CHAPTER 1
General Information

MODEL SPECIFICATIONS

2010 600 RUSH

Model Numbers:
S10BF6KSA / S10BF6KSL / S10BF6KEA

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4202-6044-OP6N
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.014-.020 / 0.356 - 0.508
Operating RPM ±200	8250
Idle RPM	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 4
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	91+ (Non-Oxygenated)

Clutch Settings

ALTITUDE meters (feet)	DRIVE CLUTCH		P2 DRIVEN CLUTCH		
	Shift Weight	Clutch Spring	Clutch Spring	Driven Helix	Gearing
0-600 (0-2000)	10-64	BLACK 120 - 310 7043601	130 - 180 Tabbed 7043515	58/42 - .45 5137176	23:39 - 72
600-1200 (2000-4000)	10-62				22:39 - 72
1200-1800 (4000-6000)	10-60				22:40 - 72
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10,000)	10-56				20:41 - 72
3000-3600 (10,000-12,000)	10A-L				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm) Re-torque after running engine.					

Clutch Settings (Electric Start Models)

ALTITUDE meters (feet)	DRIVE CLUTCH		P2 DRIVEN CLUTCH		
	Shift Weight	Clutch Spring	Clutch Spring	Driven Helix	Gearing
0-600 (0-2000)	10-64	BLK/GRN 120 - 340 7042083	130 - 180 Tabbed 7043515	58/42 - .45 5137176	23:39 - 72
600-1200 (2000-4000)	10-62				22:39 - 72
1200-1800 (4000-6000)	10-60				22:40 - 72
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10,000)	10-56				20:41 - 72
3000-3600 (10,000-12,000)	10A-L				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm) Re-torque after running engine.					

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	120 (304.8)
Pitch Plies	2.86 2
Lug Height - Inches (cm)	1.25 (3.175) (Ripsaw)
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)

General

Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	459 / 208
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5.25 / 5.0
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	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 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	NGK BPR9ES

Front Suspension

Suspension Type	PRO-RIDE
Shocks	Walker Evans Needle w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	80 (14)
IFS Spring Installed Length - Inches (cm)	Preload = 3.75 (9.5) 10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Camber Inches (cm)	1.68 ± 0.31 (4.3 ± .8)
Toe Out Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	Pro-Ride Progressive
Front Track Shock (FTS)	Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 2
FTS Spring Rate lbs/in (N/mm)	120 - 310 (21 - 54.25)
FTS Spring Installed Length Inches (cm)	Preload = .75 (1.9) 7.75 (19.7)
Rear Track Shock (RTS)	Walker Evans Needle w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 4
Standard RTS Spring Rider Weight* 120 - 250lbs. Rate lbs/in (N/mm)	PN: 7043572-385 190 (33.25)
LW RTS Spring Rider Weight* 90 - 150lbs. Rate lbs/in (N/mm)	PN: 7041575-385 120 (21)
HD RTS Spring Rider Weight* 240 - 335+lbs. Rate lbs/in. (N/mm)	PN: 7043585-385 260 (45.5)
RTS Spring Rider / Weight Setting	Spring length set to rider weight using adjustment gauge. STD Gauge PN: 5253792 LW Gauge PN: 5253854 HD Gauge PN: 5253855 (STD gauge in tool kit. LW and HD gauges are accessories and should be ordered when ordering a LW or HD spring.) Rider weight adjustment can also be performed using tape measure and RTS Spring Guide Table located in the Steering/Suspension Chapter.
Rear Travel Inches (cm)	14 (35.6)

NOTE: * = Rider weight in everyday clothing.
**** = From full soft (CCW) position.**

2011 600 RUSH

Model Numbers:
600 RUSH
S11BF6NSA / S11BF6NSL / S11BF6NSB / S11BF6NSM

600 RUSH LX
S11BD6NSL / S11BD6NSM

600 RUSH PRO-R
S11BP6NSA / S11BP6NSL / S11PB6NEL / S11BP6NSB
S11BP6NSM / S11BE6NSM

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4215-6044-OO6N
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM ±200	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 4
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	91+ (Non-Oxygenated)

Clutch Settings

ALTITUDE meters (feet)	DRIVE CLUTCH		P2 DRIVEN CLUTCH		
	Shift Weight	Clutch Spring	Clutch Spring	Driven Helix	Gearing
0-600 (0-2000)	10-64	BLACK 120 - 310 7043681	130 - 180 Tabbed 7043515	58/42 - .45 5137176	23:39 - 72
600-1200 (2000-4000)	10-62				22:39 - 72
1200-1800 (4000-6000)	10-60				22:40 - 72
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10,000)	10-56				20:41 - 72
3000-3600 (10,000-12,000)	10A-L				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm) Re-torque after running engine.					

Clutch Settings (Electric Start Models)

ALTITUDE meters (feet)	DRIVE CLUTCH		P2 DRIVEN CLUTCH		
	Shift Weight	Clutch Spring	Clutch Spring	Driven Helix	Gearing
0-600 (0-2000)	10-64	BLK/GRN 120 - 340 7042083	130 - 180 Tabbed 7043515	58/42 - .45 5137176	23:39 - 72
600-1200 (2000-4000)	10-62				22:39 - 72
1200-1800 (4000-6000)	10-60				22:40 - 72
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10,000)	10-56				20:41 - 72
3000-3600 (10,000-12,000)	10A-L				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm) Re-torque after running engine.					

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	121 (307)
Pitch Plies	2.52 2
Lug Height - Inches (cm) RUSH RUSH PRO-R	1.0 (2.54) (Hacksaw) 1.25 (3.175) (Ripsaw)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/40cm ahead of rear idler shaft	1/2″ - 1.0″(1.3 - 2.54cm)

General

Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	469 / 212
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6 / 5.7
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	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 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	NGK BPR9ES

Front Suspension

Suspension Type	PRO-RIDE
Shocks RUSH RUSH PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Spring Preload - Inches (cm)	4.5 (11.4)
Travel-Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Camber Inches (cm)	1.68 ± 0.31 (4.3 ± .8)
Toe Out Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	PRO-RIDE Progressive
Front Track Shock (FTS) RUSH RUSH PRO-R	 Fox HPG w/IFP Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 2
FTS Spring Rate lbs/in (N/mm)	120 - 310 (21 - 54.25)
FTS Spring Installed Length-Inches (cm) RUSH Preload RUSH PRO-R Preload	 7.5 (19.05) 1.0 (2.54) 1.0 (2.54)
Rear Track Shock (RTS) RUSH RUSH PRO-R	 Fox HPG w/IFP Walker Evans Needle w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 4
Standard RTS Spring Rider Weight* 120 - 250lbs. Rate lbs/in (N/mm)	PN: 7043572-133 190 (33.25)
LW RTS Spring Rider Weight* 90 - 150lbs. Rate lbs/in (N/mm)	PN: 7041575-385 120 (21)
HD RTS Spring Rider Weight* 240 - 335+lbs. Rate lbs/in. (N/mm)	PN: 7043585-385 260 (45.5)
RTS Spring Rider / Weight Setting	Spring length set to rider weight using adjustment gauge. STD Gauge PN: 5254748 LW Gauge PN: 5254749 HD Gauge PN: 5254750 (STD gauge in tool kit. LW and HD gauges are accessories and should be ordered when ordering a LW or HD spring.) Rider weight adjustment can also be performed using tape measure and RTS Spring Guide Table located in the Steering/Suspension Chapter.
Rear Travel Inches (cm)	14 (35.6)

NOTE: * = Rider weight in everyday clothing.
**** = From full soft (CCW) position.**

2011 800 RUSH

Model Numbers:
800 RUSH
S11BF8GSA / S11BF8GSL / S11BF8GSB / S11BF8GSM

800 RUSH LX
S11BD8GSM

800 RUSH PRO-R
S11BP8GSA / S11BP8GSL / S11PB8GEL / S11BP8GSB
S11BP8GSM / S11BP8GEM / S11BE8GSM

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4139-8044-OO8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 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="4">BLACK
120-310
7043681</td><td rowspan="3">BLU/BLK
123-203
7043064</td><td rowspan="6">64/42 - .36
5135401</td><td rowspan="4">22:36-70</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 rowspan="2">10-60</td><td rowspan="3">BLK/PUR
160-240
7043363</td></tr>
<tr><td>2400-3000
(8000-10,000)</td><td rowspan="2">BLACK
140-330
7043342</td><td rowspan="2">20:38-70</td></tr>
<tr><td>3000-3600
(10,000-12,000)</td><td>10-58</td></tr>
<tr><td colspan="6">Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)
Re-torque after running engine.</td></tr>
</table>

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

General

Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6 / 5.7
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	 7.53 22 36 70 Polaris Synthetic (80W) 9 / 266 PERC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	121 (307)
Pitch Plies	2.52 2
Lug Height - Inches (cm) RUSH RUSH PRO-R	 1.0 (2.54) (Hacksaw) 1.25 (3.175) (Ripsaw)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/40cm ahead of rear idler shaft	1/2″ - 1.0″(1.3 - 2.54cm)

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	NGK BPR9ES

Front Suspension

Suspension Type	PRO-RIDE
Shocks RUSH RUSH PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Spring Preload - Inches (cm)	4.5 (11.4)
Travel-Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Camber Inches (cm)	1.68 ± 0.31 (4.3 ± .8)
Toe Out Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	PRO-RIDE Progressive
Front Track Shock (FTS) RUSH RUSH PRO-R	 Fox HPG w/IFP Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 2
FTS Spring Rate lbs/in (N/mm)	120 - 310 (21 - 54.25)
FTS Spring Installed Length-Inches (cm) RUSH Preload RUSH PRO-R Preload	7.5 (19.05) 1.0 (2.54) 1.0 (2.54)
Rear Track Shock (RTS) RUSH RUSH PRO-R	 Fox HPG w/IFP Walker Evans Needle w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 4
Standard RTS Spring Rider Weight* 120 - 250lbs. Rate lbs/in (N/mm)	PN: 7043572-133 190 (33.25)
LW RTS Spring Rider Weight* 90 - 150lbs. Rate lbs/in (N/mm)	PN: 7041575-385 120 (21)
HD RTS Spring Rider Weight* 240 - 335+lbs. Rate lbs/in. (N/mm)	PN: 7043585-385 260 (45.5)
RTS Spring Rider / Weight Setting	Spring length set to rider weight using adjustment gauge. STD Gauge PN: 5254748 LW Gauge PN: 5254749 HD Gauge PN: 5254750 (STD gauge in tool kit. LW and HD gauges are accessories and should be ordered when ordering a LW or HD spring.) Rider weight adjustment can also be performed using tape measure and RTS Spring Guide Table located in the Steering/Suspension Chapter.
Rear Travel Inches (cm)	14 (35.6)

NOTE: * = Rider weight in everyday clothing.
**** = From full soft (CCW) position.**

2011 800 Switchback Assault

Model Numbers:
800 Switchback Assault 1.3
S11CW8GSA / S11CW8GSB / S11CW8GEA
S11CW8GEB

800 Switchback Assault 2.0
S11CW8GST

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4229-8044-OO8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	91+ (Non-Oxygenated)

800 Switchback Assault 1.3 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="4">BLACK
120-310
7043681</td><td rowspan="3">BLU/BLK
123-203
7043064</td><td rowspan="6">64/42 - .36
5135401</td><td rowspan="3">23:39 - 72</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 rowspan="2">10-60</td><td rowspan="3">BLK/PUR
160-240
7043363</td><td>21:40 - 72</td></tr>
<tr><td>2400-3000
(8000-10,000)</td><td rowspan="2">BLACK
140 - 330
7043342</td><td rowspan="2">20:42 - 72</td></tr>
<tr><td>3000-3600
(10,000-12,000)</td><td>10-58</td></tr>
<tr><td colspan="6">Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)
Re-torque after running engine.</td></tr>
</table>

800 Switchback Assault 2.0 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="4">BLACK
120-310
7043681</td><td rowspan="3">BLU/BLK
123-203
7043064</td><td rowspan="6">64/42 - .36
5135401</td><td rowspan="6">20:42 - 72</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 rowspan="2">10-60</td><td rowspan="3">BLK/PUR
160-240
7043363</td></tr>
<tr><td>2400-3000
(8000-10,000)</td><td rowspan="2">BLACK
140-330
7043342</td></tr>
<tr><td>3000-3600
(10,000-12,000)</td><td>10-58</td></tr>
<tr><td colspan="6">Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)
Re-torque after running engine.</td></tr>
</table>

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	144 (365.76)
Pitch Plies	2.52 2
Lug Height - Inches (cm) 1.3 2.0	 1.352 (3.43) (Cobra) 2.0 (5.08) (Series 4)
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)

General

Width (in/cm)	48 / 121.9
Length (in/cm)	126 / 320
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	457 / 212.7
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.0/5.7
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	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 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	NGK BPR9ES

Front Suspension

Suspension Type	PRO-RIDE
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length - Inches (cm)	10.0 (25.4)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Camber Inches (cm)	1.68 ± 0.31 (4.3 ± .8)
Toe Out Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	Switchback 144 Tipped
Front Track Shock (FTS)	Walker Evans Piggyback 16 Click Compression Adjustable Factory Setting** = 8
FTS Spring Rate lbs/in (N/mm)	170 (21 - 54.25)
FTS Spring Installed Length Inches (cm)	7.25 (18.4)
Rear Track Shock (RTS)	Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 8
Torsion Springs	.359/77° LH=7041629-329 RH=7041630-329
Rear Travel Inches (cm)	14.5 (36.8)

2011 800 RMK 155

Model Numbers:
S11CM8GSA / S11CM8GSL / S11CM8GEA
S11CM8GSB / S11CM8GSM

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4229-8044-OO8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0040-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	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>10-68</td><td rowspan="6">BLACK 140 - 330 7043342</td><td rowspan="4">BLACK 155-222 7043063</td><td rowspan="6">56/42 - .36 5135403</td><td rowspan="6">20:42 - 72</td></tr>
<tr><td>600-1200 (2000-4000)</td><td>10-66</td></tr>
<tr><td>1200-1800 (4000-6000)</td><td>10-64</td></tr>
<tr><td>1800-2400 (6000-8000)</td><td>10-62</td></tr>
<tr><td>2400-3000 (8000-10,000)</td><td>10-60</td><td rowspan="2">BLK/PUR 160-240 7043363</td></tr>
<tr><td>3000-3600 (10,000-12,000)</td><td>10-58</td></tr>
<tr><td colspan="6">Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)
Re-torque after running engine.</td></tr>
</table>

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

General

Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5.3/5.0
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	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height - Inches (cm)	2.4 (6.1) Series 5.1
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/40cm ahead of rear idler shaft	3/8″ - 1/2″(1.0 - 1.3cm)

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	NGK BPR9ES

Front Suspension

Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length - Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	RydeFX Twin Tube
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
Rear Track Shock (RTS)	RydeAFX Twin Tube
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043680-133 210 (36.75) 10-3/4" (27.3) 10-1/4" (26) 10-1/8" (25.7) 9-3/4" (24.8) **CAUTION: Do not adjust STD spring length greater than 10-3/4" or less than 9-5/8".**
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043741-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	155 = 16 (40.6)

NOTE: * = Rider weight with gear.

2011 800 RMK Assault

Model Numbers:
S11CN8GSA / S11CN8GSB / S11SN86EA

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4092-8044-OO8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0040-.0055 / 0.105-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	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	BLACK 140 - 330 7043342	BLACK 155-222 7043063	56/42 - .36 5135403	20:42 - 72
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		BLK/PUR 160-240 7043363		
3000-3600 (10,000-12,000)	10-58				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm) Re-torque after running engine.					

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

General

Width (in/cm)	48 / 121.9
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	446 / 202.3
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5.3/5.0
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	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	155 (393.7)
Pitch Plies	2.86 2
Lug Height - Inches (cm)	2.125 (5.4) (Competition)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/40cm ahead of rear idler shaft	3/8″ - 1/2″(1.0 - 1.3cm)

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	NGK BPR9ES

Front Suspension

Suspension Type	PRO-RIDE RMK Wide Adjustable
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	130 (22.75)
IFS Spring Installed Length - Inches (cm)	10.75 (27.3)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	41.5-42.5-43.5 (105.4-108-110.5) 38.58 (98) Measured inside of spindles.
Camber Inches (cm)	2.25 ± 0.31 (5.7 ± .8)
Toe Out Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	Walker Evans HPG w/IFP
FTS Spring Rate lbs/in (N/mm)	180 (31.5)
FTS Spring Installed Length-Inches (cm)	8.50 (21.6)
Rear Track Shock (RTS)	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043572-133 190 (33.25) 10-7/8" (27.6) 10-1/4" (26) 10" (25.4) 9-1/2" (24.1) **CAUTION: Do not adjust STD spring length greater than 11.0" or less than 9-3/8".**
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043740-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	155 = 16 (40.6)

NOTE: * = Rider weight with gear.

2011 800 PRO RMK 155/163

Model Numbers:
800 PRO RMK 155
S11CG8GSA / S11CG8GSL / S11CG8GSB
S11CG8GSM / S11CG8GEA

800 PRO RMK 163
S11CH8GSA / S11CH8GSB / S11CH8GEA

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4092-8044-OO8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 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	BLACK 140 - 330 7043342	BLACK 155-222 7043063	56/42 - .36 5135403	20:42 - 72
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		BLK/PUR 160-240 7043363		
3000-3600 (10,000-12,000)	10-58				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm) Re-torque after running engine.					

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

General

Width (in/cm)	46.5 / 118.1
Length (in/cm)	155 = 129/327.7 163 = 134/340.4
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	155 = 431/195.5 163 = 437/198.7
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	155=5.3/5.0 163=5.5/5.2
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	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	155 (393.7) 163 (414)
Pitch Plies	2.86 1
Lug Height - Inches (cm)	2.4 (6.1) Series 5.1
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/40cm ahead of rear idler shaft	3/8″ - 1/2″(1.0 - 1.3cm)

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	NGK BPR9ES

Front Suspension

Suspension Type	PRO-RIDE RMK Adjustable
Shocks	Walker Evans HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	100 (17.4)
IFS Spring Installed Length - Inches (cm)	10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	RMK Coil-Over 155/163 163= Tipped Rail
Front Track Shock (FTS)	Walker Evans HPG w/IFP
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
FTS Spring Installed Length Inches (cm)	8.50 (21.6)
Rear Track Shock (RTS)	Walker Evans HPG w/IFP
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043714-133 210 (36.75) 10-3/4" (27.3) 10-3/8" (26.3) 10-1/8" (25.7) 9-3/4" (24.8) **CAUTION: Do not adjust STD spring length greater than 11.0" or less than 9-3/4".**
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043740-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	155/163 = 16 (40.6)

NOTE: * = Rider weight with gear.

2012 600 RUSH

Model Numbers:
600 RUSH
S12BF6NSA / S12BF6NSL

600 RUSH PRO-R
S12BP6NSA / S12BP6NSB / S12BP6NSC / S12BP6NSL
S12BP6NEL / S12BP6NSM / S12BP6NSP

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4357-6044-OL6N
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM ±200	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 4
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	91+ (Non-Oxygenated)

Clutch Settings

ALTITUDE meters (feet)	DRIVE CLUTCH		P2 DRIVEN CLUTCH		
	Shift Weight	Clutch Spring	Clutch Spring	Driven Helix	Gearing
0-600 (0-2000)	10-64	BLACK 120 - 310 7043681	130 - 180 Tabbed 7043515	58/42 - .45 5137176	23:39 - 72
600-1200 (2000-4000)	10-62				22:39 - 72
1200-1800 (4000-6000)	10-60				22:40 - 72
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10,000)	10-56				20:41 - 72
3000-3600 (10,000-12,000)	10A-L				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm) Re-torque after running engine.					

Clutch Settings (Electric Start Models)

ALTITUDE meters (feet)	DRIVE CLUTCH		P2 DRIVEN CLUTCH		
	Shift Weight	Clutch Spring	Clutch Spring	Driven Helix	Gearing
0-600 (0-2000)	10-64	BLK/GRN 120 - 340 7042083	130 - 180 Tabbed 7043515	58/42 - .45 5137176	23:39 - 72
600-1200 (2000-4000)	10-62				22:39 - 72
1200-1800 (4000-6000)	10-60				22:40 - 72
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10,000)	10-56				20:41 - 72
3000-3600 (10,000-12,000)	10A-L				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm) Re-torque after running engine.					

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	121 (307)
Pitch Plies	2.52 2
Lug Height - Inches (cm) Base PRO-R	 1.0 (2.54) (Hacksaw) 1.25 (3.175) (Ripsaw)
Track tension sag in/mm with 10 lbs/4.54kg placed 16 in/40cm ahead of rear idler shaft	1/4″ - 3/8″(6.3 - 9.6mm)

General

Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	469 / 212
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6 / 5.7
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	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 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	NGK BPR9ES

Front Suspension

Suspension Type	PRO-RIDE (Fixed Camber)
Shocks Base PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Preload - Inches (cm) Base PRO-R	 3.25 (8.25) 2.875 (7.3)
Travel-Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Camber Inches (cm)	NOT ADJUSTABLE
Toe Out Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	PRO-RIDE Progressive
Front Track Shock (FTS) Base PRO-R	 Fox HPG w/IFP Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 2
FTS Spring Rate lbs/in (N/mm)	120 - 310 (21 - 54.25)
FTS Spring Installed Length-Inches (cm) Base Preload PRO-R Preload	 7.5 (19.05) 1.0 (2.54) 1.0 (2.54)
Rear Track Shock (RTS) Base PRO-R	 Fox HPG w/IFP Walker Evans Needle w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 4
Standard RTS Spring Rider Weight* 120 - 260lbs. Rate lbs/in (N/mm)	PN: 7043195-133 170 (29.75)
LW RTS Spring Rider Weight* 90 - 150lbs. Rate lbs/in (N/mm)	PN: 7041575-385 120 (21)
HD RTS Spring Rider Weight* 240 - 335+lbs. Rate lbs/in. (N/mm)	PN: 7043585-385 260 (45.5)
RTS Spring Rider / Weight Setting	Spring length set to rider weight using adjustment gauge. STD Gauge PN: 9923267 STD gauge supplied with vehicle. LW and HD springs - Use tape measure and RTS Spring Guide Table located in the Steering/Suspension Chapter.
Rear Travel Inches (cm)	14 (35.6)

NOTE: * = Rider weight in everyday clothing.
**** = From full soft (CCW) position.**

2012 800 RUSH

Model Numbers:
800 RUSH
S12BF8GSA / S12BF8GSL

800 RUSH PRO-R
S12BP8GSA / S12BP8GSB / S12BP8GSC / S12BP8GSL
S12BP8GEL / S12BP8GSM / S12BP8GSP

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4360-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	 <91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 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="4">BLACK 120-310 7043681</td><td rowspan="3">BLU/BLK 123-203 7043064</td><td rowspan="6">64/42 - .36 5135401</td><td rowspan="4">22:36-70</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 rowspan="2">10-60</td><td rowspan="3">BLK/PUR 160-240 7043363</td></tr>
<tr><td>2400-3000 (8000-10,000)</td><td rowspan="2">BLACK 140-330 7043342</td><td rowspan="2">20:38-70</td></tr>
<tr><td>3000-3600 (10,000-12,000)</td><td>10-58</td></tr>
<tr><td colspan="6">Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)
Re-torque after running engine.</td></tr>
</table>

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

General

Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6 / 5.7
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	 7.53 22 36 70 Polaris Synthetic (80W) 9 / 266 PERC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	121 (307)
Pitch Plies	2.52 2
Lug Height - Inches (cm) Base PRO-R	 1.0 (2.54) (Hacksaw) 1.25 (3.175) (Ripsaw)
Track tension sag in/mm with 10 lbs/4.54kg placed 16 in/40cm ahead of rear idler shaft	1/4″ - 3/8″(6.3 - 9.6mm)

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	NGK GR9A-EG

Front Suspension

Suspension Type	PRO-RIDE (Fixed Camber)
Shocks Base PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Preload - Inches (cm) Base PRO-R	 3.25 (8.25) 2.875 (7.3)
Travel-Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Camber Inches (cm)	NOT ADJUSTABLE
Toe Out Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	PRO-RIDE Progressive
Front Track Shock (FTS) Base PRO-R	 Fox HPG w/IFP Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 2
FTS Spring Rate lbs/in (N/mm)	120 - 310 (21 - 54.25)
FTS Spring Installed Length-Inches (cm) Base Preload PRO-R Preload	7.5 (19.05) 1.0 (2.54) 1.0 (2.54)
Rear Track Shock (RTS) Base PRO-R	 Fox HPG w/IFP Walker Evans Needle w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 4
Standard RTS Spring Rider Weight* 120 - 260lbs. Rate lbs/in (N/mm)	PN: 7043195-133 170 (29.75)
LW RTS Spring Rider Weight* 90 - 150lbs. Rate lbs/in (N/mm)	PN: 7041575-385 120 (21)
HD RTS Spring Rider Weight* 240 - 335+lbs. Rate lbs/in. (N/mm)	PN: 7043585-385 260 (45.5)
RTS Spring Rider / Weight Setting	Spring length set to rider weight using adjustment gauge. STD Gauge PN: 9923267 STD gauge supplied with vehicle. LW and HD springs - Use tape measure and RTS Spring Guide Table located in the Steering/Suspension Chapter.
Rear Travel Inches (cm)	14 (35.6)

NOTE: * = Rider weight in everyday clothing.
**** = From full soft (CCW) position.**

2012 800 RUSH PRO-R LE

Model Numbers:
S12BV8GSM / S12BV8GEM

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4360-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	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="4">BLACK 120-310 7043681</td><td rowspan="3">BLU/BLK 123-203 7043064</td><td rowspan="6">64/42 - .36 5135401</td><td rowspan="4">22:36-70</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 rowspan="2">10-60</td><td rowspan="3">BLK/PUR 160-240 7043363</td></tr>
<tr><td>2400-3000 (8000-10,000)</td><td rowspan="2">BLACK 140-330 7043342</td><td rowspan="2">20:38-70</td></tr>
<tr><td>3000-3600 (10,000-12,000)</td><td>10-58</td></tr>
<tr><td colspan="6">Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)
Re-torque after running engine.</td></tr>
</table>

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

General

Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6 / 5.7
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	 7.53 22 36 70 Polaris Synthetic (80W) 9 / 266 PERC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	121 (307)
Pitch Plies	2.52 2
Lug Height - Inches (cm)	1.352 (3.43) (Cobra)
Track tension sag in/mm with 10 lbs/4.54kg placed 16 in/40cm ahead of rear idler shaft	1/4″ - 3/8″(6.3 - 9.6mm)

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	NGK GR9A-EG

Front Suspension

Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Walker Evans Piggyback 16 Click Compression Adjustable / 16 Click Rebound Adjuster Factory Compression Setting** = 6 Factory Rebound Setting = 8
IFS Spring Rate lbs/in (N/mm)	80 (14)
Preload - Inches (cm)	3.25 (8.25)
Travel-Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	42.5 (108) 41.52 (105)
Camber - Inches (cm)	NOT ADJUSTABLE
Toe Out - Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	PRO-RIDE Progressive
Front Track Shock (FTS)	Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 2
FTS Spring Rate lbs/in (N/mm)	120 - 310 (21 - 54.25)
FTS Spring Installed Length-Inches (cm) Preload	7.5 (19.05) 1.0 (2.54)
Rear Track Shock (RTS)	Walker Evans Needle w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 4
Standard RTS Spring Rider Weight* 120 - 260lbs. Rate lbs/in (N/mm)	PN: 7043195-133 170 (29.75)
LW RTS Spring Rider Weight* 90 - 150lbs. Rate lbs/in (N/mm)	PN: 7041575-385 120 (21)
HD RTS Spring Rider Weight* 240 - 335+lbs. Rate lbs/in. (N/mm)	PN: 7043585-385 260 (45.5)
RTS Spring Rider / Weight Setting	Spring length set to rider weight using adjustment gauge. STD Gauge PN: 9923267 STD gauge supplied with vehicle. LW and HD springs - Use tape measure and RTS Spring Guide Table located in the Steering/Suspension Chapter.
Rear Travel Inches (cm)	14 (35.6)

NOTE: * = Rider weight in everyday clothing.
**** = From full soft (CCW) position.**

2012 600 Switchback

Model Numbers:
600 Switchback
S12BR6NSA / S12BR6NSL

600 Switchback Adventure
S12BA6NSL

600 Switchback PRO-R
S12BS6NSA / S12BS6NSB / S12BS6NSC / S12BS6NSL
S12BS6NEL / S12BS6NSM / S12BS6NSP

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4357-6044-OL6N
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM ±200	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 4
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	91+ (Non-Oxygenated)

Clutch Settings

ALTITUDE meters (feet)	DRIVE CLUTCH		P2 DRIVEN CLUTCH		
	Shift Weight	Clutch Spring	Clutch Spring	Driven Helix	Gearing
0-600 (0-2000)	10-64	BLACK 120 - 310 7043681	130 - 180 Tabbed 7043515	58/42 - .45 5137176	23:39 - 72
600-1200 (2000-4000)	10-62				22:39 - 72
1200-1800 (4000-6000)	10-60				22:40 - 72
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10,000)	10-56				20:41 - 72
3000-3600 (10,000-12,000)	10A-L				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm) Re-torque after running engine.					

Clutch Settings (Electric Start Models)

ALTITUDE meters (feet)	DRIVE CLUTCH		P2 DRIVEN CLUTCH		
	Shift Weight	Clutch Spring	Clutch Spring	Driven Helix	Gearing
0-600 (0-2000)	10-64	BLK/GRN 120 - 340 7042083	130 - 180 Tabbed 7043515	58/42 - .45 5137176	23:39 - 72
600-1200 (2000-4000)	10-62				22:39 - 72
1200-1800 (4000-6000)	10-60				22:40 - 72
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10,000)	10-56				20:41 - 72
3000-3600 (10,000-12,000)	10A-L				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm) Re-torque after running engine.					

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	136 (345.4)
Pitch Plies	2.52 2
Lug Height - Inches (cm) Base Adventure/PRO-R	 1.25 (3.175) (Ripsaw) 1.352 (3.43) (Cobra)
Track tension sag in/mm with 10 lbs/4.54kg placed 16 in/40cm ahead of rear idler shaft	1/4″ - 3/8″(6.3 - 9.6mm)

General

Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	469 / 212
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5 / 4.7
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	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 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	NGK BPR9ES

Front Suspension

Suspension Type	PRO-RIDE (Fixed Camber)
Shocks BASE/Adventure PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Preload - Inches (cm) Base/Adventure PRO-R	 3.25 (8.25) 2.875 (7.3)
Travel-Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Camber Inches (cm)	NOT ADJUSTABLE
Toe Out - Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	PRO-RIDE Progressive
Front Track Shock (FTS) Base/Adventure PRO-R	 Fox HPG w/IFP Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 2
FTS Spring Rate lbs/in (N/mm)	120 - 310 (21 - 54.25)
FTS Spring Installed Length-Inches (cm) Base/Adventure Preload PRO-R Preload	 7.5 (19.05) 1.0 (2.54) 1.0 (2.54)
Rear Track Shock (RTS) Base Adventure/PRO-R	 Fox HPG w/IFP Walker Evans Needle w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 4
Standard RTS Spring Rider Weight* 120 - 260lbs. Rate lbs/in (N/mm)	PN: 7043160-133 150 (26.25)
LW RTS Spring Rider Weight* 90 - 150lbs. Rate lbs/in (N/mm)	PN: 7041575-385 120 (21)
HD RTS Spring Rider Weight* 240 - 335+lbs. Rate lbs/in. (N/mm)	PN: 7043585-385 260 (45.5)
RTS Spring Rider / Weight Setting	Spring length set to rider weight using adjustment gauge. STD Gauge PN: 9923267 STD gauge supplied with vehicle. LW and HD springs - Use tape measure and RTS Spring Guide Table located in the Steering/ Suspension Chapter.
Rear Travel Inches (cm)	14 (35.6)

NOTE: * = Rider weight in everyday clothing.
**** = From full soft (CCW) position.**

2012 800 Switchback

Model Numbers:
800 Switchback
S12BR8GSA / S12BR8GSL

800 Switchback PRO-R
S12BS8GSA / S12BS8GSB / S12BS8GSC / S12BS8GSL
S12BS8GEL / S12BS8GSM / S12BS8GSP

800 Switchback PRO-R Adventure INTL
S12BC8GEL

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4360-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	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="4">BLACK 120-310 7043681</td><td rowspan="3">BLU/BLK 123-203 7043064</td><td rowspan="6">64/42 - .36 5135401</td><td rowspan="4">22:36-70</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 rowspan="2">10-60</td><td rowspan="3">BLK/PUR 160-240 7043363</td></tr>
<tr><td>2400-3000 (8000-10,000)</td><td rowspan="2">BLACK 140-330 7043342</td><td rowspan="2">20:38-70</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)
Re-torque after running engine.</td></tr>
</table>

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

General

Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5 / 4.7
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	 7.53 22 36 70 Polaris Synthetic (80W) 9 / 266 PERC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	136 (345.4)
Pitch Plies	2.52 2
Lug Height - Inches (cm) Base/Adventure PRO-R	 1.25 (3.175) (Ripsaw) 1.352 (3.43) (Cobra)
Track tension sag in/mm with 10 lbs/4.54kg placed 16 in/40cm ahead of rear idler shaft	1/4″ - 3/8″(6.3 - 9.6mm)

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	NGK GR9A-EG

Front Suspension

Suspension Type	PRO-RIDE (Fixed Camber)
Shocks Base Adventure/PRO-R	Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
Preload - Inches (cm) Base Adventure/PRO-R	 3.25 (8.25) 2.875 (7.3)
Travel-Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	42.5 (108) 41.52 (105)
Camber Inches (cm)	NOT ADJUSTABLE
Toe Out - Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	PRO-RIDE Progressive
Front Track Shock (FTS) Base Adventure/PRO-R	Fox HPG w/IFP Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 2
FTS Spring Rate lbs/in (N/mm)	120 - 310 (21 - 54.25)
FTS Spring Installed Length-Inches (cm) Base Preload ADV./PRO-R Preload	7.5 (19.05) 1.0 (2.54) 1.0 (2.54)
Rear Track Shock (RTS) Base Adventure/PRO-R	Fox HPG w/IFP Walker Evans Needle w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 4
Standard RTS Spring Rider Weight* 120 - 260lbs. Rate lbs/in (N/mm)	PN: 7043160-133 150 (26.25)
LW RTS Spring Rider Weight* 90 - 150lbs. Rate lbs/in (N/mm)	PN: 7041575-385 120 (21)
HD RTS Spring Rider Weight* 240 - 335+lbs. Rate lbs/in. (N/mm)	PN: 7043585-385 260 (45.5)
RTS Spring Rider / Weight Setting	Spring length set to rider weight using adjustment gauge. STD Gauge PN: 9923267 STD gauge supplied with vehicle. LW and HD springs - Use tape measure and RTS Spring Guide Table located in the Steering/Suspension Chapter.
Rear Travel Inches (cm)	14 (35.6)

NOTE: * = Rider weight in everyday clothing.
**** = From full soft (CCW) position.**

2012 Switchback Assault

Model Numbers:
Switchback Assault 1.3
S12CW8GSA / S12CW8GSL

Switchback Assault 2.0
S12CL8GSB / S12CL8GSM / S12CL8GEL

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4361-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	91+ (Non-Oxygenated)

Switchback Assault 1.3 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="4">BLACK
120-310
7043681</td><td rowspan="3">BLU/BLK
123-203
7043064</td><td rowspan="6">64/42 - .36
5135401</td><td rowspan="3">23:39 - 72</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 rowspan="2">10-60</td><td rowspan="3">BLK/PUR
160-240
7043363</td><td>21:40 - 72</td></tr>
<tr><td>2400-3000
(8000-10,000)</td><td rowspan="2">BLACK
140 - 330
7043342</td><td rowspan="2">20:42 - 72</td></tr>
<tr><td>3000-3600
(10,000-12,000)</td><td>10-58</td></tr>
<tr><td colspan="6">Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)
Re-torque after running engine.</td></tr>
</table>

Switchback Assault 2.0 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="4">BLACK
120-310
7043681</td><td rowspan="3">BLU/BLK
123-203
7043064</td><td rowspan="6">64/42 - .36
5135401</td><td rowspan="6">20:42 - 72</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 rowspan="2">10-60</td><td rowspan="3">BLK/PUR
160-240
7043363</td></tr>
<tr><td>2400-3000
(8000-10,000)</td><td rowspan="2">BLACK
140 - 330
7043342</td></tr>
<tr><td>3000-3600
(10,000-12,000)</td><td>10-58</td></tr>
<tr><td colspan="6">Drive Clutch Bolt Torque: 80 lb.ft. (108Nm)
Re-torque after running engine.</td></tr>
</table>

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	144 (365.76)
Pitch Plies	2.52 2
Lug Height - Inches (cm) 1.3 2.0	1.352 (3.43) (Cobra) 2.0 (5.08) (Series 4)
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)

General

Width (in/cm)	48 / 121.9
Length (in/cm)	126 / 320
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	457 / 212.7
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.0/5.7
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	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 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	NGK GR9A-EG

Front Suspension

Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length - Inches (cm)	10.0 (25.4)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	42.5 (108) 41.52 (105)
Camber Inches (cm)	NOT ADJUSTABLE
Toe Out - Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	Switchback 144 Tipped
Front Track Shock (FTS)	Walker Evans Piggyback 16 Click Compression Adjustable Factory Setting** = 8
FTS Spring Rate lbs/in (N/mm)	170 (21 - 54.25)
FTS Spring Installed Length Inches (cm)	7.25 (18.4)
Rear Track Shock (RTS)	Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 8
Torsion Springs	.359/77° LH=7041629-329 RH=7041630-329
Rear Travel Inches (cm)	14.5 (36.8)

2012 600 RMK 144

Model Numbers:
S12CK6GSA / S12CK6GSL / S12CK6GEA

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4316-6044-OL6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 2
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 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	BLACK/ GREEN 120 - 340 7042083	BLK/PUR 160-240 7043363	56/42 - .36 5135403	20:42 - 72
600-1200 (2000-4000)	10-62				
1200-1800 (4000-6000)	10-60				
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10,000)	10-56				
3000-3600 (10,000-12,000)	10-54				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm) Re-torque after running engine.					

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

General

Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.0/5.7
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	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	144 (393.7)
Pitch Plies	2.52 2
Lug Height - Inches (cm)	2.0 (6.1) Series 4
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/40cm ahead of rear idler shaft	3/8″ - 1/2″(1.0 - 1.3cm)

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	NGK GR9A-EG

Front Suspension

Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length - Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out - Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	RMK144 Tipped
Front Track Shock (FTS)	RydeFX Twin Tube
FTS Spring Rate lbs/in (N/mm)	170 (21 - 54.25)
FTS Spring Installed Length Inches (cm)	7.25 (18.4)
Rear Track Shock (RTS)	RydeAFX Twin Tube
Torsion Springs	.359/77° LH=7041629-329 RH=7041630-329
Rear Travel Inches (cm)	13 (33)

2012 600 RMK 155

Model Numbers:
S12CM6GSA / S12CM6GSL

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4316-6044-OL6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 2
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	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	BLACK/ GREEN 120 - 340 7042083	BLK/PUR 160-240 7043363	56/42 - .36 5135403	20:42 - 72
600-1200 (2000-4000)	10-62				
1200-1800 (4000-6000)	10-60				
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10,000)	10-56				
3000-3600 (10,000-12,000)	10-54				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm) Re-torque after running engine.					

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

General

Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.3/6.0
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	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height - Inches (cm)	2.4 (6.1) Series 5.1
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/40cm ahead of rear idler shaft	3/8″ - 1/2″(1.0 - 1.3cm)

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	NGK GR9A-EG

Front Suspension

Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length - Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out - Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	RydeFX Twin Tube
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
Rear Track Shock (RTS)	RydeAFX Twin Tube
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043680-133 210 (36.75) 10-3/4" (27.3) 10-1/4" (26) 10-1/8" (25.7) 9-3/4" (24.8) **CAUTION: Do not adjust STD spring length greater than 10-3/4" or less than 9-5/8".**
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043741-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)

NOTE: * = Rider weight with gear.

2012 600 PRO RMK 155

Model Numbers:
S12CG6GSA / S12CG6GSL / S12CG6GEA

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4452-6044-OL6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 2
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 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	BLACK/ GREEN 120 - 340 7042083	BLK/PUR 160-240 7043363	56/42 - .36 5135403	20:42 - 72
600-1200 (2000-4000)	10-62				
1200-1800 (4000-6000)	10-60				
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10,000)	10-56				
3000-3600 (10,000-12,000)	10-54				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm) Re-torque after running engine.					

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

General

Width (in/cm)	46.5 / 118.1
Length (in/cm)	129/327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	431/195.5
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5.3/5.0
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	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height - Inches (cm)	2.4 (6.1) Series 5.1
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/40cm ahead of rear idler shaft	3/8″ - 1/2″(1.0 - 1.3cm)

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	NGK GR9A-EG

Front Suspension

Suspension Type	PRO-RIDE RMK Adjustable
Shocks	Walker Evans HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	100 (17.4)
IFS Spring Installed Length - Inches (cm)	10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out - Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	Walker Evans HPG w/IFP
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
FTS Spring Installed Length Inches (cm)	8.50 (21.6)
Rear Track Shock (RTS)	Walker Evans HPG w/IFP
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043714-133 210 (36.75) 10-3/4" (27.3) 10-3/8" (26.3) 10-1/8" (25.7) 9-3/4" (24.8) **CAUTION: Do not adjust STD spring length greater than 11.0" or less than 9-3/4".**
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043740-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)

NOTE: * = Rider weight with gear.

2012 800 RMK 155

Model Numbers:
S12CM8GSA / S12CN8GSL / S12CM8GEA

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4361-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0040-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 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	BLACK 140 - 330 7043342	BLACK 155-222 7043063	56/42 - .36 5135403	20:42 - 72
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		BLK/PUR 160-240 7043363		
3000-3600 (10,000-12,000)	10-58				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm) Re-torque after running engine.					

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

General

Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.3/6.0
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	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height - Inches (cm)	2.4 (6.1) Series 5.1
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/40cm ahead of rear idler shaft	3/8″ - 1/2″(1.0 - 1.3cm)

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	NGK GR9A-EG

Front Suspension

Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length - Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out - Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	RydeFX Twin Tube
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
Rear Track Shock (RTS)	RydeAFX Twin Tube
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043680-133 210 (36.75) 10-3/4" (27.3) 10-1/4" (26) 10-1/8" (25.7) 9-3/4" (24.8) **CAUTION: Do not adjust STD spring length greater than 10-3/4" or less than 9-5/8".**
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043741-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)

NOTE: * = Rider weight with gear.

2012 800 RMK Assault

Model Numbers:
S12CN8GSA / S12CN8GEA / S12CN8GSB
S12CN8GSL / S12CY8GSA

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4359-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0040-.0055 / 0.105-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	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	BLACK 140 - 330 7043342	BLACK 155-222 7043063	56/42 - .36 5135403	20:42 - 72
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		BLK/PUR 160-240 7043363		
3000-3600 (10,000-12,000)	10-58				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm) Re-torque after running engine.					

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

General

Width (in/cm)	48 / 121.9
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	446 / 202.3
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5.3/5.0
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	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	155 (393.7)
Pitch Plies	2.86 2
Lug Height - Inches (cm) Base Powder	 2.125 (5.4) (Competition) 2.4 (6.1) Series 5.1
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/40cm ahead of rear idler shaft	3/8″ - 1/2″(1.0 - 1.3cm)

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	NGK GR9A-EG

Front Suspension

Suspension Type	PRO-RIDE RMK Wide Adjustable
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	130 (22.75)
IFS Spring Installed Length - Inches (cm)	10.75 (27.3)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	41.5-42.5-43.5 (105.4-108-110.5) 38.58 (98) Measured inside of spindles.
Camber Inches (cm)	2.25 ± 0.31 (5.7 ± .8)
Toe Out - Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	Walker Evans HPG w/IFP
FTS Spring Rate lbs/in (N/mm)	180 (31.5)
FTS Spring Installed Length-Inches (cm)	8.50 (21.6)
Rear Track Shock (RTS)	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043572-133 190 (33.25) 10-7/8" (27.6) 10-1/4" (26) 10" (25.4) 9-1/2" (24.1) **CAUTION: Do not adjust STD spring length greater than 11.0" or less than 9-3/8".**
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043740-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)

NOTE: * = Rider weight with gear.

2012 800 PRO RMK 155/163

Model Numbers:
800 PRO RMK 155
S12CG8GSA / S12CG8GEA / S12CG8GSB
S12CG8GSC / S12CG8GSL / S12CG8GSM
S12CG8GSP

800 PRO RMK 163
S12CH8GSA / S12CH8GEA / S12CH8GSB
S12CH8GSC / S12CH8GSL / S12CH8GSM
S12CH8GSP

Engine

Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4359-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

Fuel Delivery

Type - Number of Fuel Injectors	DC-CFI - 2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure - PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	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	BLACK 140 - 330 7043342	BLACK 155-222 7043063	56/42 - .36 5135403	20:42 - 72
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		BLK/PUR 160-240 7043363		
3000-3600 (10,000-12,000)	10-58				
Drive Clutch Bolt Torque: 80 lb.ft. (108Nm) Re-torque after running engine.					

NOTE: OPTIONAL - USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

General

Width (in/cm)	46.5 / 118.1
Length (in/cm)	155 = 129/327.7 163 = 134/340.4
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	155 = 431/195.5 163 = 437/198.7
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	155=5.3/5.0 163=5.5/5.2
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	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

Track

Width - Inches (cm)	15 (38)
Length - Inches (cm)	155 (393.7) 163 (414)
Pitch Plies	2.86 1
Lug Height - Inches (cm)	2.4 (6.1) Series 5.1
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/40cm ahead of rear idler shaft	3/8″ - 1/2″(1.0 - 1.3cm)

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	NGK GR9A-EG

Front Suspension

Suspension Type	PRO-RIDE RMK Adjustable
Shocks	Walker Evans HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	100 (17.4)
IFS Spring Installed Length - Inches (cm)	10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out - Inches (mm)	0 -1/8″ (0 - 3)

Rear Suspension

Suspension Type	RMK Coil-Over 155/163
Front Track Shock (FTS)	Walker Evans HPG w/IFP
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
FTS Spring Installed Length Inches (cm)	8.50 (21.6)
Rear Track Shock (RTS)	Walker Evans HPG w/IFP
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043714-133 210 (36.75) 10-3/4" (27.3) 10-3/8" (26.3) 10-1/8" (25.7) 9-3/4" (24.8) **CAUTION: Do not adjust STD spring length greater than 11.0" or less than 9-3/4".**
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043740-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)

NOTE: * = Rider weight with gear.

SNOWMOBILE NUMBER DESIGNATIONS

Model Number Designation

Example: S10BF6KSA

GROUP	MODEL YEAR	MODEL LINE	MODEL TYPE	ENGINE MODIFIER	VIN IDENTIFIER	OPTION IDENTIFIER
1st digit	2/3rd digit	4th digit*	5th digit*	6th/7th digits*	8th digit	9th digit**
S	10 11 12	B = Pro-Ride C = Hybrid	A = Base Adventure C = PRO-R Adv. F = 120/121 D= LX E= PRO-R LX F = Rush Base G = 155 Premium H = 163 Premium K = 144 Base L = SB Assault 2” M = 155 Base N = 155 Assault RMK P = Rush PRO-R R = Switchback Base S = Switchback Premium V = Limited Edition W = SB Assault 1.35” Y = Assault 155 2.4”	6G = 600 DC-CFI-2 6K = 600 DC-CFI-2+2 6N = 600 DC-CFI-4 8G = 794 DC-CFI-2	S = Standard E = Europe	A = Base B = 1st Opt. C = 2nd Opt. L = Electric Start M = Electric Start P = Electric Start T = Track Opt.
*=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 used in model number only. They are not used with the 17 digit VIN.						

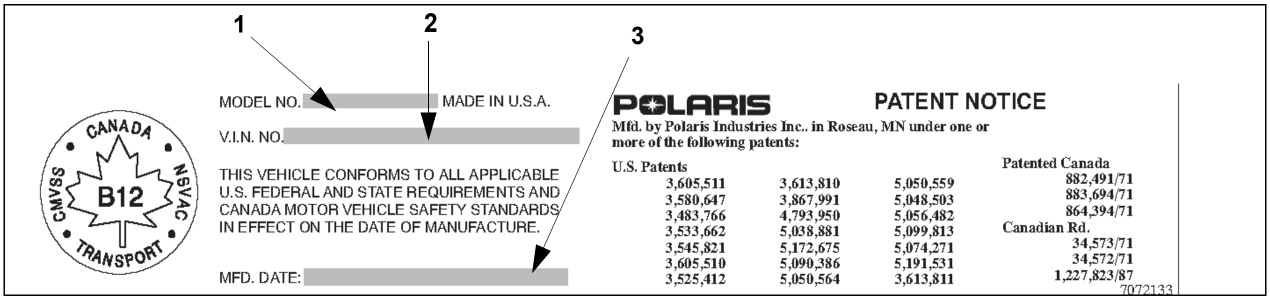
VEHICLE IDENTIFICATION NUMBER

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	B	F	6	K	S	0	2	2	0	0	0	0	0	0

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.



PUBLICATION PART NUMBERS

2010 Publications

MODEL	OWNER'S MANUAL	SUPPLEMENT	PARTS BOOK
600 RUSH	9922276	9922279 9922648 (S10BF6KSL)	9922280

NOTE: Owner's Manuals and electronic parts catalogs available at: http://www.polarisindustries.com/en-us/RidersPortal.

2011 Publications

MODEL	OWNER'S MANUAL	SUPPLEMENT	PARTS BOOK
600 RUSH	9922829	9922839 (RUSH) 9922830 (RUSH LX) 9922835 (PRO-R Retro LX) 9922841 (PRO-R)	9922831 (RUSH/LX) 9922836 (PRO-R)
800 RUSH		9922840 (RUSH) 9922833 (Retro LX) 9922837 (PRO-R Retro LX) 9922842 (PRO-R)	9922834 (RUSH/LX) 9922838 (PRO-R)
800 Switchback Assault	9922844	9922852	9922853
800 RMK 155		9922848	9922849
800 RMK Assault		9922850	9922851
800 PRO RMK 155/163		9922845 (155) 9922847 (163)	9922846

NOTE: Owner's Manuals and electronic parts catalogs available at: http://www.polarisindustries.com/en-us/RidersPortal.

2012 Publications

MODEL	OWNER'S MANUAL	SUPPLEMENT	PARTS BOOK
600/800 RUSH Models	9923316	600 RUSH - 9923330 600 RUSH Electric Start - 9923326 800 RUSH Electric Start - 9923328 800 RUSH - 9923332	600 RUSH PRO-R - 9923327 800 RUSH PRO-R - 9923329 600 RUSH - 9923331 800 RUSH - 9923333
600/800 Switchback Models	9923308	600 Switchback Electric Start - 9923309 800 Switchback - 9923336 600 Switchback - 9923338 800 Switchback Electric Start - 9923340	600 Switchback - 9923335 600 Adventure - 9923310 800 Switchback - 9923337 600 Switchback PRO-R - 9923339 800 Switchback PRO-R - 9923341 800 Adventure INTL. - 9923483
800 Switchback Assault 1.3/2.0	9923351	1.3 - 9923359 2.0 - 9923352	1.3 - 9923360 2.0 - 9923353
600/800 RMK Models	9923345	600 PRO RMK - 9923343 800 PRO RMK 155 - 9923346 800 PRO RMK 163 - 9923348 600 RMK 144 - 9923349 600 RMK 155 - 9923354 800 RMK 155 - 9923355 RMK Assault - 9923357	600 RMK 144/155 - 9923350 600 PRO RMK - 9923484 800 PRO RMK 155/163 - 9923347 800 RMK 155 - 9923356 RMK Assault - 9923358

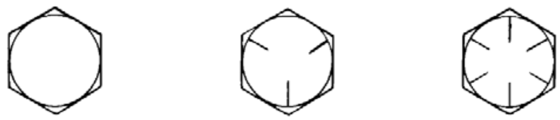
NOTE: Owner’s Manuals and electronic parts catalogs available at: http://www.polarisindustries.com/en-us/RidersPortal.

Service/Safety Bulletins

BULLETIN	MODEL/YEAR	DESCRIPTION
S-09-10	600 RUSH/2010	August Build 2010 600 RUSH PRO-RIDE Inspections/Updates (Select Models)
S-10-01	600 RUSH/2010	2010 600 RUSH PRO-RIDE ECU Reflash (All Models)
S-11-02	800 PRO RMK 155/163 800 RMK Assault 2011	2011 800 PRO RMK/RMK Assault Oil Hose Routing (All Models)

GENERAL REFERENCE

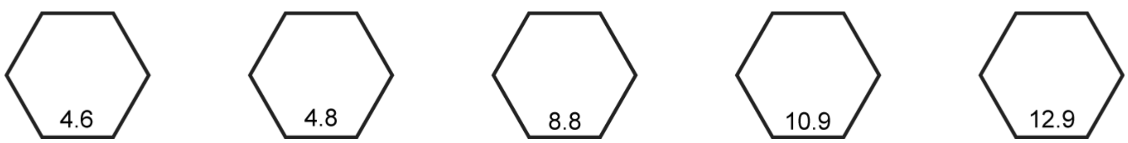
Standard Bolt Torque Specification



Grade 2 Grade 5 Grade 8

Bolt Size	Grade 2 ft-lb (Nm)	Grade 5 ft-lb (Nm)	Grade 8 ft-lb (Nm)
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)

Metric Bolt Torque Specification



Bolt Size	GRADE				
	4.6	4.8	8.8/8.9	10.9	12.9
	FT-LB/NM (DRY THREADS)				
M3	.3/.5	.5/.7	1/1.3	1.5/2	1.5/2
M4	.8/1.1	1/1.5	2/3	3/4.5	4/5
M5	1.5/2.5	2/3	4.5/6	6.5/9	7.5/10
M6	3/4	4/5.5	7.5/10	11/15	13/18
M8	7/9.5	10/13	18/25	26/35	33/45
M10	14/19	18/25	37/50	55/75	63/85
M12	26/35	33/45	63/85	97/130	110/150
M14	37/50	55/75	103/140	151/205	177/240
M16	59/80	85/115	159/215	232/315	273/370
M18	81/110	118/160	225/305	321/435	376/510

Gasoline Volatility

MAXIMUM REID VAPOR		AMBIENT AIR TEMP	
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			

Gasoline 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 driveability problems and hard starting when warm.

Fuel / Oil Premix Ratios

FUEL (GALLONS)	40:1 RATIO (OUNCES OF OIL)
5	16

Formula:

- 1 Gallon = 128 Ounces
- 128 / (Desired Ratio) = Ounces of oil for every 1 gallon of fuel.
- 128 / 40 (40:1 Ratio) = 3.2 ounces of oil for every 1 gallon of fuel.

Always mix ratio in 5 gallon increments.

NOTE: A 40:1 premix should always be used during engine break-in or after rebuilding the engine.

Fuel Recommendations

For maximum performance, Polaris recommends the use of 91 octane or higher non-oxygenated fuel. Although lower octane and/or oxygenated fuel is usable, some engine performance will be lost and fuel economy will decrease.

Do not use lower than 87 octane fuel. Do not use oxygenated fuel containing more than 10% ethanol. Never use E85 fuel in your snowmobile.

NOTE: Operating with an obstructed fuel system will result in serious engine damage. Perform maintenance as recommended.

Prolonged exposure to petroleum based products may damage paint. Always protect painted surfaces when handling fuel.

Fuel System Deicers

If you use non-ethanol fuel (sometimes labeled “non-oxygenated”), Polaris recommends the regular use of a isopropyl-based fuel system deicer. Add one to two ounces per gallon (8-16 ml per liter) of gasoline to prevent damage resulting from fuel system icing. Never use deicers or additives containing methanol. Polaris recommends the use of Carbon Clean Plus.

If you use fuel with up to 10% ethanol (sometimes labeled “oxygenated”) do not add deicers or additives that contain any form of alcohol.

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

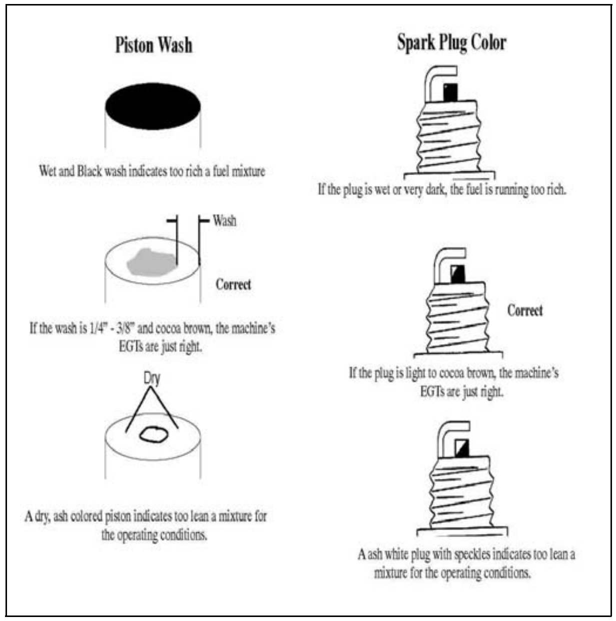
1/64 .... .0156
.... 1/32 .... .0312 .... 1 mm= .0394"
3/64 .... .0469
.... 1/16 .... .0625
5/64 .... .0781 .... 2 mm = .0787"
.... 3/32 .... .0938
7/64 .... .1094 .... 3 mm =.1181"
.... 1/8......... .1250
9/64 .... .1406
.... 5/32 .... .1563 .... 4 mm = .1575"
11/64 .... .1719
.... 3/16 .... .1875 .... 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 establish the EGTs for your machine.



Glossary Of Terms

ABDC: After bottom dead center.

ACV: Alternating current voltage.

Alternator: Electrical generator producing voltage alternating current.

ATDC: After top dead center.

BBDC: Before bottom dead center.

BDC: Bottom dead center.

BTDC: Before top dead center.

CC: Cubic centimeters.

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

CFI: Cleanfire Fuel Injection fuel management and ignition system. In this system, all system and chassis voltage is DC.

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

CI: Cubic inches.

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

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

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

Crankshaft Run-Out: Run-out or “bend” of crankshaft measured with a dial indicator while crankshaft is supported between centers on V blocks or resting in crankcase. Measure at various points especially at PTO.

CVT: Continuously Variable Transmission (Drive Clutch System)

DCV: Direct current voltage.

DC-CFI: Cleanfire Fuel Injection fuel managment and ignition system featuring a stator with a separate DCV system coil and ACV lighting coil.

DET (Detonation Elimination Technology): Engine monitoring and control software that reduces ignition timing and/or adds fuel when detonation is detected.

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

Electrical Open: Open circuit. An electrical circuit which isn't complete.

Electrical Short: Short circuit. An electrical circuit which is completed before the current reaches the intended load. (i.e. a bare wire touching the chassis).

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

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

ft.: Foot or feet.

ft-lb: (foot-pound) A force of one pound at the end of a lever one foot in length, applied in a rotational direction.

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

gal.: Gallon.

ID: Inside diameter.

in.: Inch/inches.

in-lb: (inch pounds) A force of one pound at the end of a lever one foot in length, applied in a rotational direction. 12 in. lbs. = 1 ft. lb.

kg/cm^2: Kilograms per square centimeter.

kg-m: Kilogram meters.

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

l or ltr: Liter.

lbs/in^2: Pounds per square inch.

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

m: Meter/meters.

Mag: Magneto.

Magnetic Induction: As a conductor (coil) is moved through a magnetic field, a voltage will be generated in the windings. Mechanical energy is converted to electrical energy in the stator.

mi.: Mile/miles.

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

Nm: Newton meters.

OD: Outside diameter.

Ohm: The unit of electrical resistance opposing current flow.

oz.: Ounce/ounces.

PERC: Polaris Electronic Reverse Control

Piston Clearance: Total distance between piston and cylinder wall.

psi.: Pounds per square inch.

PTO: Power take off.

PVT: Polaris Variable Transmission

qt.: Quart/quarts.

Regulator: Voltage regulator. Regulates battery charging system output at approx. 14.5 DCV as engine RPM increases.

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

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

RPM: Revolutions per minute.

Seized Piston: Galling of the sides of a piston. Usually there is a transfer of aluminum from the piston onto the cylinder wall.

Stator Plate: The plate mounted under the flywheel supporting the battery charging coils.

TDC: Top dead center. Piston's most outward travel from crankshaft.

VES: Variable Exhaust System

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

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

WOT: Wide open throttle.

CHAPTER 2
Maintenance

PERIODIC MAINTENANCE

Periodic Maintenance Schedule

Periodic Maintenance Table

Item	Frequency / Intervals				
	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
Drive Belt Condition / Ride Out	Pre-Ride Inspection				I
Drive / Driven Clutch Condition	I	C	I	I	C
Drive Belt Tension			I		I
Engine					
Engine Mounts		I	I	I	I
Engine Mount Screws 2010-2011 Models with 14mm Head Diameter Bolts 2012/All with 16mm Head Diameter Bolts	Re-torque engine mount screws every 1,000 miles (1,600 km). Inspect every 1,000 miles (1,600 km).				
Recoil Handle / Rope / Function		I	I	I	I
Engine Torque Link	I			I	I
Cylinder Head Bolts	I	I	I	I	I
Cylinder Base Nuts		I	I	I	
Ignition Timing				I	I
Spark Plugs	I	I	I	R	I
Exhaust System / Retaining Springs		I	I	I	I
VES Valves / Solenoid / Hoses		I / C	I / C	I / C	I / C
Cooling System / Hoses / Coolant Level / Heat Exchangers	Pre-Ride Inspection				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	I
Fuel Filter	Replace every 2,000 miles (3,200km) or every 2 years.				
Throttle Lever / Throttle Cable	I	L	L	L	L

Periodic Maintenance Table

Item	Frequency / Intervals				
	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 Pump Adjustment				I	I
Oil Hoses	I	I	I	I	I
Air Box	I		I		I
Electrical System					
Auxiliary Shut-Off	Pre-Ride Inspection				I
Throttle Safety Switch	Pre-Ride Inspection				I
Ignition Switch	Pre-Ride Inspection				I
Headlights / Brake light / Taillights	Pre-Ride Inspection				I
Hand / Thumbwarmers	Pre-Ride Inspection				I
PERC Reverse System	Pre-Ride Inspection				I
Chassis / Suspension					
Ski Toe Alignment		I	I	I	
Suspension Mounting Bolts	Pre-Ride Inspection				I
Rear Chain Case Fasteners 2010-2011 Pro-Ride Models 2012 (Bonded Chaincase)	Re-torque three lower fasteners every 1,000 miles (1,600 km). Visually Inspect				
Steering Fasteners / Linkage / Handlebars	Pre-Ride Inspection				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
Rebuildable IFP Shocks	High performance shocks should have oil changed and recharged at the end of every riding season.				
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 Semi-Synthetic Oil (Use for engine break-in.) Quart Gallon 2.5 Gallon 16 Gallon 55 Gallon 330 Gallon	 2875035 2875036 2875038 2875037 2875039 2875040
VES Gold Plus 2-Cycle Oil (All Variable Exhaust Engines) Quart Gallon 2.5 Gallon 16 Gallon 55 Gallon 330 Gallon Liter 4 Liter 25 Liter 208 Liter	 2877882 2877883 2877884 2877885 2877886 2877892 2877887 2877888 2877889 2877890
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 - 5W - Fox Quart Gallon	 2870995 2872279
Shock Oil - 5W - Ryde FX / Arvin	2873716
Brake Fluid - DOT 4	2872189
Fogging Oil Aerosol Quart	 2870791 2871517
Premium All Season Grease 3oz. Grease Gun Kit 14oz. Tube	 2871312 2871423
Starter Grease	2871460
Carbon Clean Plus	2871326
Isopropyl	2870505

DESCRIPTION	PART NUMBER
Fuel Stabilizer Quart 2.5 Gallon	 2870652 2872280
Three Bond Sealant 5oz.	2871557
Loctite® 242™	2871950
Shock Thread Spray Lubricant Use only on Rush rear track shocks without thrust bearing. Do not use lubricant on any other shock.	2878018

BREAK-IN PROCEDURES

Engine Break-In Procedure

The first tank of fuel is considered the break-in period for the engine. During this time it is critical to not operate the engine at full throttle for more than a few seconds. Vary the throttle speed as much as possible. Monitor engine temperatures and fluid levels often during the break-in period.

NOTE: During the engine break-in period, verify the oil injection system is functioning by monitoring the oil level in the oil tank. If the oil level does not drop, inspect the oil injection system.

Polaris recommends filling the oil tank and pre-mixing the first full tank of fuel with Premium 2-Cycle Semi-Synthetic Oil when the engine is either new or refurbished (new pistons, crankshaft, cylinder, etc.). Polaris semi-synthetic engine oil will seat the rings faster than when using Polaris VES Gold Plus oil.

After the break-in period use Polaris VES Gold Plus engine oil for normal operation.

Fuel/Oil Premix Ratio

During the break-in period, premix the first tank a fuel (10 US gallons) using a 40:1 (fuel:oil) ratio.

Formula = 1 US Gallon = 128oz. / 40 (Desired Ratio) = 3.2oz. for every 1 US gallon of fuel.

10 US gallons of fuel requires 32oz. of oil to achieve a 40:1 premix ratio.

Always mix fuel and oil 5 gallons at a time. Never fill the tank with fuel and then add oil.

Drive Belt Break-In Procedure

The break-in period for a new drive belt is 30 miles. During this time, vary the throttle position under 50% and limit full throttle use.

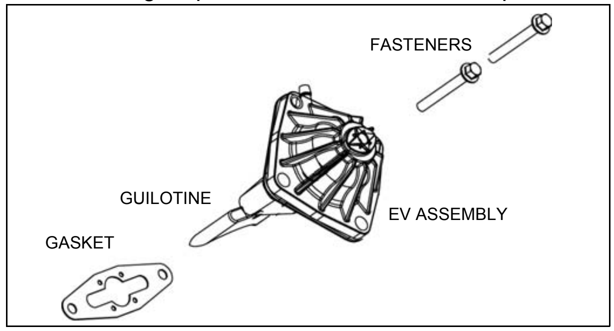
New drive belts that feature a sanded finish should be first washed with warm, soapy water and allowed to air dry prior to use.

Always take time to warm up the belt and driveline prior to operating the snowmobile. Free track and skis from the ground before engaging throttle.

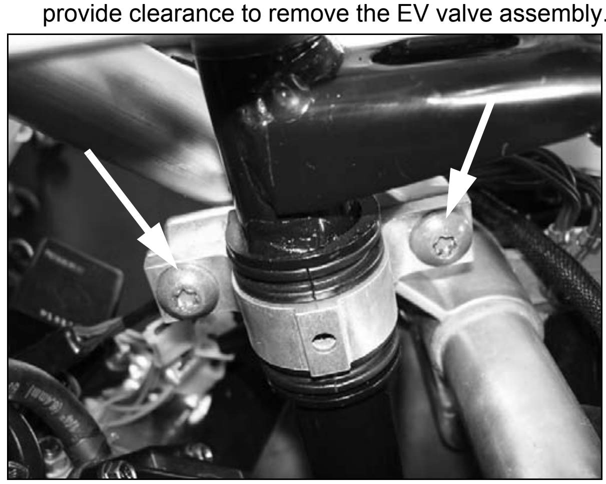
ENGINE MAINTENANCE

Variable Exhaust Valve Cleaning

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

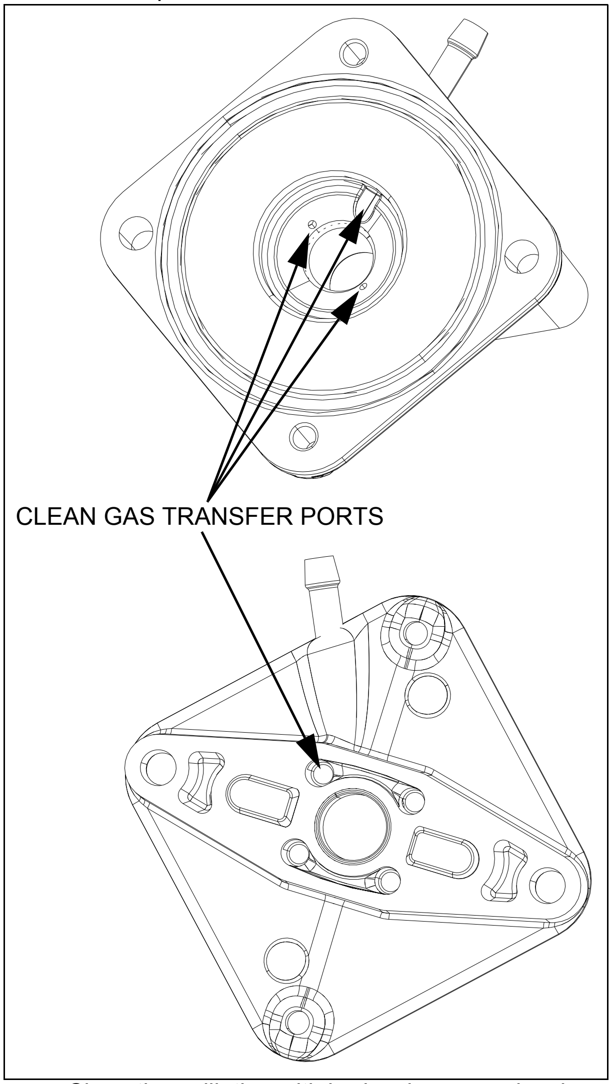


1. Remove the vent hose from the EV base fitting.
2. On the MAG VES assembly, remove the two fasteners that secure the valve assembly to the cylinder. Remove the cover after the assembly is removed from the engine.
3. On the PTO VES assembly, remove all four screws. Remove the cover and spring from the EV base.
4. Remove the two screws that secure the lower steering shaft clamp to the over structure. Doing this will provide clearance to remove the EV valve assembly.

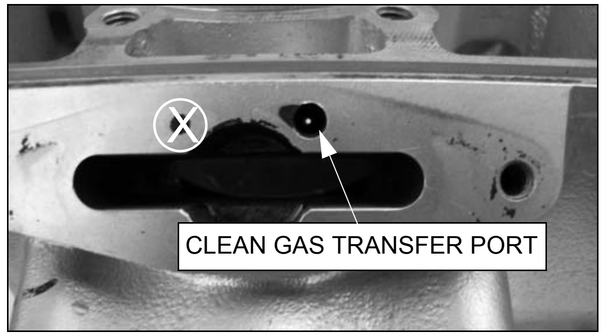


5. Carefully extract the guillotine out of the cylinder. Discard the gasket. Do not excessively push on the lower steering shaft when removing the EV assembly.
6. Using a clean rag or shop towel, remove the oil residue from the cylinder, guillotine, and EV base.

7. Inspection:
   - Inspect the guillotine for signs of damage. Replace guillotine if damage is found. Inspect the cylinder and piston for damage if guillotine is damaged.
   - Inspect the spring. Replace if rusted, damaged, or bent.
   - Inspect bellows. Replace if damaged or excessively worn.
   - Submerse the assembly in parts cleaner. Thoroughly flush the EV housing base, bellows, and mating surfaces. Verify no carbon is in the gas transfer ports.



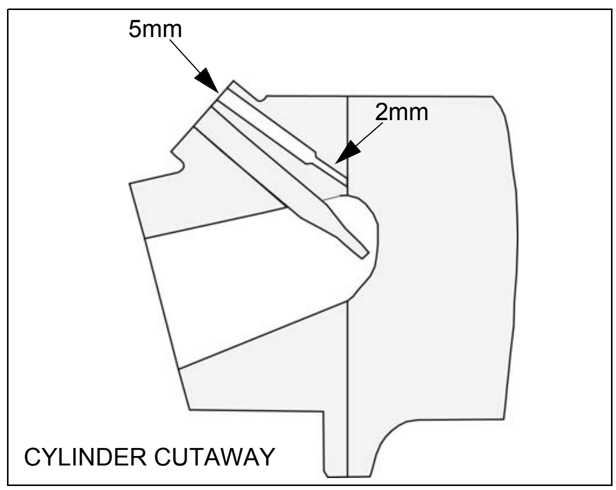
   - Clean the guillotine with brake cleaner and a piece of fine steel wool. Clean only to remove hardened carbon deposits.
8. Once clean, rinse blade with mild detergent and water. Dry completely.
9. Inspect the VES gas ports on the cylinder(s) for blockage. Remove the spark plugs and use a piston inspection light to illuminate the port(s).



10. Light must be seen through the VES gas port(s). If a port appears to be blocked, use compressed air or a long .075" drill bit to clean the port.

NOTE: Do not drill hole marked: "X".

⚠ CAUTION
Rotate the crankshaft to move piston(s) to BDC-below VES gas ports. Do not damage pistons when using drill bit to clean ports.



NOTE: The transfer port diameter starts at 5mm and then tapers to 2mm as it approaches the cylinder wall. Do not damage taper and/or 2mm bore with a larger drill bit.

11. Install a new gasket, then reinstall the EV assembly. Apply Loctite® 242™ to the fastener threads, and torque to specification.

NOTE: Always install a new EV base gasket. Never re-use the gasket, or modify a new gasket.

= T
Exhaust Valve Housing Fasteners: **10.5-13.5 ft-lb (14.3-18.3 Nm) - Apply Loctite® 242™**

12. Reconnect the vent hoses.
13. Torque lower steering post clamp fasteners to specification.

= T
Lower Steering Post Clamp Fasteners: **15 ft-lb (20 Nm)**

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

Spark Plugs

Inspect/replace the spark plugs as outlined in the periodic maintenance table.

The spark plugs can be serviced by opening the left and right door panels.

Replace a spark plug when the following occurs:

- Spark plug is damaged/insulator is cracked or missing
- Plug electrode/insulator is fouled
- Replace at interval in maintenance table

When inspecting a spark plug, take note of the electrode and insulator color. A light brown/dark tan color indicates the engine is running properly.

If the spark plug electrode/insulator is white, the engine may be running lean. Inspect the engine, throttle body boots, etc. for air leaks.

If the spark plug electrode/insulator is black, oily, or shows heavy soot, the engine may be running rich. Inspect the engine, fuel system, and lubrication system for problems.

Set the electrode gap to specification before installing a new spark plug.

= In. / mm.
Spark Plug Gap:**.027 (.70mm)**

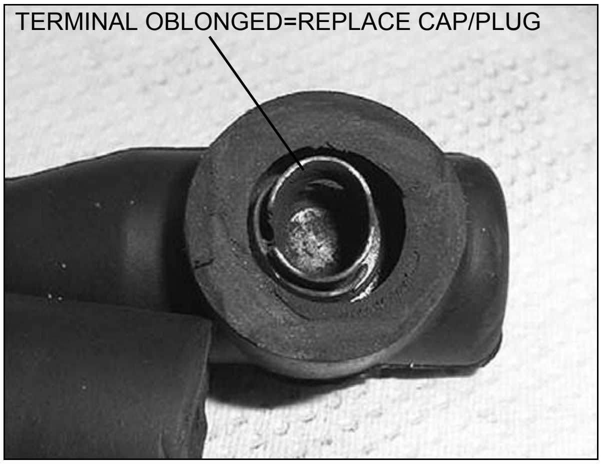
= T
Spark Plug Torque: **18-21.6 ft-lb (24-30 Nm)** **Apply anti-seize to threads.**

Spark Plug Caps/Spark Plug Terminals

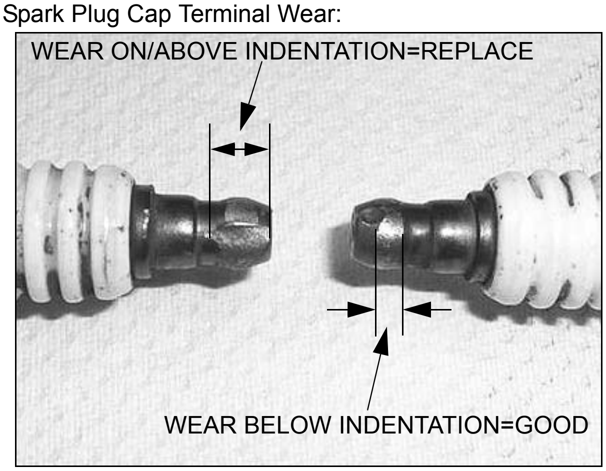
Inspect the spark plug caps when performing spark plug maintenance.

Visually inspect the terminal ring inside the cap and the spark plug tip for oblonging/uneven wear. Replace the spark plug and corresponding cap if the wear patterns on the cap terminal ring and spark plug terminal resemble the photos below.

Spark Plug Cap Terminal Ring Wear:



Spark Plug Cap Terminal Wear:



Use gentle force and a slight twisting motion when installing plug caps. An audible “click” should be heard when the terminal ring is properly seated below terminal tip indentation.

Spark Plug Wire Maintenance/Routing

Inspect each spark plug wire and the routing of both high tension wires when performing spark plug maintenance.

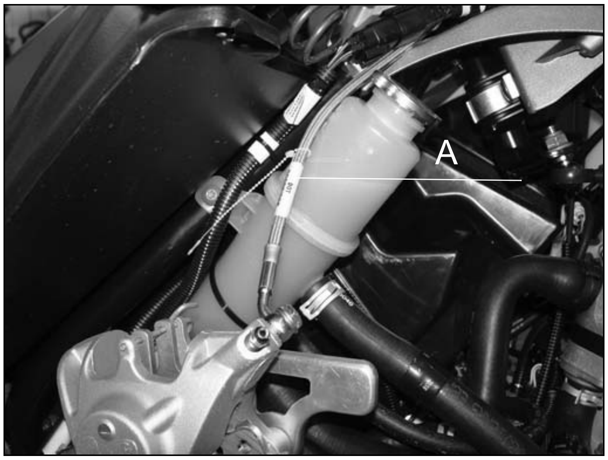
Replace damaged wires/ignition coils if found. Verify the spark plug wires are routed as shown in the corresponding photo below. Proper spark plug wire routing is critical in preventing spark plug cap/wire wear.

A = Panduit strap securing both high tension wires to EV vent hose.
B = T-Clip

Surge Tank

Keep the level of the coolant inside the surge tank at the FULL COLD level mark (A) 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-mixed antifreeze. This premium antifreeze is rated for temperatures down to -62°F (-52°C).

Cooling System Bleeding

1. Position the snowmobile in a well-ventilated area.
2. Raise the front-right ski/suspension off the ground.
3. Allow the cooling system to cool completely. Open the engine compartment door panels. Remove the hood.
4. Verify the coolant level in the surge tank is at the COLD mark. Fill the surge tank with coolant if required. Loosely install the pressure cap.
5. 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.
6. Apply the parking brake and start the engine.
7. Immediately add coolant to the surge tank if the coolant level drops significantly after the engine is 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. Continue to run the engine until the engine temperature is at least 130° F (54° C). Secure the bleed screw after the thermostat begins to open and coolant begins to flow out of the bleed screw.
9. Verify the tunnel coolers and front heat exchanger (if equipped) begin to warm as the engine continues to run.
10. The thermostat outlet bleed screw may need to be opened slightly to allow any residual air trapped in the outlet to escape.
11. Verify that all of the coolers are warm, including the tunnel-length cooling system. Shut off the engine once all of the tunnel coolers are warm. Release the parking brake.

⚠ CAUTION

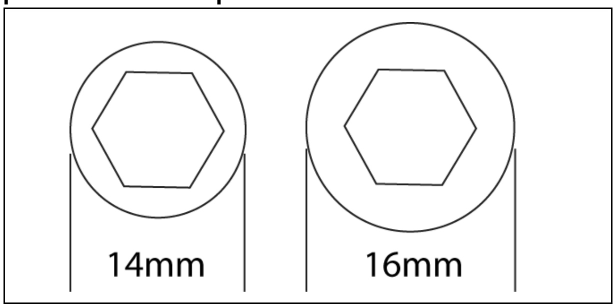
Always verify all tunnel coolers / heat exchanger are warm to the touch. A cooler or return hose that is significantly “colder” than another cooler or hose is an indication of trapped air within the cooling system.

12. Allow time for the coolant temperature to cool. Re-check the coolant level in the surge tank. Add more coolant if required. Reinstall the surge tank cap, hood, and engine compartment door panels.

Engine Mount Bolt Re-Torque

NOTE: The engine mount bolt maintenance procedure only applies to 2010-2011 Pro-Ride vehicles using the original 14mm head diameter bolts.

2012 models and 2010-2011 engine mount bolt service parts use 16mm head diameter bolts and only require periodic visual inspection.

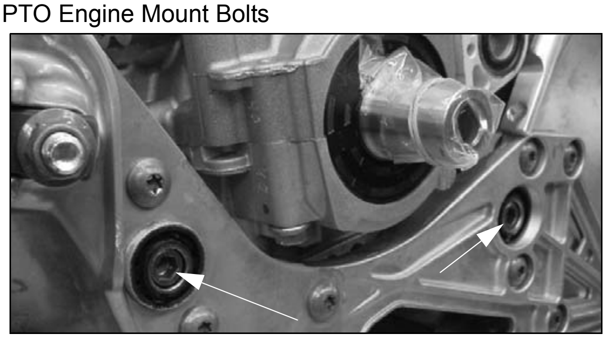


Verify and re-torque the four engine mount bolts as outlined in the periodic maintenance table.

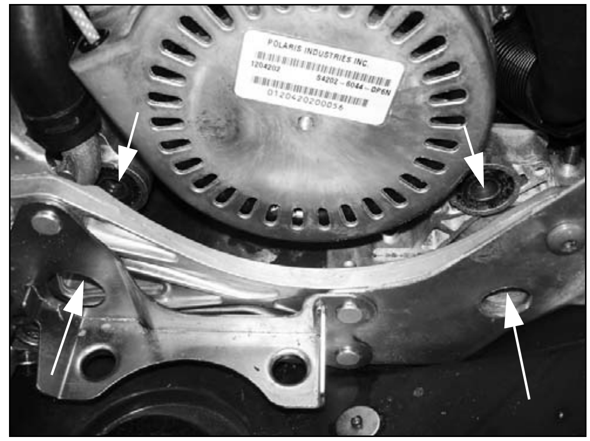
The drive clutch and exhaust silencer will require removal to gain access to all four engine mount bolts.

NOTE: Original 14mm head bolts on 2010 Pro-Ride models were GREEN. Original 14mm head bolts on 2011 Pro-Ride models were SILVER. Bolt color must be noted to properly torque fasteners.

PTO Engine Mount Bolts



MAG Engine Mount Bolts

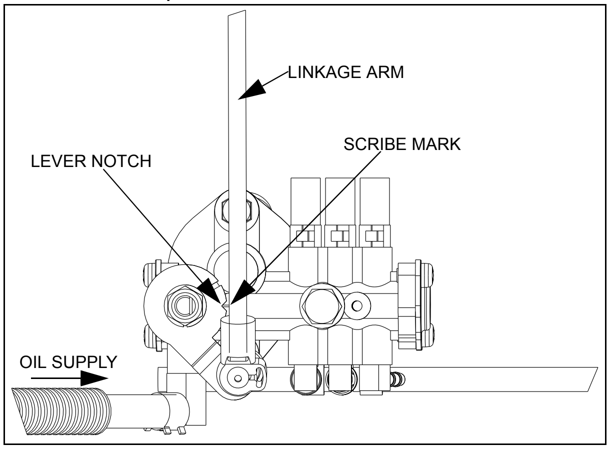


= T
14mm Head Diameter Engine Mount Bolts: **Green M10x1.5x45-14mm Head (8.8)** **30 ft-lb (41 Nm)** **Silver M10x1.5x50-14mm Head (12.9)** **35 ft-lb (48 Nm)** Note two torque values for Bolts. Always clean engine mount threads with compressed air or M10x1.5 tap before installing bolt(s). Apply Loctite® Primer N™ and Loctite® 242™ when using original bolts.

Detailed information regarding engine mount bolts can be found in Chapter 3. See “Engine Mount Bolt Service Replacement Kit” on page 3.20.

Oil Pump Adjustment

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



Oil Pump Adjustment Settings

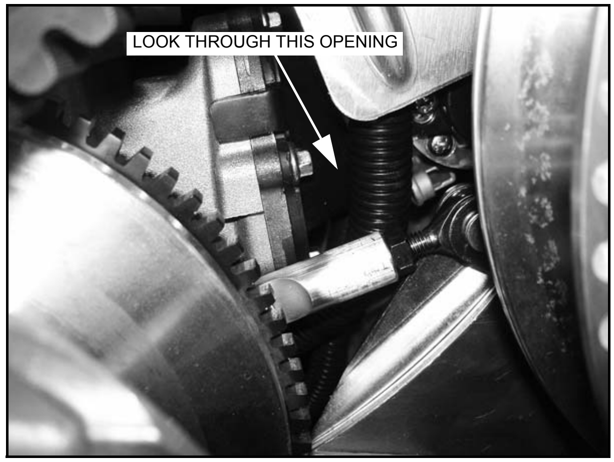
PART NUMBER	ARM MARKING	LEVER SETTING
2521000 1204439	600B Linkage Adjustment	Set lever notch in-line with oil pump scribe mark.
1204363 1204438	800B Linkage Adjustment	

CAUTION

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

2. Remove the following components:
   - Left side compartment door panel

3. Access to the oil pump for inspection is between the drive and driven clutches.

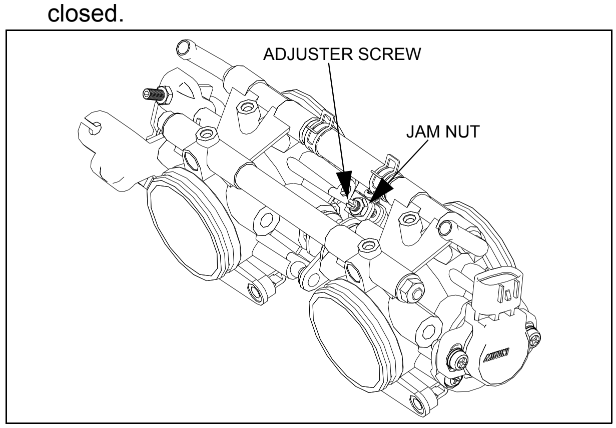


4. Using a mirror and a flash light, visually inspect the current oil pump setting. The scribe mark should be aligned with the point of the lever notch when the throttle plates are closed.

CAUTION

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

5. If adjustment is required, locate the oil pump linkage adjuster on the throttle body. Open and release the throttle several times to verify throttle plates are closed.



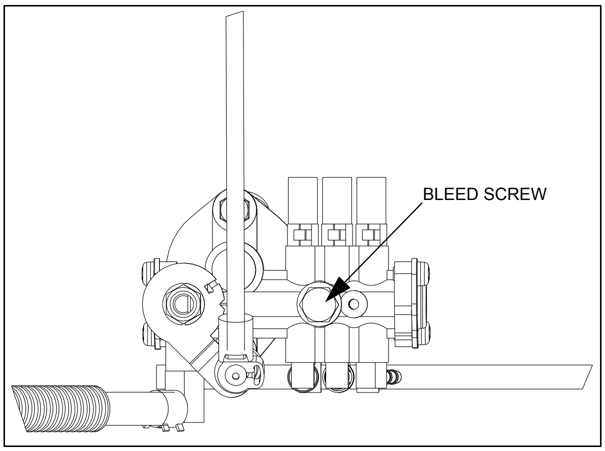
6. Loosen the adjuster jam nut. Using an Allen wrench, turn the adjuster screw clockwise to raise the oil pump lever arm. Turn the screw counter-clockwise to lower the oil pump lever arm.
7. Visually inspect the lever notch/scribe mark alignment. When in alignment, tighten the jam nut without moving the adjuster screw.

NOTE: If the linkage arm comes off of the lever or adjuster arm, verify the oil pump lever arm has not rotated over-center prior to reinstalling the linkage.

Oil Pump Bleeding

⚠ CAUTION

FAILURE TO PROPERLY BLEED THE OIL PUMP MAY CAUSE SEVERE ENGINE DAMAGE.



1. The oil supply hose must be filled with oil to bleed the pump.
2. Remove the following components:
   - Drive belt
   - Oil tank/clutch cover assembly
   - Air box assembly
   - Throttle body assembly from the intake adapter plate
3. Loosen the bleed screw (A). Verify a stream of oil flows from the bleed screw.
4. After bleeding oil pump, secure bleed screw and wipe up oil residue.

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

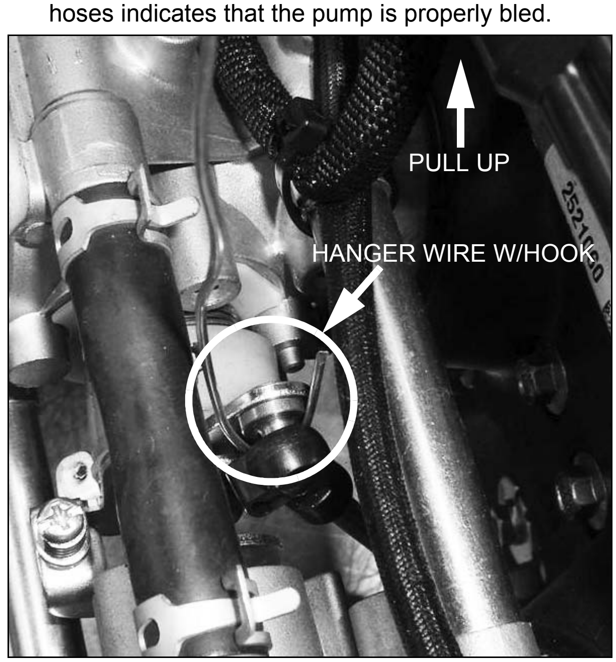
Oil Injection Hose Priming

⚠ CAUTION

FAILURE TO PROPERLY PRIME THE OIL PUMP MAY CAUSE SEVERE ENGINE DAMAGE.

To prime the oil injection hoses follow these steps:

1. Locate the oil pump linkage rod end on the top of the throttle body.
2. Obtain a length of wire (coat hanger) with a small hook on one end.
3. Hook the oil pump linkage rod on the throttle body as shown in the photo.
4. With the engine compartment doors closed, have an assistant start the engine. Pull the linkage upwards to set the oil pump to maximum flow. Continue doing this for a few minutes.
5. Stop the engine. Inspect the oil injection hoses for air bubbles. If there are air bubbles greater than one inch in length, repeat step 4 until they are pushed out of the hoses. Air bubbles less than one inch in length are permissible, but you must verify they are moving towards each oil injector when the engine is running. The fact that the air bubbles are moving through the hoses indicates that the pump is properly bled.

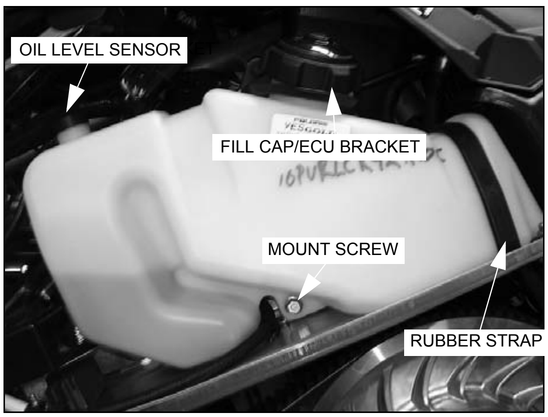


Oil Tank/Clutch Cover Service

The oil tank is mounted to the clutch cover assembly. The oil tank/clutch cover assembly can be removed from the vehicle to access components within the engine compartment.

NOTE: Because of the relative ease of removing both the oil tank and clutch cover at the same time, both processes have been combined although not all service procedures will require the removal of the clutch cover.

1. Open the engine compartment door panels, and remove the hood.
2. Remove the hood assembly.



3. Disengage the rubber strap from the cover at the back of the oil tank.
4. Remove the screw securing the bottom of the tank to the clutch cover.
5. Remove cap. Remove the ECU bracket from the oil tank. Reinstall the fill cap. Disconnect the oil level sensor.
6. Disconnect the two wire harness connectors from the ECU.
7. Disconnect the wire harness connections at the regulator/rectifier, and capacitor. Release the wire conduits from the rosebud connectors.
8. Remove the four nuts securing the clutch cover from the chassis.
9. Carefully pull up and release the cover from the mounting studs.
10. Using a needle nose pliers, slide the clamp back and remove the oil supply hose at the filter location. Use the pliers to pinch the supply hose to prevent oil loss.
11. Installation is the reverse of removal. After installing the supply hose on to the filter and installing the clamp, hold the oil tank high in the engine compartment with the supply hose pointed down to allow the trapped air to bleed upwards into the tank.

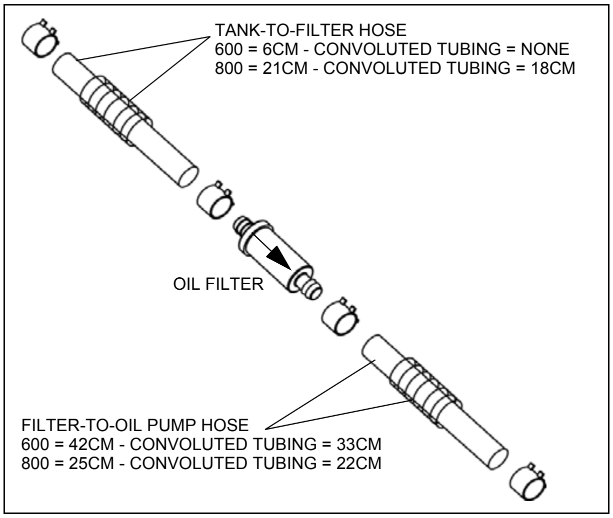
CAUTION
Verify the oil supply hose is not kinked after installing the oil tank/oil supply hose.

12. Install the ECU bracket, and fill cap.
13. Torque the lower tank screw to specification. Install the rubber strap.

= T
Oil Tank Mount Screw: **10 ft-lb (12 Nm)**

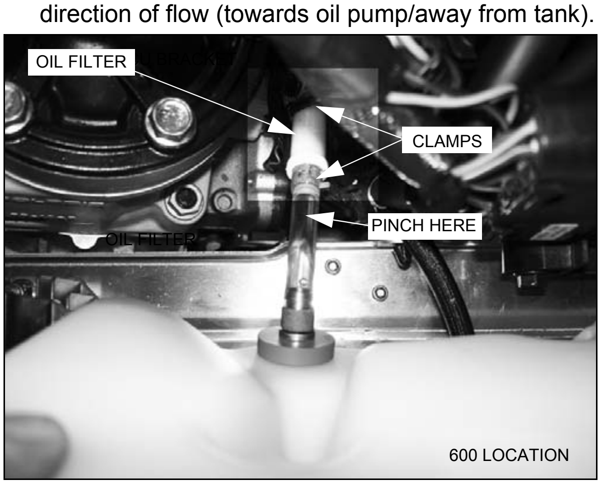
Oil Filter Service

The oil filter is located near the oil tank on 600 models, and between the reed tracks on 800 models. The illustration below shows the individual hose lengths depending on model.



600 Models:

1. Remove oil tank mounting screw and the rubber strap securing the tank to the clutch cover.
2. Slide the clamp off of the filter. Pinch off the oil supply hose using a soft-jawed pliers. Remove the supply hose from the filter.
3. Remove the oil filter from the oil pump oil supply hose. Have a clean shop rag available to wipe up any residual oil.
4. Install a new filter with the arrow pointing in the direction of flow (towards oil pump/away from tank).



5. Install oil tank/supply hose with clamp. Hold the tank high in the engine compartment with the supply hose pointed down to allow the trapped air to bleed upwards into the tank.

NOTE: Squeezing the hose with a pliers will push the air out towards the tank.

CAUTION

Severe engine damage will occur if the oil supply hose is not properly bled of trapped air.
Verify the oil supply hose is not kinked after installing the oil tank/oil supply hose.

6. Install the ECU bracket, and then fill cap.
7. Torque the lower tank screw to specification. Install the rubber strap.

= T

Oil Tank Mount Screw: **10 ft-lb (12 Nm)**

800 Models:

1. Remove the drive belt and driven clutch assembly.
2. Remove oil tank mounting screw and the rubber strap securing the tank to the clutch cover.
3. Remove the oil cap, and then slide the ECU bracket up and off of the oil tank. Reinstall the oil cap.
4. Disconnect all of the ECU and assorted wiring harnesses from the electrical center components.
5. Remove the clutch cover nuts, and then remove the clutch cover from the vehicle.

NOTE: Position the oil tank on top of the drive clutch. Do not allow the oil tank to hang from the oil hose.

6. Remove the fuel supply and return hoses from the air box.
7. Reference Chapter 4 and remove the fuel hoses from the fuel pump.
8. Remove the air box assembly.
9. Carefully disconnect the oil pump linkage arm from the cam on the throttle body assembly. Note that the oil pump lever will rotate over-center to the full open position after it is disconnected, and will need to be installed correctly during reinstallation.

10. Loosen the two throttle body gear clamps and remove the throttle body from the adapter plate and secure it to the steering drag link.
11. Remove the throttle body adapter plate from the crankcase. The reed cages can remain in the crankcase.
12. Position the oil tank so that air in the oil hose bleeds up to the tank. Squeeze the hose with a pliers to force the air upwards.

CAUTION

Severe engine damage will occur if the oil supply hose is not properly bled of trapped air.

13. Replace the oil filter making sure the arrow on the filter points towards the oil pump.
14. If the reed cages were removed, clean each cage assembly and reinstall.
15. Reinstall the throttle body adapter plate. Install screws and torque to 9 ft-lb (12 Nm) in a criss-cross pattern.
16. Untie throttle body assembly that is secured to steering drag link.
17. Locate the oil pump lever arm linkage. Pull up on the linkage making sure the oil pump lever rotates counter-clockwise.
18. Reconnect the oil pump lever linkage to the throttle body.

NOTE: If the oil pump linkage is installed incorrectly, the oil pump will be set to the full-rich setting.

19. Reinstall the throttle body assembly into the adapter plate boots. Tighten gear clamps. Prior to going to the next step, verify the oil pump notch and index marks are set properly.
20. Reinstall the air box assembly and tighten gear clamps.

NOTE: Air box divider plate may have to be removed to ensure the air box boots are correctly installed on to the throttle body.

21. Reinstall the clutch guard/oil tank/electrical center assembly. Verify the oil supply hose is lying flat across the intake track and not kinked. Reassemble all electrical connections.
22. Reconnect the fuel supply/return hoses to the fuel pump flange. Verify an audible “click” is heard when installing the hoses.
23. Reinstall the driven clutch and drive belt. Tighten drive clutch fastener to 17ft-lb (23 Nm).

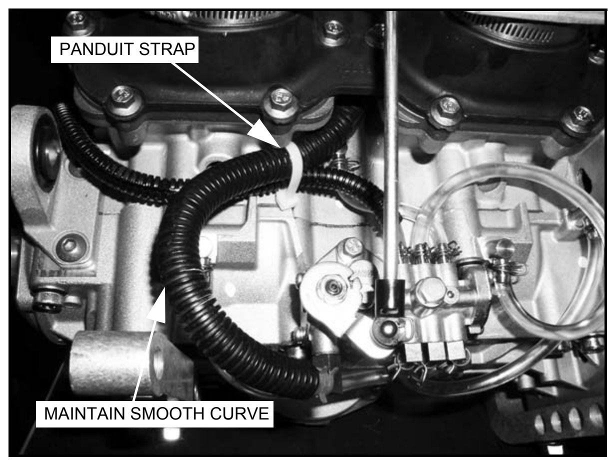
Oil Supply Hose Routing/Panduit Strap

To prevent disruptions in oil flow and premature oil hose wear, verify the oil supply hose is free from kinks and/or sharp bends.

Whenever servicing the oil supply hoses, oil pump, etc. verify the hose(s) are not coming into the contact with components that may prematurely wear the hose.

Some models feature a panduit strap to prevent the oil hose from coming into contact with the front tunnel bulkhead plate. While not on all models, the strap can be installed on any vehicle.

IMPORTANT: All 800 models with front tunnel closeoff panels must have the panduit strap installed to prevent the oil hose from making contact with the panel.



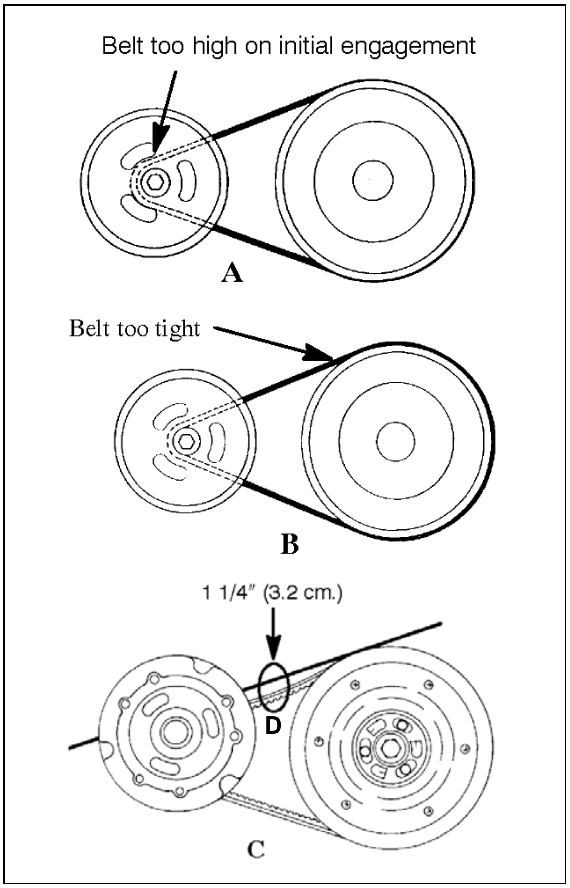
Secure the main oil supply hose to the PTO bearing oil injector hose while maintaining a smooth curve in the hose leading to the oil pump.

PVT SYSTEM

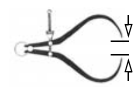
Belt Deflection Inspection

Excessive 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).

Insufficient 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). Compare to specification.
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.

Team/P2 Deflection Adjustment

CAUTION

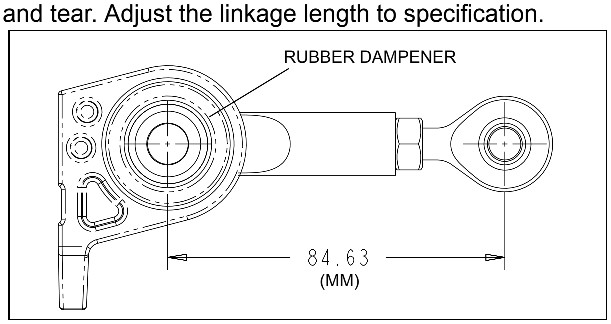
The driven clutch can be damaged if the clutch is in reverse drive.

1. Verify the drive system is in forward drive.
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, and repeat belt deflection inspection.

Torque Limiter

NOTE: 2010 Models Only

Inspect the rubber dampener for signs of abnormal wear and tear. Adjust the linkage length to specification.



Clutch Alignment/Offset

The drive and driven clutches are offset from each other. This offset is controlled by the number and thickness of washers installed on the jackshaft behind the driven clutch.

1. Remove drive belt.
2. Push the driven clutch towards the bulkhead. Install the alignment tool into the drive clutch and on top of the driven clutch hub.

TOOL PART NUMBER	APPLICATION
PS-47477	Light Weight (LWT) Team Driven / P2

NOTE: The PS-47477 offset tool is calibrated with the correct alignment angle for the respective driven clutch.

Inspect for broken motor mounts, engine straps or bulkhead damage if the offset tool reveals major mis-alignment.

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" (1.5mm).

NOTE: If the front of the alignment bar does not touch the driven sheave, the maximum clearance cannot exceed .025″ (.64mm).

Offset/Float Adjustment

1. Determine direction driven clutch needs to be adjusted.
2. Remove driven clutch retaining bolt, and remove driven clutch.
3. With one 16 GA. bushing installed, add or remove offset washers from behind the driven clutch to set the proper offset.
4. After adjusting the offset, add or remove shim washers from behind the driven clutch bolt and washer to provide a .060" (.1.5mm) driven clutch float on the jackshaft.

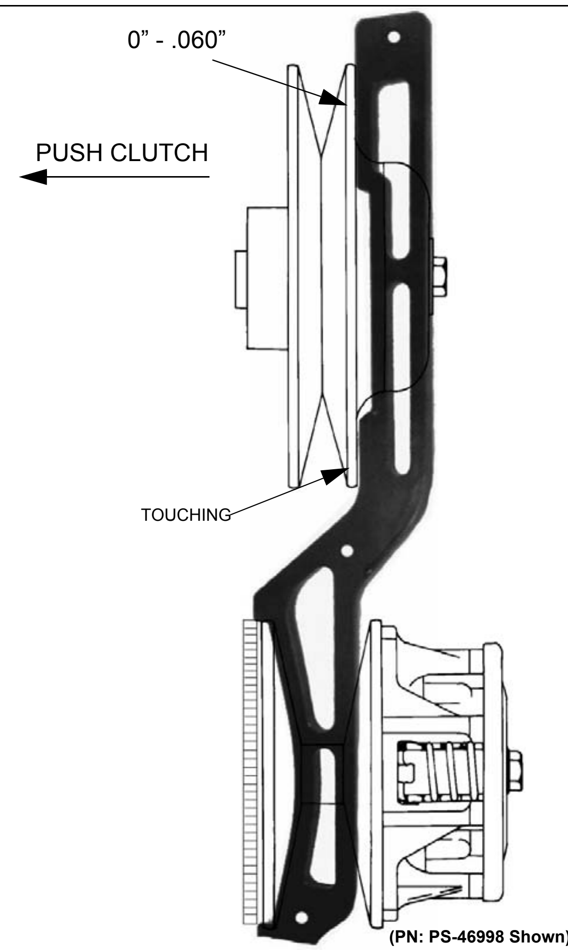
Driven Clutch Offset/Shim Washers

Offset Washers
16 Gauge Bushing=7556509 (QTY.1)
.023” = 7555917 (AR)
.120” = 7555864 (AR)
Float Washers
.065" = 7555806 (AR)
.105" = 7555832 (AR)

AR = As Required

CAUTION

Always verify the driven clutch floats on the jackshaft. The jackshaft bearing will fail from side-loading if the driven clutch is not allowed to float.

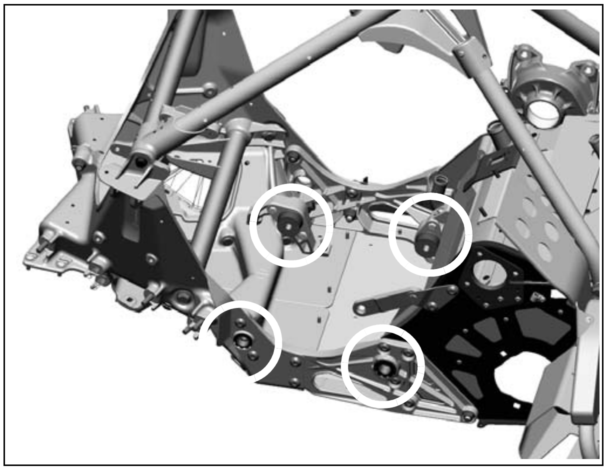


(PN: PS-46998 Shown)

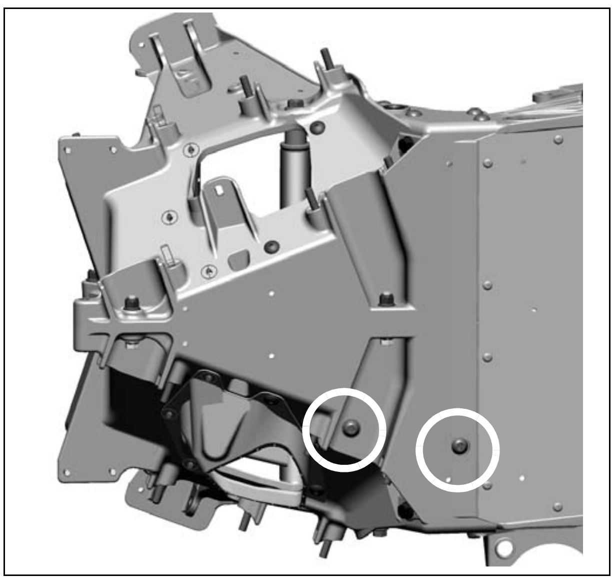
Adjusting Engine Mount Bolts/Engine Alignment

Minor adjustments to the engine mount bolts and MAG-front engine mount can be performed if the alignment tool indicates major clutch mis-alignment.

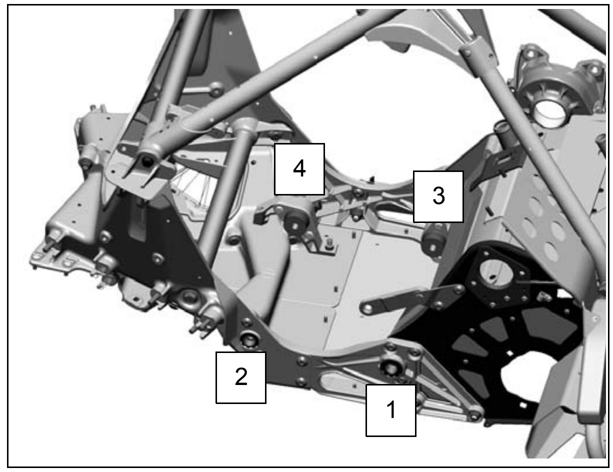
1. Loosen, but do not remove, the four engine mount bolts.



2. Loosen, but do not remove, the two Torx screws securing the MAG-front engine mount to the bulkhead.



3. Verify clutch alignment has changed using the Clutch Alignment Tool part number: PS-47477. The engine can be moved slightly with the screws loosened at the MAG-front location.
4. Once clutch alignment is set, tighten the engine mount bolts to specification in the sequence shown in the illustration.



= T
2010 - 14mm Head Diameter - DK.Green Color: **DK. GREEN-M10x1.5x45 (8.8) = 30 ft-lb (41 Nm)** 2011 - 14mm Head Diameter - Silver/Gray Color: **SILVER/GRY-M10x1.5x50 (12.9) = 35 ft-lb (48 Nm)** 2012/Replacement Kit - 16mm Head Diameter: **Silver/Gray Color** **SILVER/GRY-M10x1.50 (12.9) = 40 ft-lb (54 Nm)**

5. Torque the two Torx screws only after all four engine mount bolts are torqued to specification.

= T
Front-MAG Engine Mount Screws-to-Bulkhead Screws: **22 ft-lb (30 Nm)**

6. Re-check clutch alignment. If clutch alignment is still incorrect, inspect the engine mounts, motor straps, radial inserts, and chassis for broken or twisted components.

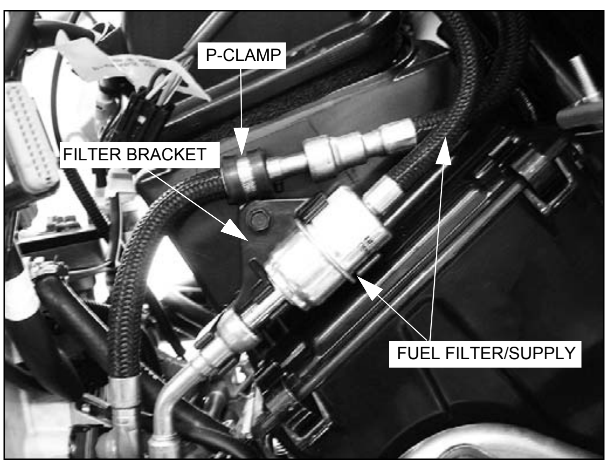
FUEL/INTAKE SYSTEM

Fuel Filter - DC-CFI-4 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.
2. Open the left and right door panels. Remove the hood and drive belt.
3. Disengage the rubber strap securing the oil tank to the clutch cover. Remove the oil tank mount screw.
4. Remove the two harness connectors from the ECU. Remove the oil tank fill cap, and then the ECU bracket.
5. Remove the four nuts that mount the clutch cover to the chassis. Slide the oil tank down to open access to the two rear nuts.
6. Carefully release the clutch cover from the studs and then pull it away from the airbox.
7. De-pressurize the fuel system. Remove the filter from the airbox bracket. Disconnect the fuel filter from the pump flange and supply fuel hose using a 3/8" fuel line disconnect tool.



8. Drain any fuel in the hoses/filter into an appropriate container, and then discard filter in accordance with local rules and regulations.
9. When re-connecting the fuel hoses, verify an audible “click” is heard and the connections are secure by firmly pulling on the two hose connections. Push the filter cartridge back into the bracket.
10. If the filter bracket was removed for any reason, note that the fuel return hose p-clamp is installed behind the filter bracket.
11. Inspect the hoses making sure none are worn or damaged.
12. Reinstall the clutch cover. Torque cover nuts to specification.
13. Reconnect the ECU wiring harness connectors.
14. Install the ECU bracket onto the oil tank. Reinstall the oil tank. Torque mount screw to specification.
15. Reinstall the drive belt. Replace the hood and door panels.

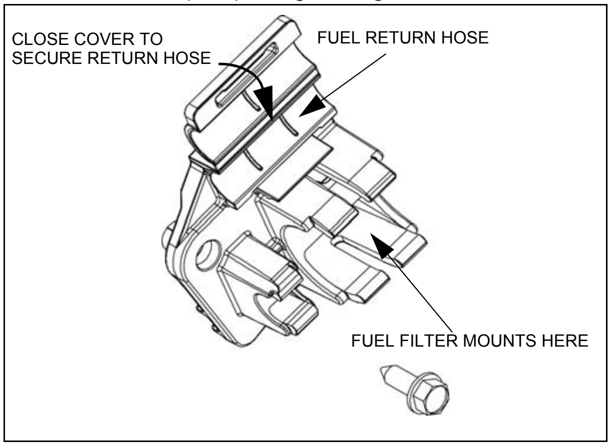
Fuel Filter - DC-CFI-2 Models

WARNING

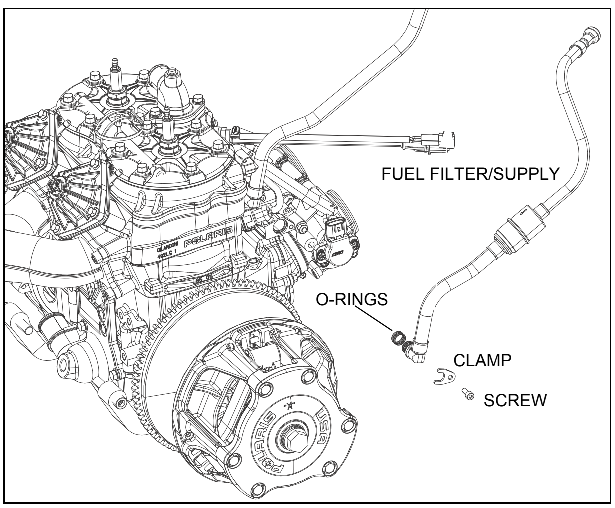
When removing the fuel filter fuel spillage will occur. Be sure to work in a well ventilated area away from anything which may cause the fuel to ignite such as an open flame, heaters, trouble lights or cigarettes.

1. The fuel filter should be replaced as outlined in the periodic maintenance table.
2. Open the left and right door panels. Remove the hood and drive belt.
3. Disengage the rubber strap securing the oil tank to the clutch cover. Remove the oil tank mount screw.
4. Remove the two harness connectors from the ECU. Remove the oil tank fill cap, and then the ECU bracket.
5. Remove the four nuts that mount the clutch cover to the chassis. Slide the oil tank down to open access to the two rear nuts.
6. Carefully release the clutch cover from the studs and then pull it away from the airbox.

7. Depressurize the fuel system. Remove the filter from the airbox bracket. Disconnect the fuel supply hose from the fuel pump flange using a disconnect tool.



8. Remove the bottom fuel fitting clamp on the fuel rail.
9. Carefully remove the fuel hose fitting from the fuel rail. Have a clean shop rag at hand to absorb any fuel that leaks from the fitting. Dispose of rag properly when finished.



10. Drain any fuel in the hoses/filter into an appropriate container, and then discard filter in accordance with local rules and regulations.
11. Apply a light film of two stroke engine oil to the new fuel supply hose fitting. Carefully install the fitting back into the fuel rail. Torque screw to specification.

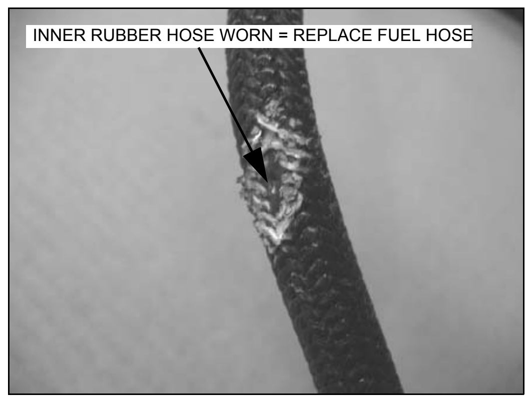
= T
Fuel Hose Fittings-to-Fuel Rail Clamp Screws: **3.3 ft-lb (4.5 Nm)**

12. Reconnect the supply hose to the fuel pump flange. Verify an audible “click” is heard and the connections are secure by firmly pulling on the two hose connections. Push the filter cartridge back into the bracket.
13. Inspect the hoses making sure none are worn or damaged.
14. Reinstall the clutch cover. Torque cover nuts to specification.
15. Reconnect the ECU wiring harness connectors.
16. Install the ECU bracket onto the oil tank. Reinstall the oil tank. Torque mount screw to specification.
17. Reinstall the drive belt. Replace the hood and door panels.

2

Fuel Hose Inspection

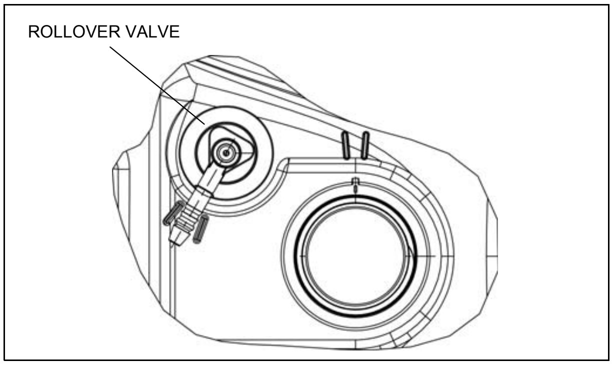
Inspect all fuel hoses as part of periodic maintenance. Replace any fuel hose if the inner rubber core show signs of wear.



Fuel Tank Vent System

All models feature a fuel tank vent / vacuum check valve system.

The rollover check valve prevents fuel from escaping the tank in the event of a vehicle rollover.



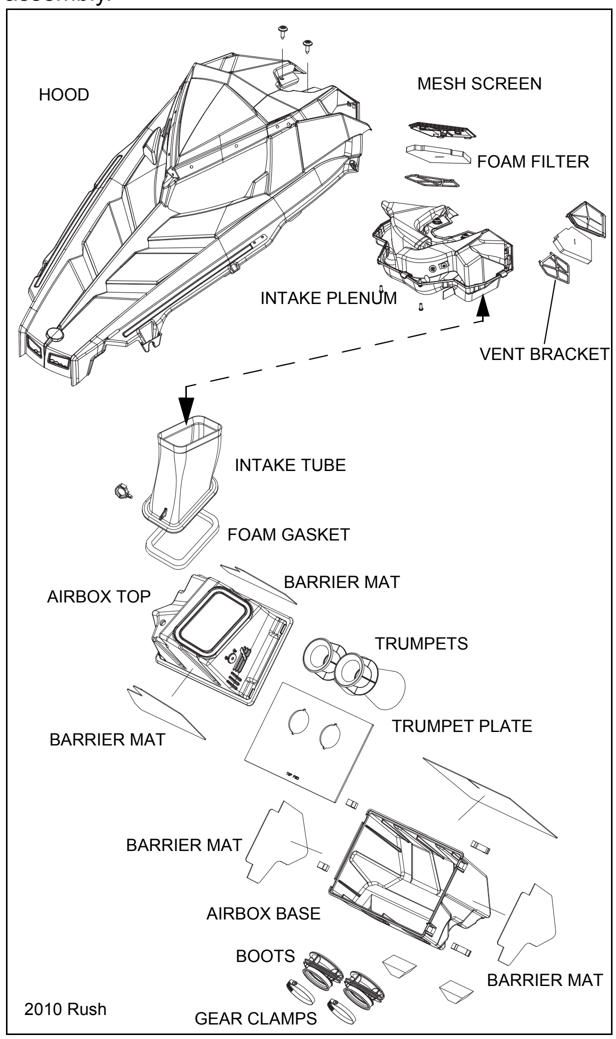
The rollover check valve is not serviceable. When inspecting the system, verify the hose is not kinked.

Air Box/Pre-Filters

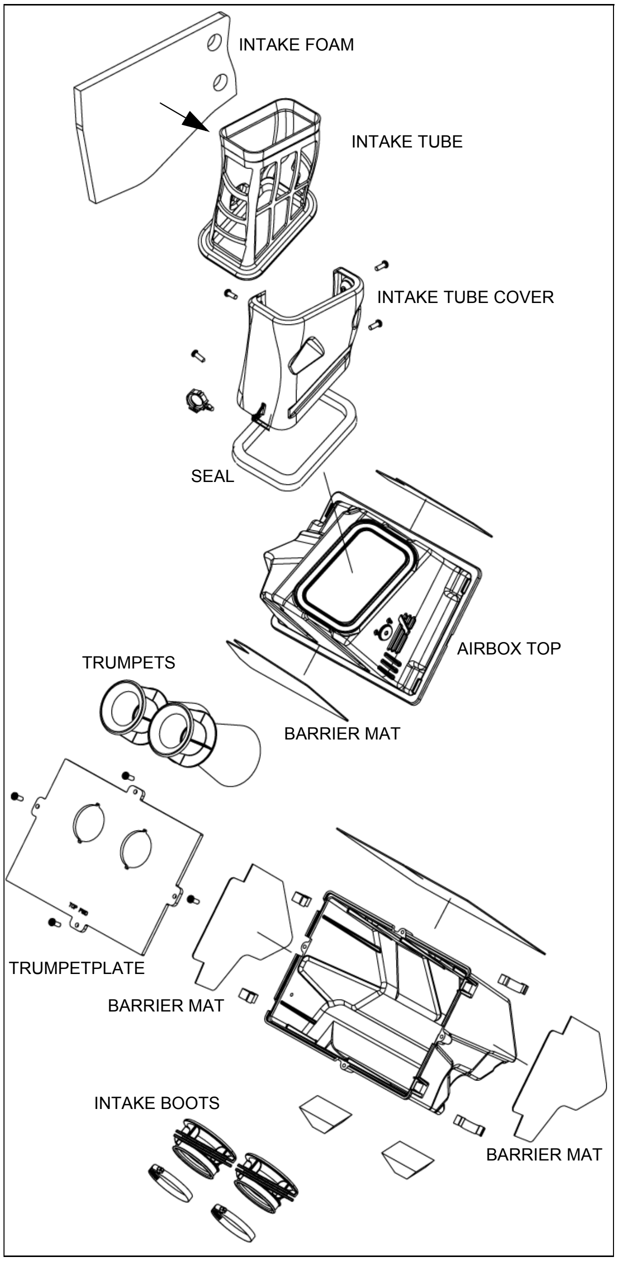
Inspect the air intake system as outlined in the periodic maintenance table. Replace cracked, broken, or missing parts.

Verify the hood intake screens are not torn or missing. An intake tube connects the hood plenum to the air box inside the engine compartment.

Always verify the intake tube is installed properly in both the air box and hood plenum when installing the hood assembly.



2011 and later models feature an air box with a revised intake tube to reduce noise and a trumpet plate that is screwed to the air box base.



Air Box Servicing

The air box can be removed from the engine compartment by disassembling the individual components.

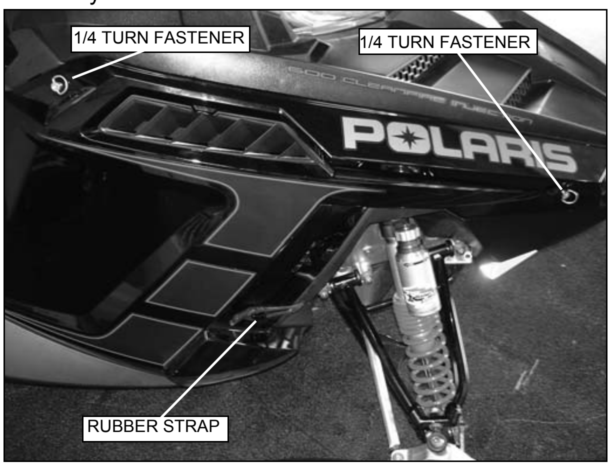
1. Remove the left and right door panels.
2. Remove the hood assembly.
3. Remove the oil tank/clutch cover assembly.
4. Remove the intake tube from the airbox.
5. Un-hook the four air box top clamps. Remove the air box top piece from the engine compartment.
6. Remove the trumpet plate. On 2011-current models, remove the screws securing the plate to the air box base. Note the “TOP FWD” plate orientation marking on the plate.
7. Loosen the two gear clamps securing the intake boots to the throttle body.
8. Carefully pull up on the rear of the air box base to release the intake boots from the throttle body. Remove the air box base from the engine compartment.
9. Note the gear clamp stops on the intake boots. Ensure the worm gear housings on each gear clamp are positioned against the stops during assembly. (The stops prevent the gear clamps from rotating while tightening.)
10. Air box installation is the reverse of removal. Verify the intake boots are installed tight and flush against the throttle body.
11. Install the trumpet plate with the “TOP FWD” call out orientated correctly.
12. Verify the intake tube foam is not damaged or torn. If it is, it must be replaced with new foam.
13. After installing the hood assembly, verify the intake tube is installed in both the air box and hood intake plenum.

CHASSIS

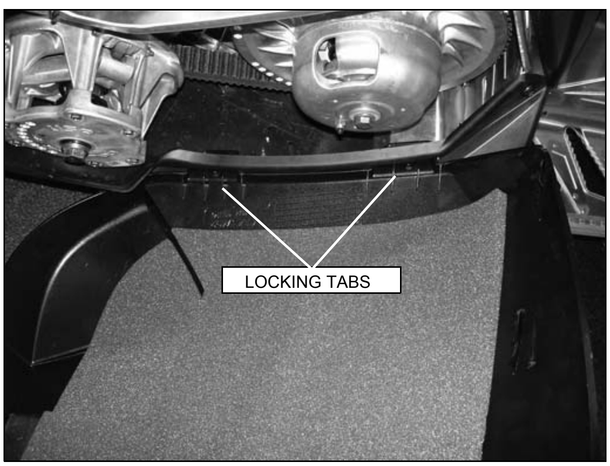
Door/Hood Removal and Installation

To remove the door panels, follow these steps:

1. Turn the two 1/4 turn fasteners counter-clockwise.
2. Un-hook the rubber strap. Carefully pull the door(s) away from the hood/chassis.



3. Pull up on the door to disengage the locking tabs at the bottom of each door.



To remove the hood, follow these steps:

1. Remove both door panels.
2. Using a T40 Torx driver, remove the two screws securing the hood to the steering post.

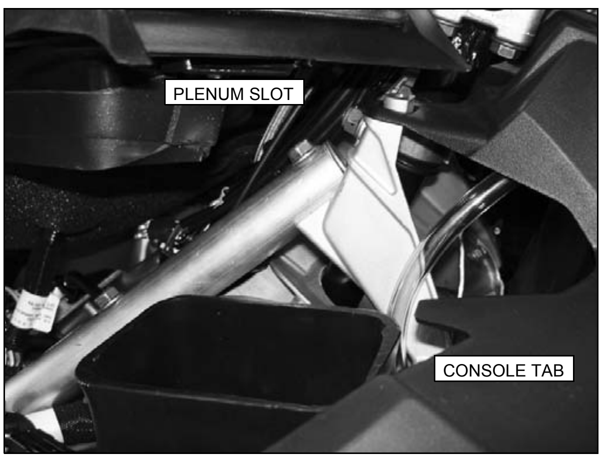
3. Using a flat blade screwdriver, remove the left and right side nylon rivets securing the hood to the console.

4. Disconnect the hood wiring harness from the chassis harness. Note the routing of the harness under the over structure tube.
5. Lift the back of the hood up making sure the brake duct clears the console. Push the hood forward to disengage the nose tabs from the nose cone.
6. Remove the hood from the vehicle.

7. When installing the hood, verify the hood harness connector is routed under the over structure tube.

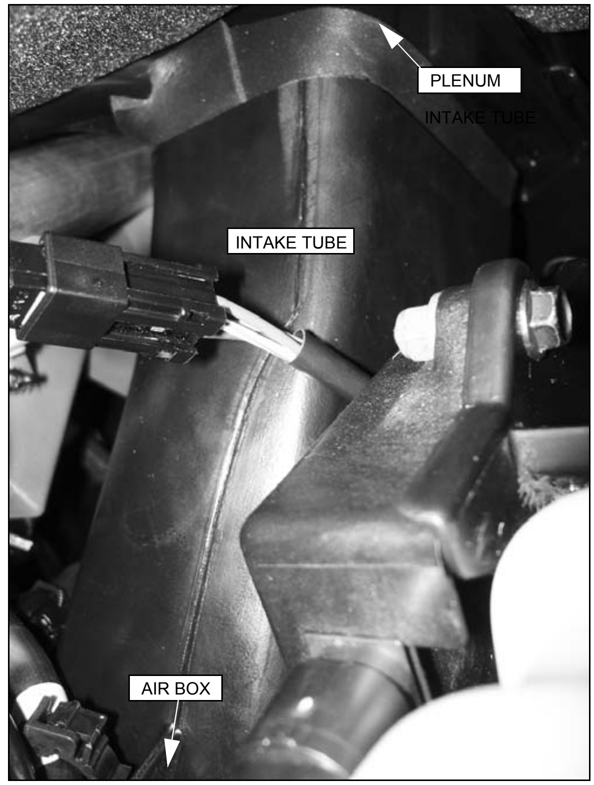
NOTE: The hood harness connector must be routed under the over structure tube to prevent the wires from coming into contact with the other components.

8. Engage the two console tabs with the hood plenum slots at the rear of the hood.



NOTE: Failure to properly install the console tabs into the hood plenum may cause snow ingestion and not allow the hood to seat correctly.

9. Prior to closing the left side door panel, verify the air box intake tube is installed in both the air box and hood intake plenum.

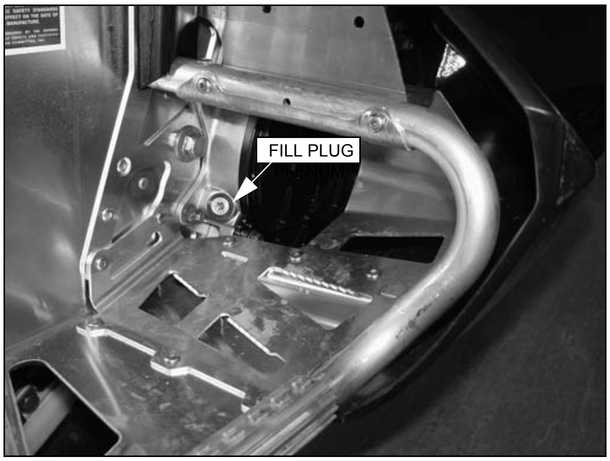


NOTE: Failure to properly install the intake tube may cause snow or under hood hot air ingestion into the intake system.

Chain Case Oil Level Check

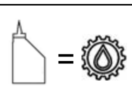
Maintain the oil level at the bottom of the fill port hole.

1. Position the vehicle on a flat and level surface.
2. Remove the fill plug. Verify the oil level is at the base of the plug hole.
3. Add the recommended oil as needed at the fill plug.



Chain Case Oil Replacement

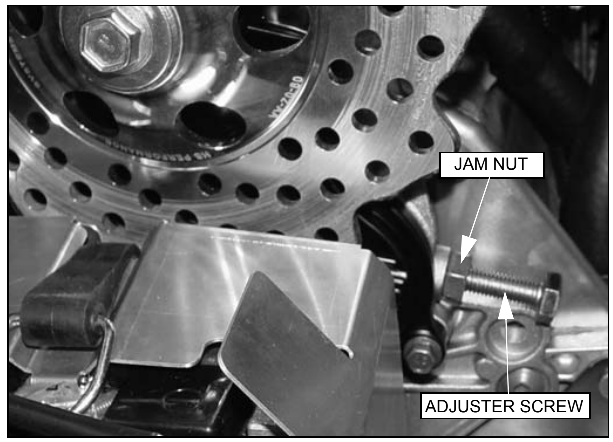
1. Locate the chaincase drain plug on the bottom of the nosepan.
2. Place an oil catch pan under the drain plug. Clean the drain plug socket.
3. Remove the drain plug and drain the oil into the catch pan.
4. Clean the magnetic plug to remove metal shavings.
5. Install drain plug and hand-tighten. Do not over-tighten the drain plug.
6. Remove the fill plug. Clean the magnetic end to remove metal shavings. Fill chaincase with 80W synthetic chaincase lubricant at the fill plug location until the oil level is at the base of the threads.



Chaincase Oil Capacity = 9oz. (266 ml)
Recommended Lubricant:
Chaincase = Polaris 80W Synthetic Chaincase Lubricant

Drive Chain Tension Adjustment

1. Open the left and right side door panels. Remove the hood.
2. Remove the exhaust silencer.
3. Rotate the driven clutch counter-clockwise to move all of the slack in the chain to the tensioner side. Set the parking brake, or have an assistant hold the brake lever.
4. Loosen the jam nut.



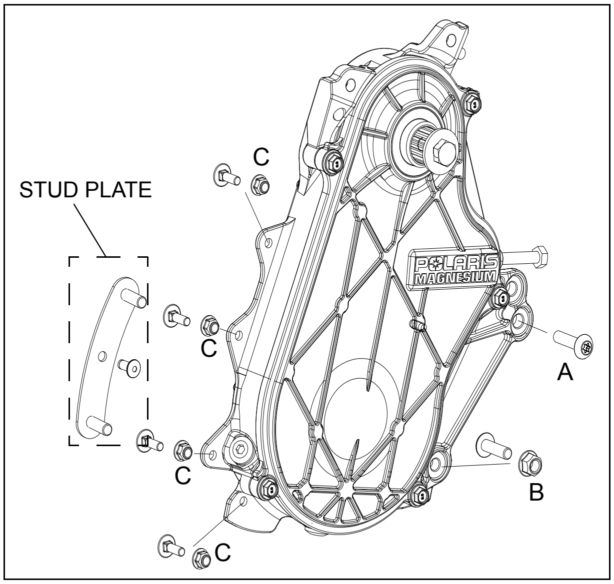
5. Finger tighten the adjuster screw until it can no longer be adjusted by hand, then back off 1/4 turn.
6. Tighten the jam nut while holding the adjuster bolt. torque to 21 ft-lb (28 Nm).
7. Release the brake lever lock.
8. Reinstall the exhaust silencer.

Chain Case Fastener Re-Torque

NOTE: This maintenance procedure only applies to 2010-2011 models. 2012 models feature chain cases that are bonded to the chassis.

Verify and re-torque the chain case mount screws as outlined in the periodic maintenance table.

The drive exhaust silencer will require removal to gain access to two front chaincase mount screws.

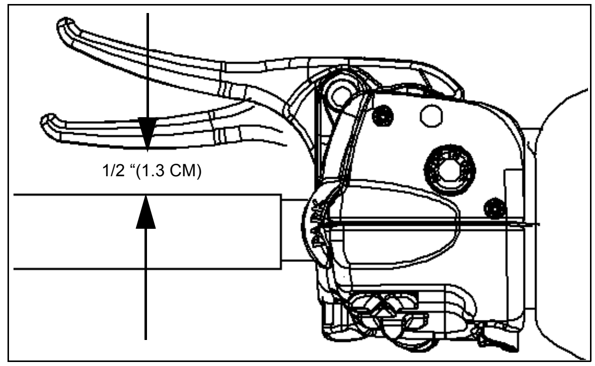


= T

A = 26 ft-lb (35 Nm) DO NOT OVER-TORQUE
B = 26 ft-lb (35 Nm)
C = 14 ft-lb (19 Nm)

BRAKE SYSTEM MAINTENANCE

Brake Lever Travel



The gap between the brake lever and handlebar grip should be equal to or more than 1/2″ (1.3cm) when depressing the brake lever.

If the gap is less than 1/2″ (1.3cm), the brake system should be inspected and bled of any air within the fluid.

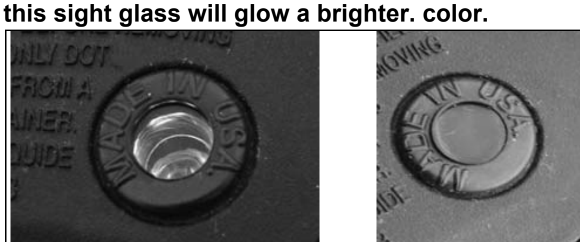
Brake Fluid

⚠ 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.

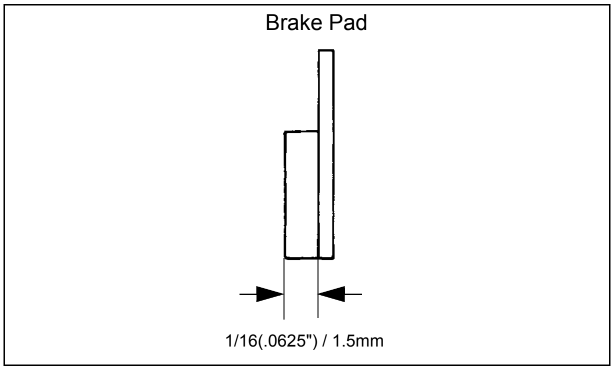
NOTE: A low brake fluid level can be indicated through the sight glass on the cover. If the fluid is low this sight glass will glow a brighter. color.



LOW FULL

Brake Pad Replacement

Brake pads need to be replaced if the thickness of the friction material is less than 1/16" (.0625") / 1.5mm.



THROTTLE CABLE ADJUSTMENT

Throttle Lever Free-Play

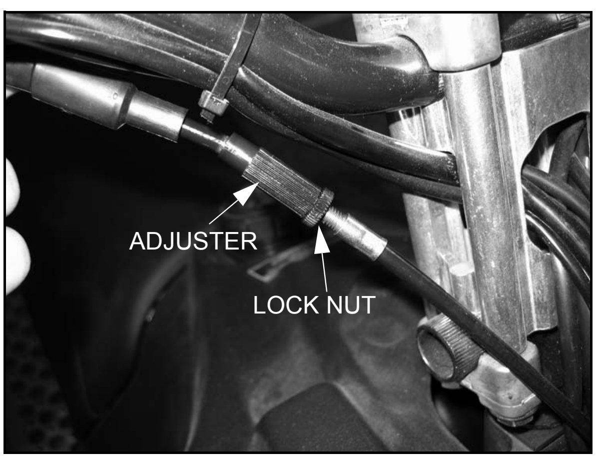
⚠ CAUTION

When adjusting throttle lever free-play, always verify the engine RPM does not change while turning the handlebars to the full left and full right positions.

= In. / mm.

Throttle Lever Free Play: .010″-.030″ (0.25-0.8mm)

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. 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.

Throttle Cable Routing

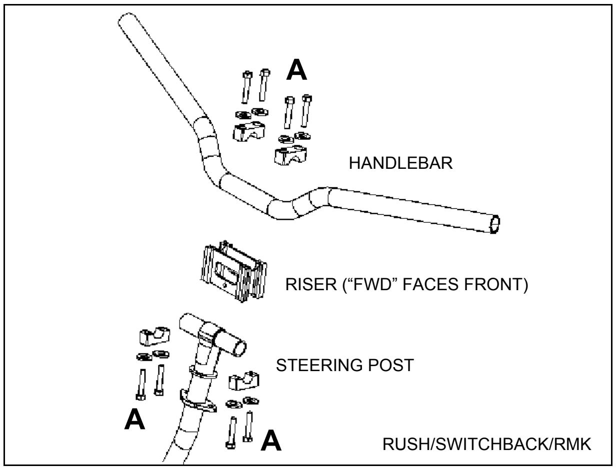
Route the throttle cable as shown in the photo. Turn the handle bars to the full left and right positions with the engine running to verify the engine RPM does not increase as the bars are turned.

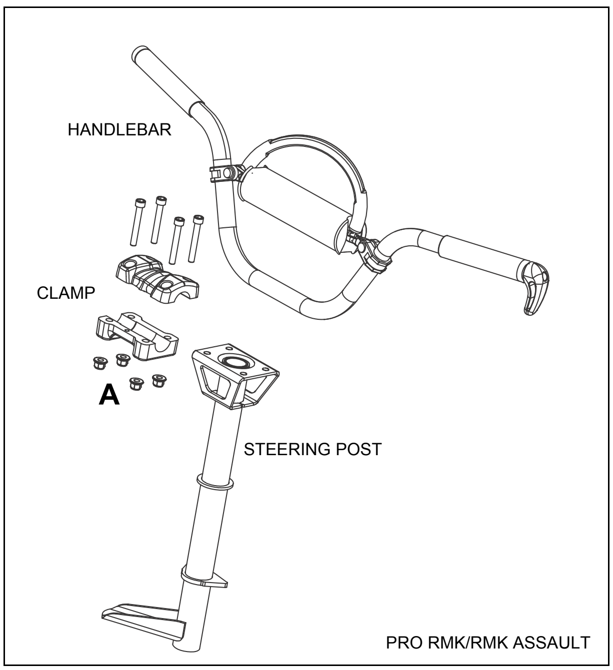
2

STEERING / SUSPENSION MAINTENANCE

Handlebars

Periodically inspect the torque of the handlebar clamp fasteners.





1. To adjust the handlebar angle, remove the handlebar cover, if equipped, to expose the upper 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.

NOTE: Verify “FWD” printed on riser faces front of snowmobile

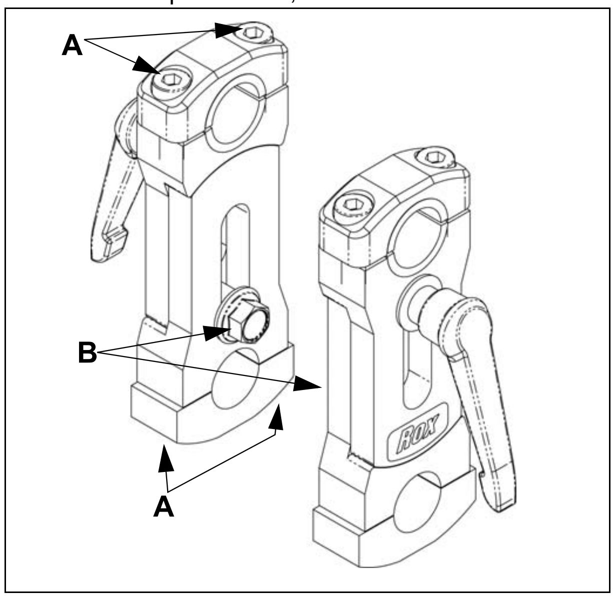
4. Secure the front clamp fasteners first to specification. Finish by securing the two rear clamp fasteners to the same torque setting.

= T
Handlebar Clamp Fastener Torque: **A = 14.7 ft-lb (20 Nm)**

5. Reinstall the handlebar cover if equipped.

Adjustable Riser

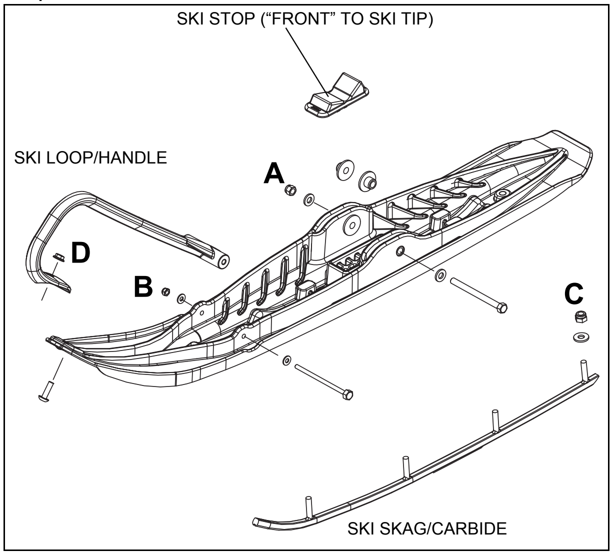
Periodically inspect the torque of the upper/lower handlebar clamp fasteners, and slide fasteners.



= T
Handlebar Clamp Fastener Torque: **A = 15.4 ft-lb (21 Nm) Apply Loctite® 243™** ROX Slide Fastener Torque: **B = 15 ft-lb (20 Nm)** Adjuster Cranks: Hand Tight

Ski/Ski Skag Fasteners

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



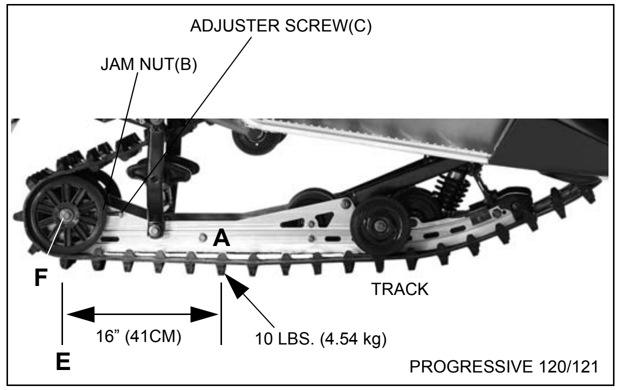
= T
A = 36 ft-lb (50 Nm)
B = 6 ft-lb (8 Nm)
C = 7 ft-lb (10 Nm)
D = 9 ft-lb (12 Nm)

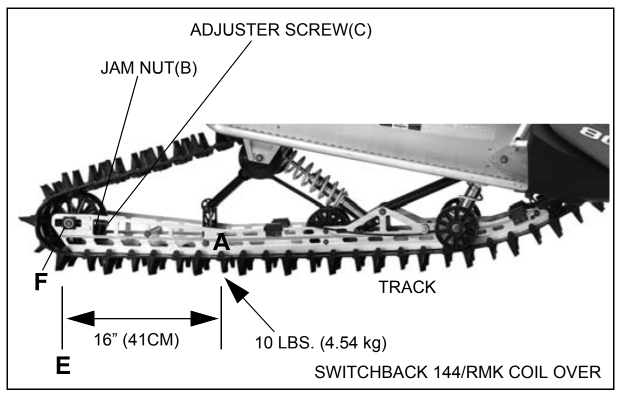
Inspect ski skags and skag fasteners for abnormal wear and tear. Replace skags when carbide edge is worn away or when skag is bent/damaged.

Always use new lock nuts when replacing parts.

Track Tension

Track tension is critical for maintaining correct suspension operation. If the track tension is too loose, the track may bunch-up at the rail tips, or slip (ratchet). If the track is too tight, premature rail slide wear, reduced top speed, rear suspension vibration can occur.





1. Lift the rear of the machine using a dedicated sled lift.

NOTE: A conventional track stand will not work for adjusting track tension on PRO-RIDE Progressive suspensions as lifting the sled at the bumper will compress the rear crank and tighten the track.

