance. When deciding on which gear ratio to use, the operator must factor in the decision where the snowmobile will be ridden, what type of riding will be encountered, and the level of performance the operator hopes to achieve.

Gearing a snowmobile too low for extended high-speed runs may cause damage to the drive belt and drive system, while gearing a snowmobile too high for deep-snow, mountain use may cause premature belt and clutch wear.

Typically, it is recommended to gear the snowmobile with a slightly higher ratio than the actual top speed the snowmobile will ever achieve.

1:1 Shift Ratio

A 1:1 shift ratio occurs when the drive clutch and the driven clutch are rotating at the same RPM.

The mathematical vehicle speed for a given gear ratio at a 1:1 shift ratio is represented in the chaincase gearing charts located in the Final Drive Chapter.

Low / High Ratio

Low ratio is the mechanical position when the drive belt is all the way down into the drive clutch, and all the way out on the driven clutch. High ratio represents when the drive belt is all the way out on the drive clutch, and all the way in on the driven clutch.

Driven Helix / Ramp

The helix cam is the primary torque feedback component within the driven clutch, regardless of driven clutch type. The beginning angle of the helix must transmit enough torque feedback to the moveable sheave in order to pinch the drive belt while minimizing belt slip. The flatter or lower the helix angle, the more side force will be exerted on the moveable sheave, while the steeper, or higher the helix angle, the less side force will be exerted on the moveable sheave.

GENERAL INFORMATION

Special Tools

Team “12 Cooling Fin Driven Clutch” Offset Alignment Tool	PS-46998
Team “24 Cooling Fin Driven Clutch” Offset Alignment Tool	PS-47477
Drive Clutch Puller (3/4 - 16 x 7/16) - All Fuji Fan / Liquid Cooled Engines	2872084
Drive Clutch Puller (3/4 - 16 x 14mm) - Domestic 500 / 600 / 700 / 800 / FS / FST Engines	2872085
Drive Clutch Puller (14mm)	2871855
Replacement Handle for ALL Clutch Pullers	5020326
Drive Clutch Holding Wrench	9314177-A
Strap Wrench	PU-45419
Replacement Strap	305085
Drive Clutch Spider Nut Socket	2870338
Drive Clutch Spider Removal and Spider Installation Tool	2870341-A
Pin Centering Tool	2870401
Clutch Pin Installation Tool	2870402
Clutch Pin Punch	2870507
Tapered Reamer - 29mm Short Drive (Fuji Snow Engines Only)	2870576
Tapered Reamer - 29mm Long Drive (Non-2007 600/700 CFI Domestic Snow Engines Only)	PS-48584
Tapered Reamer - 31mm (2007 600/700 CFI Domestic Snow Engines Only)	PS-48587
Roller Pin Tool	2870910-A
Drive Clutch Button Removal Tool	2870985
Clutch Bushing Replacement Tool Kit	2871025
Clutch Holding Fixture	2871358
Clutch Compression Tool	8700220
Spider Assembly Tool	8700221
Clutch Compression Tool Extensions for TEAM driven	PS-45909
Clutch Pilot Tool (used with the 2871358 to compress the clutch)	PU-45779
Drive Clutch Compression Tool (Compresses drive clutch without removing clutch from engine.)	2871173

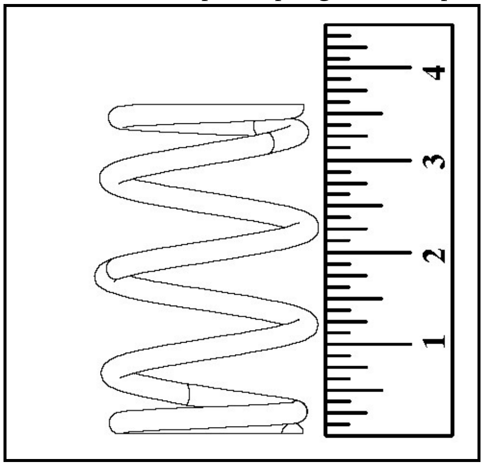
Drive Clutch Springs

PART NUMBER	COLOR	WIRE DIAMETER (inches)	FREE LENGTH +/-.125”	FORCE LBS.@2.50” - 1.19” (+/- 12 LBS.)	LOAD RATE (lbs./inch)
7041021	Clear	.157”	4.14	70 - 130	44
7041022	Black	.140”	4.25”	44 - 77	25
7041063	Purple	.168	4.37	75 135	53
7041062	Silver	.207	3.12	75 - 243	151
7041065	Pink	.177	4.69	112 - 200	64
7041060	Orange	.196	3.37	70-199	98
7041083	Red	.192	3.77	120 - 245	94
7041102	Yellow	.192	2.92	44 - 185	105
7041061	Brown	.200	3.14	69 - 212	109
7041132	White	.177	2.92	34 - 141	81
7041168	Green	.177	3.05	42 - 142	76
7041148	Gold	.207	3.25	100 - 275	133
7041150	Red/White	.192	3.59	100 - 220	91
7041286	Silver/Gold	.218	3.05	77 - 240	163
7041080	Blue	.207	3.55	120 - 300	137
7041781	Dark Blue/White	.225	3.42	120 - 310	145
7041945	Almond	.218	3.65	140 - 330	145
7041645	Almond/Gold	.207	4.00	150 - 290	107
7041818	Black/White	.218	3.52	140 - 320	137
7041816	Almond/Black	.200	3.75	165 - 310	111
7041922	Almond/Blue	.218	3.75	150 - 310	122
7041988	Almond/Red	.207	4.27	165 - 310	110
7042083	Black/Green	.218	3.38	120 - 340	168
7043342	Black - 3342	.218	3.46	140 - 330	145
7043076	Black - 3076	.225	2.67	40 - 340	229
7043120	Black - 3120	.225	2.78	60 - 340	213
7043077	Black - 3077	.255	2.90	80 - 340	198
7043121	Black - 3121	.255	3.05	100 - 340	183
7042287	Black - 2287	.207	3.40	110 - 290	137

NOTE: Springs listed as color - #### will have the last four digits of the part number painted on the spring coil. Tag each spring with the part number and spring force when not in use.

Spring Free Length

Measure the drive and driven spring free length with the spring resting on a flat surface. Replace spring if out of specification.



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.

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

Drive Clutch Weights

Full Tail Weights

WEIGHT	GRAMS	PART NUMBER
S43H	43	1321849
S45H	45	1321850
S47H	47	1321851
S49H	49	1321730
S51H	51	1321731
S53H	53	1321759
S55H	53	1322004

10 Series Weights

WEIGHT	GRAMS(+/- 1g)	PART NUMBER
10M - R	44	1321530
10M - W	46	1321527
10M - B	47.5	1321529
10M - 5	48.8	1321528
10M	49.5	1321531
10A - L	51	1321531
10	51.5	1321526
10A	53	1321589
10-54	54	1321685
10-56	56	1321684
10-58	58	1321588
10-60	60	1321587
10-62	62	1321586
10-62M	61.5	1321614
10-64	64	1321585
10-64M	63.5	1321615
10-66	66	1321584
10-68	68	1322427
10-70	70	1322414
10-72	72	1322428
10-74	74	1322429
10-76	76	1322585
10-78	78	1322586

11 Series Weights

WEIGHT GRAMS(+/- .8g)	PART NUMBER
11-40	1322593
11-42	1322592
11-44	1322591
11-48	1322590
11-50	1322589
11-52	1322595
11-64	1322604
11-66	1322559
11-68	1322558
11-70	1322523
11-72	1322524
11-74	1322525
11-76	1322526

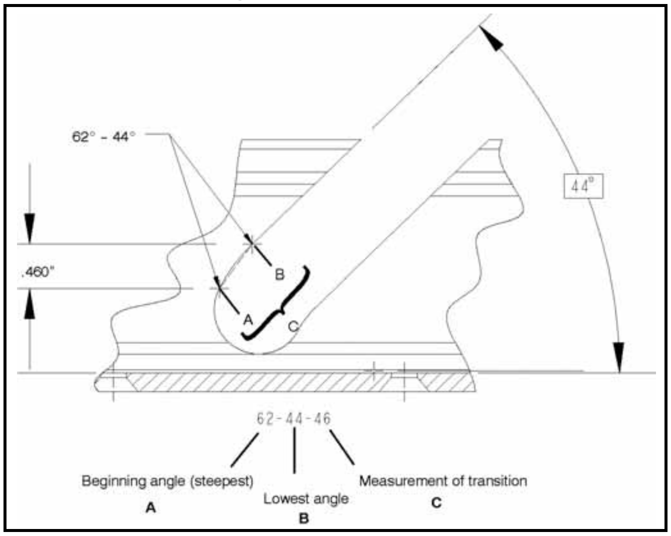
PERC Team LWT Driven Helixes (24 Fin)

PART NUMBER	DESCRIPTION
5135401	64 / 42 - .36
5135402	64 / 38 - .25
5135403	56 / 42 - .36
5135503	54 / 38 - .25
5136255	S42
5135504	S36
5135772	66 / 44 - .46

Non-PERC Team LWT Driven Helixes (24 Fin)

PART NUMBER	DESCRIPTION
5135375	62 / 40 - .46 64 / 40 - .55
5135376	64 / 38 - .65 64 / 38 - .46
5135438	70 / 44 - .46 66 / 44 - .46
5135480	64 / 38 - .65 64 / 38 - .46
5135486	62 / 40 - .46 64 / 40 - .55
5135521	74 / 50 - .46 74 / 48 - .46
5135522	74 / 44 - .46 74 / 40 - .46
5135523	70 / 50 - .46 70 / 48 - .46
5135524	70 / 44 - .46 70 / 40 - .46
5135525	66 / 50 - .46 66 / 48 - .46
5135526	66 / 44 - .46 66 / 40 - .46
5135537	64 / 38 - .65

Team Ramp Angles



The angles and length of the transition between the first and final angle is stamped on the back of the helix. The first number (A) designates the starting angle of the ramp. The second number (B) designates the finish angle. The last number (C) is the transition distance (in inches) between the starting and finish angles.

CAUTION

Do not install a non-ER helix on a Perc-equipped snowmobile where the engine changes directions.

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Team Driven Springs

TEAM Driven Springs

PART NUMBER	COLOR	LOAD @ 2.2″(lbs)	LOAD @ 1.1″(lbs)	Rate (Lbs. per inch)
7042181	Black/Yellow	145	208	56
7043058	Red/Black	140	240	90
7043059	Red/Green	120	220	90
7042066	Green/Black	135	198	56
7043061	Red/Silver	125	175	45
7043062	Red/Yellow	100	150	45
7043057	Red/Blue	140	200	54
7043064	Blue/Black	123	203	73
7043060	Red/White	100	200	91
7043069	Red/Pink	140	260	110
7043363	Black/Purple	160	240	72
7043063	Black- 155 / 222	155	222	65
7043252	Black - 160 / 280	160	280	109
7043253	Black - 180 / 280	180	280	91
7043254	Black - 140 / 300	140	300	146
7043255	Black - 160 / 300	160	300	127
7043256	Black - 180 / 300	180	300	109

NOTE: Team driven springs listed with a color - ### / ### will have the beginning and ending spring rates painting on the spring coils. Tag the spring with the part number when not in use.

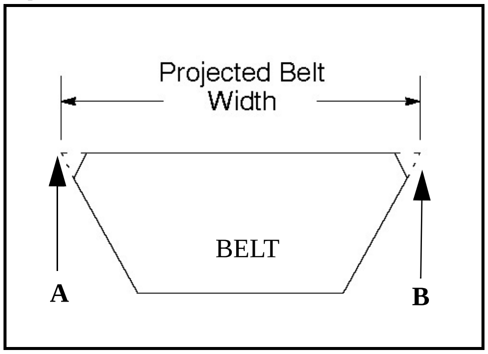
Drive Belts

Part Number	Belt Width (Projected)* in/mm	Side Angle Overall*	Center to Center in/cm*	Outer Circumference in/cm	Notes
3211080	1.438 / 36.5	28_	11.5 / 29.2	46.625/118.4	Double Cog CVT version of 3211078
3211078	1.438 / 36.5	28_	11.5 / 29.2	46.62 / 118.4	Standard Drive Belt
3211117	1.46 / 37.1	26_	11 / 27.9	45.79 / 116	MBL High Performance Belt “Sanded Finish”
3211121	1.46 / 37.1	26_	11 / 27.9	45.79 / 116	MBL Kevlar Belt “Cut Finish”
3211122	1.46 / 37.1	26_	11.5 / 29.2	46.77 / 118.8	MBL Kevlar Belt “Cut Finish”
3211114	1.438 / 36.5	26_	10.625 / 27	45.2 / 114	MBL High Performance Race Belt “Sanded Finish”
3211115	1.46 / 37.1	26_	11.5 / 29.2	46.77 / 118.8	MBL High Performance Belt “Sanded Finish”

*Belt dimensions are given in 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 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.

Belt Inspection



1. Measure the belt width and replace it if it is worn severely. Generally a belt should be replaced if the clutches can no longer be adjusted to provide the proper belt deflection.
   - Project the side profiles and measure from corner to corner.
   - Place a straight edge on each side of the drive belt and measure the distance where the straight edges intersect at the top (A,B).
2. Inspect the belt for loose cords. missing cogs, cracks, abrasions, thin spots or excessive wear spots. Replace if necessary.
3. Inspect the belt for hour glassing (extreme circular wear in at least one spot an on both sides of the belt). Hour glassing occurs when the drive train does not move and the drive clutch engages the belt. Example would be taking off while the track is frozen to the ground. Remember to always warm up the track and free it from the ground.

Drive Clutch Bolt Torque

Follow the torque table below when installing the drive clutch.

= T
All 600 HO Carbureted Engines = 50 Ft.Lbs. (68 Nm) All 600 / 700 / 800 CFI Engines = 80 Ft.Lbs. (108 Nm) Re-torque clutch bolt after running engine.

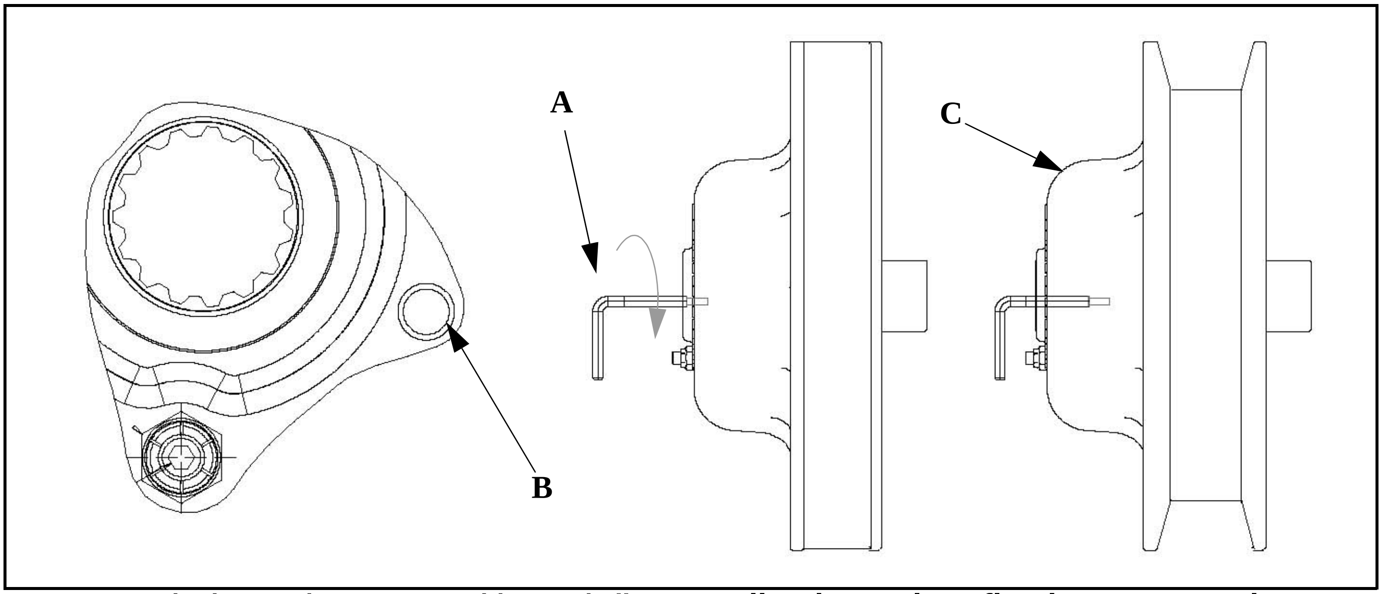
7

Belt Wear / Burn Diagnostics

Table 7-1: Belt Wear / Burn Diagnostics

POSSIBLE CAUSE	SOLUTION
Driving at or about engagement RPM for extended periods of time in any type of snow condition.	Drive at higher RPM if possible. Gear the machine down. Make sure belt deflection is at 1 1/4” 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 drive away 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 drive away
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 actual vehicle speed and 60 m.p.h. 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 warm-up. 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 carburetors. Make sure no water or ice is present in the 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, or damage on the clutch
Slow, easy belt engagement - easing on the throttle	Use fast, effective throttle to engage the clutch.

Drive Belt Removal - Team Driven Clutch



NOTE: Turn the key to the "OFF" position and allow the engine to come to a complete stop.

1. Verify the driven clutch is not in reverse. Open the clutch guard.

CAUTION

Damage to the driven clutch or L wrench will occur when attempting to open the driven clutch when the driven clutch is in the reverse position.

2. Insert the L wrench, PN 2874857 (A), into the threaded hole (B) located on the driven clutch, and turn it clockwise until the clutch sheaves are in the open position (C).
3. Remove the drive belt.

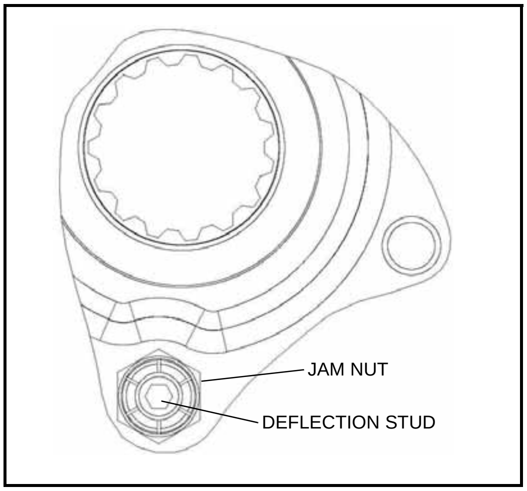
Drive Belt Installation - Team Driven Clutch

1. With the L wrench inserted into the threaded into hole and the sheaves in the open position, install the drive belt.

NOTE: Install belt so that the numbers can be read correctly on the left side of the machine or in the direction in which the belt was originally installed.

2. Remove the wrench. "Wiggle" the belt to remove slack while removing the wrench.
3. Close the clutch guard.

Adjusting Belt Deflection - Team Driven Clutch



1. Loosen the jam nut.
2. Using an 1/8″ Allen head wrench, turn the stud counter-clockwise to decrease belt deflection and clockwise to increase belt deflection.
3. When the proper belt deflection is achieved torque the lock nut to 90 - 110 in-lb. (10 - 12 Nm).

NOTE: When using a MBL drive belt, the belt deflection should be set so that .9″ to .10″ of the outer cogs are outside of the driven sheaves.

PVT SYSTEM ADJUSTMENTS

Clutch Alignment / Offset

The engine is mounted in the bulkhead so the drive and driven clutches self-align under high torque loads.

Offset is controlled by the number of washers installed on the jackshaft behind the driven clutch.

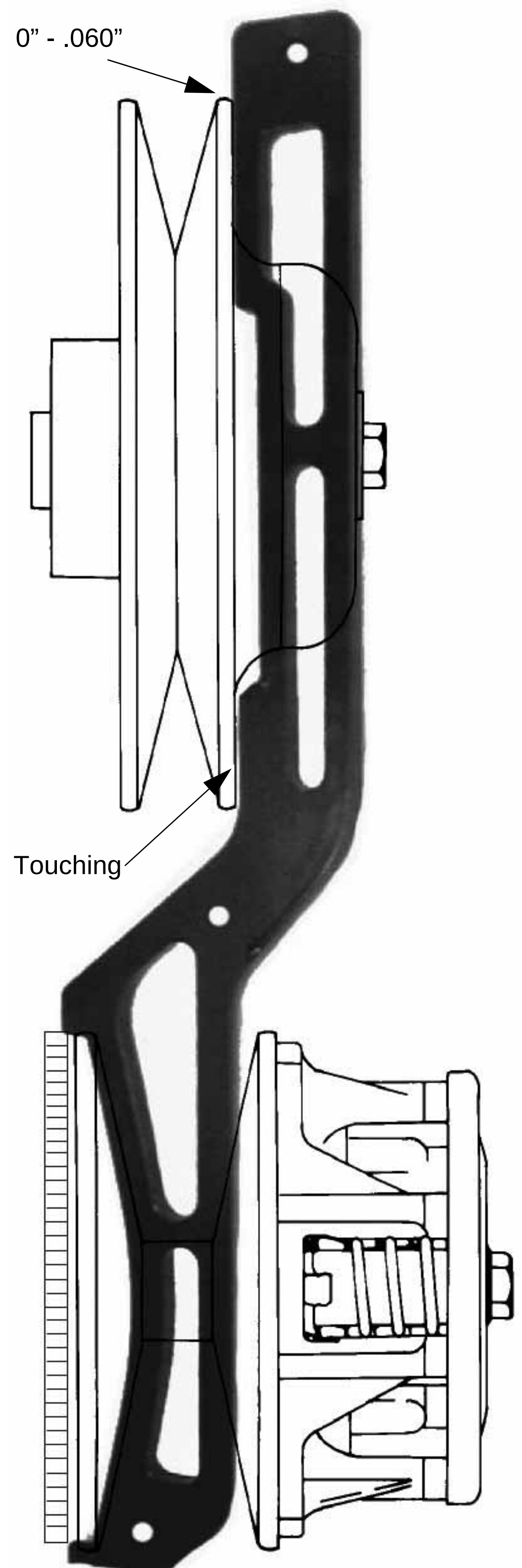
1. Remove drive belt.
2. Install the correct alignment tool depending on the type of driven clutch installed on the snowmobile.

TOOL PART NUMBER	APPLICATION
PS-46998	Standard Team Driven
PS-47477	Light Weight (LW) Team Driven

NOTE: A standard alignment tool will not work with a Team LW driven clutch. Likewise, a LW alignment tool will not work with a standard Team driven clutch. A Team LW driven clutch can be identified as having 24 cooling fins.

3. The optimum setup is when the front and rear of the tool touch the driven clutch. No gap should be present in the front, and the rear clearance should not exceed .060" (3mm).

NOTE: If the front of the alignment bar does not touch the driven sheave, the maximum clearance cannot exceed .025″.



(PN: PS-46998 Shown)

Offset Adjustment

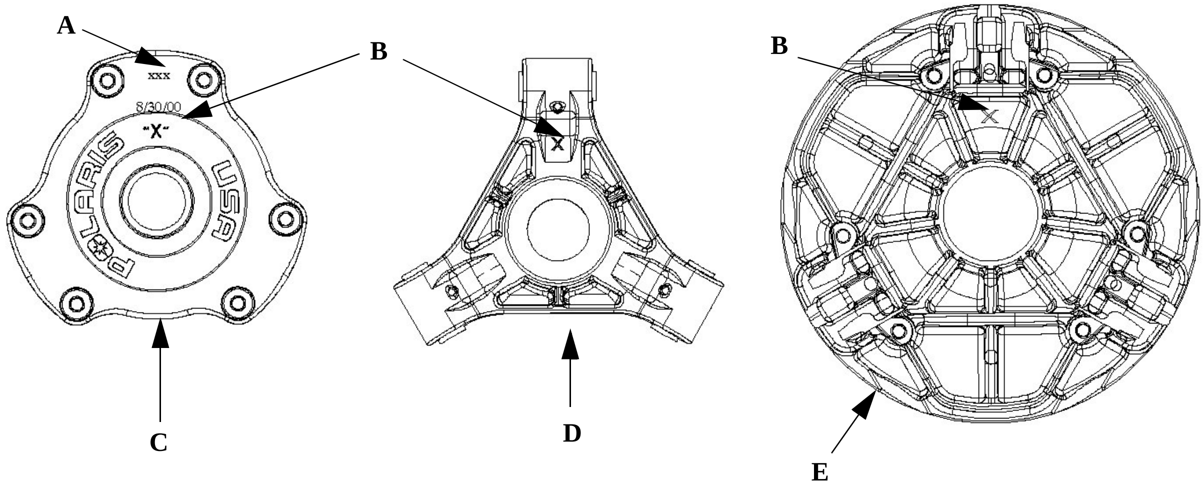
1. Determine direction driven clutch needs to be adjusted.
2. Remove driven clutch retaining bolt, and remove driven clutch.
3. Add or remove washers from the jackshaft between the driven clutch and jackshaft bearing to achieve proper offset.
4. After adjusting offset, add or remove shim washers from the retaining bolt to provide a +/- 0.030” (.75mm) of float on the jackshaft.

⚠ CAUTION

Always verify the driven clutch floats on the jackshaft after securing the fastener. The jackshaft bearing will fail due to side-loading if the driven clutch is not allowed to float.

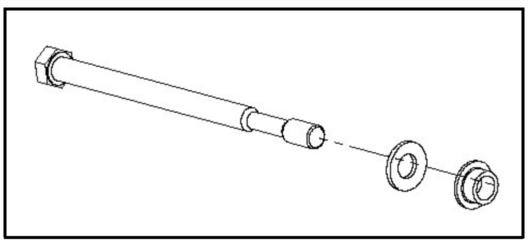
DRIVE CLUTCH

Identification



Every clutch will have the last three digits of the clutch part number etched on to the cover (A). The “X" (B) marking is an index mark where the clutch cover (C), clutch spider (D) and the stationary sheave (E) should line up when the clutch is assembled.

Drive Clutch Removal



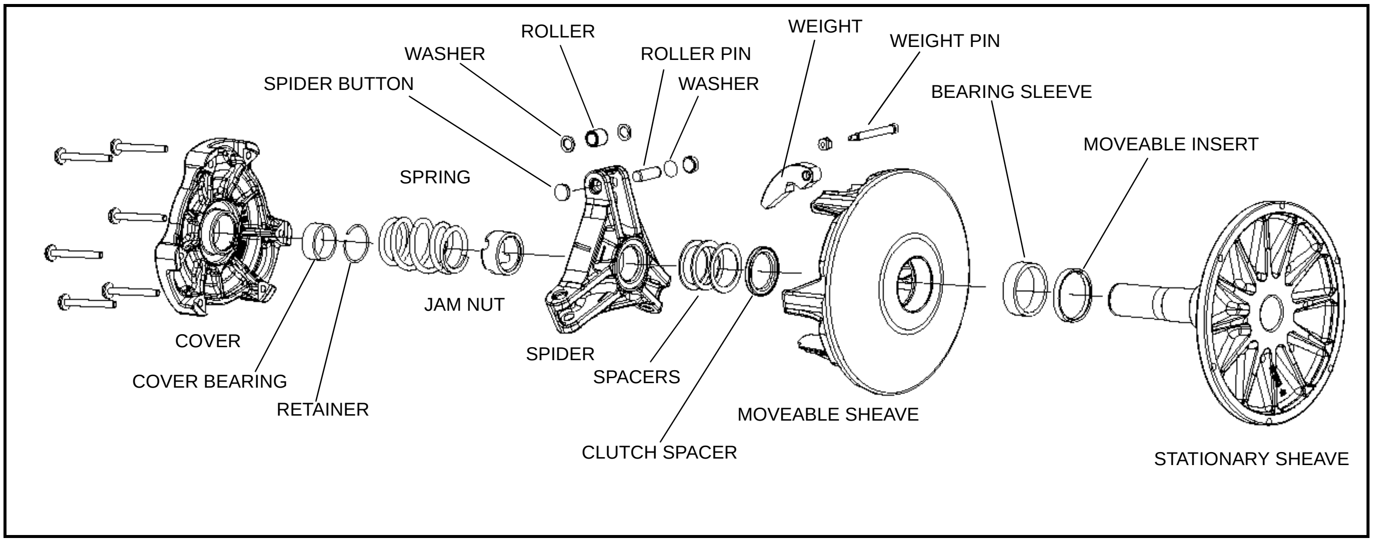
NOTE: All clutch tools can be found at the beginning of this chapter.

1. Remove the belt.
2. Place the clutch holding tool (PN 9314177-A) on the drive clutch.
3. Remove the drive clutch retaining bolt. Note the placement and number of washers on retaining bolt.
4. Insert the correct clutch puller into the retaining bolt hole.
5. Tighten the puller into the clutch. If the clutch does not come off, strike the clutch puller head with a hammer. If the clutch does not “pop” off, continue to tighten the clutch puller, and repeat this step.

CAUTION

Do not use an impact wrench to remove or install the clutch bolt or clutch puller. Damage to the clutch and/or crankshaft can occur.

Drive Clutch Disassembly



CAUTION

Wear eye protection when servicing the drive clutch. Sheaves must be marked to provide a reference point for dutch balance and spider indexing. If the sheaves are not marked and the spider washers are changed or misplaced, the clutch may be out of balance and damage to the clutch may result.

WARNING

Clutch spring is under extreme tension, use caution when disassembling the clutch.

1. In a straight line, mark the sheaves and the cover with a black marker or etched with a scribe.
2. Remove the clutch.
3. Place the drive clutch in the clutch compression tool (PN 8700220).
4. Compress the clutch in the compression tool, then secure the chain.
5. Evenly remove the cover fasteners. The cover bushing may be damaged if the cover is side-loaded or mis-aligned.
6. Carefully remove the tension from the compression tool.
7. Remove the cover and inspect the cover bushing. Replace if damaged or worn.

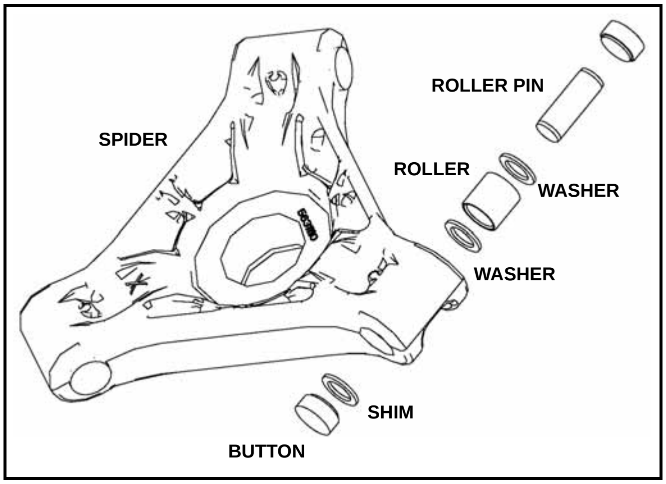
NOTE: Replace the cover bushing if the inside diameter is over 1.40″ (28.95mm)

8. Remove the spring.
9. Mount the drive clutch securely in a drive clutch holding fixture (PN 2871358).
10. Remove the jam nut in a counterclockwise direction (standard thread) using the drive clutch spider nut socket (PN 2871358).
11. Install the spider removal tool (PN 2870341), and remove the spider in a counterclockwise direction (standard thread).
12. Measure the total thickness of the spacer washers that are installed on top of the clutch spacer. Record the thickness of these spacer washers.
13. Inspect both sheave surfaces for wear or damage.
14. Inspect the moveable sheave bushing for wear or damage.
15. Remove all three drive clutch weights.
16. Inspect each weight. The surface should be smooth, with no waves or galling. Place bolt inside weight to check flyweight bushing and pin surface for wear by rocking the weight back and forth.
17. Inspect all the rollers, bushings and roller pins by pulling a flat metal rod across the roller.
18. Roller can also be inspected by rolling with a finger to feel for flat spots, roughness, or loose bushing.

NOTE: The flyweight bushing is not replaceable. If flyweight bushing is damaged both the flyweight, pin and nut will need to be replaced.

19. Inspect to see if the roller and bushing are separating.
20. Bushing must fit tightly in roller.
21. Replace roller and pin if roller fails to roll smoothly (no flat spots) or if the bushing is loose or worn.

Roller Removal

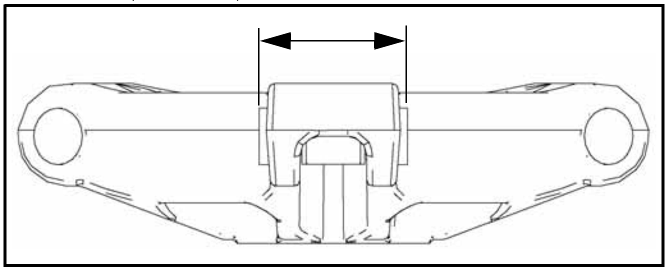


1. With the spider in a vise start removing the spider buttons by drilling a 0.18" hole in the center of a button on one side of the spider.
2. Place spider on a vise or in an arbor press.
3. Place a pin punch through the spider button hole and drive the opposite button and pin out.
4. Remove shims (if any are installed) and note their location.
5. Flip the spider over and tap out the holed button.

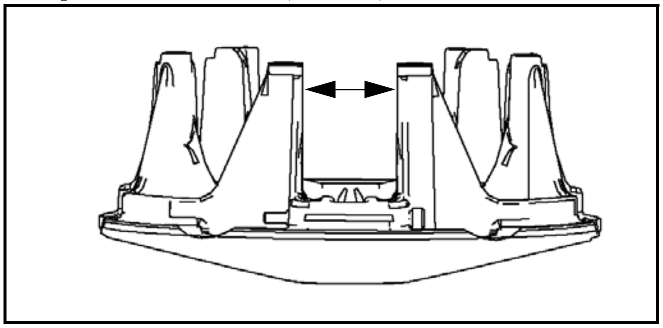
Roller Installation

NOTE: 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 busing could be damaged causing premature wear and roller failure.

1. Drive pin into the spider leg.100" -.125" (0.25 - 0.32cm) beyond the first land of the spider leg.
2. Install one washer on the portion of the pin that is protruding from the spider leg.
3. Install new buttons into the spider
4. Place roller in spider leg and center it on the pin.
5. Place a second washer on the other side of the roller.
6. Place the spider on a vise.
7. Install pin centering tool (PN 2870401).
8. Drive the roller pin through the second land of the spider.
9. Repeat process for the other two rollers.
10. Measure the width of the spider leg with the buttons installed (9) and record the measurement. Specification is 1.496" (37.99mm).



11. Measure the width of the moveable sheave towers. Specification is 1.50" (38.1mm).



12. Subtract the spider measurement form the tower measurement. The clearance between the spider buttons and the moveable sheave towers is .002" - .004" (.05 - .10mm).

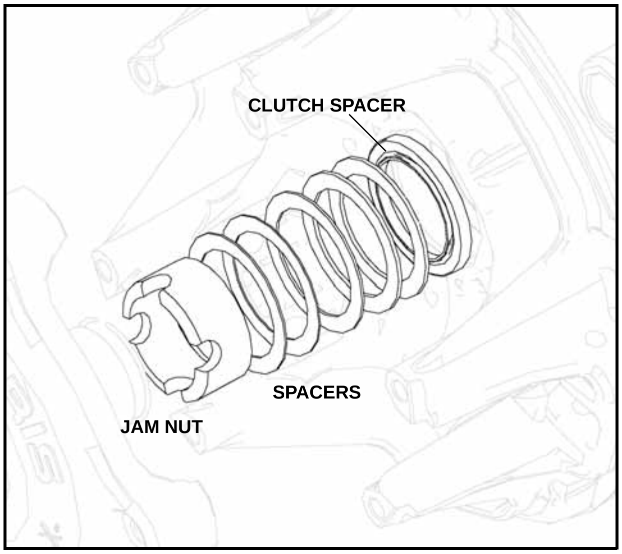
7

Clutch Assembly

1. Assemble the rollers, bushings and roller pins if they were removed.
2. Install the head of the weight pin so that it is on the leading side of rotation. This will orientate the nut on the trailing side of rotation.
3. Torque weight pin to specification.

= T
Weight Pin Torque 20 - 30 In.Lbs. (2.2 - 3.4 Nm)

4. Place the moveable sheave onto the stationary sheave.
5. Place the same number of spacers on top of the stepped spacer onto the shaft of the stationary sheave.



6. Thread the spider onto the stationary sheave shaft.
7. Index the spider. See “Spider Indexing” on page 7.17.
8. Using the spider tool (PN 2870341) torque to the spider to specification.

= T
Spider Torque All Except 800 CFI = 200 - 225 Ft.Lbs. (271 - 305 Nm) Apply Loctite 620 to Threads. 800 CFI = 280 - 300 Ft.Lbs. (380 - 407 Nm) Apply Loctite 242 to Threads.

9. Install the spider jam nut onto the shaft and torque to specification.

= T
Spider Jam Nut Torque All Except 800 CFI = 225 - 250 Ft.Lbs. (305 - 339 Nm) Apply Loctite 620 to Threads. 800 CFI = 290 - 310 Ft.Lbs. (393 - 420 Nm) - Apply Loctite 242 to Threads.

10. Place the drive spring on the shaft.
11. Place the cover onto the clutch and torque the cover fasteners to specification.

= T
Cover Fastener Torque 100 In.Lbs. (11 Nm)

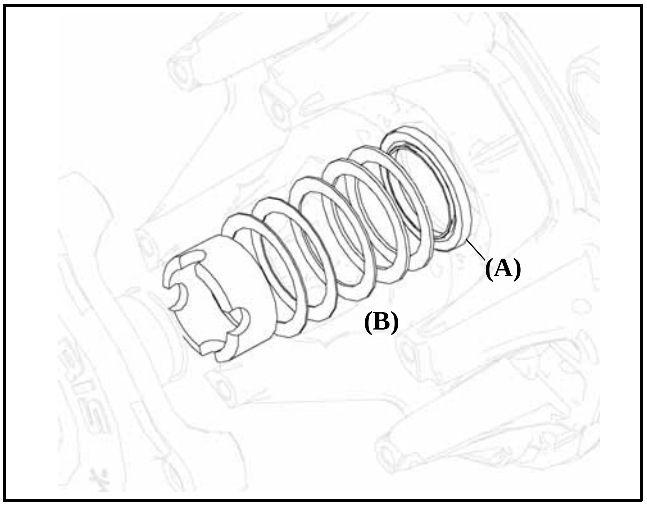
NOTE: Do not allow side loading or mis-alignment of the cover or the bushing may become damaged.

Spider Indexing

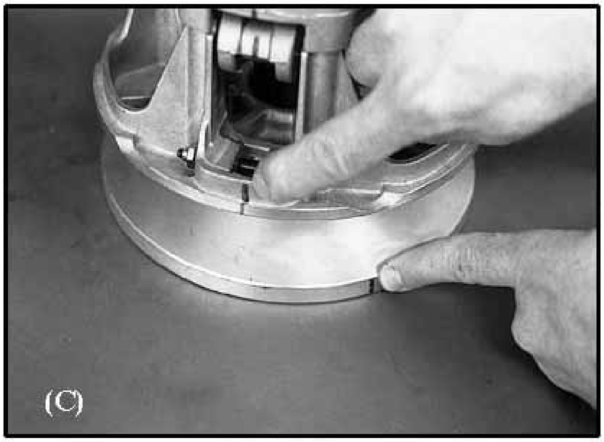
NOTE: Spider indexing effects belt to sheave clearance and clutch balance. Please read all procedures before proceeding.

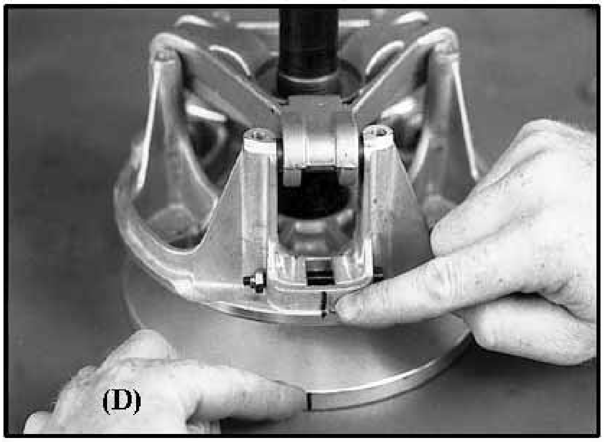
1. Remove and disassemble clutch
2. Add or remove spider washers as required to achieve desired belt to sheave clearance. Make sure that the stepped washer (A) is on the bottom of the spacer stack (B). For example: If belt to sheave clearance is .020″ too large, removing one .020″ shim will position the movable sheave closer to the fixed sheave reducing belt to sheave clearance by .020″.
3. Place the correct number of spacer washers (B) beneath the spider. The following washers are available for fine tuning:

- 5210752 - .020″ (.51mm)
- 5242981 - .025″ (.63mm)
- 5210753 - .032″ (.81mm)
- 5210754 - .050″ (1.27mm)
- Clutch Spacer - .130″ (3.3mm)



4. Install spider washer(s) and spider aligning the “X” with the moveable sheave’s “X”. Notice as the spider seat location is changed, the sheave marks made before disassembly no longer align (C). 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 (D). For EXAMPLE: 0.020" or 0.032" (0.5 - 0.8mm) washer removed - re-index spider clockwise 1/3 turn.

NOTE: Alignment marks on the sheaves should be with in 1" (25.4mm) after final assembly and torquing.

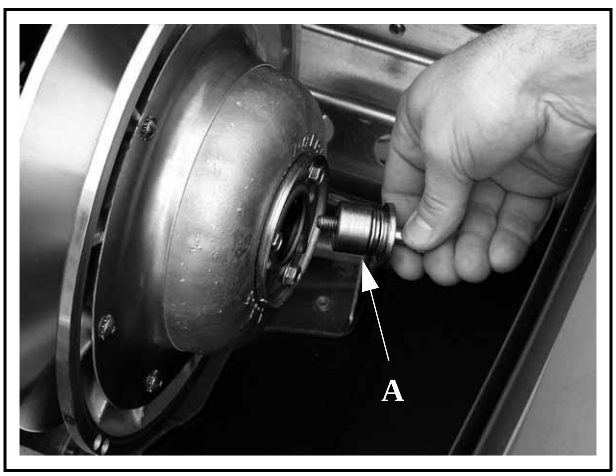
Drive Clutch Installation

NOTE: Always clean the clutch taper before re-installing clutch on engine.

1. Place a clutch taper reamer (PN 2870576) in a vise and lubricate the cutting edges with cutting oil. Clean the clutch taper by manually rotating the clutch clockwise on the reamer one or two revolutions. Only use the weight of the clutch and do not push down on the clutch while turning.
2. Check crankshaft taper for galling or scoring. If necessary clean the taper evenly with 200 grit emery cloth.
3. The clutch taper and the crankshaft taper should be clean and dry. Do not use harsh cleaners which may cause clutch taper to corrode, or damage the crank seal.
4. Clean clutch taper with lacquer thinner or isopropyl alcohol.
5. Slide clutch onto crankshaft taper.
6. Install the retaining bolt with all spacers and washers or o-rings that were on the bolt when it was removed.
7. Hold the clutch with the holding wrench PN 931417-A.
8. Torque bolt to specification.
9. Run engine then re-torque the retaining bolt to specification.

DRIVEN CLUTCH

Driven Clutch Removal

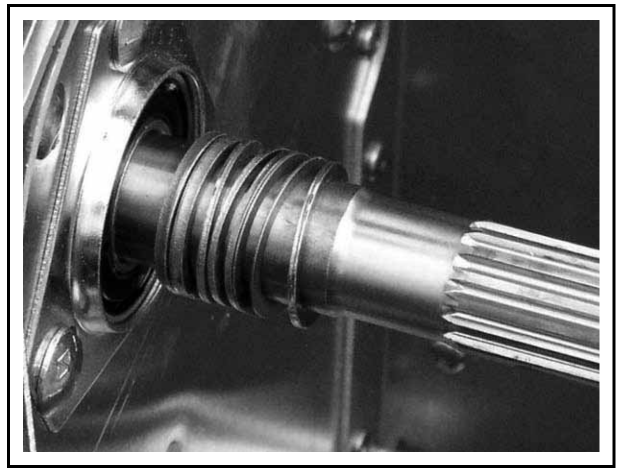


1. Remove the drive belt.
2. Apply and lock the parking brake.
3. Remove the driven clutch bolt and washers (A).

NOTE: Count the number and location of the spacer washers located on the fastener and behind the clutch.

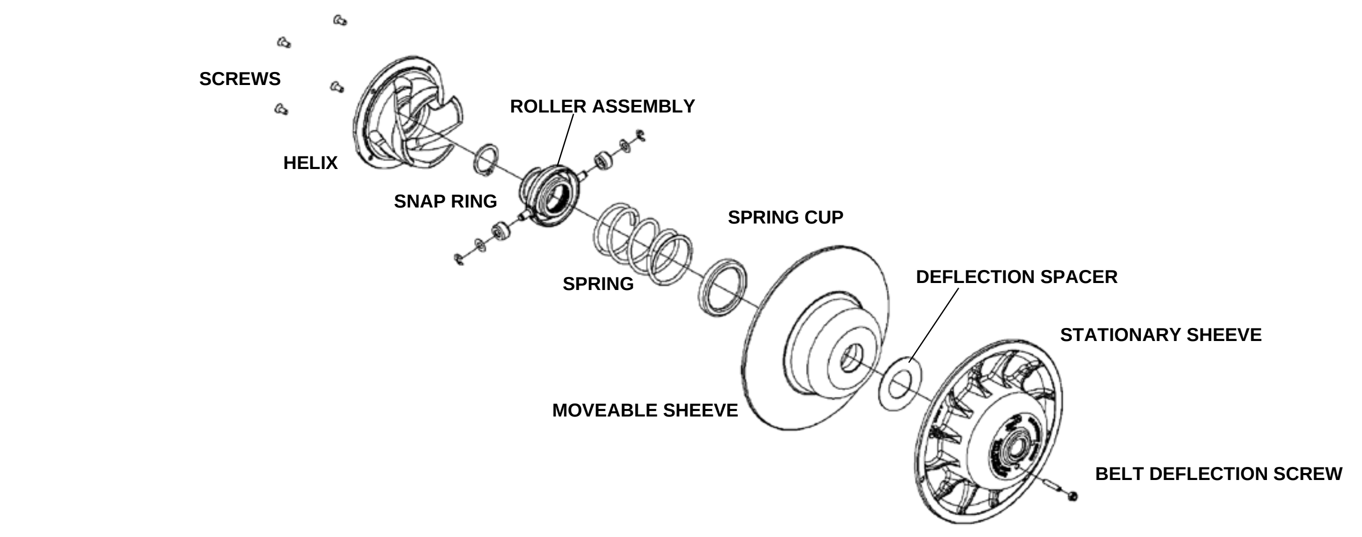
4. Slide the driven clutch off the jackshaft.
5. Inspect the splines and replace jackshaft if damage is found.

Driven Clutch Installation



1. Install the driven clutch bolt with the same amount of washers at removal.
2. Torque the bolt to specification.
3. Check for correct belt deflection.

Team LWT Components



= T
Helix Fasteners = 60 - 80 In.Lbs. (7 - 9 Nm) Driven Clutch Retaining Fastener = 17 Ft.Lbs. (23 Nm)

Disassembly and Assembly Process

1. Remove the screws from the helix, then carefully pry the helix out of the moveable sheave.
2. Install the clutch in the clutch compressor fixture, PN 8700220. Install the extensions, PN PS-45909.
3. Wearing eye protection, carefully compress the roller assembly to gain access to the snap ring. Remove the snap ring.
4. Slowly release the fixture arm to remove the roller assembly and spring. Disassembly the clutch sheaves.
5. Inspect the sheaves for abnormal wear. Clean sheave faces with a Scotch Brite pad and a solution of warm, soapy water.
6. Inspect spring, spring cup, spacer and rollers for wear and replace as required.
7. To assemble the clutch, slide the components back on to the stationary sheave shaft.
8. Align the notch in the roller assembly with row of double splines on the shaft. Slowly compress the spring and roller assembly down on to the shaft. Install the snap ring making sure it is fully seated in the groove.
9. Install the helix by aligning the rollers with the ramps. Push the helix down into the sheave while keeping the screws holes aligned.
10. Install and torque helix fasteners to 60 - 80 in. lbs. (7 - 9 Nm).

7

NOTES

CHAPTER 8

Steering and Suspensions

8

OVERVIEW / SPECIFICATIONS

Inspection

When inspecting steering and suspension components for wear or damage, always replace parts as necessary. Refer to the assembly exploded views in this chapter for identification of components and torque values of fasteners. Make notes of the direction a bolt goes through a part, what type of nut is used in an application, 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. Review steering adjustment guidelines before making adjustments.

The following components must be inspected at this time.

- Tie rods and tie rod ends
- Torsion bar and bushings / linkage (where applicable)
- Handlebars and steering post assembly
- Spindles and bushings
- Skis and skags
- Pitman arms / Idler arms
- A-arms and bushings
- Shock absorbers, shock mounts, springs
- All related fasteners - check torque. Refer to steering exploded views at the beginning of this section.
- Grease all fittings.

Always follow rod end engagement guidelines. Maximum setup width must be checked whenever front suspension components are adjusted or replaced.

Camber / Toe Specifications

Maximum width and camber measurements are to be taken with the front end elevated and shocks at full extension.

Toe alignment is measured at ride height. This means that the machine is on the ground and resting at normal ride height, not full rebound. Measure at a point 10" (2.54cm) forward of the ski mount bolt and 10" (2.54cm) behind the ski mount bolt, preferably on the center line of the carbide skags.

Width is measured from the center of the spindles.

Camber measurement is taken from the top of the alignment bar to the top of the ski mount hole in the spindle with the bushing removed.

Camber & Toe Specifications

SUSPENSION	MAXIMUM SET UP WIDTH in/cm (± .25in/.6cm)	CAMBER in/mm	TOE OUT (At ride height) in/mm
IQ 42.5	42.5 / 108	2.25 ± .31 57 ± 7.9	0 -.12 0 -3.05
IQ RMK	38.67 / 98.2	2.17 ± .31 55 ± 7.9	

Springs

When the front suspension encounters a bump, the force of the bump compresses the spring. If the bump force is 450 pounds, a 100 #/in. spring will compress 4.5 inches. A 150 #/in. spring will 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.

- Free length - the length of a coil spring with no load applied to the spring
- Installed length - the length of the spring 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.
- 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.

Adjustable Shocks

Snowmobiles equipped with adjustable Ryde FX shocks allow the driver to make adjustments to the compression valving by turning the screw on the shock.

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.

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 turned in full clockwise, the compression spring should be adjusted with the threaded adjustment collar. Back the screw out to the original starting position after the compression spring has been adjusted.

Riding conditions are ever changing. Keep in mind the compression damping adjustable screw can be adjusted at any time to achieve the best possible ride in any condition.

NOTE: Install shock so the adjustment screw is facing outwards.

Front Suspension Type by Model

FRONT SUSPENSION	MODEL
IQ 42.5	ALL IQ, IQ Switchback, IQ LX, and IQ Touring Models
IQ RMK	ALL IQ RMK Models

Rear Suspension Type by Model

TYPE	MODEL
IQ 121	2007 - 2008 IQ 121 Models
IQ 144 / 155 / 163	2007 IQ Switchback Models 2007 - 2008 IQ RMK Models
M-10 128	2007 - 2008 IQ LX Models
M-10 136	2007 600 HO IQ Touring
IQ 136 Coupled	All 2008 IQ Switchbacks
IQ 136 Comfort	2008 600 IQ Touring

Suspension Mounting Fastener Torque

Component	Torque Specification
Front Suspension Upper / Lower Control Arm-to-Bulkhead Mount Fasteners	40 Ft.Lbs. (54Nm)
IQ 121 FTA / RTA-to-Tunnel Fasteners	60 Ft.Lbs (81Nm)
IQ 144 / 155 / 163 FTA / RTA-to-Tunnel Fasteners	45 Ft.Lbs. (61Nm)
M-10 128 / 136 FTA / RTA-to-Tunnel Fasteners	70 Ft.Lbs. (95Nm)
IQ 136 Coupled FTA / RTA-to-Tunnel Fasteners	60 Ft.Lbs (81Nm)
IQ 136 Comfort FTA / RTA-to-Tunnel Fasteners	60 Ft.Lbs (81Nm)

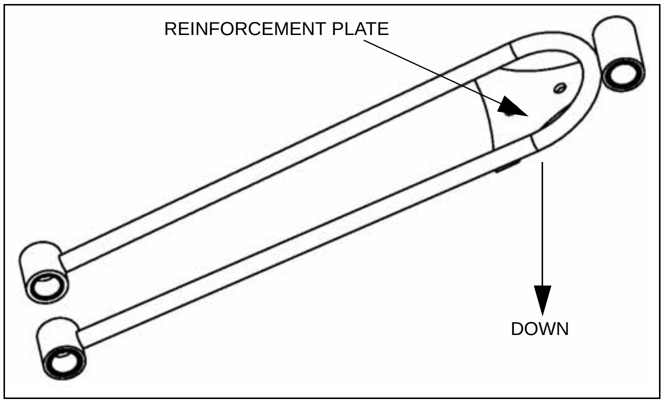
NOTE: FTA = Front Torque Arm / RTA = Rear Torque Arm

CAUTION

Torque arm fasteners are pre-coated with thread locking agent. Always replace with new fasteners.
Never re-use Nylock nuts. Always replace components with new nuts.

IQ Rear Suspension Shock Rod

Orientate the shock rod with the reinforcement plate facing down.

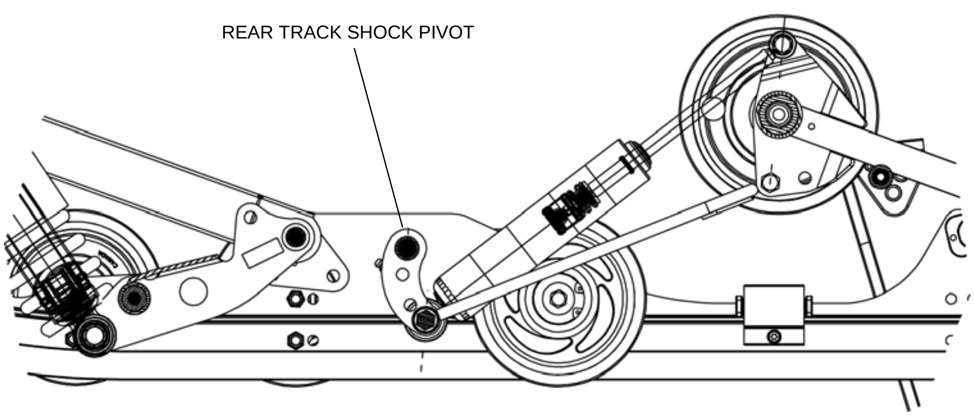


IQ Rear Track Shock Pivot Orientation

The rear track shock pivot must be properly located on all IQ rear suspensions when installing the rear skid into the tunnel. Failure to properly locate the rear track shock pivot may cause the rear torque arm to lock.

All IQ rear track shock pivots, with the exception of IQ RMK and race suspensions, must be located as shown below. On IQ RMK and race rear suspensions, the shock pivot is orientated upwards.

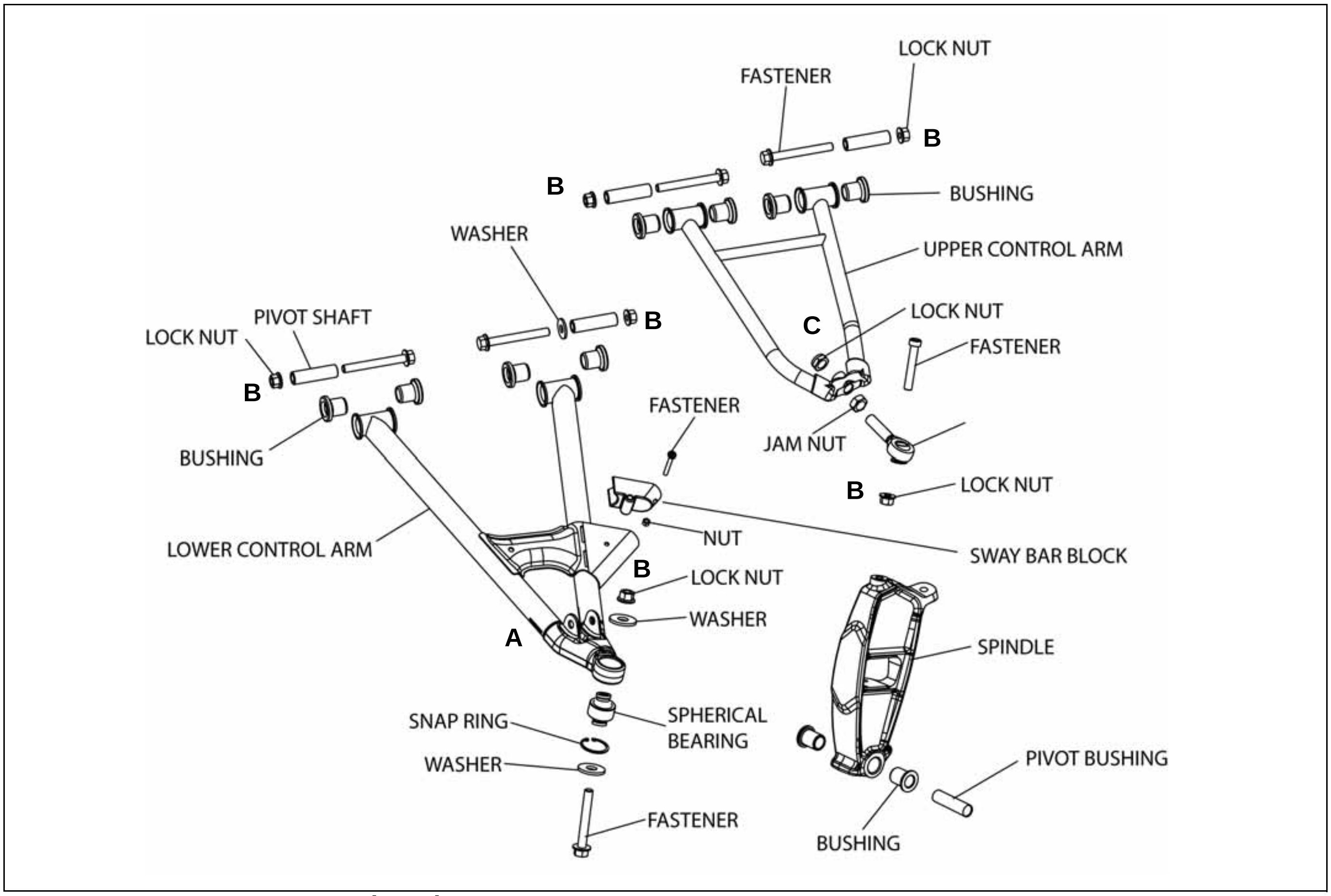
Always verify the rear torque arm scissor is pushed forward so that it is either straight up (IQ RMK, IQ Shift) or against the FRSS (IQ 121, IQ 136 Coupled, IQ Comfort) and not collapsed rearward when installing the rear skid assembly.