2. Start the engine and slowly let the engine turn the track over.
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 between the rail slider and the track. The measurement should fall within the measurement range for the appropriate vehicle.

SUSPENSION	MEASUREMENT
Progressive 120 (2010 Rush)	7/8″-1-1/8″ (2.2 - 2.9cm)
Progressive 121 (2011 Rush)	1/2″ - 1.0″ (1.3 - 2.54cm)
Progressive 121/136 (2012 Rush/Switchback)	1/4″-3/8″ (6.3-9.5mm)
RMK/Switchback 144 RMK Coil Over 155/163	3/8″ - 1/2″ (1 - 1.3cm)

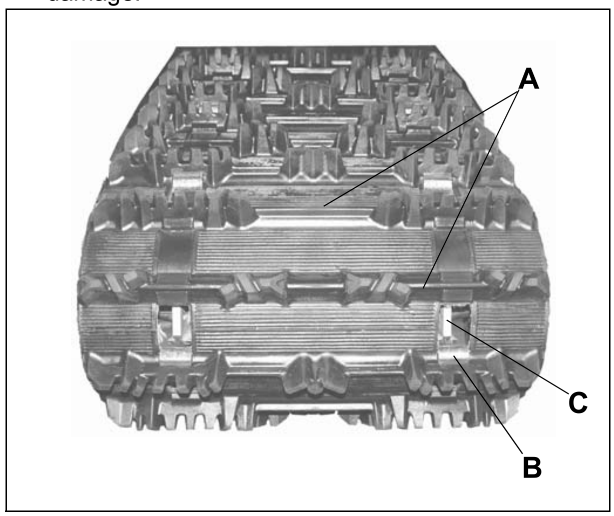
6. If adjustment is needed, loosen the jam nuts (B) on each rail.
7. Loosen the idler shaft bolts (F).
8. Turn each adjuster screw equally (C) clockwise to tighten track. Turn the adjuster screw equally counterclockwise to loosen track tension.
9. Torque the jam nuts (B) and idler shaft bolts on each side to 35 ft-lb (47.5 Nm).

Track Alignment

NOTE: ***Track alignment affects track tension. Misalignment of the track will cause excessive wear to the track, rail slides, and rail.***
Excessive rail slide wear occurs due to running in inadequate snow conditions.

Periodically check that the track is centered and running evenly on the 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. 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.

9. After any adjustments are complete, be sure to torque the locknuts to specification.

= T
Adjuster Lock Nuts: **33 ft-lb (45 Nm)**

10. Torque both idler shaft bolts to specification.

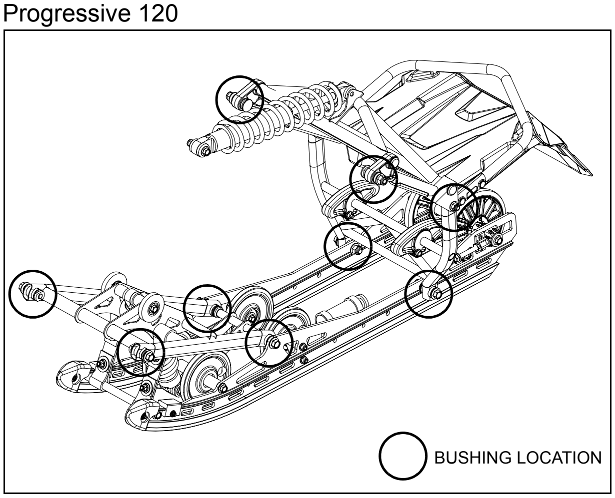
= T
Idler Shaft Bolt: **33 ft-lb (45 Nm)**

WARNING
Broken track rods can cause a rotating track to come off the machine. Never operate or rotate a damaged track under power with broken rod(s). 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.

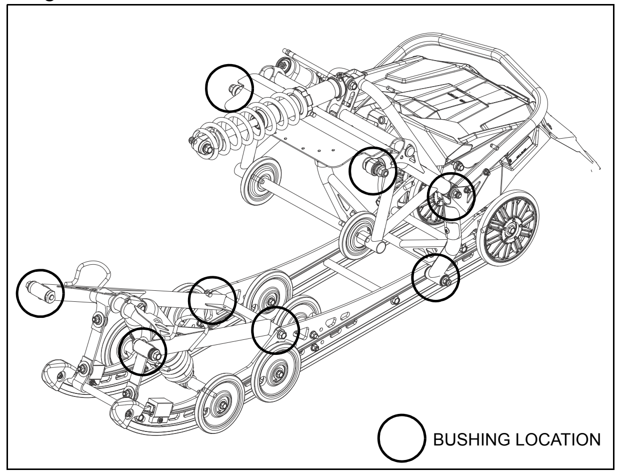
Suspension Pivots/Lubrication

Inspect suspension pivot bushings as outlined in the periodic maintenance table. Replace worn or damaged bushings.

Progressive 120



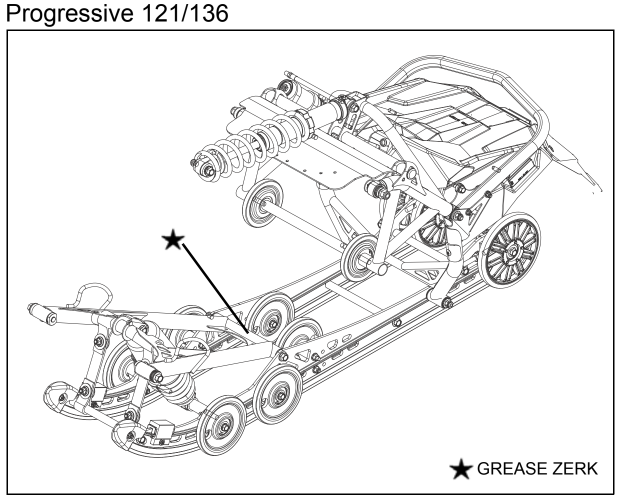
Progressive 121



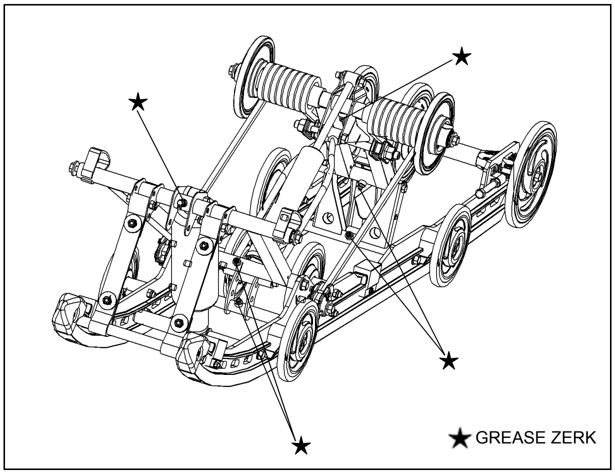
Suspension Lubrication

Lubricate the rear suspension pivot shafts with Polaris Premium All Season Grease as outlined in the periodic maintenance table.

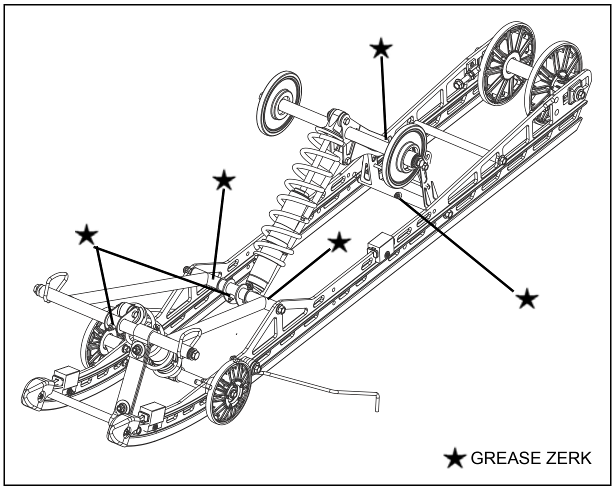
Progressive 121/136



Switchback/RMK 144



RMK Coil Over 155/163



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. Remove the hood assembly.
2. Locate the bulb connectors on the head lamp assembly.
3. Rotate the connector counter-clockwise to remove the bulb.
4. Install a new bulb by holding it in a clean shop rag or napkin.
5. Install the connector into the head lamp and turn clockwise.
6. Reinstall the hood assembly.

Tail Lamp Replacement

The rear tail lamp assembly uses light emitting diodes (LEDs). LEDs cannot be replaced. The tail lamp assembly must be replaced if an LED is not functioning.

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.

CHAPTER 3
Engine/Cooling/Exhaust

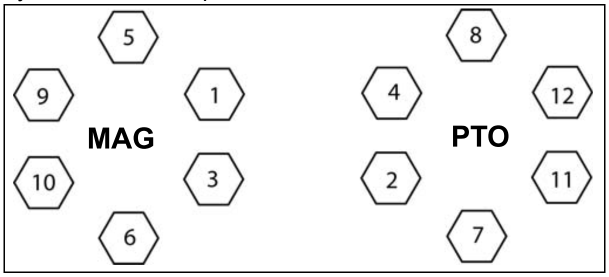
ENGINE SPECIFICATIONS

Fastener Torque Guide

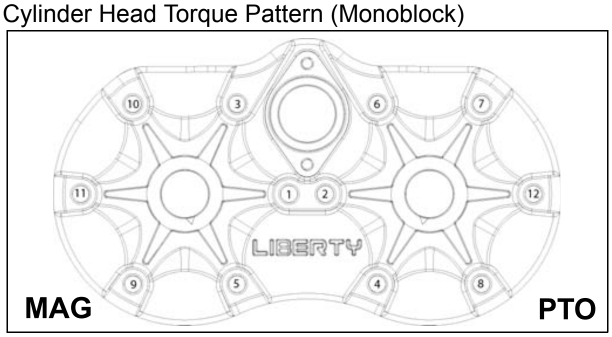
COMPONENT	600 DC-CFI-2/4 FT-LB (NM)	800 DC-CFI-2 FT-LB (NM)	ASSEMBLY NOTES
Spark Plug	18-21.6 (24-30)		Apply anti-seize to threads.
Head Cover	23-27 (31.2-36.6)		
Throttle Body Hose	7 (9.5)		Apply pipe sealant to threads.
Plug-OR- Bypass Nozzle	N/A	15.5-20 (21-27.8) 18 (24)	Apply pipe sealant to threads.
Bleed Screw	70 in-lb (8 Nm)		
Knock Sensor	144-192 in-lb (16.3-21.7Nm)		Do not under/over torque. Clean/dry threads.
Temp. Sensor	18 (24)		
EV Housing Base / Cover	10.5-13.5 ft-lb (14.3-18.3 Nm)		Apply Loctite® 242™ to cylinder screws.
EV Bellows -Cap Nut -Threaded Cap/Stud	14-18 ft-lb (19.1-24.5 Nm) 18-22 ft-lb(24.5-29.9 Nm)		Apply Loctite® 242™ to guillotine threads. Apply Loctite® 242™ to stud threads.
Cylinder Base Nuts	38-46 (51-62)	N/A	
Cylinder Bolts	N/A	38-46 (51.6-62.4)	
Intake Boots	9 (12)		
Exhaust Manifold	22 (30)		
Oil Pump	10 (9.5)		
Water Pump Cover	9 (12)		
Water Pump Cover Nozzle	18 (24)		Apply pipe sealant to threads.
Recoil Housing	9 (12)		
Recoil Reel Screw 1204173 Assembly 1204331 Assembly	9 (12) 14 (20)		Apply Loctite® 242™ to threads.
Recoil Hub Screws	9 (12)		
Flywheel Nut	90 (122)		
Stator Plate	12 (16)		
Crankcase M6/M8	22 (30)		
Torque Stop Bracket	18 (24)		
Engine Strap Screws	30 (41)		Apply Loctite® 242™ to threads.
Water Pump Impeller	10 (13)		
Fuel Rail Screws	9 (12)		
Crankcase Drain Plugs	60 in-lb (7 Nm)		Apply pipe sealant to threads.
Air Intake Gear Clamps	11 in-lb (1.2 Nm)		

Component Torque Sequences

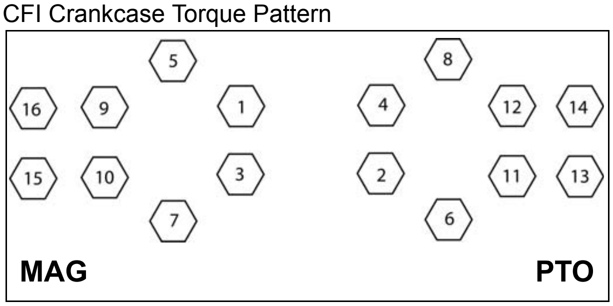
Cylinder Head Torque Pattern



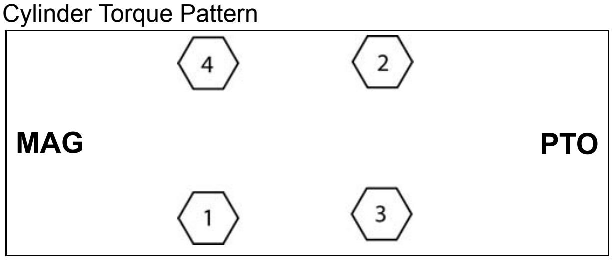
Cylinder Head Torque Pattern (Monoblock)



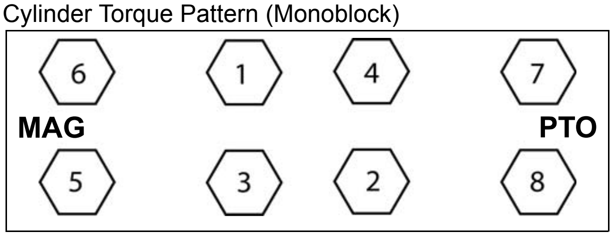
CFI Crankcase Torque Pattern



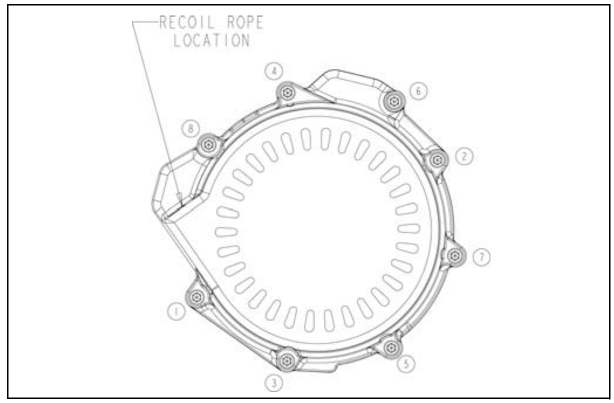
Cylinder Torque Pattern



Cylinder Torque Pattern (Monoblock)



CFI Recoil Cover



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 INCHES (MM)</th></tr>
<tr><td>S4202-6044-OP6N</td><td rowspan="5">25.65-27.15</td><td rowspan="5">.045-.058
(1.143-1.482)</td><td rowspan="5">.0033-.0054
(0.085-0.137)
SVC. Limit=.009"</td><td>.014-.020
(0.356-0.508)</td><td rowspan="11">.014-.052
(0.36-1.34)</td></tr>
<tr><td>S4357-6044-OL6N</td><td rowspan="10">.017-.025
(0.450-0.650)</td></tr>
<tr><td>S4215-6044-OO6N</td></tr>
<tr><td>S4316-6044-OL6G</td></tr>
<tr><td>S4452-6044-OL6G</td></tr>
<tr><td>S4139-8044-OO8G</td><td rowspan="6">36.2-37.8</td><td rowspan="6">.054-.066
(1.382-1.666)</td><td rowspan="6">.004-.0055
(0.103-0.141)
SVC. Limit=.009"</td></tr>
<tr><td>S4229-8044-OO8G</td></tr>
<tr><td>S4092-8044-OO8G</td></tr>
<tr><td>S4359-8044-OL8G</td></tr>
<tr><td>S4360-8044-OL8G</td></tr>
<tr><td>S4361-8044-OL8G</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:
  CFI = .0014 - .0024 (.036 - .061mm)
- Connecting Rod Side Clearance = .0114" - .0295" (.289 - .749mm)
- Crankshaft Runout Deflection Limit = .0025" (0.07mm)

Vehicle/Engine Matrix

MODEL YEAR	VEHICLE	ENGINE MODEL NUMBER
2010	600 Rush	S4202-6044-OP6N
2011	600 Rush/Rush LX/Rush Pro-R	S4215-6044-OO6N
	800 Rush/Rush LX/Rush Pro-R	S4139-8044-OO8G
	800 Switchback 1.3/2.0 800 RMK 155	S4229-8044-OO8G
	800 RMK Assault 800 PRO RMK 155/163	S4092-8044-OO8G
2012	600 Rush/Rush Pro-R/600 Switchback/Adventure/Switchback Pro-R	S4357-6044-OL6N
	800 Rush/Rush Pro-R/Pro-R LE/800 Switchback/Switchback Pro-R	S4360-8044-OL8G
	Switchback Assault 1.3/2.0 800 RMK 155	S4361-8044-OL8G
	600 RMK 144/155	S4316-6044-OL6G
	600 PRO RMK 155	S4452-6044-OL6G
	800 RMK Assault 800 PRO RMK 155/163	S4359-8044-OL8G

SPECIAL TOOLS

Special Tools - Engine

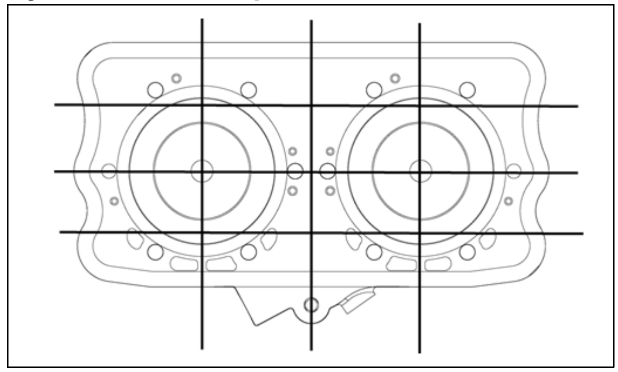
Special Tools - Engine

PART NUMBER	DESCRIPTION	NOTE
2870303-A	Ammco Hone Kit	Use to re-surface cylinder walls when installing new piston and/or rings.
2870588	Hone Oil	Provides better crosshatch pattern when honing cylinders.
PU-49876	Ammco 320 Grit Stone	Use to re-surface plated big bore cylinders.
2870390	Piston Support Block	Supports piston when installing pin and c-clips.
2871043-A	Flywheel Puller	
PU-45255	22mm Piston Pin Puller	800 CFI Engines
PS-47055	Offset Piston Pin Puller Adapter	800 CFI Engines
2870386	Piston Pin Puller	
2871445	Pin Puller Adapter	Use with 2870386.
2871989	Engine Mount Socket	Removes tabbed rubber engine mounts.
2872389	Water Pump Seal Installation Tool	Used to install water pump seal on all 600/700/ 800 engines.
2872401-A	20mm C-Clip Tool	Install c-clips on all 600 / 700 engines.
2872622A	22mm C-Clip Tool	Install c-clips on all 800 engines.
PS-49001	Oil Cable Wrenches	Use to loosen or tighten oil pump cable jam nuts.
2870630	Battery Powered Timing Light	Check ignition timing.
2870852	14mm Compression Gauge	
PU-45149	Hose Pincher	
PU-45419	Strap Wrench	Secure drive clutch or flywheel.
PU-45423	Telescoping Gauge Set	Use to inspect cylinder bore diameter.
PU-45424	Dial Indicator Set	Use to measure run-out, piston degrees-to-TDC, etc.
PV-39776	Electronic Digital Caliper	
PU-45433	Seal Pick Set	
PU-45431	Depth Micrometer Set	
PV-34673	Precision Straight Edge	
PV-43554	V-Block Set	
PV-3009	75 - 100mm Micrometer	Use to measure piston diameter, etc.
PS-50753	VES threaded stud/cap tool.	Use to clamp VES threaded stud/ cap in bench vise.

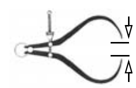
NOTE: Polaris dealers can order the tools listed above through the SPX Service Tools catalog or by calling SPX @ 1-800-328-6657.

ENGINE INSPECTIONS

Cylinder Head Inspection



Using a precision straight edge and a feeler gauge, to inspect cylinder head for warping. Replace head if warping exceeds .006" (.015mm).



= In. / mm.

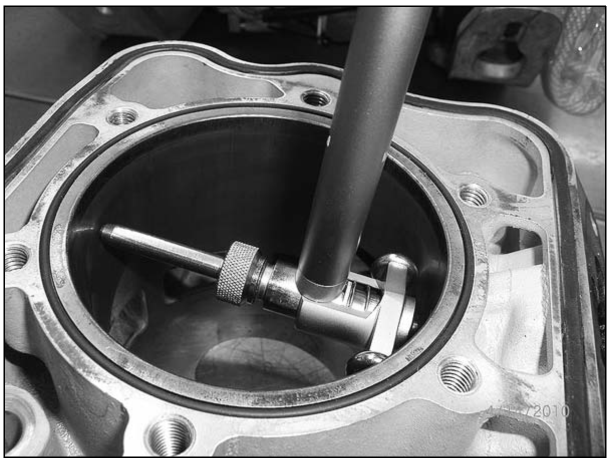
Cylinder Head Warp Limit
.006" (.015mm)

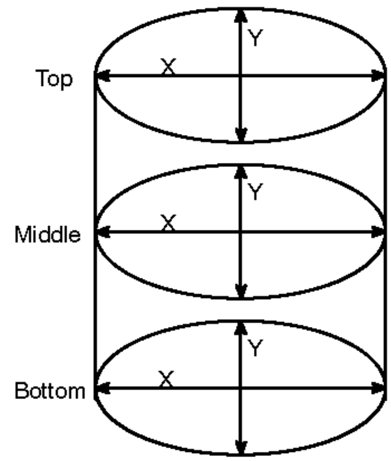
3

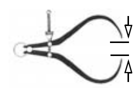
Cylinder Measurement

Inspect cylinder for wear, scratches, or damage. If no damage is evident, measure the cylinder for taper and out of round with a dial bore gauge. Measure the bore 20mm 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 a point just above the exhaust port and at a point below the transfer port. Use the chart below and record all measurements.

NOTE: A dial bore gauge is the only recommended tool to accurately measure cylinder bore diameter.







Taper Limit: .002" (0.051mm)
Out-of-Round Limit: .002" (0.051mm)

Cylinder Measurement Worksheet

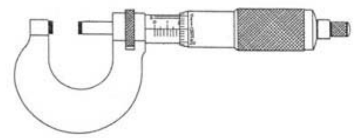
TOP (Measured 20mm from top of cylinder)	
X	Y
MIDDLE (Measured above exhaust port)	
X	Y
BOTTOM (Measured below transfer port)	
X	Y
Out-of-Round = Top X - Top Y and Bottom Y - Bottom X	
Taper = Top Y - Bottom Y and Top X - Bottom X	

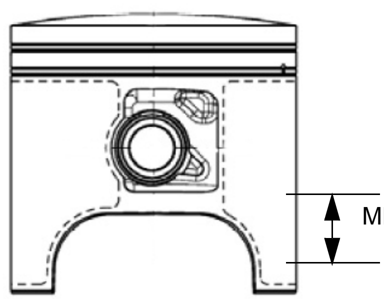
Piston Inspection

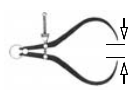
Check piston for scoring or cracks in piston crown or pin area. Excessive carbon buildup below the ring lands is an indication of piston, ring or cylinder wear.

Using only a micrometer, measure the piston outside diameter at a 90° angle to the direction of the piston pin and at the specified measuring point.

NOTE: A micrometer is the only recommended tool to accurately measure piston diameter.



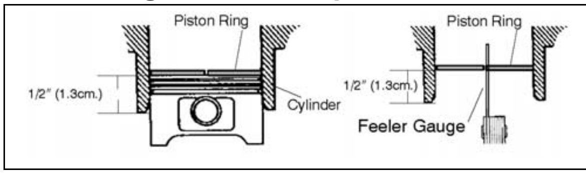




Measuring Point
600/800 Pistons: 10-20mm

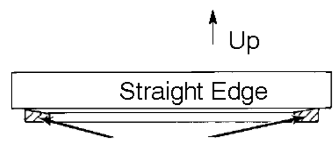
Subtract this measurement from the minimum cylinder measurement (90° to the pin). If clearance exceeds the service limit piston/cylinder overhaul may be required.

Piston Ring Installed Gap



Position the ring 20mm 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.



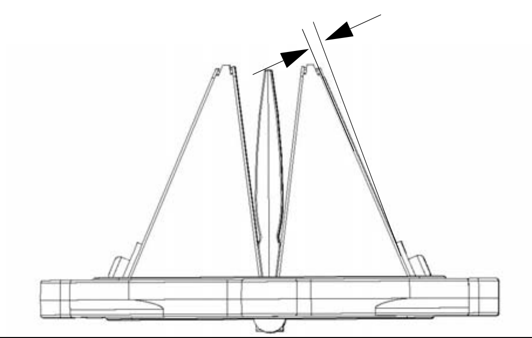
Piston rings are installed with marking or beveled side up.

Reed Valve Inspection

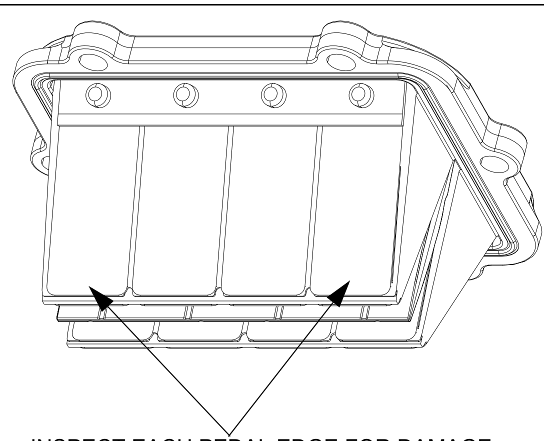
1. Loosen the hose clamps.
2. Remove the throttle body from the intake boots.
3. Remove the intake boot fasteners.
4. Remove the intake assembly.
5. Separate the intake boot from the reed cages.
6. Separate the reed stuffer(s) from the reed cage and inspect the reeds before they are removed from the 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” (0.30mm)



7. Inspect the leading edges of each reed pedal. If edges are chipped, or excessively worn, replace the reed assembly.

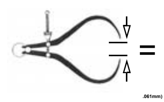


Bearing Fit

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.

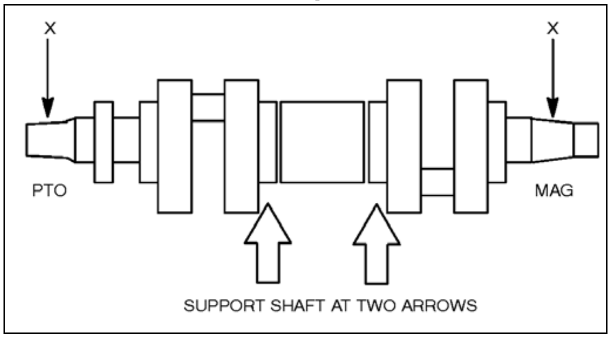
Install and torque the crankcase fasteners to specification. Take the crankcase apart, and then measure the Plastigage. Compare Plastigage width to interference fit specification.



= **In. / mm.**

Bearing Interference Fit:
.0014" - .0024" (0.035-0.061mm)

Crankshaft Runout Inspection



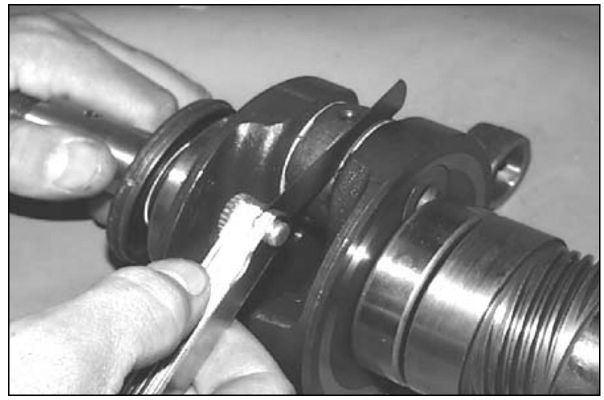
1. Support the crankshaft in a set of "V" blocks as shown.
2. Use a dial indicator to measure the runout at the following locations:
   - PTO end = First taper after bearing flat.
   - MAG end = 1/2" from bearing flat.
3. Runout deflection cannot exceed .0025" (.07mm).
4. If the runout deflection exceeds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

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.

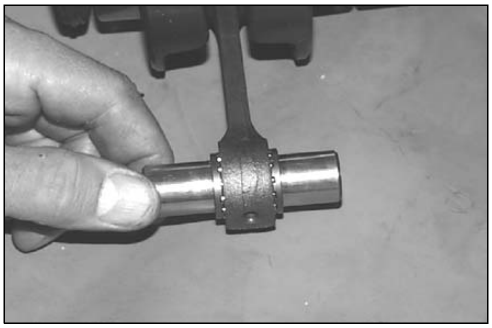
= In. / mm.

Connecting Rod Side Clearance:
.0114"-.0295" (0.289-0.749mm)
Maximum Clearance Differential
.002" (0.051mm)

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:

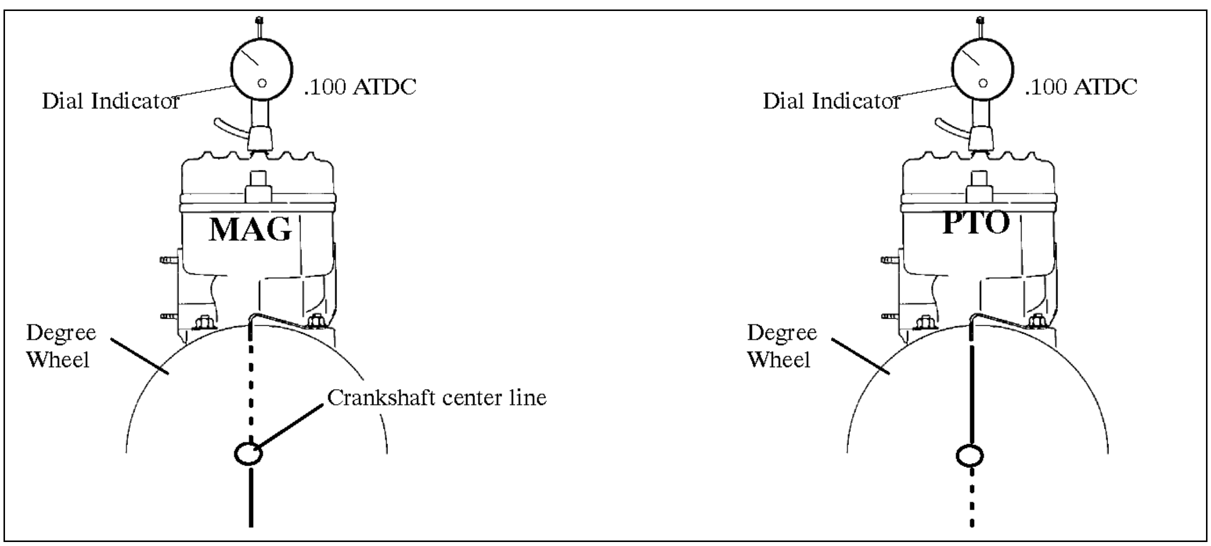
- Unexplained piston failure on one cylinder (i.e. severe detonation, broken ring lands, etc.)
- Excessive vibration of engine, back-firing, etc.
- Rough idle, poor top speed.

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.

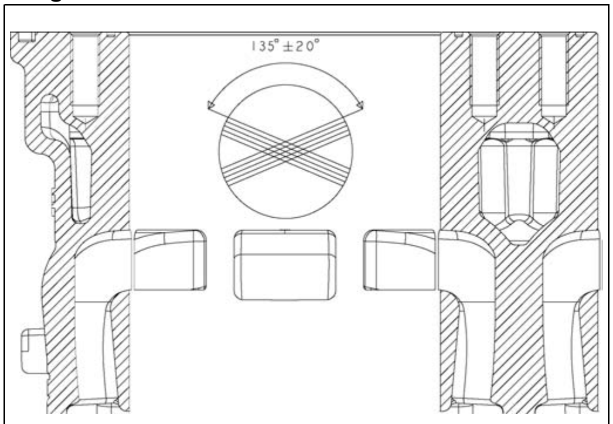
9. Remove the dial indicator and install in PTO cylinder. Repeat finding TDC process. Note the degree wheel indication when the dial indicator reads .100" ATDC. It should be 180° (+/-2°) from the MAG cylinder mark.



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 320 grit stone hone but can not be oversized.



EXAMPLE OF A CROSS HATCH PATTERN

Honing Tools

The following tools are recommended:

- Ammco 3950 Hone Kit - SPX PN 2870303 / commercially available
- Ammco 3956 Honing Stones (320 grit / Oversize)
- Honing Oil - Commercially Available

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).
4. Apply honing oil to the stones and cylinder walls. Wet honing removes more material faster and leaves a more distinct pattern in the bore.
5. Using a 1/2" (13 mm) drill motor rotating at a speed of 300-500 RPM, run the hone in and out of the cylinder rapidly until cutting tension decreases. Remember to keep the hone drive shaft centered to prevent edge loading and always bring the stone approximately 1/2" (1.2 cm) beyond the bore at the end of each stroke.
6. 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.

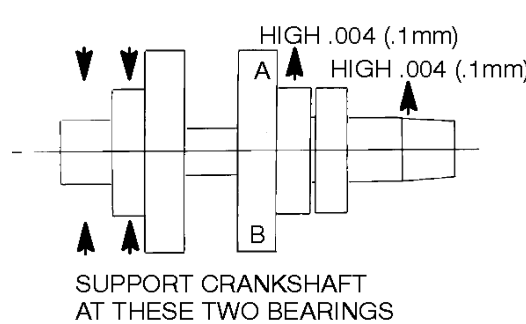
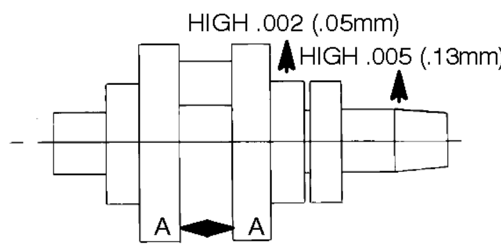
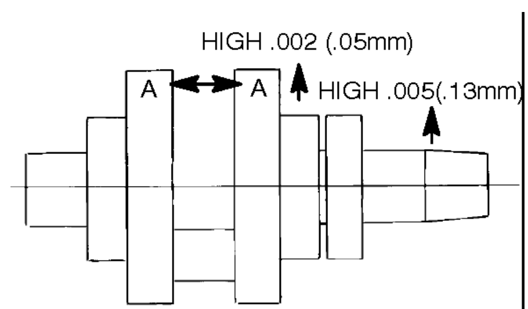
NOTE: Always check piston to cylinder clearance and piston ring installed gap after honing is complete.

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.

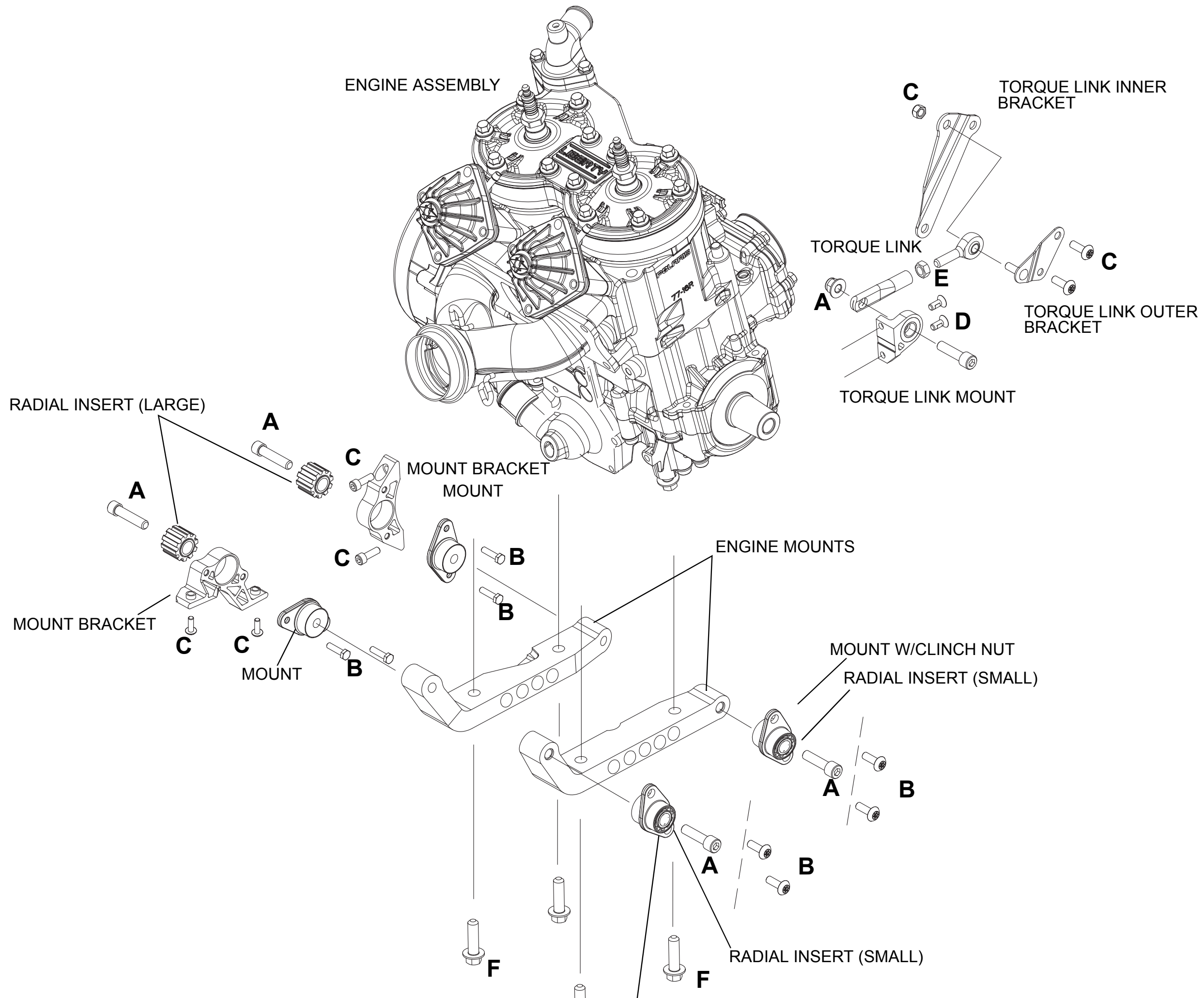
NOTE: The rod pin position in relation to the dial indicator tells you what action is required to straighten the shaft.

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.	

ENGINE MOUNTING SYSTEMS

2010 600 Engine Mounting



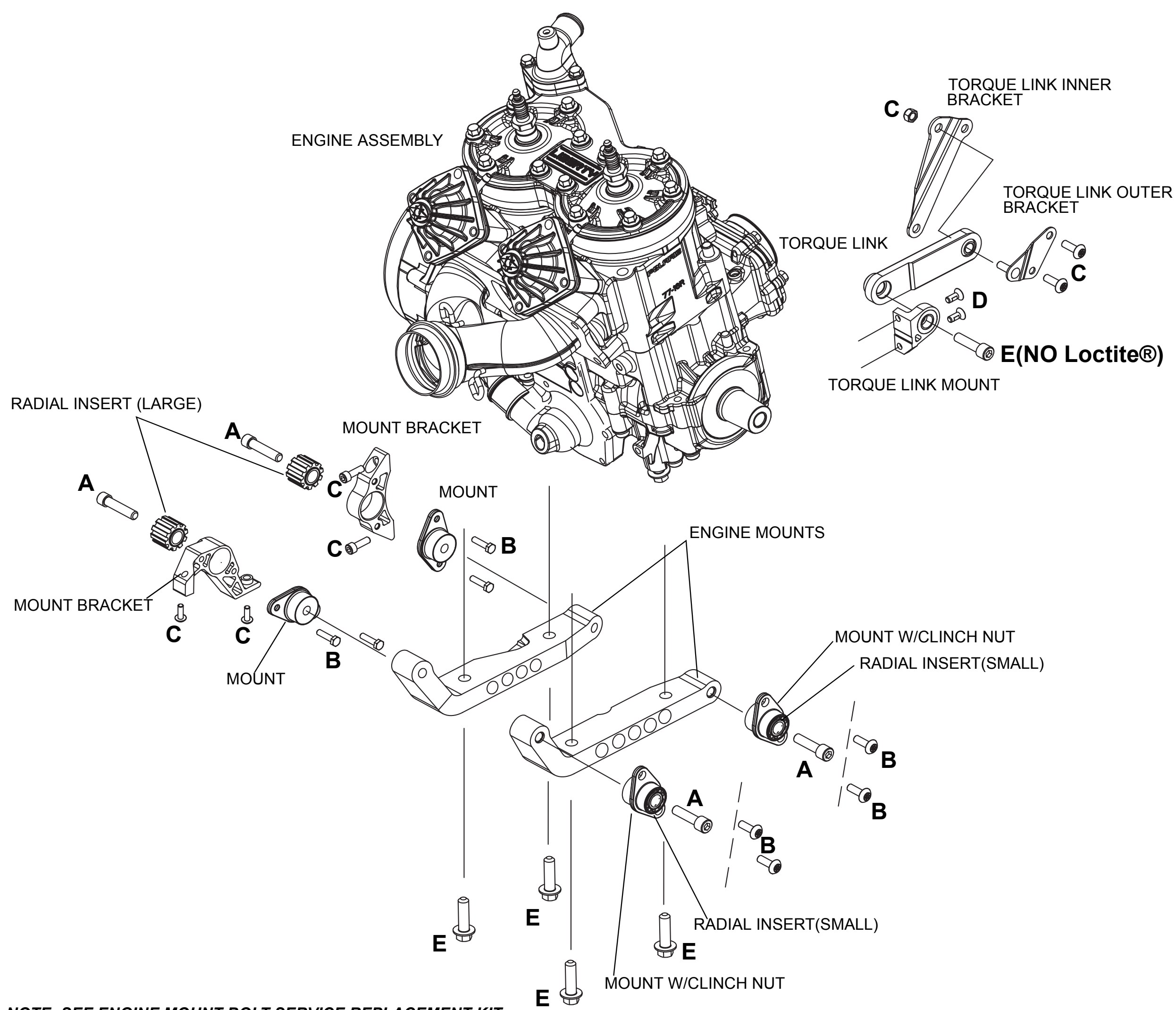
NOTE: SEE ENGINE MOUNT BOLT SERVICE REPLACEMENT KIT

= T
A = **DK. GREEN-M10x1.5x45 (8.8) = 30 ft-lb (41 Nm)** **SILVER/GRY-M10x1.5x50 (12.9) = 35 ft-lb (48 Nm)** **B = 9 ft-lb (12 Nm)** **C = 26 ft-lb (35 Nm)** **D = 18 ft-lb (24 Nm)** **E = 12.5 ft-lb (17 Nm)** **F = 30 ft-lb (41 Nm) Apply Loctite® 242™ to threads.**

Assembly Notes:

- ENGINE MOUNT BOLTS-Note two torque values for screws. Always clean engine mount threads with compressed air or M10x1.5 tap before installing screw(s). Apply Loctite® 242™ when using original screw.
- To prevent the engine mount screws from catching on the radial inserts, spray the inserts with rubber lubricant or isopropyl before installing engine mount fasteners.
- Replace lock nuts with new parts when removed.
- Torque link length (center-to-center) = 3.33" (84.63mm)

2011 600 Engine Mounting



NOTE: SEE ENGINE MOUNT BOLT SERVICE REPLACEMENT KIT

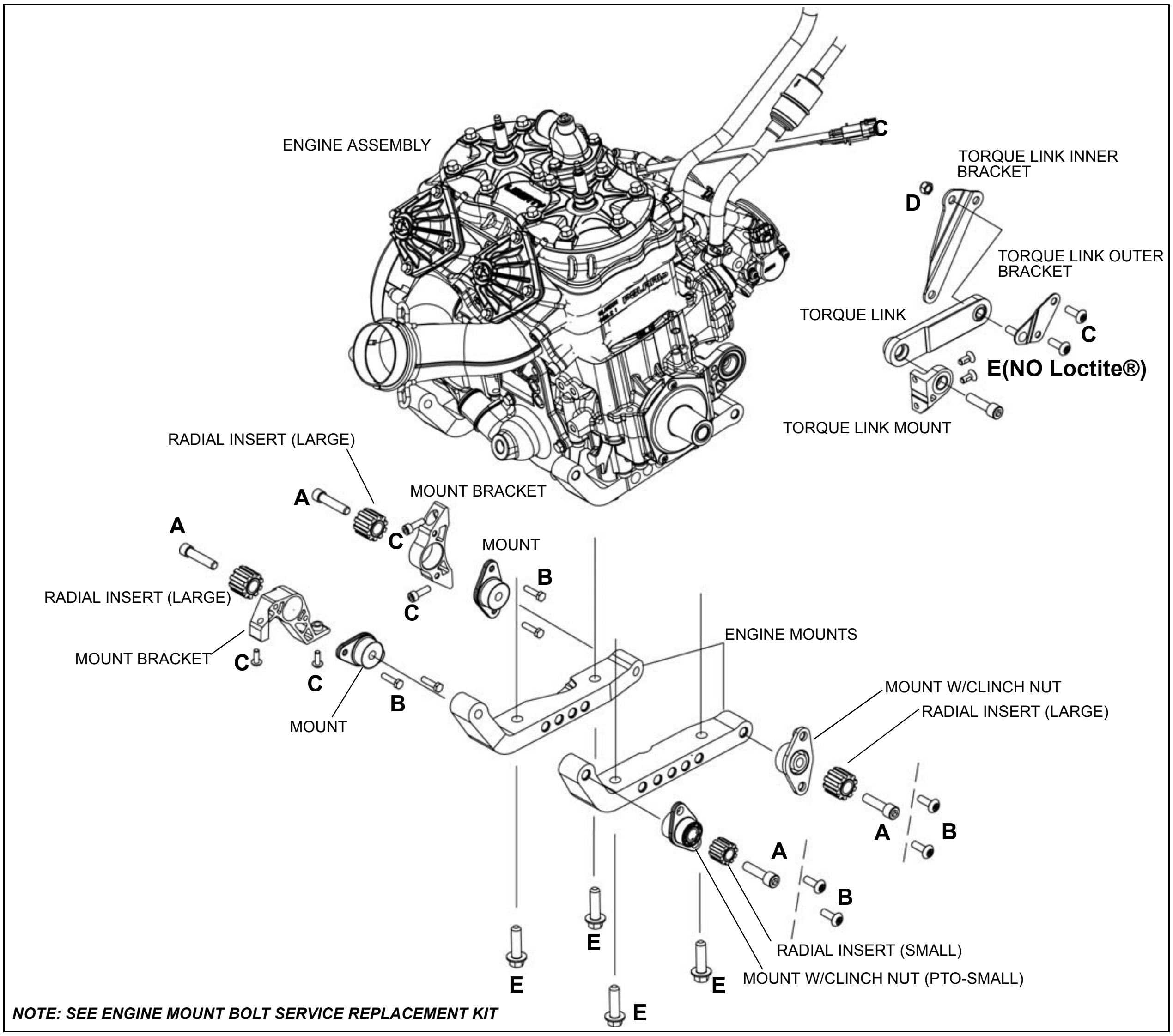
= T

A = 35 ft-lb (48 Nm) Apply Loctite® 242™ to threads.
B = 9 ft-lb (12 Nm)
C = 26 ft-lb (35 Nm)
D = 18 ft-lb (24 Nm)
E = 30 ft-lb (41 Nm) Apply Loctite® 242™ to threads.

Assembly Notes:

- ENGINE MOUNT SCREWS-Always clean engine mount threads with compressed air or M10x1.5 tap before installing screw(s). Apply Loctite® 242™ when using original screw.
- To prevent the engine mount screws from catching on the radial inserts, spray the inserts with rubber lubricant or isopropyl before installing engine mount fasteners.
- Replace lock nuts with new parts when removed.

2011 800 Engine Mounting



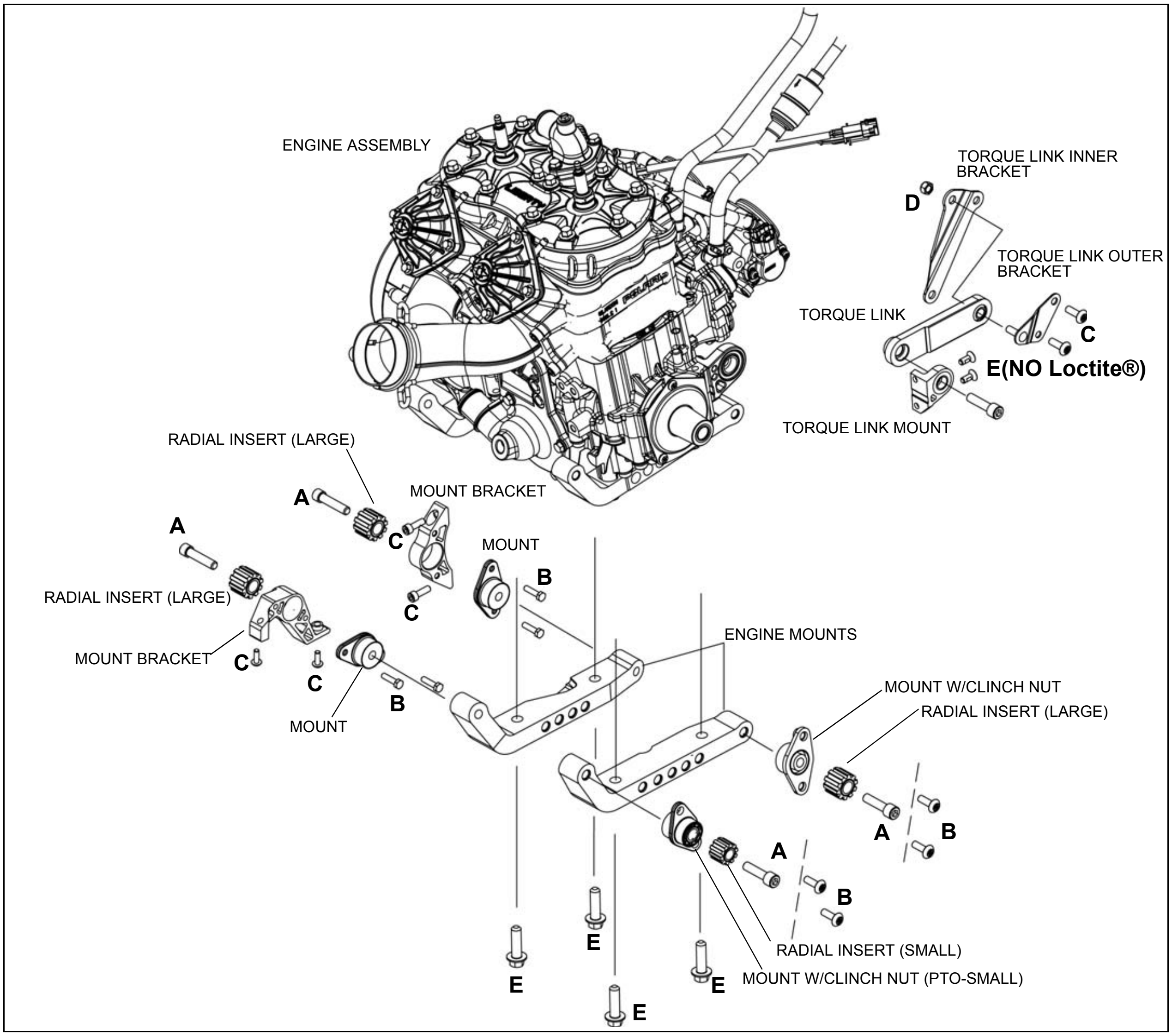
NOTE: SEE ENGINE MOUNT BOLT SERVICE REPLACEMENT KIT

= T
A = 35 ft-lb (48 Nm) Apply Loctite® 242™ to threads. **B = 9 ft-lb (12 Nm)** **C = 26 ft-lb (35 Nm)** **D = 18 ft-lb (24 Nm)** **E = 30 ft-lb (41 Nm) Apply Loctite® 242™ to threads.**

Assembly Notes:

- ENGINE MOUNT BOLTS-Always clean engine mount strap threads with compressed air or M10x1.5 tap before installing screw(s). Apply Loctite® 243™ when using original bolt.
- To prevent the engine mount bolts from catching on the radial inserts, spray the inserts with rubber lubricant or isopropyl before installing engine mount fasteners.
- Replace lock nuts with new parts when removed.

2012 600/800 Engine Mounting



= T
A = 40 ft-lb (54 Nm) Apply Loctite® 243™ to threads.
B = 9 ft-lb (12 Nm)
C = 26 ft-lb (35 Nm)
D = 18 ft-lb (24 Nm)
E = 30 ft-lb (41 Nm) Apply Loctite® 242™ to threads.

Assembly Notes:

- ENGINE MOUNT BOLTS-Always clean engine mount strap threads with compressed air or M10x1.5 tap before installing screw(s). Apply Loctite® 243™ when using original bolt.
- To prevent the engine mount bolts from catching on the radial inserts, spray the inserts with rubber lubricant or isopropyl before installing engine mount fasteners.
- Replace lock nuts with new parts when removed.

Engine Mount Bolt Service Replacement Kit

A service kit has been developed to replace the original engine mount fastener bolts used on 2010-2011 600/800 Pro-Ride vehicles to the 2012 fastener specification.

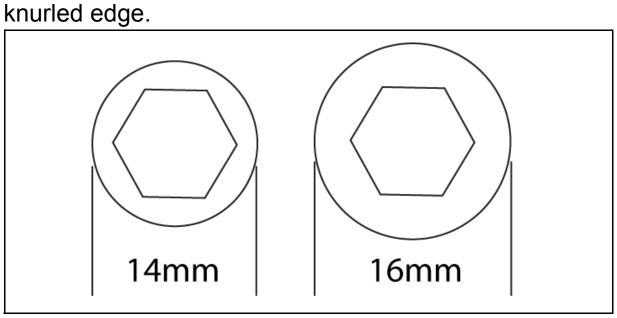
Engine Mount Bolt Replacement Kit PN 2204633

The engine mount bolt replacement kit includes the following parts:

- PN 7519334 - 4QTY. - Bolts-M10X1.5X50 12.9
- PN 3022426 - 2QTY. - Radial Inserts (Small) (600/800s - Front PTO / 2010-2011 600s Rear PTO ONLY)
- PN 3022409 - 3 QTY. - Radial Inserts (Large) (600/800s - MAG Front and Rear / 2011 800 Rear PTO)

The engine mount bolt replacement kit will replace all four engine mount bolts along with their associated radial inserts. The original bolts (part numbers: 7519009 and 7519282) will sub to the 2204633 kit part number.

Bolt identification can be quickly made by measuring the head diameter of the bolt. Bolts used on 2010-2011 Pro-Ride vehicles have 14mm head diameters, while the replacement bolts have 16mm heads and feature a knurled edge.



A selection of radial inserts is included with the kit. All 2010-2011Pro-Ride MAG-side engine mounts use large radial inserts.

On the PTO side, all 2010-2011 600 Pro-Ride models use small radial inserts in both the front and back locations.

All 2011 800 Pro-ride models feature a small PTO-front and large PTO-rear radial insert.

IMPORTANT: It is recommended that all engine mount bolts be replaced if removed. If bolt replacement is not possible, the bolt(s) must be replaced after TWO installation cycles. It is recommended that the technician marks the bulkhead to count the number of installations at each bolt(s) location.

Engine Mount Screw Installation

1. Determine which bolt(s) is going to be installed.

NOTE: Polaris recommends installing the Engine Mount Bolt Replacement Kit (PN 2204633) if original 2010-2011 bolts are installed.

2. Clean the engine mount strap threads with compressed air and/or M10x1.5 tap.
3. Apply Loctite® 243™ or Loctite® 242™ w/Primer N™ to 5-6 bolt threads.
4. Reference torque specifications and install bolt(s).
5. Apply final torque to bolt(s) using the following order:

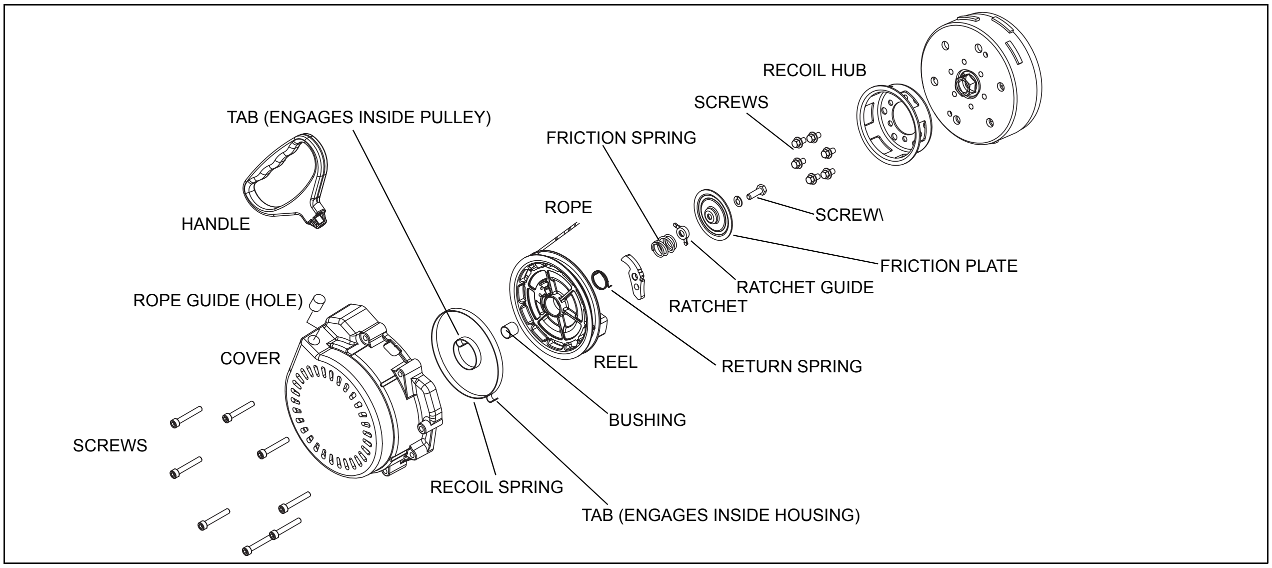
Loosen already-installed bolts 1 full turn to accommodate torque pattern if required.

- PTO-REAR
- PTO-FRONT
- MAG-REAR
- MAG-FRONT

= T
2010 - 14mm Head Diameter - DK.Green Color DK. GREEN-M10x1.5x45 (8.8) = 30 ft-lb (41 Nm) 2011 - 14mm Head Diameter - Silver/Gray Color SILVER/GRY-M10x1.5x50 (12.9) = 35 ft-lb (48 Nm) 2012/Replacement Kit - 16mm Head Diameter Silver/Gray Color SILVER/GRY-M10x1.50 (12.9) = 40 ft-lb (54 Nm)

RECOIL ASSEMBLY

Rope Removal and Installation



= T

Cover/Hub Screws: 9 ft-lb (12Nm)
Friction Plate Screw:
1204173 Recoil Assembly: 9 ft-lb (12 Nm)
1204331 Recoil Assembly: 14 ft-lb (19 Nm)

CAUTION

Recoil spring under high tension. Wear eye protection.

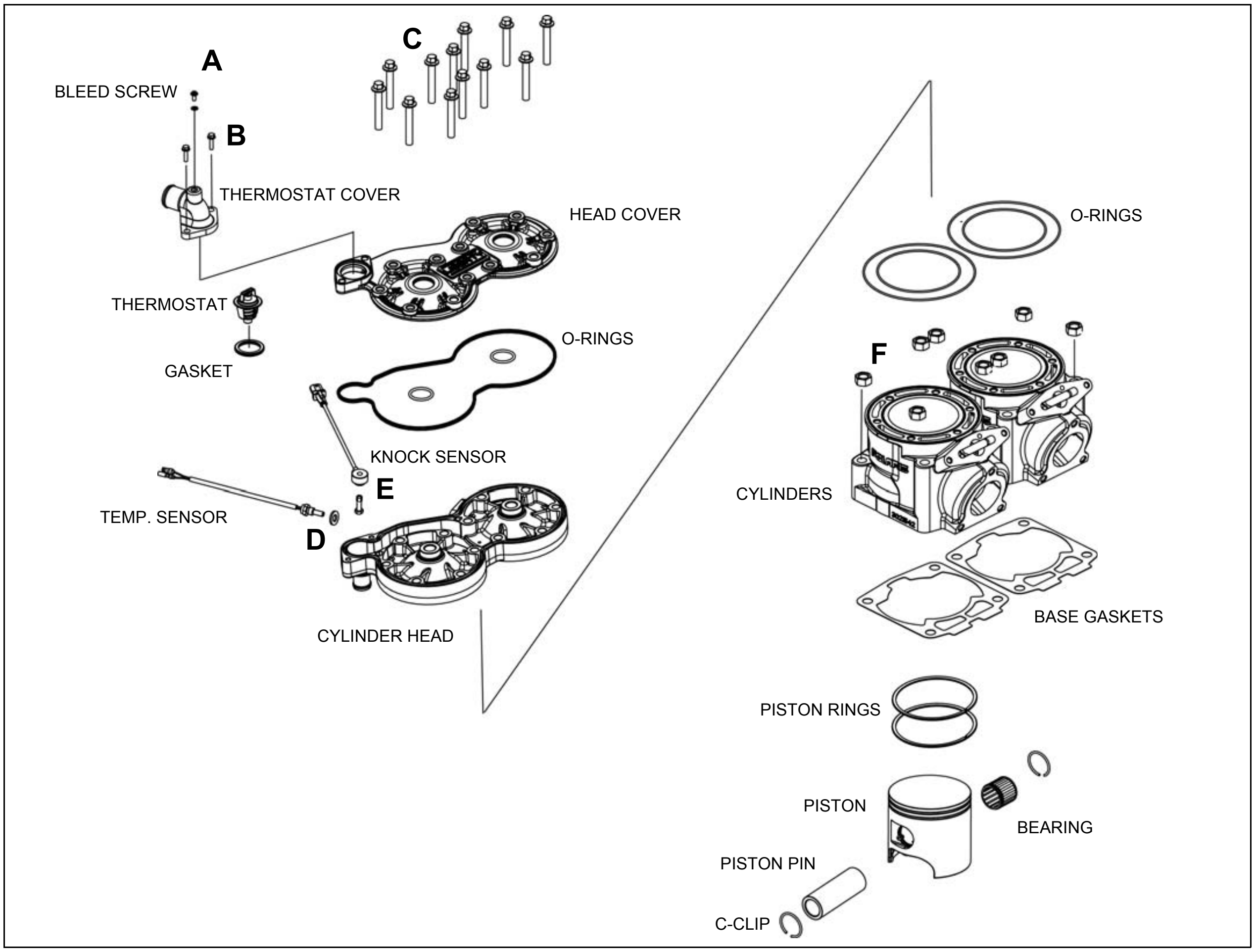
1. Remove recoil housing from the engine. Un-tie knot in the recoil rope and allow the reel to slowly unwind.
2. Remove the screw, washer, friction plate, ratchet guide, friction spring, ratchet and return spring from the reel.
3. Lift the reel straight out of the housing making sure the spring is no longer connected to the backside of the reel.

NOTE: If the recoil spring tension is removed, the spring should stay inside the housing.

4. Inspect all components for signs of abnormal wear. 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 reel.
5. If the reel 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 reel.
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 reel down the center shaft and into the housing making sure the recoil spring re-engages the reel tab.
10. Install the return spring and ratchet into the reel face. The return 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. Apply Loctite® 242™ and install screw and washer and torque to specification.
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 reel.
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.

ENGINE COMPONENT ASSEMBLIES

600 Cylinder Head/Cylinders/Pistons



= T

A: 70 in-lb (8 Nm)
B: 9 ft-lb (12 Nm) - Apply Loctite® 242™
C: 25 ft-lb (34 Nm) - Apply Loctite® 242™
D: 18 ft-lb (24 Nm) - Apply Pipe Sealant
E: 168 in-lb (19 Nm) - Clean and Dry
(DO NOT UNDER/OVER TORQUE SCREW.)
F: 37 ft-lb (50 Nm)

Piston Matrix

Engine Model	Piston PN	Piston ID
S4202-6044-OP6N S4215-6044-OO6N S4357-6044-OL6N	2204152	3222

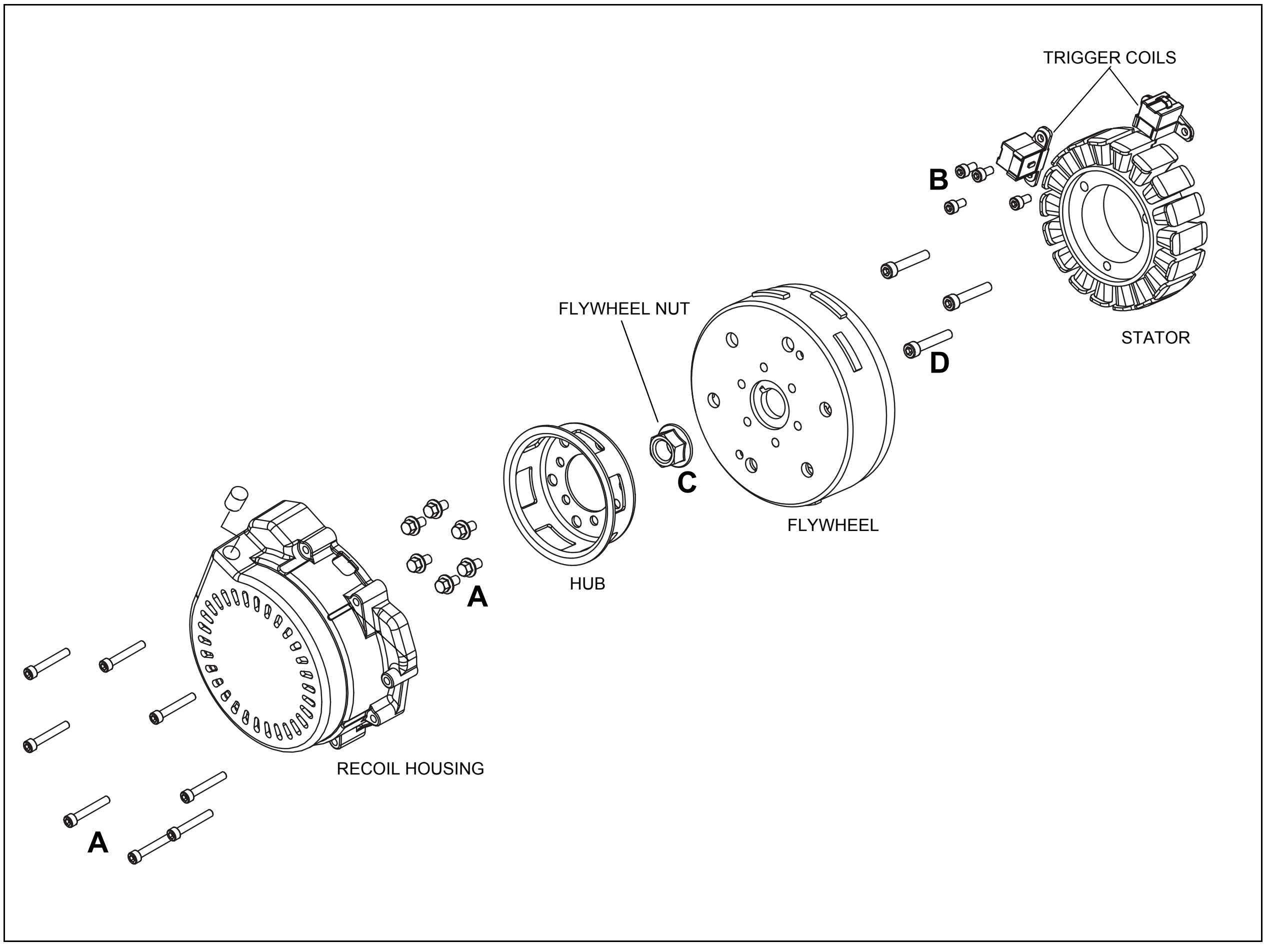
Piston Matrix

Engine Model	Piston PN	Piston ID
S4316-6044-OL6G S4452-6044-OL6G	2204659	3226

Disassembly / Assembly Process

1. Remove the coolant from the engine using a siphon, wet/dry vac, or drain pan.
2. Remove the oil tank/clutch cover, air box assembly, and exhaust pipe 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(s) are going to be removed, remove the fuel rail from the upper fuel injectors.
9. Loosen all, then remove the cylinder base nuts.
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. Always refresh the cylinder crosshatch pattern using a 320 grit stone. See “Cylinder Honing” on page 3.14.
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.

600/800 Recoil/Stator Assembly



= T
A: 9 ft-lb (12 Nm) **B: 5 ft-lb (7 Nm) (Trigger coil fasteners)** **C: 90 ft-lb (122 Nm) - Apply Loctite® 242™ (Do not use an impact wrench to remove or install flywheel nut.)** **D: 12 ft-lb (16 Nm) - Apply Loctite® 242™**

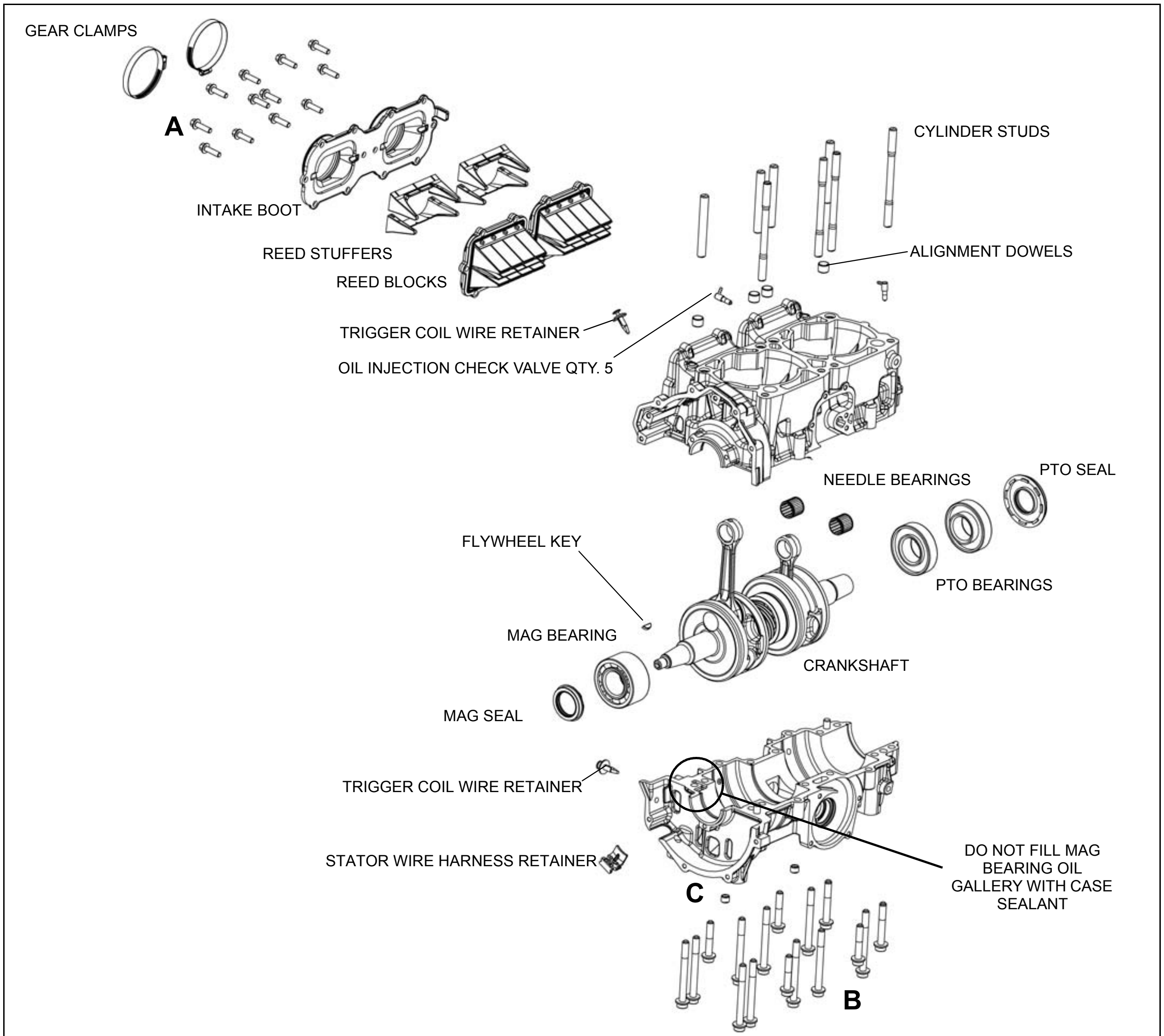
Disassembly / Assembly Process

1. Remove the exhaust pipe and silencer.
2. If the recoil assembly does not require attention, the recoil rope can remain attached to the handle. If recoil component work is desired, reference the Recoil Assembly section.
3. Remove the two mag-side engine mounting bolts. Carefully lift the mag-side of the engine to access the housing cover.
4. Remove the recoil/magneto housing cover. The recoil assembly is located inside the housing.
5. Remove the recoil hub from the flywheel. Secure the flywheel with a strap wrench, PN PU-45419. Remove the flywheel nut and washer.
6. 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.

7. Turn the puller center bolt in until the flywheel "pops" off of the crankshaft.
8. Mark the location of the magneto/stator plate in several places using a scribe.
9. Remove the two plastic rivets that prevent the trigger coil wires from contacting the flywheel.
10. Remove the magneto/stator from the crankcase.
11. During assembly, route the trigger coil wires in their designated channels. Install the two plastic rivets into the housing to prevent the wires from accidently coming into contact with the flywheel.
12. Assembly is reverse of disassembly. Reference the fastener torque specifications at the beginning of the chapter.
13. Do not use an impact wrench to install the flywheel nut.
14. Align the mag-side engine mount with the two chassis mounts. Install the engine mount screws and torque to specification.
15. Reinstall the exhaust silencer and pipe.

600 Crankcase/Crankshaft Assembly



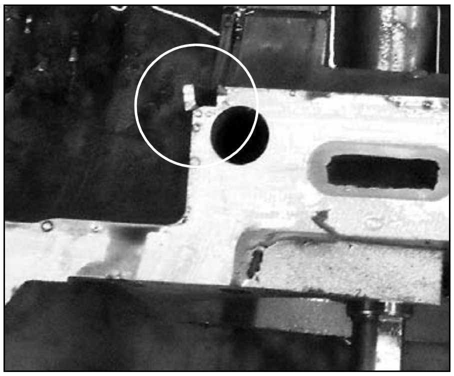
= In. / mm.
Long Stud Height (Exhaust side): 4.13" (105mm) **Small Stud Height (Intake side): 2.16" (55mm)**

= T
A: 9 ft-lb (12 Nm) **B: 22 ft-lb (30 Nm)** **C: 10 ft-lb (13 Nm) - Apply Pipe Sealant**

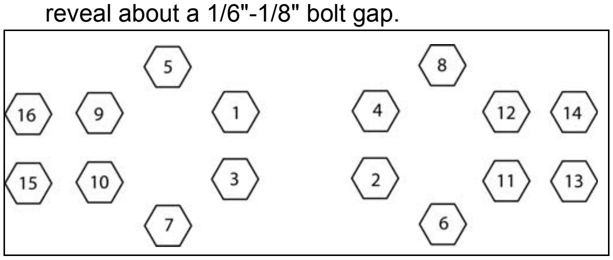
Disassembly / Assembly Process

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, reed stuffers, and reed assemblies from the intake tracks. Discard any seals or gaskets.

NOTE: The crankcase ring land damage shown in the corresponding photo is caused by improper crankcase separation or crankshaft removal.

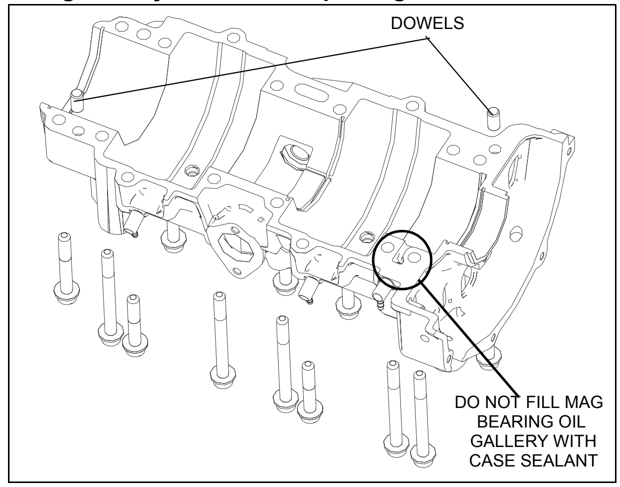


4. Remove all crankcase fasteners except ones marked 5-6-7-8 indicated below. Loosen these 4 bolts to reveal about a 1/6"-1/8" bolt gap.



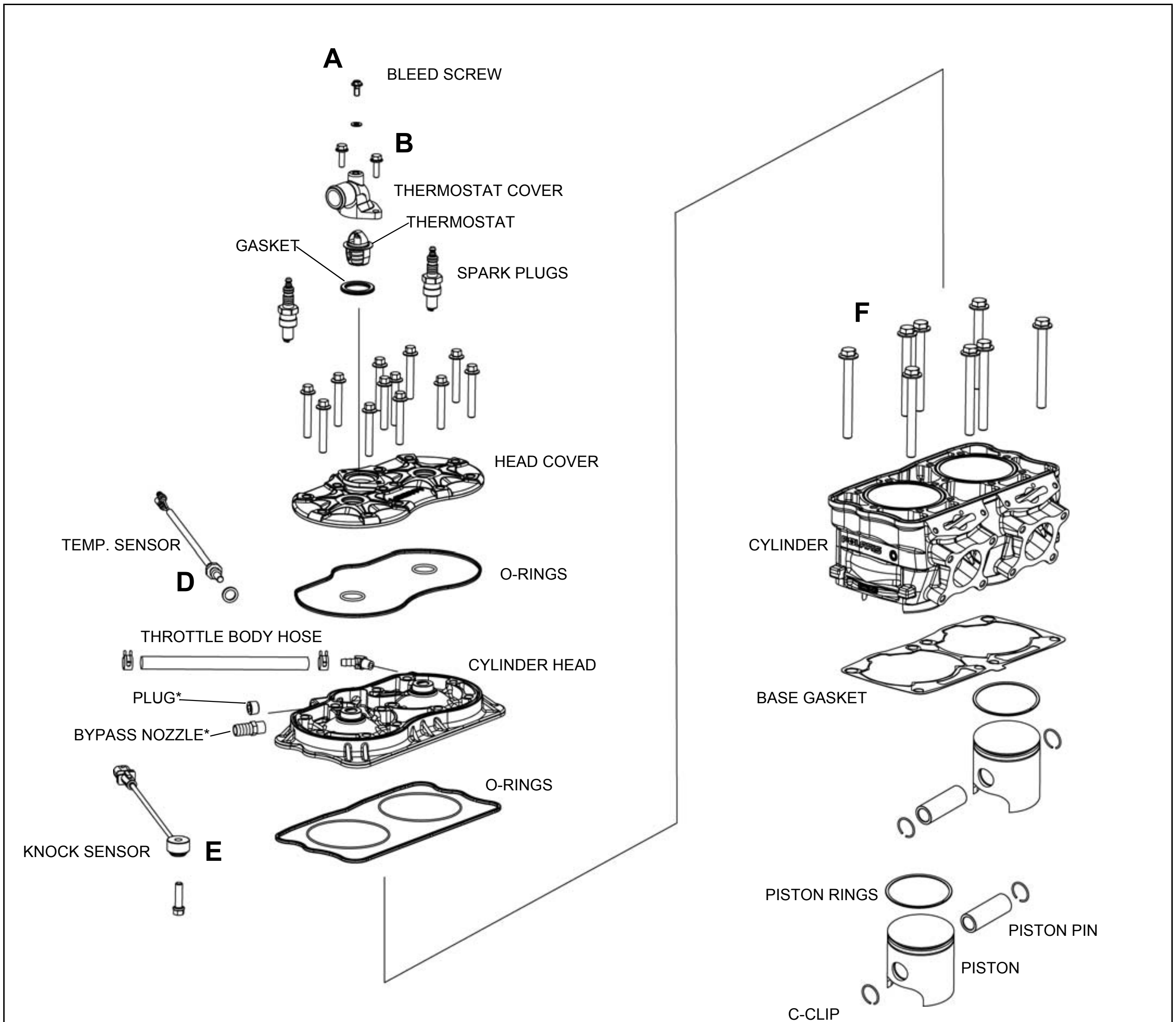
5. Once loosened, carefully and lightly tap on the bolts to separate the crankcase halves.
6. Discard the PTO and MAG crankshaft seals.
7. Remove the crankshaft by pulling it straight up and out. Inspect as required.
8. Thoroughly clean the two crankcase mating surfaces with carburetor cleaner and a gasket remover. Flush out the crankcase galleries.
9. Reinstall the crankshaft back into the lower crankcase using two new crankcase seals. Verify the two crankcase dowels are installed in the lower crankcase.
10. Apply a thin bead of Three Bond 1217H to the lower crankcase mating surface. Install the upper crankcase.

NOTE: Do not over-apply sealant in oil injector area. Doing so may block the oil passage.



11. 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.
12. Liberally coat the crankshaft bearings and components with Polaris two-stroke engine oil.

800 DC-CFI-2 Cylinder Head/Cylinder/ Pistons



= T
A: 70 in-lb (8 Nm) **B: 9 ft-lb (12 Nm) - Apply Loctite® 242™** **C: 25 ft-lb (34 Nm) - Apply Loctite® 242™** **D: 18 ft-lb (24 Nm) - Apply Pipe Sealant** **E: 168 in-lb (19 Nm) - Clean and Dry** **(DO NOT OVER/UNDER TORQUE SCREW.)** **F: 42 ft-lb (57 Nm)**

Cylinder Head/Cylinder/Piston Notes

Piston Matrix

Engine Model	Piston PN	Piston ID
S4139-8044-OO8G S4229-8044-OO8G S4092-8044-OO8G S4360-8044-OL8G S4361-8044-OL8G S4359-8044-OL8G	2204322	3305 or 3335

800 pistons feature two different rings thicknesses. The upper ring is 1.8mm thick, while the lower ring is 1.5mm thick.

Some 800 DC-CFI-2 engines feature a coolant bypass nozzle on the cylinder head. Reference table below.

Plug / Bypass Matrix

Engine Model	Cylinder Head Plug	Cylinder Head Bypass Nozzle
S4139-8044-OO8G S4229-8044-OO8G S4360-8044-OL8G S4361-8044-OL8G		X
S4092-8044-OO8G S4359-8044-OL8G	X	

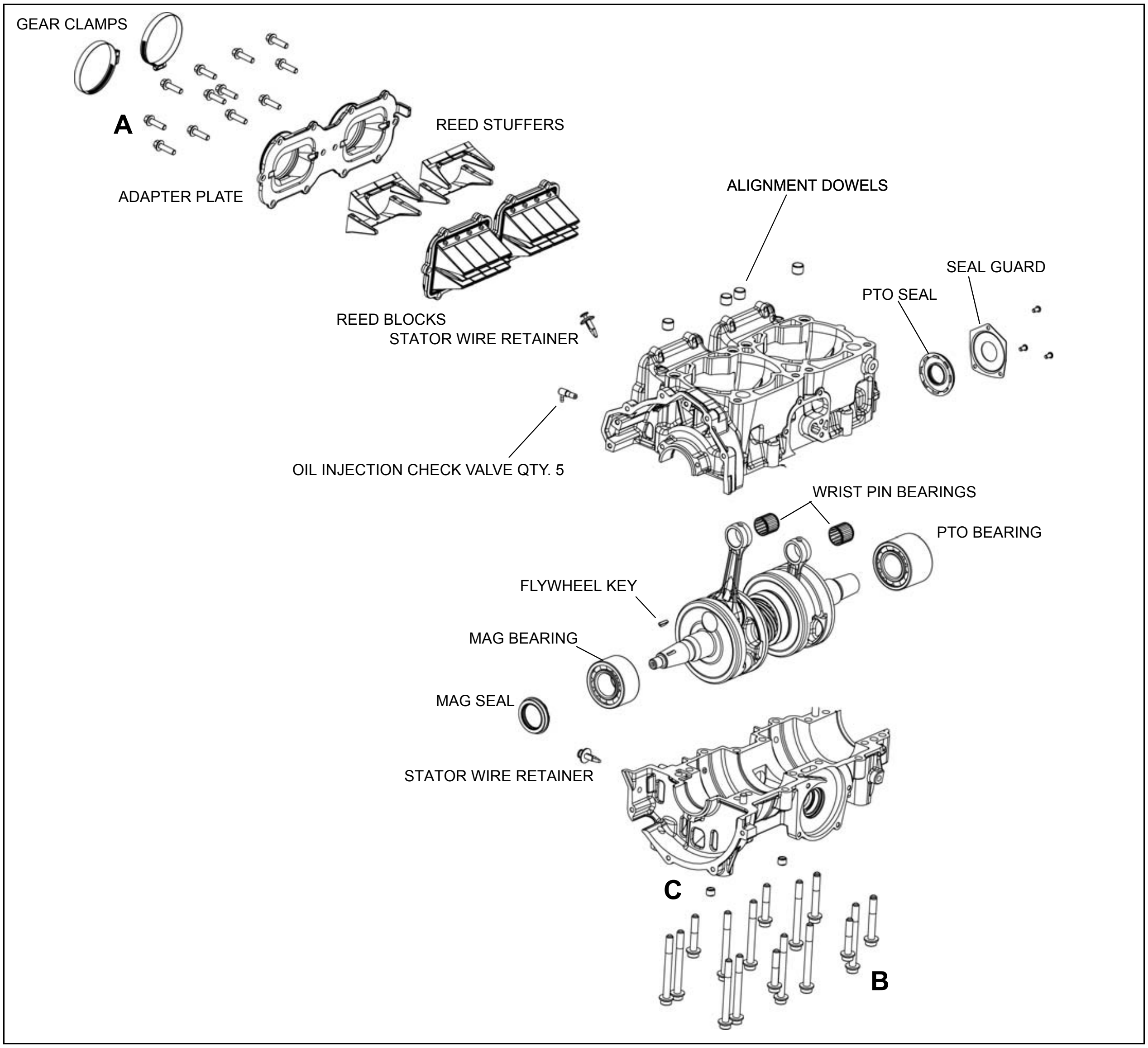
800 DC-CFI-2 Cylinder Head/Cylinder/ Pistons Disassembly/Assembly

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. Remove the fuel rail and fuel injectors from cylinder. See “Fuel Rail/Injector Removal and Installation” on page 4.24.

NOTE: Leave the exhaust Y-pipe attached to the cylinder assembly. Remove Y-pipe after removing cylinder from crankcase.

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 using a 320 grit stone. 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. Always refresh the cylinder crosshatch pattern using a 320 grit stone. See “Cylinder Honing” on page 3.14.
17. 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.
18. Follow the torque specifications and torque sequences located at beginning of chapter when tightening fasteners.

800 DC-CFI-2 Crankcase/Crankshaft

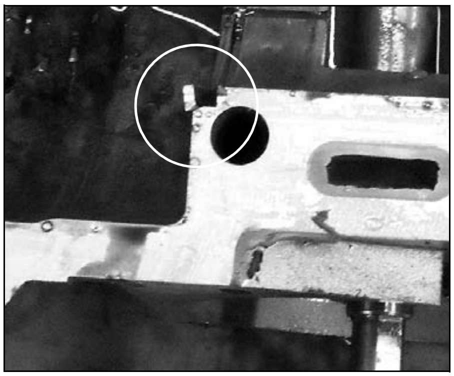


= T
A: 9 ft-lb (12 Nm) **B: 22 ft-lb (30 Nm) - Apply Loctite® 242™** **C: 10 ft-lb (13 Nm) - Apply Pipe Sealant**

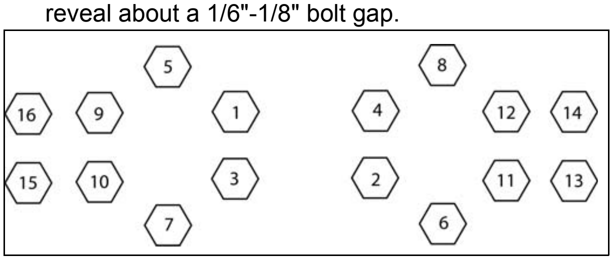
Disassembly and Assembly Process - Crankcase/ Crankshaft

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.

NOTE: The crankcase ring land damage shown in the corresponding photo is caused by improper crankcase separation or crankshaft removal.

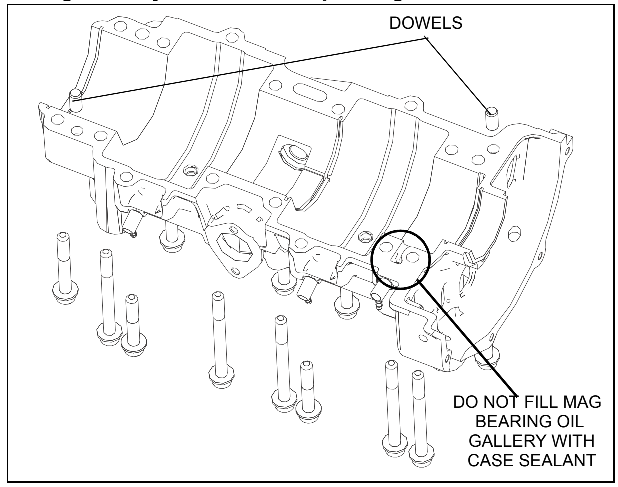


3. Remove all crankcase fasteners except ones marked 5-6-7-8 indicated below. Loosen these 4 bolts to reveal about a 1/6"-1/8" bolt gap.



4. Once loosened, carefully and lightly tap on the bolts to separate the crankcase halves.
5. Discard the PTO and MAG crankshaft seals.
6. Remove the crankshaft by pulling it straight up and out. Inspect as required.
7. Thoroughly clean the two crankcase mating surfaces with carburetor cleaner and a gasket remover. Flush out the crankcase galleries.
8. Reinstall the crankshaft back into the lower crankcase using two new crankcase seals.
9. Apply a thin bead of Three Bond 1217H to the lower crankcase mating surface. Install the upper crankcase.

NOTE: Do not over-apply sealant in oil injector area. Doing so may block the oil passage.

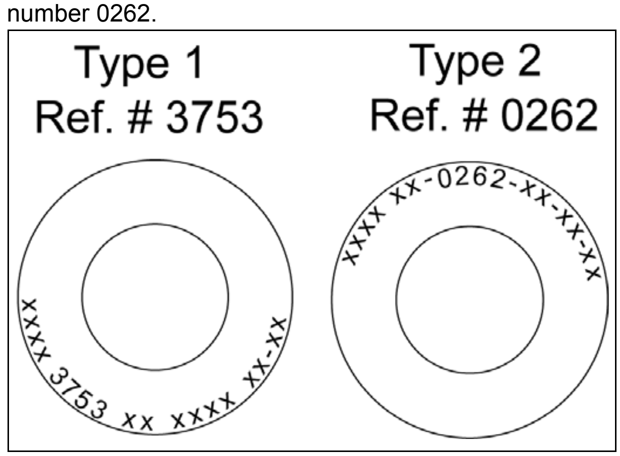


10. Loosely install the crankcase fasteners, then torque to the specifications at the beginning of the chapter. Use the correct torque sequence when tightening the screws.
11. Liberally coat the crankshaft bearings and components with Polaris two-stroke engine oil.

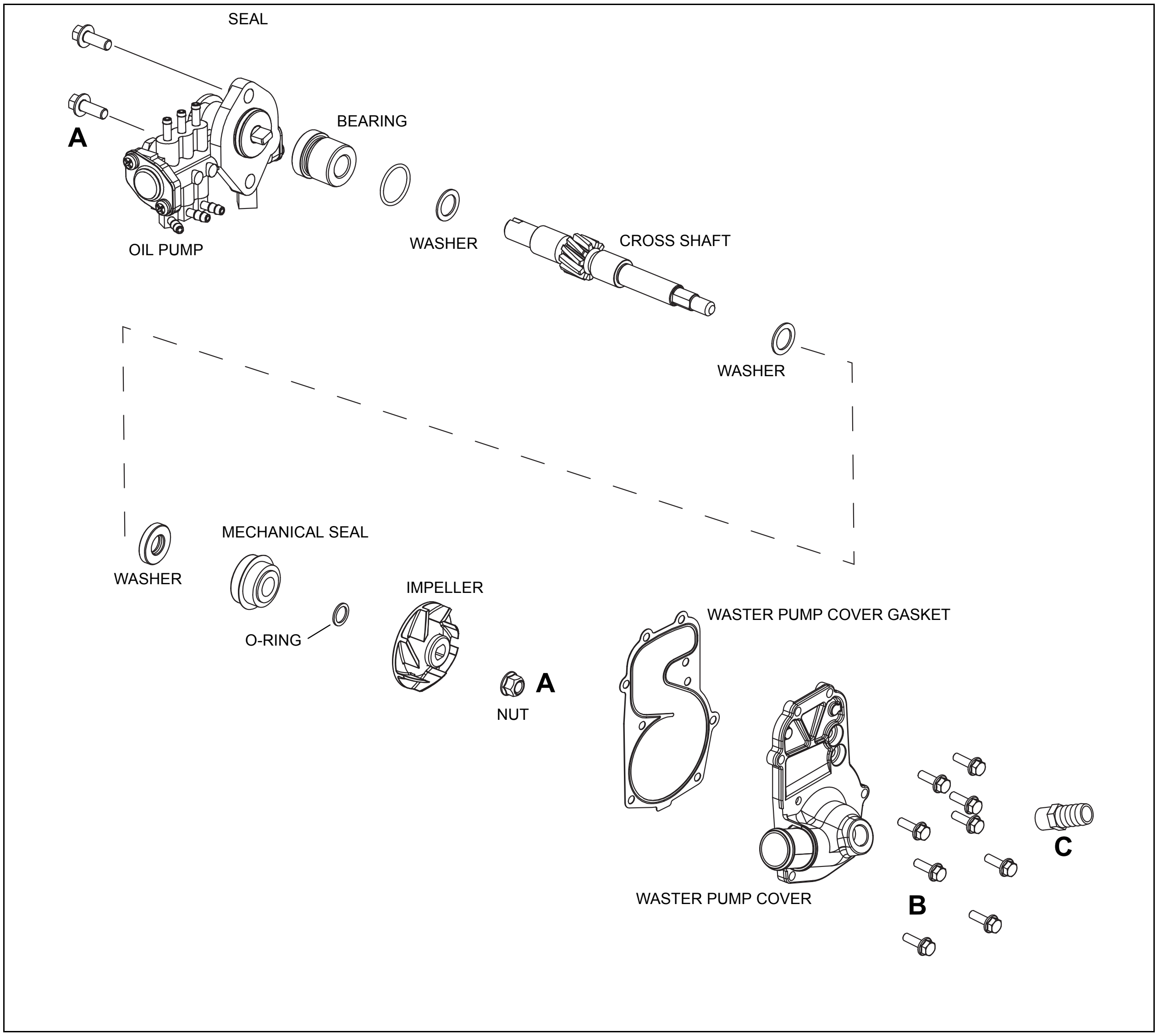
800 DC-CFI-2 Crankshaft Identification

Two different crankshaft assemblies (Type 1 and Type 2) are used for production and service parts. Use the codes etched into the nose of the PTO end to determine crankshaft type when ordering service parts.

Type 1 will have the number 3753. Type 2 will have the number 0262.



600/800 DC-CFI Water and Oil Pump Assembly



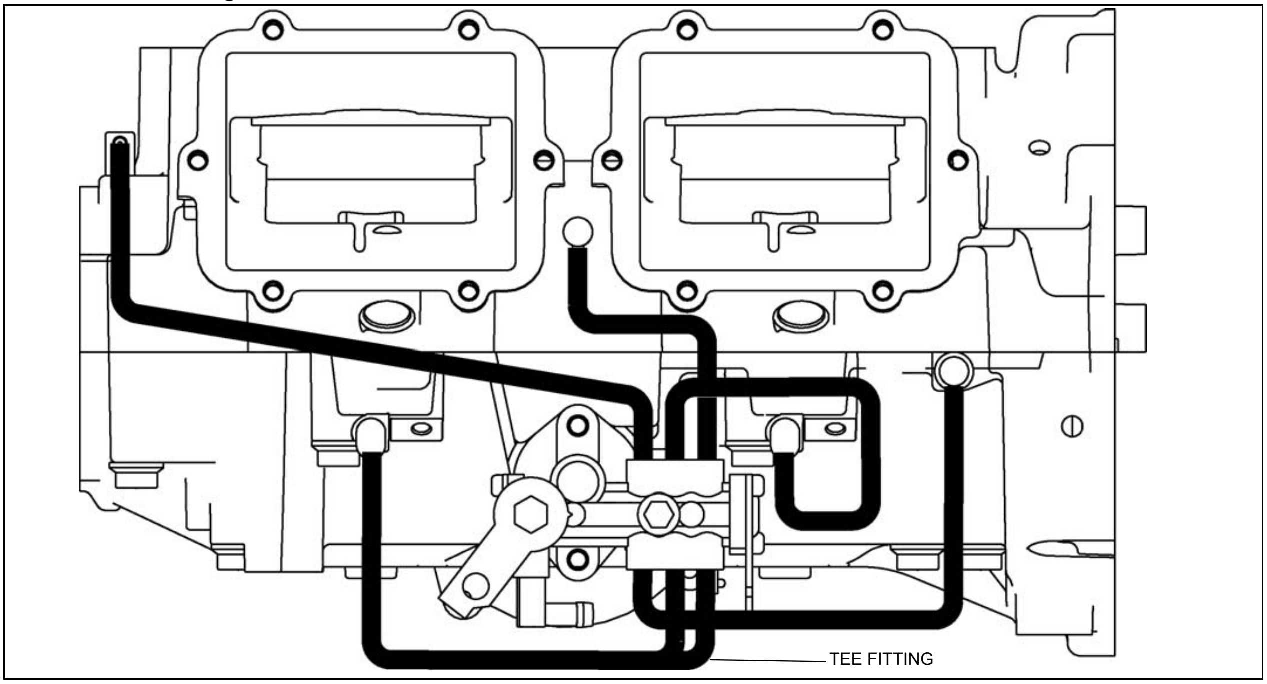
= T
A: 10 ft-lb (13 Nm) **B: 9 ft-lb (12 Nm)** **C: 18 ft-lb (Nm) Apply pipe sealant.**

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 oil tank/clutch cover assembly, airbox, exhaust pipe and resonator. Remove the hoses 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, the engine must be removed from the engine compartment. Remove the two fasteners then pull the pump out of the crankcase bore. Discard the o-ring.
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.

Oil Hose Routing



Engine Removal

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

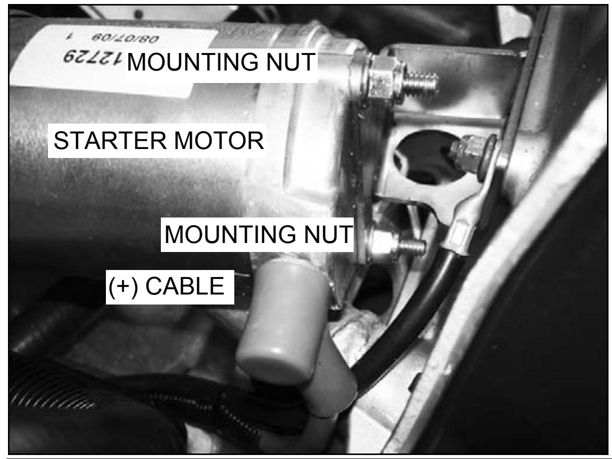
Torx screws are used throughout the engine compartment. Always use good-quality Torx wrenches when removing or installing these screws. Do not use worn or damaged tools.

1. Remove the left and right door panels. Remove the hood assembly.
2. Remove the drive belt, fender screw, drive clutch, and driven clutch.

3. Remove the oil tank/clutch cover assembly.See “Oil Tank/Clutch Cover Service” on page 2.14.
4. Remove the exhaust pipe, and exhaust silencer.

NOTE: Disconnect the exhaust temperature sensor probe wiring harness. Do not remove probe from pipe unless service is required.

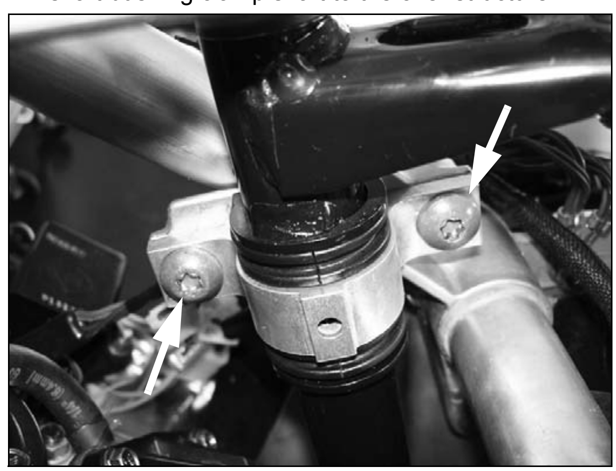
5. If the snowmobile is equipped with electric start, disconnect the battery. Remove the starter motor from the motor bracket. Remove the worm drive shaft from the case-mounted drive gear.



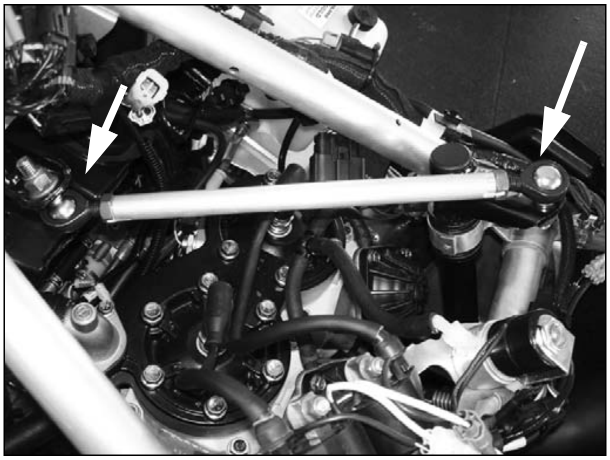
CAUTION

Remove the RED (+) battery cable first, and then the BLACK (-) cable last. Reverse order when attaching cables to battery.

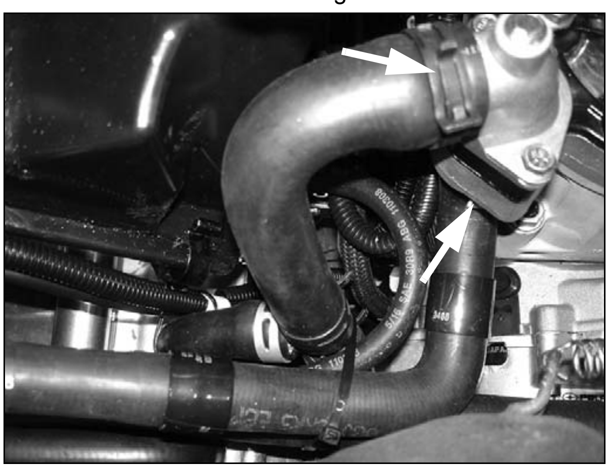
6. Remove the two screws securing the lower steering shaft bushing clamp shaft to the over structure.



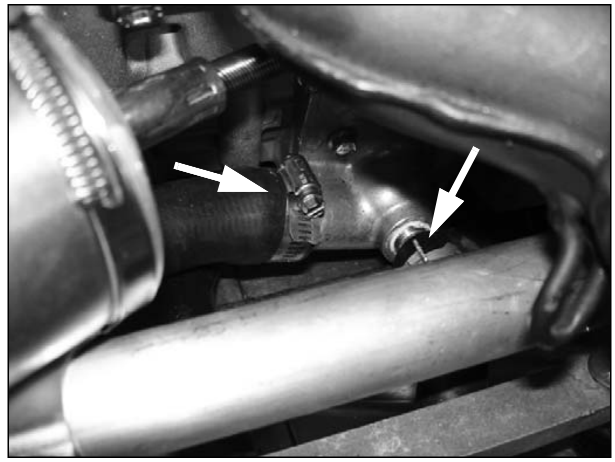
7. Remove the upper steering drag link from the lower steering shaft.



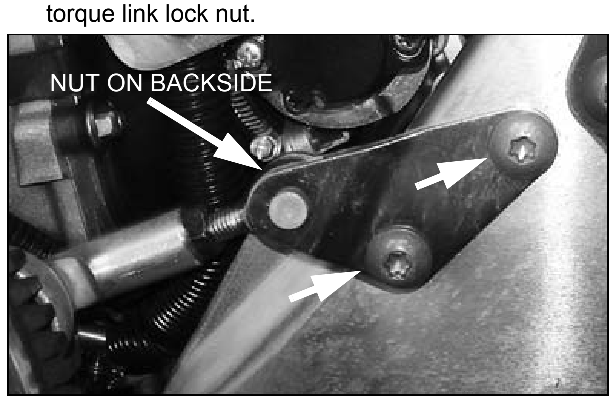
8. Remove the airbox assembly.See “Air Box Servicing” on page 2.23.
9. Remove the fuel supply and return hoses between the fuel tank and fuel rail mounted to the engine.
10. Remove the surge tank cap. Extract the engine coolant with a siphon or wet/dry vacuum.
11. Remove the thermostat bypass and main outlet hoses from the thermostat housing.



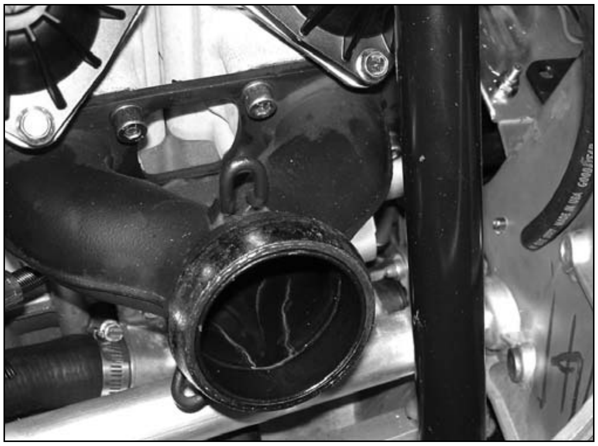
12. Remove the coolant return hoses from the water pump cover.



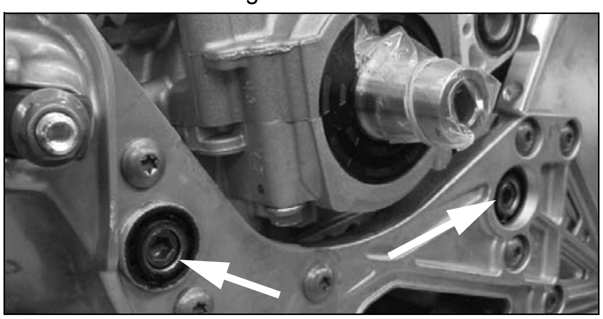
13. Disconnect the throttle cable from the throttle body.
14. Cut the knot at the end of the recoil rope to remove the handle. Pass the recoil rope through the console and guide. Tie the recoil rope in a knot to prevent it from retracting into the recoil housing.
15. Disconnect the engine torque link by removing the two screws securing the bracket to the bulk, and then the torque link lock nut.



16. Remove the exhaust y-pipe from the engine using a ball-end Allen wrench. Remove the exhaust gaskets. If un-damaged, they can be re-used during assembly.

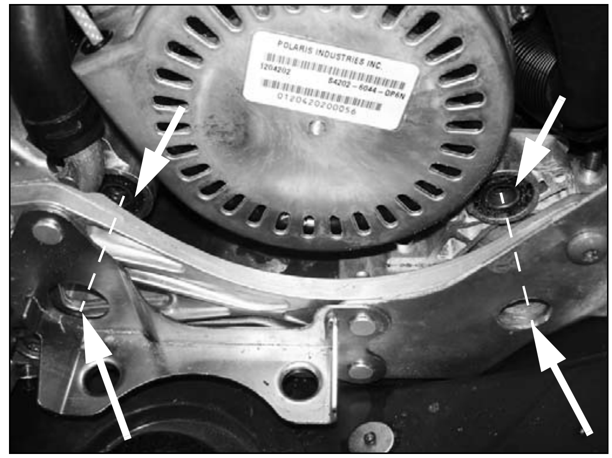


17. Remove the PTO and MAG exhaust valve assemblies from the cylinder. Doing this will provide clearance between the engine and bulkhead so the engine can be removed from the PTO-side of the engine compartment.
18. Remove the two engine mounting screws from the PTO-side of the engine.



19. Remove the two engine mount screws from the MAG-side of the engine.

NOTE: Use a six to eight inch extended Allen wrench to access the MAG-side engine mounting bolts.



20. With the help of an assistant carefully remove the engine from the PTO-side of the engine compartment.
21. Use care when lifting the engine up and over the tunnel and side support plate. Do not damage the oil pump when pulling the engine out.

Engine Installation

1. Clean the engine compartment.
2. Inspect engine mounts for damage. Replace mounts or radial inserts at this time. If any mount bracket was removed, reinstall and torque screws to specification.

= T
Engine Mount Bracket: 22 ft-lb (30 Nm)

3. Verify cooling hose and starter motor power cable (electric start models) are secured to the bulkhead floor with a p-clamp.

NOTE: White tape on wire harnesses and hoses designates clamp/harness retainer location.

4. Visually inspect the oil pump setting. If adjustment is required, adjust the oil pump before installing the engine.
5. With the help of an assistant of engine hoist, lower the engine into the bulkhead.
6. Spray the radial inserts on each of the four engine mounts with rubber lubricant or isopropyl alcohol. Lubricating the radial inserts will prevent the engine fasteners from catching on the rubber when they are torqued.
7. Install all four engine mount screws by hand. Once all four are installed, torque screws to specification.

= T
Engine Mount Screws: See Page 3.20.

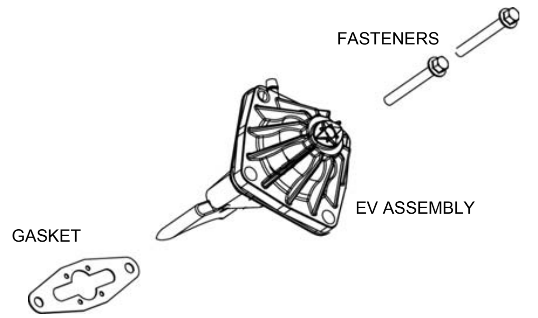
8. Install the torque link adjuster using a new lock nut. Torque lock nut and screws to specification.

= T
Torque Link Nut/Screws: 26 ft-lb (35 Nm)

9. Reinstall the surge tank-to-water pump and heat exchanger-to-water pump hoses on to the water pump cover.
10. Reinstall the coolant outlet and bypass outlet hoses at the thermostat housing. Open the bleed slightly to allow air to escape when the engine is filled with coolant.
11. If the snowmobile is equipped with electric start, reinstall the starter worm drive shaft, and the starter motor.
12. Reinstall the exhaust gaskets and y-pipe. Torque y-pipe fasteners to specification.

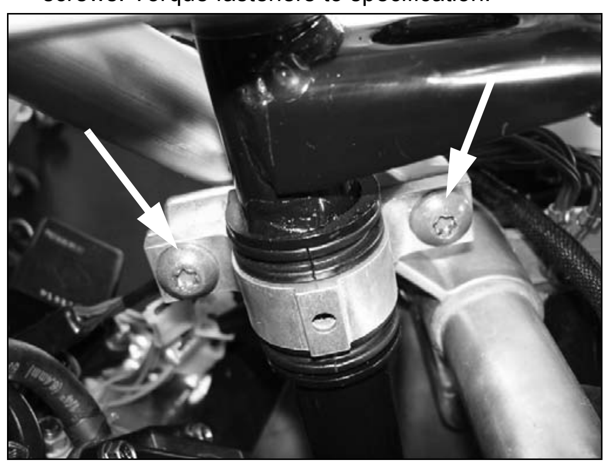
= T
Exhaust Y-Pipe Screws: 22 ft-lb (30 Nm)

13. Reinstall the throttle cable. Verify the throttle cable freeplay is set to specification.
14. Install the MAG and PTO exhaust valve assemblies using new gaskets. Torque fasteners to specification. Reconnect vent hoses and secure clamps.



= T
Exhaust Valve Mounting Screws: 2 ft-lb (16 Nm) **Apply Loctite® 242™**

15. Reinstall the lower steering shaft bushing bracket on to the over structure by loosely installing the two screws. Torque fasteners to specification.



= T
Lower Steering Shaft Bushing Bracket: **15 ft-lb (20 Nm)**

16. Reinstall the steering drag link with the rod ends parallel to each mating surface. Torque nuts to specification.

= T
Steering Drag Link Rod End Nuts: 37 ft-lb (50 Nm)

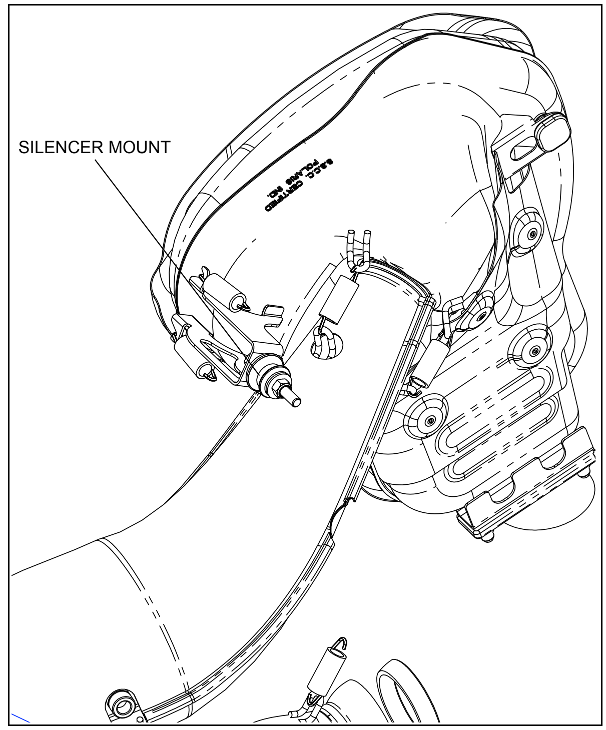
17. If the snowmobile is equipped with electric start, reinstall the battery and reconnect the battery cables. Connect BLACK negative (-) cable first, and then RED positive (+) cable last.

CAUTION

Attach the BLACK (-) battery cable first, and then the RED (+) cable last.

18. Reinstall the exhaust silencer. Verify the silencer outlet tube is installed in the fender boot and that the boot has not been pushed out of the fender.
19. Torque the silencer rubber mount fastener to specification.

NOTE: Install the silencer mount rubber dampener with the fat end facing outwards.



= T
Silencer Mount: 17 ft-lb (23 Nm)

20. Reinstall the exhaust pipe. Verify the gray springs are installed at the pipe-to-manifold locations.
21. Reconnect the over structure electrical component wire harness connections. Verify the white harness bands are routed so they can be fitted into each respective harness retainers.
22. Clean the PTO clutch taper with emery cloth. Reinstall the drive clutch. Torque fastener to specification.

= T
Drive Clutch Bolt Torque: 80 ft-lb (108 Nm) **Re-torque after running engine.**

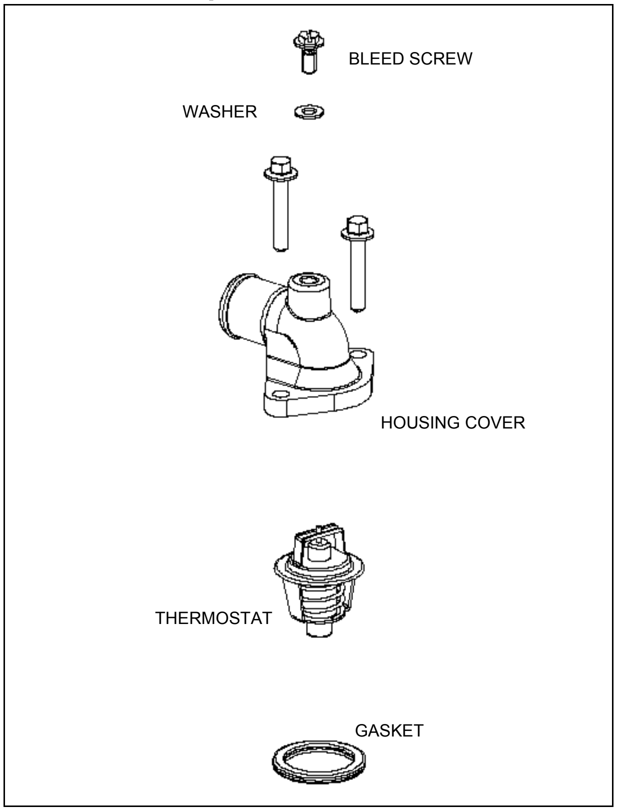
23. Reinstall the driven clutch assembly. Torque fastener to specification.

= T
Driven Clutch Bolt Torque: 18 ft-lb (25 Nm)

24. Reinstall the drive belt.
25. Reinstall the airbox assembly. See “Air Box Servicing” on page 2.23.
26. Reinstall the clutch cover/oil tank assembly. See “Oil Tank/Clutch Cover Service” on page 2.14.
27. Fill the coolant surge tank with 60/40 Polaris engine coolant. Follow the Cooling System Fill/Bleed Procedure outlined in Chapter Two. See “Cooling System Bleeding” on page 2.10.
28. Reinstall the hood assembly. See “Door/Hood Removal and Installation” on page 2.24.
29. Reinstall the left and right door panels.
30. If the engine was rebuilt, follow the engine break-in procedure. See “Engine Break-In Procedure” on page 2.6.

COOLING SYSTEM

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.

= T

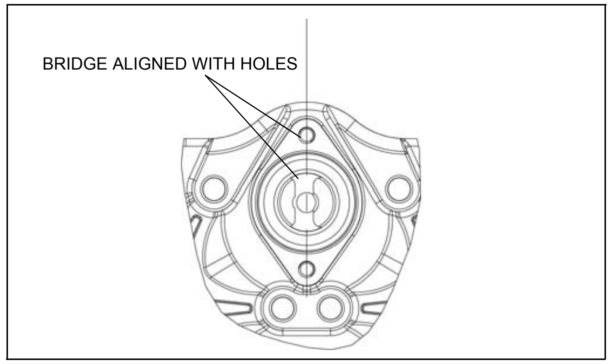
Cover Fasteners: 9 ft-lb (12 Nm)

5. Verify the bleed screw and washer are installed.

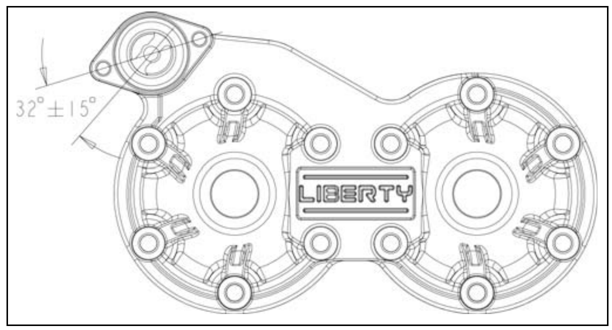
Thermostat Orientation

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

Center Thermostat Location



Offset Thermostat Location



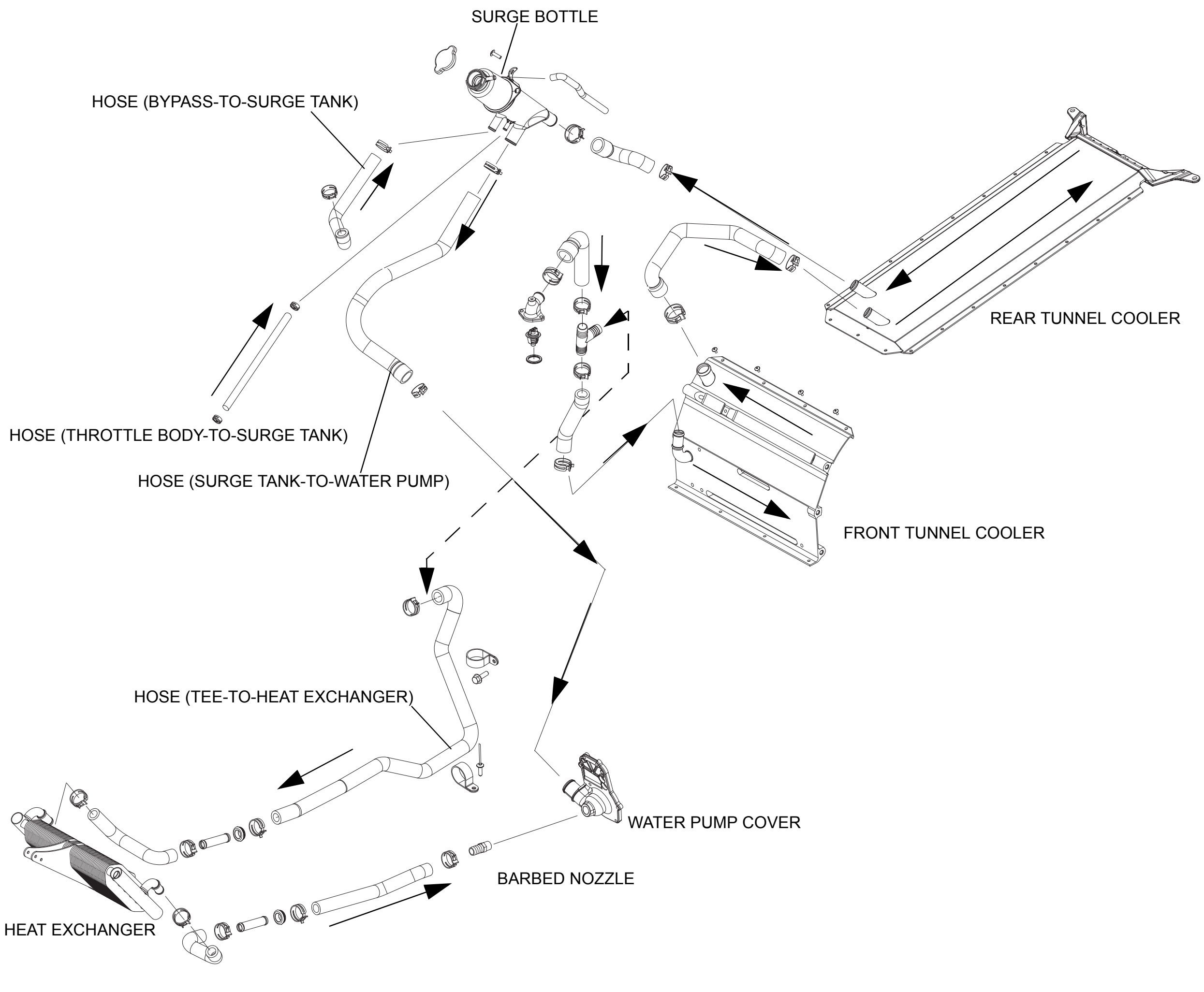
800 Thermostats

There are two different thermostats used depending on what model the engine is installed in.

Cooling System Type	Thermostat PN	Bleed Hole ID
RUSH/Switchback	7052433	2 mm
SB Assault/RMK PRO RMK/ RMK Assault	7052452	3.5 mm

Both thermostats are full open at 120°F (49°C).

2010 600 RUSH Cooling System



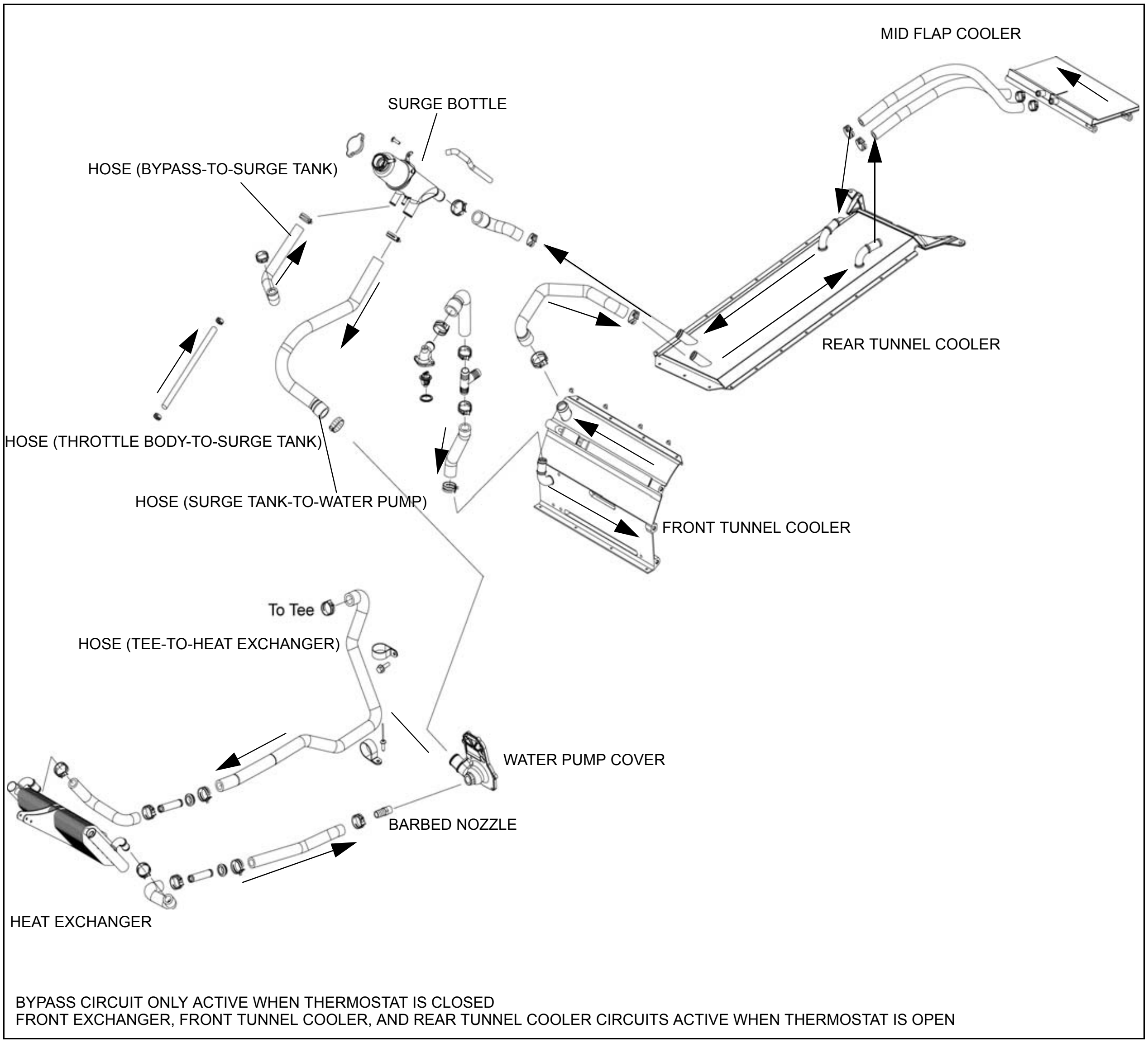
BYPASS CIRCUIT ONLY ACTIVE WHEN THERMOSTAT IS CLOSED
FRONT EXCHANGER, FRONT TUNNEL COOLER, AND REAR TUNNEL COOLER CIRCUITS ACTIVE WHEN THERMOSTAT IS OPEN

NOTE: When the thermostat is closed, engine coolant is bypassed back to the surge bottle.

When the thermostat is open, the bypass circuit is closed. Engine coolant is routed to the front heat exchanger, front tunnel cooler, and rear tunnel cooler.

Thermostat opening temperature is 120° F (49° C).

2011 600 RUSH Cooling System

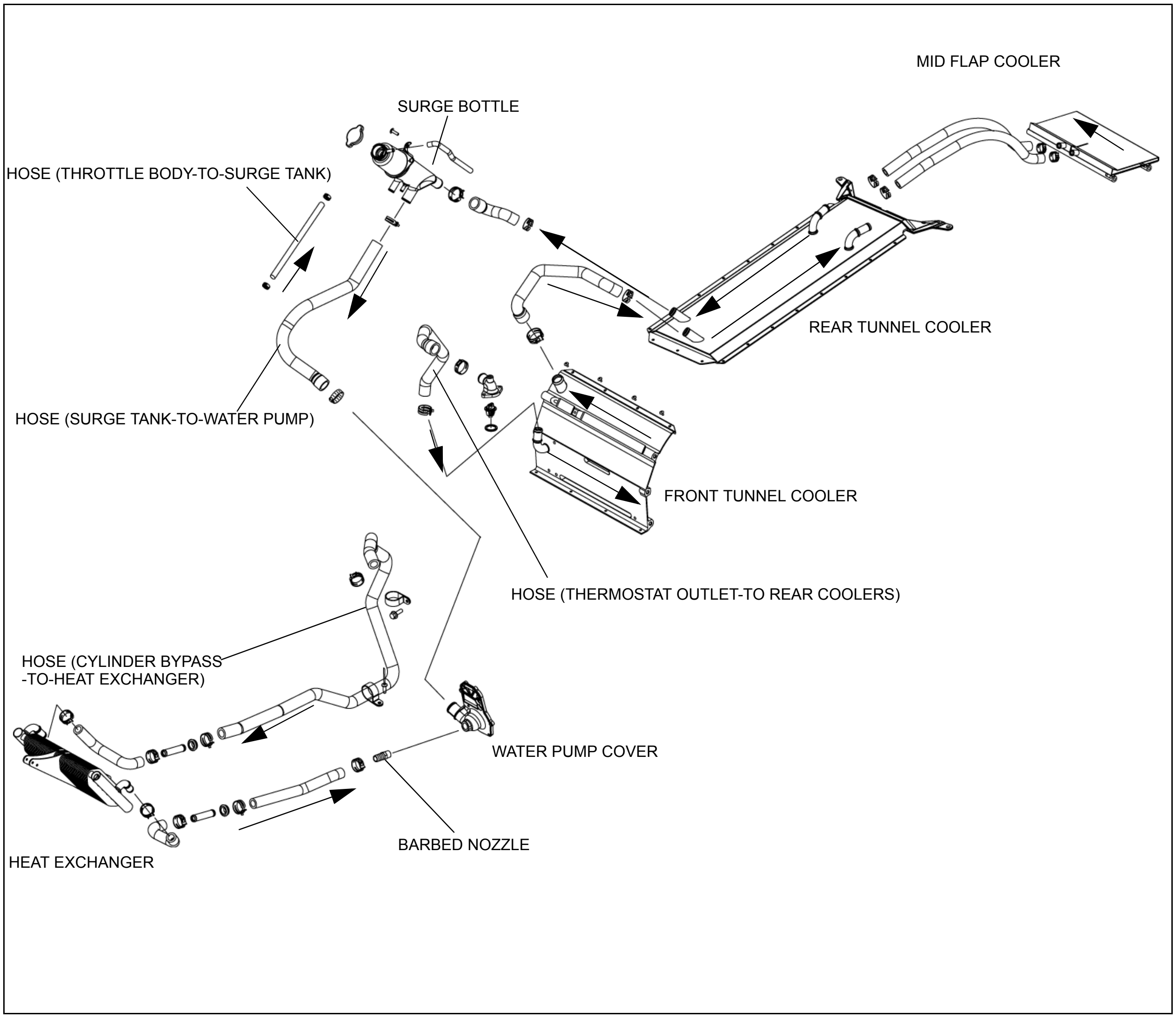


NOTE: When the thermostat is closed, engine coolant is bypassed back to the surge bottle.

When the thermostat is open, the bypass circuit is closed. Engine coolant is routed to the front heat exchanger, front tunnel cooler, tunnel cooler, and mid-flap coolers.

Thermostat opening temperature is 120° F (49° C).

2011 800 RUSH Cooling System

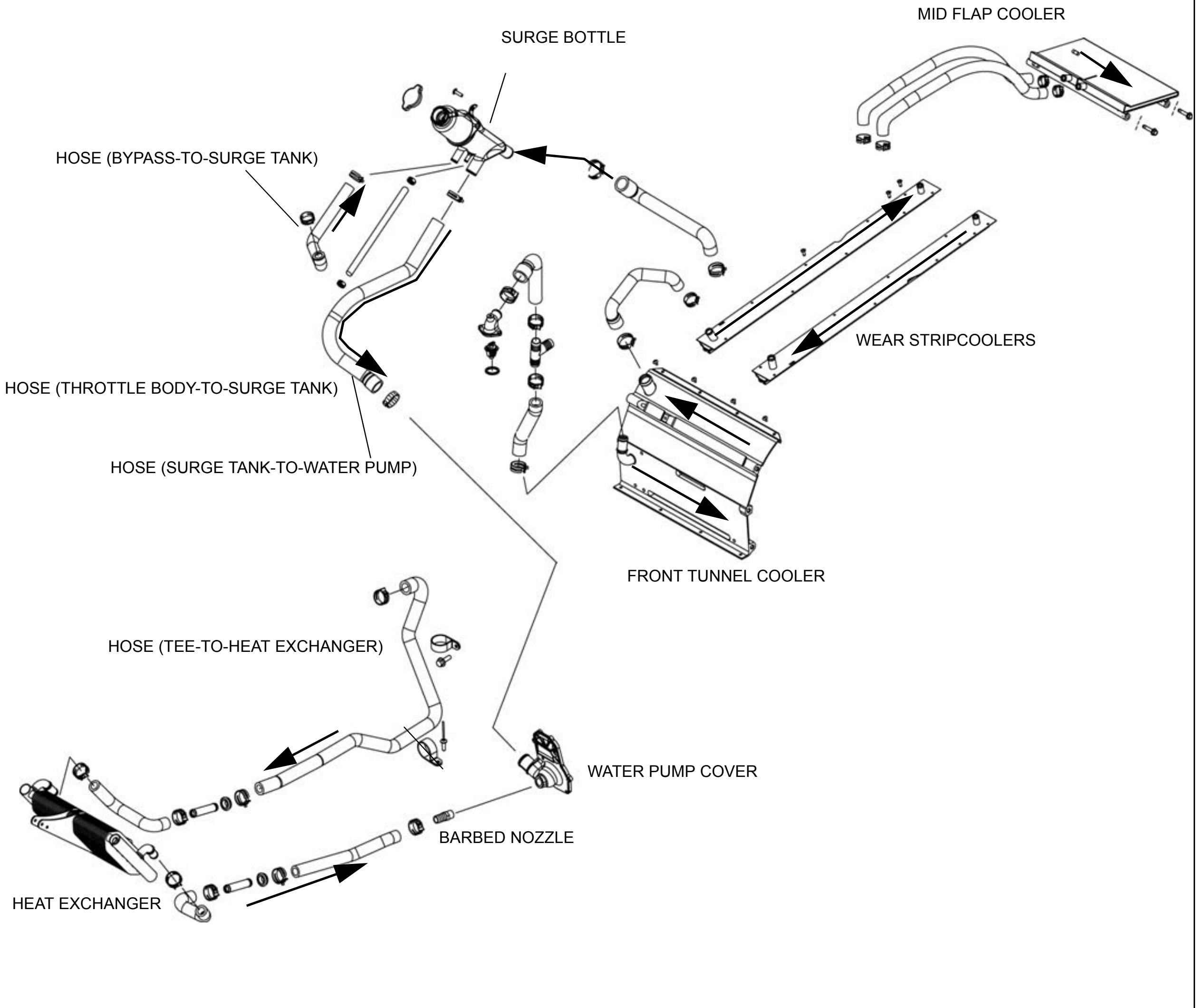


NOTE: Front heat exchanger circuit always active. Front tunnel cooler, tunnel cooler, and mid-flap cooler only active when thermostat is open.

Models feature 2mm thermostat bleed hole.

Thermostat opening temperature is 120° F (49° C).

2012 600 RUSH/Switchback Cooling System



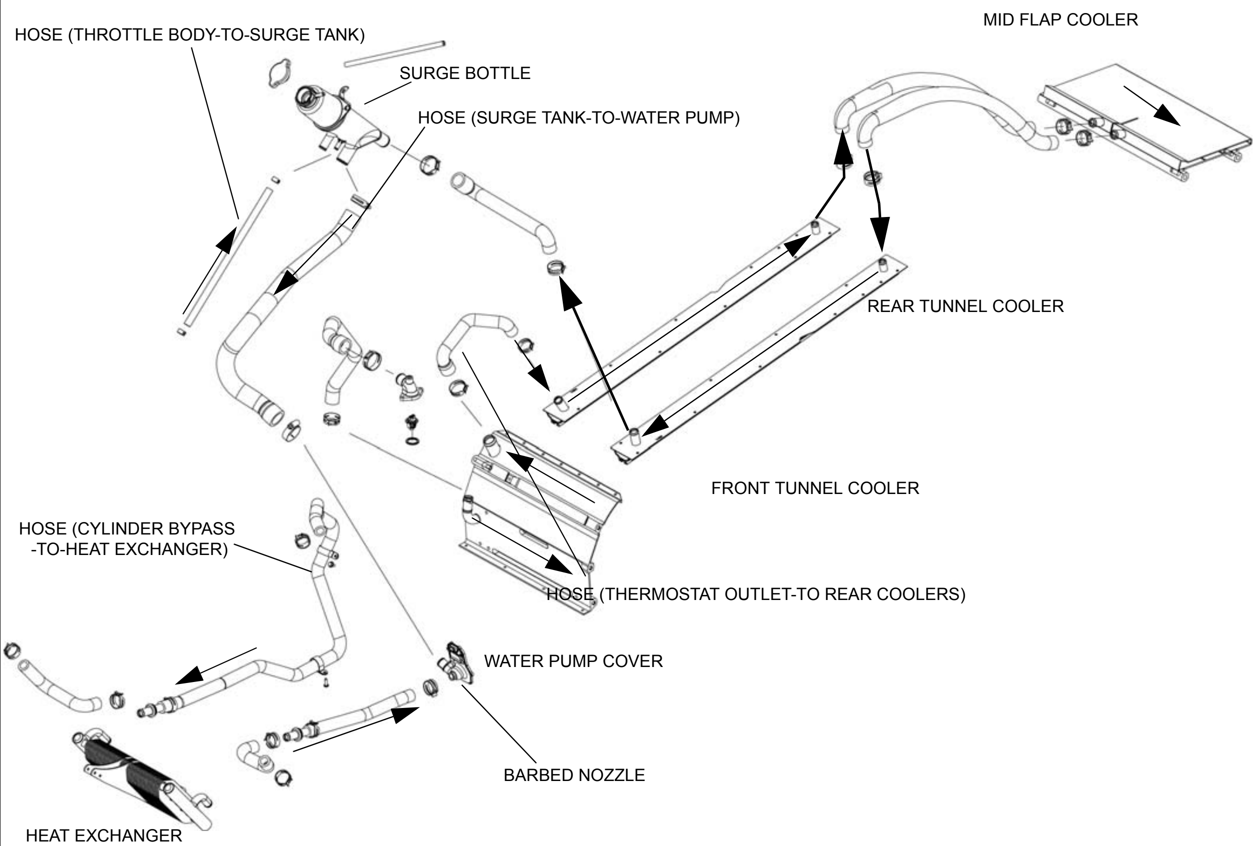
BYPASS CIRCUIT ONLY ACTIVE WHEN THERMOSTAT IS CLOSED
FRONT EXCHANGER, FRONT TUNNEL COOLER, AND REAR TUNNEL COOLER CIRCUITS ACTIVE WHEN THERMOSTAT IS OPEN

NOTE: When the thermostat is closed, engine coolant is bypassed back to the surge bottle.

When the thermostat is open, the bypass circuit is closed. Engine coolant is routed to the front heat exchanger, front tunnel cooler, tunnel coolers, and mid-flap coolers.

Thermostat opening temperature is 120° F (49° C).

2012 800 RUSH/Switchback Cooling System

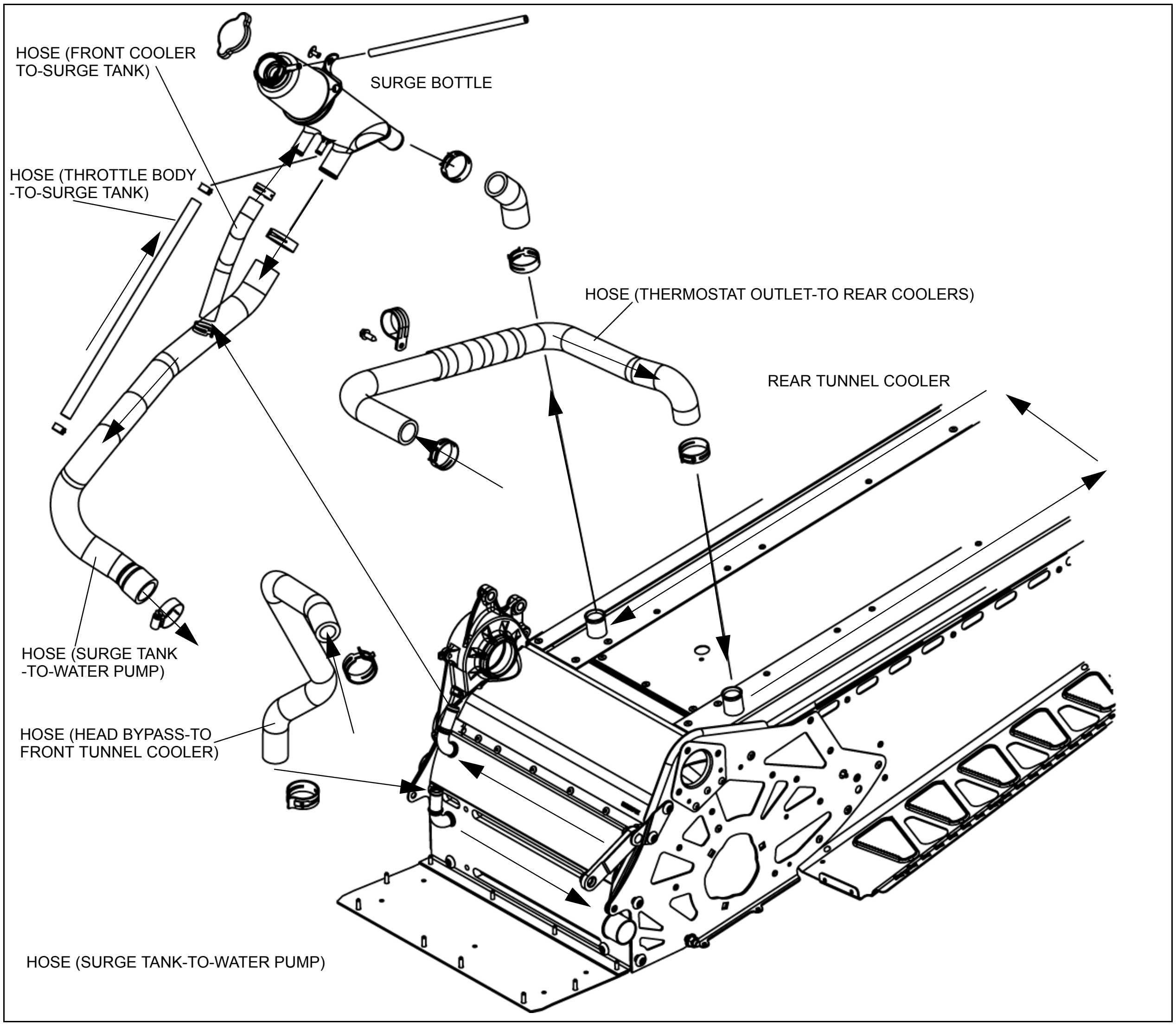


NOTE: Front heat exchanger circuit always active. Front tunnel cooler, tunnel cooler, and mid-flap cooler only active when thermostat is open.

Models feature 2mm thermostat bleed hole.

Thermostat opening temperature is 120° F (49° C).

Pro-Ride Switchback Assault/RMK Cooling System

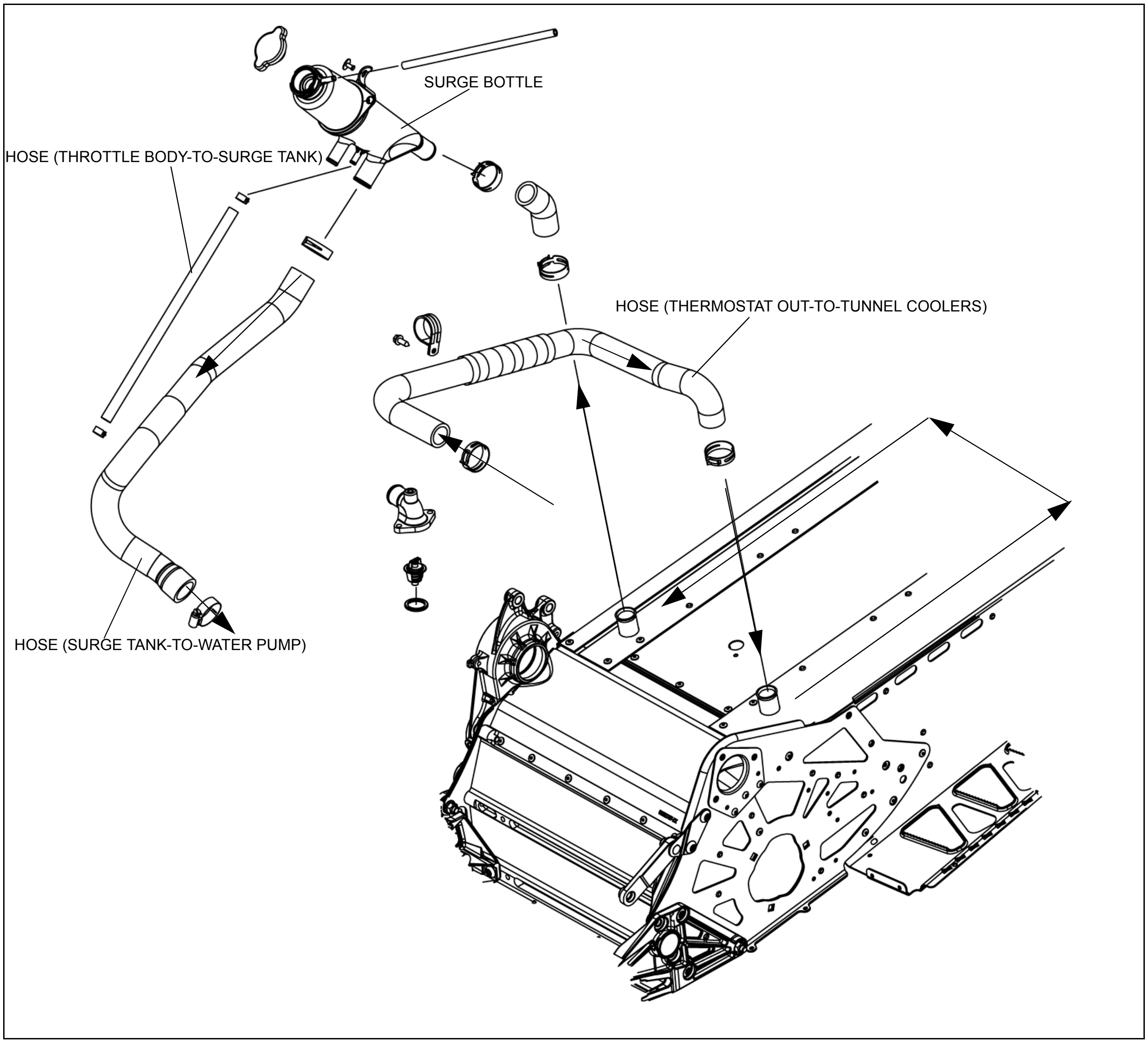


NOTE: Front tunnel cooler circuit always active. Rear tunnel coolers only active when thermostat is open.

Models feature 3.5mm thermostat bleed hole.

Thermostat opening temperature is 120° F (49° C).

Pro-Ride PRO RMK/RMK Assault Cooling System

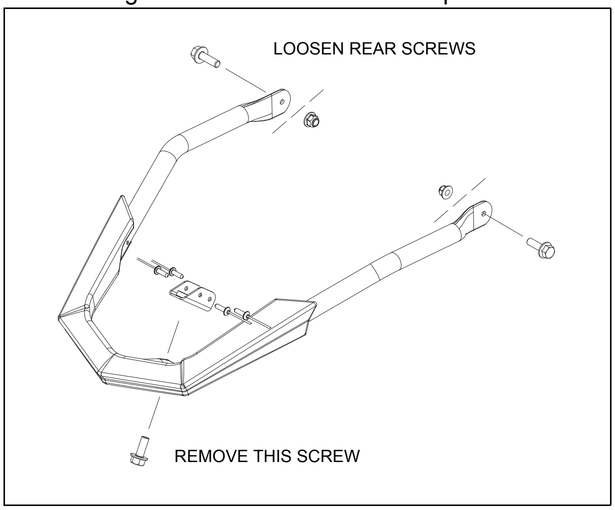


NOTE: Models feature 3.5mm thermostat bleed hole. Cylinder head outlet plugged.

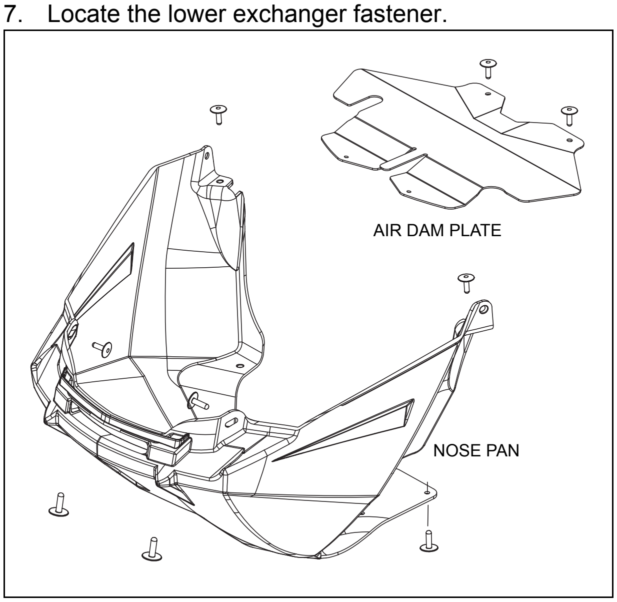
Thermostat opening temperature is 120° F (49° C).

Front Heat Exchanger Service

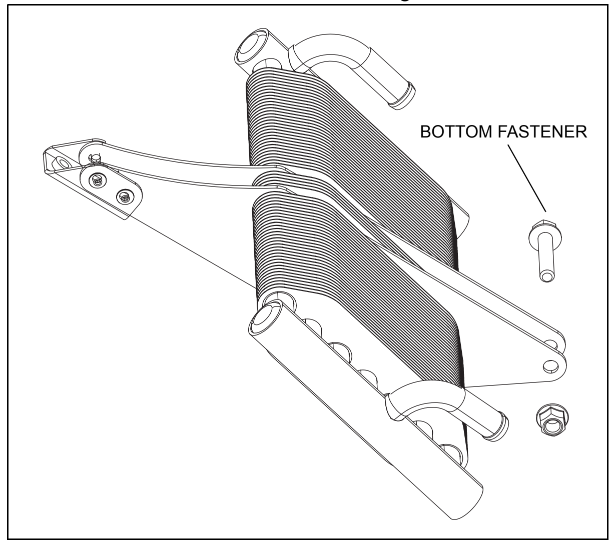
1. Remove the left and right door panels. Remove the hood assembly.
2. Remove the exhaust pipe.
3. Drill out and remove the rivets that attach the air dam plate to the bulkhead, and the two rivets that attach the nosepan to the plate.
4. Remove the screw attaching the bumper to the heat exchanger. Loosen the two rear bumper screws.



5. Drill out the rivets that attach the bumper to the nosepan.
6. Rotate the bumper up and away from the nosepan.
7. Locate the lower exchanger fastener.



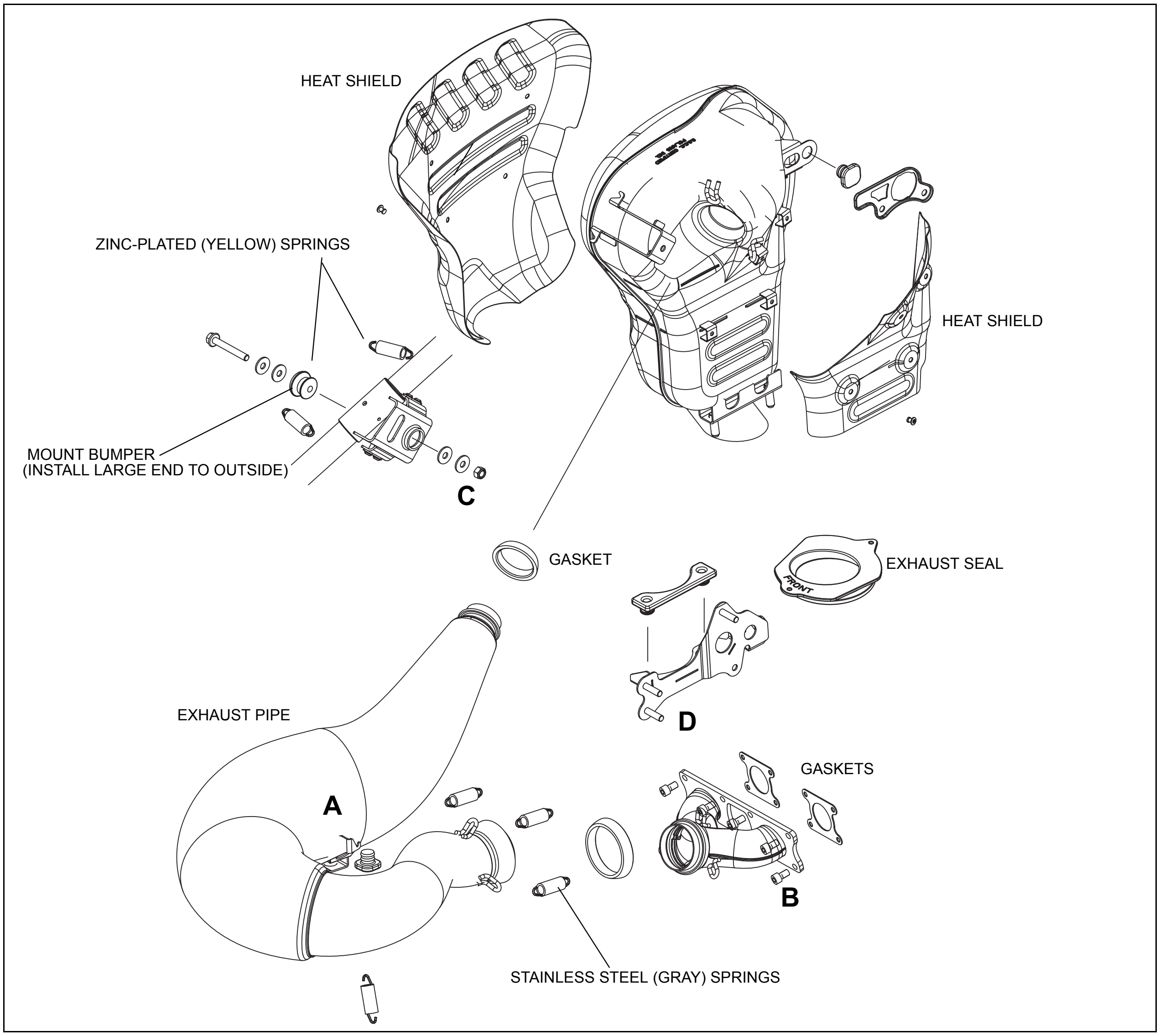
8. Remove the bottom heat exchanger fastener.



9. Pinch-off the coolant in and out hoses using dedicated hose pinchers or soft-jawed pliers.
10. Remove the two heat exchanger hose clamps. Remove the heat exchanger from the bulkhead.
11. Reverse the disassembly process to install the heat exchanger and bumper.
12. Add engine coolant to the surge bottle. Bleed the cooling system. See “Cooling System Bleeding” on page 2.10.

EXHAUST SYSTEMS

PRO-RIDE DC-CFI-4 Exhaust System

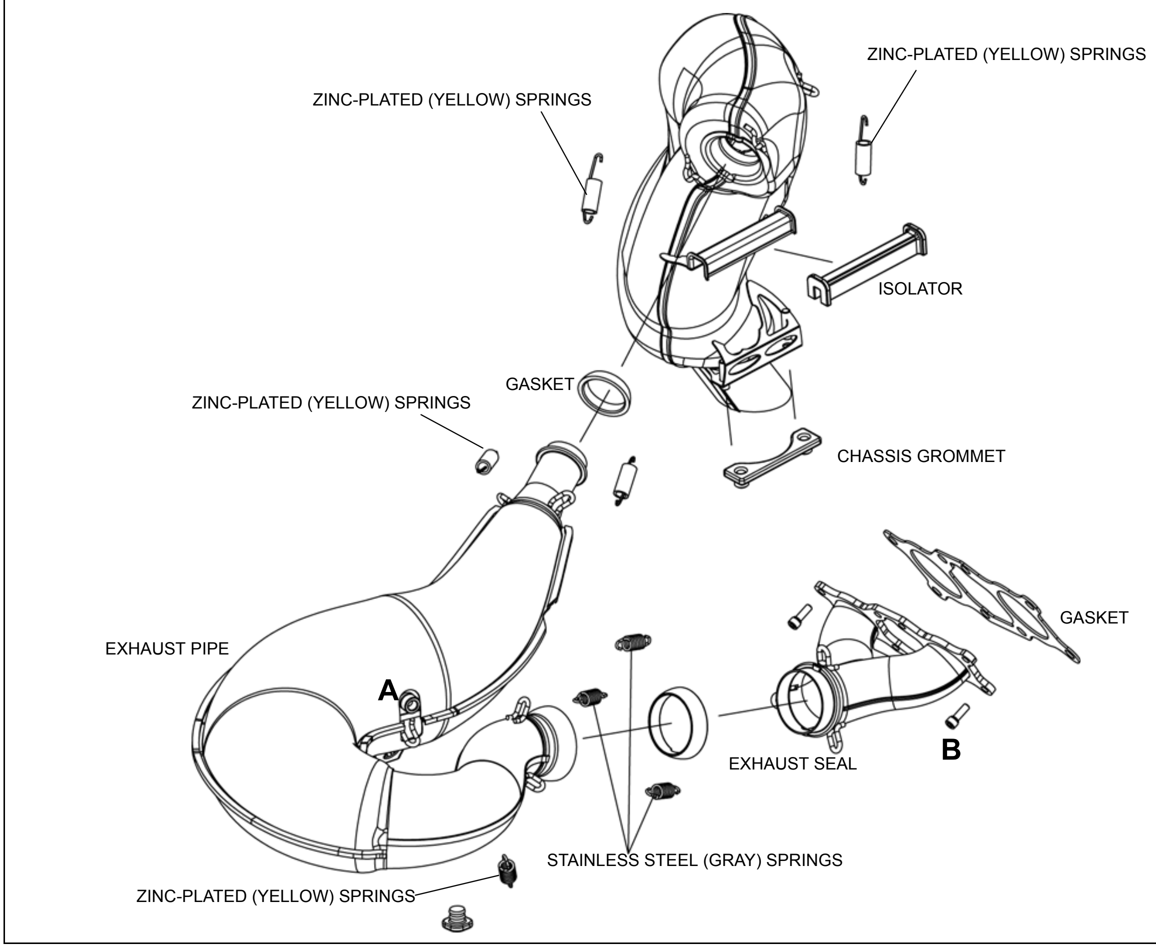


= T
A: EGT Sensor: 32 ft-lb (44 Nm) Apply anti-seize to threads. **B: Exhaust Manifold Fasteners: 22 ft-lb (30 Nm)** **C: Silencer Rubber Mount Fastener = 17 ft-lb (23 Nm)** **D: Silencer Bracket Fasteners = 26 ft-lb (35 Nm)**

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

When removing the exhaust pipe, disconnect the EGT probe wire harness. Do not remove the EGT probe from the pipe if not necessary.

PRO-RIDE DC-CFI-2 Exhaust System

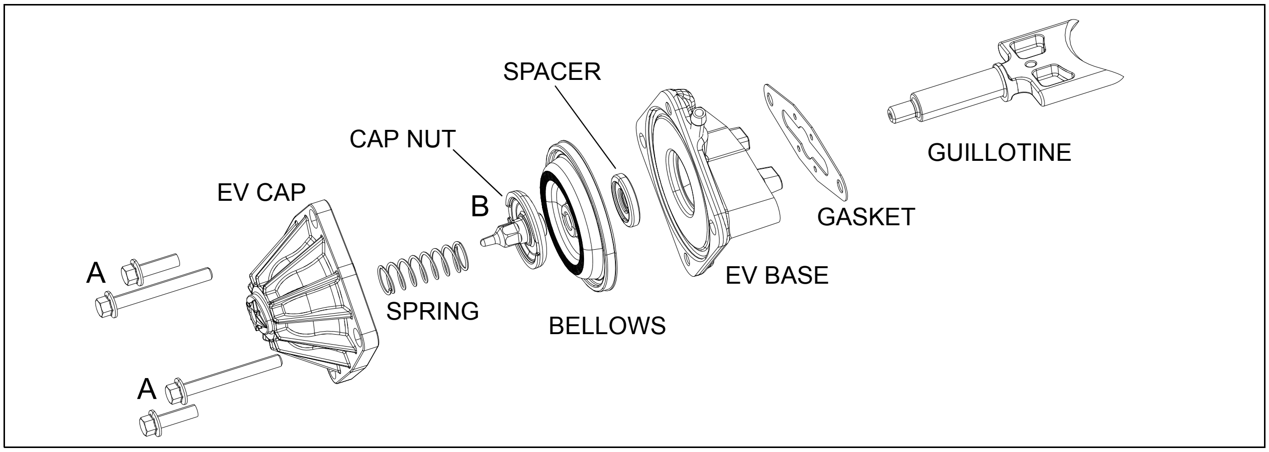


= T
A: EGT Sensor: 32 ft-lb (44 Nm) Apply anti-seize to threads. **B: Exhaust Manifold Fasteners: 22 ft-lb (30 Nm)**

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

When removing the exhaust pipe, disconnect the EGT probe wire harness. Do not remove the EGT probe from the pipe if not necessary.

Variable Exhaust System (VES)-Threaded Valve

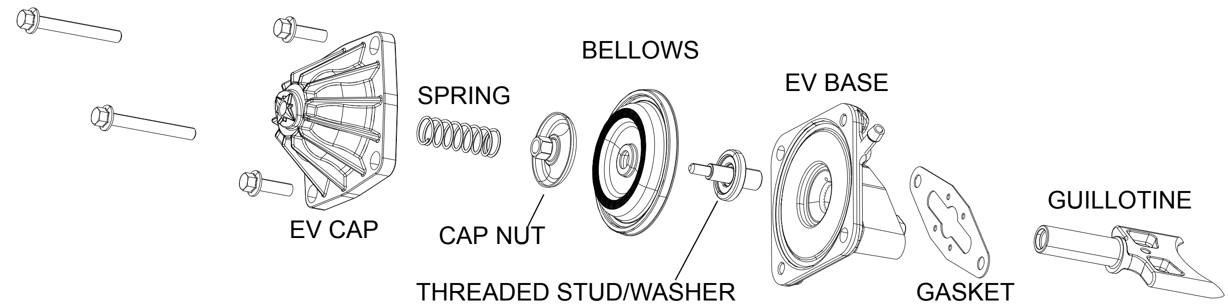


= T
EV Cap Screws (A): 10.5-13.5 ft-lb (14.3-18.3 Nm) **Apply Loctite® 242™ to cylinder screws.** **Cap Nut (B): 14-18 ft-lb (19.1-24.5 Nm)** **Apply Loctite® 242™ to threads.**

Assembly Notes:

- Replace spring if rusted, bent, or distorted
- Inspect bellows for tears.
- Inspect guillotine threads and cap nut threads for wear/galling. Replace parts as required.
- Discard gasket. Replace with new parts during assembly.
- Clean components as outlined in Chapter 2-Maintenance.

Variable Exhaust System (VES)-Threaded Stud



= T

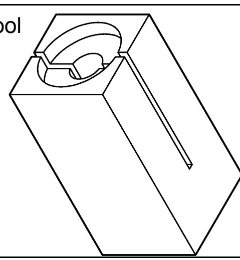
EV Cap Screws(A): 10.5-13.5 ft-lb (14.3-18.3 Nm) Apply Loctite® 242™ to cylinder screws.
Cap Nut/Threaded Stud Asm.(B): 18-22 ft-lb (24.5-29.9 Nm) Apply Loctite® 242™ to threaded stud threads.

Assembly Notes:

- Replace spring if rusted, bent, or distorted
- Inspect bellows for tears.
- Inspect threaded stud, cap, guillotine threads and cap nut threads for wear/galling. Replace parts as required.
- Discard gasket. Replace with new parts during assembly.
- Clean components as outlined in Chapter 2-Maintenance.

Special Tool:

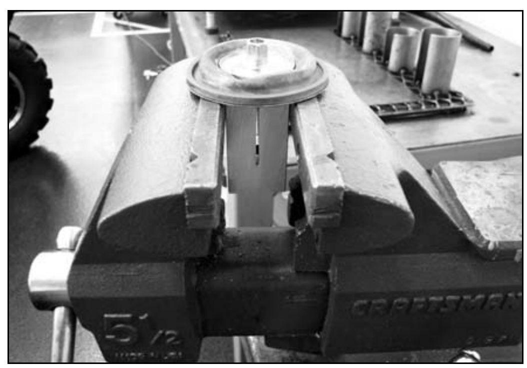
VES Threaded Stud/Cap Tool
PS-50573



Use special tool: PS-50753 to disassemble the cap nut, bellows and threaded stud/washer assembly.

To disassemble guillotine components, clamp blade in soft-faced bench vise. Loosen cap nut.

If the complete assembly un-screws from the guillotine, use special tool PS-50753 to clamp the threaded stud/washer in the bench vise.



During reassembly, apply Loctite® 242™ to the threaded stud/washer guillotine and cap nut threads. Loosely install the threaded stud/washer, bellows, and cap nut. Torque only cap nut to specification to fasten all components.

NOTE: A new threaded stud/washer has pre-applied thread lock. No Loctite® is required.

NOTES

CHAPTER 4

Cleanfire Fuel Injection

4

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

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

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

Always verify the fuel injector part number prior to installation.

ENGINE PROTECTION FEATURES

Engine Temperature RPM Limit

The ECU will illuminate the instrument cluster engine hot LED when it determines the engine is overheating. The ECU will flash the hot LED and enable a RPM misfire if it determines continued engine operation will cause serious engine damage. The ECU makes this determination based on current engine coolant temp, engine RPM, and throttle position.

Engine Temperature Limit Modes

MODEL	HOT LAMP MODE	THRESHOLD*
600/800 DC-CFI 2/4	Hot Lamp ON	Hot Lamp Illuminates: Idle = 230° F/110° C WOT = 185° F/85° C
	Hot Lamp FLASH	Hot Lamp Flashes RPM Misfire at: Idle = 239° F/115° C WOT = 208° F/98° C

NOTE: * = Only minimum (idle) and maximum (WOT) parameters listed.

The driver must take immediate action to cool the engine once the hot LED is illuminated. Drive the snowmobile in loose, un-packed snow to cool the engine. If trail conditions are poor, turn the engine off and allow it to cool.

When the engine is cool, check the coolant level in the surge bottle (reservoir). Only add coolant when the engine is sufficiently cooled. Never add coolant when engine is hot.

If the snowmobile must be operated while the indicator LED is illuminated, drive slowly and stop the engine frequently to allow it to cool down.

Continued engine operation with the engine hot LED illuminated may cause serious engine damage. If the ECU determines serious engine damage may occur, the hot lamp will flash and an engine RPM misfire will be enabled.

The ECU will also register and accumulate (count the number of occurrences) DTCs (110/0 or 110/16) if the engine overheats or goes into the overheat misfire mode.

Engine Overheating Troubleshooting

If the hot lamp is illuminated or flashing with the engine overheat RPM misfire enabled, reference the table below.

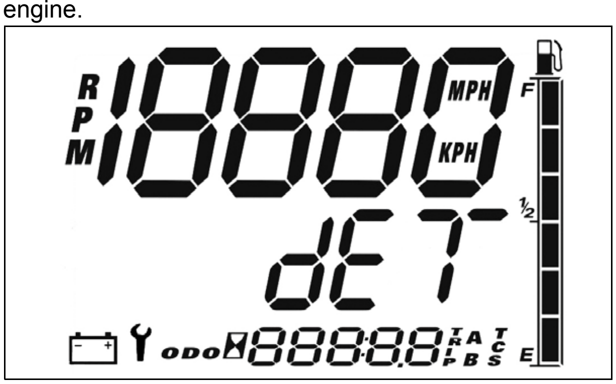
CAUSE OF OVERHEAT	SOLUTION
Riding in poor conditions	Ride snowmobile on good snow (loose, fresh, un-packed snow)
Low coolant level	Allow engine to cool. Refill coolant surge bottle to COLD line
Incorrect coolant/mix ratio	Use 60/40 (propylene glycol/ distilled water mixture
Air in cooling system	Bleed cooling system
Heat exchangers/hoses damaged or plugged	Inspect components for damage, hose kinks, etc.
Thermostat malfunctioning	Inspect thermostat for proper operation
Water pump malfunctioning	Inspect coolant flow
Cylinder base gaskets/o-rings damaged.	Pressure test cooling system. Verify system holds pressure/ pressure does not leak into cylinders
Snow flap damaged or removed	Inspect rear snow flap assembly. Verify flap(s) are not damaged or missing
Vehicle use	Verify vehicle is not overloaded during operation (high load/ high engine RPM and low ground speed)
Track condition/tension	Verify track is not missing lugs. Set correct track tension

Detonation Protection (DET)/RPM Limit

When DET is sensing and taking action to reduce detonation, the driver may notice a drop in engine RPM and/or reduced performance.

The ECU will illuminate the instrument cluster check engine LED and display “dET” on the LCD screen whenever the DET system is active.

If the ECU determines the detonation cannot be controlled by normal means and further operation may cause engine damage, the check engine LED will flash, the instrument cluster will display “dET”, and the ECU will limit the maximum engine speed to 6,500 RPM. The RPM limit will remain active until the driver turns off and restarts the engine.



If the detonation RPM limit occurs, a diagnostic trouble code (DTC) will be registered. Digital Wrench will display one of the following codes: 1352/0 (P1336), 1352/16 (P2336), 1353/0 (P1337), or 1353/16 (P2337).

DET Protection RPM Limit Modes

MODEL	CHECK ENGINE LED/INSTRUMENT CLUSTER MODE	RPM LIMIT
600/800 DC-CFI-2/4	Check engine LED illuminated/ “dET” displayed on LCD	Driver may notice slight drop in engine RPM/power
	Check engine LED flashing/ “dET” displayed on LCD	6,500 RPM Misfire Turn off engine to reset.

DET Troubleshooting

If the check engine LED is illuminated and/or flashing with “dET” displayed on the instrument cluster, reference the following table.

NOTE: A DET Troubleshooting flowchart is located at the end of the chapter.

CAUSE OF DET ACTIVATION	SOLUTION
Low fuel/no fuel in tank	Refill tank with recommended fuel
Incorrect ethanol/non-ethanol fuel resistor installed	Verify correct fuel selector resistor installed for fuel type in tank
Poor quality fuel/water in fuel	Replace with higher quality fuel. Recommended 91 octane minimum
Alcohol-based fuel additives used with ethanol fuel	Do not use deicers or additives that contain any form of alcohol when using ethanol-blended fuel
Restricted fuel filter	Replace fuel filter
Low fuel pressure	Verify fuel pressure is 58 psi (4 BAR) at idle and while riding
Low fuel injector voltage	Verify fuel injection circuit is at 16 VDC when engine is running
Faulty/plugged fuel injector	Use Digital Wrench to troubleshoot
VES system malfunctioning	Verify valves are not stuck open, vent hoses are not frozen or plugged
Knock sensor malfunctioning	Verify knock sensor screw torque is set to specification
Air leaks	Verify air intake system is sealed. Check throttle body boots for cracks/tears/loose parts. Remove after-market air intake system.
Engine/exhaust modifications	Remove modifications
Engine coolant temperature high	Check cooling system. Ride snowmobile on loose, un-packed snow
Mechanical failure	Verify crankcase seals are good (not leaking). Verify engine in good condition. Check spark plugs.

CLEANFIRE™ FUEL INJECTION

System Overview

System components include:

- **ECU:** The ECU controls the ignition / fuel injection angle, chassis/battery relays, and supplies the MFD gauge with tachometer, water temperature, PERC, HOT, DET, and diagnostic information.

CAUTION

CFI and DC-CFI ECUs cannot be interchanged. Serious engine damage may occur.

- **Stator**: Stator lighting charge coil split into two independent circuits; one for DC power (Chassis) and one for AC power (Lighting).
- **Flywheel**: Flywheel is forged. Fan cover is removed from flywheel.
- **CFI Regulator / Rectifier**: Supplies power to the ECU, fuel pump “boost power”, MFD, LED tail lamp, and accessory DC power points.
- **Capacitor**: The capacitor suppresses voltage spikes and ensures consistent voltage throughout the DC-CFI (RED-RED/WHT) circuits.
- **Chassis Relay**: The chassis relay on DC-CFI models supplies power to the MFD gauge, accessory plug and DC power test plug.
- **Ignition Coils**: Provide ignition energy to each spark plug. Both coils are fired at the same time.
- **Fuel Injectors (4 Injector)**: This system features a set of fuel injectors mounted to the crankcase, and a set of fuel injectors mounted to the cylinders (ports).
- **Fuel Injectors (2 Injector)**: This system features a set of fuel injectors mounted to the cylinders (ports).
- **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, and the exhaust valves remain closed (down). When power is removed, the solenoid closes and the exhaust valves will lift.
- **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 / Manifold Air Pressure (T-MAP) 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.
- **AC Regulator/Battery Charge Rectifier:** The head lamps and hand/thumb warmers are powered by AC voltage. If snowmobile is equipped with electric start, the regulator/rectifier supplies DCV to charge the battery.

DC-CFI-2/4 Fuel Select Modes

CAUTION

Always verify the ETHANOL resistor plug is installed in the selector plug if unsure of fuel type. Severe engine damage may occur if the PREMIUM resistor plug is installed when using ethanol-blended fuel.

Never use fuels containing more than a 10% ethanol blend.

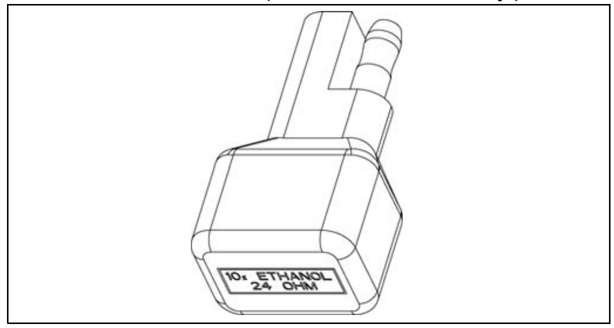
DC-CFI-2/4 models allow the operator to select between 91+ octane non-oxygenated fuels or <91 octane or oxygenated fuels.

The fuel selector resistor plug is located on the main wiring harness attached to the over structure behind the left-side door panel

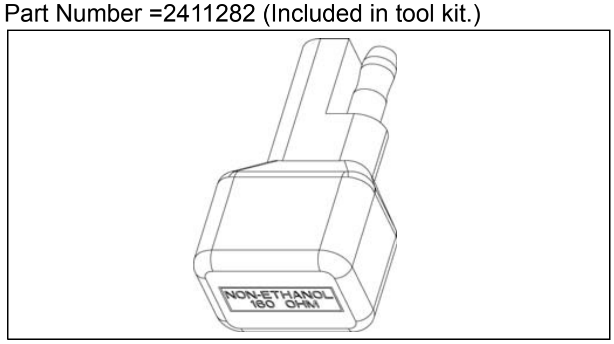
When using <91 octane, oxygenated, or when unsure of the fuel type inside the fuel tank, plug the 10% ETHANOL/ 24 OHM resistor into the fuel selector plug.

When using 91+ non-oxygenated fuels, install the NON-ETHANOL/160 OHM resistor into the fuel selector plug.

<91/10% ETHANOL/24 OHM Resistor Plug
Part Number =2411280 (Installed at the factory.)

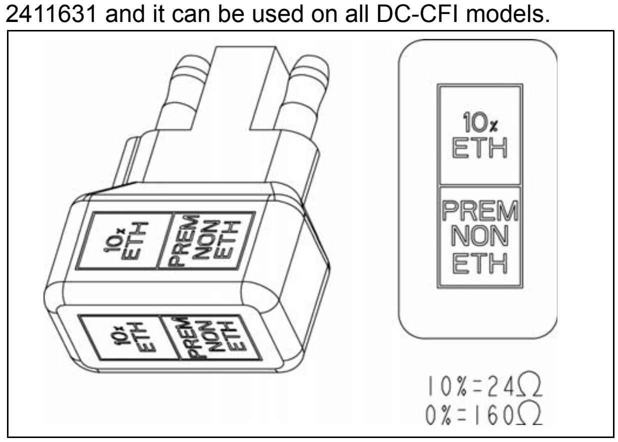


91+ NON-ETHANOL/160 OHM Resistor Plug
Part Number =2411282 (Included in tool kit.)



Dual Resistor Fuel Selector Plug

2012 models are equipped with one fuel selector plug featuring dual resistors. The part number for the plug is 2411631 and it can be used on all DC-CFI models.



Diagnostic Trouble Codes (DTCs)

TROUBLE CODE	SPN	FMI	P-CODE	MIL	DESCRIPTION
Throttle Position Sensor Abnormal Rate of Change	51	10	P0120	ON	TPS signal changes too rapidly to be correct.
Throttle Position Sensor Voltage High		3	P0123		TPS signal is above 4.39 VDC.
Throttle Position Sensor Voltage Low		4	P0122		TPS signal is below 0.7 VDC.
Vehicle Speed Sensor	84	2	P0503	2010-ON	Data erratic or intermittent (missing).
Oil Level Switch	98	17	P250F	ON	Oil level is low. Sensor disconnected or oil level fell below switch level.
Intake Air Temperature Circuit Voltage High	105	3	P0113		Sensor signal is above 4.9 VDC.
Intake Air Temperature Circuit Voltage Low		4	P0112		Sensor signal is below 0.19 VDC.
Barometric Pressure Sensor Voltage High	108	3	P2229		Sensor signal is above 3.23 VDC.
Barometric Pressure Sensor Voltage Low		4	P2228		Sensor signal is below 1.25 VDC.
Engine Coolant Temperature Sensor Voltage High	110	3	P0118		Sensor signal is above 4.8 VDC.
Engine Coolant Temperature Sensor Voltage Low		4	P0117		Sensor signal is below 0.1 VDC.
Coolant Temperature Too High		16	P0217		Code is set and occurrences accumulated (counted) in ECU whenever engine temperature hot lamp is illuminated.
Engine Overheat Shutdown (Misfire)		0	P1217		Code is set and occurrences accumulated (counted) in ECU whenever ECU enables engine overheat misfire mode.
Engine Temp. Above Normal		15	P1116		Code is set and occurrences accumulated (counted) in ECU whenever ECU enables hot lamp.
Alternator Power Supply	167	3	P1569		Chassis voltage too high.
		4	P1568		Chassis voltage too low.
EGT Sensor Circuit Voltage High	173	3	P0546		Sensor signal is above 4.9 VDC for at least 2 minutes and the engine has been running at or above 3000 RPM.
EGT Sensor Circuit Voltage Low		4	P0545		Sensor signal is below 0.06 VDC for at least 2 minutes and the engine has been running at or above 3000 RPM.
ECU Memory	628	13	P0601		Checksum / CRC Error
Crankshaft Position Sensor	636	8	P0336	2010-ON	Circuit fault.
		2	P0335		Plausibility fault.
Port MAG Injector Circuit	651	5	P0261	ON	OPEN circuit or short to ground. Can be caused by faulty wiring, injector, stator or ECU.
		3	P0262		Circuit shorted to battery voltage.

TROUBLE CODE	SPN	FMI	P-CODE	MIL	DESCRIPTION
Port PTO Injector Circuit	652	5	P0264	ON	OPEN circuit or short to ground. Can be caused by faulty wiring, injector, stator or ECU.
		3	P0265		Circuit shorted to battery voltage.
Detonation Sensor Circuit Voltage Low	731	4	P0327		Engine speed is above 6000 RPM and the sensor signal is above 4.3 VDC for at least 2 seconds.
Ignition Coil Circuit Malfunction	1268	5	P1351		Failure within the primary circuit. Can be caused by faulty wiring, ignition coil, or ECU.
Fuel Pump Driver Circuit	1347	5	P0230		Drive circuit open or shorted to ground.
Knock Level (MAG)	1352	0	P1336		Maximum Detonation Correction Limit Reached
		16	P2336	2010-OFF	Knock above critical level-Latch Mode
Knock Level (PTO)	1353	0	P1337	ON	Maximum Detonation Correction Limit Reached
		16	P2337	2010-OFF	Knock above critical level-Latch Mode
TPS/TMAP Sensor Supply Voltage (5VDC)	3509	4	P06B1	ON	Voltage too low.
Ground Speed Sensor Supply Voltage (5VDC)	3510		P06B4	2010-ON	
Fuel Injector ECU Output Supply Voltage (16 VDC)	3598	3	P16A9	ON	Voltage too high.
		4	P16A8		Voltage too low.
Throttle Switch Signal	520194	3	P1555		Voltage too high.
		4	P1554		Voltage too low.
		7	P1552		Throttle is stuck.
Chassis Relay Circuit Open/Grounded	520208	5	P1611	2010-ON	Chassis relay driver circuit is OL or shorted to ground.
Chassis Relay Driver Shorted to Battery Voltage		3	P1614		Chassis relay drive circuit is shorted to battery voltage.
Exhaust Valve Solenoid	520215	5	P1477	ON	Solenoid control circuit is OPEN. Can be caused by faulty wiring, solenoid, or ECU.
		3	P1479		Circuit shorted to battery voltage.
Crankcase MAG Injector Circuit (600 DC-CFI-4 ONLY)	520216	5	P1261		OPEN circuit or short to ground. Can be caused by faulty wiring, injector, stator or ECU.
		3	P1263		Circuit shorted to battery voltage.
Crankcase PTO Injector Circuit (600 DC-CFI-4 ONLY)	520217	5	P1264		OPEN circuit or short to ground. Can be caused by faulty wiring, injector, stator or ECU.
		3	P1267		Circuit shorted to battery voltage.
Fuel Type Selected	524007	3	P0179		Voltage too high.
		4	P0178		Voltage too low.
		2	P0177		Signal Out of Range

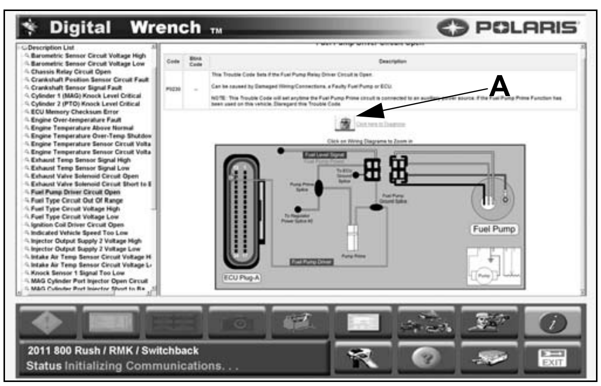
Diagnostic Trouble Code (DTC) Troubleshooting

Always use the Digital Wrench diagnostic software program to troubleshoot DTCs, 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 to isolate the root problem.

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

2. Select a code or system in the 'SYSTEM CHARTS" menu. A description of the DTC or system will be displayed.



3. Click on (A) to activate guided diagnostics.
4. Click on "X" to exit the current screen.

Instrument Cluster Code Display

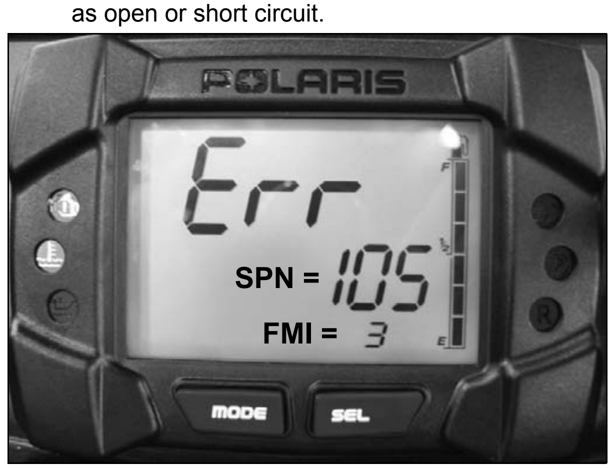
Active diagnostic trouble codes can be reviewed by accessing the instrument cluster's diagnostic display mode.

The diagnostic display mode is accessible when a trouble code is active (MIL illuminated) and when the engine is running.

1. Set the parking brake.
2. With the engine running and the MIL illuminated, press and release the SELECT button or SET switch to toggle to the diagnostic display mode. When a code is active, the diagnostic display mode will appear immediately following the engine hour display.

NOTE: When the diagnostic mode is displayed, the check engine MIL will flash and Err will be shown.

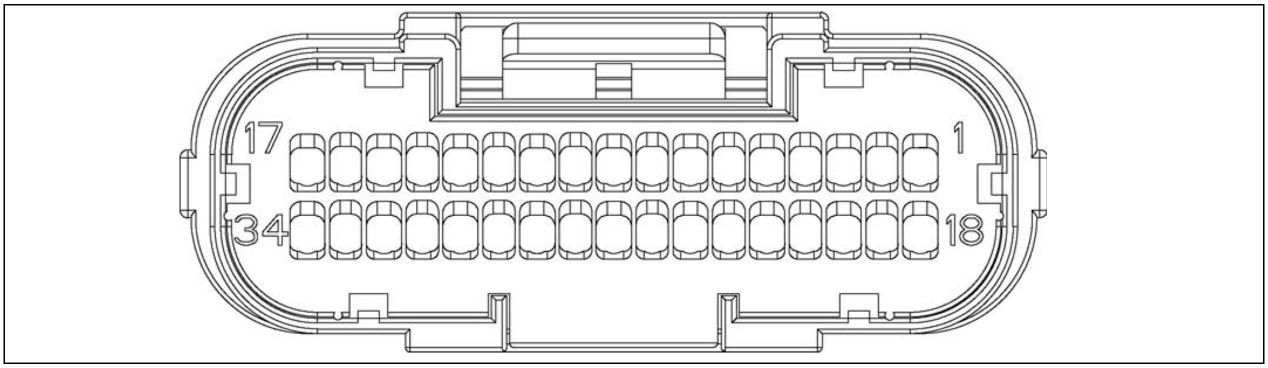
3. A set of two numbers will appear in the display.
   - The 2-6 digit suspect parameter number (SPN) in the information display area indicates which component is generating the fault code.
   - The 1-2 digit failure mode indicator (FMI) number in the odometer area indicate the fault mode, such as open or short circuit.



4. More than one fault may be active. Press and hold the MODE button or MODE switch for two seconds to toggle to the next active code. Repeat until all codes are retrieved.

NOTE: "SPN=" and "FMI=" are not displayed on screen.

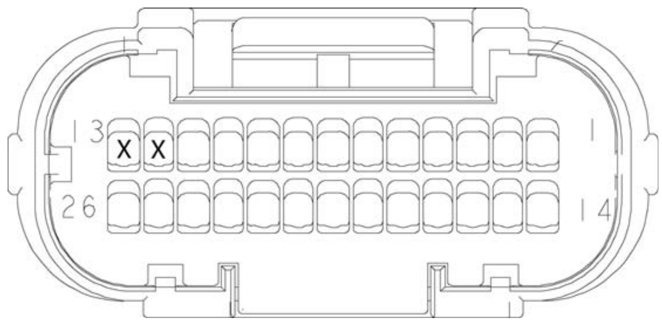
ECU 34 Pin Connector (Chassis)



NOTE: Wire Entry View

PIN	COLOR	GOES TO CONNECTOR	FUNCTION
1	DG/WHT	IGNITION SWITCH	STARTER LOCKOUT
3	RD/BLK	ELECTRIC START	BATTERY VOLTAGE
7	BLK/DB	SENSOR GROUND SPLICE	SENSOR GROUND
8	DG/RD	GROUND SPEED SPLICE	GROUND SPEED SIGNAL
9	BLACK	IGNITION SWITCH	HARD STOP SWITCH
10	GRAY	LH CONTROL SIGNAL PLUG	PERC SWITCH
11	OG/BLK	BRAKE SWITCH	BRAKE SWITCH SIGNAL
12	VIOLET	OIL LEVEL SWITCH	LOW OIL SWITCH
14	PK/BLK	FUEL MODE PLUG	FUEL QUALITY SWITCH
15	BROWN	ECU GROUND SPLICE	ECU GROUND
16	BROWN		
17	ORANGE	EXTERNAL POWER SPLICE	EXTERNAL POWER
19	BN/YEL	FUEL PUMP PRIME GROUND SPLICE	FUEL PUMP ON/OFF CONTROL
20	ORANGE	VOLTAGE BOOST	FUEL INJECTION VOLTAGE BOOST
21	ORANGE		
25	BK/RED	THROTTLE SAFETY SWITCH	THROTTLE SOFT STOP
26	OG/WHT	SPEED SENSOR CAPACITOR	SPEED SENSOR POWER
27	DARK GREEN	CAN LOW	CAN LOW SIGNAL
28	YELLOW	CAN HIGH	CAN HIGH SIGNAL
30	WHT/YEL	EV SOLENOID	SOLENOID ON/OFF CONTROL
33	WHT/DB	CHASSIS POWER RELAY	RELAY COIL ON/OFF CONTROL
34	RED	REGULATOR POWER SPLICE	DC REGULATED VOLTAGE

ECU 26 Pin Connector (Engine)



NOTE: Wire Entry View

PIN	COLOR	GOES TO CONNECTOR	FUNCTION
1	DARK BLUE	FUEL INJECTOR HARNESS PLUG	PTO CRANKCASE INJECTOR DRIVER (DC-CFI-4)
2	DARK BLUE/WHT		PTO CYLINDER INJECTOR DRIVER
3	RED/DARK BLUE		FUEL INJECTOR POWER SUPPLY (16 VDC)
4	DARK GREEN	5 TOOTH CPS SENSOR	SENSOR SIGNAL
5	WHT/GRN (2011=BRN/WHT)	STATOR CPS HARNESS CONNECTOR	SENSOR GROUND
6	BLK/BLU	TPS CONNECTOR EXHAUST TEMP. SENSOR COOLANT TEMP. SENSOR TMAP SENSOR CONNECTOR COMMUNICATION CONNECTOR	SENSOR GROUND
7	AQUA	TPS CONNECTOR	TPS SIGNAL RETURN
8	YEL/RED	COOLANT TEMP. SENSOR	COOLANT TEMP. SIGNAL
9	BLK/WHT	DETONATION SENSOR	SIGNAL GROUND
10	YEL/WHT	COMMUNICATION CONNECTOR	TxD SIGNAL (TRANSMIT)
11	WHT/BLK		RxD SIGNAL (RECEIVE)
14	YELLOW	FUEL INJECTOR HARNESS PLUG	MAG CRANKCASE INJECTOR DRIVER (DC-CFI-4)
15	YEL/WHT		MAG CYLINDER INJECTOR DRIVER
16	RED/BLU		FUEL INJECTOR POWER (16 VDC)
17	WHITE	2 TOOTH CPS SENSOR	SENSOR SIGNAL
18	RED	IGNITION COIL CONNECTOR	COIL POWER
19	BLACK		COIL GROUND
20	GRAY	TMAP SENSOR CONNECTOR	INTAKE PRESSURE SIGNAL
21	ORANGE	STATOR SYSTEM POWER CONNECTOR	FUEL INJECTOR BOOST POWER
22	WHT/BLK	EXHAUST TEMP. SENSOR	EXHAUST TEMP. SIGNAL
23	PINK	TMAP SENSOR CONNECTOR	INTAKE AIR TEMP. SIGNAL
24	RED/WHT	TPS CONNECTOR TMAP SENSOR CONENCTOR COMMUNICATION CONECTOR	5VDC SENSOR VOLTAGE
25	PURPLE	DETONATION SENSOR	SENSOR SIGNAL
26	ORANGE	STATOR SYSTEM POWER CONNECTOR	FUEL INJECTOR POWER

Exhaust Temperature Sensor

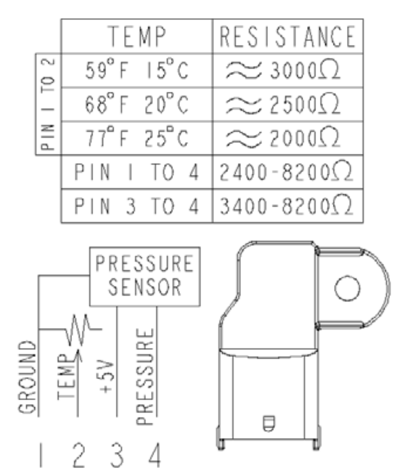
Sensor Specifications

Resistance Values	2.3MΩ @ 392°F (200°C) 76Ω @ 1652°F (900°C)

= T

Exhaust Temperature Sensor Torque:
32 ft-lb (44 Nm)

Temperature / Air Pressure Sensor (TMAP)



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 and determines the following:

- 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

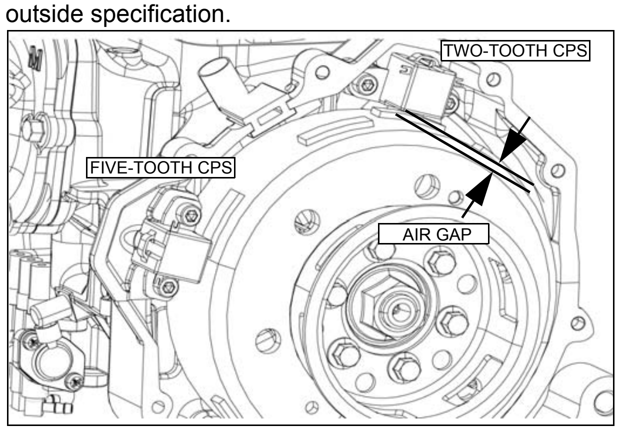
The 2 tooth crank position sensor picks up 2 flywheel teeth. It detects the crank angle and obtains minimal information of the crank angle when control enters into limp home mode

The sensors must be in the correct position or the engine will not run. A sheared flywheel key will cause the engine to not start or to shut off (misfire).

4

Crankshaft Position Sensor Air Gaps

Hard engine starting, erratic reverse operation, and poor engine performance can occur if the CPS air gap(s) are outside specification.



NOTE: The sensor bases are not slotted. Only minor deflection adjustments can be made.

= In. / mm.

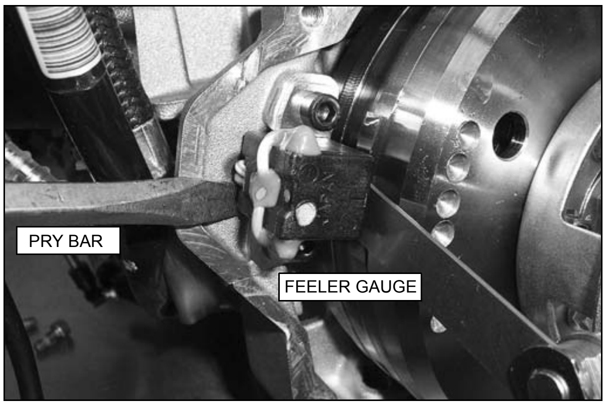
Crankshaft Position Sensor Air Gap:
.020"-.030" (0.5-0.8mm)

Air Gap Inspection/Adjustment

1. Rotate the crankshaft/flywheel so that an encoder rib is positioned directly underneath the sensor being measured.

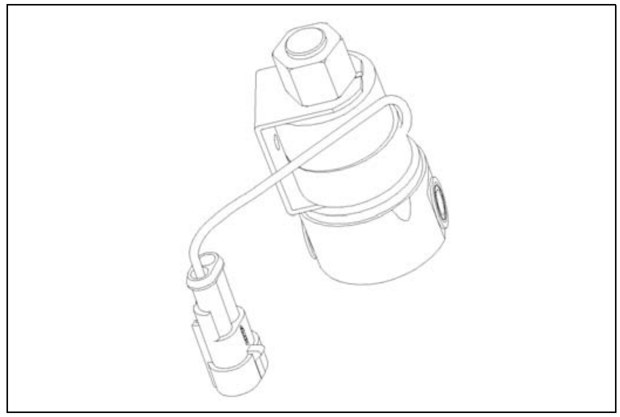
2. Insert the blade of a .030" feeler gauge between the rib and sensor face. If there is no drag felt on the feeler gauge, the CPS must be adjusted.
3. To adjust a CPS, use a 8 inch pry bar to carefully deflect the sensor.
4. Place the tip of the small pry bar between the back of the sensor and crankcase. insert a .012" feeler gauge between the sensor face and encoder rib.

IMPORTANT: Do not pry on the individual sensor wires.



5. Gently pry the sensor towards the encoder rip until the gauge begins to bind between the components.
6. Re-measure the air gap. The gap should be between .020-.030.

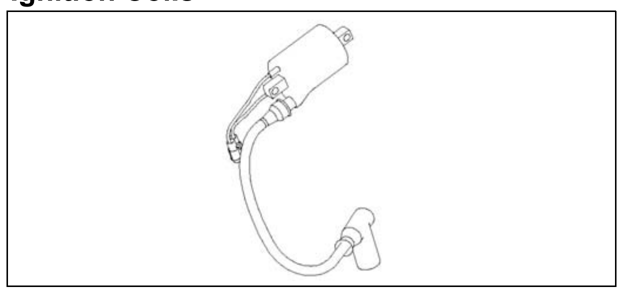
Exhaust Valve Solenoid



Specifications

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

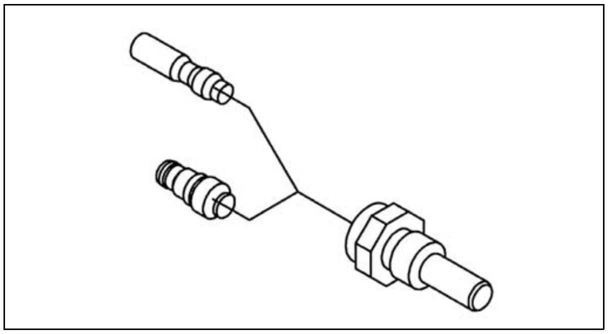
Ignition Coils



Specifications

	DC-CFI 4	DC-CFI 2
Primary Coil Resistance (Black to White)	0.20Ω +/- 15% @ 68°F (20°C)	0.45Ω +/- 15% @ 68°F (20°C)
Secondary Coil Resistance (Without Plug Cap/ Black to High Tension Lead)	6.3kΩ +/- 15% @ 68°F (20°C)	18kΩ +/- 15% @ 68°F (20°C)
Plug Cap Resistance	5kΩ +/- 15% @ 68°F (20°C)	

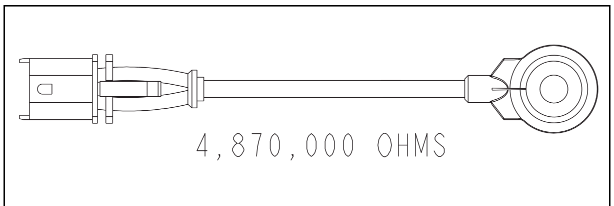
Engine Coolant Temperature Sensor



Sensor Specifications

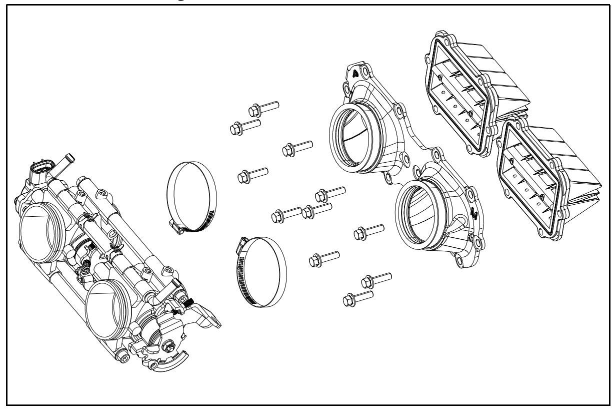
Operating Temperature Range	-22°F - +248 °F (-30°C - 120°C)
Resistance	2.4 - 2.6KΩ@ 68°F (20°C) (Measure in stirred water)
Installation Torque	29 ft-lb (39.2Nm)

Knock (DET) Sensor



= T
Knock Sensor Screw Torque: **168 in-lb (19 Nm) Install screw clean and dry**.

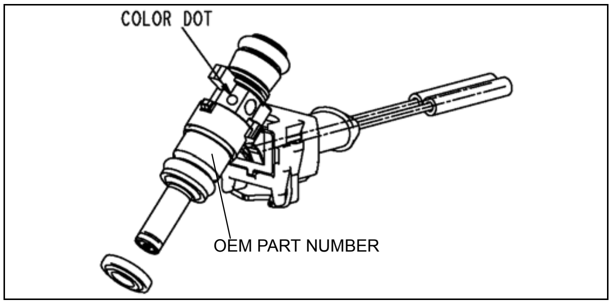
Throttle Body Removal



1. Remove the oil tank/clutch cover assembly.
2. Remove the airbox assembly.
3. Pinch off the coolant lines with the hose pincher tool PN PU-45149.
4. Remove the coolant hoses from the throttle body. Disconnect the TPS harness connector.
5. Loosen the intake boot clamps and pull the throttle body upward. Locate the oil pump linkage arm. Pop the rod end off the throttle body cam.
6. Loosen the throttle cable lock nut and remove the cable from the throttle body.
7. Remove throttle body.
8. During installation, verify the oil pump lever is not rotated over-center before installing the linkage arm on to the throttle body.

DC-CFI-4 FUEL INJECTORS/FUEL RAIL

Fuel Injectors

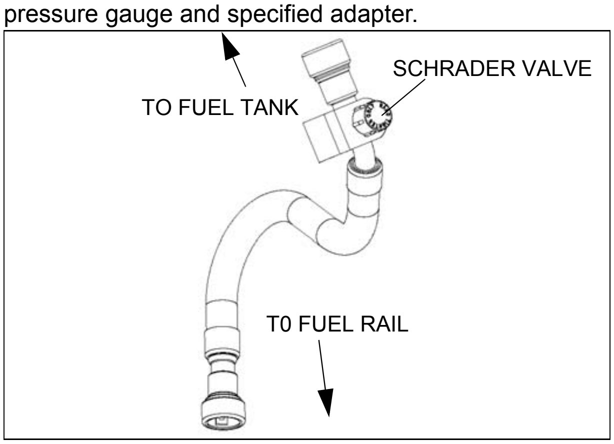


Specifications

Resistance	12Ω @ 68°F (20°C)

Fuel Rail Bleeding / Pressure Testing

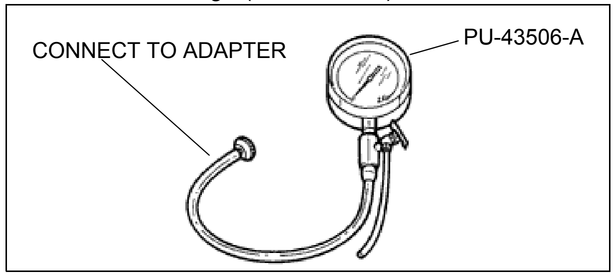
All CFI engine fuel return hoses feature an inline Schrader valve that can be used to bleed the fuel system pressure and observe fuel system pressure when using the fuel pressure gauge and specified adapter.



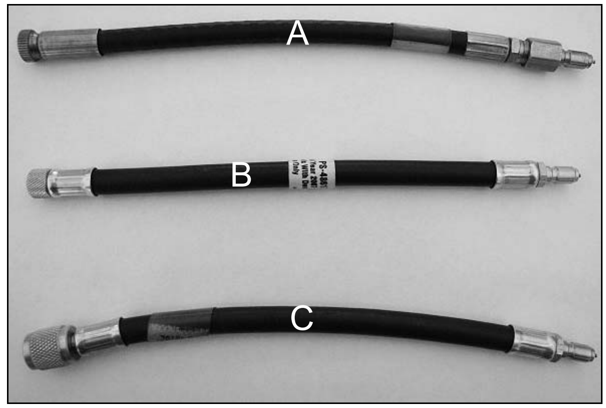
Fuel Pressure Gauge/Adapters

YEAR / MODEL	ADAPTERS	GAUGE/ BLEED TOOL
600 DC-CFI-4 PRO-RIDE Shallow Core	314249 (.305-32 Shallow Core fitting supplied with PU-43506-A)	PU-43506-A

Fuel Pressure Gauge (PU-43506-A)



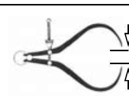
Fuel Pressure Gauge Adapters



- A = 314249 (.305-32 shallow core fitting/adapter supplied with PU-43506-A Fuel Pressure Gauge)
- B = PS-48617 (.305-32 deep core fitting)
- C = PS-48762 (7/16-20 fitting)

1. Select the appropriate adapter.
2. Connect the adaptor to the fuel return hose Schrader valve.
3. Connect the adapter to the fuel pressure/bleed tool gauge.
4. To observe running fuel system pressure, start the engine and compare reading to the specification.

NOTE: Observe pressure reading at idle and while operating the vehicle.

 = **In. / mm.**

Fuel System Pressure:
58-60 (4.0-4.1)

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 drain residual fuel.
6. Close the valve, then remove the gauge and adapter from the fuel hose Schrader valve. Replace the Schrader valve dust cap.

Disconnect Fittings

The fuel hoses 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.

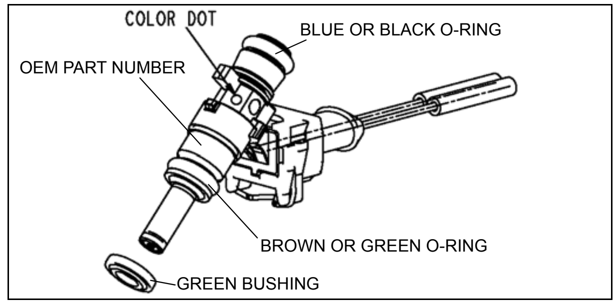
PS-47152

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. Push the tool into the housing to release the spring clamps. Carefully separate the hose from the connection.

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 and an audible "click" is heard.
5. Grasp both hoses and gently pull to verify positive engagement.

Fuel Rail/Injector Removal/Installation

NOTE: Leave protective caps installed until instructed to remove. Avoid touching the tip of the injector.



600 INJECTOR KITS

INJECTOR KITS	COLOR
2203894-053	Yellow
2203894-027	Blue
2203894-015	Red

A fuel injector, regardless of color code, can be accurately identified by the OEM part number stamped on plastic injector housing.

- 600 = OEM PN 1203491

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 of the fuel injectors must be replaced with the new color so all four injectors are the same color.

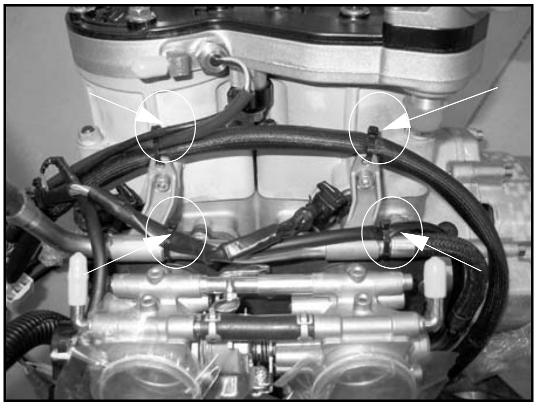
After replacing the injectors, the ECU must be re-flashed so the fuel calibration map matches the new color coded fuel injectors.

CAUTION

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 CODE.

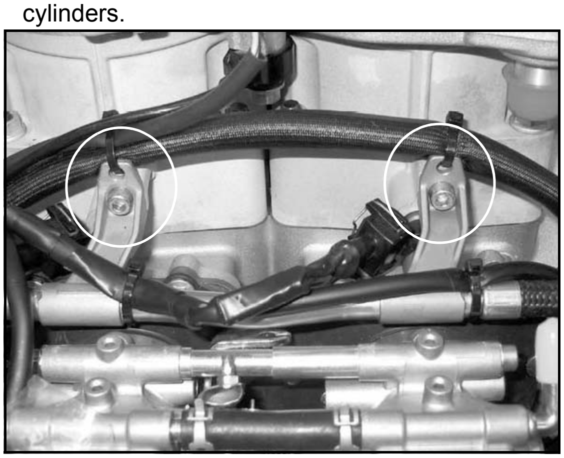
1. Depressurize the fuel rail. See "Fuel Rail Bleeding / Pressure Testing" on page 4.16.

2. Remove the panduit straps as shown.



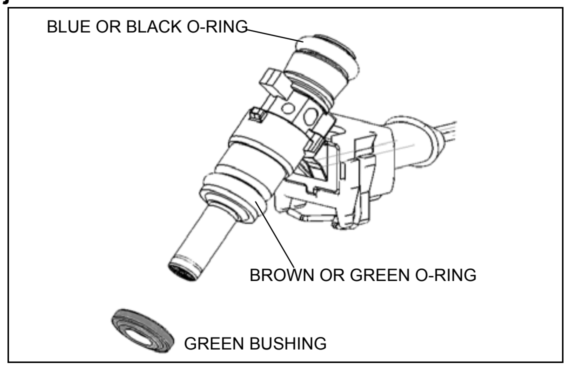
NOTE: The engine must be removed from the engine compartment to access the lower two fuel injectors.

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

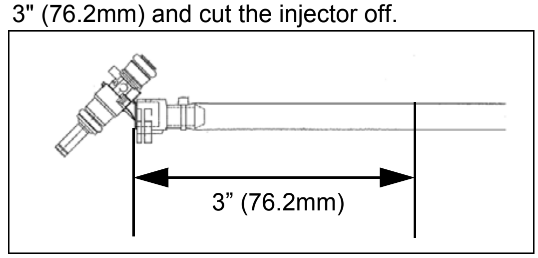


4. If replacing a lower injector, remove the two bottom screws bolts from the lower fuel rail.
5. Remove the failed injector(s).

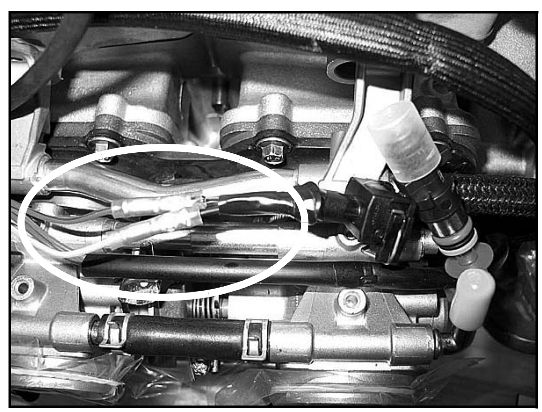
NOTE: Make sure that the green bushing comes out with the injector. If it does not, look inside the injector bore.



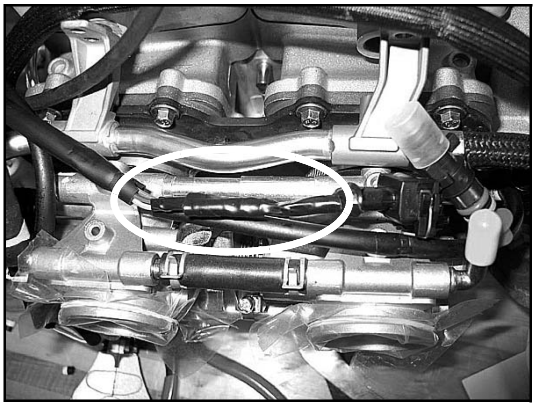
6. Measure from the end of the injector (as shown below)
   3" (76.2mm) and cut the injector off.



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.



10. Apply oil to the fuel injector o-rings.
11. Remove the protective caps. Install the injector(s) into the fuel rail. Verify the injector(s) are fully seated.
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.

= T
Fuel Rail Hex Screw Torque: 9 ft-lb (12Nm)

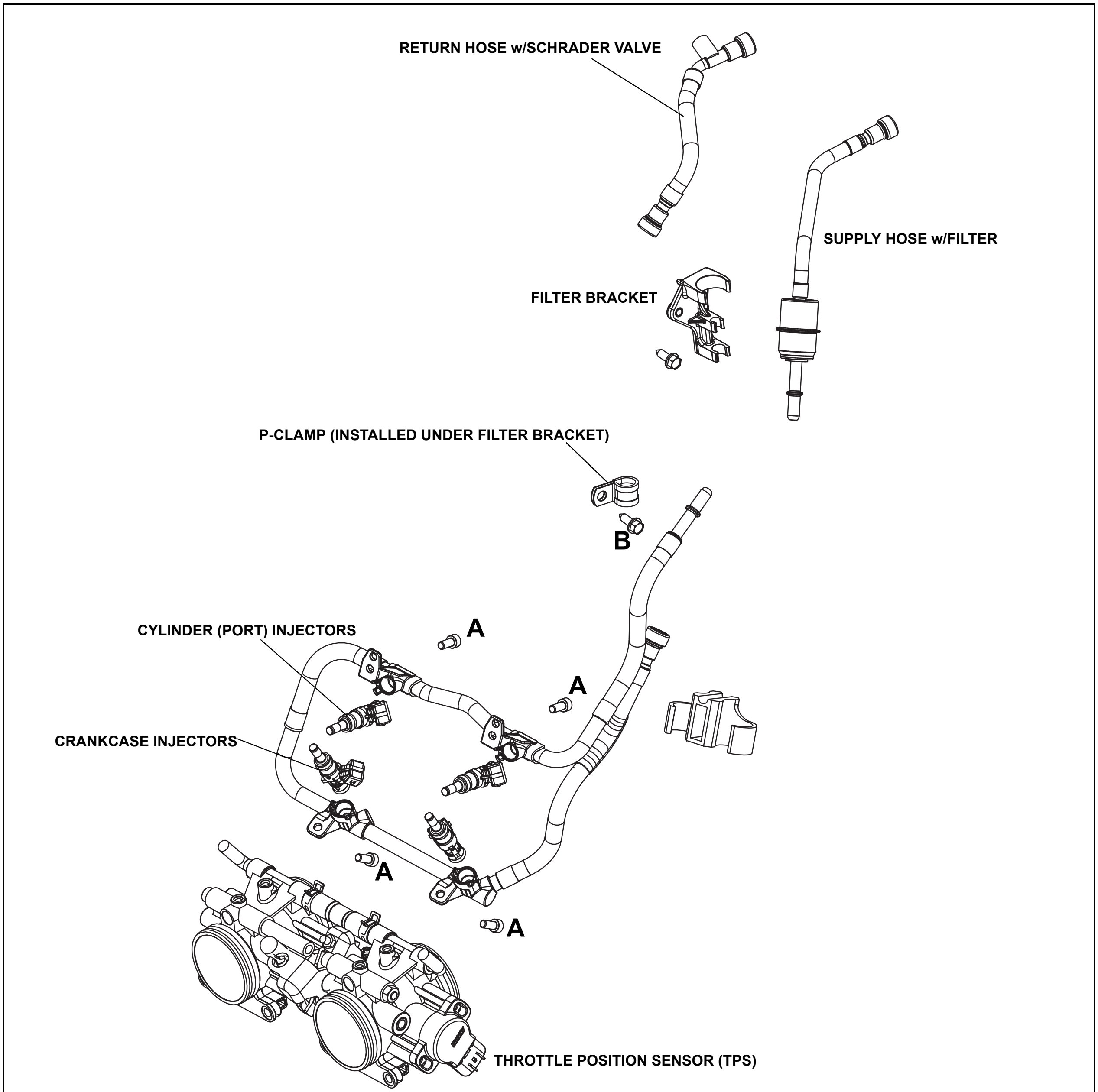
14. Replace the harness to the original routing and apply panduit straps back to the original locations.

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, re-flash the ECU to the new color code.

4

Fuel System Assembly



= T

A: 9 ft-lb (12 Nm)
B: 1.5 ft-lb (2 Nm) Position p-clamp behind bracket.

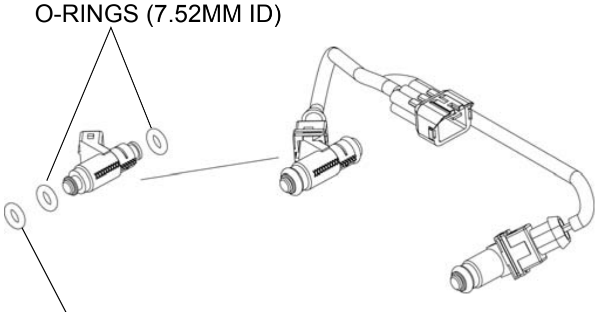
DC-CFI-2 FUEL INJECTORS/FUEL RAIL

Fuel Injectors/Assembly

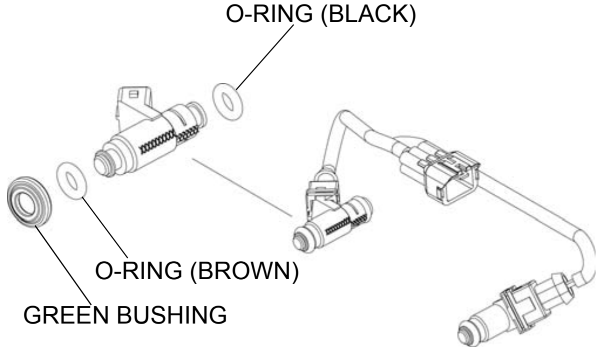
DC-CFI-2 engines feature a dual fuel injector/wiring harness assembly. Fuel injector replacement requires removing both fuel injectors/harness and installing a new assembly. Fuel injectors are not supplied individually. Harness cutting and splicing is not required.

CAUTION

2011 and 2012 fuel injectors are different and not interchangeable. Severe engine damage will occur if the incorrect fuel injectors are installed.



2011 FUEL INJECTORS w/HARNESS



2012 FUEL INJECTORS w/HARNESS

When replacing a fuel injector assembly, match the fuel injector color code with the service part number listed in the table below. If replacing a fuel injector assembly with one of a different color code, the ECU must be flashed with the new color-coded ECU map.

NOTE: In addition to the fuel injector o-rings, an isolator o-ring (2011) or bushing (2012) is installed inside each cylinder fuel injector bore.

2011 800 DC-CFI-2 INJECTOR KITS

INJECTOR KITS	COLOR
4013046-053	Yellow
4013046-027	Blue

NOTE: 4013046-015 (RED) fuel injectors are no longer available. Order and install either YELLOW or BLUE injectors. After installing new injectors, reflash the ECU to match the new fuel injector color code.

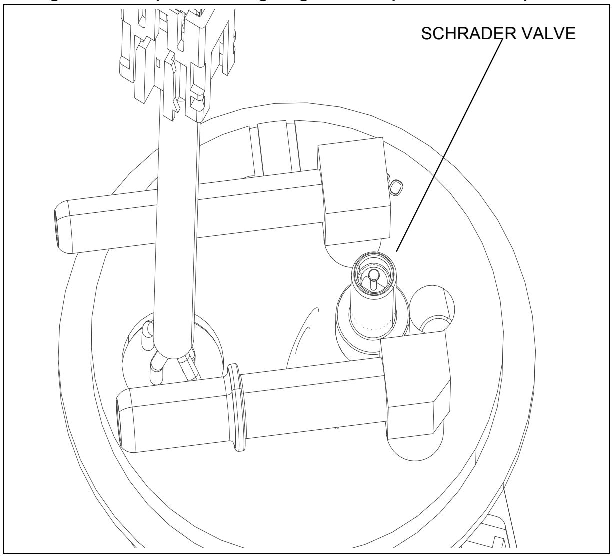
2012 600/800 DC-CFI-2 INJECTOR KITS

INJECTOR KITS	COLOR
4013258-053	Yellow
4013258-027	Blue
4013258-015	Red

4

Fuel Rail Bleeding / Pressure Testing

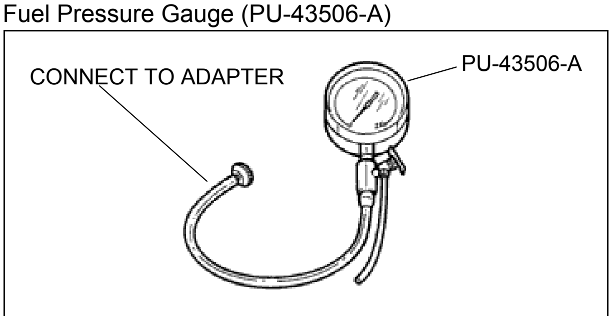
DC-CFI-2 PRO-RIDE models feature a Schrader valve located on the fuel pump that can be used to bleed the fuel system pressure and observe fuel system pressure when using the fuel pressure gauge and specified adapter.



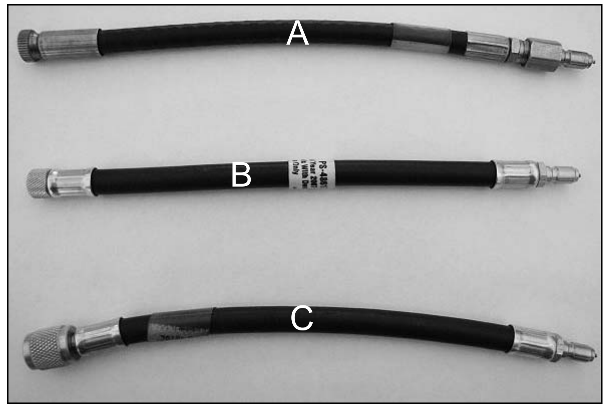
Fuel Pressure Gauge/Adapters

MODEL	ADAPTERS	GAUGE/ BLEED TOOL
DC-CFI-2 PRO-RIDE	PS-48762 (7/16-20 fitting)	PU-43506-A

Fuel Pressure Gauge (PU-43506-A)



Fuel Pressure Gauge Adapters



- A = 314249 (.305-32 shallow core fitting/adapter supplied with PU-43506-A Fuel Pressure Gauge)
- B = PS-48617 (.305-32 deep core fitting)
- C = PS-48762 (7/16-20 fitting)

1. Select the appropriate adapter.
2. Connect the adaptor to the fuel return hose Schrader valve.
3. Connect the adapter to the fuel pressure/bleed tool gauge.
4. To observe running fuel system pressure, start the engine and compare reading to the specification.

NOTE: Observe pressure reading at idle and while operating the vehicle.

= In. / mm.
Fuel System Pressure: 58-60 (4.0-4.1)

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 drain residual fuel.
6. Close the valve, then remove the gauge and adapter from the fuel hose Schrader valve. Replace the Schrader valve dust cap.

Disconnect Fittings

The fuel hoses 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. Push the tool into the housing to release the spring clamps. Carefully separate the hose from the connection.

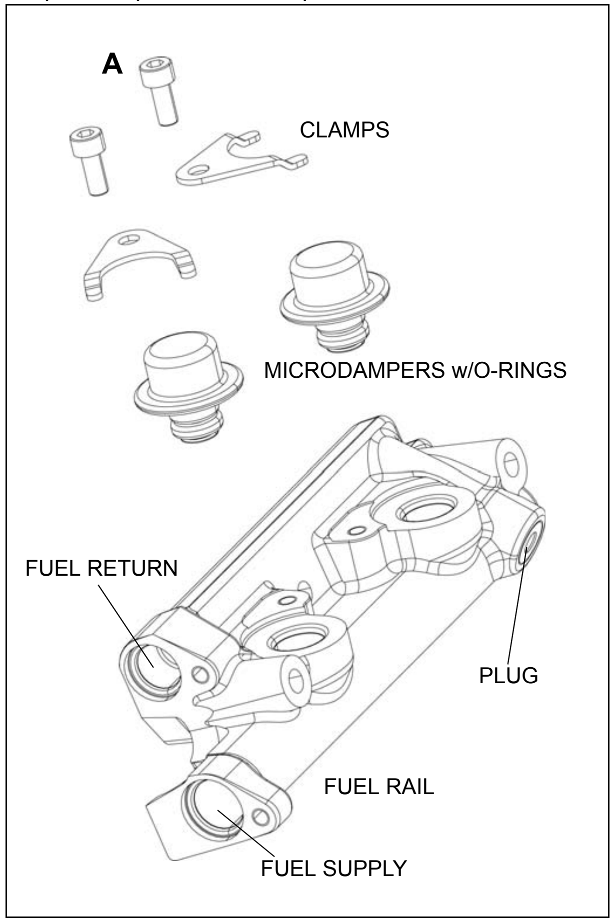
3. Reconnect the fuel hoses by coating each hose end with a light film of two stroke engine oil.
4. Carefully install the male end of the hose into the center of the female housing. Firmly push the hoses together until the male nozzle fully seats behind the spring tabs and an audible “click” is heard.
5. Grasp both hoses and gently pull to verify positive engagement.

Fuel Rail Microdampers

The DC-CFI-2 fuel rail assembly contains two fuel pressure microdampers. The microdampers suppress fuel pressure pulses that occur when each fuel injector is activated.

The microdampers are considered “life of engine” components and servicing is not recommended. If a microdamper is removed, apply a light film of two-stroke engine oil to the o-ring during installation.

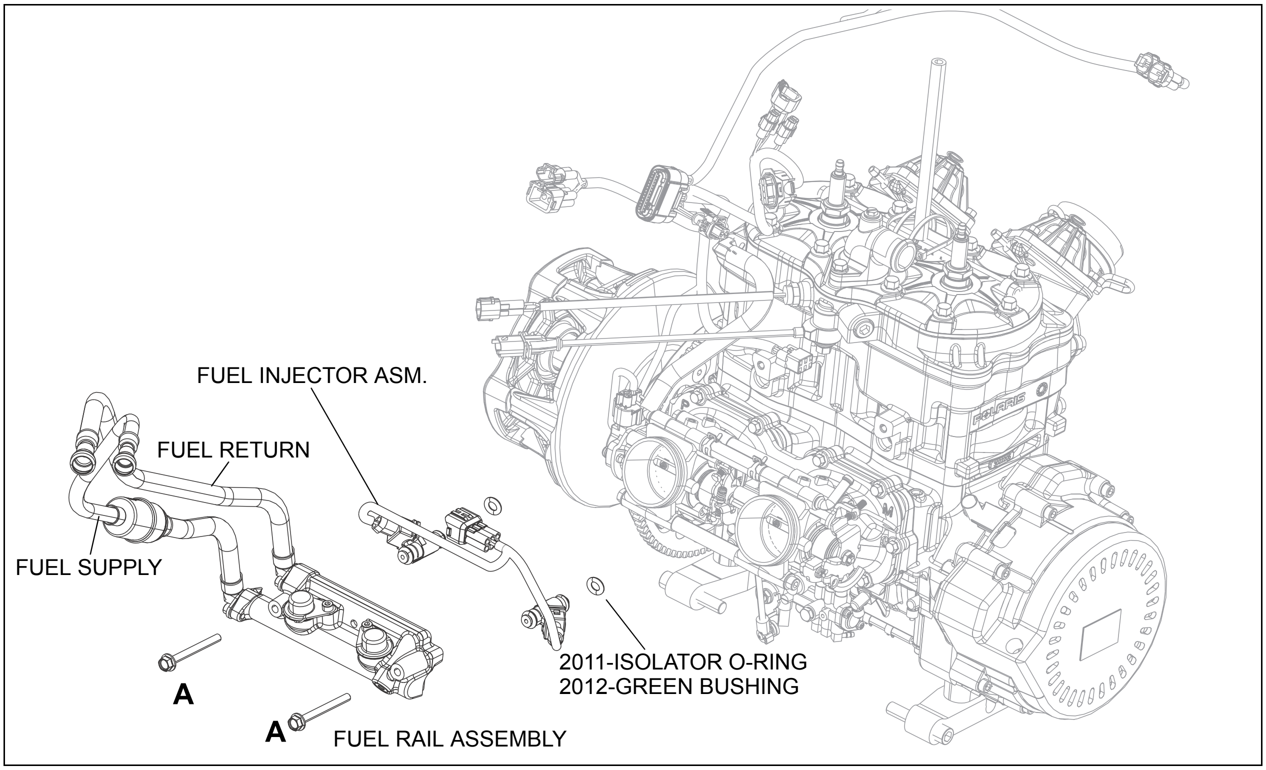
Torque clamp fasteners to specification.



= T
A: 3.3 ft-lb (4.5 Nm)

NOTE: A threaded plug is located on the MAG end of rail. Do not remove plug.

Fuel Rail/Injector Removal and Installation



= T
A: 9 ft-lb (12 Nm)

Removal/Installation Process

NOTE: Do not touch fuel injector inlet/outlet. Leave protective caps in place while handling.

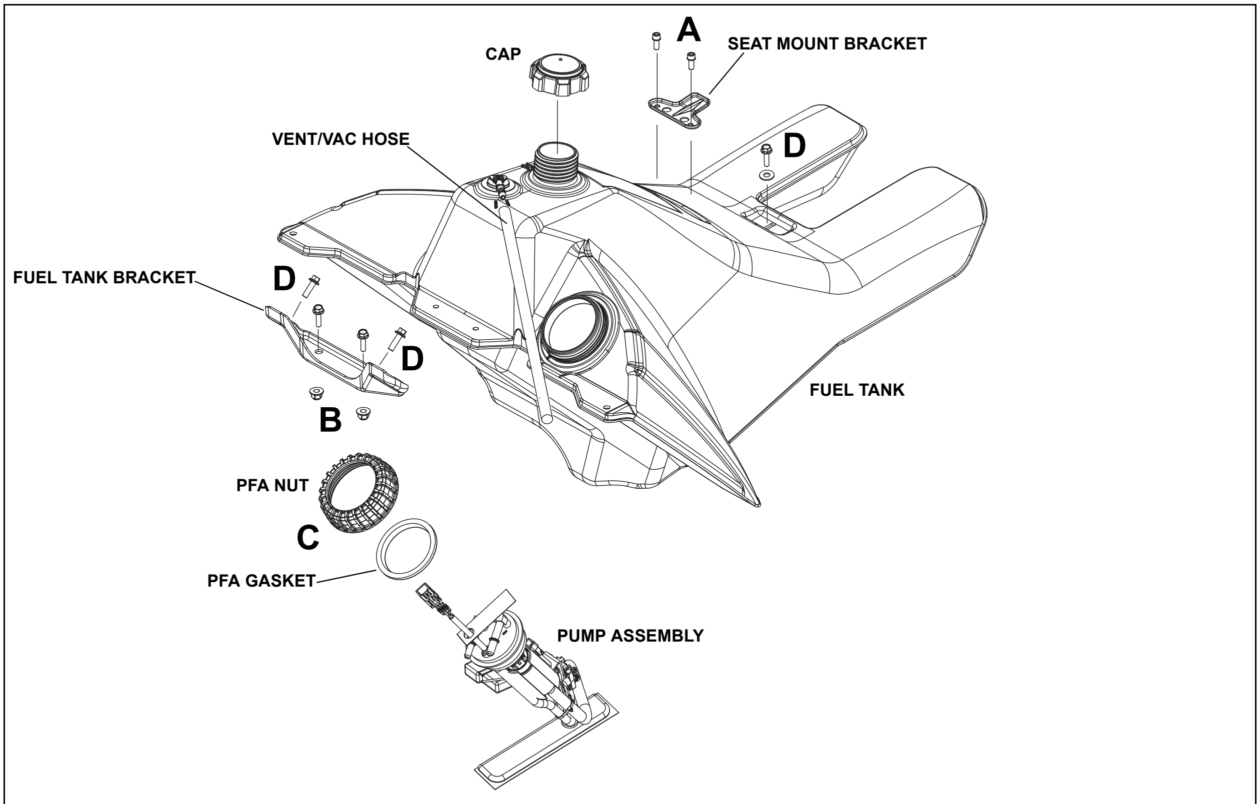
1. Open the door panels and remove the hood assembly.
2. Relieve fuel system pressure.
3. Disconnect the fuel supply and return hoses from the fuel pump.
4. Remove the ECU, ECU bracket, and oil tank from the clutch cover assembly.
5. Remove the air box intake tube and top to gain access to the fuel rail.
6. Disconnect the fuel injector assembly wiring harness connector.
7. Remove the two screws that mount the fuel rail to the cylinder.
8. Carefully pull the rail away from the engine and injectors. Remove the injectors from the cylinder.

NOTE: Always use new o-rings/isolators after fuel injectors have been removed.

9. Using a pick, remove the two fuel injector isolators or bushings from the injector ports in the cylinder. Discard the isolators/bushings.
10. Remove the fuel injector o-rings from fuel injectors. Discard the fuel injector o-rings.
11. To reinstall the fuel rail assembly, lightly coat two new fuel injector isolators with two-stroke engine oil. Install the new isolators or bushings into the cylinder injector ports.
12. Install four new oil-coated fuel injector o-rings.
13. Install both fuel injectors into the cylinder. Carefully install the fuel rail assembly.
14. Tighten fuel rail screws evenly. Once both screws are seated, torque to specification.
15. Reconnect the fuel injector harness wiring connector.
16. Reinstall the air box components.
17. Install the oil tank, ECU bracket, and ECU.
18. Reconnect the fuel supply and return fuel hoses on the fuel pump.

FUEL TANK/PUMP SERVICE

2010 Fuel Tank/Pump Assembly



= T
A: 10 ft-lb (14 Nm) **B: 6 ft-lb (8 Nm)** **C: 28 ft-lb (38 Nm)** **D: 7 ft-lb (10 Nm)**

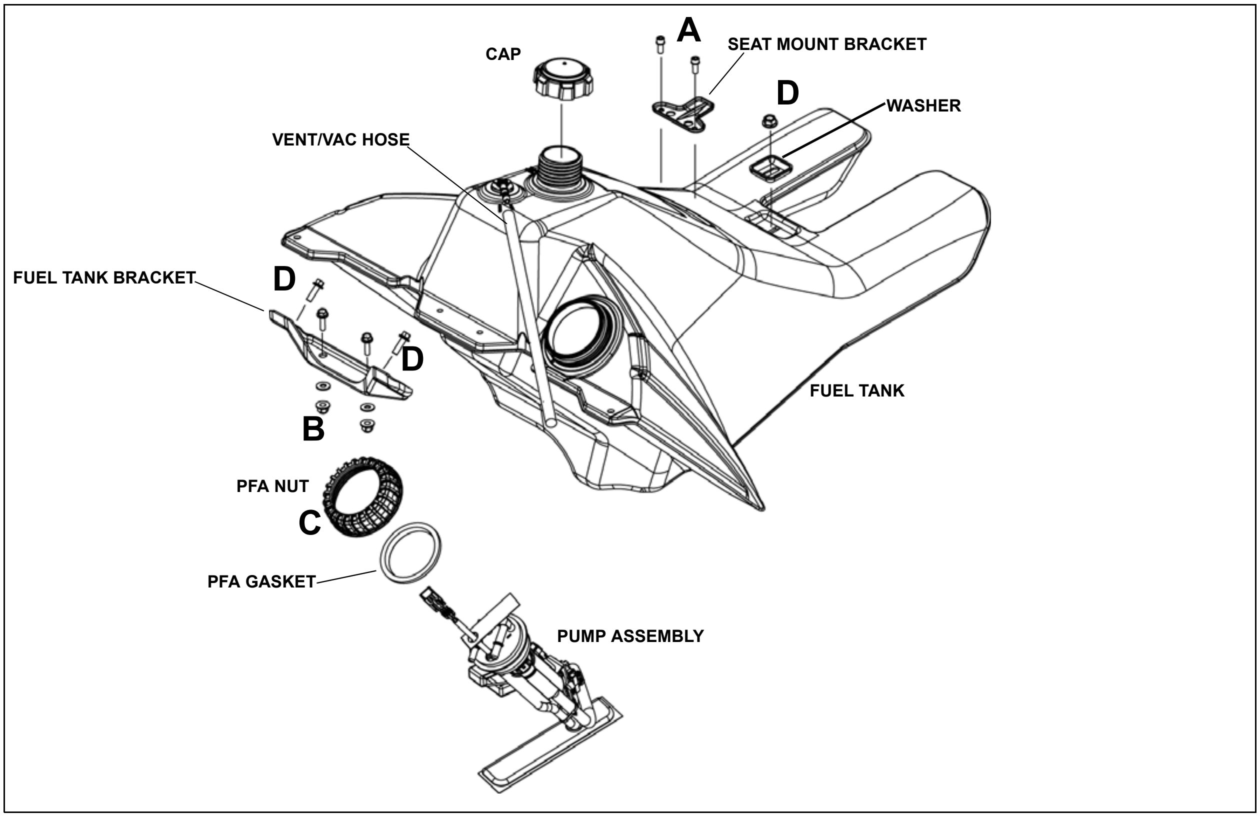
SERVICE PARTS:

- Fuel Pump Assembly - 2520951
- Pickup/Sock Assembly (w/clamps and cable ties) - 2204376
- PFA Gasket - 5413063

CAUTION

ALWAYS REPLACE PFA GASKET WITH NEW GASKET AFTER REMOVING FUEL PUMP.

2011-2012 RUSH/Switchback Fuel Tank/ Pump Assembly



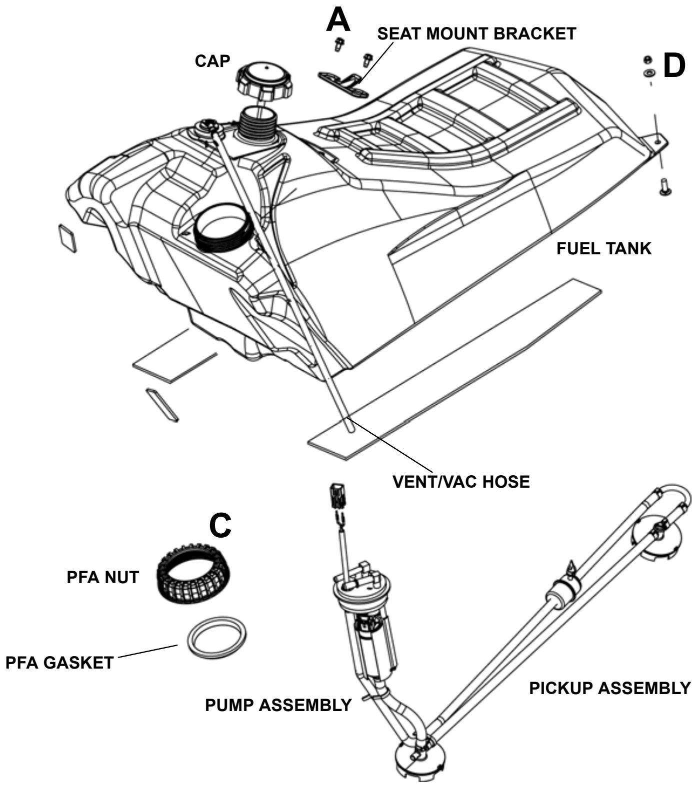
= T
A: 10 ft-lb (14 Nm) **B: 6 ft-lb (8 Nm)** **C: 28 ft-lb (38 Nm)** **D: 7 ft-lb (10 Nm)**

SERVICE PARTS:

- Fuel Pump Assembly - (600 Rush) 2520951 (800 Rush) 2521107
- Pickup/Sock Assembly (w/clamps and cable ties) - 2204376
- PFA Gasket - 5413063

CAUTION
ALWAYS REPLACE PFA GASKET WITH NEW GASKET AFTER REMOVING FUEL PUMP.

2011-2012 Switchback Assault/RMK Fuel Tank/Pump Assembly



= T
A: 10 ft-lb (14 Nm) **B: 6 ft-lb (8 Nm)** **C: 28 ft-lb (38 Nm)** **D: 7 ft-lb (10 Nm)**

SERVICE PARTS:

- Fuel Pump Assembly (w/gasket) - 2521142
- Pickup Assembly (w/clamps-gasket) - 2520873
- PFA Gasket - 5413063

CAUTION

ALWAYS REPLACE PFA GASKET WITH NEW GASKET AFTER REMOVING FUEL PUMP.

Fuel Tank Service

1. Remove the tank cap and siphon the fuel in the tank into a suitable container.
2. Remove the seat assembly
3. Remove the door panels and hood.
4. Remove the console.
5. On RUSH models, remove the two screws attaching the fuel tank bracket to the steering post assembly.
6. Disconnect the fuel supply and return hoses from the fuel pump. Disconnect the fuel pump power/level sender wire harness connector.
7. Remove the fuel tank assembly from the snowmobile.
8. Inspect the tank for signs of damage/excessive wear. Inspect the foam pads that the tank rests on. Replace pads if torn, missing, or damaged.
9. Installation is the reverse of removal.

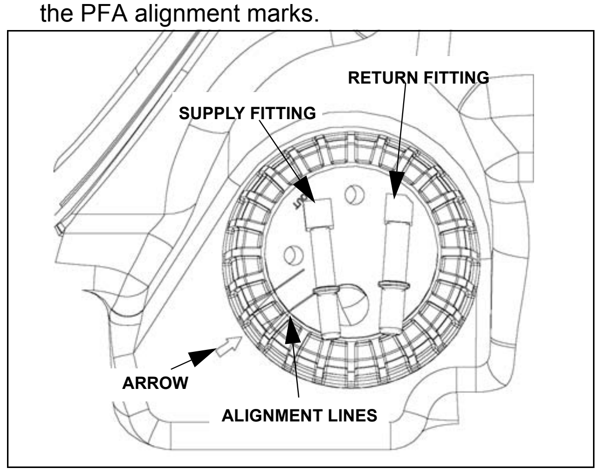
Fuel Pump Service

1. Siphon the fuel out of the fuel tank into a suitable container.
2. Remove the door panels, hood, and console.
3. Disconnect the positive (+) battery cable from the battery if applicable.
4. Bleed the pressure from the fuel rail. See “Fuel Rail Bleeding / Pressure Testing” on page 4.16.
5. Disconnect the fuel supply and return hoses from the pump flange. See “Disconnect Fittings” on page 4.17.
6. Disconnect the wiring harness.
7. Using the PFA spanner wrench and nut socket (PS-48459), carefully remove the PFA nut.

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

CAUTION
ALWAYS REPLACE PFA GASKET WITH NEW GASKET AFTER REMOVING FUEL PUMP.

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



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

= T
PFA Nut Torque: 28 ft-lb (38 Nm)

CAUTION
Verify the PFA nut does not make contact with the fuel tank after applying torque.

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

Fuel Pump/Level Sender Test Specifications

The fuel level sender resistance can be checked using a multitester set to read resistance (OHMS).

Measure resistance at the fuel pump harness connector between pin 2 (WHITE/BLACK) and pin 4 (PINK/BLACK).

ARM UP/GAUGE READING FULL = <8Ω
FLOAT HEIGHT FROM BOTTOM OF TANK = 345.3mm +/-16.4

ARM MIDDLE/GAUGE READING 1/2 = 40.7+/- 1.5Ω
FLOAT HEIGHT FROM BOTTOM OF TANK = 213.2mm +/- 23.2

ARM DOWN/GAUGE READING EMPTY = 91.5 +/- 1.5Ω
FLOAT HEIGHT FROM BOTTOM OF TANK =
89.6mm +/- 20.8

Fuel Tank Pressure Test

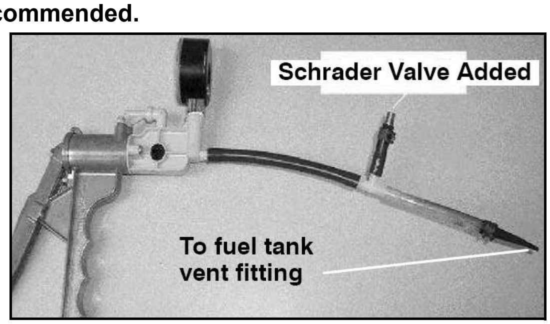
1. Connect a Mity Vac hand pump to the fuel tank vent fitting.
2. Connect a eight-inch piece of 5/16″ fuel hose and two gear clamps across the fuel supply and return fittings at the fuel pump flange.
3. Pressurize the tank to 5 PSI (34 Kpa).

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

⚠ WARNING

Do not over-pressurize the fuel tank past 6 PSI (41 Kpa).

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. Blow on the bubbles to pop them. Watch for new bubble formation. New bubble formation may be very small so look closely. Apply additional water/detergent solution if required.

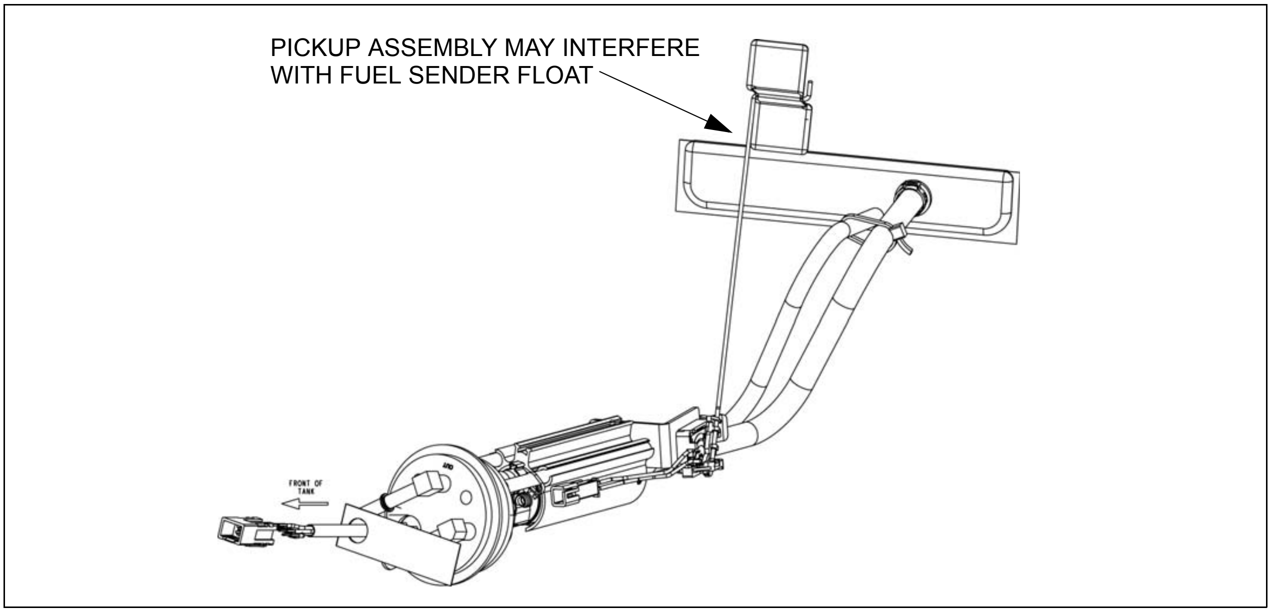
4

Rush/Switchback Fuel Pump Pickup Orientation

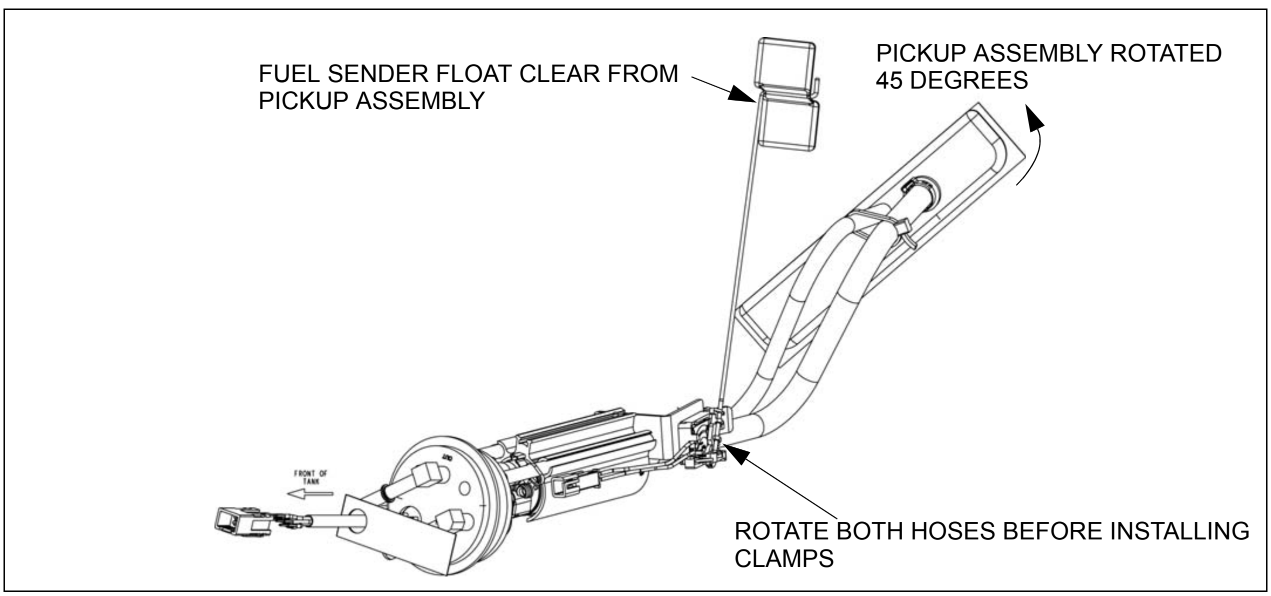
When servicing the Rush fuel pump pickup assembly or troubleshooting an issue with a stuck low fuel gauge display on the MFD gauge, verify the pickup assembly is orientated as shown in the MY11 Pickup Assembly illustration below.

NOTE: Model year 2010 Rush fuel pump assembly service parts feature the rotated fuel pickup assembly.

MY10 Rush Pickup Assembly:



MY11 Rush Pickup Assembly:



DIGITAL WRENCH DIAGNOSTIC SOFTWARE

Digital Wrench™ Diagnostic Software Overview

IMPORTANT: Refer to Section 2, 3 and 4 in the Instruction Manual provided in the Digital Wrench™ Diagnostic Kit to install the Polaris Digital Wrench™ diagnostic software on your computer.

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

- View or clear trouble codes
- Analyze real-time engine data
- Reflash ECU calibration files
- Perform guided diagnostic procedures
- Create customer service account records
- Perform output state control tests

Special Tools

DIGITAL WRENCH™ DIAGNOSTIC SOFTWARE	PART NUMBER
PC/Laptop with Microsoft Windows 98/XP-SP2/Vista/7	Commercially Available
Digital Wrench™ Diagnostic Kit	PU-47063-B
PU-47063-B (listed above) INCLUDES:	Digital Wrench™ Software: PU-48731
	Standard Interface Cable: PU-47151
	USB-Serial Adapter Cable: PU-50621
	SmartLink Module/Cable Kit: PU-47471 PU-47471 INCLUDES: SmartLink Module: PU-47468 SmartLink Serial Cable: PU-47470 SmartLink CAN Interface Cable: PU-47469
Chassis Power-Up Harness	PS-47296-A
Dual Power-Up Adapter/Fuel Pump Prime Harness	PS-50805
12 VDC Battery	Commercially Available
Reflash Enable Jumper	PS-50361

Diagnostic Software Version

Always use the most current version of the Digital Wrench™ software to ensure you have the latest updates or enhancements. New reprogramming files and guided diagnostic procedures are added to these updates as they become available. For information on how to determine if you have the latest update available, refer to “Digital Wrench™ Version and Update ID”.

ECU Replacement

Although the need for ECU replacement is unlikely, a specific replacement procedure is required to ensure that all essential data contained within the original ECU is transferred to the replacement ECU.

Refer to procedure and carefully follow all instructions provided in Digital Wrench™.

Guided Diagnostics Available

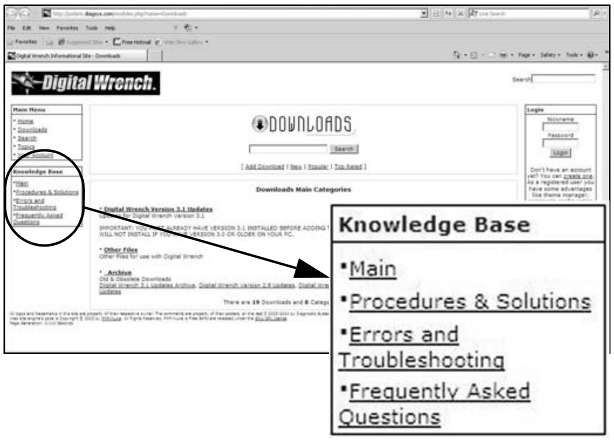
Guided diagnostics are available within Digital Wrench™ for all supported Trouble Codes (that is, any fault that will turn on the ‘Check Engine’ indicator).

In addition, guided diagnostics are also available for many other electrical sub systems.

Diagnostic procedures are added to subsequent versions of Digital Wrench™ as they become available. Check your release version often and upgrade when available to be sure you are using the most current software available.

Digital Wrench™ Communication Errors

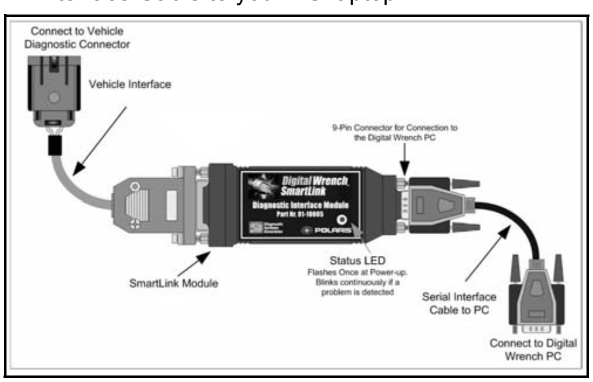
If you experience problems connecting to a vehicle or any Digital Wrench™ related problem, visit the Digital Wrench™ Knowledge Base for the most current troubleshooting information, FAQs, downloads and software updates at: ***http://polaris.diagsys.com/.***



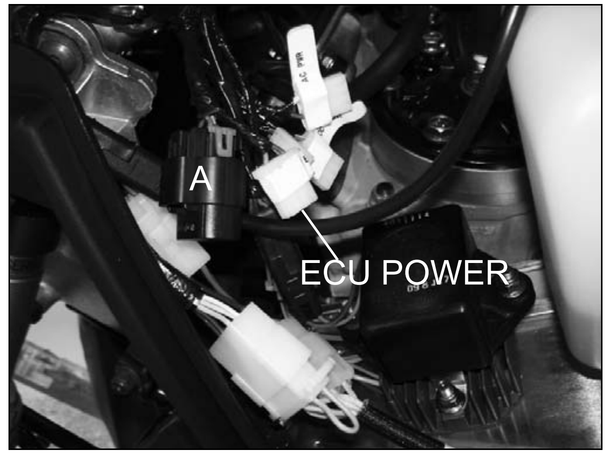
Digital Wrench™ - Diagnostic / Power Connectors

The diagnostic/power connectors are located behind the left engine compartment door.

1. Assemble the SmartLink Module and attach the PC Interface Cable to your PC/laptop.



2. Remove the protective cap from the Digital Wrench™ connector (A) and then connect the Vehicle Interface Cable to the diagnostic connector.



3. Connect the chassis power-up harness to a fully charged 12VDC battery. Connect the chassis power-up harness to the ECU POWER connector.

NOTE: An internal relay within the harness prevents reverse polarity damage in the event the alligator clamps are connected to the battery incorrectly.

4. When battery power is connected successfully, the SmartLink status LED will blink on once.

NOTE: Connecting the chassis power-up harness to the DC POWER TEST plug will power the DC chassis circuit.

⚠ CAUTION

Do not connect DC power to the AC power test plug. This plug is for testing the AC power circuit with a digital volt/ohm meter. Severe electrical system damage will occur.

Digital Wrench™ Serial Number Location

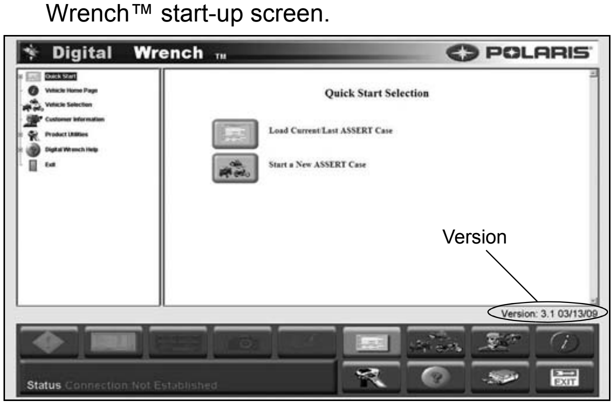
Open the configuration screen by clicking on the wrench icon. The serial number is located on the right side of the screen.

Digital Wrench™ Version and Update ID

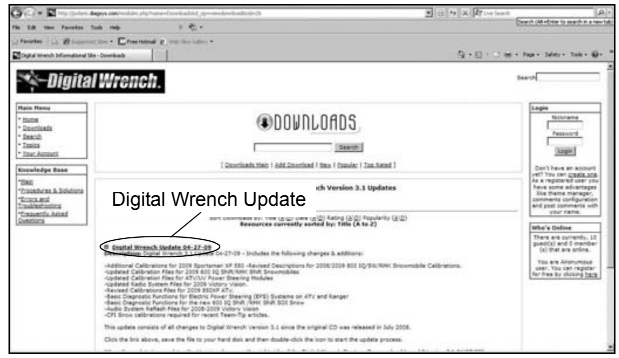
Knowing what Digital Wrench™ version and update is installed will help determine which updates are required.

NOTE: Versions and updates are subject to change.

1. Open the Digital Wrench™ software. Locate the version ID shown on the lower right side of the Digital Wrench™ start-up screen.



2. Proceed to ***http://polaris.diagsys.com*** to see if a newer update is available.



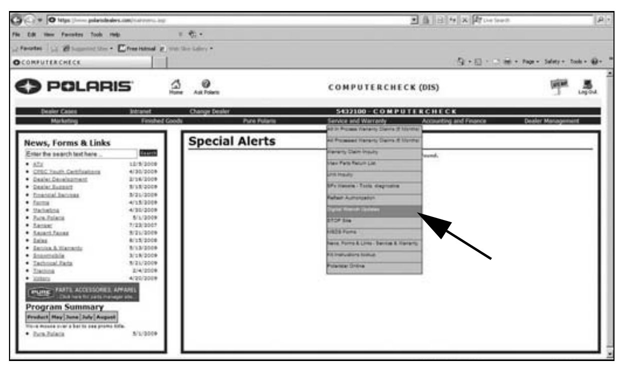
3. If a newer update is available, it should be downloaded before using Digital Wrench™ (see "Digital Wrench™ Updates").

Digital Wrench™ Updates

Updates are released for Digital Wrench™ via the Internet at: ***http://polaris.diagsys.com***. The Digital Wrench™ web site can also be accessed through the dealer web site at: ***www.polarisdealers.com***.

NOTE: Only authorized Polaris dealers and distributors can access the dealer web site.

1. Log on to ***www.polarisdealers.com***.
2. Locate the "**Service and Warranty**" drop-down menu.
3. Click on "**Digital Wrench Updates**".



4. The Digital Wrench™ portal web site should appear in a new web browser.

4

5. Click on “**Digital Wrench Version Updates**”.

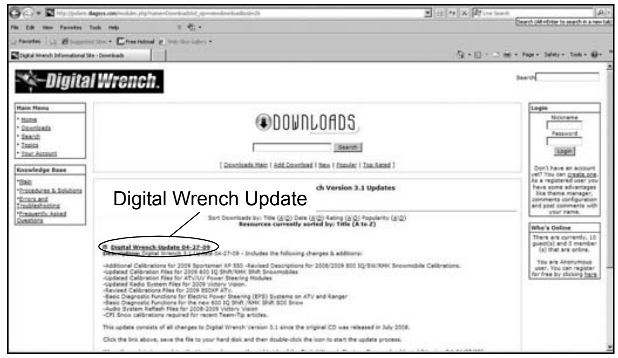
IMPORTANT: You must already have the current version installed before adding an update. Updates will not install if you are using an older version loaded on your PC.

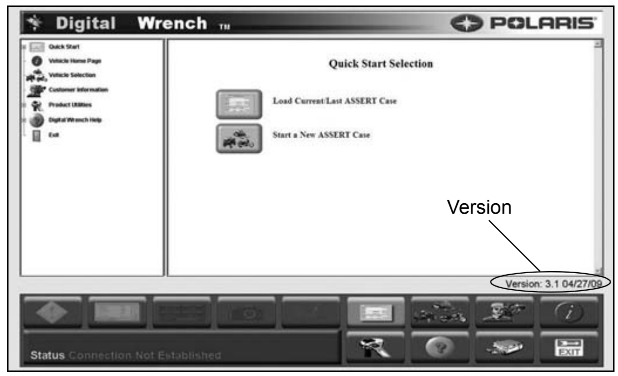
6. If the update file date listed is newer than your current version and update (see “Digital Wrench™ Version and Update ID”), download the file.

7. Click on the link shown above, save the file to your hard disk and then double-click the icon to start the update process.

NOTE: Do not RUN or OPEN the file the web site. Select SAVE and download to your PC before running the install.

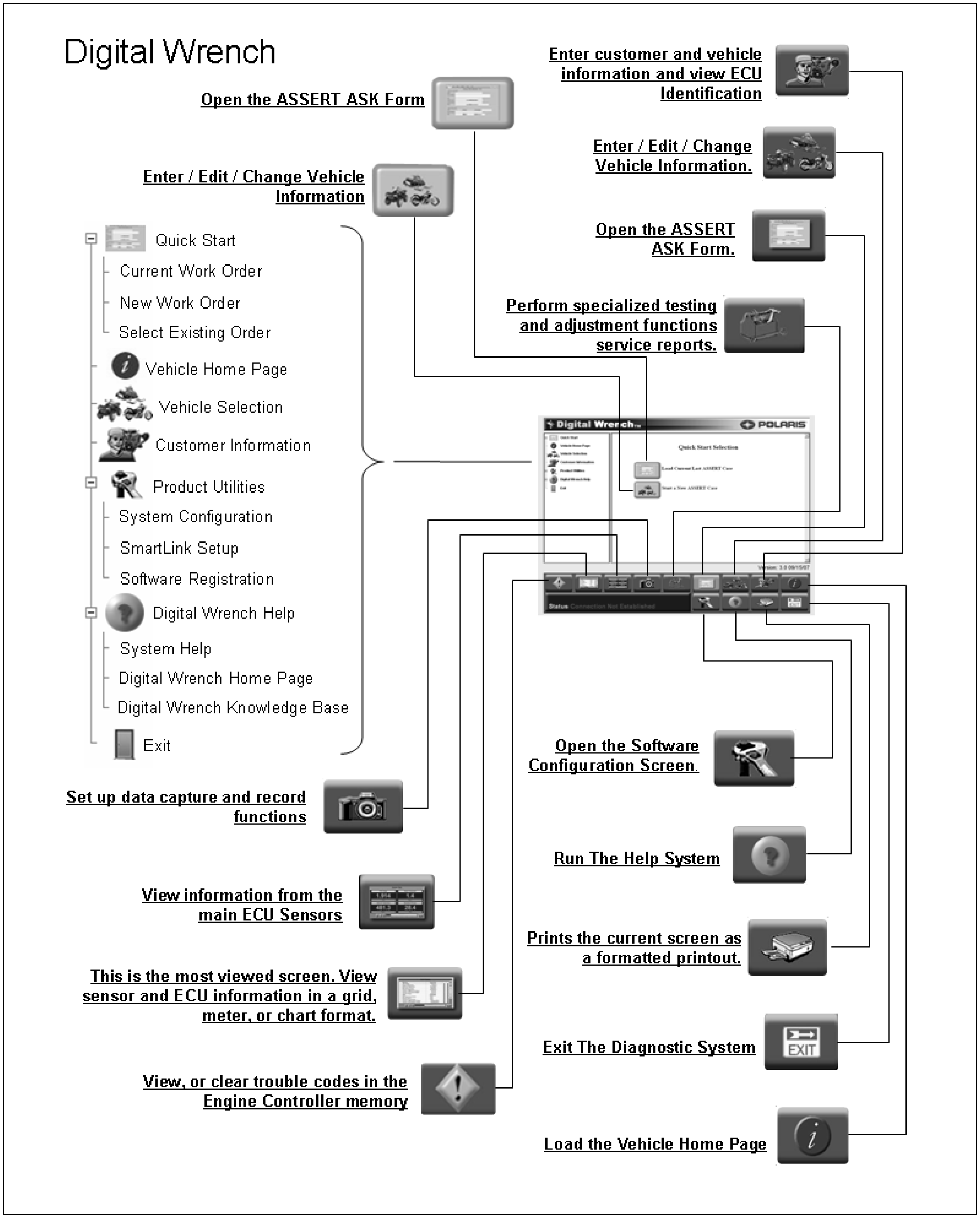
8. When the update is complete, the version shown on the right side of the Digital Wrench™ start-up screen should match the update you just downloaded.





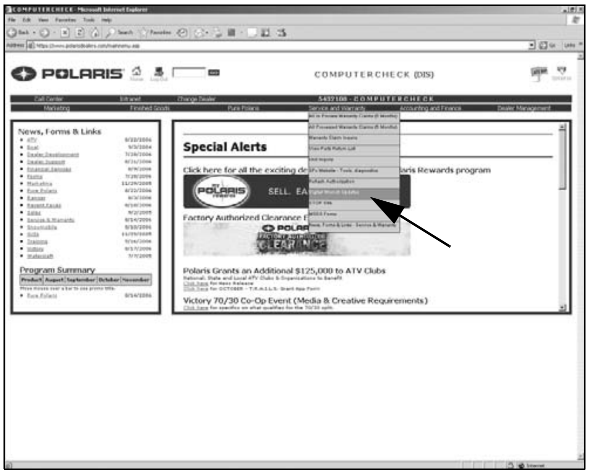
NOTE: Versions and updates are subject to change.

Digital Wrench™ Feature Map



Updating Digital Wrench

Updates 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 and click on the version of Digital Wrench currently running on the PC or laptop.

6. Locate and click on the update file. Save the file to the PC or laptop’s desktop.

7. Locate the update file 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 Identification

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

3. The version ID number should match the Digital Wrench update name.

Special Tests Menu

The SPECIAL TESTS (Tool Box Icon) in Digital Wrench gives the service technician the following options:

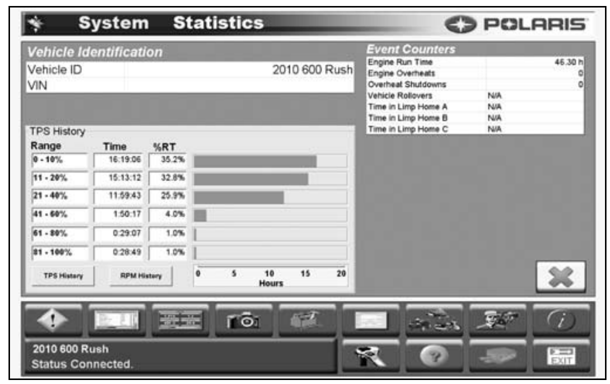
- Vehicle History Information
- Output State Control
- TPS Set Procedure
- Service Report
- ECU Replacement
- Security Functions (2012 Only)
- Engine Controller Reprogramming
- Vehicle Information
- Feature Configuration/Registration

NOTE: Special Tests menu selections will populate according to vehicle selected.

Vehicle History Information

Selecting the Vehicle History Information option displays the following information:

- Throttle Position (TPS) history
- Engine RPM history
- Engine run time hours
- Engine overheat occurrences
- Engine overheat misfire protection mode occurrences
- Engine run time in limp home modes



Service Report

Selecting Service Report from the SPECIAL TESTS MENU generates a report of all of the current ECU input/output values, model/calibration/software information, and diagnostic trouble codes.

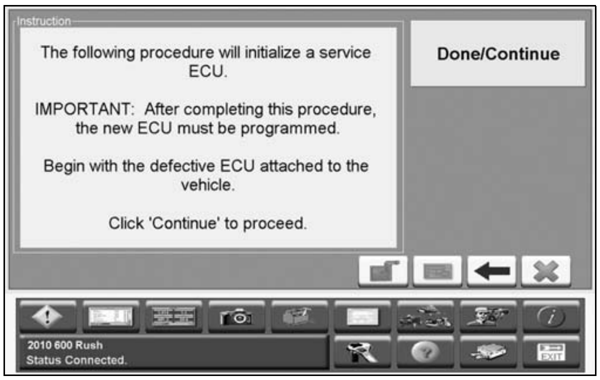
Technicians can add the VIN or customers' name to the "customer name"' field and then save the service report as a .txt file on their laptop/PC.

Clicking on "View Current" will refresh the report information. Selecting "View Saved" will access any saved service report .txt files saved on the laptop/PC.

ECU Replacement

Use the ECU replacement feature whenever installing a new service ECU on the vehicle. Follow the guided procedures in Digital Wrench to perform the ECU replacement procedure.

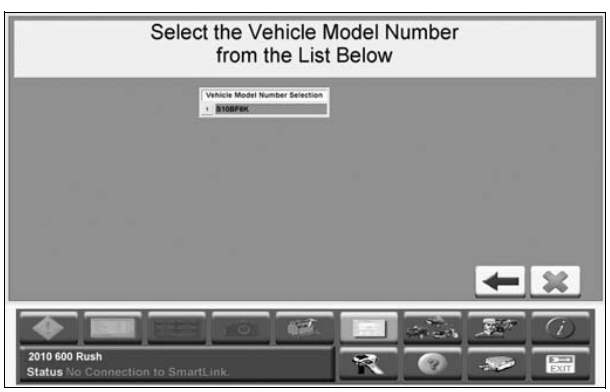
NOTE: The ECU replacement function initializes the new service ECU. Service ECUs cannot be reflashed without first performing this procedure.



The procedure copies the model ID number from the original ECU, and then copies it to the new service ECU.

IMPORTANT: The procedure cannot be reversed once the model ID number is copied to the new service ECU. The service ECU will forever retain the model ID number copied on it using this procedure.

If communication with the original ECU cannot be established, Digital Wrench will guide the user through a manual model ID selection procedure. Pay careful attention to the model selected when using the manual procedure.



After completing the ECU replacement procedure, reflash the ECU with the current ECU calibration file for the vehicle using the engine controller reprogramming procedure.

NOTE: ECU replacement only copies the model ID number to the new service ECU. Vehicle history and calibration files are not copied over.

Engine Controller Reprogramming (Reflash)

Process Overview

The reprogramming feature is in the Special Tests menu on the Digital Wrench™ screen. Start Digital Wrench™ and click on the Special Tests menu icon (red tool box). A technician should be familiar with the process and with computer operation in general before attempting to reprogram an ECU.

The Digital Wrench™ Engine Controller Reprogramming (or "Reflash") feature allows reprogramming of the ECU fuel and ignition map. To successfully reprogram the ECU, an Authorization Key must be obtained by entering a Request Code in the box provided on the Reflash Authorization site. The Request Code is automatically generated by Digital Wrench™ during the reprogramming process. The Reflash Authorization site is located under the "**Service and Warranty**" drop down menu on the dealer website at: ***www.polarisdealers.com***.

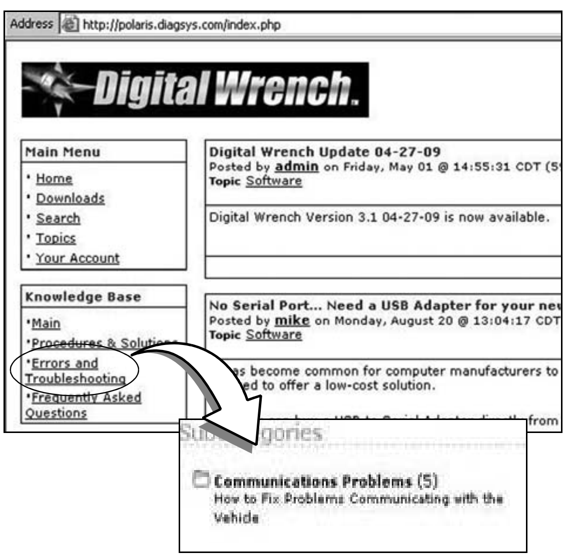
IMPORTANT: Failure to follow the reprogramming instructions completely and correctly can result in an engine that does not run! Replacement ECUs are programmed as "no-start" and require a reflash for them to work.

Reprogramming (Reflash) Tips:

- BATTERY VOLTAGE: The majority of problems with reprogramming can be attributed to a low battery. Be sure the battery voltage (no load) is at least 13 volts and at least 12.5 volts with the key 'ON'. Connect a battery charger if necessary to bring voltage level above minimum. Fully charge the battery before you attempt to reprogram.
- DEDICATED LAPTOP: Best results are obtained using a laptop computer that is "dedicated to Digital Wrench™". A laptop that is used by a variety of people and in several applications around the dealership is more likely to cause a reprogramming problem than one dedicated to Digital Wrench™ diagnostics only.
- OBTAINING THE LATEST UPDATE: Reprogramming updates are provided periodically and contain the most recent calibrations (see "Digital Wrench™ Updates").

- CLOSE NON-ESSENTIAL PROGRAMS: Polaris recommends that you DO NOT install non-essential programs on a Service Department laptop. Camera detection software, Virus Scanners, Tool Bars, etc. may clog up memory if running in the background and make it harder for the diagnostic software to operate.
- KNOW THE PROCESS: If you are not familiar with the entire reprogramming process, review the HELP section of the diagnostic software before you attempt reprogramming. Click on the **?** on the tool bar or press F11. The information in the on-line help is the most current and complete information available. This should be your first step until you are familiar with the process.
- COMMUNICATION PROBLEMS: If you have had problems communicating with a vehicle while performing diagnostic functions, do not attempt reprogramming until the cause has been identified and fixed. Check all connections, and be sure battery voltage is as specified.

  Proceed to ***http://polaris.diagsys.com*** for specific information and FAQs on how to troubleshoot communication problems.



- DON'T DISTURB THE PC: While reprogramming is in progress, don't move the mouse and don't touch the keyboard. The process only takes a few minutes, and is best left alone until complete.

NOTE: New service replacement ECUs are programmed as "no-start" and must be reflashed for the engine and fuel injector code.

1. Verify the most current update is downloaded and loaded into Digital Wrench.
2. Connect the communication cables to the snowmobile connectors.
3. Start Digital Wrench. Select the model year and vehicle 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".

NOTE: All fuel injectors on the engine must share the same color code.

The most-current reflash files will be located at the top of the list and will not have "SUPERSEDED" in the file name.

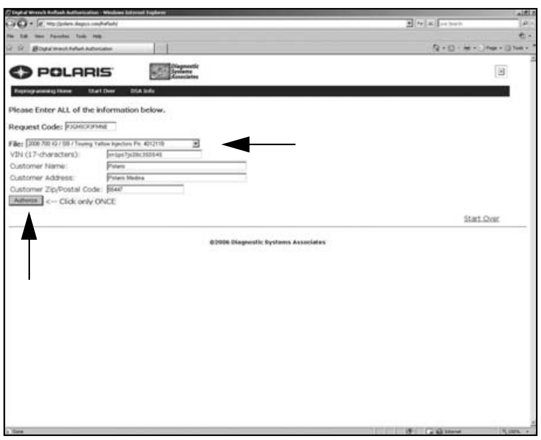
Files with "SUPERSEDED" in the file name denote older calibrations.

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

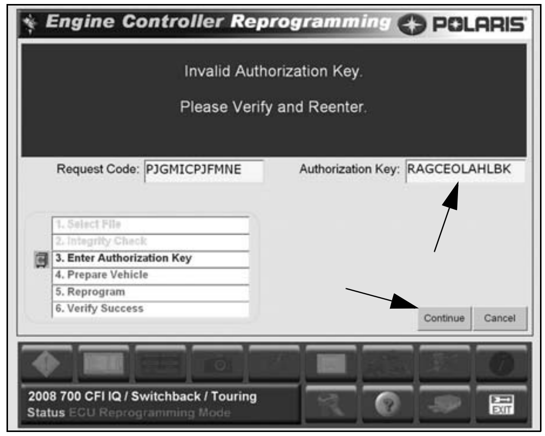
8. Access www.polarisdealers.com. Locate "REFLASH AUTHORIZATION" under the "SERVICE AND WARRANTY" drop-down menu.

9. Enter the REQUEST CODE generated by Digital Wrench into the information box.

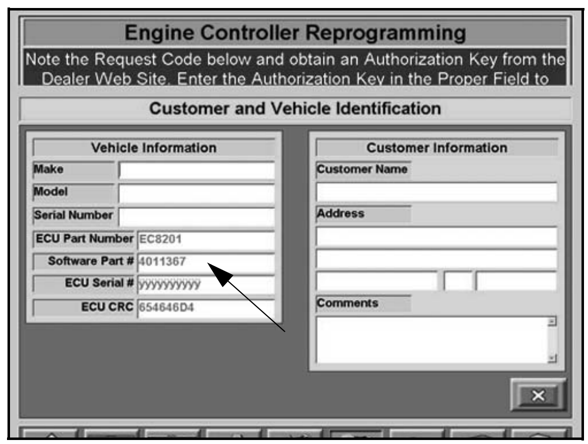
10. After entering the REQUEST CODE, click "CONTINUE".



11. The next screen asks for the following information:
    - Desired Reflash File
    - Vehicle VIN
    - Customer Name, Address, Zip Code
12. After entering the required information, click "CONTINUE".
13. If all of the information was accurate, the website will generate and AUTHORIZATION CODE.
14. Copy the code, and then enter the code into the AUTHORIZATION box in Digital Wrench. Click "CONTINUE".



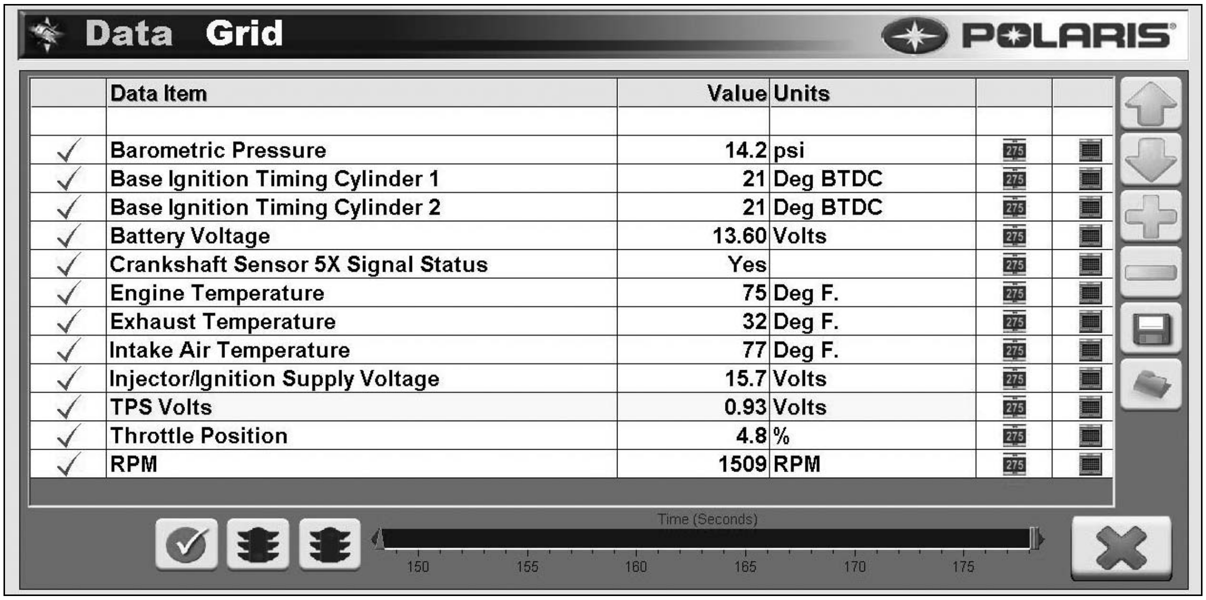
15. The reflash process will begin. Verify all connections are properly made. Do not touch anything during the process.
16. Verify the reflash was a success by comparing the software ID number listed under the "CUSTOMER AND VEHICLE IDENTIFICATION" button with the number recorded in step 6.



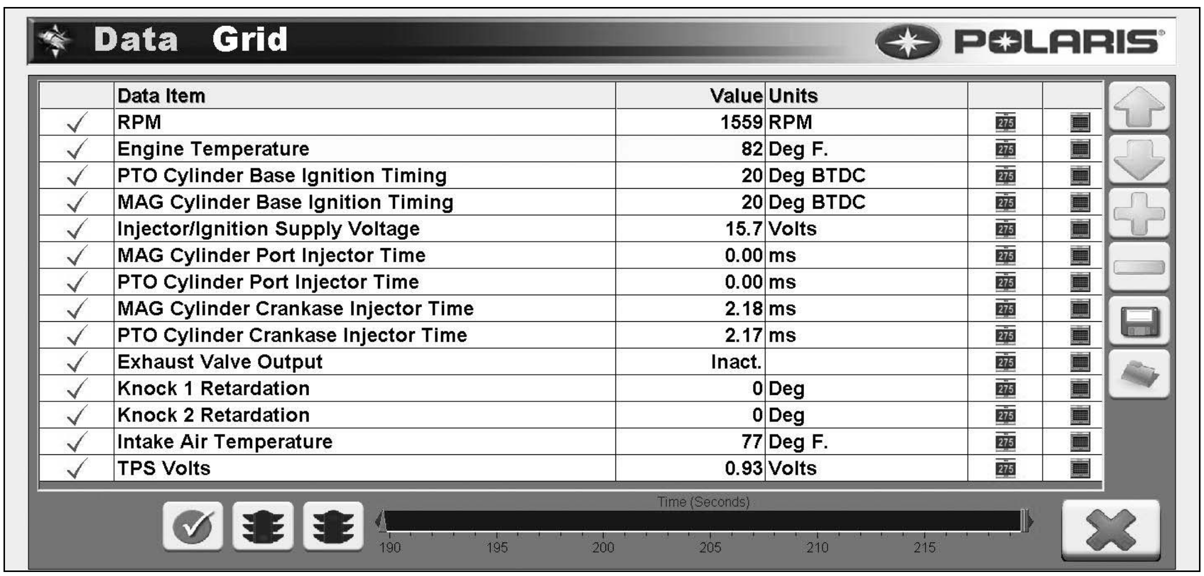
NOTE: If security function was enabled on vehicle prior to replacing the ECU and/or performing the engine controller reprogramming, the Security Enable procedure will have to be completed to activate security in the ECU.

Digital Wrench Data Grid Screenshots

2010 RUSH 600 - Engine at Idle (75° F shop room temperature/1,060 ft. ASL)



	Data Item	Value	Units
√	Barometric Pressure	14.2	psi
√	Base Ignition Timing Cylinder 1	21	Deg BTDC
√	Base Ignition Timing Cylinder 2	21	Deg BTDC
√	Battery Voltage	13.60	Volts
√	Crankshaft Sensor 5X Signal Status	Yes	
√	Engine Temperature	75	Deg F.
√	Exhaust Temperature	32	Deg F.
√	Intake Air Temperature	77	Deg F.
√	Injector/Ignition Supply Voltage	15.7	Volts
√	TPS Volts	0.93	Volts
√	Throttle Position	4.8	%
√	RPM	1509	RPM



	Data Item	Value	Units
√	RPM	1559	RPM
√	Engine Temperature	82	Deg F.
√	PTO Cylinder Base Ignition Timing	20	Deg BTDC
√	MAG Cylinder Base Ignition Timing	20	Deg BTDC
√	Injector/Ignition Supply Voltage	15.7	Volts
√	MAG Cylinder Port Injector Time	0.00	ms
√	PTO Cylinder Port Injector Time	0.00	ms
√	MAG Cylinder Crankase Injector Time	2.18	ms
√	PTO Cylinder Crankase Injector Time	2.17	ms
√	Exhaust Valve Output	Inact.	
√	Knock 1 Retardation	0	Deg
√	Knock 2 Retardation	0	Deg
√	Intake Air Temperature	77	Deg F.
√	TPS Volts	0.93	Volts

The data grid can display numerous sensor/switch inputs and outputs. Not all are shown in the screenshots above. Use the (+) and (-) button to add and remove data parameters.

Always verify the reading against known information. Some of the items to look for include:

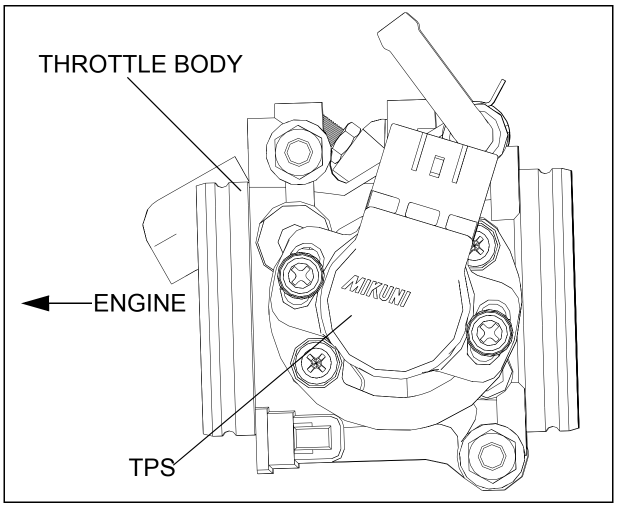
- Is the barometric pressure, intake air temperature, and engine coolant temperature accurate?
- Is the TPS voltage (at idle) 0.95 +/- .01 VDC?
- Does the TPS voltage transition smoothly when the throttle lever is pushed?
- Is the Injector/ignition voltage 15.5-16.5 VDC?

THROTTLE POSITION SENSOR

Throttle Position Sensor (TPS) Overview

CAUTION

The throttle position sensor (TPS) is set at the time of throttle body manufacture. TPS adjustments should only be made if the TPS was loosened, repositioned, or replaced.
Any adjustments made to the idle air gap screw, TPS sensor, or throttle synchronization screw should only be performed when directed to so by the Digital Wrench Diagnostic Software.



The Throttle Position Sensor (TPS) is a 5 VDC potentiometer (variable resistance) type sensor mounted to the PTO side of the throttle body. The internal components of the sensor are connected to the throttle shaft. The TPS output signal changes as the throttle plates are opened and closed by the operator. The ECU uses this signal to determine the position of the throttle plates.

The TPS is set at the factory based on a throttle body idle air gap flow specification. Adjustments should only be performed when:

- TPS is replaced
- TPS or throttle body is mis-adjusted
- Troubleshooting erratic or inconsistent engine idle, and/or engine performance

NOTE: Follow these guidelines whenever working with the TPS:

- Use Digital Wrench when checking the TPS voltage. Do not use any other diagnostic tool.
- Disconnect throttle cable from the throttle lever. If the TPS idle voltage changes, the throttle cable is too tight. Readjust throttle cable.
- Verify the throttle cable is not pulling on the throttle plate cam. Turn the throttle cable in line adjuster clockwise to loosen the cable. If the cable continues to pull on the throttle plate cam, readjust the throttle cable threaded barrel on the throttle body.
- All engine management sensors/switches must be connected to obtain accurate TPS voltage readings.
- Use a fully charged 12VDC battery to power the engine management system

TPS Tests

Two tests can be performed to quickly determine if further testing is required.

TEST 1: TPS Idle Voltage

1. Connect Digital Wrench to the vehicle. Confirm the throttle lever free play is set to specification, and the throttle cable is not pulling on the throttle plate cam.
2. Click on the DATA GRID ICON to view the current sensor readings.
3. Locate the TPS VOLTAGE reading and compare it to the specification for the vehicle. Verify SENSOR REFERENCE VOLTAGE is 4.9-5.0 VDC.

TPS Voltage	0.947	Volts
Exhaust Temperature	32.0	Deg F.
Intake Air Temperature	72.7	Deg F.
Engine Temperature	70.5	Deg F.
Barometric Pressure	29.1	InHg
Chassis Voltage	0.00	Volts
Vehicle Speed	0	MPH
Sensor Reference Voltage	4.990	Volts

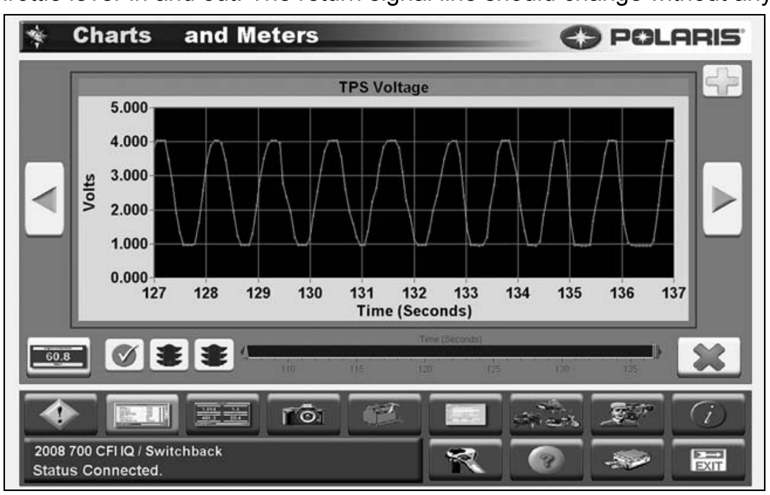
TPS Idle Base Setting Voltage

MODEL	SPECIFICATION
600 DC-CFI Engine	.94-.96 VDC
800 DC-CFI Engine	.93-.95 VDC

TEST 2: TPS Signal Sweep

Utilize the sensor graph function to view the TPS voltage return signal voltage as a line graph.

1. Slowly move the throttle lever in and out. The return signal line should change without any erratic jumps or gaps.



2. If erratic jumps or gaps are encountered, inspect the wiring, and connector pins at the sensor and ECU connector.
3. If no wiring problems are found, inspect the TPS to verify it is securely mounted to the throttle body. If loose, it will have to be readjusted.
4. Replace the TPS if steps 3 and 4 do not resolve the issue.

TPS Set Procedure Menu

The TPS Set Procedure Menu must be accessed to perform the following procedures:

- Idle Voltage Setting Adjustment
- Base and Idle Voltage Adjustments - TPS Replacement
- Throttle Body Synchronization-Full Adjustment Procedure

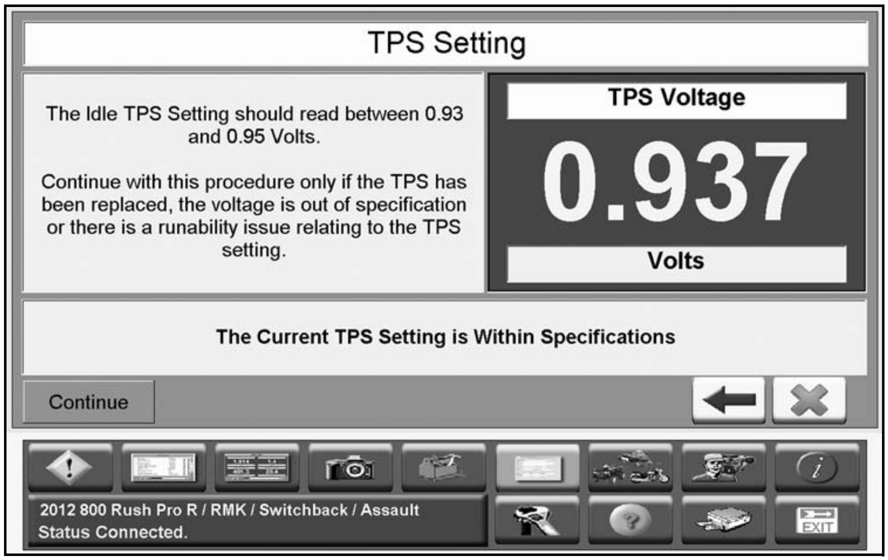
To access the TPS Set Procedure Menu, click on the Special Tests (Red Tool Box) button.

Select Menu Option 3 - TPS Set Procedure

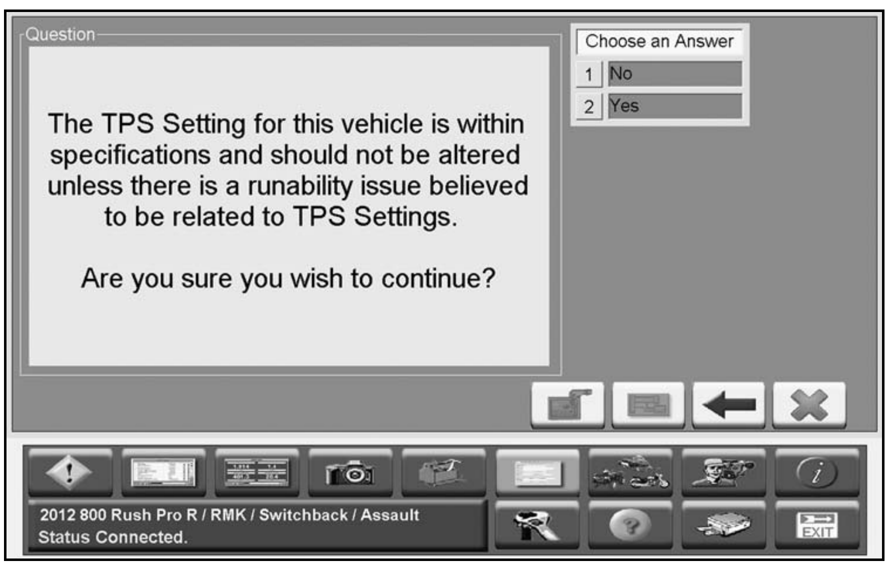
The next screen will display the current idle voltage setting. The text will match the voltage specification required by the vehicle.