IQ 136 COMFORT REAR SUSPENSION

FRONT SUSPENSION ASSEMBLY ILLUSTRATIONS

IQ Front Suspension



NOTE: 2008 IQ Front Suspension Shown

CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

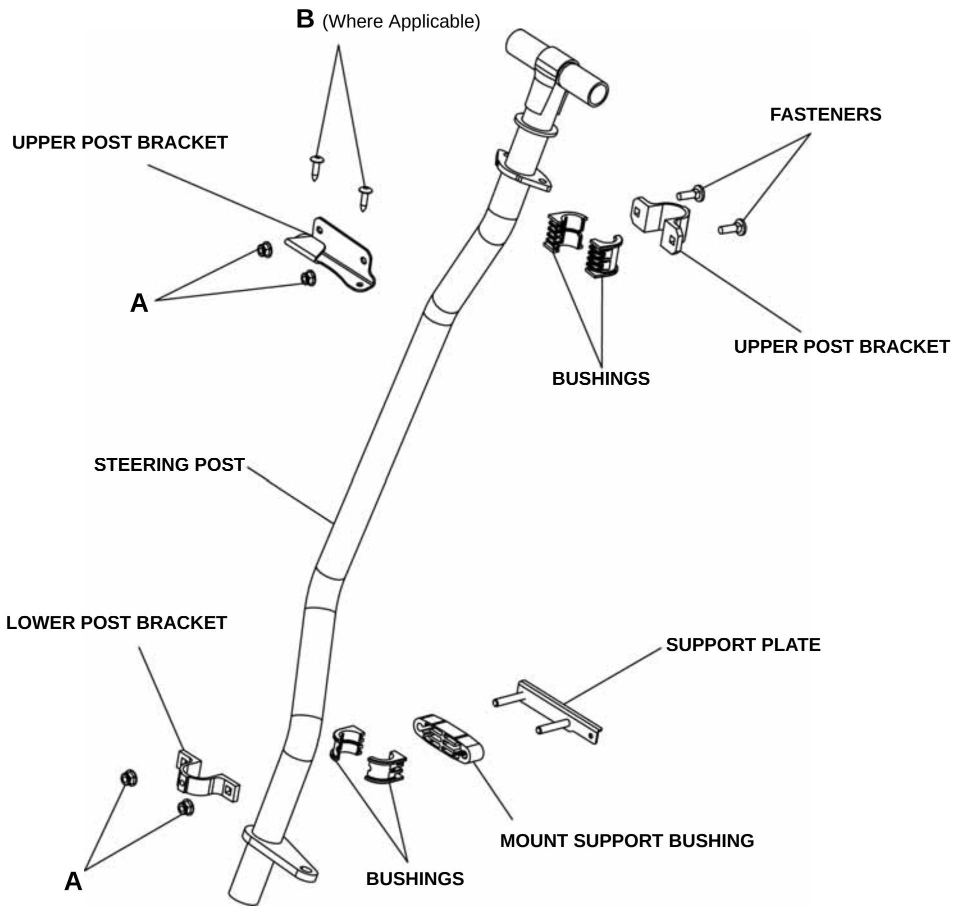
= T

A = 29 Ft.Lb. (39 Nm) (Shock Mounting Fastener Nuts)
B = 40 Ft.Lb. (54 Nm)
C = 45 Ft.Lb. (61 Nm)
Sway Bar Block Fastener Nuts = Hand Tight

NOTE: Assembly Notes

- Note washer installed between fastener and pivot bushing on the rear, lower control arm mount to allow sufficient clearance between nut and sway bar.
- Orientate rod ends so they are parallel with mating component.

IQ Fixed Steering Post Assembly



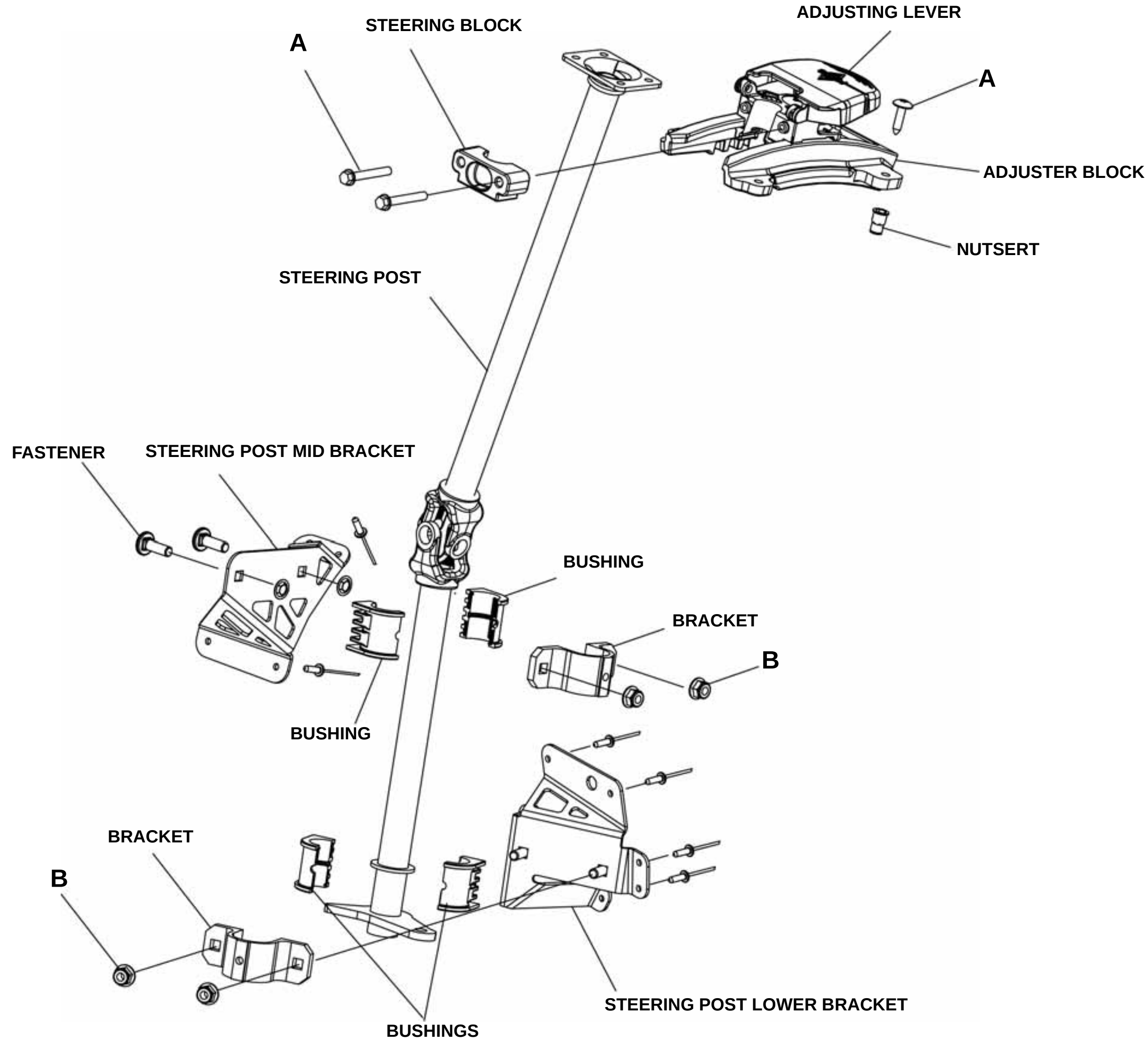
CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

= T

A = 16 Ft.Lbs. (22 Nm)
B = 13 Ft.Lbs. (17 Nm)

IQ Rider Select Steering Post Assembly



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

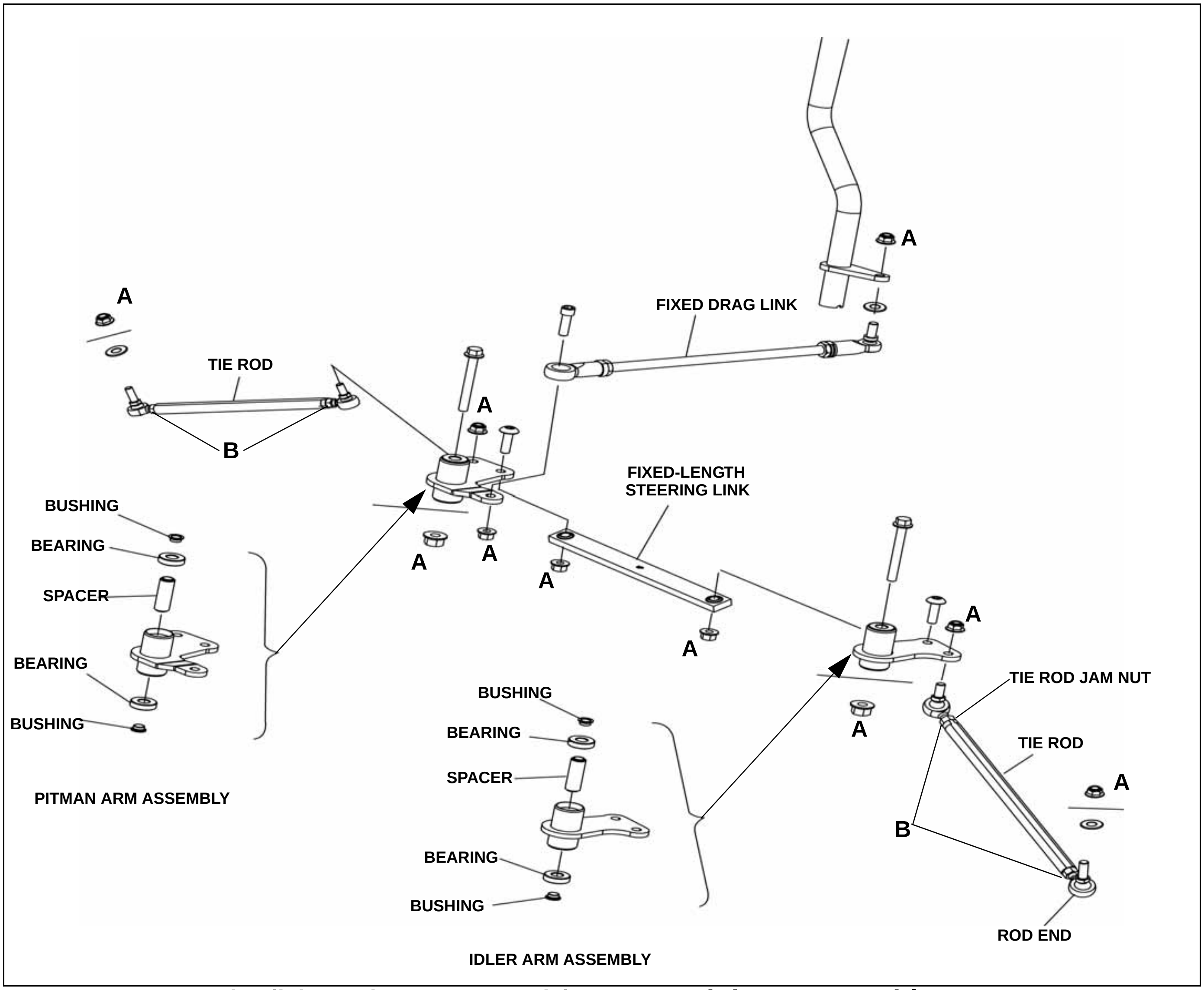
= T

A = 7 Ft.Lbs. (10 Nm)
B = 11 Ft.Lbs. (15 Nm)

NOTE: Assembly Notes

- Torque steering post lower bracket fasteners first, then torque the steering post mid bracket fasteners.

IQ Steering Linkage



NOTE: 2008 IQ steering linkage shown. 2007 models feature adjustable steering links.

CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

= T

A = 29 Ft.Lbs. (40 Nm)
B = 11 Ft.Lbs. (15 Nm) (Rod end jam nuts.)

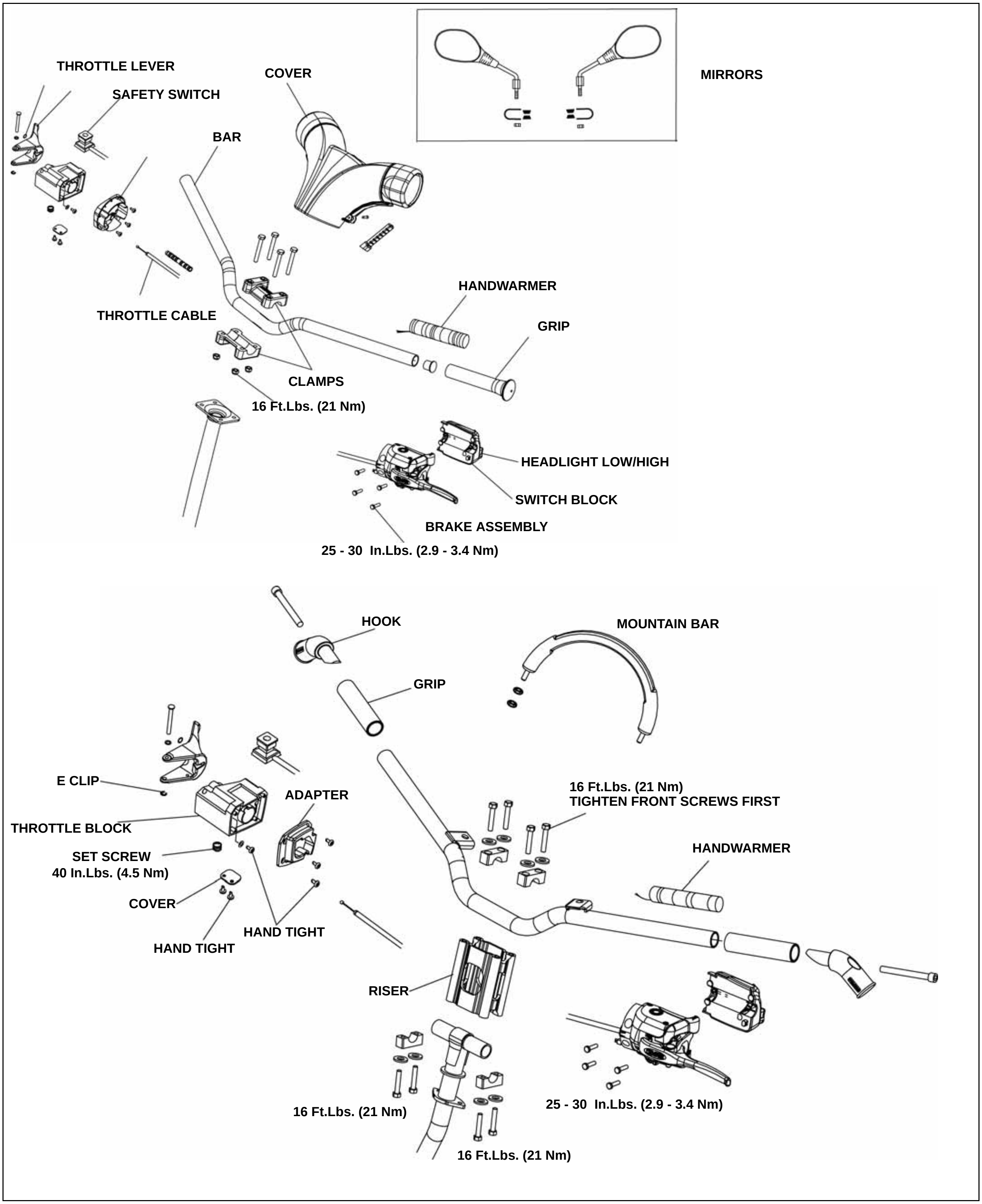
NOTE: Orientate rod ends so they are parallel with mating component.

Linkage Assembly Measurements

IQ 42.5 Tie Rod Length	15.06in. (382.5mm)
IQ 42.5 Adjustable Steering Drag Link Length	14.78in. (375.4mm)
IQ 42.5 Fixed Steering Drag Link Length	15.31in. (389mm)
IQ 42.5 Steering Link Length	9.30in. (236mm)
IQ RMK Tie Rod Length	13.66in. (345mm)
IQ RMK Fixed Steering Drag Link Length	15.31in. (389mm)
IQ RMK Steering Link Length	9.30in. (236mm)

NOTE: Measurements are rod-end center-to-center with rod-ends perpendicular to tie rod.

Handlebar Assemblies



8

ADJUSTMENT PROCEDURES

SETUP AND ADJUSTMENTS

Spring 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. An increase in IFS shock spring preload will result in an increase in ski pressure.

To adjust front spring preload on threaded adjust models, grasp the spring and turn in a clockwise direction (as viewed from the top of the shock) to increase the preload. Turn in a counterclockwise direction to decrease preload.

Always set the preload equally between the right and left-side shocks.

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.

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.

To determine if the suspension is using full travel, place the shock's jounce bumper against the shock body, then test ride the machine.

The bumper will move on the rod in relation to the amount of travel. For example, if the shock travel is full, the bumper will travel the entire length of the shock rod.

To prevent excessive bottoming-out, install the next highest rate spring, or reduce the preload on the existing spring and change the shock valving to obtain the desired effect.

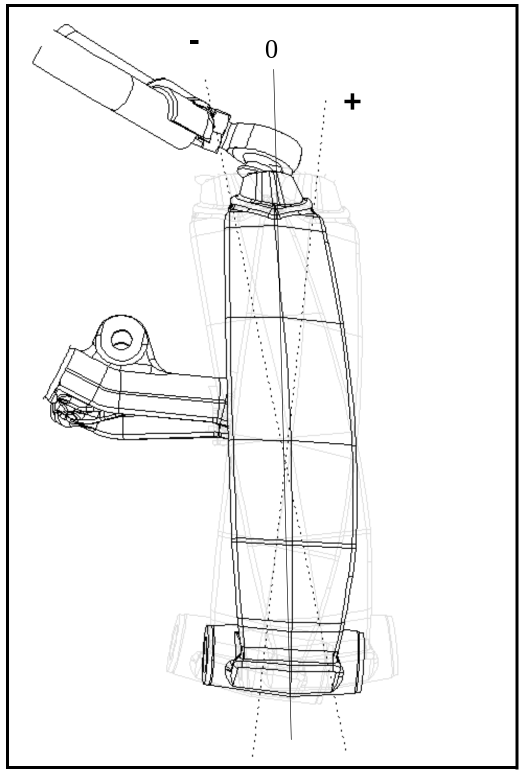
NOTE: Shock valving can only be adjusted or changed on models that have serviceable shocks.

Alignment Bar Specifications

- DIAMETER: .623”-.625” (15.824-15.875mm)
- LENGTH: 45” (114.3cm)
- MATERIAL: C-1018

Camber

- 0 = Neutral camber. The spindle is 90_ (perpendicular) to the ground.
- + = Positive camber. Spindle top is canted outward from the chassis.
- - = Negative camber. Spindle top is canted inward towards the chassis.



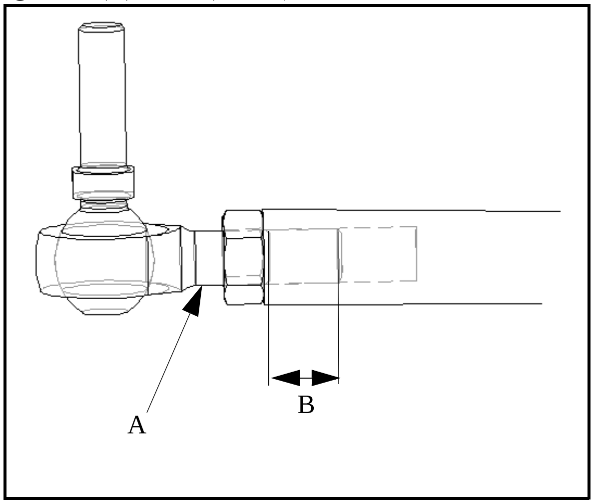
Rod Ends

Rod ends must be parallel to their respective mounting surface after tightening jam nut. If possible, support the edge of the rod end to keep it from rotating out of position until jam nut is tight. When rod ends are properly tightened, the rod should rotate freely approximately 1/8 turn.

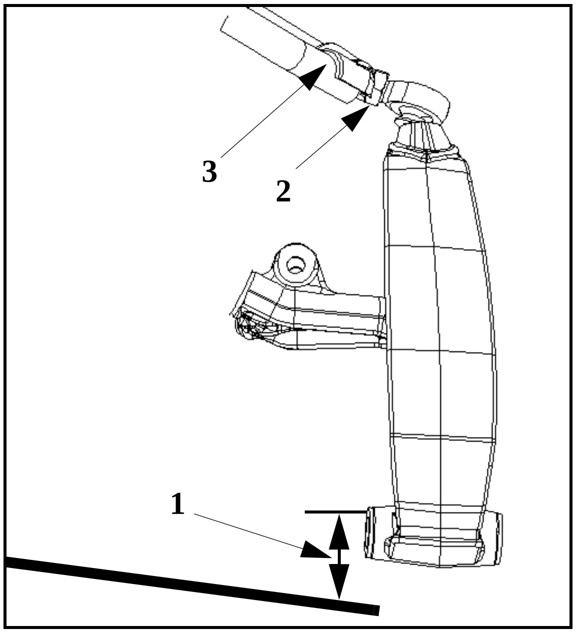
Rod End Engagement

Rod ends must engage the rod a minimum of 2x the thread diameter when adjustment is complete.

Example: .4375” (11mm) rod end (A) X 2 = minimum thread engagement (B) .875” (22mm).



Camber Adjustment



1. Raise the front of the machine so that the skis are off the floor 3” (7.62cm). The shocks should be at full extension
2. Remove the skis.
3. Determine which spindle requires the greatest amount of correction my installing the alignment bar through one spindle to the other spindle. Measure the distance from the top of the alignment bar to the top of the ski mount hole with the bushing(s) removed. Record measurement.
4. Remove the alignment bar and install it to measure the opposite side. Measure the distance from the top of the alignment bar to the top of the ski mount hole with the bushing(s) removed. Record measurement
5. To adjust the camber, unlock the lock nut and adjust the camber with the adjuster nut until alignment bar measurement is within the specified range for each spindle.
6. Once the specification is achieved, tighten all jam nut(s) and torque them Ft.Lb. (61 Nm).
7. Re-check the set up width and compare to specification.

Handlebar Centering

1. Raise the front of the machine off the floor so that the spindles are off the floor 3”(7.62cm).
2. Insert the alignment bar through both ski bolt holes in each spindles.
3. Adjust Toe until handlebar is centered.

Toe Adjustment

Toe is adjusted with the shocks and skis installed. Track alignment must be correct before starting this process.

Toe alignment is measured at ride height.

1. Lift front of the machine off the floor rock the front end up and down and then set it down gently. This will set the unit at ride height.
2. Measure and make a mark 10” (2.54cm) forward of the ski mount bolt and 10” (2.54cm) behind the ski mount bolt, preferably on the center line of the carbide skags.
3. Place a straight edge along the one side of the track. Make sure that the straight edge is touching along the length of the track.

4. Record the measurements from the edge of the straight edge to the forward ski mark and the rearward ski mark.
5. Adjust the tie rod so that both measurements are the same.
6. Place the straight edge on the opposite side of the track and measure the opposite ski marks.
7. Adjust the tie rod so that both measurements are the same.
8. Verify that the ski center distances are within specification from the forward marks and the rearward marks.

DISASSEMBLY AND ASSEMBLY

Spindle Removal

1. Securely support the front of the machine up off the floor.
2. Remove the ski(s).
3. Remove the upper control arm (UCA)-to-spindle fastener.
4. Remove the fastener securing the lower control arm (LCA) to the spindle. Note the orientation of the fastener and nut.
5. Remove the tie rod from the spindle, by removing the nut and bolt.

Spindle Assembly

1. Assembly is the reverse order of disassembly. Reference the front suspension assembly illustration for fastener torque values.

Spherical Bearing Replacement

1. Remove the fastener securing the lower control arm (LCA) to the spindle.
2. Remove the lower shock fastener.
3. Remove the fasteners securing the LCA to the bulkhead.
4. Remove the snap ring, then, using a press, press the spherical bearing out of the LCA.
5. Press in a new bearing, then install the snap ring.
6. Assemble the LCA into the spindle, and shock into LCA. Reference front suspension assembly illustration for fastener torque values.

Upper / Lower Control Arm Removal

1. Remove the fastener securing the control arm being removed from the spindle. Remove the lower shock fastener.
2. Remove the fasteners securing the control arm to the bulkhead.
3. Remove the control arm, pivot bushings, and pivot shafts.

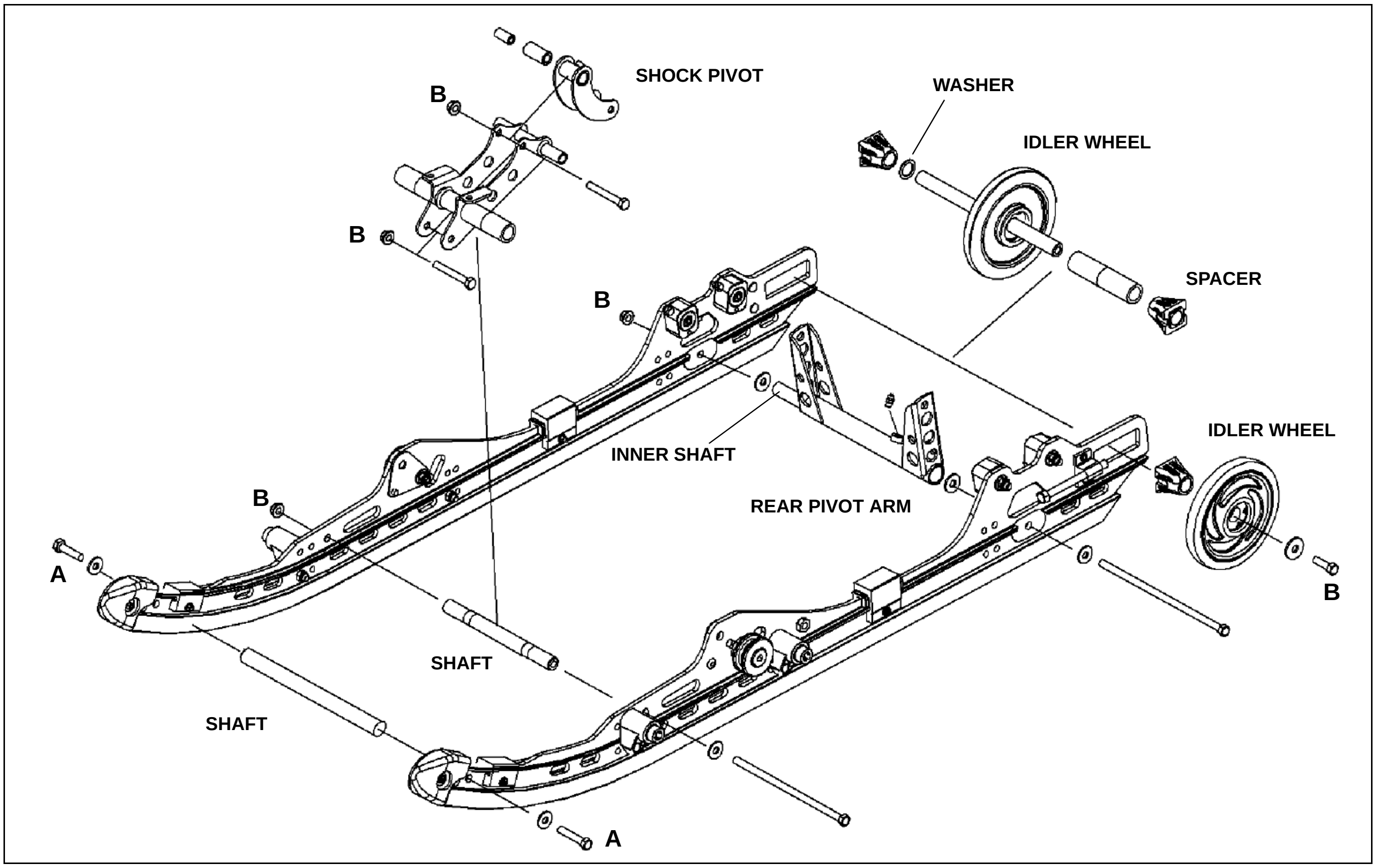
Upper / Lower Control Arm Installation

1. Replace the upper or lower control arm bushings in the control arm(s).
2. Replace the upper or lower control arm(s) into the bulkhead.
3. Reference the front suspension illustration for the appropriate fastener torque.

NOTE: There is a washer located on the rearward lower control arm mounting at the bolt head.

REAR SUSPENSION ASSEMBLY ILLUSTRATIONS

IQ 121 Pivots / Rear Idler

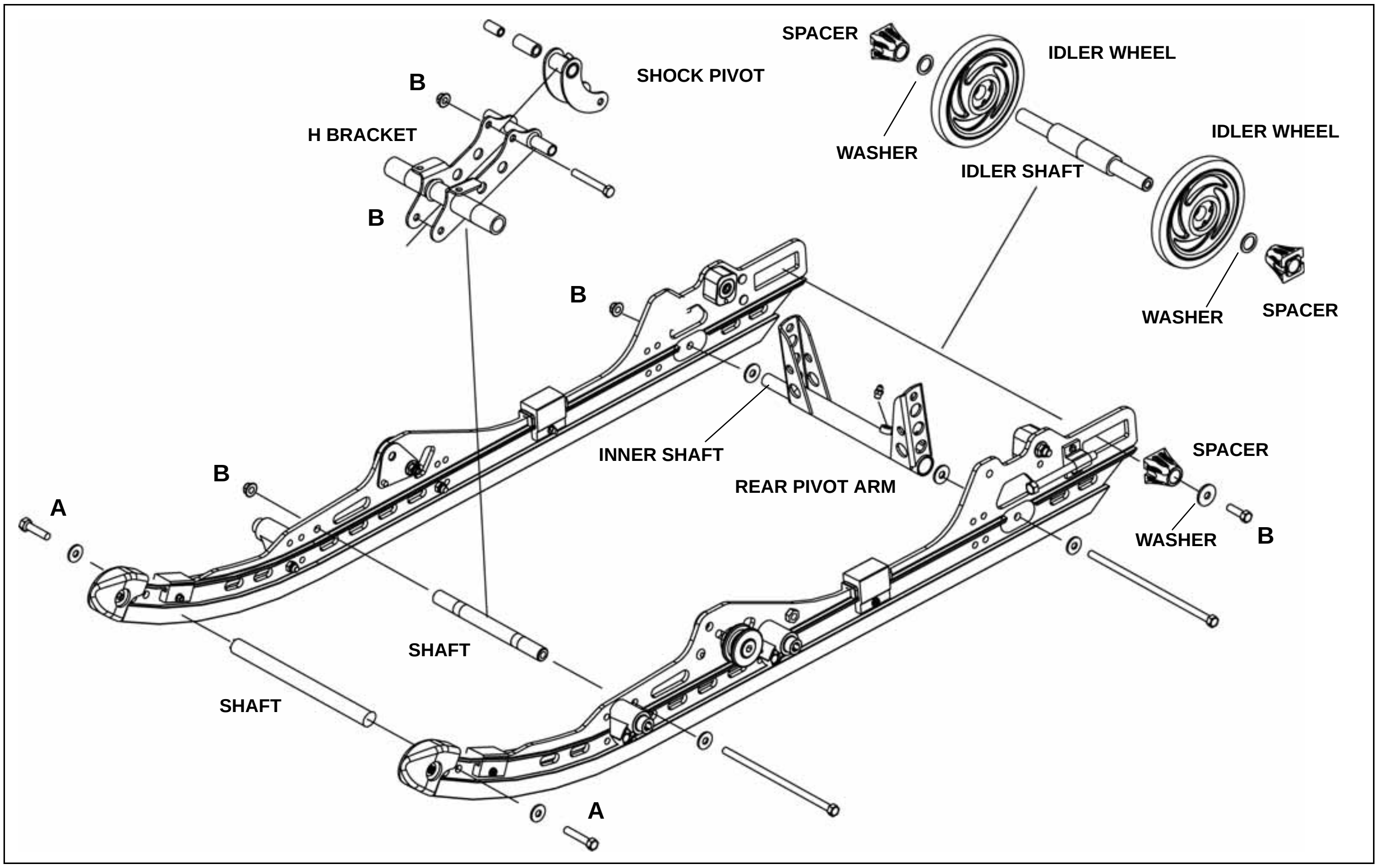


= T
A = 45 Ft.Lb. (61 Nm) B = 35 Ft.Lb. (47 Nm)

Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

IQ 121 Shift Pivots / Rear Idler

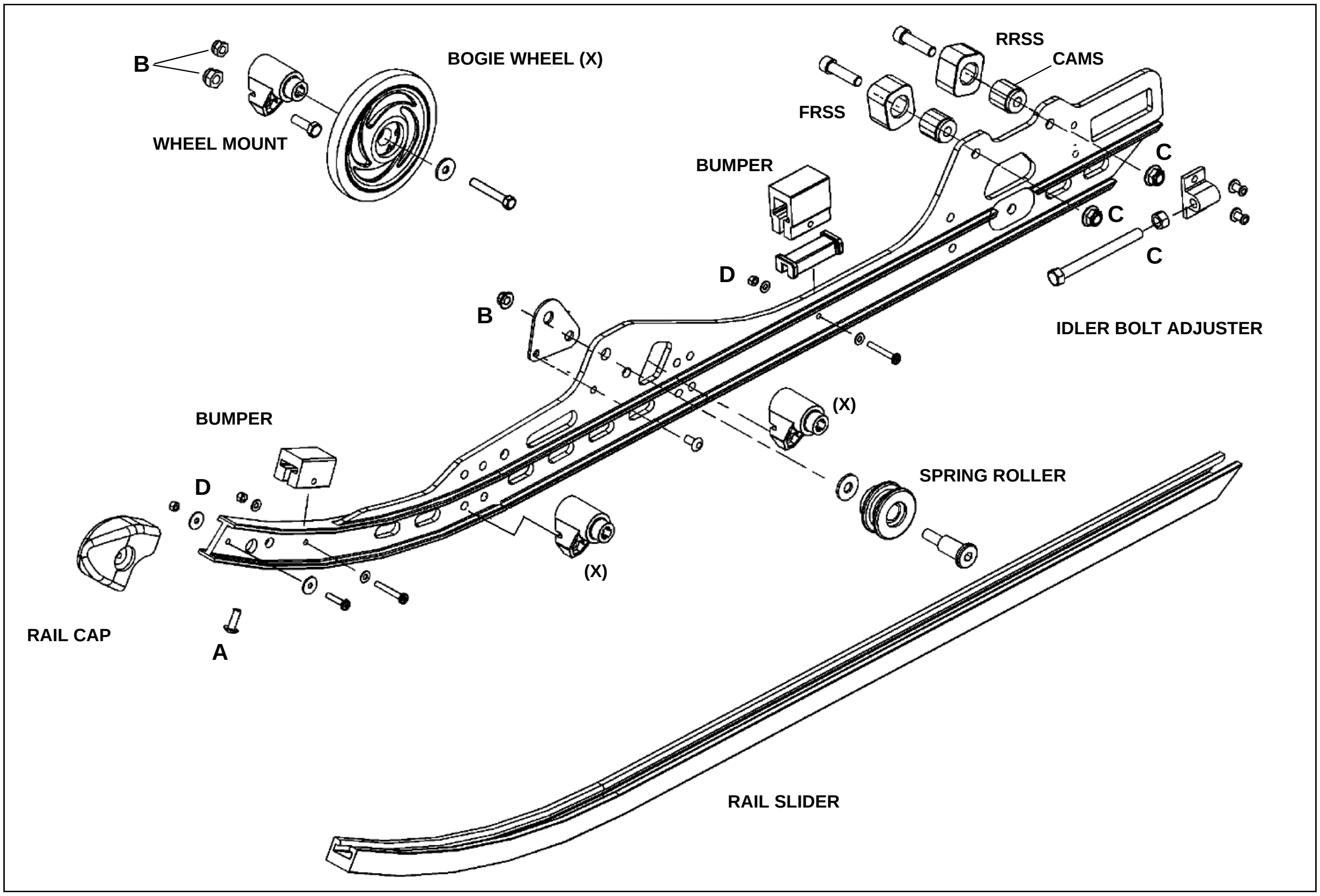


= T
A = 45 Ft.Lb. (61 Nm) B = 35 Ft.Lb. (47 Nm)

Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

IQ 121 Rail Assembly

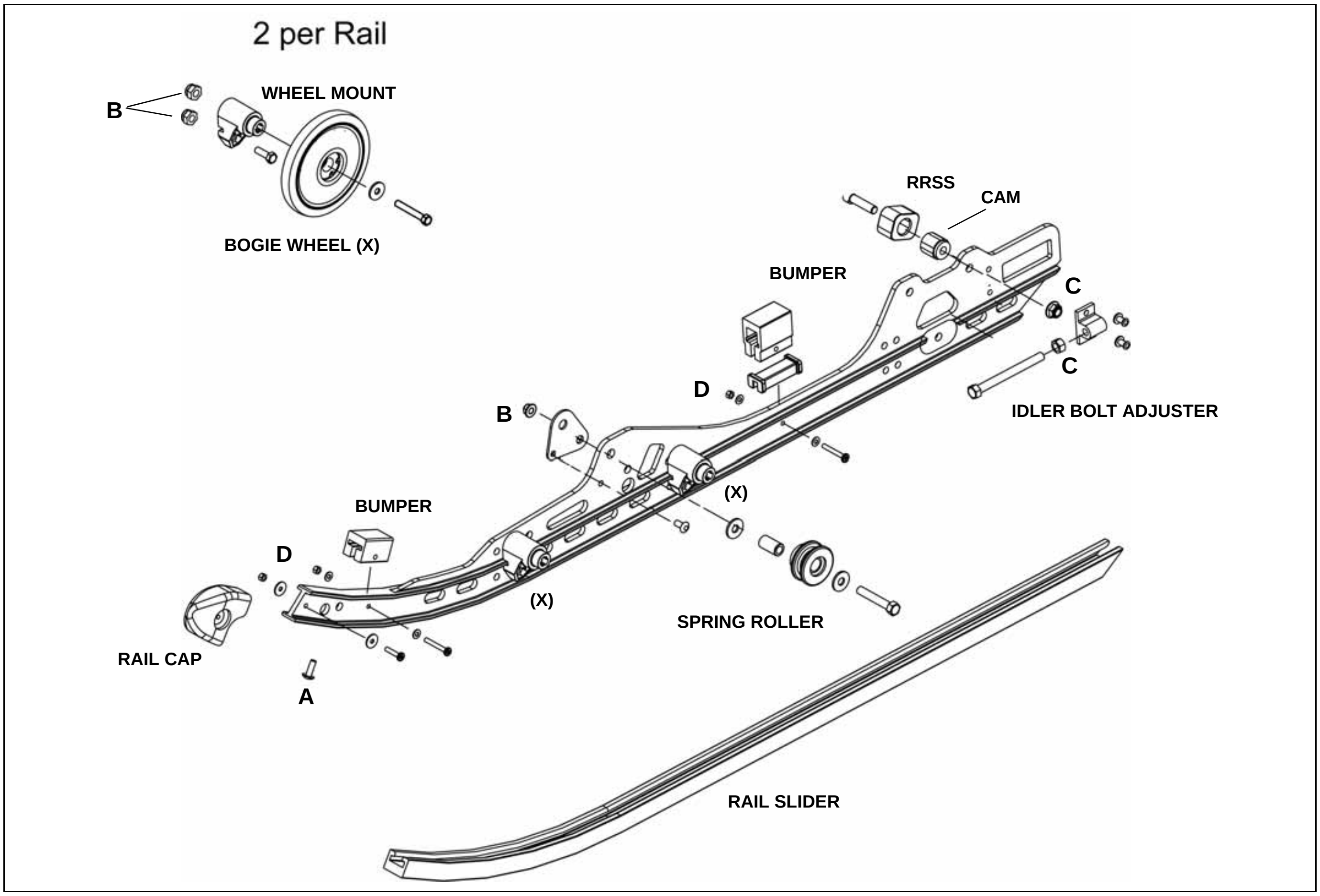


= T
A = 3 - 6 Ft.Lb. (4 - 8 Nm) B = 19 Ft.Lb. (26 Nm) C = 35 Ft.Lb. (47 Nm) D = 35 In.Lb. (2 Nm)

Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

IQ 121 Shift Rail Assembly

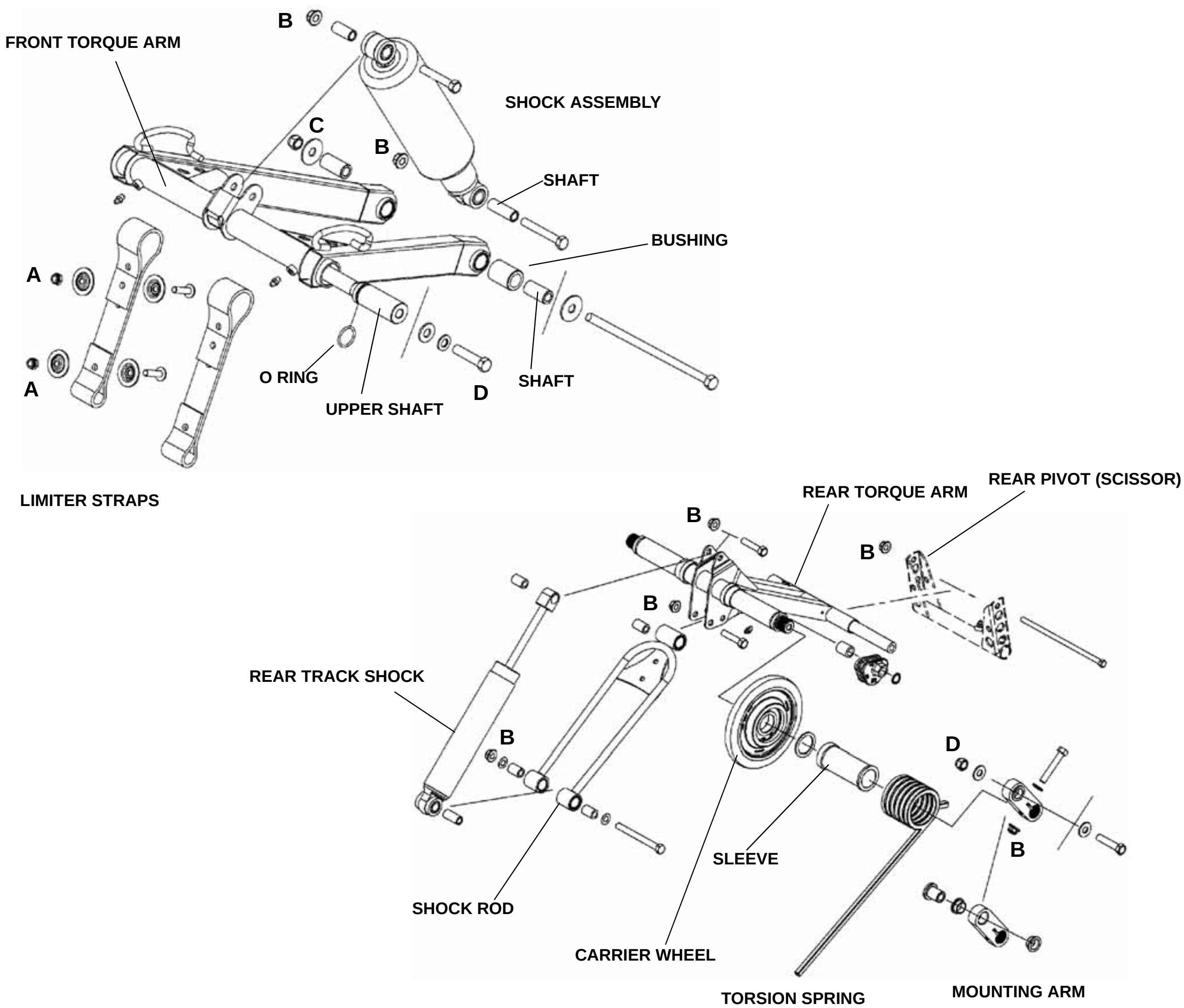


= T
A = 3 - 6 Ft.Lb. (4 - 8 Nm) B = 19 Ft.Lb. (26 Nm) C = 35 Ft.Lb. (47 Nm) D = 35 In.Lb. (4 Nm)

Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

IQ 121 / Shift Front / Rear Torque Arms



= T
A = 12 Ft.Lb. (16 Nm) B = 35 Ft.Lb. (47 Nm) C = 45 Ft.Lb. (61 Nm) D = 60 Ft.Lb. (81 Nm)

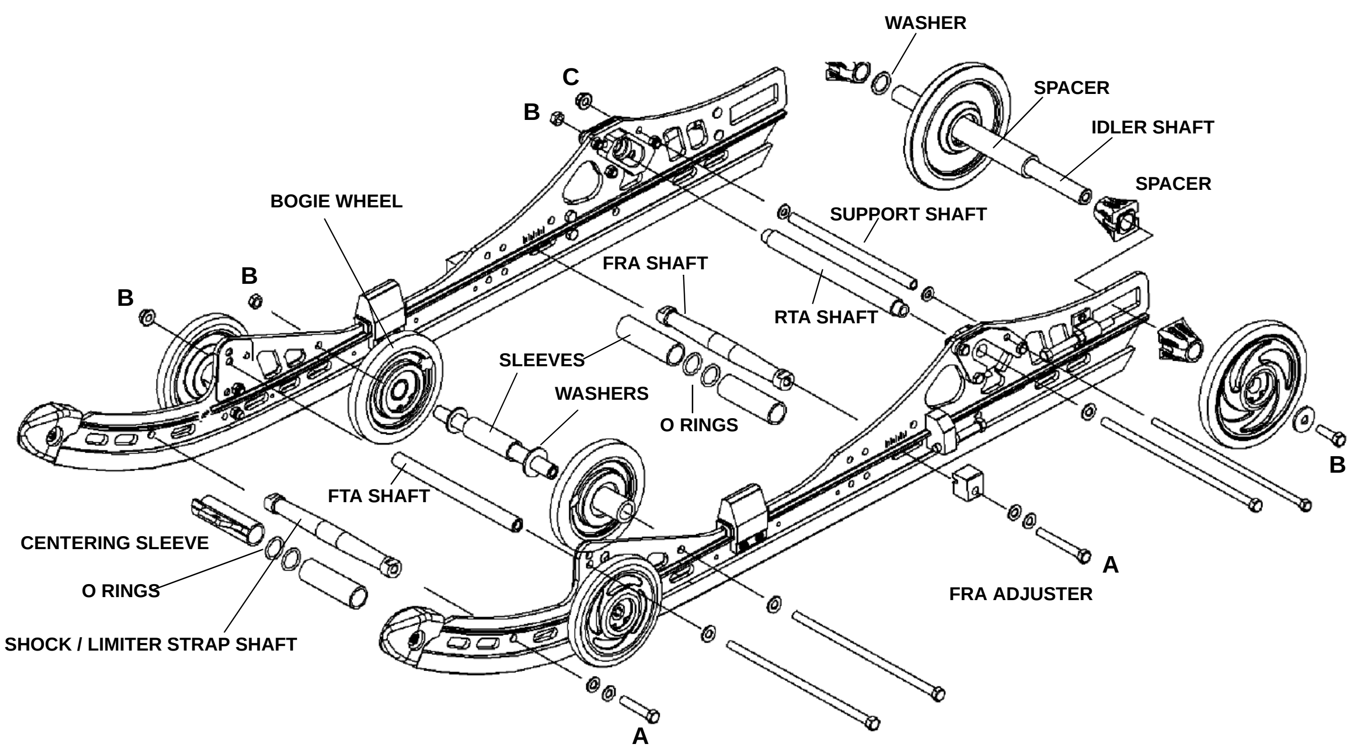
Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

CAUTION

The fasteners securing the rear suspension to the tunnel are pre-coated with a locking agent when new. Never re-use these fasteners when removed. Always use new pre-coated fasteners when mounting the suspension to the tunnel.

M-10 128 Pivots / Rear Idler

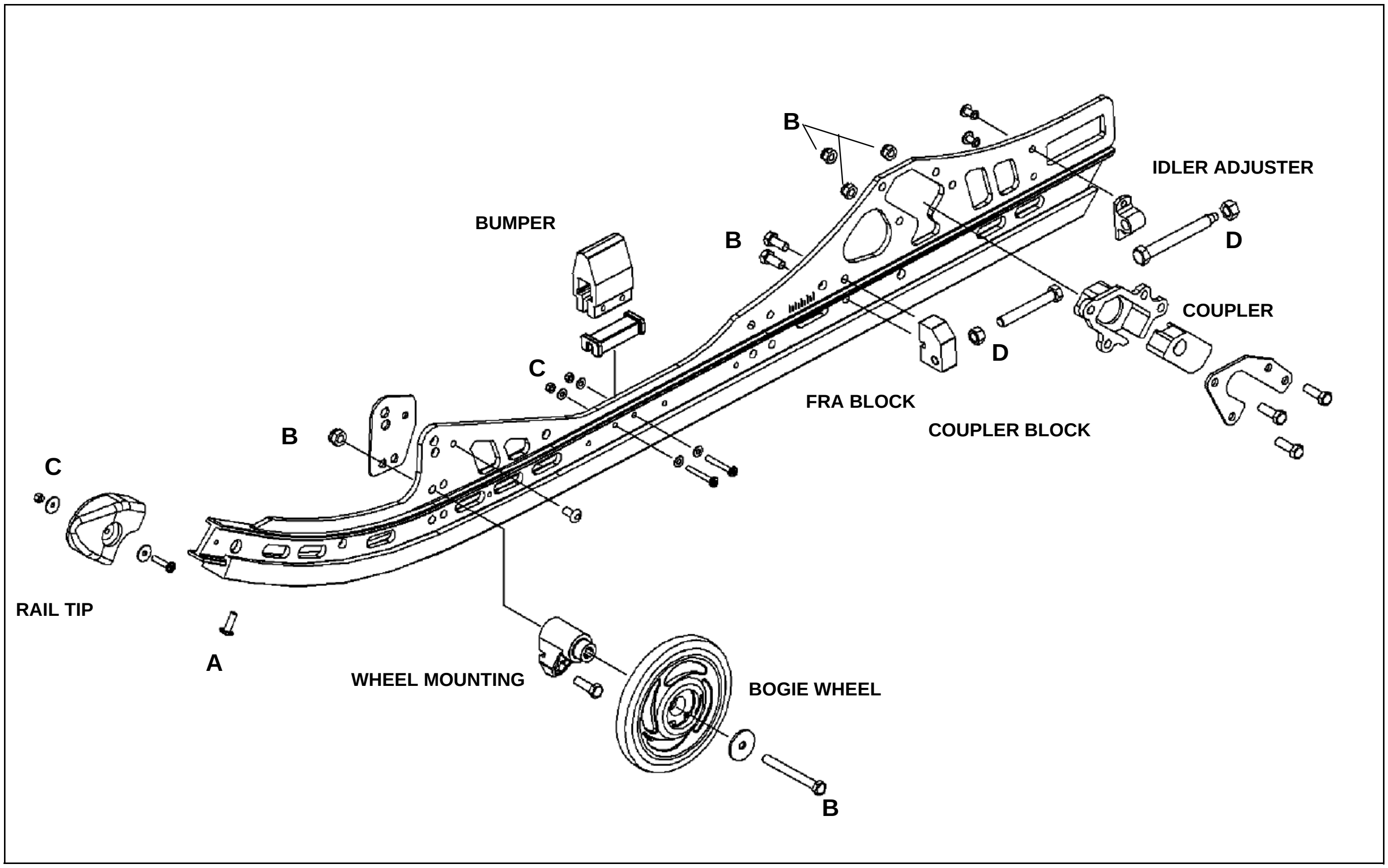


= T
A = 45 Ft.Lb. (61 Nm) B = 35 Ft.Lb. (47 Nm) C = 19 Ft.Lb. (26 Nm)

Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

M-10 128 Rail Assembly

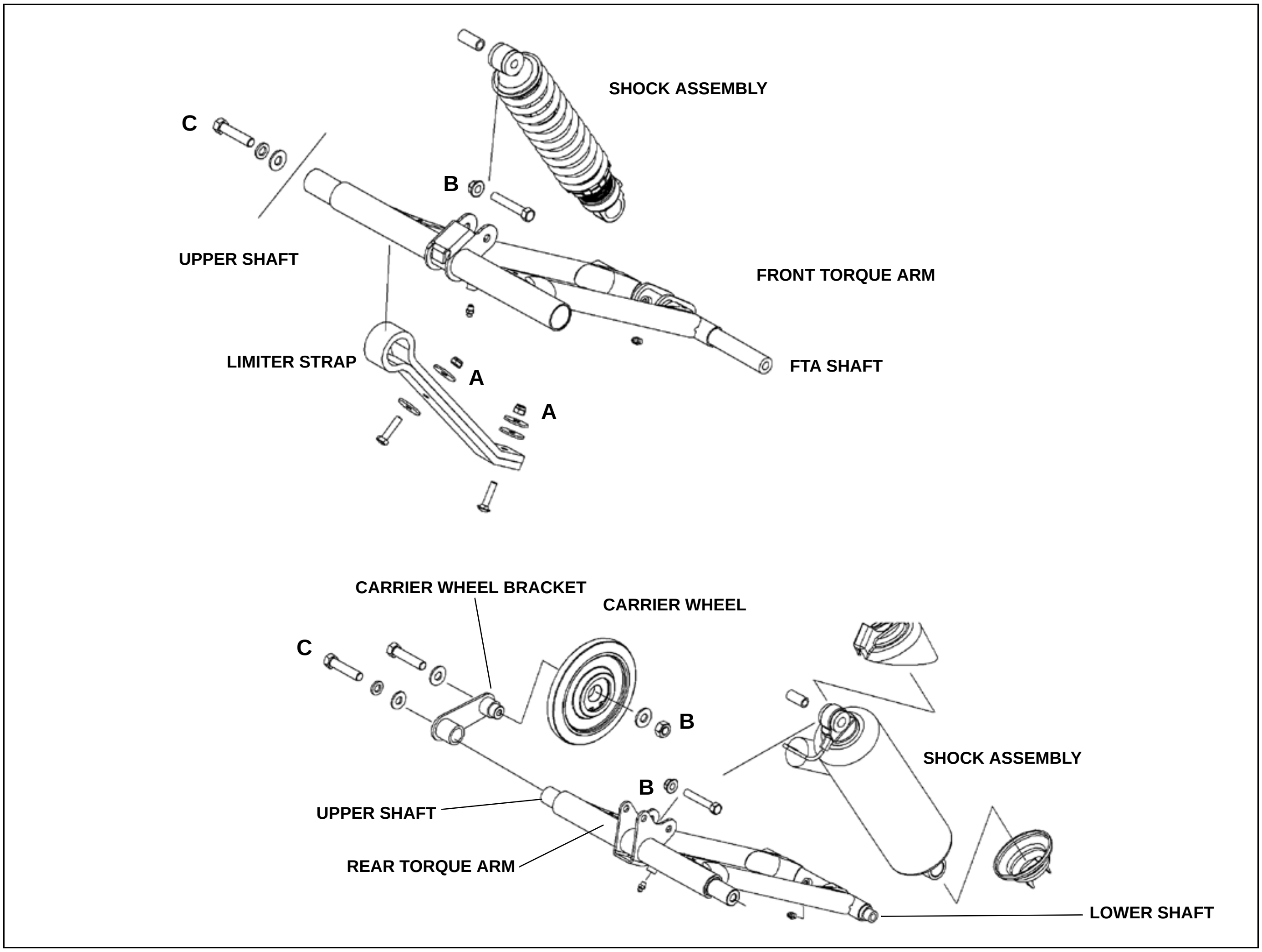


= T
A = 3 - 6 Ft.Lb. (4 - 8 Nm)
B = 19 Ft.Lb. (26 Nm)
C = 35 In.Lb. (4 Nm)
D = 35 Ft.Lb. (47 Nm)

Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

M-10 128 Front / Rear Torque Arms



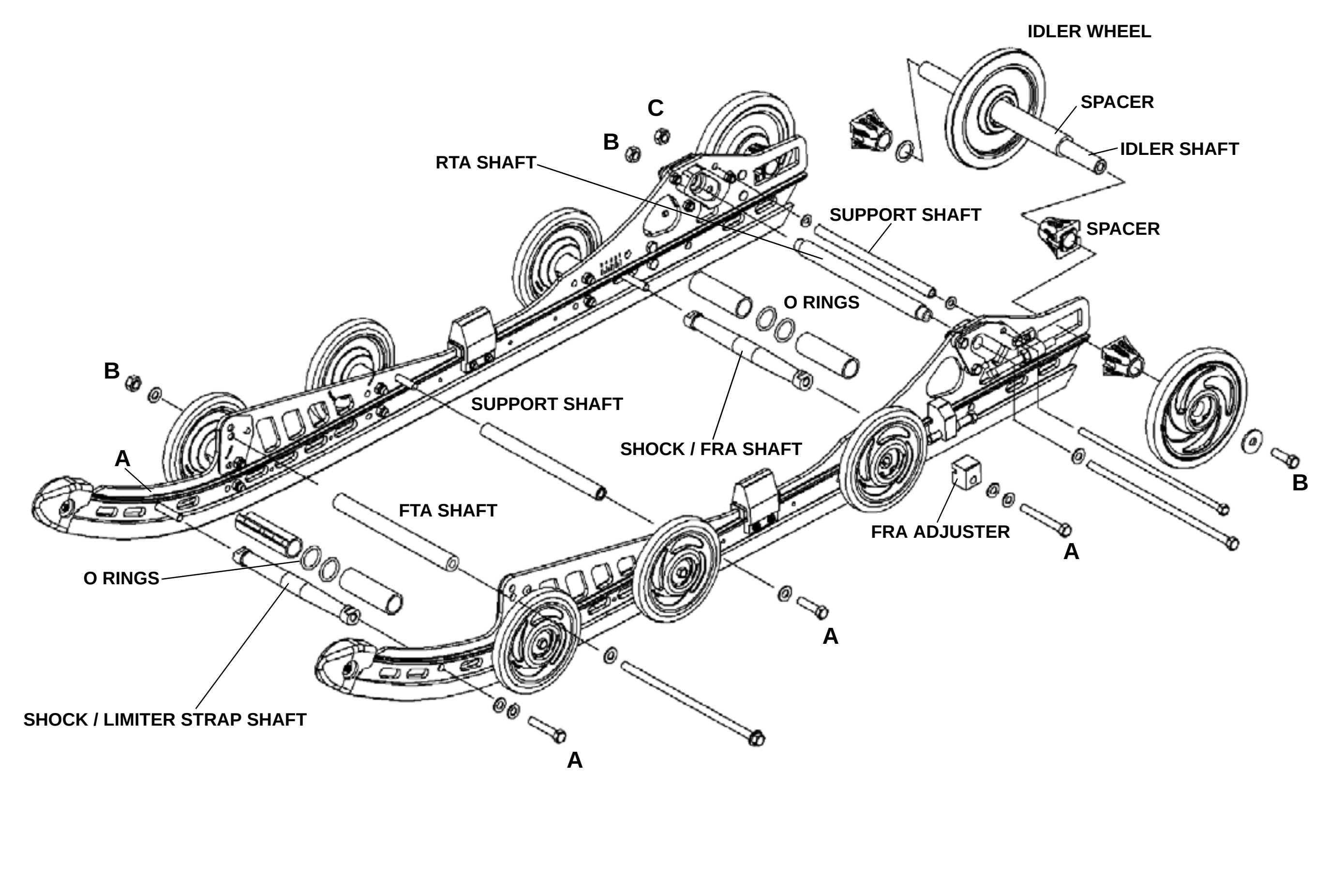
= T
A = 12 Ft.Lb. (16 Nm) B = 35 Ft.Lb. (47 Nm) C = 70 Ft.Lb. (94 Nm)

Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

CAUTION
The fasteners securing the rear suspension to the tunnel are pre-coated with a locking agent when new. Never re-use these fasteners when removed. Always use new pre-coated fasteners when mounting the suspension to the tunnel.