If the voltage is within specification, the dialogue box will indicate the current TPS setting is within specifications, and the CONTINUE button will be RED.

If the voltage is outside specification, the dialogue box will indicate the current TPS setting is outside specifications, and the CONTINUE button will be GREEN.

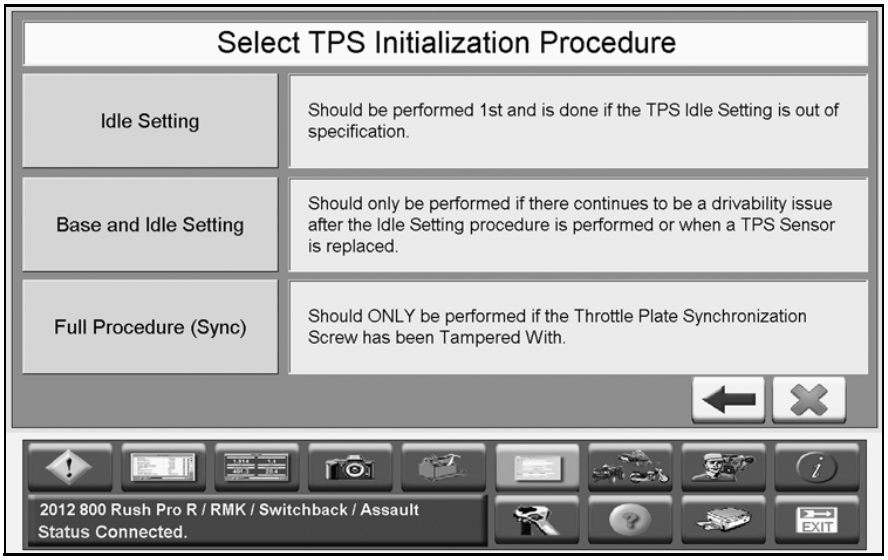


If the technician clicks on the RED CONTINUE button on the TPS Setting screen, the following screen will be displayed. This screen prompts the user to verify they want to make an adjustment to the TPS knowing the idle voltage setting is within specification.

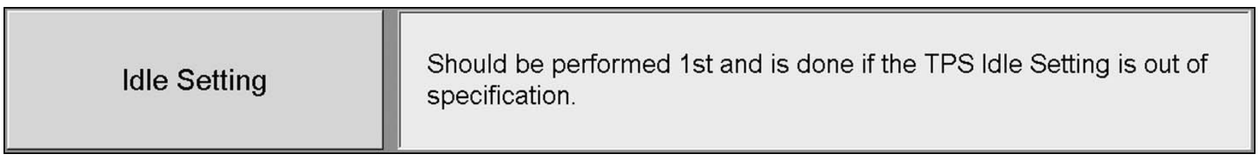


Clicking NO will end the procedure and return the user to the Special Tests Menu. Clicking YES will display the TPS Initialization Procedure screen.

This is the TPS Initialization Procedure screen. A detailed description of each procedure is outlined below.



IDLE SETTING



Access the Idle Setting procedure to set the idle speed voltage. Digital Wrench will guide the technician through the process for setting the TPS idle voltage. This procedure should only be performed if the TPS idle voltage setting is incorrect, or when minor adjustments to the engine idle speed are desired.

Minor adjustments to the engine idle speed may be desired if the engine idle is too low or too high due to extreme external environmental factors such as altitude. In addition to environmental factors, normal throttle body component wear and tear may cause changes in idle speed over the life of the vehicle. The idle speed screw can be adjusted to compensate for these changes.

IMPORTANT: Never set the TPS idle voltage below or above the specified voltage range. Setting the idle voltage at the low end of the range will result in a lower idle speed. Setting the idle voltage at the upper end of the scale will result in a higher idle speed.

Always check engine idle speed when the engine is at operating temperature and the idle speed has stabilized.

Engine idle speed with the engine at operating temperature is 1700 +/- 200 RPM.

600/800 DC-CFI **Engine Idle Speed** **(Engine at operating temperature)** **1700 +/- 200 RPM**

NOTE: Test vehicle after performing the idle setting procedure to verify proper vehicle operation.

BASE AND IDLE SETTING

Base and Idle Setting	Should only be performed if there continues to be a drivability issue after the Idle Setting procedure is performed or when a TPS Sensor is replaced.

CAUTION

The throttle position sensor (TPS) is set at the time of throttle body manufacture. TPS adjustments should only be made if the TPS was loosened, repositioned, or replaced.
Any adjustments made to the idle air gap screw, TPS sensor, or throttle synchronization screw should only be performed when directed to so by the Digital Wrench Diagnostic Software.

Access the Base and Idle Setting procedure when repairing a loose TPS sensor, or when replacing the sensor with a new part.

NOTE: New throttle body service parts include the TPS sensor and are set at the time of manufacture. Do not perform the Base and Idle Setting procedure.

Digital Wrench will guide the technician through the process of establishing the TPS baseline voltage and TPS idle voltage settings.

NOTE: Test vehicle after performing repairing/replacing TPS sensor and after completing base and idle setting procedure to verify proper vehicle operation.

FULL PROCEDURE (Synchronization)

Full Procedure (Sync)	Should ONLY be performed if the Throttle Plate Synchronization Screw has been Tampered With.

CAUTION

Severe engine damage may occur if the throttle plate synchronization is tampered with or set incorrectly. Read and understand the instructions outlined in Digital Wrench when performing this procedure.

Access the Full Procedure (Sync) procedure only when it is known the throttle body plate synchronization screw has been tampered with and the throttle plates are out of synchronization.

Digital Wrench will guide the technician through the process of establishing the correct synchronization between the MAG and PTO throttle plates, setting the TPS baseline voltage, and setting the TPS idle voltage.

IMPORTANT: If the technician cannot confirm the throttle plate synchronization is set correctly, throttle body replacement is required.

NOTE: Test vehicle after performing the full procedure (synchronization) procedure to verify proper vehicle operation.

VARIABLE EXHAUST SYSTEM (VES)

Overview

The Polaris VES system uses exhaust valves (1 valve per cylinder) to control the exhaust port height. The valves are actuated by controlling cylinder pressure with a solenoid, bellows, and a series of vent hoses.

The solenoid is powered by 12 VDC and turned on and off by the engine control unit (ECU).

When the solenoid is powered (ON), the VES vent paths are open allowing cylinder pressure to vent to atmosphere, and the guillotine valves remain in the closed (down) position.

When the solenoid is OFF, the vent path(s) are closed. Cylinder gas pressure builds within the exhaust valve housings beneath the bellows. Once the cylinder gas pressure pushing on the bellows overcomes the spring pressure, the bellows will inflate, lifting the guillotine valves from the closed (down) position.

The ECU uses engine RPM and throttle position (TPS) as the primary variable exhaust system solenoid control signals. In general, the ECU will close the solenoid at 100% wide open throttle (WOT) at approximately 6500-6900 RPM.

CAUTION

Do not plug the vent hoses or tamper with solenoid. Severe engine damage may occur.

When troubleshooting the variable exhaust system, follow these guidelines:

- Use the recommended oil. Polaris recommends VES Gold Plus engine oil for maximum VES performance.
- Never mix different brands of oil.
- Follow the recommended valve periodic maintenance schedule.
- Do not use harsh abrasives or sharp tools when cleaning the valves. Small abrasions and nicks can create pockets of carbon formation.
- Replace rusted/corroded springs.
- Inspect the bellows and replace if distorted, stretched, or torn.
- Replace the housing gasket each time the housing is removed from the cylinder. Do not modify the gasket in anyway.
- Inspect the vent hoses and fittings for leaks. Remove and apply thread sealant to fittings that appear to be leaking oil/exhaust gases.
- Verify all hose clamps are tight.
- Use a Mity Vac™ hand pump to test the solenoid function. The solenoid must hold pressure and not leak when not powered. The solenoid must vent when powered with 12VDC.

ELECTRONIC REVERSE (PERC)

Overview

The operation of the electronic reverse system is achieved by automatically reversing the engine rotation with a push of a button. When in reverse, an indicator light will flash, indicating the engine 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 THROTTLE 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.***

4

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 feet (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.
- On DC-CFI models the PERC system will not operate if the TPS is out of adjustment or the 5 tooth CPS signal is interrupted or broken.

TROUBLESHOOTING

Engine Will Not Start

- Is the key inserted in key switch and turned to RUN?
- Is the safety slap switch pulled up?
- Is the throttle lever free play set to specification?
- Is there fuel in the fuel tank?
- Is the fuel tank vent/vac. hose plugged or malfunctioning? Remove fuel tank cap and try to start engine.
- Are the spark plugs fouled? Replace with new spark plugs.
- Is there spark at the spark plugs? Test with spark plug tester.
- Inspect wire harness connectors. Are connectors disconnected? Are there any broken wires?
- Is the throttle plate gap set to specification?
- Is there fuel pressure? Test using fuel pressure gauge. Determine if fuel filter requires replacement.
- Inspect the stator using multitester and/or Digital Wrench. Are the fuel injectors receiving 16 VDC? Is the fuel pump receiving VDC power when pulling recoil?
- Are there any diagnostic trouble codes? Use Digital Wrench to view trouble codes and perform guided diagnostics.
- Is the engine mechanically sound? Check cylinder compression, piston condition, etc.

Engine Starts - Won’t Idle/Stalls

- Is the throttle lever free play set to specification?
- is the fuel tank vent/vac. hose plugged or malfunctioning? Remove fuel tank cap and test.
- Are the spark plugs fouled? Replace with new spark plugs.
- Inspect wire harness connectors. Are connectors disconnected? Are there any broken wires?
- Is there fuel pressure? Test using fuel pressure gauge. Determine if fuel filter requires replacement.
- Are there any diagnostic trouble codes? Use Digital Wrench to view trouble codes and perform guided diagnostics.
- Is the throttle plate gap/TPS set to specification?

Poor Performance

- Fuel quality. Use recommended fuel (91 octane minimum).
- Ethanol/Non-ethanol fuel resistor plug. Is the correct fuel selector plug connected for the type of fuel in the tank?
- Are the spark plugs fouled? Correct gap set?
- Is the fuel pressure correct at idle and during operation?
- Fuel filter. Has the fuel filter been serviced as part of periodic maintenance?
- VES system. Have the valves, and bases been serviced/cleaned as part of periodic maintenance?
- VES system. Are the hoses loose, damaged or plugged/frozen?
- Inspect fuel injector power. Are injectors receiving 16 VDC during operation?
- Is the engine mechanically sound? Perform a compression check on both cylinders. Are the results within 10% of each other?
- Inspect piston skirts through exhaust ports. Is there any scuffing, ring damage, etc.?
- Inspect the exhaust system. Are there any leaks, missing springs, or damaged exhaust seals?
- Driveline. Inspect the driveline for damage. Set the track tension to specification. Is the track too tight or missing lugs? Is the gear ratio correct for desired riding style?
- Inspect the drive, driven clutches, and drive belt. Replace worn or damaged parts. Clean clutch sheaves, and set belt deflection.
- Are there any diagnostic trouble codes (DTCs). Use Digital Wrench to retrieve any codes.
- Reference CFI Troubleshooting Flowchart
- Is detonation occurring and/or detonation engine RPM limit occurring? Reference Detonation Troubleshooting Flowchart/checklist.

DC-CFI Troubleshooting Flowchart

Reference the following flowchart for general DC-CFI troubleshooting techniques.

STEP 1 Preliminary Checks	DOCUMENT THE BASICS 1. VIN 2. Vehicle Miles 3. Issue(s) 4. Vehicle / Engine Modifications (Non-approved modifications may cause performance/durability issues.) 5. Check unit against Unit Inquiry for any outstanding Service Bulletins or Team Tips 6. Type of fuel in the fuel tank / Fuel Selector Status The fuel selector jumper wires or resistor plug must be set as outlined below based off of the type of fuel in the tank. Fuel octane not known, < 91+ octane, or any 87+ octane oxygenated (ethanol, MTBE, etc, blended) fuel = 24 OHM Resistor 91+ octane non-oxygenated (non-ethanol) fuel = 160 OHM Resistor
STEP 2 Using Digital Wrench	DIGITAL WRENCH (DW) 1. Is DW the most current version? Check the DW update site (http://polaris.diagsys.com/modules.php?name=Downloads) to review and download any available updates. 2. Connect DW to the vehicle. Are there any trouble code(s)? Document all of the trouble code(s), both historic and current. Use guided diagnostics to troubleshoot current trouble code(s). Once repairs are made and trouble code(s) are cleared, do any return? Start the engine and confirm trouble code(s) to not re-appear. If trouble code(s) re-appear, continue to troubleshoot issue using guided diagnostics and Service Manual. 3. Review the ECU information for the vehicle. Does the ECU map match the vehicle's configuration / fuel injector color and part number? If not, reflash the ECU using the correct color-coded map / part number that matches the fuel injector color / part number installed on the engine. 4. Is the vehicle subject to any Service Bulletins, or Team Tips where revised ECU reflash files have been made available? If so, verify the Service Bulletin or Team Tip has been performed if required and the ECU information matches the revised reflash files.
STEP 3 Clutching	CLUTCHING 1. Do the drive clutch weights match what is specified for the elevation where the vehicle is operated? If not, install the specified drive clutch weights based model specifications for the vehicle located in the appropriate Service Manual or Owner's Manual Supplement. 2. Inspect drive belt deflection and adjust if required. Replace the belt if it is hour-glassed, shows heavy glazing or severely worn.
STEP 4 Throttle Lever	THROTTLE LEVER FREEPLAY 1. Check the throttle lever freeplay. Too much slack in the throttle cable can cause runability issues. 2. Is the throttle lever freeplay = .010 - .030 inches? If not, reset the freeplay to specification and retest vehicle.
STEP 5 Fuel System	FUEL SYSTEM 1. Using Digital Wrench, verify the fuel injector supply voltage is 16VDC when the engine is running. 2. Using the appropriate fuel pressure gauge (see Service Manual), verify the fuel pressure when the engine is running is 58 PSI (4BAR). 3. If the fuel pump voltage is good, but the fuel pressure low, replace the fuel filter and recheck fuel pressure.
STEP 6 EGT Sensor	EXHAUST GAS TEMPERATURE SENSOR 1. Using the data display tool in Digital Wrench, monitor the EGT sensor function while the engine is running (vehicle raised off the ground on a sled lift or track stand) at or above 3,000 RPM. 2. Does the exhaust gas temperature value change with changing throttle lever input after running the engine for 60 seconds at or above 3,000 RPM? 3. If the EGT value does not change, inspect the sensor wiring and connections. If the wiring and connections are good, replace the sensor and retest.
STEP 7 Exhaust System	EXHAUST SYSTEM 1. Check exhaust system for leaks, missing, over-stretched damaged springs, and worn out seals. Replace components as required. 2. Remove the resonator and shake. Replace resonator if shaking reveals loose internal baffle plates.
STEP 8 Ignition System	IGNITION SYSTEM 1. Insect the spark plug caps and spark plugs. Are the caps worn, oblong, or bent? Replace cap(s) as required. 2. Have the spark plug(s) worn into the top of the cap(s)? If so, replace both the affected spark plug and cap as required.
STEP 9 Exhaust Valves	EXHAUST VALVES 1. Inspect VES system. Clean valve blades as outlined in the periodic maintenance table. Inspect valve bellows for tears, damage. 2. Inspect the exhaust valve solenoid vent system (discharge hose) for leaks or plugged / kinked hoses. Repair or re-route hoses / connections as required. Verify outlet hoses is not freezing during operation. Inspect fittings at solenoid are not leaking. 3. Do the exhaust valves move as RPM increases? Test exhaust valve motion by installing a 1 inch piece of clear, fuel vent hose onto each EV cap nut through the hole in each EV housing. Start the engine and increase the engine speed past 6,000 RPM to check for proper valve operation. 4. Do both valves move at the same time / rate? If not, inspect one or both EV assemblies. Inspect for torn bellows, worn EV springs and loose bellows cap nuts. Verify the EV base vent and cylinder holes are clean and free from carbon or heavy residue.
STEP 10 Pistons	PISTONS 1. With the exhaust valve assemblies removed from the cylinders, insert a piston wash light or use a flashlight to inspect the exhaust-side of the pistons. Is heavy scoring, scratching or ring damage visible? 2. If piston skirt, or ring damage is visible through the exhaust valve slots, the pistons should be replaced and the cylinders inspected and lightly honed with an Ammco 320 grit (or equivalent) NiCaSil oversize honing stone.
STEP 11 Engine	ENGINE 1. Perform compression test. 2. Inspect crankshaft index. 3. Verify flywheel key has not sheared (flywheel out of index).

Detonation Limit Troubleshooting Flowchart

Reference the troubleshooting table at the beginning of the chapter and the following flowchart if the ECU consistently enables the detonation “dET” engine protection 6,500 RPM limiter.

STEP 1 Preliminary Checks	DOCUMENT THE BASICS 1. VIN 2. Vehicle Miles 3. Issue(s) 4. Vehicle / Engine Modifications (Non-approved engine/vehicle modifications may cause detonation.) 5. Check unit against Unit Inquiry for any outstanding Service Bulletins or Team Tips 6. Type of fuel in the fuel tank / Fuel Selector Status The fuel selector resistor plug must be set as outlined below based off of the type of fuel in the tank. Fuel octane not known, < 91+ octane, or any 87+ octane oxygenated (ethanol, MTBE, etc, blended) fuel = 24 OHM Resistor 91+ octane non-oxygenated (non-ethanol) fuel = 160 OHM Resistor
STEP 2 Using Digital Wrench	DIGITAL WRENCH (DW) 1. Is DW the most current version? Check the DW update site (http://polaris.diagsys.com/modules.php?name=Downloads) to review and download any available updates. 2. Connect DW to the vehicle. Are there any trouble code(s)? Document all of the trouble code(s), both historic and current. Use guided diagnostics to troubleshoot current trouble code(s). Once repairs are made and trouble code(s) are cleared, do any return? Start the engine and confirm trouble code(s) to not re-appear. If trouble code(s) re-appear, continue to troubleshoot issue using guided diagnostics and Service Manual. 3. Review the ECU information for the vehicle. Does the ECU map match the vehicle’s configuration / fuel injector color and part number? If not, reflash the ECU using the correct color-coded map / part number that matches the fuel injector color / part number installed on the engine. 4. Is the vehicle subject to any Service Bulletins, or Team Tips where revised ECU reflash files have been made available? If so, verify the Service Bulletin or Team Tip has been performed if required and the ECU information matches the revised reflash files.
STEP 3 Fuel System	FUEL SYSTEM 1. Check the fuel level in the tank. 2. Using Digital Wrench, verify the fuel injector supply voltage is 16VDC when the engine is running and while operating the snowmobile. 3. Using the appropriate fuel pressure gauge (see Service Manual), verify the fuel pressure when the engine is running and while operating the snowmobile is 58 PSI (4BAR). 4. Verify fuel filter has been replaced as outlined in the periodic maintenance table. If it has not been replaced initially at 1,000 miles, and then at 2,000 mile intervals, replace the fuel filter. Re-check fuel pressure.
STEP 4 Exhaust Valves	EXHAUST VALVES 1. Inspect the exhaust valve solenoid vent system (discharge hoses) for leaks, plugged, kinked hoses, or icing. Repair or re-route hoses / connections as required. Verify the outlet hose is not freezing during operation. 2. Start the engine in a well-ventilated area. Raise the track off the ground with a track stand. Rev the engine to clutch engagement speed. Inspect the VES solenoid outlet hose for exhaust gas discharge. If no gas discharge is seen, the hoses may be plugged, restricted, or the solenoid circuit is damaged. 3. Do the exhaust valves move as RPM increases? Test exhaust valve motion by installing a 1 inch piece of clear, fuel vent hose onto each EV cap nut through the hole in each EV housing. Start the engine and increase the engine speed past 6,000 RPM to check for proper valve operation. 4. Do both valves move at the same time / rate? If not, inspect one or both EV assemblies. Inspect for torn bellows, worn EV springs and loose bellows cap nuts. Verify the EV base vent and cylinder holes are clean and free from carbon or heavy residue.
STEP 5 Detonation Sensor Fastener Torque	DETONATION SENSOR FASTENER TORQUE 1. The DET sensor fastener must be installed clean and dry and torqued to specification: (168 in.lbs./19 Nm).
STEP 6 Air Leaks	AIR LEAKS 1. Check air box seals, foam, mounting boots, air box-to-hood interface. Verify air box assembly is not cracked/damaged. 2. Inspect throttle body boots for delaminating rubber, or if boots are torn. Verify boots are seated correctly against air box and throttle body. 3. Does snowmobile have an aftermarket air intake kit installed? Remove the kit and reinstall original components. 4. Inspect engine crankcase seals/base gaskets, etc. for leaks.
STEP 7 EGT Sensor	EXHAUST GAS TEMPERATURE SENSOR 1. Using the data display tool in Digital Wrench, monitor the EGT sensor function while the engine is running (vehicle raised off the ground on a sled lift or track stand) at or above 3,000 RPM. 2. Does the exhaust gas temperature value change with changing throttle lever input after running the engine for 60 seconds at or above 3,000 RPM? 3. If the EGT value does not change, inspect the sensor wiring and connections. If the wiring and connections are good, replace the sensor and retest.
STEP 8 Exhaust System	EXHAUST SYSTEM 1. Remove aftermarket exhaust pipe(s) and/or non-Polaris tested silencer. 2. Check exhaust system for leaks, missing, over-stretched damaged springs, and worn out seals. Replace components as required. 3. Remove the resonator and shake. Replace resonator if shaking reveals loose internal baffle plates.

NOTES

CHAPTER 5

Final Drive/Brake System

TRACK STUD SPECIFICATIONS

Track Studding

CAUTION

Do not install stud lengths that are not recommended in the guidelines. Severe track and/or tunnel damage may occur.

General Studding Guide Lines:

- Optimal stud penetration range is .250"-.375" (6.35-9.52mm).
- DO NOT EXCEED .375" (9.52mm) STUD PENETRATION ON ANY TRACK.
- 2010-2011 Rush Maximum Track Lug Height WITHOUT Studs = 1.5." DO NOT INSTALL STUDS ON A 1.5" TRACK.
- 2012 Rush/Switchback Maximum Track Lug Height WITHOUT Studs = 2.0". DO NOT INSTALL STUDS ON A 2.0" TRACK.
- 2012 Rush/Switchback Maximum Track Lug WITH STUDS = 1.75". DO NOT EXCEED .375" STUD PENETRATION ON A 1.75" TRACK.
- Switchback Assault 1.3 Maximum Stud Length = 1.325" when using Woody's Studs.
- DO NOT INSTALL STUDS ON A 2.0"+ TRACK.
- Studs can be installed on the inner and outer track rows. Studding the inside of the track is good for improving traction and vehicle braking. Adding studs to the outer rows is generally considered for drivers who desire a high degree of traction, but can sacrifice track durability. Studs placed on the outer rows are more susceptible to being ripped out of the track.
- Adding studs may require the use of longer, more aggressive ski wear bars/carbides.
- A wear strip kit must be installed to protect the tunnel and tunnel cooler when studs are installed.

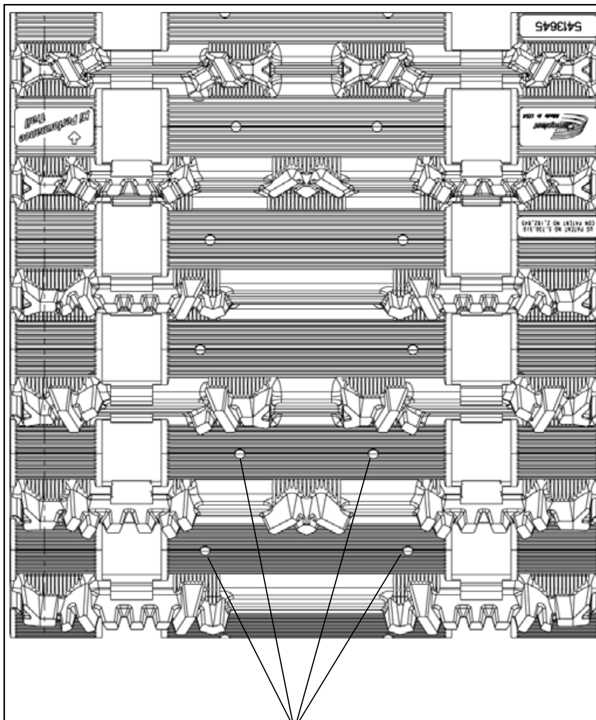
2010-2011 Rush Wear Strip Kit PN: 2878532
Switchback Assault 1.3 PN: 2878161
2012 Rush/Switchback: Integrated

- Consult stud manufacture for more information and recommendations.

Stud templates are guides designed to locate where to drill the track when installing studs depending on the track length, desired number of studs, and pattern.

2.86 Pitch Track Template: 2878247
2.52 Pitch Track Template: 2875157

The 1.25 Ripsaw track used on 2010 Rush snowmobiles feature stud location indicators molded into the outer cover of the track. The indicators mark the manufacture-recommended stud pattern for improved performance and maximum track durability.



DRIVE GEARS/CHAINS

Drive Gears

PART NUMBER	DESCRIPTION
3221095	19T, 3/4W, 15 SPL, HYVO, PM
3221096	20T, 3/4W, 15 SPL, HYVO, PM
3221097	21T, 3/4W, 15 SPL, HYVO, PM
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
3222127	26T, 3/4W, 15 SPL, HYVO, PM
3222126	36T, 3/4W, 15 SPL, HYVO, PM
3222125	37T, 3/4W, 15 SPL, HYVO PM
3222108	39T, 3/4W, 15 SPL, HYVO, PM
3222099	40T, 3/4W, 15 SPL, HYVO, PM
3222101	41T, 3/4W, 15 SPL, HYVO, PM
3221188	43T, 3/4W, 15 SPL, HYVO, PM
Commercially Available	44T, 3/4W, 15 SPL, HYVO, PM
3222146	45T, 3/4W, 15 SPL, HYVO, PM
Commercially Available	46T, 3/4W, 15 SPL, HYVO, PM

Drive Chains

PART NUMBER	DESCRIPTION
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

GEAR RATIO SPEED CHART

The following gear and chain combinations are acceptable for use with the 7.53 center distance chaincase. MPH speed is the theoretical speed when the drive and driven clutches are at a 1:1 ratio.

7.53 CD Chaincase Speed Chart

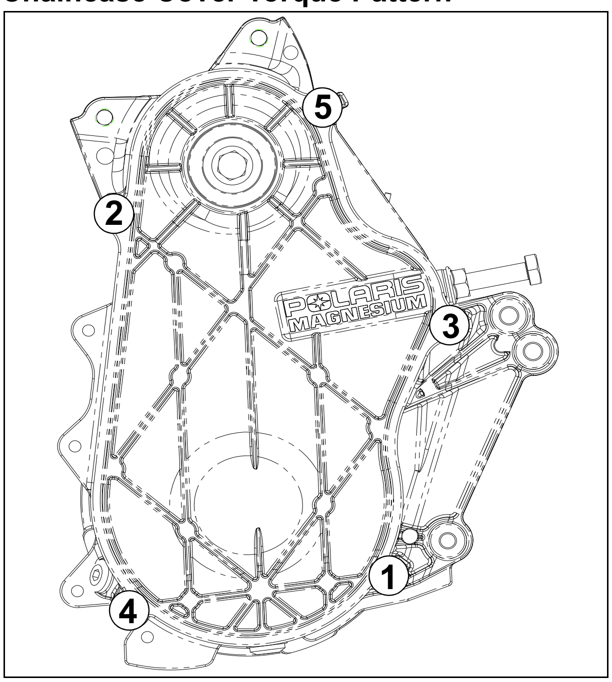
				ENGINE RPM									
				8250	8000	7750	7500	7250	7000	6750	6500	6250	6000
TOP GEAR	BOTTOM GEAR	CHAIN PITCH	RATIO	MPH AT 1:1 DRIVE RATIO									
26	36	72	1.38	129	125	121	117	113	110	106	102	98	94
26	37	72	1.42	126	122	118	114	110	107	103	99	95	91
25	37	72	1.48	121	117	113	110	106	102	99	95	91	88
25	38	72	1.52	118	114	110	107	103	100	96	93	89	86
26	40	74	1.54	116	113	109	106	102	99	95	92	88	85
23	36	70	1.57	114	111	107	104	100	97	93	90	87	83
26	41	74	1.58	113	110	106	103	100	96	93	89	86	82
24	38	72	1.58	113	109	106	103	99	96	92	89	86	82
25	40	74	1.60	112	108	105	102	98	95	91	88	85	81
25	40	74	1.60	112	108	105	102	98	95	91	88	85	81
24	39	72	1.63	110	107	103	100	97	93	90	87	83	80
22	36	70	1.64	109	106	103	99	96	93	89	86	83	79
25	41	74	1.64	109	106	102	99	96	92	89	86	83	79
25	41	74	1.64	109	106	102	99	96	92	89	86	83	79
23	38	72	1.65	108	105	102	98	95	92	89	85	82	79
26	43	76	1.65	108	105	102	98	95	92	88	85	82	79
26	43	76	1.65	108	105	102	98	95	92	88	85	82	79
25	42	74	1.68	106	103	100	97	94	90	87	84	81	77
22	37	70	1.68	106	103	100	97	93	90	87	84	81	77
26	44	76	1.69	106	102	99	96	93	90	86	83	80	77
23	39	72	1.70	105	102	99	96	93	89	86	83	80	77
24	41	74	1.71	105	101	98	95	92	89	86	82	79	76
24	41	74	1.71	105	101	98	95	92	89	86	82	79	76
21	36	70	1.71	104	101	98	95	92	88	85	82	79	76
23	40	72	1.74	103	100	97	93	90	87	84	81	78	75
24	42	74	1.75	102	99	96	93	90	87	84	80	77	74
24	42	74	1.75	102	99	96	93	90	87	84	80	77	74
25	44	76	1.76	102	98	95	92	89	86	83	80	77	74
25	44	76	1.76	102	98	95	92	89	86	83	80	77	74
21	37	70	1.76	101	98	95	92	89	86	83	80	77	74
22	39	72	1.77	101	98	95	92	89	86	83	79	76	73
22	39	72	1.77	101	98	95	92	89	86	83	79	76	73
25	45	76	1.80	99	96	93	90	87	84	81	78	75	72
21	38	70	1.81	99	96	93	90	87	84	81	78	75	72
22	40	72	1.82	98	95	92	89	86	83	80	77	74	72
23	42	74	1.83	98	95	92	89	86	83	80	77	74	71
23	42	74	1.83	98	95	92	89	86	83	80	77	74	71
19	35	68	1.84	97	94	91	88	85	82	79	76	74	71
20	37	70	1.85	97	94	91	88	85	82	79	76	73	70
23	43	74	1.87	96	93	90	87	84	81	78	75	72	70
24	45	76	1.88	95	92	90	87	84	81	78	75	72	69
20	38	70	1.90	94	91	88	86	83	80	77	74	71	68
21	40	72	1.90	94	91	88	85	82	80	77	74	71	68
24	46	76	1.92	93	90	88	85	82	79	76	73	71	68
21	41	72	1.95	92	89	86	83	80	78	75	72	69	67
22	43	74	1.95	91	89	86	83	80	78	75	72	69	67
19	38	70	2.00	89	87	84	81	79	76	73	70	68	65
22	44	74	2.00	89	87	84	81	79	76	73	70	68	65
23	46	76	2.00	89	87	84	81	79	76	73	70	68	65
20	41	72	2.05	87	85	82	79	77	74	71	69	66	63
20	41	72	2.05	87	85	82	79	77	74	71	69	66	63
19	39	70	2.05	87	84	82	79	77	74	71	69	66	63
21	44	74	2.10	85	83	80	78	75	72	70	67	65	62
20	42	72	2.10	85	83	80	77	75	72	70	67	64	62
21	45	74	2.14	83	81	78	76	73	71	68	66	63	61
19	42	72	2.21	81	78	76	74	71	69	66	64	61	59
20	45	74	2.25	79	77	75	72	70	67	65	63	60	58
19	43	72	2.26	79	77	74	72	69	67	65	62	60	57
19	45	74	2.37	75	73	71	69	66	64	62	59	57	55
19	46	74	2.42	74	72	69	67	65	63	60	58	56	54

CHAINCASE

Specifications/Torque Guide

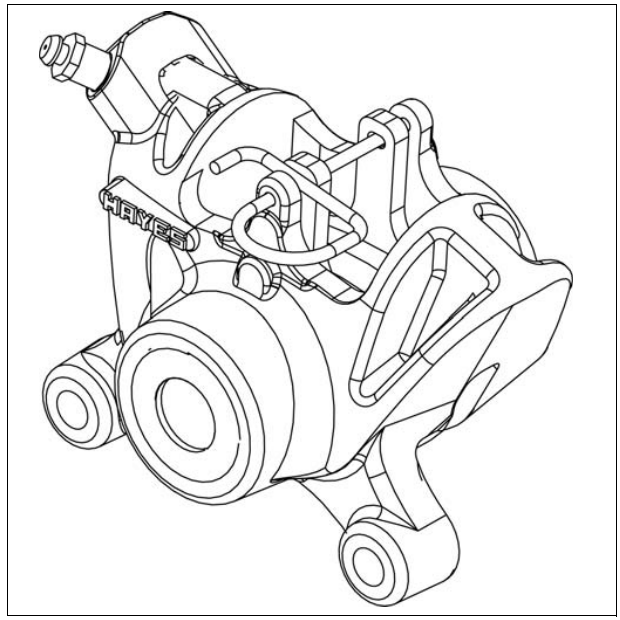
COMPONENT	TORQUE/SPEC.
Lubricant Capacity	Polaris 80W SCL 9oz. (266 ml)
Cover Fasteners (Follow Torque Pattern)	9.5 ft-lb (13 Nm)
Chain Tensioner Jam Nut	21 ft-lb (28 Nm)
Fill Plug	6 - 9.5 ft-lb (8 - 13 Nm)
Drain Plug (Clean socket prior to inserting tool.)	6 - 9.5 ft-lb (8 - 13 Nm)
Brake Disc Fastener 2010 2011-Current	 29 ft-lb (40 Nm) 40 ft-lb (54 Nm)
Lower Gear Fastener	29 ft-lb (40 Nm)
Brake Caliper Mounting Fasteners	40 ft-lb (54 Nm)

Chaincase Cover Torque Pattern

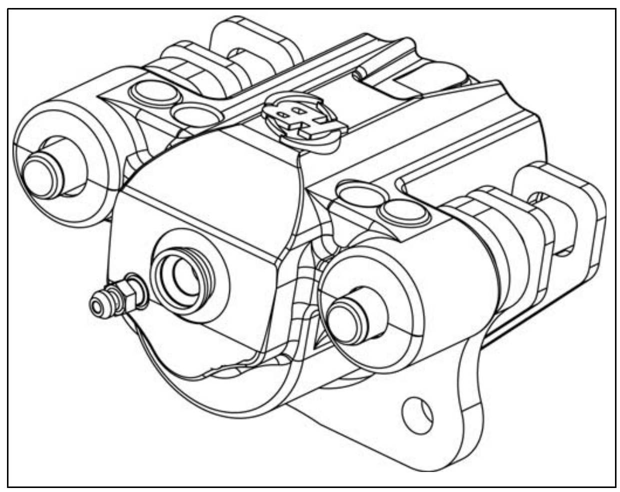


Brake Caliper Types

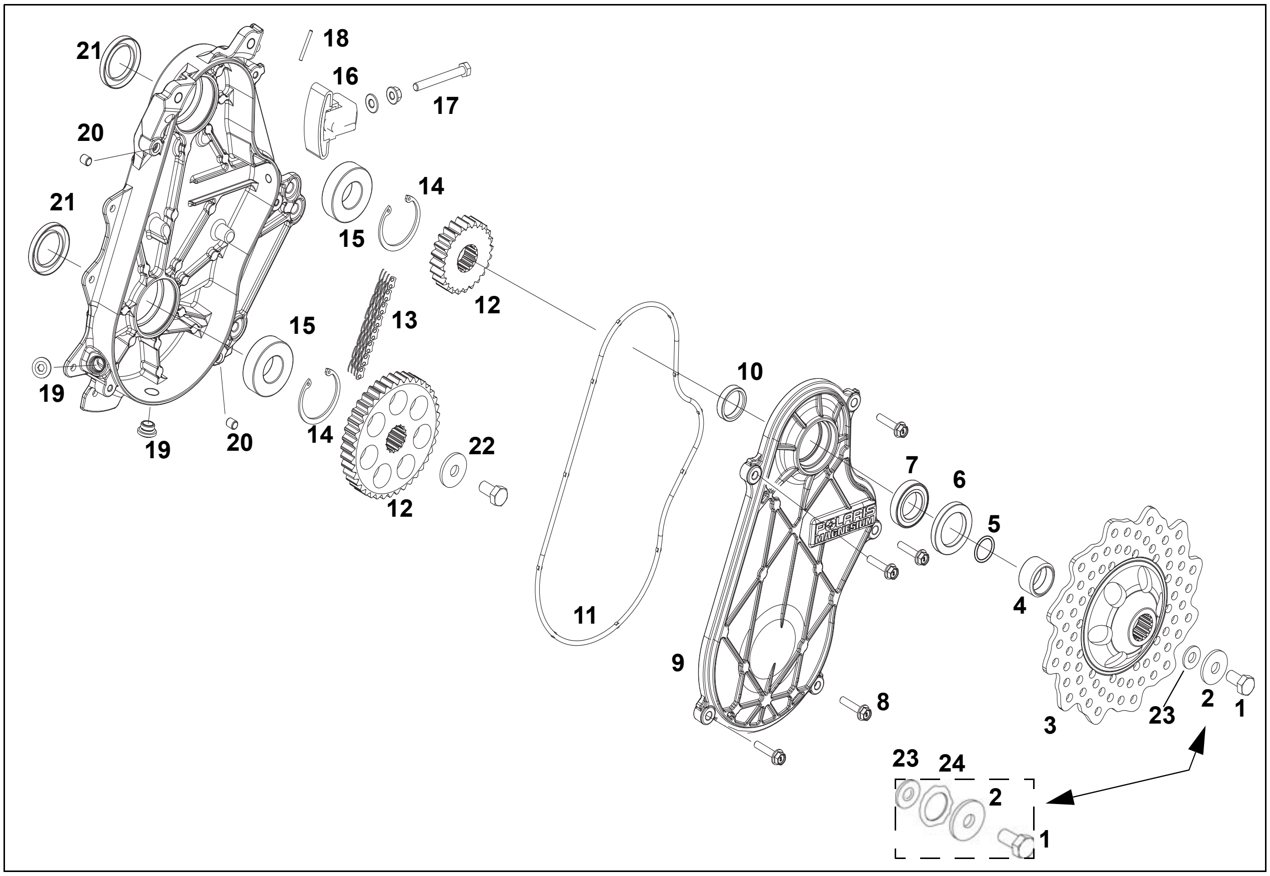
Phantom
-Fixed Caliper, Dual Floating Pistons



Phantom Lite
-Floating Caliper, Single Piston



Full Assembly View



REFERENCE #	DESCRIPTION
1	Brake Disc Fastener
2	Phantom Caliper Models = Flat Washer Phantom Lite Caliper Models = Domed (Beveled) Washer
3	Brake Disc
4	Seal Sleeve
5	Jackshaft O-Ring
6	Seal
7	Bearing
8	Cover Fasteners
9	Cover
10	Chaincase Sleeve
11	Cover Gasket
12	Top/Bottom Gears
13	Chain

REFERENCE #	DESCRIPTION
14	Snap Rings
15	Bearings
16	Chain Tensioner/Wear Pad
17	Tensioner Adjustment Screw/Jam Nut
18	Vent
19	Fill/Drain Plugs
20	Alignment Dowels
21	Seals
22	Dome (Beveled) Washer
23	Float Washer 2010 = (To get .8mm disc float = 1-2 QTY.) 2011-Current= (1 QTY.) Phantom Lite Brake Caliper = (1 QTY.)
24	Wave Washer 2011-Current Phantom Caliper Models

Chaincase Disassembly

1. Remove the left and right door panels. Remove the screw securing the right lower fender to the chassis.
2. Remove the hood assembly.
3. Remove the exhaust silencer.
4. If equipped with electric start, remove the battery and battery box.

⚠ CAUTION

Remove the RED (+) battery cable first, and then the BLACK (-) cable last. Reverse order when attaching cables to battery.

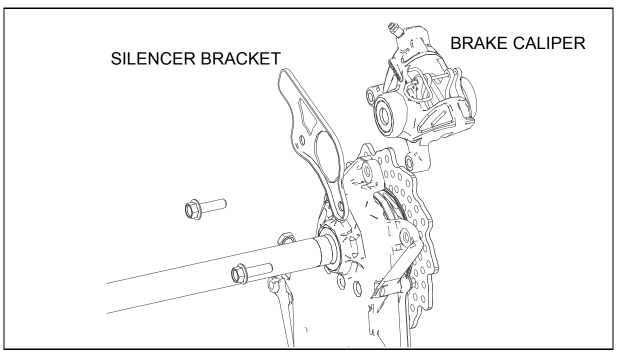
5. Place a drain pan under the chaincase. Remove the plug to drain the oil. Clean the plug threads. Verify the o-ring is not damaged.
6. Reinstall plug and torque to specification.

= T

Chaincase Drain Plug: 8-9.5 ft-lb (8-13 Nm)

7. Apply the parking brake and then loosen the brake disc mounting fastener.
8. Release the parking brake. Remove the brake calliper mounting bolts. Tie the caliper to overstructure.

NOTE: DC-CFI-2 models with Phantom brake calipers have washers in place of silencer bracket. Phantom Lite models do not use washers or bracket.

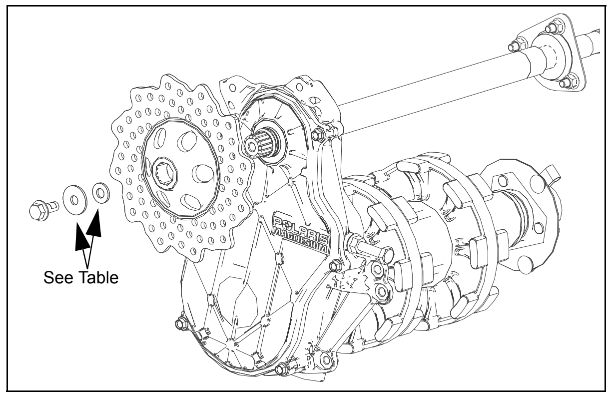


⚠ CAUTION

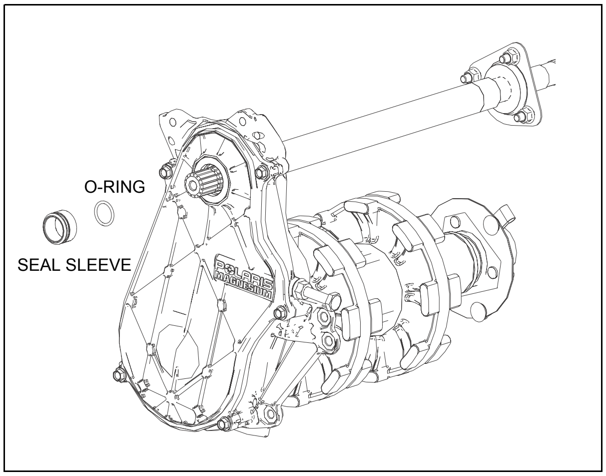
Do not allow the brake caliper to hang by the brake hose.

9. Remove the brake disc from the jackshaft. Reference table for brake disc hardware.

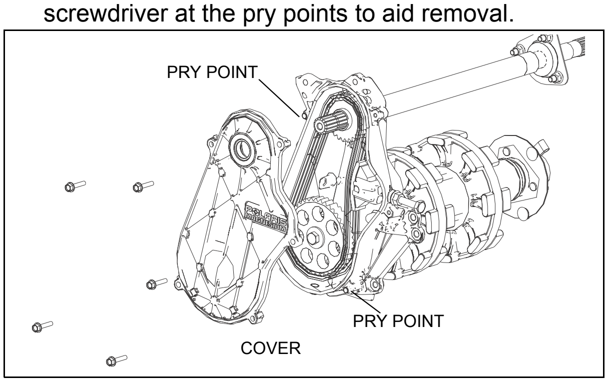
YEAR/ CALIPER TYPE	BRAKE DISC FASTENER HARDWARE
2010/ Phantom	Fastener: 29 ft-lb (40 Nm) Flat Washer 1-2 Float Washers (Install QTY. to achieve .8mm Disc Float)
2011-Current/ Phantom	Fastener: 40 ft-lb (54 Nm) Flat Washer Wave Washer 1 Float Washer
2011-Current/ Phantom Lite	Fastener: 40 ft-lb (54 Nm) Domed (Beveled) Washer (Dome facing out.)



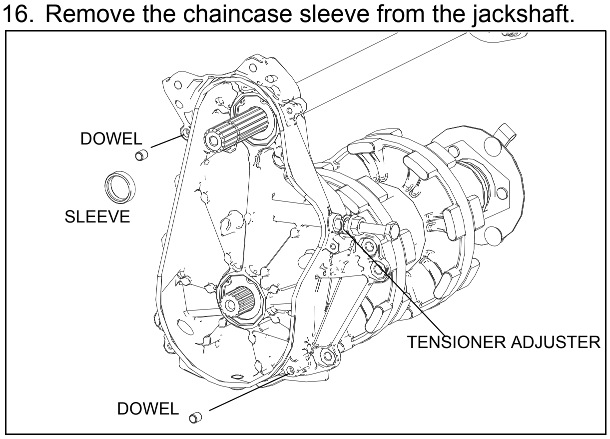
10. Note the groove on the seal sleeve. Use a pair of flat blade screwdrivers or soft-jawed pliers to carefully pry the sleeve out of the cover.
11. Locate the o-ring on the end of the jackshaft inside the cover. Use a pick and carefully remove the o-ring. Inspect o-ring and discard if damaged or torn.



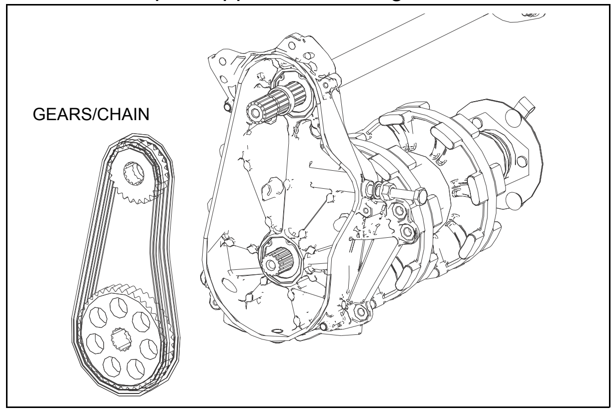
12. Remove the cover fasteners.
13. Carefully remove the cover. Use a flat blade screwdriver at the pry points to aid removal.



14. After removing the cover, note the two dowels in the chaincase.
15. Inspect the cover gasket for damage. Inspect the bearing and seal in the cover. Replace bearing if it no longer rolls smoothly. Replace the seal if damaged.
16. Remove the chaincase sleeve from the jackshaft.



17. Remove the lower gear screw. Note the beveled washer orientation.
18. Loosen the chain adjuster screw. Remove the tensioner pad, upper and lower gears, and chain.



Chaincase Assembly

1. Thoroughly clean the chaincase, gears, and chain.
2. Inspect the tensioner pad for damage. Replace if excessive wear is evident.
3. Install the gears and chain as a set.
4. Install the lower gear screw and beveled washer. Verify the beveled washer is installed dome side out.
5. Torque screw to specification.

= T
Lower Gear Fastener: 29 ft-lb (40 Nm)

6. Rotate the driven clutch forward to move all of the chain slack to the tensioner side.
7. Install the chain tensioner. Tighten the tensioner screw until there is 1/8" (3.175mm) chain deflection on the backside of the drive chain.
8. Verify the tensioner screw washer is seated against the chaincase, and then torque the tensioner screw jam nut to specification.

= T
Tensioner Jam Nut: 21 ft-lb (28 Nm)

9. Install the chaincase sleeve on to the jackshaft.
10. Inspect the cover gasket. Replace if cut or torn. Verify the gasket is installed flush in the cover.
11. Install the cover making sure the cover engages the two dowels evenly.
12. Lightly tap on the cover with a soft-faced hammer to seat the cover.

13. Install the cover screws. Torque screws to specification using the specified sequence. See “Chaincase Cover Torque Pattern” on page 5.5.

= T
Cover Fasteners: 9.5 ft-lb (13 Nm)

14. Install the o-ring on to the jackshaft. Verify the o-ring is sitting in the groove. Install the seal sleeve with the groove facing out.
15. Clean the brake disc with brake cleaner and then install on to jackshaft.
16. Install the specified brake disc hardware as shown in the table.

YEAR/ CALIPER TYPE	BRAKE DISC FASTENER HARDWARE
2010/ Phantom	Fastener: 29 ft-lb (40 Nm) Flat Washer 1-2 Float Washers (Install QTY. to achieve .8mm Disc Float)
2011-Current/ Phantom	Fastener: 40 ft-lb (54 Nm) Flat Washer Wave Washer 1 Float Washer
2011-Current/ Phantom Lite	Fastener: 40 ft-lb (54 Nm) Domed Washer (Dome facing out.)

17. Install the brake caliper and silencer bracket if equipped. Torque fasteners to specification.

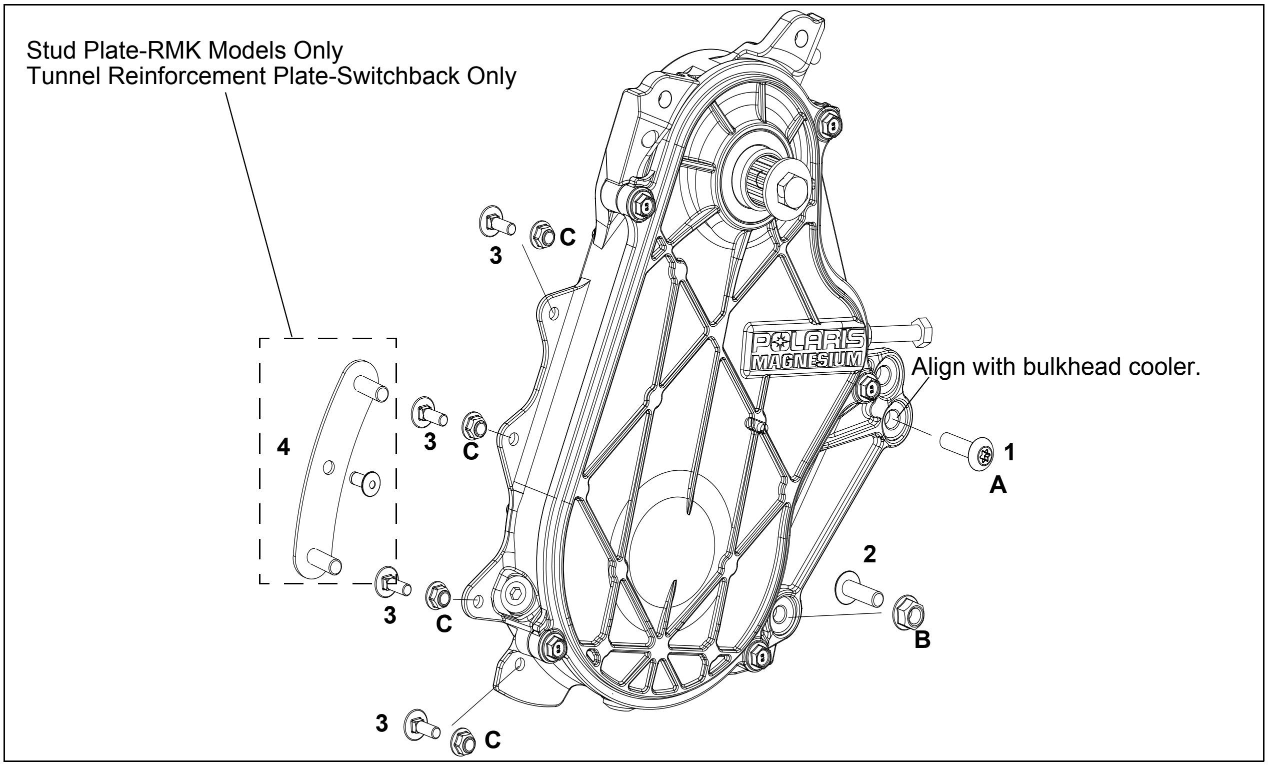
= T
Brake Caliper Fasteners: 40 ft-lb (54 Nm)

18. Set the parking brake. Torque the brake disc screw to specification. Release the parking brake.

= T
Brake Disc Fastener: **2010: 29 ft-lb (40 Nm)** **2011-Current: 40 ft-lb (54 Nm)**

19. If equipped with electric start, reinstall the battery box, and battery. Connect the BLACK (-) first, and then the RED (+) battery cable.
20. Install the exhaust silencer. Verify the outlet boot is installed correctly around the silencer outlet tube.
21. Install the screw securing the right fender to the chassis. Reinstall the hood assembly and both door panels.
22. Refill the chaincase with synthetic 80W lubricant. Fill to specification or when lubricant reaches the fill plug bore opening.

Mounting Assembly View



NOTE: 2012 Pro-Ride models feature a bonded chaincase.

REFERENCE #	DESCRIPTION
1	Screw-M8x1.25x35.8
2	Screw - M8x1.25x30.8
3	Carriage Bolts-M6x1.0x20
4	Stud Plate (RMK models only) Reinforcement Plate (Switchback only-not shown.)

CAUTION

Do not re-use lock Nuts. Always replace with new parts after removal.

Non-Bonded Chaincase Removal/ Installation

1. Follow the procedures for chaincase disassembly.
2. Follow the procedures for removing the track and driveshaft.
3. Remove the fasteners securing the chaincase to the tunnel, front cooler/closeoff panel, and side support.
4. Inspect the seals for excessive wear or damage. Replace as required.
5. Verify bearings roll smoothly. Replace if they do not or if excessive play is evident. Use an arbor press to remove and install bearings.
6. To install the chaincase, loosely install all of the fasteners using new lock nuts where applicable.
7. Verify fastener (1) is installed in the lower chaincase mounting hole has shown in the illustration.
8. Torque fasteners to specifications.

= T

A: 26 ft-lb (35 Nm) DO NOT OVER-TORQUE
B: 26 ft-lb (35 Nm)
C: 14 ft-lb (19 Nm)

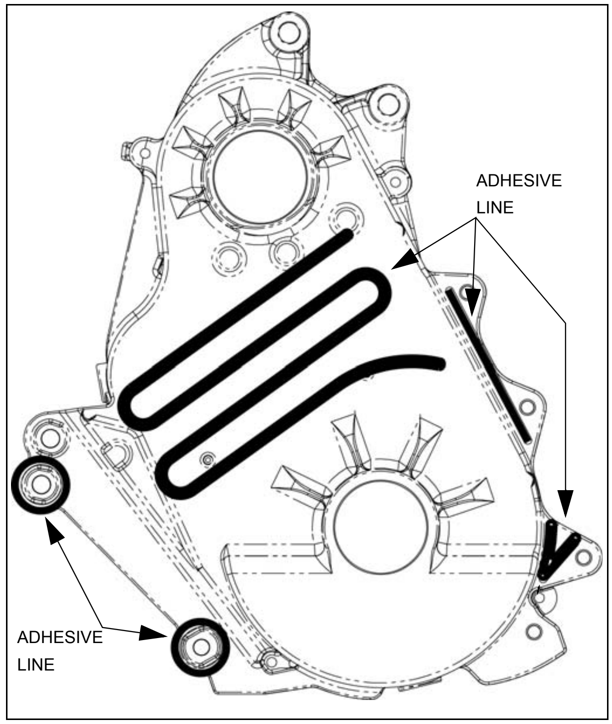
9. Follow the procedures for reinstalling the driveshaft and track.
10. Follow the procedures for chaincase assembly.

Bonded Chaincase Removal/Installation

1. Follow the procedures for chaincase disassembly.
2. Follow the procedures for removing the track, rear suspension, and driveshaft.
3. Remove the fasteners securing the chaincase to the tunnel, front cooler/closeoff panel, and side support.
4. While wearing protective gloves and clothing, use a propane torch to evenly heat the backside and fastener points of the chaincase/tunnel.

> **CAUTION**
>
> Keep flame away from flammable materials. Use propane torch in well-ventilated area.
>
> Only apply heat to area that requires adhesive bond separation. Do not apply heat to areas of adhesive where bond line separation is not needed. Doing so will require removing the part, removing adhesive, and then re-applying new adhesive.

5. While applying heat, carefully and slowly pull the chaincase assembly away from the tunnel. Use extreme care as to not distort the tunnel.
6. Allow the chaincase to properly cool. Once cooled, inspect the seals for excessive wear or damage. Replace as required.
7. Verify bearings roll smoothly. Replace if they do not or if excessive play is evident. Use an arbor press to remove and install bearings.
8. Thoroughly clean the chaincase-to-tunnel mating surfaces. All residual bonding adhesive MUST be removed. Use a putty knife and wire brush to remove material.
9. After removing residual adhesive, wash parts in solution of warm, soapy water and allow to air dry.



10. Begin chaincase installation by verifying all fasteners are accounted for and staged for installation.
11. Verify the chaincase and tunnel mating surfaces are clean and free of dirt, and oil residue.
12. Reference Adhesive Applicator Kit and Adhesive Application sections in Chapter 9. See “Bonded Component Service” on page 9.21.

NOTE: The Bonded Component Service section in Chapter 9 outlines the adhesive, applicator tools, and the adhesive application procedure required to properly install bonded components.

13. After the adhesive has been applied to the backside of the chaincase, quickly install all of the fasteners.
14. Verify fastener (1) is installed in the lower chaincase mounting hole has shown in the illustration. See “Mounting Assembly View” on page 5.10.
15. Torque fasteners to specifications.

= T
A: 26 ft-lb (35 Nm) DO NOT OVER-TORQUE
B: 26 ft-lb (35 Nm)
C: 14 ft-lb (19 Nm)

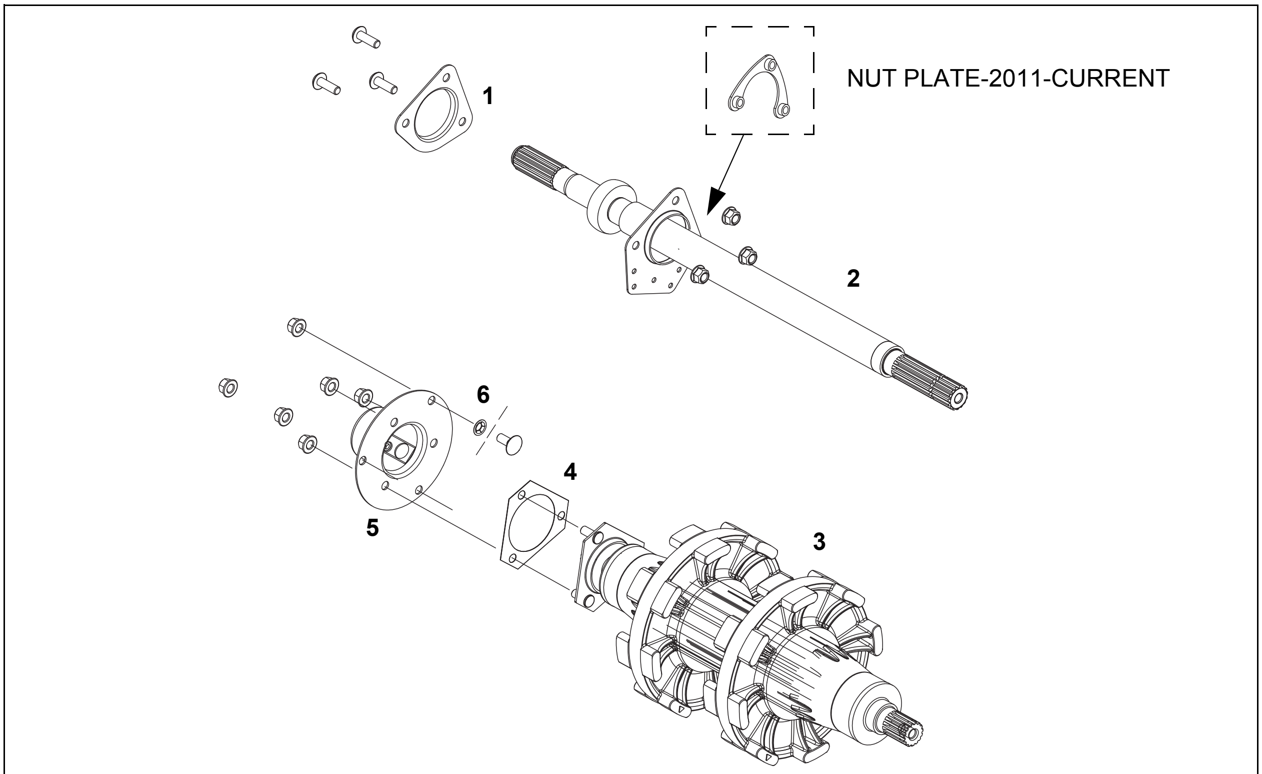
16. Follow the procedures for reinstalling the driveshaft and track.
17. Follow the procedures for chaincase assembly.

DRIVESHAFT/JACKSHAFT

Specifications/Torque Guide

COMPONENT	TORQUE
Jackshaft Flange Nuts	18 ft-lb (25 Nm)
Speedometer Flange Nuts	18 ft-lb (25 Nm)
Driveshaft Flange Nuts	18 ft-lb (25 Nm)
Driven Clutch Fastener	18 ft-lb 25 Nm)
Speed Sensor Screw	18 ft-lb 25 Nm)

Assembly View



NOTE: The PTO ends of the jackshaft/driveshaft feature sealed bearings. No grease required.

REFERENCE #	DESCRIPTION
1	Flangette
2	Jackshaft
3	Driveshaft
4	Gasket
5	Speedometer Housing

REFERENCE #	DESCRIPTION
6	Nut Pals

CAUTION

Do not re-use lock Nuts. Always replace with new parts after removal.

Jackshaft Removal

1. Follow the procedures for chaincase disassembly.
2. Remove the driven clutch assembly.
3. Remove the oil tank/clutch cover assembly. Remove the airbox.
4. Remove the jackshaft flangette screws and nuts or nut plate. Discard the lock Nuts.
5. Carefully pull the jackshaft from the clutch-side of the vehicle out of the chaincase. Remove jackshaft from vehicle.

Jackshaft Installation

1. Carefully insert the jackshaft through the bulkhead and into the chaincase.
2. Using new lock Nuts, install the jackshaft flangette. Torque nuts to specification.

= T
Jackshaft Flange Nuts: 18 ft-lb (25 Nm)

3. Reinstall the airbox assembly and driven clutch. torque driven clutch fastener to specification.

= T
Driven Clutch Fastener: 18 ft-lb (25 Nm)

4. Follow the procedures for chaincase assembly.

NOTE: The jackshaft features a sealed bearing. No grease is required.

Driveshaft Removal

1. Follow the procedures for chaincase disassembly.
2. Remove the driven clutch assembly.
3. Remove the track/rear suspension from the vehicle.
4. Remove the nuts securing both the speedometer housing to the chassis and the nuts securing the driveshaft to the speedometer housing. Discard the lock Nuts.
5. Carefully pull the driveshaft from the clutch-side of the vehicle out of the chaincase. When the driveshaft clears the chaincase, drop it down through the tunnel and then remove the driveshaft from the vehicle.
6. Inspect the drive sprockets for damage and excessive wear. Complete driveshaft replacement is required if sprockets or bearing are damaged.
7. Inspect the gasket. Replace if worn or damaged.

Driveshaft Installation

1. From underneath the tunnel, insert the flangette-side of the driveshaft through the bulkhead.
2. Once aligned with the chaincase, carefully insert the spline-end into the lower chaincase hole.
3. Verify the gasket is not damaged or torn.
4. Using new lock nuts, loosely install both the driveshaft and speedometer flangette.
5. Torque the speedometer housing and driveshaft nuts to specifications.

= T
Speedometer Housing/Driveshaft Nuts: **18 ft-lb (25 Nm)**

6. Install the driven clutch assembly. Torque driven clutch fastener to specification.

= T
Driven Clutch Fastener: 18 ft-lb (25 Nm)

7. Reinstall the track/rear suspension.
8. Follow the procedures for chaincase assembly.

NOTE: The driveshaft features a sealed bearing. No grease is required.
The speedometer sensor pickup gear is not serviceable.

BRAKE SYSTEM

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.

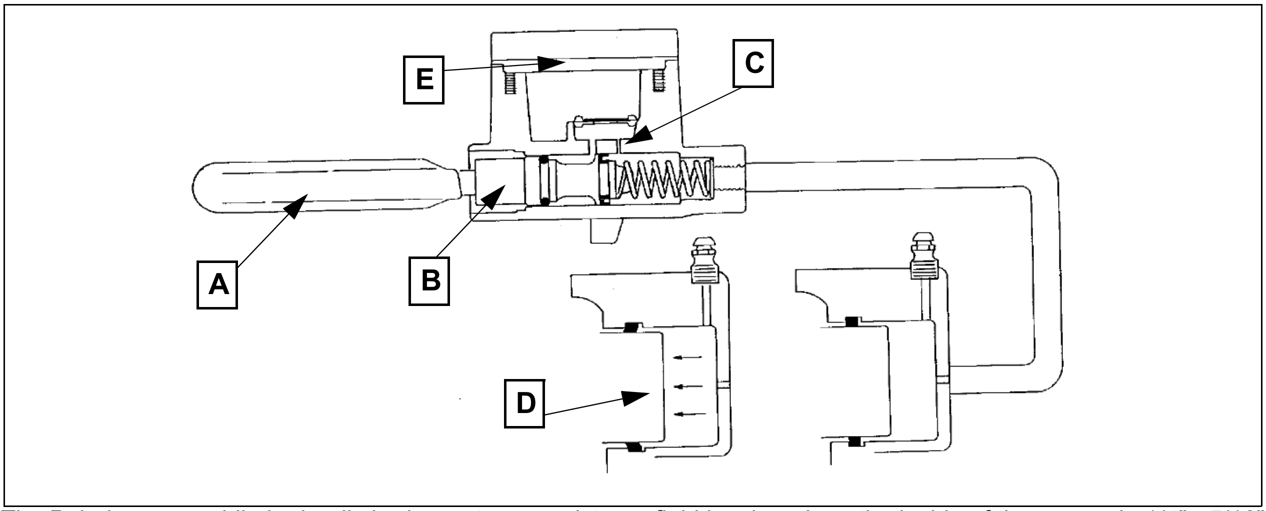
CAUTION

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.

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.

Brake Fluid Replacement & Bleeding

Each hydraulic brake is fitted with a bleeder valve and a banjo bolt. The bleeder valve is a special screw, which seals when tightened to the correct torque, but which allows air and/or fluid to pass out through a hole in the valve stem when loosened one turn.

NOTE: A second person is usually needed to assist in bleeding the brakes.

1. Clean the master cylinder cover and remove.

2. Attach one end of a flexible tube over the stem of the bleeder valve.

NOTE: A 'box end' wrench placed on the bleeder valve before attaching the flexible tubing is a convenient method for loosening and tightening the bleed valve.

3. Place the other end of flexible tube into a jar containing a small amount of clean fluid. See that the end of the tube is below the fluid surface to prevent breathing/sucking air back into the system.
4. Loosen bleeder valve one turn.
5. Fully apply the brake and hold, check for air bubbles rising in the fluid, indicating that air is being forced out of the system.
6. Continue actuating the brake until air bubbles stop. This indicates that the brake has been bled successfully.

NOTE: Add new fluid to the master cylinder reservoir as needed.

7. Retighten the bleeder valve when the brake lever has reached the end of its stroke. Torque bleeder to specification.

= T
Brake Caliper Bleeder Screws: **Phantom: 100-135 in-lb (11-15Nm)** **Phantom Lite: 36-46 in-lb (4-5Nm)**

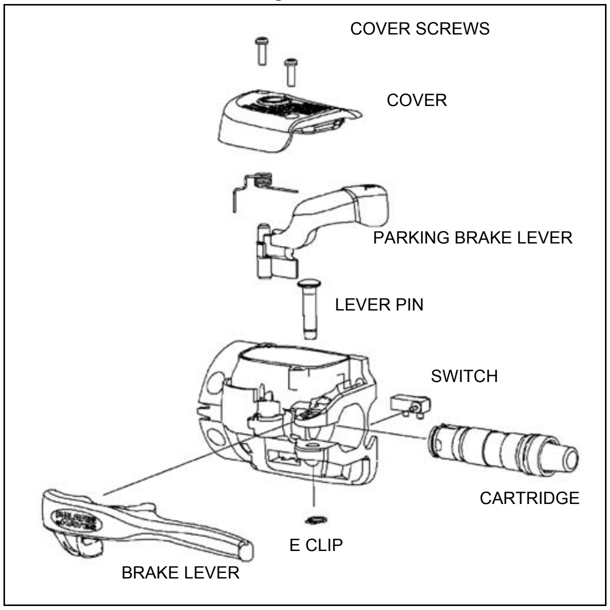
8. Evaluate the brake system for proper operation, and inspect for leaks. The brake lever should feel firm, without excessive travel and sponginess.
9. Add new fluid to the master cylinder reservoir to bring the fluid level back up to a level between the maximum and minimum fill lines. Replace master cylinder cover.

= T
Master Cylinder Cover Screws: **Combined: 16-20 in-lb (1.8-2.3Nm)** **Cyclone: 6-8 in-lb (.7-.9Nm)**

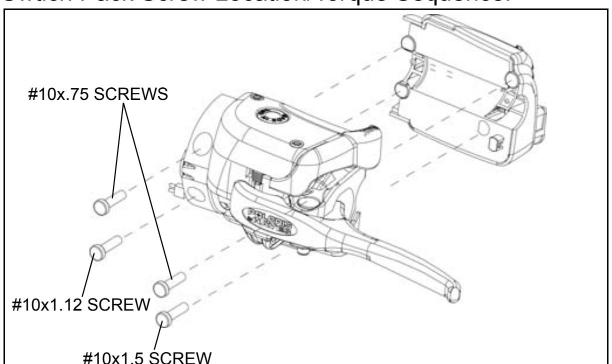
CAUTION
Caution: Take care not to get brake fluid on pads or disc. If brake fluid gets on disc, fully clean disc with alcohol.

10. Test brake system prior to returning vehicle to service.

Combined Master Cylinder/Lever Service



Swtich Pack Screw Location/Torque Sequence:

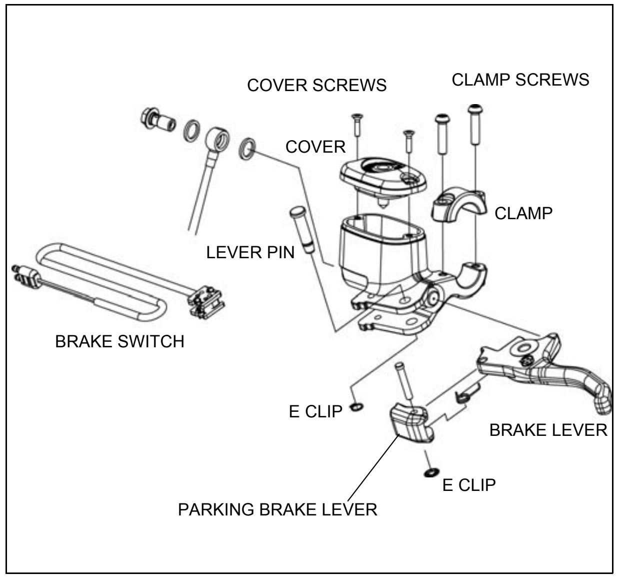


= T

Cover Screws: 16-20 in-lb (1.8-2.3Nm)
Switch Pack Screws: 25-30 in-lb (2.8-3.4Nm)
Brake Hose: 240-264 in-lb (27-30Nm)

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 5.16.
9. Test brake system prior to returning vehicle to service.

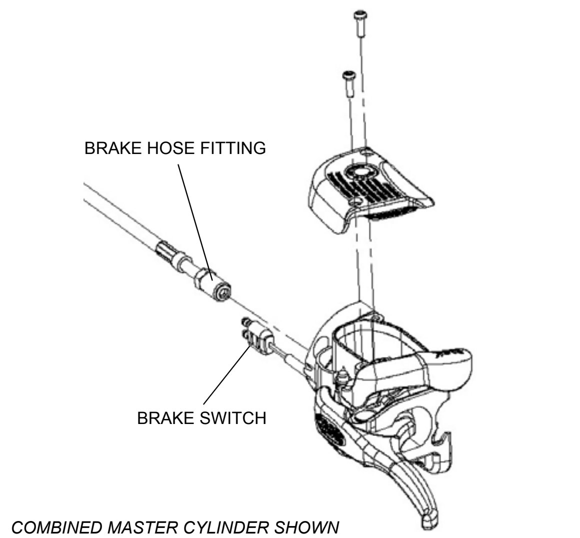
Cyclone Master Cylinder/Lever Service



= T

Cover Screws: 6-8 in-lb (.7-.9Nm)
Handlebar Clamp Screws: 60-80 in-lb (6.8-9Nm)
Brake Hose Banjo Screw: 240-264 in-lb (27-30Nm)

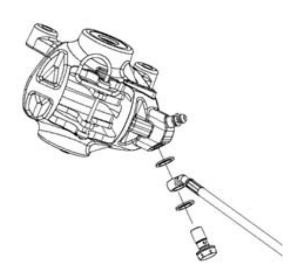
Brake Line Replacement



COMBINED MASTER CYLINDER SHOWN

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

1. Drain 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. Remove the brake line from the caliper assembly. Use a shop towel to catch any remaining brake fluid in the hose.
5. On Cyclone master cylinders, remove the banjo bolt, washers and fitting from reservoir.
6. On combined master cylinder, 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.

= T
Brake Caliper Banjo Bolt: **240-264 in-lb (27-30Nm)**

11. Insert the new brake line and install into the master cylinder. Torque the brake line to specification.

= T
Brake Line-to-Master Cylinder: **240-264 in-lb (27-30Nm)**

12. 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.
13. Route the brake light switch in the harness correctly.

14. On combined master cylinders, 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.
15. Follow the bleeding procedure. See “Brake Fluid Replacement & Bleeding” on page 5.16.
16. Test brake system prior to returning vehicle to service.

Brake Hose Routing

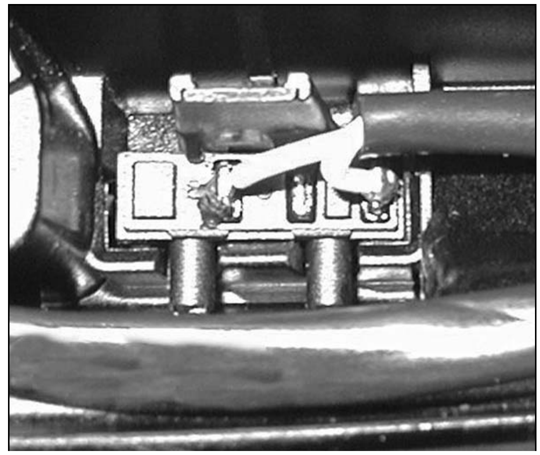
Route brake hose over steering block, under right over structure tube, and behind coolant surge tank.

⚠ CAUTION

Do not pinch brake hose between over structure tubes and steering block or between hood and hood mounts.

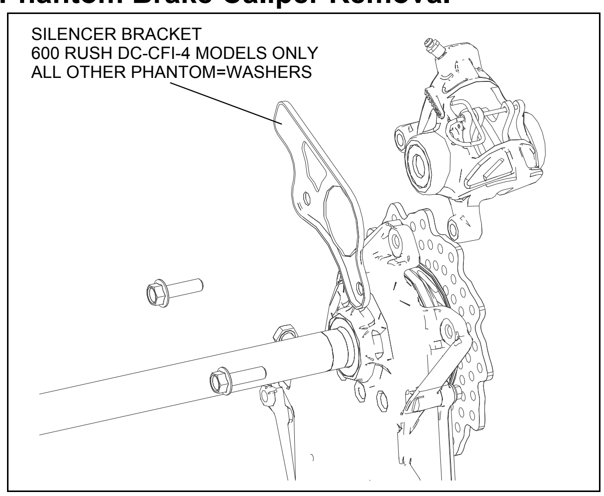
Combined MC Brake Light Switch Replacement

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. Replace faulty brake light switch into the master cylinder and route wires correctly.
4. Plug the brake switch back into the harness.
5. 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.

Phantom Brake Caliper Removal



1. Remove the two caliper bolts that hold the caliper and silencer bracket to the chaincase.

NOTE: DC-CFI-2 models with Phantom calipers do not feature silencer bracket. Washers are installed in its place.

2. Remove the caliper from the chaincase. Tie the caliper to the overstructure. Do not allow the brake caliper to hang from the brake hose.

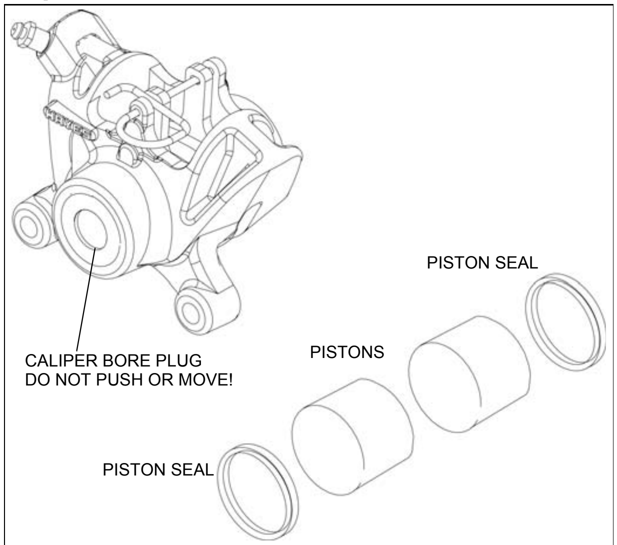
Phantom Brake Caliper Installation

1. Apply Loctite® 242™ and replace caliper bolts, and silencer bracket or washers if equipped. Torque bolts to specification.

= T
Caliper Bolts: 40 ft-lb (54 Nm)

2. Place the brake line on the caliper in the same orientation as it was before it was removed.
3. Clean the threads of the banjo bolt and the threads in the caliper.
4. Follow Brake Line Replacement. See “Brake Line Replacement” on page 5.18.
5. Install banjo bolt into the caliper and torque it to specification.
6. Bleed the brakes. See “Brake Fluid Replacement & Bleeding” on page 5.16.
7. Test brake system prior to returning vehicle to service.

Phantom Brake Caliper Piston and Seal Replacement



CAUTION

NEVER RE-USE PISTON SEALS. ALWAYS REPLACE WITH NEW PARTS.
DO NOT ATTEMPT TO SAND OR POLISH A CALIPER PISTON.

1. Remove the brake hose from the caliper. Drain the brake fluid into a jar or suitable container.
2. Rotate and remove the brake pad retaining pin and then remove the brake pads. Remove the caliper from the chaincase.
3. Hold the caliper over the brake fluid jar and then push the pistons back into the caliper. This will push the brake fluid in the caliper out of the brake hose banjo fitting hole.

CAUTION

NEVER RE-USE BRAKE FLUID. USED BRAKE FLUID MAY CONTAIN AIR BUBBLES. ALWAYS USE NEW BRAKE FLUID FROM A UNOPENED CONTAINER.

4. Clamp the end of a 1/4” thick 2” x 10” piece of steel to the workbench. Allow the piece of steel to hang off of the bench by 4 - 5”.

5. Position the caliper over the steel plate with the plate firmly against one of the retracted pistons.

CAUTION

DO NOT PUSH ON THE CALIBER BORE PLUG. DOING SO WILL BREAK THE PLUG SEAL AND REQUIRE CALIPER REPLACEMENT.

WARNING

TO AVOID POSSIBLE INJURY, DO NOT PLACE FINGERS BETWEEN PISTONS TO ATTEMPT TO CATCH THEM WHEN APPLYING COMPRESSED AIR.
WEAR EYE PROTECTION WHEN APPLYING COMPRESSED AIR TO CALIPER.

6. Insert a rubber-tipped air nozzle into the brake hose inlet port and apply compressed air to push out the piston.
7. To remove the second piston, lay a rubber sheet on the steel plate and position the caliper over the rubber sheet to seal the open piston bore. Repeat STEP 7.
8. Using a plastic or wood pick, remove both piston seals from the caliper bores. Discard the seals.
9. Clean the caliper and pistons with denatured alcohol and dry with either compressed air or a lint-free rag.
10. Inspect the caliper bores and pistons for pitting, heavy scoring or corrosion. Replace parts if heavily scored or pitted.
11. To assemble the caliper, lubricate two new piston seals with new brake fluid. Install each seal by inserting one point of the seal into the bore groove, and then work the seal around the groove with your index finger. Do not twist, or rip the seals.
12. Coat the piston thoroughly with new brake fluid. Evenly insert each piston into the bores, working each in by hand carefully and slowly. Push each piston down until bottomed out.
13. Reinstall the brake caliper on to the chaincase. Torque fasteners to specification.

= T

Caliper Mounting Screws: 18-20 ft-lb (24-27 Nm)

14. Inspect both brake pads prior to installation. If they are within the pad wear specification, reinstall into caliper.
15. Install the brake hose using the same routing and orientation noted during removal. Torque fitting to specification.

= T

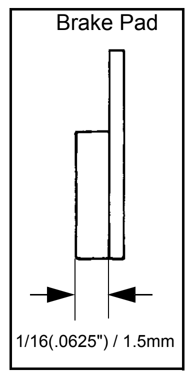
Caliper Banjo Bolt: 240-264 in-lb (27-30Nm)

16. Fill and bleed the brake system of air. See “Brake Fluid Replacement & Bleeding” on page 5.16.
17. Test brake system prior to returning vehicle to service.

Phantom Brake Pad Replacement

Brake pads need to be replaced if the thickness of the friction material is less than 1/16" (.0625") / 1.5mm.

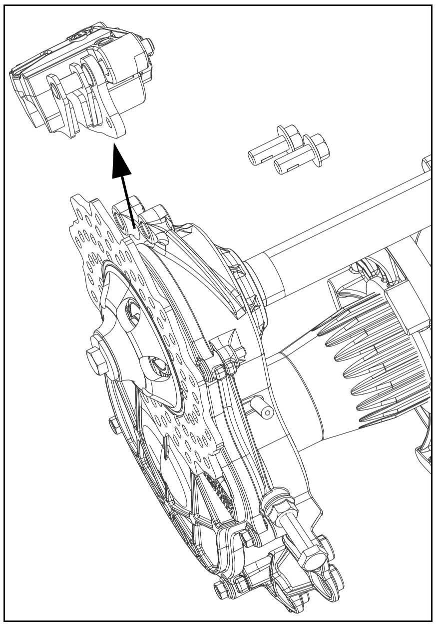
1. Remove brake pad retaining pin.
2. Remove the brake pads.
3. Inspect the brake disc for any wear.
4. Replace brake pads in reverse order of removal.
5. Test brake system prior to returning vehicle to service.



Phantom Lite Brake Caliper Bracket/Seal/ Piston Service

⚠ CAUTION

NEVER RE-USE PISTON SEALS. ALWAYS REPLACE WITH NEW PARTS.
DO NOT ATTEMPT TO SAND OR POLISH A CALIPER PISTON.

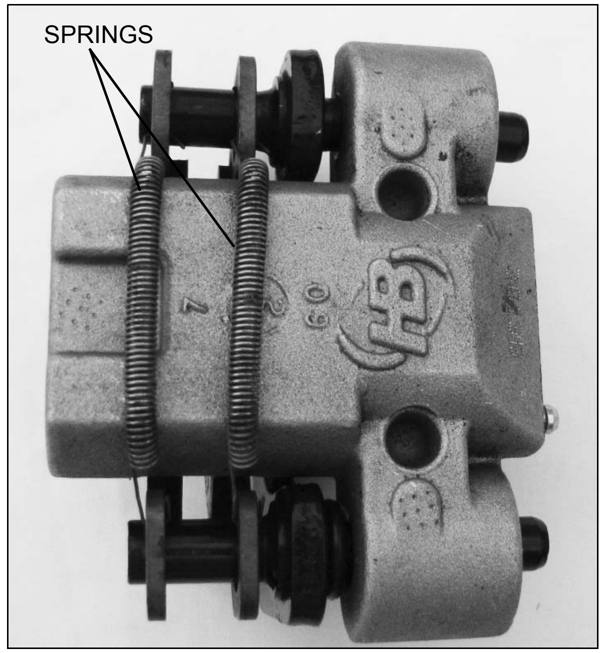


1. Clean the friction pad area.
2. Remove the brake caliper from the chain case. Slide the caliper off of the brake disc.
3. Remove the brake hose from the caliper. Drain the brake fluid from the master cylinder and caliper into a suitable jar or container.

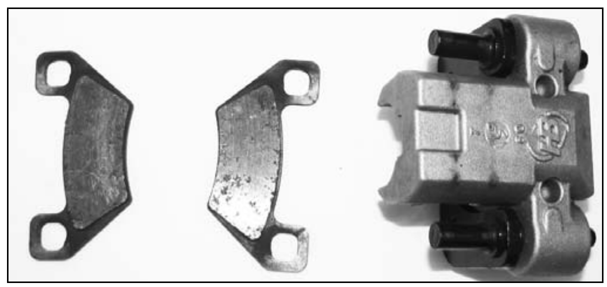
⚠ CAUTION

NEVER RE-USE BRAKE FLUID. USED BRAKE FLUID MAY CONTAIN AIR BUBBLES. ALWAYS USE NEW BRAKE FLUID FROM A UNOPENED CONTAINER.

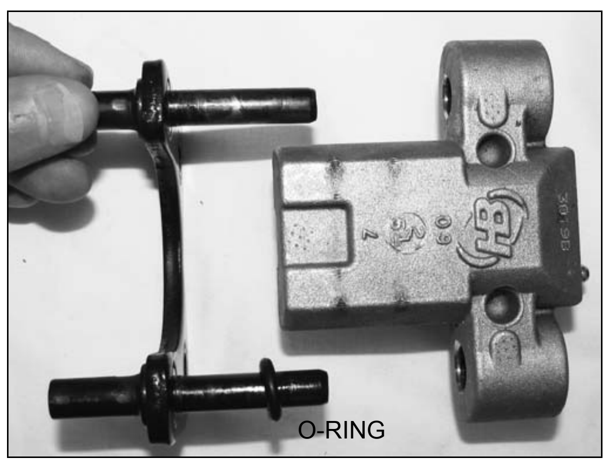
4. Remove the two anti-rattle springs. If springs are damaged or rusted, discard and replace with new springs.



5. Push the caliper mounting bracket against caliper.
6. Remove both friction pads.



7. Extract bracket by pulling it out of caliper. Note spacer o-ring on large diameter pin.

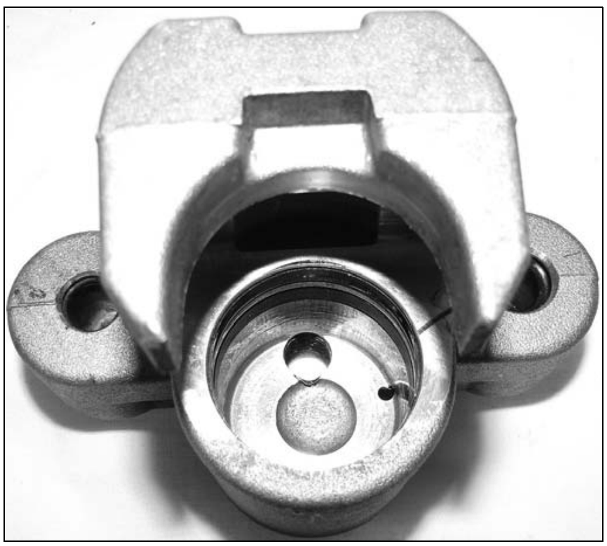


8. Remove the two small and two large o-rings from the inside of mounting ears on caliper. Discard the o-rings. Do not damage the shaft bores when removing o-rings.
9. Thoroughly clean the bracket pins and pin bores with brake cleaner.
10. To remove piston, insert a rubber-tipped air nozzle into the brake hose inlet port and apply compressed air to push out the piston.

WARNING

TO AVOID POSSIBLE INJURY, DO NOT PLACE FINGERS BETWEEN PISTON AND CALIPER TO ATTEMPT TO CATCH IT WHEN APPLYING COMPRESSED AIR.
WEAR EYE PROTECTION WHEN APPLYING COMPRESSED AIR TO CALIPER.

11. Using a plastic or wood pick, remove both piston seals from the piston bore. Discard both seals.



12. Clean the caliper bore and piston with denatured alcohol and dry with either compressed air or a lint-free rag.
13. Inspect the piston and piston bore for pitting, heavy scoring or corrosion. Replace parts if damaged.
14. To assemble the caliper, lubricate two new piston seals with new brake fluid. Install each seal by inserting one point of the seal into the bore groove, and then work the seal around the groove with your index finger. Do not twist, or rip the seals.
15. Coat the piston thoroughly with new brake fluid. Evenly insert piston into the bore, working it in by hand carefully and slowly. Push piston down until bottomed out.
16. Install two new small and two new large o-rings into the caliper for the bracket pins.
17. Apply a liberal amount of silicone-based grease to the bracket pins and pin bores. Install the bracket into the caliper.
18. Inspect both brake pads prior to installation. If they are within the pad wear specification, reinstall into caliper. Install two new anti-rattle springs.
19. Install the brake hose using the same routing and orientation noted during removal. Torque fitting to specification.

= T

Caliper Banjo Bolt: 240-264 in-lb (27-30 Nm)

20. Reinstall brake caliper assembly on chain case. Torque fasteners to specification.

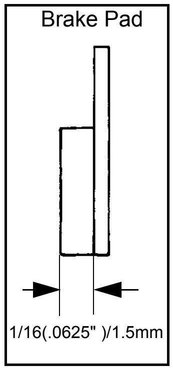
= T

Brake Caliper Mounting Fasteners:
20-22 ft-lb (27-30 Nm)

21. Fill and bleed the brake system of air. See “Brake Fluid Replacement & Bleeding” on page 5.16.
22. Test brake system prior to returning vehicle to service.

Phantom Lite Brake Pad Replacement

NOTE: Always replace both friction pads at the same time.



Brake pads need to be replaced if the thickness of the friction material is less than 1/16" (.0625") / 1.5mm.

1. Clean the friction pad area and master cylinder cover.
2. Remove the two caliper mounting mount bolts and slide the caliper assembly off the disc.
3. Remove master cylinder cover.
4. Prior to removing old pads from caliper, insert a large C-clamp placed on the head of the banjo bolt and the backing plate, tighten C-clamp carefully until piston is pushed back into the bore, do not over tighten, Piston should move easily. If no C-clamp is available insert a flat blade of large screwdriver between pads and pry apart. This action should press the caliper piston back into its bore, to make room for the new pads. Monitor the master cylinder during piston push back and remove any excess fluid that is forced back into the reservoir to prevent spillage.
5. Slide bracket tight to caliper and remove worn friction pads and install the new pads making sure that the friction material is facing inwards.
6. Insure slider bores are greased well with silicone-based grease.
7. Install bracket into slider bores.
8. Install new pads making sure that the friction material is facing inwards.
9. Reposition the caliper over the brake disc, insert and torque mounting bolts to specification.

= T
Brake Caliper Mounting Fasteners: **20-22 ft-lb (27-30Nm)**

10. With the unit reassembled, actuate the brake lever lightly and slowly several times to seat the new pads against the disc.
11. Check master cylinder reservoir for proper fluid level and replace cover. Torque screws to specification.

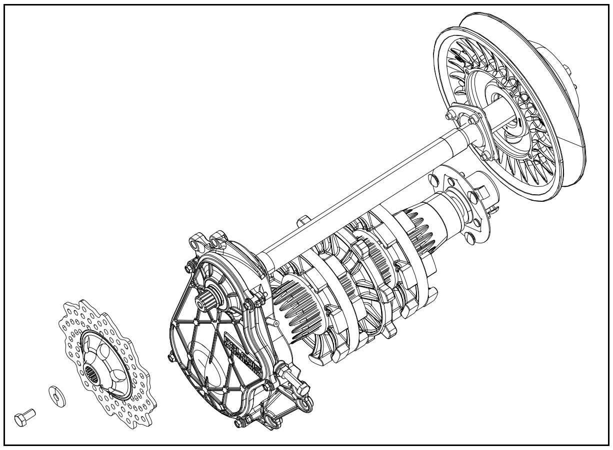
= T
Master Cylinder Reservoir Screws: **240-264 in-lb (27-30Nm)**

12. Test brake system prior to returning vehicle to service.

Brake Disc Replacement

NOTE: Reference Brake Disc Hardware table before reinstalling brake disc.

YEAR/ CALIPER TYPE	BRAKE DISC FASTENER HARDWARE
2010/ Phantom	Fastener: 29 ft-lb (40 Nm) Flat Washer 1-2 Float Washers (Install QTY. to achieve .8mm Disc Float)
2011-Current/ Phantom	Fastener: 40 ft-lb (54 Nm) Flat Washer Wave Washer 1 Float Washer
2011-Current/ Phantom Lite	Fastener: 40 ft-lb (54 Nm) Domed Washer (Dome facing out.)



1. Engage the parking brake. Loosen the brake disc bolt.
2. Disengage the parking brake.
3. Remove the brake caliper from the chaincase. Tie the caliper to the overstructure. Do not allow the brake caliper to hang from the brake hose.
4. Remove the brake disc bolt, beveled washer and shim washer(s) if model is equipped with the phantom brake caliper.
5. Remove the brake disc from the jackshaft.

Brake Disc Service Specifications:

- Lateral Run-Out Service Limit = .010" (.254mm)
- Service Limit Thickness = .030" (.762mm) less than nominal
- Nominal Thickness = .197"±.005" (5±.127mm)

6. Prior to installation, clean brake disc with brake cleaner, or denatured alcohol. Dry with compressed air or lint-free towel.
7. Install brake disc on to jackshaft. Reinstall correct brake disc hardware.
8. Reinstall the brake caliper assembly. Torque caliper bolts to specification.
9. Test brake system prior to returning vehicle to service.

= T

Brake Caliper Bolts: 40 ft-lb (54 Nm)

10. Lock the parking brake. Torque brake disc bolt to specification.

= T

Brake Disc Bolt:
2010: 29 ft-lb (40 Nm)
2011-CURRENT: 40 ft-lb (54 Nm)

5

NOTES

CHAPTER 6

PVT System

6

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. The shift out RPM should be the same RPM as the recommended engine operating RPM. 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 / P2) 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 than 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.

PVT System Fastener Torques

Fastener	Torque	Note
Drive Clutch Bolt (All Carbureted)	50 ft-lb (68 Nm)	Re-torque after running engine.
Drive Clutch Bolt (All 2007 - Current CFI)	80 ft-lb (108 Nm)	
Driven Clutch Bolt	17 ft-lb (23 Nm)	
Team Helix Fasteners	60 - 80 in-lb (7 - 9Nm)	
P2 Cover	12 ft-lb (16 Nm)	
Team Deflection Jam Nut	110 in-lb (12 Nm)	DO NOT OVER-TORQUE
P2 Deflection Cam	12 ft-lb (16 Nm)	
P2 SPA Deflection Adjuster Screw Lock Nut	10 ft-lb (12Nm)	
Spider	280-300 ft-lb (380-406 Nm)	Apply Loctite® 243™ OR Loctite® 242™ with Primer N™
Spider Jam Nut	290-330 ft-lb (394-447 Nm)	
Drive Clutch Cover	100 In. Lbs. (11 Nm)	
Starter Ring gear	150-180 in-lb (1-1.2 Nm)	Apply Loctite® 271 Use cross pattern

GENERAL INFORMATION

Special Tools

Team “12 Cooling Fin” Driven Clutch Offset Alignment Tool	PS-46998
Team “24 Cooling Fin” Driven Clutch / P2 Offset Alignment Tool	PS-47477
Drive Clutch Puller (3/4 - 16 x 7/16): Fuji 340 / 488 / 440 / 550 Fan and Liquid Engines	2872084
Drive Clutch Puller: All engines through 1998 (Excluding Domestic Twins / Fuji 700-800 XCR)	2870506
Drive Clutch Puller (3/4 - 16 x 14mm): 2000 - Current Domestic Twins / 1999 - 2003 440 / FS-FST 1999 - 2003 700 - 800 XCR	2872085
Drive Clutch Puller (M14 x 1.5mm): 1997 - 1999 Domestic Twins (Excluding 1999 440 XCR)	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/Installation Tool	2870341
Clutch Pin Punch	2870507
Tapered Reamer - 29mm Short Drive-All Fuji Snow Engines (Excluding 700-800 XCR)	2870576
Tapered Reamer - 29mm Long Drive-755/866 w/original crankshaft / 700-800 XCR / All Domestic Carbureted (Excluding 600 IQ Racer)	PS-48587
Tapered Reamer - 31mm- All 600/700/800 CFI / 755/866 w/large taper crankshaft / 600 IQ Racer	PS-48584
Roller Pin Installation Roller/Bushing Alignment Tool	2870910-A
Drive Clutch Button Removal Tool	2870985
Clutch Bushing Replacement Tool Kit	2871025
Clutch Holding Fixture	2871358-1
Universal Drive/Driven Clutch Compressor (Screw Down Type)	PU-50518
Spring-Loaded Roller Pin Installation Roller/Bushing Alignment Tool	8700221
Drive Clutch Compression Tool (Compresses drive clutch without removing clutch from engine.)	2871173

NOTE: Polaris dealers can order the tools listed above through the SPX Service Tools catalog or by calling SPX @ 1-800-328-6657.

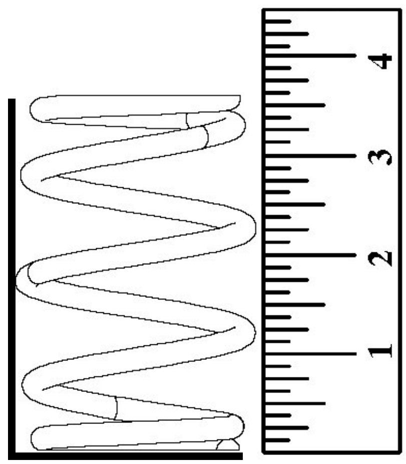
Drive Clutch Springs

PART NUMBER	COLOR	WIRE DIAMETER (inches)	FREE LENGTH +/- .125”	FORCE LBS. @ 2.50” - 1.19” (+/- 12 LBS.)	LOAD RATE (lbs./ inch)
7041080	Blue	.207	3.55	120 - 300	137
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
7043681	Black - 3681	.225	3.327	120 - 310	145
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
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.



VERIFY SPRING COILS ARE PARALLEL
COILS ARE NOT DISTORTED/CRACKED

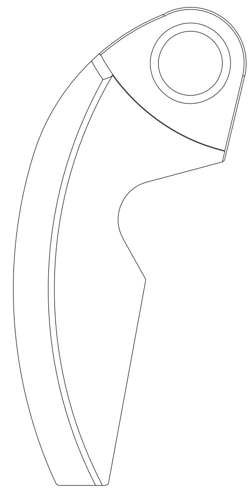
In addition to proper free length, the spring coils should be parallel to one another when placed on a flat surface. Distortion of the spring indicates stress fatigue. Replacement is required.

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

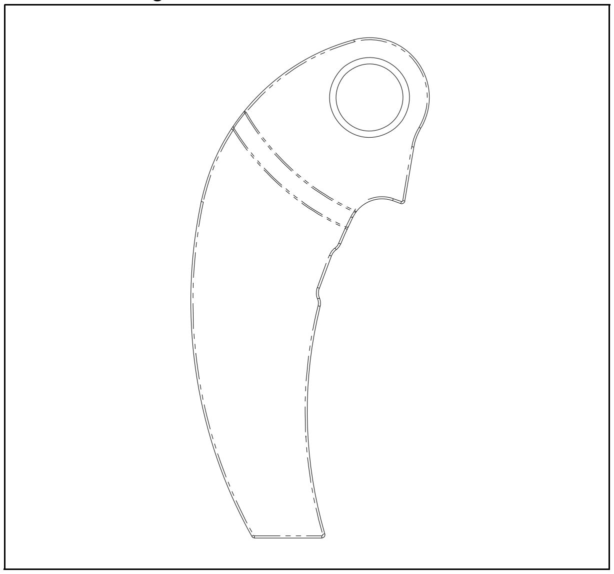
Drive Clutch Weights

10 Series Weights



WEIGHT	GRAMS(+/- 1gr.)	PART NUMBER
10M - R	44	1321530
10M - W	46	1321527
10M - B	47.5	1321529
10M	49.5	1321528
10	51	1321526
10A - L	52.3	1321531
10-54	54	1321685
10A	55	1321589
10-56	56	1321684
10-58	58	1321588
10-60	60	1321587
10-62	62	1321586
10-64	64	1321585
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



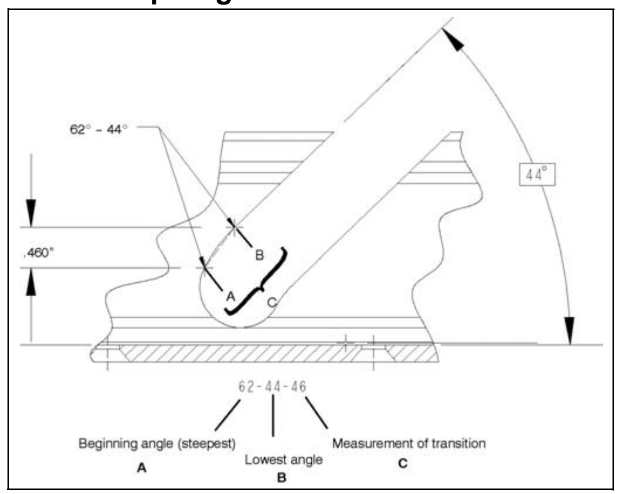
WEIGHT GRAMS(+/- .8gr.)	PART NUMBER
11-40	1322593
11-42	1322592
11-44	1322591
11-46	1322596
11-48	1322590
11-50	1322589
11-52	1322595
11-54	1322866
11-56	1322865
11-58	1322864
11-60	1322863
11-62	1322862
11-64	1322604
11-66	1322559
11-68	1322558
11-70	1322523
11-72	1322524
11-74	1322525
11-76	1322526

NOTE: When compared to 10 series weights, 11 series weights feature more weight distribution at the beginning of the shift curve, a more aggressive shift curve, and a larger heel angle. The belt-to-sheave clearance will require adjustment when changing to and from each series of weights.
When cross referencing 10 and 11 series weights, select a 2 gr. lighter 11 series weight (10-66 = 11-64).

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
5135504	S36
5135772	66 / 44 - .46
5136327	60 / 42 - .36
5136255	S42

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.

Team Driven Springs

TEAM Driven Springs

PART NUMBER	COLOR	Free Length Inches (cm)	LOAD @ 2.2″(lbs)	LOAD @ 1.1″(lbs)	Rate (Lbs. per inch)
7042181	Black/Yellow	6.0 (15.24)	145	208	56
7043058	Red/Black	Subs to 7043149 - P2 Non-Tabbed			
7043059	Red/Green	4.767 (12.1)	120	220	90
7042066	Green/Black	5.60 (14.2)	135	198	56
7043061	Red/Silver	4.95 (12.5)	125	175	45
7043062	Red/Yellow	4.40 (11.2)	100	150	45
7043057	Red/Blue	4.767 (12.1)	140	200	54
7043063	Black	Subs to 7043150 - P2 Non-Tabbed			
7043064	Blue/Black	Subs to 7043152 - P2 Non-Tabbed			
7043060	Red/White	4.95 (12.5)	100	200	91
7043069	Red/Pink	3.50 (8.9)	140	260	110
7043363	Black/Purple	4.50 (11.4)	160	240	72
7043252	Black - 160 / 280	3.70 (9.4)	160	280	109
7043254	Black - 140 / 300	3.20 (8.1)	140	300	146
7043255	Black - 160 / 300	3.50 (8.9)	160	300	127
7043256	Black - 180 / 300	3.90 (9.9)	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 each spring with the part number when not in use.

Polaris P2 Driven Non-Tabbed Springs

PART NUMBER	COLOR	Free Length Inches (cm)	LOAD @ 2.2″(lbs)	LOAD @ 1.1″(lbs)	Rate (Lbs./In.)	TEAM EQUIVALENT COLOR
7043397	BLACK	4.4 (11.2)	100	150	45	RED/YELLOW
7043398		4.95 (12.6)	125	175	45	RED/SILVER
7043151		4.76 (12.1)	140	200	54	RED/BLUE
7043150		4.2 (10.6)	140	220	65	BLACK
7043430		4.4 (11.2)	160	240	72	BLACK/PURPLE
7043152		4.1 (10.4)	120	200	73	BLUE/BLACK
7043149		4.7 (11.9)	140	240	90	RED/BLACK

Polaris P2 Tabbed Driven Springs

PART NUMBER	COLOR	Free Length* Inches (cm)	LOAD @ 2.4″(lbs)	LOAD @ 1.4″(lbs)	Rate (Lbs./In.)
7043515	BLACK	4.77 (12.1)	130	180	54.5
7043495		4.74 (12)	140	200	60.9
7043496		4.4 (11.2)	145	220	73
7043512		3.74 (9.5)	120	210	91

NOTE: Tag each spring with the part number and spring force when not in use.

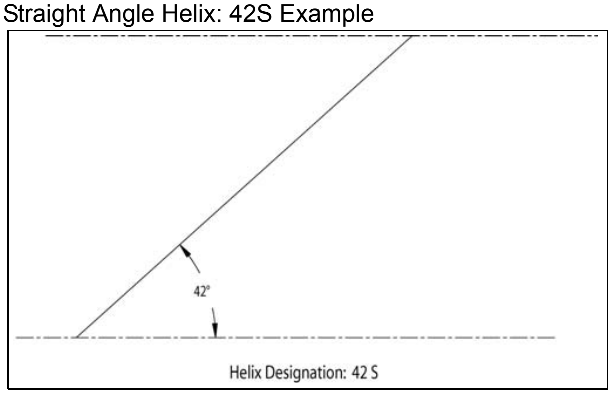
*** = Not including tab.**

Polaris P2 Driven Helixes

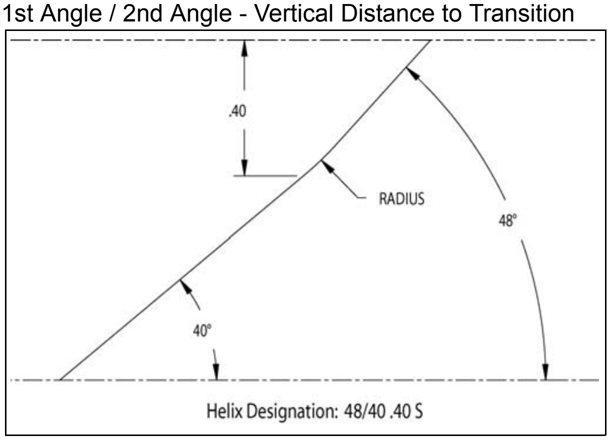
PART NUMBER	DESCRIPTION
5136975	38S
5137154	40S
5137155	42S
5137160	44S
5137142	58/40 - .35
5137150	40/38 - .45
5137157	44/38 - .45
5137176	58/42 - .45
5137153	60/40 - .45

P2 Helix Angles

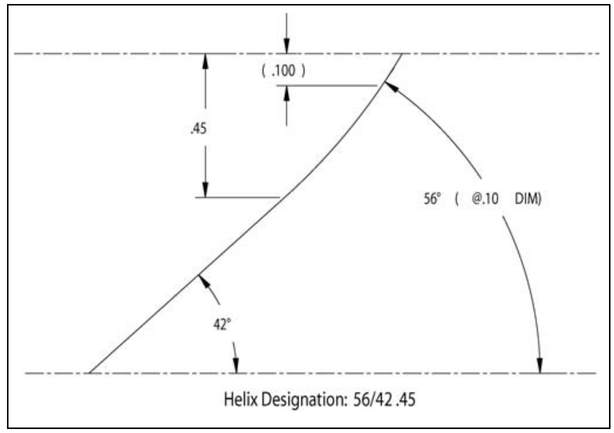
Straight Angle Helix: 42S Example



Dual Straight Angle Helix: 48/40 .40S Example
1st Angle / 2nd Angle - Vertical Distance to Transition



Arc to Straight Angle Helix: 56/42 .45 Example
1st Angle at .100” from Horizontal / 2nd Angle - Vertical Distance to Transition



Drive Belts

<table>
<tr><th>Part Number</th><th>Projected Width (IN/CM)</th><th>Overall Side Angle</th><th>Center to Center (IN/CM)</th><th>Outer Circumference (IN/CM)</th><th>Ride Out</th><th>Notes</th></tr>
<tr><td>3211122</td><td rowspan="2">1.46 / 37.1</td><td rowspan="2">26°</td><td rowspan="2">11.5 / 29.2</td><td rowspan="2">46.77 / 118.8</td><td rowspan="2">Belt cord line should be flush with, or slightly above, the outer circumference of driven clutch sheaves.</td><td>MBL Kevlar Cords
Performance replacement for the 3211080
Cut Finish</td></tr>
<tr><td>3211115</td><td>MBL High Performance / Mountain Belt
PBO Fiber Cords
Cut Finish</td></tr>
</table>

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.

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.

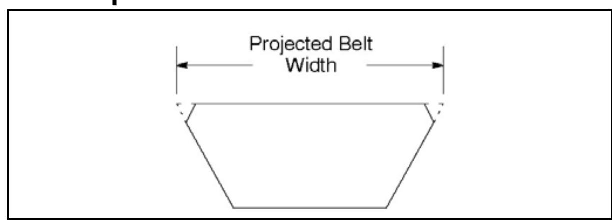
The belt cord line should be flush with, or slightly above, the outer circumference of the driven clutch sheaves. The belt will seat itself in the driven clutch during the break-in period. Adjust the belt ride out after the break-in period by re-adjusting belt deflection.

The break-in period for a new drive belt is 30 miles. During this time, vary the throttle position under 50% and limit full throttle use.

New drive belts that feature a sanded finish should be first washed with warm, soapy water and allowed to air dry prior to use.

Always take time to warm up the belt and driveline prior to operating the snowmobile. Free track and skis from the ground before engaging throttle.

Belt Inspection

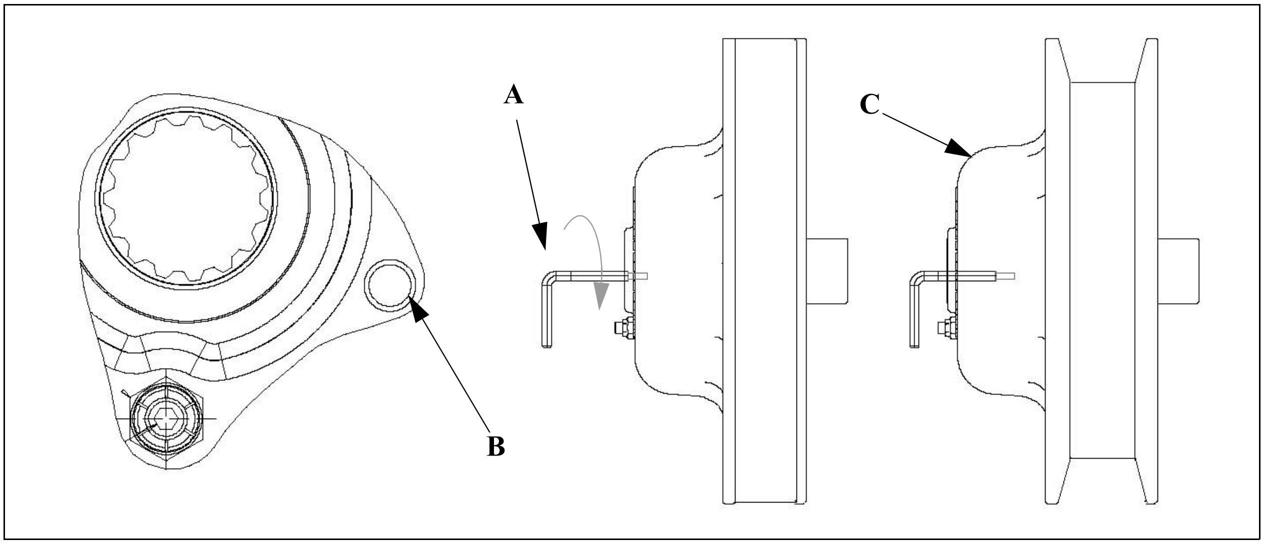


1. Measure the belt width and replace it if it is worn severely. Generally a belt should be replaced if the clutches can no longer be adjusted to provide the proper belt deflection.
   - Project the side profiles and measure from corner to corner.
   - Place a straight edge on each side of the drive belt and measure the distance where the straight edges intersect at the top.
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 and on both sides of the belt). Hour glassing occurs when the drive train does not move and the drive clutch engages the belt.

Belt Wear / Burn 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



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. Remove the LH compartment door panel.

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.

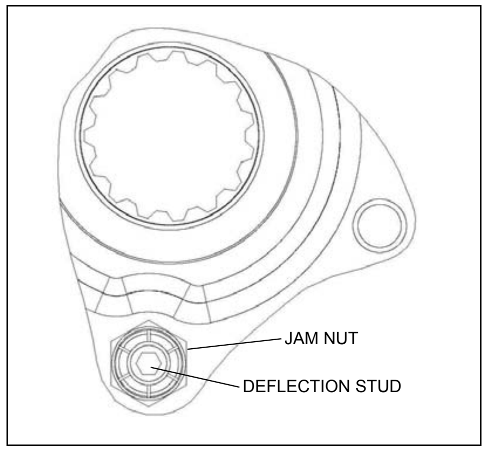
Drive Belt Installation - Team Driven

1. With the L wrench inserted into the threaded hole (B) 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.

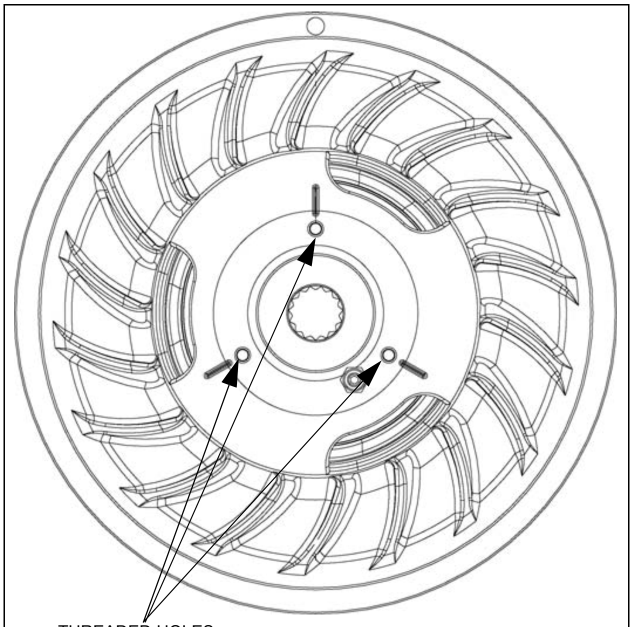
Adjusting Belt Deflection - Team Driven Clutch



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 specification.

= T
Deflection Set Screw Lock Nut: **90-110 in-lb. (10-12 Nm)**

Drive Belt Removal - SPA P2



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 LH compartment door panel.

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, into one of the threaded holes located on the driven clutch. Turn it clockwise until the clutch sheaves are in the open position.
3. Remove the drive belt.

Drive Belt Installation - SPA P2

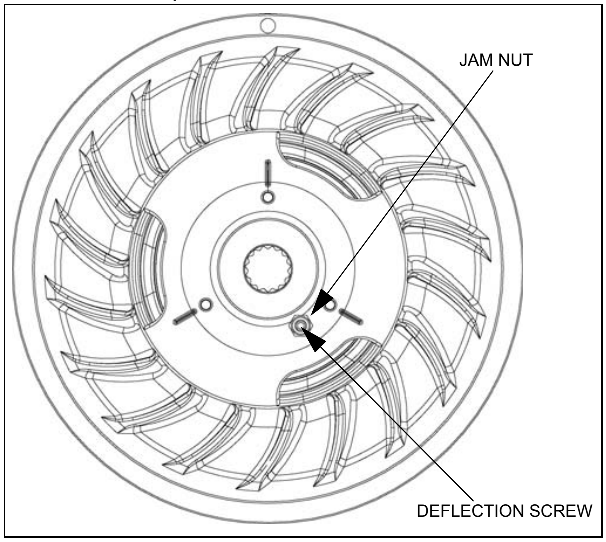
1. With the L wrench inserted into one of the threaded holes and the sheaves in the open position, install the drive belt.

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.

Adjusting Belt Deflection - SPA P2

1. Loosen the deflection screw jam nut.
2. Using a 1/8 Allen driver, turn the deflection screw in or out to adjust the distance between the driven clutch sheaves.
3. When the proper belt deflection is achieved torque the lock nut to specification.



= T
Deflection Screw Lock Nut: 110 in-lb (12 Nm)

PVT SYSTEM ADJUSTMENTS

Clutch Alignment/Offset

The drive and driven clutches are offset from each other. This offset is controlled by the number and thickness of washers installed on the jackshaft behind the driven clutch.

1. Remove drive belt.
2. Push the driven clutch towards the bulkhead. Install the alignment tool into the drive clutch and on top of the driven clutch hub.

TOOL PART NUMBER	APPLICATION
PS-47477	Light Weight (LWT) Team Driven / P2

NOTE: The PS-47477 offset tool is calibrated with the correct alignment angle for the respective driven clutch.

Inspect for broken motor mounts, engine straps or bulkhead damage if the offset tool reveals major mis-alignment.

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" (1.5mm).

NOTE: If the front of the alignment bar does not touch the driven sheave, the maximum clearance cannot exceed .025″ (.64mm).

Offset/Float Adjustment

1. Determine direction driven clutch needs to be adjusted.
2. Remove driven clutch retaining bolt, and remove driven clutch.
3. With one 16 GA. bushing installed, add or remove offset washers from behind the driven clutch to set the proper offset.
4. After adjusting the offset, add or remove shim washers from behind the driven clutch bolt and washer to provide a .060" (.1.5mm) driven clutch float on the jackshaft.

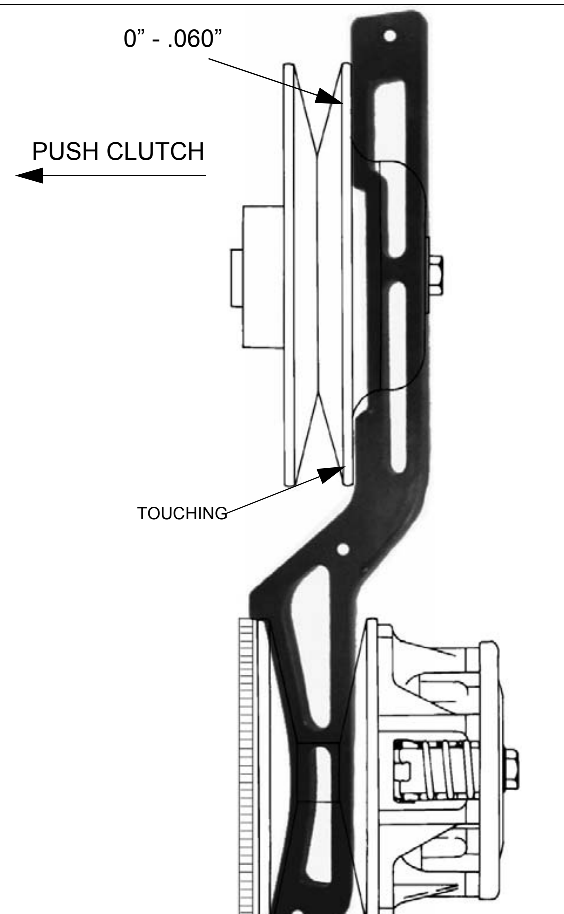
Driven Clutch Offset/Shim Washers

Offset Washers
16 Gauge Bushing=7556509 (QTY.1)
.023” = 7555917 (AR)
.120” = 7555864 (AR)
Float Washers
.065" = 7555806 (AR)
.105" = 7555832 (AR)

AR = As Required

CAUTION

Always verify the driven clutch floats on the jackshaft. The jackshaft bearing will fail from side-loading if the driven clutch is not allowed to float.

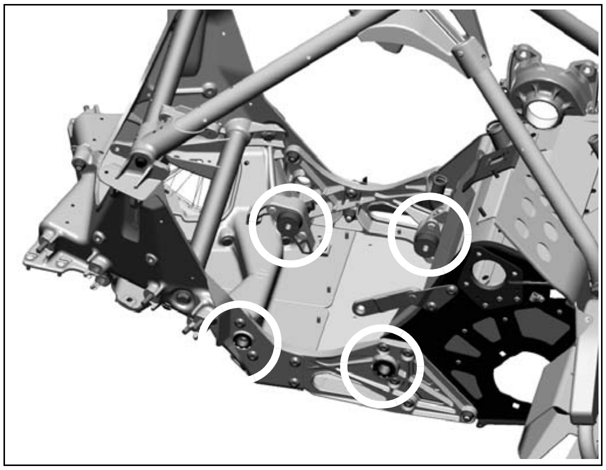


(PN: PS-46998 Shown)

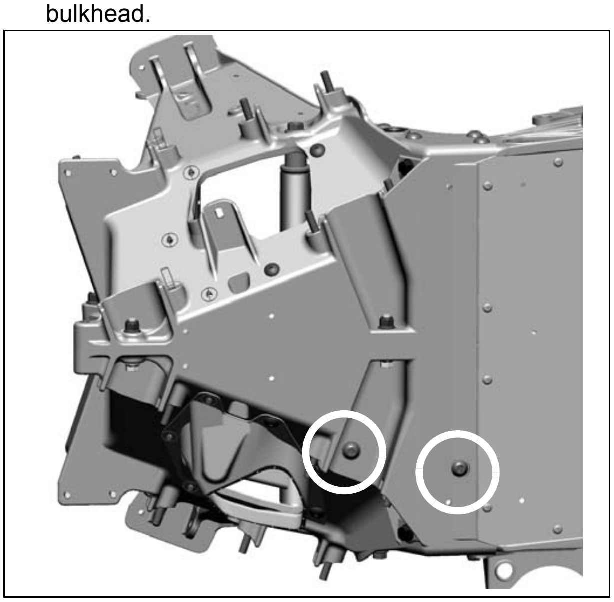
Adjusting Engine Mount Bolts/Engine Alignment

Minor adjustments to the engine mount bolts and MAG-front engine mount can be performed if the alignment tool indicates major clutch mis-alignment.

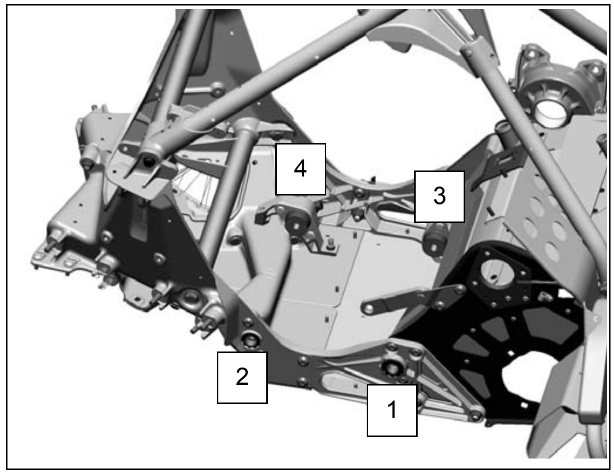
1. Loosen, but do not remove, the four engine mount bolts.



2. Loosen, but do not remove, the two Torx screws securing the MAG-front engine mount to the bulkhead.



3. Verify clutch alignment has changed using the Clutch Alignment Tool part number: PS-47477. The engine can be moved slightly with the screws loosend at the MAG-front location.
4. Once clutch alignment is set, tighten the engine mount bolts to specification in the sequence shown in the illustration.



= T
2010 - 14mm Head Diameter - DK.Green Color **DK. GREEN-M10x1.5x45 (8.8): 30 ft-lb (41 Nm)** **2011 - 14mm Head Diameter - Silver/Gray Color** **SILVER/GRY-M10x1.5x50 (12.9): 35 ft-lb (48 Nm)** **2012/Replacement Kit - 16mm Head Diameter** **Silver/Gray Color** **SILVER/GRY-M10x1.50 (12.9): 40 ft-lb (54 Nm)**

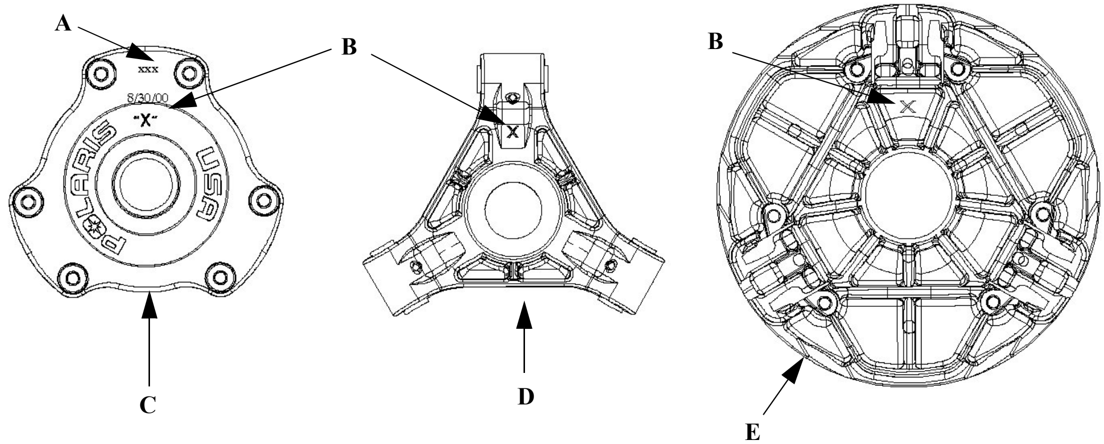
5. Torque the two Torx screws only after all four engine mount bolts are torqued to specification.

= T
Front-MAG Engine Mount Screws-to-Bulkhead Screws: 22 ft-lb (30 Nm)

6. Re-check clutch alignment. If clutch alignment is still incorrect, inspect the engine mounts, motor straps, radial inserts, and chassis for broken or twisted components.

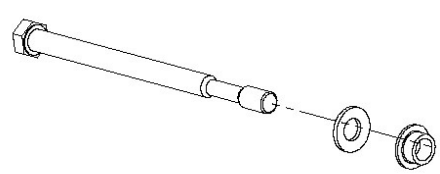
DRIVE CLUTCH

Identification



Every clutch will have the clutch part numbers 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



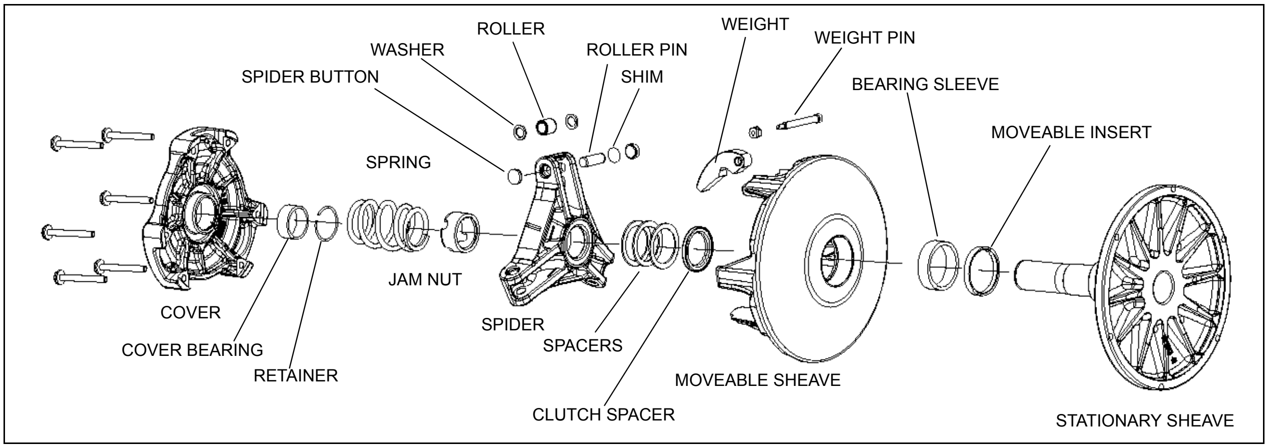
NOTE: All clutch tools can be found at the beginning of this chapter.

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 clutch 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 and wear eye protection when disassembling the clutch.

1. In a straight line, mark/etch the sheaves and the cover with a black marker or a scribe.
2. Place the drive clutch in the clutch compression tool (PN 8700220).
3. Compress the clutch in the compression tool, then secure the chain.
4. Evenly remove the cover fasteners. The cover bushing may be damaged if the cover is side-loaded or mis-aligned.
5. Carefully remove the tension from the compression tool.
6. Remove the cover and inspect the cover bushing. Replace if damaged or worn.

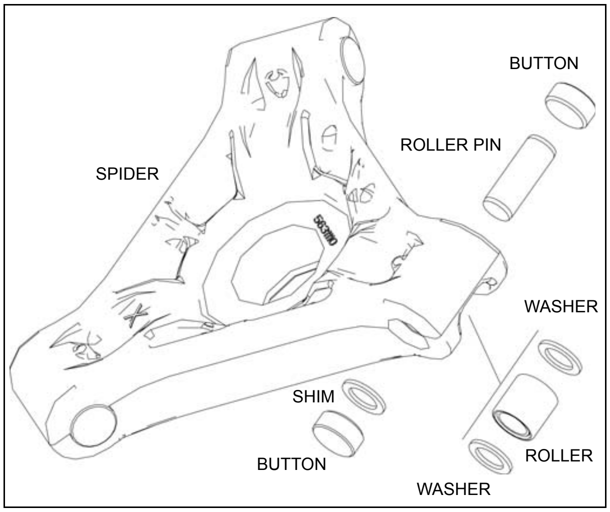
NOTE: Replace the cover bushing if the inside diameter is over 1.40″ (28.95mm)

7. Remove the spring.
8. Mount the drive clutch securely in a drive clutch holding fixture (PN 2871358).
9. Remove the jam nut in a counterclockwise direction (standard thread) using the drive clutch spider nut socket (PN 2871358).
10. Install the spider removal tool (PN 2870341), and remove the spider in a counterclockwise direction (standard thread).
11. Measure the total thickness of the spacer washers that are installed on top of the clutch spacer. Record the thickness of these spacer washers.
12. Inspect both sheave surfaces for wear or damage.
13. Inspect the moveable sheave bushing for wear or damage.
14. Remove all three drive clutch weights.
15. Inspect each weight. The surface should be smooth, with no waves or galling. Place pin inside weight to check flyweight bushing and pin surface for wear by rocking the weight back and forth.
16. Inspect all the rollers, bushings and roller pins by pulling a flat metal rod across the roller.
17. 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.

18. Inspect to see if the roller and bushing are separating.
19. Bushing must fit tightly in roller.
20. 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 a pin punch through the drilled hole in the button and drive the opposing button and pin out.
3. Remove shims (if any are installed) and note their location.
4. Flip the spider over and tap out the holed button.
5. Perform steps on remaining spider legs.

NOTE: When required, button shims are installed on the trailing (right) side of the spider leg as viewed from the front of spider.

Roller Installation

NOTE: 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. Place roller in spider leg and center it on the pin.
4. Place a second washer on the other side of the roller.
5. Place the spider on a vise.
6. Install pin centering tool (PN 2870401).
7. Drive the roller pin through the second land of the spider.
8. Repeat process for the other two rollers.

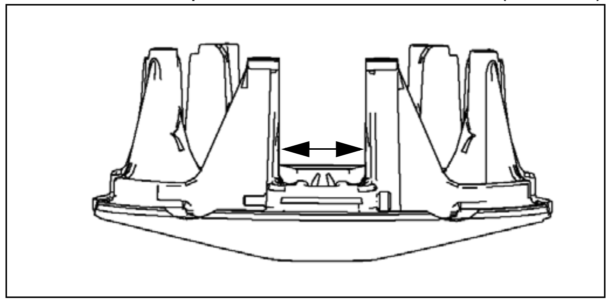
Spider Button Installation

1. A shim kit is available which contains an assortment of shims.

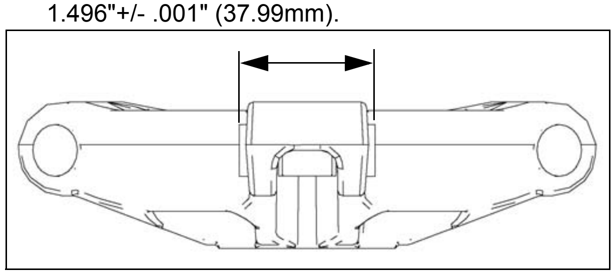
Drive Clutch Shim Kit

PN 2200387

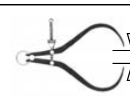
2. Measure the width of the moveable sheave towers and record. Specification is 1.50"+/- .001" (38.1mm).



3. Measure the width of each corresponding spider leg with the buttons installed and record. Specification is 1.496"+/- .001" (37.99mm).



4. Subtract the spider measurement form the tower measurement. The clearance between the spider buttons and the moveable sheave towers is .001" - .002" (.025 - .05mm).
5. Add shims beneath each trailing side spider button to obtain the specified button-to-tower clearance when assembled at each spider leg.



= In. / mm.
Button-To-Tower Clearance .001" - .002" (.025 - .05mm)

Bushing/Insert Replacement

The drive clutch moveable sheave and cover bushings/ insert are replaceable. Bushing/insert removal and installation can be aided using Bushing Removal and Installation Kit.

The kit uses the Piston Pin Puller tool. Each of the adapters and/or tools are marked with an item number. The item number is referenced within the text for identification.

Clutch Bushing Removal / Installation Kit

PN 2871025 Individual Parts: P-85 Bushing / Insert Tool = 5020627 (Item 1) Cover Bushing Tool = 5020629 (Item 3) Main Puller Adapter = 5020632 (Item 8)

Piston Pin Puller Tool

PN 2870386

Moveable Sheave Bushing/Insert Removal and Installation

NOTE: A torch may be required to release the bushing retaining compound.

1. Disassemble the clutch and remove the moveable sheave from the stationary shaft.
2. Install handle end of the piston pin puller securely into a bench vise.
3. Install the main adapter (Item 8) onto the puller.
4. Working from inside of moveable sheave, insert the moveable sheave removal tool (Item 1) into the center of the sheave. Slide sheave onto puller tool with towers facing upwards.
5. Secure puller nut. turn puller barrel to increase tension on the sheave if required.
6. Turn sheave counterclockwise on puller rod until it comes free.
7. Remove the sheave from the puller tool rod.
8. Remove and discard the old bushing and insert.
9. To install a new bushing, place the main adapter (Item 8) onto the puller rod.
10. Apply a thin film of Loctite® 648 to the leading edge of the new bushing. Push a new bushing into center of sheave by hand.

NOTE: Verify no retaining compound is deposited on the I.D. of the bushing.

11. Insert installation tool (Item 1) into center of sheave and with the towers pointing toward the vise (down), slide the sheave onto the puller rod.
12. Secure rod nut. turn barrel to apply additional tension against sheave if required.
13. Turn the sheave counterclockwise until bushing is fully seated.
14. Remove the rod nut and installation tool and repeat steps 11 to 13 and install the new insert.

Cover Bushing

NOTE: A torch may be required to release the bushing retaining compound.

1. On covers utilizing a retaining ring, remove the ring using a pick or scribe.
2. Install the main adapter (Item 8) onto the puller tool.
3. From outside of the cover, insert the removal tool (Item 3) into the cover bushing.
4. With the inside of the cover facing the vise, slide the cover onto the puller.
5. Secure the rod nut. Turn the puller barrel to apply tension if required.
6. Turn the clutch cover counterclockwise until the bushing is removed and the cover comes free.
7. Remove the tools and discard the bushing.
8. To install a new cover bushing, apply Loctite® 648 to the leading edge of the new bushing. Insert the new bushing and bushing installation tool (Item 3) from the inside of the cover.

NOTE: Verify no retaining compound is deposited on the I.D. of the bushing.

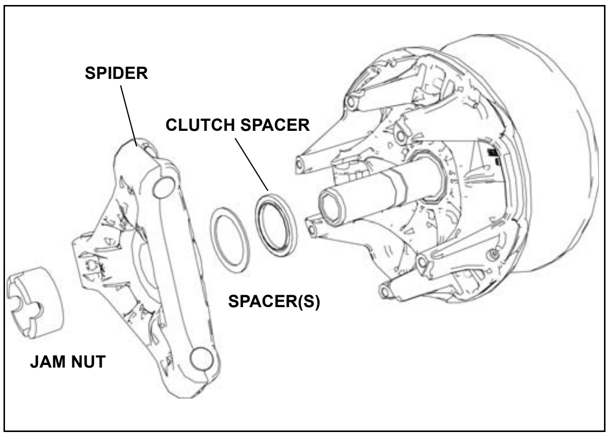
9. With the main adapter (Item 8) installed on the puller, insert the cover onto the puller rod with the outside of the cover facing the vise.
10. Secure the rod nut and tighten the puller barrel to apply more tension if required.
11. Turn the clutch cover counterclockwise on the puller rod until the bushing is fully seated. Remove the tools from the rod and remove cover.
12. Squeeze the ends of the retaining ring and reinstall into the back of the cover.

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-lb (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 6.22.
8. Apply Loctite® 243™ to shaft threads. Do not get Loctite® on moveable bushing. Using the spider tool (PN 2870341) torque to specification.

= T
Spider Torque: **280-300 ft-lb (380-406 Nm)** **Apply Loctite® 243™ to Threads**

9. Apply Loctite® 243™ to shaft threads. Do not get Loctite® on moveable bushing.Install the jam nut onto the shaft and torque it to specification.

= T
Spider Jam Nut Torque: **290-330 ft-lb (394-447 Nm)** **Apply Loctite® 243™ 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-lb (11 Nm) Use cross pattern.**

NOTE: Do not allow side loading or mis-alignment of the cover or the bushing may become damaged.

Belt-to-Sheave Clearance Adjustment

Belt-to-sheave clearance is an important factor when evaluating drive clutch performance as it controls the starting drive ratio and the position of the drive clutch weights in relation to engine RPM.

If the clearance is too small, the drive belt will drag on the face of the sheaves when the engine is at idle speed.

If the clearance is too large, the belt will slip during initial engagement causing belt burning and low-speed engine bogging.

= In. / mm.
Belt-to-Sheave Clearance: **Nominal = .020in. (0.508mm)** **Range = .005 - .035in. (0.127 - 0.89mm)**

Belt-to-sheave clearance can be adjusted by installing a different drive belt, or by adding or removing shims washers) located under the spider assembly.

To measure belt-to-sheave clearance, follow these steps:

1. Verify the drive clutch sheave faces are clean and the drive belt is in good condition, and not damaged or excessively worn.
2. Push the drive belt tight against one side of the drive

clutch sheaves. Measure the opposite side gap using a feeler gauge.

3. A slight drag should be felt when inserting the feeler gauge between the belt and sheave face.
4. Compare measured gap to the specification.

The distance between the moveable and stationary clutch sheaves and thus the belt-to-sheave clearance is determined by the number and thickness of the washer(s) installed between the spider and clutch spacer.

To increase the clearance, add or install thicker washer(s). To decrease the clearance, remove or install thinner washer(s). Either way, belt-to-sheave clearance adjustment most often requires the spider to be "re-indexed".

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″.

NOTE: Install the clutch spacer (stepped washer) with the lip facing the spider.

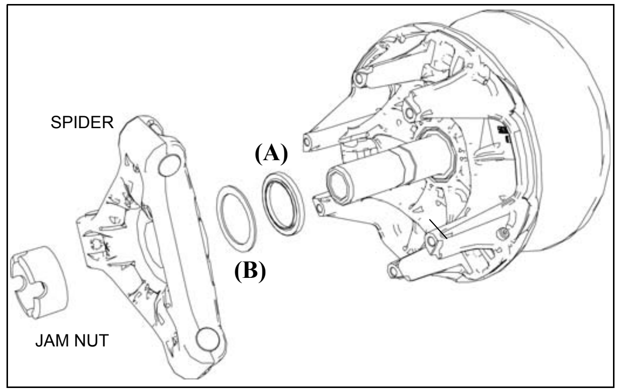
3. Place the correct number of spacer washers (B) between the spider and clutch spacer (A) (stepped washer). The following washers are available for fine tuning:

   • 5210752 - .020″ (.51mm)

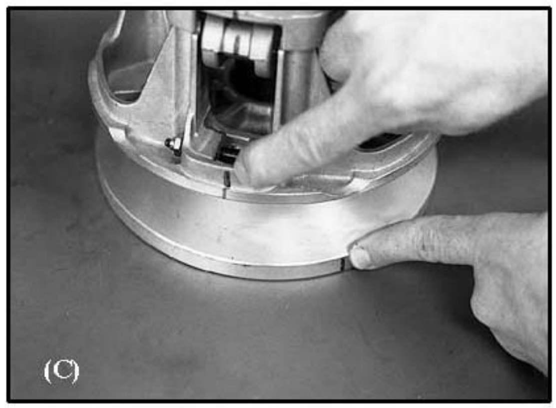
   • 5242981 - .025″ (.63mm)

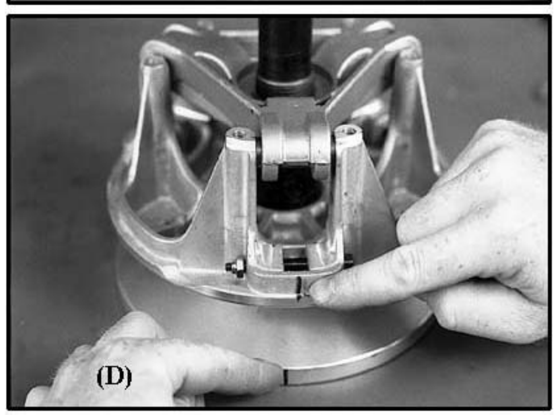
   • 5210753 - .032″ (.81mm)

   • 5210754 - .050″ (1.27mm)



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. When assembling a new clutch with all of the same components, it is not uncommon for the marks not to line up.

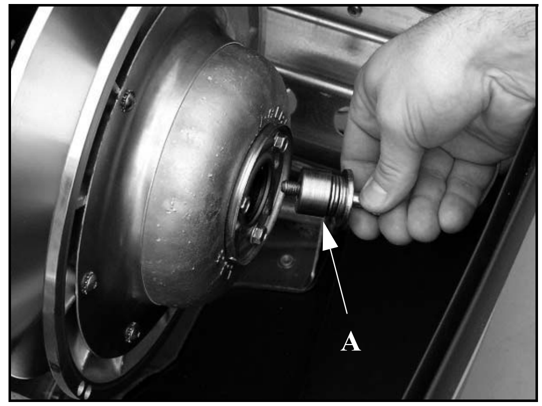
Drive Clutch Installation

NOTE: Always clean the clutch taper before re-installing clutch on engine.

1. Place the specified clutch taper reamer 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

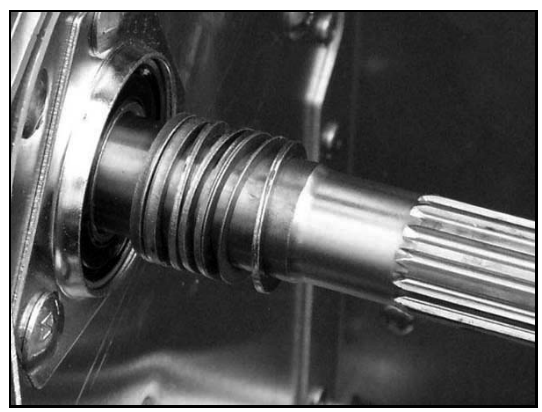


1. Remove the drive belt.
2. Apply and lock the parking brake.
3. Remove the driven clutch bolt and washers (A).

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.

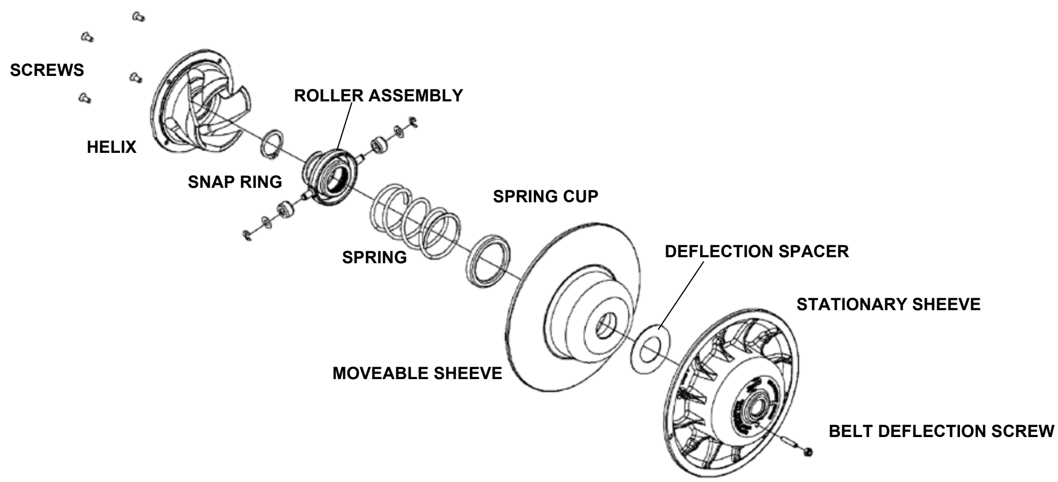
Driven Clutch Installation



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, and the clutch floats on the shaft.

6

Team LWT Components



= T

Helix Fasteners: 60-80 in-lb (7-9 Nm) **Driven Clutch Retaining Fastener: 17 ft-lb (23 Nm)**

Disassembly and Assembly Process

1. Remove the screws from the helix, then carefully pry the helix out of the moveable sheave, or gently tap shaft on a block of wood.
2. Install the clutch in the clutch compressor fixture, PN 8700220. Install the extensions, PN PS-45909.

CAUTION

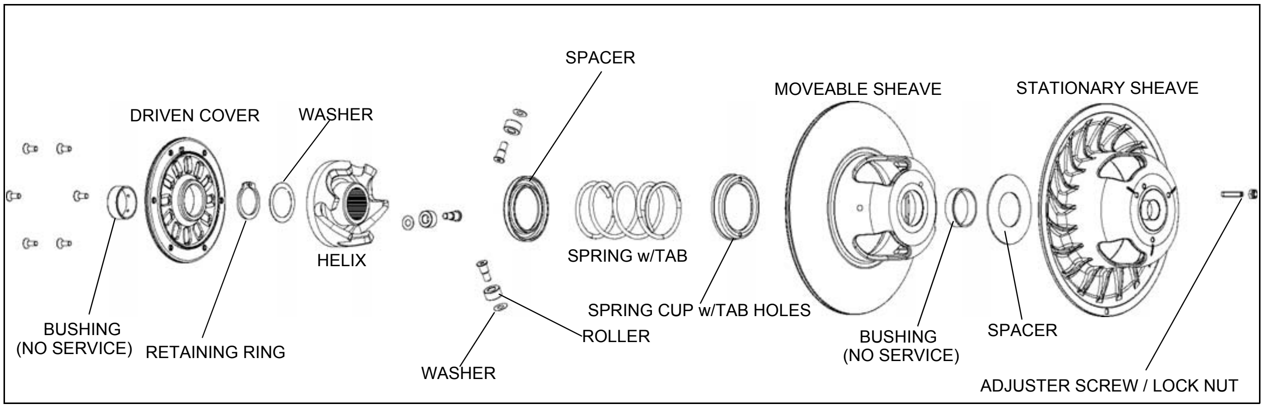
Driven spring under pressure. Wear eye protection when removing snap ring and helix.

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. Disassemble 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 specification.

= T

Helix Fasteners: 60-80 in-lb. (7-9 Nm)

Polaris SPA-P2 Driven Clutch Components



= T

Driven Cover Screws: 12 ft-lb (16Nm)
Deflection Adjuster Screw Lock Nut: 10 ft-lb (12Nm)
Driven Clutch Retaining Fastener: 18 ft-lb (25 Nm)
Roller Fasteners: 110 in-lb (12.5 Nm)

Disassembly and Assembly Process

1. Remove the driven cover screws and cover. Note the "X" in the cover and moveable sheave are in alignment.
2. Install the clutch into a screw-down clutch compression fixture. Screw-down clutch compressors are commercially available through after-market companies such as Team Industries Inc.

NOTE: The 8700220 clutch compressor and PS-45909 extensions will not work on a P2 driven clutch.

3. Remove the snap ring. Verify the washer is not lodged inside the snap ring groove.

CAUTION

Driven spring under pressure. Wear eye protection when removing snap ring and helix.

4. Unscrew the compressor to remove the helix, spring cups and spring. Note the orientation of the spring spacer, spring cup, and tabbed spring. Disassemble the clutch sheaves.
5. Inspect the helix, cup/spacer, spring, bushings, rollers, and clutch sheaves for damage.
6. The cover and sheave bushings are not serviceable. If bushings are severely worn or binding, clutch assembly replacement is required.
7. Clean the sheaves with a Scotch Brite pad and a solution of warm, soapy water.
8. Inspect the rollers for abnormal wear and replace as required. Install new rollers with the ejector pin marks on the rollers facing center of sheave (visible).
9. Install the sheave spacer, and then the moveable sheave.
10. Next, install the metal spring cup, spring, and then spring spacer. Make sure the spring tab is in one of the spring cup holes, and engaged in the moveable sheave hole.
11. Slide the helix down the stationary shaft.

6

12. Align the helix alignment hole with the "X" on the moveable sheave.

13. Align the wide gap in the helix splines with the skip tooth in the stationary sheave shaft.
14. Visually verify the rollers are positioned underneath each corresponding helix ramp.
15. Compress the helix down into the sheave. Install the washer and snap ring. Verify the snap ring is fully seated in the groove with the sharp edge upward.
16. Carefully release the clutch compressor.
17. Align the two "X" marks and install the cover. Torque fasteners to specification.

= T
P2 Cover Fastener Torque: **12 ft-lb (16 Nm)**

PVT SYSTEM TROUBLESHOOTING

Drive Belt

- Verify specified drive belt is installed on vehicle.
- Drive belts have different width, angle and length measurements. Reference: "Drive Belts" section for specifications.
- Installing a non-specified drive belt often requires drive clutch spacer adjustments to achieve correct belt-to-sheave clearance.
- Install drive belt so part number can be read from left-side of vehicle. Always install belt using the same orientation as it was before removal.
- **PREMATURE WEAR:** Ensure correct belt is installed. Inspect belt-to-sheave clearance, deflection, and clutch alignment.
  Adjust gearing for rider type. Verify correct clutch weight/spring package is installed.
  Change riding habits/style.
- **OPERATING RPM DROP:** Drive belts used on snowmobiles operated at high speeds/loads (mountain use) for extended periods of time should be inspected for glazing at 1,000 mile intervals.
- **CORD POP-OUT:** Inspect drive/driven clutch alignment, motor mounts, and deflection. Set driven clutch float.
- Remove belt during off-season storage period.

Drive Clutch

- **PREMATURE WEAR:**
  Verify correct clutch weight/spring package is installed.
  Inspect spider rollers/bushings for damage and uneven wear.
  Inspect sheave faces for premature wear. De-glaze faces with 1500-2000 grit sand paper.
  Verify jam nut/spider are torqued to specification.
- **OPERATING RPM DROP:**
  Replace drive clutch spring and retest.
  Inspect spider rollers/bushings.
  Inspect/adjust belt-to-sheave clearance.
  Inspect moveable/cover bushings.

Driven Clutch

- **PREMATURE WEAR:**
  Verify correct clutch helix/spring is installed.
  Inspect rollers/bushings for damage and uneven wear.
  Inspect sheave faces for premature wear. De-glaze faces with 1500-2000 grit sand paper.
  Verify driven clutch floats on jackshaft.
- **OPERATING RPM DROP:**
  Replace spring and retest.
  Inspect spider rollers/bushings.
  Inspect moveable/cover bushings.

CHAPTER 7
Shocks

7

SPECIAL TOOLS

Shock Rebuilding Tools

Special Tools

PART NUMBER	DESCRIPTION
2200421	Gas Shock Recharging Kit
PS-45259	Gas Fill Tool
PS-45259-1	Gas Fill Tool Repalcement Needles (20 Pack)
2871351	IFP Depth Tool (Fox/Walker Evans)
PS-45629	Shock Body Holding Tool (1 3/4”)
2871071	Shock Body Holding Tool (1 5/8”)
PS-45281	Shock Body Holding Tool (2 1/8”)
2871352	Shock Rod Holding Tool 1/2" Diameter Rod
2872429	Shock Rod Holding Tool 5/8" Diameter Rod
2201639	Shock Shaft Seal Protector 1/2" Diameter
2201640	Shock Shaft Seal Protector 5/8" Diameter
2870623	Shock Absorber Spring Compression Tool
2870803	Shock Spring Pre-Load Adjustment Tool
PS-45908	Walker Evans T-Handle Tool

Ryde FX Shock Special Tools

PART NUMBER	DESCRIPTION
PS-45260	Ryde FX Lower Retainer Wrench
PS-45261	Ryde FX IFP Positioning / Extraction Tool
PS-45262	Ryde FX Cylinder Head Wrench
PS-45263	Ryde FX Wear Band Tool
PS-45280	Ryde FX Shock Collar Tool

FOX Shock Special Tools

PART NUMBER	DESCRIPTION
2871232	Fox Shock Spanner
PS-44925	Fox Inner Tube Puller (Position Sensitve Shocks)

NOTE: Polaris dealers can order the tools listed above through the SPX Service Tools catalog or by calling SPX @ 1-800-328-6657.

VALVE SHIMS

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	

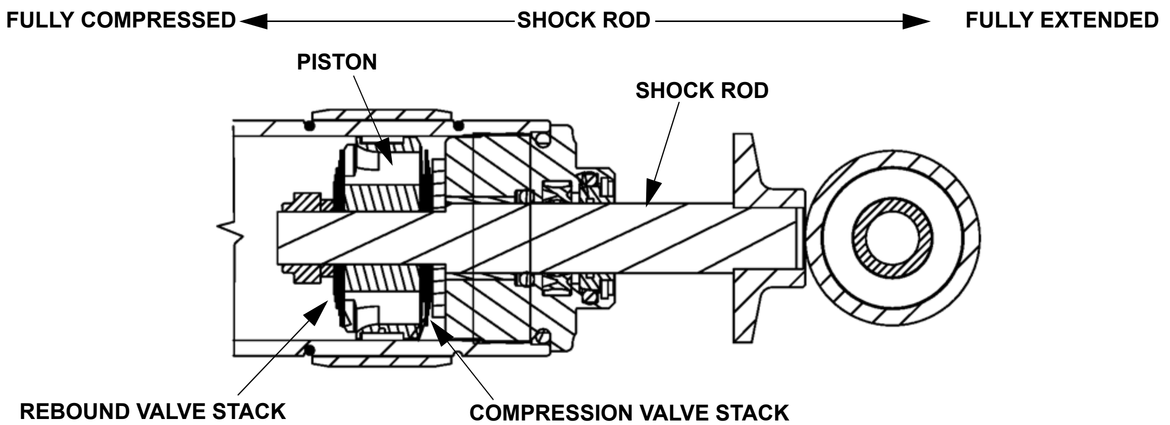
Walker Evans™ Shock 3/8" Valve Part Numbers

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	
1800379	1.250	
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	
1800380	1.200	
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

Valve Shim Arrangement

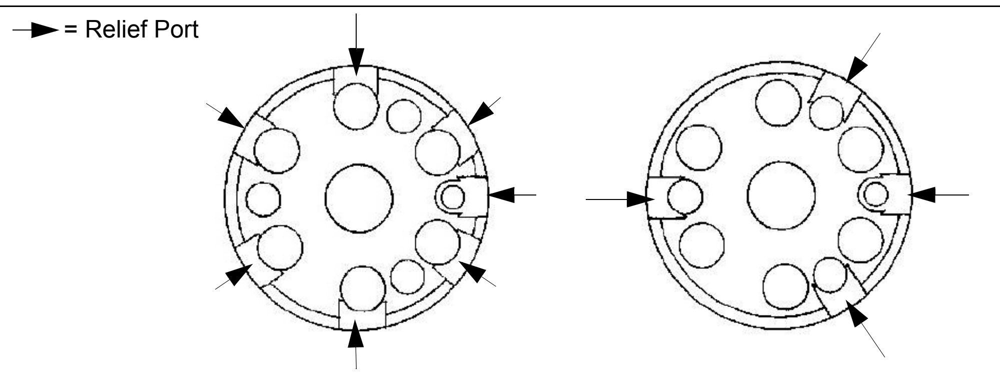
Shown below is an example of how valving stacks are arranged.

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, the piston is convex and color-coded.
Blue = COMPRESSION SIDE
Red = REBOUND SIDE.

SPECIFICATIONS

2010 Rush Shock Specifications

NOTE: All valve code measurements are in inches.

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).

2010 IFS Shock

SHOCK PN	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043436	Walker Evans	18.60	12.16	6.44	.625	2.00	Full	200

2010 IFS Shock

SHOCK	7043436
REBOUND	.625 x .065 .700 x .010 .800 x .010 .900 x .010 .900 x .010 1.00 x .010 1.10 x .008 1.20 x .008
Piston Orifice	.052
Shaft Bleed	.082
COMPRESSION	1.30 x .006 .800 x .012 1.20 x .006 .900 x .015 1.100 x .006 1.000 x .006 .900 x .006 .800 x .006 .700 x .006 .625 x .065 .875 x .090
ADJUSTER	1.00 X .025 1.00 X .025 .625 X .065

2010 Front Track Shock (FTS)

SHOCK PN	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043412	Walker Evans	11.75	7.98	3.77	.625	2.25	Full	200

2010 Front Track Shock

SHOCK	7043412
REBOUND	.625 x .065 .700 x .008 .800 x .008 .900 x .008 1.00 x .008 1.10 x .008 1.25 x .010 1.25 x .010
Piston Orifice	.063
COMPRESSION	1.30 x .010 1.10 x .010 .900 x .010 1.30 x .010 1.25 x .010 1.10 x .008 1.00 x .008 .900 x .008 .800 x .008 .700 x .008 .625 x .065
ADJUSTER	Compression .800 x .006 Rebound 1.0 x .025 1.0 x .025 .900 x .015 .625 x .063

2010 Rear Track Shock (RTS)

SHOCK PN	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043417	Walker Evans	17.25	12.00	5.25	.625	2.00	Full	200

2010 Rear Track Shock

SHOCK	7043417
REBOUND	.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 1.25 x .015
Shaft Bleed	.086
COMPRESSION	1.300 x .008 1.10 x .008 .900 x .010 1.30 x .008 1.20 x .008 1.10 x .008 1.00 x .008 .900 x .008 .800 x .008 .700 x .008 .875 x .090
ADJUSTER	1.00 x .025 1.00 x .025 .625 x .065

2011 PRO-RIDE Model Shock Specifications

NOTE: All valve code measurements are in inches.

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).

2011 IFS Shocks

SHOCK PN	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043631	Fox	18.02	12.13	5.89	.498	1.75	Full	200
7043650	Walker Evans	18.0	12.16	5.84	.625	2.0	Full	200
7043636	Walker Evans	18.0	12.16	5.84	.625	2.0	Full	200
7043568	Walker Evans	18.6	12.16	6.44	.625	2.0	Full	200
7043429	Walker Evans	17.5	11.5	6.0	.50	6.875	Full	200

2011 IFS Shocks

SHOCK	7043631	7043650	7043636	7043568	7043429
REBOUND	.620x.093 .700x.010 .800x.010 .900x.012 1.00x.012 1.10x.012 .800x.012 1.250x.006	.625x.065 .700x.010 .800x.010 .900x.010 1.00x.010 1.10x.008 1.20x.008	.625x.065 .700x.010 .800x.010 .900x.010 1.00x.010 1.10x.010 1.25x.010	.625x.065 .700x.012 .800x.012 .900x.012 1.00x.012 1.10x.012 1.20x.012 1.25x.015	.875x.090 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.20x.008 1.25x.008
Piston Orifice	.093	.052	.042	.040	.052
Shaft Bleed	N/A	.086	.082	.082	N/A
COMPRESSION	1.30x.008 .800x.010 1.250x.008 1.10x.008 1.00x.008 .900x.006 .800x.006 .700x.006 .620x.020 1.125x.093	1.30x.006 .800x.012 1.20x.006 .900x.012 1.10x.008 1.00x.008 .900x.010 .800x.010 .700x.010 .625x.065 .875x.090	1.30x.008 .900x.010 1.20x.008 .900x.008 1.25x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.010 .875x.090	1.30x.010 1.00x.008 .900x.010 1.20x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.015 .875x.090	1.30x.010 1.20x.008 1.00x.008 .800x.012 1.25x.010 1.20x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.015 .875x.090
ADJUSTER	N/A	REBOUND .800x.012 COMPRESSION 1.00x.025 1.00x.025 .625x.065	REBOUND 1.00x.025 1.00x.025 .625x.065	1.00x.025 1.00x.025 .625x.065	N/A

7

2011 Front Track Shocks (FTS)

SHOCK PN	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043632	Fox	11.67	8.33	3.34	.498	.69	Full	250
7043642	Walker Evans	11.67	8.33	3.34	.625	2.25		200
7043634		12.34	8.84	3.5		2.0		
7043628		11.75	8.21	3.54	.50	.75		
7043602						4.30		

2011 Front Track Shocks

SHOCK	7043632	7043642	7043634	7043628	7043602
REBOUND	.620x.093 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.250x.008	.625x.065 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.25x.012 .900x.006 1.25x.008	.625x.065 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.25x.010 1.25x.010	.625x.065 .700x.010 .800x.010 .900x.010 1.00x.010 1.10x.010 1.25x.012 1.25x.012	.625x.065 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.25x.010 1.25x.010
Piston Orifice	.078	.063	.086	.063	.063
COMPRESSION	1.30x.008 .900x.008 1.250x.012 1.10x.012 1.00x.012 .900x.012 .800x.012 .700x.012 1.125x.093	1.30x.008 .900x.010 1.30x.012 1.25x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .625x.065	1.30x.008 1.20x.008 .900x.010 1.30x.010 1.25x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .625x.065	1.30x.010 1.10x.010 .900x.008 1.30x.012 1.25x.012 1.10x.010 1.00x.010 .900x.010 .800x.010 .700x.008 .875x.090	1.30x.010 1.10x.010 .900x.010 1.30x.010 1.25x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .625x.065
ADJUSTER	N/A	REBOUND .800x.012 COMPRESSION 1.00x.025 1.00x.025 .900x.015 .625x.065	1.00x.025 1.00x.025 .900x.015 .625x.065	N/A	N/A

2011 Rear Track Shocks (RTS)

SHOCK PN	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043633	Fox	17.29	12.06	5.23	.498	2.26		
7043651		17.25	12.0	5.25	.625	2.0		
7043635	Walker Evans	16.71	10.96	5.75	.50	2.25	Full	200
7043629		16.8	11.35	5.45	.625	2.0		
7043603					.50	6.25		

2011 Rear Track Shocks

SHOCK	7043633	7043651	7043635	7043629	7043603
REBOUND	.620x.093 .700x.015 .800x.015 .900x.015 1.00x.015 1.10x.015 1.250x.015 1.250x.015 1.250x.015	.625x.065 .700x.015 .800x.015 .900x.015 1.00x.015 1.10x.015 1.20x.015 1.25x.015 1.25x.015 1.25x.015	.625x.065 .700x.010 .800x.010 .900x.010 1.00x.012 1.10x.012 1.25x.015 1.25x.015 1.25x.015	.625x.065 .700x.015 .800x.015 .900x.015 1.00x.015 1.10x.015 1.20x.012 1.25x.015 1.25x.015	.875x.090 .700x.008 .800x.015 .900x.012 1.00x.010 1.10x.010 1.20x.010 1.25x.008
Piston Orifice	.093	N/A	.086	N/A	.069
Shaft Bleed	N/A	.086	N/A	.082	N/A
COMPRESSION	1.30x.006 .700x.012 1.250x.008 1.10x.008 1.00x.006 .900x.006 .800x.006 .700x.006 .620x.020 1.125x.093	1.30x.006 1.10x.006 .800x.012 1.20x.006 1.10x.006 1.00x.006 .900x.008 .800x.008 .700x.008 .625x.065 .875x.090	1.30x.008 1.25x.006 .800x.012 1.25x.010 1.10x.010 1.00x.010 .900x.010 .800x.010 .700x.010 .625x.065	1.30x.010 1.20x.008 1.00x.010 1.25x.012 1.20x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .875x.065	1.30x.008 1.10x.010 .900x.008 1.30x.010 1.20x.010 1.10x.010 1.00x.010 .900x.010 .800x.010 .700x.008 .875x.090
ADJUSTER	N/A	REBOUND .800x.012 COMPRESSION 1.00x.025 1.00x.025 .900x.015 .625x.065	1.10x.025 1.10x.025 1.00x.025 .875x.090	REBOUND 1.00x.025 1.00x.025 .625x.065	N/A

2012 PRO-RIDE Model Shock Specifications

NOTE: All valve code measurements are in inches.

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).

2012 IFS Shocks

SHOCK PN	MODEL	EXTENDED LENGTH (INCHES)	COLLAPSED LENGTH (INCHES)	STROKE (INCHES)	SHOCK ROD (INCHES)	IFP DEPTH (INCHES)	OIL VOLUME	PSI
7043725	Fox	17.19	11.15	6.04	.498	1.07	Full	200
7043731	Walker Evans	17.3	11.45	5.85	.625	2.0		
7043749		17.7	11.63	6.07	.625			
7043757								
7043568		18.6	12.16	6.44	.625			
7043429		17.5	11.5	6.0	.50	6.875		

2012 IFS Shocks

SHOCK	7043725	7043731	7043749	7043757	7043568	7043429
REBOUND	.620x.093 .700x.012 .800x.012 .900x.012 1.0x.012 1.10x.012 .800x.012 1.25x.006	.625x.065 .700x.008 .800x.008 .900x.008 1.0x.008 1.10x.008 .800x.010 1.20x.006	.625x.065 .700x.008 .800x.008 .900x.008 1.0x.008 1.10x.008 .800x.010 1.20x.006	.625x.065 .700x.010 .800x.010 .900x.010 1.0x.010 1.10x.010 1.20x.010	.625x.065 .700x.012 .800x.012 .900x.012 1.00x.012 1.10x.012 1.20x.012 1.25x.015	.875x.090 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.20x.008 1.25x.008
Piston Orifice	.093	.052	.052	.042	.040	.052
Shaft Bleed	N/A	.086	N/A	.082	.082	N/A
COMPRESSION	1.30x.008 .800x.010 1.25x.012 1.10x.012 1.0x.008 .900x.008 .800x.006 .700x.006 .620x.020 1.125x.093	1.30x.006 .800x.012 1.20x.006 .900x.012 1.10x.008 1.0x.008 .900x.010 .800x.010 .700x.010 .625x.065 .875x.090	1.30x.006 .800x.012 1.20x.006 .900x.012 1.10x.008 1.0x.008 .900x.010 .800x.010 .700x.010 .625x.065 .875x.090	1.30x.008 .900x.010 1.20x.010 .900x.008 1.25x.010 1.10x.010 1.0x.010 .900x.010 .800x.010 .700x.010 .875x.090	1.30x.010 1.00x.008 .900x.010 1.20x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.015 .875x.090	1.30x.010 1.20x.008 1.00x.008 .800x.012 1.25x.010 1.20x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.015 .875x.090
ADJUSTER	N/A	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .625x.065	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .625x.065	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .625x.065	1.00x.025 1.00x.025 .625x.065	N/A

2012 Front Track Shocks (FTS)

SHOCK PN	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043634	Walker Evans	12.34	8.84	3.5	.625	2.0	Full	200
7043628		11.75	8.21	3.54	.50	.75		
7043602						4.3		
7043737	Fox	12.27	8.63	3.64	.498	.73		250
7043738	Walker Evans	12.25	8.64	3.61	.625	2.25		200
7043720	Fox	11.67	8.33	3.34	.498	.74		250
7043722	Walker Evans	11.67	8.33	3.34	.625	2.25		200

2012 Front Track Shocks

SHOCK	7043737	7043738	7043720	7043722	7043634	7043628	7043602
REBOUND	.620x.093 .700x.008 .800x.008 .900x.008 1.0x.008 1.10x.008 1.25x.008 .800x.008 1.25x.008	.625x.065 .700x.008 .800x.008 .900x.008 1.0x.008 1.10x.008 1.25x.012 .900x.008 1.25x.010	.620x.093 .700x.008 .800x.008 .900x.008 1.10x.008 1.25x.008 .800x.008 1.25x.008	.625x.065 .700x.008 .800x.008 .900x.008 1.0x.008 1.10x.008 1.25x.012 .900x.008 1.25x.010	.625x.065 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.25x.010 1.25x.010	.625x.065 .700x.010 .800x.010 .900x.010 1.00x.010 1.10x.010 1.25x.012 1.25x.012	.625x.065 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.25x.010 1.25x.010
Piston Orifice	.070	.063	.070	.063	.086	.063	.063
COMPRESSION	1.30x.010 1.25x.015 .900x.006 1.25x.015 1.25x.015 1.10x.012 1.0x.012 .900x.012 .800x.012 .700x.012 1.125x.093	1.30x.012 1.10x.012 1.0x.010 1.30x.010 1.25x.008 1.10x.008 1.0x.008 .900x.008 .800x.008 .700x.008 .625x.065 .875x.095	1.30x.015 1.10x.015 .900x.006 1.25x.015 1.10x.015 1.0x.012 .900x.012 .800x.012 .700x.012 1.125x.093	1.30x.012 1.10x.012 1.0x.010 1.30x.010 1.25x.008 1.10x.008 1.0x.008 .900x.008 .800x.008 .700x.008 .625x.065 .875x.095	1.30x.008 1.20x.008 .900x.010 1.30x.010 1.25x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .625x.065	1.30x.010 1.10x.010 .900x.008 1.30x.012 1.25x.012 1.10x.010 1.00x.010 .900x.010 .800x.010 .700x.008 .875x.090	1.30x.010 1.10x.010 .900x.010 1.30x.010 1.25x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .625x.065
ADJUSTER	N/A	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .900x.015 .625x.065	N/A	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .900x.015 .625x.065	1.00x.025 1.00x.025 .900x.015 .625x.065	N/A	N/A

7

2012 Rear Track Shocks (RTS)

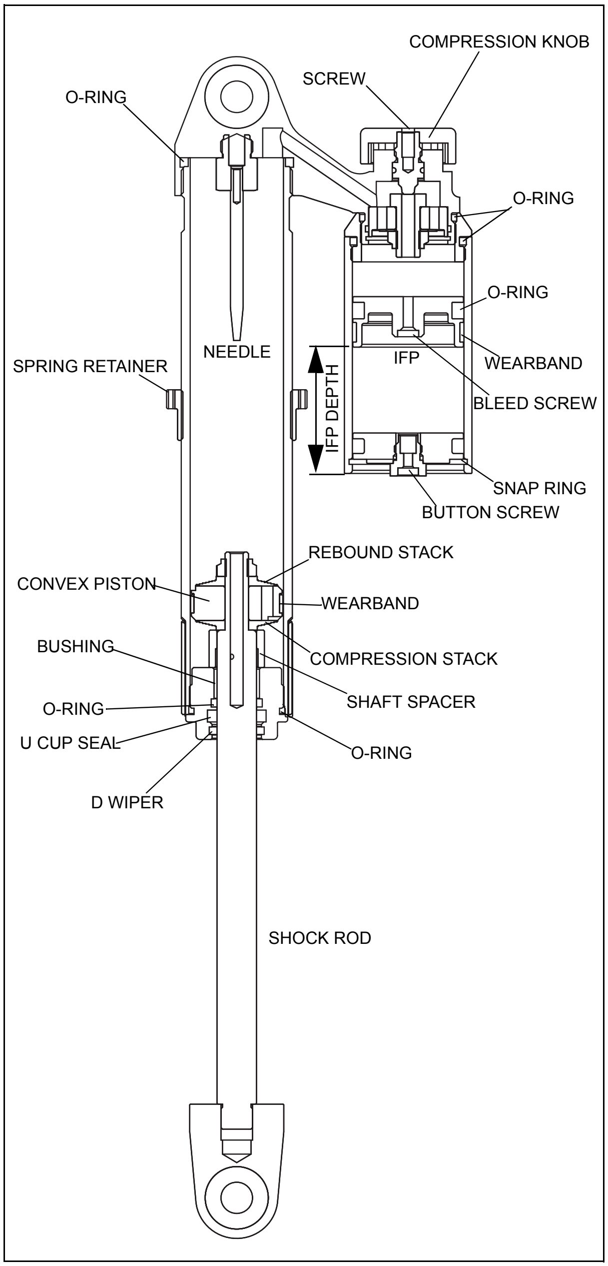
SHOCK PN	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043721	Fox	17.29	12.06	5.23	.498	2.26	Full	200
7043723	Walker Evans	17.25	12.0	5.25	.625	2.0		
7043635		16.71	10.96	5.75	.50	2.25		
7043629		16.80	11.35	5.45	.625	2.0		
7043603					.50	6.25		

2012 Rear Track Shocks

SHOCK	7043721	7043723	7043635	7043629	7043603
REBOUND	.620x.093 .700x.012 .800x.012 .900x.012 1.0x.012 1.10x.015 1.25x.015 1.25x.015	.625x.065 .700x.012 .800x.012 .900x.012 1.0x.012 1.10x.012 1.20x.012 1.25x.015 1.25x.015	.625x.065 .700x.010 .800x.010 .900x.010 1.00x.012 1.10x.012 1.25x.015 1.25x.015 1.25x.015	.625x.065 .700x.015 .800x.015 .900x.015 1.00x.015 1.10x.015 1.20x.012 1.25x.015 1.25x.015	.875x.090 .700x.008 .800x.015 .900x.012 1.00x.010 1.10x.010 1.20x.010 1.25x.008
Piston Orifice	.093	.055	.086	N/A	.069
Shaft Bleed	N/A	.086	N/A	.082	N/A
COMPRESSION	1.30x.006 .700x.012 1.25x.008 1.10x.008 1.0x.006 .900x.006 .800x.006 .700x.006 .620x.020 1.125x.093	1.30x.006 1.25x.006 .900x.010 1.30x.008 1.20x.008 1.10x.008 .800x.008 1.20x.008 1.0x.006 .900x.006 .800x.006 .700x.006 .875.090	1.30x.008 1.25x.006 .800x.012 1.25x.010 1.10x.010 1.00x.010 .900x.010 .800x.010 .700x.010 .625x.065	1.30x.010 1.20x.008 1.00x.010 1.25x.012 1.20x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .875x.065	1.30x.008 1.10x.010 .900x.008 1.30x.010 1.20x.010 1.10x.010 1.00x.010 .900x.010 .800x.010 .700x.008 .875x.090
ADJUSTER	N/A	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .900x.015 .625x.065	1.10x.025 1.10x.025 1.00x.025 .875x.090	Rebound 1.00x.025 1.00x.025 .625x.065	N/A

SHOCK MAINTENANCE

Walker Evans Coil-Over Piggyback Shock



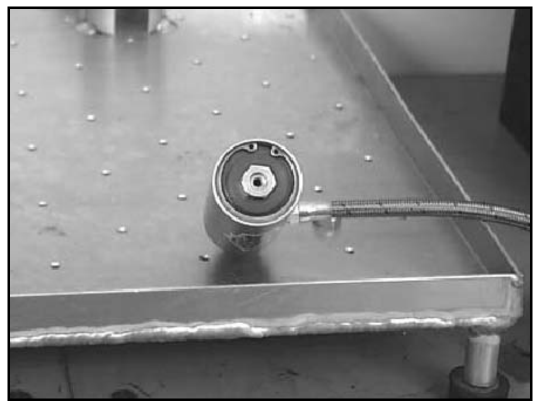
Walker Evans Remote Reservoir / Piggyback Shock Disassembly

NOTE: Remote reservoir shock shown.

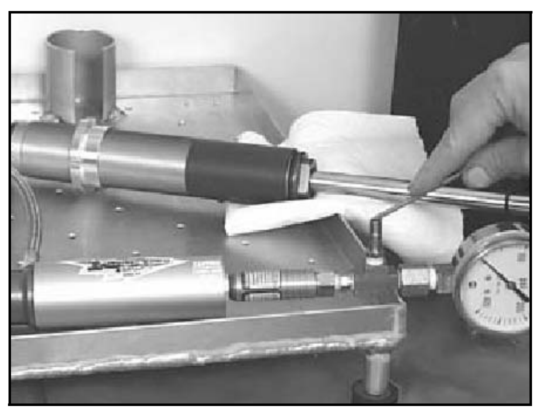
IMPORTANT: To prevent damage or marks to the shock, the use of soft jaws on a vise is recommended.

CAUTION
SHOCK CONTENTS UNDER HIGH PRESSURE. ALWAYS WEAR SAFETY GLASSES WHEN WORKING WITH SHOCKS.

1. Clean and carefully remove shock from the suspension.
2. Remove button head screw from reservoir cap (if applicable).

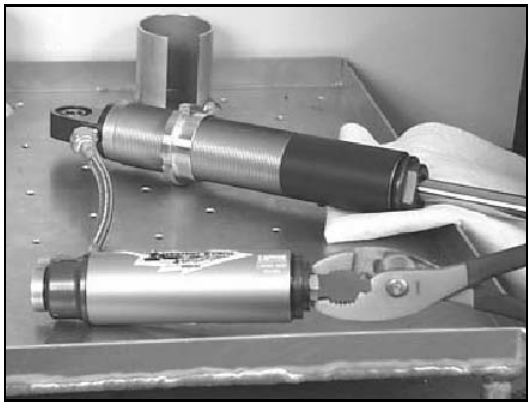


3. Insert safety needle carefully and depressurize the shock.



7

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.

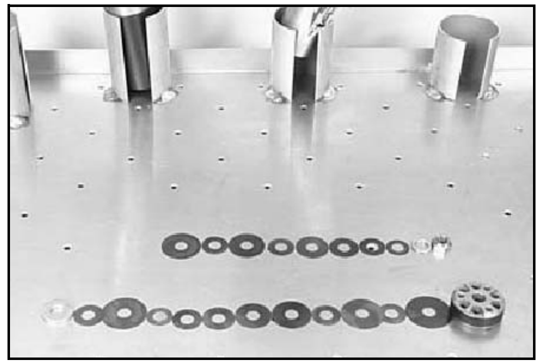
NOTE: Insert the IFP tool (PN PS-45908) and cycle the internal floating piston (IFP) a few times to purge the shock oil from the reservoir.

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 / Piggyback Shock Assembly

⚠ CAUTION
SHOCK CONTENTS UNDER HIGH PRESSURE. ALWAYS WEAR SAFETY GLASSES WHEN WORKING WITH SHOCKS.

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.

= T
Lock Nut Torque: 14 ft-lb (19 Nm)

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 on remote reservoir shocks 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.

7

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.

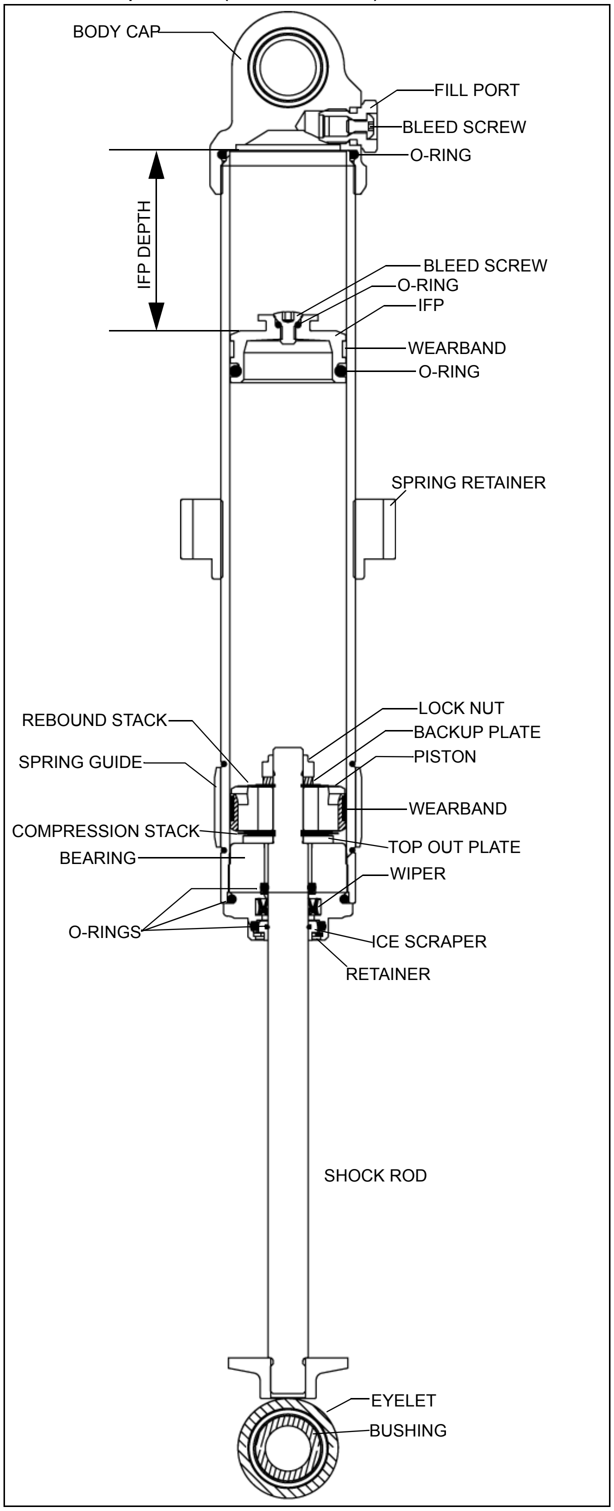
NOTE: During installation, some shock oil will over flow. Wrap a shop cloths around the shock body to catch any oil overflow.

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.

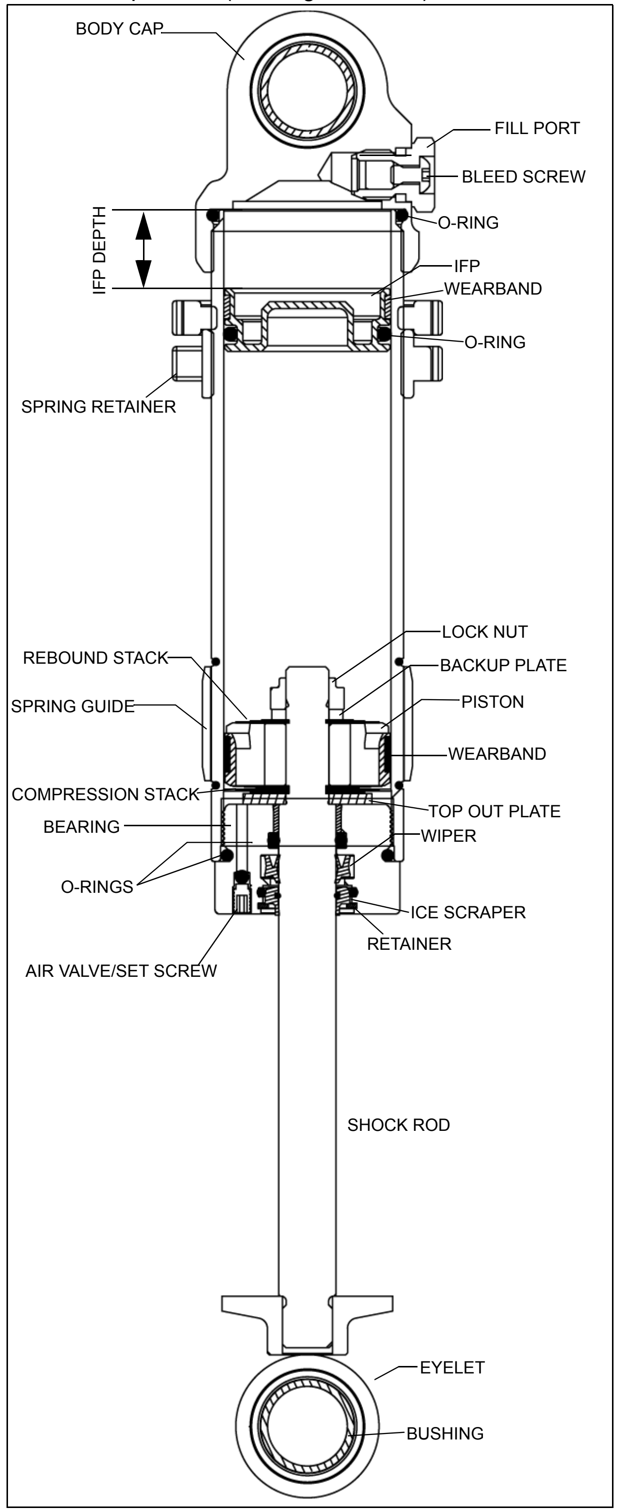
16. Tighten the cylinder head onto the shock body.
17. Verify the IFP is set at the specified depth. If not, verify there is oil on top of the IFP, then open the bleed screw.
18. Set the IFP to specification, then close the bleed screw.
19. Pour out any remaining shock oil from the reservoir.
20. Install 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.

FOX IFP Monotube Shock Disassembly

Shock Components (IFP Air Bleed)



Shock Components (Bearing Air Bleed)



7

Shock Disassembly

> **⚠ CAUTION**
>
> SHOCK CONTENTS UNDER HIGH PRESSURE. ALWAYS WEAR SAFETY GLASSES WHEN WORKING WITH SHOCKS.

1. Remove the shock from the vehicle. Clean the shock assembly to remove all dirt and foreign material. Inspect the assembly for any noticeable signs of damage.
2. Clamp the body cap end of the shock in a soft-jawed bench vise.
3. Remove the bleed screw from the fill port. Insert the needle of the gas fill tool, PN PS-45259, into the fill port to depressurize the shock. Push the shock rod down to ensure all nitrogen is expelled. Remove the fill port from the body cap.
4. Remove the bearing assembly from the shock body. Remove the bearing assembly/shock rod from the shock body.
5. Release the bench vise and drain all of the oil out of the shock body into a suitable container. Discard the oil in accordances with local rules and regulations.
6. Position the bearing cap end of the shock over a clean shop towel on the bench. Use compressed air applied to the fill port bore to push the IFP out of the shock body.
7. Using the shock body holding tool, PN 2871071, clamp the shock body with the body cap pointed up in a bench vise. Remove the body cap from the tube.
8. Remove the lock nut from the shock rod. Remove the backup plate, rebound stack, piston, compression stack, and top-out plates as one assembly. Orientate these components on a clean shop towel as they are assembled on the shock rod.
9. Remove the shock rod from the bearing.
10. With the shock disassembled, inspect all o-rings, wiper, wearbands, and the ice scraper. It is recommended that all be replaced with new parts.
11. Inspect the shock rod and shock body tube for damage and/or pitting.
12. Inspect the rebound and compression stack valve shims. Shims that are damaged, bent, chipped, or wavy in appearance must be replaced.
13. Thoroughly clean all parts and dry with compressed air.

FOX IFP Monotube Shock Assembly

Shock Assembly - IFP Air Bleed Shocks

> **⚠ CAUTION**
>
> SHOCK CONTENTS UNDER HIGH PRESSURE. ALWAYS WEAR SAFETY GLASSES WHEN WORKING WITH SHOCKS.

1. Place the shock rod eyelet in the bench vise. Apply a liberal amount of shock oil to the surface of the shock rod and internal bore of the bearing.

NOTE: Install jounce bumper if equipped.

2. Place the seal protector, PN 2201639, over the threaded end of the shock rod. Carefully install the bearing onto the shock rod.
3. Install the topout plate, and compression valve stack. Use a Vernier Caliper and reference the valve stack specifications in this chapter if unsure of the shim order of assembly.
4. Install a new wearband on the piston valve. Lubricate the piston with shock oil. Install the piston with the greater number of relief ports facing up away from the compression stack.
5. Install the rebound valve stack. Again, if unsure of order of shims, use a Vernier Caliper and reference the valve stack specifications for the shock in this chapter.
6. Install the backup plate. Remove the seal protector and install a new lock nut. Torque lock nut to 15-20 ft-lb (20-27 Nm).
7. Remove the shock rod from the bench vise. Secure the shock body with shock body holding tool in the vise.
8. Install the bearing/shock rod assembly into the body tube. Tighten securely. Remove shock body from vise. Secure shock rod eyelet in bench vise.
9. With the shock rod eyelet mounted in the vise, and the body cap end of the shock pointed up, slowly fill 3/4 of the body tube with new shock oil.

> **Fox 5W Shock Oil**
> **2870995(Quart)**

10. Allow the oil to sit for several minutes to allow air bubbles to escape. Gently tap on the shock body to assist in removing any trapped air.

11. After a few minutes, slowly and carefully pump the shock body up and down to force the oil through the valves stacks and piston orifices. Continue until air bubbles no longer rise to the surface of the oil.
12. After removing all of the air from the shock oil, collapse the shock rod into the shock body.
13. Remove the bleed screw from the IFP. Install a new o-ring and wearband onto the IFP. Lubricate the assembly with shock oil.
14. Set the depth of the IFP locator tool, PN 2871351, with a Vernier Caliper. The IFP depth specifications are noted for all rebuildable shocks in this chapter.
15. Slowly push the IFP down into the shock body until the IFP locator tool bottoms-out on the tube. Tap on the shock body to remove any air trapped under the IFP.

NOTE: The IFP must be completely submerged in shock oil to ensure air does not become trapped under the IFP.

16. With the IFP correctly set inside the tube, install the IFP bleed screw. Make sure not to move the shock rod after installing the screw as doing so will move the IFP.
17. Remove the shock from the bench vise and pour out the remaining shock oil into a suitable container.
18. Install the body cap onto the shock body. Tighten securely.
19. Reinstall the fill port. Charge the shock with nitrogen to the specified pressure using the gas fill tool, PN PS-45259. The shock rod should be pushed outwards as the IFP compresses the shock oil.
20. Remove the fill tool from the fill port and reinstall the bleed screw.
21. Test shock by pushing down on the shock rod. The rod should extend slowly after pushing it into the tube with no sound of trapped air inside the oil. If the sound of air is present or the rate of shock rod compression or extension dramatically changes, the shock should be disassembled and the oil replaced.

FOX IFP Monotube Shock Assembly

Shock Assembly - Bearing Air Bleed Shocks

⚠ CAUTION

SHOCK CONTENTS UNDER HIGH PRESSURE. ALWAYS WEAR SAFETY GLASSES WHEN WORKING WITH SHOCKS.

1. Place the shock rod eyelet in the bench vise. Apply a liberal amount of shock oil to the surface of the shock rod and internal bore of the bearing.

NOTE: Install jounce bumper if equipped.

2. Place the seal protector, PN 2201639, over the threaded end of the shock rod. Carefully install the bearing onto the shock rod.
3. Install the topout plate, and compression valve stack. Use a Vernier Caliper and reference the valve stack specifications in this chapter if unsure of the shim order of assembly.
4. Install a new wearband on the piston valve. Lubricate the piston with shock oil. Install the piston with the greater number of relief ports facing up away from the compression stack.
5. Install the rebound valve stack. Again, if unsure of order of shims, use a Vernier Caliper and reference the valve stack specifications for the shock in this chapter.
6. Install the backup plate. Remove the seal protector and install a new lock nut. Torque lock nut to 15-20 ft-lb (20-27 Nm).
7. Remove the shock rod from the bench vise. Secure the shock body with shock body holding tool in the vise.
8. With the body cap removed from the shock body, the IFP must be installed as shown in the illustration. Install a new o-ring and wearband onto the IFP. Lubricate the assembly with shock oil.
9. Set the depth of the IFP locator tool, PN 2871351, with a Vernier Caliper. The IFP depth specifications are noted for all rebuildable shocks in this chapter.
10. Slowly push the IFP down into the shock body until the IFP locator tool bottoms-out on the tube.
11. Install the gas fill port bleed screw into the body cap. Install a new body cap o-ring, and then reinstall the body cap. Tighten securely.

NOTE: The IFP should now be set in the correct position inside the shock body.

12. Mount the body cap end of the shock in bench vise. Slowly fill 3/4 of the body tube with new shock oil.

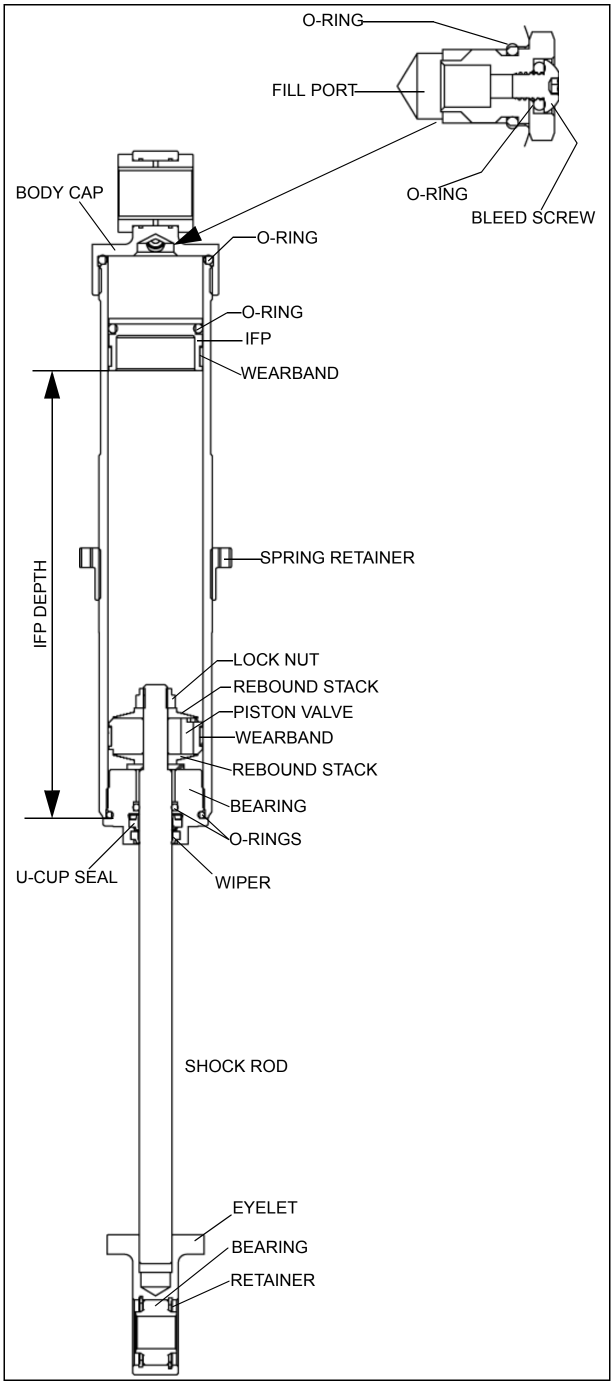
Fox 5W Shock Oil **2870995(Quart)**

13. Allow the oil to sit for several minutes to allow air bubbles to escape. Gently tap on the shock body to assist in removing any trapped air.
14. Install the shock rod/bearing cap assembly into the shock body. Submerge the piston assembly in the shock oil.
15. Slowly and carefully pump the piston up and down to force the oil through the valves stacks and piston orifices. Gently tap on the shock body to dislodge trapped air. Continue until air bubbles no longer rise to the surface of the oil.

NOTE: Pump the valve assembly slowly. Harsh and abrupt movements may move the IFP.

16. After removing all of the air from the shock oil, fill the shock body with oil. Again, remove any air bubbles that may have formed.
17. Wrap a clean shop towel around the shock body to catch oil that overflows. Carefully install the bearing cap. Tighten the cap securely.
18. Charge the shock with nitrogen to the specified pressure using the gas fill tool, PN PS-45259. The shock rod should be pushed outwards as the IFP compresses the shock oil.
19. Remove the fill tool from the fill port and reinstall the bleed screw.
20. Test shock by pushing down on the shock rod. The rod should extend slowly after pushing it into the tube with no sound of trapped air inside the oil. If the sound of air is present or the rate of shock rod compression or extension dramatically changes, the shock should be disassembled and the oil replaced.

Walker Evans IFP Monotube Shock



Shock Disassembly

CAUTION

SHOCK CONTENTS UNDER HIGH PRESSURE. ALWAYS WEAR SAFETY GLASSES WHEN WORKING WITH SHOCKS.

1. Remove the shock from the vehicle. Clean the shock assembly to remove all dirt and foreign material. Inspect the assembly for any noticeable signs of damage.
2. Clamp the body cap end of the shock in a soft-jawed bench vise.
3. Remove the bleed screw from the fill port. Insert the needle of the gas fill tool, PN PS-45259, into the fill port to depressurize the shock. Push the shock rod down to ensure all nitrogen is expelled. Remove the fill port from the body cap.
4. Remove the bearing assembly from the shock body. Remove the bearing assembly/shock rod from the shock body.
5. Release the bench vise and drain all of the oil out of the shock body into a suitable container. Discard the oil in accordances with local rules and regulations.
6. Position the bearing cap end of the shock over a clean shop towel on the bench. Use compressed air applied to the fill port bore to push the IFP out of the shock body.

NOTE: Body cap removal is only required if the sealing o-ring is believed to be damaged. Final assembly IFP depth is measured from the bearing end of shock.

7. Remove the lock nut from the shock rod. Remove the backup plate, rebound stack, piston, compression stack, and top-out plates as one assembly. Orientate these components on a clean shop towel as they are assembled on the shock rod.
8. Remove the shock rod from the bearing.
9. With the shock disassembled, inspect all o-rings, the U-cup seal, wearbands, and the wiper seal. It is recommended that all be replaced with new parts.
10. Inspect the shock rod and shock body tube for damage and/or pitting.
11. Inspect the rebound and compression stack valve shims. Shims that are damaged, bent, chipped, or wavy in appearance must be replaced.
12. Thoroughly clean all parts and dry with compressed air.

Walker Evans IFP Monotube Shock Assembly

Shock Assembly

CAUTION

SHOCK CONTENTS UNDER HIGH PRESSURE. ALWAYS WEAR SAFETY GLASSES WHEN WORKING WITH SHOCKS.

1. Place the shock rod eyelet in the bench vise. Apply a liberal amount of shock oil to the surface of the shock rod and internal bore of the bearing.
2. Place the seal protector, PN 2201639, over the threaded end of the shock rod. Carefully install the bearing onto the shock rod.
3. Install the topout plate, and compression valve stack. Use a Vernier Caliper and reference the valve stack specifications in this chapter if unsure of the shim order of assembly.
4. Install a new wearband on the piston valve. Lubricate the piston with shock oil. Install the piston with the greater number of relief ports facing away from the compression stack.
5. Install the rebound valve stack. Again, if unsure of order of shims, use a Vernier Caliper and reference the valve stack specifications for the shock in this chapter.
6. Install the backup plate. Remove the seal protector and install a new lock nut. Torque lock nut to 15-20 ft-lb (20-27 Nm).
7. Remove the shock rod from the bench vise. Secure the body cap with the open end of the tube facing up into the bench vise.
8. Install a new o-ring and wearband onto the IFP. Lubricate the assembly with new shock oil.
9. Install the IFP into the shock with the flat side facing the body cap.
10. Set the depth of the IFP using a Vernier Caliper. Reference the IFP depth specification for the shock in this chapter.
11. With the IFP set, verify the fill port bleed screw is installed. Doing so will prevent the IFP from moving when stroking the shock rod in later steps.
12. Slowly fill 3/4 of the shock body with new shock oil.

Walker Evans 5W Shock Oil
2874522(Quart)

13. Allow the oil to sit for several minutes to allow air bubbles to escape. Gently tap on the shock body to assist with removing any trapped air.
14. Carefully install the shock rod/bearing into the shock body. Have a clean shop towel in hand to wipe up any oil that spills out of the shock. Submerge the piston valve assembly in the shock oil.

NOTE: From this point on, do not remove the piston valve assembly from the shock oil.

15. Slowly and carefully stroke the shock rod up and down to force the oil through the valve stacks and piston orifices. Continue until air bubbles no longer rise to the surface of the oil. Tap on the shock body/rod to assist with the removal of any trapped air.
16. Completely fill the shock body with shock oil. Wrap the bearing and open end of shock with a clean shop towel.
17. Slide the bearing down the rod shaft. Install the bearing into the shock body and securely tighten. Oil must spill out during installation to ensure air does not remain in the oil.
18. Remove the fill port bleed screw. Charge the shock with nitrogen to 200 PSI using the gas fill tool, PN PS-45259. The shock rod should be pushed outwards as the IFP is compresses the shock oil.
19. Remove the fill tool from the fill port and reinstall the bleed screw.
20. Test shock by pushing down on the shock rod. The rod should extend slowly after pushing it into the tube with no sound of trapped air inside the oil. If the sound of air is present or the rate of shock rod compression or extension dramatically changes, the shock should be disassembled and the oil replaced.

CHAPTER 8
Steering and Suspensions

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.

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.

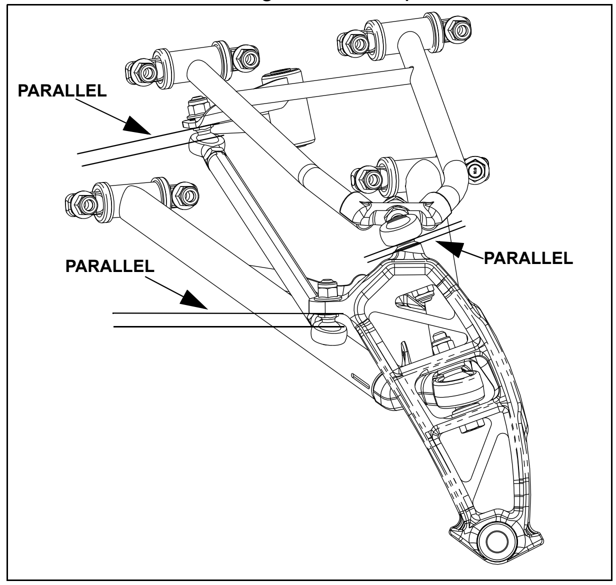
- Tie rods and tie rod ends
- Sway bar and bushings/linkage (where applicable)
- Handlebars and steering post assembly
- Spindles and bushings
- Skis and skags
- Pitman arms / Idler arms
- A-arms and bushings
- Shock absorbers, shock mounts, springs
- All related fasteners - check torque.
- Pivot shafts and bushings

Always follow rod end engagement guidelines. Maximum setup width must be checked whenever front suspension components are adjusted or replaced.

Rod End Installation

All rod ends in the front suspension and steering assemblies (including steering drag links) must be parallel with the corresponding mating surface after they are installed and torqued to specification.

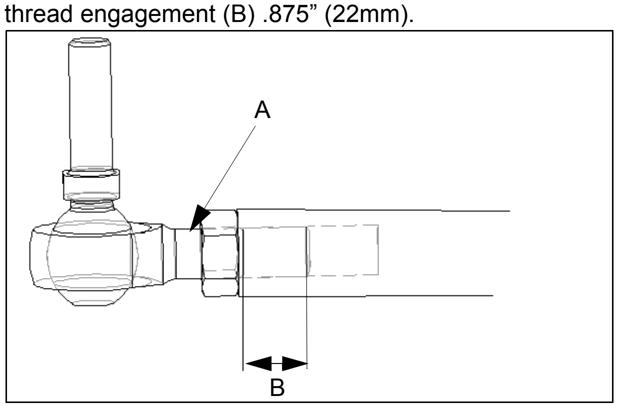
If the rod ends are not parallel, the rider may experience an increase in ski darting and/or bump steer.



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).



8

Front Suspension Type by Model

FRONT SUSPENSION	MODELS
Pro-Ride	2010-2011Rush/ Switchback Assault
Pro-Ride (Fixed Camber)	2012 Rush/Switchback/ Switchback Assault
Pro-Ride RMK Adjustable	RMK/Pro RMK
Pro-Ride Wide Adjustable	RMK Assault

Rear Suspension Type by Model

REAR SUSPENSION	MODEL
Pro-Ride Progressive 120	2010 Rush
Pro-Ride Progressive 121	Rush
Pro-Ride Progressive 136	Switchback
Switchback 144	Switchback Assault
RMK Coil Over 155/163	RMK/Pro RMK/RMK Assault

Camber / Toe Specifications

Maximum width and camber measurements are achieved 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.

Maximum 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.

NOTE: Only models featuring upper control arms with rod ends allow for adjusting camber.

Camber & Toe Specifications

<table>
<tr><th>SUSPENSION</th><th>MAXIMUM SET UP WIDTH in/cm (± .25in/.6cm)</th><th>CAMBER in/cm</th><th>TOE OUT (At ride height) in/cm</th></tr>
<tr><td>Pro-Ride</td><td rowspan="2">41.52/105</td><td>1.68 ± .31 (4.2 ± 0.8)</td><td rowspan="4">0 -.12 (0 -0.305)</td></tr>
<tr><td>Pro-Ride (Fixed Camber)</td><td>N/A</td></tr>
<tr><td>Pro-Ride RMK Adjustable</td><td>36.26/92</td><td>1.95 ± 0.31 (4.3 ± 0.8)</td></tr>
<tr><td>Pro-Ride Wide Adjustable</td><td>38.58/98</td><td>2.25 ± 0.31 (5.7 ± 0.8)</td></tr>
</table>

Suspension Mounting Fastener Torque

NOTE: Reference assembly illustrations for torque specifications not listed in table.

Component	Torque Specification
Upper/Lower Control Arm Bulkhead Nuts	30 ft-lb (41 Nm)
Upper/Lower Spindle-to-Control Arm Fasteners	40 ft-lb (54 Nm)
Steering Rack Link Fastener Torque	37 ft-lb (50 Nm)
Tie Rod-to-Spindle Fastener Torque	37 ft-lb (50 Nm)
IFS Shock Upper/Lower Fastener Torque	37 ft-lb (50 Nm)
Ski Fastener Torque	37 ft-lb (50 Nm)
Sway Bar Linkage Fasteners	20 ft-lb (27 Nm)
Sway Bar Bushing Block Fasteners	7 ft-lb (10 Nm)
Lower Steering Shaft Bushing Block Fasteners 2010 2011-Current	 14.7 ft-lb (20 Nm) 22 ft-lb (30 Nm)
Lower Steering Shaft-to-Bulkhead Fastener Nut	22 ft-lb (30 Nm)
Drag Link Rod End Fasteners	37 ft-lb (50 Nm)
Upper Steering Shaft Bushing Block Fasteners 2010 2011-Current	 15 ft-lb (20 Nm) 20 ft-lb (27 Nm)
Handlebar Riser/Clamp Fasteners	14.7 ft-lb (20 Nm)
120/121/136 Front Torque Arm Tunnel Fasteners Apply Loctite® 262™ to Threads	60 ft-lb (80 Nm)
120/121/136 Rear Crank Tunnel Fasteners	60 ft-lb (80 Nm)
120/121/136 Rear Track Shock Fasteners	33 ft-lb (45 Nm)
120/121/136 Rear Track Shock Reservoir Clamp Fasteners	17 ft-lb (23 Nm)
120/121/136 Rear Scissor-to-Rear Crank Fasteners	33 ft-lb (45 Nm)
120/121/136 Rear Scissor-to-Rail Fasteners	60 ft-lb (80 Nm)
120/121/136 Upper Carrier Wheel Shaft Fasteners	33 ft-lb (45 Nm)
120/121/136 Front Track Shock Fasteners	33 ft-lb (45 Nm)
Rear Idler Wheel Shaft Fasteners	33 ft-lb (45 Nm)
Switchback 144 FTA-to-Tunnel Fasteners	45 ft-lb (61 Nm)
Switchback 144 RTA-to-Tunnel Fasteners	45 ft-lb (61 Nm)
Switchback 144 Limiter Strap Mount Fasteners	12 ft-lb (16 Nm)
Switchback 144 Rear Idler Shaft Screws	35 ft-lb (47.4 Nm)
RMK Coil-Over FTA-to-Tunnel Fasteners	46 ft-lb (63 Nm)
RMK Coil-Over RTA-to-Tunnel Fasteners	46 ft-lb (63 Nm)
RMK Coil-Over Rear Idler Screws Apply Loctite® 262™ to Threads	33 ft-lb (44.7 Nm)

Special Tools

NOTE: Polaris dealers can order the tools listed in this chapter through the SPX Service Tools catalog or by calling SPX @ 1-800-328-6657.

Initial Shock Settings

Use the Initial Shock Settings Table below to set the vehicle suspension to the original factory configuration.

NOTE: A collumn for the RTS spring setting is not included as all vehicles require rider weight to set the spring length/SAG setting. This information is located within this chapter.

Initial Shock Settings

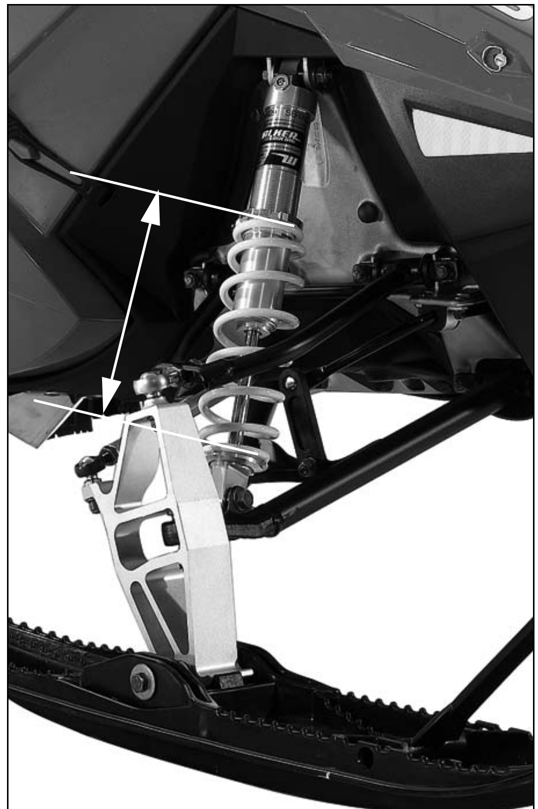
MODEL	IFS SPRING PRELOAD (INCHES/CM)	IFS SPRING INSTALLED LENGTH (INCHES/CM)	IFS CLICKER SETTING (REBOUND)	FTS SPRING PRELOAD (INCHES/CM)	FTS SPRING INSTALLED LENGTH (INCHES/CM)	FTS CLICKER SETTING	RTS CLICKER SETTING
2010 Rush	3.75/9.5	N/A	6	.75/1.9	N/A	2	4
2011 Rush	4.5/11.4			1.0/2.54			
2011 800 SB Assault	N/A	10/25.4		N/A	7.25/18.4	8	8
2011 800 RMK		10.5/26.7	N/A		N/A	N/A	Screw
2011 800 RMK Assault		10.75/27.3	6		8.5/21.6		6
2011 800 PRO RMK		10.25/26	N/A				N/A
2012 Rush Base	3.25/8.25	N/A		1.0/2.54	N/A		
2012 Rush PRO-R	2.875/7.3		6			2	4
2012 Rush PRO-R LE	3.25/8.25		6 (8)				
2012 SB Base	3.25/8.25		N/A			N/A	N/A
2012 SB ADV. 600 800	 3.25/8.25 2.875/7.3		 N/A 6			 N/A 2	 4 4
2012 SB PRO-R	2.875/7.3		6			2	4
2012 800 SB Assault	N/A	10/25.4	6	N/A	7.25/18.4	8	8
2012 600/800 RMK 144 155		10.5/26.7	N/A		N/A	N/A	Screw
2012 600/800 PRO RMK		10.25/26			8.5/21.6		N/A
2012 800 RMK Assault		10.75/27.3	6			6	6

Independent Front Suspension (IFS) Shock Settings

To change the IFS shock preload/installed spring height, raise the front of the snowmobile up and off the ground to remove the weight from the front suspension. Grasp the spring and rotate it. Increasing IFS shock spring preload too much may adversely affect the handling of the snowmobile and the performance of both the front and rear suspensions. Never exceed one inch (2.54 cm) of adjustment beyond the factory setting.

When decreasing IFS shock spring preload, make sure at least two turns of preload are holding the spring retainer against the spring. Failure to do so may cause the retainer to fall out when the shock is fully extended.

MEASURING PRELOAD



MEASURING INSTALLED LENGTH

Adjusting the IFS shock spring preload raises or lowers the front vehicle ride height and either increases or decreases ski pressure when not accelerating. Increasing spring preload will also shift the vehicle balance towards the rear. Decreasing the spring preload will lower the front vehicle ride height and shift the vehicle balance towards the front.

The compression dampeners control ride comfort/quality. Turning the adjusters towards the SOFT setting (counter-clockwise) will make the ride quality less harsh, but may cause the shocks to bottom out. Turning the adjuster towards the STIFF setting (clockwise) will make the ride quality stiffer.

Make equal adjustments to both shocks and only one to two clicks at a time. Heavier riders may want to set the compression clickers two to four clicks higher than lighter riders.

Rebound Adjustment

Rush 800 LE models feature IFS shocks with rebound adjusters.

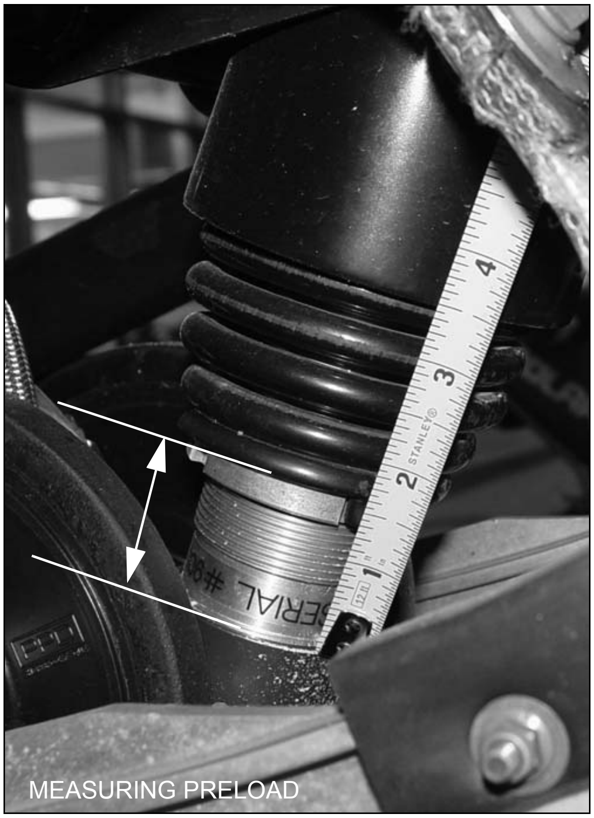
The rebound adjustment clicker is located at the bottom of the shock rod. There are 16 possible settings. The initial factory setting is 8 clicks.

Make equal adjustments to both shocks and only one to two clicks at a time.

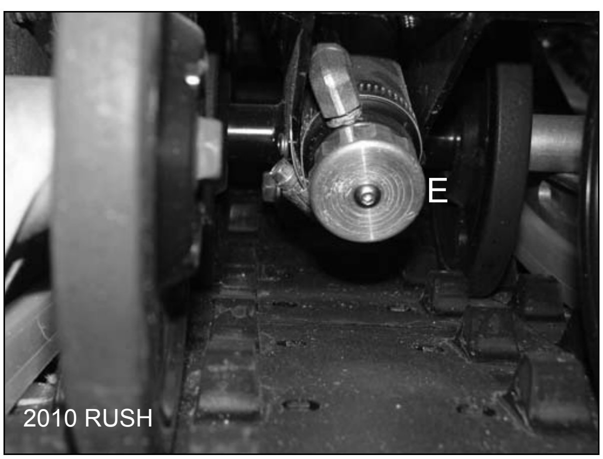
- Turning the clicker clockwise (inwards) increases rebound control and the shock will extend slower after being compressed.
- Turning the clicker counter-clockwise (outwards) decreased rebound control and the shock will extend faster after being compressed.

Front Track Shock (FTS) Factory Settings

To change the FTS spring preload, carefully tip the snowmobile onto its left side to remove weight from the front track shock. Grasp the spring and rotate it.



MEASURING PRELOAD



2010 RUSH

2011-2012 RUSH/SWITCHBACK/RMK ASSAULT

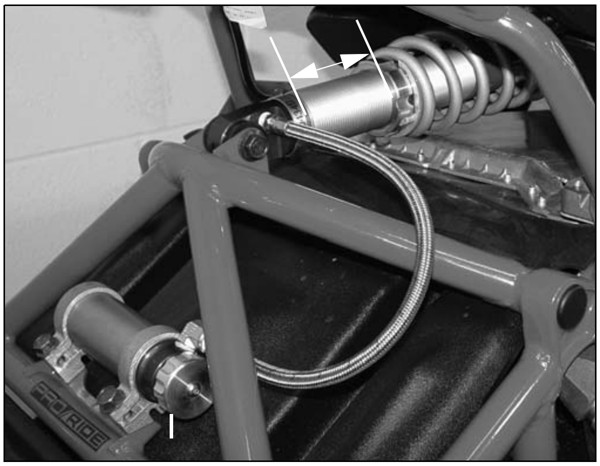
When decreasing FTS spring preload, make sure at least two turns of preload are holding the spring retainer against the spring. Failure to do so may cause the retainer to fall out when the shock is fully extended.

When the snowmobile is not accelerating, Increasing FTS spring preload will decrease ski pressure. Decreasing FTS spring preload will increase ski pressure.

The compression dampener controls ride comfort/quality. Turning the adjuster towards the SOFT setting (counter-clockwise) will make the ride quality less harsh, but may cause the FTS to bottom out. Turning the adjuster towards the STIFF setting (clockwise) will make the FTS stiffer.

Rear Track Shock (RTS) Factory Settings

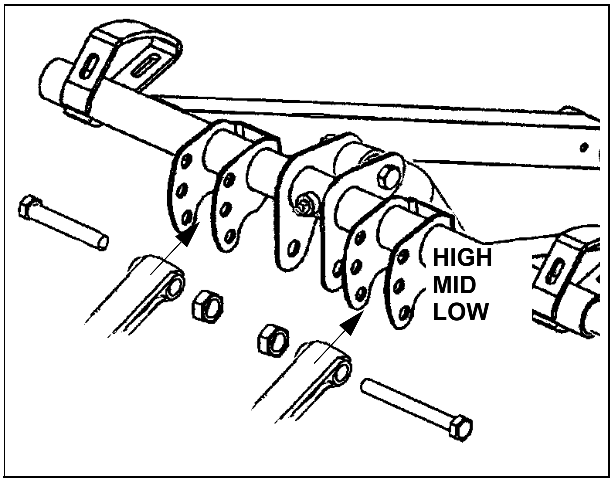
The RTS spring is the primary suspension setup and tuning component. For more information regarding how to set the spring preload and compression dampening, reference the Pro-Ride Progressive Suspension or Pro-Ride RMK Coil-Over Rear Suspension sections in this chapter.



Limiter Straps

The limiter straps on the Pro-Ride Progressive and Pro-Ride RMK Coil-Over rear suspensions are not adjustable. Drilling new holes in the straps to increase or decrease strap length is not recommended.

The limiter straps on Switchback/RMK 144 rear suspensions are adjustable. The limiter straps are initially set in the mid position.



Move BOTH limiter straps to the HIGH position to increase ski pressure and reduce ski lift. The HIGH position moves the balance of the snowmobile towards the front which increases cornering characteristics, but reduces flotation.

Move BOTH limiter straps to the LOW position to decrease ski pressure and increase ski lift. The LOW position moves the balance of the snowmobile towards the rear which increases traction and flotation, but reduces cornering characteristics.

Torque limiter strap nuts to specification.

= T
Limiter Strap Fasteners: 19 ft-lb (25 Nm)

Torsion Springs/SAG Setting

The Switchback 144 rear suspension is equipped with rear torsion springs. The spring preload can be set by adjusting the torsion spring preload blocks.

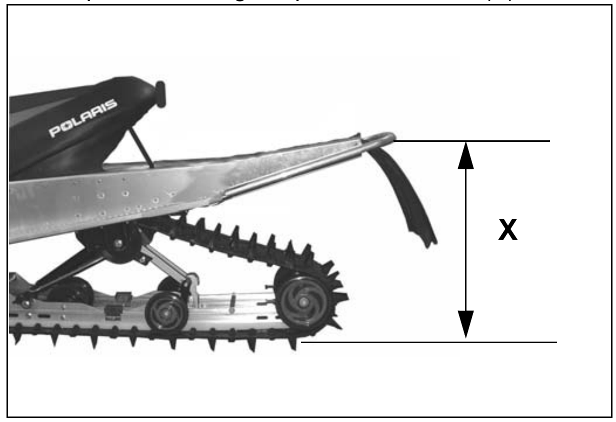
The torsion spring preload sets the rear suspension SAG setting. SAG is the difference between the unloaded and loaded rear bumper height when the snowmobile is sitting on snow.

The specified SAG setting for the Switchback 144 Tipped rear suspension is 5" (12.7cm). to set SAG, follow these steps:

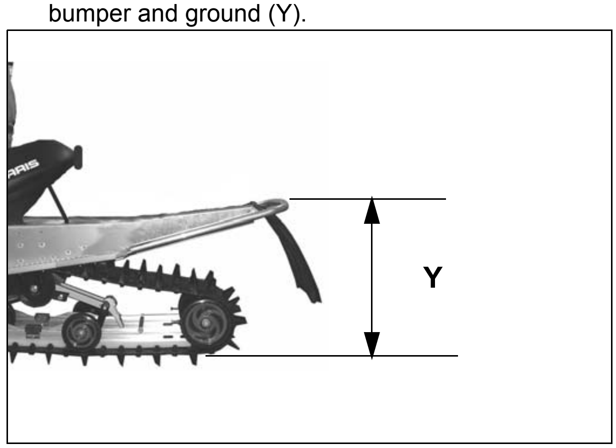
1. Position the snowmobile on snow.

NOTE: Positioning the snowmobile on a hard surface (pavement/concrete) distributes more weight to the rear track shock/torsion springs and can distort the following measurements.

2. Lift the rear bumper to fully extend the rear suspension. Using a tape measure, find (X).

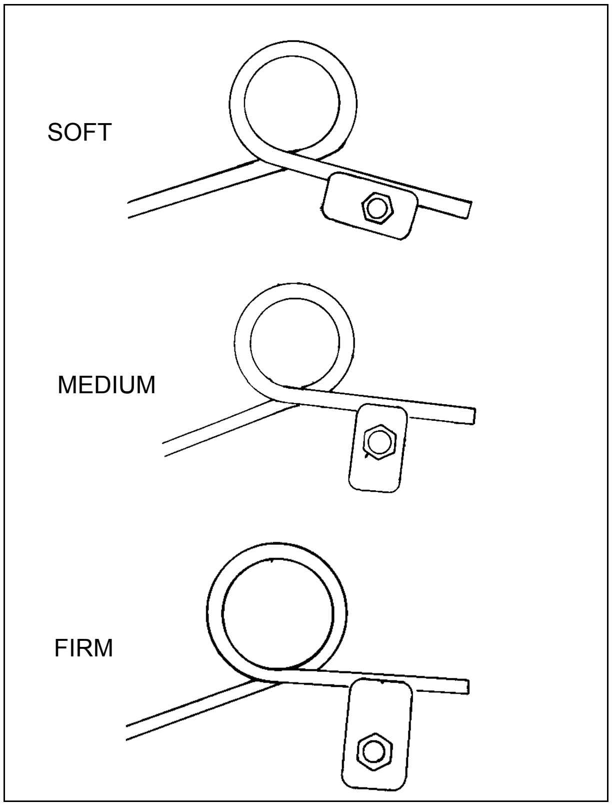


3. Have the rider, in riding gear, mount the snowmobile. The rider should drop down hard on the seat and bounce the suspension several times to collapse the suspension.
4. Again, measure the distance between the rear bumper and ground (Y).



5. Subtract measurement Y from X (X-Y=SAG).

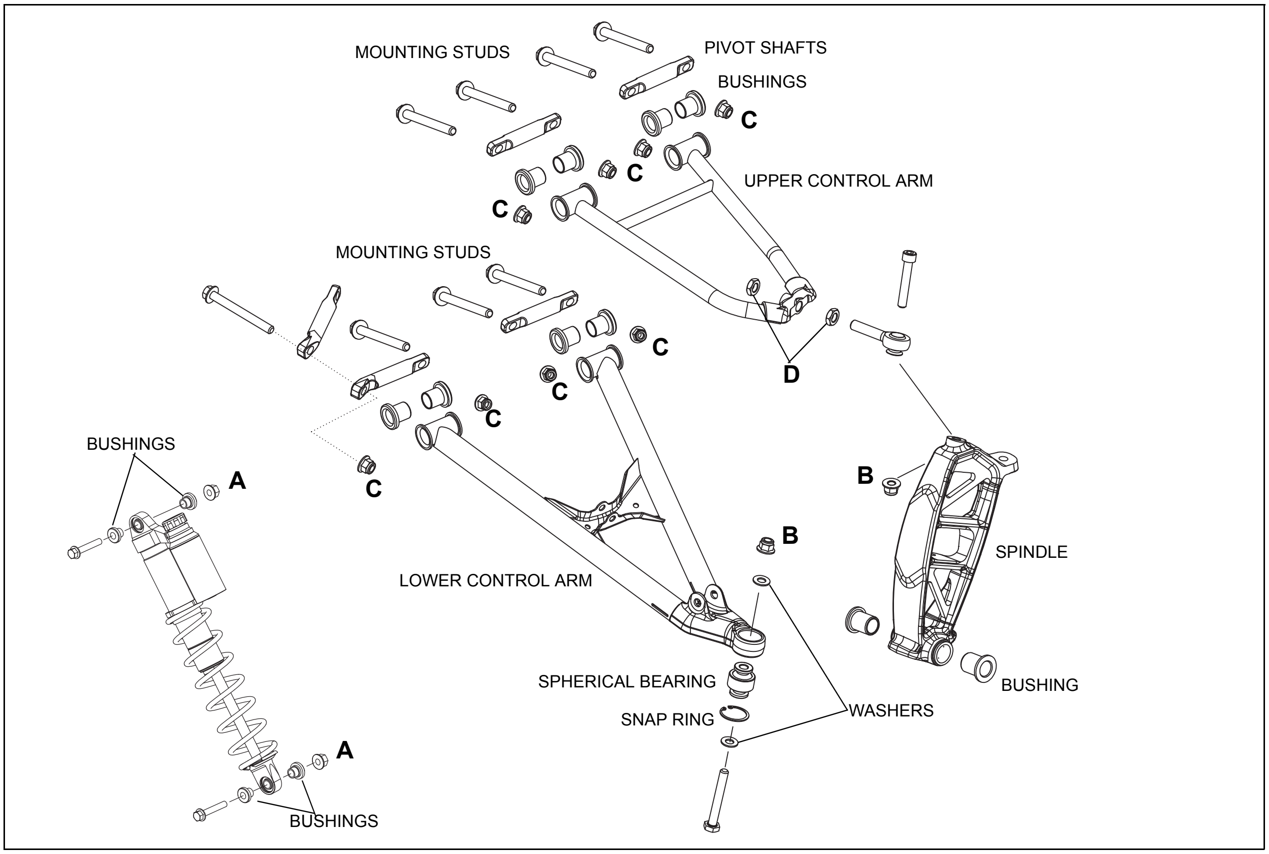
6. Set both torsion spring adjuster blocks to SOFT, MEDIUM, or FIRM to achieve the specified SAG measurement.



NOTE: Optional torsion springs are available to fine tune SAG setting. See individual model specifications in Chapter 1.

FRONT SUSPENSION ASSEMBLY ILLUSTRATIONS

2010 Pro-Ride Front Control Arms



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

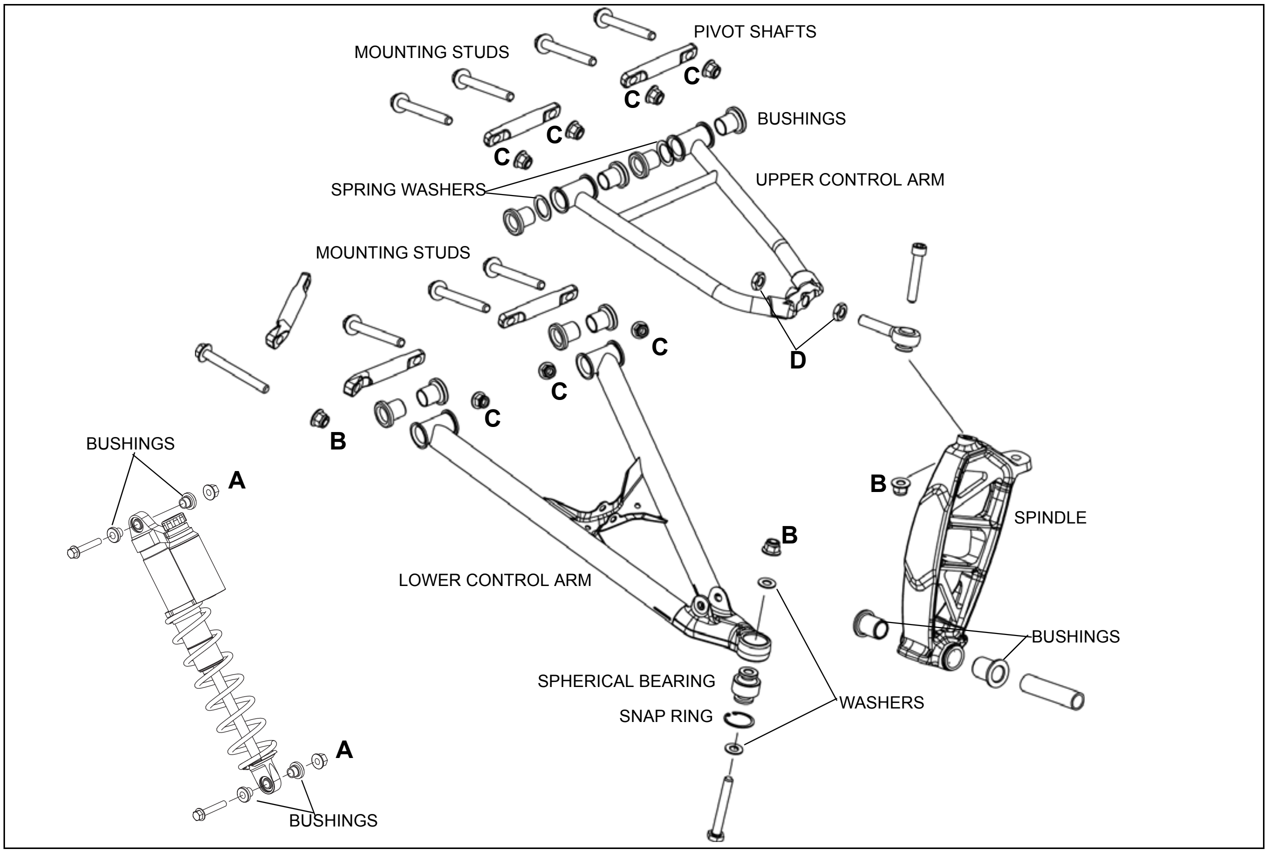
= T

A: 37 ft-lb (50 Nm) (Shock Mounting Fastener Nuts)
B: 40 ft-lb (54 Nm)
C: 30 ft-lb (41 Nm)
D: 44 ft-lb (60 Nm) Apply Loctite® 262™ to Threads

NOTE: Assembly Notes

- Orientate rod ends so they are parallel with mating component.
- Apply grease to pivot shafts during assembly.

2011 Pro-Ride Front Control Arms



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

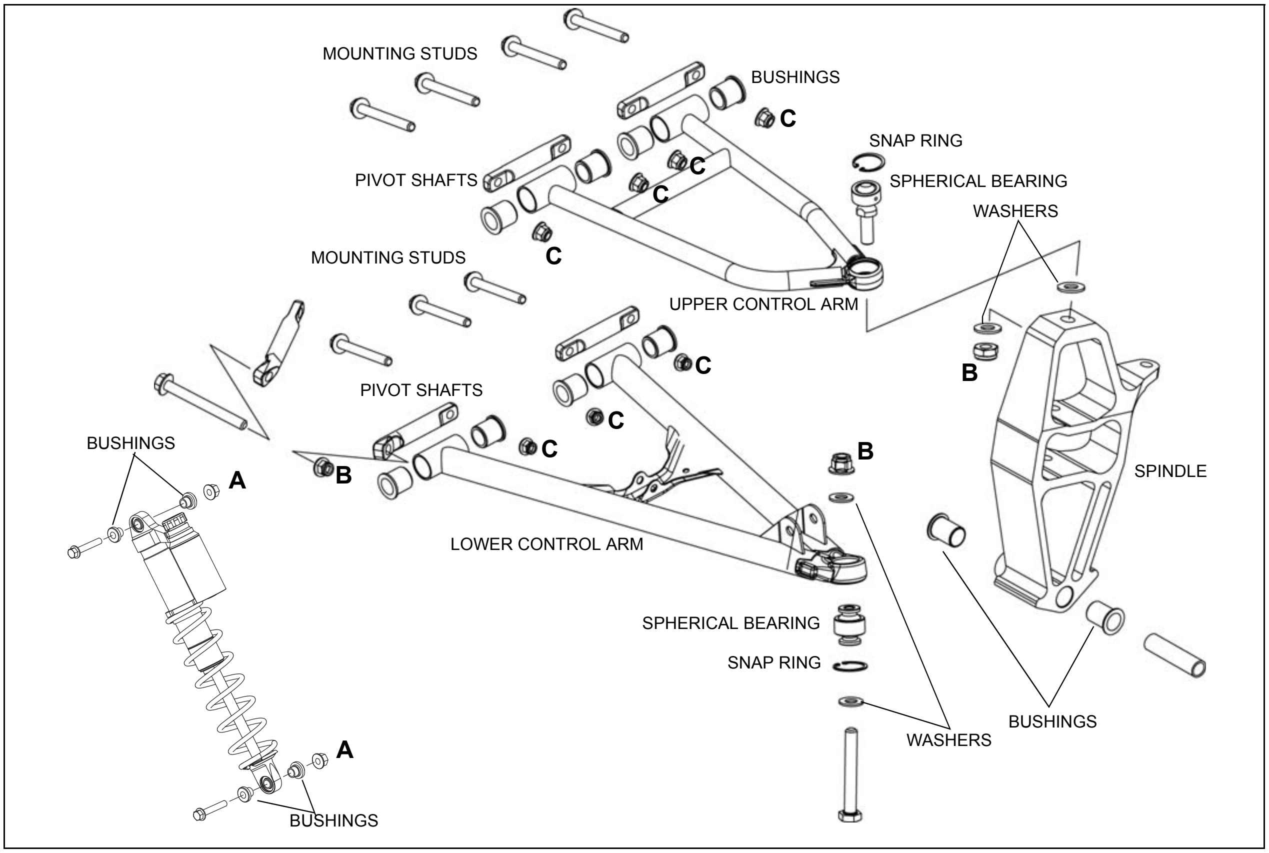
= T

A: 37 ft-lb (50 Nm) (Shock Mounting Fastener Nuts)
B: 40 ft-lb (54 Nm)
C: 30 ft-lb (41 Nm)
D: 44 ft-lb (60 Nm) Apply Loctite® 262™ to Threads

NOTE: Assembly Notes

- Orientate rod ends so they are parallel with mating component.
- Apply grease to pivot shafts during assembly.

2012 Pro-Ride (Fixed Camber) Front Control Arms



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

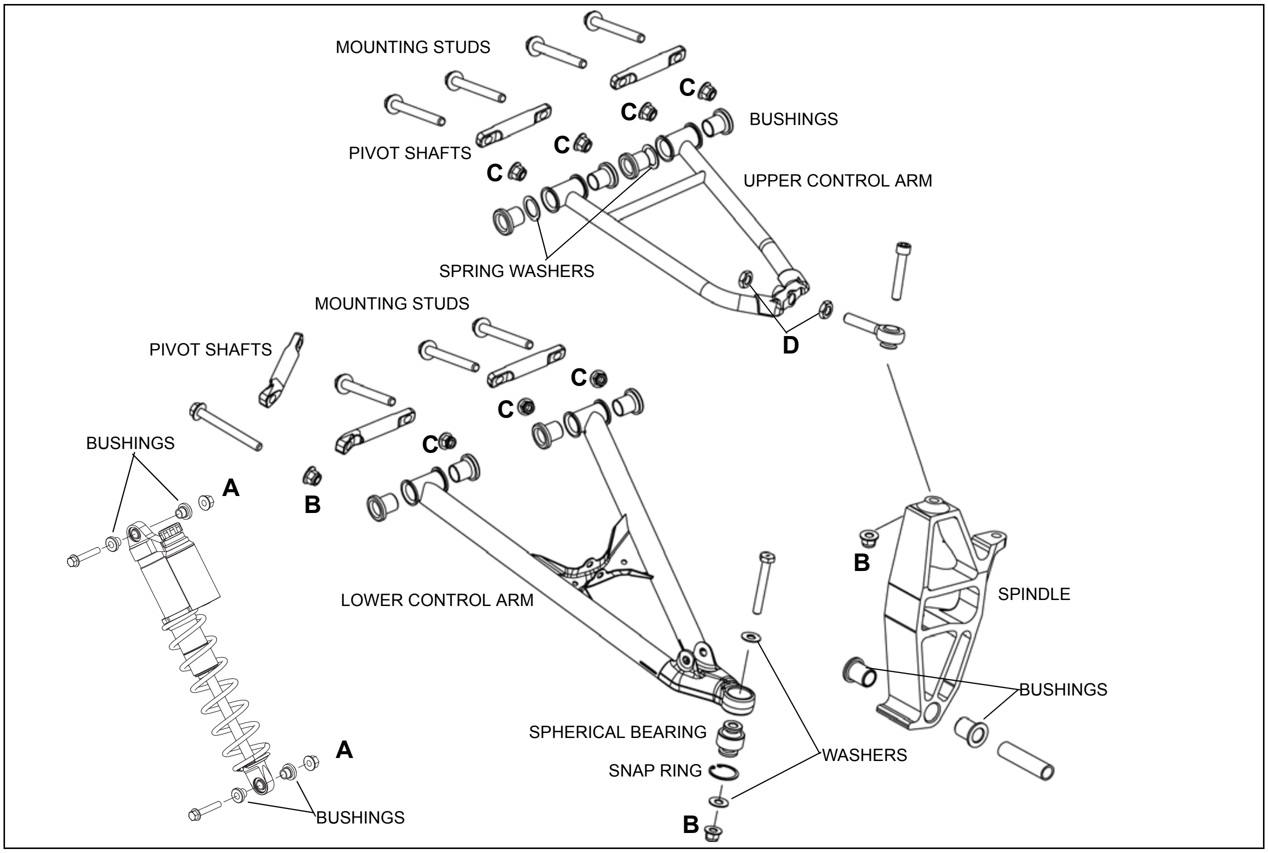
= T

A: 37 ft-lb (50 Nm) (Shock Mounting Fastener Nuts)
B: 40 ft-lb (54 Nm)
C: 30 ft-lb (41 Nm)

NOTE: Assembly Notes

- Orientate rod ends so they are parallel with mating component.
- Apply grease to pivot shafts during assembly.

Pro-Ride RMK/Wide Adjustable Front Control Arms



⚠ CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

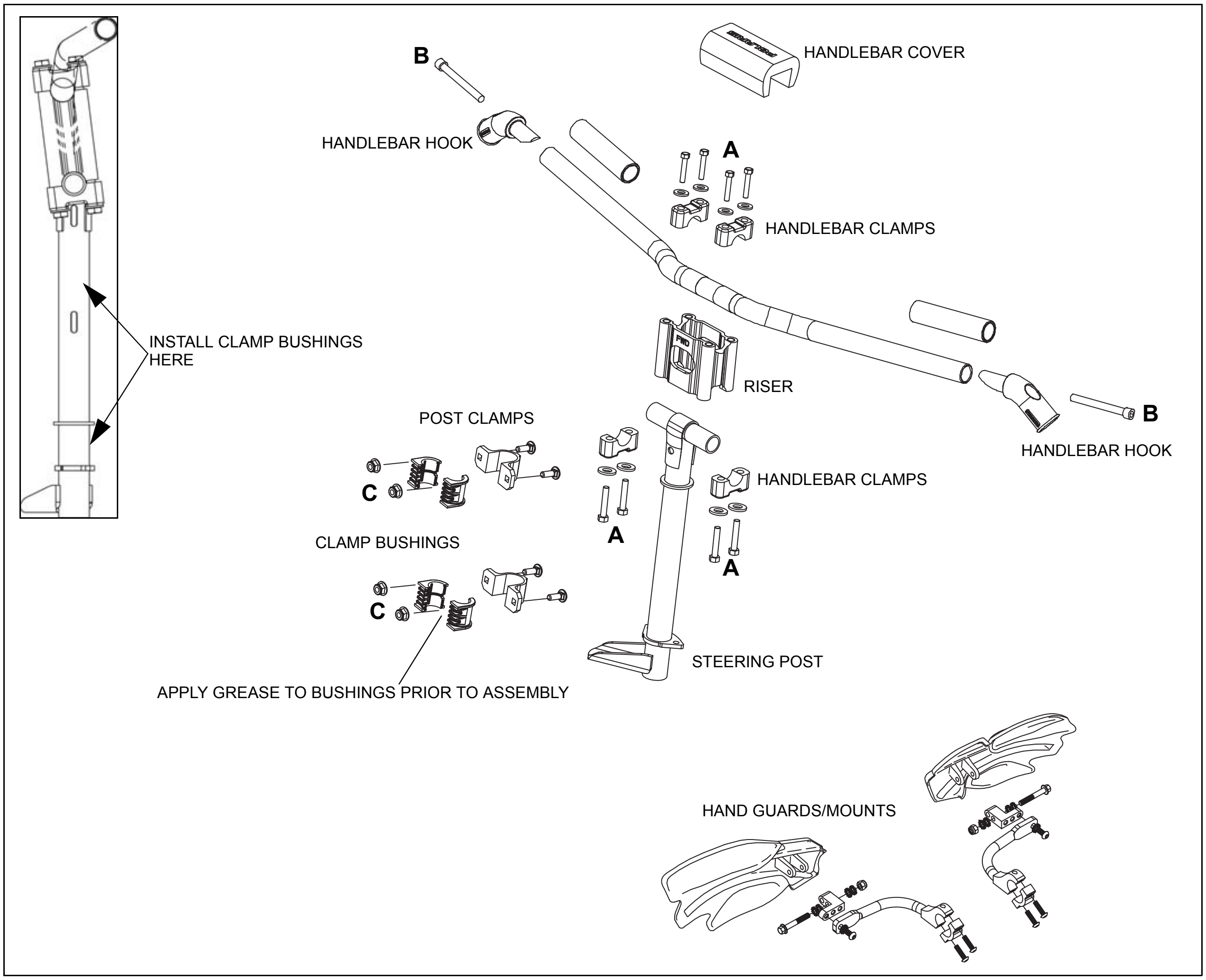
= T

A: 37 ft-lb (50 Nm) (Shock Mounting Fastener Nuts)
B: 40 ft-lb (54 Nm)
C: 30 ft-lb (41 Nm)
D: 44 ft-lb (60 Nm) Apply Loctite® 262™ to Threads

NOTE: Assembly Notes

- Orientate rod ends so they are parallel with mating component.
- Apply grease to pivot shafts during assembly.

2010-2011 Rush Upper Steering Assembly



8

CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

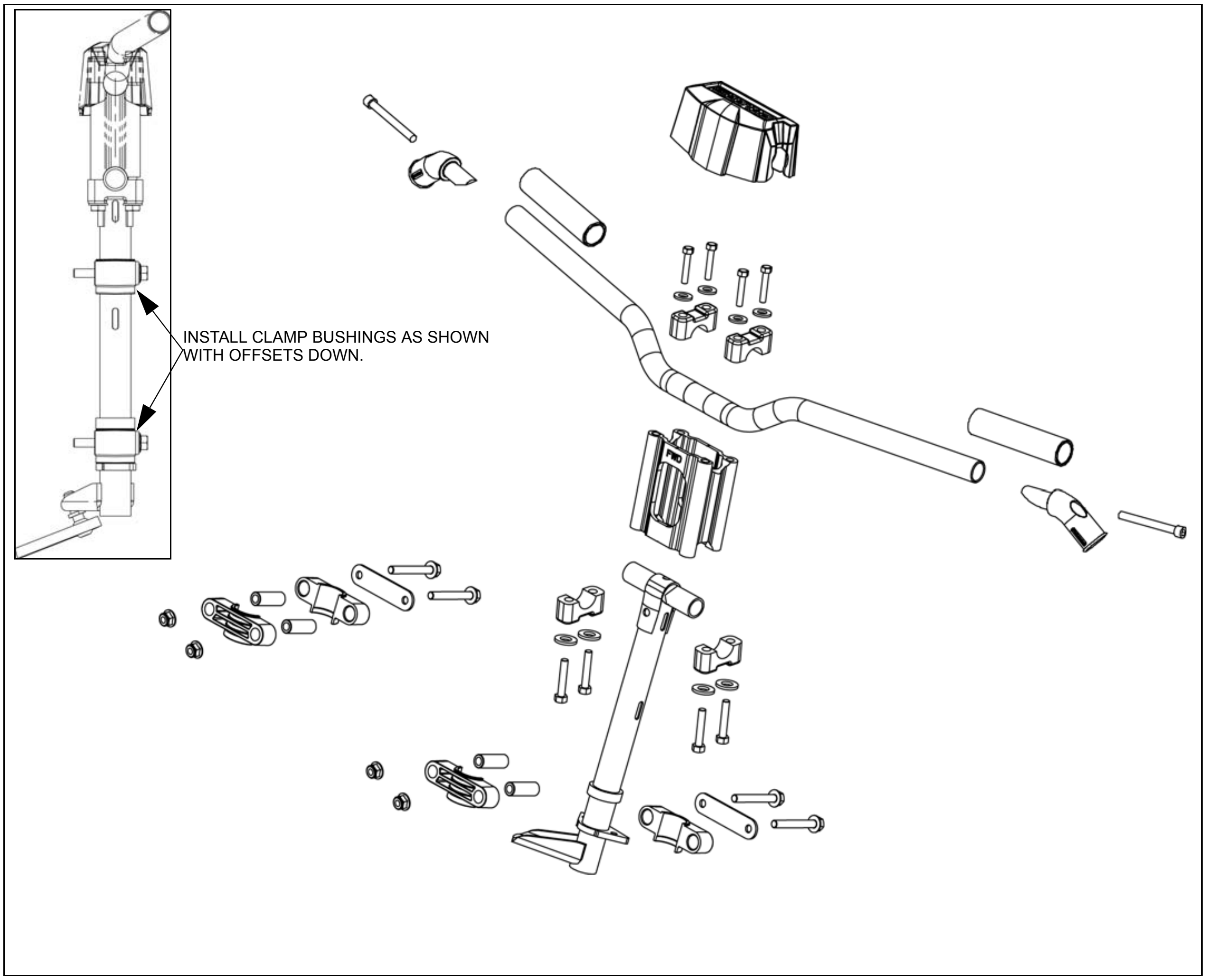
= T

A: 14.7 ft-lb (20 Nm)
B: 12 ft-lb (16 Nm)
C: (2010) = 15 ft-lb (20 Nm)
C: (2011) 20 ft-lb (27 Nm)
Throttle Lever Block Screw: 35 in-lb (4 Nm)
Master Cylinder Screws: 24 in-lb (2.7 Nm)
Torque hand guard screws to prevent components from moving/rotating during operation. DO NOT CRUSH HANDLEBAR WHEN TORQUING SCREWS.

NOTE: Assembly Notes

- Install handlebar riser with “FWD” facing front of vehicle.

2012 Rush/Switchback Upper Steering Assembly



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

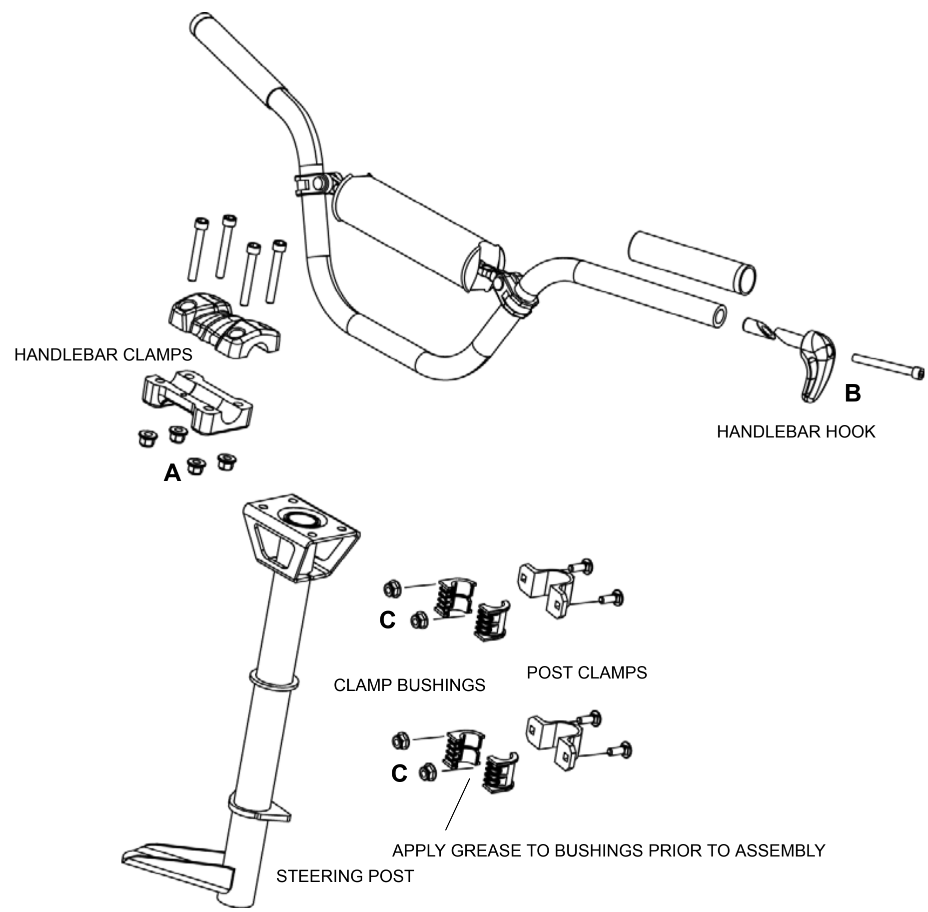
= T

A: 14.7 ft-lb (20 Nm)
B: 12 ft-lb (16 Nm)
C: 15 ft-lb (20 Nm)
Throttle Lever Block Screw: 35 in-lb (4 Nm)
Master Cylinder Screws: 24 in-lb (2.7 Nm)
Torque hand guard screws to prevent components from moving/rotating during operation. DO NOT CRUSH HANDLEBAR WHEN TORQUING SCREWS.

NOTE: Assembly Notes

- Install handlebar riser with “FWD” facing front of vehicle.

Switchback Assault Upper Steering Assembly



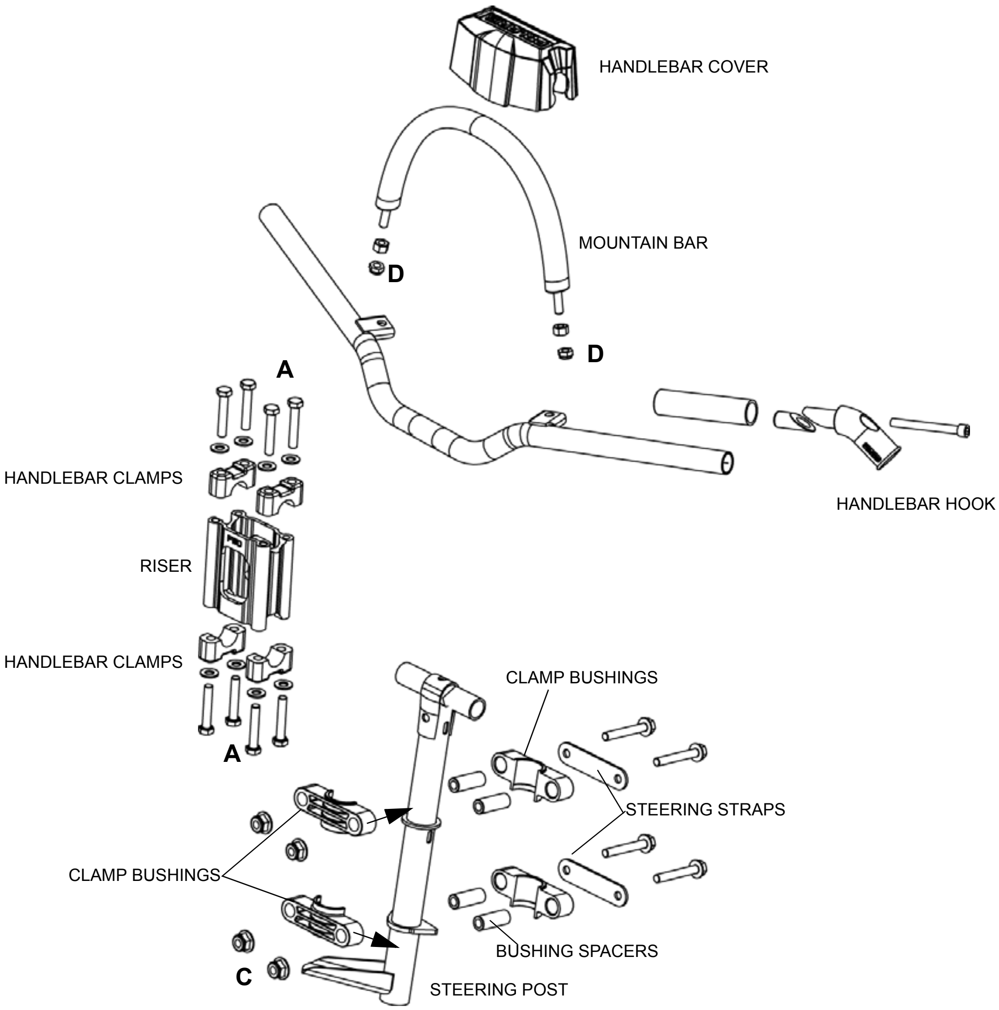
CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

= T

A: 14.7 ft-lb (20 Nm)
B: 12 ft-lb (16 Nm)
C: 20 ft-lb (27 Nm)
Throttle Lever Block Screw: 35 in-lb (4 Nm)
Master Cylinder Clamp: 60-80 in-lb (6.8-9 Nm)
DO NOT CRUSH HANDLEBAR WHEN TORQUING SCREWS.

600/800 RMK Upper Steering Assembly



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

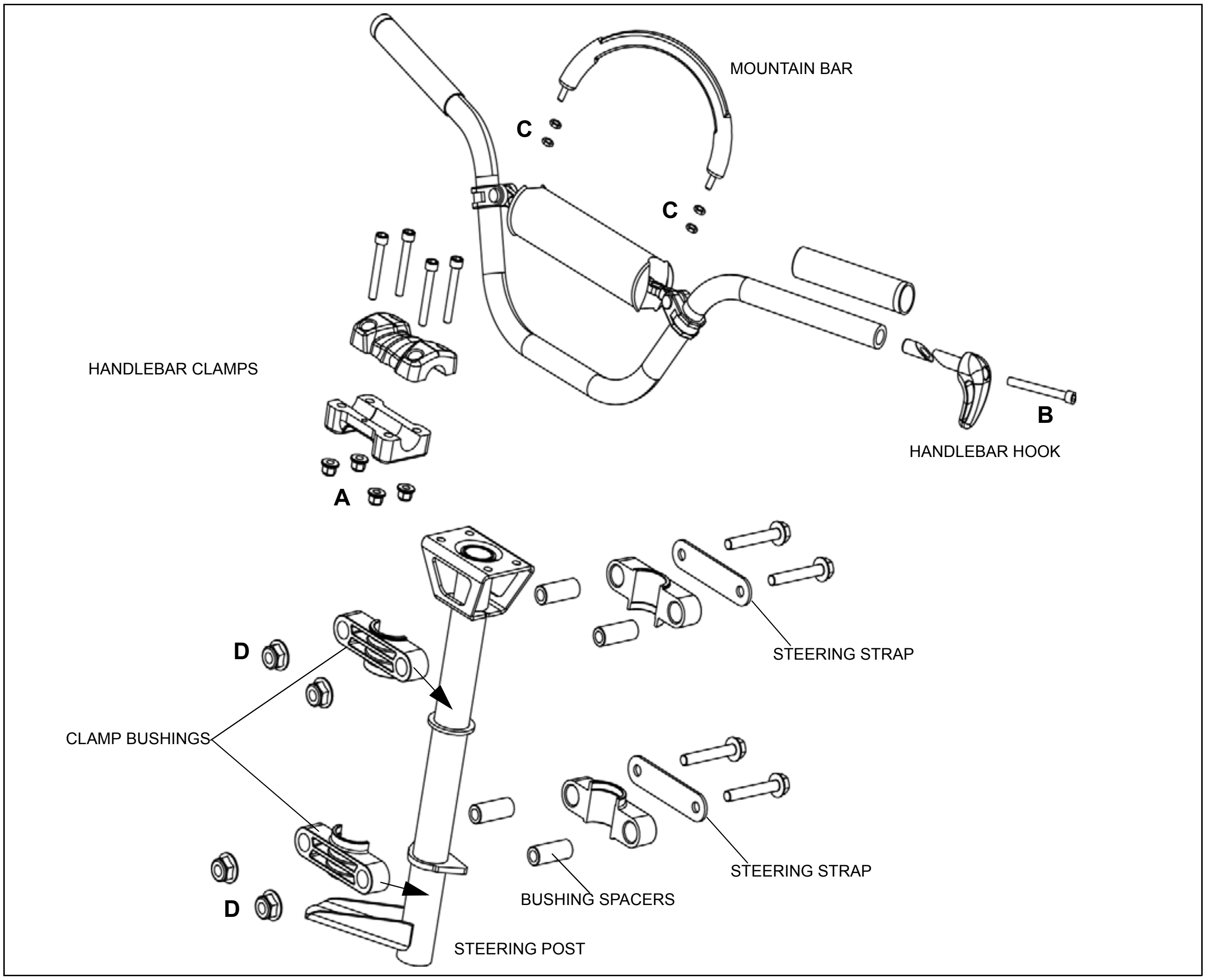
= T

A: 14.7 ft-lb (20 Nm)
B: 12 ft-lb (16 Nm)
C: 18 ft-lb (25 Nm)
D: 5 ft-lb (7 Nm)
Throttle Lever Block Screw: 35 in-lb (4 Nm)
Master Cylinder Screws: 24 in-lb (2.7 Nm)
DO NOT CRUSH HANDLEBAR WHEN TORQUING SCREWS.

NOTE: Assembly Notes

- Install handlebar riser with FWD facing front of vehicle.

600/800 PRO RMK/RMK Assault Upper Steering Assembly



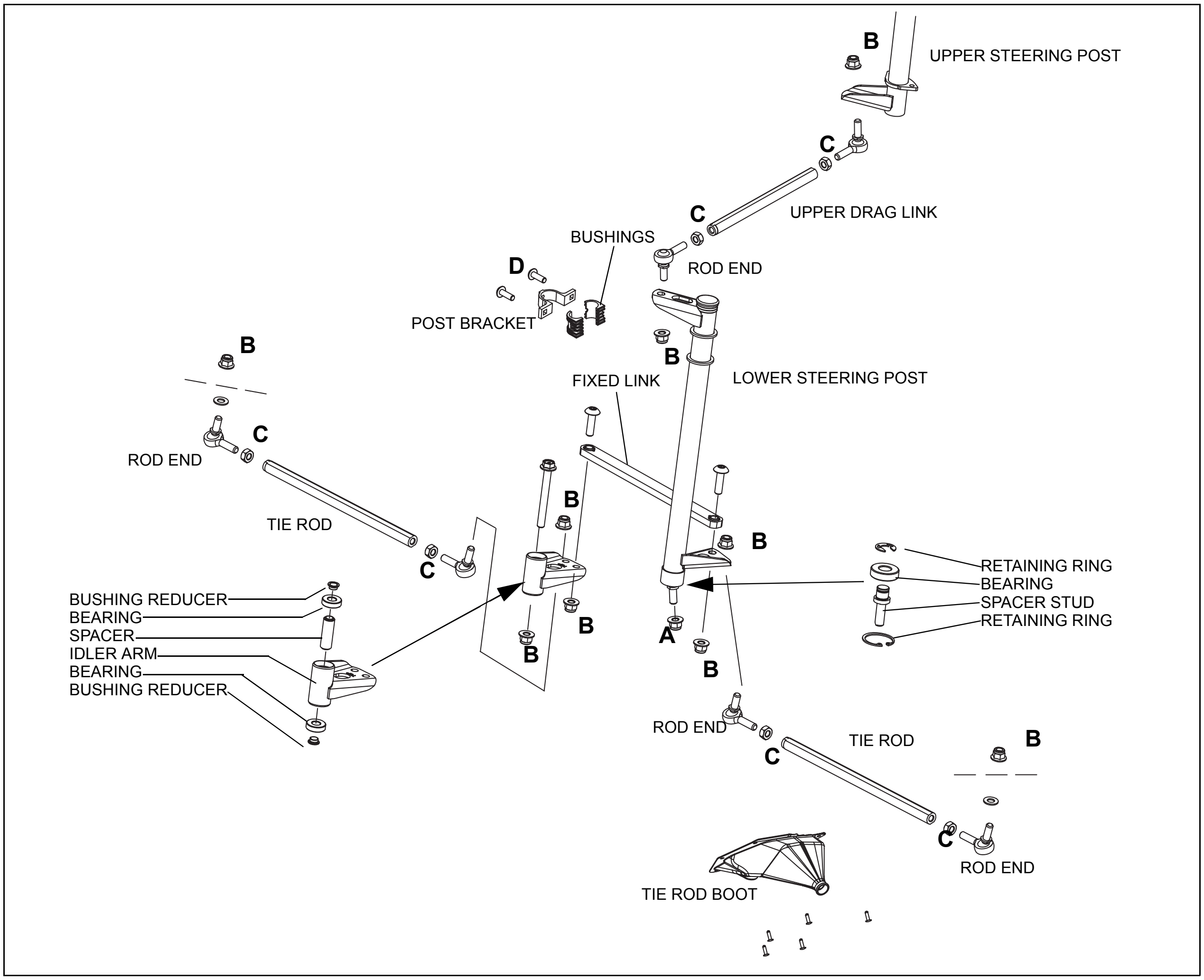
CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

= T

A: 14.7 ft-lb (20 Nm)
B: 12 ft-lb (16 Nm)
C: 5 ft-lb (7 Nm)
D: 18 ft-lb (25 Nm)
Throttle Lever Block Screw: 35 in-lb (4 Nm)
Master Cylinder Clamp: 60-80 in-lb (6.8-9 Nm)
DO NOT CRUSH HANDLEBAR WHEN TORQUING SCREWS.

2010 Rush Lower Steering Assembly



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

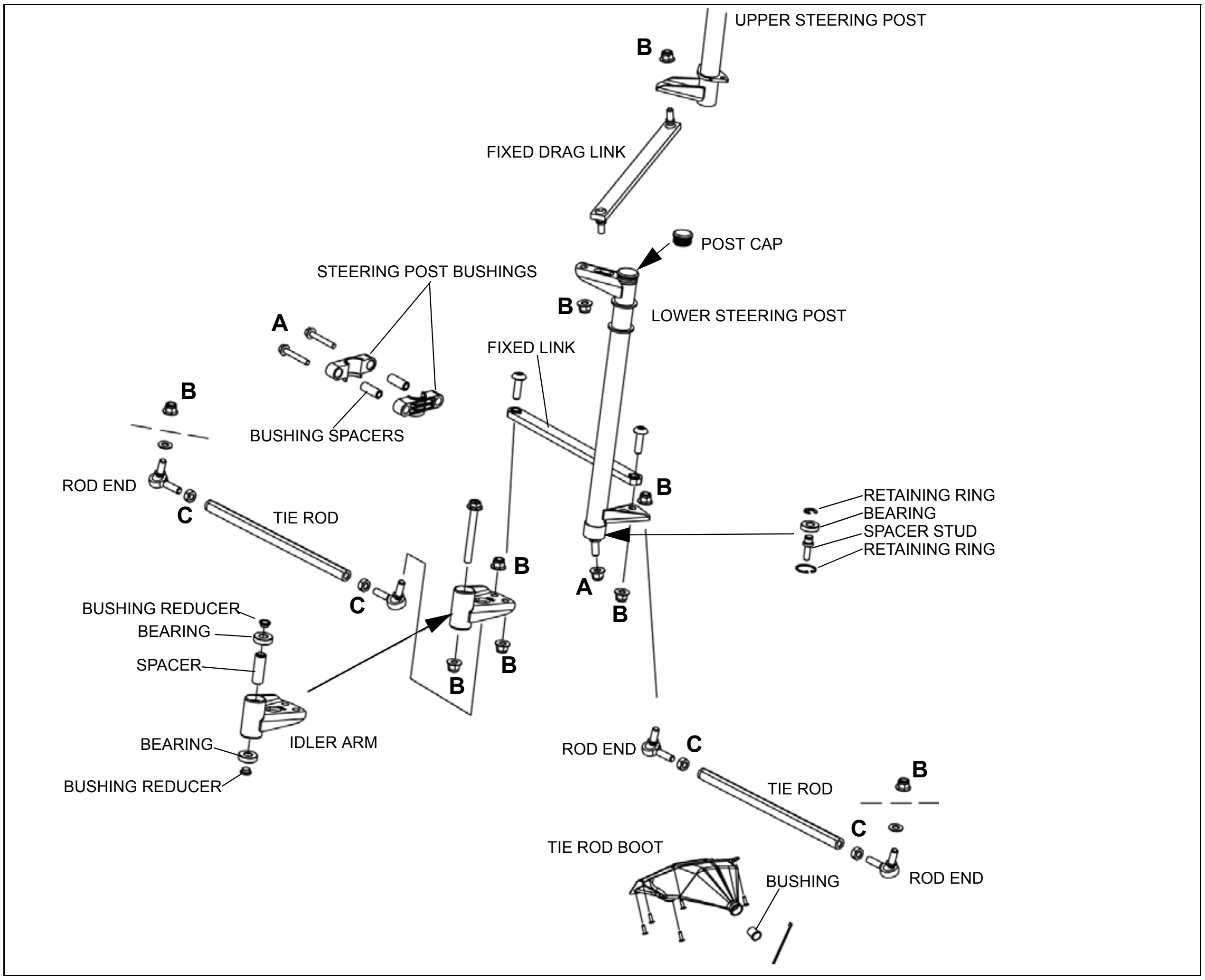
= T

A: 22 ft-lb (30 Nm)
B: 37 ft-lb (50 Nm)
C: 11 ft-lb (15 Nm)
D: 14.7 ft-lb (20 Nm)

NOTE: Assembly Notes

- Orientate rod ends so they are parallel with mating component.
- Tie rod end-to-rod end (center-to-center) length =15.04" (382mm)
- Upper drag link rod end-to-rod end (center-to-center) length = 11.71" (297.5mm)

2011-2012 Rush/Switchback/ SwitchbackAssault Lower Steering Assembly



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

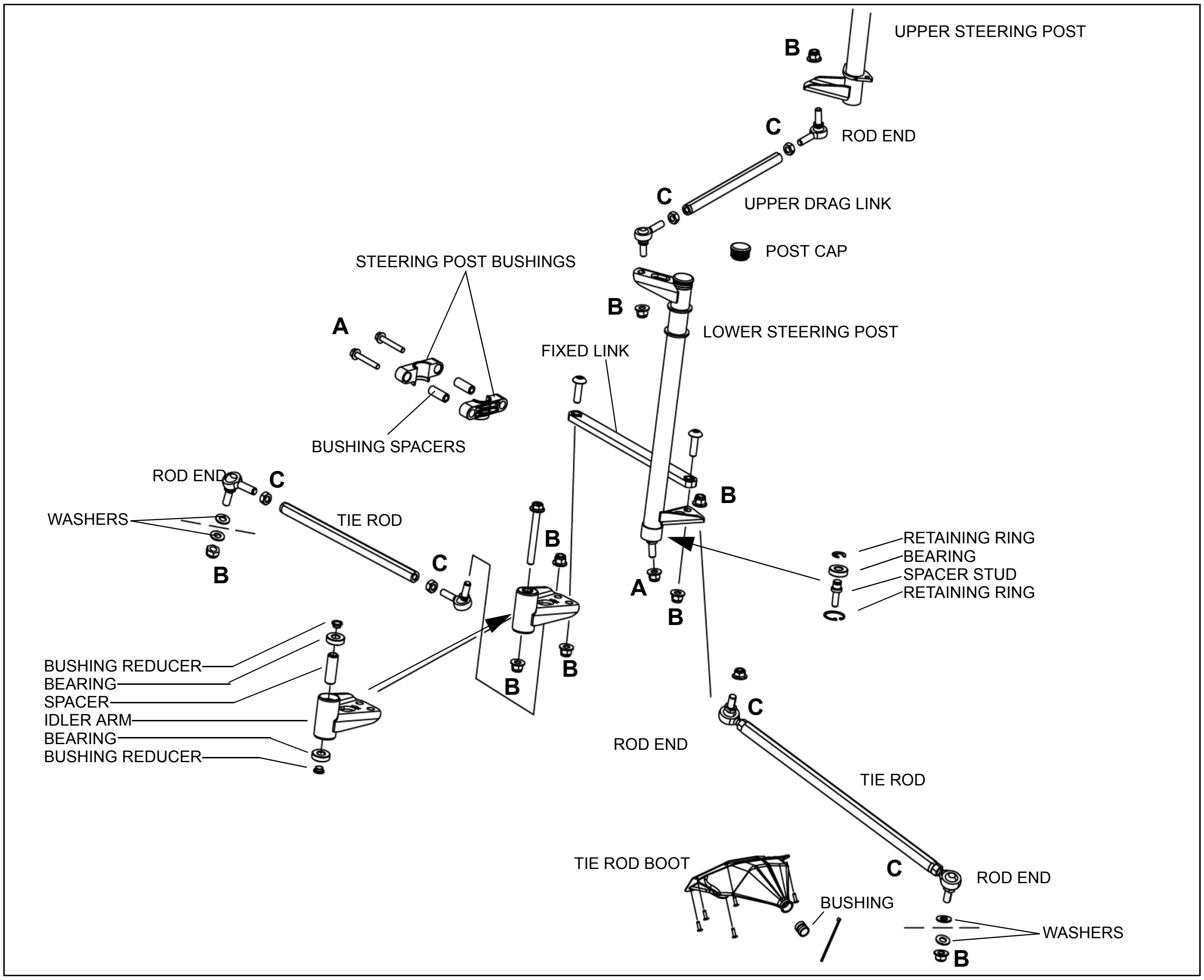
= T

A: 22 ft-lb (30 Nm)
B: 37 ft-lb (50 Nm)
C: 11 ft-lb (15 Nm)

NOTE: Assembly Notes

- Orientate rod ends so they are parallel with mating component.
- Tie rod end-to-rod end (center-to-center) length =15.04" (382mm)

2011-2012 RMK/PRO RMK/RMK Assault Steering Assembly



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

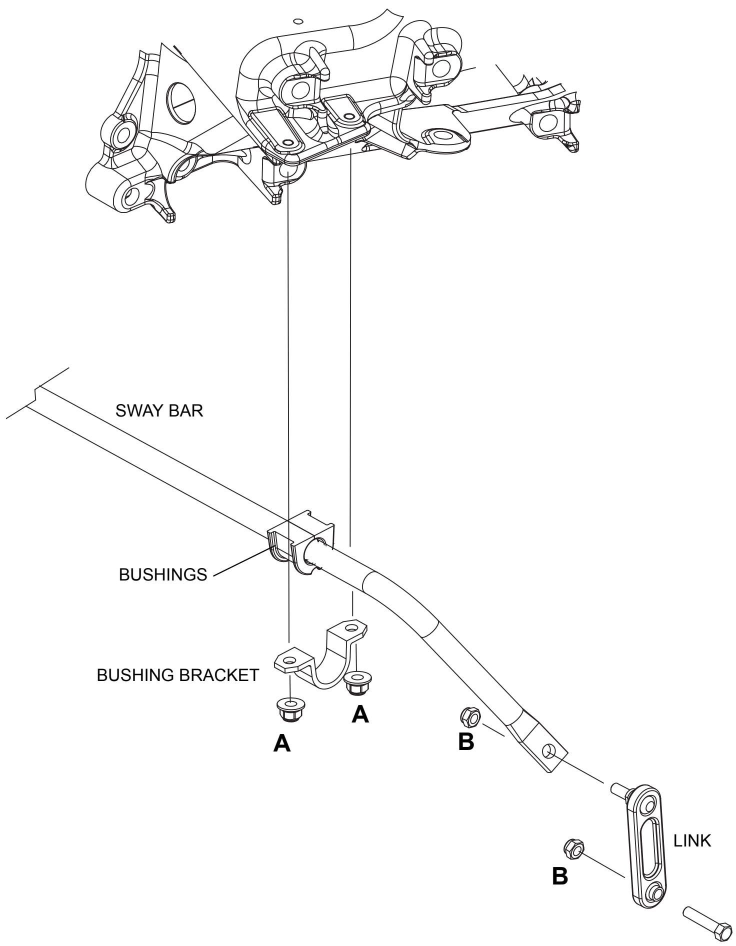
= T

A: 22 ft-lb (30 Nm)
B: 37 ft-lb (50 Nm)
C: 11 ft-lb (15 Nm)

NOTE: Assembly Notes

- Orientate rod ends so they are parallel with mating component.
- Tie rod end-to-rod end (center-to-center) length =
  800 RMK/PRO RMK - 13.4" (354mm)
  800 RMK Assault - 15.04" (382mm)
- Upper drag link rod end-to-rod end (center-to-center) length = 15.19" (385.9mm)

2010-2012 Sway Bar Assembly



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

= T

A: 7.4 ft-lb (10 Nm)
B: 20 ft-lb (27 Nm)

8

FRONT SUSPENSION SETTINGS

Overview

The following topics are outlined involving the front suspension:

- Maximum Width
- Handlebar Centering
- Setting Camber
- Ski Toe Adjustment

Before making any adjustments to the front suspension, inspect all components for damage. Replace any broken, bent or worn components before making any adjustments.

Verify the sway bar and related hardware are not bent, loose, or broken. Inspect the shocks.

The shocks on the front suspension are the only components that limit maximum control arm extension. Bent shock rod(s) adversely affect front suspension settings and handling.

Never install longer (when fully extended) shocks. Installing longer shocks will stress the upper control arm rod ends and lower control arm spherical bearings.

Always verify track alignment. Proper track alignment is critical when aligning the skis with the chassis.

Rod ends must be parallel with mating components. Rod ends that are not parallel will increase the “bump steer” effect.

An alignment bar is an essential tool required to set camber.

Alignment Bar Specifications

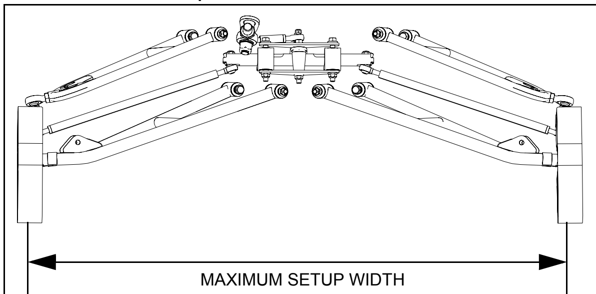
- DIAMETER: .623″-.625″ (15.824-15.875mm)
- LENGTH: 45″ (114.3cm)
- MATERIAL: C-1018
- Polaris PN: 5333508 (Order from tool vendor.)

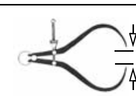
Maximum Setup Width

The maximum width setting is the distance between the front center lines of both spindles with the skis off the ground and the shocks installed.

Because of the design of the front suspension, maximum width can only be changed by adjusting camber. This is due to the fact that only the upper control arms feature rod ends and thus camber can only be adjusted by turning the upper control rod ends in or out.

1. To measure the maximum setup width, raise the front of the snowmobile off the ground with the shocks and skis installed.
2. Center the skis/spindles. Measure the distance between the spindle center lines.




= In./cm.

Maximum Width
Pro-Ride = 41.52/105
Pro-Ride RMK Adjustable = 36.26/92
Pro-Ride Wide Adjustable = 38.58/98

3. If the measurement is out of specification, inspect the front suspension for damage. Replace damaged components.
4. If no damage is found, reset the camber.

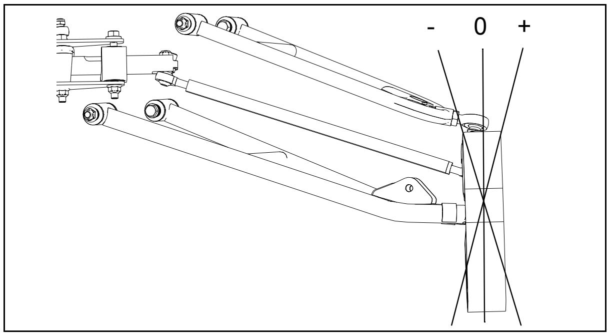
Handlebar Centering

1. Raise the vehicle to remove the skis.
2. Verify the handlebars are straight. Measure from each bar end to a common center point at the rear of the vehicle.
3. Verify the steering drag link is not damaged, bent, or loose. If it is, the drag link must be either adjusted or replaced. If the drag link is correct, adjust the steering linkage tie rod ends until handlebar is centered. Note that the toe setting will require adjustment.
4. Reinstall the spindle rod ends, bushings, and skis. Torque bolts to specification.

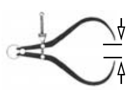
Camber

On a snowmobile, camber is the angle of the spindle relative to vertical as viewed from the front. The camber angle becomes increasingly more negative as the control arms deflect upward.

- 0 = Neutral Camber. The spindle is perpendicular to the ground.
- + = Positive Camber. The top of the spindle is canted outward from the chassis.
- - = Negative Camber. The top of the spindle is canted inward towards the chassis.

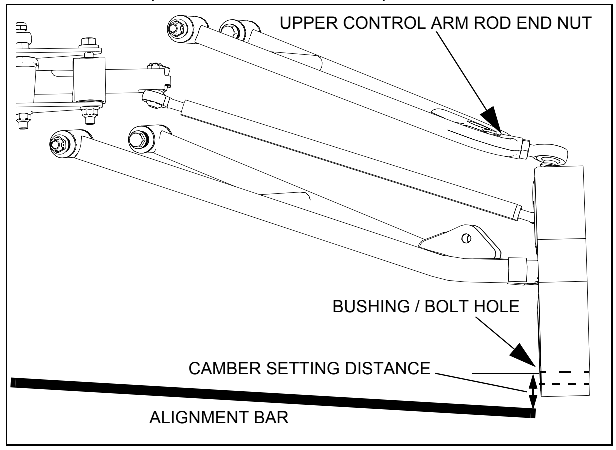


Camber Adjustment



Camber Setting
Top of alignment bar to top of ski bushing / bolt spindle hole.
Pro-Ride = 1.68±.31/42±0.8
Pro-Ride RMK Adjustable = 1.95 ± 0.31/4.3 ± 0.8
Pro-Ride Wide Adjustable = 2.25 ± 0.31/5.7 ± 0.8

1. Verify the handlebars are centered. Measure from each end to a common center point at the rear of the snowmobile if necessary.
2. Raise the front of the snowmobile off the ground. Remove the skis and ski bushings.
3. Verify the shocks are at full extension and that no IFS components are bent or damaged. Replace any component that is damaged before making any adjustments.
4. Insert the alignment bar, PN 5333508 or equivalent, through one spindle. Adjust the opposing spindle's upper control arm rod end to adjust the angle of the spindle.
5. Check the measurement between the top-end of the alignment bar and the top of the spindle's bushing/ski bolt hole (see illustration below).



6. Insert the alignment bar into the opposite spindle and perform the same steps. Monitor the specified camber measurement as the control arm rod end nuts are adjusted.
7. Continue making small rod end changes to both control arm rod end nuts until the camber setting specification is achieved at both spindles.

CAUTION

DO NOT EXCEED THE MAXIMUM SETUP WIDTH SETTING WHEN ADJUSTING CAMBER.

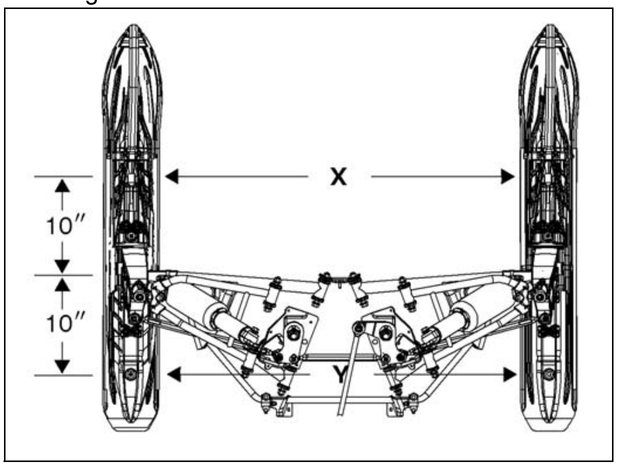
8. Verify the upper rod ends are torqued to specification. Ensure the rod ends remain parallel to the spindles when torquing nuts.
9. Apply a liberal amount of Premium Grease to the ski bushings, and then reinstall the bushings and skis. Torque fasteners to specification.

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. Rock the front end of the vehicle up and down and then set it down gently. This will set the front suspension at ride height.
2. Verify the handlebars are centered. Measure from each end to a common center point at the rear of the snowmobile to verify.
3. 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.



4. 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.
5. Record the measurements from the edge of the straight edge to the forward ski mark (X) and the rearward ski mark (Y).
6. Adjust the tie rod so that both measurements are the same.
7. Place the straight edge on the opposite side of the track and measure the opposite ski marks.
8. Adjust the tie rod so that both measurements are the same.
9. Steps 3 to 8 will align the skis with the track. At this point, verify the handlebar is centered with the skis.

NOTE: The handlebar can be aligned with the skis on models featuring an adjustable drag link by adjusting the length of the drag link. If the snowmobile does not feature an adjustable drag link, handlebar-ski alignment can only be performed by adjusting the steering tie rod lengths.

10. Turn both tie rods equally to set ski toe. When finished, measurement (X) should be 0" - 1/8" wider than measurement (Y).
11. Torque steering tie rod jam nuts to specification and lower the vehicle.

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 nuts 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

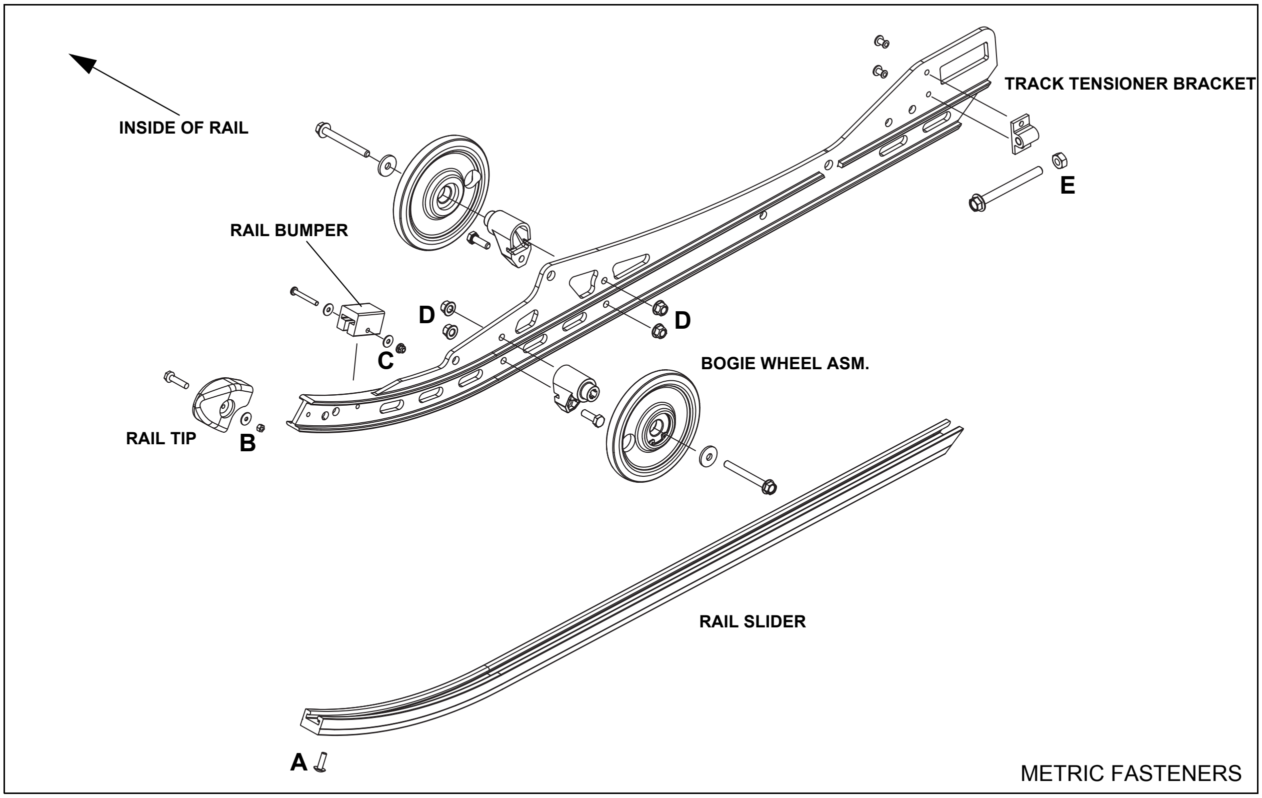
1. Remove the fastener securing the control arm to the spindle. Remove the lower shock fastener.
2. Remove the nuts securing the control arm to the bulkhead.
3. Remove the control arm, pivot bushings, and pivot shafts.

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.