M-10 136 Pivots / Rear Idler

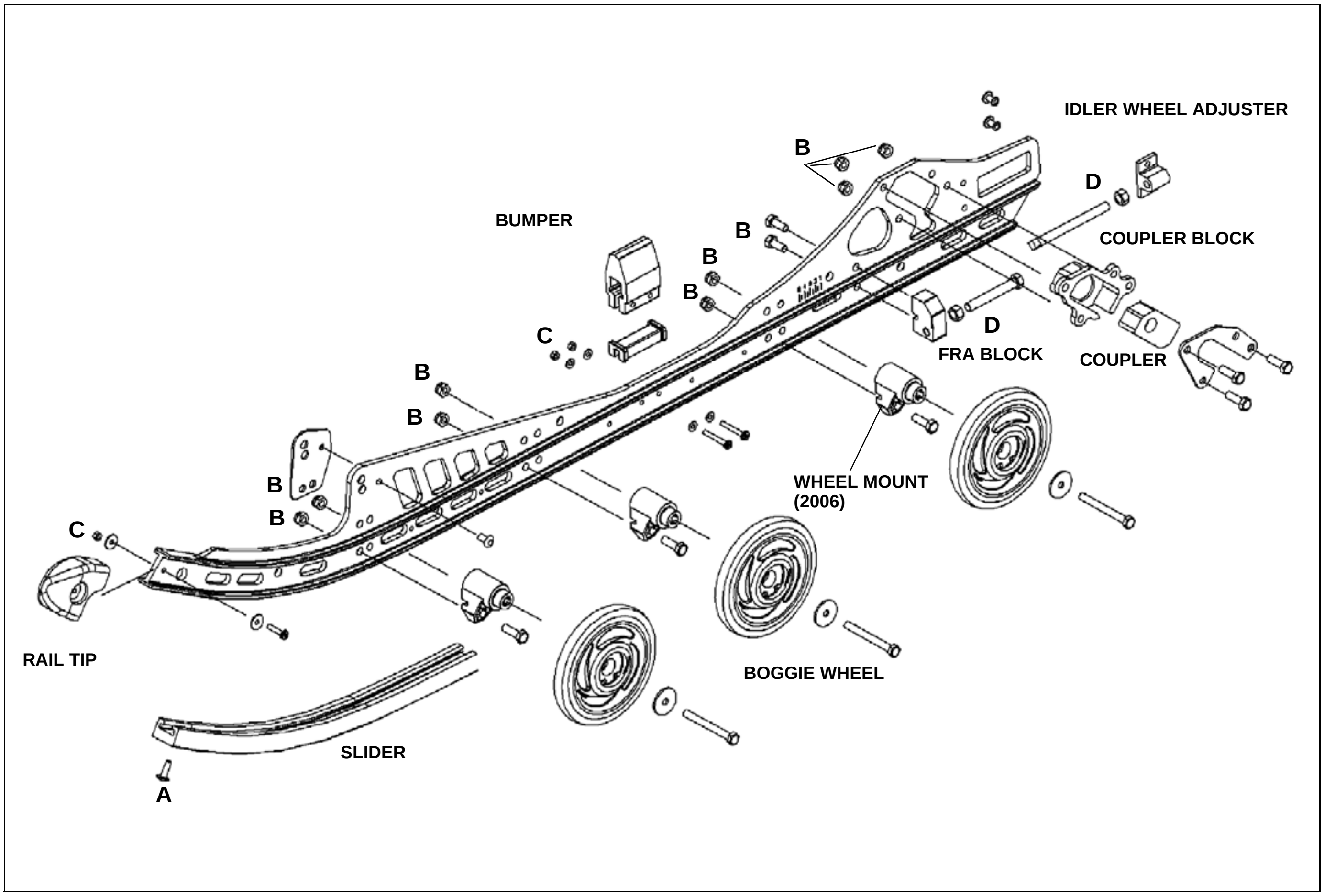


= T
A = 45 Ft.Lb. (61 Nm). B = 35 Ft.Lb. (47 Nm) C = 19 Ft.Lb. (26 Nm)

Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

M-10 136 Rail Assembly

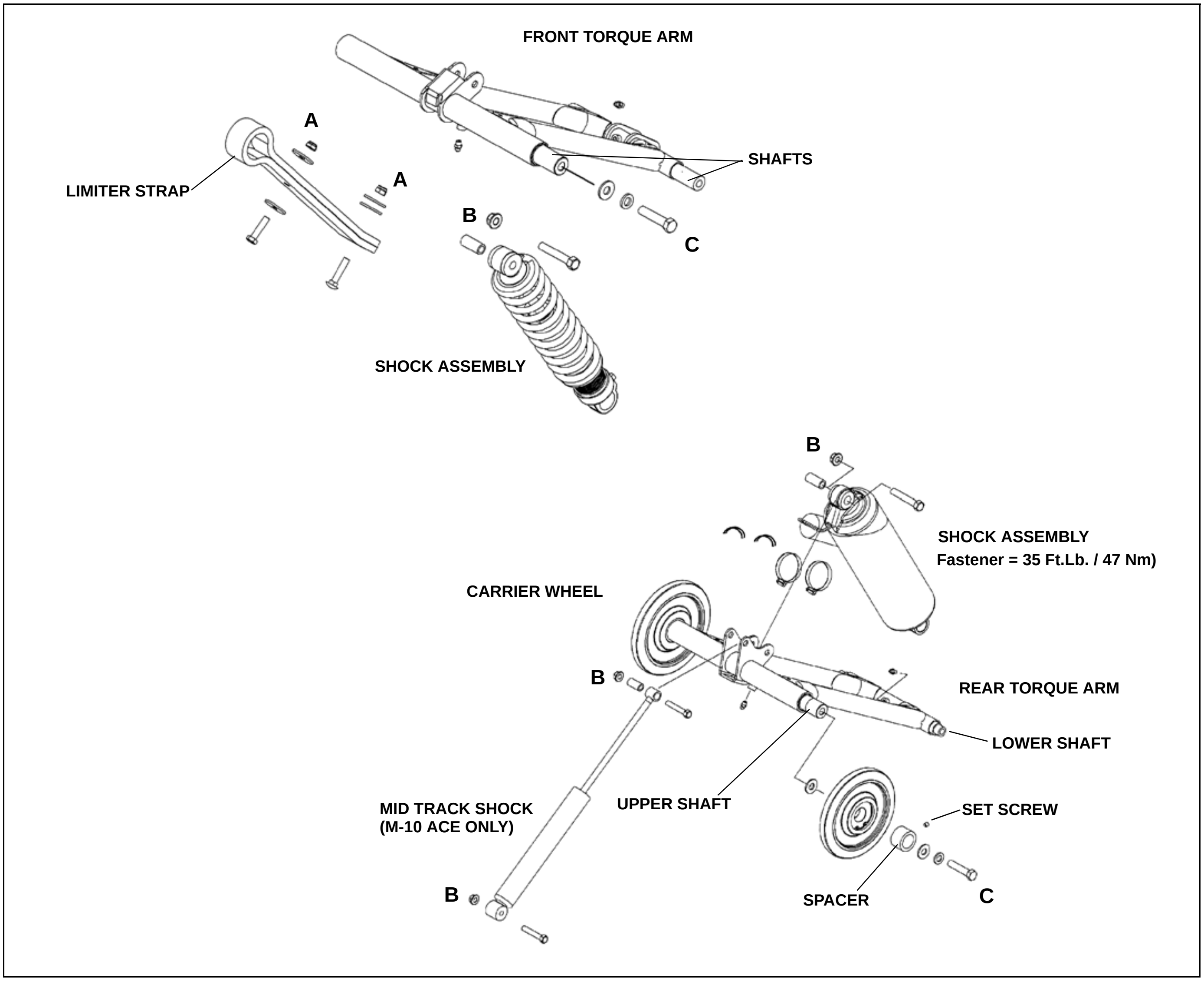


= T
A = 3 - 6 Ft.Lb. (4 - 8 Nm) B = 19 Ft.Lb. (26 Nm) C = 35 In.Lb. (4 Nm) D = 35 Ft.Lb. (47 Nm)

Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

M-10 136 Front / Rear Torque Arms



= T
A = 12 Ft.Lb. (16 Nm) B = 35 Ft.Lb. (47 Nm) C = 70 Ft.Lb. (94 Nm)

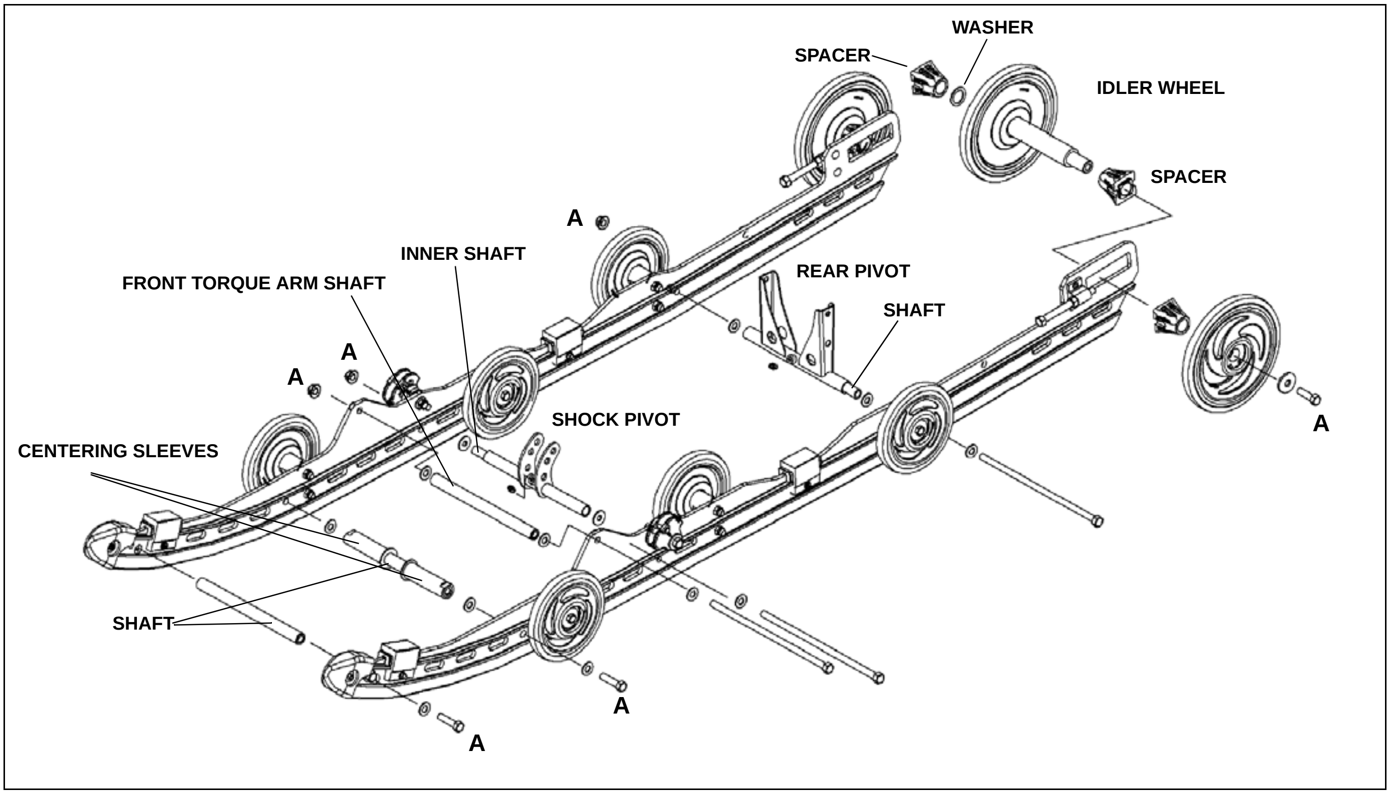
Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

CAUTION

The fasteners securing the rear suspension to the tunnel are pre-coated with a locking agent when new. Never re-use these fasteners when removed. Always use new pre-coated fasteners when mounting the suspension to the tunnel.

IQ Switchback 144 Pivots / Rear Idler

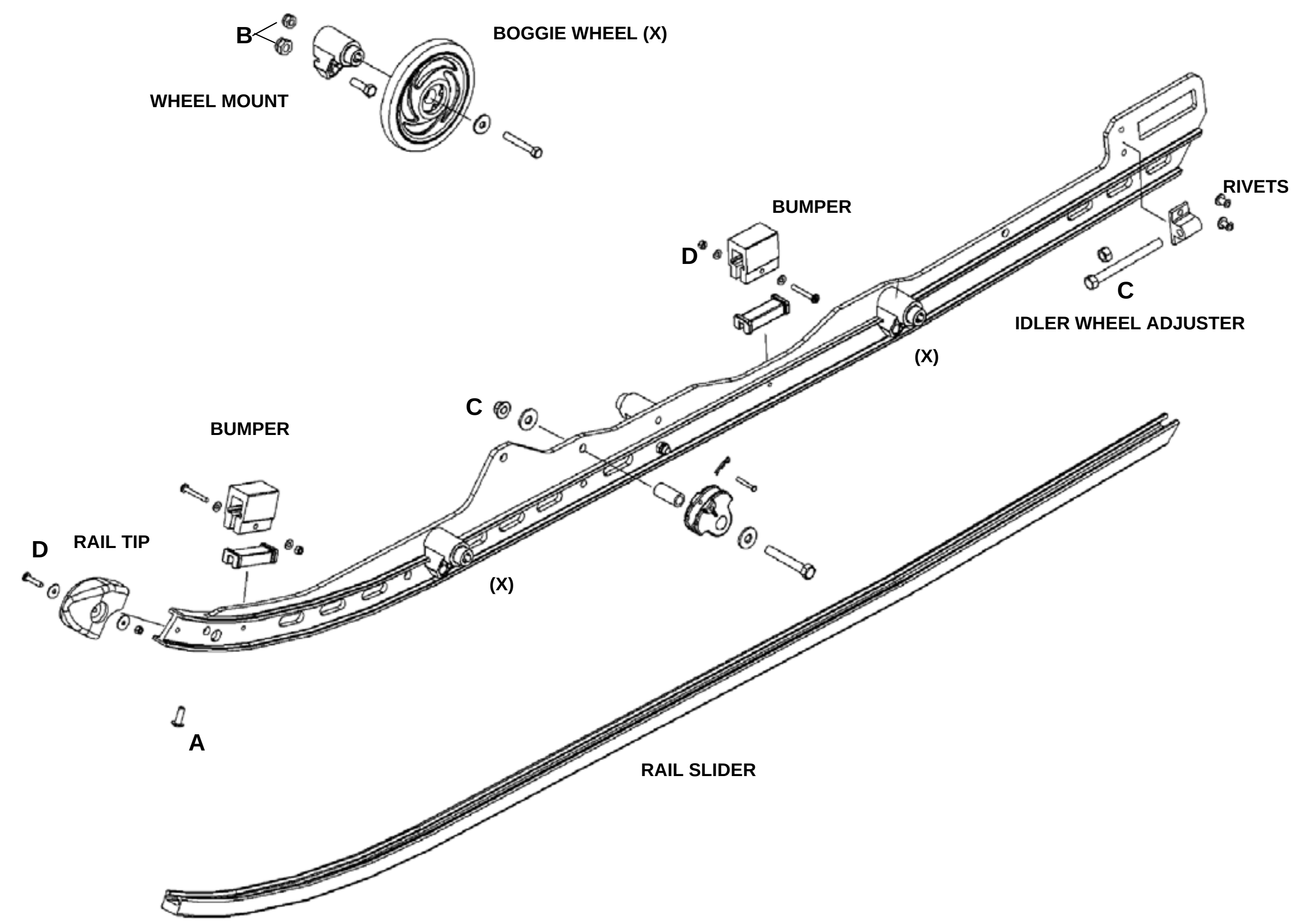


= T
A = 35 Ft.Lb. (47 Nm)

Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

IQ Switchback 144 Rail Assembly

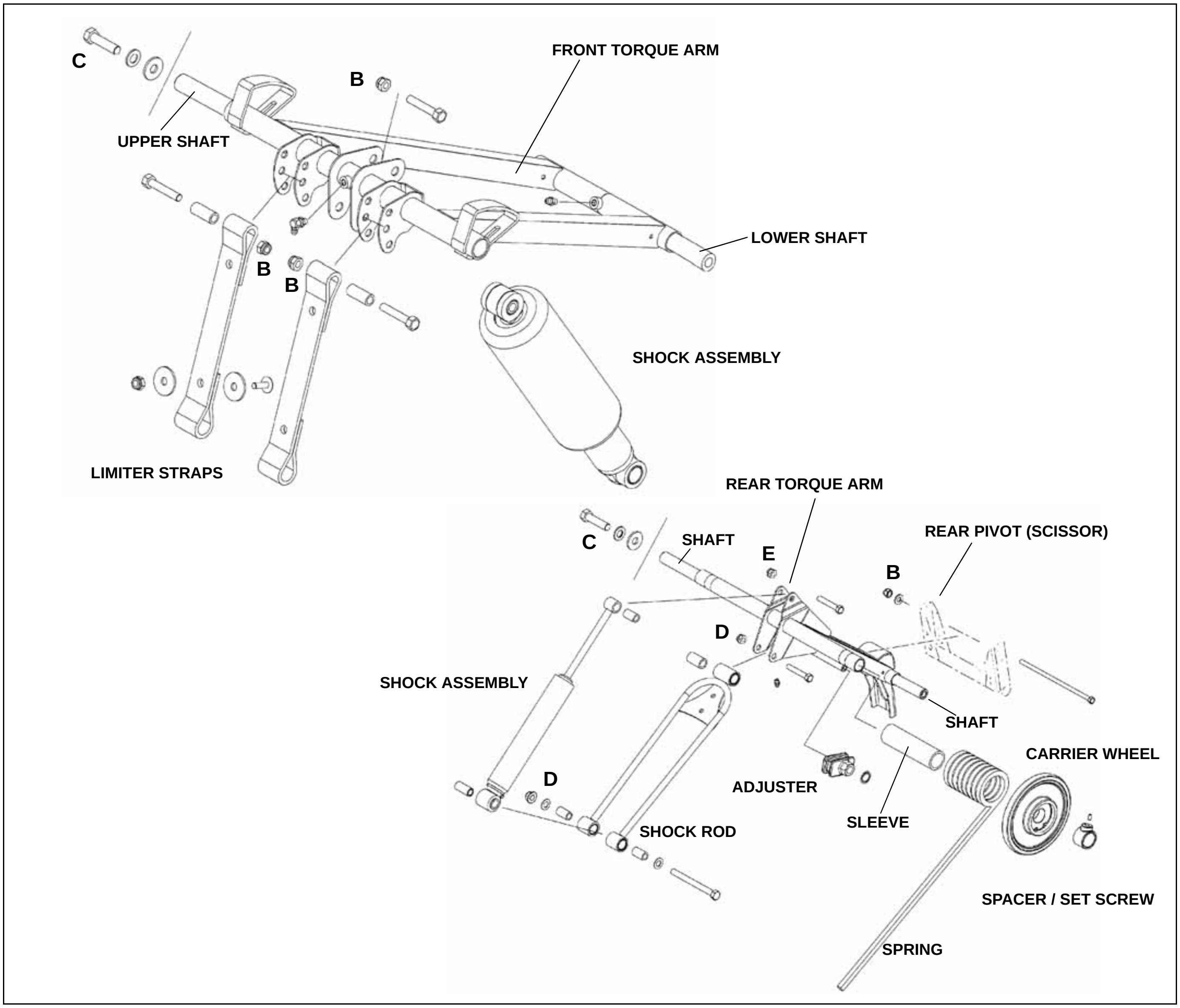


= T
A = 3 - 6 Ft.Lb. (4 - 8 Nm)
B = 19 Ft.Lb. (26 Nm)
C = 35 Ft.Lb. (47 Nm)
D = 35 In.Lb. (4 Nm)

Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

IQ Switchback 144 Front / Rear Torque Arms



= T
A = 12 Ft.Lb. (16 Nm)
B = 19 Ft.Lb. (26 Nm)
C = 45 Ft.Lb. (61 Nm)
D = 35 Ft.Lb. (47 Nm)
E = 25 Ft.Lb. (34 Nm)

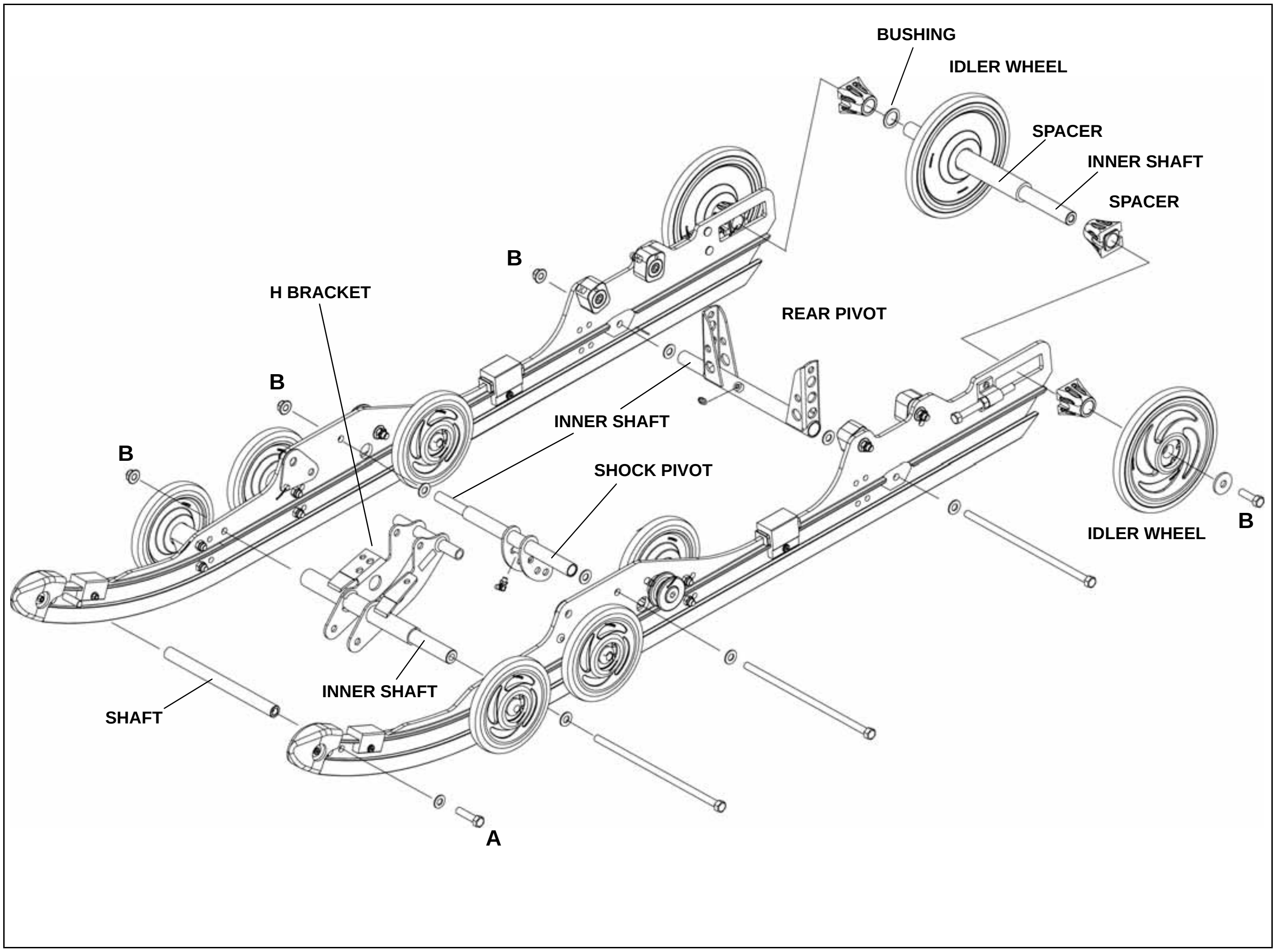
Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

CAUTION

The fasteners securing the rear suspension to the tunnel are pre-coated with a locking agent when new. Never re-use these fasteners when removed. Always use new pre-coated fasteners when mounting the suspension to the tunnel.

IQ 136 Comfort Pivots / Rear Idler

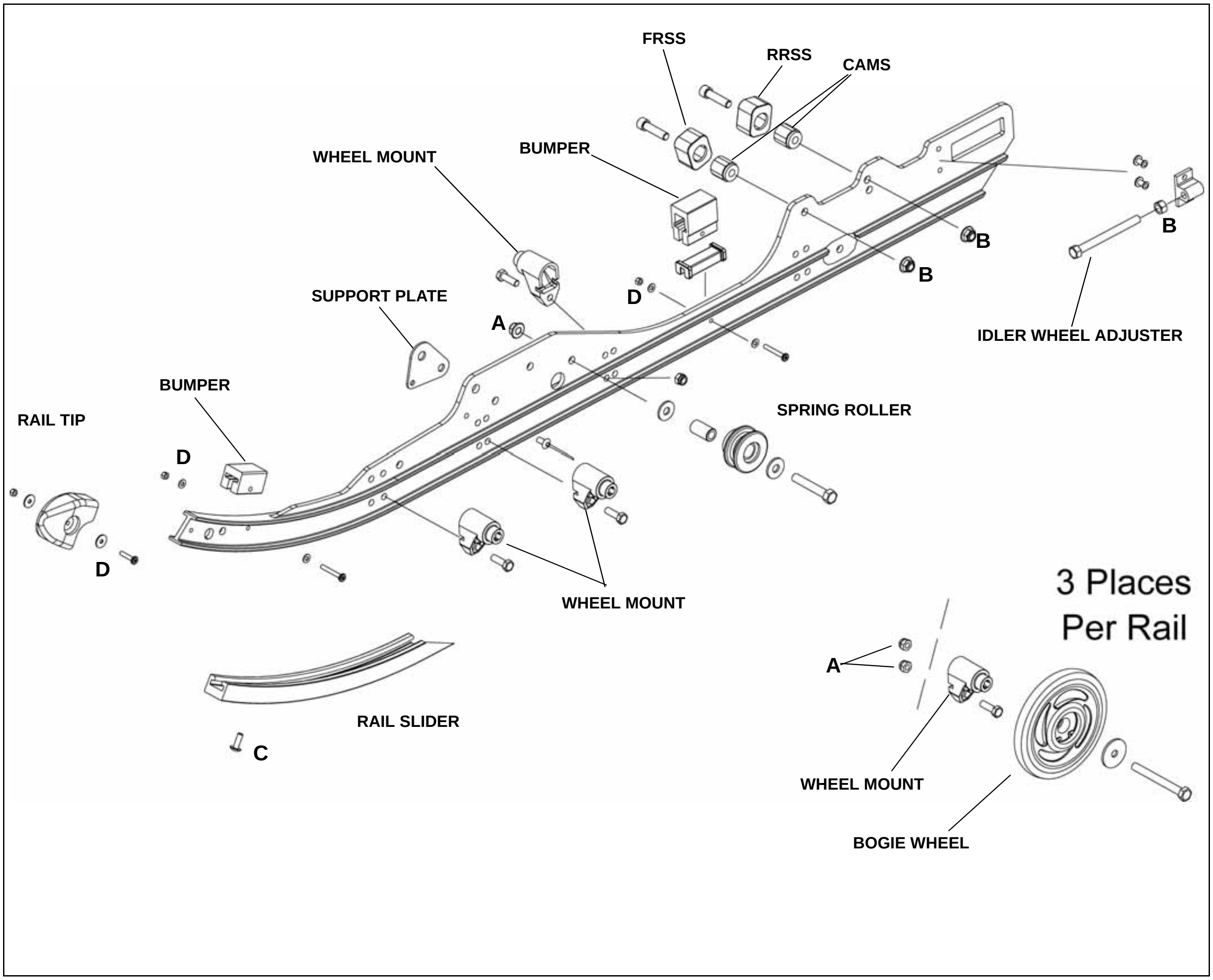


= T
A = 45 Ft.Lb. (61 Nm) B = 35 Ft.Lb. (47 Nm)

Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

IQ 136 Comfort Rail Assembly

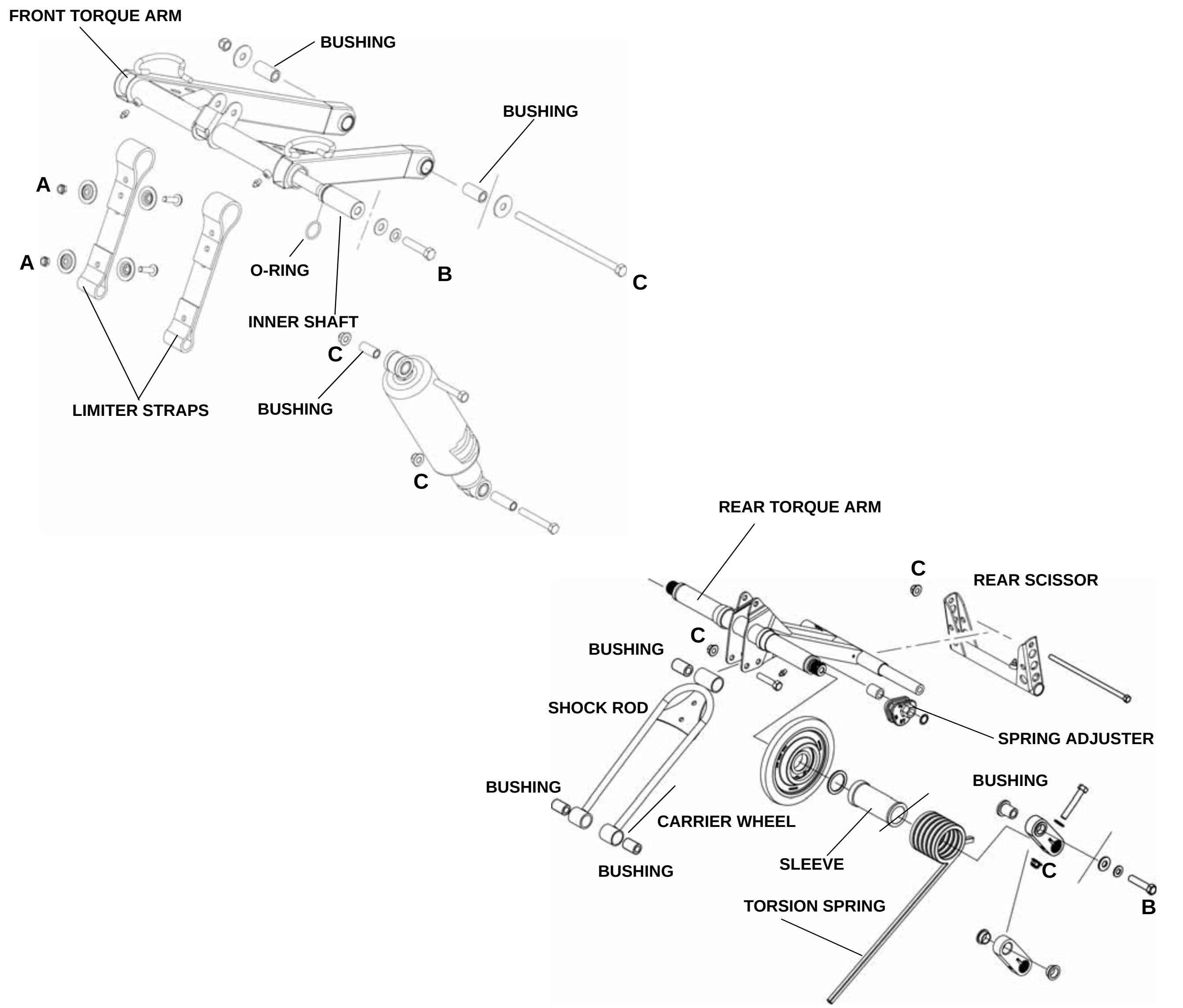


= T
A = 19 Ft.Lb. (26 Nm)
B = 35 Ft.Lb. (47 Nm)
C = 3 - 6 Ft.Lb. (4 - 8 Nm)
D = 35 In.Lb. (4 Nm)

Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

IQ 136 Comfort Front / Rear Torque Arms



= T
A = 12 Ft.Lb. (16 Nm) B = 40 Ft.Lb. (54 Nm) C = 35 Ft.Lb. (47 Nm)

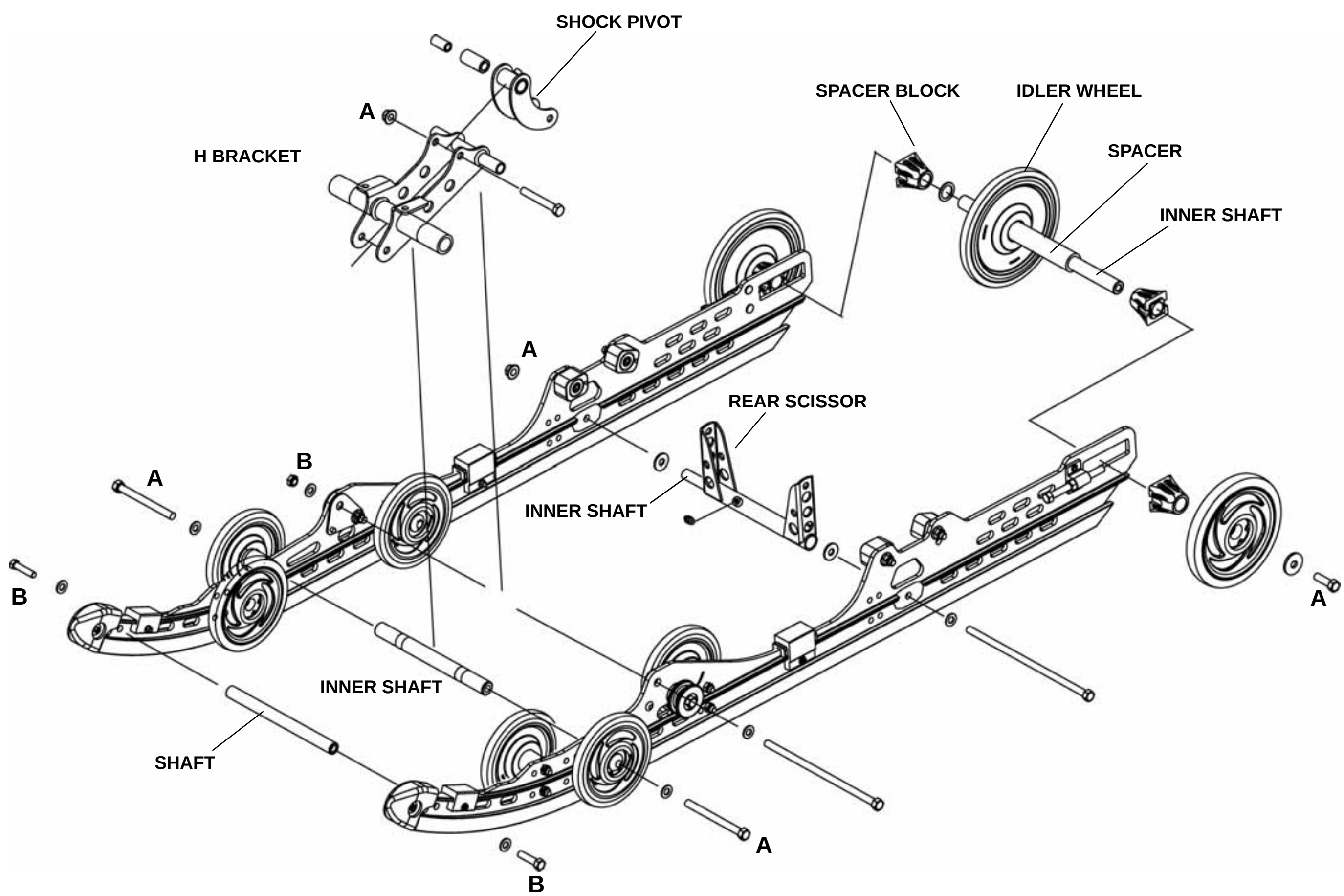
Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

CAUTION

The fasteners securing the rear suspension to the tunnel are pre-coated with a locking agent when new. Never re-use these fasteners when removed. Always use new pre-coated fasteners when mounting the suspension to the tunnel.

IQ 136 Coupled Pivots / Rear Idler

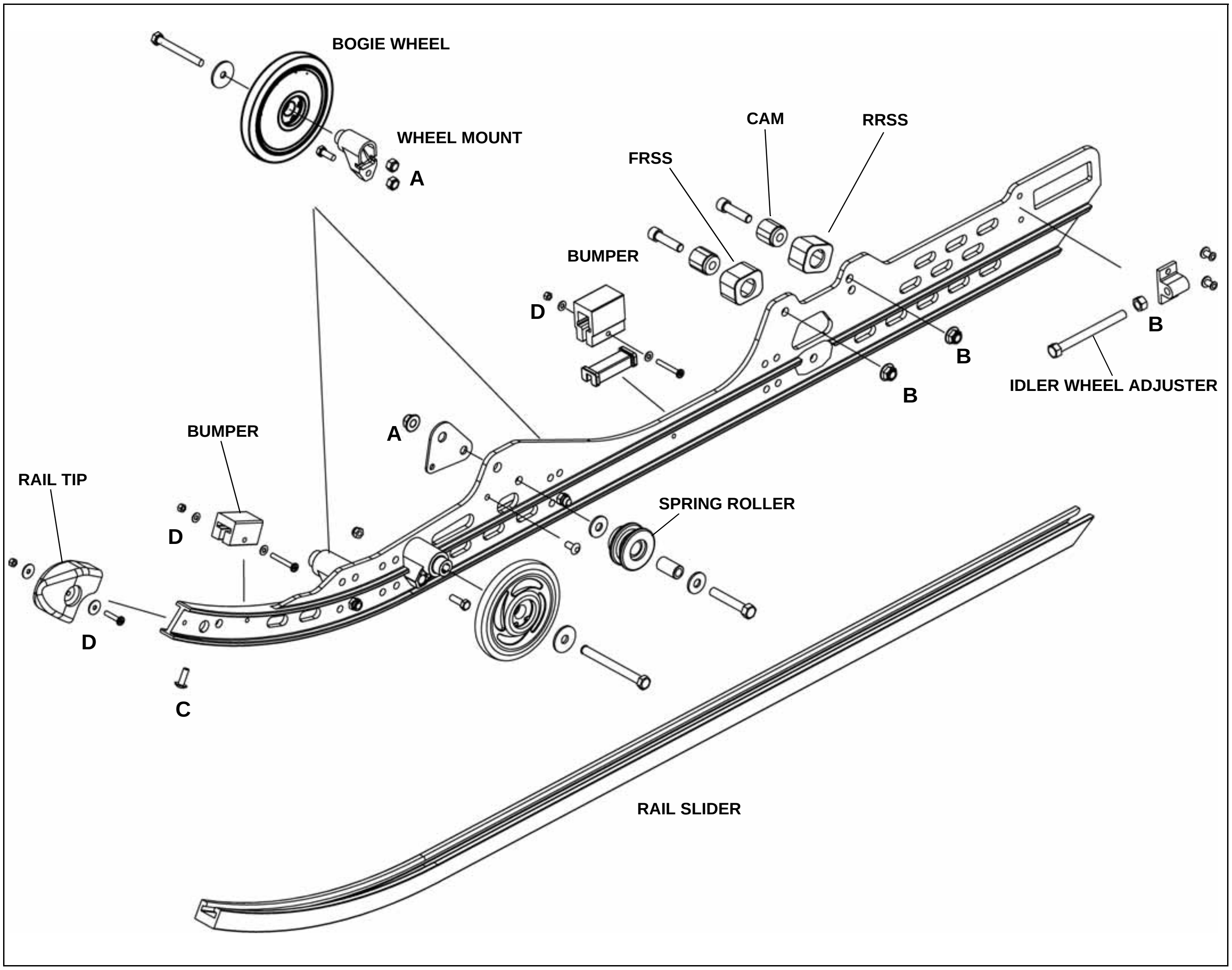


= T
A = 35 Ft.Lb. (47 Nm) B = 45 Ft.Lb. (61 Nm)

Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

IQ 136 Coupled Rail Assembly

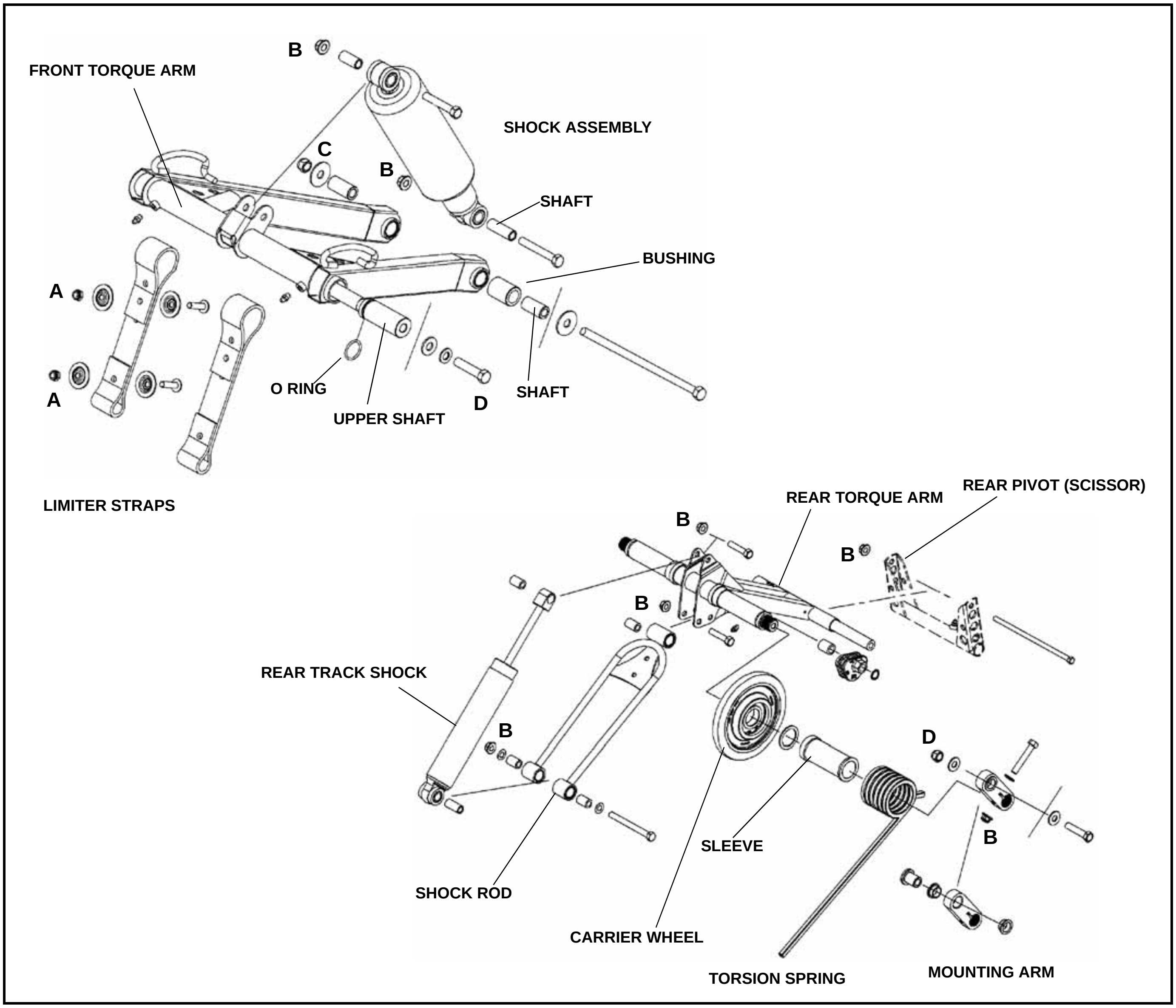


= T
A = 19 Ft.Lb. (26 Nm) B = 35 Ft.Lb. (47 Nm) C = 3 - 6 Ft.Lb. (4 - 8 Nm) D = 35 In.Lb. (4 Nm)

Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

IQ 136 Coupled Front / Rear Torque Arms



= T
A = 12 Ft.Lb. (16 Nm)
B = 35 Ft.Lb. (47 Nm)
C = 45 Ft.Lb. (61 Nm)
D = 60 Ft.Lb. (81 Nm)

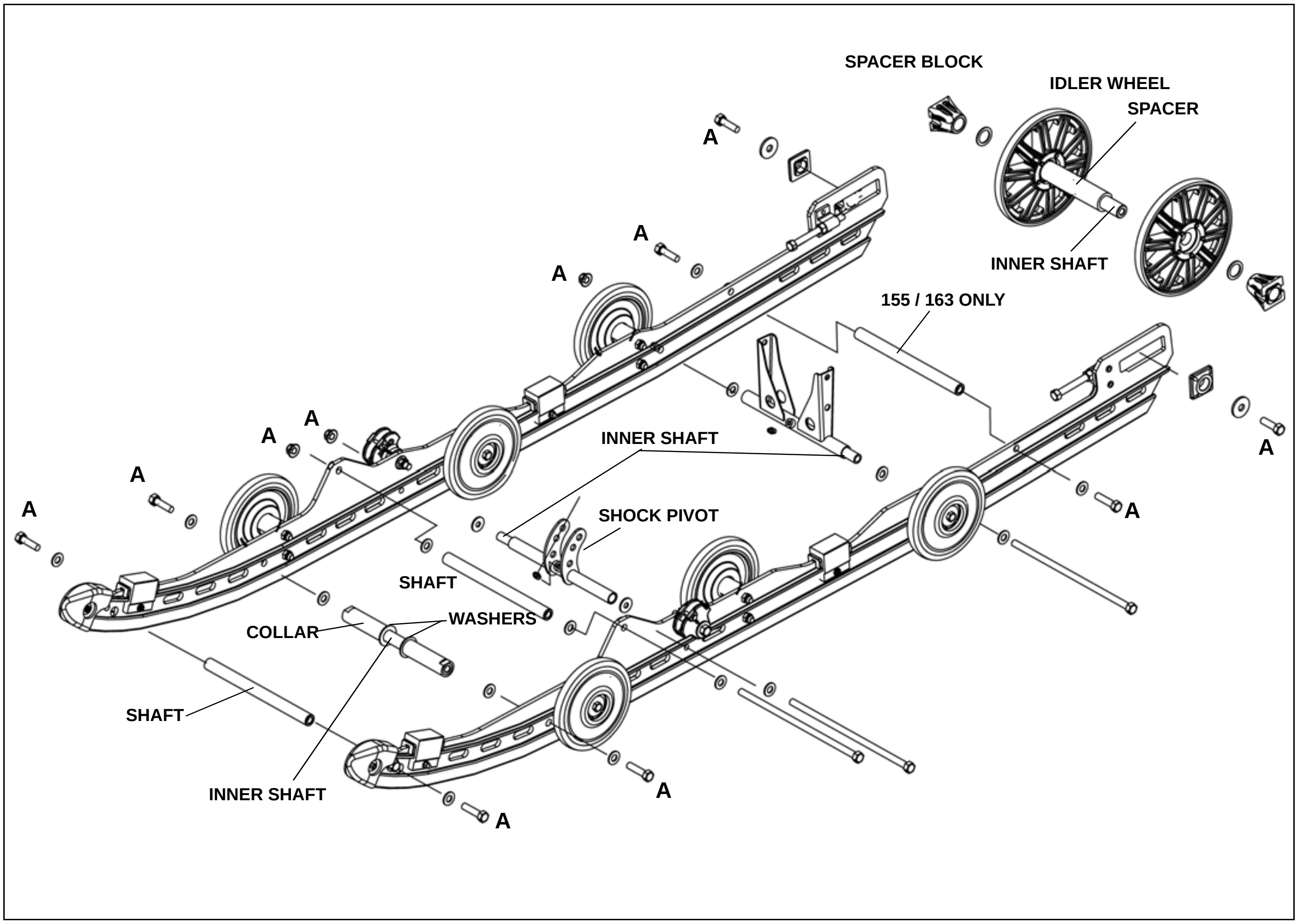
Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

CAUTION

The fasteners securing the rear suspension to the tunnel are pre-coated with a locking agent when new. Never re-use these fasteners when removed. Always use new pre-coated fasteners when mounting the suspension to the tunnel.

IQ RMK 144 / 155 / 163 Pivots / Rear Idler

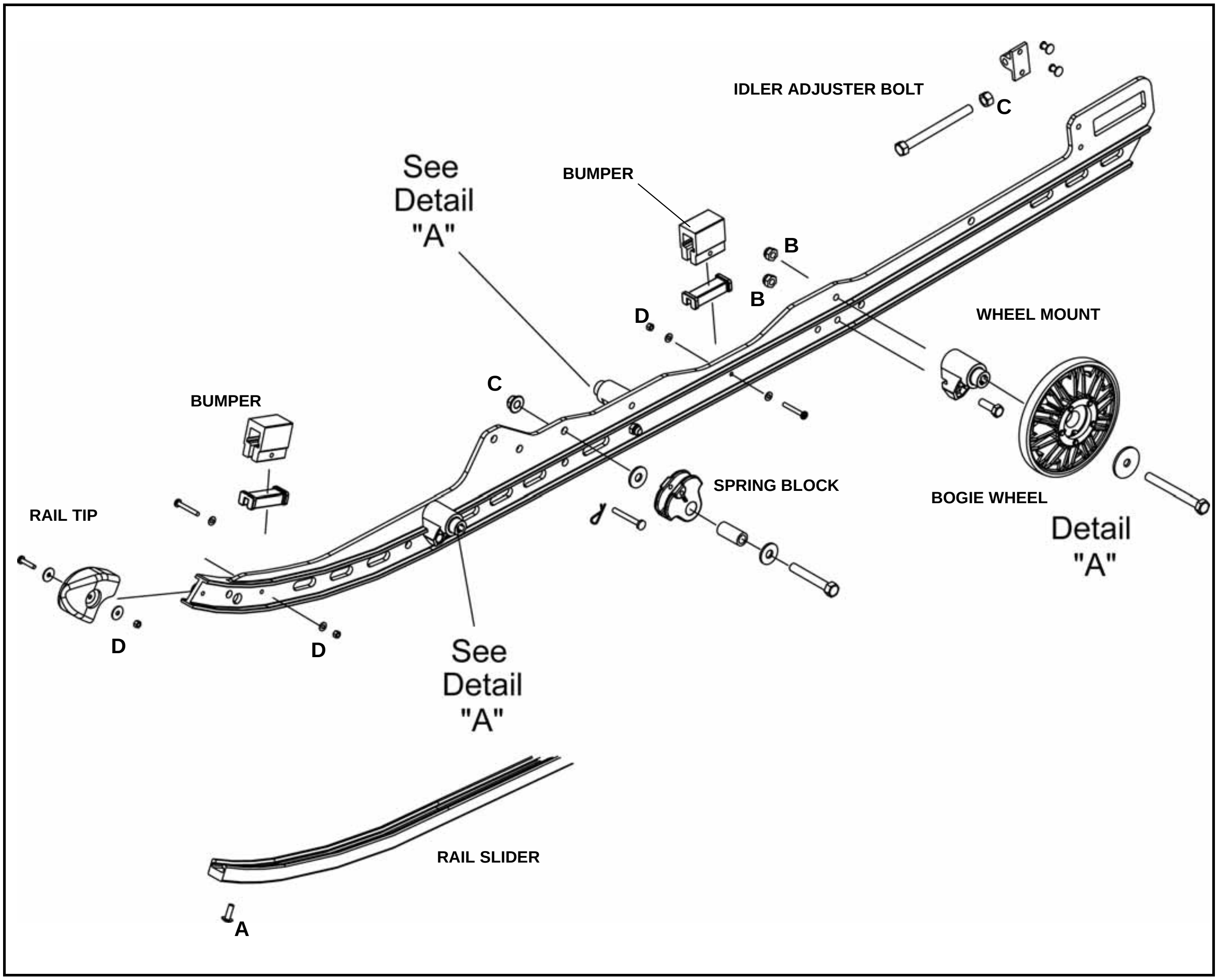


= T
A = 35 Ft.Lb. (47 Nm)

Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

IQ RMK 144 / 155 / 163 Rail Assembly

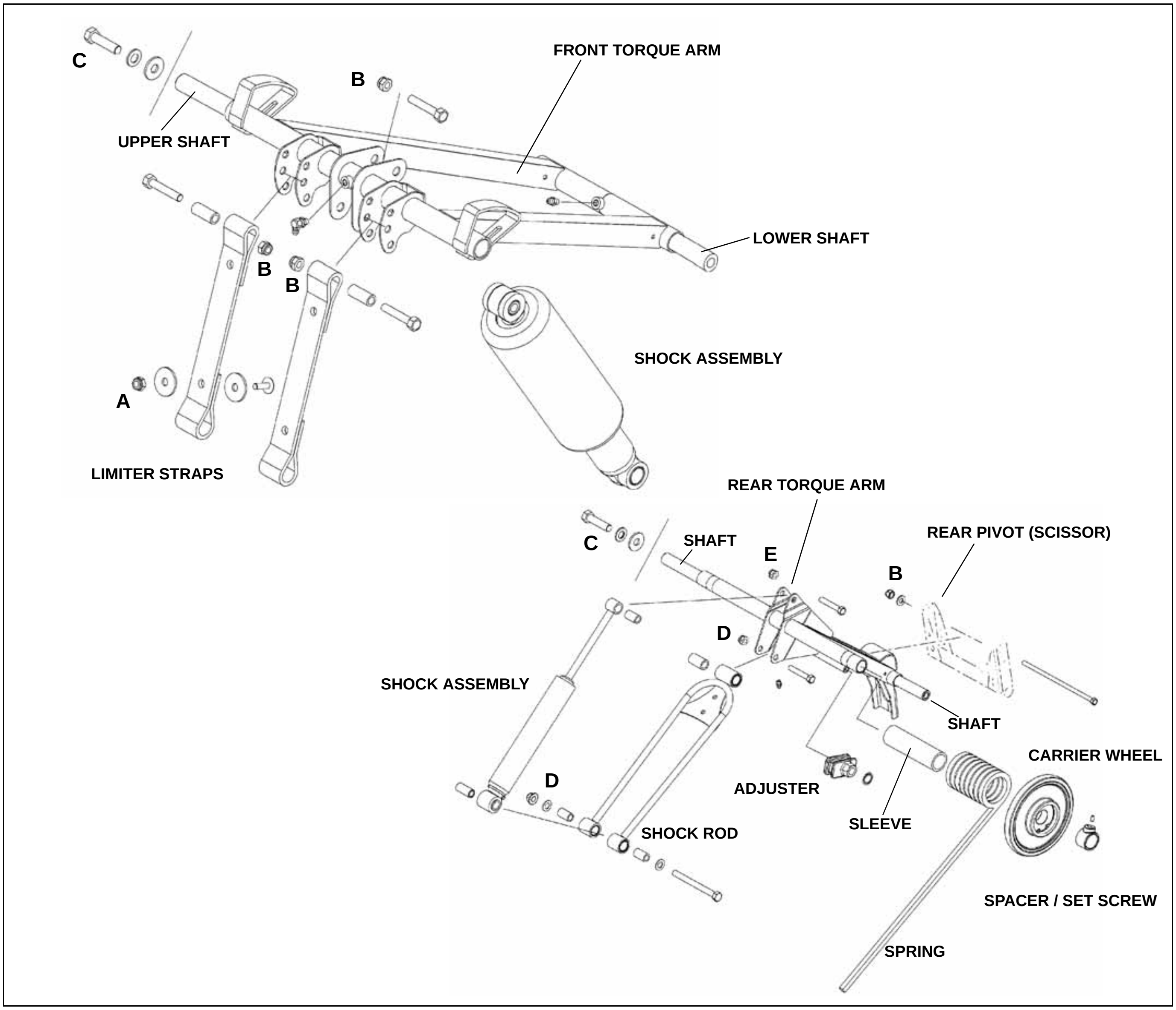


= T
A = 3 - 6 Ft.Lb. (4 - 8 Nm) B = 19 Ft.Lb. (26 Nm) C = 35 Ft.Lb. (47 Nm) D = 35 In.Lb. (4 Nm)

Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

IQ RMK 144 / 155 / 163 Front / Rear Torque Arms



= T
A = 12 Ft.Lb. (16 Nm)
B = 19 Ft.Lb. (26 Nm)
C = 45 Ft.Lb. (61 Nm)
D = 35 Ft.Lb. (47 Nm)
E = 25 Ft.Lb. (34 Nm)

Assembly Notes

- Never re-use Nylock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Apply Polaris Premium All Season Grease to all grease zerks as outlined in the periodic maintenance table.

CAUTION

The fasteners securing the rear suspension to the tunnel are pre-coated with a locking agent when new. Never re-use these fasteners when removed. Always use new pre-coated fasteners when mounting the suspension to the tunnel.

REAR SUSPENSION OPERATION

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.

Rear suspensions have 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. However, suspension adjustments always involve compromises. A rear suspension set up to perform well in 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 front of 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 during acceleration. Lengthening the strap allows the front of the suspension to extend further; increasing the angle of the torque arm and decreasing ski pressure during acceleration. Limiter strap adjustment has a great affect on weight transfer. Limiter straps only affect acceleration. 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 about the front torque arm. 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 in this chapter. Scissor stops also affect weight transfer. See scissor stop information also in this chapter.

Coupling

On all Polaris snowmobile rear suspensions, there are two torque arms that control the movement of the rail beam. Prior to the advent of suspension coupling, these torque arms could move independently of each other. Rear suspension coupling links the movement of the front and rear torque arms to each other.

The front rear scissor stop (FRSS) couples the movement of the front torque arm with the rear torque arm and limits the amount of independence between the movement of the front torque arm and the rear torque arm.

When hitting a bump, the front torque arm starts to compress. The FRSS links that movement to the rear torque arm, causing it to compress and raise the rear suspension up as one, allowing the suspension to hit the bump only once and eliminating kickback. The factory setting are usually adequate for all riders in all conditions.

The rear-rear scissor stop (RRSS) couples the movement of the rear torque arm with the front torque arm and limits the amount of independent movement between the rear torque arm and the front torque arm.

Adjusting the RRSS to a lower setting allows more weight to transfer to the rear for more traction.

Adjusting the RRSS to a higher position will reduce weight transfer, improve chatter bump ride and improve cornering performance.

REAR SUSPENSION ADJUSTMENTS

Adjustment Procedures

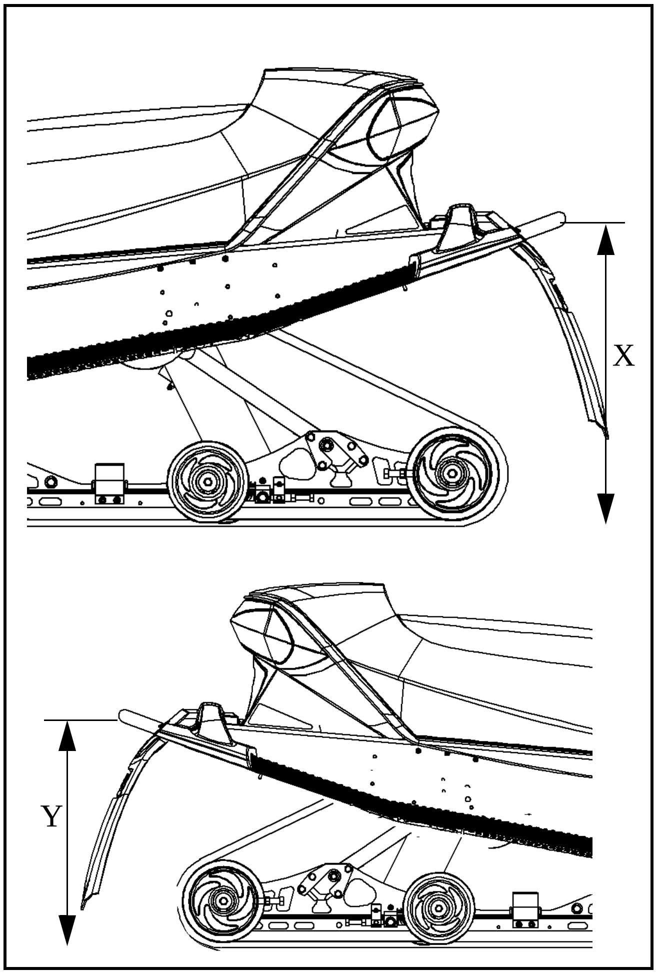
NOTE: Break-in the suspension for at least 150 miles (240 km) before making adjustments.

All settings will vary from rider to rider, and are dependant on rider weight, vehicle speed, riding style, and trail conditions. Always start with the factory settings. Make individual adjustments 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.

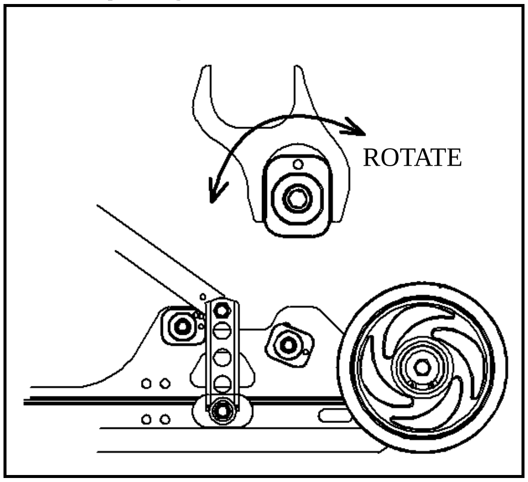
Rear Suspension Ride Height

1. To set up the rear suspension torsion spring preload, measure the distance between the ground and rear bumper with out the rider on the seat and the suspension at full extension. This can be achieved by lifting the rear of the machine so that the suspension is off the ground and carefully setting the machine down. Write this down as measurement “X”.
2. Have the rider in full gear drop down on the seat, work the suspension slightly by bouncing up and down and sit in the seated riding position. With the rider in the seated position measure from the ground to the bumper in the same spot as you did for measurement “X” and write it down as measurement “Y”.
3. To determine the correct ride height, subtract measurement X from measurement Y. (X - Y = ride height).
4. The ideal ride height is:
   - IQ 121 / 136 = 4-5”(10-13cm)
   - IQ RMK / Switchback = 5” (13cm)
   - IQ M-10 = 3-4” (8-10cm)
5. Adjust for the desired ride height by rotating the torsion spring cams located on the rear of the torsion spring.