REAR SUSPENSION ASSEMBLY ILLUSTRATIONS

2010 Progressive 120 Rail Assembly



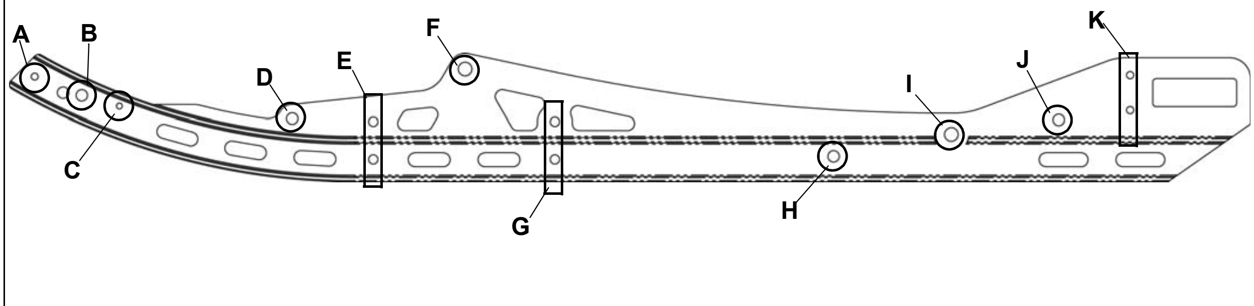
= T
A: 7.4 ft-lb (10 Nm)
B: 4 ft-lb (5.4 Nm)
C: Torque nut until screw protrudes 7/32" (5.3mm)
D: 17 ft-lb (23 Nm)
E: 33 ft-lb (45 Nm)

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

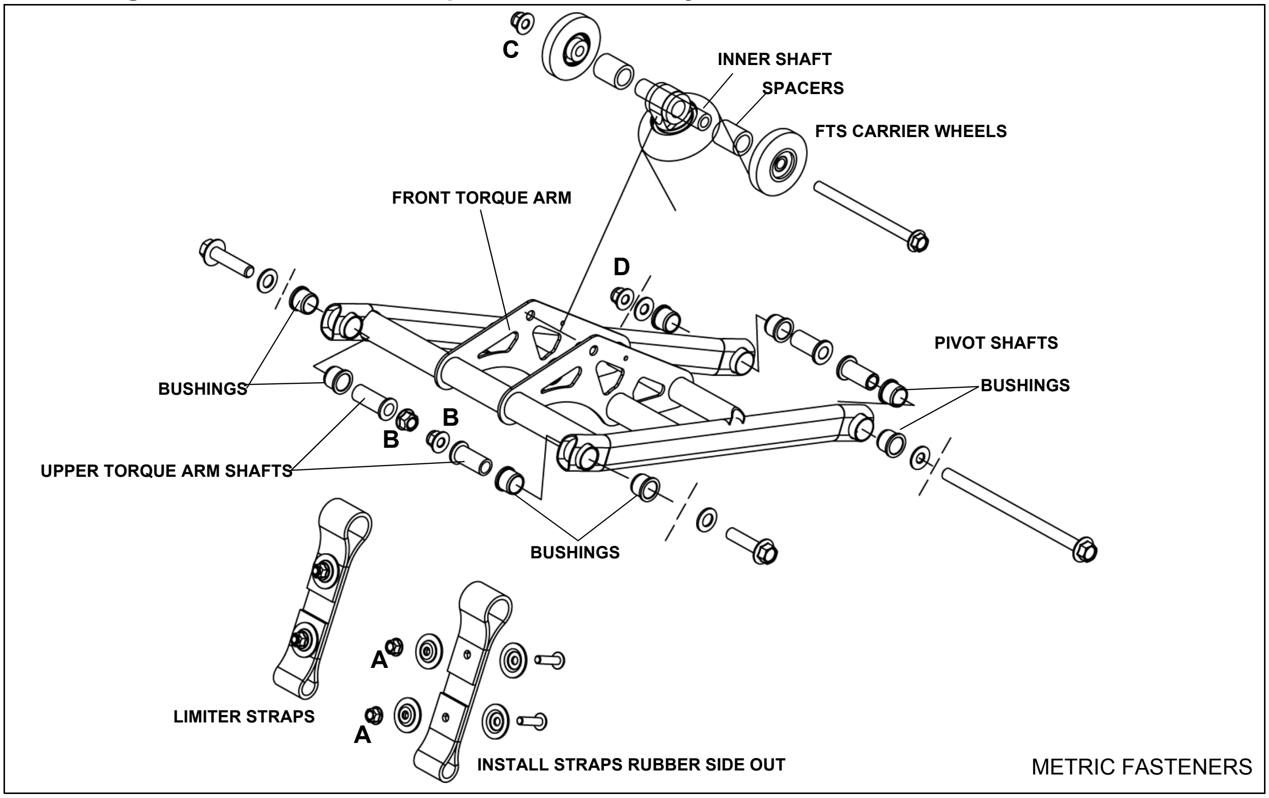
2010 Progressive 120 Rail Fastener Locations



Components/Fasteners:

- A - Rail Tip
- B - Limiter Strap Shaft
- C - Rail Bumper
- D - H Bracket/Bogie Wheel Shaft
- E - Bogie Wheel Asm. (Mount to outside of rail).
- F - Front Torque Arm Shaft
- G - Bogie Wheel Asm. (Mount to inside of rail).
- H - Rail Brace Shaft
- I - Rear Pivot Shaft
- J - Rail Brace Shaft
- K - Rear Idler Adjuster Block

2010 Progressive 120 Front Torque Arm Assembly



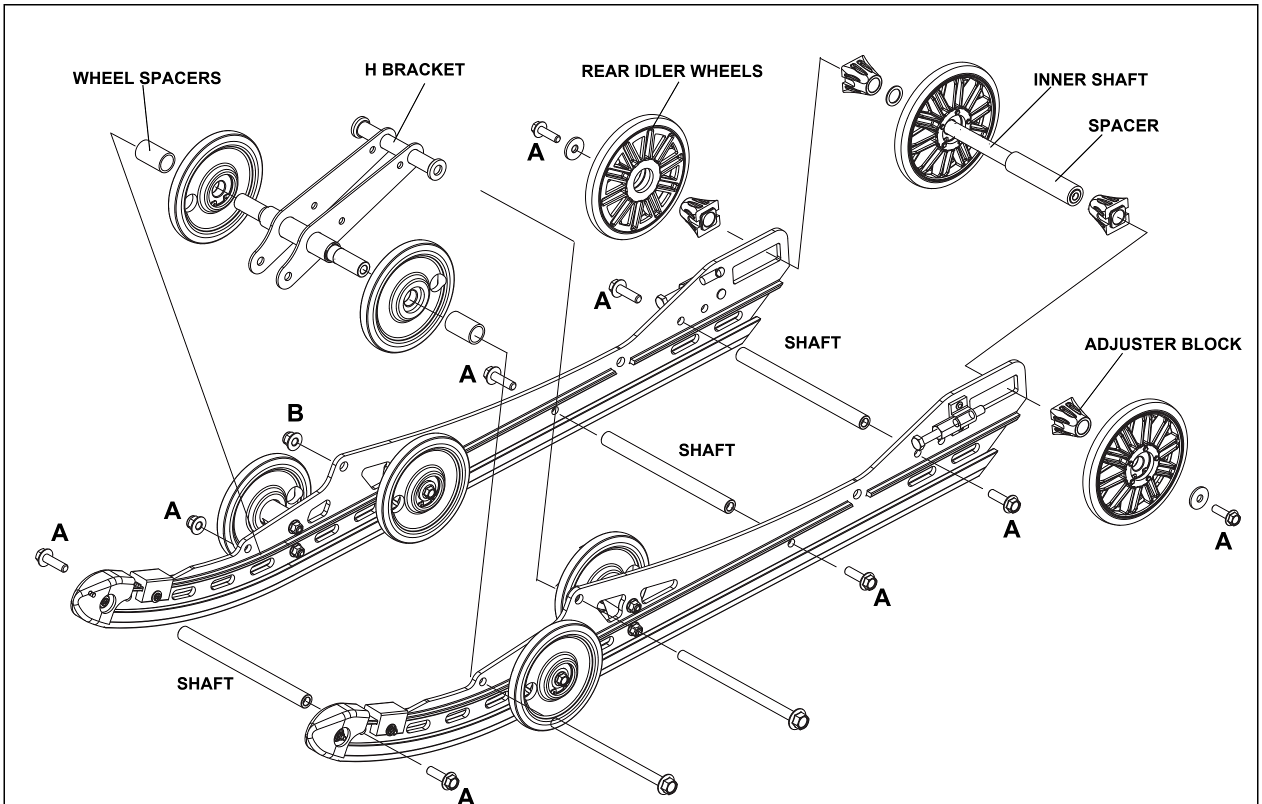
= T
A: 17 ft-lb (23 Nm) **B: 60 ft-lb (80 Nm) Apply Loctite® 262™ to Threads** **C: 33 ft-lb (45 Nm)** **D: 60 ft-lb (80 Nm)**

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

2010 Progressive 120 Idler Shaft Assembly



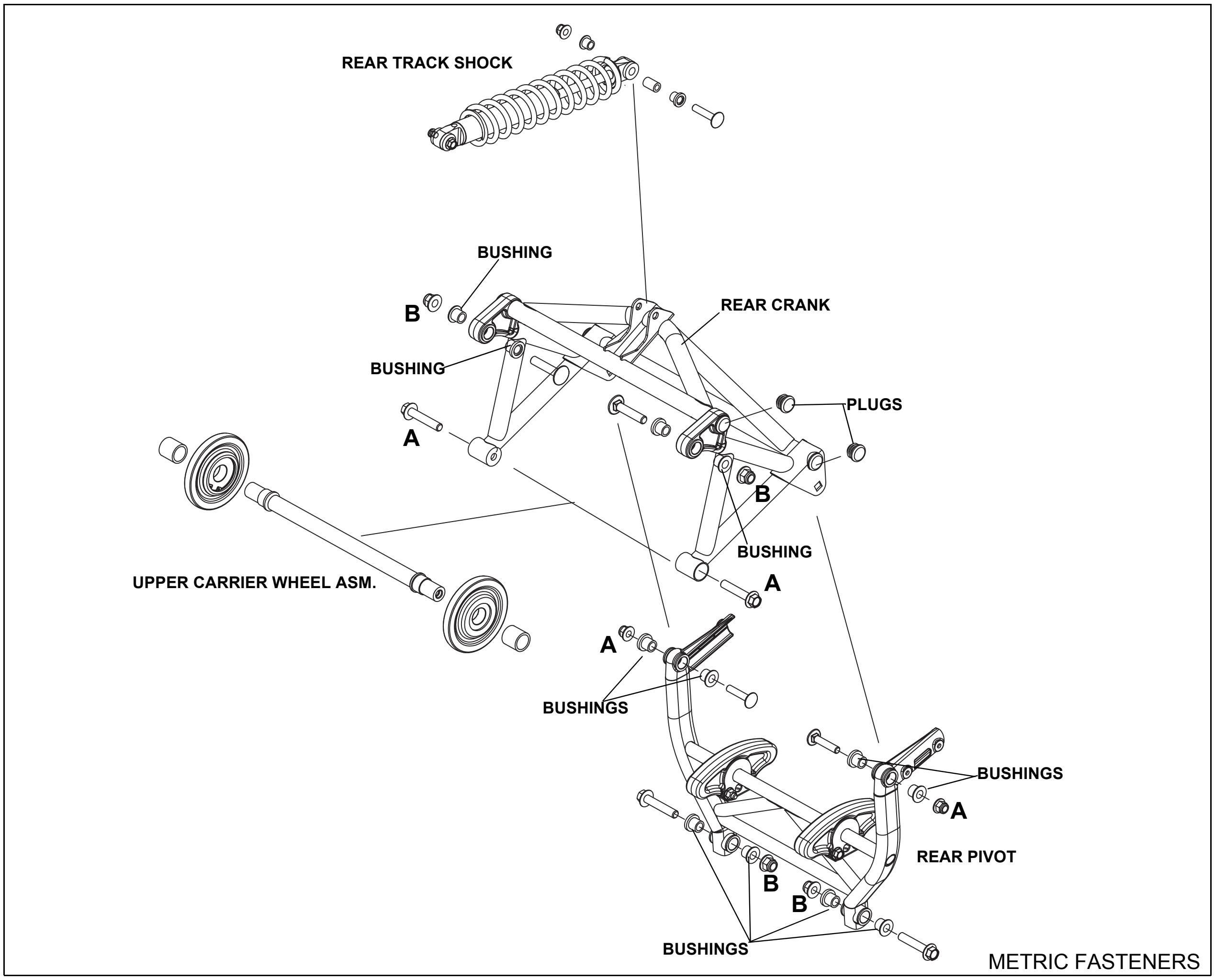
= T
A: 33 ft-lb (45 Nm) **B: 60 ft-lb (80 Nm)**

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Install rear idler adjust blocks with flat side facing adjuster screw.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

2010 Progressive 120 Rear Crank/Rear Scissor Assembly



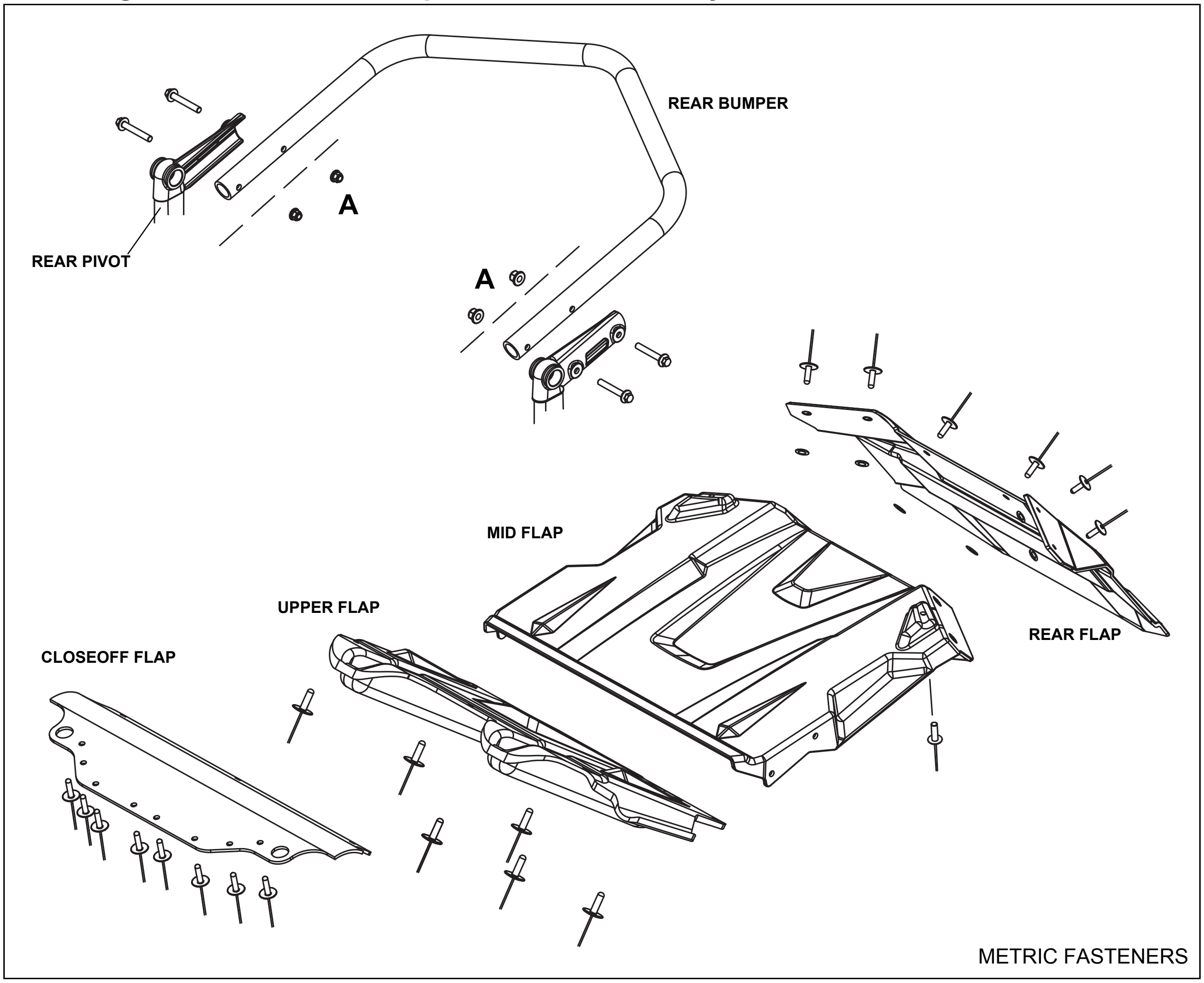
= T
A: 33 ft-lb (45 Nm) **B: 60 ft-lb (80 Nm)**

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

2010 Progressive 120 Rear Bumper/Closeoff Assembly

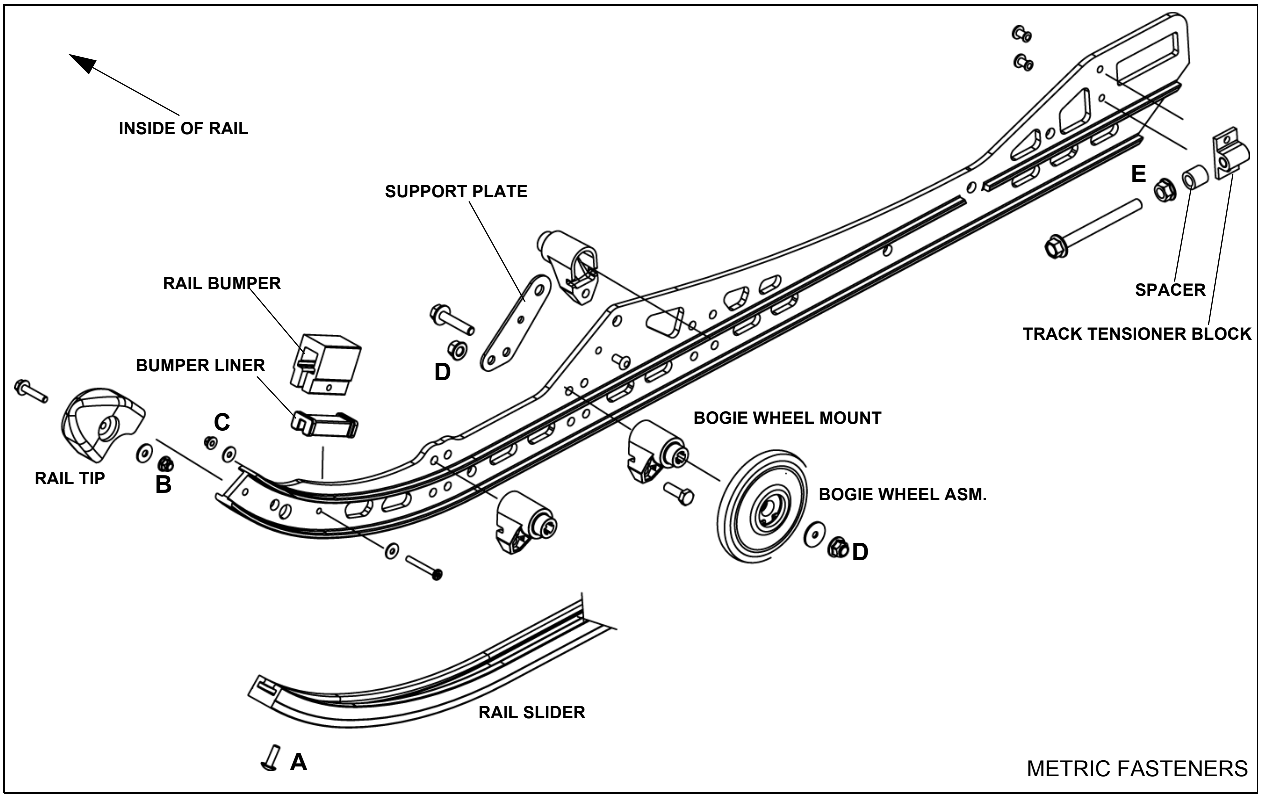


= T
A: 7 ft-lb (9.5 Nm)

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

Progressive 121 Rail Assembly



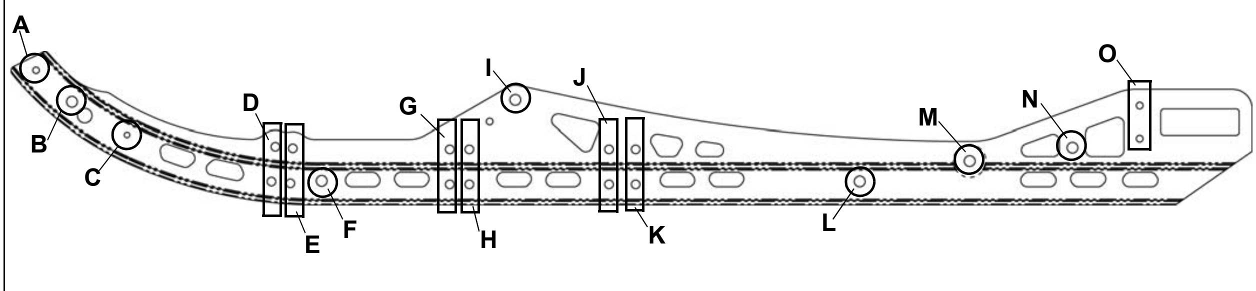
= T
A: 7.4 ft-lb (10 Nm) **B: 4 ft-lb (5.4 Nm)** **C: Torque nut until screw protrudes 5mm** **D: 17 ft-lb (23 Nm)** **E: 33 ft-lb (45 Nm)**

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

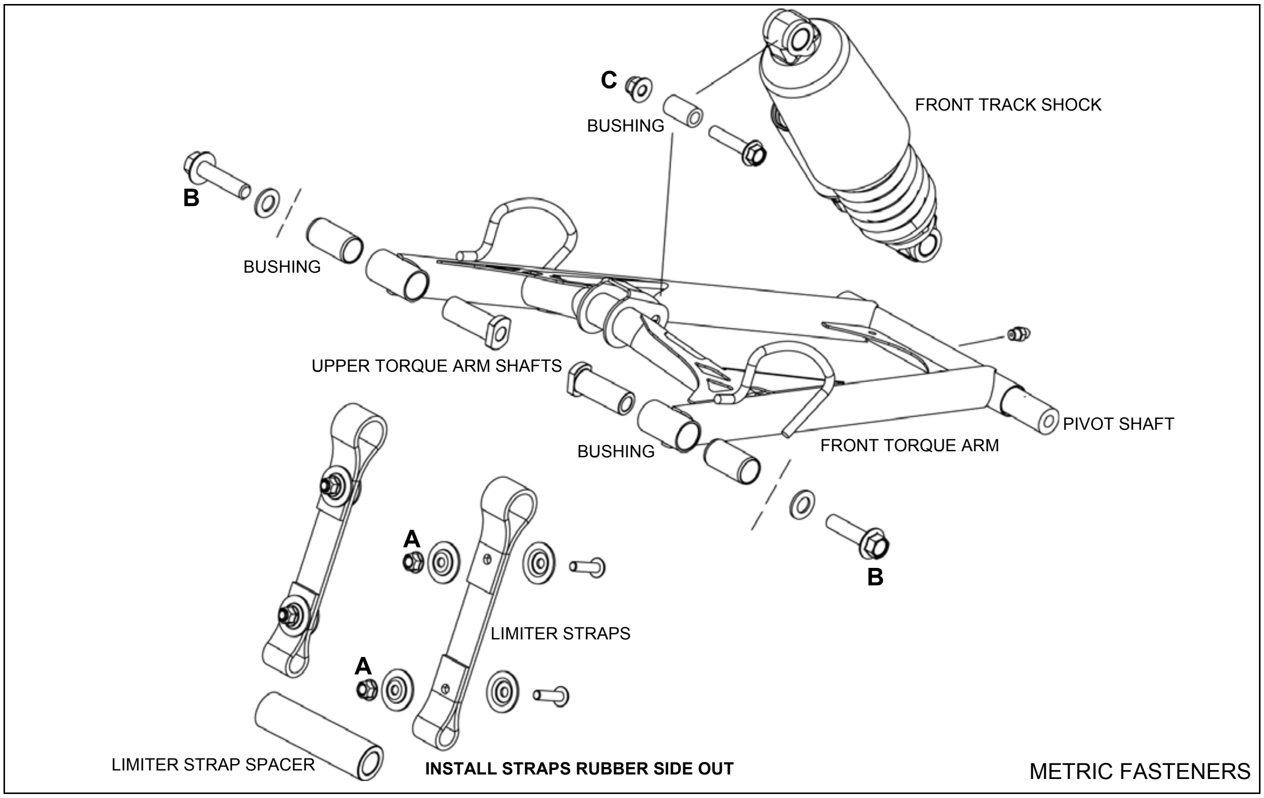
Progressive 121 Rail Fastener Locations



Components/Fasteners:

- A - Rail Tip
- B - Limiter Strap Shaft
- C - Rail Bumper
- D - Left Rail Front Holes - Bogie Wheel Asm. (Mount to outside of rail).
- E - Right Rail Rear Holes - Bogie Wheel Asm. (Mount to outside of rail).
- F - Front Shock Shaft
- G - Left Rail Front Holes - Bogie Wheel Asm. (Mount to outside of rail).
- H - Right Rail Rear Holes - Bogie Wheel Asm. (Mount to outside of rail).
- I - Front Torque Arm Shaft
- J - Left Rail Front Holes - Bogie Wheel Asm. (Mount to inside of rail).
- K - Right Rail Rear Holes - Bogie Wheel Asm. (Mount to inside of rail).
- L - Rail Brace Shaft
- M - Rear Pivot Shaft
- N - Rail Brace Shaft
- O - Rear Idler Adjuster Block

Progressive 121 Front Torque Arm



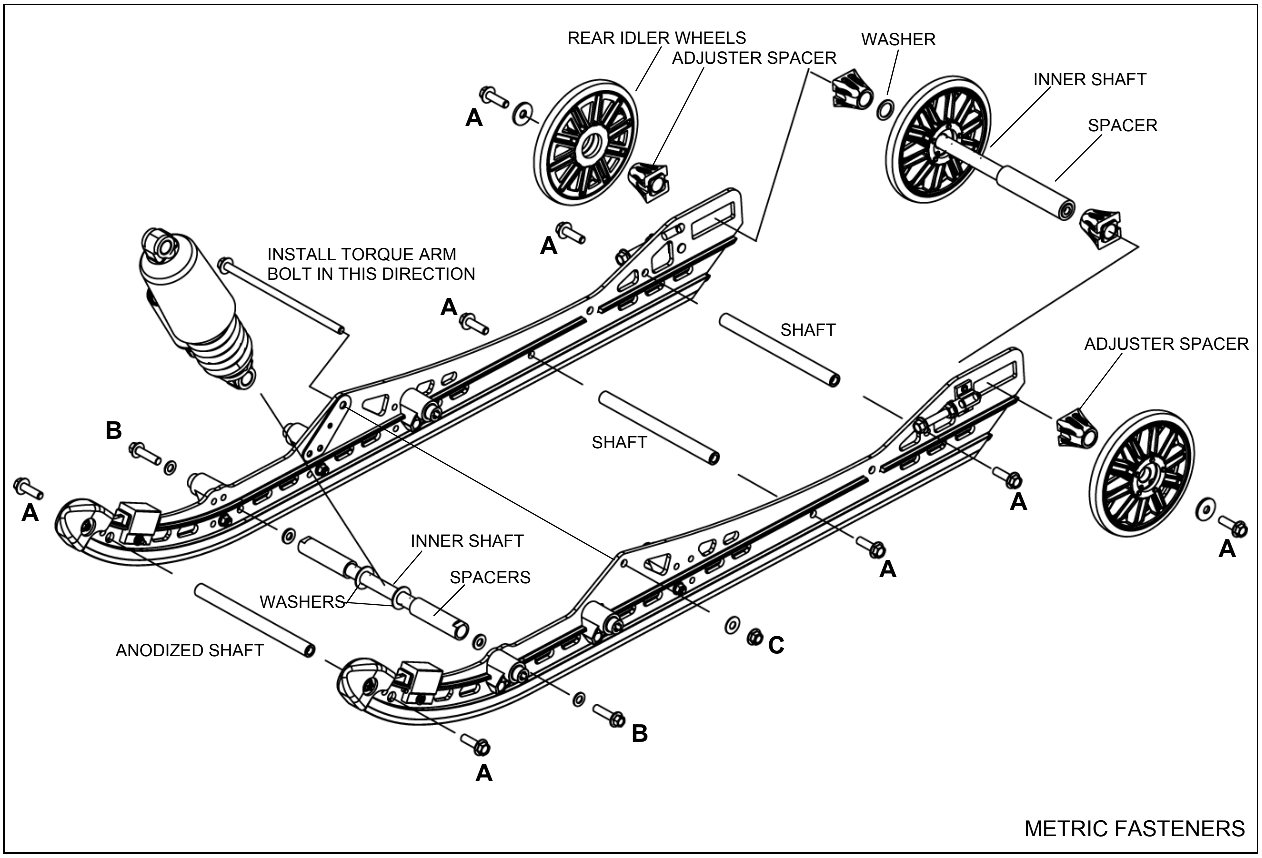
= T
A: 17 ft-lb (23 Nm) **B: 60 ft-lb (80 Nm) Apply Loctite® 262™ to Threads** **C: 33 ft-lb (45 Nm)**

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

Progressive 121 Idler Shafts



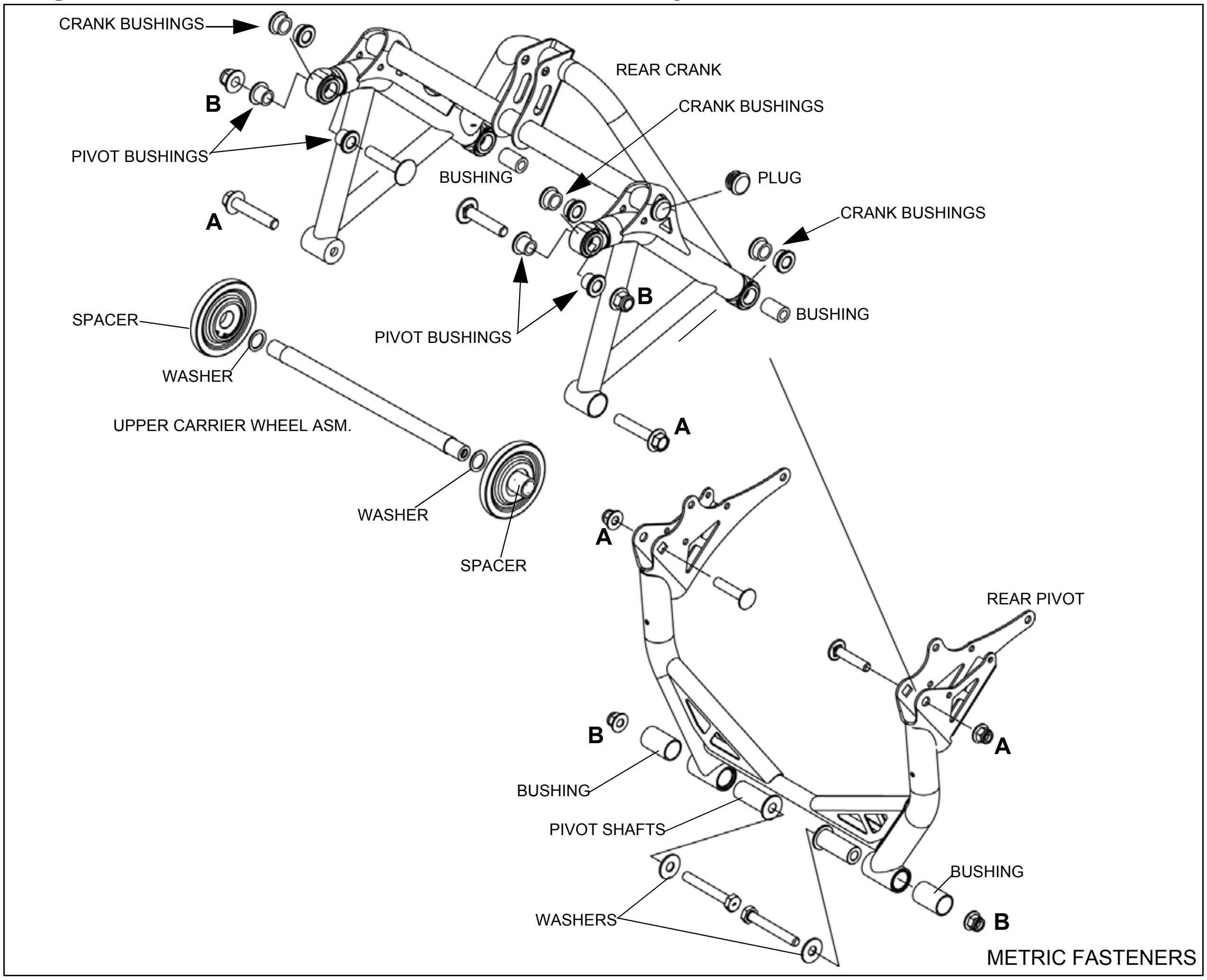
= T
A: 33 ft-lb (45 Nm) Apply Loctite® 262™ to threads **B: 50 ft-lb (67 Nm) Apply Loctite® 262™ to threads** **C: 60 ft-lb (81 Nm)**

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Install rear idler adjust blocks with flat side facing adjuster screw.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

Progressive 121 Rear Crank/Rear Scissor Assembly



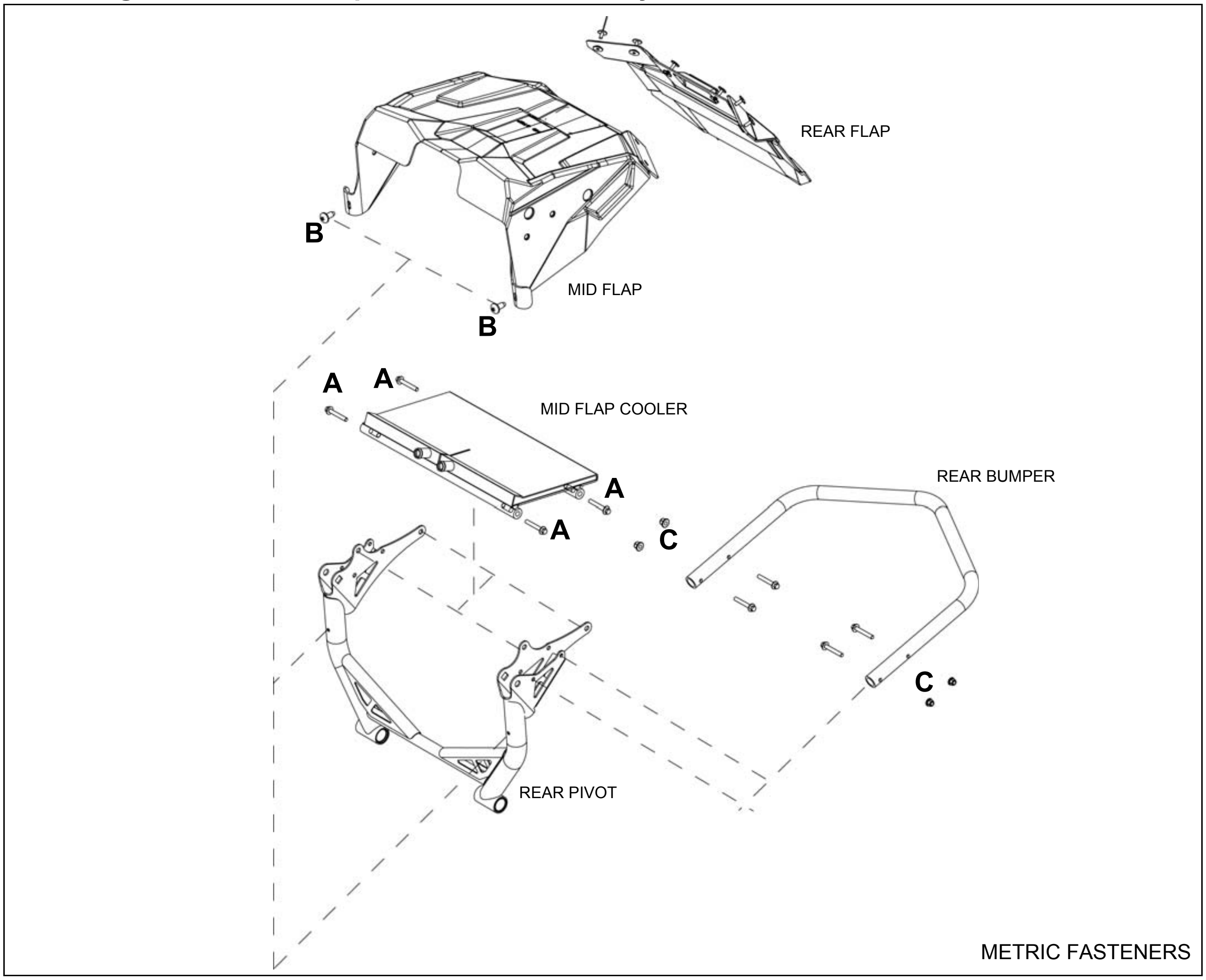
= T
A: 33 ft-lb (44.7 Nm) **B: 60 ft-lb (80 Nm)**

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

2011 Progressive 121 Bumper/Closeoff Assembly



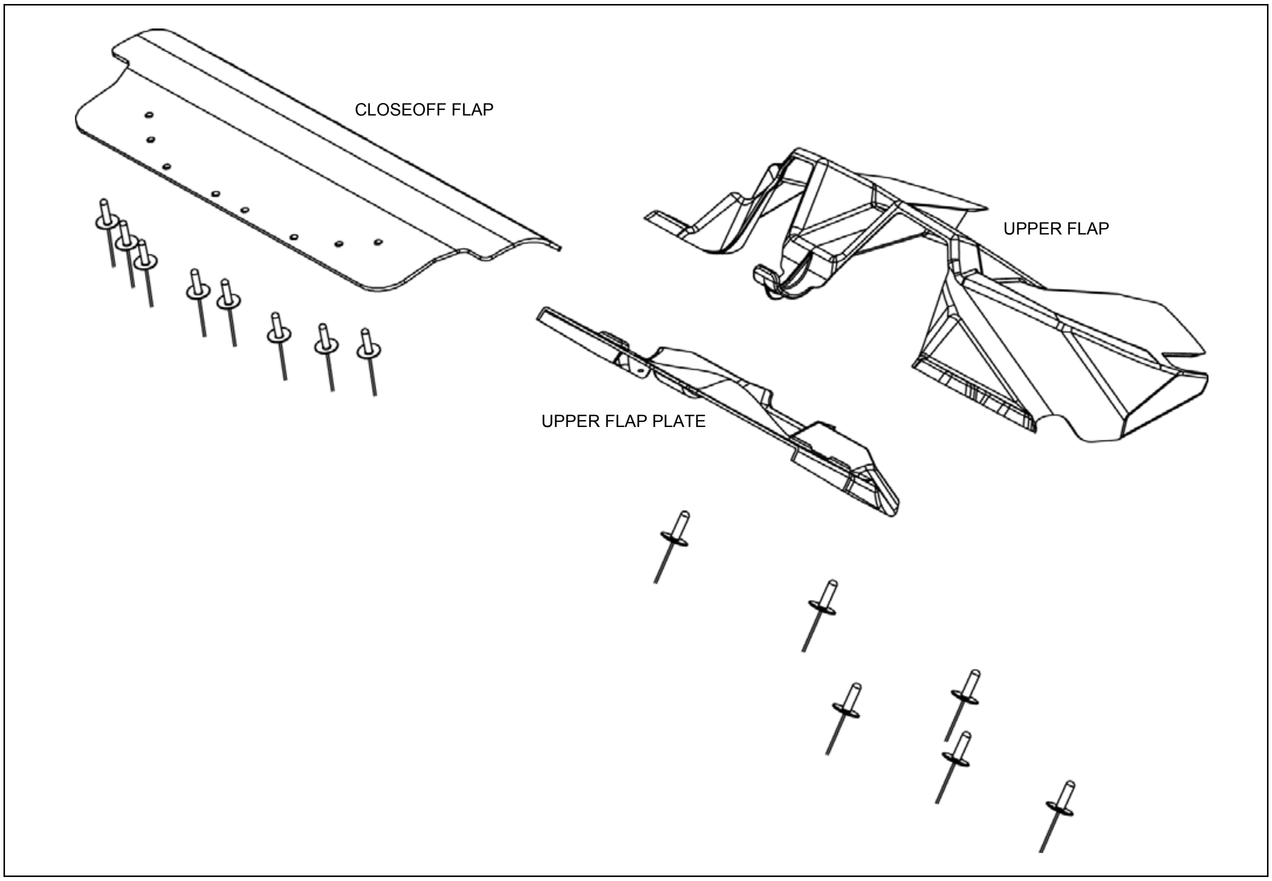
= T
A: 33 ft-lb (44.7 Nm) **B: 3.6 ft-lb (5 Nm)** **C: 9.5 ft-lb (7 Nm)**

Assembly Notes

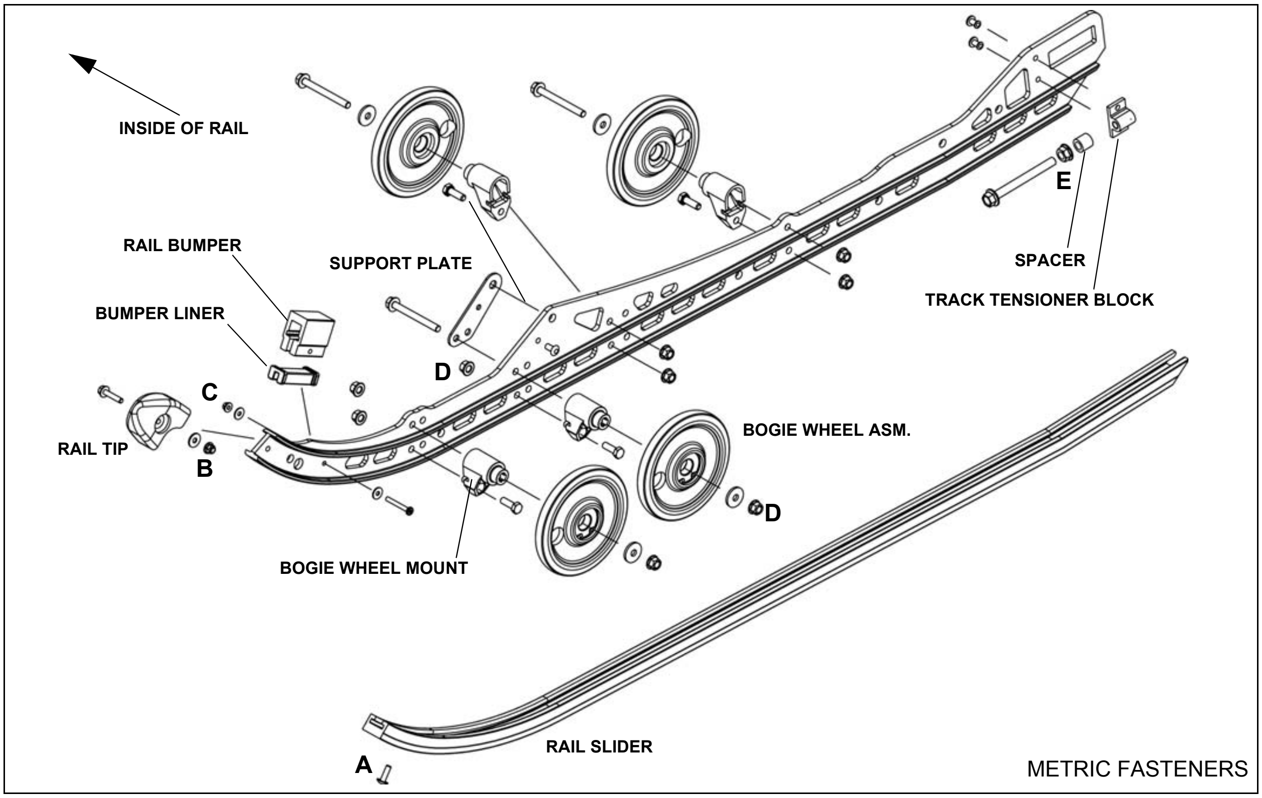
- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

8

2011 Progressive 121 Rear Mid Flap Covers



Progressive 136 Rail Assembly



= T
A: 7.4 ft-lb (10 Nm)
B: 4 ft-lb (5.4 Nm)
C: Torque nut until screw protrudes 5mm
D: 17 ft-lb (23 Nm)
E: 33 ft-lb (45 Nm)

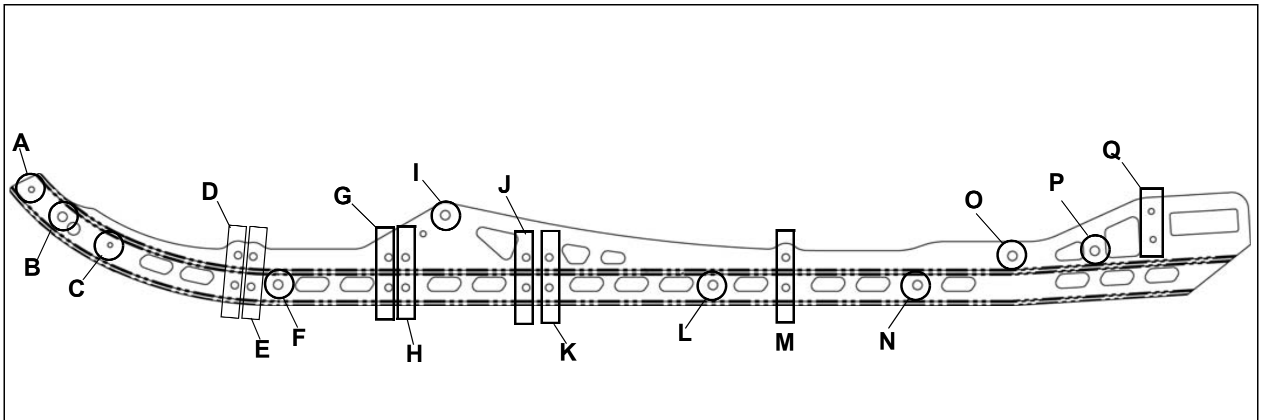
Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION

Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

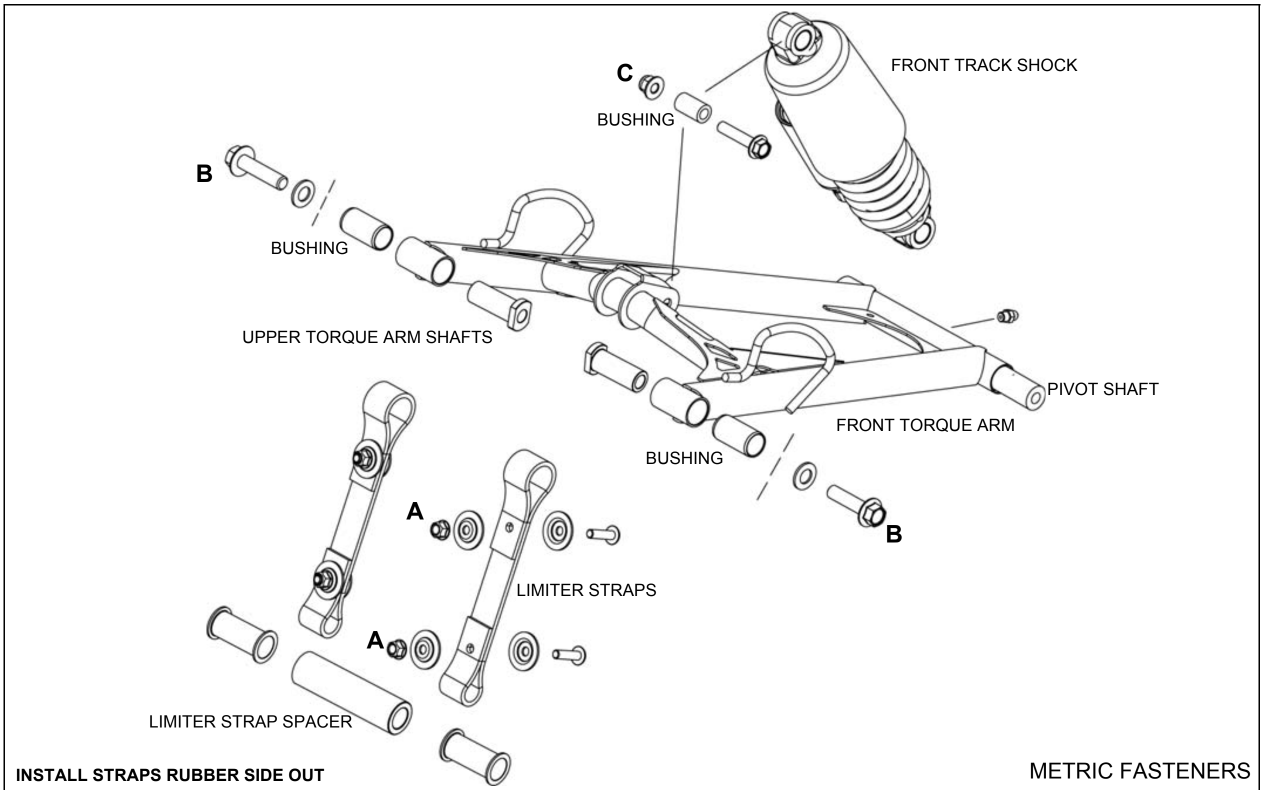
Progressive 136 Rail Fastener Locations



Components/Fasteners:

- A - Rail Tip
- B - Limiter Strap Shaft
- C - Rail Bumper
- D - Left Rail Front Holes - Bogie Wheel Asm. (Mount to outside of rail)
- E - Right Rail Rear Holes - Bogie Wheel Asm. (Mount to outside of rail)
- F - Front Shock Shaft
- G - Left Rail Front Holes - Bogie Wheel Asm. (Mount to outside of rail)
- H - Right Rail Rear Holes - Bogie Wheel Asm. (Mount to outside of rail)
- I - Front Torque Arm Shaft
- J - Left Rail Front Holes - Bogie Wheel Asm. (Mount to inside of rail)
- K - Right Rail Rear Holes - Bogie Wheel Asm. (Mount to inside of rail)
- L - Rail Brace Shaft
- M - Bogie Wheel Asm. (Mount to inside of rail)
- N - Rail Brace Shaft
- O - Rear Pivot Shaft
- P - Rail Brace Shaft
- Q - Rear Idler Adjuster Block

Progressive 136 Front Torque Arm



= T

A: 17 ft-lb (23 Nm)
B: 60 ft-lb (80 Nm) Apply Loctite® 262™ to threads
C: 33 ft-lb (45 Nm)

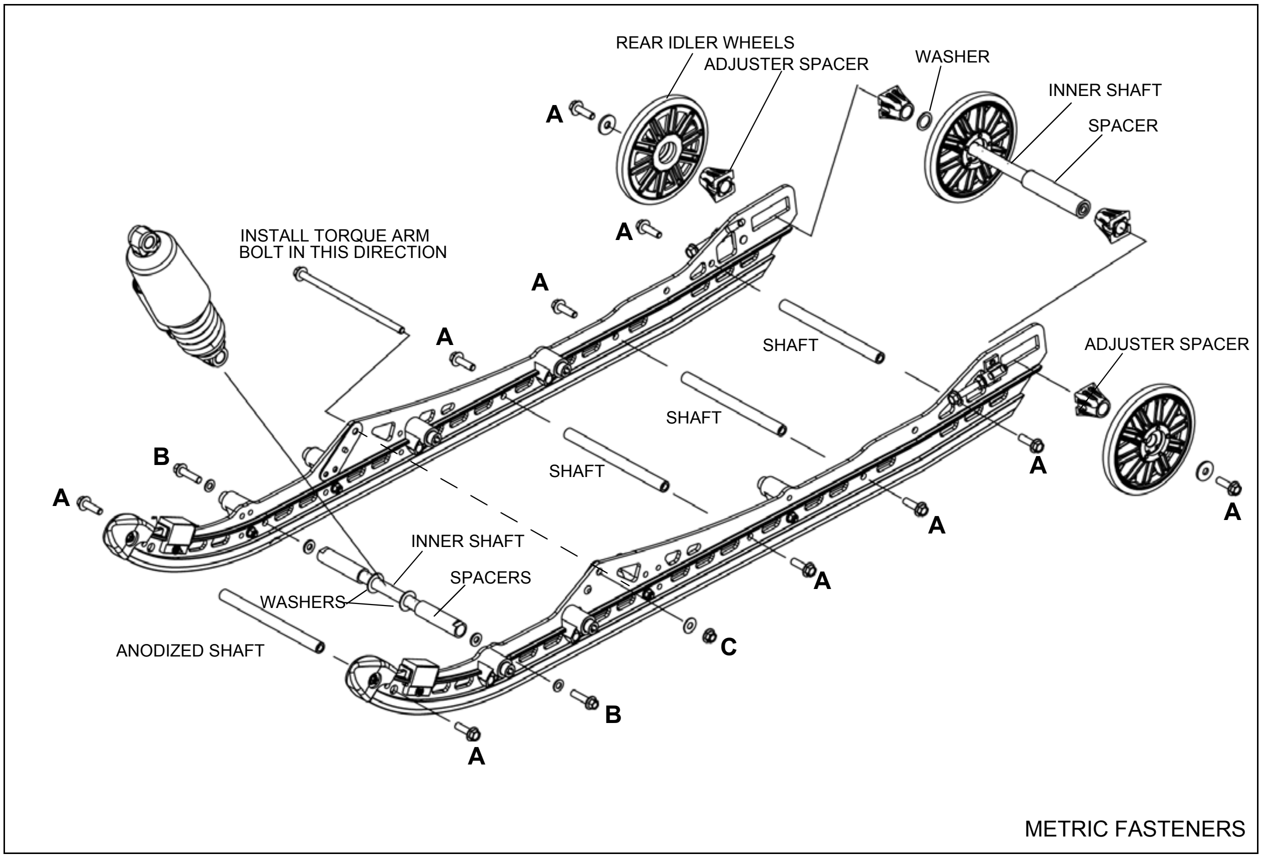
Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION

Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

Progressive 136 Idler Shafts



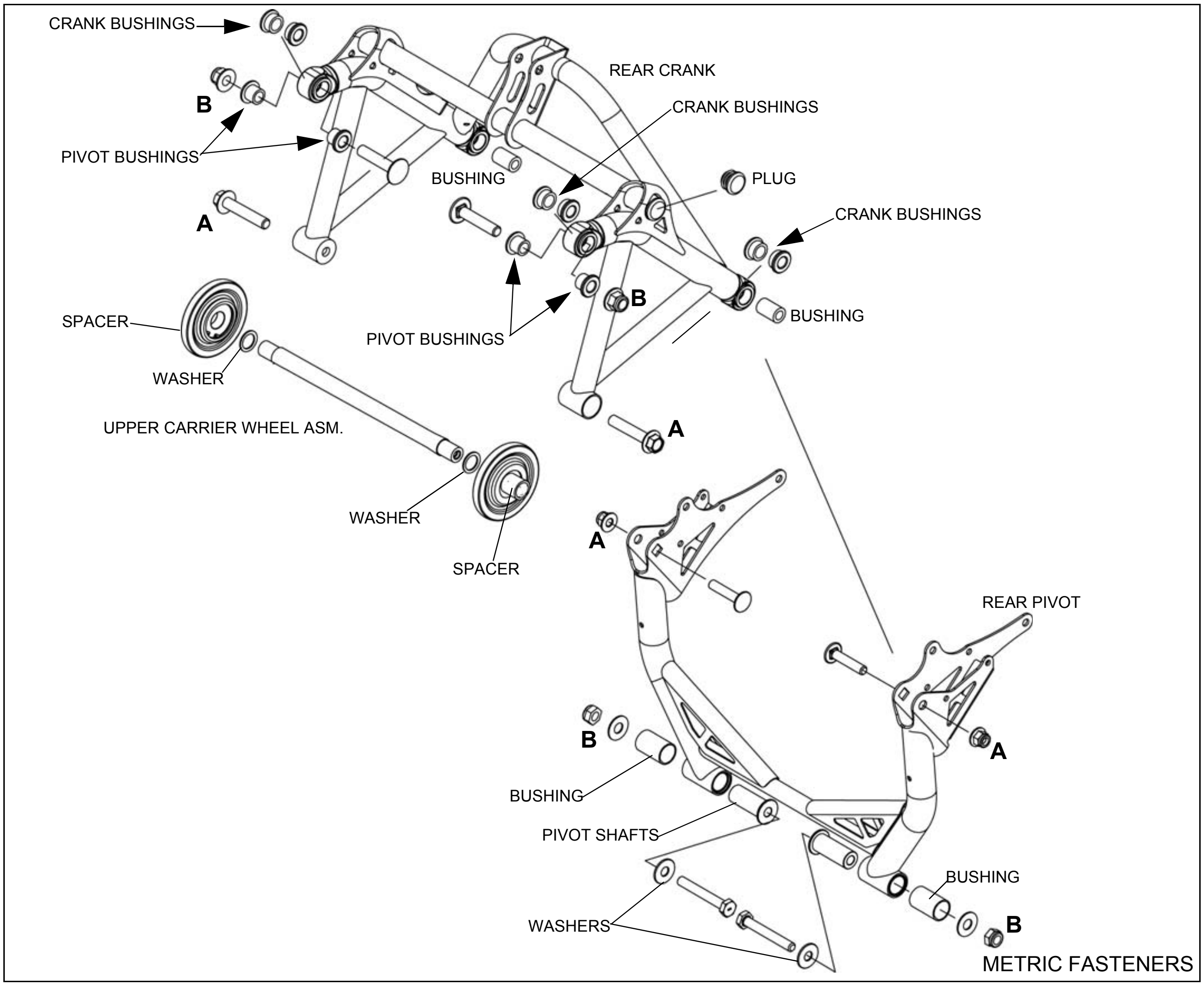
= T
A: 33 ft-lb (45 Nm) Apply Loctite® 262™ to threads **B: 50 ft-lb (67 Nm) Apply Loctite® 262™ to threads** **C: 60 ft-lb (81 Nm)**

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Install rear idler adjust blocks with flat side facing adjuster screw.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

Progressive 136 Rear Crank/Rear Scissor Assembly



= T
A: 33 ft-lb (44.7 Nm) **B: 60 ft-lb (80 Nm)**

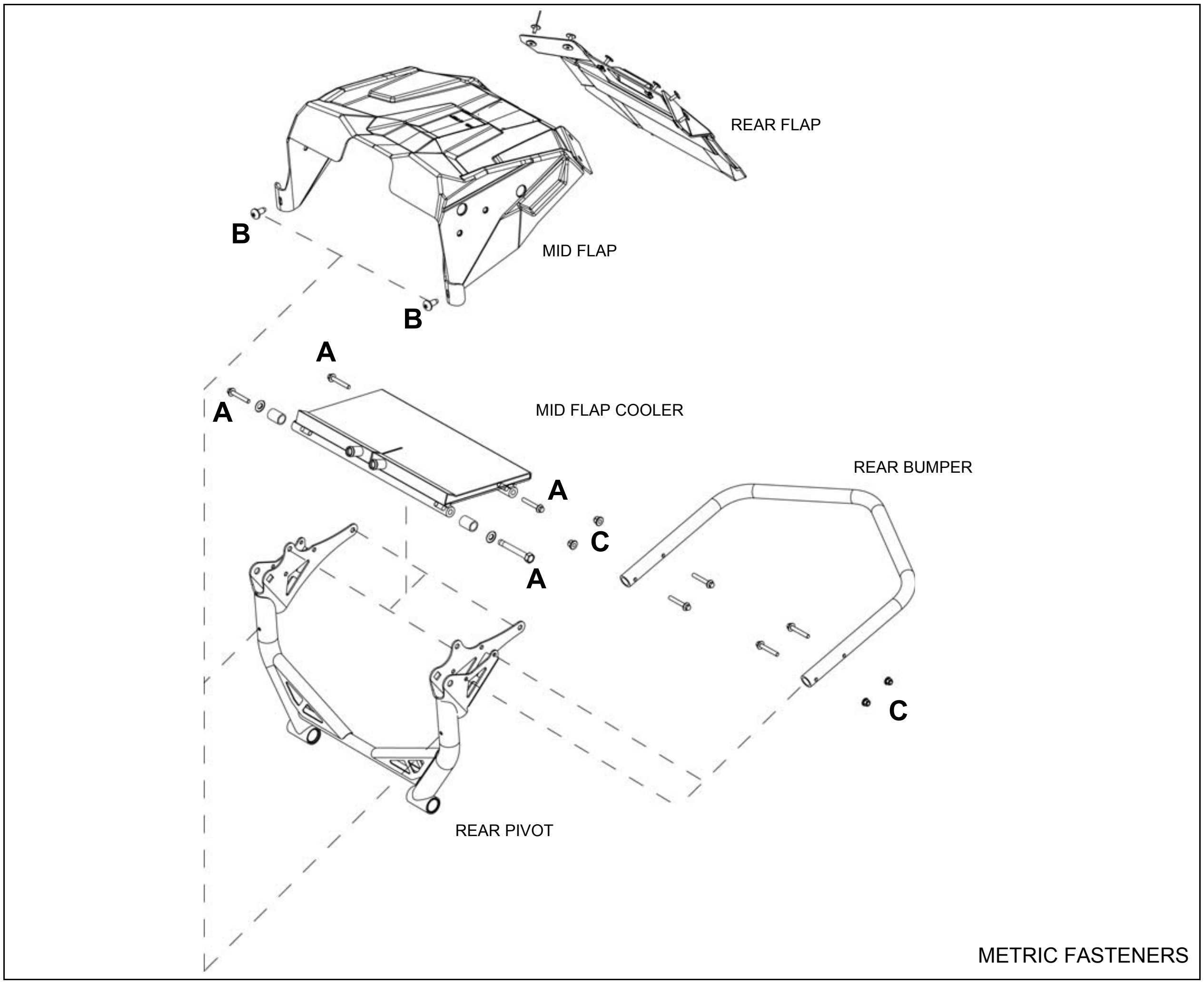
Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

8

2012 Progressive 121/136 Bumper/Closeoff Assembly

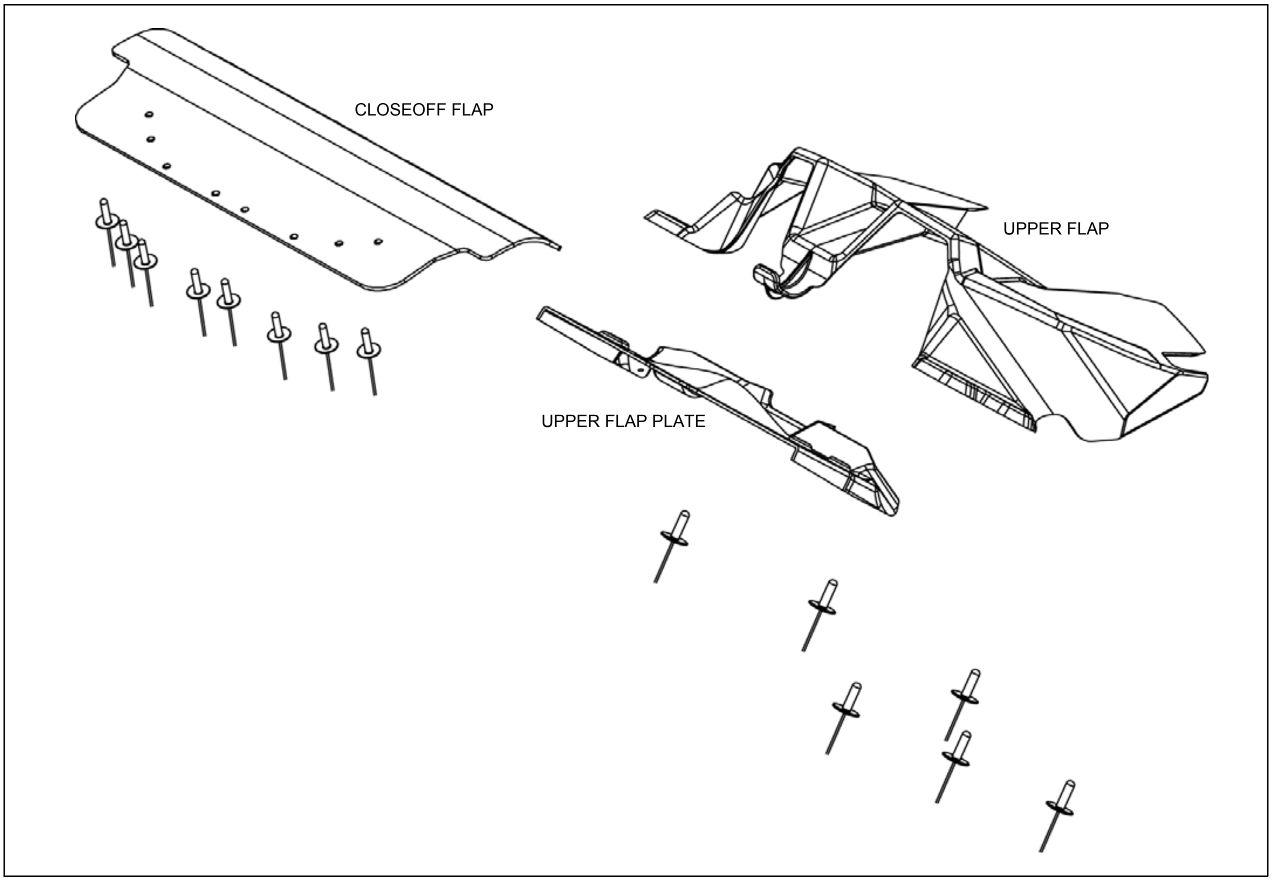


= T
A: 33 ft-lb (44.7 Nm) **B: 3.6 ft-lb (5 Nm)** **C: 9.5 ft-lb (7 Nm)**

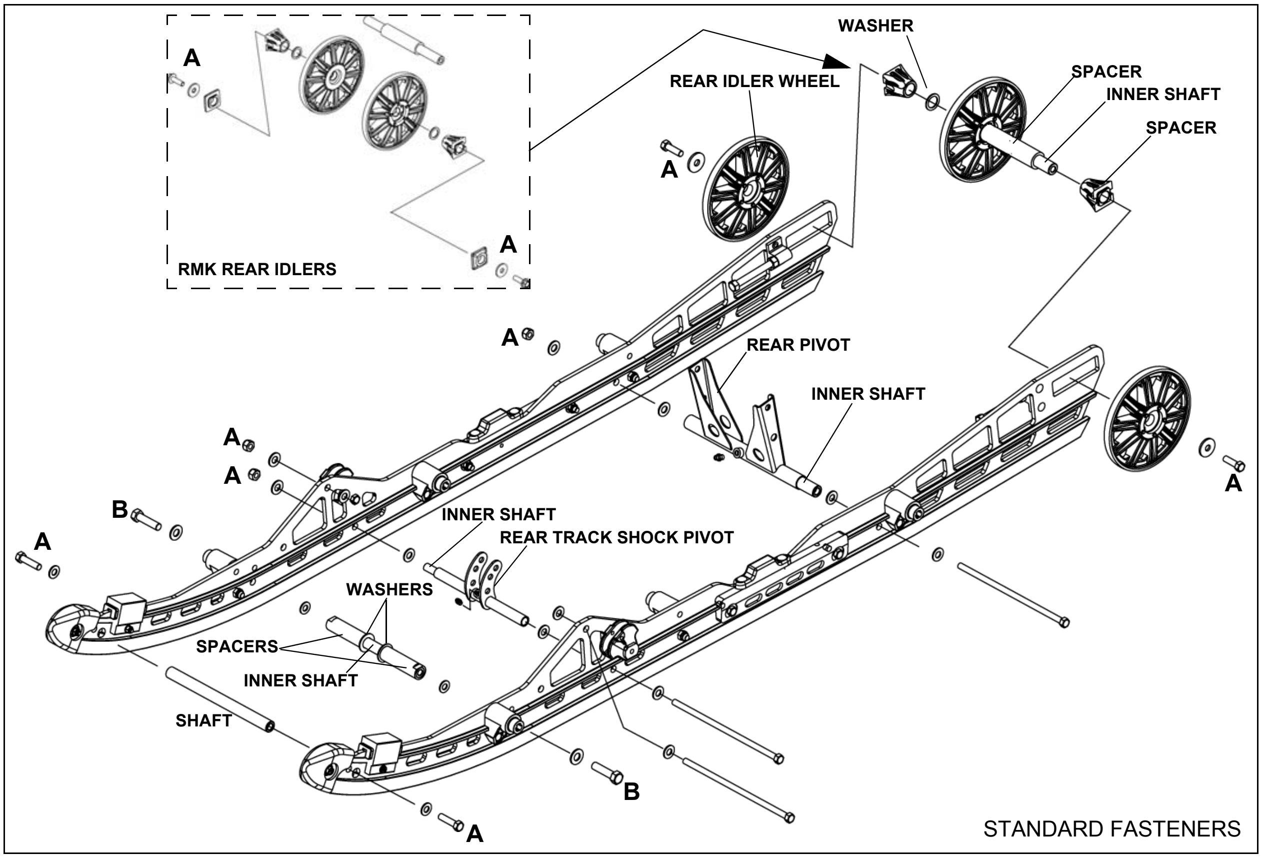
Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

2012 Progressive 121/136 Rear Mid Flap Covers



RMK 144/Switchback Assault Pivots/Rear Idler



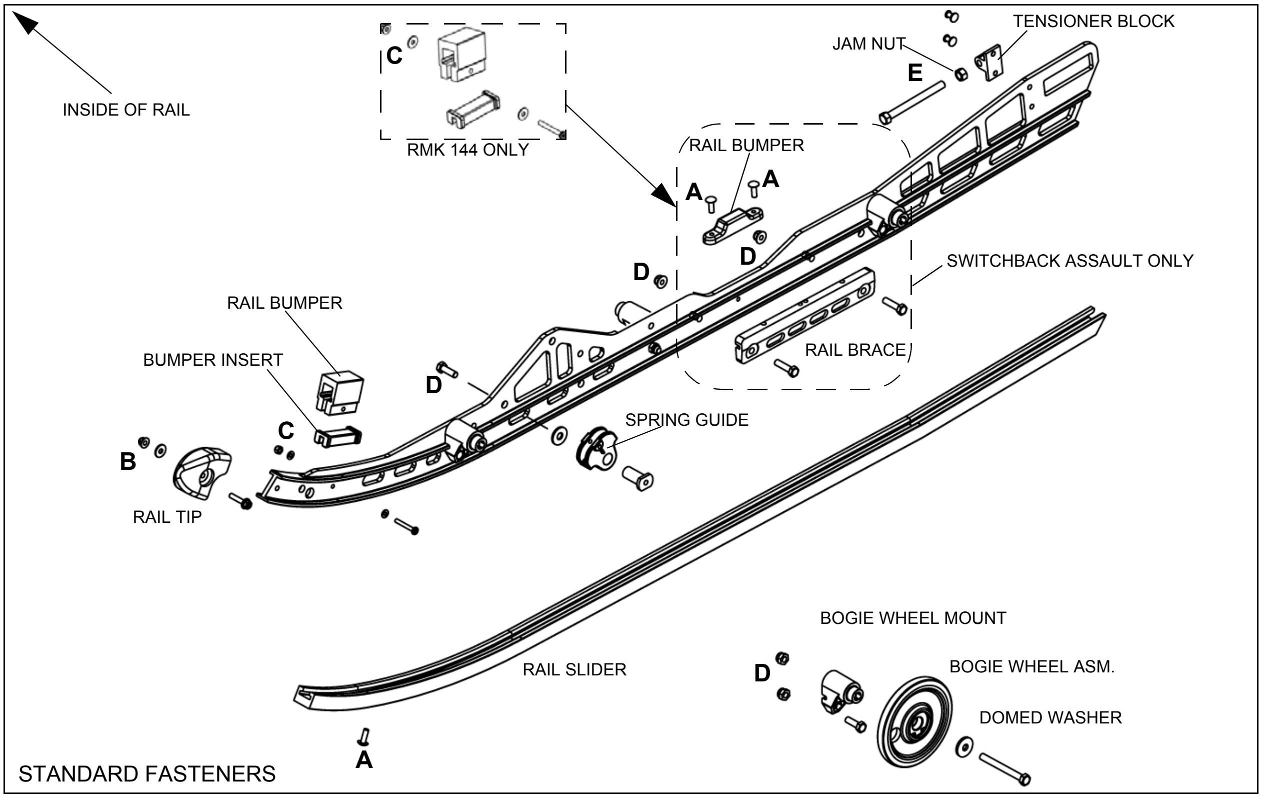
= T
A: 35 ft-lb (47.4 Nm) **B: 35 ft-lb (47.4 Nm) Apply Loctite® 262™**

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Install rear idler adjust spacers with flat side facing adjuster screw.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

RMK144/Switchback Assault Rail Assembly



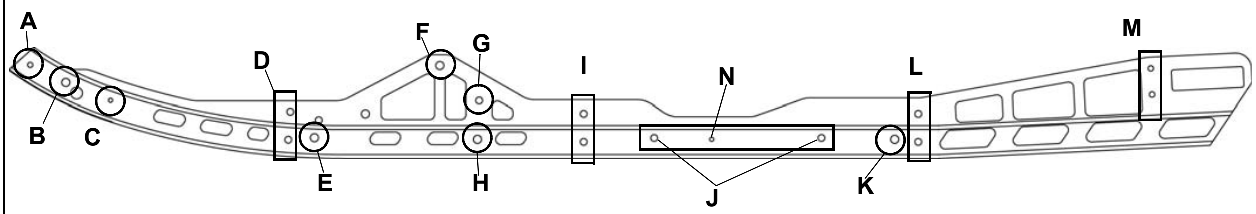
= T
A: 3-6 ft-lb (4-8 Nm) **B: 4 ft-lb (5.4 Nm)** **C: Torque nut until screw protrudes 7/32" (5.3mm)** **D: 19 ft-lb (25 Nm)** **E: 35 ft-lb (47 Nm)**

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

RMK 144/Switchback Assault Rail Fastener Locations

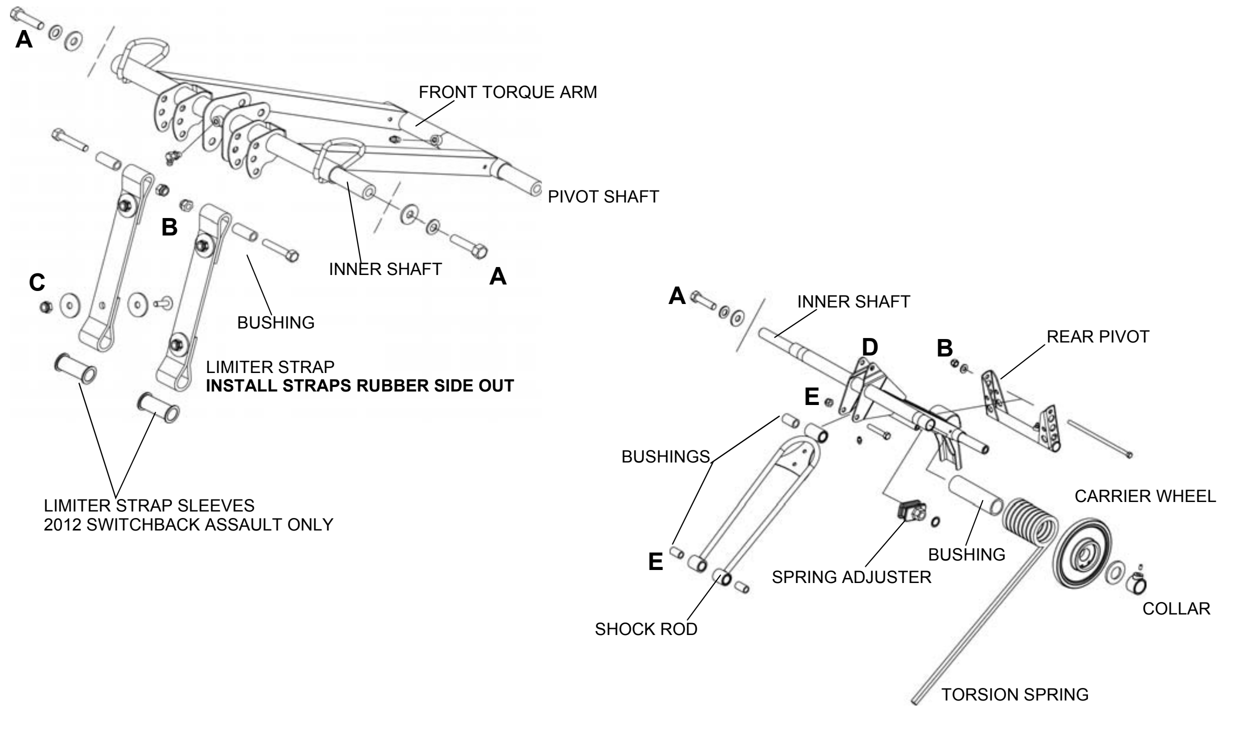


LEFT RAIL SHOWN

Components/Fasteners:

- A - Rail Tip
- B - Limiter Strap Shaft
- C - Rail Bumper
- D - Bogie Wheel Asm. (Mount to outside of rail).
- E - Front Shock Shaft
- F - Front Torque Arm Shaft/Screw
- G - Torsion Spring Guide
- H - Rear Track Shock Front Pivot Shaft
- I - Bogie Wheel Asm. (Mount to inside of rail).
- J - Rail Brace Asm. (Switchback Assault Only - Mount to outside of rail).
- K - Rear Pivot Shaft
- L - Bogie Wheel Asm. (Mount to outside of rail).
- M - Rear Idler Adjuster Block
- N - Rail Rumper (RMK 144 Only)

RMK 144/Switchback Assault Front/Rear Torque Arm



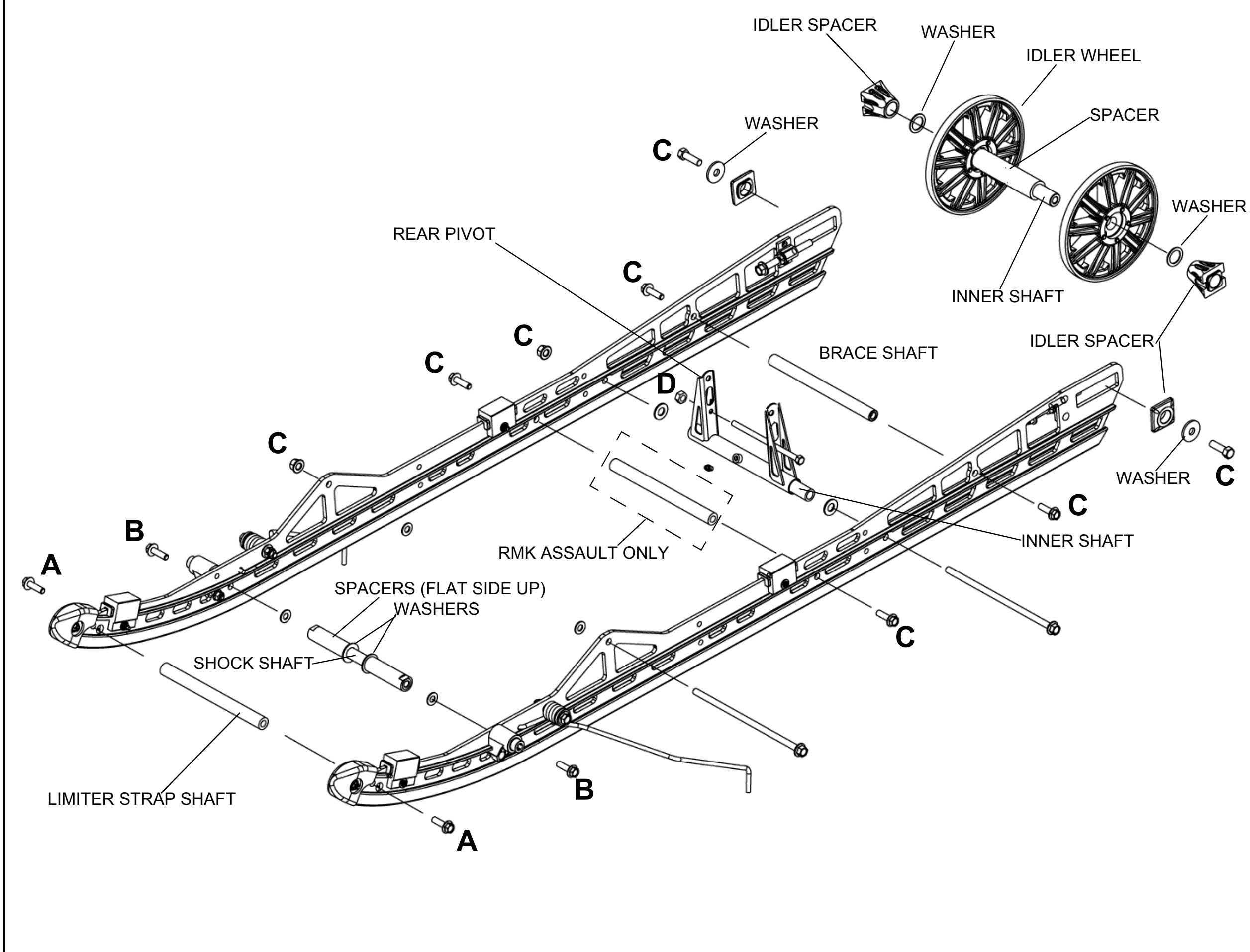
= T
A: 45 ft-lb (61 Nm) **B: 19 ft-lb (25 Nm)** **C: 12 ft-lb (16 Nm)** **D: 25 ft-lb (34 Nm)** **E: 35 ft-lb (47.4 Nm)**

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

RMK/PRO RMK 155/163 Pivots/Rear Idler



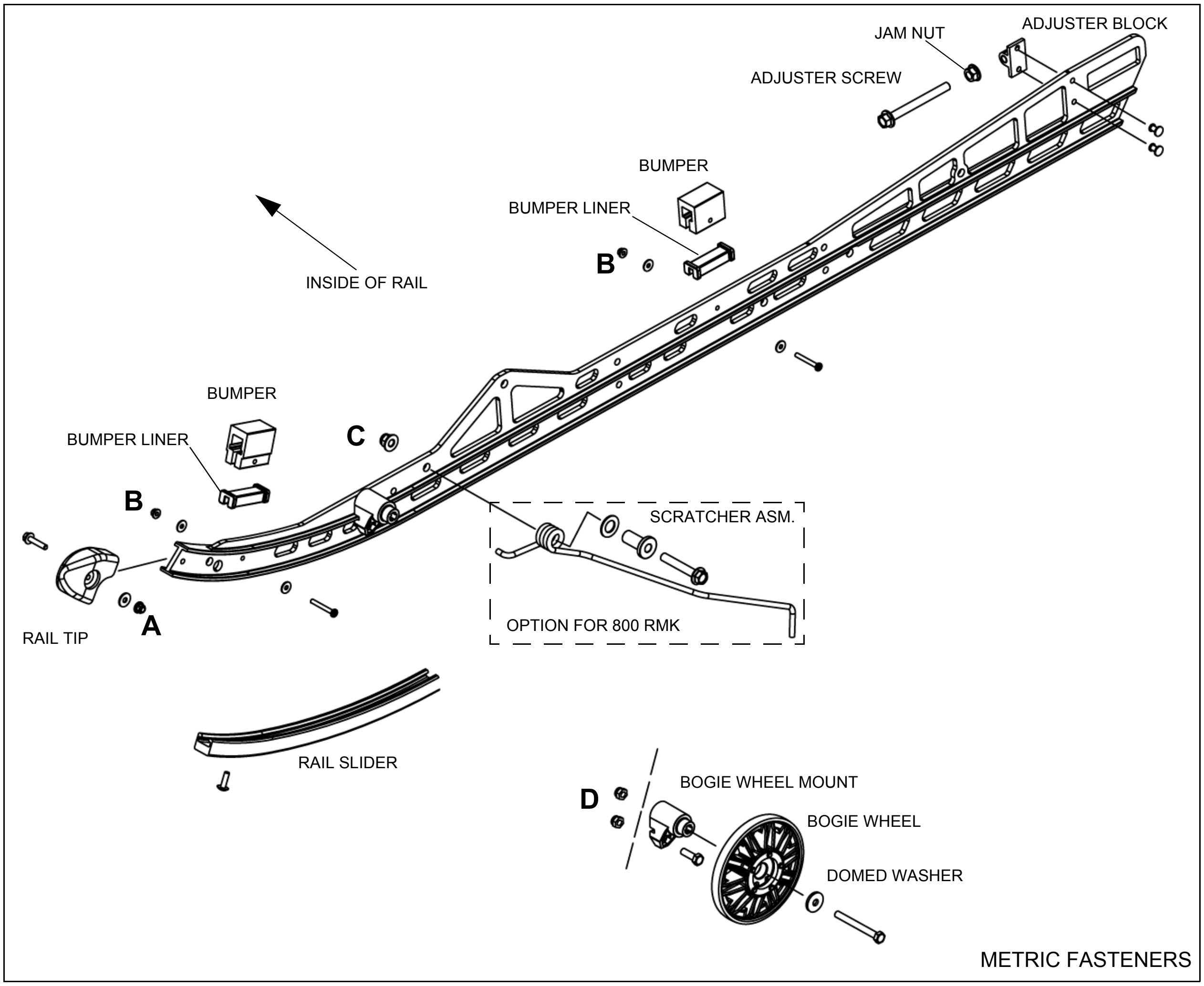
= T
A: 33 ft-lb (44.7 Nm) - Apply Loctite® 262™ **B: 46 ft-lb (63 Nm)** **C: 33 ft-lb (44.7 Nm)** **D: 6 ft-lb (8 Nm)**

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

RMK/PRO RMK 155/163 Rail Assembly



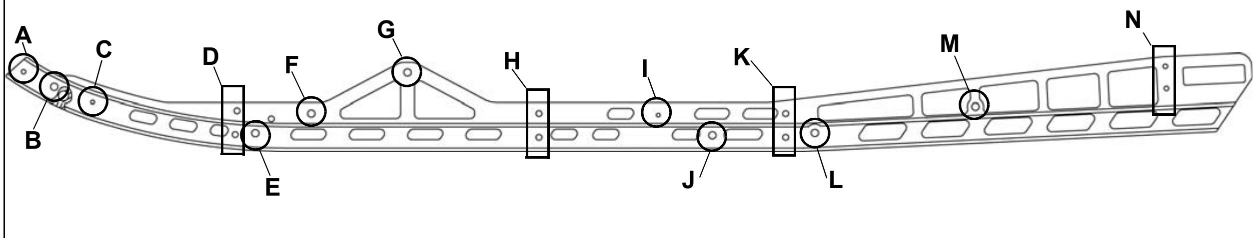
= T
A: 4 ft-lb (5.5 Nm) **B: Torque until 5mm of threads protruded from nut.** **C: 31 ft-lb (42 Nm)** **D: 17 ft-lb (23 Nm)**

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

RMK/PRO Ride RMK 155/163 Rail Fastener Locations



NOTE: 163 Rail Shown. 155/155 Assault Similar

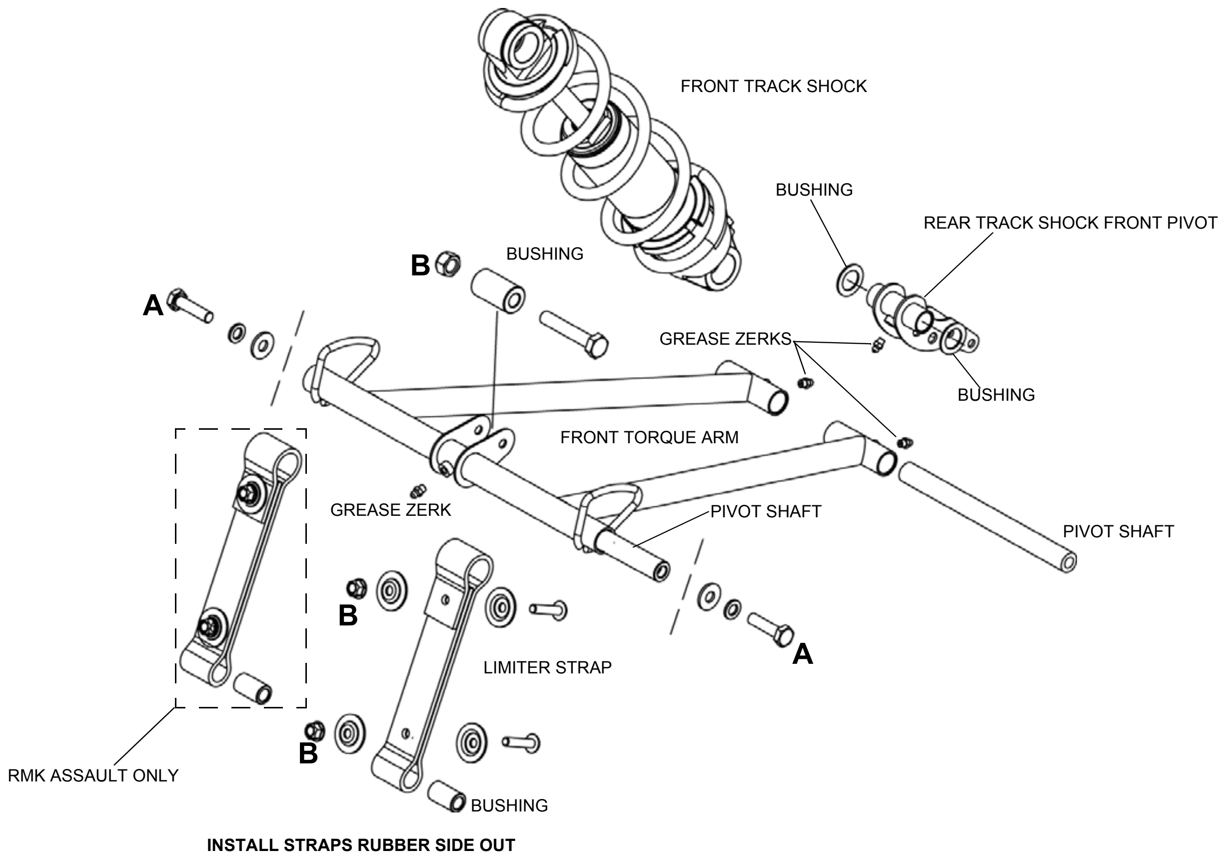
Components/Fasteners:

- A - Rail Tip
- B - Limiter Strap Shaft
- C - Rail Bumper
- D - Bogie Wheel Asm. (Mount to outside of rail)
- E - Front Shock Shaft
- F - Scratchers (Optional on 800 RMK)
- G - Front Torque Arm Shaft/Screw
- H - Bogie Wheel Asm. (Standard on 800 RMK. Optional for all other models. Mount to inside of rail on all models except for 800 RMK Assault)
- I - Rail Bumper
- J - Rail Brace Shaft/Screws (Standard on 800 RMK Assault)
- K - Bogie Wheel Asm. (Standard on 800 RMK. Optional for all other models. Mount to outside of rail)
- L - Rear Scissor Shaft/Screw
- M - Rail Brace Shaft/Screws
- N - Rear Idler Adjuster Block

IMPORTANT: RMK Assualt Models - If installing accessory bogie wheels, the wheels MUST be installed on the outside of the rails at location (H) and the scratchers must be removed.

Damage to the front track shock reservoir will occur if the accessory bogie wheels are installed on the inside of the rail.

RMK/PRO RMK 155/163 Front Torque Arm



= T
A: 46 ft-lb (63 Nm) **B: 17 ft-lb (23 Nm)**

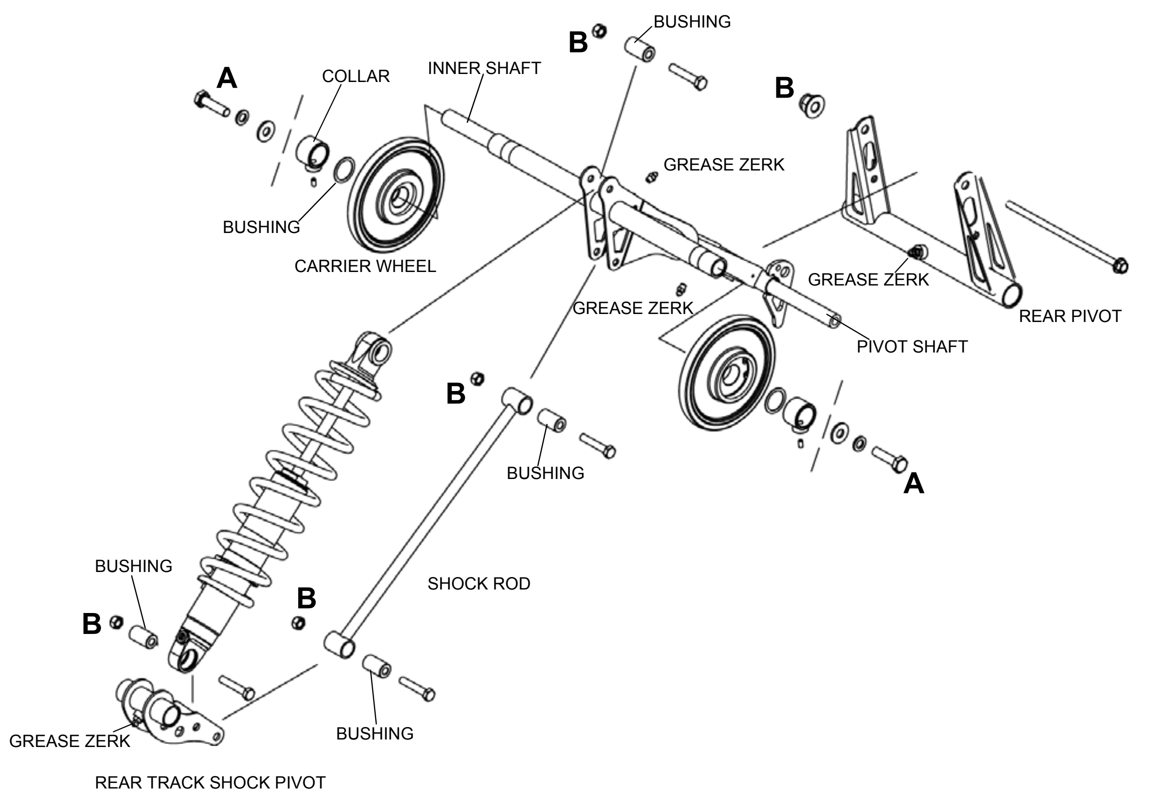
Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION

Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

RMK/PRO RMK 155/163 Rear Torque Arm



METRIC FASTENERS

= T
A: 46 ft-lb (63 Nm) **B: 17 ft-lb (23 Nm)**

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

PRO-RIDE PROGRESSIVE SUSPENSION OPERATION

Operation

The Pro-Ride progressive suspension allows the rider to easily adjust the desired amount of weight transfer, ski pressure, and ride comfort using the following components:

- Rear track shock spring preload
- Rear track shock compression dampener
- Front track shock spring preload
- Front track shock compression dampener
- IFS shock compression dampeners
- IFS shock spring preload

Unlike other Polaris rear suspensions, the Pro-Ride progressive rear suspension is not coupled and does not feature front or rear-rear scissor stops. The front torque arm is not linked with the rear crank or rear scissor.

Weight transfer during acceleration is controlled by two primary factors. The first weight transfer control is the rear track shock spring preload. The second weight transfer control is rider position.

- Increasing rear track shock spring preload reduces weight transfer during acceleration and increases ski pressure in all driving modes
- Sitting or standing close to the fuel tank decreases weight transfer and increases ski pressure in all driving modes
- Decreasing rear track shock spring preload increases weight transfer during acceleration and decreases ski pressure in all driving modes
- Sitting or standing at the rear of the seat increases weight transfer under acceleration and decreases ski pressure in all driving modes

Ride comfort is controlled by the compression dampener adjusters on the IFS, and front/rear track shocks. All shocks offer sixteen compression dampening settings.

- Increasing shock dampening reduces bottoming, but makes the ride stiffer
- Decreasing shock dampening makes the ride softer, but increases the chance the suspension will bottom-out

Adjustment Procedures

Always adjust the Pro-Ride Progressive suspension following these three steps:

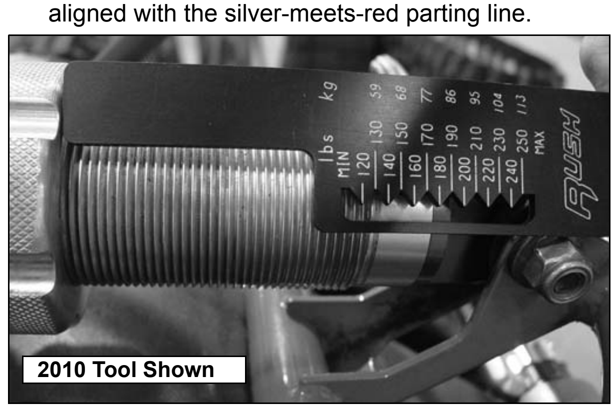
1. Set the rear track shock spring preload for the rider weight in everyday “street clothes”, not riding gear.
2. Adjust “fine tune” the balance of the snowmobile based on rider preference by increasing or decreasing the rear track spring preload.
3. Adjust the shock compression dampeners to tune ride quality. Increase the compression dampening to stiffen the ride. Decrease the compression dampening to soften the ride.

STEP 1 - REAR TRACK SHOCK SPRING PRELOAD

1. The rear track shock spring preload is set to the rider’s weight in everyday clothing, not riding gear.
2. Using the spring gauge tool supplied with the vehicle, set the spring preload.

NOTE: Lifting up on the seat support will remove the load on the shock spring, making spring adjustment easier.

3. If the shock threads are dirty or the preload knob is difficult to turn, spray the threads with Shock Thread Spray Lubricant, PN 2878018.
4. Place the spring gauge tool on top of the shock with the narrow end against the spring retainer knob.
5. Reference where the silver shock body meets the red shock end cap. Turn the spring preload adjuster knob in or out until the weight call out on the gauge is aligned with the silver-meets-red parting line.



2010 Tool Shown

6. A tape measure can be used to set the spring preload when a gauge is not available, or an accessory rear track shock spring is installed in place of the standard spring.
7. Reference the Spring Guide Table when using a tape measure for all springs.

2010-2011 RTS Spring Guide

The stock rear track spring is a 190#/inch spring. The stock spring will accommodate most riders weighing between 120 and 250 lbs. (54-113 kg).

Two additional accessory springs are available for riders whose weight is at the lowest or highest settings for the 190 spring.

All of the springs, spring gauge tools, and spring preload measurements using a tape measure are provided in the RTS Spring Guide Table below.

NOTE: Use a tape measure in the same manner as a gauge tool with the end of the tape against the spring tension adjuster knob and the preload measurement length at the shock-body cap parting line.

2010-2011 RTS Spring Guide Table

STOCK 190 SPRING 120 - 250 LBS.				120 LWT SPRING 90 - 155 LBS.				260 HD SPRING 240+ LBS.			
SPRING PN = 2010=7043572-385 2011 = 7043572-133				SPRING PN = 7041575-385				SPRING PN = 7043585-385			
STOCK SPRING GAUGE PN 2010 = 5253792 2011 = 5254748				LWT SPRING GAUGE PN 2010 = 5253854 2011 = 5254749				HD SPRING GAUGE PN 2010 = 5253855 2011 = 5254750			
Rider Weight		Preload		Rider Weight		Preload		Rider Weight		Preload	
lbs.	kg	in.	cm	lbs.	kg	in.	cm	lbs.	kg	in.	cm
120	54	2 5/8 MIN	6.7 MIN	90	41	2 5/8 MIN	6.7 MIN	240	109	2 3/8 MIN	6.0 MIN
130	59	2 3/4	7.0	95	43	2 3/4	7.0	255	116	2 1/2	6.3
140	64	2 7/8	7.3	100	45	2 7/8	7.3	270	122	2 5/8	6.7
150	68	3	7.6	105	48	3	7.6	280	127	2 3/4	7.0
160	73	3 1/8	7.9	110	50	3 1/8	7.9	295	134	2 7/8	7.3
170	77	3 1/4	8.3	115	52	3 1/4	8.3	310	141	3	7.6
180	82	3 3/8	8.6	120	54	3 3/8	8.6	320	145	3 1/8	7.9
190	86	3 1/2	8.9	125	57	3 1/2	8.9	335	152	3 1/4 MAX	8.3 MAX
200	91	3 5/8	9.2	130	59	3 5/8	9.2				
210	95	3 3/4	9.5	135	61	3 3/4	9.5				
220	100	3 7/8	9.8	140	64	3 7/8	9.8				
230	104	4	10.1	150	68	4	10.1				
240	109	4 1/8	10.5	155	70	4 1/8 MAX	10.5 MAX				
250	113	4 1/4 MAX	10.8 MAX								

CAUTION

DO NOT ADJUST SPRING PRELOAD PAST THE MINIMUM OR MAXIMUM SETTINGS LISTED FOR EACH SPRING.

2012 RTS Spring Guide

The stock spring will accommodate most riders weighing between 120 and 260 lbs. (54-118 kg).

Two additional accessory springs are available for riders whose weight is at the lowest or highest settings for the stock spring.

All of the springs, spring gauge tools, and spring preload measurements using a tape measure are provided in the RTS Spring Guide Table below.

NOTE: Use a tape measure in the same manner as a gauge tool with the end of the tape against the spring tension adjuster knob and the preload measurement length at the shock-body cap parting line.

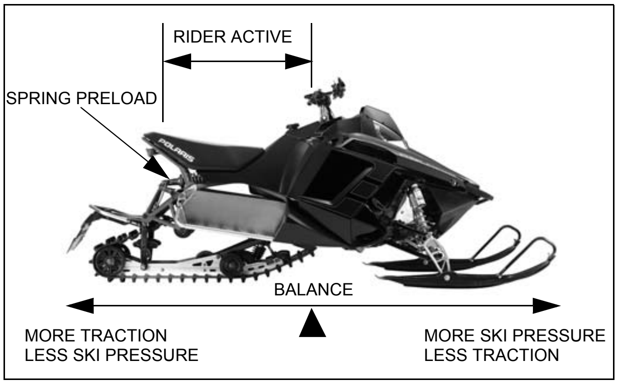
2012 RTS Spring Guide Table

STOCK SPRING 120 - 260 LBS.				120 LWT SPRING 90 - 155 LBS.				260 HD SPRING 240+ LBS.			
SPRING PN = RUSH = 7043195-133 Switchback = 7043160-133				SPRING PN = 7041575-385				SPRING PN = 7043585-385			
STOCK SPRING GAUGE PN 9923267				LWT SPRING GAUGE PN = N/A				HD SPRING GAUGE PN = N/A			
Rider Weight		Preload		Rider Weight		Preload		Rider Weight		Preload	
lbs.	kg	in.	cm	lbs.	kg	in.	cm	lbs.	kg	in.	cm
120-140	54-64	1 1/2 MIN	3.81 MIN	90	41	2 5/8 MIN	6.7 MIN	240	109	2 3/8 MIN	6.0 MIN
				95	43	2 3/4	7.0	255	116	2 1/2	6.3
140-160	64-73	1 3/4	4.44	100	45	2 7/8	7.3	270	122	2 5/8	6.7
				105	48	3	7.6	280	127	2 3/4	7.0
160-180	73-82	2	5.08	110	50	3 1/8	7.9	295	134	2 7/8	7.3
				115	52	3 1/4	8.3	310	141	3	7.6
180-200	82-91	2 1/8	5.39	120	54	3 3/8	8.6	320	145	3 1/8	7.9
				125	57	3 1/2	8.9	335	152	3 1/4 MAX	8.3 MAX
200-220	91-100	2 1/4	5.71	130	59	3 5/8	9.2				
				135	61	3 3/4	9.5				
220-240	100-109	2 1/2	6.35	140	64	3 7/8	9.8				
				150	68	4	10.1				
240-260	109-118	2 3/4 MAX	6.98 MAX	155	70	4 1/8 MAX	10.5 MAX				

CAUTION

DO NOT ADJUST SPRING PRELOAD PAST THE MINIMUM OR MAXIMUM SETTINGS LISTED FOR EACH SPRING.

STEP 2 - FINE TUNE THE BALANCE



The Pro-Ride Progressive rear suspension allows the rider to fine tune the balance of the snowmobile depending on the driver's riding style and trail conditions. Balance control is accomplished both mechanically and by the driver.

Mechanical balance adjustment involves increasing or decreasing the rear track spring preload from the base setting established in step one. Fine tuning the balance should only be done after riding the snowmobile. Adjustments should always be performed in small increments.

NOTE: Turn the spring adjuster one full turn at a time and then ride the snowmobile taking note of any changes.

Increasing spring preload one full revolution at a time will shift the snowmobile balance to the front and result in increased ski pressure with less weight transfer for flatter cornering and more precise steering.

Riders who sit or stand at the rear of the seat or experience push through corners may want to increase rear track spring preload.

Decreasing spring preload one full revolution at a time will shift the snowmobile balance to the rear and result in decreased ski pressure with more weight transfer during acceleration.

Riders who sit or stand close to the fuel tank, when riding on loose snow with little traction, or when steering effort is too high may want to decrease rear track shock spring preload.

Rider-active balance control involves adjustments in rider position and/or rider weight distribution when turning, encountering bumps/road approaches, or during acceleration/braking. Rider-active balance control can effect the snowmobile balance just as much as adjusting the rear track spring preload.

For example, riders wanting less inside ski lift during cornering, but maximum traction during acceleration can shift their body position/weight towards the front and into the turn and then shift their body position/weight rearward when exiting and accelerating out of the turn.

Likewise, riders who use a less active riding position may want to only adjust the rear track spring preload to achieve similar results.

Remember that while the Pro-Ride progressive rear suspension can be adjusted to satisfy all types of riders and riding styles, it is unlikely that one rider's setup will provide similar results for a different rider.

Always reset the rear track shock preload and shock compression dampening settings when a new driver rides the snowmobile.

KEY POINTS/RECOMMENDATIONS

- Increasing rear track shock spring preload shifts the snowmobile balance forward
- Decreasing rear track shock spring preload shifts the snowmobile balance rearward
- Always begin suspension setup by setting the rear track shock spring preload to the rider's weight in everyday street clothes.
- Make small adjustments when tuning the suspension settings
- Ride the snowmobile after making each change and take note of the results of each change
- Make ride position and weight distribution (sit at the rear of the seat or close to the fuel tank, lean into turns, etc.) changes while riding and take note of the results
- Ride the snowmobile on various trail conditions and take note of the results
- Adjusting spring preload controls balance, adjusting the compression or rebound (if equipped) clickers controls comfort
- Verify the track tension is set to specification

STEP 3 - ADJUSTING RIDE COMFORT/QUALITY

NOTE: Step 3 applies to shocks equipped with compression and/or rebound adjusters.

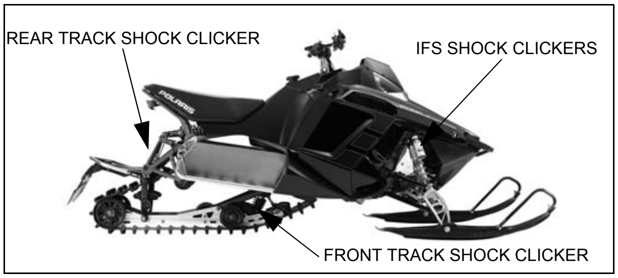
After performing steps one and two, the last step in adjusting the snowmobile's suspension is to adjust the ride comfort.

Ride comfort/quality is controlled by the remote shock compression dampeners.

NOTE: Use the compression dampeners to control suspension bottoming, not the spring preload adjusters.

Turning the compression adjuster knobs clockwise will increase resistance to bottoming, making the shock stiffer.

Turning the compression adjuster knobs counter-clockwise decreases resistance to bottoming, making the shock softer.



RIDE EXPERIENCE	ADJUSTMENT
IFS shocks bottom out	Turn adjuster knobs clockwise one click at a time. Set both IFS shocks to the same setting.
Front of rear suspension bottoms out	Turn front track shock compression adjuster knob clockwise one click at a time.
Rear of rear suspension bottoms out	Turn rear track shock compression knob clockwise one click at a time.
No bottoming, but ride is harsh/stiff in both the front and rear of rear suspension	Turn rear track shock compression knob counter-clockwise one click at a time.
Ride is harsh in stutter/ chatter bumps	Turn rear track shock compression knob counter-clockwise one click at a time.

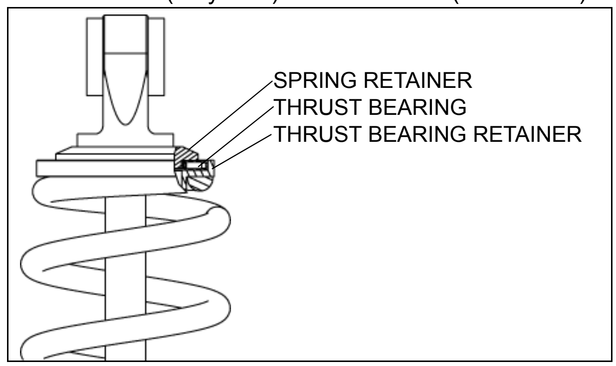
NOTE: Riders at the far ends of each rear track spring's rider weight/preload settings may want to adjust the compression dampener base settings. Lighter drivers should decrease the dampening by one click, while heavier riders may want to increase the dampening by one to two clicks.

Rear Track Shock Thrust Bearing

2011 and newer 600/800 Rush/Switchback models feature rear track shock retainers with a thrust bearing. The bearing significantly reduces the effort required to adjust the rear track shock spring.

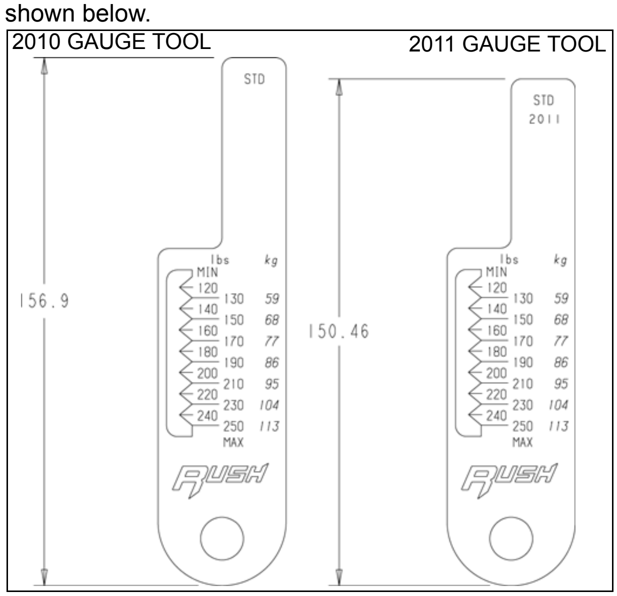
The thrust bearing can be installed on 2010 models (equipped with original Walker Evans Shocks) by installing the following parts:

- Spring Retainer - 5137540
- Thrust Bearing - 3514706
- Thrust Bearing Retainer - 5137541
- X-Brace (Indy Red) - 1017977-293 (Not Shown)



The addition of the thrust bearing on a 2010 Rush increases spring preload and requires the use of either a tape measure or the 2011 spring gauge tools to set the RTS spring length.

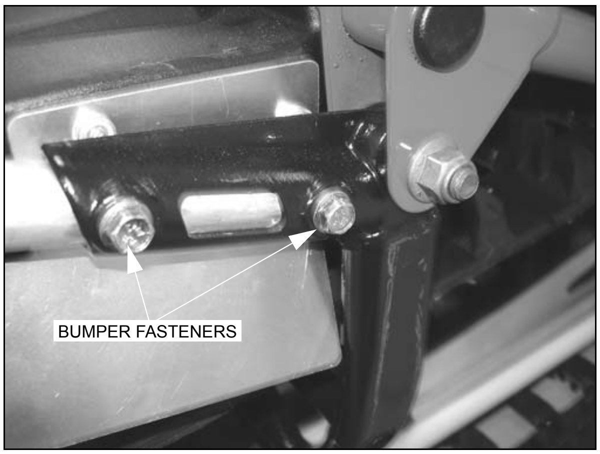
The 2010 tools can also be trimmed to 150.46mm as shown below.



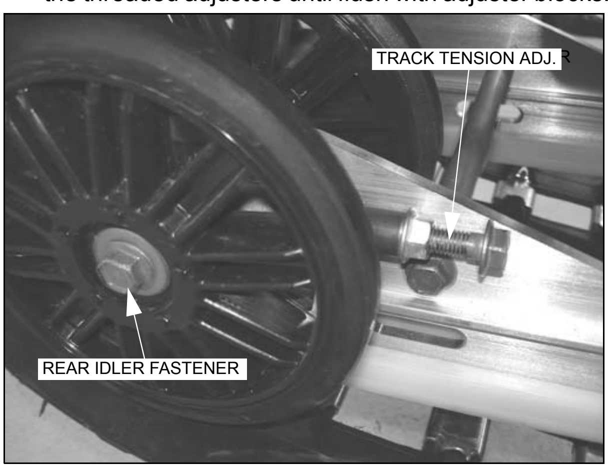
PROGRESSIVE REAR SUSPENSION REMOVAL AND INSTALLATION

Removal

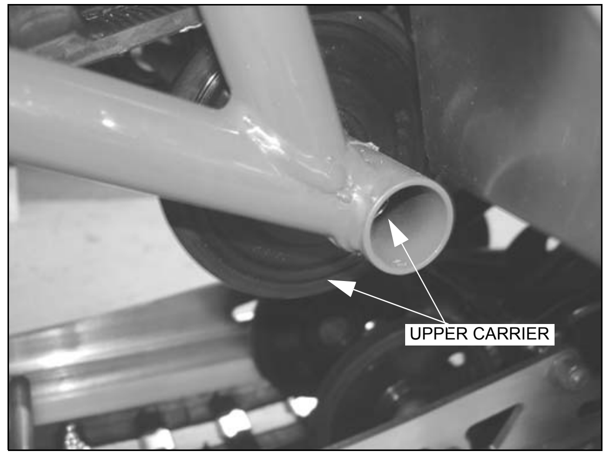
1. Place a large mat, shop blanket, or piece of cardboard on the floor next to the snowmobile. The piece should be large enough to protect the plastics when the unit is laid on its side.
2. Remove the rear bumper assembly from the rear crank.



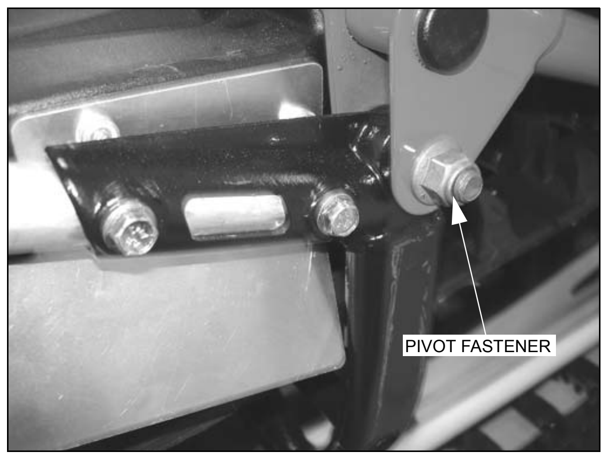
3. Loosen, but do not remove, the rear idler wheel fasteners.
4. Loosen the track tension adjuster jam nuts. Back out the threaded adjusters until flush with adjuster blocks.



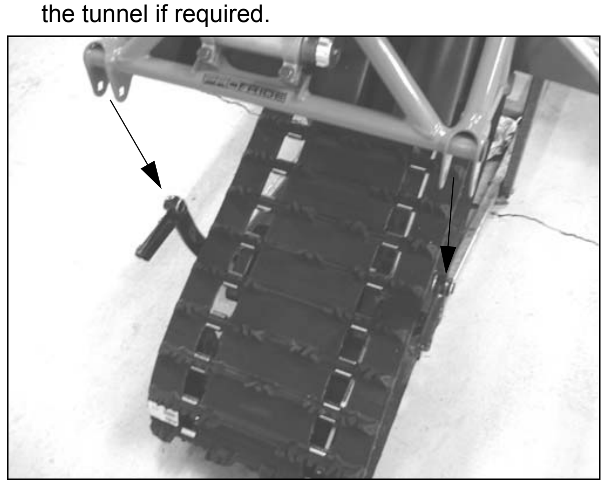
5. Using a snowmobile lift, raise the vehicle high enough off the ground to remove the vehicle weight from the rear suspension.
6. Remove the upper carrier wheel assembly from the rear crank.



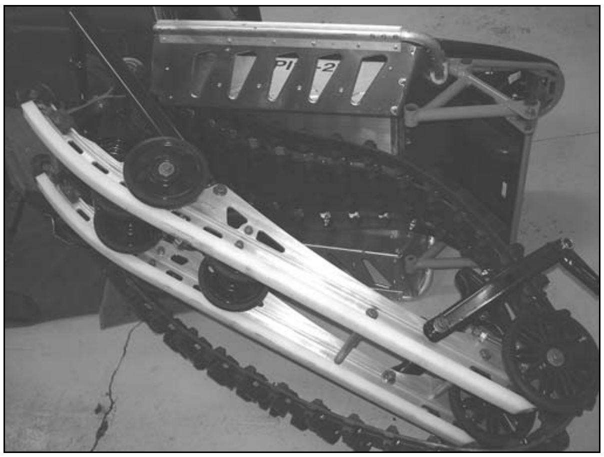
7. Remove the two fasteners and nuts securing the rear pivot to the rear crank.



8. The rear of the suspension is now free to drop out of the tunnel if required.



9. Locate and remove the two fasteners and threaded pivot shafts securing the front torque arm to the tunnel.
10. The suspension should now be hanging inside the track.
11. Lower the snowmobile down to the floor. Remove the sled lift.
12. Carefully role the snowmobile on to its side making sure the plastics are protected by the mat or blanket previously placed on the ground.
13. Fold the rear scissor forward. Remove the suspension from the track by working the rear free from the track, and then pulling the front torque arm out of the tunnel.



14. Roll the snowmobile back over on to the skis.
15. If the track removal is required, reference the driveshaft removal procedure in chapter five. The track can be removed after the driveshaft is removed from the vehicle.
16. The rear suspension bushings, shafts, and pivots should be inspected. Replace bushings that are worn or damaged. Replace any part that is worn excessively or damaged.

Installation

1. If the track was removed, reinstall the track into the tunnel. Verify the arrow marks on the track point in the direction of forward vehicle travel.
2. Reference the driveshaft installation procedure outlined in chapter five.
3. Place a protective mat, shop blanket, or large piece of cardboard on the ground next to the vehicle.
4. Carefully roll the snowmobile on to its side making sure the plastics are protected by the mat, blanket or cardboard.
5. Install the rear suspension into the track by inserting the front torque arm assembly into the tunnel at an angle.
6. Fold the rear scissor forward, and then work the rear of the skid into the track.
7. Once the suspension is installed in the track, work the track to align the sliders with the track clips and guides.
8. Position the front torque arm and align its mounting holes with the holes in the tunnel. Loosely install the front torque arm threaded pivots and fasteners.
9. Loosely install the rear pivot-to-rear crank carriage bolts and nuts. Verify the carriage bolts are fully seated into the rear crank.
10. Roll the snowmobile back on to its skis. Raise the snowmobile up off the ground using a snowmobile lift.
11. Torque the front torque arm mounting bolts to specification.
12. Torque the rear pivot mounting nuts to specification.
13. Reinstall the upper carrier wheel assembly. Torque fasteners to specification.
14. Reinstall the rear bumper assembly. Loosely install all of the bumper fasteners first, and then torque to specification.
15. Set the track tension to specification using the track tension adjustment screws. Once the track tension is set, torque the jam nuts to specification.
16. Torque the rear idler fasteners to specification.

Rear Crank Service

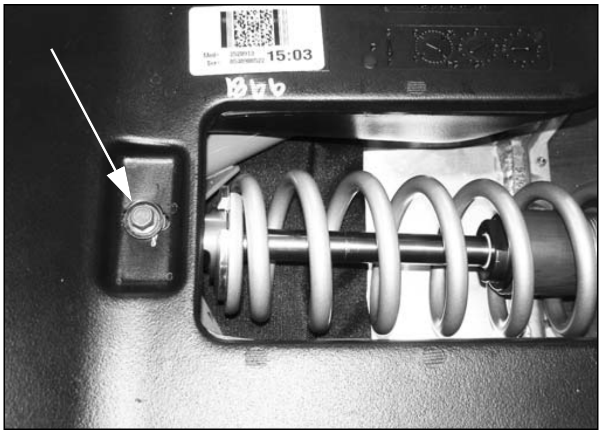
1. To remove the rear crank assembly, raise the snowmobile off the ground using a snowmobile lift.
2. Remove the rear track shock spring tension by turning the preload adjuster counter-clockwise.
3. Remove the fasteners securing the upper carrier assembly to the rear crank.
4. Remove the fasteners securing the rear crank to the rear pivot. Allow the suspension rail assembly to drop to the ground.
5. Remove the rear track shock fastener from the rear crank.
6. Remove the two fasteners securing the rear crank to the tunnel mounts. Remove the screws attaching the reservoir to the rear crank.
7. Remove the rear crank assembly.
8. Reverse procedure to assemble the rear crank. Reference to torque specifications located on the assembly view illustrations.

Rear Track Shock Service

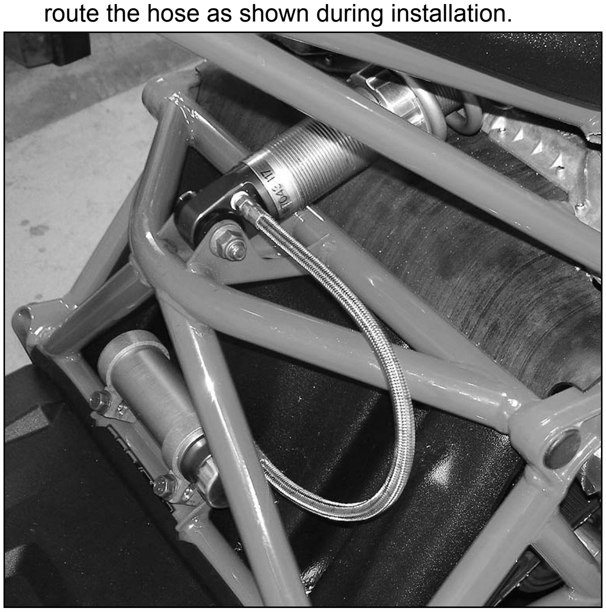
1. Raise the snowmobile off the ground with a snowmobile lift.

NOTE: Lifting at the bumper will compress the RTS.

2. Remove the seat assembly.
3. Remove the nut holding the fuel tank to the x-brace.



4. Remove the nut securing the shock to the rear crank.
5. Carefully lift up the rear of the fuel tank to access the shock fasteners. Prop the tank with a block of wood.
6. Remove the shock. To remove spring, turn preload knob counter-clockwise. Remove spring retainer, and then spring.
7. To remove the reservoir, remove the two clamp screws. Note the orientation of the reservoir hose. route the hose as shown during installation.



8. Assembly is the reverse of removal. Torque fasteners to specification using new lock nuts.

= T
Rear Track Shock Fasteners: 33 ft-lb (45 Nm) **Reservoir Clamp Screws: 17 ft-lb (23 Nm)** **Fuel Tank Screw: 7 ft-lb (10 Nm)** **Seat Screws” 7 ft-lb (10 Nm)**

RMK COIL-OVER REAR SUSPENSION

Suspension Adjustments

The primary tuning component on all RMK coil-over rear suspensions is the rear track shock spring installed length.

All RMK coil-over rear suspensions are manufactured with STANDARD rear track shock springs that will accommodate rider weights (with gear) up to 340 lbs. (154kg).

Initially, the rear track shock spring should be set to the rider's weight (with gear). Reference the Rear Track Shock Spring (RTSS) Setup Table below.

RTSS Setup-Standard Spring
(Measure spring length with suspension off the ground.)

RIDER WEIGHT (WITH GEAR)		MODEL	INSTALLED SPRING LENGTH (REAR SUSPENSION OFF THE GROUND)	
LBS.	KG		INCHES	CM
<160	<73	RMK PRO RMK 155/163	10 3/4	27.3
		RMK ASSAULT	10 7/8	27.6
160-220	**73-100**	**RMK**	**10 1/4**	**26**
		PRO RMK 155/163	**10 3/8**	**26.3**
		RMK ASSAULT	**10 1/4**	**26**
220-280	100-127	RMK PRO RMK 155/163	10 1/8	25.7
		RMK ASSAULT	10	25.4
280-340	127-154	RMK PRO RMK 155/163	9 3/4	24.8
		RMK ASSAULT	9 1/2	24.1
NOTE: BOLD/SHADED CELLS = FACTORY SETTING.				

CAUTION

CAUTION: Do not adjust STANDARD spring length greater than (>) or less than (<):
RMK = >10 3/4" or <9 5/8"
PRO RMK = >11" or <9 3/4"
RMK Assault = >11" or <9 3/8"

RMK Coil-Over Standard Springs

- RMK = 7043680-133 (210 Rate)
- PRO RMK = 7043714-133 (190 Rate)
- RMK Assault = 7043572-133 (210 Rate)

Heavy Duty Rear Track Shock Spring-RMK Coil-Over

An optional HEAVY DUTY spring is available if adjustments to the factory-installed springs are not sufficient for riders over 300 lbs. (136kg).

The part number for the HD spring is 7043741-067. Reference the RTSS Setup-Heavy Duty Spring Table below.

RTSS Setup-Heavy Duty Spring
(Measure spring length with suspension off the ground.)

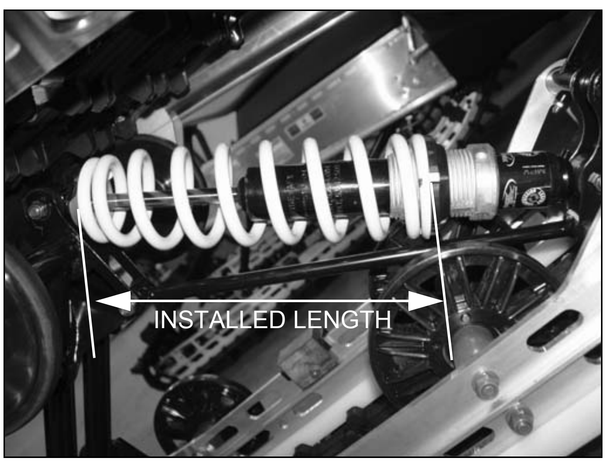
RIDER WEIGHT (WITH GEAR)		MODEL	INSTALLED SPRING LENGTH (REAR SUSPENSION OFF THE GROUND)	
LBS.	KG		INCHES	CM
250-300	113-136	RMK PRO RMK 155/163 RMK ASSAULT	10 1/8	25.7
300-350	136-159		10	25.4

CAUTION

CAUTION: Do not adjust HEAVY DUTY spring length greater than (>) or less than (<):
ALL MODELS = >10 7/8" or < 9 7/8"

Measuring Rear Track Shock Spring Installed Length

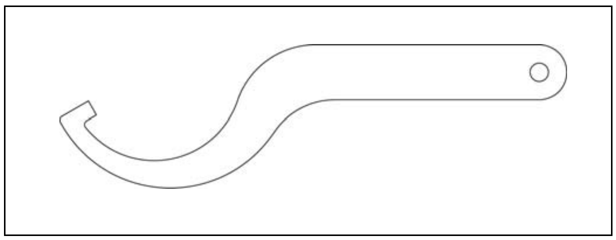
1. Lift the rear of the snowmobile off the ground or tip the snowmobile on to its side to remove the weight from the rear suspension.
2. Use a tape measure to measure the spring installed length between the two spring retainers.



3. To adjust, clear away any snow/ice that may be trapped within the spring or threads. Rotate the spring using a spanner wrench to change the length. Regardless of spring type, do not adjust the spring past the MAXIMUM or MINIMUM measurements.

Spring Retainer Spanner Wrench

Use the spanner wrench included in the tool kit to adjust the rear track shock spring installed length.



Spanner Wrench PN:
2871095-329

Fine Tuning Adjustments

Additional minor adjustments can be made to the spring length to adjust the feel of the vehicle. Do not exceed the minimum and maximum installed length requirements.

For more ski lift (transfer), reduce spring preload by increasing the installed length. Rotate the spring 1-2 full turns counter-clockwise (when viewed from bottom). This will enhance maneuverability, making the snowmobile more “flickable” although it may hinder climbing performance.

For less ski lift (transfer), increase spring preload by reducing the installed length. Rotate the spring 1-2 full turns clockwise (when viewed from bottom). This will improve climbing ability and rider control.

To control the overall balance of the vehicle use the following guidelines:

- More rear track shock spring preload increases ski pressure. Less preload decreases ski pressure.
- Spring preload can affect bottoming resistance. More preload means less bottoming. Less preload means a softer ride (and more bottoming).

Both adjustments will affect overall balance and ski pressure.

After adjusting RTSS preload, the front track shock (FTS) spring preload and independent front suspension (IFS) spring preload can also be adjusted.

For a softer ride on rough, washboard surfaces, reduce front track shock (FTS) spring preload by 1-2 turns.

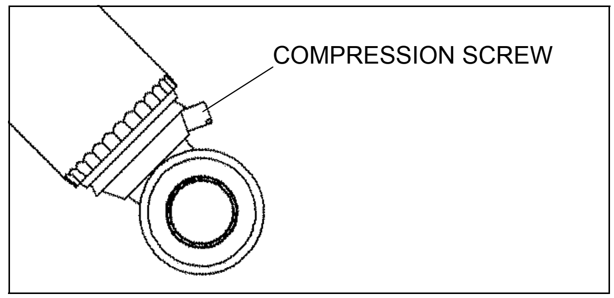
To improve corner stability, increase front suspension (IFS) spring preload by 1-2 turns on both sides of the vehicle.

Shock Dampening

Compression damping adjustments can be made on 800 RMK and 800 RMK Assault models to control ride quality and bottoming resistance.

600/800 RMK - Rear Track Shock

Make the adjustments in half-turn increments, then test ride. To stop bottoming, turn the damping screw clockwise one half-turn, then test ride. Repeat the adjustment until bottoming stops and the desired ride quality is achieved.



800 RMK Assault - IFS and Rear Track Shocks

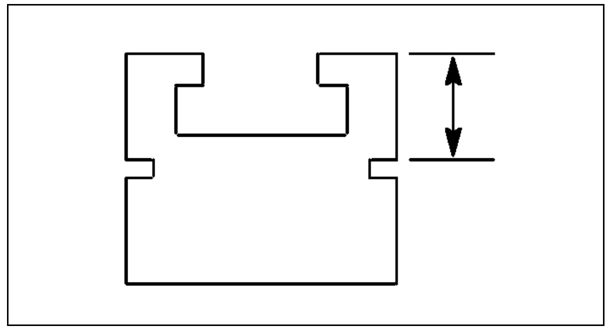
Compression damping can be adjusted at the front suspension and at the rear track shock. Make adjustments in 2-click increments, then test ride. When adjusting the front suspension, always adjust both clickers equally.

To stop bottoming of the front or rear suspension (stiffer ride), rotate the clicker(s) clockwise two clicks (as viewed from the top of the clicker), then test ride. Repeat the adjustment until bottoming stops and the desired ride quality is achieved.

For a more plush ride at the front or rear suspension, rotate the clicker(s) counterclockwise two clicks, then test ride. Repeat the adjustment until the desired ride quality is achieved.

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/Installation

1. Raise the snowmobile off the ground using a snowmobile lift.
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 "broken-in" for longer life and better wear patterns. When performing the break-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.

CHAPTER 9
Chassis

SAFETY INFORMATION

General Cautions and Notes

- Never re-use lock Nuts. Always replace lock nuts that have been removed with new parts.
- Never re-use pre-coated fasteners. Always replace pre-coated fasteners with new parts.
- The side braces, bulkhead floor, and the front tunnel cooler upper mating surface are bonded components.
- The only authorized bonding adhesive is Lord 406 Acrylic Adhesive. DO NOT ANY NON-SPECIFIED BONDING ADHESIVE, GLUE, OR EPOXY.
- Lord 406 Acrylic Adhesive has a shelf life of no more than 60 days at 68° F (20° C) from the time of manufacture. Do not store this product. Order repair kit as required and dispose product after repair is completed in accordance with local rules and regulations.
- Wear gloves, face mask, and protective eye wear when removing original adhesive from chassis components.
- Never apply excessive heat or flame to bonded components when not intending to remove them from the chassis.
- The engine overstructure/steering support assembly and floor board support tubes are bonded components. THESE COMPONENTS ARE NOT SERVICEABLE. REPLACE AS COMPLETE ASSEMBLIES.
- Bonded components must be removed, cleaned, and re-bonded if the adhesive is subjected to temperatures above 300° F (149° C).
- Adhesive working time is 6 to 10 minutes. Component handling time is achieved within 60 minutes. Complete cure time will take 24 hours at 68° F (20° C).
- Allow the adhesive to cure at room temperature 68° F (20° C). Do not move the snowmobile outside (colder temperature) while the adhesive is curing.
- Do not place the vehicle into service until the adhesive has completely cured (24 hours).

Lord 406 Acrylic Adhesive Information

Review and understand the following product handling practices and first aid measures prior to working with bonding adhesive.

For additional handling, first aid, or MSDS information, contact Lord at www.lord.com.

WARNING

Lord 406 Acrylic Adhesive is flammable. Do not store or use near heat, sparks, or open flame.

Handling Practices
Ventilation - Work in a well-ventilated area.

Respirator - Use properly-fitted, organic vapor, air purifying respirator (face mask).

Skin Protection - Use neoprene, or rubber gloves. Wash hands and exposed skin with soap and water after working with product.

Eye Protection - Wear safety glasses/goggles.

First Aid Measures
Eye Contact - Flush eyes immediately with large amounts of water for at least 15 minutes holding eyelids open while flushing. Get prompt medical attention.

Skin Contact - Flush contaminated skin with large amounts of water while removing contaminated clothing. Wash affected skin areas with soap and water. Get medical attention if symptoms occur.

Inhalation - Move person to fresh air. Restore and support continued breathing. If breathing is difficult, give oxygen. Get immediate medical attention.

Ingestion - If swallowed, do not induce vomiting. Give victim one or two glasses of water or milk. Call a physician or poison control center immediately for further instructions. Never give anything by mouth if victim is rapidly losing consciousness, unconscious, or convulsing.

SPECIFICATIONS

Fastener Torque Specifications

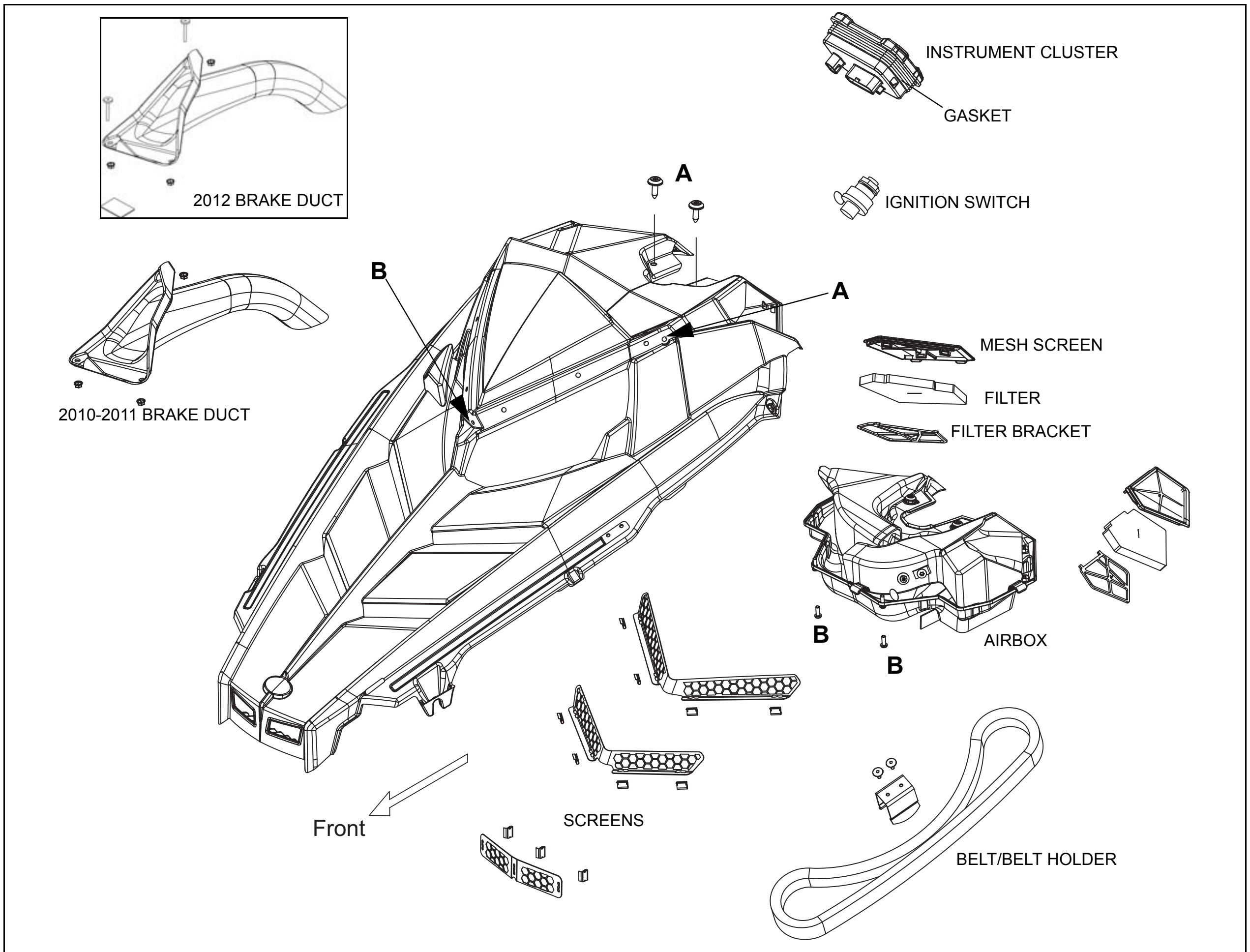
COMPONENT	TORQUE
Rear hood-to-rear over structure screws	7.4 ft-lb (10 Nm)
Head light asm.front/air box screws	3 ft-lb (4 Nm)
Head light asm. side mounting screws	7.4 ft-lb (10 Nm)
Front bumper-to-over structure/heat exchanger fasteners	7.4 ft-lb (10 Nm)
Seat screws	7.4 ft-lb (10 Nm)
Seat brace-to-x brace screws	7.4 ft-lb (10 Nm)
Seat brace-to-rear brace screws	17 ft-lb (23 Nm)
Bulkhead clip fasteners/ nuts	26 ft-lb (35 Nm)
Exhaust silencer fasteners/ nuts	26 ft-lb (35 Nm)
Right side brace fasteners/ nuts	26 ft-lb (35 Nm)
Left side brace fasteners/ nuts	26 ft-lb (35 Nm)
Left side front/rear engine mounts-brace fasteners	22 ft-lb (30 Nm)
Cross brace screws	35 ft-lb (47 Nm)
Front over structure-to-bulkhead clip fasteners	22 ft-lb (30 Nm)
Front over structure-to-rear over structure tube fasteners	17 ft-lb (23 Nm)
Rope guide fastener	7 ft-lb (9.5 Nm)
Rear over structure-to-front tunnel mount/x-brace fastener	35 ft-lb (47 Nm)
Rear over structure-to-tunnel fastener	22 ft-lb (30 Nm)
X-brace-to-rear brace support fasteners	35 ft-lb (47 Nm)

COMPONENT	TORQUE
Front footrest tube/rear over structure fasteners	22 ft-lb (30 Nm)
Running board support-to-rear support braces	26 ft-lb (35 Nm)
Rear support brace tunnel fasteners	26 ft-lb (35 Nm)
Bulkhead cooler-to-tunnel/ braces fasteners	26 ft-lb (35 Nm)

9

CHASSIS ASSEMBLIES

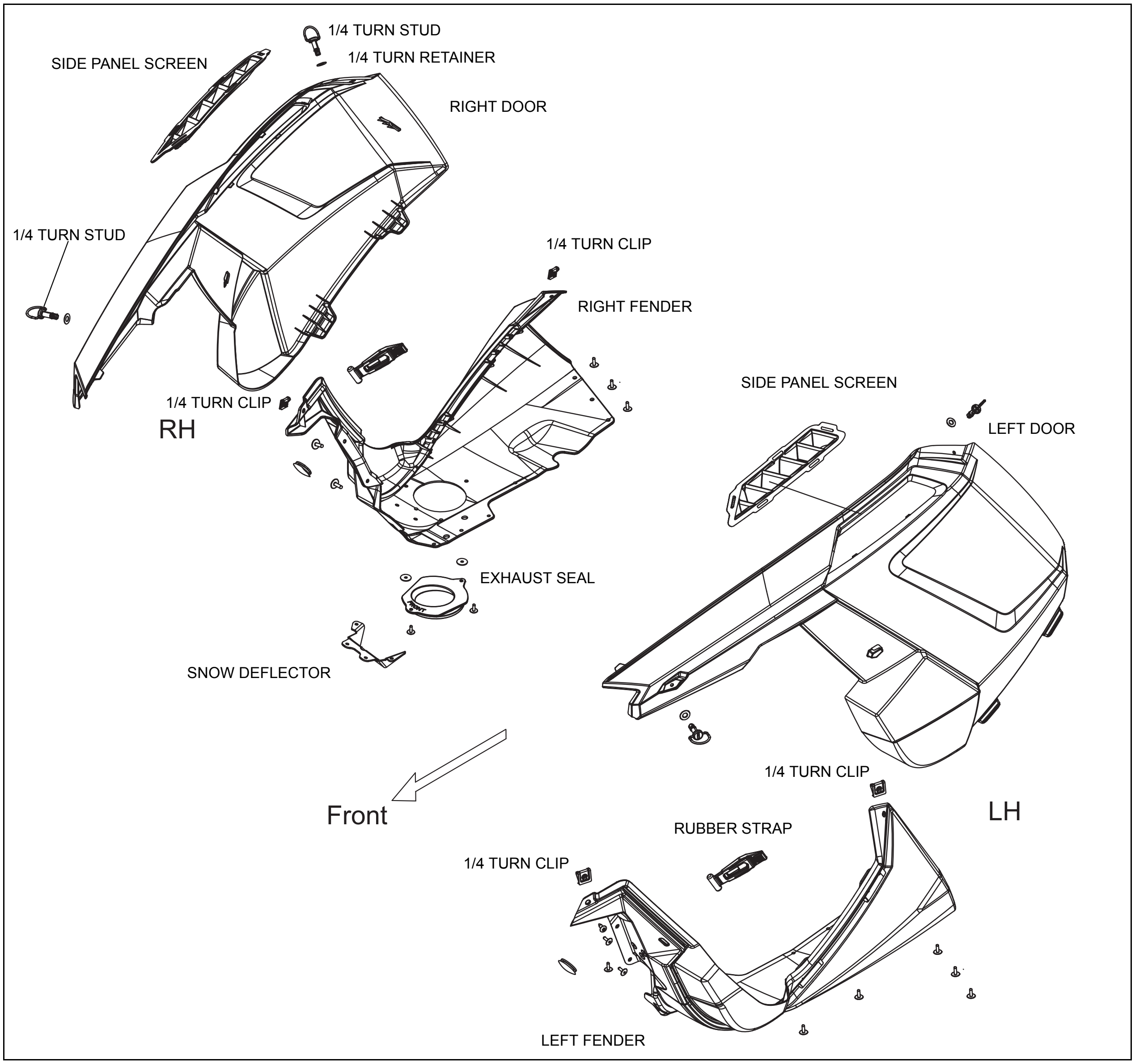
Hood



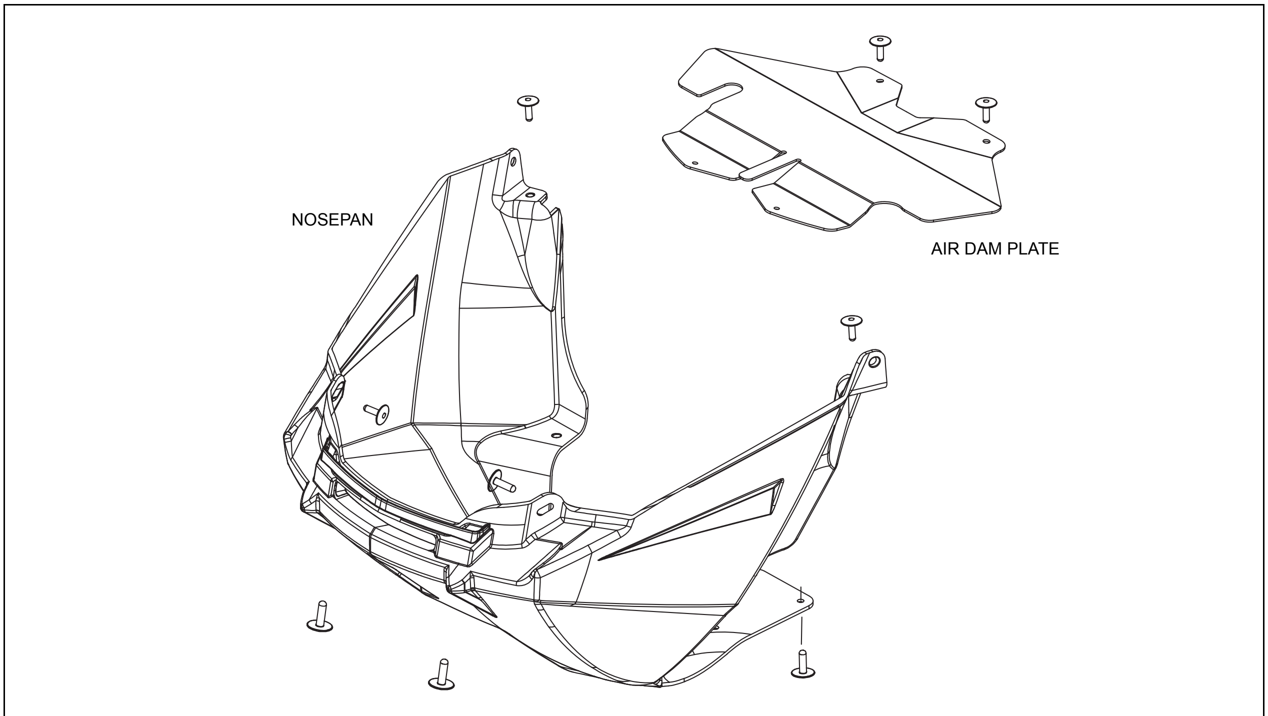
= T
A: 7.4 ft-lb (10 Nm) **B: 3 ft-lb (4 Nm) (Airbox/Headlight Asm. Screws)**

If the brake duct mounting posts break on a 2010-2011 Rush or Switchback Assault hood, install the Brake Duct Kit, PN 2204584.