If the rear suspension ride height cannot be adjusted to the correct dimension, optional torsion springs may be required. This is only an initial setup, and final spring preload may vary based on rider preference and riding conditions.



Scissor Stop Adjustment



The front rear scissor stop (FRSS) controls 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.

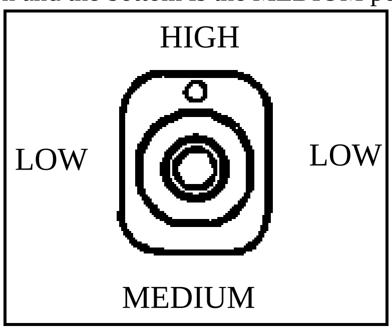
This accomplishes two important things. First, it allows a lighter spring rate on the FTA because it can borrow spring rate from the rear torsion springs. Second, it prepares the rear portion of the suspension for the bump, reducing secondary kick back.

The FRSS is made of a resilient material allowing smooth action and preventing any suspension component damage.

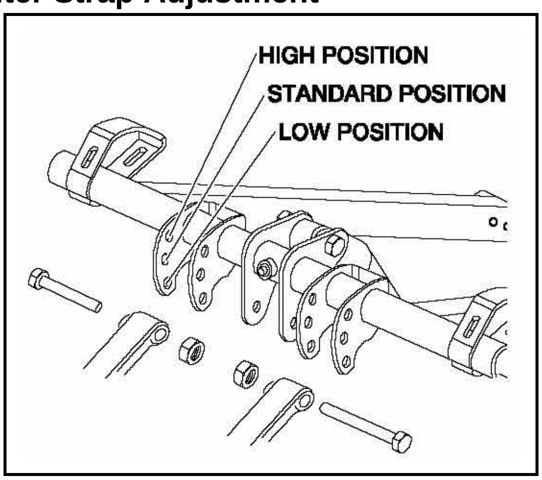
The RRSS controls weight transfer from the rear suspension to the skis. It also influences the stiffness of the ride by controlling the amount of coupling action between the front and rear torque arms. To decrease weight transfer, the RRSS should be set in the high position.

The RRSS can be 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.

The dot is an indicator of the HIGH position. The sides are the LOW position and the bottom is the MEDIUM position.



Limiter Strap Adjustment



One method of changing ski-to-snow pressure is to change the length of the front limiter straps.

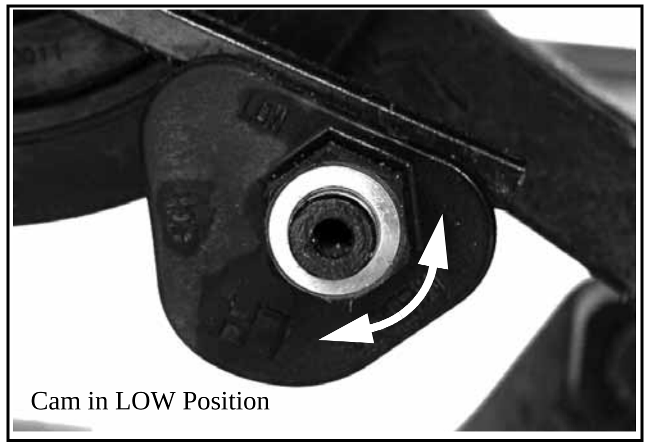
- Lengthening the straps decreases ski pressure under acceleration.
- Shortening the straps increases ski pressure under acceleration.

Set up Recommendations for Optimum Performance (RMK / Switchback Rear Suspensions)

- DEEP POWDER SNOW: Limiter strap in LOW position for maximum lift and flotation
- POWDER-HARDPACK: Limiter strap in STANDARD position for overall handling and speed over snow.
- HARDPACK: Limiter strap in HIGH position for increased control and less transfer.

Torsion Spring Adjustment

To adjust the rear torsion spring, rotate the adjuster cam to the desired adjustment. The cam has three sides, LOW, MEDIUM and HIGH.



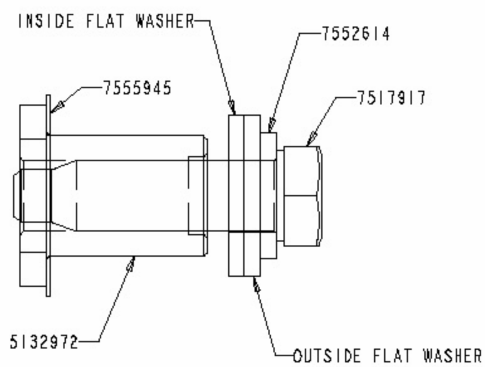
Cam in LOW Position

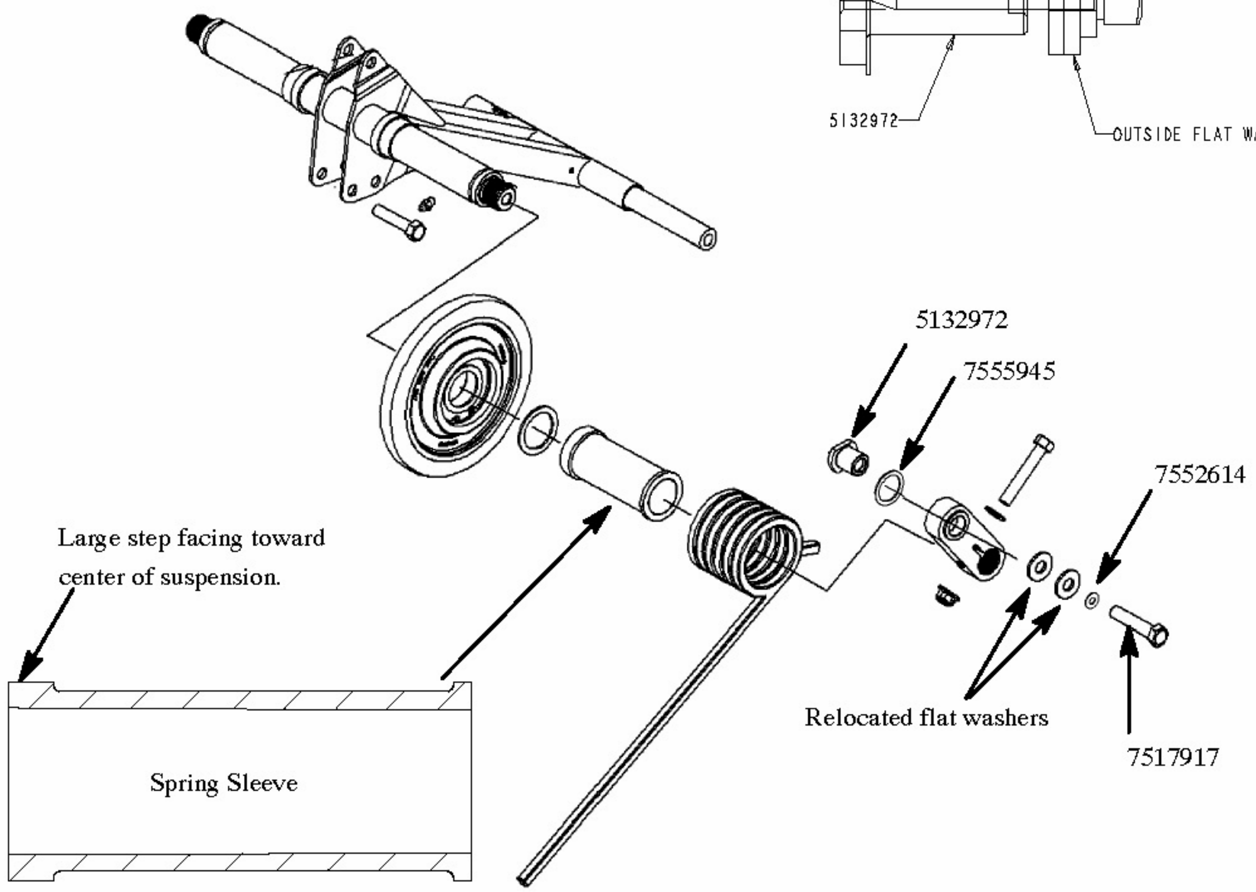
IQ 121 Heavy Torsion Spring Installation

Please reference the following information when installing heavy torsion springs on IQ sleds. The issue that arises when installing the heavy spring on a Fusion sled is that the coil stack of the torsion spring is wide enough to interfere with the suspension arm clamp nut. To work around this issue you will need to order two (one for each side) of the following parts. Relocate the two washers that are next to the clamp nut to the outside of the link arm.

Parts Needed:

QUANT.	DESCRIPTION	PART NUMBER
2	SHAFT ARM	5132972
2	SCREW	7517917
2	THRUST WASHER	7555945
2	LOCK WASHER	7552614





Torsion spring sleeve
NOTE: Install so that the larger step is facing toward the center of the suspension

M-10 SUSPENSION

M-10 OVERVIEW

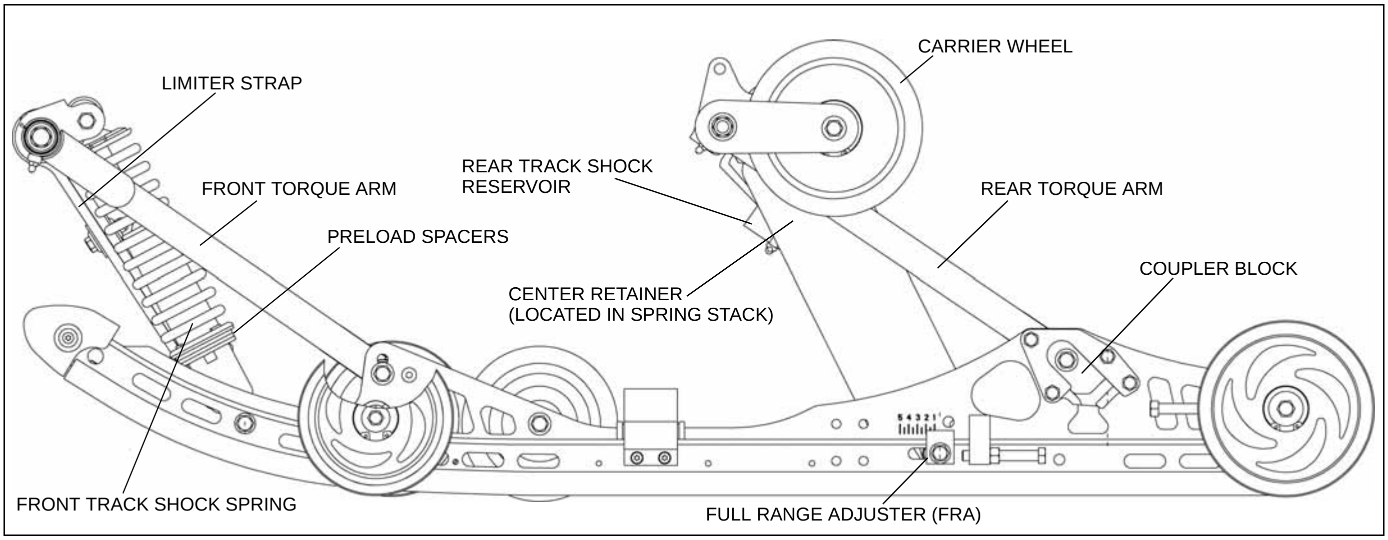
The FAST M-10 rear suspension has been designed and set up to deliver a soft ride under average riding conditions. Rider weight, riding styles, trail conditions, and vehicle speed each affect suspension action.

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.

M-10 ADJUSTMENTS

- Full Range Adjuster (FRA)
- Center Retainer

IMPORTANT: The M-10 rear suspension has been designed to be very sensitive to rider weight. Changes in rider weight of 25 lbs. or more may require appropriate changes in FRA settings.



M-10 TERMINOLOGY

- **Coupler Blocks:** Plastic blocks located at the rear of each rail. Blocks facilitate the couple function.
- **Full Range Adjuster (FRA):** FRA refers to the adjustable lower rear shock attachments. Changing the FRA location has two effects on tuning. First, moving the shock forward increases shock speed, resulting in firmer damping on compression and rebound. Second, it also increases the effect of the rear spring by displacing it further.
- **Sag Settings:** The difference in rear bumper height from the sleds fully extended position to its lower height with the rider seated on the sled.

M-10 ADJUSTMENTS

The primary adjustment on the M-10 suspension is the Full Range Adjustment (FRA). Adjusting the FRA will have the MOST effect on rear suspension performance.

Polaris recommends that you allow between 25 to 200 miles for the suspension to break in before performing any adjustments to the suspension.

This chart is a guideline to be used for initial suspension setups. Your setup may vary based on your desired riding style.

M-10 128

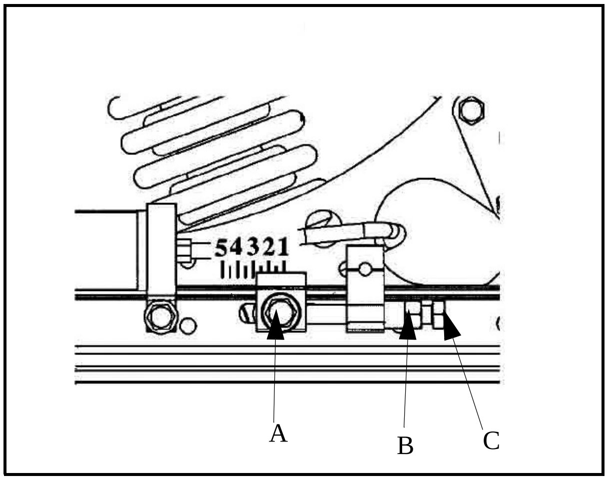
Rider weight with gear (lbs.)	Suggested FRA Range (Lower number is softer)
Under 100	1 to 1 1/2
100-150	1 1/2 to 2
150-200	2 to 2 1/2
200-250	2 1/2 to 3
250-300	3 to 3 1/2
300-350*	3 1/2 to 4
Over 350*	4 to 5

M-10 136

Rider weight with gear (lbs.)	Suggested FRA Range (Lower number is softer)
Under 100*	1 to 1 1/2
100-150*	1 1/2 to 2
150-200*	2 to 2 1/2
200-250	2 1/2 to 3
250-300	3 to 3 1/2
300-350	3 1/2 to 4
Over 350	4 to 5

*=Optional rear track middle spring retainer available. See Optional Retainer Table

M-10 FRA INITIAL SET UP REFERENCE



Adjusting the FRA will have the MOST effect on the rear suspension performance. To adjust the FRA:.

1. Refer to the initial set-up reference chart (see Table and Table) to determine the desired FRA position.
2. To adjust, loosen the hex bolts (A) attaching the rear lower shock cross shaft to the rail beam.
3. Using a 9/16" wrench, loosen the jam nuts (B) on the preload bolts.
4. Adjust the preload bolts (C) to the desired FRA position.
5. Tighten the jam nuts.

NOTE: Make sure the preload bolt contacts the slide block before tightening the jam nut.

6. Tighten the hex bolts and torque to 35 ft. lbs. (47 Nm)

NOTE: When the M-10 suspension is new, it will take 25 to 200 miles (40-300 km) to properly break in the springs and shocks, at which time the suspension will be softer and may require FRA adjustment.

M-10 REAR SPRING PRELOAD

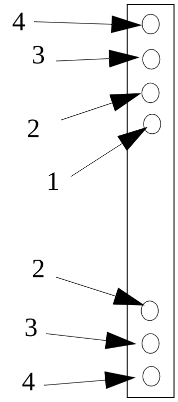
If FRA position alone does not allow the setup of the proper amount of sag, the center retainer of the rear track shock can be replaced with optional retainers to adjust the preload and change the sag.

Optional Retainers

Retainer insert Part Number	Retainer part Number	Preload	Sag
5436109	5135077 (std. on M10/128)	Least	Most
	5134923	Middle	Middle
	5135080 (std. on M10/136)	Most	Least

NOTE: Whenever ordering any of the retainers listed in the chart, always order the retainer insert as well. The insert is not removable once installed, so a new insert is needed when installing a new retainer.

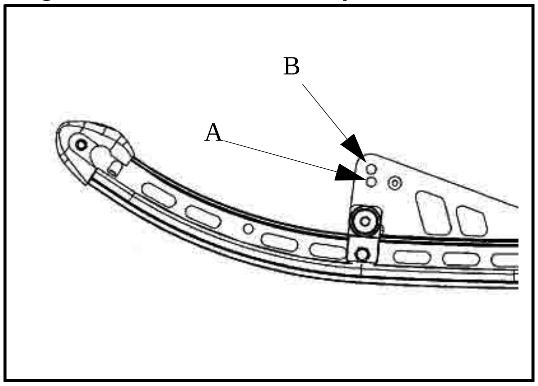
M-10 SKI PRESSURE



Ski pressure is set at the factory to deliver the optimum balance between ride and handling. If a rider prefers more ski pressure for improved steering performance, adjustments can be made to the front limiter strap and front arm mount.

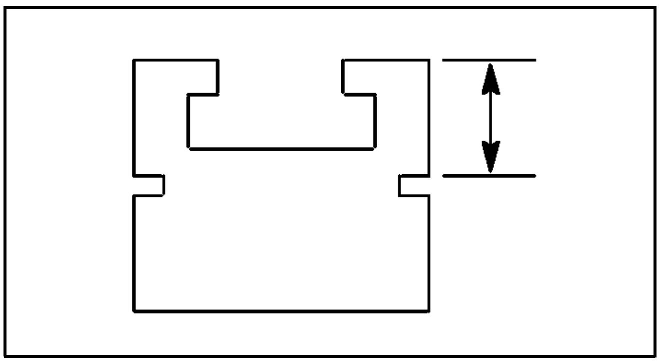
1. Determine if the rider prefers comfort or control. Lean toward the #4 setting for comfort and toward the #3 setting for aggressive riding.
2. For full hole adjustments, remove the 5/16" nut and flat washers from the lower attachments of the limiter straps and relocate the straps to the desired position (i.e. move from position 4 to 3). Replace the nut and washer. Tighten securely.
3. For half-hole increments (such as 3/4), the limiter straps have slots at the upper pinch bolt. These slots allow the bolts to be loosened (rather than removed) for half-step adjustments. Re-tighten the pinch bolts.
4. There are also two front arm mounting holes in the slide rail that can adjust ski pressure. The lower hole (A) increases ski pressure while the upper hole (B) decreases ski pressure.

NOTE: By design, the BIASED COUPLE design of the M-10 suspension displaces the rear arm as the front arm is compressed. This means that when you raise the front limiter strap, at some point you will collapse the rear suspension arm, which will affect SAG height and reduce rear suspension travel.



RAIL SLIDERS

Wear Limit



Replace sliders when wear exceeds notch. If sliders look “wavy” in appearance, check and adjust track tension or consider adding more bogie wheels.

Removal

1. Remove the rear suspension.

NOTE: Some models may allow the rail sliders to be removed by sliding it through track windows with the suspension mounted in the machine.

2. Remove front rail slider retaining bolt, located at the rail tip.
3. Use a block of wood or a drift punch and hammer to drive the slider rearward off the slide rail.
4. With the rail slider at room temperature, install a new rail slider by reversing steps 1 - 3.

NOTE: Lightly coat rail slider track clip area with a lubricant such as LPS2 or WD-40 to ease installation.

Break-In

After installing new rail sliders they must be “broke in” for longer life and better wear patterns. When performing the breaking in procedure ride the sled on a surface that has adequate snow conditions with deeper snow nearby. Run the sled on the adequate snow surface and dip into the deeper snow every so often.

REAR SUSPENSION REMOVAL AND INSTALLATION

Removal

1. Support the rear of the machine so that the track is off the floor.
2. Loosen the rear idler bolts, then push the rear idler shaft toward the front of the machine.
3. Carefully release the torsion spring pressure (if equipped).
4. Remove the support from the tunnel letting the suspension carry the weight of the machine.
5. Remove the fasteners securing the skid to the tunnel.
6. Place a protective mat on the floor and tip the unit over on the left side, supporting the sled on the end of the handlebar.
7. Collapse the torque arms, and remove the suspension from the tunnel.

Installation

CAUTION

Always use new fasteners when securing the torque arms to the tunnel.

1. With the unit on its left side, place the suspension in the tunnel.
2. Align the front and rear torque arms with the tunnel mounting holes. Loosely install two new fasteners.

NOTE: On IQ 121 and Switchback skids, verify the rear track shock pivot and brackets are rotated forward before attempting to collapse the rear torque arm.

3. Set the machine upright.
4. Install the remaining two new torque arm mounting fasteners.
5. Torque the rear suspension mounting bolts to specification.
6. Align the track guides/clips with the suspension rails.
7. Adjust the rear idler to achieve the correct amount of track sag.

CHAPTER 9

Shocks

9

SPECIAL TOOLS

Shock Rebuilding Tools

Special Tools

PART NUMBER	DESCRIPTION
2200421	Gas Shock Recharging Kit
2201639	Shock Shaft Seal Protector .50" Diameter
2201640	Shock Shaft Seal Protector .625" Diameter
2870623	Shock Absorber Spring Compression Tool
2870803	Shock Spring Pre-Load Adjustment Tool
PS-45259	Gas Fill Tool
9917736	VIDEO-Rebuilding Mono Tube Shocks
9917737	VIDEO-Rebuilding Remote Reservoir Shocks

Ryde FX Shock Special Tools

PART NUMBER	DESCRIPTION
PS-45259	Gas Fill Tool and Gauge (Incl. 5 needles)
PS-45259-1	Gas Fill Needles replacement pack
PS-45259-2	Gas Fill Gauge (replacement)
PS-45260	Lower Retainer Wrench
PS-45261	IFP Positioning / Extraction tool
PS-45262	Cylinder Head Wrench
PS-45263	Wear Band Tool
PS-45629	Arvin Shock Body Holder
PS-45280	Shock Collar Tool
PS-45821	Shock Reservoir Holder

FOX Shock Special Tools

PART NUMBER	DESCRIPTION
2871021	Shock Body Holding Tool
2871352	Shock Rod Holding Tool .50" Diameter Rod
2872429	Shock Rod Holding Tool .625" Diameter Rod
2871232	Fox Shock Spanner
2871351	Fox Shock IFP Depth Tool
PS-44925	Fox Inner Tube Puller PS 2

VALVE SHIMS

Shock shim stacks can be adjusted to control the amount of fluid that is forced by as the piston travels through its motion. Refer to the appropriate parts manual for a complete listing of shock parts.

Ryde FX™ Shock Valve Part Numbers

PART NUMBER	SIZE	THICKNESS
1700080	0.700	0.004
1700086	0.800	
1700092	0.900	
1700081	0.700	0.006
1700087	0.800	
1700093	0.900	
1700121	1.000	
1700129	1.100	
1700134	1.250	
1700139	1.300	
1700094	0.900	0.008
1700122	1.000	
1700130	1.100	
1700135	1.250	
1700140	1.300	
1700082	0.700	0.009
1700088	0.800	
1700083	0.700	0.010
1700089	0.800	
1700095	0.900	
1700126	1.000	
1700131	1.100	
1700136	1.250	
1700141	1.300	
1700084	0.700	0.012
1700090	0.800	
1700096	0.900	
1700127	1.000	
1700132	1.100	
1700137	1.250	
1700142	1.300	
1700085	0.700	0.015
1700091	0.800	
1700120	0.900	
1700128	1.000	
1700133	1.100	
1700138	1.250	
1700143	1.300	

Fox™ Shock Valve Part Numbers

PART NUMBER	SIZE	THICKNESS
1500055	0.700	0.006
1500054	0.800	
1500053	0.900	
1500048	1.000	
1500049	1.100	
1500050	1.250	
1500052	1.300	
1500029	0.700	0.008
1500028	0.800	
1500033	0.900	
1500032	1.000	
1500031	1.100	
1500051	1.250	
1500030	1.300	
1500044	0.700	0.010
1500047	0.800	
1500046	0.900	
1500045	1.000	
1500027	1.100	
1500026	1.250	
1500062	1.300	
1500056	0.700	0.012
1500057	0.800	
1500058	0.900	
1500059	1.000	
1500060	1.100	
1500078	1.250	
1500079	1.300	
1500081	0.700	0.015
1500082	0.800	
1500083	0.900	
1500084	1.000	
1500085	1.100	
1500086	1.250	
1500087	1.300	

Walker Evans™ Shock Valve Part Numbers

PART NUMBER	SIZE	THICKNESS
1800051	.700	.006
1800075	.800	
1800076	.900	
1800077	1.000	
1800078	1.100	
1800079	1.200	
1800080	1.300	
1800081	.700	.008
1800082	.800	
1800083	.900	
1800084	1.000	
1800085	1.100	
1800086	1.200	
1800087	1.250	
1800088	1.300	
1800052	.700	.010
1800053	.800	
1800054	.900	
1800055	1.000	
1800056	1.100	
1800057	1.200	
1800058	1.300	
1800059	.700	.012
1800060	.800	
1800061	.900	
1800062	1.000	
1800063	1.100	
1800064	1.200	
1800089	1.250	
1800072	1.300	
1800066	.700	.015
1800067	.800	
1800068	.900	
1800069	1.000	
1800070	1.100	
1800071	1.250	
1800072	1.300	
1800090	1.000	.025
1800091	1.100	
1800092	1.200	
1800093	1.300	
1800050	.625	.065
1800204	.875	.090

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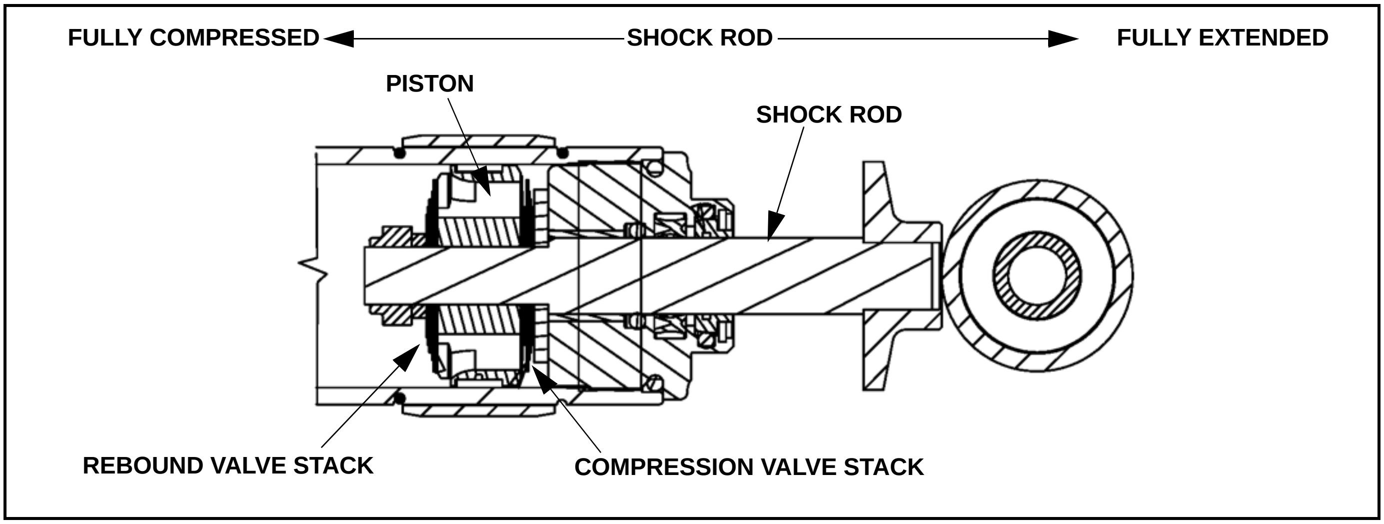
Walker Evans™ Shock Valve Part Numbers - 7/16″ I.D.

PART NUMBER	SIZE	THICKNESS
1800244	.900	.010
1800245	1.000	
1800246	1.100	
1800247	1.200	
1800248	1.300	
1800249	1.450	
1800250	1.500	
1800251	1.550	
1800252	.900	.012
1800253	1.000	
1800254	1.100	
1800255	1.200	
1800256	1.300	
1800257	1.450	
1800258	1.500	
1800259	1.550	
1800260	.900	.015
1800261	1.000	
1800262	1.100	
1800263	1.200	
1800264	1.300	
1800265	1.450	
1800266	1.500	
1800267	1.550	
1800268	1.000	.090 (WASHERS)
1800269	1.100	
1800270	1.250	
1800271	1.300	.025

Valve Shim Arrangement

Shown below is an example of how valving stacks are arranged.

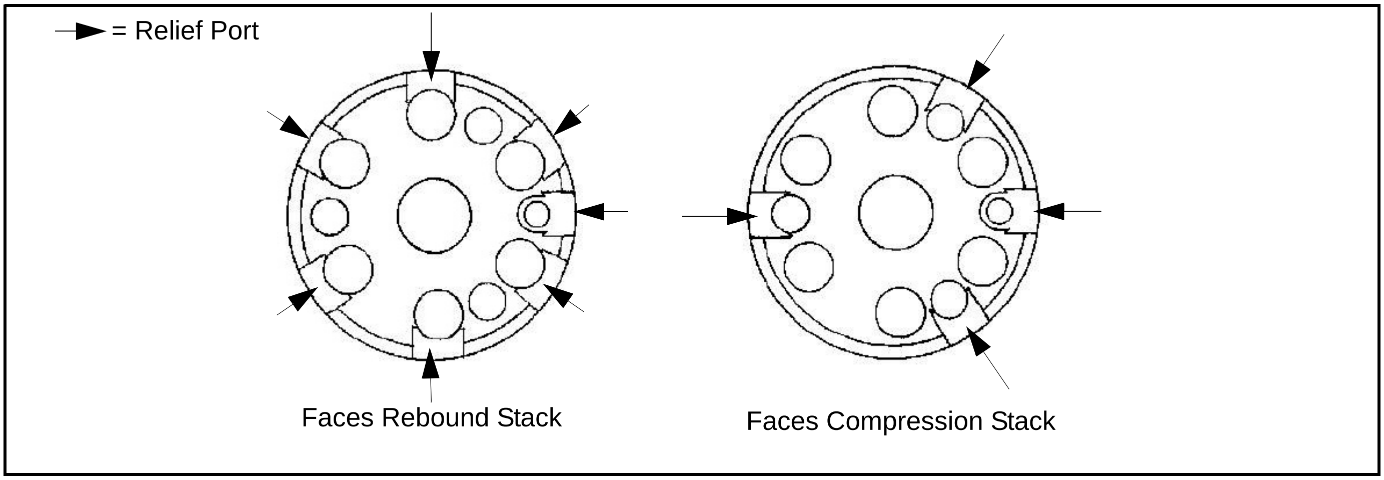
NOTE: The rebound and compression valve stacks will always be positioned as shown in the illustration, regardless of how the shock assembly is installed on the snowmobile.



Piston Orientation

The face of the piston with the greater number of relief ports will always face the rebound valve stack

NOTE: On some Walker Evans™ shocks, piston is color-coded.
Blue = COMPRESSION SIDE
Red = REBOUND SIDE.



SPECIFICATIONS

2007 Shock Specifications

Front Suspension Shocks

SHOCK PN	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7042258	Ryde FX	18.00	11.8	6.2	.49	6.92	Full	200
7043245	Ryde FX	18.00	11.8	6.2	.49	6.92	Full	200
7043141	Fox	18.00	11.8	6.2	.50	1.42	Full	200
7043268 (LH) 7043269 (RH)	Fox	18.00	11.8	6.2	.49	2.55	Full	200
7043095	Walker Evans	18.00	11.738	6.27	.625	2.25	Full	200
7043090	Ryde FX	17.00	11.20	5.80	.49	6.54	Full	200
7043082	Ryde FX	16.25	12.76	5.25	.49	6.27	Full	280
7043206	Walker Evans	18.00	10.13	6.26	.625	2.25	Full	200
7043233	Walker Evans	17.02	11.27	5.75	1.124	N/A	95cc	215 220 - 225 (Opt.)

Front Track Shocks

SHOCK PN	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7041975	Ryde FX	12.10	8.60	3.5	.50	4.61	Full	200
7043142	Fox	12.51	8.92	3.59	.50	.840	Full	200
7043244	Ryde FX	12.12	8.61	3.52	.50	4.68	Full	200
7043267	Fox	12.07	8.63	3.44	.50	1.8	Full	200
7043204	Walker Evans	12.10	8.60	3.50	.625	2.25	Full	200
7043234	Walker Evans	12.49	8.92	3.57	1.124	N/A	70cc	215 210 - 220 (Opt.)

Rear Track Shocks

SHOCK PN	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043177	Fox	15.60	10.56	5.04	.50	1.22	Full	200
7043246	Fox	16.60	10.91	5.96	.50	2.23	Full	200
7043266	Fox	15.65	10.56	5.09	.50	1.63	Full	200
7043205	Walker Evans	15.60	10.56	5.04	.625	2.25	Full	200
7043216	Fox	14.12	9.29	4.83	.50	2.40	Full	300
7043235	Walker Evans	16.71	10.96	5.75	.50	7.25	Full	200

2007 Shock Valve Shim Stack Configurations

NOTE: All measurements are in inches.

2007 IFS Shocks

SHOCK	7042258	7043141	7043268 7043269	7043095	7043090	7043082	7043206	7043233 (Stock)	7043233 (Optional)
REBOUND	.700 x .008 .800 x .008 .900 x .008 1.000 x .008 1.100 x .008 1.250 x .008	.620 x .093 .700 x .012 .800 x .012 .900 x .012 1.000 x .010 1.100 x .010 .700 x .008 1.250 x .008	.620 x .093 .700 x .015 .800 x .015 .900 x .012 1.00 x .010 1.100 x .010 .700 x .008 1.250 x .008	.625 x .065 .700 x .010 .800 x .010 .900 x .010 1.00 x .010 1.10 x .008 1.20 x .008	.700 x .008 .800 x .008 .900 x .008 1.000 x .008 1.100 x .008 1.250 x .008	.800 x .010 .900 x .010 1.000 x .010 1.100 x .010 1.250 x .006	.625 x .065 .700 x .010 .800 x .010 .900 x .010 1.00 x .010 1.10 x .008 1.20 x .008	.625 x .065 .700 x .010 .800 x .010 .900 x .010 1.00 x .010 1.10 x .012 1.10 x .010 1.20 x .012 1.20 x .010	.700 x .010 .800 x .010 .900 x .010 1.000 x .010 1.100 x .010 1.100 x .015 1.200 x .015 1.250 x .015 1.250 x .015
Piston Orifice	.060	.078	.078	.052	.081	.093	.052 (Shaft Bleed .082)	.052	.052
COMPRESSION	1.300 x .008 1.100 x .006 .800 x .008 1.250 x .006 1.100 x .008 1.000 x .006 .900 x .006 .800 x .006 .700 x .015	1.300 x .006 1.100 x .008 .800 x .008 1.250 x .008 1.100 x .08 1.000 x .008 .900 x .008 .700 x .012 .700 x .012 1.125 x .093	1.300 x .006 1.000 x .010 1.250 x .008 .900 x .010 1.100 x .008 1.000 x .008 .900 x .008 .800 x .008 .700 x .010 1.125 x .093	1.30 x .006 1.00 x .012 1.20 x .006 .900 x .012 1.10 x .006 1.00 x .006 .900 x .006 .800 x .006 .700 x .006 .625 x .065 .875 x .090	1.300 x .008 1.100 x .006 .800 x .008 1.250 x .006 1.100 x .008 1.000 x .006 .900 x .006 .800 x .006 .700 x .015	1.300 x .008 1.250 x .008 .900 x .006 1.300 x .010 1.250 x .008 1.100 x .010 1.000 x .012 .900 x .012 .800 x .012	1.30 x .006 1.00 x .012 1.20 x .006 .900 x .012 1.10 x .006 1.00 x .006 .900 x .006 .800 x .006 .700 x .006 .625 x .065 .875 x .090	1.30 x .015 1.20 x .015 1.20 x .010 1.10 x .015 1.10 x .010 1.00 x .015 .900 x .010 .800 x .010 .700 x .010 .625 x .065 1.30 x .150	1.300 x .015 1.300 x .015 1.300 x .015 1.250 x .015 1.200 x .015 1.200 x .010 1.100 x .015 1.000 x .015 .900 x .010 .800 x .010 .700 x .010 1.300 x .150
ADJUSTER	N/A	N/A	**(Rebound)** **.700 x .008** .700 x .010 .700 x .010 .700 x .010 .700 x .010 .700 x .010 .700 x .010 .600 x .010 .600 x .010 .600 x .010 .500 x .006 .500 x .006 .500 x .006 .500 x .006 **(Back Up)** **.400 x .020**	1.100x.025 1.000x.025 .625x.065	N/A	N/A	1.10x.025 1.00x.025 .625x.065	N/A	N/A

NOTE: Valve shim stacks listed as they would appear on the shaft when shock rod is locked in a table vise (eyelet down, threaded end up).

2007 Front Track Shocks

SHOCK	7041975	7043142	7043244	7043267	7043204	7043234
REBOUND	.800 x .012 .900 x .012 1.00 x .010 1.100 .010 1.250 x .008	.620 x .093 .700 x .015 .800 x .015 .900 x .012 .900 x .012 1.000 x .010 1.100 x .010 .800 x .008 1.250 x .008	.700 x .010 .800 x .012 .900 x .010 1.000 x .010 1.100 x .010 1.250 x .010	.620 x .093 .700 x .015 .800 x .015 .800 x .015 .900 x .012 1.000 x .010 1.100 x .010 .800 x .006 1.250 x .008	.625 x .065 .700 x .012 .800 x .012 .900 x .012 1.000 x .012 1.100 x .012 1.200 x .012	.625 x .065 .700 x .015 .800 x .015 .900 x .015 1.00 x .015 1.10 x .015 1.20 x .015 1.25 x .015
Piston Orifice	.070	.078	.070	.070	.082	.052
COMPRESSION	1.300 x .008 1.000 x .006 1.300 x .008 1.100 x .010 1.000 x .008 .900 x .008 .800 x .008	1.300 x .006 1.250 x .008 .900 x .008 1.250 x .008 1.100 x .008 .900 x .008 .700 x .012 .700 x .012 1.125 x .093	1.300 x .008 1.100 x .006 .900 x .008 1.250 x .008 1.100 x .008 1.000 x .010 .900 x .010 .800 x .008	1.300 x .010 1.250 x .008 1.100 x .008 .900 x .008 .800 x .008 .700 x .008 .700 x .012 1.125 x .093	1.30 x .012 1.20 x .012 1.10 x .012 1.00 x .012 .900 x .012 .800 x .012 .700 x .012 .625 x .065	1.30 x .015 1.30 x .015 1.25 x .015 1.20 x .015 1.10 x .015 1.00 x .015 .900 x.015 .800 x .015 .700 x .015 1.30 x .025 1.30 x .025 .875 x .090 1.30 x .025
ADJUSTER	N/A	N/A	N/A	N/A	1.100x.012 1.000x.012 1.000x.012 .700x.010 .875x.090	N/A

NOTE: Valve shim stacks listed as they would appear on the shaft when shock rod is locked in a table vise (eyelet down, threaded end up).

2007 Rear Track Shocks

SHOCK	7043177	7043246	7043266	7043205	7043216	7043235
REBOUND	.620 x .093 .800 x .012 .900 x .012 1.000 x .012 1.100 x .012 1.250 x .010 1.250 x .010	.950 x .050 .950 x .050 .900 x .008 1.100 x .015 1.100 x .015 .700 x .006 1.250 x .008	.950 x .050 .950 x .050 .800 x .008 .900 x .008 1.000 x .010 1.100 x .010 .700 x .008 1.250 x .008	.625 x .065 .700 x .010 .800 x .010 .900 x .010 1.00 x .010 1.10 x .010 .800 x .008 1.25 x .012	.620 x .093 1.125 x .093 1.100 x .010 1.250 x .012	.625 x .065 .700 x .010 .800 x .010 .900 x .010 1.00 x .010 1.10 x .010 1.25 x .012
Piston Orifice	.093	.070	.076	.082	.055	.040
COMPRESSION	1.300 x .008 1.300 x .008 1.000 x .006 1.100 x .008 1.100 x .010 1.100 x .012 1.000 x .010 .900 x .010 1.125 x .093	1.300 x .008 1.250 x .008 .800 x .008 1.250 x .012 1.100 x .012 1.000 x .010 .700 x .015 .700 x .015 .700 x .015 1.125 x .093	1.300 x .006 1.250 x .008 .900 x .010 1.250 x .010 1.100 x .008 1.000 x .008 .900 x .010 .700 x .015 .700 x .015 .700 x .015 1.125 x .093	1.30 x .010 1.25 x .010 .700 x .010 1.10 x .008 .900 x .008 1.10 x .008 1.00 x .010 .900 x .010 .800 x .008 .700 x .008 .625 x .065 .875 x .090	1.300 x .008 1.300 x .006 .800 x .010 1.300 x .010 1.300 x .008 1.300 x .008 .900 x .008 1.125 x .093	1.30 x .010 1.25 x .010 1.10 x .008 1.10 x .008 1.00 x .010 .900 x .010 .800 x .008 .700 x .010 .875 x .090
ADJUSTER		.400 x .020 .500 x .006 .500 x .006 .500 x .006 .500 x .006 .600 x .010 .600 x .010 .600 x .010 .700 x .010 .700 x .010 .700 x .010 .700 x .010 .700 x .010 .700 x .010	.400 x .020 .500 x .006 .500 x .006 .500 x .006 .500 x .006 .600 x .010 .600 x .010 .600 x .010 .700 x .010 .700 x .010 .700 x .010 .700 x .010 .700 x .010 .700 x .010 **.700 x .008 (Rebound Check Valve)**	1.10 x .025 1.00 x .015 1.10 x .015 .700 x .010 .875 x .090		

NOTE: Valve shim stacks listed as they would appear on the shaft when shock rod is locked in a table vise (eyelet down, threaded end up).

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2008 Shock Specifications

2008 Front Suspesion Shocks

SHOCK PN	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043245	Ryde FX	17.98	11.77	6.21	.49	6.92	Full	200
7043315	Ryde FX	18.00	11.80	6.20	N/A	5.75	Full	36mm (Rod) Cylinder= 145 PSI 47mm (Body) Cylinder= 60 PSI
7043364	Walker Evans	17.02	11.27	5.75	1.124	N/A	95cc	220

2008 Front Track Shocks

SHOCK PN	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043244	Ryde FX	12.12	8.61	3.52	.50	4.68	Full	200
7043365	Walker Evans	12.49	8.92	3.57	1.124	N/A	60cc	217.5

2008 Rear Track Shocks

SHOCK PN	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043177	Fox	15.60	10.56	5.04	.50	1.22	Full	200
7043216	Fox	14.12	9.29	4.83	.50	2.40	Full	300
7043316	Ryde FX	15.60	10.60	5.00	.50	1.60	Full	200
7043366	Walker Evans	16.71	10.96	5.75	.50	6.75	Full	200

2008 Shock Valve Shim Stack Configurations

NOTE: All measurements are in inches.

2008 IFS Shocks

SHOCK	7043245	7043315	7043364
REBOUND	.700 x .008 .800 x .008 .900 x .008 1.000 x .008 1.100 x .008 1.250 x .008		.625 x .065 .700 x .012 .800 x .012 .900 x .012 1.00 x .012 1.10 x .015 1.20 x .015 1.25 x .010 1.25 x .015
Piston Orifice	.060	TBA	.052
COMPRESSION	1.300 x .008 1.100 x .006 .800 x .008 1.250 x .006 1.100 x .008 1.000 x .006 .900 x .006 .800 x .006 .700 x .015		1.30 x .015 1.20 x .015 1.20 x .010 1.10 x .015 1.10 x .010 1.00 x .015 .900 x .015 .800 x .015 .700 x .015 .875 x .090

NOTE: Valve shim stacks listed as they would appear on the shaft when shock rod is locked in a table vise (eyelet down, threaded end up).

2008 Front Track Shocks

SHOCK	7043244	7043365
REBOUND	.700 x .010 .800 x .012 .900 x .010 1.000 x .010 1.100 x .010 1.250 x .010	.625 x .065 .7 x .015 .8 x .015 .9 x .015 1.0 x .015 1.1 x .015 1.2 x .015 1.2 x .015 1.25 x .015 1.25 x .015 1.25 x .015
Piston Orifice	.070	.052
COMPRESSION	1.300 x .008 1.100 x .006 .900 x .008 1.250 x .008 1.100 x .008 1.000 x .010 .900 x .010 .800 x .008	1.3 x .010 1.1 x .010 .9 x .012 .7 x .012 1.3 x .012 1.2 x .012 1.1 x .012 1.0 x .012 .9 x .012 .8 x .012 .7 x .012 .625 x .065

NOTE: Valve shim stacks listed as they would appear on the shaft when shock rod is locked in a table vise (eyelet down, threaded end up).

2008 Rear Track Shocks

SHOCK	7043177	7043216	7043316	7043366
REBOUND	.620 x .093 .800 x .012 .900 x .012 1.000 x .012 1.100 x .012 1.250 x .010 1.250 x .010	.620 x .093 1.125 x .093 1.100 x .010 1.250 x .012	TBA	.625 x .065 .700 x .015 .800 x .015 .900 x .015 1.00 x .015 1.10 x .015 1.20 x .015 1.25 x .015 1.25 x .015
Piston Orifice	.093	.055		.065
COMPRESSION	1.300 x .008 1.300 x .008 1.000 x .006 1.100 x .008 1.100 x .010 1.100 x .012 1.000 x .010 .900 x .010 1.125 x .093	1.300 x .008 1.300 x .006 .800 x .010 1.300 x .010 1.300 x .008 1.300 x .008 .900 x .008 1.125 x .093		1.30 x .015 1.20 x .012 1.00 x .012 .800 x .012 1.30 x .012 1.25 x .012 1.20 x .012 1.10 x .012 1.00 x .015 .900 x .015 .800 x .015 .700 x .012 .625 x .065
ADJUSTER				

NOTE: Valve shim stacks listed as they would appear on the shaft when shock rod is locked in a table vise (eyelet down, threaded end up).

OPTIONAL SHOCK SETTINGS

Walker Evans Air Shock

NOTE: Always adjust both IFS shocks to the same pressure setting.

Discharge the shock gas pressure completely before refilling the shock with nitrogen.

Raise the shock nitrogen gas pressure within each shock in 2.5 psi increments and keep the fill tool needle installed in the charge port for at least 30 seconds to allow the gas pressure to stabilize.

Perform work on shocks when shocks and nitrogen gas supply tank are at room temperature (70F / 21C).

The Walker Evans IFS Air shocks can be configured using the stock and optional 2007 settings or the stock 2008 settings.

In 2007, an optional valve stack setting was specified to accommodate riders wanting a stiffer shock setting. There is not an optional valve stack configuration specified for 2008 Walker Evans IFS Air shocks.

The stock nitrogen gas pressure setting for a 2007 Walker Evans FTS Air shock can be adjusted to increase its stiffness.

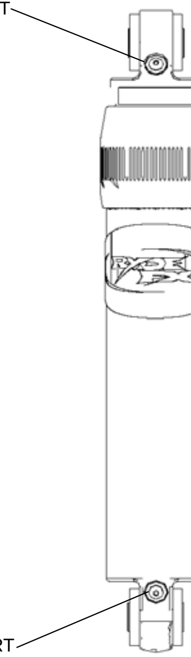
Currently, there is not an optional nitrogen gas pressure setting for the 2008 Walker Evans FST Air Shock.

Ryde FX Air 2.0 Shock

The shock rod pressure setting can be adjusted to accommodate different rider weights and riding styles.

Before making any shock pressure adjustments, the rider should ride the snowmobile for at least 250 - 500 miles in all types of riding conditions.

NOTE: Do not adjust the shock body chamber pressure setting. Always charge the shock body chamber to specification.



Air 2.0 Shock Notes:

- All shock work must be performed when the shock assembly and nitrogen supply tank are at least 70°F. (21°C).
- Nitrogen pressure changes by approximately 2% for every 10°F from 70°F.
- Polaris calibrates all shocks at 30°F ride temperature.
- Any IFS shock service that requires gas recharging needs to be performed on both IFS shocks to maintain the same spring rate between both shocks.
- When charging any shock, let the nitrogen gas stabilize within the shock for at least 30 seconds before removing the shock charge needle from the charge port.

If the rider is requesting stiffer shock settings for more bottoming resistance, increase the shock rod nitrogen pressure in 5 PSI increments until the desired performance level is achieved.

CAUTION

Do not exceed 200 psi shock rod chamber pressure.

Always reset the shock body chamber pressure to the factory specification charge.

If the rider is requesting softer shock settings for less bottoming resistance, decrease the shock rod nitrogen pressure in 5 PSI increments until the desired performance level is achieved.

Again, always reset the shock body chamber pressure to the factory specification charge.

If one shock appears to be too soft, place the vehicle on flat, level ground. Stand on the sled, and rock the skis back and forth to verify issue.

Determine if the shock is leaking or has leaked an oil, then determine why. Look for shaft damage and replace the shaft and seal if damage is found.

If no oil leaks are found, verify there are no gas leaks at the charge ports. Replace the charge ports as required.

After inspecting both shocks, recharge both shocks to the desired pressure settings and specifications.

SHOCK MAINTENANCE

Ryde FX Air 2.0 Shock Disassembly

WARNING

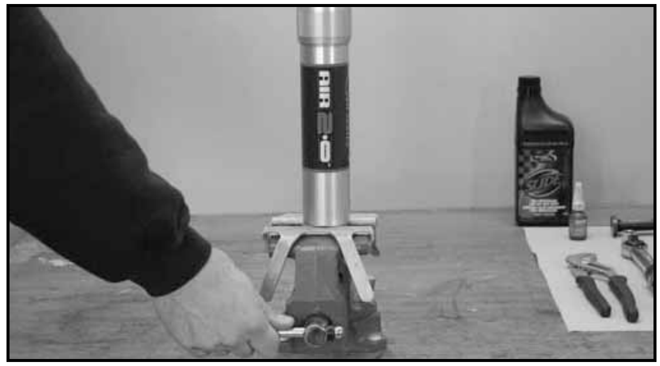
Before servicing a gas shock it is important that all the gas pressure be discharged from the shock.

Nitrogen gas is under extreme pressure. Protective eyewear must be worn at all times to avoid risk of injury while servicing shocks or using compressed air.

CAUTION

Always clamp the lower mount of the shock in a vise. Any other method of securing the shock body may deform the shock body cylinder.

1. Remove the shock from the snowmobile. Wash the entire shock assembly in parts cleaner, then dry with compressed air or a clean shop towel.
2. Remove lower shock body mount eyelet components. Secure shock in a soft-jawed table vise.



3. Remove both small bottom head screws form each pressure valve assemblies located at both ends of the shock.

4. Using a flat-blade screwdriver, carefully loosen both pressure valve assemblies counter-clockwise two full rotations. Allow all of the nitrogen gas to fully escape past each pressure valve assembly o-ring.

5. After all of the nitrogen gas has been allowed to escape from the shock, remove both pressure valve assemblies.

6. Using interlocking channel pliers, loosen and remove the cylinder head assembly.

7. Pour the oil out of the cylinder. Discard oil into an approved container and dispose appropriately. Never reuse shock oil.
8. Using compressed air, invert the large diameter cylinder over a clean shop towel. Pressurize the cylinder to 90 psi to remove the IFP from the cylinder. Account for the floating piston, wear band, and o-ring.

9. Place the 36mm piston (shock) rod upper mount in a soft-jawed bench vise. Remove the piston valve and valve shim assembly from the rod in the sequence of disassembly.

10. Remove the rod head assembly and spring from the rod shaft.
11. Again, using compressed air, invert the rod shaft over a clean shop towel. Pressurize the cylinder to 90 psi to remove the IFP from the cylinder. Account for the floating piston and o-ring.
12. With the shock disassembled, inspect the following items:
    - 36mm piston rod for straightness, nicks, or burrs.
    - Cylinder head assembly / bearing.
    - Inside of shock body for scratches, burs, or excessive wear.
    - Teflon piston and IFP wear band for cuts, chipped or nicked edges, or excessive wear.
    - O-rings for nicks, cuts, or cracks.
    - Valve discs for kinks or waves.

9

Ryde FX Air 2.0 Shock Assembly

1. Place the 36mm piston rod upper mount in a soft-jawed bench vise. Lubricate the internal IFP and o-ring with shock oil.
2. Install the internal IFP, flat-side / o-ring side first, into the piston rod.
3. Install the rod head assembly. Torque to specification.

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4. Install the compression and rebound valve shim stacks back on to the piston valve assembly in the order they were removed.
5. Apply a small amount of Loctite 290 to the bolt threads. Thread piston assembly into piston rod by hand.

6. Torque bolt to specification.

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Piston Valve Bolt Torque 28 - 32 Ft.Lbs.

CAUTION
DO NOT OVER-TORQUE PISTON VALVE BOLT.

7. Apply a light film of grease to the 36mm rod assembly pressure valve port counter bore where the pressure valve assembly o-ring meets.
8. Install pressure valve assembly and torque to specification.

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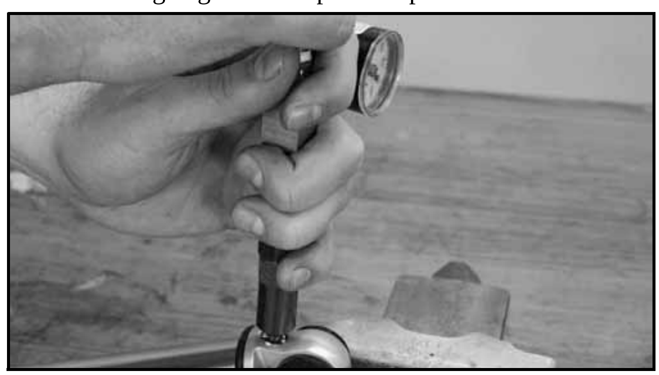
Pressure Valve Assembly Torque 100 - 110 In.Lbs.

9. Pressurize the 36mm piston rod through the pressure valve with nitrogen gas to the specified pressure.



NOTE: The internal IFP will be forced to the top of the piston rod after cylinder is pressurized.

10. Secure the shock body lower mount in a soft-jawed bench vise.
11. Thread the head onto the IFP locator tool and adjust the top of the value indicator to the specified IFP measurement.

12. Apply a thin layer of oil to the IFP, wearband, and o-ring. Insert the IFP, o-ring side first, into the shock body.

13. using the IFP locator tool, slowly push the IFP down into the cylinder. The IFP is set to the correct position when the indicator knob makes contact with the shock body.

14. Install the pressure valve assembly into the valve port and torque to specification.

= T
Pressure Valve Assembly Torque 100 - 110 In.Lbs.

15. Slowly fill the shock body with Ryde FX shock oil up to the level of the outer threads.

NOTE: Allow the shock to stabilize for several minutes and allow the air bubbles to escape to the top.
Wrap the shock body with clean shop towels to catch any shock oil spillage.

16. Invert the 36mm piston rod assembly and pour a small amount of shock oil into the center of the locking piston bolt until the oil flows back out of the hole.

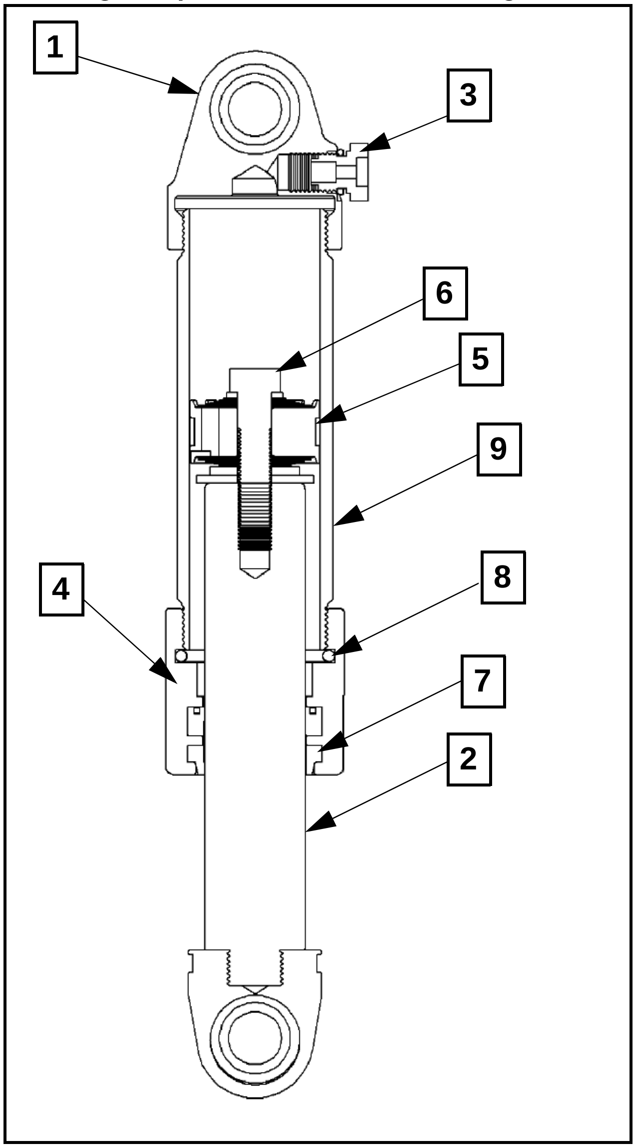
17. Hold a finger over the bolt hole, then carefully insert the piston rod into the shock body cylinder. Slightly oscillate the piston rod to allow the piston to enter the shock body bore.

18. Slowly push the piston rod into the shock body until the cylinder head assembly bottoms on the cylinder counterbore. Slight up and down movement may be required to allow all air to pass through the piston assembly.
19. Using interlocking channel pliers, securely tighten the cylinder head on the shock body.

20. Pressurize the shock body cylinder with nitrogen gas to specification.
21. Install the small button-head screws back into each valve assembly.
22. Reinstall the eyelet hardware and test shock. After being compressed, the piston rod must fully extend from the body.

Walker Evans Air Shock Disassembly

IMPORTANT: Verify the protective outer boot is not torn or damaged. If damaged, inspect the shock shaft for damage. Replace shock shaft if damage is found.



1. Place the body cap (1) of the shock in the vise so that the shock rod (2) is facing downward.
2. Remove the service port screw (3) and release the pressure with the shock charging needle. Verify all pressure is released.
3. Place the body cap (1) in the vise, so that the shock rod (2) is facing upward.
4. Slowly loosen the shock rod bearing cap (4) and remove from the shock.
5. Empty all the shock oil from the shock body and discard the old oil.
6. Inspect the valve stack (5) as needed. Replace any worn, wavy, bent valve shims.
7. If valve shim service or adjustment is done, torque the piston retaining bolt (6) to 25-30 ft-lb (34-41 N-m).

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Piston Retaining Bolt: 25-30 ft-lb (34-41 Nm)

8. If required, replace the bearing cap seal (7) and o-ring (8).

Walker Evans Air Shock Assembly

1. Place the specified amount of fluid into the shock body.

CAUTION
Do not overfill the shock oil level. Too much shock oil may cause the shock rod to hydro lock.

2. Insert and torque down the bearing cap (4) assembly into the shock body (9).

= T
Bearing Cap Torque: 85 ft-lb (115 N-m)

CAUTION
Do not over-torque the shock rod bearing cap or shock performance will be compromised.

3. Flip shock over in the vise so that the shock rod is facing downward.
4. Pressurize the shock to specification. Hold the fill tool needle in the port for thirty seconds to allow the nitrogen gas to stabilize.

IMPORTANT: Never re-insert the fill tool needle back into the shock to check pressure after initial charging. The amount of gas required to fill the tool will give a false pressure reading.

Always completely discharge the shock and refill to obtain an accurate pressure reading.

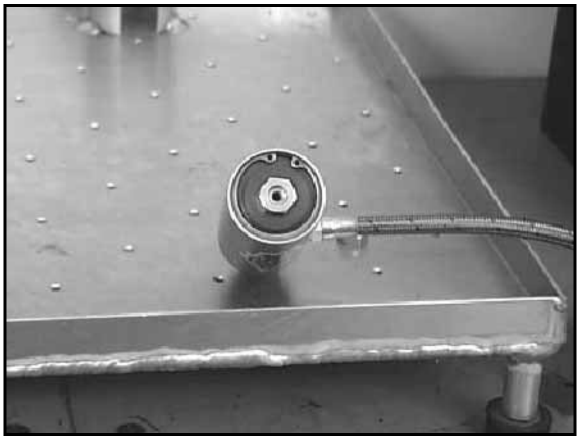
5. Check for any leaks.
6. Reinstall the protective boot and carefully reinstall shock.

Walker Evans Remote Reservoir / Piggy Back Shock Disassembly

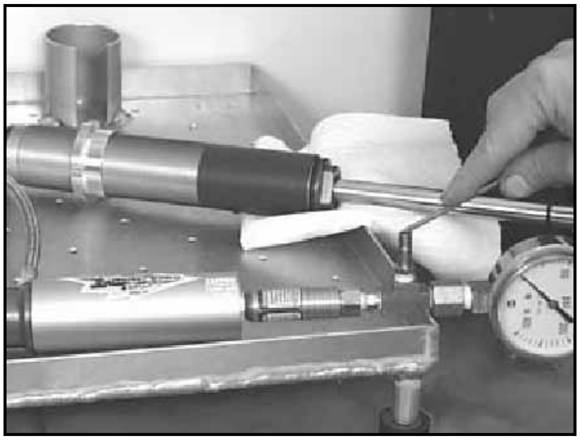
NOTE: Remote reservoir shock shown.

IMPORTANT: To prevent damage or marks to the shock, the use of soft jaws on a vise is recommended.

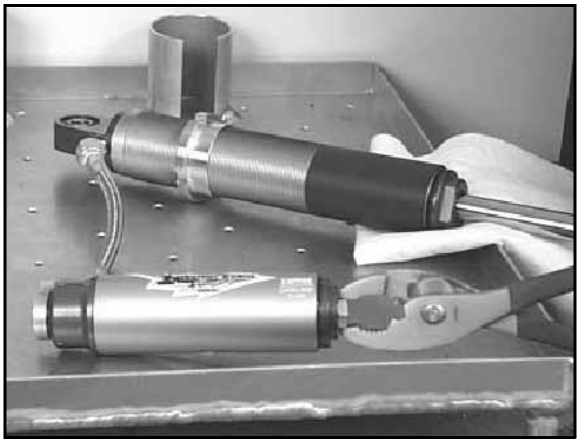
1. Clean and carefully remove shock from the suspension.
2. Remove button head screw (1) from reservoir cap (if applicable).



3. Insert safety needle carefully and depressurize the shock.



4. Press the end cap into the reservoir to access the snap ring.
5. Remove the snap ring, then remove the cap from the body.



6. Place the shock lower eyelet in a vise.
7. Loosen and remove the bearing cap from the shock.
8. Remove the used oil from the shock body.

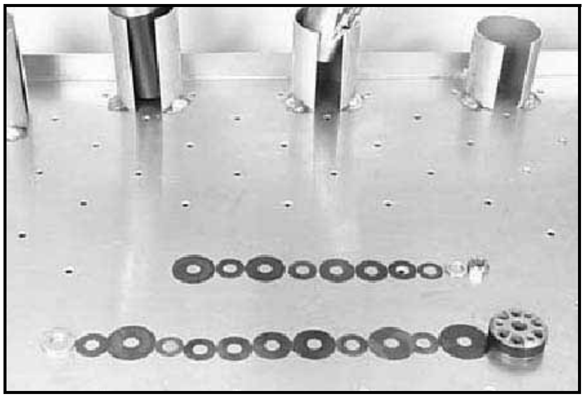
NOTE: Insert the IFP tool (PN PS-45908) and cycle the internal floating piston (IFP) a few times to purge the shock oil from the reservoir.

9. Remove the IFP from the reservoir with the IFP tool (PN PS-45908).
10. Clean and inspect ALL parts and replace worn out parts if needed.

IMPORTANT: Seal kits are available and should be installed at this time if seals or o-rings are damaged or worn.

11. Place the shock rod in a vise so that the threaded part is facing upward.
12. Place the valve stack on a clean shop towel in order of removal.

NOTE: Place the valve stack on a clean shop towel in case you have to move them. This will also help when assembling them back onto the shock rod.



13. Inspect the valves for kinks, waves, pits or foreign material.
14. Inspect the piston wear band and replace if damaged or worn.

Walker Evans Remote Reservoir / Piggy Back Shock Assembly

1. Secure the shock rod in a vise with the threads of the rod facing up.
2. Place the compression valve stack on the rod in the reverse order of disassembly.
3. Place the valve piston on top of the compression stack.

4. Place a new lock nut onto the shock rod. Torque the new lock nut to specification.

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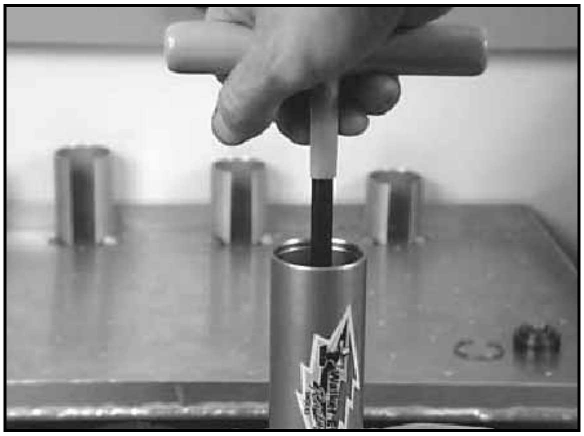
Lock Nut Torque: 14 ft-lb (19N-m)

IMPORTANT: Do not over torque or damage to the valve stack can occur.

5. Secure the shock body by its lower mount.
6. Set the compression damping adjustment selector to position “1”.
7. Fill the shock body and remote reservoir 1/2 full of Walker Evans 5w shock oil (PN 2874522).
8. Apply a thin film of oil to the IFP o-ring and floating wear band located on the shock rod piston.
9. Compress the wear band and insert the IFP into the reservoir. Allow as much air as possible to escape as you install the piston.

10. Screw the IFP tool, PN PS-45908, into the IFP.
11. Hold or place the reservoir as low as possible so the air will travel upward as you slowly cycle the IFP up and down.
    - Be sure to bottom out the piston in the reservoir body.
    - Allow time for the bubbles to dissipate.
    - Repeat the process until all the air has been removed.
12. Set the IFP so it is approximately 1/8 from the bottom of the reservoir. Install the bleed screw.



13. With the cylinder head assembly pushed down against the valve piston, dip the piston assembly in shock oil.

14. Fill the shock body with oil to the bottom of the threads. Carefully insert the piston rod and valve assembly into the cylinder.
    - Slightly oscillate the piston rod to allow the piston to enter the shock body bore as it purges the air out
    - Slight up and down movement may be required to allow all the air to pass through the piston assembly.
15. Slowly push the piston rod and assembly into the shock body until the threads can be engaged.

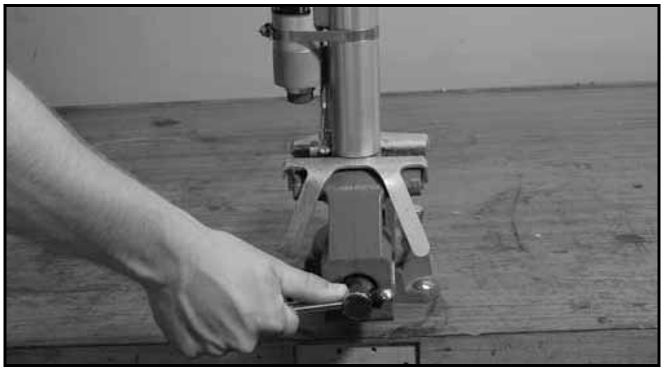
NOTE: During installation, some shock oil will over flow. Wrap a shop cloths around the shock body to catch any oil overflow.

IMPORTANT: Fast installation of the piston rod and assembly may displace the internal floating piston (IFP) from its original position. Performance issues will be a result if the IFP is not in its specified position.

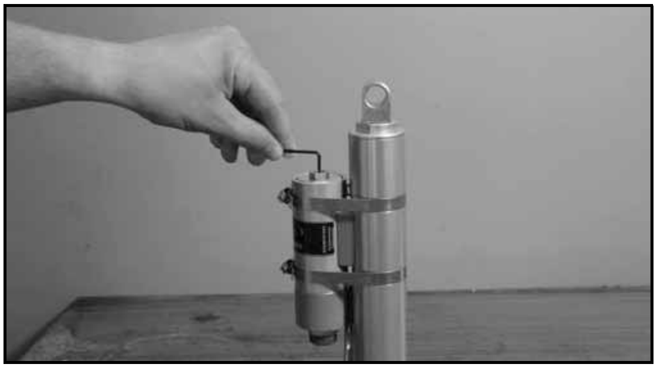
16. Tighten the cylinder head onto the shock body.
17. Verify the IFP is set at the specified depth. If not, verify there is oil on top of the IFP, then open the bleed screw.
18. Set the IFP to specification, then close the bleed screw.
19. Pour out any remaining shock oil from the reservoir.
20. Install the cap making sure the o-ring does not flip-over. Install the snap ring.
21. Charge the shock to the specified pressure.
22. Clean the shock of all oil reside and check for any leaks.
23. Install button screw onto the reservoir cap.

Ryde FX Remote Reservoir Shock Disassembly

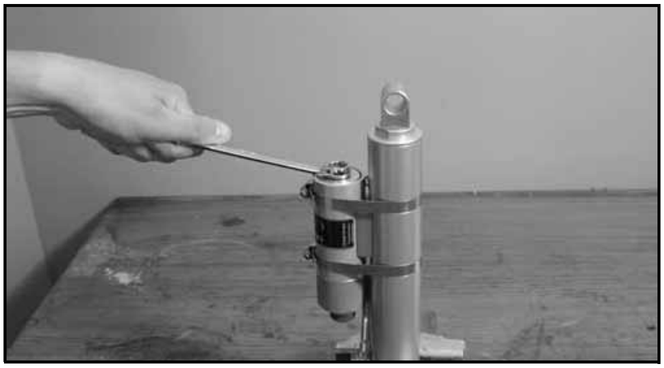
1. Remove the bushings and eyelet components from the lower shock body. Mount the shock in a soft-jawed bench vise.



2. Remove the button head screw from the pressure valve assembly.

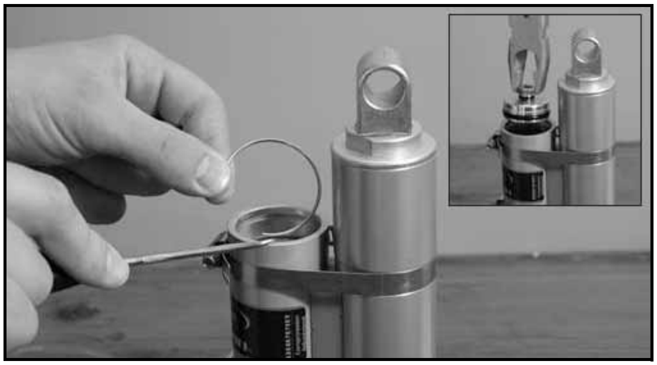


3. Slowly open the pressure valve assembly. Allow all of the nitrogen gas to escape from the reservoir and shock assembly.

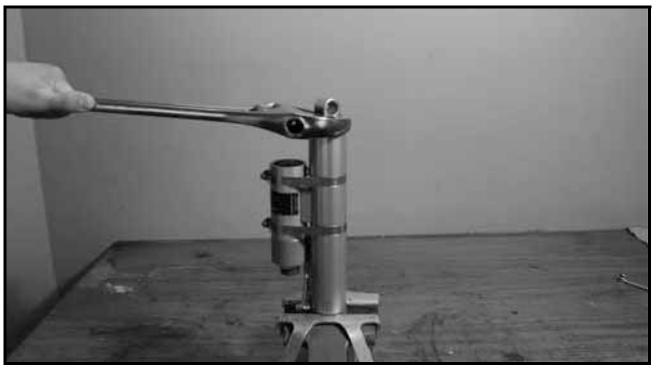


4. When all of the gas has escaped the reservoir, carefully push the reservoir cap down to expose the c-clip. Using a pick, remove the c-clip from the reservoir body.

5. Remove the cap from the reservoir body.



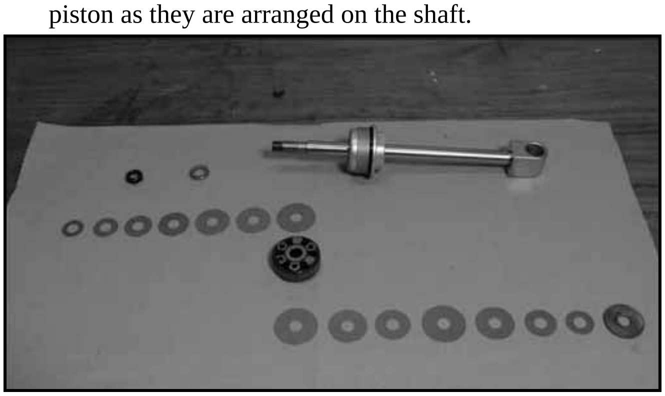
6. Using an adjustable wrench, slowly remove the shock rod bearing cap from the shock body.



7. using a 1/8” Allen Wrench, remove the bleed screw from the IFP inside the reservoir. Verify the o-ring comes out with the screw.
8. Use a pliers to remove the IFP from the reservoir. Verify the wear band and o-ring come out with the IFP.
9. Pour out all of the shock oil into an appropriate storage container. Dispose of oil properly.

NOTE: Do not reuse shock oil.

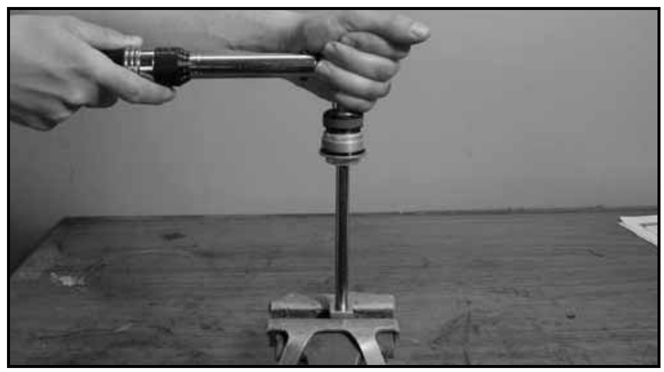
10. Place the shock rod in a soft-jawed bench vise. Remove the valve shim stack and piston nut. Remove the shims and piston as they are arranged on the shaft.



11. With the shock disassembled, inspect the following items:
    - Piston rod for straightness, nicks, or burrs.
    - Cylinder head assembly / bearing.
    - Inside of shock body for scratches, burs, or excessive wear.
    - Teflon piston and IFP wear band for cuts, chipped or nicked edges, or excessive wear.
    - O-rings for nicks, cuts, or cracks.
    - Valve discs for kinks or waves.
    - Hose for kinks or cuts.

Ryde FX Remote Reservoir Shock Assembly

1. Install the shock rod in a soft-jawed bench vise.
2. Reassemble the valve shim stacks and piston in the order in which they were removed.
3. Torque nut to specification.



CAUTION

DO NOT OVERTIGHTEN THE NUT. DAMAGE TO THE SHOCK ROD MAY OCCUR.

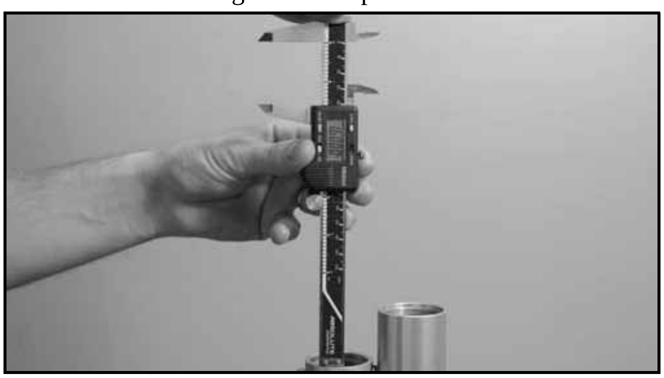
= T

Shock Rod Lock Nut Torque
15 - 20 Ft.Lbs. (21 - 28 Nm)

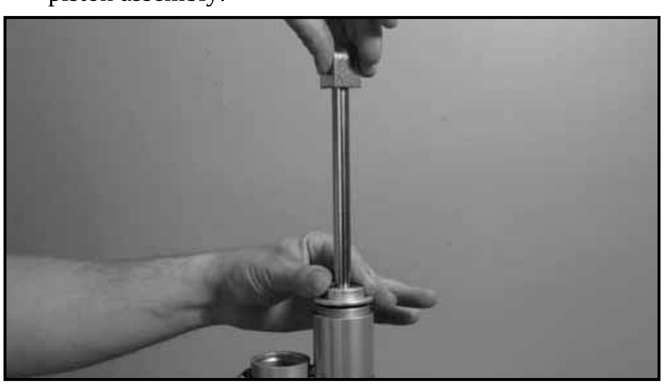
4. Secure the shock body in a soft-jawed bench vise.

5. Fill the shock body with new Ryde FX shock oil. Fill until the level of the oil is one inch below the top of the reservoir body.

6. Using a Vernier Caliper, set the caliper leg to the specified IFP locating position for the shock.
7. Apply a thin layer of shock oil to the IFP o-ring and wear band.
8. Carefully install the IFP back into the reservoir. Set the IFP to the specified depth. Take care not to damage the IFP wear band while setting the IFP depth.



9. When the IFP is set to the depth specification, reinstall the bleed screw.
10. Fill the shock body with new Ryde FX shock oil to the bottom of the shock body threads.
11. Carefully and slowly install the shock rod / bearing assembly back into the shock body. Use a slight up and down movement to dispose of any air trapped below the piston assembly.



12. Using an adjustable wrench, secure the bearing cap assembly to the shock body.
13. Pour all of the remaining oil out of the reservoir body into a suitable container.
14. Apply a light film of Lithium grease to the pressure valve counter bore on the reservoir cap.
15. Apply a thin layer of shock oil to the cap o-ring, then carefully reinstall the cap back into the reservoir. Push cap just below the c-clip groove.
16. Use a pliers to pull the cap up against the c-clip.

17. Charge the reservoir with nitrogen to the specified pressure. Once pressurized, the shock rod should fully extend.
18. With pressure working against the reservoir cap, secure the pressure valve into the cap, then remove the shock fill tool from the valve. Reinstall the button head screw.

RYDE FX MONO-TUBE SHOCK DISASSEMBLY

Procedures for the proper disassembly and assembly of Ryde FX gas charged IFP and emulsion mono-tube shock absorbers.

CAUTION

BEFORE SERVICING A GAS SHOCK IT IS IMPORTANT THAT ALL THE GAS PRESSURE BE DISCHARGED FROM THE UNIT. REFER TO THE INSTRUCTIONS LISTED BELOW FOR THE PROPER PROCEDURE OF DISCHARGING THE GAS PRESSURE FROM A SHOCK. PROTECTIVE EYE WEAR SHOULD BE WORN TO AVOID RISK OF INJURY WHILE SERVICING RYDEFX GAS CHARGED MONO-TUBE SHOCKS.

1. Remove the shock(s) from the vehicle.
2. Before unscrewing pre-load springs, measure the compressed length of the installed spring and mark position for reinstallation.
3. If the shock incorporates a spring, remove the spring and all collateral retainers.

CAUTION

WHEN REMOVING THE SPRING FROM A SHOCK THAT UTILIZES A FIXED LOWER RETAINER; THE USE OF A PROPER SPRING COMPRESSOR SHOULD BE USED TO AVOID RISK OF BODILY INJURY.

4. Wash the shock body in parts cleaner; then dry with compressed air to remove sand and dirt.

WARNING

WHEN USING COMPRESSED AIR TO DRY COMPONENTS, PROTECTIVE EYE WEAR SHOULD BE WORN TO AVOID RISK OF INJURY.

5. Remove bearing, sleeve and/or bushings from lower shock mount eyelet. Secure the lower mount of the shock in a vise. The use of soft jaws is recommend to prevent damage or marks to the shock.

CAUTION

IT IS IMPORTANT THAT THE GAS SHOCK BE RETAINED IN THE VISE BY THE LOWER MOUNT. ANY OTHER METHOD OF SECURING THE CHOCK BODY DURING THESE PROCEDURES MAY DEFORM THE SHOCK BODY CYLINDER.

6. Remove the small button head screw from the pressure valve assembly.
7. Depressurize the shock.

WARNING

NITROGEN GAS IS UNDER EXTREME PRESSURE. USE CAUTION WHEN RELEASING NITROGEN GAS FROM SHOCK. PROTECTIVE EYE WEAR SHOULD BE WORN TO AVOID RISK OF INJURY.

8. Internal Floating Piston Shocks, using a slotted screwdriver, loosen the pressure valve assembly counter-clockwise two full revolutions allowing the gas pressure to fully escape past the pressure valve assembly O-ring.
9. Emulsion Shocks: With the shock inverted and the piston rod fully extended, secure the lower mount of the shock in a vise. Allow a couple of minutes for the gas pressure to separate from the oil and rise to the top. Using a rag as a shield to prevent spraying gas and oil; place rag over top the pressure valve assembly and slowly loosen the valve assembly with slotted screw driver three full revolutions, allowing all the gas pressure to escape past the pressure valve assembly O-ring.
10. Allow all the gas pressure to escape before proceeding with the removal of the pressure valve assembly. Pressurized gas and shock oil could eject the valve assembly from the cylinder resulting in bodily injury.
11. Using a slotted screwdriver, remove the pressure valve assembly from the lower end mount. Account for an O-ring.
12. Using an adjustable face spanner (PN PS45262), fully loosen and remove cylinder head assembly.
13. Pour the oil out of the shock body. Discard old oil into an approved storage container and dispose appropriately. Never reuse damper oil during shock rebuild.
14. Using the I.F.P extraction tool thread the tool into the I.F.P and pull upwards, removing the I.F.P from the shock body. Account for wear band and an O-ring. Note: Not applicable for emulsion shock
15. Clean the inside of the shock body using clean parts-cleaning solvent and blow dry using compressed air.
16. Place the shock piston rod upper mount in bench vise, begin piston and valve removal. Arrange parts removed in the sequence of disassembly. The piston should have the flat slots facing the nut end (as highlighted in black).
17. Items to inspect: Piston rod for straightness, nicks or burrs. Cylinder Head Assembly / DU Bearing clean, inspect, or replace. Inside of shock body for scratches, burrs or excessive wear. Teflon piston and I.F.P wear band for cuts, chipped or nicked edges, or excessive wear. O-rings for nicks, cuts, or cracks. Cap and rod seals for nicks, cuts or cracks. Valve discs for kinks or waves. Compression bumpers (ski shocks only) for chipping, cracking or missing. Should any of these items be in question replacement is recommended.

RYDE FX MONO-TUBE SHOCK ASSEMBLY

1. Place the piston rod upper mount into the vise. Reassemble damper rod assembly in the reverse order of disassembly. Special attention should be paid the order of the Rebound and Compression disc (shim) stacks, ensuring that they are in the same order prior to disassembly. Tighten the lock nut to 15-20 ft-lb. of torque. DO NOT OVER-TORQUE. If excessive torque is applied, damage to the piston and valves will occur.
2. Secure the shock body by its lower mount in vise. The use of soft jaws is recommend to prevent damage or marks to the shock. It is important that the gas shock be retained in the vice by the lower mount. Any other method of securing the shock body during these procedures may deform the shock body cylinder.

NOTE: The next points on IFP are not applicable for emulsion shocks. Proceed to assembly of the pressure valve.

3. Thread the positioning head onto the I.F.P locator tool and adjust the top of the value indicator to the appropriate measurement. Depending on which shock absorber is being worked on, adjust the piston location tool to the specified depth indicated in the shock specification chart.
4. Apply a thin film of oil onto the floating wear band and O-ring and install the floating piston into the top of the shock body, positioning it below the counterbore.
5. Using the tool as a handle, push the floating piston down into the shock body, being careful not to damage I.F.P wear band and O-ring, until the value indicator knob comes in contact with the shock body. The piston should now be located correctly.
6. Screw the pressure valve assembly into the valve port by hand with a slotted head screwdriver; and tighten to 100-110 in.lb of torque.
7. Fill the shock body with shock oil. Internal Floating Piston Shocks: Fill the shock body with shock oil to the bottom of the thread within the cylinder. Emulsion Shocks: Fill shock body with 110cc's of oil. This will allow for the required air space to properly gas charge the shock with nitrogen gas.

NOTE: After filling the shock body with oil, allow a couple of minutes for all air bubbles to rise to the top.

8. With the cylinder head assembly pushed down against the piston, carefully, insert the piston rod and assembly into the cylinder; Slightly oscillating the piston rod to allow piston to enter shock body bore. A light coating of oil on the piston wear band will ease installation.
9. Slowly push the piston rod and assembly into shock body until the cylinder head assembly bottoms on the cylinder counterbore. Slight up and down movement may be required to allow all air to pass through piston assembly.
10. During installation, some shock oil will overflow. Wrap a shop cloth around shock body to catch possible oil overflow. Fast installation of the piston rod and assembly may displace the floating piston from its original position. This must not occur if the damper is expected to perform as designed.
11. Using an open face spanner wrench tighten cylinder head securely into the shock cylinder.
12. Pressurize the shock, through the pressure valve, with nitrogen gas to the specified pressure.
13. If using RydeFX inflation tool Refer to Procedures for use of replaceable inflation needle instruction manual found in the RydeFX inflation tool case.
14. After being compressed, the piston rod should fully extend from the shock body once the shock has been pressurized.
15. Install the small button head screw in the pressure valve assembly and tighten securely.
16. Reinstall sleeve and bushings in lower shock mount.

FOX PS-5 DISASSEMBLY

1. Remove the shock from the vehicle.
2. Remove the steel sleeve from the eyelet using the mallet and an appropriate sized socket.
3. Pry the polyurethane bushings out using the flat blade screwdriver, being careful not to scratch the body cap.
4. Clean the entire shock assembly with soapy water. Try to remove as much dirt and grime as possible by scrubbing with a soft bristle brush. Never pressure wash your shock, as this can force water and debris inside which will damage the seals. Dry the shock assembly with compressed air, if available, or use clean towels.
5. Use a 3/32" Hex Key to remove the button head screw from the FOX air valve in the shock body.
6. Securely clamp Fox Nitrogen Safety Needle in vice.

CAUTION
Point air valve away from face and body when charging or discharging any shock.

7. Insert the Fox Safety Needle squarely into center of gas valve.
8. Using a blunt object, depress the air valve core to release pressure.
9. When the shock is FULLY DISCHARGED, pull reservoir away from the Fox Safety Needle in a straight, smooth motion.
10. Clamp the body end eyelet of the shock securely in vice with shaft side up.
11. Using the 1 3/8" wrench, loosen and unscrew the bearing assembly from the shock body. If the body cap unscrews instead of the bearing, that is OK. You will need to remove both for this rebuild procedure.

12. Clamp the shock in the vice using the body clamp blocks. If the bearing is still in the body, use the 1 3/8” end wrench to loosen and un-thread the bearing. If the body cap is what needs removal, use the large crescent wrench to loosen and unthread the body cap.
13. Remove the shaft assembly from the body tube, and place on a clean, lint free paper towel. Remove the shock from the vice and pour shock oil from body tube into a proper disposal container. Do not re-use old shock oil.
14. Using the handle of the mallet, push the IFP out of the shock body on to a folded shop towel.
15. Remove the bleed screw from the IFP using the 1/8" T-Handle
16. Clean the IFP with solvent. Dry with compressed air in a well ventilated area. If compressed air is not available, dry parts using clean, lint free paper towels and let sit in a well ventilated area to allow the solvents to evaporate.
17. Set body assembly aside on a clean, lint free towel.
18. Clamp the shaft eyelet securely in vice with the piston end up.
19. Using a 9/16" wrench, remove the piston lock nut from the end of the shaft.
20. Hold the tip of the Phillips Head Screwdriver against the end of shaft. Hold the piston assembly under the top-out plate and lift upwards. Slide the piston assembly onto the shaft of the screwdriver. Pull the Screwdriver away from shock shaft while supporting the piston assembly. Set this on a clean, lint free towel. There are many pieces to the piston assembly, and the assembly order of these pieces is critical to the proper performance of your shock. This step ensures that the proper order is kept.
21. Slide bearing assembly off of shaft. Use extreme caution not to scratch inside of the bearing assembly when passing it over the threads at end of shaft and set it on a clean, lint free towel.
22. Remove the bleed screw from the IFP and set them both on a clean, lint free towel.

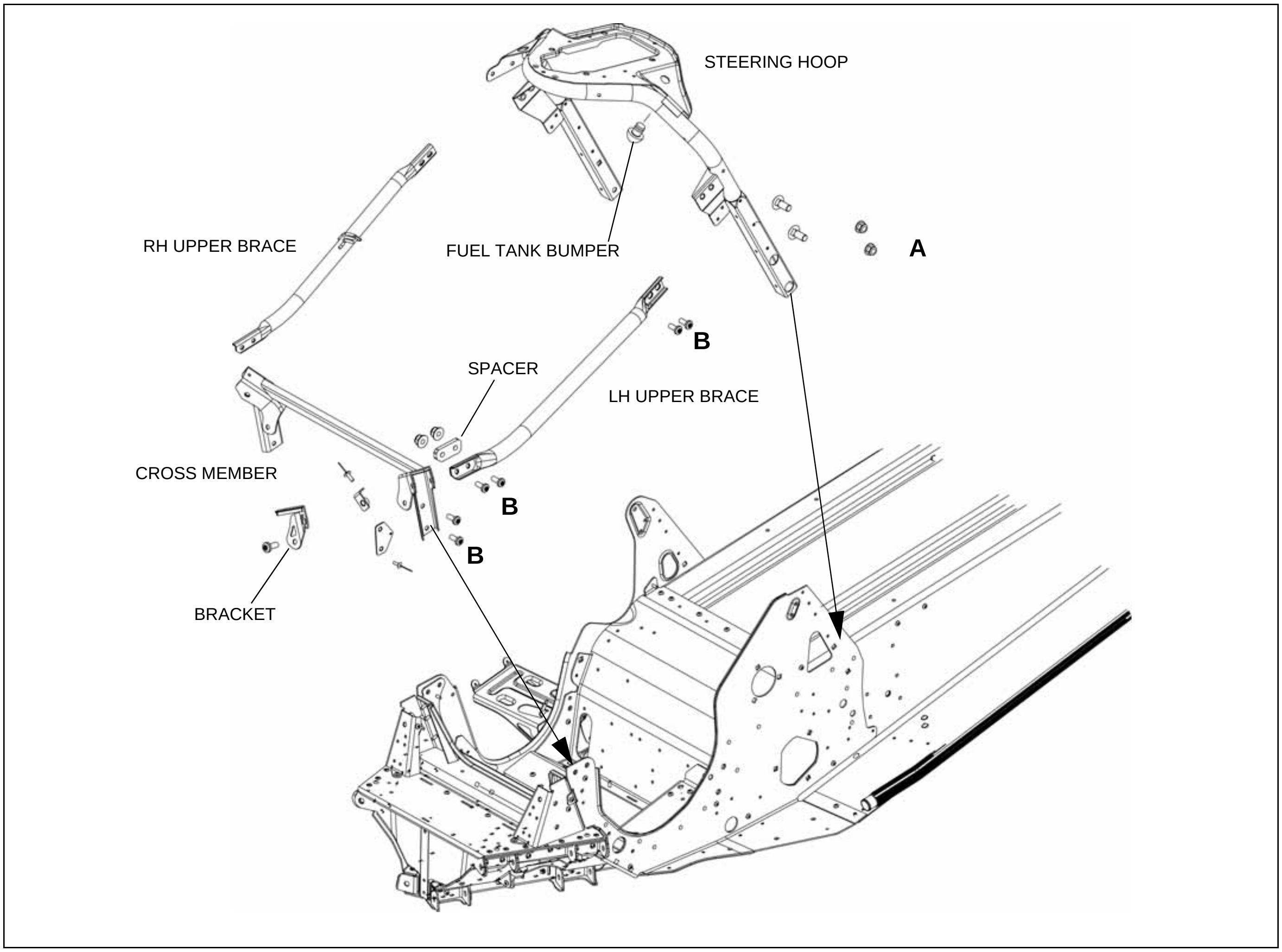
FOX PS-5 ASSEMBLY

1. Using a small pair of snap ring pliers, remove the snap ring from the bearing housing. Using your fingers, remove the FIST scraper from the housing. Use a scribe or a dental pick to remove the o-ring from the inside of the FIST scraper by "spearing" the seal with the point of the scribe and pulling it out. Use extreme caution when using a scribe to remove seals. Always "spear" the seal with the point of the scribe. Do not wedge the point of the scribe in behind the seal. This can scratch the surface of the seal groove which will compromise the performance and reliability of the shock absorber.
2. Use the scribe to remove the u-cup wiper and o-ring seals from the bearing housing. Be careful not to scratch the seal grooves or the DU bushing that is pressed into the bearing.
3. Thoroughly clean the FIST scraper, bearing housing, and piston assembly with solvent. Dry with compressed air in a well ventilated area. If compressed air is not available, dry parts using clean, lint free paper towels and let sit in a well ventilated area, to allow the remaining solvent to evaporate.
4. Use a scribe or dental pick to remove the o-ring seal from the IFP.
5. Install the new, well lubricated, o-ring into the FIST scraper. Check to make sure the seal is properly seated, and is not twisted. If a tool is required to aid in proper seating of o-ring, use the non-writing end of a pen, or a similar soft, blunt object, to push it in.
6. Install the new, well lubricated, o-rings into the bearing housing. Correct placement of the shaft seal o-ring is in the groove next to the DU bushing. Check to make sure the seals are properly seated, and are not twisted. If a tool is required to aid in proper seating of o-ring, use the non-writing end of a pen, or a similar soft, blunt object, to push it in.
7. Install the new U-cup seal into bearing. U-cup should be installed so the cupped end is facing the DU bushing inside of bearing. Check to make sure seal is properly seated. If a tool is required to aid in proper seating of U-cup seal, use the non-writing end of a pen, or a similar soft, blunt object, to push it in.
8. Install FIST bearing into housing. Check for proper orientation of the FIST bearing. The stepped side of the FIST bearing should be visible.
9. Using a small pair of snap-ring pliers, install the snap-ring into the bearing housing. Check for proper orientation of the snap ring. The flat side of the snap-ring should be visible. Check to make sure the snap-ring is properly seated.
10. Install the new, well greased o-ring onto the IFP.
11. Install the new, well greased o-ring on the IFP bleed screw.

CHAPTER 10
Chassis

IQ CHASSIS COMPONENTS

Steering Hoop Assembly (Typical)



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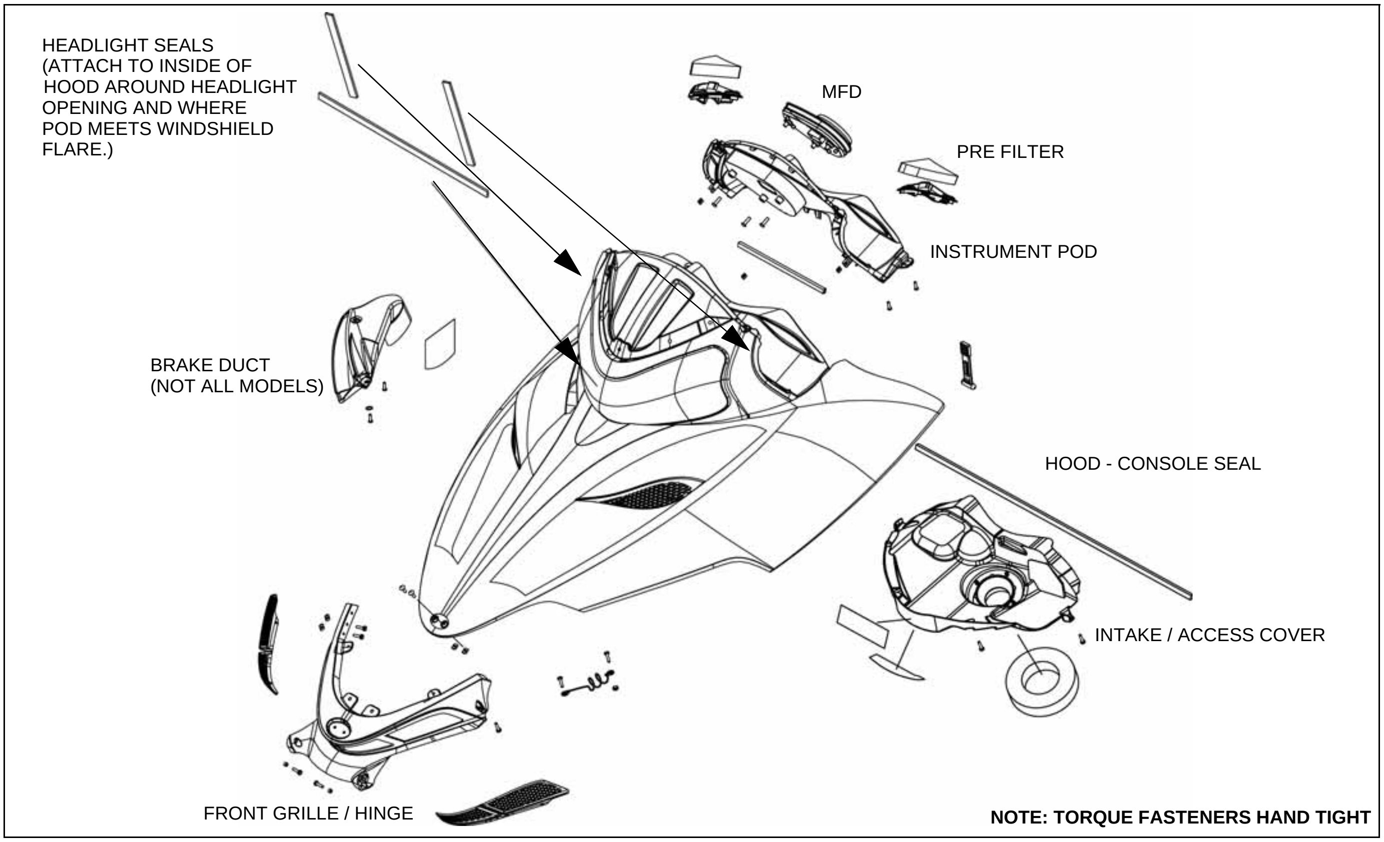
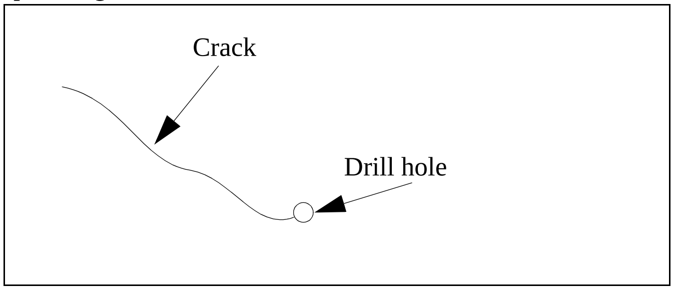
A: 18 Ft.Lb. (24 Nm) B: 21 Ft.Lbs. (28 Nm)

Hood Assembly



Hood / Plastic Repair

Hoods are made of Thermoplastic Olefin (TPO) and cannot be repaired. If a hood is broken it must be replaced. For small cracks, drill a small hole on both ends of the crack to limit spreading.



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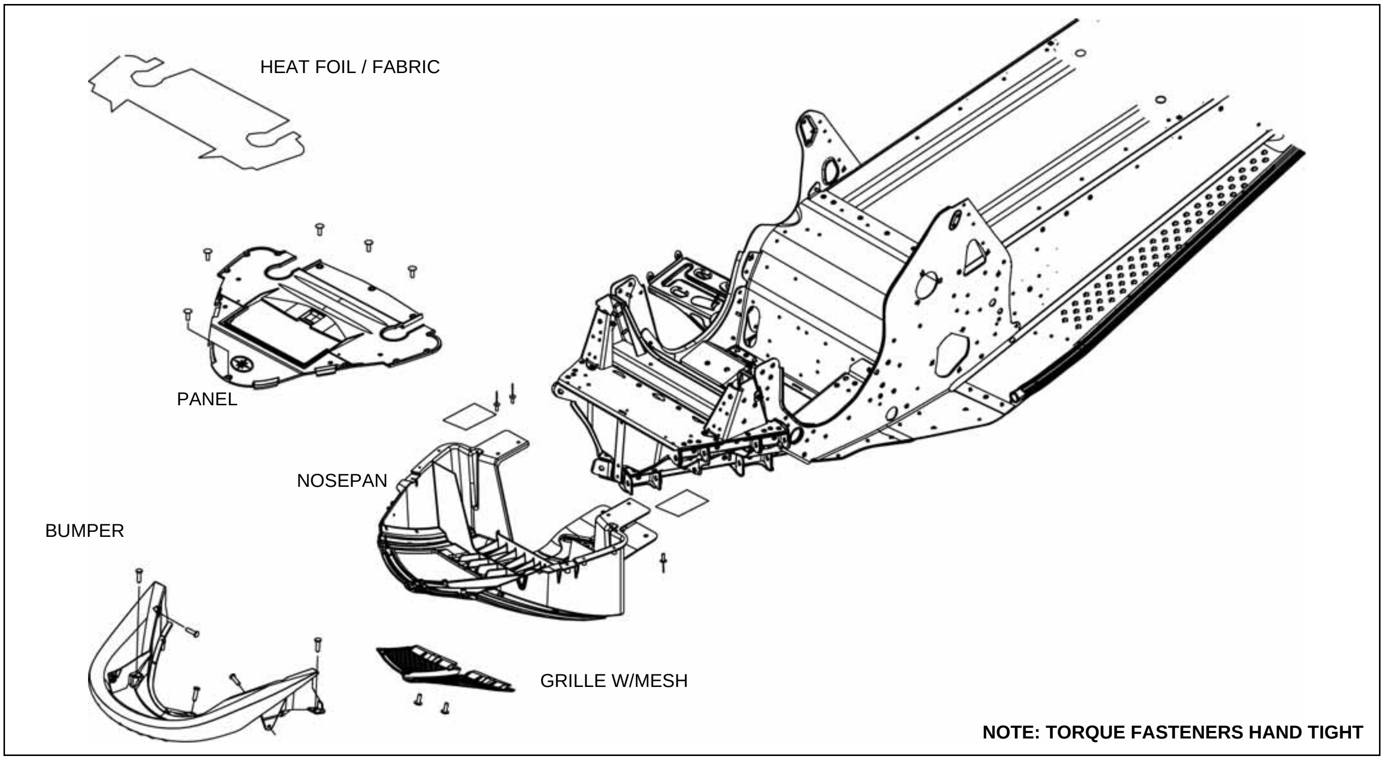
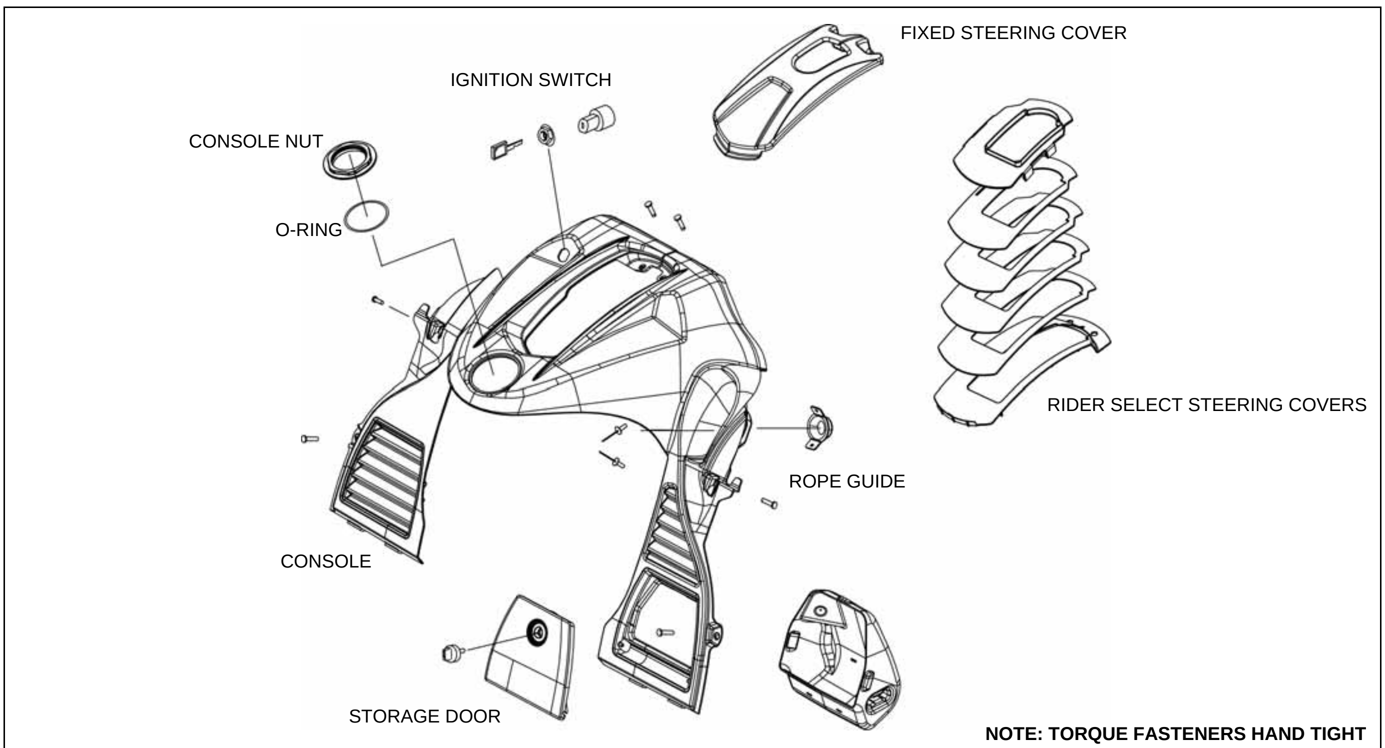
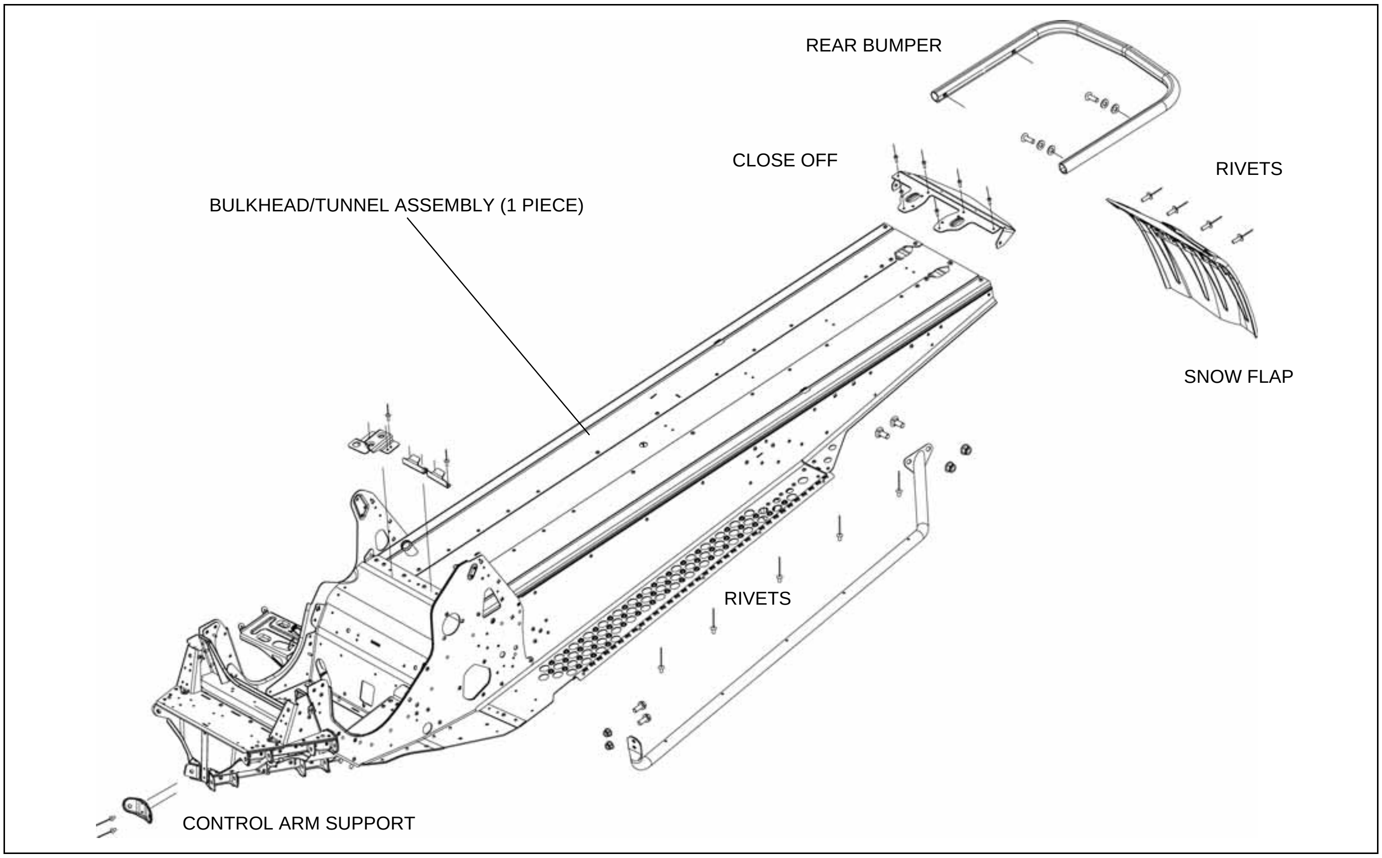
Front Bumper Assembly (Typical)



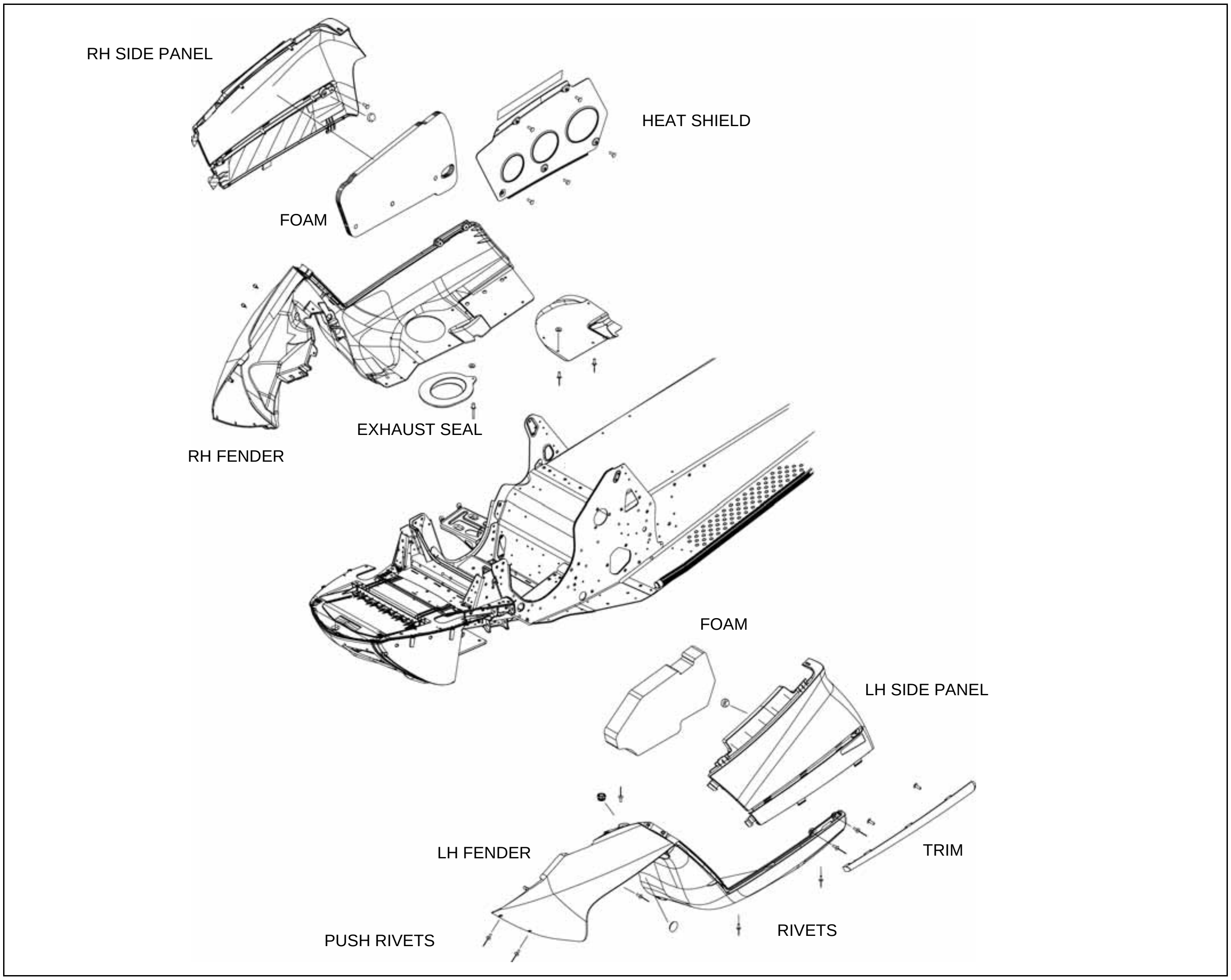
IQ Console Assembly (Typical)



RMK Tunnel

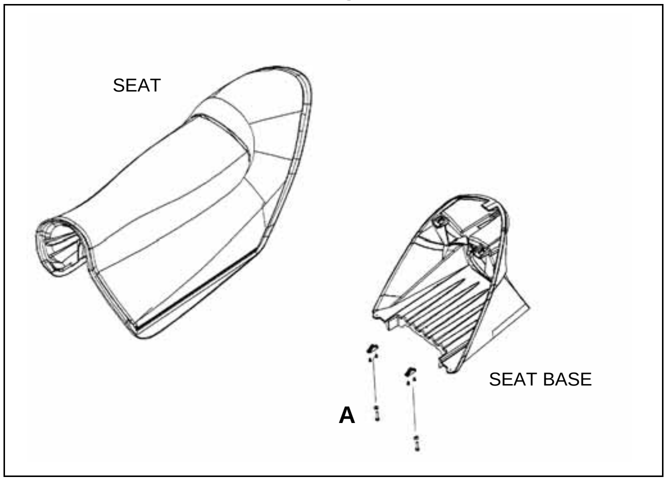

REAR BUMPER
CLOSE OFF
RIVETS
BULKHEAD/TUNNEL ASSEMBLY (1 PIECE)
SNOW FLAP
RIVETS
CONTROL ARM SUPPORT

Fenders and Side Panels



SEAT ASSEMBLIES

IQ Fixed Seat Assembly



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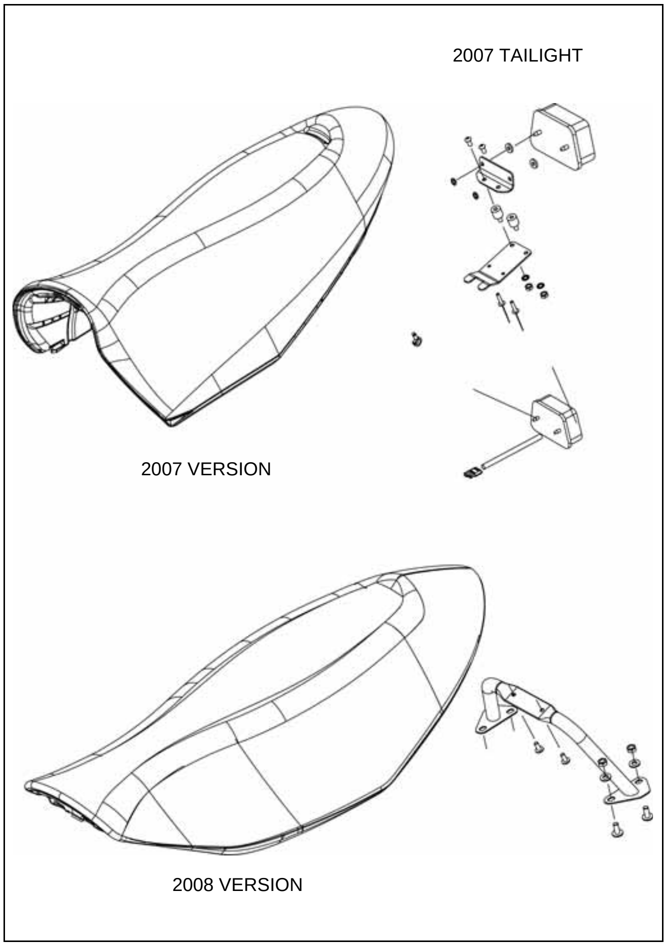
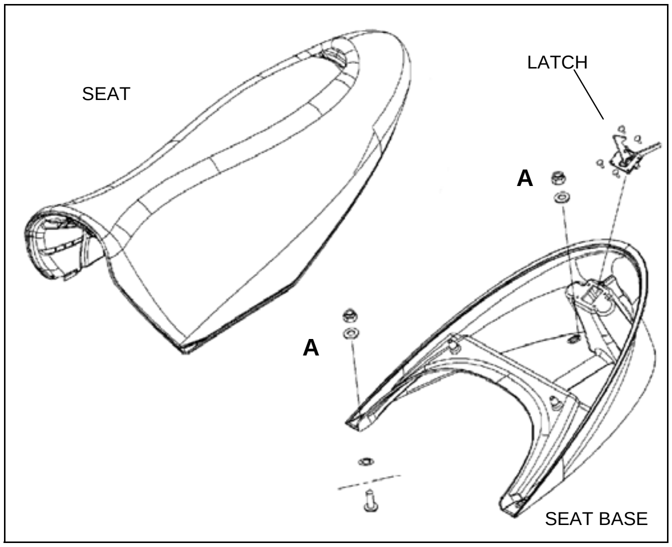
A: 5.5 Ft.Lbs. (7.5 Nm)

IQ Raw Seat Assembly

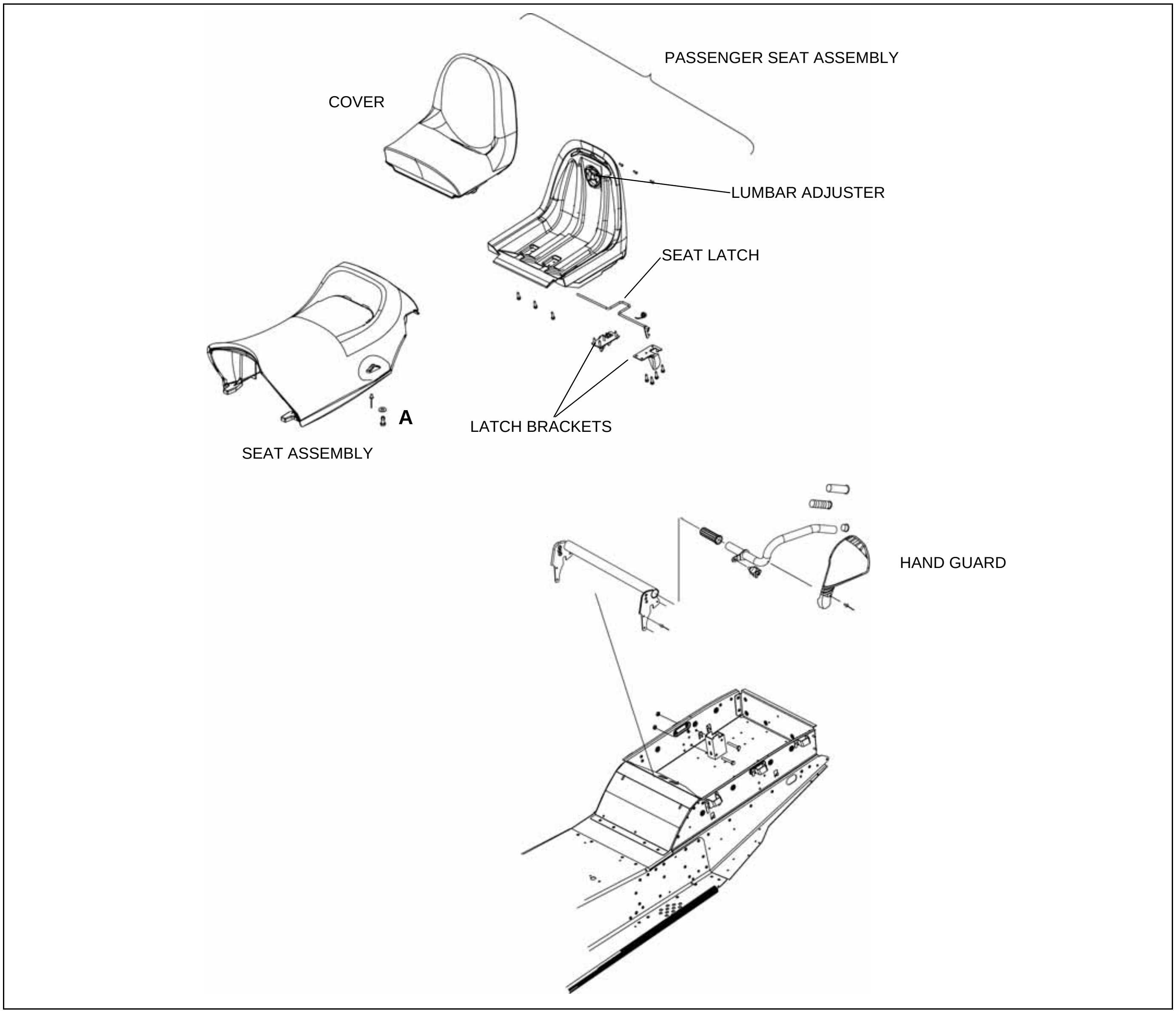


IQ Removable Seat Assembly



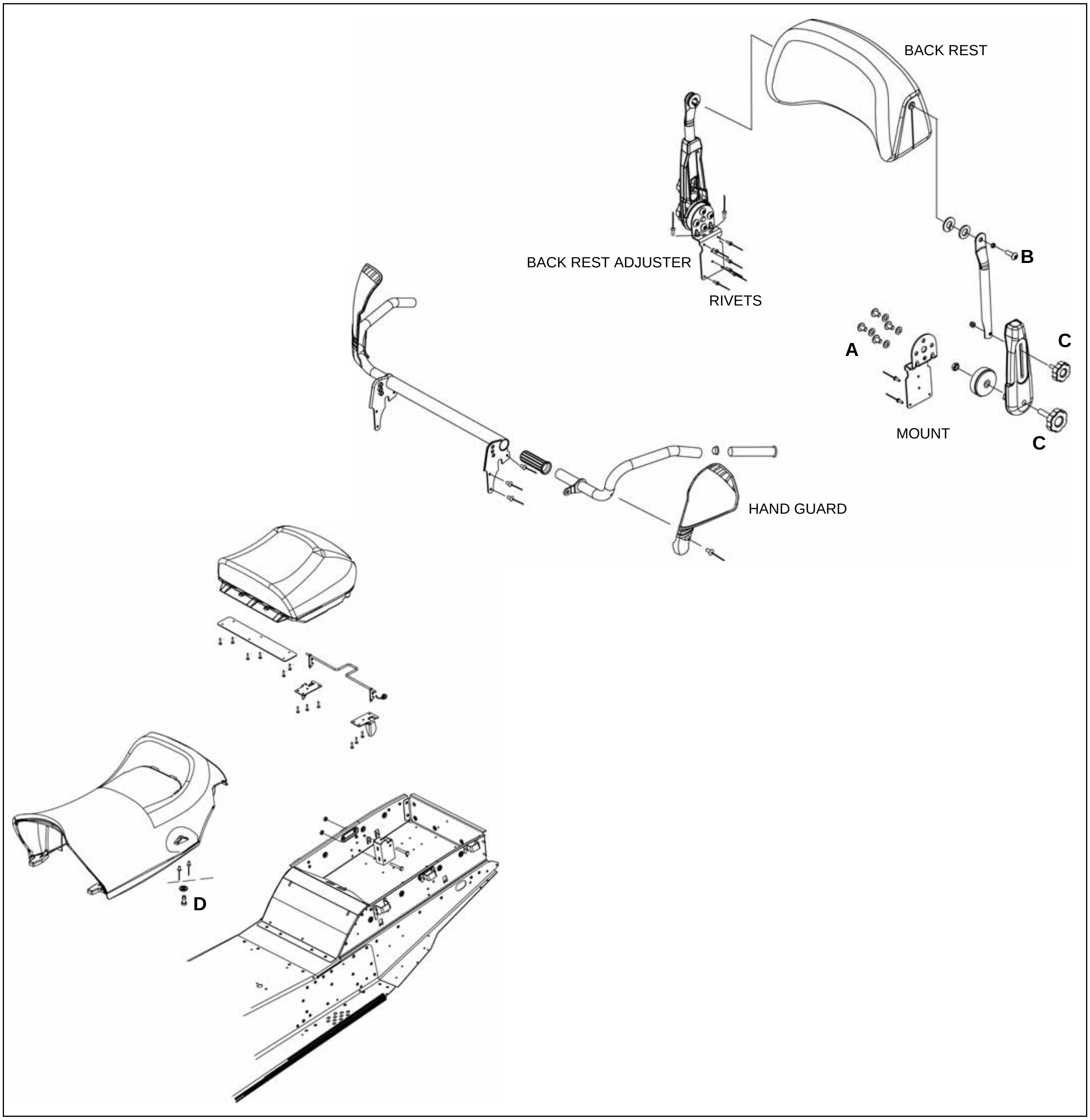
= T
A: 5.5 Ft.Lbs. (7.5 Nm) Plastic crushes at 10 Ft.Lbs. (13 Nm).