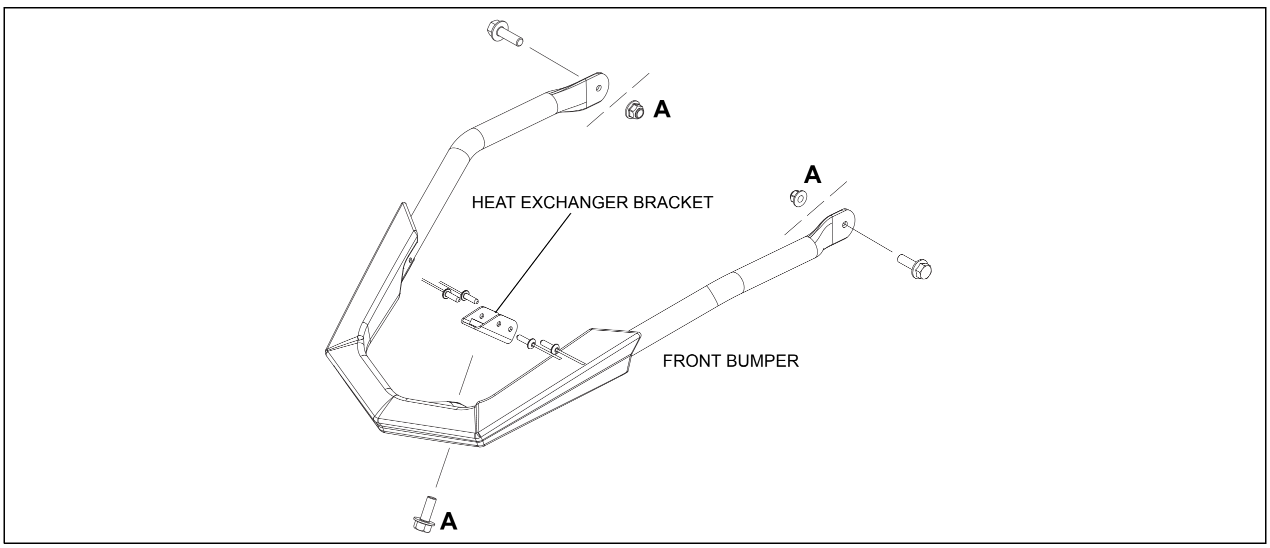
Left/Right Doors and Fenders



Nosepan-Rush /Switchback

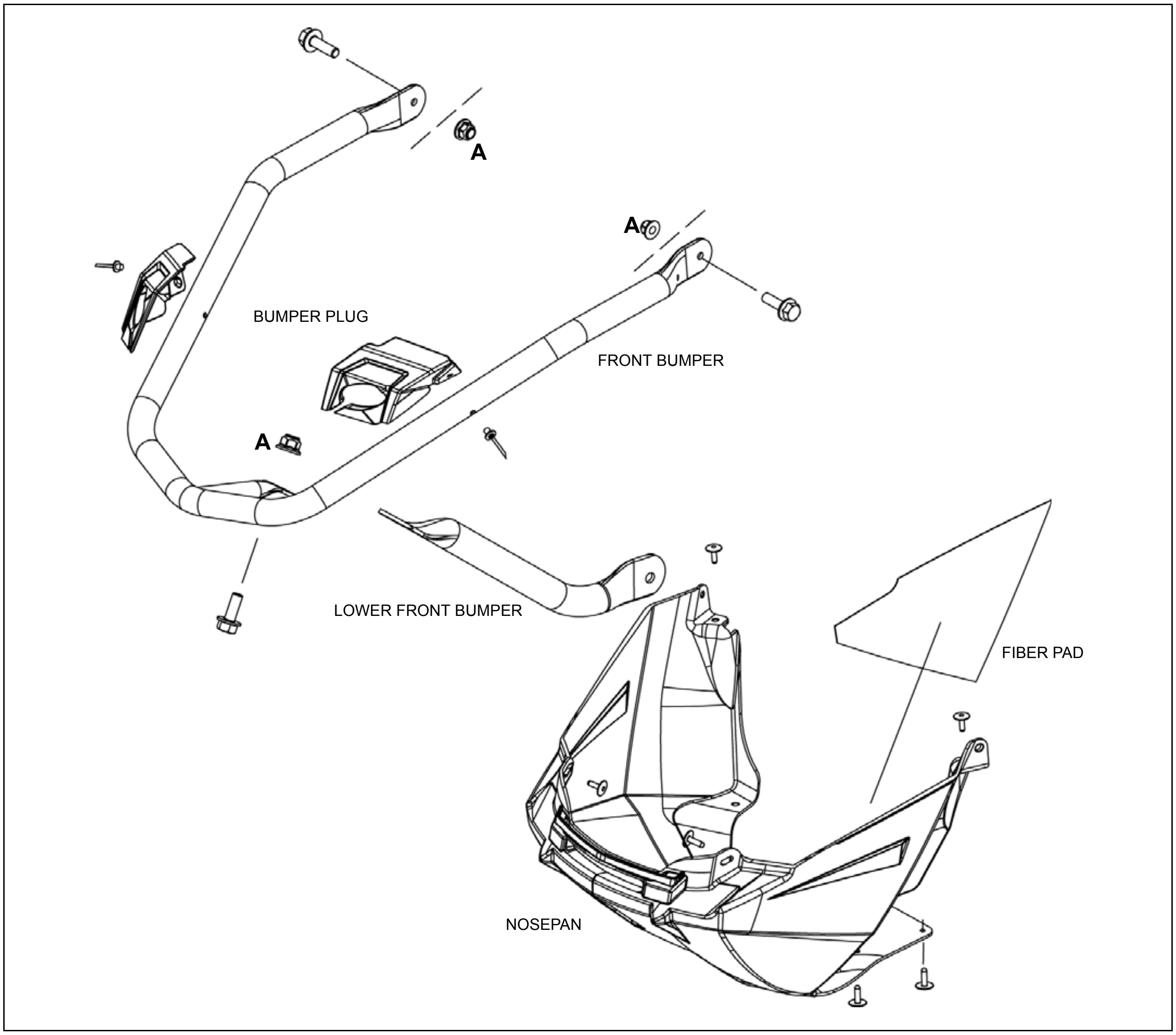


Front Bumper- Rush/Switchback



= T
A: 7.4 ft-lb (10 Nm)

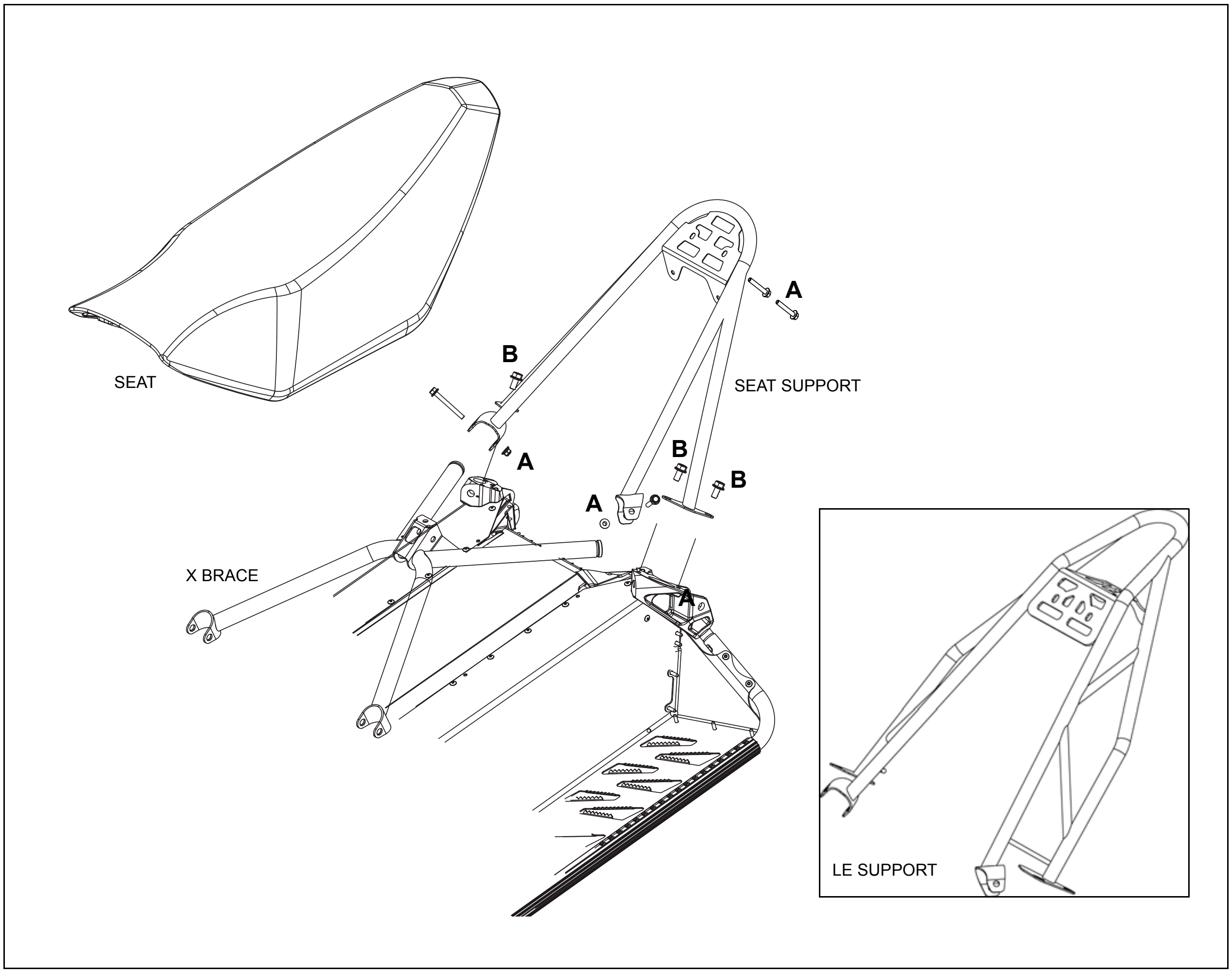
Front Bumper/Nosepan-Switchback Assualt/RMK



= T
A: 7.4 ft-lb (10 Nm)

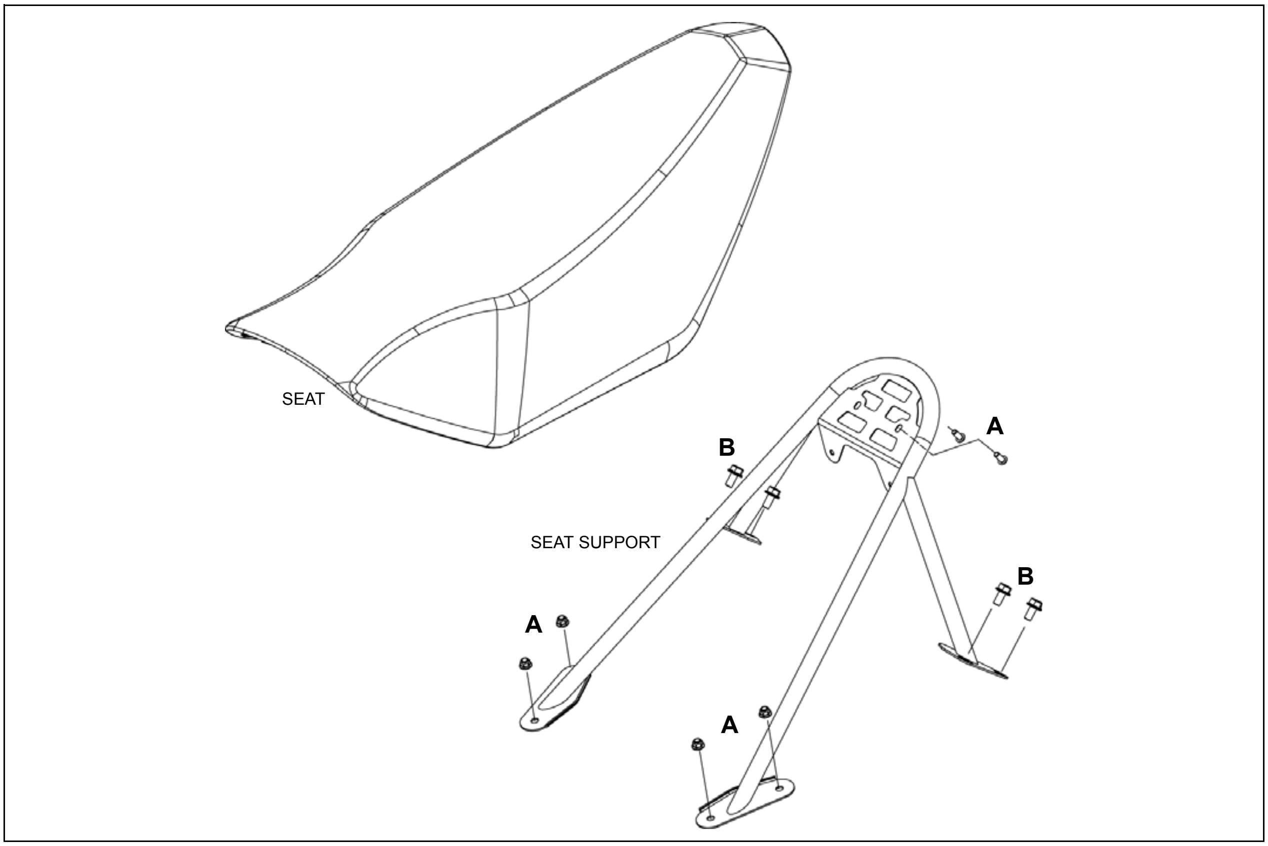
9

Seat/Seat Support-Rush Models



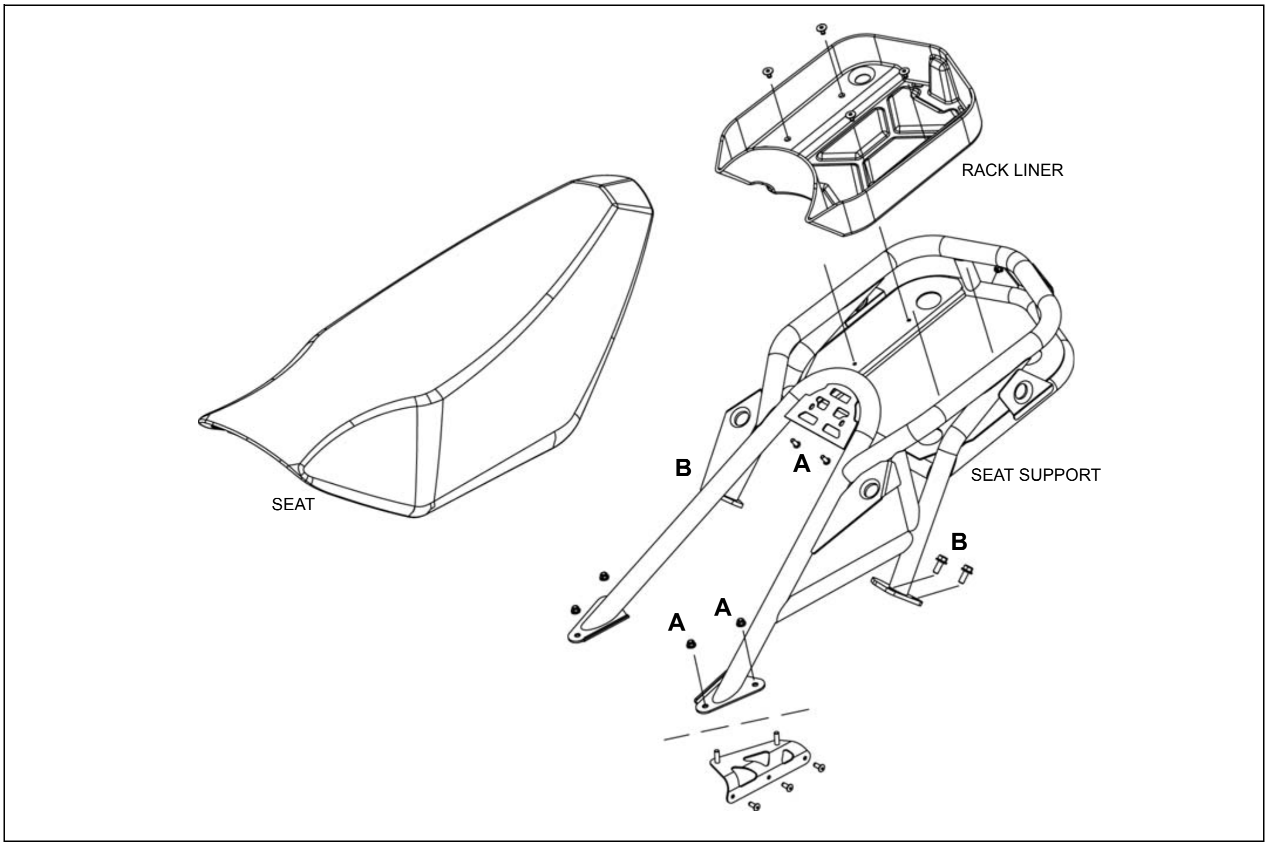
= T
A: 7.4 ft-lb (10 Nm) **B: 17 ft-lb (23 Nm)**

Seat/Seat Support-Switchback Models



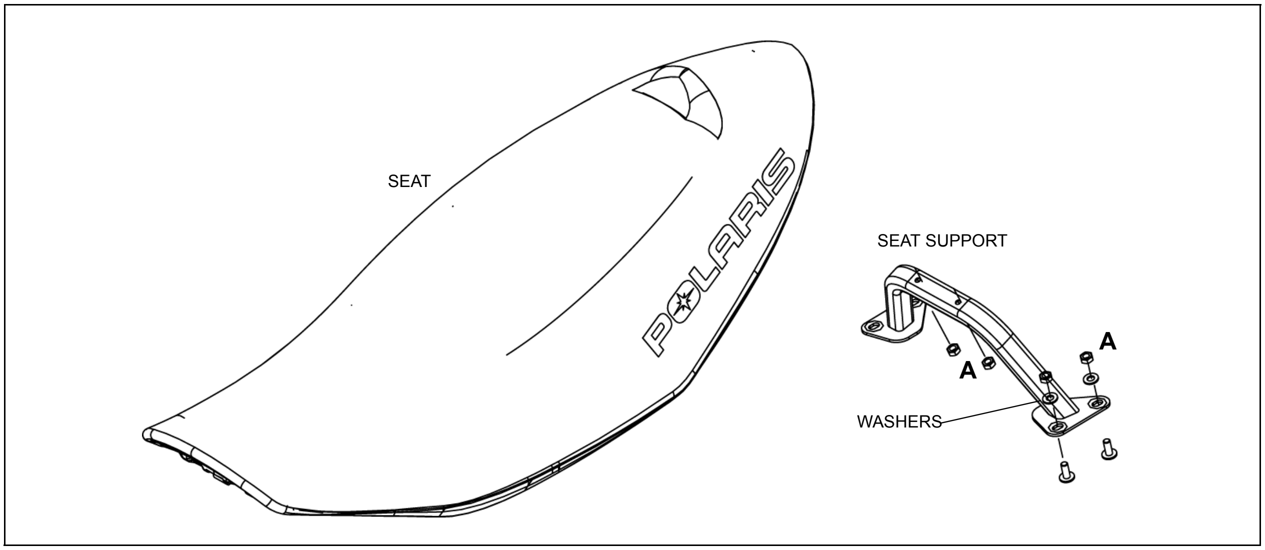
= T
A: 7.4 ft-lb (10 Nm) **B: 17 ft-lb (23 Nm)**

Seat/Seat Support-Switchback Adventure



= T
A: 7.4 ft-lb (10 Nm) **B: 17 ft-lb (23 Nm)**

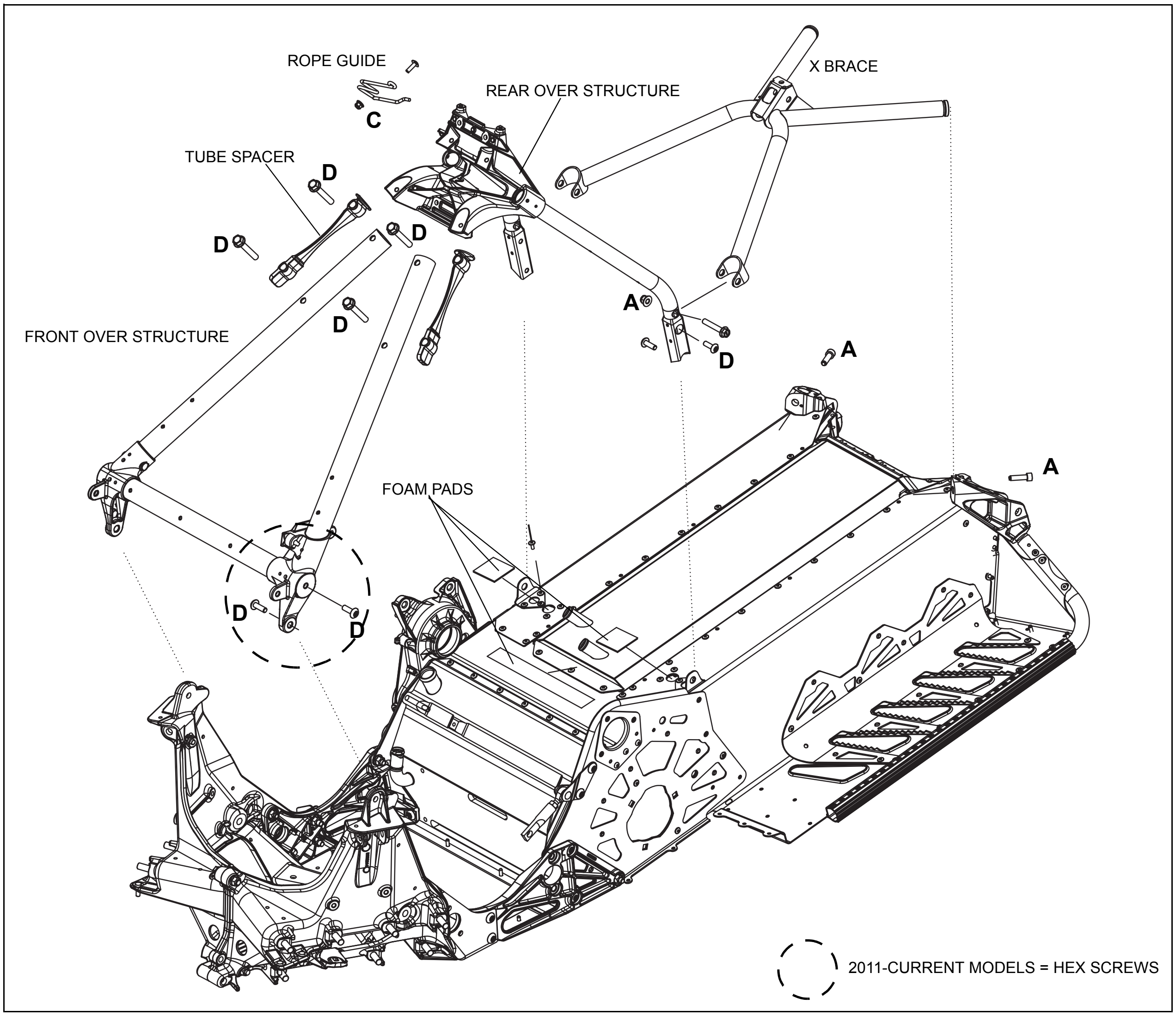
Seat/Seat Support-Switchback Assault/RMK



= T
A: 7.4 ft-lb (10 Nm)

9

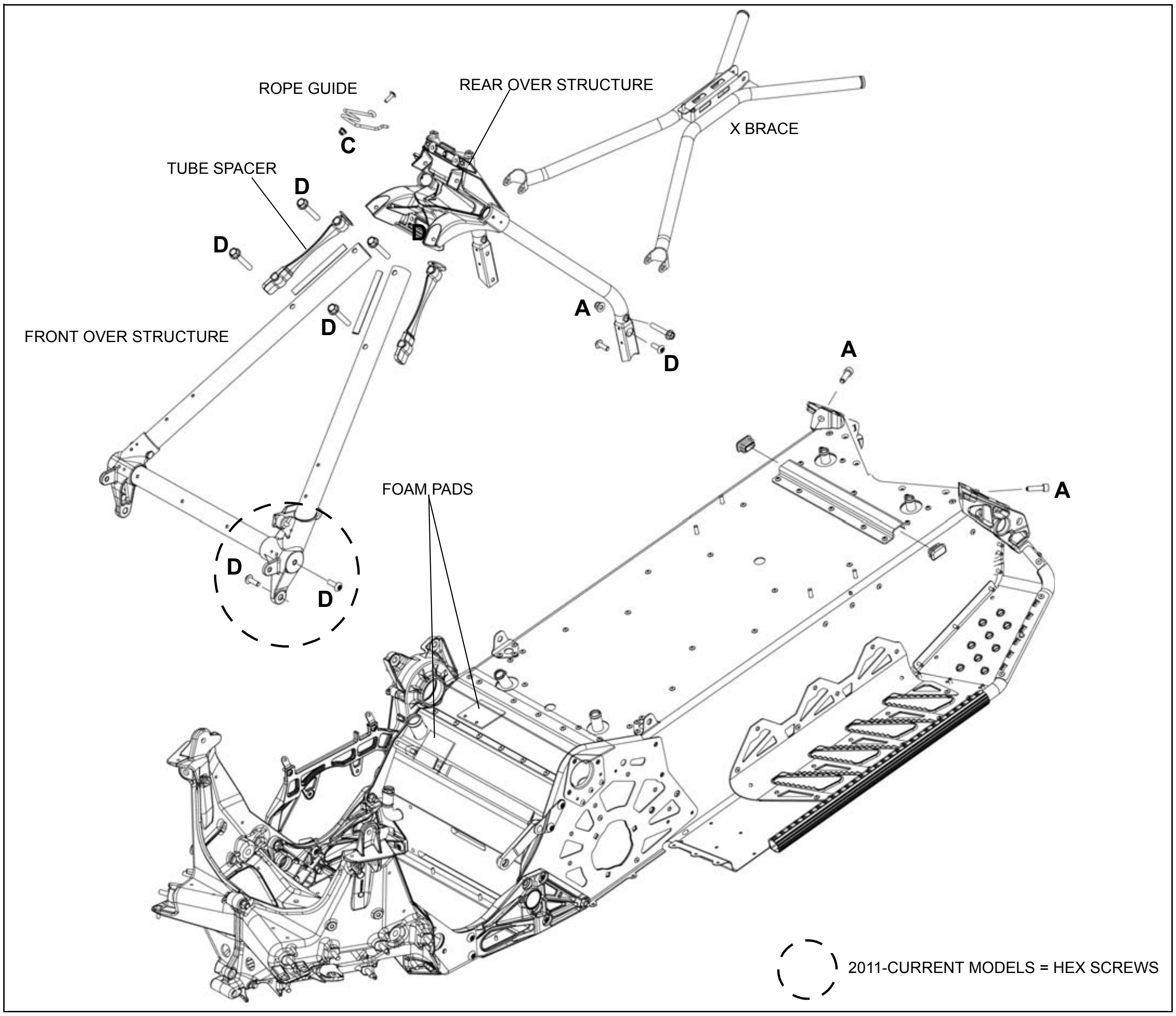
Front/Rear Over Structure/X Brace-Rush Models



= T
A: 35 ft-lb (47 Nm) B: 17 ft-lb (23 Nm) C: 7 ft-lb (9.5 Nm) D: 22 ft-lb (30 Nm)

CAUTION
Front and rear over structure assemblies feature bonded components. Do not attempt to service over structure tubes.

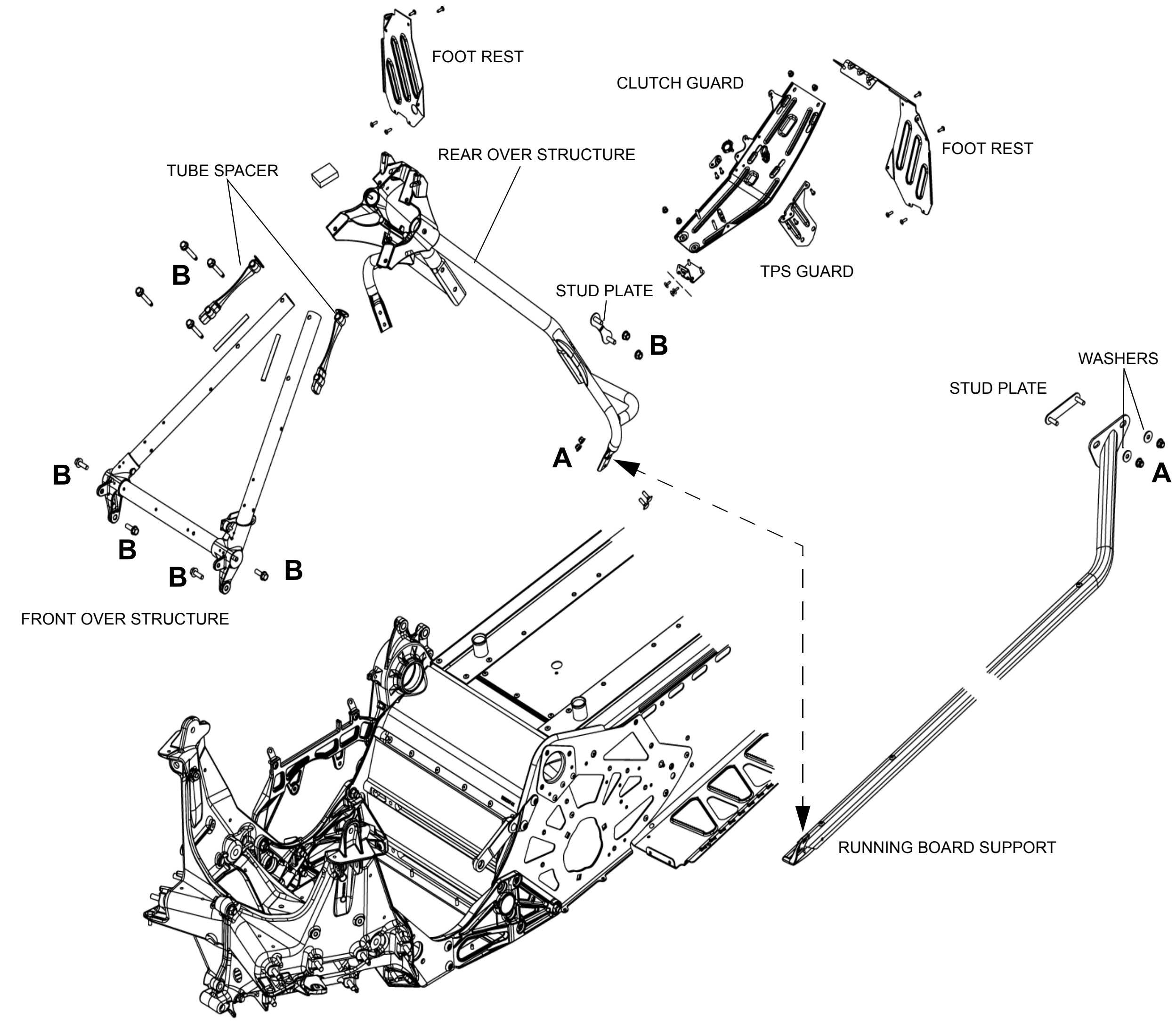
Front/Rear Over Structure/X Brace-Switchback Models



= T
A: 35 ft-lb (47 Nm) **B: 17 ft-lb (23 Nm)** **C: 7 ft-lb (9.5 Nm)** **D: 22 ft-lb (30 Nm)**

CAUTION
Front and rear over structure assemblies feature bonded components. Do not attempt to service over structure tubes.

Front/Rear Over Structure-Switchback Assault/RMK Models

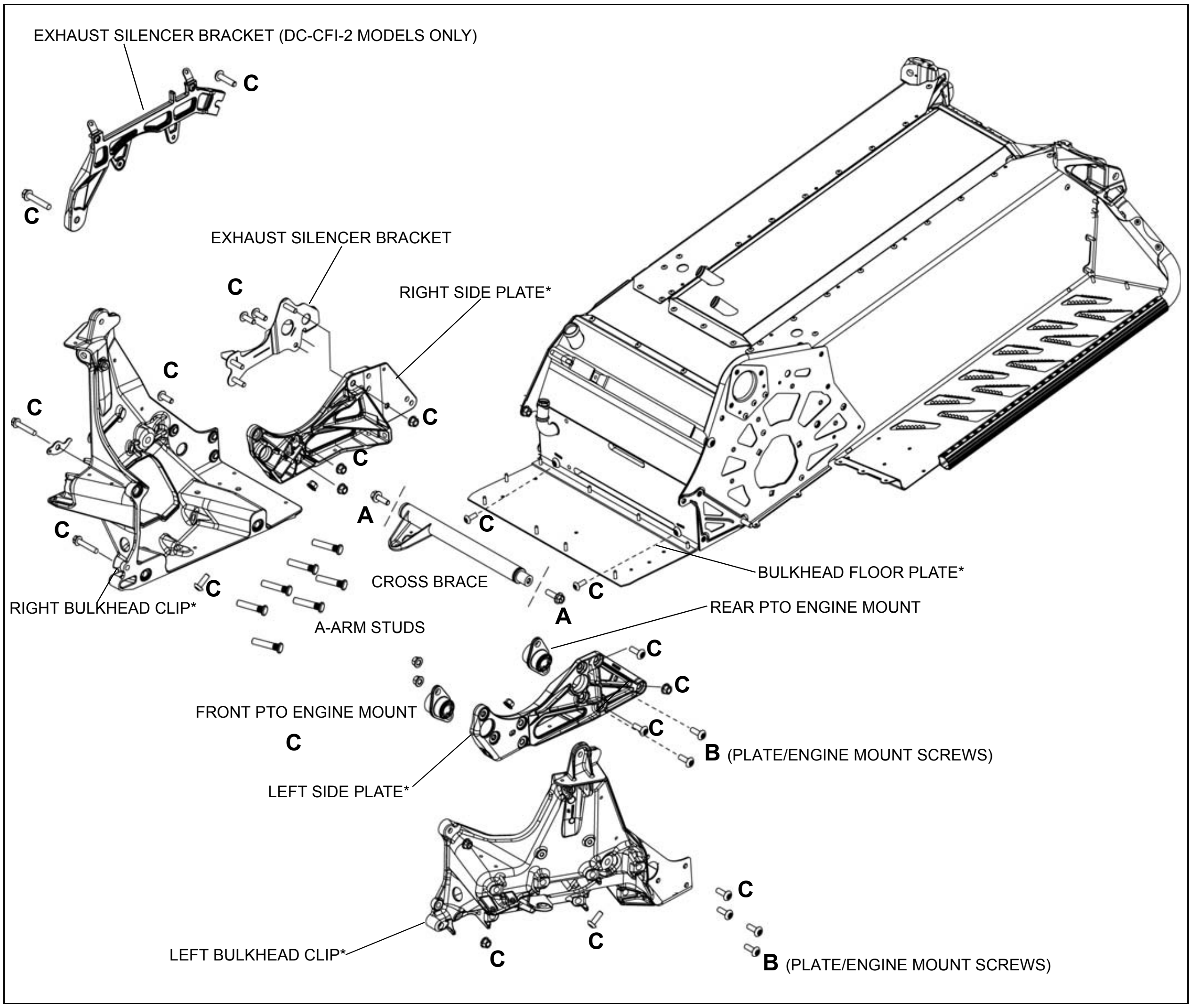


= T
A: 7 ft-lb (9.5 Nm) **B: 22 ft-lb (30 Nm)**

CAUTION

Front and rear over structure assemblies feature bonded components. Do not attempt to service over structure tubes.

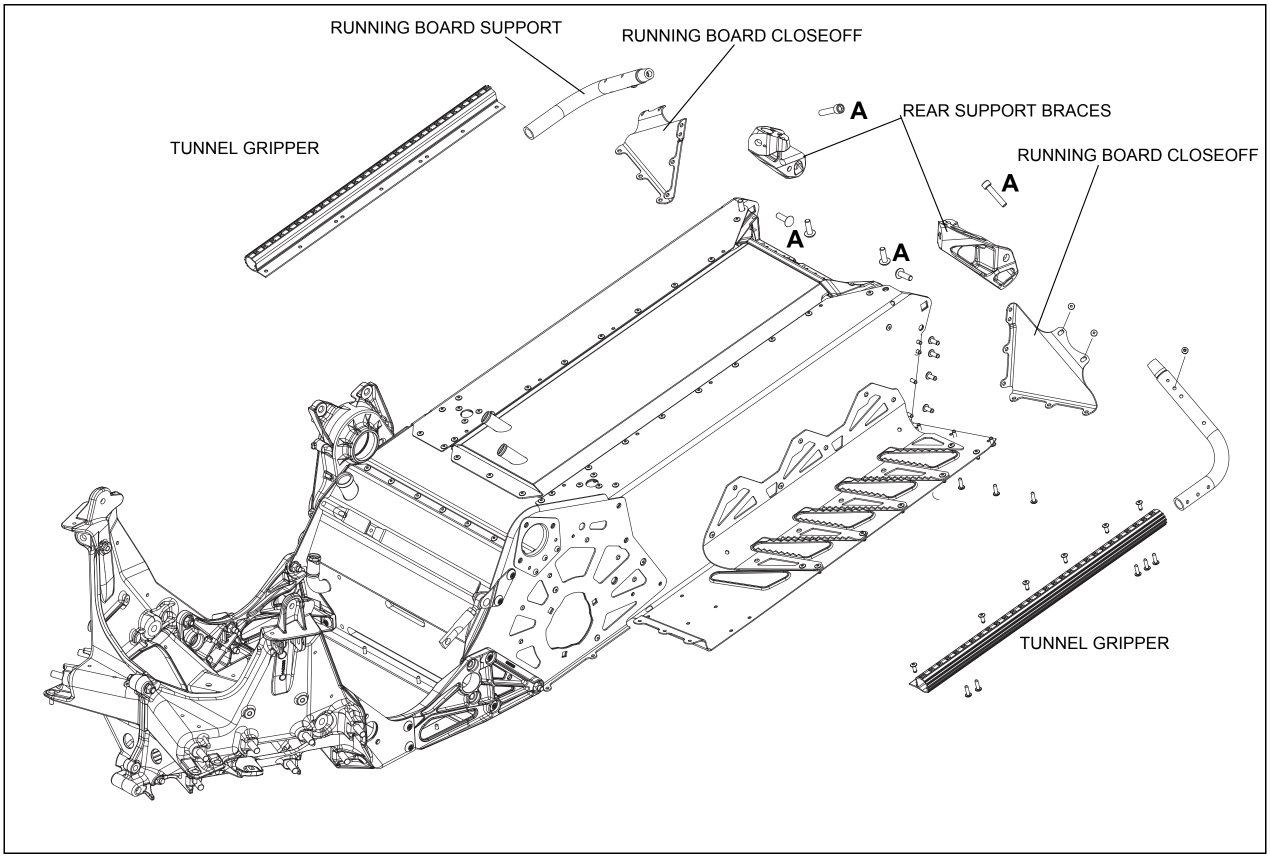
Left/Right Bulkhead Clips/Side Braces-All Models



= T
A: 35 ft-lb (47 Nm) **B: 22 ft-lb (30 Nm)** **C: 26 ft-lb (35 Nm)**

NOTE: * = Bonded component.

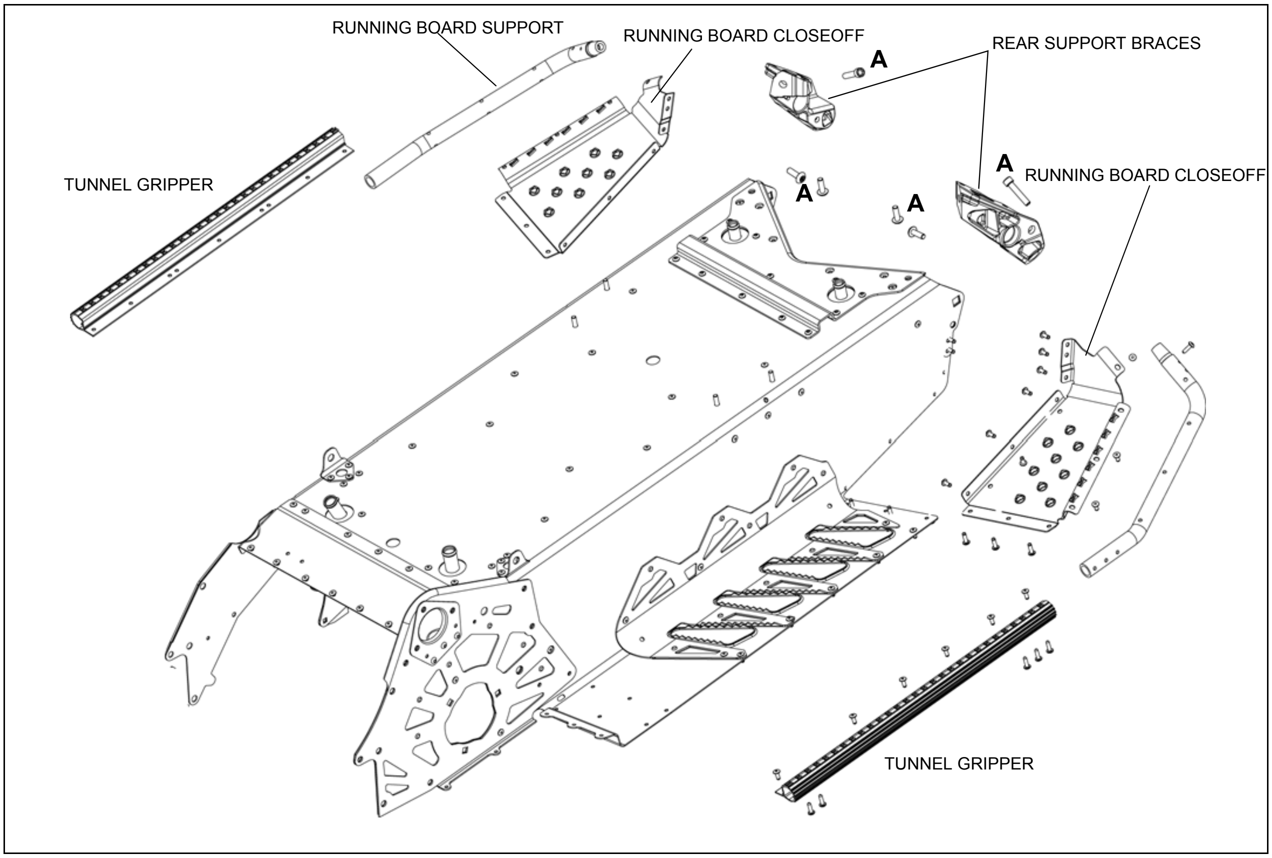
Tunnel Rear-Rush Models



= T
A: 26 ft-lb (35 Nm)

CAUTION
Running board supports feature bonded components. Do not attempt to service supports.

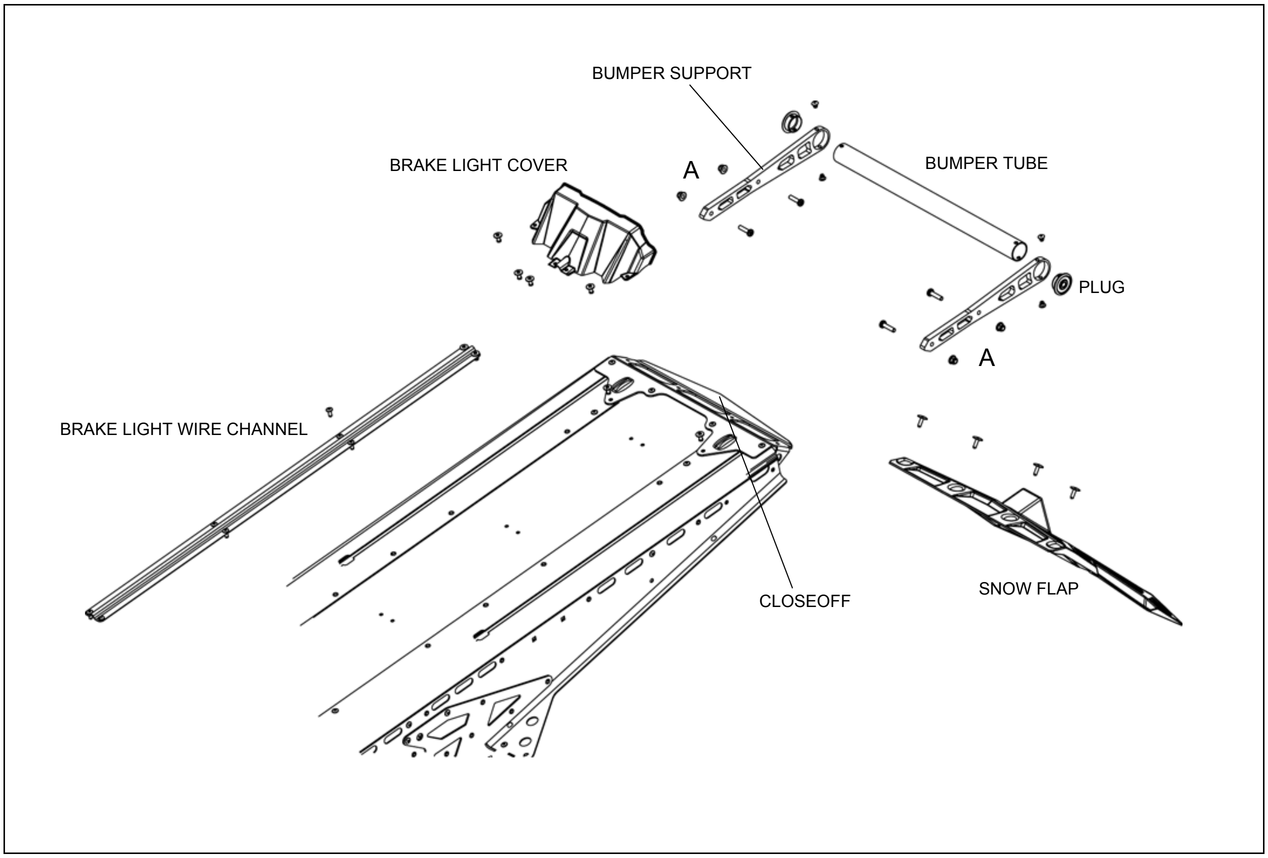
Tunnel Rear-Switchback



= T
A: 26 ft-lb (35 Nm)

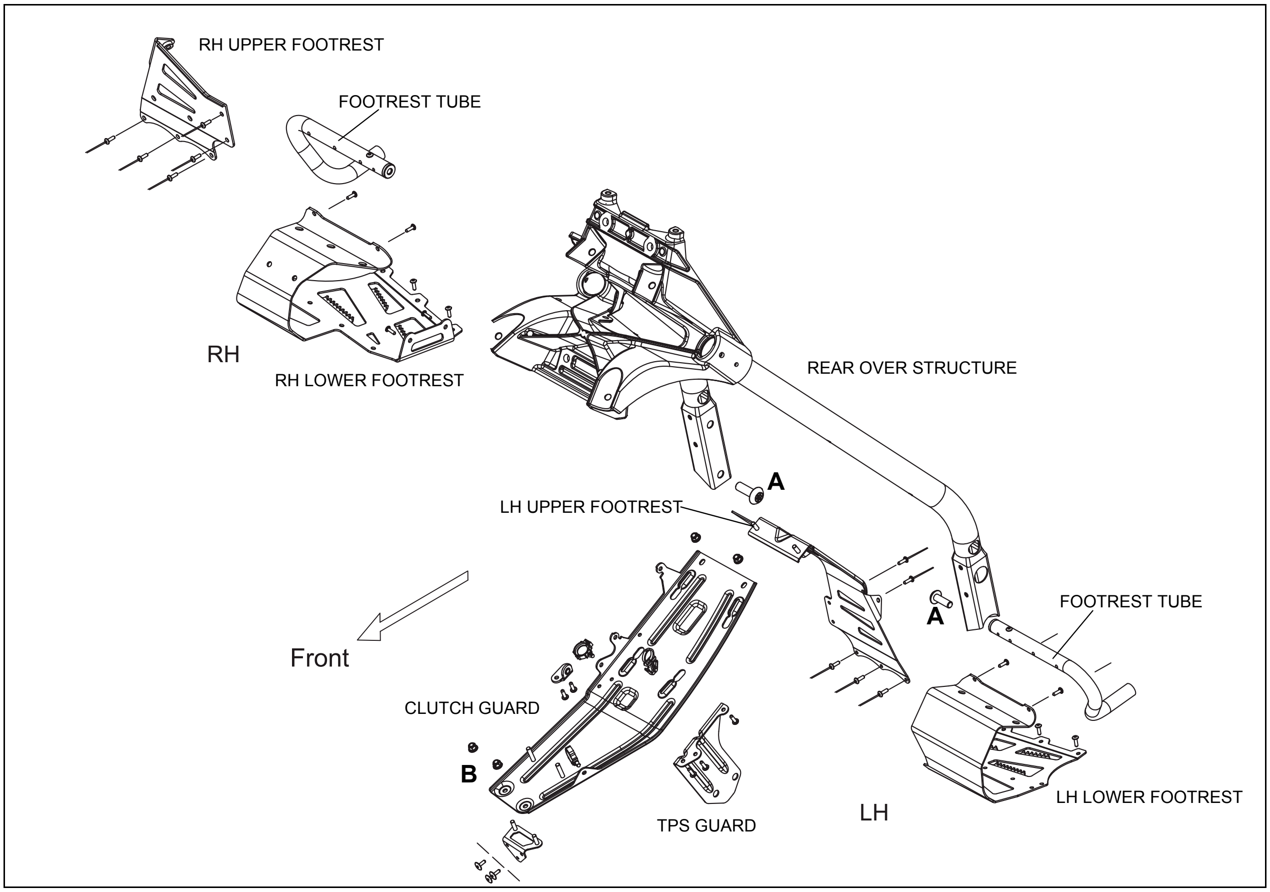
CAUTION
Running board supports feature bonded components. Do not attempt to service supports.

Tunnel Rear-Switchback Assault/RMK



= T
A: 7 ft-lb (9.5 Nm)

Left/Right Foot Supports-Rush/Switchback Models

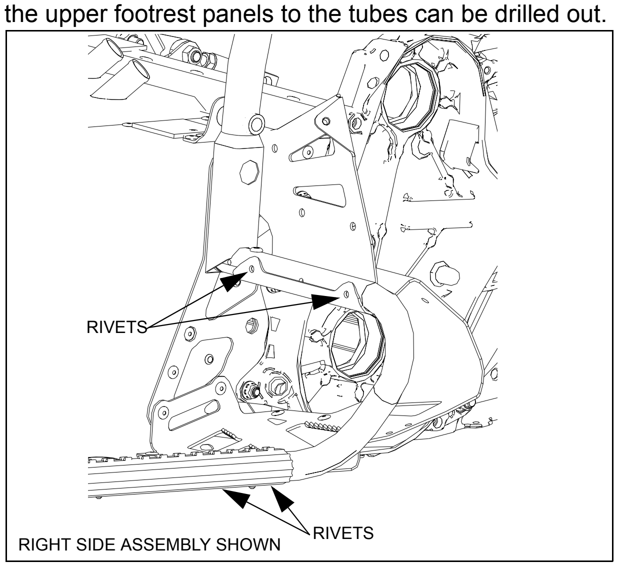


= T
A: 22 ft-lb (30 Nm) **B: 7.4 ft-lb (10 Nm)**

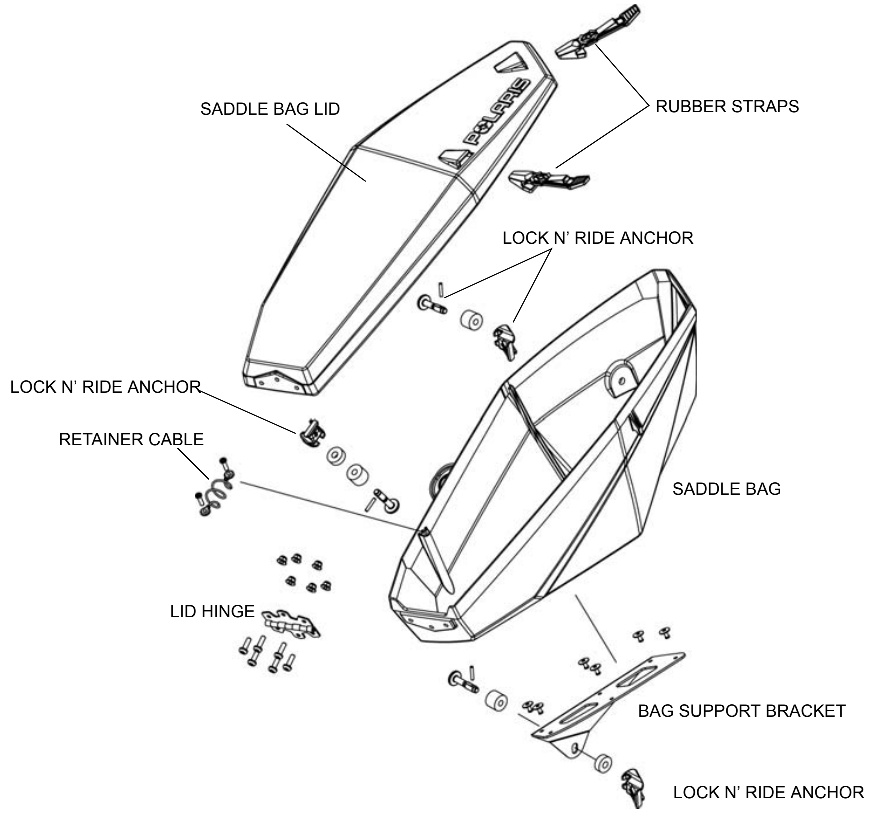
Assembly Notes:

To remove the rear over structure from the tunnel after all of the fasteners are removed, the rivets attaching the lower footrests to the footrest tubes have to be removed along with the rivets attaching the footrest tubes to the tunnel grippers.

After removing the rear over structure, the rivets securing the upper footrest panels to the tubes can be drilled out.



Switchback Adventure Saddle Bags



= T

Retainer Cable Fasteners: 3 ft-lb (4 Nm)
Lid Hinge Fasteners: 7.3 ft-lb (10 Nm)

CAUTION

Running board supports feature bonded components. Do not attempt to service supports.

BONDED COMPONENT SERVICE

Overview

The following serviceable components are bonded with structural adhesive:

- Left/right bulkhead clips are bonded to the left/right support braces
- Left/right support braces are bonded to the tunnel assembly
- Bulkhead floor plate
- Top of front tunnel bulkhead cooler

NOTE: The left and right bulkhead clips are not bonded to each other.

Please read and understand the topics outlined on the following pages before working with any bonded component.

Bonded Component Removal

Breaking the adhesive bond between the before-mentioned components is required whenever performing the following repairs:

- Left or right bulkhead clip removal/replacement
- Left or right engine support side brace removal/replacement
- Front tunnel cooler removal/replacement

In every repair procedure listed, the bulkhead floor plate must be removed. Breaking the bulkhead floor plate bond will render the part unusable. The bulkhead floor plate is considered a sacrificial part and will always be replaced with a new plate whenever removed.

There are two removal methods. The first method does not require the use of the direct application of heat to break the bond. This method only involves removing the bulkhead floor plate and front tunnel bulkhead cooler. This method works because the adhesive has very little resistance to peel force and therefore the two parts can be easily pried/peeled off of the chassis.

The second removal method requires the use of the direct application of heat to release the bond. This method of removal only involves the removal of the bulkhead clip(s) and/or engine support brace(s).

The recommended source of heat is the use of propane gas, and can be obtained at most commercial hardware stores.

NOTE: In all bonded component repair procedures, the engine assembly and bulkhead floor plate are removed from the engine compartment.

Bonded Component Surface Preparation

⚠ WARNING

Handling Practices
Ventilation - Work in a well-ventilated area.

Respirator - Use properly-fitted, organic vapor, air purifying respirator (face mask).

Skin Protection - Use neoprene, or rubber gloves. Wash hands and exposed skin with soap and water after working with product.

Eye Protection - Wear safety glasses/goggles.

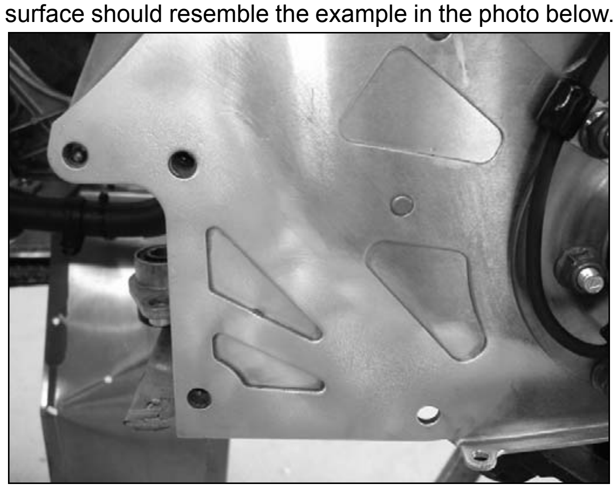
⚠ CAUTION

Original adhesive must be removed from bonded components prior to the application of new adhesive.

Bonded components that will be re-used during assembly must be cleaned and free from original adhesive.

Remove adhesive using a putty knife, gasket remover tool, wire brush, etc. and propane gas torch.

Apply heat to adhesive to assist in removal. After all of the residual adhesive is removed, the component mating surface should resemble the example in the photo below.



After removing the adhesive, clean the bonding area with warm, soapy water and allow to dry completely.

NOTE: New bonded parts should be washed with warm, soapy water and allowed to dry completely before the adhesive is applied.

Adhesive Applicator Kits

Polaris offers a repair kit, individual adhesive cartridges, and replacement needle packs. The adhesive has a shelf life of sixty days from the date of manufacture when stored at room temperature (68° F/20° C).

NOTE: Optimum storage temperature is 40-50° F (4-10° C).

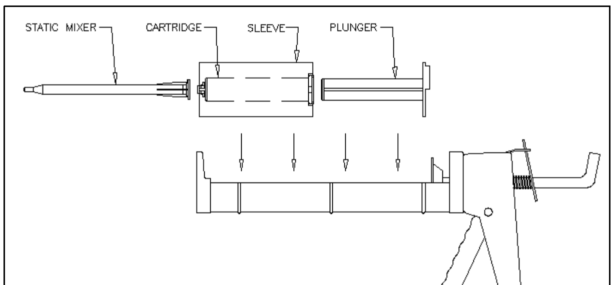
Leave mixer needle attached to cartridge when not in use.

Discard the adhesive cartridge on the date of expiration noted on cartridge label in accordance with local rules and ordinances.

Lord 406/19 Repair Kit (50 mL): 2204171
Includes:
-12qty. Static mixer needles
- 1qty. 50mL 406/19 adhesive cartridge
- 1qty. Standard caulking gun adapter sleeve
- 1qty. Plunger adapter

Lord 406/19 50mL Adhesive Cartridge: 2204400

Lord Static Mixer Needles (12qty.): 2204172



REPAIR KIT: 2204171

The Lord 406/19 Repair Kit (2204171) is supplied with a adapter sleeve and plunger adapter designed to work with a standard size, caulk gun. A smooth rod-type caulk gun is preferable over a ratchet rod type.

Perform the following steps to assemble the repair kit:
1. Insert the cartridge into the adapter sleeve.
2. Install the plunger into the back of the cartridge.
3. Install the plunger/cartridge into the caulk gun. Manually extend the rod so it engages the plunger squarely.
4. Squeeze the trigger slowly making sure the plunger makes equal contact with both cartridge chambers.
5. Only install the mixer needle when ready to apply the adhesive to the components.

Obtaining Adhesive/Mixing Tools Commercially
- The only Polaris-authorized adhesive is Lord 406/19 Acrylic Adhesive (Lord 50mL PN:3003680). Do not use Lord Fusor® Adhesive.
- Lord Dispensing Gun = Lord Pak 50™ (3001112)
- Lord Plunger = Lord Pak 50™ 4:1 Plunger (3004479)
- Lord Mixing Needles = .25"x6" Needle (3004476)

Adhesive Application

NOTE: Read and understand the following steps to ensure the adhesive is applied correctly.

The adhesive has a maximum working time of 6 to 10 minutes at room temperature. It is critical to pre-position all of the components, screws, nuts, and tools before applying any adhesive.

All bonded components and mating surfaces must be cleaned and free from grease, oils, dirt, etc. Clean all mating surfaces with a soap/water solution and allow to air dry.

Verify the adhesive and components are at room temperature (68° F/20° C).

NOTE: The components, and adhesive, must be at room temperature 68° F (20° C) to ensure the adhesive cures properly.

1. When ready to apply the adhesive, remove the cartridge end caps. Level the plunger by slowing squeezing the trigger and expelling the adhesive from the plug onto scrap piece of material.

2. Attach a new mixer needle to the cartridge.

3. While holding the mixer needle over a piece of scrap material, slowly compress the caulk gun trigger to fill the mixer needle. The needle will automatically mix and dispense the correct volumetric ratio of adhesive and accelerator.

4. Continue squeezing the trigger until a needle's length of adhesive is expelled.
5. Quickly apply a 4mm bead of adhesive to the component as shown on the following pages. Apply adhesive to one component at a time.
6. Carefully install the component and torque the fasteners to specification immediately. Do not break the bond once the components are mated.

CAUTION

The bonded parts can be repositioned by gently sliding them into position. Never pull the parts apart. Doing so will introduce air gaps and will require removing the parts, and removing all adhesive.

7. When not using the adhesive, leave the mixer needle attached to the cartridge.
8. If the needle has sat idle for any amount of time, simply remove the needle, and repeat steps 2 though 4 to apply adhesive to additional components.

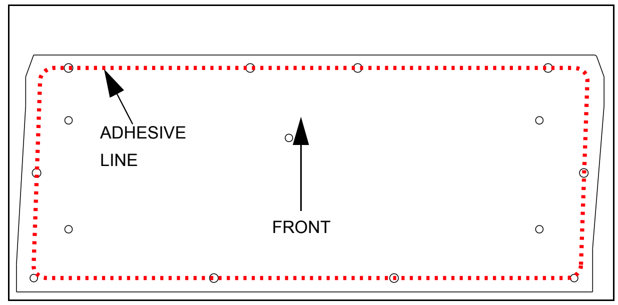
CAUTION

Do not manually mix the adhesive and accelerator. Always use a mixing needle to apply the adhesive.

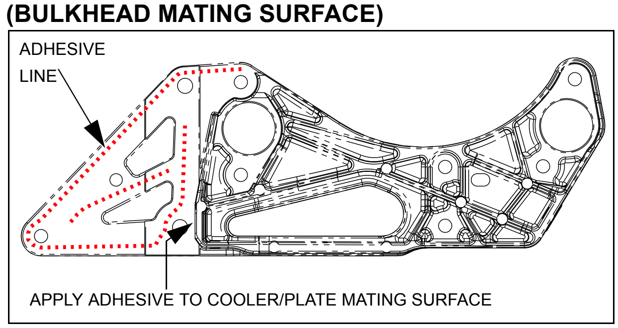
Adhesive Application Patterns

Reference the following illustrations showing the exact patterns for each bonded component when applying the adhesive.

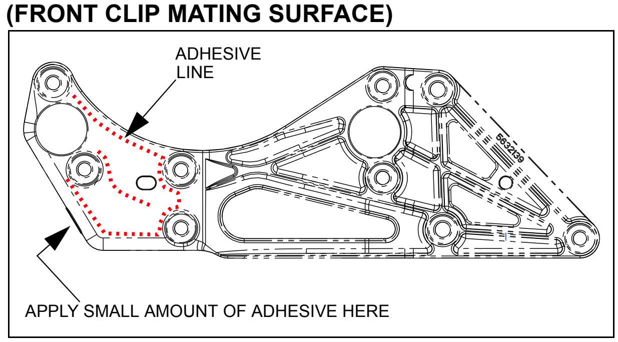
BULKHEAD FLOOR



LH (PTO) SIDE BRACE
(BULKHEAD MATING SURFACE)

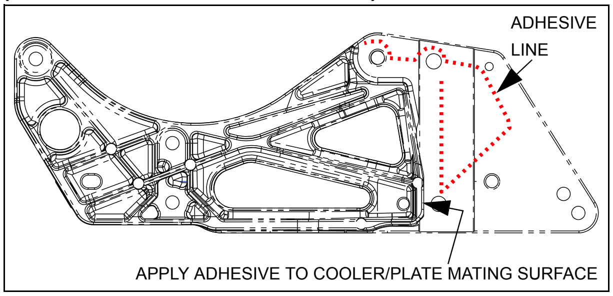


(FRONT CLIP MATING SURFACE)

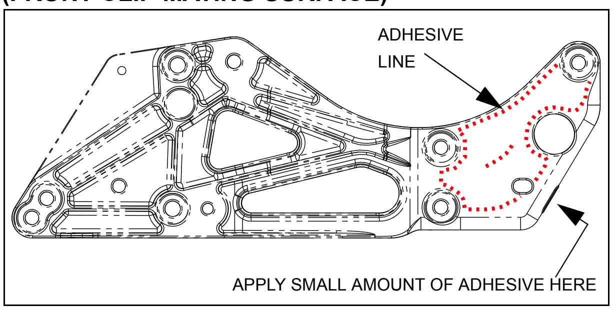


RH (MAG) SIDE BRACE

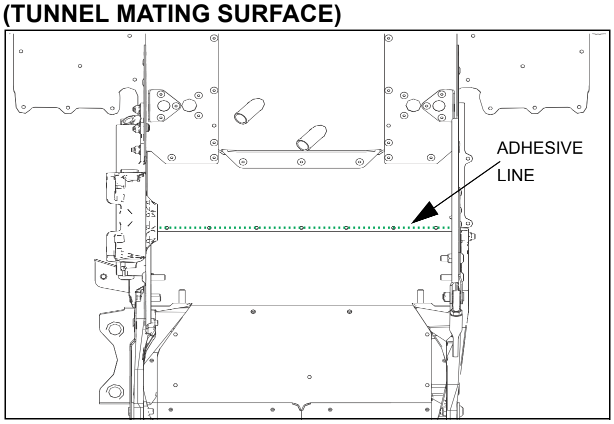
(BULKHEAD MATING SURFACE)



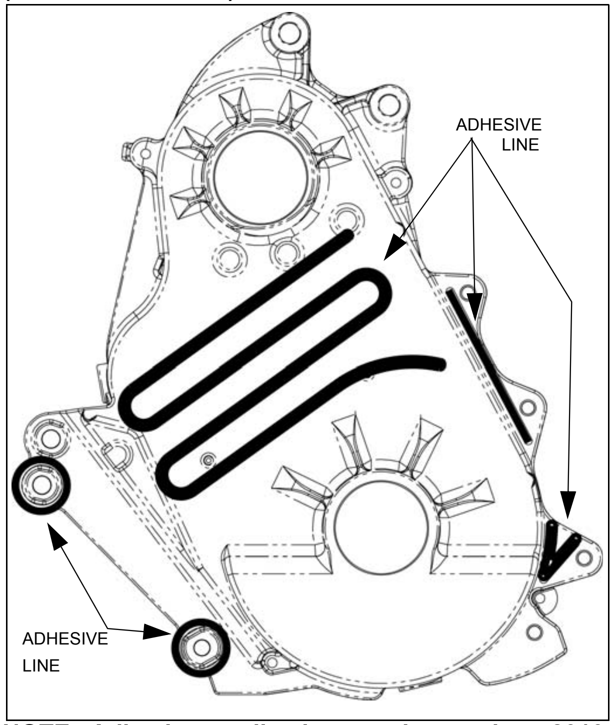
(FRONT CLIP MATING SURFACE)



FRONT BULKHEAD COOLER/PLATE (TUNNEL MATING SURFACE)



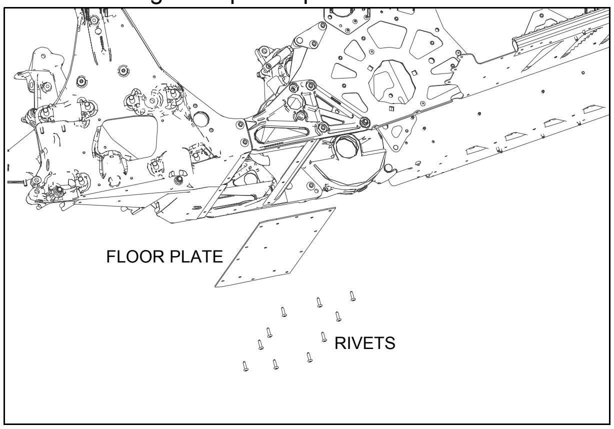
Chaincase (2012 Models) (MATING SURFACE)



NOTE: Adhesive application can be used on 2010-2011 models.

Bulkhead Floor Plate Removal

1. Follow the procedures for removing the engine. See Engine chapter.
2. Remove the fender from the chassis on the side of the vehicle that requires service.
3. The bulkhead floor plate is riveted and bonded to the chassis.
4. Locate and drill-out the rivets securing the plate to the bulkhead clips, support plates and bulkhead cooler. Drill out the rivet in the center of the plate that secures the cooling hose p-clamp.



5. Insert the blade of a flat blade screwdriver into one of the plate's corners. Pry the plate away from the chassis.
6. Continue working the screwdriver along the edge of the plate until the plate can be grasped with a Vise Grip pliers.
7. Using the Vise Grip pliers, pull/peel the plate away from the chassis. Discard the plate.
8. Thoroughly clean the chassis mating surfaces where the plate attaches to the chassis. Reference the Bonded Component Surface Preparation section.

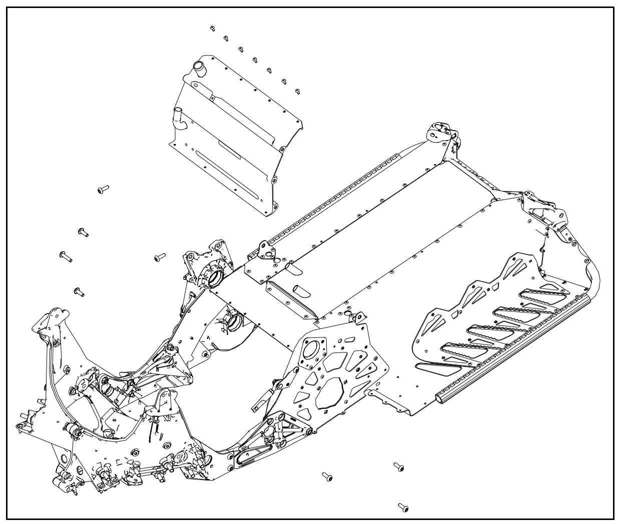
Bulkhead Floor Plate Installation

1. Clean the new bulkhead floor plate with warm, soapy water. Allow the plate to completely dry.
2. The next assembly step is applying the adhesive. Thoroughly read and understand the Adhesive Applicator Tool and Adhesive Application sections before proceeding.
3. Apply the adhesive to the plate. Reference the illustration in the Adhesive Application Patterns section.
4. Install the plate using new rivets.
5. Reinstall the fender.
6. Install the rivet securing the cooling hose p-clamp to the plate from inside engine compartment.
7. Reinstall the engine assembly.

NOTE: Allow the adhesive to cure for 24 hours at 68° F (20° C) before placing the snowmobile back into service.

Front Tunnel Bulkhead Cooler Removal

1. Remove the following components:
   - Right/left engine compartment door
   - Hood
   - Exhaust pipe/silencer
   - Oil tank/clutch cover assembly
   - Airbox assembly
   - Engine assembly
   - Driven clutch
   - Bulkhead floor plate
   - Fuel tank assembly
2. Drill out the rivets securing the cooler to the top of the tunnel.
3. Remove the fasteners securing the cooler to the sides of the tunnel.
4. Remove the fasteners securing the engine support braces to the cooler.
5. Remove the cooler from the chassis.



9

6. Remove any residual adhesive from the tunnel and/ or cooler if it is going to be re-used.

Front Tunnel Bulkhead Cooler Installation

1. If installing the original bulkhead cooler, verify all of the original adhesive is removed from the mating surface.
2. The next assembly step is applying the adhesive. Thoroughly read and understand the Adhesive Applicator Tool and Adhesive Application sections before proceeding.
3. Apply the adhesive to the bulkhead cooler. Reference the illustration in the Adhesive Application Patterns section.
4. Install the cooler using new rivets.
5. Install the fasteners securing the cooler to the engine support braces. Torque to specification.

= T
Bulkhead Cooler-to-Tunnel/Braces: **26 ft-lb (35 Nm)**

6. Install the fasteners securing the cooler to the sides of the tunnel. Torque fasteners to specification.

= T
Bulkhead Cooler-to-Tunnel Fasteners: **26 ft-lb (35 Nm)**

7. If the MAG rear engine mount bracket was removed for the cooler, reinstall the mount and torque fasteners to specification.

= T
MAG Engine Mount-to-Cooler Fasteners: **22 ft-lb (30 Nm)**

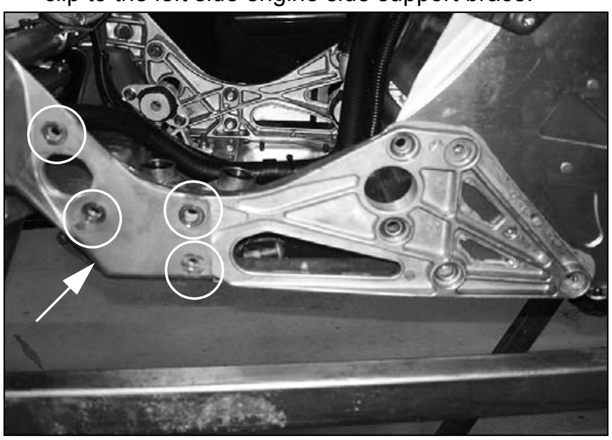
8. Reinstall the following components:

- Right/left engine compartment door
- Hood
- Exhaust pipe/silencer
- Oil tank/clutch cover assembly
- Airbox assembly
- Engine assembly
- Driven clutch
- Bulkhead floor plate
- Fuel tank assembly

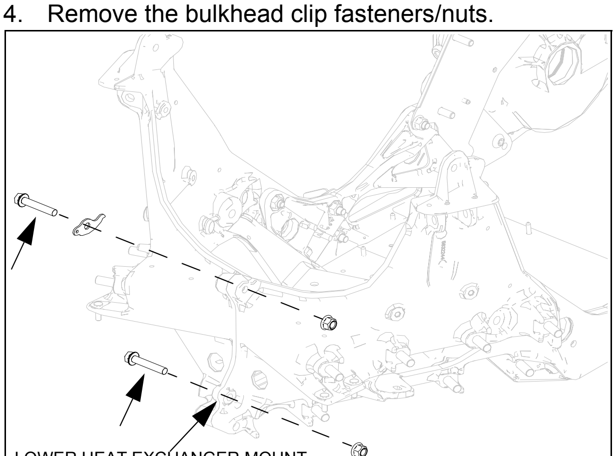
NOTE: Allow the adhesive to cure for 24 hours at 68° F (20° C) before placing the snowmobile back into service.

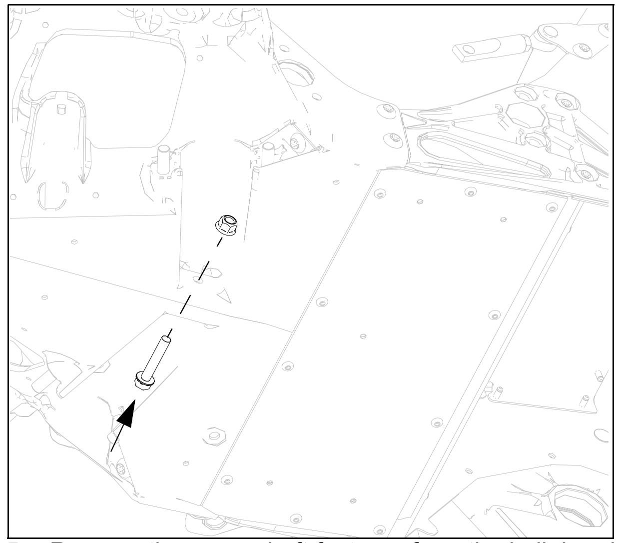
Left Bulkhead Clip Removal

1. Remove the following components:
   - Right/left engine compartment door
   - Hood
   - Nosepan/bumper
   - Exhaust pipe/silencer
   - Oil tank/clutch cover assembly
   - Airbox assembly
   - Engine assembly
   - Left-side front engine mount
   - Bulkhead floor plate
   - Left side front suspension components
   - Lower steering arm
   - Fuel tank (Remove fuel hoses and gasoline from tank)
2. Drill out the rivets securing the left fender to the bulkhead and chassis.
3. Remove the five fasteners and nuts (including the two engine mount fasteners/nuts) securing the bulkhead clip to the left side engine side support brace.



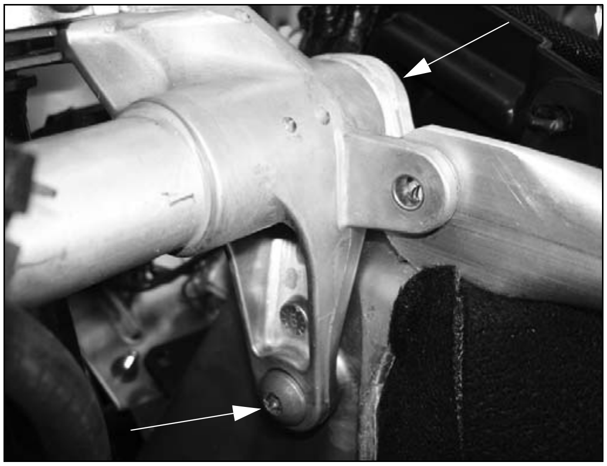
4. Remove the bulkhead clip fasteners/nuts.





5. Remove the cross shaft fastener from the bulk head clip.

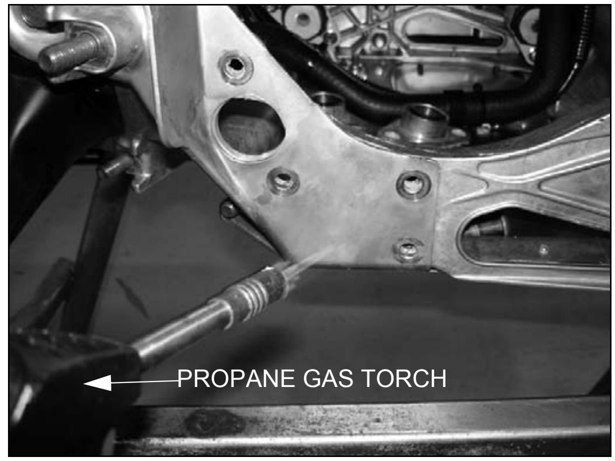
6. Remove the screws securing the over structure to the bulk head clip.



7. Remove the tie rod boot. Remove the lower steering shaft nut.

8. When all of the noted fasteners and nuts are removed, the next step is to heat where the bulkhead clip mates with the engine side support brace.

9. Wearing heat resistant gloves, use a propane gas torch to heat the adhesive between the two components.
   Apply torch until adhesive begins to crackle. During this time, the adhesive may smoke and bubble.
   Continue heating the area until the components can be separated.

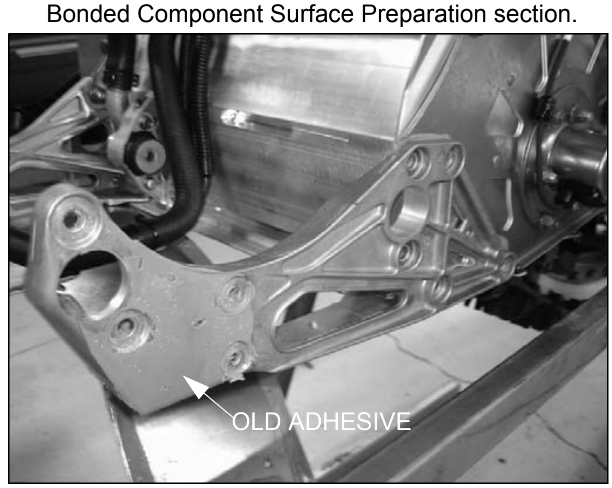


CAUTION

Keep flame away from flammable materials. Use torch in well-ventilated area.

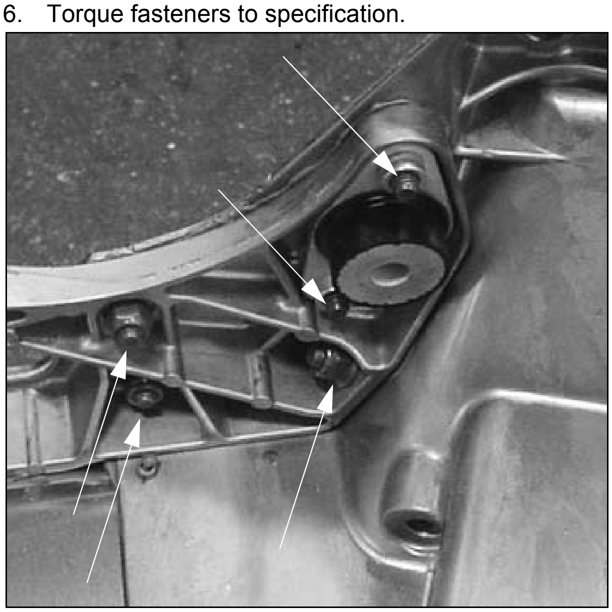
Only apply heat to area that requires adhesive bond separation. Do not apply heat to areas of adhesive where bond line separation is not needed. Doing so will require removing the part, removing adhesive, and then re-applying new adhesive.

10. Once the adhesive bond is broken, remove the left-side bulkhead clip from the chassis. Note the old (residual) adhesive. If the component is to be re-used, the adhesive must be completely removed. See Bonded Component Surface Preparation section.



Left Bulkhead Clip Installation

1. Verify the bulkhead clip and engine side support brace are thoroughly cleaned and all residual adhesive is removed from both parts.
2. Gather together the three T40 fasteners and nuts, and two T40 engine mount screws that secure the bulkhead clip to the engine side support brace.
3. The next assembly step is applying the adhesive. Thoroughly read and understand the Adhesive Applicator Tool and Adhesive Application sections before proceeding.
4. Apply the adhesive to the front, left engine side support brace as outlined in the Adhesive Application section.
5. Install the bulkhead clip. Install and torque the T40 screws that attach the clip to the side support brace.
6. Torque fasteners to specification.



CAUTION

The fasteners must be torqued within the adhesive working time of 6 to 10 minutes.

= T

Bulkhead Clip-to-Side Brace Fasteners:
26 ft-lb (35 Nm)
Engine Mount Fasteners: 22 ft-lb(30 Nm)

7. Reinstall the bulkhead clip fasteners including lower heat exchanger mount screw/nut. Torque nuts to specification.

= T

Bulkhead Clip Fasteners:
26 ft-lb (35 Nm)

8. Reinstall the over structure-to-bulkhead screws. Torque screws to specification.

= T

Over Structure-to-Bulkhead Fasteners:
22 ft-lb (30 Nm)

9. Reinstall the cross shaft fastener. Torque to specification.

= T

Cross Shaft Fasteners: 35 ft-lb (47 Nm)

10. Reinstall the lower steering shaft nut. Torque nut to specification.

= T

Steering Shaft Nut: 22 ft-lb (30 Nm)

11. Reinstall the tie rod boot.
12. Reinstall the bulkhead floor plate.
13. Reinstall the left fender assembly using new rivets.
14. Reinstall the following components:

- Right/left engine compartment door
- Hood
- Exhaust pipe/silencer
- Oil tank/clutch cover assembly
- Airbox assembly
- Engine assembly
- Left side front suspension components

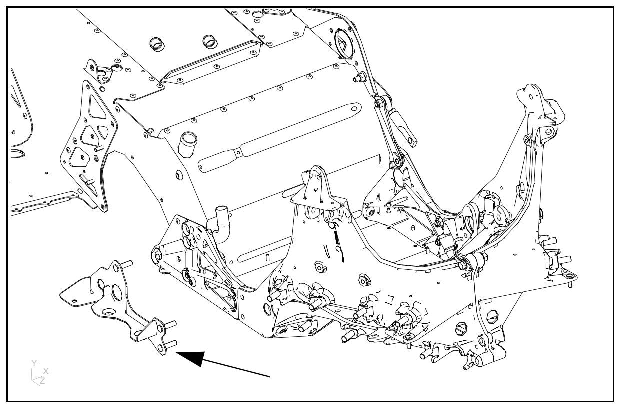
NOTE: Allow the adhesive to cure for 24 hours at 68° F (20° C) before placing the snowmobile back into service.

Right Bulkhead Clip Removal

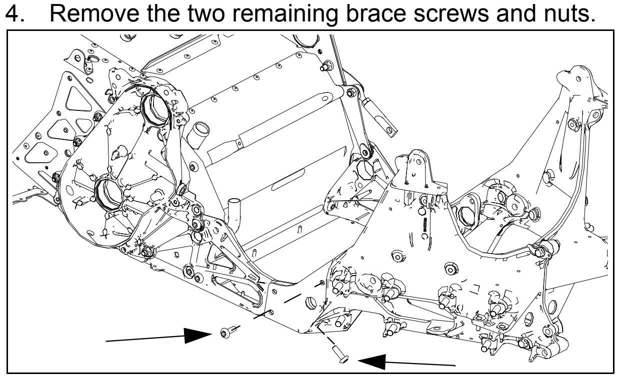
1. Remove the following components:

- Right/left engine compartment door
- Hood
- Nosepan/bumper
- Exhaust pipe/silencer
- Exhaust silencer bracket
- Oil tank/clutch cover assembly
- Airbox assembly
- Engine assembly
- Bulkhead floor plate
- Right side front suspension components
- Fuel tank (Remove fuel hoses and gasoline from tank)

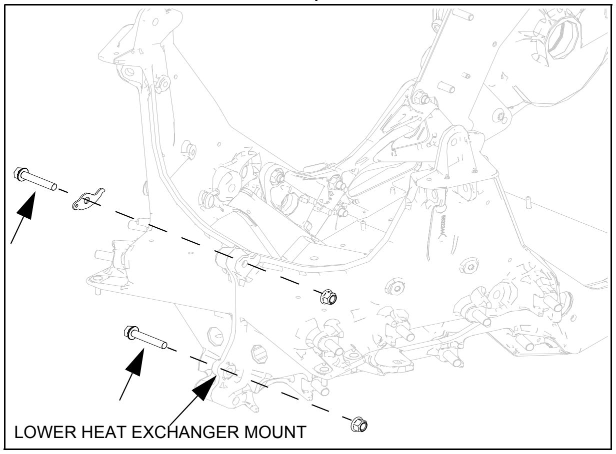
2. Drill out the rivets securing the right fender to the bulkhead and chassis.
3. Remove the exhaust silencer bracket.

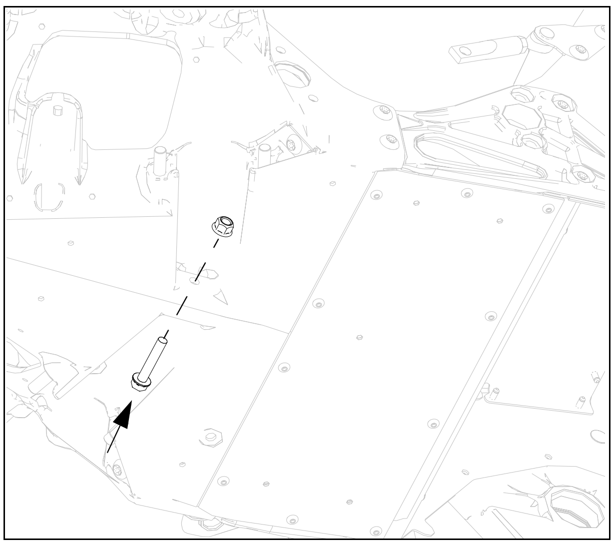


4. Remove the two remaining brace screws and nuts.

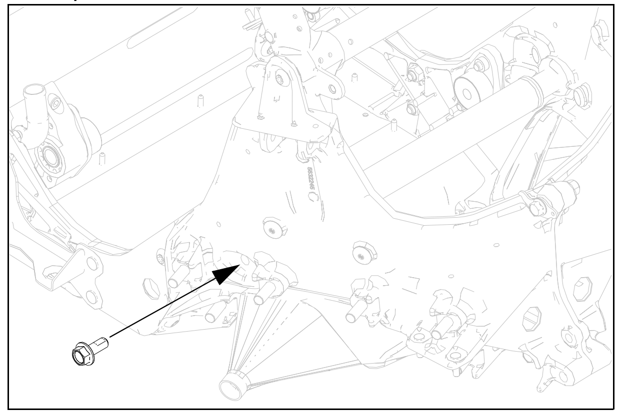


5. Remove the bulkhead clip fasteners/nuts.

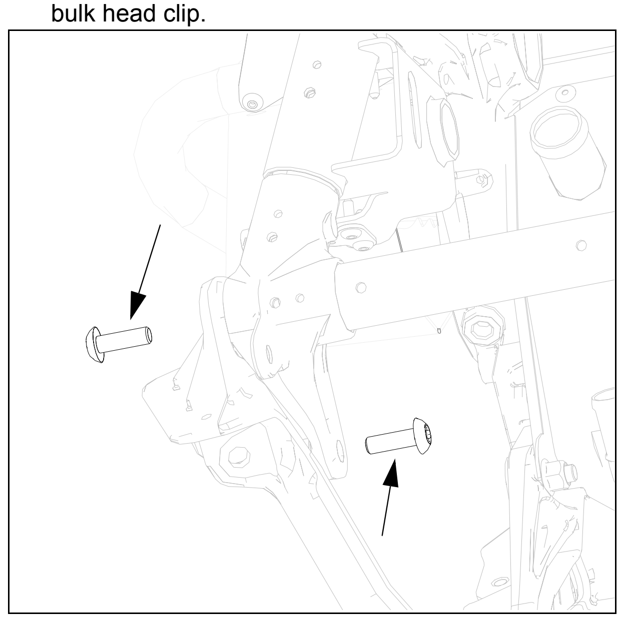




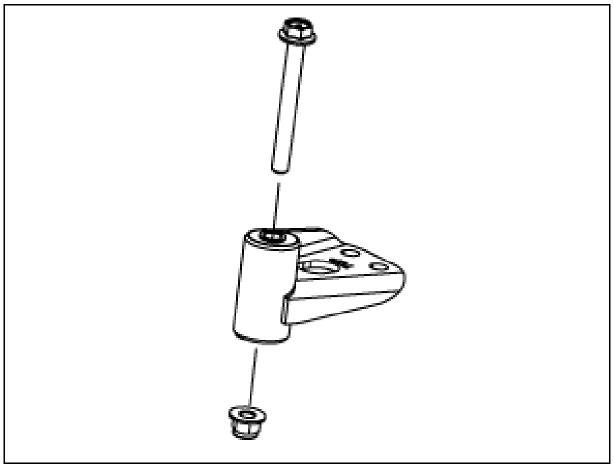
6. Remove the cross shaft fastener from the bulk head clip.



7. Remove the screws securing the over structure to the bulk head clip.

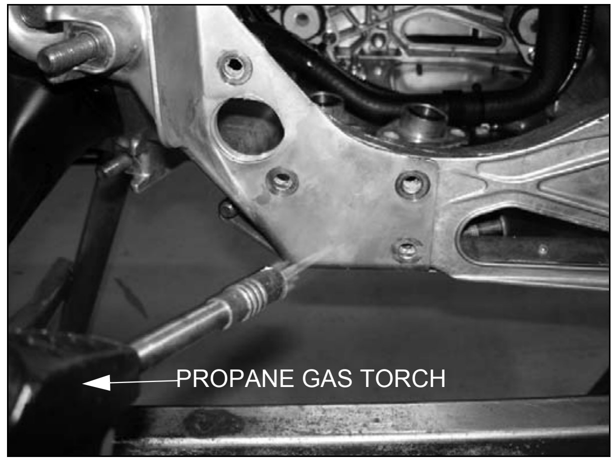


8. Remove the tie rod boot. Remove the idler arm bolt and nut.



9. When all of the noted fasteners and nuts are removed, the next step is to heat where the bulkhead clip mates with the engine side support brace.
10. Wearing heat resistant gloves, use a propane gas torch to heat the adhesive between the two components.
    Apply torch until adhesive begins to crackle. During this time, the adhesive may smoke and bubble.
    Continue heating the area until the components can be separated.

NOTE: Left side shown.

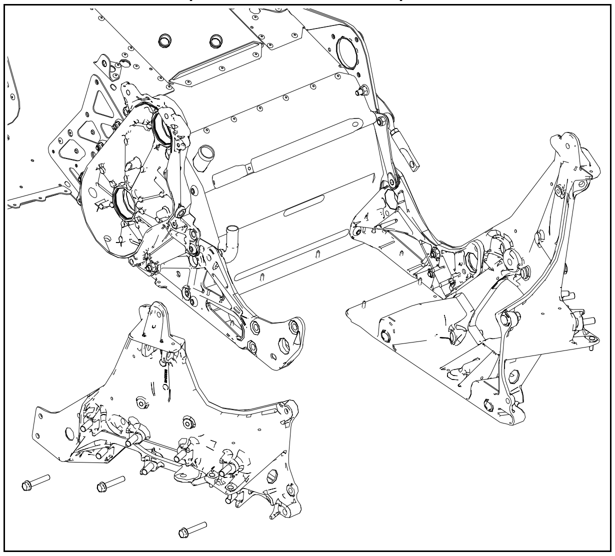


CAUTION

Keep flame away from flammable materials. Use torch in well-ventilated area.

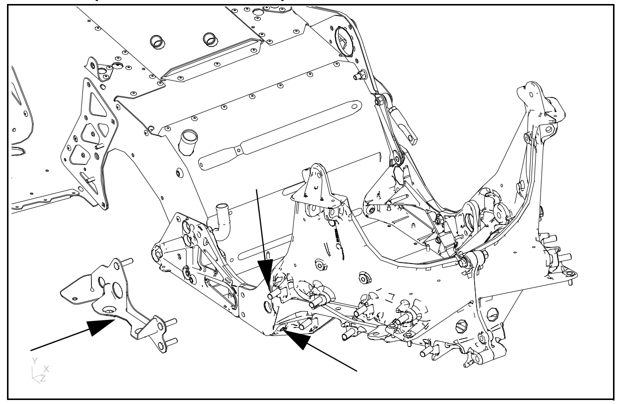
Only apply heat to area that requires adhesive bond separation. Do not apply heat to areas of adhesive where bond line separation is not needed. Doing so will require removing the part, removing adhesive, and then re-applying new adhesive.

11. Once the adhesive bond is broken, remove the right-side bulkhead clip from the chassis. Note the old (residual) adhesive. If the component is to be re-used, the adhesive must be completely removed. See Bonded Component Surface Preparation section.



Right Bulkhead Clip Installation

1. Verify the bulkhead clip and engine side support brace are thoroughly cleaned and all residual adhesive is removed from both parts.
2. Gather together the two T40 fasteners and nuts, and the exhaust bracket screw and nuts that secure the bulkhead clip to the side brace.
3. The next assembly step is applying the adhesive. Thoroughly read and understand the Adhesive Applicator Tool and Adhesive Application sections before proceeding.
4. Apply the adhesive to the front, right side brace as outlined in the Adhesive Application section.
5. Install the bulkhead clip. Install and torque the T40 screws that attach the clip to the side support brace, and the screw and three nuts that attach the exhaust silencer bracket to the brace.
6. Torque fasteners to specification.



CAUTION

The fasteners must be torqued within the adhesive working time of 6 to 10 minutes.

= T

Bulkhead Clip-to-Side Brace Fasteners:
Exhaust Bracket Fasteners
26 ft-lb (35 Nm)

7. Reinstall the bulkhead clip fasteners including lower heat exchanger mount screw/nut. Torque nuts to specification.

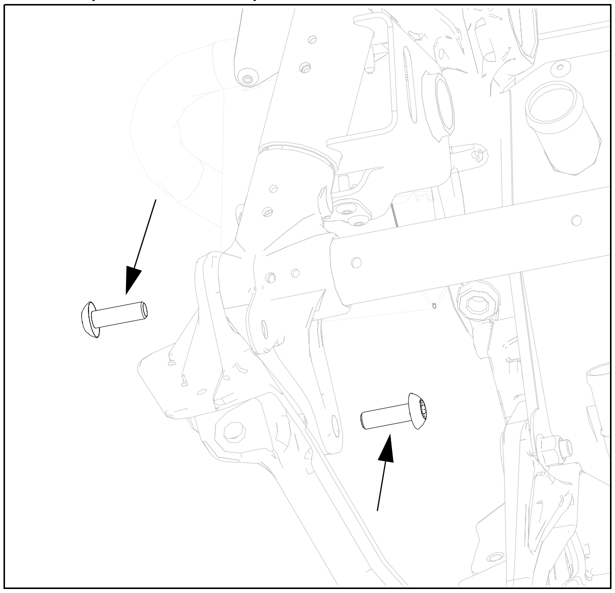
= T

Bulkhead Clip Fasteners:
26 ft-lb (35 Nm)

8. Reinstall the over structure-to-bulkhead screws.

9

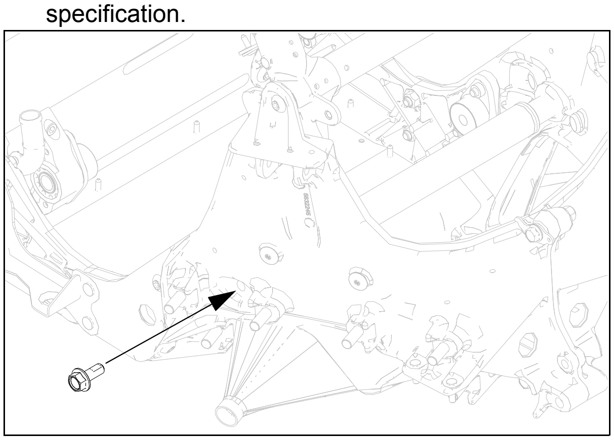
Torque screws to specification.



= T

Over Structure-to-Bulkhead Fasteners: 22 ft-lb (30 Nm)

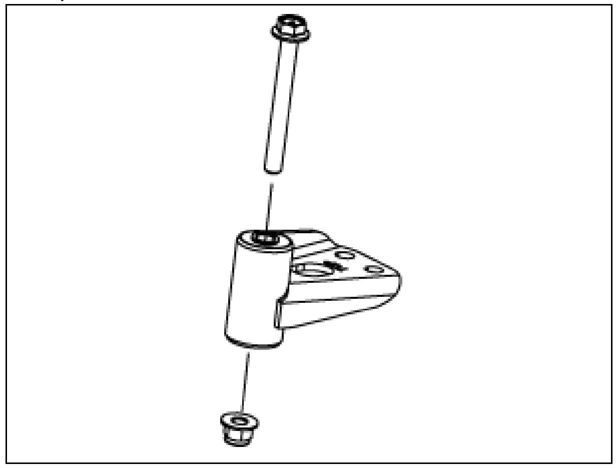
9. Reinstall the cross shaft fastener. Torque to specification.



= T

Cross Shaft Fasteners: 35 ft-lb (47 Nm)

10. Reinstall the idler arm bolt and nut. Torque nut to specification.



= T

Idler Arm Nut: 37 ft-lb (50 Nm)

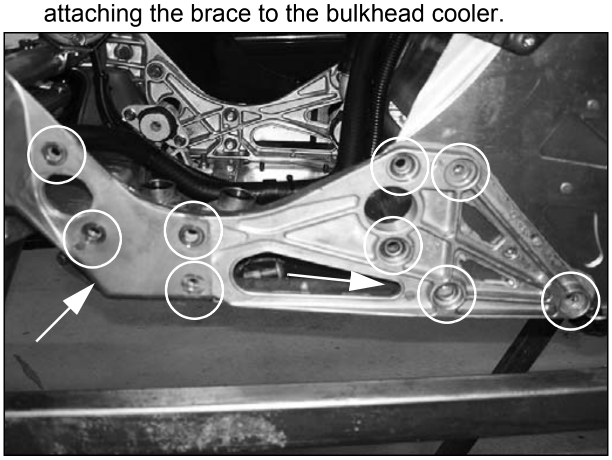
11. Reinstall the tie rod boot.
12. Reinstall the bulkhead floor plate.
13. Reinstall the right fender assembly using new rivets.
14. Reinstall the following components:

- Right/left engine compartment door
- Hood
- Exhaust pipe/silencer
- Oil tank/clutch cover assembly
- Airbox assembly
- Engine assembly
- Right side front suspension components

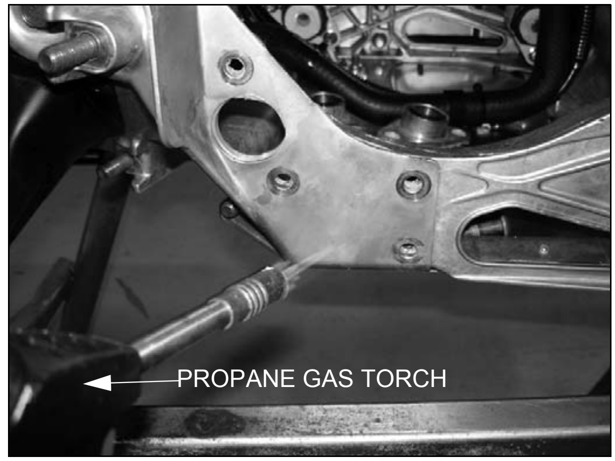
NOTE: Allow the adhesive to cure for 24 hours at 68° F (20° C) before placing the snowmobile back into service.

Left Support Brace Removal

1. Remove the following components:
   - Right/left engine compartment door
   - Hood
   - Exhaust pipe/silencer
   - Oil tank/clutch cover assembly
   - Driven clutch
   - Airbox assembly
   - Engine assembly
   - Left-side front/rear engine mount
   - Bulkhead floor plate
   - Fuel tank (Remove fuel hoses and gasoline from tank)
2. Drill out the rivets securing the left fender to the bulkhead and chassis.
3. Remove the three screws and nuts and seven screws securing the bulkhead clip to the left side engine side support brace.
   Note the screw located on the inside of the brace attaching the brace to the bulkhead cooler.



4. When all of the noted fasteners, nuts, and screws are removed, the next step is to heat where the brace mounts to the tunnel and bulkhead clip.
5. Wearing heat resistant gloves, use a propane gas torch to heat the where the brace mounts to the tunnel and bulkhead clip.
   Apply torch until adhesive begins to crackle. During this time, the adhesive may smoke and bubble.
   Continue heating the area until the brace can be separated from the bulkhead and tunnel.



⚠ CAUTION

Keep flame away from flammable materials. Use torch in well-ventilated area.

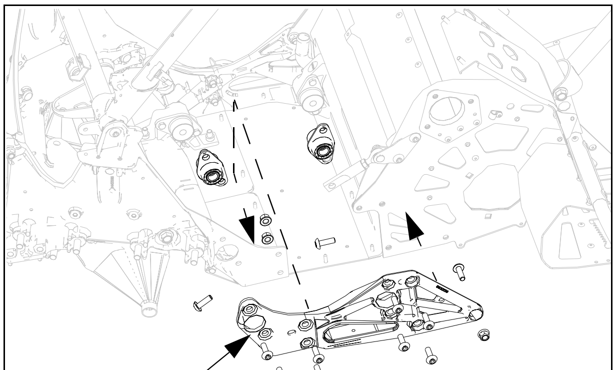
Only apply heat to area that requires adhesive bond separation. Do not apply heat to areas of adhesive where bond line separation is not needed. Doing so will require removing the part, removing adhesive, and then re-applying new adhesive.

6. Note the residual adhesive on the brace, bulkhead clip and tunnel. If the component is to be re-used, the adhesive must be completely removed. See Bonded Component Surface Preparation section.

9

Left Support Brace Installation

1. Verify the bulkhead clip, side brace, and tunnel are thoroughly cleaned and all residual adhesive is removed from the parts.
2. Gather together the T40 screws and nuts, and engine mounts.
3. The next assembly step is applying the adhesive. Thoroughly read and understand the Adhesive Applicator Tool and Adhesive Application sections before proceeding.
4. Apply the adhesive to the front and rear of the left side brace as outlined in the Adhesive Application section.
5. Install the brace. Torque fasteners to specification. Note the screw on the inside of the brace mounting the brace to the bulkhead cooler.



CAUTION

The fasteners must be torqued within the adhesive working time of 6 to 10 minutes.

= T

Bulkhead Clip-to-Brace Fasteners: 26 ft-lb (35 Nm)
Brace-to-Tunnel Fasteners: 26 ft-lb (35 Nm)
Brace Engine Mount Fasteners: 22 ft-lb(30 Nm)

6. Install a new bulkhead floor plate.
7. Reinstall the left side fender using new rivets.
8. Install the following components:

   - Right/left engine compartment door
   - Hood
   - Exhaust pipe/silencer
   - Oil tank/clutch cover assembly
   - Driven clutch
   - Airbox assembly
   - Engine assembly

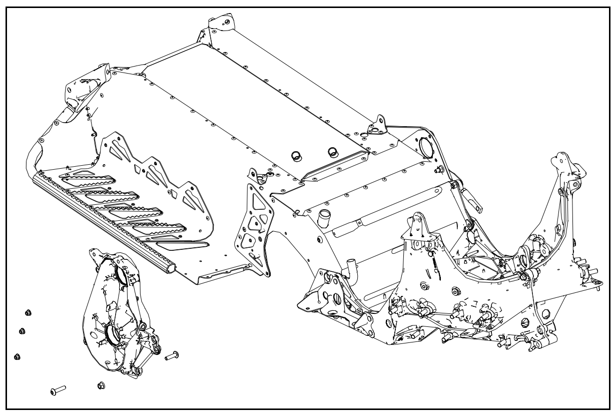
NOTE: Allow the adhesive to cure for 24 hours at 68° F (20° C) before placing the snowmobile back into service.

Right Support Brace Removal

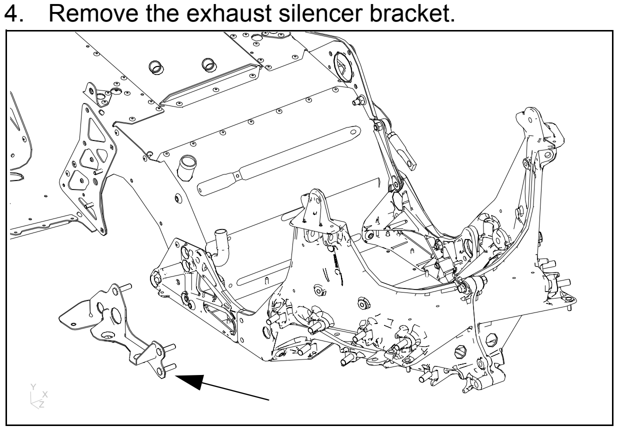
1. Remove the following components:

   - Right/left engine compartment door
   - Hood
   - Nosepan/bumper
   - Exhaust pipe/silencer
   - Exhaust silencer bracket
   - Chaincase components/chaincase
   - Oil tank/clutch cover assembly
   - Airbox assembly
   - Engine assembly
   - Bulkhead floor plate
   - Right side front suspension components
   - Fuel tank (remove fuel hoses and gasoline from tank)
2. Drill out the rivets securing the right fender to the bulkhead and chassis.
3. Disassemble the chaincase. Remove the chaincase from the tunnel and brace.

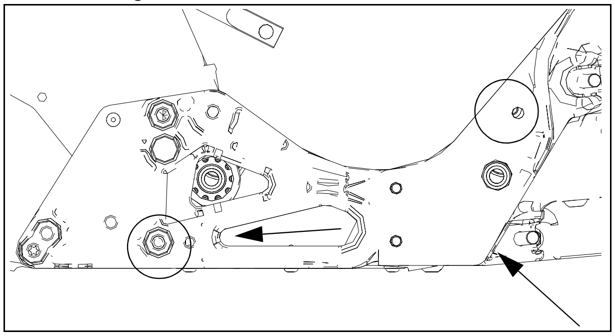
NOTE: 2012 models feature bonded chaincases.



4. Remove the exhaust silencer bracket.

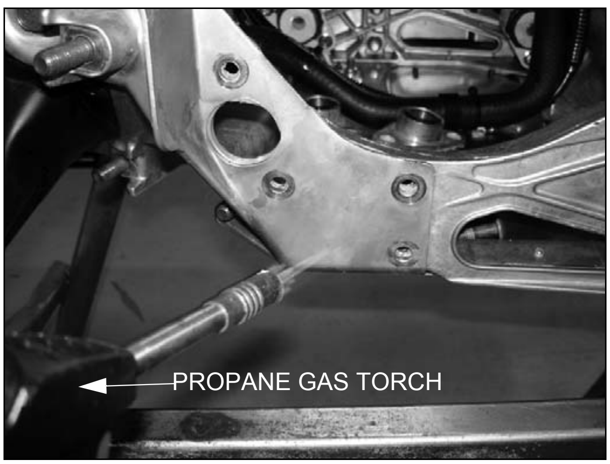


5. Remove the four remaining brace screws and nuts. Note the screw located on the inside of the brace attaching the brace to the bulkhead cooler.



6. When all of the noted fasteners, nuts, and screws are removed, the next step is to heat where the brace mounts to the tunnel and bulkhead clip.
7. Wearing heat resistant gloves, use a propane gas torch to heat the where the brace mounts to the tunnel and bulkhead clip.
   Apply torch until adhesive begins to crackle. During this time, the adhesive may smoke and bubble.
   Continue heating the area until the brace can be separated from the bulkhead and tunnel.

NOTE: Left side shown.

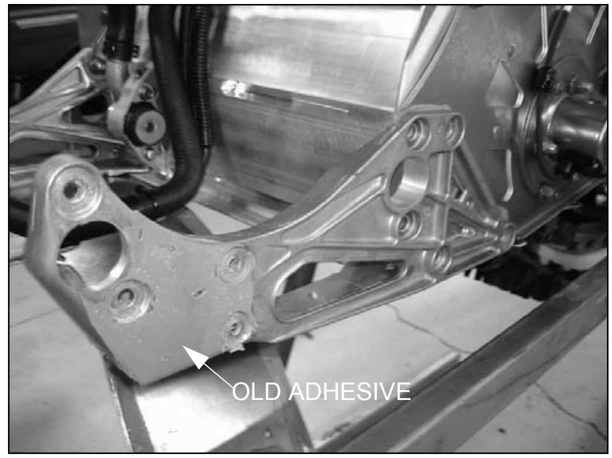


CAUTION

Keep flame away from flammable materials. Use torch in well-ventilated area.

Only apply heat to area that requires adhesive bond separation. Do not apply heat to areas of adhesive where bond line separation is not needed. Doing so will require removing the part, removing adhesive, and then re-applying new adhesive.

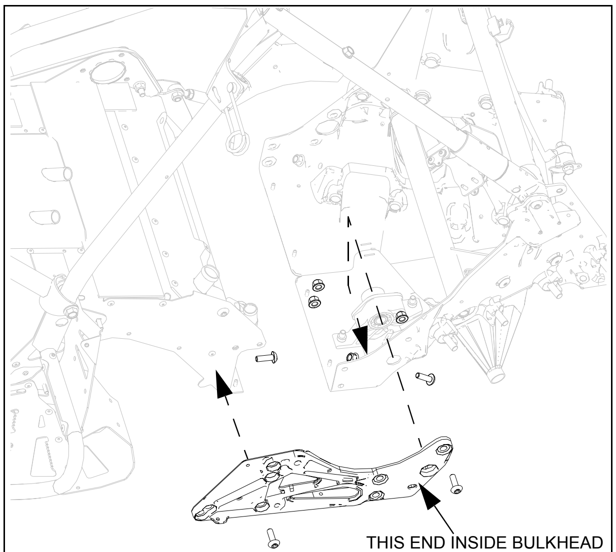
8. Note the residual adhesive on the brace, bulkhead clip and tunnel. If the component is to be re-used, the adhesive must be completely removed. See Bonded Component Surface Preparation section.

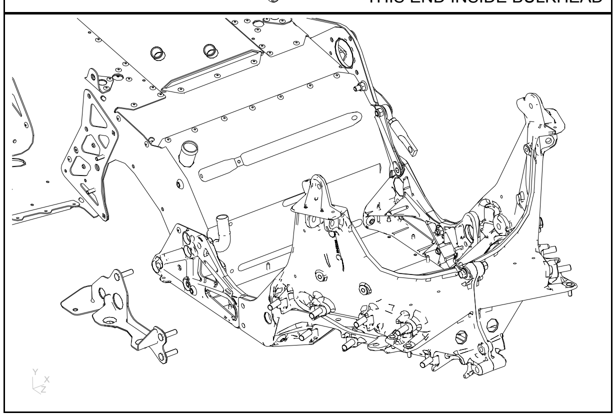


9

Right Support Brace Installation

1. Verify the bulkhead clip, side brace, and tunnel are thoroughly cleaned and all residual adhesive is removed from the parts.
2. Gather together the T40 screws and nuts, and exhaust silencer bracket and nuts.
3. The next assembly step is applying the adhesive. Thoroughly read and understand the Adhesive Applicator Tool and Adhesive Application sections before proceeding.
4. Apply the adhesive to the front and rear of the right side brace as outlined in the Adhesive Application section.
5. Install the brace. Torque fasteners to specification. Note the screw on the inside of the brace mounting the brace to the bulkhead cooler.





⚠ CAUTION

The fasteners must be torqued within the adhesive working time of 6 to 10 minutes.

= T

Bulkhead Clip-to-Brace Fasteners: 26 ft-lb (35 Nm)
Brace-to-Tunnel Fasteners: 26 ft-lb (35 Nm)
Exhaust Bracket Fasteners: 26 ft-lb (35 Nm)

6. Install a new bulkhead floor plate.
7. Reinstall the right side fender using new rivets.
8. Reinstall the following components:

- Right/left engine compartment door
- Hood
- Nosepan/bumper
- Exhaust pipe/silencer
- Exhaust silencer bracket
- Chaincase components/chaincase
- Oil tank/clutch cover assembly
- Airbox assembly
- Engine assembly
- Bulkhead floor plate
- Right side front suspension components

NOTE: Allow the adhesive to cure for 24 hours at 68° F (20° C) before placing the snowmobile back into service.

CHAPTER 10
Battery and Electrical

SPECIFICATIONS

Engine Models

Model Number	Engine
S4202-6044-OP6N S4215-6044-OO6N S4357-6044-OL6N	Domestic L/C 600cc DC-CFI-4
S4316-6044-OL6G S4452-6044-OL6G	Domestic L/C 600cc DC-CFI-2
S4139-8044-OO8G S4229-8044-OO8G S4092-8044-OO8G S4360-8044-OL8G S4361-8044-OL8G S4359-8044-OL8G	Domestic L/C 800cc DC-CFI-2

Spark Plugs

Model	Spark Plug	Gap (Inches / mm)
2010-2011 2012 DC-CFI-2	NGK BPR9ES NGK GR9A-EG	.027 / 0.70

Charging/Lighting System

Model	Stator Output	# of Pulses
ALL	400W	N/A

Ignition Timing

Model	Specification
600 DC-CFI-4	18° @ Idle (1700 RPM [0.95 VDC TPS]) and 120° Engine Coolant Temperature
600/800 DC-CFI-2	18° @ Idle (1700 RPM [0.94 VDC 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.

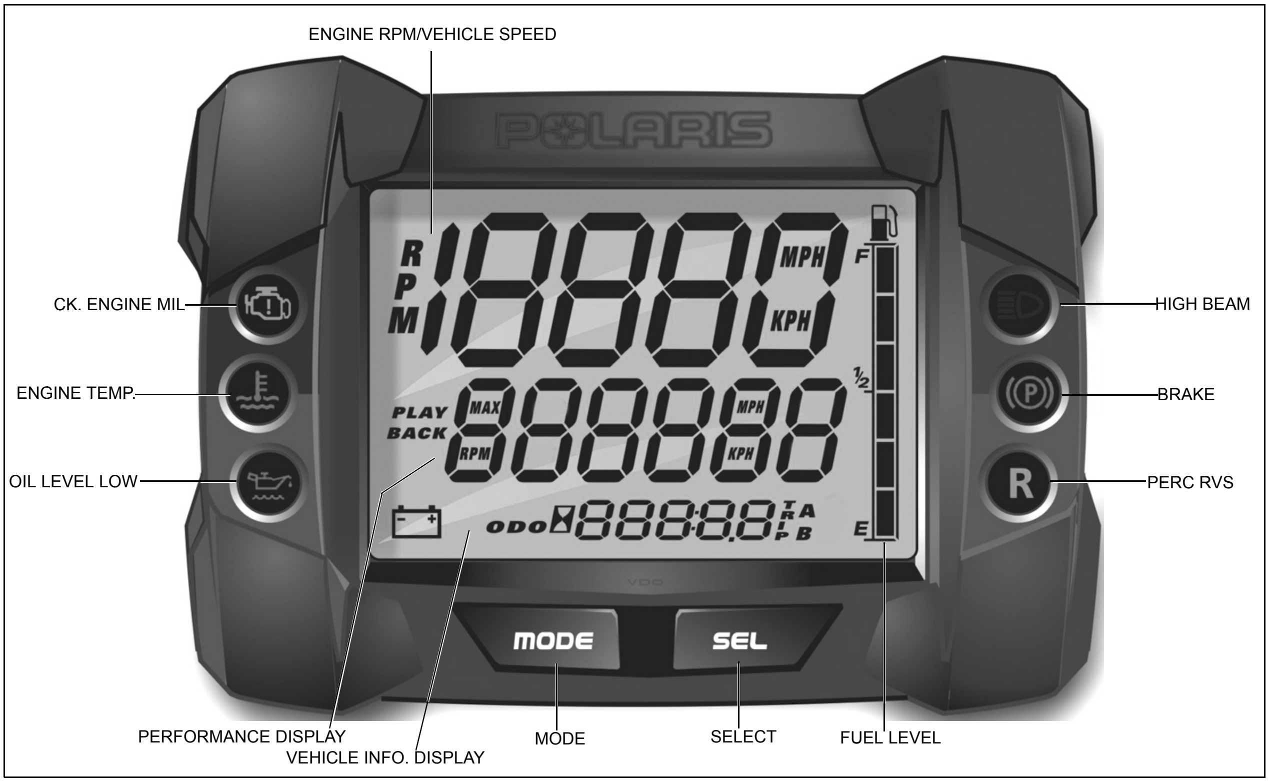
EYES: FLUSH WITH WATER FOR 15 MINUTES AND GET PROMPT MEDICAL ATTENTION.

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.

INSTRUMENT CLUSTER

Overview



Information regarding vehicle speed, engine RPM, engine overheat, PERC, oil level, brake, engine temperature (2011-current models) and check engine MIL (diagnostic trouble codes) is transmitted to the gauge from the ECU using CAN BUS communication technology.

Current fuel level is received from the fuel level sender located on the fuel pump. When the high beam headlights are illuminated, the gauge receives a signal from the YEL/ RED high beam circuit.

The MODE and SEL buttons perform the same functions as the LH control MODE/SET toggle button.

In addition to standard engine and vehicle information, the instrument cluster can playback up to three minutes of historical engine performance, and vehicle speed information and display diagnostic trouble codes when the check engine MIL is illuminated.

The instrument cluster is powered by the RED/WHT chassis power 12 VDC circuit.

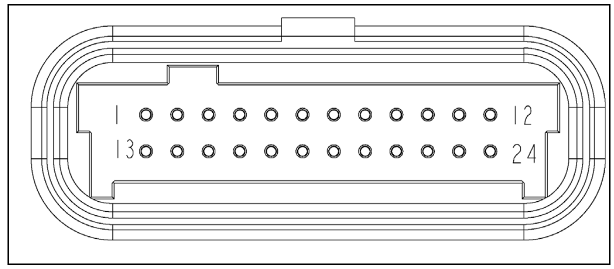
Rider Information Display

The rider information display is located in the instrument cluster. All segments will illuminate for approximately one second at start-up.

NOTE: If the instrument cluster fails to illuminate, an over-voltage condition may have occurred forcing the instrument cluster to power down.

1. **RPM / Vehicle Speed Display** - LCD display of either engine RPM or vehicle speed in MPH or km/h.
2. **MPH / km/h Display** - MPH is displayed when the instrument cluster is in the “Standard” mode. Km/h is displayed when the instrument cluster is in the “Metric” mode.
3. **Performance Information Area -** Engine RPM or Vehicle Speed (whichever is not displayed in top section of display) / MAX RPM / MAX Ground Speed and engine temperature (2011 models) are shown in the middle of the screen. The performance information area also displays “Play Back” when the play back function is enabled.
4. **Vehicle Information Area -** Trip meters A and B / Odometer / Service Interval Hours / Throttle Opening (TCS). TCS is only available during playback mode.
5. **Fuel Level Indicator** - Six segment LCD bar graph indicating current fuel level. All segments will flash when the last segment is cleared indicating a low fuel warning.
6. **Check Engine MIL** - Illuminated when the ECU has detected a Diagnostic Trouble Code (DTC) within the engine management system. Icon will flash when DTC display mode is active.
7. **Engine Temperature Indicator** - LED icon will illuminate when the ECU determines the engine is overheating. The icon will flash to indicate the engine is overheating. The icon will stay lit and not flash if a severe overheating condition exists.
8. **Low Oil Level Indicator** - Icon will illuminate when the oil level in the oil tank becomes too low. Add oil at the next fuel stop.
9. **High Beam Indicator** - LED will illuminate when the high beam headlamps are active.
10. **Parking Brake Indicator** - Icon will illuminate whenever the brake lever is pulled or when the parking brake is engaged.
11. **Reverse Indicator** - Icon will illuminate and flash whenever PERC reverse mode button is pushed on the LH control.

Instrument Cluster Pinouts



Connector Pinouts

FUNCTION	PIN
DC Gauge Voltage (VDC) - RED/WHT	1
Ground - BRN/WHT	2
DC Gauge Voltage (VDC) - RED/WHT	3
CAN 1 High - YELLOW	4
CAN 1 Low - DK GREEN	5
LH Mode Switch - WHT/RED	10
LH Set Switch - WHT/BLK	11
High Beam Signal - YEL/RED	20
Fuel Level Sensor Signal - VIOLET/WHT	23
System Ground - BRN/WHT	24

NOTE: CAN wires are twisted together and must remain twisted to prevent interference.

Engine RPM/Vehicle Speed Display

The top section of the display will show either engine RPM or vehicle speed. If engine RPM is displayed at the top, then vehicle speed will be displayed in the performance information area and vice-versa. To change the top section display, follow these steps:

1. The engine RPM or vehicle speed must be displayed in the performance information area. If neither are displayed, press and release the MODE button on the gauge or LH control until engine RPM or vehicle speed is displayed.
2. Press and hold the MODE button on the instrument cluster or LH control for 3 seconds to switch between the two displays.

Performance Information Area

The performance information area (middle) of the display screen is dedicated to displaying:

- Engine RPM or vehicle speed (whichever is not displayed at the top of the screen)
- Maximum ground speed
- Maximum engine RPM
- Engine temperature (2011-current models only)

Press and release the MODE button on the instrument cluster or LH control to toggle between the different displays.

Vehicle Information Area

The bottom of the instrument cluster screen is dedicated to displaying the following information:

- Odometer
- Trip A
- Trip B
- Engine hours

Press and release the SEL button on the instrument cluster or SET button on the LH control to toggle between the different displays.

To reset the Trip A and Trip B displays, press and hold the SEL button on the instrument cluster or SET button on the LH control for 3 seconds when the desired trip meter is displayed on the screen. The counter will reset to 0.

NOTE: Engine hours and odometer cannot be reset.

Changing Units

The instrument cluster will display either standard or metric units. Change between the two by following these steps:

1. Press and release the SEL button on the instrument cluster or the SET button on the LH control until the ODOMETER is displayed on the screen.
2. Once the ODOMETER is displayed, press and hold either the SEL button or SET button for 3 seconds until the units change.

Diagnostic Display

The instrument cluster can display diagnostic trouble codes (DTCs) when, and only when, the check engine MIL is illuminated.

To display DTCs, follow these steps:

1. When an active DTC is realized, the check engine MIL will illuminate.

NOTE: The instrument cluster will display historic DTCs, but only during the same power cycle. All codes stored in the instrument cluster are lost when the instrument cluster is powered down.

2. Keep the engine running. Press and release the SEL button on the instrument cluster or the SET switch on the LH control until the diagnostics mode is activated. Once activated, the check engine MIL will begin flashing and “Err” will be displayed on the screen.
3. The diagnostics mode will display the SPN and FMI codes. A list of codes can be found in chapter four.
4. To check for multiple codes, press and hold the SEL button on the instrument cluster for 2 seconds until a new code is displayed. Repeat until no new codes are displayed.
5. To exit the diagnostics mode, either turn off the engine, or press and release the SEL button on the instrument cluster.

Playback Mode

The instrument cluster can be used as an engine RPM, vehicle speed, and TPS data recorder. Once enabled, the gauge can record up to three minutes of information.

To initiate RECORD:

1. Press and hold the MODE and SEL buttons on the instrument cluster for 3 seconds.
2. The PLAY BACK icon will begin flashing when record is activated.

To PLAY BACK:

1. Once the snowmobile has stopped and the engine RPM drops below clutch engagement speed, press and hold the MODE and SEL buttons on the instrument cluster to enter the play back mode.
2. To exit the play back mode, slightly tap the throttle lever.

SECURITY SYSTEM

Security System: Overview

An optional security feature is available on all 2012 Pro-Ride snowmobiles which is enabled by an authorized Polaris dealer using Digital Wrench™. The security feature allows the operator to lock the ECU to prevent unauthorized use. When security is locked the ECU will prevent clutch engagement by limiting engine speed to 3500 RPM.

NOTE: If the engine is running and security is locked, the ECU will shut the engine off when the engine temperature is above 120°F (49°C) for 60 seconds.

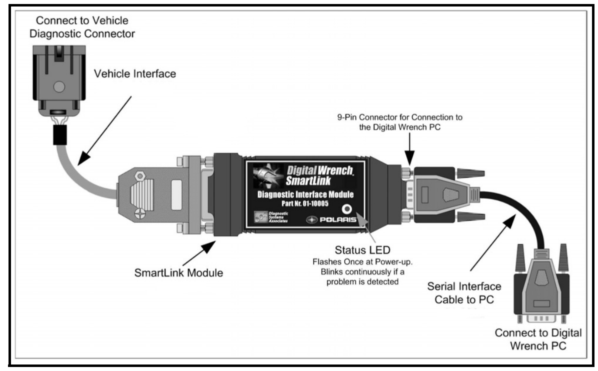
Security System: Digital Wrench™ Enable

Use Digital Wrench™ to enable the security function in the ECU. The following list of tools are required to enable the security function:

- PC/Laptop equipped with Digital Wrench™ and associated snowmobile SmartLink communication cables
- Fully Charged 12 VDC Battery
- Chassis Power-Up Harness: PS-47296-A
- Dual Power-Up Adapter: PS-50805
- Internet connection to Polaris reflash authorization site

Chassis Power-Up Harness and Dual PWR/Fuel Pump Prime Adapter

Digital Wrench SmartLink Module/Communication Cables



The security enable process has to be performed when:

- User wants security function turned on
- ECU has been reflashed with new reflash fileset
- Installing a new ECU

To enable the security function:

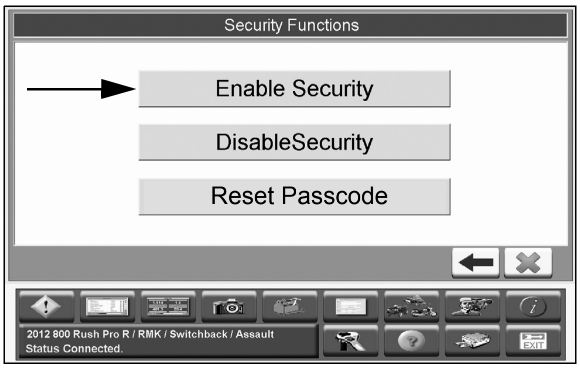
1. Open the left side engine compartment door and locate the Digital Wrench™ diagnostic plug, ECU power plug, and DC power plug.

2. Connect the dual power-up adapter to the chassis power-up harness. Attach one of the dual power-up connectors to the ECM PWR plug, and the other to the DC PWR plug. Connect the alligator clamps to a fully charged 12 VDC battery.

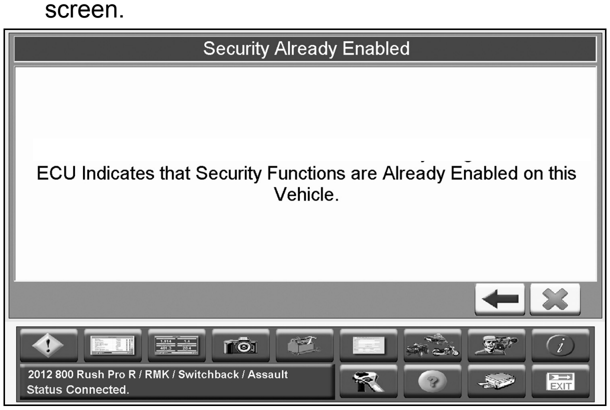
10

3. Start Digital Wrench™ on the PC/laptop. Navigate to the appropriate vehicle home page. Select OPTION 6 - SECURITY FUNCTIONS from the Special Tests (Red Toolbox) Menu.

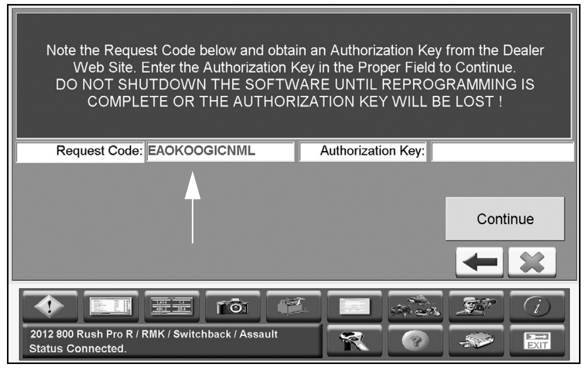
4. Select ENABLE SECURITY on the following screen.



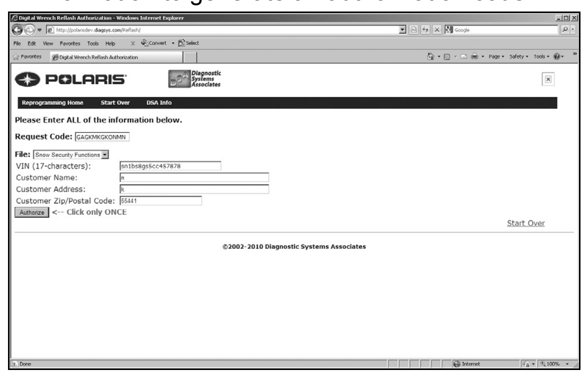
5. After selecting ENABLE SECURITY, Digital Wrench™ will scan the ECU to verify the process can be completed. If the security function is already enabled, Digital Wrench™ will display the following screen.



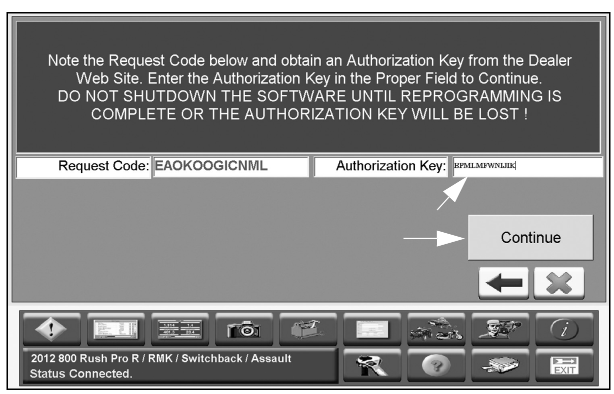
6. If the security function is not enabled, the following screen will appear. Highlight the entire REQUEST code and then copy it by pressing (CTRL+C).



7. Log on the reflash authorization site at www.polarisdealers.com. Paste the request code into the field using (CTRL+V). Enter the VIN and customer information to generate an authorization code.



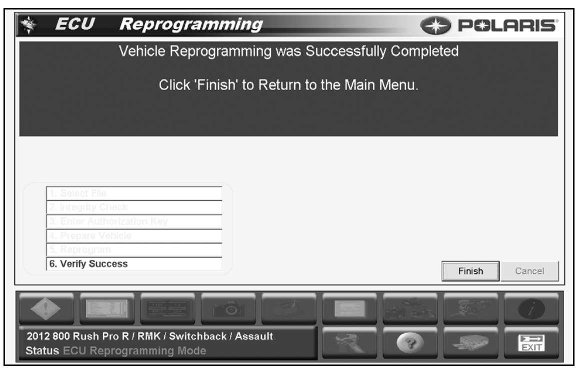
8. Copy the authorization key provided on the authorization site by highlighting the entire code and then pressing (CTRL+C). Go back to Digital Wrench™ and paste the Authorization key into the AUTHORIZATION KEY field by pressing (CTRL+V). Click CONTINUE.



9. Digital Wrench™ will begin to reflash the ECU. A timer and status indicator bar on the screen will indicate the process is working.

NOTE: Do not disturb the vehicle or computer until this process is complete!

10. After the reflash process is complete, cycle the power to the ECU by disconnecting and then re-connecting the ECU PWR 12 VDC power-up cable. Click the FINISH button.

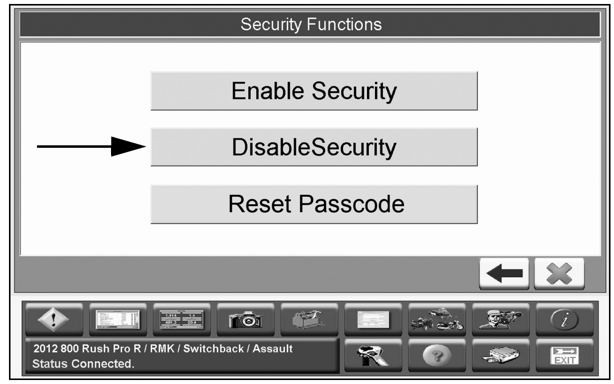


11. The following screen will appear. Click on the red X.

12. Determine if the Instrument Cluster Initialization procedure has to be completed by starting the engine, setting the parking brake, and then pressing and holding the MODE and SEL buttons on the instrument cluster.

Security System: Digital Wrench™ Disable

The security system can be disabled by turning off the function in the ECU. Select DISABLE SECURITY from the SECURITY FUNCTIONS screen.



After selecting Disable Security from the Security Functions Menu, follow the step-by-step procedure as outlined by Digital Wrench™. The process is the same as the Enable Procedure.

10

Security System: Digital Wrench™ Passcode Reset

If the three digit passcode is either lost or unknown, it can be reset to 000 using Digital Wrench™.

The ECU and instrument cluster must be powered at the same time. This can be done by either starting and running the engine in a well-ventilated area, or with the chassis power-up harness and dual power-up adapter.

Steps 1 and 2 can be eliminated by performing the procedure with the engine running.

When using the chassis power-up harness and dual power-up adapter to reset the password, follow these steps:

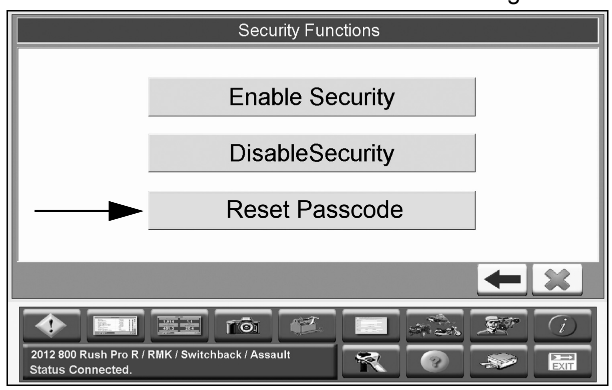
1. Open the left side engine compartment door and locate the Digital Wrench™ diagnostic plug, ECU power plug, and DC power plug.

2. Connect the dual power-up adapter to the chassis power-up harness. Attach one of the dual power-up connectors to the ECM PWR plug and the other connector to the DC PWR TEST plug. Connect the alligator clamps to a fully charged 12 VDC battery.

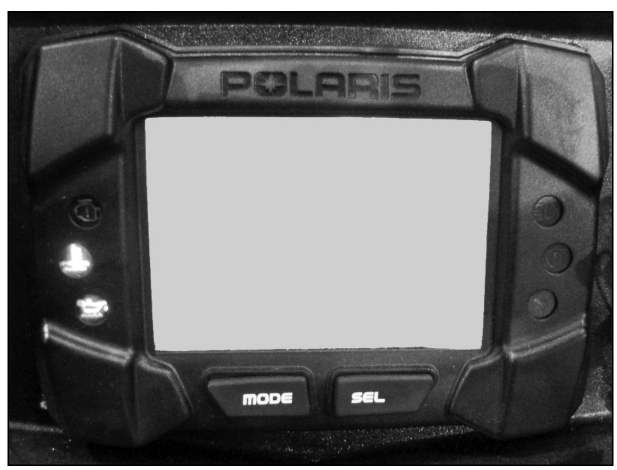
NOTE: The ECU and DC chassis power circuits (instrument cluster, LED brake, etc) are now powered. Confirm the instrument cluster is powered-up.

3. Start Digital Wrench™ on the PC/laptop. navigate to the appropriate vehicle home page. Select OPTION 5 - SECURITY FUNCTIONS from the Special Tests (Red Toolbox) Menu.

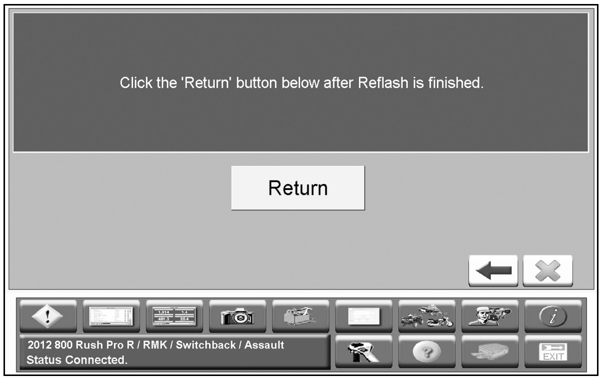
4. Select RESET PASSCODE on the following screen.



5. Digital Wrench™ will reset the instrument cluster passcode to 000. During the process the instrument cluster display, oil level, and engine temp. MIL LEDs will flash.



6. After the reset passcode process is complete, the following screen will be displayed. Click on the RETURN button to return to the main screen.



7. Cycle the power to the ECU and DC PWR test connectors to finish the procedure.

Security System: Instrument Cluster Initialization

Instrument cluster initialization is a one-time procedure that must be performed when the instrument cluster is linked for the first time to a security-enabled ECU.

The ECU and instrument cluster must be powered at the same time. This can be done by either starting and running the engine in a well-ventilated area, or with the chassis power-up harness and dual power-up adapter.

Skip steps 1 and 2 when performing the procedure with the engine running.

When using the chassis power-up harness and dual power-up adapter, follow these steps:

1. Open the left side engine compartment door and locate the Digital Wrench™ diagnostic plug, ECU power plug, and DC PWR test plug.

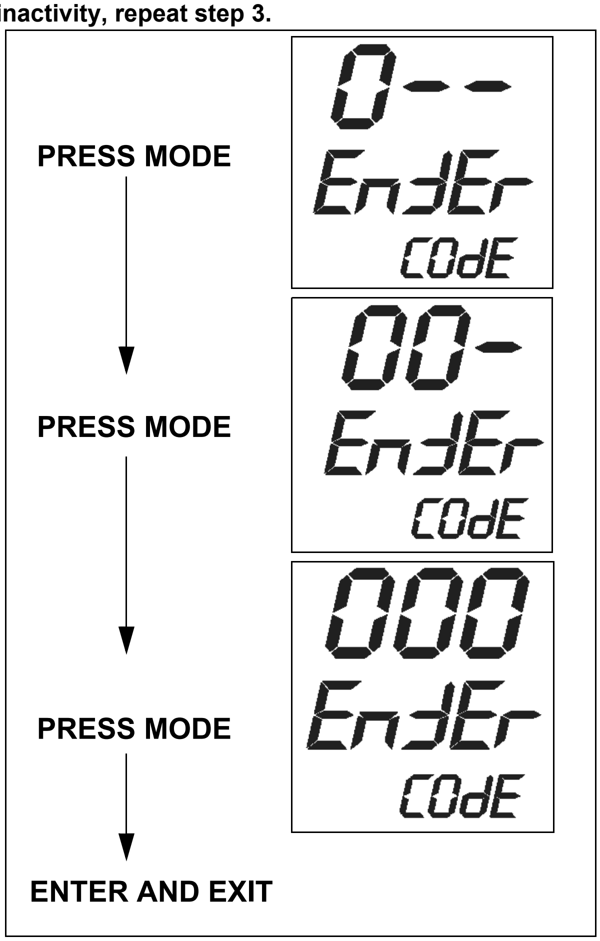
2. Connect the dual power-up adapter to the chassis power-up harness. Attach one of the dual power-up connectors to the ECM PWR plug and the other connector to the DC PWR TEST plug. Connect the alligator clamps to a fully charged 12 VDC battery.

NOTE: The ECU and DC chassis power circuits (instrument cluster, LED brake, etc) are now powered. Confirm the instrument cluster is powered-up.

3. **Hold the brake lever.** Press and hold the MODE and SEL buttons for 3 seconds, then release. SECURE OFF should be displayed. If not, repeat this step.

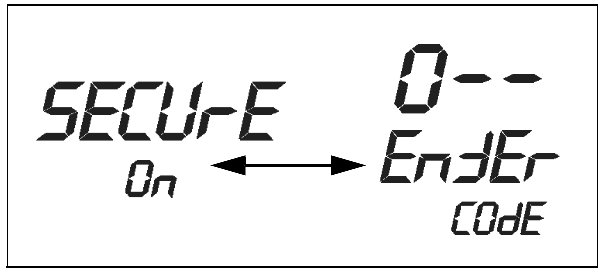
4. Wait until ENTER CODE displays, and then press and release MODE button 3 consecutive times to enter and accept the 000 base code.

NOTE: If the ENTER CODE screen exits due to inactivity, repeat step 3.

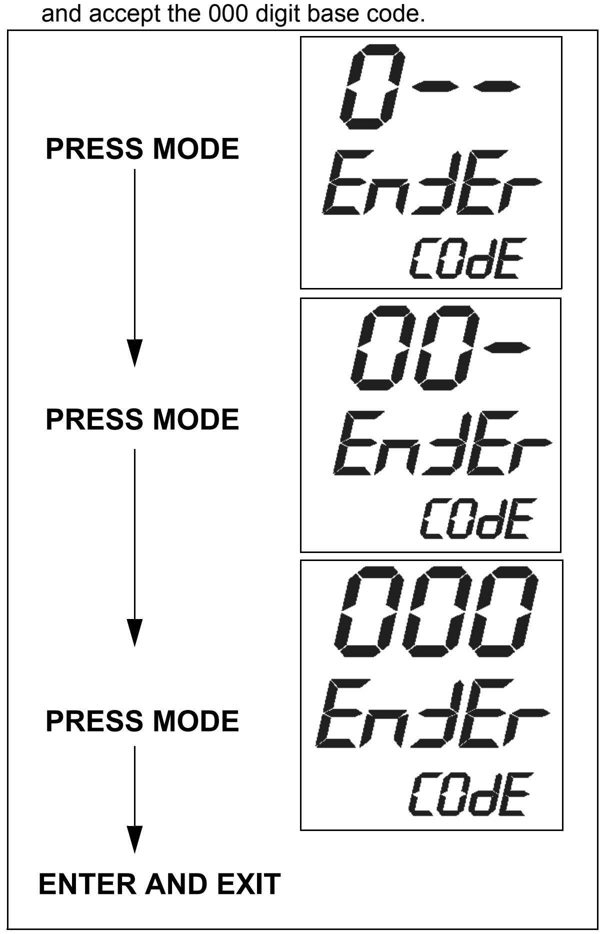


NOTE: Security is now LOCKED.

5. SECURE ON will be displayed. The display will alternate between SECURE ON and ENTER CODE.



6. Wait until ENTER CODE displays, then press and release MODE button 3 consecutive times to enter and accept the 000 digit base code.



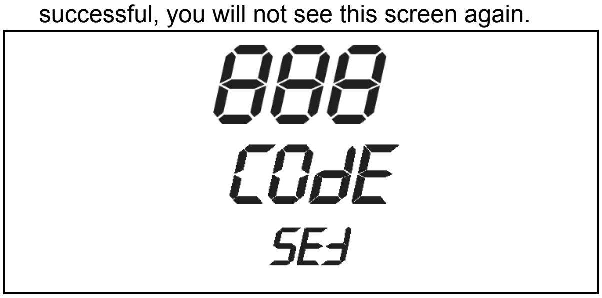
7. SECURE OFF displays if the system unlocks.

8. Immediately after locking and unlocking the security system, and while SECURE OFF is displayed, press and hold the MODE button to bring up the enter code screen.

9. When ENTER CODE displays, use the MODE and SEL buttons to select and accept each digit of a new personal security code.

   - **SEL = Advances up 1 digit (0 to 9 to 0)**
   - **MODE = Enter and move 1 digit to right**

10. After pressing MODE to accept the last digit, view the display screen. The new code and CODE SET will display if the system accepted the new code. If successful, you will not see this screen again.



NOTE: If steps 9-11 are not completed immediately after performing the initialization procedure, the security code will be 000. See Changing Security Code to enter a new passcode.

11. Record the new security code in a safe place (Owner's Manual or Customer RO) for future reference.

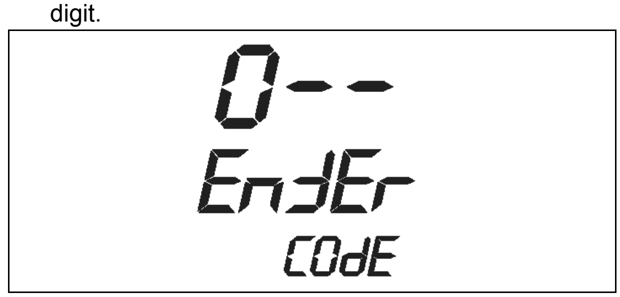
Security System: Locking

1. Start the engine in a well ventilated area.

2. **Hold the brake lever.** Press and hold the MODE and SEL buttons for 3 seconds, then release. SECURE OFF should be displayed. If not, repeat this step.

   - **SEL = Advances up 1 digit (0 to 9 to 0)**
   - **MODE = Enter and move 1 digit to right**

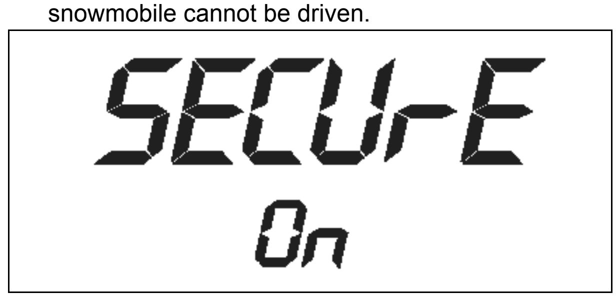
3. When ENTER CODE displays, press and release SEL to advance the digit. When the first digit of your security code is displayed, press and release the MODE button to accept the digit and move to the next digit.



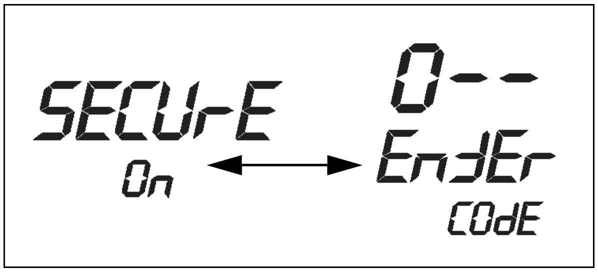
NOTE: If the ENTER CODE screen exits due to inactivity, repeat the locking procedure.

4. Continue to use MODE and SEL to select and accept the remaining two digits of the security code.

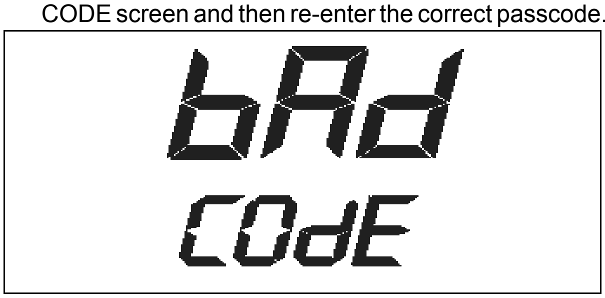
5. After pressing MODE to accept the last digit, view the display screen. SECURE ON displays if the system locks. Engine RPM speed is now limited and the snowmobile cannot be driven. 10



NOTE: When the engine is running and security is locked, the display will alternate between SECURE ON and ENTER CODE.



6. If an incorrect code is entered, BAD CODE will be displayed. Wait until the display returns to the ENTER CODE screen and then re-enter the correct passcode.



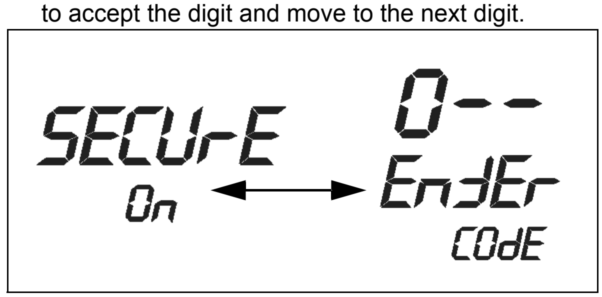
Security System: Unlocking

1. When the engine is running and security is locked, the display will alternate between SECURE ON and ENTER CODE.

NOTE: When the system is locked and the engine temperature is above 120°F (49°C), the correct pass code must be entered within 60 seconds or the engine will shut down.

- **SEL = Advances up 1 digit (0 to 9 to 0)**
- **MODE = Enter and move 1 digit to right**

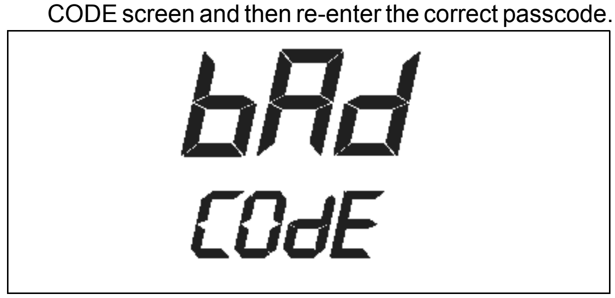
2. When ENTER CODE displays, press and release SEL to advance the digit. When the first digit of your security code is displayed, press and release MODE to accept the digit and move to the next digit.



3. Continue to use MODE and SEL to select and accept the remaining two digits of the code.

4. After pressing MODE to accept the last digit, view the display screen. SECURE OFF displays if the system unlocks.

5. If an incorrect code is entered, BAD CODE will be displayed. Wait until the display returns to the ENTER CODE screen and then re-enter the correct passcode.



Security System: Changing Passcode

To change the current security code to a new code, perform these steps:

NOTE: The instrument cluster illustrations on the following pages reference the 000 default security code. Use the owner's current security code.

1. Start the engine and lock the parking brake.
2. Lock and then unlock the security function on the instrument cluster using the existing passcode.
3. Immediately after unlocking security, press and hold the MODE button to display the ENTER CODE screen.
   - **SEL = Advances up 1 digit (0 to 9 to 0)**
   - **MODE = Enter and move 1 digit to right**
4. When ENTER CODE displays, use the MODE and SEL buttons to select and accept each digit of the new security code.
5. After pressing MODE to accept the third digit, the new code and CODE SET will display if the system accepted the new code. If successful, this screen will not be displayed again.

6. Record the new security code in a safe place (Owner's Manual or Customer RO) for future reference.

Security System: User Notes

- Security system activation requires an authorized Polaris dealer using Digital Wrench™ to turn on the function in the ECU.
- First time use requires an initialization procedure to turn on the security function in the instrument cluster.
- Holding the brake lever closed and pressing the MODE and SEL buttons for 3 seconds will bring up the security display on the instrument cluster.
- If the brake lever is not held while pressing the MODE and SEL buttons for 3 seconds, the instrument cluster will start the record/playback data logging function.
- Pressing the MODE button will accept the selected digit and move to the next digit. After entering the third digit, pressing MODE a fourth time will enter the code.
- Pressing the SEL button advances each digit up from 0 to 9 then back to 0.
- If the engine is running and security is locked, the ECU will shut the engine off when the engine temperature is above 120°F (49°C) for 60 seconds.
- The instrument cluster retains the last programmed security passcode. Disabling and enabling the security function in the ECU does not change the code in the insturment cluster. If the passcode is unkown or BAD CODE is displayed perform the Reset Passcode Procedure to reset the code back to 000.
- Reflashing the ECU using the Engine Controller Reprogramming function disables the security function. Perform the Security Enable procedure after reflashing the ECU.

MAINTENANCE-FREE BATTERY

Specifications

Battery PN 4012638

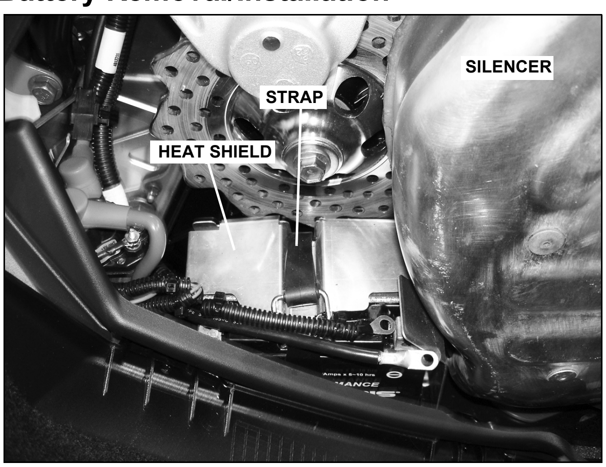
Battery Type	Yuasa - YTX20CH-BS
Nominal Capacity	12VDC / 18AH @ 10hr. rate.
Electrolyte Volume	28oz.
Specific Gravity	1.340
CCA @ 0F (-18C)	270 AMPS
Charging Current	1.8 AMPS (5-10 Hours)

Specifications

Battery PN 4013045

Battery Type	Yuasa - YTX20CH (Sealed)
Nominal Capacity	12VDC / 18AH @ 10hr. rate.
Electrolyte Volume	28oz.
Specific Gravity	1.340
CCA @ 0F (-18C)	270 AMPS
Charging Current	1.8 AMPS (5-10 Hours)

Battery Removal/Installation



1. Open the left and right side door panels. Remove the hood.
2. Remove the exhaust silencer.
3. Remove the battery heat shield.
4. Remove the rubber strap. Disconnect the RED(+) cable first, and then the BLACK(-) cable.
5. Installation is the reverse of removal. Install the BLACK(-) cable first, and then the RED(+) cable during installation.