2007 IQ Touring Seat Assembly



= T
A: 5.5 Ft.Lbs. (7.5 Nm)

2008 IQ Touring Seat Assembly



= T
A: 18 Ft.Lbs. (24 Nm) B: Hand Tight (Do not crush washers.) C: Hand Tight D: 5.5 Ft.Lbs. (7.5 Nm)

Seat Cover Replacement

1. Remove seat.
2. Remove the old covering by removing the staples that hold it on the base.
3. Drape the new cover over the seat foam.
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.

> **WARNING**
>
> Apply staples in the stapling channel only. If you apply staples outside the channel, you will damage the fuel tank reservoir in the seat base. If this happens you will have to replace the entire seat assembly.

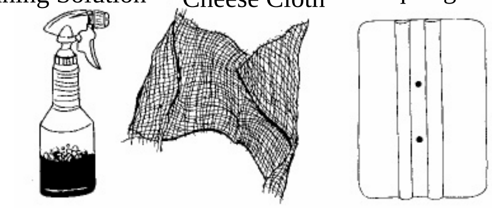
5. Using a staple gun, tack each side of the vinyl cover in place using two staples (1). If cover has a “POLARIS” emblem carefully align emblem with the bottom edge of the seat. This will help ensure that the cover is positioned properly.
6. Align the two sewn seams located at the rear of the seat cover with the two back corners of the seat base.
7. Pull the vinyl tight and tack the seat cover to the plastic seat base in each corner. Use two or three staples per corner.
8. Now that the cover is positioned, and tacked to the plastic seat base in for places, turn the assembly over an inspect it. If the seat cover seems to fit correctly and everything looks straight, continue.
9. Staple the remainder of the unattached seat cover to the plastic seat base. Always staple between two existing staples and follow this procedure until the seat cover is completely stapled to the seat base see the staple sequence above.
10. 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.
11. Trim excess vinyl from the bottom around the back of the seat area only after a satisfactory fit is obtained.

DECALS

Decal Removal

Before beginning, read these instructions and check to be sure all parts and tools are accounted for.

Cleaning Solution Cheese Cloth Squeegee



3M t Cleaner

Hair Dryer

Use the following items:

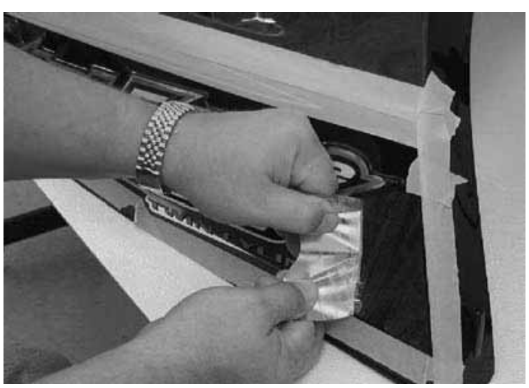
- Squeegee
- Cheese Cloth or a non abrasive cloth
- Paper Shop Towels
- Hair Drier or Heat Gun
- Wallpaper seam roller or similar roller
- 3M t citrus based clear (3M t PN 62-4615-430-5) available at most auto parts stores
- Cleaning solution (99% water 1% mild dish washing detergent)
- ScotchR 233 Performance masking tape

Perform the decal removal procedures carefully! If care is not taken, the possibility exists that paint could peel from the hood. Follow each step thoroughly and completely to avoid hood damage! **Polaris is not responsible for any hood or paint damage resulting from this decal replacement procedure**.

> **CAUTION**
>
> USE SAFETY GLASSES AND RUBBER GLOVES WHEN PERFORMING THIS PROCEDURE.

1. Using masking tape, tape off all decals that are not going to be replaced. If you do not tape off the other decals, the cleaning solution used later in the process may cause the adhesive to break down in the non-affected decals.

2. Using a hair dryer (preferable) or low setting on a heat gun, carefully heat the decal to loosen the adhesive. Heat until the decal is warm to touch. **DO NOT OVER HEAT! Overheating may cause damage to the paint and to the integrity of the hood.** Polaris is not responsible for any hood damage resulting from this decal replacement procedure.
3. Once the decal is warm to touch and the adhesive is loose, peel the decal off slowly and evenly. **Use of a hair dryer or heat gun is required!** If heat is not applied, the decal will be very hard to remove and paint from the hood may peel off with the decal.
4. After the decal is removed, apply 3M t citrus based cleaner to the decal area to remove the adhesive. Be sure to follow the instructions and the precautions on the container, and use rubber gloves and safety glasses. Spray the cleaner on the adhesive and let set for 15-20 seconds. Using a squeegee, wipe the adhesive from the hood and deposit it in a paper shop towel. You may have to repeat this process several times to remove all of the adhesive from the hood. Use care not to get the cleaner on any other decals.



5. When the bulk of the adhesive is removed from the hood by using the squeegee, remove any left over residue with a clean, non-abrasive shop towel or cheese cloth that is wet with the 3M t cleaner.
6. Once all of the adhesive is removed from the decal area, follow with a cleaning solution of 99% water to 1% mild dishwasher detergent. Use a non-abrasive cloth with the solution to remove dirt, grease, cleaning solvent, and finger prints. Always clean the surface where the decal will be applied.

CAUTION

It is extremely important to remove all traces of dirt and debris from the hood where the decal is to be applied. Left over debris will be magnified through the chrome decals.

Decal Installation

All decals should be applied indoors, free from dust, dirt, cold air, and humidity. Room temperature must be between 40_ and 100_F (4 - 38_C). These decals are to be applied dry.

1. Make sure the surface area of the hood where the decal is to be placed is free of any dirt, debris, or adhesive.

2. Place the decal in the area to be installed and make sure that everything lines up properly.
3. Carefully peel away the adhesive side of the decal.

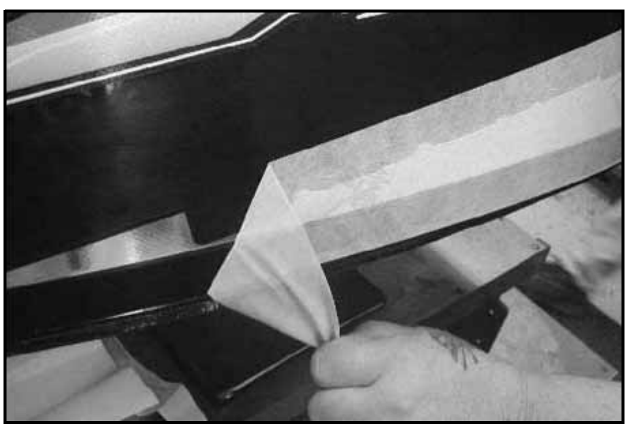
10

4. Apply the decal and slowly work the decal down using a clean squeegee to lay the decal straight and to avoid creating air bubbles. Do NOT remove the decal mask until the decal is fully applied.

CAUTION

ONCE THE ADHESIVE STICKS, IT CAN BE VERY DIFFICULT TO PULL THE DECAL BACK OFF OF THE HOOD. USE EXTREME CARE! IF YOU ENCOUNTER AIR BUBBLES DO NOT ATTEMPT TO USE A STRAIGHT PIN TO POKE THE BUBBLE AND LET THE AIR OUT. A HOLE POKED IN A CHROME DECAL WILL BE VERY NOTICEABLE.

5. When finished installing the decal, carefully remove the decal mask at a 180_ angle.



6. Peel the backing off and install the urocals in the appropriate places. These also have strong adhesives and once applied they cannot be removed easily. Use a wall paper roller to adhere all surfaces of the urocal. Urocal decals are rigid and need to be rolled to ensure good adhesion, particularly on the edges.

CHAPTER 11

Battery and Electrical Systems

SPECIFICATIONS

Engine Models

Model Number	Engine
S3273-6044-PF6F S3274-6044-PF6F S3466-6044-PU6F S3467-6044-PU6F	Liberty 600cc HO Carbureted
S3206-6044-PF6H S3468-6044-PU6H S3469-6044-PU6H	Liberty 600cc CFI
S3305-7044-PF7J S3322-7044-PF7J S3470-7044-PU7J S3471-7044-PU7J	Liberty 700cc CFI
S3489-8044-PU8E S3471-8044-PU8E	Liberty 800cc CFI

Spark Plugs

Model	Spark Plug	Gap (Inches / mm)
ALL MODELS Standard Optional	Champion RN57YCC NGK BPR9ES	0.025 / 0.63

Charging System

Model	Stator Output	# of Pulses
ALL 600 CARBURETED	280W	6
ALL 600 / 700 / 800 CFI	400W	N/A

Ignition Timing

Model	Specification
ALL 600 CARBURETED	26° @ 3500 RPM (Disconnect TPS)
ALL 600 / 700 / 800 CFI	18° @ Idle (1700 RPM [0.95Vdc TPS]) and 120° Engine Coolant Temperature

⚠ WARNING

PROPOSITION 65 WARNING

BATTERY POSTS, TERMINALS, AND RELATED ACCESSORIES CONTAIN LEAD AND LEAD COMPOUNDS, CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND REPRODUCTIVE HARM. WASH HANDS AFTER HANDLING.

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.

CONVENTIONAL BATTERY

NOTE: Do not service the battery unless it will be put into regular service within 30 days.

Battery Preparation

1. Fill battery with electrolyte to the upper level marks on the case.
2. Set battery aside and allow it to cool and stabilize for at least 30 minutes.
3. Add electrolyte to bring the level back to the upper level mark on the case.

NOTE: This is the last time electrolyte is added. After charging the battery, only add distilled water.

4. 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).
5. Check specific gravity of each cell with a hydrometer to ensure each has a reading of 1.270 or higher.
6. Install vent covers.

Specifications

Battery PN 4140006

Battery Type	YB14A-A2 - Conventional
Nominal Capacity	12Vdc / 14AH
Electrolyte Volume	30.4oz.
CCA @ 0F (-18C)	195 AMPS
Charging Current	1.4 AMPS

Battery PN 4140005

Battery Type	Y50-N18L-A - Conventional
Nominal Capacity	12Vdc / 20AH
Electrolyte Volume	47.3oz.
Charging Current	2 AMPS

Refilling a Conventional 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 1.270 or greater.

FRESH PACK BATTERY

NOTE: Do not service the battery unless it will be put into regular service within 30 days.

Battery Preparation

Some models are equipped with a fresh pack battery. These batteries require filling with electrolyte and a full charge prior to service.

1. Fill battery with electrolyte to the upper level marks on the case.
2. Set battery aside and allow it to cool and stabilize for at least 30 minutes.
3. 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.

4. 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).
5. Check specific gravity of each cell with a hydrometer to ensure each has a reading of 1.270 or higher.
6. Install vent cover.

NOTE: Once the vent cover is installed, the battery is sealed. Do not remove the cover.

Specifications

Battery PN 4011092 (4010905)

Battery Type	YTX14AH-BS-Fresh Pack
Nominal Capacity	12Vdc / 12AH
Electrolyte Volume	22.3oz.
Specific Gravity	1.320
CCA @ 0F (-18C)	210 AMPS
Charging Current	1.2 AMPS

BATTERY TESTING

Testing Procedures

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 sulfication will form on the plates, reducing their efficiency and possibly ruining the battery.

Open Circuit Voltage Test (OCV)

Check static battery voltage with multimeter. Voltage should be no less than 12.8 Vdc. Charge battery if voltage is lower than 12.8 Vdc.

Load Test

A battery may pass the OCV test, but still not have the storage capacity necessary to properly function.

1. Connect multimeter to the battery as if performing the OCV test.
2. Turn the engine over using the electric starter.
3. Replace battery if Vdc drops below 9.5Vdc.

NOTE: Battery load test tools can be purchased commercially. Follow the manufactures' instructions for use.

Specific Gravity Test (Conventional Battery)

NOTE: Do not attempt to open the vent cover on a fresh pack battery.

A 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 0.025 between the lowest and highest cell readings indicate a need to replace the battery.

Battery Voltage

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	12.00v
0% CHARGED	< 11.80v	< 11.90v

Battery Voltage Per Cell

STATE OF CHARGE	CONVENTIONAL LEAD-ACID	YUMACRON TYPE
100% CHARGED	1.265v	1.275v
75% CHARGED	1.210v	1.225v
50% CHARGED	1.160v	1.175v
25% CHARGED	1.120v	1.135v
0% CHARGED	< 1.100v	< 1.115v

Off Season Storage

To prevent battery damage during extended periods of non-use, the following 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 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. Charge at a rate no greater than 1/10 of the battery's amp/hr. capacity.
4. Store the battery in a cool, dry 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.

Specific Gravity Freezing Point

Specific Gravity of Electrolyte	Freezing Point
1.265	-75_F (-59_C)
1.225	-35_F (-37_C)
1.200	-17_F (-27_C)
1.150	5_F (-15_C)
1.100	18_F (-8_C)
1.050	27_F (-3_C)

IGNITION TIMING

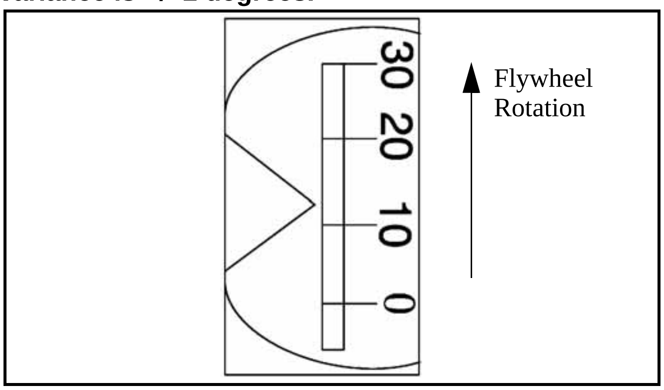
Timing Procedure - Carbureted Engines

NOTE: Always verify timing of engine at room temperature (68°F / 20°C), and at the specified RPM. If applicable, make sure the key switch is in the PREMIUM mode and the TPS is unplugged.

1. Reference the timing specification chart.
2. Install a dial indicator gauge into the MAG spark plug hole.
3. Place the MAG piston in the proper timing position, then mark the flywheel at this point.

EXAMPLE: 600 HO Carbureted = 26° @ 3500RPM. Place the MAG piston 4.0096mm (0.1579in.) BTDC.

NOTE: Each 10 degree mark is separated by lines every 2 degrees (not shown). Acceptable timing variance is +/- 2 degrees.



4. Connect an accurate tachometer and a good quality timing light to the engine according to manufacturer's instructions.
5. Disconnect the throttle position sensor (TPS), if equipped.
6. Start engine and increase RPM to the point specified in the timing specifications. Hold the throttle to maintain specified timing RPM.
7. Point the timing light at the timing inspection hole.
8. 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 pointer. If the stationary pointer is aligned with the mark made in Step 3, or within the acceptable variance, ignition timing is correct.
9. If the pointer is outside the variance, the stator will have to be rotated either with 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. 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.

10. Torque stator plate screws and flywheel nut to specified torque. Apply Loctite 262 (red) to crankshaft flywheel taper if required. Refer to the Specifications section for torque specifications and flywheel installation procedure for engine type.

Timing Procedure - CFI Engines

NOTE: Before performing procedure, verify there are no current trouble codes and that all of the engine electrical connections are clean and tight.

1. Reference the timing specification chart and locate the piston BTDC measurement for 18°.
2. Install a dial indicator gauge into the MAG spark plug hole.
3. Place the MAG piston at 18° BTDC. Mark the flywheel.

NOTE: Each 10 degree mark is separated by lines every 2 degree. Acceptable timing variance is +/- 2 degrees.

4. Connect a good quality timing light to the engine according to manufacturer's instructions.
5. Start and run the engine at idle speed until the engine temperature is 120°F (49°C). Verify the throttle lever is closed and the engine is at idle speed (1700 +/- 100 RPM).

NOTE: The engine temperature must be approximately 120°F (49°C) to obtain accurate timing specification. Use the MFD digital temperature display to view engine temperature.

6. Point the timing light at the timing inspection hole.
7. 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 pointer. If the stationary pointer is aligned with the mark made in Step 3, or within the acceptable variance, ignition timing is correct.

NOTE: The stator plate, two-tooth, and five-tooth crankshaft position sensor locations are not adjustable.

8. If the pointer is outside the variance, either the flywheel key has sheared allowing the flywheel to move on the crankshaft, the crankshaft is out of index, a problem with the engine electrical harness exists, or one of the crankshaft position sensors has moved.

Ignition Timing Chart

Convert the ignition timing specification from degrees BTDC to either inches or millimeters, then use a dial indicator to verify timing marks.

NOTE: Always disconnect the TPS on carbureted engines prior to checking ignition timing.

	600 CFI / CARBURETED		700 CFI		800 CFI	
ROD/STROKE (mm)	128mm ROD 64mm STROKE		128mm ROD 68mm STROKE		132mm ROD 70mm STROKE	
Degrees BTDC	MM	Inches	MM	Inches	MM	Inches
1	0.0061	0.0002	0.0066	0.0003	0.0067	0.0003
2	0.0244	0.0010	0.0262	0.0010	0.0270	0.0011
3	0.0548	0.0022	0.0590	0.0023	0.0607	0.0024
4	0.0974	0.0038	0.1048	0.0041	0.1078	0.0042
5	0.1522	0.0060	0.1637	0.0064	0.1684	0.0066
6	0.2190	0.0086	0.2356	0.0093	0.2424	0.0095
7	0.2979	0.0117	0.3205	0.0126	0.3298	0.0130
8	0.3889	0.0153	0.4184	0.0165	0.4305	0.0169
9	0.4919	0.0194	0.5291	0.0208	0.5445	0.0214
10	0.6068	0.0239	0.6528	0.0257	0.6717	0.0264
11	0.7336	0.0289	0.7892	0.0311	0.8121	0.0320
12	0.8723	0.0343	0.9383	0.0369	0.9656	0.0380
13	1.0227	0.0403	1.1001	0.0433	1.1321	0.0446
14	1.1849	0.0466	1.2745	0.0502	1.3115	0.0516
15	1.3586	0.0535	1.4614	0.0575	1.5038	0.0592
16	1.5439	0.0608	1.6606	0.0654	1.7089	0.0673
17	1.7406	0.0685	1.8722	0.0737	1.9266	0.0758
18	1.9487	0.0767	2.0960	0.0825	2.1569	0.0849
19	2.1681	0.0854	2.3319	0.0918	2.3996	0.0945
20	2.3986	0.0944	2.5798	0.1016	2.6547	0.1045
21	2.6402	0.1039	2.8395	0.1118	2.9220	0.1150
22	2.8927	0.1139	3.1110	0.1225	3.2013	0.1260
23	3.1560	0.1243	3.3941	0.1336	3.4927	0.1375
24	3.4300	0.1350	3.6887	0.1452	3.7958	0.1494
25	3.7146	0.1462	3.9946	0.1573	4.1106	0.1618
26	4.0096	0.1579	4.3117	0.1698	4.4369	0.1747
27	4.3149	0.1699	4.6399	0.1827	4.7746	0.1880
28	4.6303	0.1823	4.9789	0.1960	5.1235	0.2017
29	4.9558	0.1951	5.3287	0.2098	5.4835	0.2159
30	5.2911	0.2083	5.6891	0.2240	5.8543	0.2305
31	5.6361	0.2219	6.0598	0.2386	6.2358	0.2455
32	5.9907	0.2359	6.4408	0.2536	6.6278	0.2609
33	6.3546	0.2502	6.8318	0.2690	7.0302	0.2768
34	6.7278	0.2649	7.2326	0.2847	7.4427	0.2930
35	7.1099	0.2799	7.6431	0.3009	7.8652	0.3097
36	7.5010	0.2953	8.0632	0.3174	8.2974	0.3267
37	7.9007	0.3111	8.4925	0.3343	8.7392	0.3441
38	8.3089	0.3271	8.9308	0.3516	9.1903	0.3618
39	8.7254	0.3435	9.7381	0.3692	9.6506	0.3799
40	9.1501	0.3602	9.8340	0.3872	10.1198	0.3984

THROTTLE POSITION SENSOR (TPS)

The TPS is located on the carburetor rack (carbureted engines) or on the throttle body (CFI engines). The TPS is set at the time of manufacture and should only require adjustment when:

- When the TPS is replaced.
- When the carburetor rack or throttle body is replaced or adjusted.
- The TPS is suspected of being set incorrectly as part of troubleshooting.

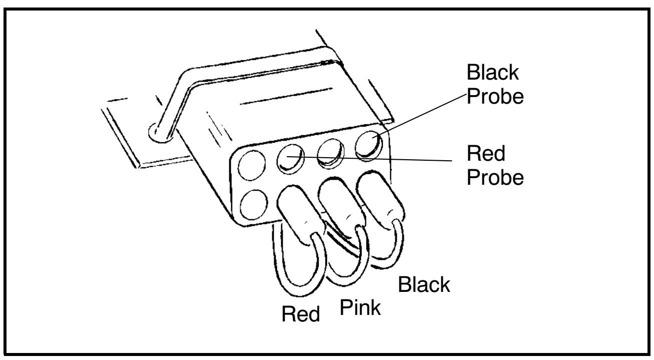
The TPS test tool, PN 2201519, is used to accurately adjust the TPS return signal settings.

TPS Test Tool Setup

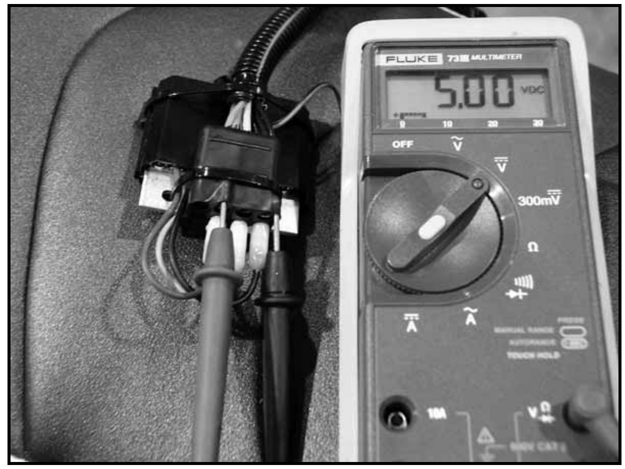
The test tool must be always be used to inspect the TPS on carbureted engines. On CFI models, either the test tool or Digital Wrench can be used to test the TPS.

NOTE: Signal readings can be affected if the 9 volt battery is weak. Always verify the battery is in good condition.

1. Set the multimeter to read Vdc.
2. Verify the 9 volt battery condition by inserting the black multimeter probe into the black wire terminal and the red multimeter probe into the pink wire terminal. Voltage should read 4.99 to 5.01 Vdc. Use a new battery if voltage is below 4.99 Vdc.



3. Connect the test tool to the TPS on the carburetor or throttle body.



NOTE: Always disconnect the 9 volt battery when tool is not in use.

Using the TPS Test Tool

1. Remove the wiring harness connector from the TPS.
2. Verify the throttle cable is not kinked and the throttle flipper is closed. Disconnect the throttle cable from the throttle flipper.
3. Connect the test tool to the TPS.
4. Insert the black multimeter probe into the black terminal port, then insert the red multimeter probe into the yellow terminal port.
5. Reference the specifications to determine if the TPS requires adjustment or replacement.
6. Reconnect the throttle cable with throttle flipper.

TPS Setting Specifications

ENGINES	VOLTAGE SETTINGS
Carbureted Engines	4.00 +/- 0.1 Vdc @ WOT
CFI Engines 600 / 700 800	 0.95 +/- 0.01 Vdc @ Idle 0.93 +/- 0.01 Vdc @ Idle

7. To verify the TPS is sending a linear signal, slowly move the throttle flipper from the closed to WOT position, then back down to the closed position.
8. The voltage readings displayed on the multimeter should rise and fall without erratically jumping from high to low.

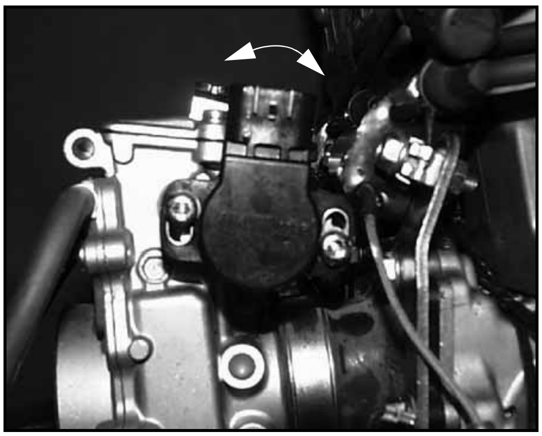
NOTE: The multimeter display may change scales and show O.L. momentarily when throttle flipper is moving.

9. If the signal readings are erratic, replace the TPS sensor.

TPS Adjustment - Carbureted Models

NOTE: Always verify the engine idle speed is set at engine operating temperature and the throttle cable freeplay is set to 0.10″ - 0.30″.

1. Connect the TPS test tool to the TPS.
2. Slightly loosen the screws securing the TPS to carburetor body.
3. Have an assistant hold the throttle flipper in the WOT position.
4. Turn the TPS **clockwise** to <u>decrease voltage</u>, or **counterclockwise** to <u>increase voltage.</u>
5. Carefully tighten the TPS screws when the WOT Vdc is 4.00Vdc.



TPS Adjustment - CFI Models - Using Digital Wrench

Either Digital Wrench or the TPS Test Tool can be used to see the TPS return signal voltage, set the TPS baseline and set the idle gap on CFI models.

To use Digital Wrench, follow these steps.

1. Click on the TOOLBOX icon.
2. Click on “TPS INITIALIZATION”
3. Follow the steps and procedures displayed on the screen.

TPS Baseline Adjustment - CFI Models

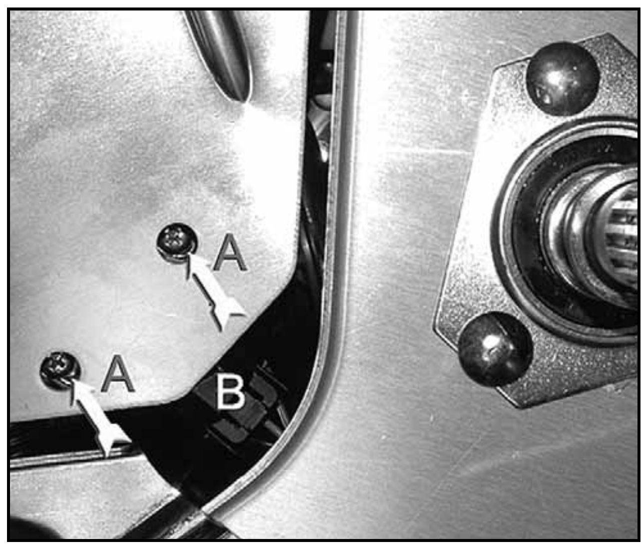
NOTE: The TPS baseline and idle speed adjustments must be performed whenever the TPS is moved or replaced.

1. Remove the drive belt, driven clutch, airbox, and adapter plate.
2. If the TPS requires replacement, remove the throttle body and replace the TPS.

NOTE: If only verifying the TPS voltage setting, the throttle body can remain on the engine.

3. The TPS fasteners can be accessed through a set of access holes in the TPS guard if adjustment is required.
4. Unplug the TPS connector (B), and connect the TPS test tool.

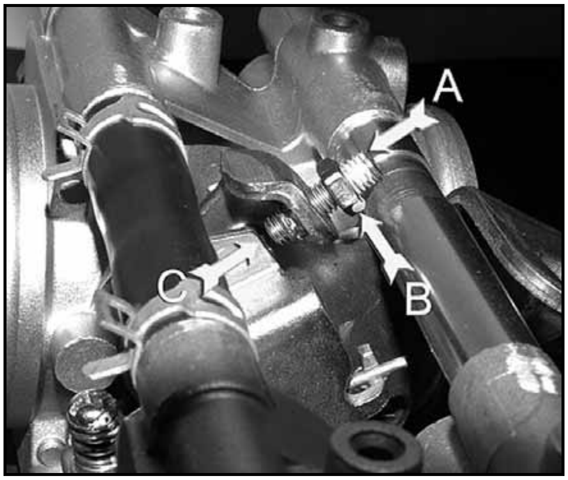
NOTE: The guard may need to be “flexed” to align the holes with the TPS fasteners.



- A = TPS Fasteners
- B = TPS Harness Connector

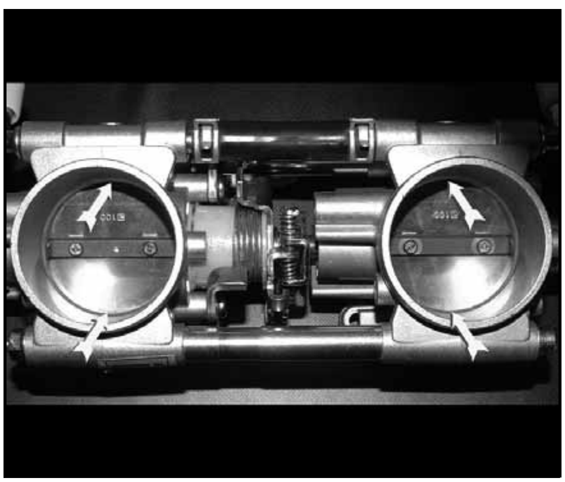
5. Remove the throttle cable barrel from the throttle flipper.

6. Loosen the idle speed screw until the screw no longer touches the tab and the throttle plates are completely closed.

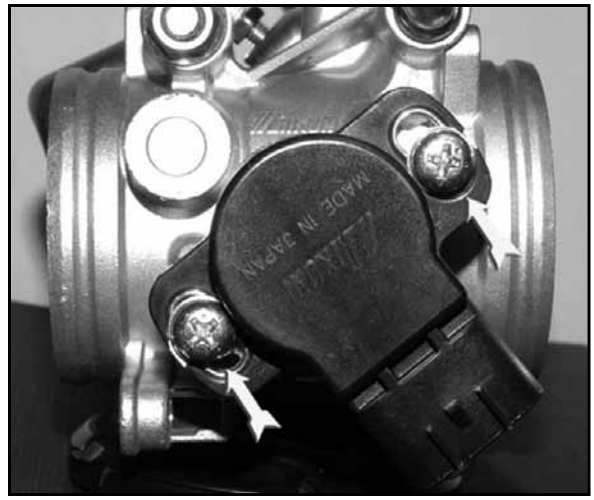


- A = Idle Speed Screw
- B = Lock Nut
- C = Throttle Stop

7. Open and close the throttle plates 2 to 3 times to ensure plates are completely closed.



8. Using the TPS test tool, verify the TPS is set to 0.70 +/- 0.01 Vdc.
9. To adjust the TPS base-line, slightly loosen the screws, then slowly turn the TPS clockwise or counter-clockwise to adjust the voltage.

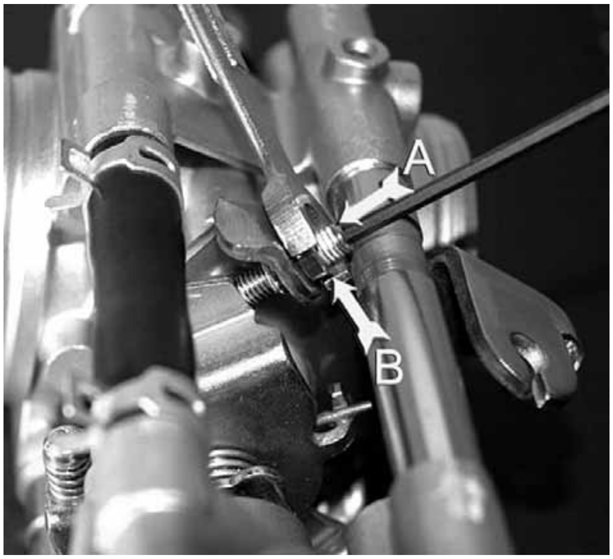


10. Carefully tighten the screws to 31 In.Lbs. (3.5 Nm) when the voltage is 0.70 +/- 0.01 Vdc.
11. Open and close the throttle plate 2 - 3 times and verify the voltage is still within specification.

11

TPS Idle Speed Adjustment - CFI Models

1. Verify the TPS voltage is 0.70 +/- 0.01 Vdc with the throttle plates closed.
2. Slowly turn the idle speed adjustment screw (A) clockwise until the voltage displayed on the multi meter reads 0.95 +/ - 0.1 Vdc (.93 +/- 0.1 Vdc for 800 CFI engines).
3. Carefully tighten the lock nut (B) while maintaining the voltage setting.



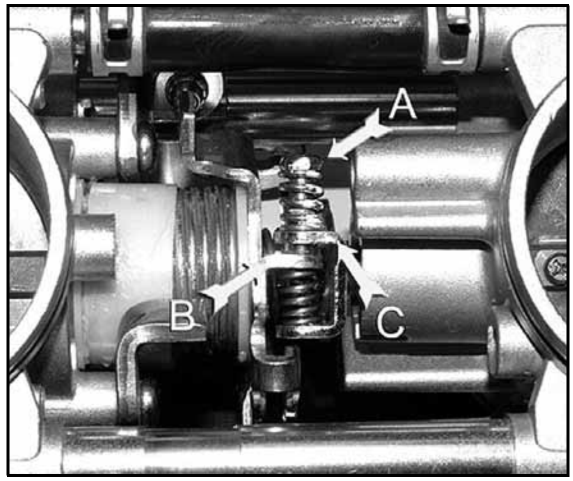
4. Reinstall the throttle cable, then install the throttle body back on to the engine.

Throttle Plate Synchronization

The throttle plates are synchronized at the time of throttle body manufacture. Adjustment should never be required unless it is believed the plates are out of sync.

To adjust throttle plate synchronization, follow these steps:

1. Perform the TPS Baseline Adjustment. The TPS must be set to specification.
2. Carefully back the synchronization screw out so it no longer touches the tab, but do not remove the screw or the spring.
3. Verify the TPS voltage is set to 0.70 +/- 0.01 Vdc. If it is not, re-perform the baseline adjustment.



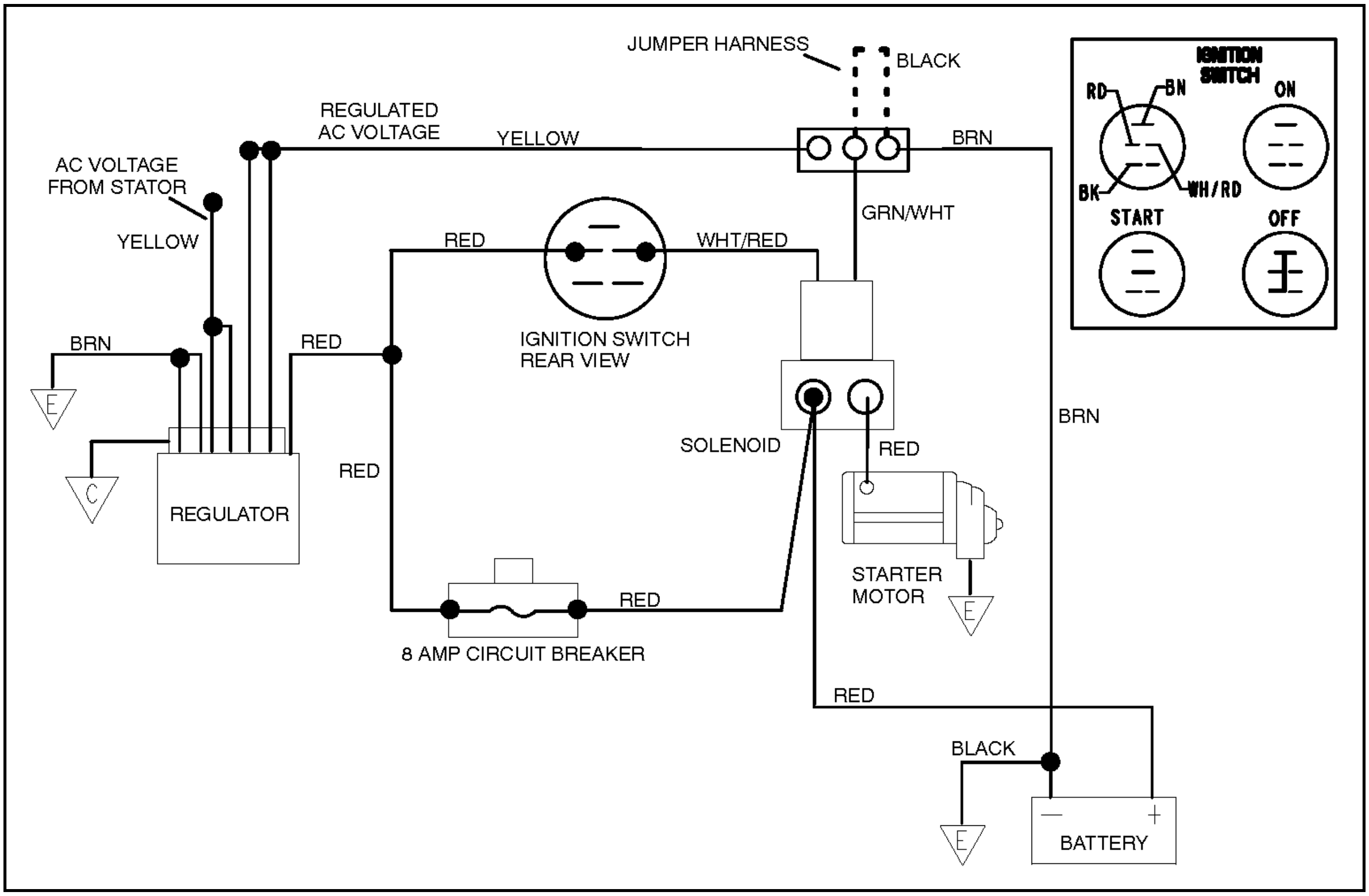
- A = Synchronization Screw
- B = Throttle Arm Tab
- C = Screw Mount

4. Slowly turn the synchronization screw inwards until the instant the voltage on the multimeter changes. Back the screw out so the voltage reads 0.70 +/- 0.01 Vdc.

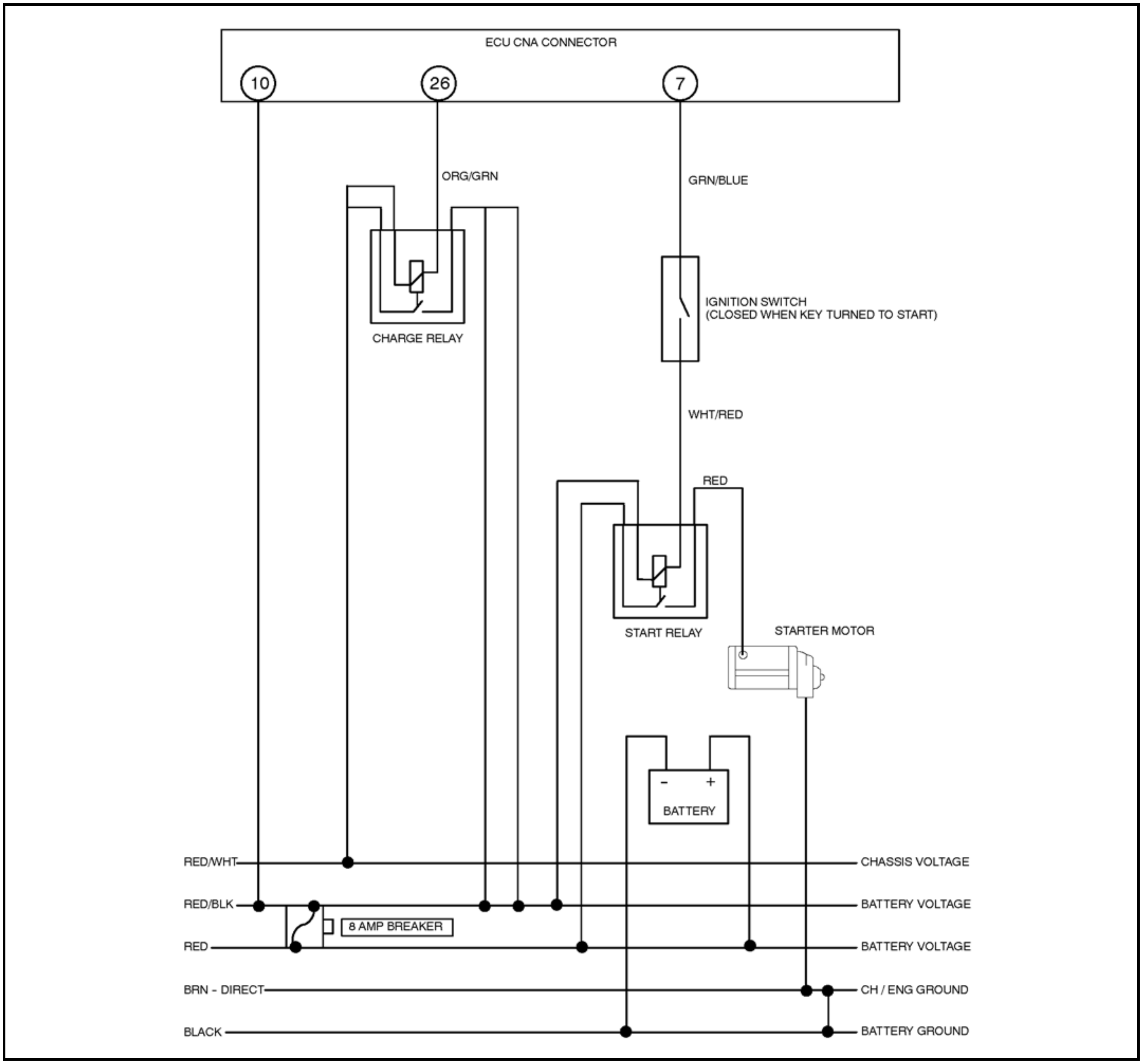
NOTE: When turning the synchronization screw, do not push the screwdriver with enough force to move the throttle cable cam. Doing so will affect the TPS voltage reading on the multimeter.

ELECTRIC START - IQ CARBURETED / CFI

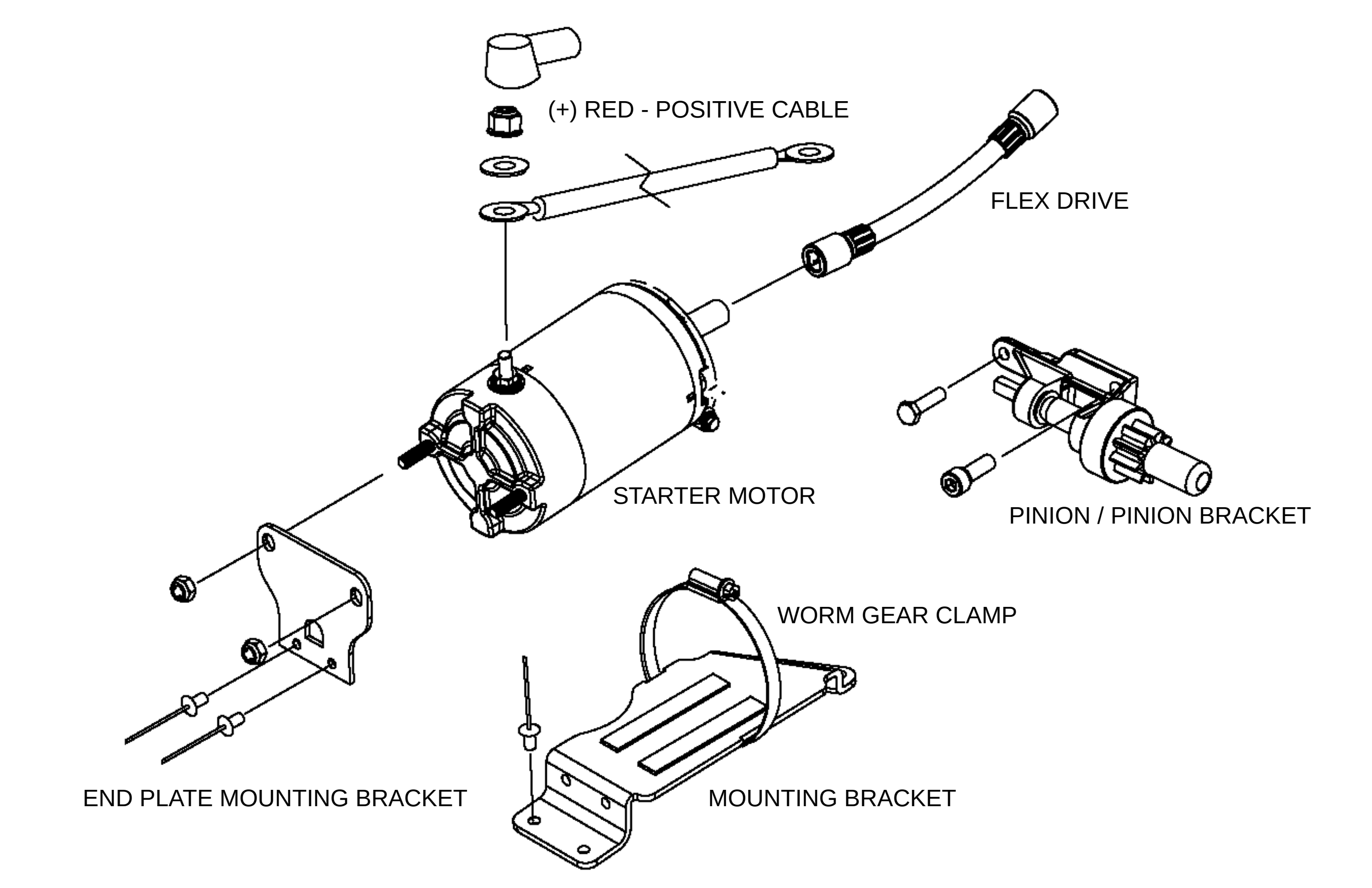
System Schematic - 600 Carbureted



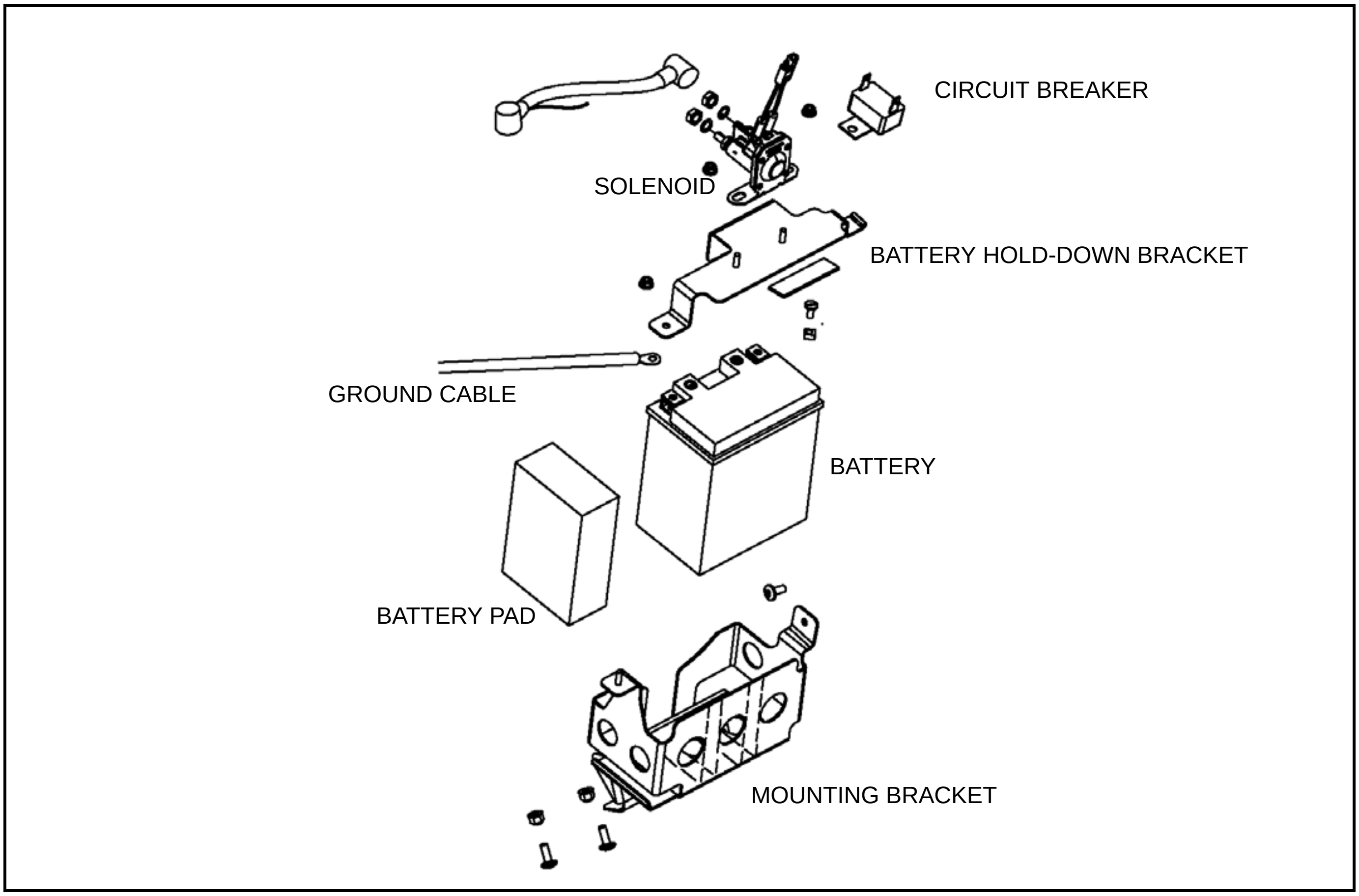
System Schematic - CFI



Starter Motor / Flex Drive Assembly



IQ Battery Box Assembly



CARBURETED ELECTRICAL SYSTEMS

600 HO Stator Specifications

NOTE: Use a multimeter to test the stator circuits. Remember to test the circuits when the engine is cold and after the engine has been running for some time.

Specifications

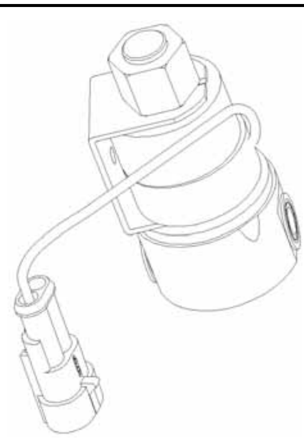
YEL TO BRN	0.15Ω
BRN TO ENGINE	0Ω
BLK / RED TO GRN	15Ω
RED TO GRN	15Ω
BLK or WHT TO ENGINE	0Ω
WHT / RED TO WHT	185Ω

Ignition Coil Packs

Specifications

BLK TO WHT (Primary)	0.3Ω
BLK or WHT TO SECONDARY LEAD	OPENΩ
SECONDARY LEAD TO LEAD	5KΩ
PLUG CAPS	10KΩ

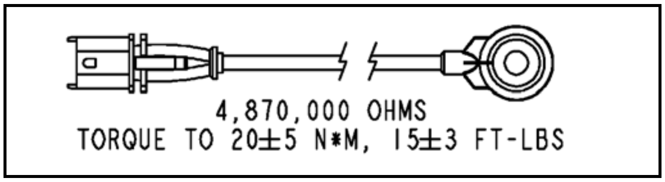
Exhaust Valve Solenoid



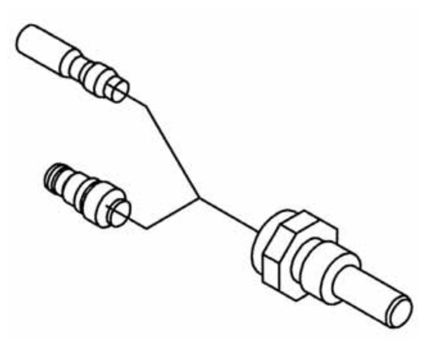
Specifications

Coil Resistance (WHT/YEL to RED)	15Ω +/- 15% @ 68°F (20°C)

Knock Sensor



600HO Coolant Temperature Sensor



Sensor Specifications

Operating Temperature Range	-22_F - +248 _F (-30_C - 120_C)
Resistance	2.4 - 2.6KΩ@ 68_F (20_C) (Measure in stirred water)
Installation Torque	29 ft.lbs. (39.2Nm)

Oil Level Sender

To test the oil level sender, position the sender as it would be in the oil tank. Allow the float to drop in the direction it would if the oil tank were empty. Continuity should be present when using a multimeter to test the sender with the float in the “empty” position.

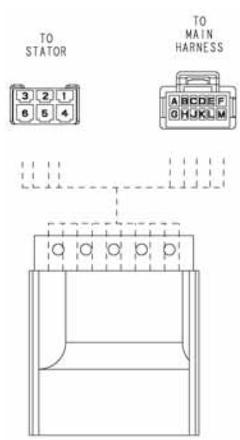
No continuity should be present when the float is moved away from the “empty” position.

11

2007 600 HO Regulator / Rectifier

This regulator / rectifier performs the following functions:

- Regulates AC Voltage to 14.3 volts.
- Provides regulated DC voltage to power the MFD gauge.
- Provides regulated DC voltage to charge the battery, if equipped.
- Illuminates the MFD brake LED indicator by grounding the MFD circuit whenever the module receives an Vac brake light signal (operator pulls brake lever).



Circuit Specifications

PLUG / PIN / COLOR	FUNCTION
STATOR / 2 / BROWN	GROUND
STATOR / 3 / YELLOW	AC POWER INPUT
STATOR / 4 / BROWN	GROUND
STATOR / 6 / YELLOW	AC POWER INPUT
HARNESS / A / YELLOW	REGULATED AC POWER
HARNESS / B / ORG/ BLK	DC BRAKE LAMP GROUND
HARNESS / C / ORANGE	AC BRAKE SIGNAL INPUT
HARNESS / D / BRN/ WHT	DC GROUND
HARNESS / F / BROWN	AC GROUND
HARNESS / G / YELLOW	REGULATED AC POWER

Circuit Specifications

HARNESS / J / RED/ WHT	REGULATED DC MFD POWER
HARNESS / K / RED	REGULATED DC BATTERY POWER
HARNESS / M / BROWN	AC GROUND
METAL TAB	GROUND PLATE

Replace the regulator / rectifier whenever the following occurs:

- AC voltage is over 14.8 volts when the engine is running.
- No DC voltage found on the RED/WHT or RED circuits when the engine is running.
- The brake lights illuminate when the brake lever is pulled, but the LED indicator does not.

2008 RMK Shift 155 Regulator / Rectifier

The RMK Shift regulator / rectifier performs the same functions as the 2007 600 HO regulator / rectifier.

Circuit Specifications

PLUG / PIN / COLOR	FUNCTION
1 / YEL/BLK	AC POWER INPUT
2 / YEL/BLK	AC POWER INPUT
4 / RED	VDC (BATTERY CHARGE)
5 / RED/WHT	VDC (REGULATED FOR MFD)
6 / ORANGE	AC BRAKE SIGNAL
7 / YELLOW	REGUALTED VAC
8 / YELLOW	REGULATED VAC
9 / BROWN	GROUND
10 / BROWN	GROUND
13 / BRN/WHT	DC GROUND
14 / ORG/BLK	DC BRAKE LAMP GROUND (MFD)
15 / BROWN	AC GROUND
16BROWN	AC GROUND

2008 IQ Shift Regulator / Rectifier

The regulator rectifier on a 2008 IQ Shift limits AC Voltage to 14.3 volts. The module also supplies 12 Vdc to power the exhaust valve solenoid.

Replace the regulator / rectifier if the AC Voltage is above 14.8 V or when there is no 12 Vdc supply on the RED / GREEN circuit.

Circuit Specifications

PLUG / PIN / COLOR	FUNCTION
YELLOW	REGULATED 14.3 Vac POWER
RED/GREEN	EXHAUST VALVE SOLENOID POWER (Vdc)
BROWN	GROUND

DETONATION CONTROL (DET)

Overview

Detonation control is achieved by using a knock sensor mounted to the cylinder head and an ECU (CFI engines) or the CDI (600HO engines).

The knock sensor “listens” for combustion knock by converting internal engine noise in to an electrical signal. The ECU or CDI uses the signal to determine the level of knock within the combustion chambers after each combustion event.

When the ECU or CDI determines detonation has occurred, the CHECK ENGINE / DET LED lamp will blink on and off at 0.5 second intervals.

On CFI models, the ECU will retard timing and provide additional fuel to eliminate the detonation. On carbureted engines, the CDI will retard timing until the detonation stops. If the detonation continues past a pre-determined level, the ECU or CDI will initiate an engine mis-fire mode.

To prevent detonation, follow these steps:

- Always use premium fuel (91, 92, or 93 octane)
- On carbureted engines, follow the carburetor jetting guidelines
- Do not modify the engine or exhaust system with non-approved Polaris modifications
- Verify there is no water or foreign material in the fuel
- Verify there is no internal engine damage
- Verify the cooling system is working properly

NOTE: Install the knock sensor fastener clean and dry without applying thread locker or oils.

VARIABLE EXHAUST SYSTEM (VES)

Overview

The Polaris VES system uses exhaust valves (1 per cylinder) to control the exhaust port height. The valves are actuated by controlling cylinder pressure with a solenoid, bellows, and a series of hoses.

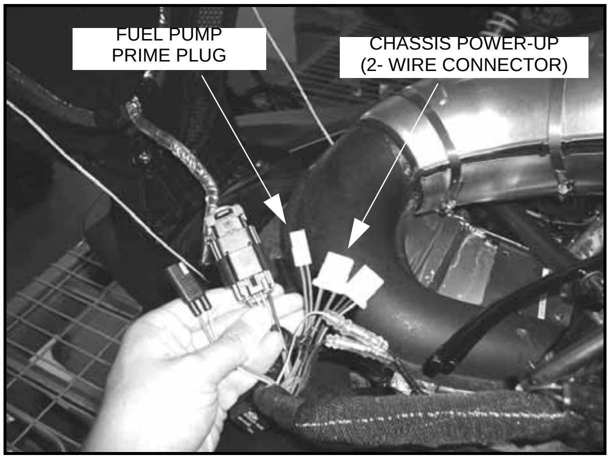
At idle speed and up to a pre-determined level, the solenoid is powered by the ECU or CDI. This action opens the solenoid’s internal valve and allows the cylinder pressure to vent into the atmosphere. During this time the valves are down.

To raise the valves, the ECU or CDI will cut power to the solenoid which will close the vent path to atmosphere. The cylinder pressure will then act upon each valve bellows which will raise each valve.

On CFI engines the timing at which the solenoid is turned off is determined by engine RPM, TPS position, and pipe temperature. On carbureted engines, the CDI will turn the solenoid off at 6700 RPM when the throttle flipper is at least 3/4 throttle or at 7200 RPM when the throttle flipper is at least 1/2 throttle.

NOTE: Solenoid Powered = Vent Path Open
Solenoid Off = Vent Path Closed

DIAGNOSTIC PLUGS



IQ Chassis Power Plug

IQ models (CFI and carbureted) feature a chassis power diagnostic plug. Connect the plug to the M-10 ACE / ECU-Chassis Power-Up cable, PN PA-46355 and a fully charged 12-volt battery. The plug consists of two wires (BRN and RED/WHT).

Once powered, all of the RED/WHT chassis power circuits will be powered with battery voltage. The circuits include:

- Head / Tail / Brake Lamps
- MFD (Multi Function Display)
- Accessory Power Plugs
- Hand / Thumb Warmers

IQ CFI Fuel Pump Prime Plug

IQ CFI models feature a fuel pump prime plug. Use the fuel pump prime plug to power-up the fuel pump when purging the fuel system of air or when testing fuel pump pressure.

The fuel pump prime plug consists of two wires (BRN and RED).

ELECTRONIC REVERSE (PERC)

Overview

Some models are equipped with Polaris electric reverse control (PERC). The operation of the electronic reverse system is achieved by automatically reversing the engine rotation with a push of a button. When in reverse you will have an indicator light that will flash, notifying you that the machine is in the reverse mode. The design of the clutches are matched to the specifications that will allow the backwards rotation of the engine to move the sled in reverse. To get back to forward is as easy as pushing the button again.

Operation

WARNING

Reverse operation, even at low speeds, may cause loss of control, resulting in serious injury or death. To avoid loss of control, always:
LOOK BEHIND BEFORE AND WHILE BACKING.
AVOID SHARP TURNS.
SHIFT TO OR FROM REVERSE ONLY WHEN STOPPED.
APPLY THROTLE SLOWLY.

CAUTION

To avoid personal injury and/or engine damage, do not operate the electric start or recoil while engine is running.

1. Ensure that the vehicle is stopped and the engine is warmed up and running at idle.

NOTE: ***The system will only engage in reverse if the engine is below 4000 RPM. If engine is above 4000 RPM the system can not be activated*.**

2. Ensure that the path behind you is clear.
3. Push and hold the yellow reverse button on the left hand control for 1 second and then release the button. The reverse light on the instrument panel will flash when engine is in reverse motion.

NOTE: ***The engine will automatically reduce RPM and it will reverse the rotation of the engine when the RPM is at the lowest RPM point*.**

4. Ensure that the path behind you is clear.
5. Slowly apply throttle until the sled starts to move in reverse, and carefully direct the sled in the direction that you want.

NOTE: ***Maximum RPM in reverse is 6000 RPM.***

NOTE: If the engine stops running or is shut off while in reverse. The engine will start in forward gear.

FORWARD OPERATION

1. If unit was operated in reverse, ensure that the path ahead is clear, and push an hold the reverse button for 1 second and then release the button. The engine will now automatically change direction form reverse to forward and the reverse light on the instrument panel will stop flashing.

NOTE: ***When servicing clutches, ensure that the vehicle is in forward gear. If not damage to the driven clutch may occur when removing the belt*.**

Altitude Setting

If your engine is carbureted, you can adjust the elevation setting of the Polaris electric reverse control (PERC). If your engine is a Cleanfire system, this is automatically done through the engine controller unit (ECU), and you do not need to do any setting.

At higher elevations over 6000 ft (1829m), the engine requires a different ignition RPM setting to improve the operation of the reverse system.

To set the altitude settings:

1. With the engine running, push and hold the reverse button for 5 - 6 seconds and then release the button.
2. The reverse light will flash rapidly on the instrument panel.
3. You have now set the PERC system to the higher elevation setting.
4. To go back to the low elevation setting repeat step 1. The reverse light will flash slowly indicating that the system is now in the lower elevation setting.

NOTE: ***The elevation setting will be set in the memory (engine running or not) until it is changed*.**

Important Notes

- Max RPM for shifting into reverse = 4000 RPM
- Max RPM for operating in reverse = 6000 RPM
- Engine must first reach 900 RPM at start up before the reverse system can be used. The system works between 900 and 4000 RPM.
- If the button is pushed above 4000 RPM the system is bypassed and nothing will happen.
- Flashing light on the instrument panel indicates that the system is in reverse. On carbureted units a slow flash indicates that the system is set for low elevation, and a fast flash indicates the system is set up for high elevation. Push and hold the reverse button for longer than 5 seconds to toggle back and forth from high and low elevation settings. On Cleanfire units this is automatically done through the engine controller unit (ECU).
- Elevation above 6000 ft (1829m) requires a different timing curve to eliminate a “kick-back” effect.
- If engine is shut off or dies in forward or reverse gear, the engine when started will automatically be in forward gear.
- When servicing clutches, ensure that the vehicle is in the forward gear.

NOTES

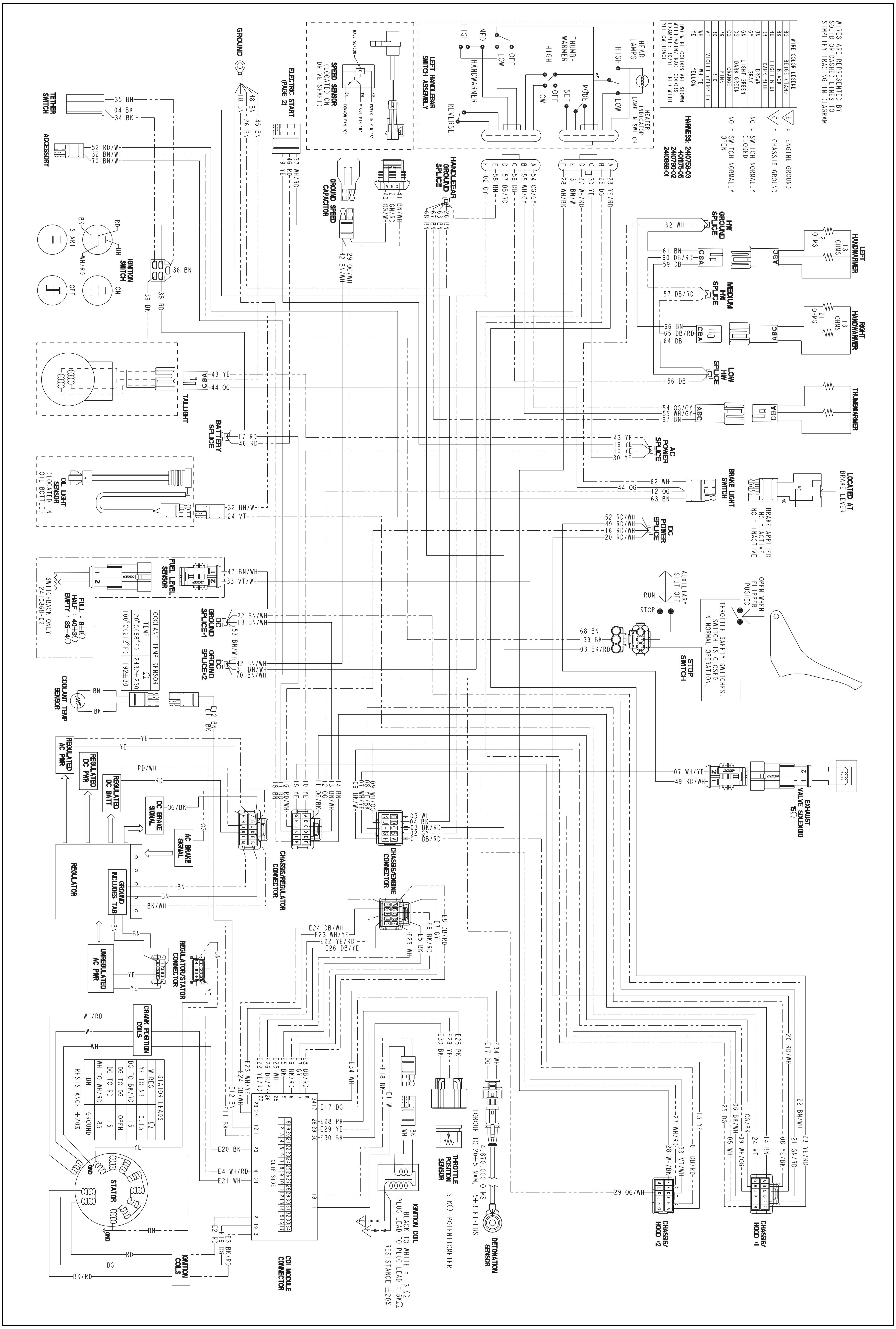
A

B

C

D

2007 600 HO Carbureted 1 of 2



2007 600 HO Carbureted 2 of 2

WIRE TERMINATION TABLE HARNESS PART NUMBER 2410729-03 & 2410868-01**

CCT NO	COLOR	GAUGE	FROM CONNECTOR	CAVITY	TO CONNECTOR	CAVITY	FUNCTION
01	BLU/RED	18	CDI MODULE	A	CHASSIS/HOOD #2	B	ENGINE TEMP
02	GRAY	18	CDI MODULE	B	LH CONTROL SIGNAL	F	REVERSE SIGNAL
03	BLACK/RED	18	CDI MODULE	C	STOP SWITCH	-	SOFT STOP
04	BLACK	18	CDI MODULE	D	TETHER	-	HARD STOP
05	WHITE	18	CDI MODULE	E	CHASSIS/HOOD #1	L	REVERSE LED
06	BLACK/WHITE	18	CDI MODULE	F	CHASSIS/HOOD #1	K	HOT LED
07	WHITE/YELLOW	18	CDI MODULE	G	EV SOLENOID	2	SOLENOID CONTROL
08	YELLOW/BLACK	18	CDI MODULE	H	CHASSIS/HOOD #1	B	TACHOMETER
09	WHITE/ORANGE	18	CDI MODULE	J	CHASSIS/HOOD #1	J	DETONATION LED
10	YELLOW	16	REGULATOR	A	AC POWER SPLICE	-	AC POWER
11	ORANGE/BLACK	20	REGULATOR	B	CHASSIS/HOOD #1	H	DC BRAKE SIGNAL
12	ORANGE	18	REGULATOR	C	BRAKE SWITCH	.180F	AC BRAKE SIGNAL
13	BROWN/WHITE	18	REGULATOR	D	DC GROUND SPLICE #1	-	DC GROUND
14	BROWN	16	REGULATOR	F	CHASSIS/HOOD #1	A	AC GROUND
15	YELLOW	16	REGULATOR	G	CHASSIS/HOOD #2	A	AC POWER
16	RED/WHITE	18	REGULATOR	J	DC POWER SPLICE	-	DC POWER
17	RED	16	BATTERY SPLICE	-	REGULATOR	K	BATTERY CHARGE
18	BROWN	16	REGULATOR	M	GROUND	1/4R	AC GROUND
19	YELLOW	16	ELECTRIC START	.180F	AC POWER SPLICE	-	AC POWER
20	RED/WHITE	18	DC POWER SPLICE	-	CHASSIS/HOOD #1	C	DC POWER
21	LT GREEN/RED	18	SPEED SENSOR	B	CHASSIS/HOOD #1	D	GROUND SPEED
22	BROWN/WHITE	18	DC GROUND SPLICE #1	-	CHASSIS/HOOD #1	E	DC GROUND
23	YELLOW/RED	16	LH CONTROL POWER	A	CHASSIS/HOOD #1	F	HIGH HEADLAMPS
24	VIOLET	18	OIL LEVEL	.180M	CHASSIS/HOOD #1	G	OIL LEVEL
25	GREEN	16	LH CONTROL POWER	B	CHASSIS/HOOD #1	M	LOW HEADLAMPS
26	BROWN	18	GROUND	1/4R	HANDLEBAR GROUND SPLICE	-	AC GROUND
27	WHITE/RED	20	LH CONTROL POWER	D	CHASSIS/HOOD #2	E	MODE SWITCH
28	WHITE/BLACK	20	LH CONTROL POWER	F	CHASSIS/HOOD #2	H	SET SWITCH
29	ORANGE/WHITE	20	CAPACITOR	.180F	CHASSIS/HOOD #2	K	SPEED SENSOR POWER
30	YELLOW	16	LH CONTROL POWER	C	AC POWER SPLICE	-	AC POWER
31	BROWN/WHITE	18	LH CONTROL POWER	E	DC GROUND SPLICE #2	-	DC GROUND
32	BROWN/WHITE	18	ACCESSORY	.180M	OIL LEVEL	.180F	DC GROUND
** 33	VIOLET/WHITE	20	FUEL LEVEL SENDER	A	CHASSIS/HOOD #2	D	FUEL SENDER
34	BLACK	18	TETHER	-	IGNITION SWITCH	-	HARD STOP
35	BROWN	18	TETHER	-	IGNITION SWITCH	-	CHASSIS GROUND
36	BROWN	18	GROUND	1/4R	IGNITION SWITCH	-	CHASSIS GROUND
37	WHITE/RED	20	ELECTRIC START	.180F	IGNITION SWITCH	-	START SOLENOID CONTROL
38	RED	18	BATTERY SPLICE	-	IGNITION SWITCH	-	BATTERY CHARGE
39	BLACK	18	STOP SWITCH	-	IGNITION SWITCH	-	HARD STOP
40	ORANGE/WHITE	20	CAPACITOR	.180F	SPEED SENSOR	A	SPEED SENSOR POWER
41	BROWN/WHITE	18	CAPACITOR	.180M	SPEED SENSOR	C	DC GROUND
42	BROWN/WHITE	18	CAPACITOR	.180M	DC GROUND SPLICE #2	-	DC GROUND
43	YELLOW	18	AC POWER SPLICE	-	TAILLIGHT	A	AC POWER
44	ORANGE	18	BRAKE SWITCH	.180F	TAILLIGHT	B	AC BRAKE SIGNAL
45	BROWN	18	GROUND	1/4R	TAILLIGHT	C	AC GROUND
46	RED	16	BATTERY SPLICE	-	ELECTRIC START	.180F	BATTERY CHARGE
** 47	BROWN/WHITE	20-	FUEL LEVEL SENDER	B	DC GROUND SPLICE #1	-	DC GROUND
48	BROWN	16	GROUND	1/4R	ELECTRIC START	.180M	AC GROUND
49	RED/WHITE	18	DC POWER SPLICE	-	EV SOLENOID	1	DC POWER
50	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-
52	RED/WHITE	18	ACCESSORY	.180F	DC POWER SPLICE	-	DC POWER
53	BROWN/WHITE	18	DC GROUND SPLICE #1	-	DC GROUND SPLICE #2	-	DC GROUND
54	ORANGE/GRAY	20	LH CONTROL SIGNAL	A	THUMBWARMER	A	LOW THUMBWARMER
55	WHITE/GRAY	20	LH CONTROL SIGNAL	B	THUMBWARMER	B	HIGH THUMBWARMER
56	BLUE	20	LH CONTROL SIGNAL	C	LOW HW SPLICE	-	HW LOW
57	BLUE/RED	20	LH CONTROL SIGNAL	D	MED HW SPLICE	-	HW MED HIGH
58	BROWN	20	LH CONTROL SIGNAL	E	HANDLEBAR GROUND SPLICE	-	AC GROUND
59	BLUE	20	LEFT HANDWARMER	A	LOW HW SPLICE	-	HW LOW
60	BLUE/RED	20	LEFT HANDWARMER	B	MED HW SPLICE	-	HW MED HIGH
61	BROWN	20	LEFT HANDWARMER	C	HW GROUND SPLICE	-	AC GROUND
62	WHITE	20	BRAKE SWITCH	.180F	HW GROUND SPLICE	-	AC GROUND
63	BROWN	18	BRAKE SWITCH	.180M	HANDLEBAR GROUND SPLICE	-	AC GROUND
64	BLUE	20	RIGHT HANDWARMER	A	LOW HW SPLICE	-	HW LOW
65	BLUE/RED	20	RIGHT HANDWARMER	B	MED HW SPLICE	-	HW MED HIGH
66	BROWN	20	RIGHT HANDWARMER	C	HW GROUND SPLICE	-	AC GROUND
67	BROWN	20	THUMBWARMER	C	HANDLEBAR GROUND SPLICE	-	AC GROUND
68	BROWN	20	STOP SWITCH	-	HANDLEBAR GROUND SPLICE	-	AC GROUND
69	-	-	-	-	-	-	-
70	BROWN/WHITE	18	ACCESSORY	.180M	DC GROUND SPLICE #2	-	DC GROUND

WIRE TERMINATION TABLE HARNESS PART NUMBER 4011175-05

CCT NO	COLOR	GAUGE	FROM CONNECTOR	TO CONNECTOR	FUNCTION
E1	WHITE	18	CDI MODULE	IGNITION COIL	IGNITION
E2	RED	18	CDI MODULE	EXCITER COIL	EXCITER COIL (+)
E3					
E4	WHITE/RED	18	CDI MODULE	CRANK SENSOR	PULSER COIL (+)
E5	BLK	18	CDI MODULE	CHASSIS/ENGINE	HARD STOP
E6	BLK/RED	18	CDI MODULE	CHASSIS/ENGINE	SOFT STOP
E7	GRY	18	CDI MODULE	CHASSIS/ENGINE	REVERSE SIGNAL
E8	BLU/RED	18	CDI MODULE	CHASSIS/ENGINE	WATER TEMP
E9					
E10					
E11	BLK	18	CDI MODULE	COOLANT SENSOR	WATER TEMP SIGNAL
E12	BRN	18	CDI MODULE	COOLANT SENSOR	WATER TEMP GND
E13					
E14					
E15					
E16					
E17	GRN	18	CDI MODULE	DET SENSOR	DET SENSOR GND
E18	BLK	18	CDI MODULE	IGNITION COIL	IGN COIL GND
E19	GRN	18	CDI MODULE	EXCITER COIL	EXCITER COIL (CENTER)
E20	BLK	18	CDI MODULE	CRANK SENSOR	STATOR GROUND
E21	WHITE	18	CDI MODULE	CRANK SENSOR	PULSER COIL (-)
E22	YELLOW/RED	18	CDI MODULE	CHASSIS/ENGINE	TACHOMETER
E23	WHITE/YELLOW	18	CDI MODULE	CHASSIS/ENGINE	EV SOLENOID GND
E24	BLU/WHITE	18	CDI MODULE	CHASSIS/ENGINE	HOT LED
E25	WHITE	18	CDI MODULE	CHASSIS/ENGINE	REVERSE LED
E26	BLU/YELLOW	18	CDI MODULE	CHASSIS/ENGINE	DET LED
E27					
E28	PINK	18	CDI MODULE	TPS SENSOR	TPS (5V)
E29	YELLOW	18	CDI MODULE	TPS SENSOR	TPS SIGNAL
E30	BLACK	18	CDI MODULE	TPS SENSOR	TPS GND
E31					
E32					
E33					
E34	GREEN	18	CDI MODULE	DET SENSOR	DET SIGNAL

WIRES ARE REPRESENTED BY SOLID OR DASHED LINES TO SIMPLIFY TRACING IN DIAGRAM

WIRE COLOR LEGEND	
BG	BEIGE (TAN)
BK	BLACK
BU	LIGHT BLUE
DB	DARK BLUE
BN	BROWN
GY	GRAY
GN	LIGHT GREEN
DG	DARK GREEN
OG	ORANGE
PK	PINK
RD	RED
VT	VIOLET (PURPLE)
WH	WHITE
YE	YELLOW

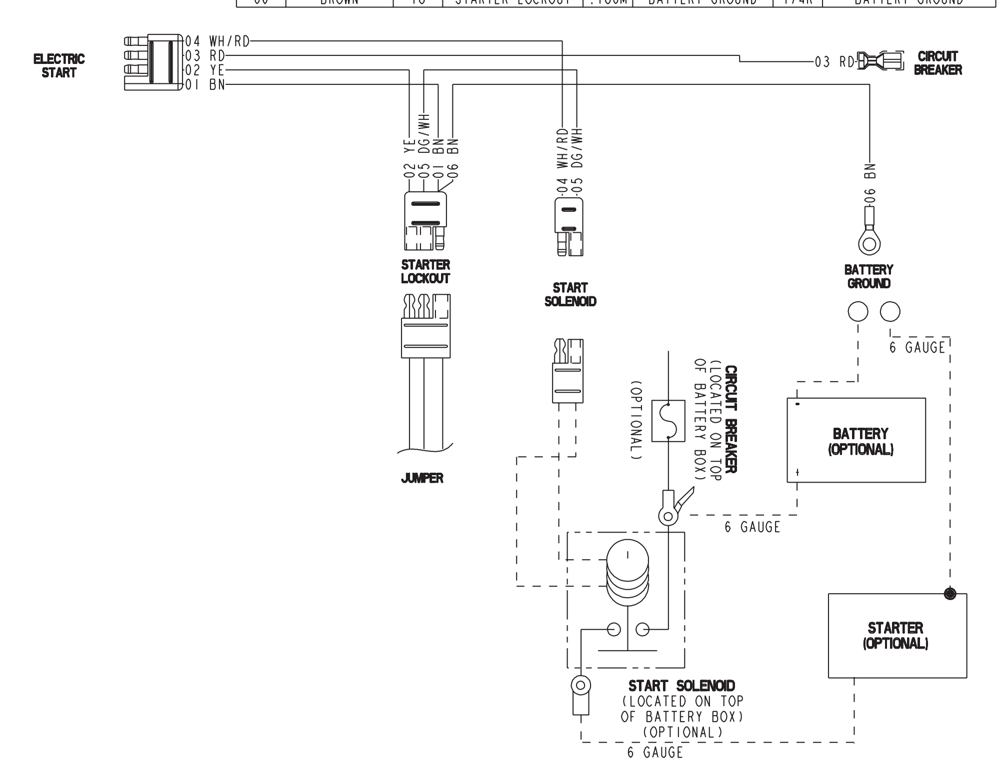
TWO WIRE COLORS ARE SHOWN WITH MAIN/TRACE COLORS. EXAMPLE: RD/YE = RED WITH YELLOW TRACE

**HARNESS 2410868-01 ONLY

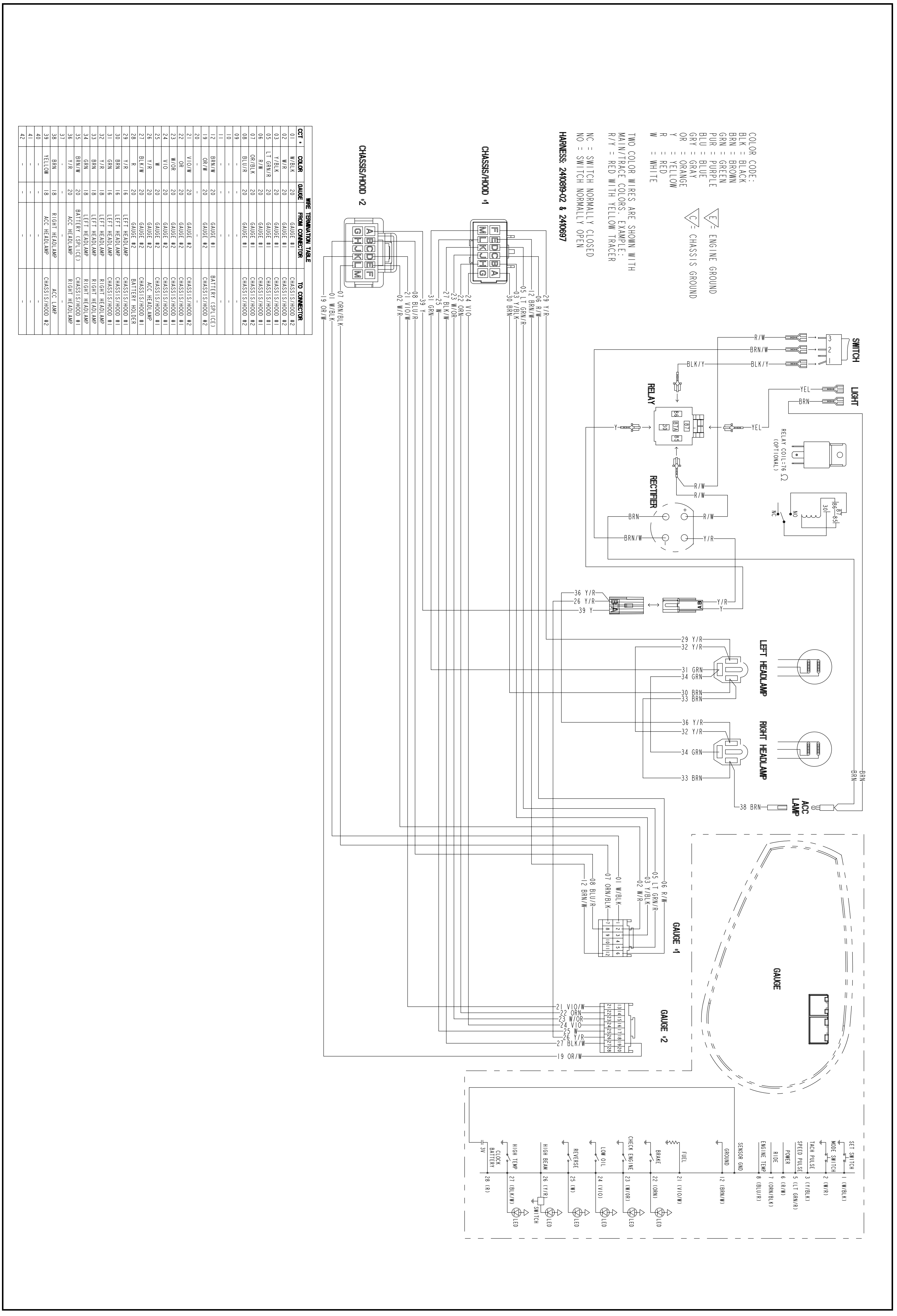
HARNESS NUMBER: 2410790-02

WIRE TERMINATION TABLE HARNESS PART NUMBER 2410790-02

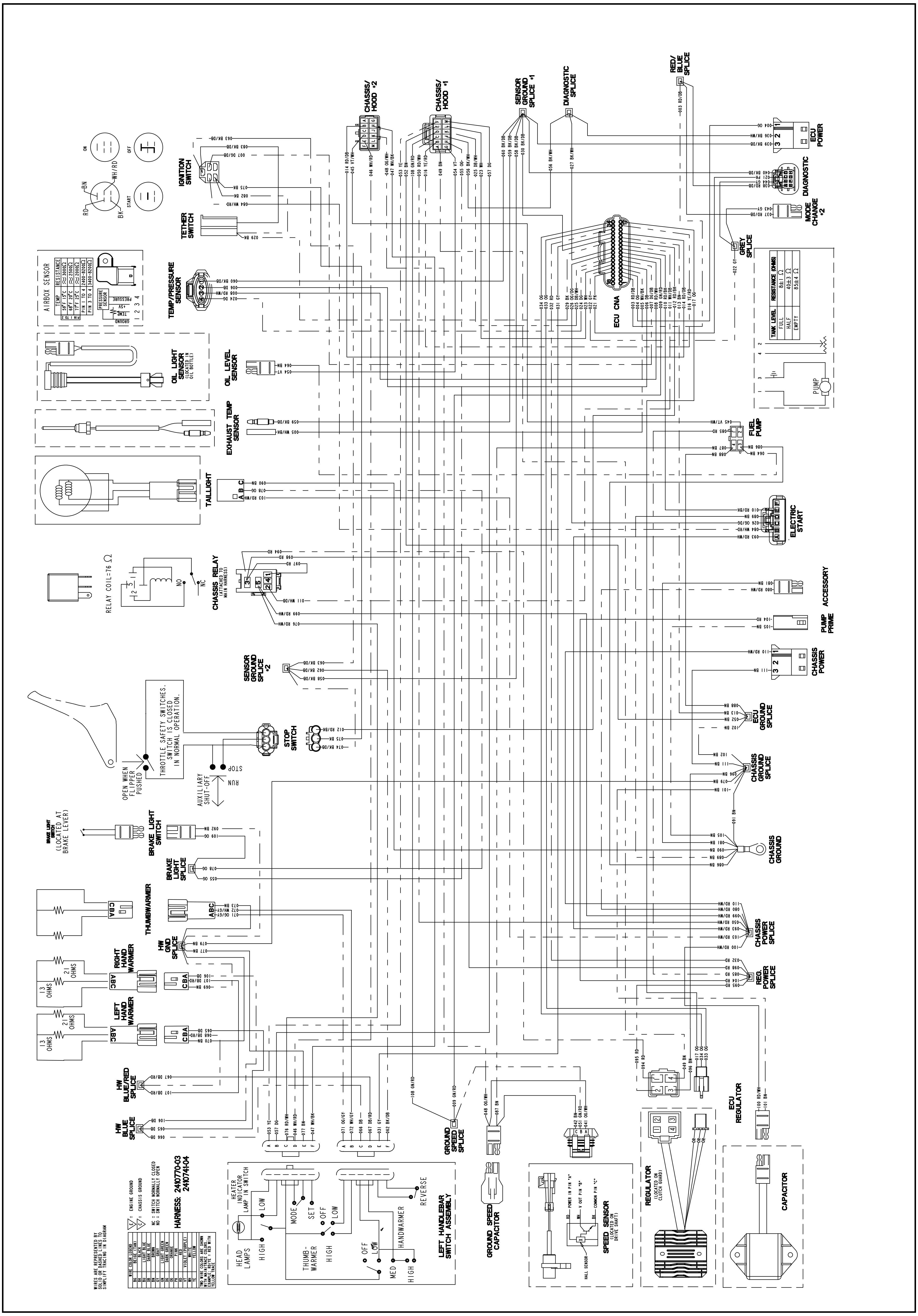
CCT #	COLOR	GAUGE	FROM CONNECTOR	CAVITY	TO CONNECTOR	CAVITY	FUNCTION
01	BROWN	18	ELECTRIC START	.180F	STARTER LOCKOUT	.180M	CHASSIS GROUND
02	YELLOW	16	ELECTRIC START	.180M	STARTER LOCKOUT	.180F	AC POWER
03	RED	18	ELECTRIC START	.180M	CIRCUIT BREAKER	.250F	BATTERY +
04	WHITE/RED	18	ELECTRIC START	.180M	START SOLENOID	.156M	STARTER SWITCH
05	GREEN/WHITE	18	STARTER LOCKOUT	.180F	START SOLENOID	.156F	LOCKOUT GROUND
06	BROWN	18	STARTER LOCKOUT	.180M	BATTERY GROUND	1/4R	BATTERY GROUND



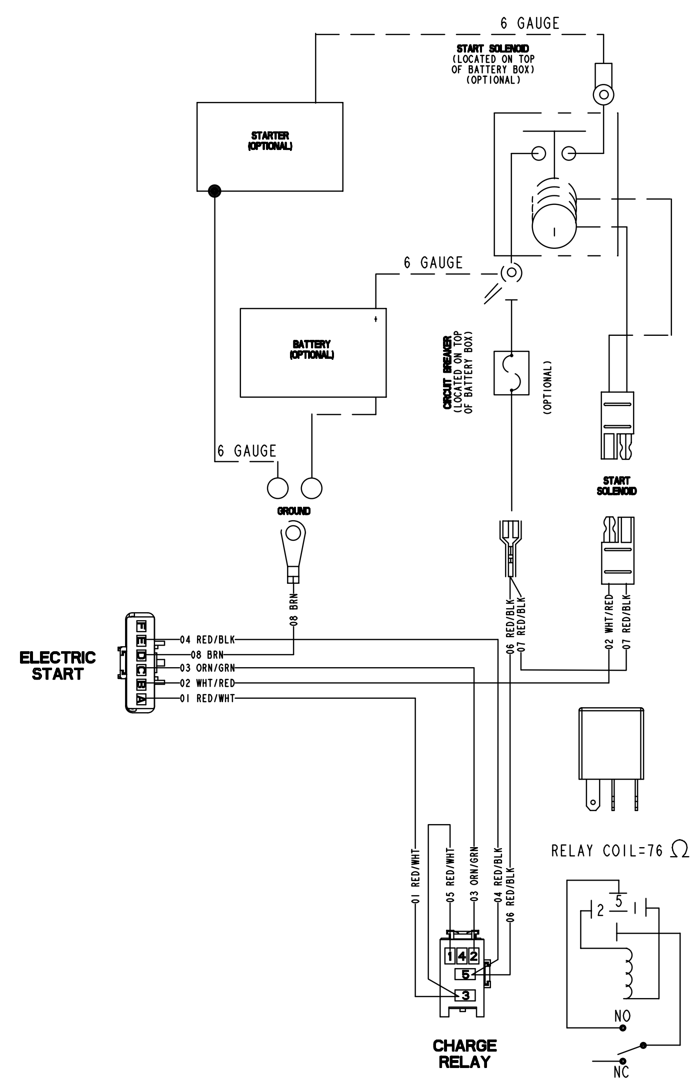
2007 600 HO Carbureted Hood Harness



2007 600 / 700 CFI Chassis Harness 1 of 2



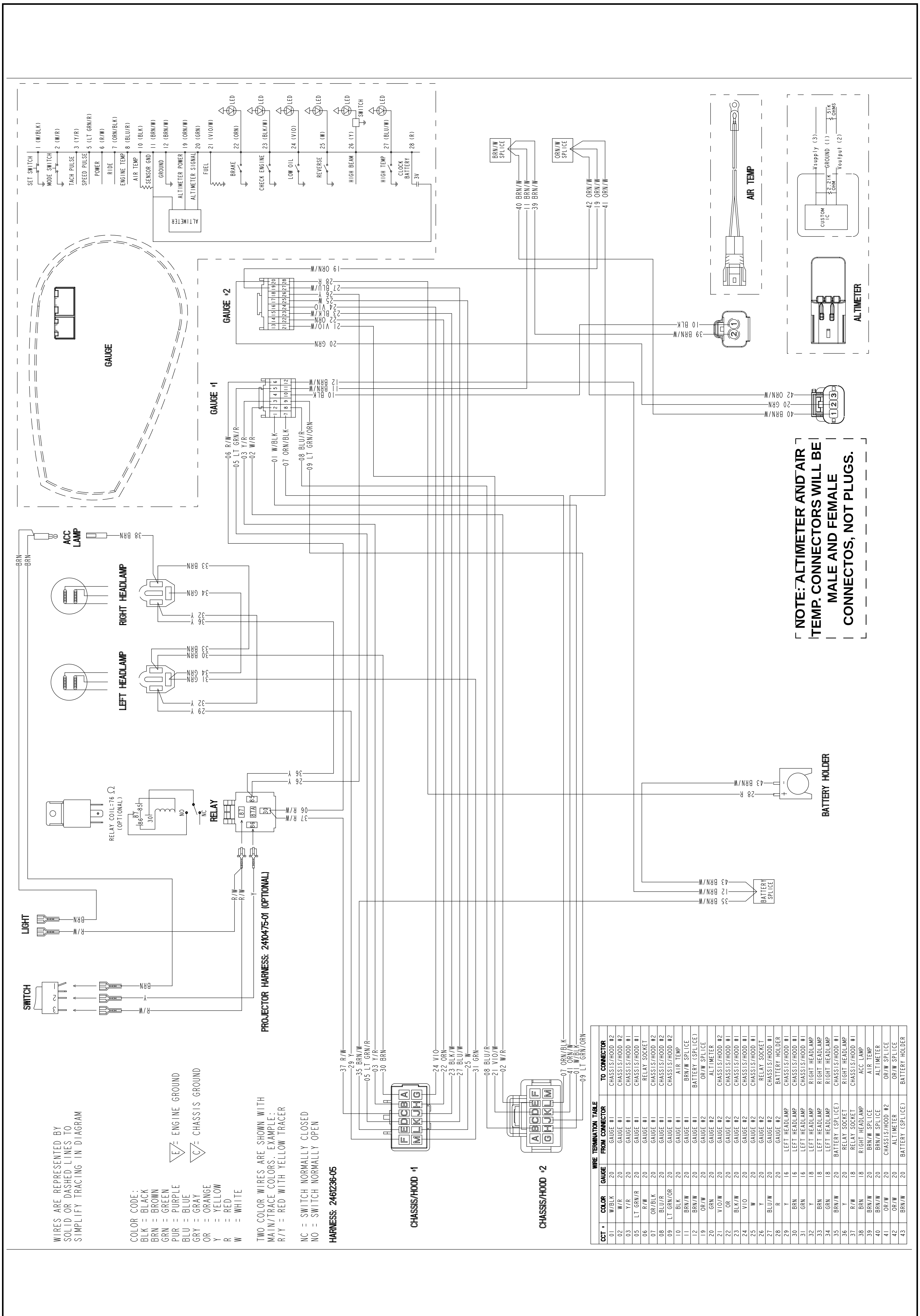
2007 600 / 700 CFI Chassis Harness 2 of 2



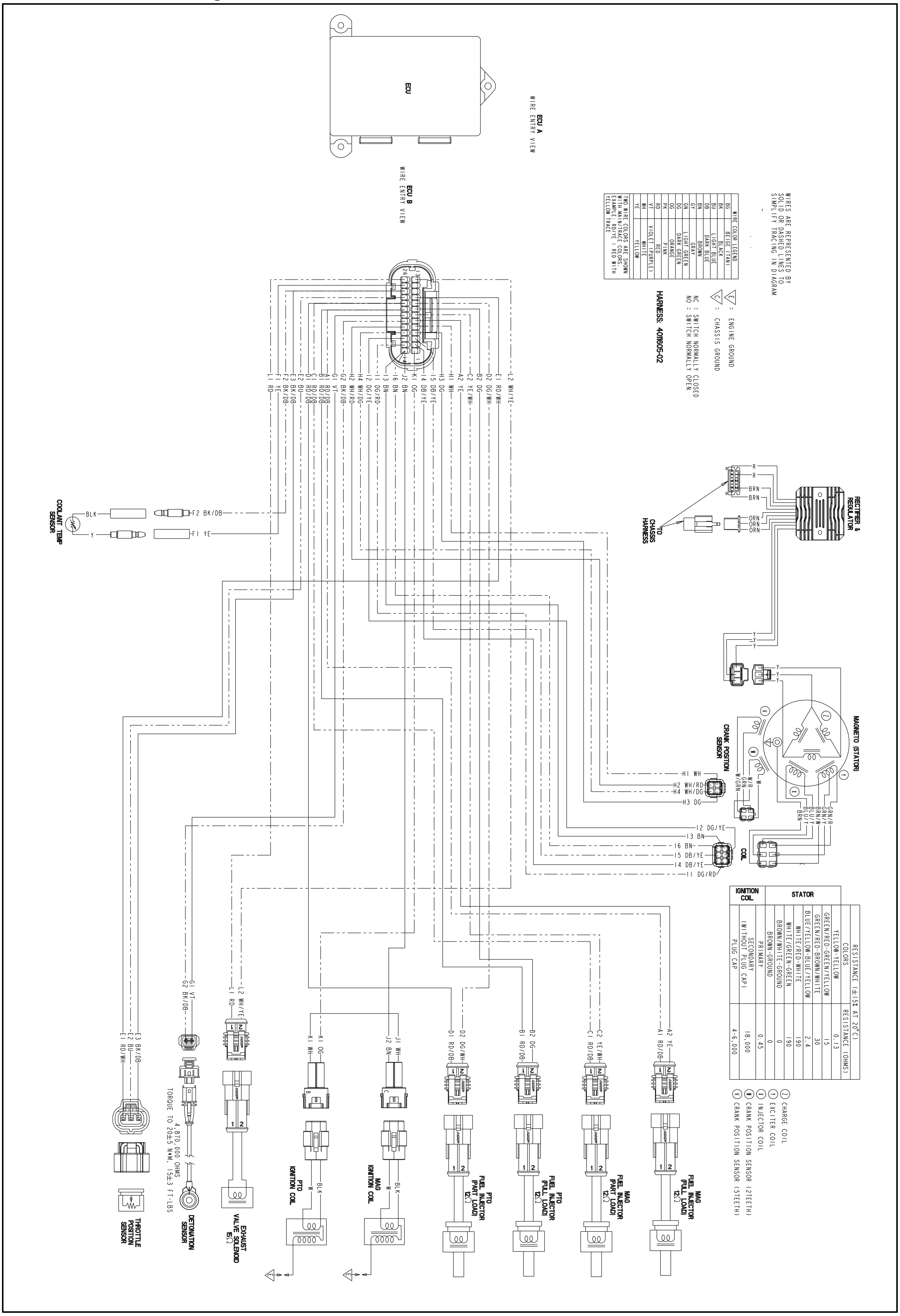
WIRE TERMINATION TABLE (ELECTRIC START)							
CCT #	COLOR	GAUGE	FROM CONNECTOR	CAVITY	TO CONNECTOR	CAVITY	FUNCTION
01	RED/WHITE	16	ELECTRIC START	A	CHARGE RELAY	3	CHASSIS POWER
02	WHITE/RED	20	ELECTRIC START	B	START SOLENOID	.156M	STARTER SWITCH
03	ORANGE/GREEN	20	ELECTRIC START	C	CHARGE RELAY	2	CHARGE RELAY CONTROL
04	RED/BLACK	20	ELECTRIC START	E	CHARGE RELAY	5	BATTERY +
05	RED/WHITE	20	CHARGE RELAY	1	CHARGE RELAY	3	CHASSIS POWER
06	RED/BLACK	16	CHARGE RELAY	5	CIRCUIT BREAKER	.250F	BATTERY +
07	RED/BLACK	20	CIRCUIT BREAKER	.250F	START SOLENOID	.156F	BATTERY +
08	BROWN	16	ELECTRIC START	D	BATTERY GROUND	1/4R	BATTERY GROUND

WIRE TERMINATION TABLE							
CCT #	COLOR	GAUGE	FROM CONNECTOR	CAVITY	TO CONNECTOR	CAVITY	FUNCTION
02	-	-	-	-	-	-	-
03	RED/BLUE	20	ECU CNA	3	RED/BLUE SPLICE	-	K LINE POWER
04	ORANGE	20TXL	ECU CNA	4	ECU POWER	1	EXTERNAL POWER
05	WHITE/BLACK	20TXL	ECU CNA	5	EXHAUST TEMP	.156F	EXHAUST TEMP SIGNAL
06	BLUE	20	ECU CNA	6	INTAKE AIR PRESSURE	2	AIR TEMP SIGNAL
07	GREEN/BLUE	20	ECU CNA	7	IGNITION SWITCH	-	STARTER LOCKOUT
08	RED/WHITE	20	ECU CNA	8	INTAKE AIR PRESSURE	3	5V POWER
09	LT GREEN/RED	20	ECU CNA	9	GROUND SPEED SENSOR SPLICE	-	GROUND SPEED
10	RED/BLACK	20	ECU CNA	10	ELECTRIC START	E	BATTERY +
11	WHITE/BLUE	20TXL	ECU CNA	11	CHASSIS RELAY	2	CHASSIS RELAY COIL
12	BLACK/RED	20	ECU CNA	12	STOP SWITCH	-	SOFT STOP
13	BROWN	20	ECU CNA	13	ECU GROUND SPLICE	-	ECU GROUND
14	BLUE/RED	20TXL	ECU CNA	14	CHASSIS/HOOD #2	B	WATER TEMP GAUGE
15	-	-	-	-	-	-	-
16	YELLOW/RED	20TXL	ECU CNA	16	CHASSIS/HOOD #1	B	TACHOMETER
17	ORANGE	20	ECU CNA	17	ECU REGULATOR	-	VOLTAGE BOOST
19	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-
21	PINK	20TXL	ECU CNA	21	DIAGNOSTIC	C	K LINE
22	GRAY	20	ECU CNA	22	GRAY SPLICE	-	MODE
23	WHITE	20TXL	ECU CNA	23	CHASSIS/HOOD #1	L	REVERSE LED
24	GREEN	20	ECU CNA	24	INTAKE AIR PRESSURE	4	PRESSURE SENSOR SIGNAL
25	BLUE/WHITE	20TXL	ECU CNA	25	CHASSIS/HOOD #1	K	HOT DET LED
26	ORANGE/GREEN	20	ECU CNA	26	ELECTRIC START	C	BATTERY RELAY COIL
27	BLACK/WHITE	20	ECU CNA	27	DIAGNOSTIC SPLICE	-	DIAGNOSTICS
29	BLACK	20	ECU CNA	29	TETHER	-	HARD STOP
30	BLACK/BLUE	20	ECU CNA	30	SENSOR GROUND SPLICE #1	-	SENSOR GROUND
31	GRAY	20	ECU CNA	31	LH CONTROL SIGNAL	E	REVERSE SIGNAL
32	RED	20	ECU CNA	32	REGULATOR POWER SPLICE	-	REGULATOR POWER
33	ORANGE	20	ECU CNA	33	ECU REGULATOR	-	VOLTAGE BOOST
34	ORANGE	20	ECU CNA	34	ECU REGULATOR	-	VOLTAGE BOOST
35	-	-	-	-	-	-	-
36	BLACK/WHITE	18TXL	DIAGNOSTIC SPLICE	-	ECU POWER	2	DIAGNOSTICS
37	RED/BLUE	18TXL	RED/BLUE SPLICE	-	MODE CHANGE #2	.156F	K LINE POWER
38	RED/BLUE	18TXL	RED/BLUE SPLICE	-	DIAGNOSTIC	A	K LINE POWER
39	BLACK/BLUE	18TXL	SENSOR GROUND SPLICE #1	-	ECU POWER	3	SENSOR GROUND
40	BLACK/BLUE	18TXL	SENSOR GROUND SPLICE #1	-	DIAGNOSTIC	D	SENSOR GROUND
41	ORANGE/WHITE	-	SPEED SENSOR	A	SPEED CAPACITOR	.180F	SPEED SENSOR POWER
42	BROWN	-	SPEED SENSOR	C	SPEED CAPACITOR	.180M	CHASSIS GROUND
43	GRAY	18TXL	GRAY SPLICE	-	MODE CHANGE #2	.156M	MODE
44	GRAY	18TXL	GRAY SPLICE	-	DIAGNOSTIC	B	MODE
45	VIOLET/WHITE	20TXL	CHASSIS/HOOD #2	D	FUEL PUMP	2	FUEL LEVEL
46	WHITE/RED	20TXL	CHASSIS/HOOD #2	E	LH CONTROL POWER	D	MODE SWITCH
47	WHITE/BLACK	20TXL	CHASSIS/HOOD #2	H	LH CONTROL POWER	F	SET SWITCH
48	ORANGE/WHITE	20TXL	CHASSIS/HOOD #2	K	SPEED CAPACITOR	.180F	SPEED SENSOR POWER
49	BROWN	16TXL	CHASSIS/HOOD #1	A	REGULATOR	4	CHASSIS GROUND
50	RED/WHITE	18TXL	CHASSIS/HOOD #1	C	CHASSIS POWER SPLICE	-	CHASSIS POWER
51	LT GREEN/RED	18	GROUND SPEED SENSOR SPLICE	-	SPEED SENSOR	B	GROUND SPEED
52	BROWN	18TXL	CHASSIS/HOOD #1	E	ECU GROUND SPLICE	-	ECU GROUND
53	YELLOW	16TXL	CHASSIS/HOOD #1	F	LH CONTROL POWER	A	HIGH BEAM
54	VIOLET	20TXL	CHASSIS/HOOD #1	G	OIL SENSOR	.180M	LOW OIL LED
55	ORANGE	20TXL	CHASSIS/HOOD #1	H	BRAKE SWITCH SPLICE	-	BRAKE LIGHT
56	BLACK/WHITE	18TXL	CHASSIS/HOOD #1	J	DIAGNOSTIC SPLICE	-	DIAGNOSTICS
57	GREEN	16TXL	CHASSIS/HOOD #1	M	LH CONTROL POWER	B	LOW BEAM
58	BLACK/BLUE	18	SENSOR GROUND SPLICE #2	-	SENSOR GROUND SPLICE #1	-	SENSOR GROUND
59	BLACK/BLUE	18TXL	SENSOR GROUND SPLICE #1	-	EXHAUST TEMP	.156M	SENSOR GROUND
60	BLACK/BLUE	18	SENSOR GROUND SPLICE #1	-	INTAKE AIR PRESSURE	1	SENSOR GROUND
61	-	-	-	-	-	-	-
62	BLACK/BLUE	20	SENSOR GROUND SPLICE #2	-	LH CONTROL SIGNAL	F	SENSOR GROUND
63	BLACK/BLUE	18	SENSOR GROUND SPLICE #2	-	IGNITION SWITCH	-	SENSOR GROUND
64	BROWN	20	FUEL PUMP	3	OIL SENSOR	.180F	CHASSIS GROUND
65	BLUE	20	LEFT HANDWARMER	A	BLUE SPLICE	-	HANDWARMER LOW
66	BLUE	20	LH CONTROL SIGNAL	C	BLUE SPLICE	-	HANDWARMER LOW
67	BLUE/RED	20	LH CONTROL SIGNAL	D	BLUE/RED SPLICE	-	HANDWARMER HI
68	BLUE/RED	20	LEFT HANDWARMER	B	BLUE/RED SPLICE	-	HANDWARMER HI
69	BROWN	18	RIGHT HANDWARMER	C	HANDLEBAR GROUND SPLICE	-	CHASSIS GROUND
70	BROWN	18	LEFT HANDWARMER	C	HANDLEBAR GROUND SPLICE	-	CHASSIS GROUND
71	ORANGE/GRAY	20	LH CONTROL SIGNAL	A	THUMBWARMER	A	THUMBWARMER LOW
72	WHITE/GRAY	20	LH CONTROL SIGNAL	B	THUMBWARMER	B	THUMBWARMER HI
73	BROWN	18	HANDLEBAR GROUND SPLICE	-	THUMBWARMER	C	CHASSIS GROUND
74	BLACK/BLUE	18	STOP SWITCH	-	SENSOR GROUND SPLICE #2	-	SENSOR GROUND
75	BLACK	20	STOP SWITCH	-	IGNITION SWITCH	-	HARD STOP
76	RED/WHITE	16TXL	CHASSIS RELAY	5	LH CONTROL POWER	C	CHASSIS POWER
77	BROWN	20	HANDLEBAR GROUND SPLICE	-	LH CONTROL POWER	E	CHASSIS GROUND
78	ORANGE	18	BRAKE SWITCH SPLICE	-	TAILLIGHT	B	BRAKE LIGHT
79	BROWN	18	CHASSIS GROUND SPLICE	-	HANDLEBAR GROUND SPLICE	-	CHASSIS GROUND
80	RED/WHITE	16	CHASSIS POWER SPLICE	-	ACCESSORY POWER	.180F	CHASSIS POWER
81	BROWN	16	CHASSIS GROUND	1/4R	ACCESSORY POWER	.180M	CHASSIS GROUND
82	BLACK	20	IGNITION SWITCH	-	TETHER	-	STARTER SOLENOID GROUND
83	BLACK/BLUE	18	IGNITION SWITCH	-	TETHER	-	CHASSIS GROUND
84	WHITE/RED	20	IGNITION SWITCH	-	ELECTRIC START	B	HARD STOP
85	RED	18	FUEL PUMP	1	REGULATOR POWER SPLICE	-	REGULATOR POWER
86	BROWN	18	FUEL PUMP	3	CHASSIS GROUND	1/4R	CHASSIS GROUND
87	BROWN	20	FUEL PUMP	4	SPEED CAPACITOR	.180M	CHASSIS GROUND
88	BROWN	20	FUEL PUMP	4	ECU GROUND SPLICE	-	ECU GROUND
89	BROWN	16	CHASSIS GROUND	1/4R	ELECTRIC START	D	CHASSIS GROUND
90	BROWN	18	CHASSIS GROUND	1/4R	TAILLIGHT	C	CHASSIS GROUND
91	BROWN	16	CHASSIS GROUND	1/4R	CHASSIS GROUND SPLICE	-	CHASSIS GROUND
92	BROWN	18	BRAKE SWITCH	.180F	HANDLEBAR GROUND SPLICE	-	CHASSIS GROUND
93	RED/WHITE	16	ELECTRIC START	A	CHASSIS POWER SPLICE	-	CHASSIS POWER
94	RED	16TXL	REGULATOR	1	CHASSIS RELAY	3	REGULATOR POWER
95	RED	16	REGULATOR	2	REGULATOR POWER SPLICE	-	REGULATOR POWER
96	BROWN	16	REGULATOR	3	CHASSIS GROUND SPLICE	-	CHASSIS GROUND
97	RED	20TXL	CHASSIS RELAY	1	CHASSIS RELAY	3	CHASSIS POWER
98	RED	16TXL	CHASSIS RELAY	3	REGULATOR POWER SPLICE	-	REGULATOR POWER
99	RED/WHITE	16TXL	CHASSIS RELAY	5	CHASSIS POWER SPLICE	-	CHASSIS POWER
100	RED/WHITE	16	CAPACITOR	.156F	CHASSIS POWER SPLICE	-	CHASSIS POWER
101	BROWN	16	CAPACITOR	.156M	CHASSIS GROUND SPLICE	-	CHASSIS GROUND
102	BROWN	18	CHASSIS GROUND SPLICE	-	ECU GROUND SPLICE	-	ECU GROUND
103	RED/WHITE	18	CHASSIS POWER SPLICE	-	TAILLIGHT	A	CHASSIS POWER
104	RED	18TXL	PUMP PRIME	1	REGULATOR POWER SPLICE	-	REGULATOR POWER
105	BROWN	18TXL	PUMP PRIME	2	CHASSIS GROUND	1/4R	CHASSIS GROUND
106	BLUE	20	RIGHT HANDWARMER	A	BLUE SPLICE	-	HANDWARMER LOW
107	BLUE/RED	20	RIGHT HANDWARMER	B	BLUE/RED SPLICE	-	HANDWARMER HI
108	LT GREEN/RED	18TXL	CHASSIS/HOOD #1	D	GROUND SPEED SENSOR SPLICE	-	GROUND SPEED
109	ORANGE	18	BRAKE SWITCH	.180F	BRAKE SWITCH SPLICE	-	BRAKE LIGHT
110	RED/WHITE	16TXL	CHASSIS POWER	1	CHASSIS POWER SPLICE	-	CHASSIS POWER
111	BROWN	16TXL	CHASSIS POWER	3	CHASSIS GROUND SPLICE	-	CHASSIS GROUND

2007 600 / 700 CFI Hood Harness



2007 600 / 700 CFI Engine Harness



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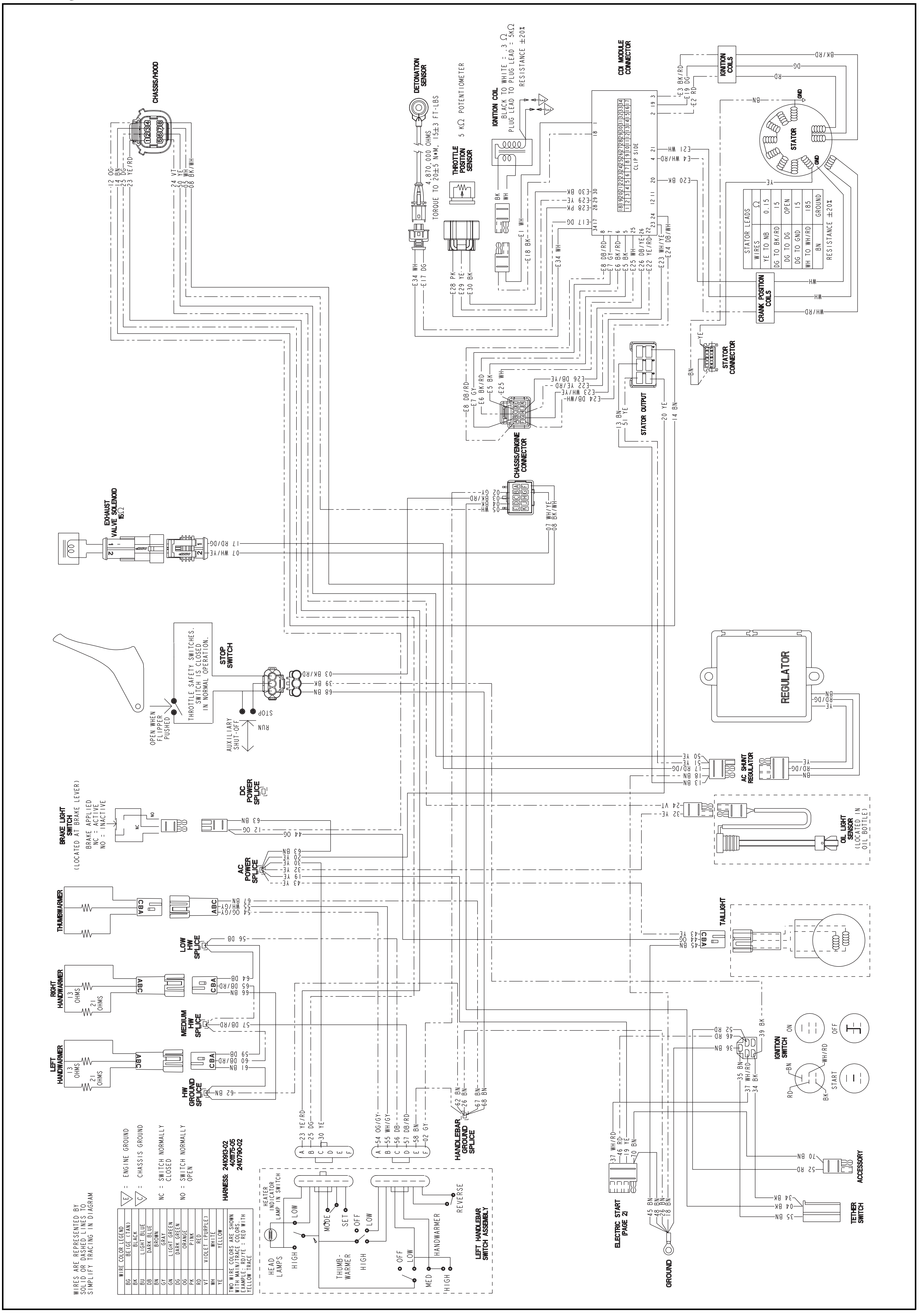

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WIRE TERMINATION TABLE

CCT NO	COLOR	GAUGE	FROM CONNECTOR	CAVITY	TO CONNECTOR	CAVITY	FUNCTION
01	-	-	-	-	-	-	-
02	GRAY	18	CDI MODULE	B	LH CONTROL SIGNAL	F	REVERSE SIGNAL
03	BLACK/RED	18	CDI MODULE	C	STOP SWITCH	-	SOFT STOP
04	BLACK	18	CDI MODULE	D	TETHER	-	HARD STOP
05	WHITE	18	CDI MODULE	E	CHASSIS/HOOD	7	REVERSE LED
06	-	-	-	-	-	-	-
07	WHITE/YELLOW	18	CDI MODULE	G	EV SOLENOID	2	SOLENOID CONTROL
08	BLACK/WHITE	18	CDI MODULE	F	CHASSIS/HOOD	8	HOT LAMP
09	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-
12	ORANGE	18	CHASSIS/HOOD	4	BRAKE SWITCH	.180F	AC BRAKE SIGNAL
13	BROWN	18	AC SHUNT REGULATOR	.180M	STATOR OUTPUT	2	DC GROUND
14	BROWN	16	STATOR OUTPUT	4	CHASSIS/HOOD	3	AC GROUND
15	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-
17	RED/DK GREEN	18	AC SHUNT REGULATOR	.180M	EV SOLENOID	1	BATTERY CHARGE
18	BROWN	16	AC SHUNT REGULATOR	.180M	GROUND	1/4R	AC GROUND
19	YELLOW	16	ELECTRIC START	.180F	AC POWER SPLICE	-	AC POWER
20	YELLOW	16	AC POWER SPLICE	-	STATOR OUTPUT	6	AC POWER
21	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-
23	YELLOW/RED	16	LH CONTROL POWER	A	CHASSIS/HOOD	1	HIGH HEADLAMPS
24	VIOLET	18	OIL LEVEL	.180M	CHASSIS/HOOD	5	OIL LEVEL
25	DK GREEN	16	LH CONTROL POWER	B	CHASSIS/HOOD	2	LOW HEADLAMPS
26	BROWN	18	GROUND	1/4R	HANDLEBAR GROUND SPLICE	-	AC GROUND
27	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-
30	YELLOW	16	LH CONTROL POWER	C	AC POWER SPLICE	-	AC POWER
31	-	-	-	-	-	-	-
32	YELLOW	18	AC POWER SPLICE	-	OIL LEVEL	.180F	AC POWER
33	-	-	-	-	-	-	-
34	BLACK	18	TETHER	-	IGNITION SWITCH	-	HARD STOP
35	BROWN	18	TETHER	-	IGNITION SWITCH	-	CHASSIS GROUND
36	BROWN	18	GROUND	1/4R	IGNITION SWITCH	-	CHASSIS GROUND
37	WHITE/RED	20	ELECTRIC START	.180F	IGNITION SWITCH	-	START SOLENOID CONTROL
38	-	-	-	-	-	-	-
39	BLACK	18	STOP SWITCH	-	IGNITION SWITCH	-	HARD STOP
40	-	-	-	-	-	-	-
41	-	-	-	-	-	-	-
42	-	-	-	-	-	-	-
43	YELLOW	18	AC POWER SPLICE	-	TAILLIGHT	C	AC POWER
44	ORANGE	18	BRAKE SWITCH	.180F	TAILLIGHT	B	AC BRAKE SIGNAL
45	BROWN	18	GROUND	1/4R	TAILLIGHT	A	AC GROUND
46	RED	16	IGNITION SWITCH	-	ELECTRIC START	.180F	BATTERY CHARGE
47	-	-	-	-	-	-	-
48	BROWN	16	GROUND	1/4R	ELECTRIC START	.180M	AC GROUND
49	-	-	-	-	-	-	-
50	YELLOW	18	CHASSIS/HOOD	6	AC SHUNT REGULATOR	.180F	-
51	YELLOW	18	STATOR OUTPUT	3	AC SHUNT REGULATOR	.180F	-
52	RED	18	ACCESSORY	.180F	IGNITION SWITCH	-	DC POWER
53	-	-	-	-	-	-	-
54	ORANGE/GRAY	20	LH CONTROL SIGNAL	A	THUMBWARMER	A	LOW THUMBWARMER
55	WHITE/GRAY	20	LH CONTROL SIGNAL	B	THUMBWARMER	B	HIGH THUMBWARMER
56	DK BLUE	20	LH CONTROL SIGNAL	C	LOW HW SPLICE	-	HW LOW
57	DK BLUE/RED	20	LH CONTROL SIGNAL	D	MED HW SPLICE	-	HW MED HIGH
58	BROWN	20	LH CONTROL SIGNAL	E	HANDLEBAR GROUND SPLICE	-	AC GROUND
59	DK BLUE	20	LEFT HANDWARMER	A	LOW HW SPLICE	-	HW LOW
60	DK BLUE/RED	20	LEFT HANDWARMER	B	MED HW SPLICE	-	HW MED HIGH
61	BROWN	20	LEFT HANDWARMER	C	HW GROUND SPLICE	-	AC GROUND
62	BROWN	20	HANDLEBAR GROUND SPLICE	-	HW GROUND SPLICE	-	AC GROUND
63	YELLOW	18	BRAKE SWITCH	.180F	AC POWER SPLICE	-	AC POWER
64	DK BLUE	20	RIGHT HANDWARMER	A	LOW HW SPLICE	-	HW LOW
65	DK BLUE/RED	20	RIGHT HANDWARMER	B	MED HW SPLICE	-	HW MED HIGH
66	BROWN	20	RIGHT HANDWARMER	C	HW GROUND SPLICE	-	AC GROUND
67	BROWN	20	THUMBWARMER	C	HANDLEBAR GROUND SPLICE	-	AC GROUND
68	BROWN	20	STOP SWITCH	-	HANDLEBAR GROUND SPLICE	-	AC GROUND
69	-	-	-	-	-	-	-
70	BROWN	18	ACCESSORY	.180M	ELECTRIC START	.180M	DC GROUND

WIRE TERMINATION TABLE HARNESS PART NUMBER 4011175-05

CCT NO	COLOR	GAUGE	FROM CONNECTOR	TO CONNECTOR	FUNCTION
E1	WHITE	18	CDI MODULE	IGNITION COIL	IGNITION
E2	RED	18	CDI MODULE	EXCITER COIL	EXCITER COIL (+)
E3					
E4	WHITE/RED	18	CDI MODULE	CRANK SENSOR	PULSER COIL (+)
E5	BLK	18	CDI MODULE	CHASSIS/ENGINE	HARD STOP
E6	BLK/RED	18	CDI MODULE	CHASSIS/ENGINE	SOFT STOP
E7	GRY	18	CDI MODULE	CHASSIS/ENGINE	REVERSE SIGNAL
E8	BLU/RED	18	CDI MODULE	CHASSIS/ENGINE	WATER TEMP
E9					
E10					
E11	BLK	18	CDI MODULE	COOLANT SENSOR	WATER TEMP SIGNAL
E12	BRN	18	CDI MODULE	COOLANT SENSOR	WATER TEMP GND
E13					
E14					
E15					
E16					
E17	GRN	18	CDI MODULE	DET SENSOR	DET SENSOR GND
E18	BLK	18	CDI MODULE	IGNITION COIL	IGN COIL GND
E19	GRN	18	CDI MODULE	EXCITER COIL	EXCITER COIL (CENTER)
E20	BLK	18	CDI MODULE	CRANK SENSOR	STATOR GROUND
E21	WHITE	18	CDI MODULE	CRANK SENSOR	PULSER COIL (-)
E22	YELLOW/RED	18	CDI MODULE	CHASSIS/ENGINE	TACHOMETER
E23	WHITE/YELLOW	18	CDI MODULE	CHASSIS/ENGINE	EV SOLENOID GND
E24	BLU/WHITE	18	CDI MODULE	CHASSIS/ENGINE	HOT LED
E25	WHITE	18	CDI MODULE	CHASSIS/ENGINE	REVERSE LED
E26	BLU/YELLOW	18	CDI MODULE	CHASSIS/ENGINE	DET LED
E27					
E28	PINK	18	CDI MODULE	TPS SENSOR	TPS (5V)
E29	YELLOW	18	CDI MODULE	TPS SENSOR	TPS SIGNAL
E30	BLACK	18	CDI MODULE	TPS SENSOR	TPS GND
E31					
E32					
E33					
E34	GREEN	18	CDI MODULE	DET SENSOR	DET SIGNAL

WIRES ARE REPRESENTED BY
SOLID OR DASHED LINES TO
SIMPLIFY TRACING IN DIAGRAM

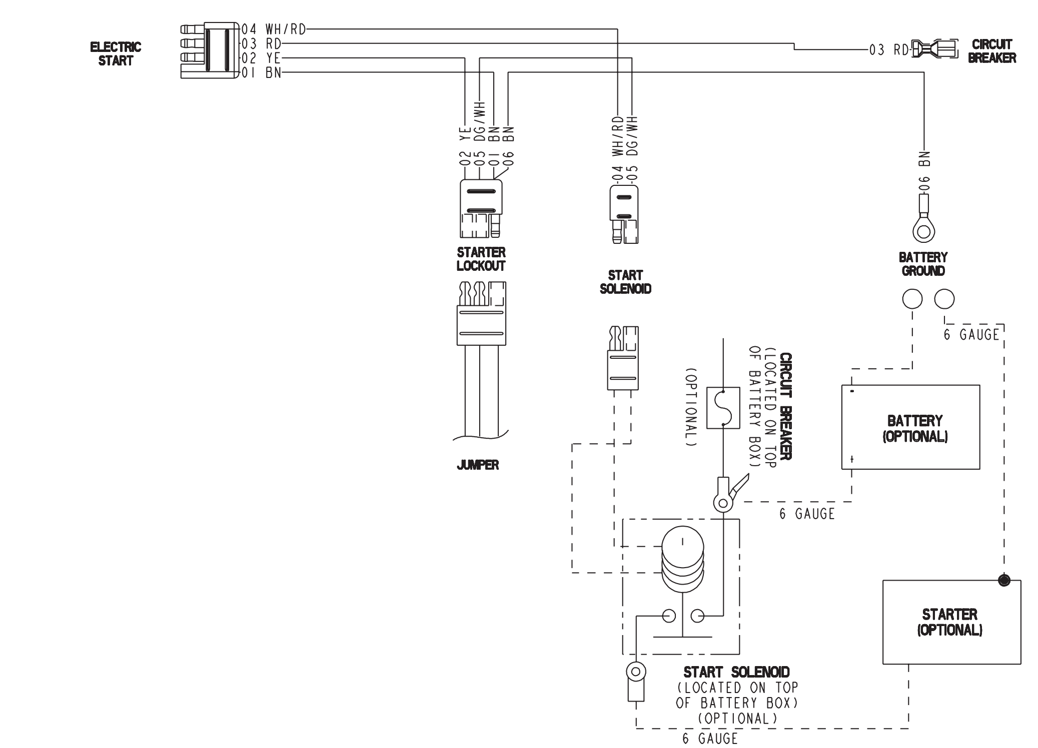
WIRE COLOR LEGEND	
BG	BEIGE (TAN)
BK	BLACK
BU	LIGHT BLUE
DB	DARK BLUE
BN	BROWN
GY	GRAY
GN	LIGHT GREEN
DG	DARK GREEN
OG	ORANGE
PK	PINK
RD	RED
VT	VIOLET (PURPLE)
WH	WHITE
YE	YELLOW

TWO WIRE COLORS ARE SHOWN WITH MAIN/TRACE COLORS. EXAMPLE: RD/YE = RED WITH YELLOW TRACE

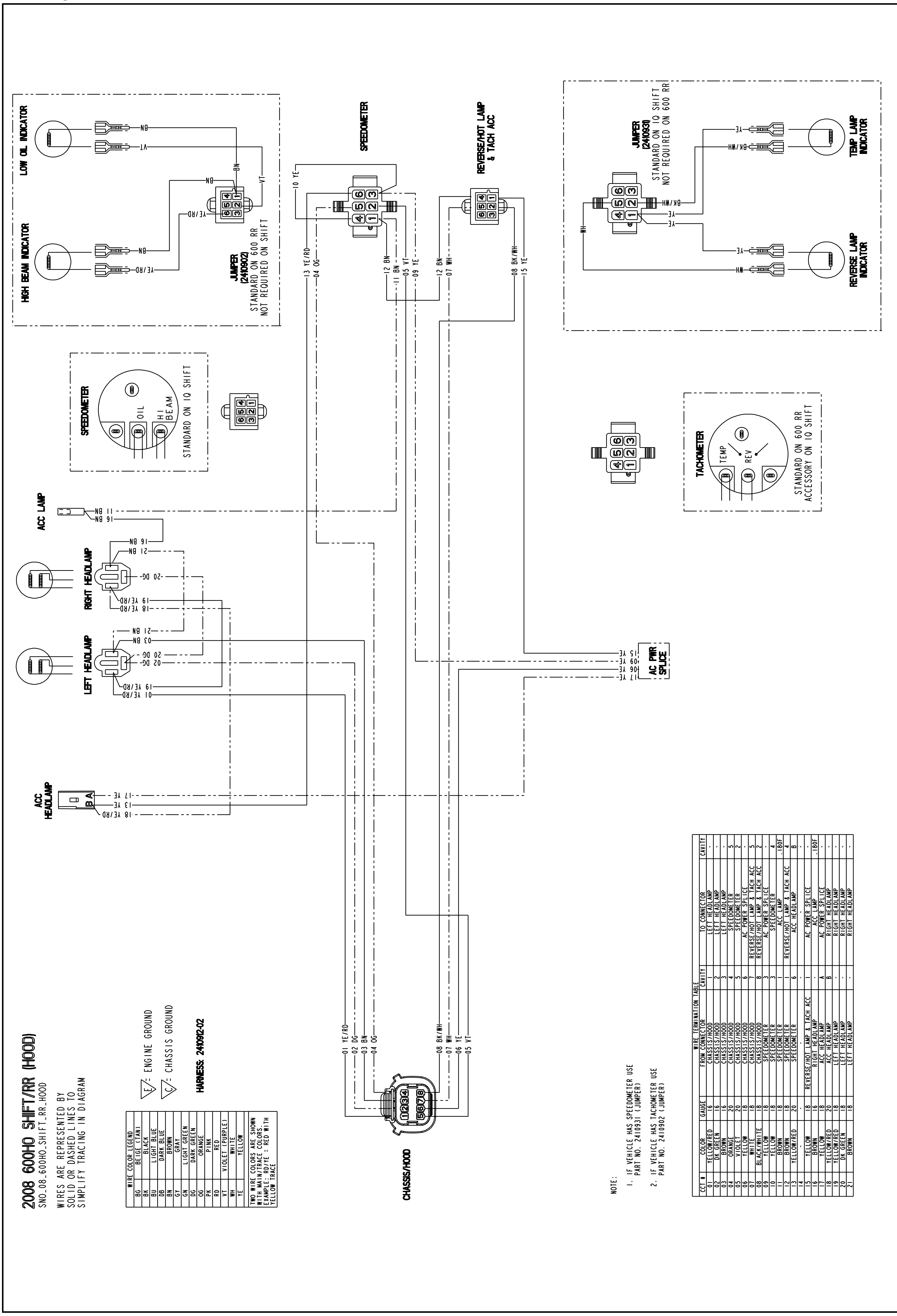
HARNESS NUMBER: 2410790-02

WIRE TERMINATION TABLE HARNESS PART NUMBER 2410790-02

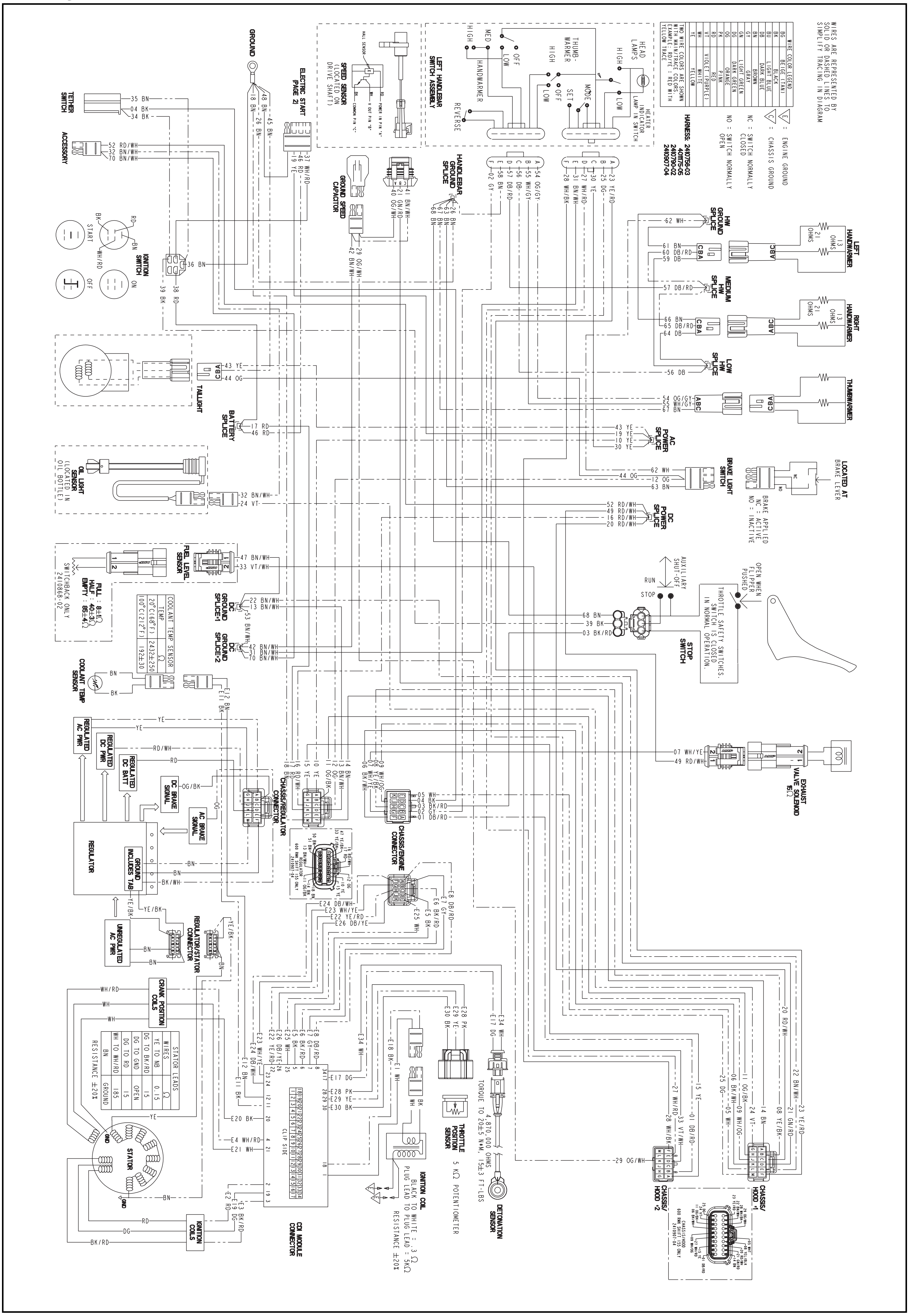
CCT #	COLOR	GAUGE	FROM CONNECTOR	CAVITY	TO CONNECTOR	CAVITY	FUNCTION
01	BROWN	18	ELECTRIC START	.180F	STARTER LOCKOUT	.180M	CHASSIS GROUND
02	YELLOW	16	ELECTRIC START	.180M	STARTER LOCKOUT	.180F	AC POWER
03	RED	18	ELECTRIC START	.180M	CIRCUIT BREAKER	.250F	BATTERY +
04	WHITE/RED	18	ELECTRIC START	.180M	START SOLENOID	.156M	STARTER SWITCH
05	GREEN/WHITE	18	STARTER LOCKOUT	.180F	START SOLENOID	.156F	LOCKOUT GROUND
06	BROWN	18	STARTER LOCKOUT	.180M	BATTERY GROUND	1/4R	BATTERY GROUND



2008 IQ Shift Hood Harness



2008 IQ Shift RMK 1 of 2



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WIRE TERMINATION TABLE HARNESS PART NUMBER 2410729-03 & 2410868-01**							
CCT NO	COLOR	GAUGE	FROM CONNECTOR	CAVITY	TO CONNECTOR	CAVITY	FUNCTION
01	BLU/RED	18	CDI MODULE	A	CHASSIS/HOOD #2	B	ENGINE TEMP
02	GRAY	18	CDI MODULE	B	LH CONTROL SIGNAL	F	REVERSE SIGNAL
03	BLACK/RED	18	CDI MODULE	C	STOP SWITCH	-	SOFT STOP
04	BLACK	18	CDI MODULE	D	TETHER	-	HARD STOP
05	WHITE	18	CDI MODULE	E	CHASSIS/HOOD #1	L	REVERSE LED
06	BLACK/WHITE	18	CDI MODULE	F	CHASSIS/HOOD #1	K	HOT LED
07	WHITE/YELLOW	18	CDI MODULE	G	EV SOLENOID	2	SOLENOID CONTROL
08	YELLOW/BLACK	18	CDI MODULE	H	CHASSIS/HOOD #1	B	TACHOMETER
09	WHITE/ORANGE	18	CDI MODULE	J	CHASSIS/HOOD #1	J	DETONATION LED
10	YELLOW	16	REGULATOR	A	AC POWER SPLICE	-	AC POWER
11	ORANGE/BLACK	20	REGULATOR	B	CHASSIS/HOOD #1	H	DC BRAKE SIGNAL
12	ORANGE	18	REGULATOR	C	BRAKE SWITCH	.180F	AC BRAKE SIGNAL
13	BROWN/WHITE	18	REGULATOR	D	DC GROUND SPLICE #1	-	DC GROUND
14	BROWN	16	REGULATOR	F	CHASSIS/HOOD #1	A	AC GROUND
15	YELLOW	16	REGULATOR	G	CHASSIS/HOOD #2	A	AC POWER
16	RED/WHITE	18	REGULATOR	J	DC POWER SPLICE	-	DC POWER
17	RED	16	BATTERY SPLICE	-	REGULATOR	K	BATTERY CHARGE
18	BROWN	16	REGULATOR	M	GROUND	1/4R	AC GROUND
19	YELLOW	16	ELECTRIC START	.180F	AC POWER SPLICE	-	AC POWER
20	RED/WHITE	18	DC POWER SPLICE	-	CHASSIS/HOOD #1	C	DC POWER
21	LT GREEN/RED	18	SPEED SENSOR	B	CHASSIS/HOOD #1	D	GROUND SPEED
22	BROWN/WHITE	18	DC GROUND SPLICE #1	-	CHASSIS/HOOD #1	E	DC GROUND
23	YELLOW/RED	16	LH CONTROL POWER	A	CHASSIS/HOOD #1	F	HIGH HEADLAMPS
24	VIOLET	18	OIL LEVEL	.180M	CHASSIS/HOOD #1	G	OIL LEVEL
25	GREEN	16	LH CONTROL POWER	B	CHASSIS/HOOD #1	M	LOW HEADLAMPS
26	BROWN	18	GROUND	1/4R	HANDLEBAR GROUND SPLICE	-	AC GROUND
27	WHITE/RED	20	LH CONTROL POWER	D	CHASSIS/HOOD #2	E	MODE SWITCH
28	WHITE/BLACK	20	LH CONTROL POWER	F	CHASSIS/HOOD #2	H	SET SWITCH
29	ORANGE/WHITE	20	CAPACITOR	.180F	CHASSIS/HOOD #2	K	SPEED SENSOR POWER
30	YELLOW	16	LH CONTROL POWER	C	AC POWER SPLICE	-	AC POWER
31	BROWN/WHITE	16	LH CONTROL POWER	E	DC GROUND SPLICE #2	-	DC GROUND
32	BROWN/WHITE	18	ACCESSORY	.180M	OIL LEVEL	.180F	DC GROUND
** 33	VIOLET/WHITE	20	FUEL LEVEL SENDER	A	CHASSIS/HOOD #2	D	FUEL SENDER
34	BLACK	18	TETHER	-	IGNITION SWITCH	-	HARD STOP
35	BROWN	18	TETHER	-	IGNITION SWITCH	-	CHASSIS GROUND
36	BROWN	18	GROUND	1/4R	IGNITION SWITCH	-	CHASSIS GROUND
37	WHITE/RED	20	ELECTRIC START	.180F	IGNITION SWITCH	-	START SOLENOID CONTROL
38	RED	18	BATTERY SPLICE	-	IGNITION SWITCH	-	BATTERY CHARGE
39	BLACK	18	STOP SWITCH	-	IGNITION SWITCH	-	HARD STOP
40	ORANGE/WHITE	20	CAPACITOR	.180F	SPEED SENSOR	A	SPEED SENSOR POWER
41	BROWN/WHITE	18	CAPACITOR	.180M	SPEED SENSOR	C	DC GROUND
42	BROWN/WHITE	18	CAPACITOR	.180M	DC GROUND SPLICE #2	-	DC GROUND
43	YELLOW	18	AC POWER SPLICE	-	TAILLIGHT	A	AC POWER
44	ORANGE	18	BRAKE SWITCH	.180F	TAILLIGHT	B	AC BRAKE SIGNAL
45	BROWN	18	GROUND	1/4R	TAILLIGHT	C	AC GROUND
46	RED	16	BATTERY SPLICE	-	ELECTRIC START	.180F	BATTERY CHARGE
** 47	BROWN/WHITE	20-	FUEL LEVEL SENDER	B	DC GROUND SPLICE #1	-	DC GROUND
48	BROWN	16	GROUND	1/4R	ELECTRIC START	.180M	AC GROUND
49	RED/WHITE	18	DC POWER SPLICE	-	EV SOLENOID	1	DC POWER
50	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-
52	RED/WHITE	18	ACCESSORY	.180F	DC POWER SPLICE	-	DC POWER
53	BROWN/WHITE	18	DC GROUND SPLICE #1	-	DC GROUND SPLICE #2	-	DC GROUND
54	ORANGE/GRAY	20	LH CONTROL SIGNAL	A	THUMBWARMER	A	LOW THUMBWARMER
55	WHITE/GRAY	20	LH CONTROL SIGNAL	B	THUMBWARMER	B	HIGH THUMBWARMER
56	BLUE	20	LH CONTROL SIGNAL	C	LOW HW SPLICE	-	HW LOW
57	BLUE/RED	20	LH CONTROL SIGNAL	D	MED HW SPLICE	-	HW MED HIGH
58	BROWN	20	LH CONTROL SIGNAL	E	HANDLEBAR GROUND SPLICE	-	AC GROUND
59	BLUE	20	LEFT HANDWARMER	A	LOW HW SPLICE	-	HW LOW
60	BLUE/RED	20	LEFT HANDWARMER	B	MED HW SPLICE	-	HW MED HIGH
61	BROWN	20	LEFT HANDWARMER	C	HW GROUND SPLICE	-	AC GROUND
62	WHITE	20	BRAKE SWITCH	.180F	HW GROUND SPLICE	-	AC GROUND
63	BROWN	18	BRAKE SWITCH	.180M	HANDLEBAR GROUND SPLICE	-	AC GROUND
64	BLUE	20	RIGHT HANDWARMER	A	LOW HW SPLICE	-	HW LOW
65	BLUE/RED	20	RIGHT HANDWARMER	B	MED HW SPLICE	-	HW MED HIGH
66	BROWN	20	RIGHT HANDWARMER	C	HW GROUND SPLICE	-	AC GROUND
67	BROWN	20	THUMBWARMER	C	HANDLEBAR GROUND SPLICE	-	AC GROUND
68	BROWN	20	STOP SWITCH	-	HANDLEBAR GROUND SPLICE	-	AC GROUND
69	-	-	-	-	-	-	-
70	BROWN/WHITE	18	ACCESSORY	.180M	DC GROUND SPLICE #2	-	DC GROUND

WIRE TERMINATION TABLE HARNESS PART NUMBER 4011175-05					
CCT NO	COLOR	GAUGE	FROM CONNECTOR	TO CONNECTOR	FUNCTION
E1	WHITE	18	CDI MODULE	IGNITION COIL	IGNITION
E2	RED	18	CDI MODULE	EXCITER COIL	EXCITER COIL (+)
E3					
E4	WHITE/RED	18	CDI MODULE	CRANK SENSOR	PULSER COIL (+)
E5	BLK	18	CDI MODULE	CHASSIS/ENGINE	HARD STOP
E6	BLK/RED	18	CDI MODULE	CHASSIS/ENGINE	SOFT STOP
E7	GRY	18	CDI MODULE	CHASSIS/ENGINE	REVERSE SIGNAL
E8	BLU/RED	18	CDI MODULE	CHASSIS/ENGINE	WATER TEMP
E9					
E10					
E11	BLK	18	CDI MODULE	COOLANT SENSOR	WATER TEMP SIGNAL
E12	BRN	18	CDI MODULE	COOLANT SENSOR	WATER TEMP GND
E13					
E14					
E15					
E16					
E17	GRN	18	CDI MODULE	DET SENSOR	DET SENSOR GND
E18	BLK	18	CDI MODULE	IGNITION COIL	IGN COIL GND
E19	GRN	18	CDI MODULE	EXCITER COIL	EXCITER COIL (CENTER)
E20	BLK	18	CDI MODULE	CRANK SENSOR	STATOR GROUND
E21	WHITE	18	CDI MODULE	CRANK SENSOR	PULSER COIL (-)
E22	YELLOW/RED	18	CDI MODULE	CHASSIS/ENGINE	TACHOMETER
E23	WHITE/YELLOW	18	CDI MODULE	CHASSIS/ENGINE	EV SOLENOID GND
E24	BLU/WHITE	18	CDI MODULE	CHASSIS/ENGINE	HOT LED
E25	WHITE	18	CDI MODULE	CHASSIS/ENGINE	REVERSE LED
E26	BLU/YELLOW	18	CDI MODULE	CHASSIS/ENGINE	DET LED
E27					
E28	PINK	18	CDI MODULE	TPS SENSOR	TPS (5V)
E29	YELLOW	18	CDI MODULE	TPS SENSOR	TPS SIGNAL
E30	BLACK	18	CDI MODULE	TPS SENSOR	TPS GND
E31					
E32					
E33					
E34	GREEN	18	CDI MODULE	DET SENSOR	DET SIGNAL

WIRES ARE REPRESENTED BY SOLID OR DASHED LINES TO SIMPLIFY TRACING IN DIAGRAM

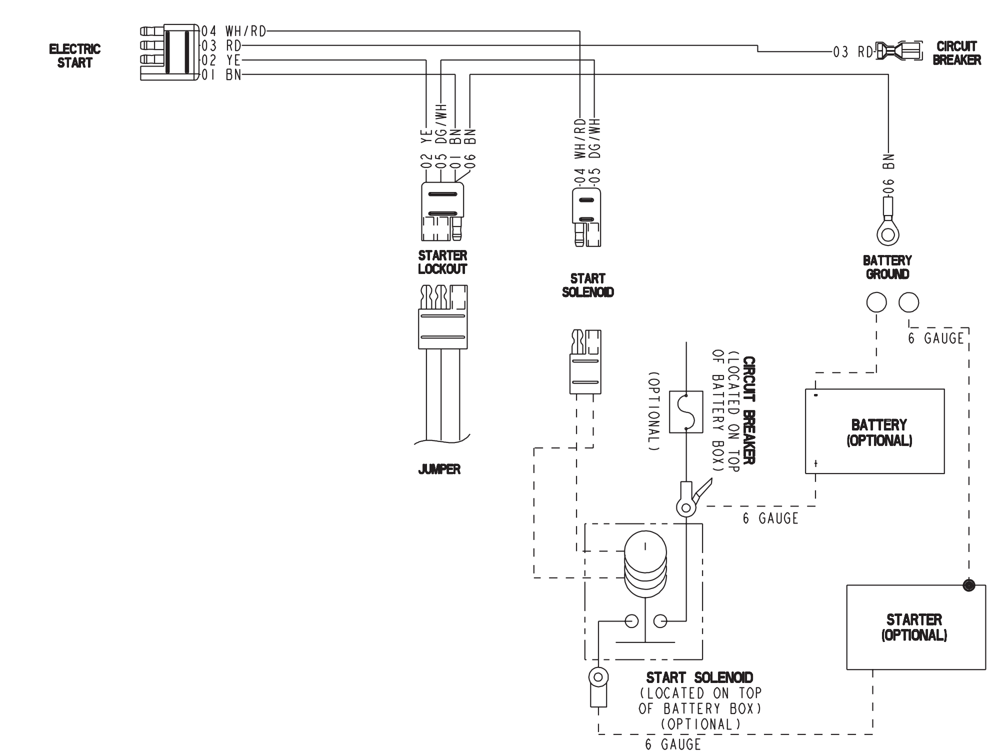
WIRE COLOR LEGEND	
BG	BEIGE (TAN)
BK	BLACK
BU	LIGHT BLUE
DB	DARK BLUE
BN	BROWN
GY	GRAY
GN	LIGHT GREEN
DG	DARK GREEN
OG	ORANGE
PK	PINK
RD	RED
VT	VIOLET (PURPLE)
WH	WHITE
YE	YELLOW

TWO WIRE COLORS ARE SHOWN WITH MAIN/TRACE COLORS. EXAMPLE: RD/YE = RED WITH YELLOW TRACE

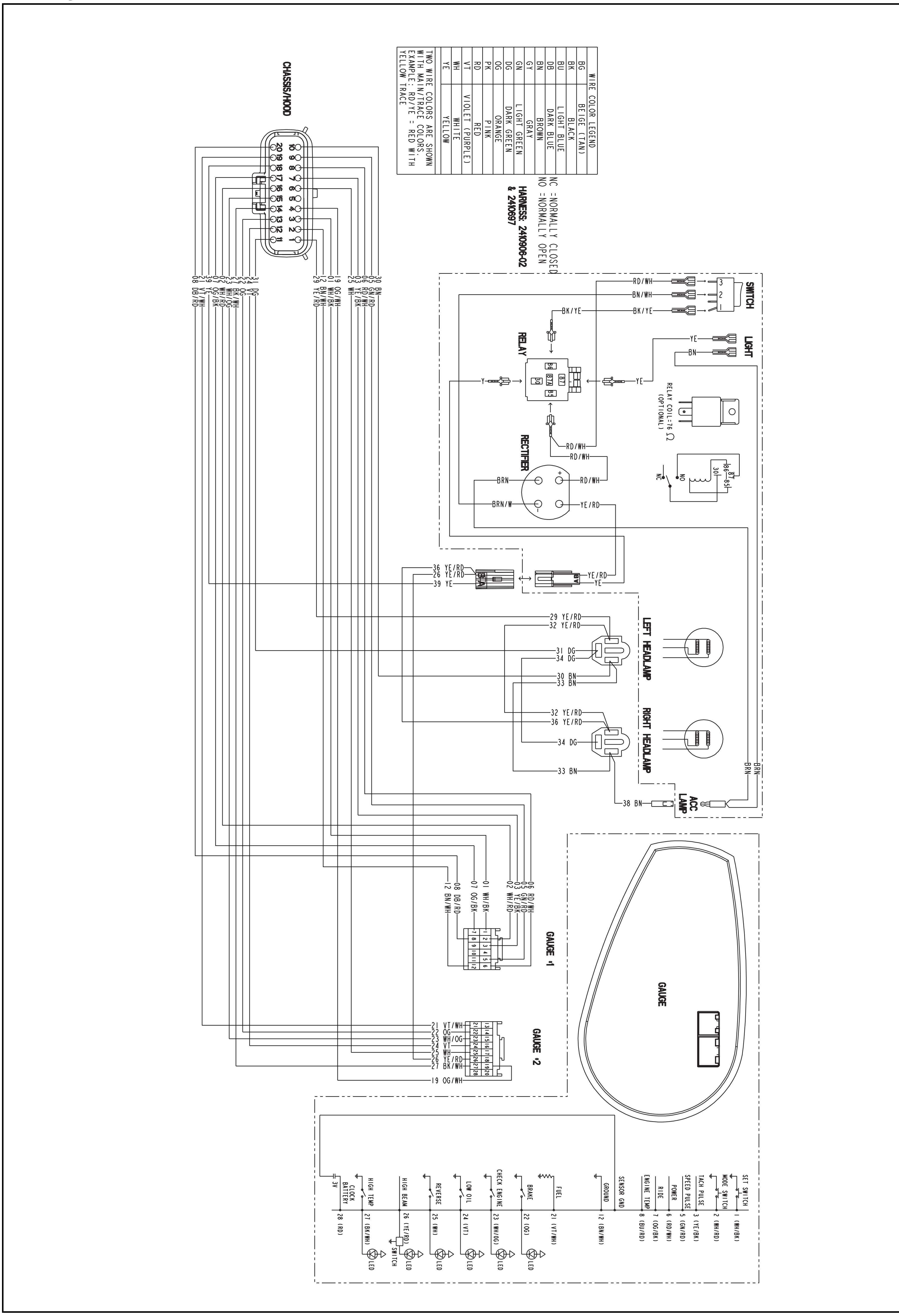
**HARNESS 2410868-01 ONLY

HARNESS NUMBER: 2410790-02

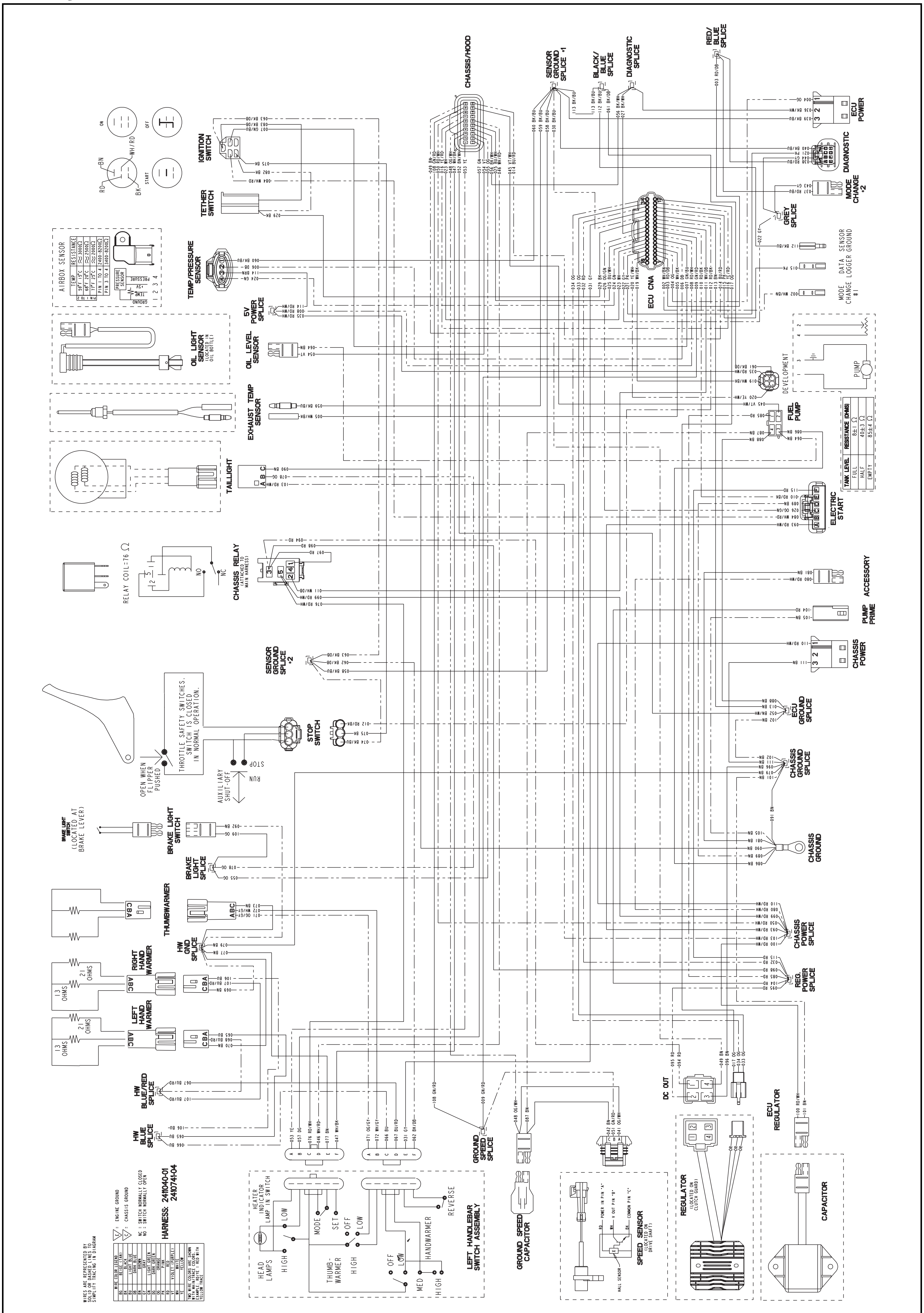
WIRE TERMINATION TABLE HARNESS PART NUMBER 2410790-02							
CCT #	COLOR	GAUGE	FROM CONNECTOR	CAVITY	TO CONNECTOR	CAVITY	FUNCTION
01	BROWN	18	ELECTRIC START	.180F	STARTER LOCKOUT	.180M	CHASSIS GROUND
02	YELLOW	16	ELECTRIC START	.180M	STARTER LOCKOUT	.180F	AC POWER
03	RED	18	ELECTRIC START	.180M	CIRCUIT BREAKER	.250F	BATTERY +
04	WHITE/RED	18	ELECTRIC START	.180M	START SOLENOID	.156M	STARTER SWITCH
05	GREEN/WHITE	18	STARTER LOCKOUT	.180F	START SOLENOID	.156F	LOCKOUT GROUND
06	BROWN	18	STARTER LOCKOUT	.180M	BATTERY GROUND	1/4R	BATTERY GROUND



2008 IQ Shift RMK Hood Harness



2008 IQ CFI Chassis Harness 1 of 2



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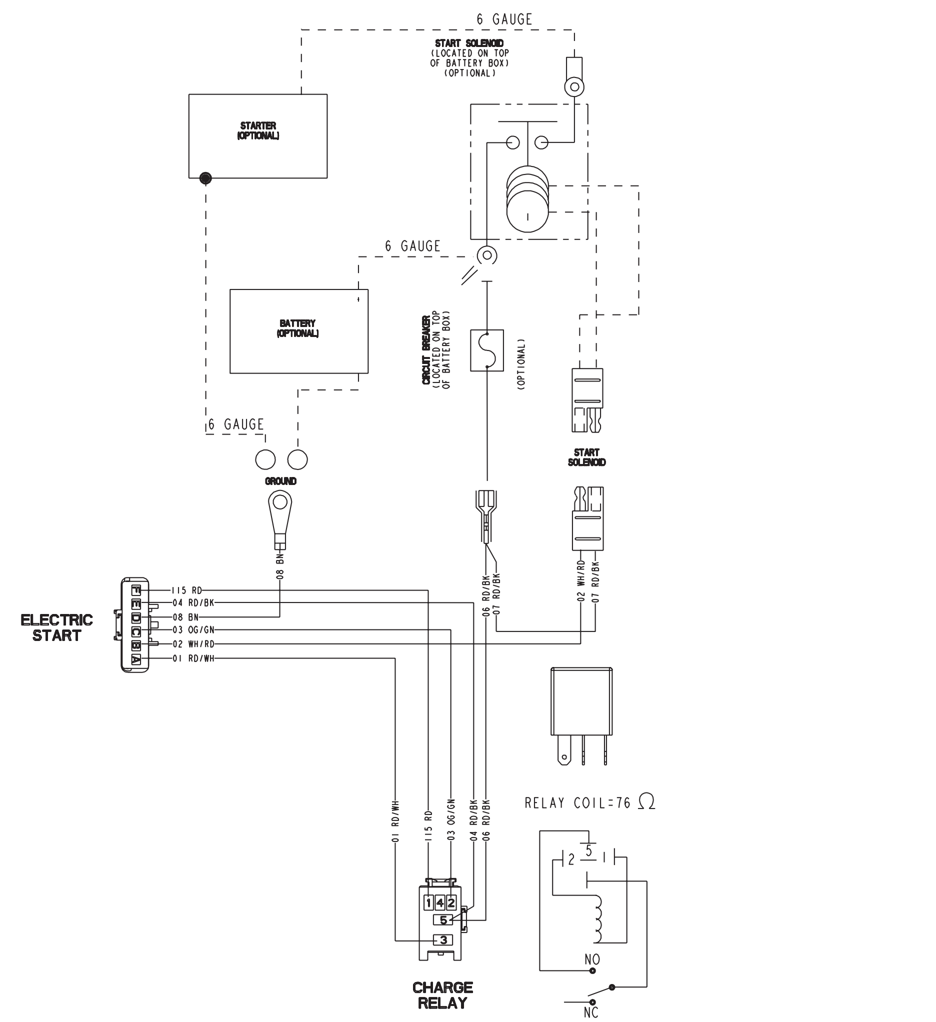

WIRE TERMINATION TABLE (ELECTRIC START)							
CCT #	COLOR	GAUGE	FROM CONNECTOR	CAVITY	TO CONNECTOR	CAVITY	FUNCTION
01	RED/WHITE	16	ELECTRIC START	A	CHARGE RELAY	3	CHASSIS POWER
02	WHITE/RED	20	ELECTRIC START	B	START SOLENOID	.156M	STARTER SWITCH
03	ORANGE/GREEN	20	ELECTRIC START	C	CHARGE RELAY	2	CHARGE RELAY CONTROL
04	RED/BLACK	20	ELECTRIC START	E	CHARGE RELAY	5	BATTERY +
05	RED/WHITE	20	CHARGE RELAY	1	CHARGE RELAY	3	CHASSIS POWER
06	RED/BLACK	16	CHARGE RELAY	5	CIRCUIT BREAKER	.250F	BATTERY +
07	RED/BLACK	20	CIRCUIT BREAKER	.250F	START SOLENOID	.156F	BATTERY +
08	BROWN	16	ELECTRIC START	D	BATTERY GROUND	1/4R	BATTERY GROUND

WIRE TERMINATION TABLE							
CCT #	COLOR	GAUGE	FROM CONNECTOR	CAVITY	TO CONNECTOR	CAVITY	FUNCTION
02	WHITE/BROWN	20	ECU CNA	2	MODE CHANGE #1	.156F	BOOT MODE
03	RED/LT BLUE	20	ECU CNA	3	RED/BLUE SPLICE	-	K LINE POWER
04	ORANGE	20TXL	ECU CNA	4	ECU POWER	1	EXTERNAL POWER
05	WHITE/BLACK	20TXL	ECU CNA	5	EXHAUST TEMP	.156F	EXHAUST TEMP SIGNAL
06	LT BLUE	20	ECU CNA	6	INTAKE AIR PRESSURE	2	AIR TEMP SIGNAL
07	LT GREEN/LT BLUE	20	ECU CNA	7	IGNITION SWITCH	-	STARTER LOCKOUT
08	RED/WHITE	20	ECU CNA	8	5V POWER SPLICE	-	5V POWER
09	LT GREEN/RED	20	ECU CNA	9	GROUND SPEED SENSOR SPLICE	-	GROUND SPEED
10	RED/BLACK	20	ECU CNA	10	ELECTRIC START	E	BATTERY +
11	WHITE/LT BLUE	20TXL	ECU CNA	11	CHASSIS RELAY	2	CHASSIS RELAY COIL
12	BLACK/RED	20	ECU CNA	12	STOP SWITCH	-	SOFT STOP
13	BROWN	20	ECU CNA	13	ECU GROUND SPLICE	-	ECU GROUND
14	LT BLUE/RED	20TXL	ECU CNA	14	CHASSIS/HOOD	20	WATER TEMP GAUGE
15	PINK	20	ECU CNA	15	DATA LOGGER	.156F	DATA LOGGER
16	YELLOW/RED	20TXL	ECU CNA	16	CHASSIS/HOOD	7	TACHOMETER
17	ORANGE	20	ECU CNA	17	ECU REGULATOR	-	VOLTAGE BOOST
19	WHITE/BLACK	20	ECU CNA	19	DEVELOPMENT	-	RXD
20	YELLOW/WHITE	20	ECU CNA	20	DEVELOPMENT	-	TXD
21	PINK	20TXL	ECU CNA	21	DIGITAL WRENCH	C	K LINE
22	GRAY	20	ECU CNA	22	GRAY SPLICE	-	MODE
23	WHITE	20TXL	ECU CNA	23	CHASSIS/HOOD	6	REVERSE LED
24	LT GREEN	20	ECU CNA	24	INTAKE AIR PRESSURE	4	PRESSURE SENSOR SIGNAL
25	LT BLUE/WHITE	20TXL	ECU CNA	25	CHASSIS/HOOD	15	HOT DET LED
26	ORANGE/LT GREEN	20	ECU CNA	26	ELECTRIC START	C	BATTERY RELAY COIL
27	BLACK/WHITE	20	ECU CNA	27	DIAGNOSTIC SPLICE	-	DIAGNOSTICS
29	BLACK	20	ECU CNA	29	TETHER	-	HARD STOP
30	BLACK/LT BLUE	20	ECU CNA	30	SENSOR GROUND SPLICE #1	-	SENSOR GROUND
31	GRAY	20	ECU CNA	31	LH CONTROL SIGNAL	E	REVERSE SIGNAL
32	RED	20	ECU CNA	32	REGULATOR POWER SPLICE	-	REGULATOR POWER
33	ORANGE	20	ECU CNA	33	ECU REGULATOR	-	VOLTAGE BOOST
34	ORANGE	20	ECU CNA	34	ECU REGULATOR	-	VOLTAGE BOOST
35	RED/WHITE	18	DEVELOPMENT	-	5V POWER SPLICE	-	5V POWER
36	BLACK/WHITE	18TXL	DIAGNOSTIC SPLICE	-	ECU POWER	2	DIAGNOSTICS
37	RED/LT BLUE	18TXL	RED/BLUE SPLICE	-	MODE CHANGE #2	.156F	K LINE POWER
38	RED/LT BLUE	18TXL	RED/BLUE SPLICE	-	DIGITAL WRENCH	A	K LINE POWER
39	BLACK/LT BLUE	18TXL	SENSOR GROUND SPLICE #1	-	ECU POWER	3	SENSOR GROUND
40	BLACK/LT BLUE	18TXL	SENSOR GROUND SPLICE #1	-	DIGITAL WRENCH	D	SENSOR GROUND
41	ORANGE/WHITE	-	GROUND SPEED SENSOR	A	CAPACITOR	.180F	SPEED SENSOR POWER
42	BROWN	-	GROUND SPEED SENSOR	C	CAPACITOR	.180M	CHASSIS GROUND
43	GRAY	18TXL	GRAY SPLICE	-	MODE CHANGE #2	.156M	MODE
44	GRAY	18TXL	GRAY SPLICE	-	DIGITAL WRENCH	B	MODE
45	VIOLET/WHITE	20TXL	CHASSIS/HOOD	19	FUEL PUMP	2	FUEL LEVEL
46	WHITE/RED	20TXL	CHASSIS/HOOD	16	LH CONTROL POWER	D	MODE SWITCH
47	WHITE/BLACK	20TXL	CHASSIS/HOOD	3	LH CONTROL POWER	F	SET SWITCH
48	ORANGE/WHITE	20TXL	CHASSIS/HOOD	4	CAPACITOR	.180F	SPEED SENSOR POWER
49	BROWN	16TXL	CHASSIS/HOOD	10	DC OUT	-	CHASSIS GROUND
50	RED/WHITE	18TXL	CHASSIS/HOOD	8	CHASSIS POWER SPLICE	-	CHASSIS POWER
51	LT GREEN/RED	18	GROUND SPEED SENSOR SPLICE	-	GROUND SPEED SENSOR	B	GROUND SPEED
52	BROWN/WHITE	18TXL	CHASSIS/HOOD	2	ECU GROUND SPLICE	-	ECU GROUND
53	YELLOW	16TXL	CHASSIS/HOOD	1	LH CONTROL POWER	A	HIGH BEAM
54	VIOLET	20TXL	CHASSIS/HOOD	12	OIL SENSOR	.180M	LOW OIL LED
55	ORANGE	20TXL	CHASSIS/HOOD	13	BRAKE SWITCH SPLICE	-	BRAKE LIGHT
56	BLACK/WHITE	18TXL	CHASSIS/HOOD	14	DIAGNOSTIC SPLICE	-	DIAGNOSTICS
57	LT GREEN	16TXL	CHASSIS/HOOD	11	LH CONTROL POWER	B	LOW BEAM
58	BLACK/LT BLUE	18	SENSOR GROUND SPLICE #2	-	SENSOR GROUND SPLICE #1	-	SENSOR GROUND
59	BLACK/LT BLUE	18TXL	SENSOR GROUND SPLICE #1	-	EXHAUST TEMP	.156M	SENSOR GROUND
60	BLACK/LT BLUE	18	SENSOR GROUND SPLICE #1	-	INTAKE AIR PRESSURE	1	SENSOR GROUND
61	BLACK/BLUE	18	DEVELOPMENT	-	BLACK/BLUE SPLICE	-	SENSOR GROUND
62	BLACK/LT BLUE	20	SENSOR GROUND SPLICE #2	-	LH CONTROL SIGNAL	F	SENSOR GROUND
63	BLACK/LT BLUE	18	SENSOR GROUND SPLICE #2	-	IGNITION SWITCH	-	SENSOR GROUND
64	BROWN	20	FUEL PUMP	3	OIL SENSOR	.180F	CHASSIS GROUND
65	LT BLUE	20	LEFT HANDWARMER	A	BLUE SPLICE	-	HANDWARMER LOW
66	LT BLUE	20	LH CONTROL SIGNAL	C	BLUE SPLICE	-	HANDWARMER LOW
67	LT BLUE/RED	20	LH CONTROL SIGNAL	D	BLUE/RED SPLICE	-	HANDWARMER HI
68	LT BLUE/RED	20	LEFT HANDWARMER	B	BLUE/RED SPLICE	-	HANDWARMER HI
69	BROWN	18	RIGHT HANDWARMER	C	HANDLEBAR GROUND SPLICE	-	CHASSIS GROUND
70	BROWN	18	LEFT HANDWARMER	C	HANDLEBAR GROUND SPLICE	-	CHASSIS GROUND
71	ORANGE/GRAY	20	LH CONTROL SIGNAL	A	THUMBWARMER	A	THUMBWARMER LOW
72	WHITE/GRAY	20	LH CONTROL SIGNAL	B	THUMBWARMER	B	THUMBWARMER HI
73	BROWN	18	HANDLEBAR GROUND SPLICE	-	THUMBWARMER	C	CHASSIS GROUND
74	BLACK/LT BLUE	18	STOP SWITCH	-	SENSOR GROUND SPLICE #2	-	SENSOR GROUND
75	BLACK	20	STOP SWITCH	-	IGNITION SWITCH	-	HARD STOP
76	RED/WHITE	16TXL	CHASSIS RELAY	5	LH CONTROL POWER	C	CHASSIS POWER
77	BROWN	20	HANDLEBAR GROUND SPLICE	-	LH CONTROL POWER	E	CHASSIS GROUND
78	ORANGE	18	BRAKE SWITCH SPLICE	-	TAILLIGHT	B	BRAKE LIGHT
79	BROWN	18	CHASSIS GROUND SPLICE	-	HANDLEBAR GROUND SPLICE	-	CHASSIS GROUND
80	RED/WHITE	16	CHASSIS POWER SPLICE	-	ACCESSORY POWER	.180F	CHASSIS POWER
81	BROWN	16	CHASSIS GROUND	1/4R	ACCESSORY POWER	.180M	CHASSIS GROUND
82	BLACK	20	IGNITION SWITCH	-	TETHER	-	STARTER SOLENOID GROUND
83	BLACK/LT BLUE	18	IGNITION SWITCH	-	TETHER	-	CHASSIS GROUND
84	WHITE/RED	20	IGNITION SWITCH	-	ELECTRIC START	B	HARD STOP
85	RED	18	FUEL PUMP	1	REGULATOR POWER SPLICE	-	REGULATOR POWER
86	BROWN	18	FUEL PUMP	3	CHASSIS GROUND	1/4R	CHASSIS GROUND
87	BROWN	20	FUEL PUMP	4	CAPACITOR	.180M	CHASSIS GROUND
88	BROWN	20	FUEL PUMP	4	ECU GROUND SPLICE	-	ECU GROUND
89	BROWN	16	CHASSIS GROUND	1/4R	ELECTRIC START	D	CHASSIS GROUND
90	BROWN	18	CHASSIS GROUND	1/4R	TAILLIGHT	C	CHASSIS GROUND
91	BROWN	16	CHASSIS GROUND	1/4R	CHASSIS GROUND SPLICE	-	CHASSIS GROUND
92	BROWN	18	BRAKE SWITCH	.180F	HANDLEBAR GROUND SPLICE	-	CHASSIS GROUND
93	RED/WHITE	16	ELECTRIC START	A	CHASSIS POWER SPLICE	-	CHASSIS POWER
94	RED	16TXL	DC OUT	-	CHASSIS RELAY	3	REGULATOR POWER
95	RED	16	DC OUT	-	REGULATOR POWER SPLICE	-	REGULATOR POWER
96	BROWN	16	DC OUT	-	CHASSIS GROUND SPLICE	-	CHASSIS GROUND
97	RED	20TXL	CHASSIS RELAY	1	CHASSIS RELAY	3	CHASSIS POWER
98	RED	16TXL	CHASSIS RELAY	3	REGULATOR POWER SPLICE	-	REGULATOR POWER
99	RED/WHITE	16TXL	CHASSIS RELAY	5	CHASSIS POWER SPLICE	-	CHASSIS POWER
100	RED/WHITE	16	CAPACITOR	.156F	CHASSIS POWER SPLICE	-	CHASSIS POWER
101	BROWN	16	CAPACITOR	.156M	CHASSIS GROUND SPLICE	-	CHASSIS GROUND
102	BROWN	18	CHASSIS GROUND SPLICE	-	ECU GROUND SPLICE	-	ECU GROUND
103	RED/WHITE	18	CHASSIS POWER SPLICE	-	TAILLIGHT	A	CHASSIS POWER
104	RED	18TXL	PUMP PRIME	1	REGULATOR POWER SPLICE	-	REGULATOR POWER
105	BROWN	18TXL	PUMP PRIME	2	CHASSIS GROUND	1/4R	CHASSIS GROUND
106	LT BLUE	20	RIGHT HANDWARMER	A	BLUE SPLICE	-	HANDWARMER LOW
107	LT BLUE/RED	20	RIGHT HANDWARMER	B	BLUE/RED SPLICE	-	HANDWARMER HI
108	LT GREEN/RED	18TXL	CHASSIS/HOOD	9	GROUND SPEED SENSOR SPLICE	-	GROUND SPEED
109	ORANGE	18	BRAKE SWITCH	.180F	BRAKE SWITCH SPLICE	-	BRAKE LIGHT
110	RED/WHITE	16TXL	CHASSIS POWER	1	CHASSIS POWER SPLICE	-	CHASSIS POWER
111	BROWN	16TXL	CHASSIS POWER	3	CHASSIS GROUND SPLICE	-	CHASSIS GROUND
112	BLACK/BLUE	20	SENSOR GROUND	.156M	BLACK/BLUE SPLICE	-	SENSOR GROUND
113	BLACK/BLUE	18	SENSOR GROUND SPLICE #1	-	BLACK/BLUE SPLICE	-	SENSOR GROUND
114	RED/WHITE	18	INTAKE AIR PRESSURE	3	5V POWER SPLICE	-	5V POWER
115	RED	16	ELECTRIC START	F	REGULATOR POWER SPLICE	-	REGULATOR POWER

2008 IQ CFI Engine Harness