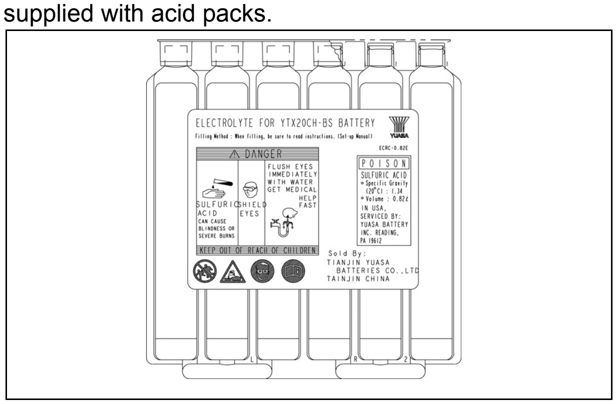
Battery Preparation

⚠ WARNING

WEAR PROTECTIVE GLOVES AND EYEGLASSES WHEN SERVICING THE BATTERY.

NOTE: Do not service the battery unless it will be put into regular service within 30 days.

Some original equipment and service batteries are supplied with acid packs.



1. To fill the dry battery, remove the vent cap from the battery and the sealing cap from the acid pack. Carefully tip the acid pack into the battery vent ports.
2. Set battery aside and allow it to cool and stabilize for at least 30 minutes. Reinstall the battery vent cap.

NOTE: This is the last time that electrolyte should be added.

3. 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).
4. Check specific gravity of each cell with a hydrometer to ensure each has a reading of 1.270 or higher.
5. Install vent cover.

NOTE: Once the vent cover is installed, the battery is sealed. Do not remove the cover.

Charging Procedure

If battery voltage is 12.6 VDC or less, the battery may need recharging. When using an automatic charger, refer to the charger manufacturer's instructions for recharging.

Do not exceed 10 amps when charging the battery.

NOTE: Charge the battery using an automatic charger that will not exceed 14.6 VDC. An automatic charger will signal when charging is complete.

Allow the battery to stand disconnected for several hours after being properly charged. If the voltage drops below 12.6 volts, charging was ineffective or the battery needs to be replaced.

WARNING

An overheated battery could explode, causing severe injury or death. Always watch charging times carefully. Stop charging if the battery becomes very warm to the touch. Allow it to cool before resuming charging.

Battery Charging Reference Table

State of Charge	Voltage (DC)	Action	Charge Time
100%	12.8 or more	None, check again in 3 months	None Required
75% - 100%	12.6 - 12.8	May need slight charge	3 - 6 hrs
50% - 75%	12.3 - 12.6	Needs Charge	5 - 11 hrs
25% - 50%	12.0 - 12.3	Needs Charge	At least 13 hrs
0% - 25%	12.0 or less	Needs Charge	At least 20 hrs

NOTE: Follow the charger instructions supplied by the manufacture regarding the order or connections, switch positions and when to connect the charger to an outlet.

Battery Testing

Whenever a service complaint is related to either the starting or charging systems, the battery should be checked first.

Following are two tests which can easily be made on a sealed Maintenance Free battery to determine its condition: OCV Test and a Load Test.

OCV - Open Circuit Voltage Test

Battery voltage should be checked with a digital multitester. Readings of 12.6 volts or less require further battery testing and charging. See the following chart and "Load Test".

NOTE: Maintenance Free batteries should be kept at a high state of charge during storage. If the battery is stored or used at a low state of charge, hard crystal sulfation will form on the plates, reducing the efficiency and service life of the battery.

NOTE: Use a volt/ohm meter to test battery voltage.

OPEN CIRCUIT VOLTAGE	
State of Charge	**Maintenance Free**
100%	12.8 V and up
75% Charged	12.6 V
50% Charged	12.3 V
25% Charged	12.0 V
0% Charged	11.8 V or less

Load Test

CAUTION

To prevent shock or component damage, remove spark plug high tension leads and connect securely to engine ground before proceeding.

A battery may indicate a full charge condition in the OCV test, but still may not have the storage capacity necessary to properly function in the electrical system. For this reason, a battery capacity or load test should be conducted whenever poor battery performance is encountered.

To perform this test, use a load testing device that has an adjustable load. Apply a load of three times the ampere-hour rating. At 14 seconds into the test, check battery voltage. A good 12V battery will have at least 10.5 volts. If the reading is low, charge the battery and retest.

Battery Conductance Analyzer

Conductance describes the ability of a battery to conduct current. A conductance tester functions by sending a low frequency AC signal through the battery and a portion of the current response is captured, from this output a conductance measurement is calculated. Conductance testing is more accurate than voltage, specific gravity, or load testing.

Authorized Polaris dealers/distributors are required to use the conductance analyzer when testing 12V Polaris batteries.

Polaris MDX-610P
SPX PN: PU-50296

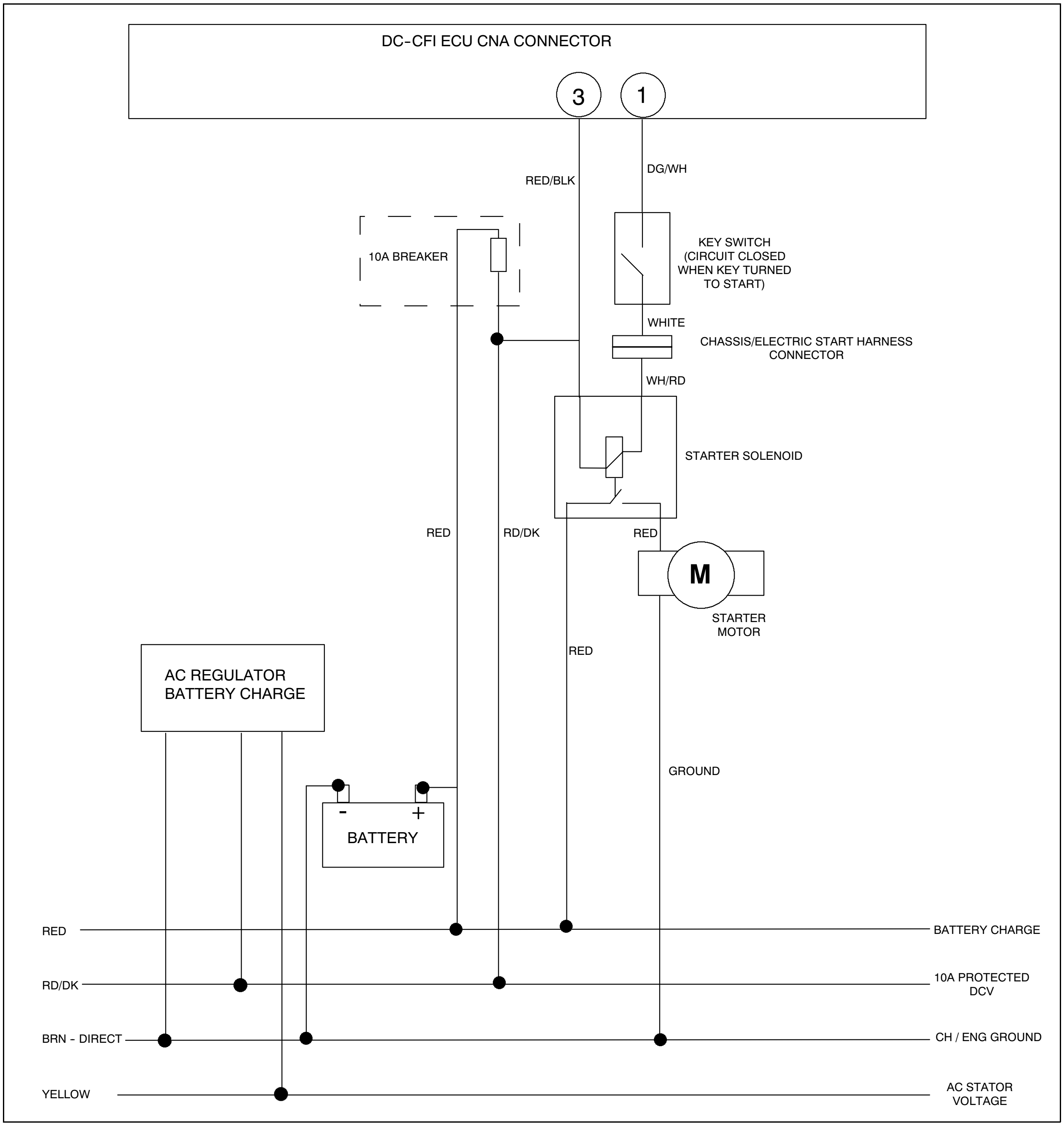
Battery Off Season Storage

Whenever the vehicle is not used for a period of three months or more, remove the battery from the vehicle, ensure that it's fully charged, and store it out of the sun in a cool, dry place. Check battery voltage each month during storage and recharge as needed to maintain a full charge.

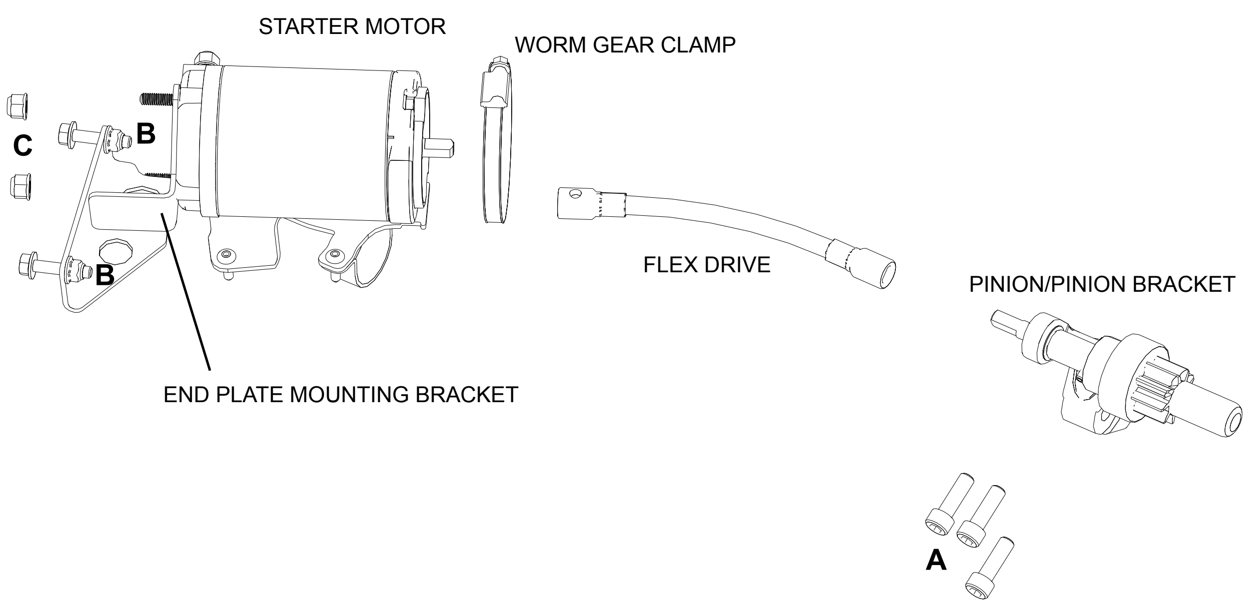
NOTE: Battery charge can be maintained by using a Polaris battery tender charger or by charging once a month to make up for normal self-discharge. Battery tenders can be left connected during the storage period, and will automatically charge the battery if the voltage drops below a pre-determined point.

ELECTRIC START

System Schematic



Starter Motor/Flex Drive Assembly



CAUTION

Disconnect battery before servicing starter motor components.
Always remove RED(+) battery cable first, and then BLACK(-) cable. Reverse order during battery installation.

= T

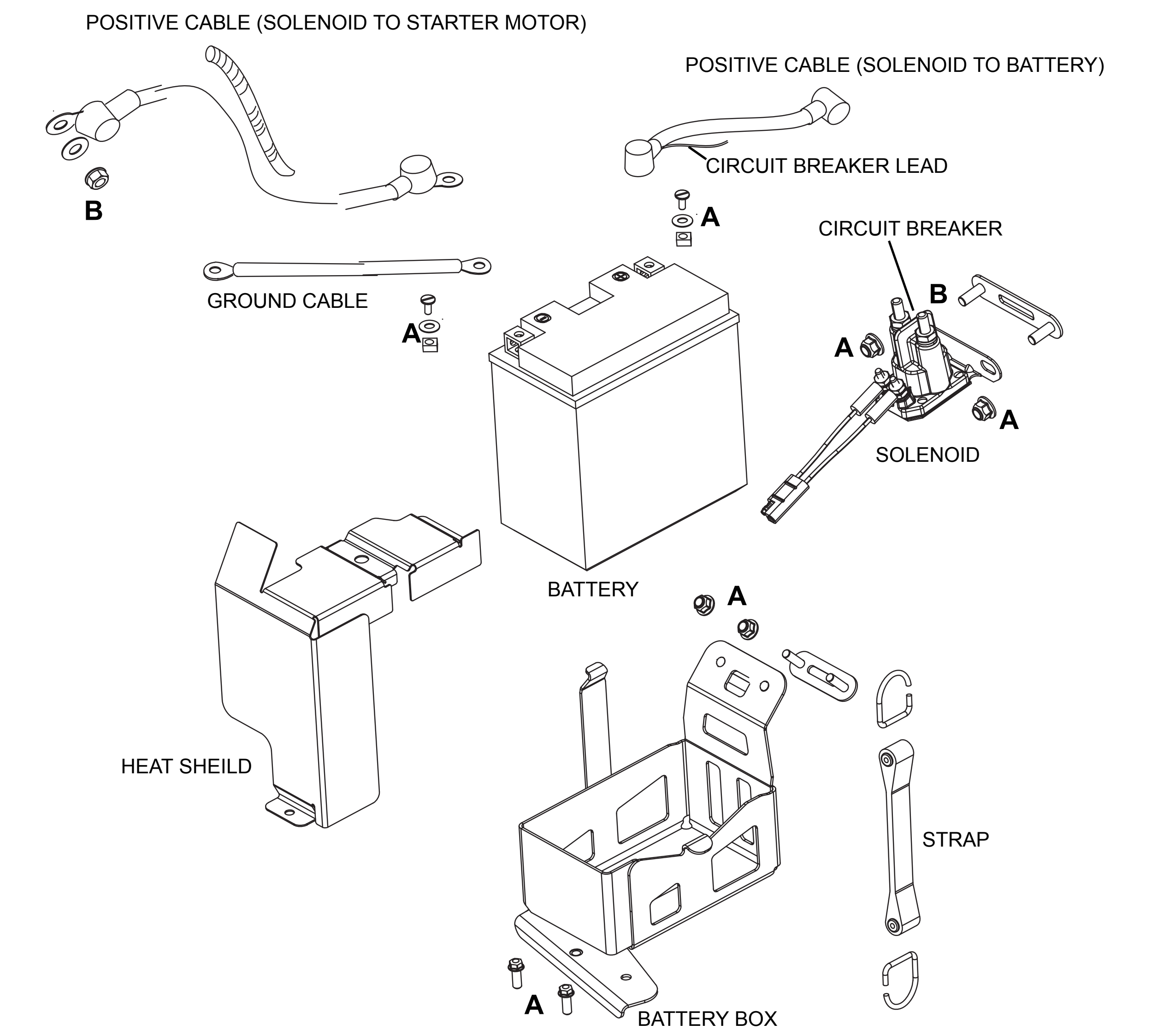
A = 22 ft-lb (30 Nm)
B = 7 ft-lb (10 Nm)
C = 8 ft-lb (11 Nm)

Starter Motor/Flex Drive Service

The starter motor, flex drive, and pinion gear can be serviced with the engine in the snowmobile.

1. Remove the exhaust pipe. If servicing the motor, remove the silencer.
2. When servicing the pinion gear, remove the y-pipe.
3. Using a ball-end allen wrench, remove the 3 screws attaching the pinion assembly to the engine.
4. To remove the starter motor, remove the gear clamp, and then the two-rear starter motor mount nuts.
5. During assembly, install the flex drive on to the pinion assembly. Install the three pinion assembly screws and torque to specification.
6. Loosely fit the gear clamp around the motor, and then install the flex drive on to the motor shaft.
7. Torque the rear nuts to specification.
8. Torque the gear clamp hand tight.
9. Reinstall the y-pipe. Torque fasteners to specification.
10. Reinstall the silencer and exhaust pipe.

Battery Box Assembly



CAUTION

Always disconnect RED(+) battery cable first, and then BLACK(-) cable. Reverse order during battery installation.

= T

A = 7 ft-lb (10 Nm)
B = 8 ft-lb (11 Nm)

10

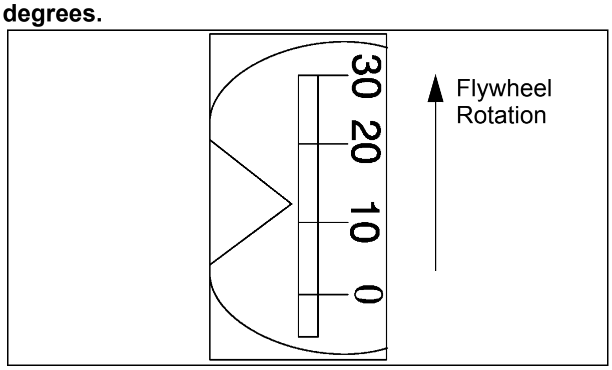
IGNITION TIMING

Timing Procedure

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 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.

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.

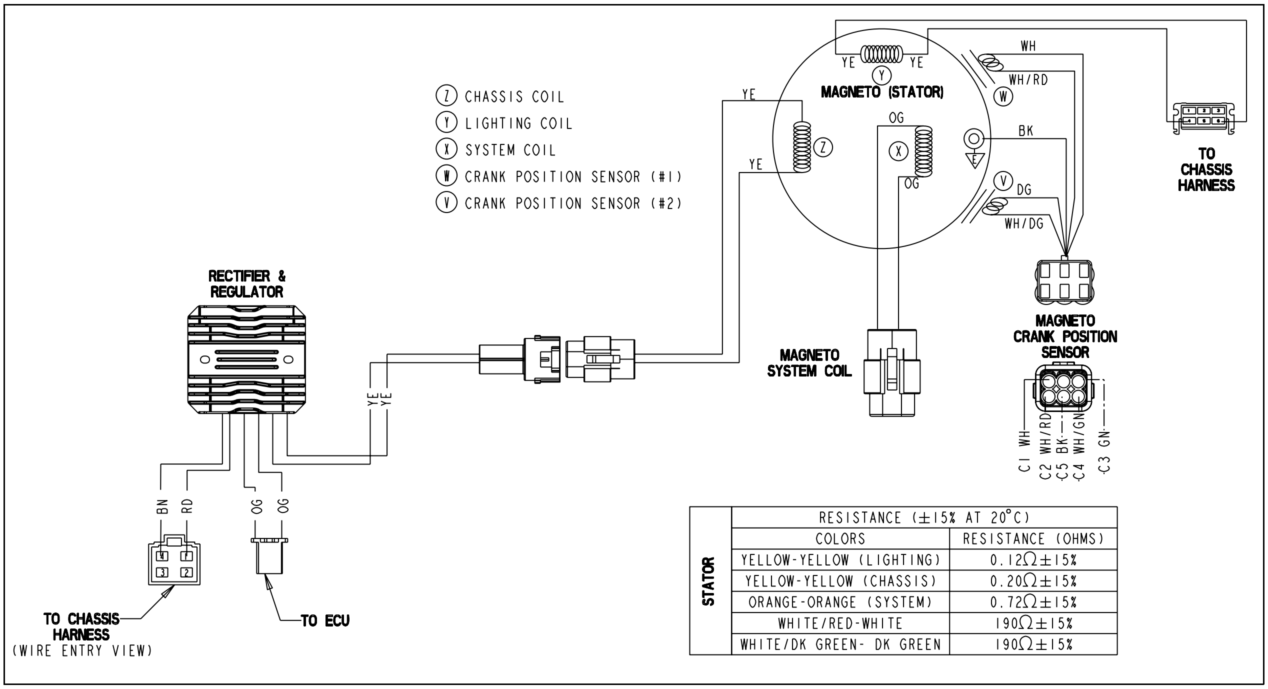
Ignition Timing Chart

Convert the ignition timing specification from degrees BTDC to either inches or millimeters, then use a dial indicator to verify timing marks.

ROD/STROKE (mm)	600 DC-CFI-2/4 128mm ROD / 64mm STROKE		800 DC-CFI-2 132mm ROD / 70mm STROKE	
Degrees BTDC	MM	Inches	MM	Inches
1	0.0061	0.0002	0.0067	0.0003
2	0.0244	0.0010	0.0270	0.0011
3	0.0548	0.0022	0.0607	0.0024
4	0.0974	0.0038	0.1078	0.0042
5	0.1522	0.0060	0.1684	0.0066
6	0.2190	0.0086	0.2424	0.0095
7	0.2979	0.0117	0.3298	0.0130
8	0.3889	0.0153	0.4305	0.0169
9	0.4919	0.0194	0.5445	0.0214
10	0.6068	0.0239	0.6717	0.0264
11	0.7336	0.0289	0.8121	0.0320
12	0.8723	0.0343	0.9656	0.0380
13	1.0227	0.0403	1.1321	0.0446
14	1.1849	0.0466	1.3115	0.0516
15	1.3586	0.0535	1.5038	0.0592
16	1.5439	0.0608	1.7089	0.0673
17	1.7406	0.0685	1.9266	0.0758
18	1.9487	0.0767	2.1569	0.0849
19	2.1681	0.0854	2.3996	0.0945
20	2.3986	0.0944	2.6547	0.1045
21	2.6402	0.1039	2.9220	0.1150
22	2.8927	0.1139	3.2013	0.1260
23	3.1560	0.1243	3.4927	0.1375
24	3.4300	0.1350	3.7958	0.1494
25	3.7146	0.1462	4.1106	0.1618
26	4.0096	0.1579	4.4369	0.1747
27	4.3149	0.1699	4.7746	0.1880
28	4.6303	0.1823	5.1235	0.2017
29	4.9558	0.1951	5.4835	0.2159
30	5.2911	0.2083	5.8543	0.2305
31	5.6361	0.2219	6.2358	0.2455
32	5.9907	0.2359	6.6278	0.2609
33	6.3546	0.2502	7.0302	0.2768
34	6.7278	0.2649	7.4427	0.2930
35	7.1099	0.2799	7.8652	0.3097
36	7.5010	0.2953	8.2974	0.3267
37	7.9007	0.3111	8.7392	0.3441
38	8.3089	0.3271	9.1903	0.3618
39	8.7254	0.3435	9.6506	0.3799
40	9.1501	0.3602	10.1198	0.3984

DC-CFI ELECTRICAL SYSTEMS

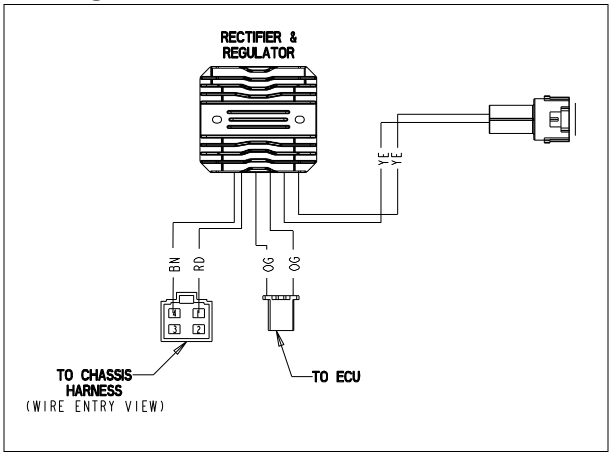
DC-CFI Stator Assembly



DC-CFI Stator Specifications

ITEM	COLOR	SYSTEM FUNCTION	RESISTANCE +/- 15% @68°F (20°C)
AC Lighting Coil (Y)	YELLOW to YELLOW	14VAC Chassis Power - Battery Charge (Electric Start Equipped) - Head / Tail Lights - Hand / Thumb Warmers	YELLOW TO YELLOW = 0.12Ω NO CONTINUITY TO GROUND
DC Chassis Coil (Z)	YELLOW to YELLOW	14VDC Chassis Power - Fuel Pump - Chassis Relay Coil - EV Solenoid - Instrument Cluster	YELLOW TO YELLOW = 0.20Ω NO CONTINUITY TO GROUND
DC System Coil (X)	ORANGE to ORANGE	16 VDC System Power - Fuel Injector Power - ECU / Sensor Power (Regulated to 5VDC) - Ignition Coil Power	ORANGE TO ORANGE = 0.72Ω 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
ENGINE GROUND	BROWN	Engine Ground	0Ω

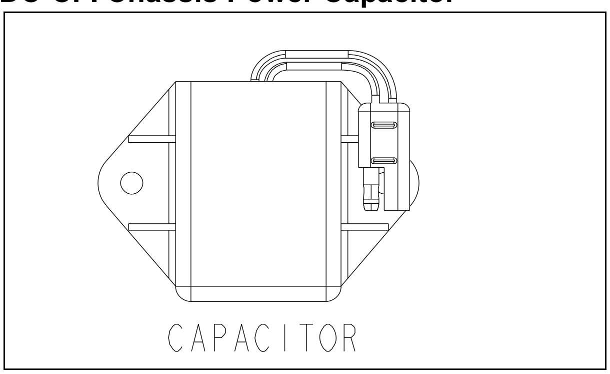
DC Regulator/Rectifier



DC-CFI Regulator / Rectifier Connections

CONNECTOR	WIRE COLORS	ITEM
Stator	YELLOW	VAC from stator coils.
ECU	ORANGE	VDC supplied to ECU to boost power to fuel pump during engine start-up.
Chassis	BROWN	14.5 VDC Chassis power. (Instrument cluster/EV solenoid/DC power points)
	RED	

DC-CFI Chassis Power Capacitor

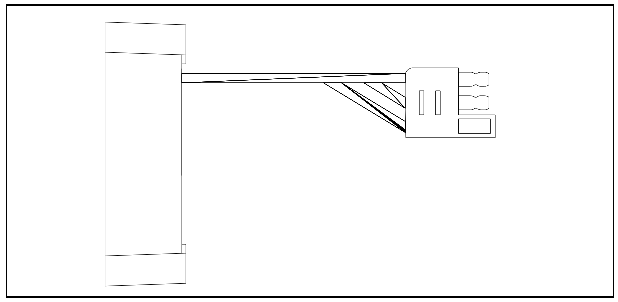


Capacitor Testing

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.

DC-CFI AC Regulator/Battery Charge Rectifier

DC-CFI models feature an AC regulator/DC (battery charge) rectifier. The AC regulator/battery charge rectifier only regulates AC voltage and charges the battery (when equipped). It does not supply VDC to the instrument cluster or accessory power points.

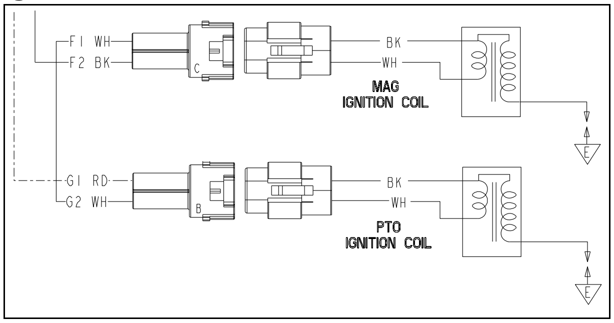


Circuit Specifications

PLUG/PIN/COLOR	FUNCTION
1 - RED/DK. GREEN	14.7DCV BATTERY (+)
2 - YELLOW	14.3 ACV (FROM STATOR)
3 - BROWN	GROUND (-)

10

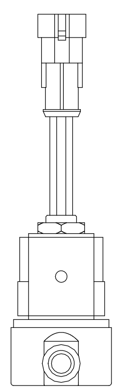
Ignition Coil Packs



Specifications

Coil Pack Wires/Leads	600 DC-CFI-4	600/800 DC-CFI-2
	+/- 15% @ 68°F (20°C)	
BLACK to WHITE (Primary)	0.20Ω	0.45Ω
BLACK to Secondary Lead	6.3KΩ	18KΩ
Plug cap	5KΩ	

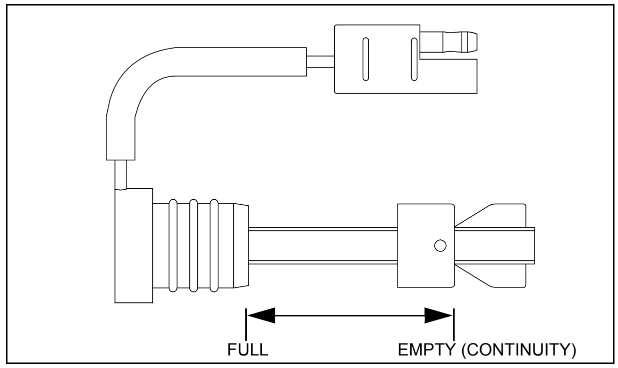
Exhaust Valve Solenoid



Specifications

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

Oil Level Sender

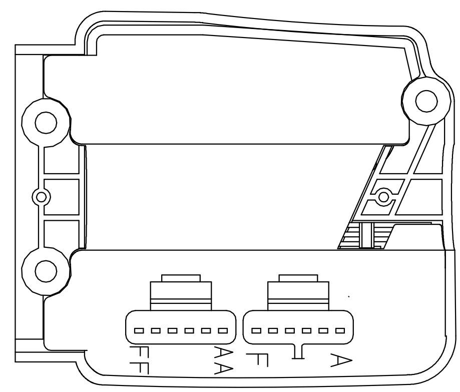


To test the oil level sender, position the sender as it would be in the oil tank. Allow the float to drop in the direction it would if the oil tank were empty. Continuity should be present when using a multimeter to test the sender with the float in the "empty" position.

No continuity should be present when the float is moved away from the "empty" position.

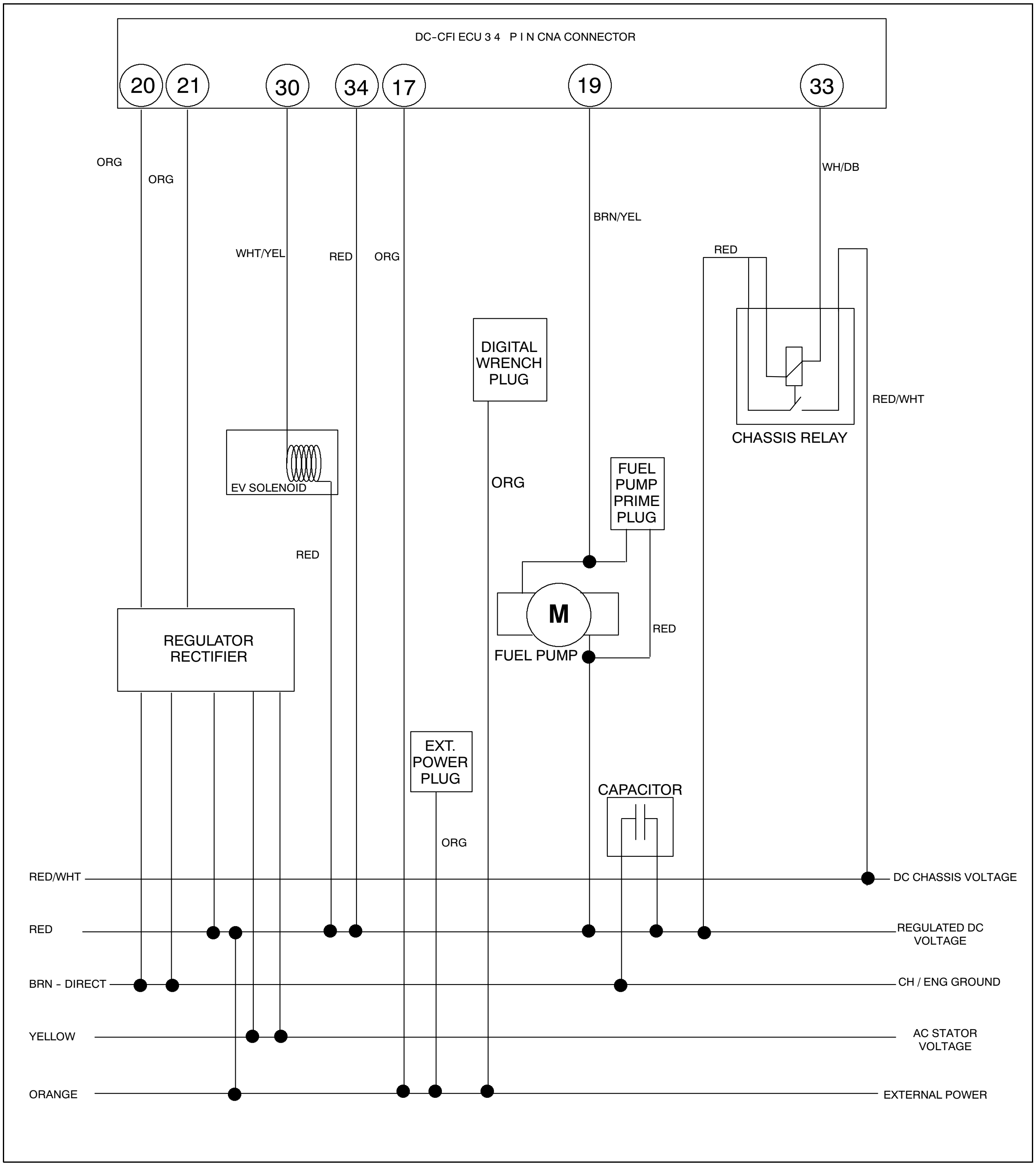
LH Control Assembly

Test the left hand (LH) control assembly using a multimeter set to show continuity. Reference the illustration below for continuity checks.



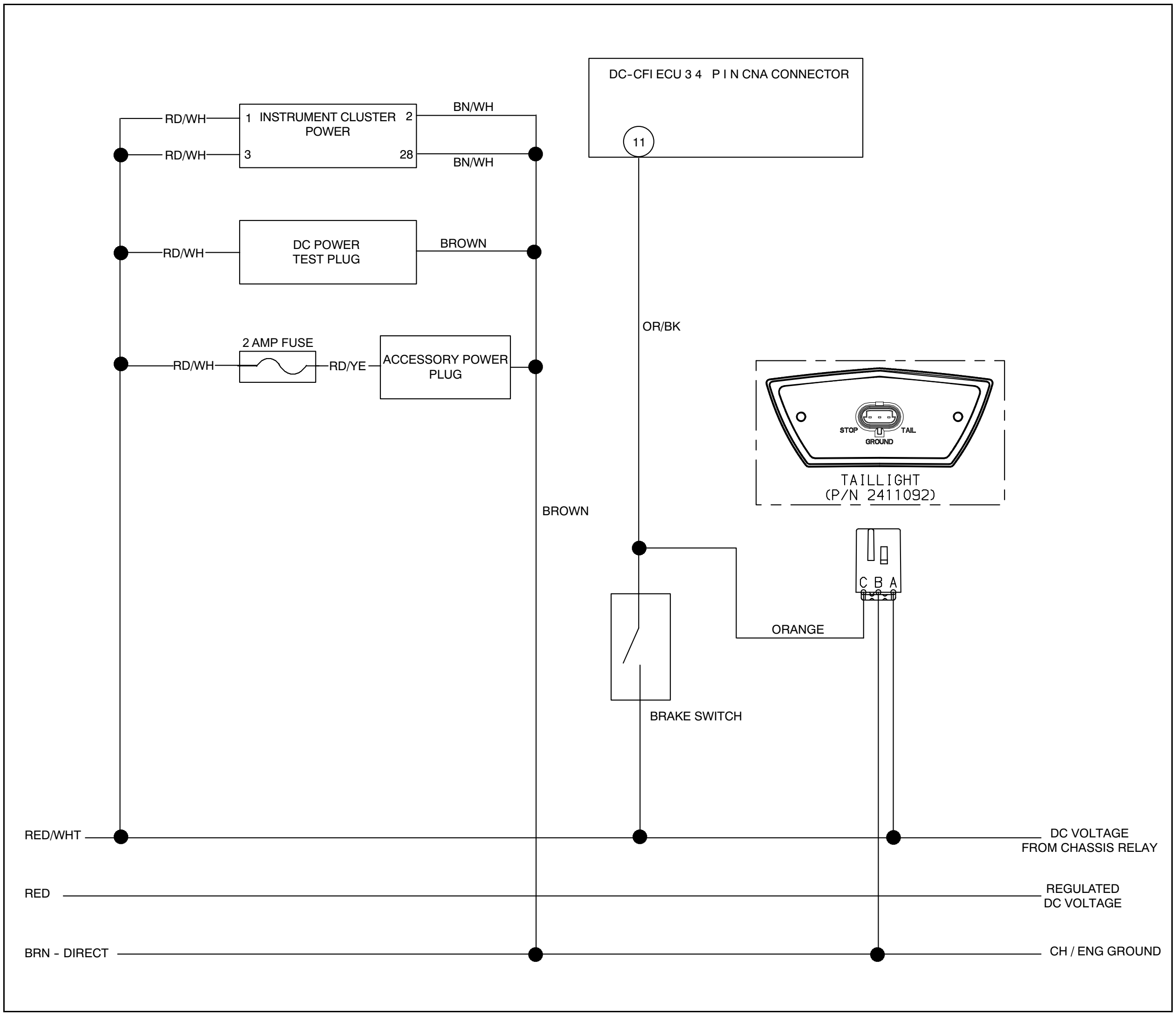
		A	B	C	D	E	F	AA	BB	CC	DD	EE	FF
HEADLIGHT	LO		O	O									
	HI	O		O									
THUMBWARMER	OFF												
	LO			O				O					
	HI			O					O				
HANDWARMER	OFF												
	LO			O						O			
	MED			O							O		
	HI			O O						O	O		
REVERSE	ON											O	O
MODE	MODE				O	O							
	SET					O	O						

DC-CFI Regulated (Red) Power Circuits

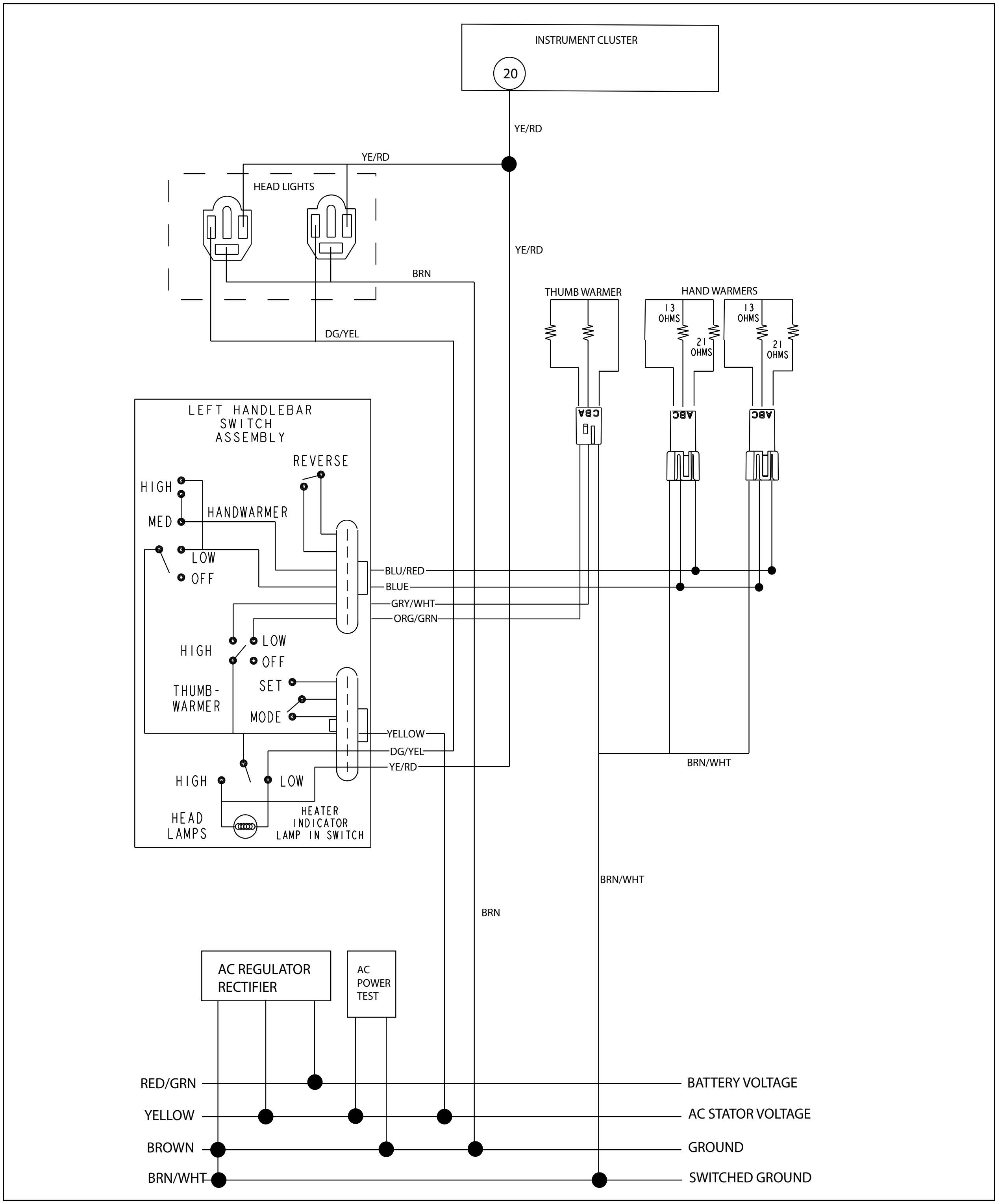


10

DC-CFI Chassis (Red/White) Power Circuits

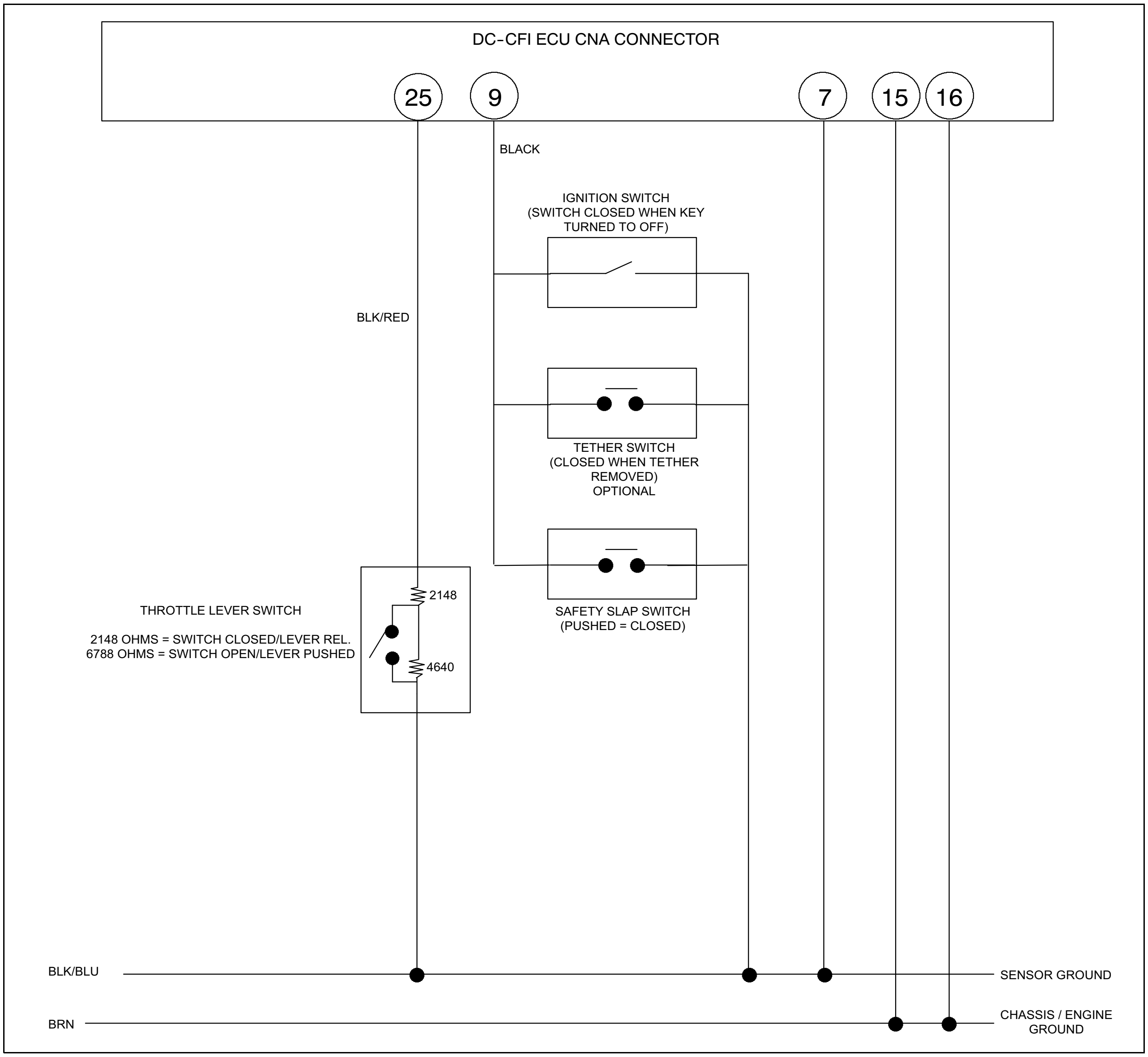


DC-CFI AC Power (Lighting) Circuits



10

DC-CFI Throttle/Ignition Kill System



System Overview

A software stop is used to determine the position of 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.

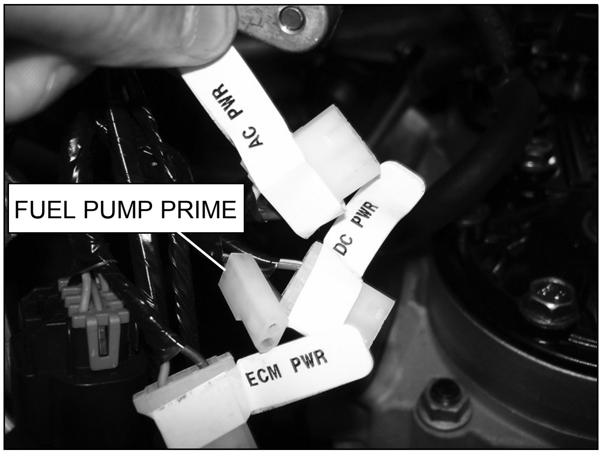
To test the throttle lever, measure the resistance with the lever pushed and closed and compare results to those in illustration.

Always verify the throttle lever freeplay is set to specification.

A 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.

DIAGNOSTIC PLUGS

Power Test Plugs



A set of power test and fuel pump prime plugs allows a technician to test several electrical circuits on the snowmobile.

The plugs can be accessed behind the left door panel.

NOTE: The AC power test plug is located on the handlebar wiring harness on 2011-later models.

Shown below is the Chassis Power-Up Harness, PS-47269-A, and Dual Power/Fuel Pump Prime Adapter, PS-50805.

When both tools are used together, the technician can supply power to the ECM PWR and DC PWR plugs. This is required for enabling the security function on 2012 models. Also, the Dual PWR/Fuel Pump Prime Adapter can connect to the fuel pump prime plug.

DC PWR Plug

Connect the Chassis Power-Up Harness to the DC PWR plug to supply battery power to the following components:

- Instrument cluster
- DC accessory power points
- LED tail lamp/brake lamp

ECM PWR Plug

Connect the Chassis Power-Up Harness to the ECM PWR plug to supply battery voltage to the following components:

- Digital Wrench™ communication connector
- ECU
- Chassis relay driver coil
- VES solenoid
- DC Power capacitor
- Fuel pump power side

Fuel Pump Prime Plug

Use the Chassis Power-Up Harness and Dual PWR/Fuel Pump Prime Adapter to supply battery voltage to the fuel pump. This is useful for purging the fuel system of air or testing fuel pump pressure with the engine off.

AC PWR Plug

⚠ CAUTION

DO NOT CONNECT BATTERY VOLTAGE TO THE AC PWR TEST PLUG. SEVERE ELECTRICAL SYSTEM DAMAGE WILL OCCUR.

The AC circuits can be tested with a multimeter at the AC PWR plug. AC circuits include the head lights, hand warmers, and thumb warmer.

NOTE: The AC power test plug is located on the handlebar wiring harness on 2011-later models.

HAND/THUMB WARMERS

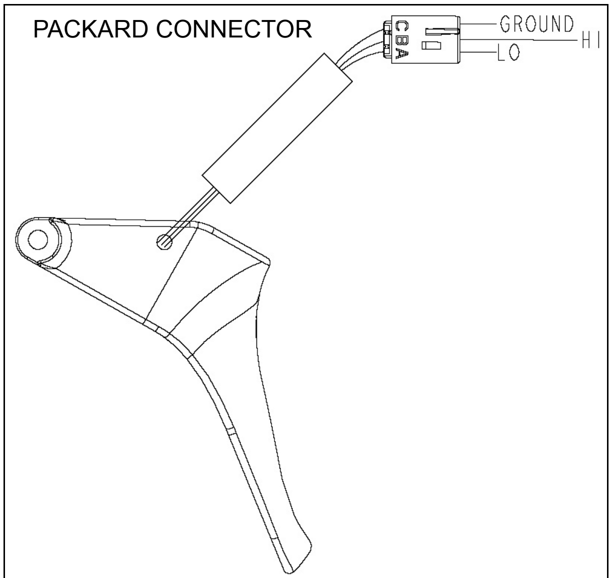
Thumb Warmer Diagnostics

The thumb warmer on all Polaris snowmobiles is a thermistor-type warming element pad. This means its resistance will change based on temperature.

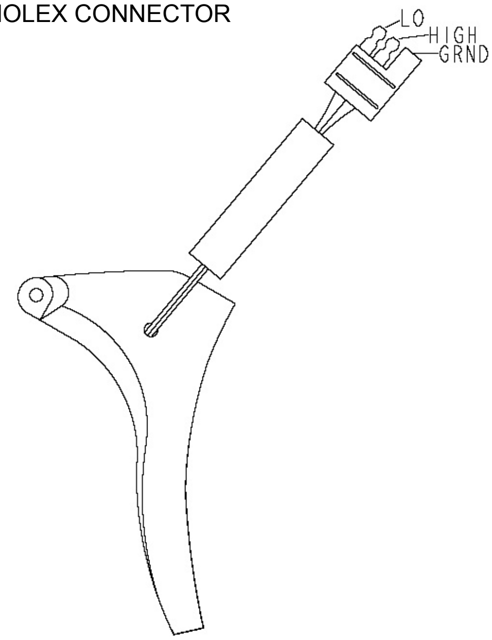
Thumb Warmer Resistance Checks

CIRCUIT (Wire Color)	RESISTANCE @ ROOM TEMP. (68 F / 20 C)
LOW (ORANGE/GRAY) to GROUND (BROWN)	1 - 120
HIGH (WHITE/GRAY) to GROUND (BROWN)	1 - 120
LOW or HIGH to CHASSIS (SHORT)	O.L. (OPEN CIRCUIT)

PACKARD CONNECTOR



MOLEX CONNECTOR



Hand Warmer Diagnostics

There are two types of hand warmer element pads used on Polaris snowmobiles. One version is used on steel/painted handlebars and touring model rear passenger grab bars, while the other is used on aluminum (Pro Taper) handlebars. The difference between the two hand warmer element pads is in the resistance values. A lower resistance element pad is used on aluminum bars because aluminum dissipates heat faster than steel.

A common misconception with Polaris hand warmer elements is the higher resistance circuit is the high temperature element. In reality, the hand warmer circuit with the least amount of resistance will flow more current, and thus create more heat. This is an important fact that must be taken into consideration when performing resistance checks on a set of hand warmers.

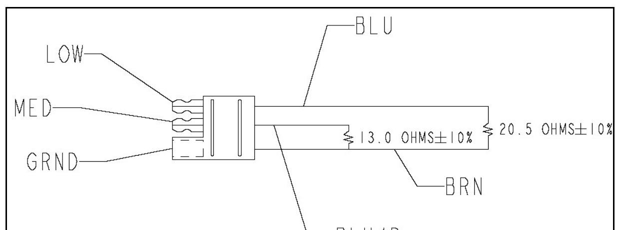
For example, if a customer has a concern that the left hand warmer appears to be cooler than the right, the technician should compare the resistance readings of each pad to the specifications, and then between the left and right pads. If the resistance of the left pad is significantly higher than that of the right, more current will flow to the right side. While more common reasons for this can be attributed to how the customer holds the bar in their hands (fingers on brake lever and not wrapped around grip, etc.), there may be instances where comparing the left and right hand warmer resistance values may resolve the customer's concern.

Another issue is when one or both of the element circuits shorts to the handlebar itself. This can occur either because the pad was improperly installed, solder breaks, or if the grip moves on the bar.

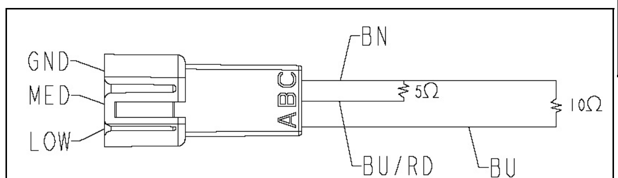
Hand Warmer Resistance Checks

NOTE: Hand warmer pads do not feature a high temperature circuit. On snowmobiles featuring a left-hand control, high temperature is achieved by supplying power to both the low and medium circuits. On snowmobiles featuring console-mount controls, the medium circuit is the high temperature circuit.

CIRCUIT (Wire Color)	RESISTANCE @ ROOM TEMP. (68 F / 20 C)
STEEL HANDLEBARS	
LOW (BLUE) to GROUND (BROWN)	20.5 +/-10%
MEDIUM (BLUE/RED) to GROUND (BROWN)	13 +/-10%
LOW or MEDIUM to CHASSIS (SHORT)	O.L. (OPEN CIRCUIT)
ALUMINUM HANDLEBARS	
LOW (BLUE) TO GROUND (BROWN)	10 +/-10%
MEDIUM (BLUE/RED) to GROUND (BROWN)	5 +/-10%
LOW or MEDIUM to CHASSIS (SHORT)	O.L. (OPEN CIRCUIT)



STEEL HANDLEBARS

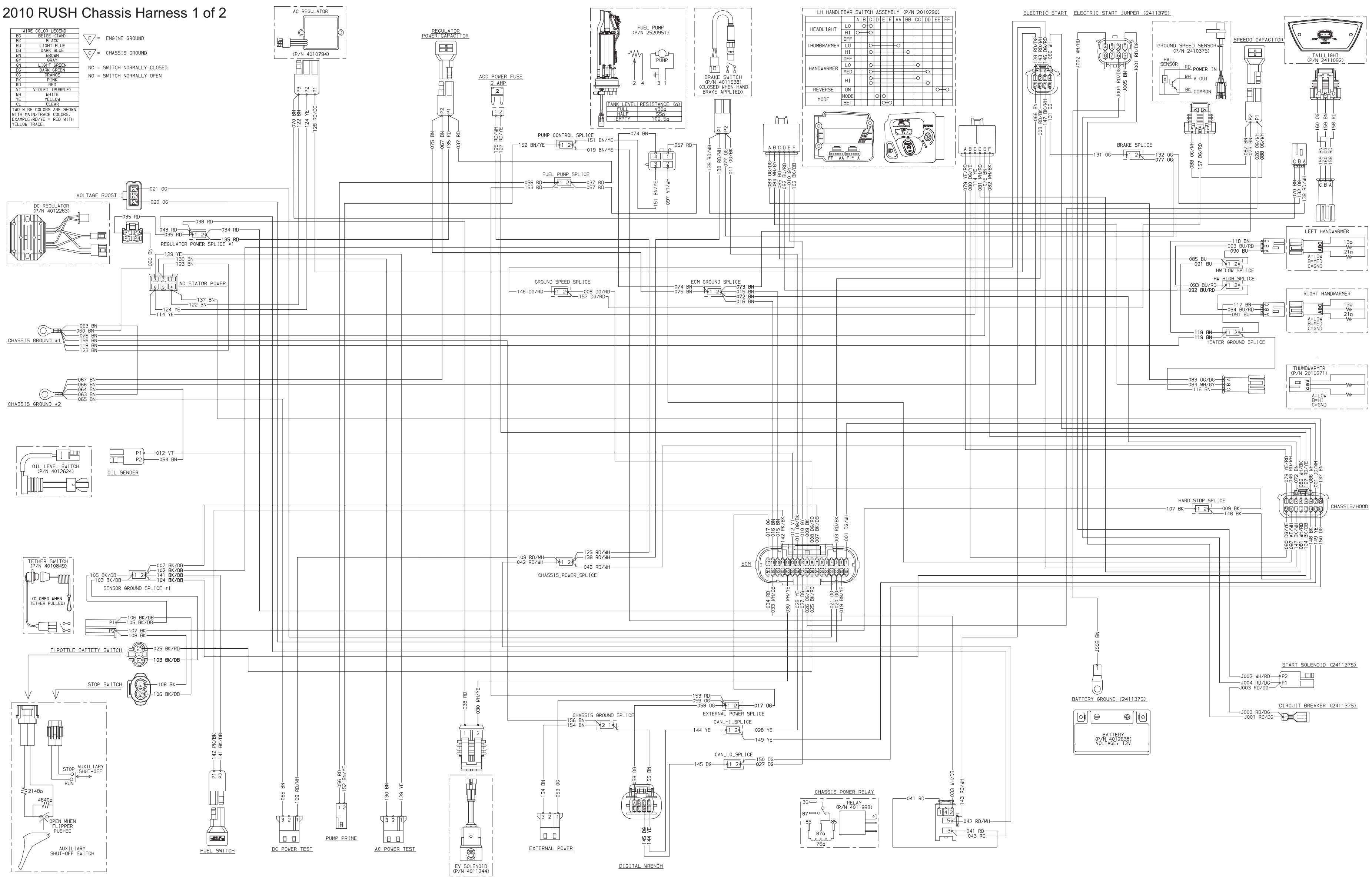


ALUMINUM HANDLEBARS

10

NOTES

2010 RUSH Chassis Harness 1 of 2



2010 600 RUSH Chassis 2 of 2

SCHEMATIC CABLE/WIRE TERMINATION TABLE

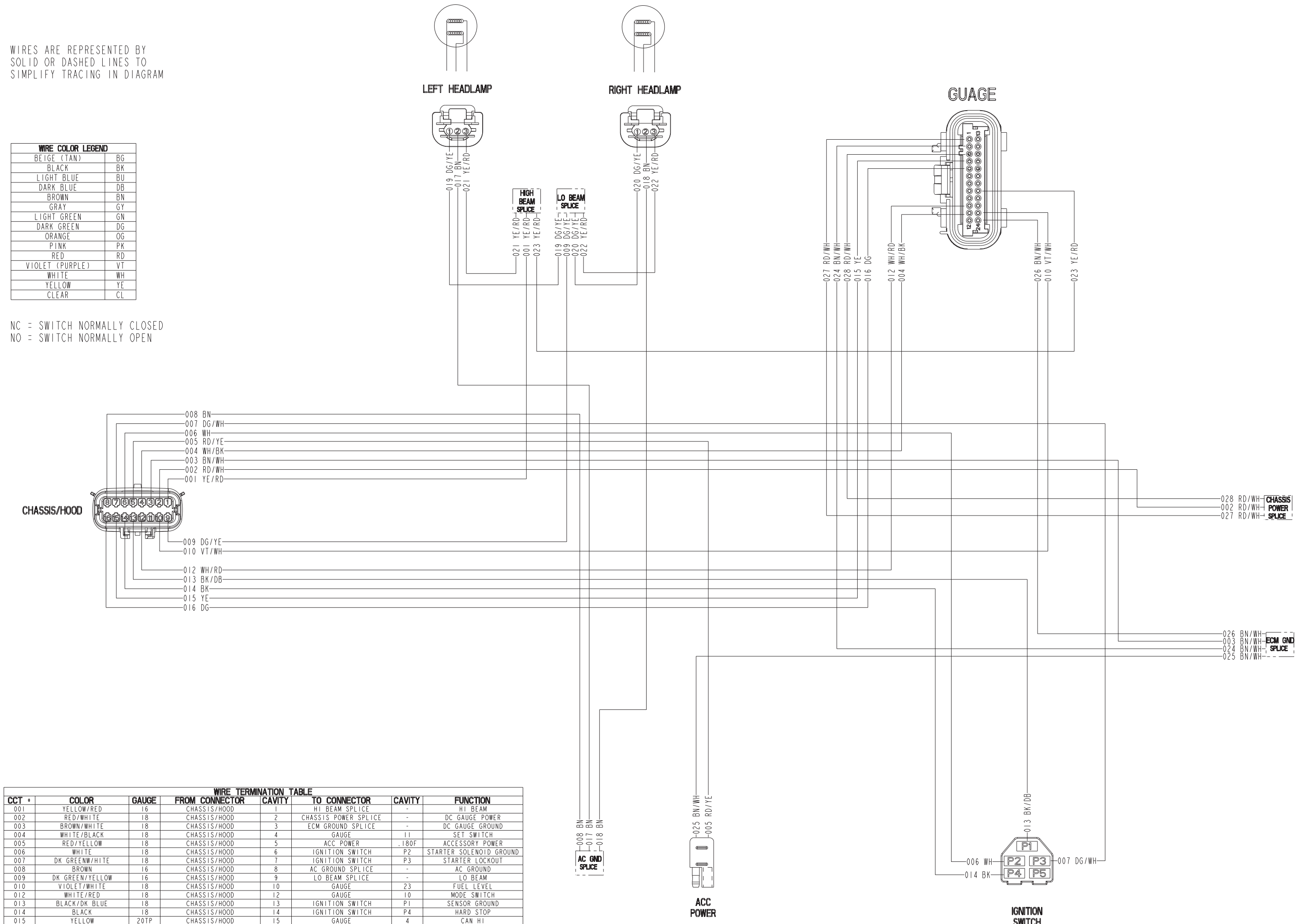
INDEX	CCT #	TYPE	GAUGE	COLOR	FROM COMPONENT	FROM PORT	TO COMPONENT	TO PORT	FUNCTION
1	001	TXL	0.5	DG/WH	ECM	1	HOOD CHASSIS	7	STARTER LOCKOUT
2	003	TXL	0.5	RD/BK	ECM	3	ELECTRIC START	6	BATTERY
3	007	TXL	0.5	BK/DB	SENSOR GND SPL #1	2	ECM	7	SENSOR GND
4	008	TXL	0.5	DG/RD	ECM	8	SPEED SENSOR	B	TBD
5	009	TXL	0.5	BK	ECM	9	HARD_STOP_SPLICE	2	HARD STOP
6	010	TWP	0.5	GY	ECM	10	LH CONTROL SIGNAL	E	REVERSE SIGNAL
7	011	TXL	0.5	OG/BK	ECM	11	BRAKE SWITCH	P1	BRAKE SW
8	012	TXL	0.5	VT	ECM	12	OIL SENDER	P1	LOW OIL
9	015	TXL	0.5	BN	ECM	15	ECM GND SPL	2	ECU GND
10	016	TXL	0.5	BN	ECM	16	ECM GND SPL	2	ECU GND
11	017	TXL	0.5	OG	ECM	17	EXTERNAL PWR SPL	2	EXTERNAL PWR
12	019	TXL	0.5	BN/YE	ECM	19	PUMP CONTROL	2	FUEL PUMP CONTROL
13	020	TXL	0.5	OG	ECM	20	VOLTAGE BOOST	P3	VOLTAGE BOOST #2
14	021	TXL	0.5	OG	ECM	21	VOLTAGE BOOST	P1	VOLTAGE BOOST#1
15	025	TXL	0.5	BK/RD	ECM	25	SOFT STOP	P2	SOFT STOP
16	026	TXL	0.5	OG/WH	ECM	26	SPEEDO CAPACITOR	P1	GROUND SPEED PWR
17	027	TXL	0.5	DG	ECM	27	CAN_LO_SPLICE	2	CAN LO
18	028	TXL	0.5	YE	ECM	28	CAN_HI_SPLICE	2	CAN HI
19	030	TXL	0.5	WH/YE	ECM	30	EV SOLENOID	2	EV SOLENOID CONTROL
20	033	TXL	0.5	WH/DB	ECM	33	CHASSIS PWR RELAY	2	CHASSIS RELAY CONTROL
21	034	TXL	0.5	RD	ECM	34	REGULATOR PWR SPL#1	2	DC_REG_PWR
22	035	TXL	1.0	RD	DC OUT	P1	REGULATOR PWR SPL#1	1	DC_REG_PWR
23	037	TXL	0.8	RD	CHASSIS CAPACITOR	P1	FUEL PUMP SPLICE	2	DC_REG_PWR
24	038	TXL	0.8	RD	EV SOLENOID	1	REGULATOR PWR SPL#1	1	DC_REG_PWR
25	041	TXL	0.5	RD	CHASSIS PWR RELAY	3	CHASSIS PWR RELAY	1	DC_REG_PWR
26	042	TXL	1.0	RD/WH	CHASSIS PWR RELAY	5	CHASSIS_POWER_SPLICE	1	DC_PWR
27	043	TXL	1.0	RD	REGULATOR PWR SPL#1	1	CHASSIS PWR RELAY	3	DC_REG_PWR
28	046	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	HOOD CHASSIS	2	DC_PWR
29	056	TXL	0.5	RD	FUEL PUMP SPLICE	1	PUMP PRIME	1	FUEL PUMP POWER
30	057	TXL	0.8	RD	FUEL PUMP SPLICE	2	FUEL PUMP	1	FUEL PUMP PWR
31	058	TXL	0.5	OG	DIGITAL WRENCH	A	EXTERNAL PWR SPL	1	EXTERNAL PWR
32	059	TXL	0.5	OG	EXTERNAL POWER	1	EXTERNAL PWR SPL	1	EXTERNAL PWR
33	060	TXL	1.0	BN	DC OUT	P2	CHASSIS ROUND #1	1	DC GND
34	063	TXL	1.0	BN	CHASSIS GROUND #2	1	CHASSIS ROUND #1	1	DC_GND
35	064	TXL	0.8	BN	CHASSIS GROUND #2	1	OIL SENDER	P2	DC_GND
36	065	TXL	1.0	BN	CHASSIS GROUND #2	1	DC_PWR_TEST	3	DC_GND
37	066	TXL	1.0	BN	CHASSIS GROUND #2	1	ELECTRIC START	5	DC_GND
38	067	TXL	1.0	BN	CHASSIS GROUND #2	1	CHASSIS CAPACITOR	P2	DC_GND
39	070	TXL	0.8	BN	AC_REGULATOR	P3	TAILLIGHT	C	AC_GND
40	072	TXL	0.8	BN	ECM GND SPL	2	HOOD CHASSIS	3	ECU_GND
41	073	TXL	0.5	BN	SPEEDO CAPACITOR	P2	ECM GND SPL	2	ECU GND
42	074	TXL	0.5	BN	ECM GND SPL	1	FUEL PUMP	4	ECU GND
43	075	TXL	1.0	BN	CHASSIS CAPACITOR	P2	ECM GND SPL	1	ECU_GND
44	076	TXL	0.8	BN	CHASSIS ROUND #1	1	LH CONTROL PWR	E	DC_GND
45	077	TXL	0.8	OG	BRAKE SPL	2	BRAKE SWITCH	P1	BRAKE GROUND
46	079	TXL	1.0	YE/RD	HOOD CHASSIS	1	LH CONTROL PWR	A	HI_BEAM
47	080	TXL	1.0	DG/YE	LH CONTROL PWR	B	HOOD CHASSIS	9	LO_BEAM
48	081	TXL	0.5	WH/RD	LH CONTROL PWR	D	HOOD CHASSIS	12	MODE SW
49	082	TXL	0.5	WH/BK	HOOD CHASSIS	4	LH CONTROL PWR	F	SET SW
50	083	TWP	0.5	OG/DG	LH CONTROL SIGNAL	A	THUMBWARMER	A	THUMBWARMER LO
51	084	TWP	0.5	GY/WH	LH CONTROL SIGNAL	B	THUMBWARMER	B	THUMBWARMER HI
52	085	TWP	0.5	BU	LH CONTROL SIGNAL	C	HW LOW SPLICE	1	HANDWARMER LO
53	086	TXL	0.5	WH	ELECTRIC START	4	HOOD CHASSIS	6	STARTER_SOLENOID_GND
54	087	TXL	0.5	BN	SPEED SENSOR	C	SPEEDO CAPACITOR	P2	SPEED CAPACITOR GND
55	088	TXL	0.5	OG/WH	SPEEDO CAPACITOR	P1	SPEED SENSOR	A	SPEED CAPACITOR PWR
56	090	TWP	0.5	BU	HW LOW SPLICE	2	LH WARMER	A	THUMBWARMER LO
57	091	TWP	0.5	BU	HW LOW SPLICE	1	RH WARMER	A	HANDWARMER LO
58	092	TWP	0.5	BU/RD	LH CONTROL SIGNAL	D	HW HIGH SPLICE	1	THUMBWARMER HI
59	093	TWP	0.5	BU/RD	HW HIGH SPLICE	1	LH WARMER	B	HANDWARMER HI
60	094	TWP	0.5	BU/RD	HW HIGH SPLICE	2	RH WARMER	B	HANDWARMER HI
61	097	TXL	0.5	VT/WH	FUEL PUMP	2	HOOD CHASSIS	10	FUEL LEVEL
62	102	TWP	0.5	BK/DB	SENSOR GND SPL #1	2	LH CONTROL SIGNAL	F	SENSOR GROUND
63	103	TXL	0.5	BK/DB	SENSOR GND SPL #1	1	SOFT STOP	P1	SENSOR GROUND
64	104	TXL	0.5	BK/DB	HOOD CHASSIS	13	SENSOR GND SPL #1	2	SENSOR GROUND
65	105	TXL	0.5	BK/DB	SENSOR GND SPL #1	1	TETHER SWITCH	P1	SENSOR GROUND
66	106	TXL	0.5	BK/DB	TETHER SWITCH	P1	HARD STOP SWITCH	P2	SENSOR GROUND
67	107	TXL	0.5	BK	HARD_STOP_SPLICE	1	TETHER SWITCH	P2	HARD STOP
68	108	TXL	0.5	BK	TETHER SWITCH	P2	HARD STOP SWITCH	P1	HARD STOP
69	109	TXL	1.0	RD/WH	CHASSIS_POWER_SPLICE	1	DC_PWR_TEST	1	CHASSIS PWR
70	114	TXL	1.0	YE	AC_STATOR_PWR	6	LH CONTROL PWR	C	AC_PWR
71	116	TXL	0.8	BN	HEATER GND SPL	2	THUMBWARMER	C	AC_GND
72	117	TXL	0.8	BN	HEATER GND SPL	2	RH WARMER	C	AC_GND
73	118	TXL	0.8	BN	HEATER GND SPL	1	LH WARMER	C	AC_GND
74	119	TXL	0.8	BN	HEATER GND SPL	1	CHASSIS ROUND #1	1	AC_GND
75	122	TXL	1.0	BN	AC_REGULATOR	P3	AC_STATOR_PWR	4	AC_GND
76	123	TXL	1.0	BN	AC_STATOR_PWR	2	CHASSIS ROUND #1	1	AC_GND
77	124	TXL	1.0	YE	AC_STATOR_PWR	6	AC_REGULATOR	P2	AC_PWR
78	125	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	ACC_PWR_FUSE	1	DC_PWR
79	127	TXL	0.8	RD/YE	ACC_PWR_FUSE	2	HOOD CHASSIS	5	ACC_DC_PWR
80	128	TXL	1.0	RD/DG	AC_REGULATOR	P1	ELECTRIC START	1	BATT_CHARGE_PWR
81	129	TXL	1.0	YE	AC_STATOR_PWR	3	AC_PWR_TEST	1	AC_PWR
82	130	TXL	1.0	BN	AC_STATOR_PWR	2	AC_PWR_TEST	3	AC_GND
83	131	TXL	0.8	OG	BRAKE SPL	1	ELECTRIC START	8	BRAKE_SW
84	132	TXL	0.8	OG	BRAKE SPL	2	TAILLIGHT	B	BRAKE_SW
85	135	TXL	0.8	RD	REGULATOR PWR SPL#1	2	CHASSIS CAPACITOR	P1	CHASSIS_PWR
86	137	TXL	1.0	BN	AC_STATOR_PWR	4	HOOD CHASSIS	8	AC GND
87	138	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	BRAKE SWITCH	P2	CHASSIS DC PWR
88	139	TXL	0.8	RD/WH	BRAKE SWITCH	P2	TAILLIGHT	A	CHASSIS DC POWER
89	141	TXL	0.8	BK/DB	SENSOR GND SPL #1	2	FUEL SWITCH	P2	SENSOR GND
90	142	TXL	0.5	PK/BK	ECM	14	FUEL SWITCH	P1	FUEL SWITCH
91	143	TXL	0.8	RD/WH	CHASSIS PWR RELAY	5	ELECTRIC START	2	CHASSIS_DC_PWR
92	144	TXL	0.5	YE	DIGITAL WRENCH	H	CAN_HI_SPLICE	1	CAN HI
93	145	TXL	0.5	DG	DIGITAL WRENCH	G	CAN_LO_SPLICE	1	CAN LO
94	146	TXL	0.5	YE	CAN_HI_SPLICE	1	ELECTRIC START	3	CAN_HI
95	147	TXL	0.5	DG	CAN_LO_SPLICE	1	ELECTRIC START	7	CAN_LO
96	148	TXL	0.8	BK	HARD_STOP_SPLICE	2	HOOD CHASSIS	14	HARD_STOP
97	149	TXL	0.5	YE	CAN_HI_SPLICE	2	HOOD CHASSIS	15	CAN_HI (GAUGE)
98	150	TXL	0.5	DG	CAN_LO_SPLICE	2	HOOD CHASSIS	16	CAN_LO_(GAUGE)
99	151	TXL	0.5	BN/YE	FUEL PUMP	3	PUMP CONTROL	2	FUEL PUMP CONTROL
100	152	TXL	0.8	BN/YE	PUMP CONTROL	1	PUMP PRIME	2	TBD
101	153	TXL	0.8	RD	EXTERNAL PWR SPL	1	FUEL PUMP SPLICE	1	TBD
102	154	TXL	0.8	BN	EXTERNAL POWER	3	CHASSIS GND	2	CHASSIS GND
103	155	TXL	0.8	BN	CHASSIS GND	1	DIGITAL WRENCH	D	CHASSIS GND
104	156	TXL	0.8	BN	CHASSIS ROUND #1	1	CHASSIS GND	2	CHASSIS GND

2010 RUSH Hood Harness

WIRES ARE REPRESENTED BY
SOLID OR DASHED LINES TO
SIMPLIFY TRACING IN DIAGRAM

WIRE COLOR LEGEND	
BEIGE (TAN)	BG
BLACK	BK
LIGHT BLUE	BU
DARK BLUE	DB
BROWN	BN
GRAY	GY
LIGHT GREEN	GN
DARK GREEN	DG
ORANGE	OG
PINK	PK
RED	RD
VIOLET (PURPLE)	VT
WHITE	WH
YELLOW	YE
CLEAR	CL

NC = SWITCH NORMALLY CLOSED
NO = SWITCH NORMALLY OPEN



WIRE TERMINATION TABLE							
CCT #	COLOR	GAUGE	FROM CONNECTOR	CAVITY	TO CONNECTOR	CAVITY	FUNCTION
001	YELLOW/RED	16	CHASSIS/HOOD	1	HI BEAM SPLICE	-	HI BEAM
002	RED/WHITE	18	CHASSIS/HOOD	2	CHASSIS POWER SPLICE	-	DC GAUGE POWER
003	BROWN/WHITE	18	CHASSIS/HOOD	3	ECM GROUND SPLICE	-	DC GAUGE GROUND
004	WHITE/BLACK	18	CHASSIS/HOOD	4	GAUGE	11	SET SWITCH
005	RED/YELLOW	18	CHASSIS/HOOD	5	ACC POWER	.180F	ACCESSORY POWER
006	WHITE	18	CHASSIS/HOOD	6	IGNITION SWITCH	P2	STARTER SOLENOID GROUND
007	DK GREENW/HITE	18	CHASSIS/HOOD	7	IGNITION SWITCH	P3	STARTER LOCKOUT
008	BROWN	16	CHASSIS/HOOD	8	AC GROUND SPLICE	-	AC GROUND
009	DK GREEN/YELLOW	16	CHASSIS/HOOD	9	LO BEAM SPLICE	-	LO BEAM
010	VIOLET/WHITE	18	CHASSIS/HOOD	10	GAUGE	23	FUEL LEVEL
012	WHITE/RED	18	CHASSIS/HOOD	12	GAUGE	10	MODE SWITCH
013	BLACK/DK BLUE	18	CHASSIS/HOOD	13	IGNITION SWITCH	P1	SENSOR GROUND
014	BLACK	18	CHASSIS/HOOD	14	IGNITION SWITCH	P4	HARD STOP
015	YELLOW	20TP	CHASSIS/HOOD	15	GAUGE	4	CAN HI
016	DK GREEN	20TP	CHASSIS/HOOD	16	GAUGE	5	CAN LO
017	BROWN	16	LEFT HEADLIGHT	2	AC GROUND SPLICE	-	AC GROUND
018	BROWN	16	RIGHT HEADLIGHT	2	AC GROUND SPLICE	-	AC GROUND
019	DK GREEN/YELLOW	16	LEFT HEADLIGHT	1	LO BEAM SPLICE	-	LO BEAM
020	DK GREEN/YELLOW	16	RIGHT HEADLIGHT	1	LO BEAM SPLICE	-	LO BEAM
021	YELLOW/RED	16	LEFT HEADLIGHT	3	HI BEAM SPLICE	-	HI BEAM
022	YELLOW/RED	16	RIGHT HEADLIGHT	3	HI BEAM SPLICE	-	HI BEAM
023	YELLOW/RED	18	GAUGE	20	HI BEAM SPLICE	-	HI BEAM INDICATOR
024	BROWN/WHITE	18	GAUGE	2	ECM GROUND SPLICE	-	DC GAUGE GROUND
025	BROWN/WHITE	18	ACC POWER	.180M	ECM GROUND SPLICE	-	ECU GROUND
026	BROWN/WHITE	18	GAUGE	24	ECM GROUND SPLICE	-	SYSTEM GROUND
027	RED/WHITE	18	GAUGE	1	CHASSIS POWER SPLICE	-	DC GAUGE POWER
028	RED/WHITE	18	GAUGE	3	CHASSIS POWER SPLICE	-	DC GAUGE POWER

2010 RUSH Engine Harness

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

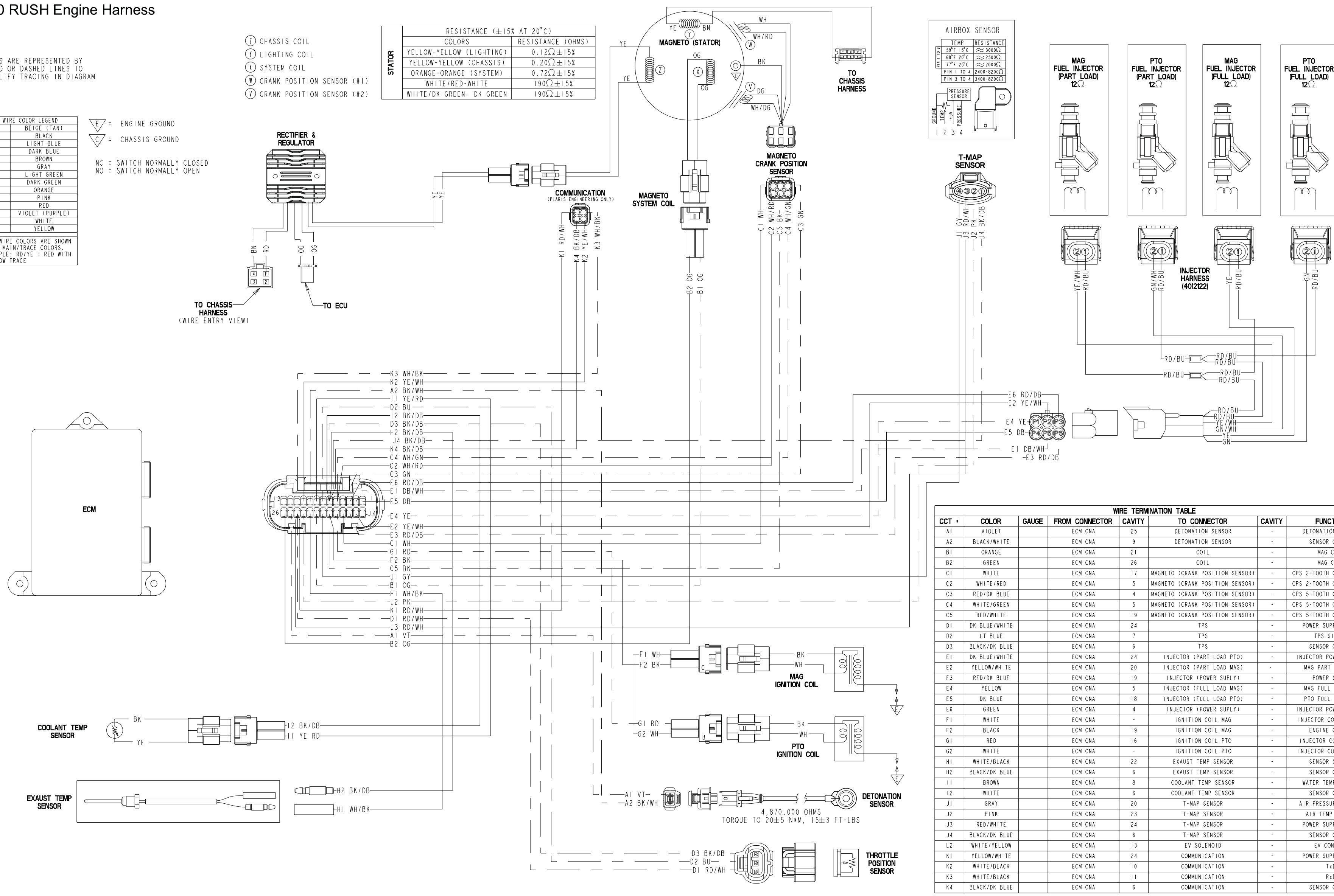
E = ENGINE GROUND

C = CHASSIS GROUND

NC = SWITCH NORMALLY CLOSED
NO = SWITCH NORMALLY OPEN

Z CHASSIS COIL
Y LIGHTING COIL
X SYSTEM COIL
W CRANK POSITION SENSOR (#1)
V CRANK POSITION SENSOR (#2)

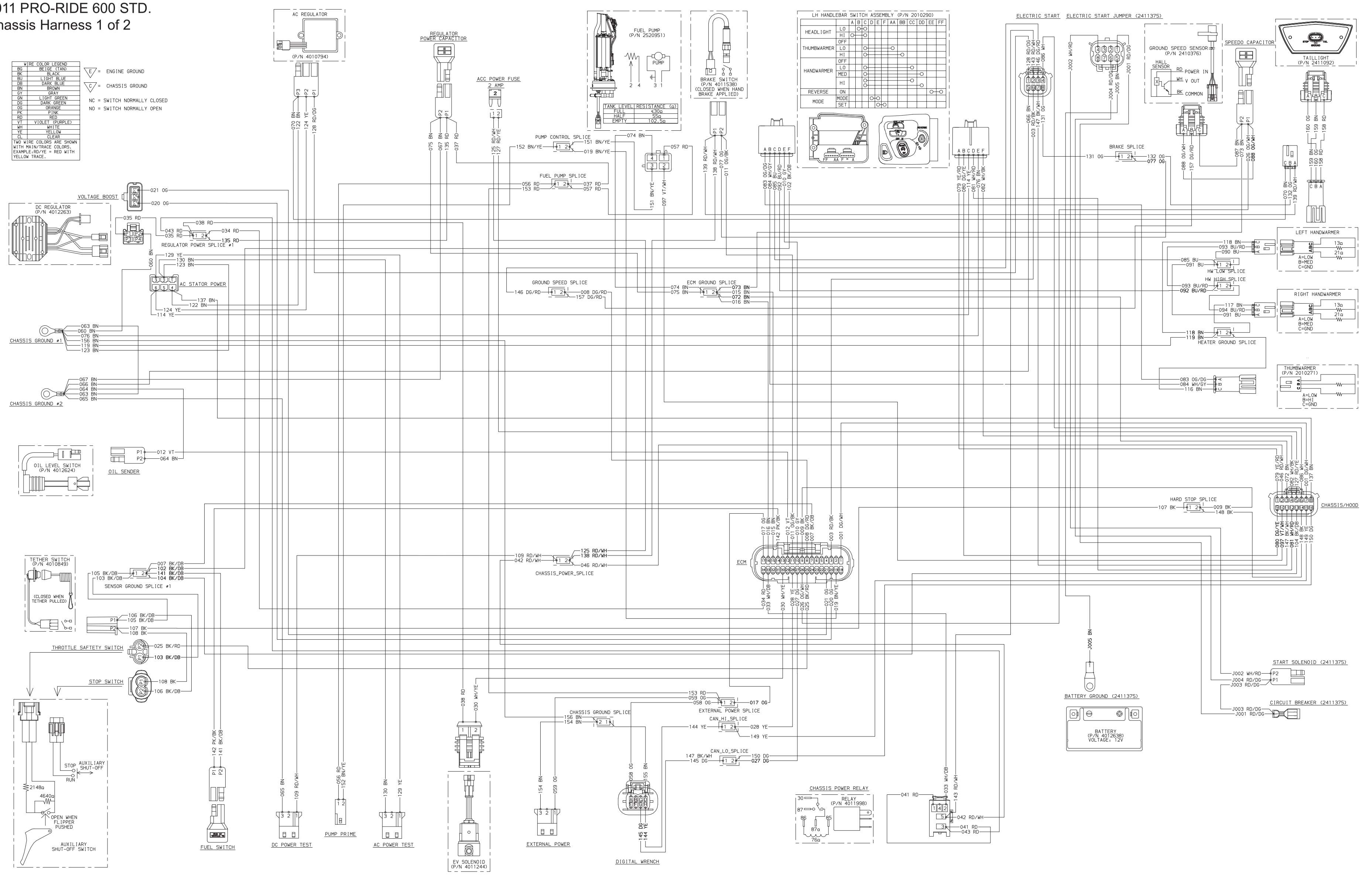
STATOR	RESISTANCE (±15% AT 20°C)	
	COLORS	RESISTANCE (OHMS)
	YELLOW-YELLOW (LIGHTING)	0.12Ω±15%
	YELLOW-YELLOW (CHASSIS)	0.20Ω±15%
	ORANGE-ORANGE (SYSTEM)	0.72Ω±15%
	WHITE/RED-WHITE	190Ω±15%
	WHITE/DK GREEN- DK GREEN	190Ω±15%



WIRE TERMINATION TABLE

CCT #	COLOR	GAUGE	FROM CONNECTOR	CAVITY	TO CONNECTOR	CAVITY	FUNCTION
A1	VIOLET		ECM CNA	25	DETONATION SENSOR	-	DETONATION SIGNAL
A2	BLACK/WHITE		ECM CNA	9	DETONATION SENSOR	-	SENSOR GROUND
B1	ORANGE		ECM CNA	21	COIL	-	MAG COIL
B2	GREEN		ECM CNA	26	COIL	-	MAG COIL
C1	WHITE		ECM CNA	17	MAGNETO (CRANK POSITION SENSOR)	-	CPS 2-TOOTH COIL SIGNAL
C2	WHITE/RED		ECM CNA	5	MAGNETO (CRANK POSITION SENSOR)	-	CPS 2-TOOTH COIL GROUND
C3	RED/DK BLUE		ECM CNA	4	MAGNETO (CRANK POSITION SENSOR)	-	CPS 5-TOOTH COIL SIGNAL
C4	WHITE/GREEN		ECM CNA	5	MAGNETO (CRANK POSITION SENSOR)	-	CPS 5-TOOTH COIL GROUND
C5	RED/WHITE		ECM CNA	19	MAGNETO (CRANK POSITION SENSOR)	-	CPS 5-TOOTH COIL GROUND
D1	DK BLUE/WHITE		ECM CNA	24	TPS	-	POWER SUPPLY (5V)
D2	LT BLUE		ECM CNA	7	TPS	-	TPS SIGNAL
D3	BLACK/DK BLUE		ECM CNA	6	TPS	-	SENSOR GROUND
E1	DK BLUE/WHITE		ECM CNA	24	INJECTOR (PART LOAD PTO)	-	INJECTOR POWER SUPPLY
E2	YELLOW/WHITE		ECM CNA	20	INJECTOR (PART LOAD MAG)	-	MAG PART CONTROL
E3	RED/DK BLUE		ECM CNA	19	INJECTOR (POWER SUPLY)	-	POWER SUPLY
E4	YELLOW		ECM CNA	5	INJECTOR (FULL LOAD MAG)	-	MAG FULL CONTROL
E5	DK BLUE		ECM CNA	18	INJECTOR (FULL LOAD PTO)	-	PTO FULL CONTROL
E6	GREEN		ECM CNA	4	INJECTOR (POWER SUPLY)	-	INJECTOR POWER SUPPLY
F1	WHITE		ECM CNA	-	IGNITION COIL MAG	-	INJECTOR COIL JUMPER
F2	BLACK		ECM CNA	19	IGNITION COIL MAG	-	ENGINE GROUND
G1	RED		ECM CNA	16	IGNITION COIL PTO	-	INJECTOR COIL POWER
G2	WHITE		ECM CNA	-	IGNITION COIL PTO	-	INJECTOR COIL JUMPER
H1	WHITE/BLACK		ECM CNA	22	EXAUST TEMP SENSOR	-	SENSOR SIGNAL
H2	BLACK/DK BLUE		ECM CNA	6	EXAUST TEMP SENSOR	-	SENSOR GROUND
I1	BROWN		ECM CNA	8	COOLANT TEMP SENSOR	-	WATER TEMP SIGNAL
I2	WHITE		ECM CNA	6	COOLANT TEMP SENSOR	-	SENSOR GROUND
J1	GRAY		ECM CNA	20	T-MAP SENSOR	-	AIR PRESSURE SIGNAL
J2	PINK		ECM CNA	23	T-MAP SENSOR	-	AIR TEMP SIGNAL
J3	RED/WHITE		ECM CNA	24	T-MAP SENSOR	-	POWER SUPPLY (5V)
J4	BLACK/DK BLUE		ECM CNA	6	T-MAP SENSOR	-	SENSOR GROUND
L2	WHITE/YELLOW		ECM CNA	13	EV SOLENOID	-	EV CONTROL
K1	YELLOW/WHITE		ECM CNA	24	COMMUNICATION	-	POWER SUPPLY (5V)
K2	WHITE/BLACK		ECM CNA	10	COMMUNICATION	-	TxD
K3	WHITE/BLACK		ECM CNA	11	COMMUNICATION	-	RxD
K4	BLACK/DK BLUE		ECM CNA	6	COMMUNICATION	-	SENSOR GROUND

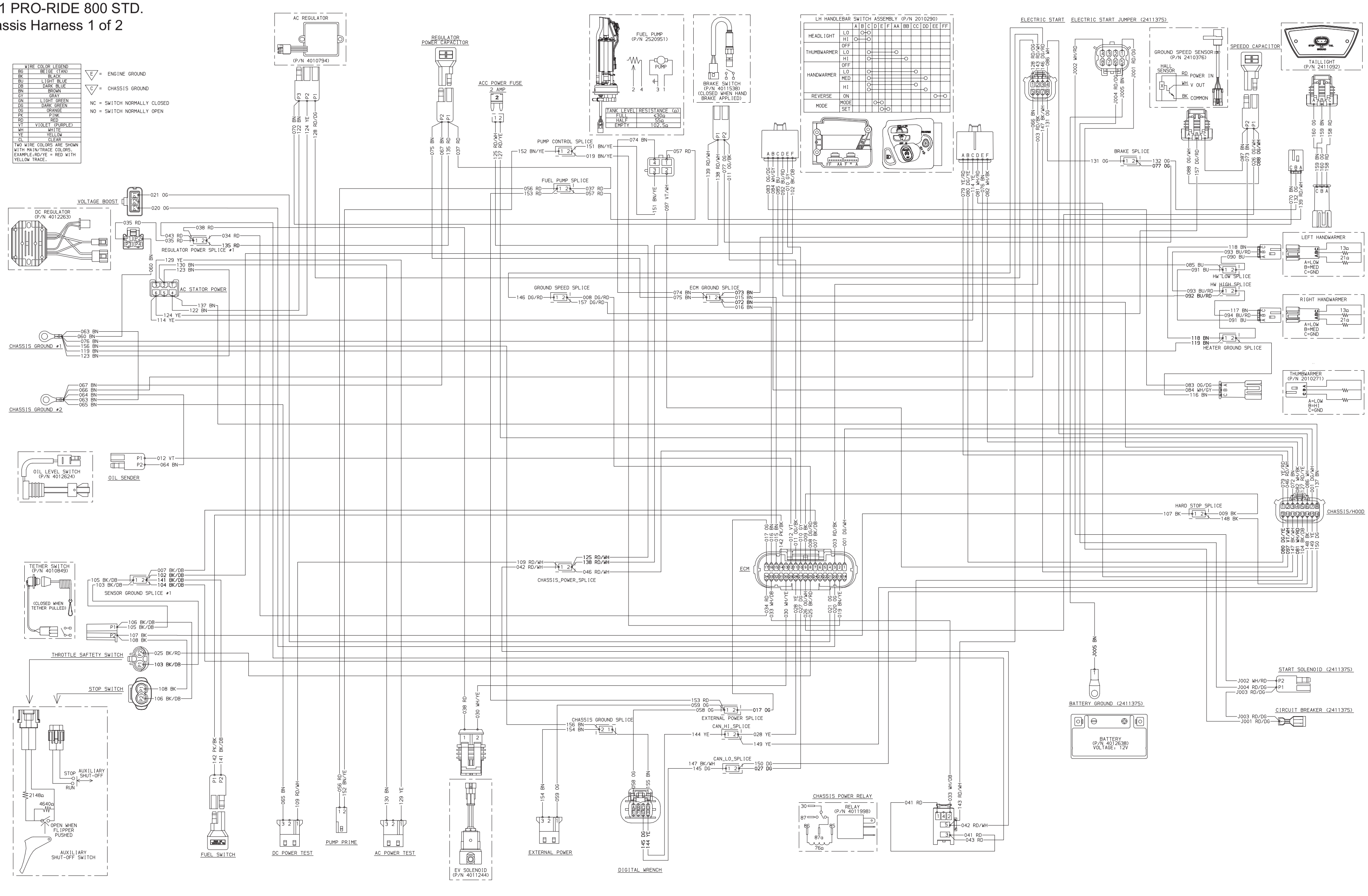
2011 PRO-RIDE 600 STD.
Chassis Harness 1 of 2



2011 600 PRO-RIDE STD.Chassis Harness 2 of 2

SCHEMATIC CABLE/WIRE TERMINATION TABLE									
INDEX	CCT #	TYPE	GAUGE	COLOR	FROM COMPONENT	FROM PORT	TO COMPONENT	TO PORT	FUNCTION
1	001	TXL	0.5	DG/WH	ECM	1	HOOD CHASSIS	7	STARTER LOCKOUT
2	003	TXL	0.5	RD/BK	ECM	3	ELECTRIC START	6	BATTERY
3	007	TXL	0.5	BK/DB	SENSOR GROUND SPLICE #1	2	ECM	7	SENSOR GROUND
4	008	TXL	0.5	DG/RD	ECM	8	GROUND SPEED SPLICE	2	GROUND SPEED SIGNAL
5	009	TXL	0.5	BK	ECM	9	HARD STOP SPLICE	2	HARD STOP
6	010	TWP	0.5	GY	ECM	10	TBD	E	REVERSE SIGNAL
7	011	TXL	0.5	OG/BK	ECM	11	BRAKE SWITCH	P1	BRAKE SWITCH
8	012	TXL	0.5	VT	ECM	12	OIL SENDER	P1	LOW OIL
9	015	TXL	0.5	BN	ECM	15	ECM GROUND SPLICE	2	ECM GROUND
10	016	TXL	0.5	BN	ECM	16	ECM GROUND SPLICE	2	ECM GROUND
11	017	TXL	0.5	OG	ECM	17	EXTERNAL POWER SPLICE	2	EXTERNAL POWER
12	019	TXL	0.5	BN/YE	ECM	19	PUMP CONTROL SPLICE	2	FUEL PUMP CONTROL
13	020	TXL	0.5	OG	ECM	20	VOLTAGE BOOST	P3	VOLTAGE BOOST #2
14	021	TXL	0.5	OG	ECM	21	VOLTAGE BOOST	P1	VOLTAGE BOOST#2
15	025	TXL	0.5	BK/RD	ECM	25	THROTTLE SAFTETY SWITCH	P2	SOFT STOP
16	026	TXL	0.5	OG/WH	ECM	26	SPEEDO CAPACITOR	P1	GROUND SPEED POWER
17	027	TXL	0.5TP	DG	ECM	27	CAN_LO_SPLICE	2	CAN LO
18	028	TXL	0.5TP	YE	ECM	28	CAN_HI_SPLICE	2	CAN HI
19	030	TXL	0.5	WH/YE	ECM	30	EV SOLENOID	2	EV SOLENOID CONTROL
20	033	TXL	0.5	WH/DB	ECM	33	CHASSIS POWER RELAY	2	CHASSIS RELAY CONTROL
21	034	TXL	0.5	RD	ECM	34	REGULATOR POWER SPLICE #1	2	DC REGULATOR POWER
22	035	TXL	1.0	RD	DC REGULATOR	P1	REGULATOR POWER SPLICE #1	1	DC REGULATOR POWER
23	037	TXL	0.8	RD	CHASSIS CAPACITOR	P1	FUEL PUMP SPLICE	2	DC REGULATOR POWER
24	038	TXL	0.8	RD	EV SOLENOID	1	REGULATOR POWER SPLICE #1	1	DC REGULATOR POWER
25	041	TXL	0.5	RD	CHASSIS POWER RELAY	3	CHASSIS POWER RELAY	1	DC REGULATOR POWER
26	042	TXL	1.0	RD/WH	CHASSIS POWER RELAY	5	CHASSIS_POWER_SPLICE	1	DC POWER
27	043	TXL	1.0	RD	REGULATOR POWER SPLICE #1	1	CHASSIS POWER RELAY	3	DC REGULATOR POWER
28	046	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	HOOD CHASSIS	2	DC POWER
29	056	TXL	0.5	RD	FUEL PUMP SPLICE	1	PUMP PRIME	1	DC POWER
30	057	TXL	0.8	RD	FUEL PUMP SPLICE	2	FUEL PUMP	1	FUEL PUMP POWER
31	058	TXL	0.5	OG	DIGITAL WRENCH	A	EXTERNAL POWER SPLICE	1	EXTERNAL POWER
32	059	TXL	0.5	OG	EXTERNAL POWER	1	EXTERNAL POWER SPLICE	1	EXTERNAL POWER
33	060	TXL	1.0	BN	DC REGULATOR	P2	CHASSIS ROUND #1	1	DC GROUND
34	063	TXL	1.0	BN	CHASSIS GROUND #2	1	CHASSIS ROUND #1	1	DC GROUND
35	064	TXL	0.8	BN	CHASSIS GROUND #2	1	OIL SENDER	P2	DC GROUND
36	065	TXL	1.0	BN	CHASSIS GROUND #2	1	DC POWER TEST	3	DC GROUND
37	066	TXL	1.0	BN	CHASSIS GROUND #2	1	ELECTRIC START	5	DC GROUND
38	067	TXL	1.0	BN	CHASSIS GROUND #2	1	CHASSIS CAPACITOR	P2	DC GROUND
39	070	TXL	0.8	BN	AC_REGULATOR	P3	TAILLIGHT	C	AC GROUND
40	072	TXL	0.8	BN	ECM GROUND SPLICE	2	HOOD CHASSIS	3	ECM GROUND
41	073	TXL	0.5	BN	SPEEDO CAPACITOR	P2	ECM GROUND SPLICE	2	ECM GROUND
42	074	TXL	0.5	BN	ECM GROUND SPLICE	1	FUEL PUMP	4	ECM GROUND
43	075	TXL	1.0	BN	CHASSIS CAPACITOR	P2	ECM GROUND SPLICE	1	ECM GROUND
44	076	TXL	0.8	BN	CHASSIS ROUND #1	1	TBD	E	DC GROUND
45	077	TXL	0.8	OG	BRAKE SPLICE	2	BRAKE SWITCH	P1	BRAKE GROUND
46	079	TXL	1.0	YE/RD	HOOD CHASSIS	1	TBD	A	HI BEAM GROUND
47	080	TXL	1.0	DG/YE	TBD	B	HOOD CHASSIS	9	LO BEAM GROUND
48	081	TXL	0.5	WH/RD	TBD	D	HOOD CHASSIS	12	MODE SWITCH
49	082	TXL	0.5	WH/BK	HOOD CHASSIS	4	TBD	F	SET SWITCH
50	083	TWP	0.5	OG/DG	TBD	A	THUMBWARMER	A	THUMBWARMER LO
51	084	TWP	0.5	WH/GY	TBD	B	THUMBWARMER	B	THUMBWARMER HI
52	085	TWP	0.5	BU	TBD	C	HW LOW SPLICE	1	HANDWARMER LO
53	086	TXL	0.5	WH	ELECTRIC START	4	HOOD CHASSIS	6	STARTER SOLENOID CONTROL
54	087	TXL	0.5	BN	GROUND SPEED SENSOR	C	SPEEDO CAPACITOR	P2	SPEED CAPACITOR GROUND
55	088	TXL	0.5	OG/WH	SPEEDO CAPACITOR	P1	GROUND SPEED SENSOR	A	SPEED CAPACITOR POWER
56	090	TWP	0.5	BU	HW LOW SPLICE	2	LH WARMER	A	HANDWARMER LO
57	091	TWP	0.5	BU	HW LOW SPLICE	1	RH WARMER	A	HANDWARMER LO
58	092	TWP	0.5	BU/RD	TBD	D	HW HIGH SPLICE	1	HANDWARMER HI
59	093	TWP	0.5	BU/RD	HW HIGH SPLICE	1	LH WARMER	B	HANDWARMER HI
60	094	TWP	0.5	BU/RD	HW HIGH SPLICE	2	RH WARMER	B	HANDWARMER HI
61	097	TXL	0.5	VT/WH	FUEL PUMP	2	HOOD CHASSIS	10	FUEL LEVEL
62	102	TWP	0.5	BK/DB	SENSOR GROUND SPLICE #1	2	TBD	F	SENSOR GROUND
63	103	TXL	0.5	BK/DB	SENSOR GROUND SPLICE #1	1	THROTTLE SAFTETY SWITCH	P1	SENSOR GROUND
64	104	TXL	0.5	BK/DB	HOOD CHASSIS	13	SENSOR GROUND SPLICE #1	2	SENSOR GROUND
65	105	TXL	0.5	BK/DB	SENSOR GROUND SPLICE #1	1	TETHER SWITCH	P1	SENSOR GROUND
66	106	TXL	0.5	BK/DB	TETHER SWITCH	P1	HARD STOP SWITCH	P2	SENSOR GROUND
67	107	TXL	0.5	BK	HARD STOP SPLICE	1	TETHER SWITCH	P2	HARD STOP
68	108	TXL	0.5	BK	TETHER SWITCH	P2	HARD STOP SWITCH	P1	HARD STOP
69	109	TXL	1.0	RD/WH	CHASSIS_POWER_SPLICE	1	DC POWER TEST	1	CHASSIS POWER
70	114	TXL	1.0	YE	TBD	C	AC STATOR POWER	6	AC_POWER
71	116	TXL	0.8	BN	HEATER GROUND SPLICE	2	THUMBWARMER	C	AC GROUND
72	117	TXL	0.8	BN	HEATER GROUND SPLICE	2	RH WARMER	C	AC GROUND
73	118	TXL	0.8	BN	HEATER GROUND SPLICE	1	LH WARMER	C	AC GROUND
74	119	TXL	0.8	BN	HEATER GROUND SPLICE	1	CHASSIS ROUND #1	1	AC GROUND
75	122	TXL	1.0	BN	AC_REGULATOR	P3	AC STATOR POWER	4	AC GROUND
76	123	TXL	1.0	BN	AC STATOR POWER	2	CHASSIS ROUND #1	1	AC GROUND
77	124	TXL	1.0	YE	AC STATOR POWER	6	AC_REGULATOR	P2	AC POWER
78	125	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	ACC POWER FUSE	1	DC POWER
79	127	TXL	0.8	RD/YE	ACC POWER FUSE	2	HOOD CHASSIS	5	ACCESSORY DC POWER
80	128	TXL	1.0	RD/DG	AC_REGULATOR	P1	ELECTRIC START	1	BATTERY CHARGE POWER
81	129	TXL	1.0	YE	AC STATOR POWER	3	AC POWER TEST	1	AC POWER
82	130	TXL	1.0	BN	AC STATOR POWER	2	AC POWER TEST	3	AC GROUND
83	131	TXL	0.8	OG	BRAKE SPLICE	1	ELECTRIC START	8	BRAKE SWITCH
84	132	TXL	0.8	OG	BRAKE SPLICE	2	TAILLIGHT	B	BRAKE SWITCH
85	135	TXL	0.8	RD	REGULATOR POWER SPLICE #1	2	CHASSIS CAPACITOR	P1	CHASSIS POWER
86	137	TXL	1.0	BN	AC STATOR POWER	4	HOOD CHASSIS	8	AC GROUND
87	138	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	BRAKE SWITCH	P2	CHASSIS DC POWER
88	139	TXL	0.8	RD/WH	BRAKE SWITCH	P2	TAILLIGHT	A	CHASSIS DC POWER
89	141	TXL	0.8	BK/DB	SENSOR GROUND SPLICE #1	2	FUEL SWITCH	P2	SENSOR GROUND
90	142	TXL	0.5	PK/BK	ECM	14	FUEL SWITCH	P1	FUEL SWITCH
91	143	TXL	0.8	RD/WH	CHASSIS POWER RELAY	5	ELECTRIC START	2	CHASSIS DC POWER
92	144	TXL	0.5TP	YE	DIGITAL WRENCH	H	CAN_HI_SPLICE	1	CAN HI
93	145	TXL	0.5TP	DG	DIGITAL WRENCH	G	CAN_LO_SPLICE	1	CAN LO
94	146	TXL	0.5	DG/RD	GROUND SPEED SPLICE	1	ELECTRIC START	3	GROUND SPEED SIGNAL
95	147	TXL	0.5	BK/WH	HOOD CHASSIS	11	ELECTRIC START	7	ABS MIL
96	148	TXL	0.8	BK	HARD STOP SPLICE	2	HOOD CHASSIS	14	HARD STOP
97	149	TXL	0.5TP	YE	CAN_HI_SPLICE	2	HOOD CHASSIS	15	CAN_HI (GAUGE)
98	150	TXL	0.5TP	DG	CAN_LO_SPLICE	2	HOOD CHASSIS	16	CAN_LO_(GAUGE)
99	151	TXL	0.5	BN/YE	FUEL PUMP	3	PUMP CONTROL SPLICE	2	FUEL PUMP CONTROL
100	152	TXL	0.8	BN/YE	PUMP CONTROL SPLICE	1	PUMP PRIME	2	FUEL PUMP CONTROL
101	153	TXL	0.8	RD	EXTERNAL POWER SPLICE	1	FUEL PUMP SPLICE	1	REGULATOR POWER
102	154	TXL	0.8	BN	EXTERNAL POWER	3	CHASSIS GROUND SPLICE	2	SENSOR GROUND
103	155	TXL	0.8	BN	CHASSIS GROUND SPLICE	1	DIGITAL WRENCH	D	SENSOR GROUND
104	156	TXL	0.8	BN	CHASSIS ROUND #1	1	CHASSIS GROUND SPLICE	2	GROUND
105	157	TXL	0.5	DG/RD	GROUND SPEED SENSOR	B	GROUND SPEED SPLICE	2	GROUND SPEED SIGNAL
106	158	TXL	0.8	RD	TAILLIGHT HARNESS JUMPER 1	C	TAILLIGHT HARNESS JUMPER 2	A	DC POWER
107	159	TXL	0.8	BN	TAILLIGHT HARNESS JUMPER 1	B	TAILLIGHT HARNESS JUMPER 2	C	AC GROUND
108	160	TXL	0.8	OG	TAILLIGHT HARNESS JUMPER 1	A	TAILLIGHT HARNESS JUMPER 2	B	BRAKE INPUT
109	J001	TXL	0.8	RD/DG	ELECTRIC START (2411375)	1	CIRCUIT BREAKER (2411375)	1	BATTERY CHARGE
110	J002	TXL	0.8	WH/RD	ELECTRIC START (2411375)	4	START SOLENOID (2411375)	P2	START SOLENOID CONTROL
111	J003	TXL	0.8	RD/DG	CIRCUIT BREAKER (2411375)	1	START SOLENOID (2411375)	P1	START SOLENOID POWER
112	J004	TXL	0.8	RD/DG	ELECTRIC START (2411375)	6	START SOLENOID (2411375)	P1	BATTERY VOLTAGE
113	J005	TXL	0.8	BN	ELECTRIC START (2411375)	5	BATTERY GROUND (2411375)	1	CHASSIS GROUND

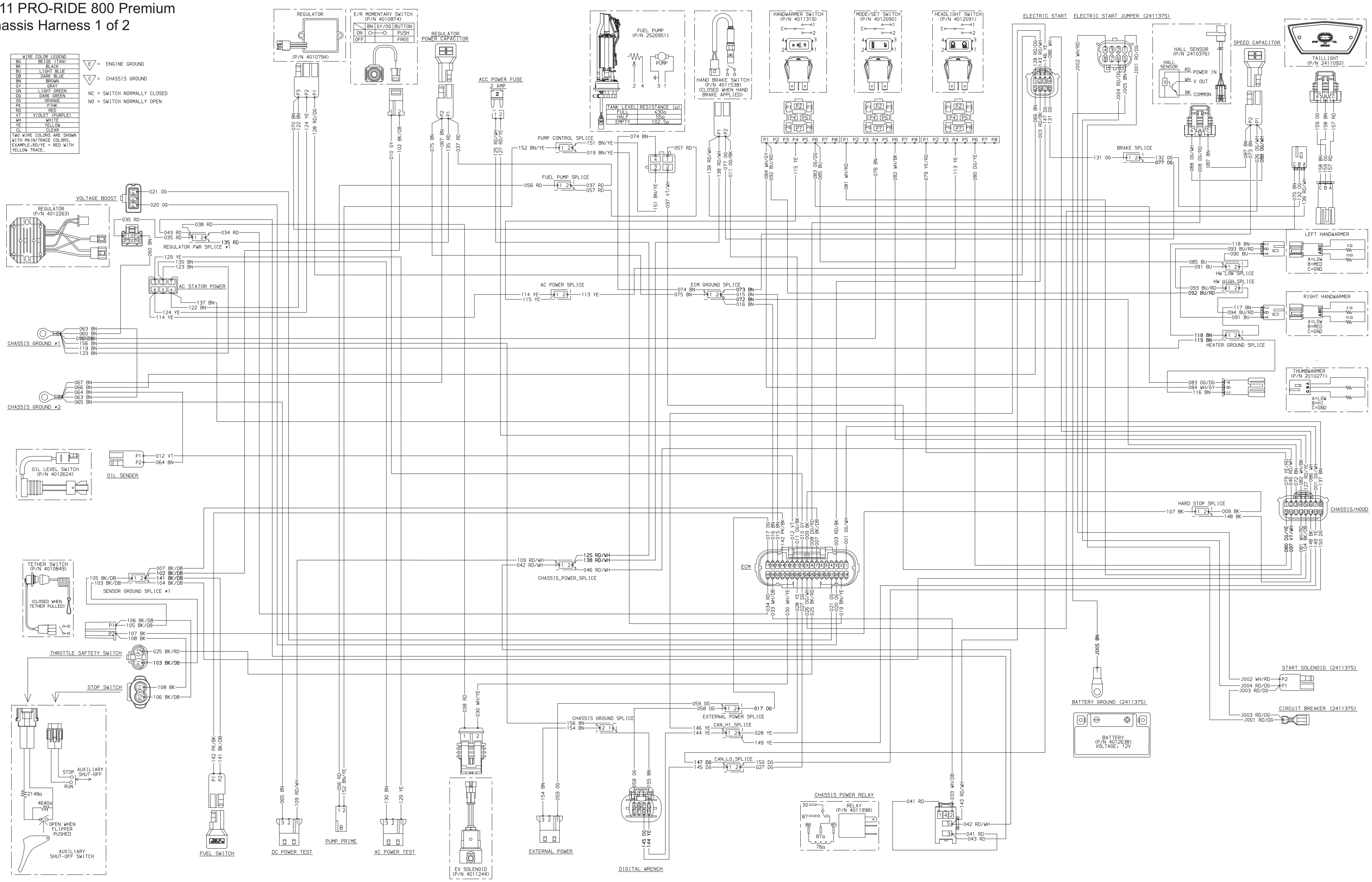
2011 PRO-RIDE 800 STD.
Chassis Harness 1 of 2



2011 PRO-RIDE 800 STD. Chassis Harness 2 of 2

SCHEMATIC CABLE/WIRE TERMINATION TABLE									
INDEX	CCT #	TYPE	GAUGE	COLOR	FROM COMPONENT	FROM PORT	TO COMPONENT	TO PORT	FUNCTION
1	001	TXL	0.5	DG/WH	ECM	1	HOOD CHASSIS	7	STARTER LOCKOUT
2	003	TXL	0.5	RD/BK	ECM	3	ELECTRIC START	6	BATTERY
3	007	TXL	0.5	BK/DB	SENSOR GROUND SPLICE #1	2	ECM	7	SENSOR GROUND
4	008	TXL	0.5	DG/RD	ECM	8	GROUND SPEED SPLICE	2	GROUND SPEED SIGNAL
5	009	TXL	0.5	BK	ECM	9	HARD STOP SPLICE	2	HARD STOP
6	010	TWP	0.5	GY	ECM	10	TBD	E	REVERSE SIGNAL
7	011	TXL	0.5	OG/BK	ECM	11	BRAKE SWITCH	P1	BRAKE SWITCH
8	012	TXL	0.5	VT	ECM	12	OIL SENDER	P1	LOW OIL
9	015	TXL	0.5	BN	ECM	15	ECM GROUND SPLICE	2	ECM GROUND
10	016	TXL	0.5	BN	ECM	16	ECM GROUND SPLICE	2	ECM GROUND
11	017	TXL	0.5	OG	ECM	17	EXTERNAL POWER SPLICE	2	EXTERNAL POWER
12	019	TXL	0.5	BN/YE	ECM	19	PUMP CONTROL SPLICE	2	FUEL PUMP CONTROL
13	020	TXL	0.5	OG	ECM	20	VOLTAGE BOOST	P3	VOLTAGE BOOST #2
14	021	TXL	0.5	OG	ECM	21	VOLTAGE BOOST	P1	VOLTAGE BOOST#2
15	025	TXL	0.5	BK/RD	ECM	25	THROTTLE SAFTETY SWITCH	P2	SOFT STOP
16	026	TXL	0.5	OG/WH	ECM	26	SPEEDO CAPACITOR	P1	GROUND SPEED POWER
17	027	TXL	0.5TP	DG	ECM	27	CAN_LO_SPLICE	2	CAN LO
18	028	TXL	0.5TP	YE	ECM	28	CAN_HI_SPLICE	2	CAN HI
19	030	TXL	0.5	WH/YE	ECM	30	EV SOLENOID	2	EV SOLENOID CONTROL
20	033	TXL	0.5	WH/DB	ECM	33	CHASSIS POWER RELAY	2	CHASSIS RELAY CONTROL
21	034	TXL	0.5	RD	ECM	34	REGULATOR POWER SPLICE #1	2	DC REGULATOR POWER
22	035	TXL	1.0	RD	DC REGULATOR	P1	REGULATOR POWER SPLICE #1	1	DC REGULATOR POWER
23	037	TXL	0.8	RD	CHASSIS CAPACITOR	P1	FUEL PUMP SPLICE	2	DC REGULATOR POWER
24	038	TXL	0.8	RD	EV SOLENOID	1	REGULATOR POWER SPLICE #1	1	DC REGULATOR POWER
25	041	TXL	0.5	RD	CHASSIS POWER RELAY	3	CHASSIS POWER RELAY	1	DC REGULATOR POWER
26	042	TXL	1.0	RD/WH	CHASSIS POWER RELAY	5	CHASSIS_POWER_SPLICE	1	DC POWER
27	043	TXL	1.0	RD	REGULATOR POWER SPLICE #1	1	CHASSIS POWER RELAY	3	DC REGULATOR POWER
28	046	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	HOOD CHASSIS	2	DC POWER
29	056	TXL	0.5	RD	FUEL PUMP SPLICE	1	PUMP PRIME	1	DC POWER
30	057	TXL	0.8	RD	FUEL PUMP SPLICE	2	FUEL PUMP	1	FUEL PUMP POWER
31	058	TXL	0.5	OG	DIGITAL WRENCH	A	EXTERNAL POWER SPLICE	1	EXTERNAL POWER
32	059	TXL	0.5	OG	EXTERNAL POWER	1	EXTERNAL POWER SPLICE	1	EXTERNAL POWER
33	060	TXL	1.0	BN	DC REGULATOR	P2	CHASSIS ROUND #1	1	DC GROUND
34	063	TXL	1.0	BN	CHASSIS GROUND #2	1	CHASSIS ROUND #1	1	DC GROUND
35	064	TXL	0.8	BN	CHASSIS GROUND #2	1	OIL SENDER	P2	DC GROUND
36	065	TXL	1.0	BN	CHASSIS GROUND #2	1	DC POWER TEST	3	DC GROUND
37	066	TXL	1.0	BN	CHASSIS GROUND #2	1	ELECTRIC START	5	DC GROUND
38	067	TXL	1.0	BN	CHASSIS GROUND #2	1	CHASSIS CAPACITOR	P2	DC GROUND
39	070	TXL	0.8	BN	AC_REGULATOR	P3	TAILLIGHT	C	AC GROUND
40	072	TXL	0.8	BN	ECM GROUND SPLICE	2	HOOD CHASSIS	3	ECM GROUND
41	073	TXL	0.5	BN	SPEEDO CAPACITOR	P2	ECM GROUND SPLICE	2	ECM GROUND
42	074	TXL	0.5	BN	ECM GROUND SPLICE	1	FUEL PUMP	4	ECM GROUND
43	075	TXL	1.0	BN	CHASSIS CAPACITOR	P2	ECM GROUND SPLICE	1	ECM GROUND
44	076	TXL	0.8	BN	CHASSIS ROUND #1	1	TBD	E	DC GROUND
45	077	TXL	0.8	OG	BRAKE SPLICE	2	BRAKE SWITCH	P1	BRAKE GROUND
46	079	TXL	1.0	YE/RD	HOOD CHASSIS	1	TBD	A	HI BEAM GROUND
47	080	TXL	1.0	DG/YE	TBD	B	HOOD CHASSIS	9	LO BEAM GROUND
48	081	TXL	0.5	WH/RD	TBD	D	HOOD CHASSIS	12	MODE SWITCH
49	082	TXL	0.5	WH/BK	HOOD CHASSIS	4	TBD	F	SET SWITCH
50	083	TWP	0.5	OG/DG	TBD	A	THUMBWARMER	A	THUMBWARMER LO
51	084	TWP	0.5	WH/GY	TBD	B	THUMBWARMER	B	THUMBWARMER HI
52	085	TWP	0.5	BU	TBD	C	HW LOW SPLICE	1	HANDWARMER LO
53	086	TXL	0.5	WH	ELECTRIC START	4	HOOD CHASSIS	6	STARTER SOLENOID CONTROL
54	087	TXL	0.5	BN	GROUND SPEED SENSOR	C	SPEEDO CAPACITOR	P2	SPEED CAPACITOR GROUND
55	088	TXL	0.5	OG/WH	SPEEDO CAPACITOR	P1	GROUND SPEED SENSOR	A	SPEED CAPACITOR POWER
56	090	TWP	0.5	BU	HW LOW SPLICE	2	LH WARMER	A	HANDWARMER LO
57	091	TWP	0.5	BU	HW LOW SPLICE	1	RH WARMER	A	HANDWARMER LO
58	092	TWP	0.5	BU/RD	TBD	D	HW HIGH SPLICE	1	HANDWARMER HI
59	093	TWP	0.5	BU/RD	HW HIGH SPLICE	1	LH WARMER	B	HANDWARMER HI
60	094	TWP	0.5	BU/RD	HW HIGH SPLICE	2	RH WARMER	B	HANDWARMER HI
61	097	TXL	0.5	VT/WH	FUEL PUMP	2	HOOD CHASSIS	10	FUEL LEVEL
62	102	TWP	0.5	BK/DB	SENSOR GROUND SPLICE #1	2	TBD	F	SENSOR GROUND
63	103	TXL	0.5	BK/DB	SENSOR GROUND SPLICE #1	1	THROTTLE SAFTETY SWITCH	P1	SENSOR GROUND
64	104	TXL	0.5	BK/DB	HOOD CHASSIS	13	SENSOR GROUND SPLICE #1	2	SENSOR GROUND
65	105	TXL	0.5	BK/DB	SENSOR GROUND SPLICE #1	1	TETHER SWITCH	P1	SENSOR GROUND
66	106	TXL	0.5	BK/DB	TETHER SWITCH	P1	HARD STOP SWITCH	P2	SENSOR GROUND
67	107	TXL	0.5	BK	HARD STOP SPLICE	1	TETHER SWITCH	P2	HARD STOP
68	108	TXL	0.5	BK	TETHER SWITCH	P2	HARD STOP SWITCH	P1	HARD STOP
69	109	TXL	1.0	RD/WH	CHASSIS_POWER_SPLICE	1	DC POWER TEST	1	CHASSIS POWER
70	114	TXL	1.0	YE	TBD	C	AC STATOR POWER	6	AC_POWER
71	116	TXL	0.8	BN	HEATER GROUND SPLICE	2	THUMBWARMER	C	AC GROUND
72	117	TXL	0.8	BN	HEATER GROUND SPLICE	2	RH WARMER	C	AC GROUND
73	118	TXL	0.8	BN	HEATER GROUND SPLICE	1	LH WARMER	C	AC GROUND
74	119	TXL	0.8	BN	HEATER GROUND SPLICE	1	CHASSIS ROUND #1	1	AC GROUND
75	122	TXL	1.0	BN	AC_REGULATOR	P3	AC STATOR POWER	4	AC GROUND
76	123	TXL	1.0	BN	AC STATOR POWER	2	CHASSIS ROUND #1	1	AC GROUND
77	124	TXL	1.0	YE	AC STATOR POWER	6	AC_REGULATOR	P2	AC POWER
78	125	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	ACC POWER FUSE	1	DC POWER
79	127	TXL	0.8	RD/YE	ACC POWER FUSE	2	HOOD CHASSIS	5	ACCESSORY DC POWER
80	128	TXL	1.0	RD/DG	AC_REGULATOR	P1	ELECTRIC START	1	BATTERY CHARGE POWER
81	129	TXL	1.0	YE	AC STATOR POWER	3	AC POWER TEST	1	AC POWER
82	130	TXL	1.0	BN	AC STATOR POWER	2	AC POWER TEST	3	AC GROUND
83	131	TXL	0.8	OG	BRAKE SPLICE	1	ELECTRIC START	8	BRAKE SWITCH
84	132	TXL	0.8	OG	BRAKE SPLICE	2	TAILLIGHT	B	BRAKE SWITCH
85	135	TXL	0.8	RD	REGULATOR POWER SPLICE #1	2	CHASSIS CAPACITOR	P1	CHASSIS POWER
86	137	TXL	1.0	BN	AC STATOR POWER	4	HOOD CHASSIS	8	AC GROUND
87	138	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	BRAKE SWITCH	P2	CHASSIS DC POWER
88	139	TXL	0.8	RD/WH	BRAKE SWITCH	P2	TAILLIGHT	A	CHASSIS DC POWER
89	141	TXL	0.8	BK/DB	SENSOR GROUND SPLICE #1	2	FUEL SWITCH	P2	SENSOR GROUND
90	142	TXL	0.5	PK/BK	ECM	14	FUEL SWITCH	P1	FUEL SWITCH
91	143	TXL	0.8	RD/WH	CHASSIS POWER RELAY	5	ELECTRIC START	2	CHASSIS DC POWER
92	144	TXL	0.5TP	YE	DIGITAL WRENCH	H	CAN_HI_SPLICE	1	CAN HI
93	145	TXL	0.5TP	DG	DIGITAL WRENCH	G	CAN_LO_SPLICE	1	CAN LO
94	146	TXL	0.5	DG/RD	GROUND SPEED SPLICE	1	ELECTRIC START	3	GROUND SPEED SIGNAL
95	147	TXL	0.5	BK/WH	HOOD CHASSIS	11	ELECTRIC START	7	ABS MIL
96	148	TXL	0.8	BK	HARD STOP SPLICE	2	HOOD CHASSIS	14	HARD STOP
97	149	TXL	0.5TP	YE	CAN_HI_SPLICE	2	HOOD CHASSIS	15	CAN_HI (GAUGE)
98	150	TXL	0.5TP	DG	CAN_LO_SPLICE	2	HOOD CHASSIS	16	CAN_LO_(GAUGE)
99	151	TXL	0.5	BN/YE	FUEL PUMP	3	PUMP CONTROL SPLICE	2	FUEL PUMP CONTROL
100	152	TXL	0.8	BN/YE	PUMP CONTROL SPLICE	1	PUMP PRIME	2	FUEL PUMP CONTROL
101	153	TXL	0.8	RD	EXTERNAL POWER SPLICE	1	FUEL PUMP SPLICE	1	REGULATOR POWER
102	154	TXL	0.8	BN	EXTERNAL POWER	3	CHASSIS GROUND SPLICE	2	SENSOR GROUND
103	155	TXL	0.8	BN	CHASSIS GROUND SPLICE	1	DIGITAL WRENCH	D	SENSOR GROUND
104	156	TXL	0.8	BN	CHASSIS ROUND #1	1	CHASSIS GROUND SPLICE	2	GROUND
105	157	TXL	0.5	DG/RD	GROUND SPEED SENSOR	B	GROUND SPEED SPLICE	2	GROUND SPEED SIGNAL
106	158	TXL	0.8	RD	TAILLIGHT HARNESS JUMPER 1	C	TAILLIGHT HARNESS JUMPER 2	A	DC POWER
107	159	TXL	0.8	BN	TAILLIGHT HARNESS JUMPER 1	B	TAILLIGHT HARNESS JUMPER 2	C	AC GROUND
108	160	TXL	0.8	OG	TAILLIGHT HARNESS JUMPER 1	A	TAILLIGHT HARNESS JUMPER 2	B	BRAKE INPUT
109	J001	TXL	0.8	RD/DG	ELECTRIC START (2411375)	1	CIRCUIT BREAKER (2411375)	1	BATTERY CHARGE
110	J002	TXL	0.8	WH/RD	ELECTRIC START (2411375)	4	START SOLENOID (2411375)	P2	START SOLENOID CONTROL
111	J003	TXL	0.8	RD/DG	CIRCUIT BREAKER (2411375)	1	START SOLENOID (2411375)	P1	START SOLENOID POWER
112	J004	TXL	0.8	RD/DG	ELECTRIC START (2411375)	6	START SOLENOID (2411375)	P1	BATTERY VOLTAGE
113	J005	TXL	0.8	BN	ELECTRIC START (2411375)	5	BATTERY GROUND (2411375)	1	CHASSIS GROUND

2011 PRO-RIDE 800 Premium
Chassis Harness 1 of 2



2011 PRO-RIDE 800 Premium Chassis Harness 2 of 2

SCHEMATIC CABLE/WIRE TERMINATION TABLE

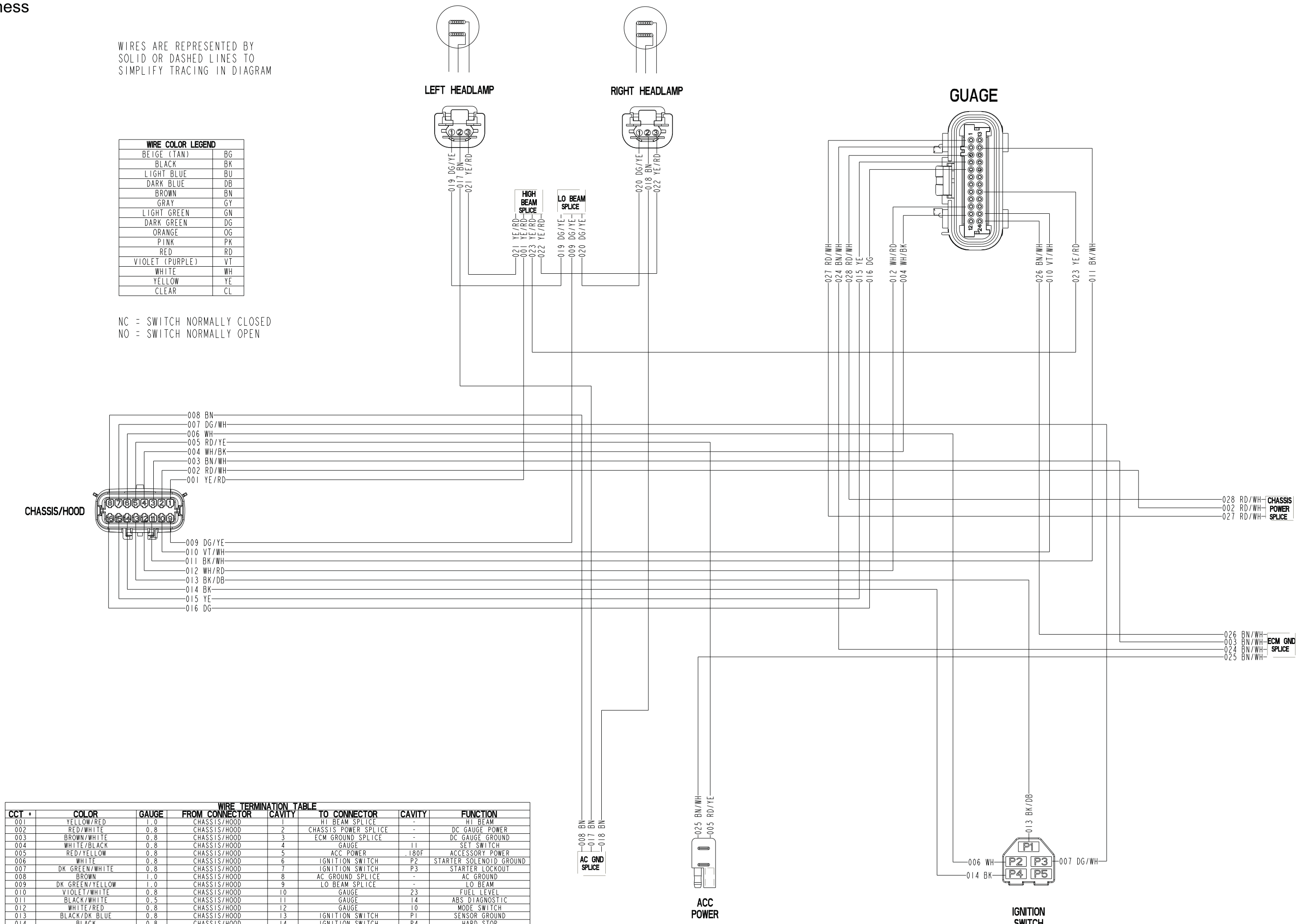
INDEX	CCT #	TYPE	GAUGE	COLOR	FROM COMPONENT	FROM PORT	TO COMPONENT	TO PORT	FUNCTION
1	001	TXL	0.5	DG/WH	ECM	1	HOOD CHASSIS	7	STARTER LOCKOUT
2	003	TXL	0.5	RD/BK	ECM	3	ELECTRIC START	6	BATTERY
3	007	TXL	0.5	BK/DB	SENSOR GROUND SPLICE #1	2	ECM	7	SENSOR GROUND
4	008	TXL	0.5	DG/RD	ECM	8	GROUND SPEED SENSOR	B	GROUND SPEED SIGNAL
5	009	TXL	0.5	BK	ECM	9	HARD STOP SPLICE	2	HARD STOP
6	010	TWP	0.5	GY	ECM	10	TBD	1	REVERSE SIGNAL
7	011	TXL	0.5	OG/BK	ECM	11	BRAKE SWITCH	P1	BRAKE SWITCH
8	012	TXL	0.5	VT	ECM	12	OIL SENDER	P1	LOW OIL
9	015	TXL	0.5	BN	ECM	15	ECM GROUND SPLICE	2	ECM GROUND
10	016	TXL	0.5	BN	ECM	16	ECM GROUND SPLICE	2	ECM GROUND
11	017	TXL	0.5	OG	ECM	17	EXTERNAL POWER SPLICE	2	EXTERNAL POWER
12	019	TXL	0.5	BN/YE	ECM	19	PUMP CONTROL SPLICE	2	FUEL PUMP CONTROL
13	020	TXL	0.5	OG	ECM	20	VOLTAGE BOOST	P3	VOLTAGE BOOST #2
14	021	TXL	0.5	OG	ECM	21	VOLTAGE BOOST	P1	VOLTAGE BOOST#2
15	025	TXL	0.5	BK/RD	ECM	25	THROTTLE SAFTETY SWITCH	P2	SOFT STOP
16	026	TXL	0.5	OG/WH	ECM	26	SPEEDO CAPACITOR	P1	GROUND SPEED POWER
17	027	TXL	0.5	DG	ECM	27	CAN_LO_SPLICE	2	CAN LO
18	028	TXL	0.5	YE	ECM	28	CAN_HI_SPLICE	2	CAN HI
19	030	TXL	0.5	WH/YE	ECM	30	EV SOLENOID	2	EV SOLENOID CONTROL
20	033	TXL	0.5	WH/DB	ECM	33	CHASSIS POWER RELAY	2	CHASSIS RELAY CONTROL
21	034	TXL	0.5	RD	ECM	34	REGULATOR PWR SPLICE #1	2	DC REGULATOR POWER
22	035	TXL	1.0	RD	DC REGULATOR	P1	REGULATOR PWR SPLICE #1	1	DC REGULATOR POWER
23	037	TXL	0.8	RD	CHASSIS CAPACITOR	P1	FUEL PUMP SPLICE	2	DC_REG_PWR
24	038	TXL	0.8	RD	EV SOLENOID	1	REGULATOR PWR SPLICE #1	1	DC REGULATOR POWER
25	041	TXL	0.5	RD	CHASSIS POWER RELAY	3	CHASSIS POWER RELAY	1	DC REGULATOR POWER
26	042	TXL	1.0	RD/WH	CHASSIS POWER RELAY	5	CHASSIS_POWER_SPLICE	1	DC POWER
27	043	TXL	1.0	RD	REGULATOR PWR SPLICE #1	1	CHASSIS POWER RELAY	3	DC REGULATOR POWER
28	046	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	HOOD CHASSIS	2	DC POWER
29	056	TXL	0.5	RD	FUEL PUMP SPLICE	1	PUMP PRIME	1	DC POWER
30	057	TXL	0.8	RD	FUEL PUMP SPLICE	2	FUEL PUMP	1	FUEL PUMP POWER
31	058	TXL	0.5	OG	DIGITAL WRENCH	A	EXTERNAL POWER SPLICE	1	EXTERNAL POWER
32	059	TXL	0.5	OG	EXTERNAL POWER	1	EXTERNAL POWER SPLICE	1	EXTERNAL POWER
33	060	TXL	1.0	BN	DC REGULATOR	P2	CHASSIS ROUND #1	1	DC GROUND
34	063	TXL	1.0	BN	CHASSIS GROUND #2	1	CHASSIS ROUND #1	1	DC GROUND
35	064	TXL	0.8	BN	CHASSIS GROUND #2	1	OIL SENDER	P2	DC GROUND
36	065	TXL	1.0	BN	CHASSIS GROUND #2	1	DC POWER TEST	3	DC GROUND
37	066	TXL	1.0	BN	CHASSIS GROUND #2	1	ELECTRIC START	5	DC GROUND
38	067	TXL	1.0	BN	CHASSIS GROUND #2	1	CHASSIS CAPACITOR	P2	DC GROUND
39	070	TXL	0.8	BN	AC_REGULATOR	P3	TAILLIGHT	C	AC GROUND
40	072	TXL	0.8	BN	ECM GROUND SPLICE	2	HOOD CHASSIS	3	ECM GROUND
41	073	TXL	0.5	BN	SPEEDO CAPACITOR	P2	ECM GROUND SPLICE	2	ECM GROUND
42	074	TXL	0.5	BN	ECM GROUND SPLICE	1	FUEL PUMP	4	ECM GROUND
43	075	TXL	1.0	BN	CHASSIS CAPACITOR	P2	ECM GROUND SPLICE	1	ECM GROUND
44	076	TXL	0.8	BN	CHASSIS ROUND #1	1	MODE SET SWITCH	P4	DC GROUND
45	077	TXL	0.8	OG	BRAKE SPLICE	2	BRAKE SWITCH	P1	BRAKE GROUND
46	079	TXL	1.0	YE/RD	HOOD CHASSIS	1	HEADLAMP SWITCH	P1	HI BEAM GROUND
47	080	TXL	1.0	DG/YE	HEADLAMP SWITCH	P6	HOOD CHASSIS	9	LO BEAM GROUND
48	081	TXL	0.5	WH/RD	MODE SET SWITCH	P1	HOOD CHASSIS	12	MODE SWITCH
49	082	TXL	0.5	WH/BK	HOOD CHASSIS	4	MODE SET SWITCH	P6	SET SWITCH
50	083	TWP	0.5	OG/DG	HEATER SWITCH	P6	THUMBWARMER	A	THUMBWARMER LO
51	084	TWP	0.5	WH/GY	HEATER SWITCH	P1	THUMBWARMER	B	THUMBWARMER HI
52	085	TWP	0.5	BU	HEATER SWITCH	P6	HW LOW SPLICE	1	HANDWARMER LO
53	086	TXL	0.5	WH	ELECTRIC START	4	HOOD CHASSIS	6	STARTER SOLENOID CONTROL
54	087	TXL	0.5	BN	GROUND SPEED SENSOR	C	SPEEDO CAPACITOR	P2	SPEED CAPACITOR GROUND
55	088	TXL	0.5	OG/WH	SPEEDO CAPACITOR	P1	GROUND SPEED SENSOR	A	SPEED CAPACITOR POWER
56	090	TWP	0.5	BU	HW LOW SPLICE	2	LH WARMER	A	HANDWARMER LO
57	091	TWP	0.5	BU	HW LOW SPLICE	1	RH WARMER	A	HANDWARMER LO
58	092	TWP	0.5	BU/RD	HEATER SWITCH	P1	HW HIGH SPLICE	1	HANDWARMER HI
59	093	TWP	0.5	BU/RD	HW HIGH SPLICE	1	LH WARMER	B	HANDWARMER HI
60	094	TWP	0.5	BU/RD	HW HIGH SPLICE	2	RH WARMER	B	HANDWARMER HI
61	097	TXL	0.5	VT/WH	FUEL PUMP	2	HOOD CHASSIS	10	FUEL LEVEL
62	102	TWP	0.5	BK/DB	SENSOR GROUND SPLICE #1	2	TBD	2	SENSOR GROUND
63	103	TXL	0.5	BK/DB	SENSOR GROUND SPLICE #1	1	THROTTLE SAFTETY SWITCH	P1	SENSOR GROUND
64	104	TXL	0.5	BK/DB	HOOD CHASSIS	13	SENSOR GROUND SPLICE #1	2	SENSOR GROUND
65	105	TXL	0.5	BK/DB	SENSOR GROUND SPLICE #1	1	TETHER SWITCH	P1	SENSOR GROUND
66	106	TXL	0.5	BK/DB	TETHER SWITCH	P1	HARD STOP SWITCH	P2	SENSOR GROUND
67	107	TXL	0.5	BK	HARD STOP SPLICE	1	TETHER SWITCH	P2	HARD STOP
68	108	TXL	0.5	BK	TETHER SWITCH	P2	HARD STOP SWITCH	P1	HARD STOP
69	109	TXL	1.0	RD/WH	CHASSIS_POWER_SPLICE	1	DC POWER TEST	1	CHASSIS POWER
70	113	TXL	1.0	YE	HEADLAMP SWITCH	P4	AC POWER SPLICE	2	AC POWER
71	114	TXL	1.0	YE	AC POWER SPLICE	1	AC STATOR POWER	6	AC_PWR
72	115	TXL	0.8	YE	HEATER SWITCH	P4	AC POWER SPLICE	1	AC POWER
73	116	TXL	0.8	BN	HEATER GROUND SPLICE	2	THUMBWARMER	C	AC GROUND
74	117	TXL	0.8	BN	HEATER GROUND SPLICE	2	RH WARMER	C	AC GROUND
75	118	TXL	0.8	BN	HEATER GROUND SPLICE	1	LH WARMER	C	AC GROUND
76	119	TXL	0.8	BN	HEATER GROUND SPLICE	1	CHASSIS ROUND #1	1	AC GROUND
77	122	TXL	1.0	BN	AC_REGULATOR	P3	AC STATOR POWER	4	AC GROUND
78	123	TXL	1.0	BN	AC STATOR POWER	2	CHASSIS ROUND #1	1	AC GROUND
79	124	TXL	1.0	YE	AC STATOR POWER	6	AC_REGULATOR	P2	AC POWER
80	125	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	ACC POWER FUSE	1	DC POWER
81	127	TXL	0.8	RD/YE	ACC POWER FUSE	2	HOOD CHASSIS	5	ACCESSORY DC POWER
82	128	TXL	1.0	RD/DG	AC_REGULATOR	P1	ELECTRIC START	1	BATTERY CHARGE POWER
83	129	TXL	1.0	YE	AC STATOR POWER	3	AC POWER TEST	1	AC POWER
84	130	TXL	1.0	BN	AC STATOR POWER	2	AC POWER TEST	3	AC GROUND
85	131	TXL	0.8	OG	BRAKE SPLICE	1	ELECTRIC START	8	BRAKE SWITCH
86	132	TXL	0.8	OG	BRAKE SPLICE	2	TAILLIGHT	B	BRAKE SWITCH
87	135	TXL	0.8	RD	REGULATOR PWR SPLICE #1	2	CHASSIS CAPACITOR	P1	CHASSIS POWER
88	137	TXL	1.0	BN	AC STATOR POWER	4	HOOD CHASSIS	8	AC GROUND
89	138	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	BRAKE SWITCH	P2	CHASSIS DC POWER
90	139	TXL	0.8	RD/WH	BRAKE SWITCH	P2	TAILLIGHT	A	CHASSIS DC POWER
91	141	TXL	0.8	BK/DB	SENSOR GROUND SPLICE #1	2	FUEL SWITCH	P2	SENSOR GROUND
92	142	TXL	0.5	PK/BK	ECM	14	FUEL SWITCH	P1	FUEL SWITCH
93	143	TXL	0.8	RD/WH	CHASSIS POWER RELAY	5	ELECTRIC START	2	CHASSIS DC POWER
94	144	TXL	0.5	YE	DIGITAL WRENCH	H	CAN_HI_SPLICE	1	CAN HI
95	145	TXL	0.5	DG	DIGITAL WRENCH	G	CAN_LO_SPLICE	1	CAN LO
96	146	TXL	0.5	YE	CAN_HI_SPLICE	1	ELECTRIC START	3	CAN_HI
97	147	TXL	0.5	DG	CAN_LO_SPLICE	1	ELECTRIC START	7	CAN_LO
98	148	TXL	0.8	BK	HARD STOP SPLICE	2	HOOD CHASSIS	14	HARD STOP
99	149	TXL	0.5	YE	CAN_HI_SPLICE	2	HOOD CHASSIS	15	CAN_HI (GAUGE)
100	150	TXL	0.5	DG	CAN_LO_SPLICE	2	HOOD CHASSIS	16	CAN_LO_(GAUGE)
101	151	TXL	0.5	BN/YE	FUEL PUMP	3	PUMP CONTROL SPLICE	2	FUEL PUMP CONTROL
102	152	TXL	0.8	BN/YE	PUMP CONTROL SPLICE	1	PUMP PRIME	2	FUEL PUMP CONTROL
103	154	TXL	0.8	BN	EXTERNAL POWER	3	CHASSIS GROUND SPLICE	2	SENSOR GROUND
104	155	TXL	0.8	BN	CHASSIS GROUND SPLICE	1	DIGITAL WRENCH	D	SENSOR GROUND
105	156	TXL	0.8	BN	CHASSIS ROUND #1	1	CHASSIS GROUND SPLICE	2	GROUND
106	157	TXL	0.8	RD	TAILLIGHT HARNESS JUMPER 1	C	TAILLIGHT HARNESS JUMPER 2	A	DC POWER
107	158	TXL	0.8	BN	TAILLIGHT HARNESS JUMPER 1	B	TAILLIGHT HARNESS JUMPER 2	C	AC GROUND
108	159	TXL	0.8	OG	TAILLIGHT HARNESS JUMPER 1	A	TAILLIGHT HARNESS JUMPER 2	B	BRAKE INPUT
109	J001	TXL	0.8	RD/DG	ELECTRIC START (2411375)	1	CIRCUIT BREAKER (2411375)	1	BATTERY CHARGE
110	J002	TXL	0.8	WH/RD	ELECTRIC START (2411375)	4	START SOLENOID (2411375)	P2	START SOLENOID CONTROL
111	J003	TXL	0.8	RD/DG	CIRCUIT BREAKER (2411375)	1	START SOLENOID (2411375)	P1	START SOLENOID POWER
112	J004	TXL	0.8	RD/DG	ELECTRIC START (2411375)	6	START SOLENOID (2411375)	P1	BATTERY VOLTAGE
113	J005	TXL	0.8	BN	ELECTRIC START (2411375)	5	BATTERY GROUND (2411375)	1	CHASSIS GROUND

2011 PRO-RIDE Hood Harness

WIRES ARE REPRESENTED BY
SOLID OR DASHED LINES TO
SIMPLIFY TRACING IN DIAGRAM

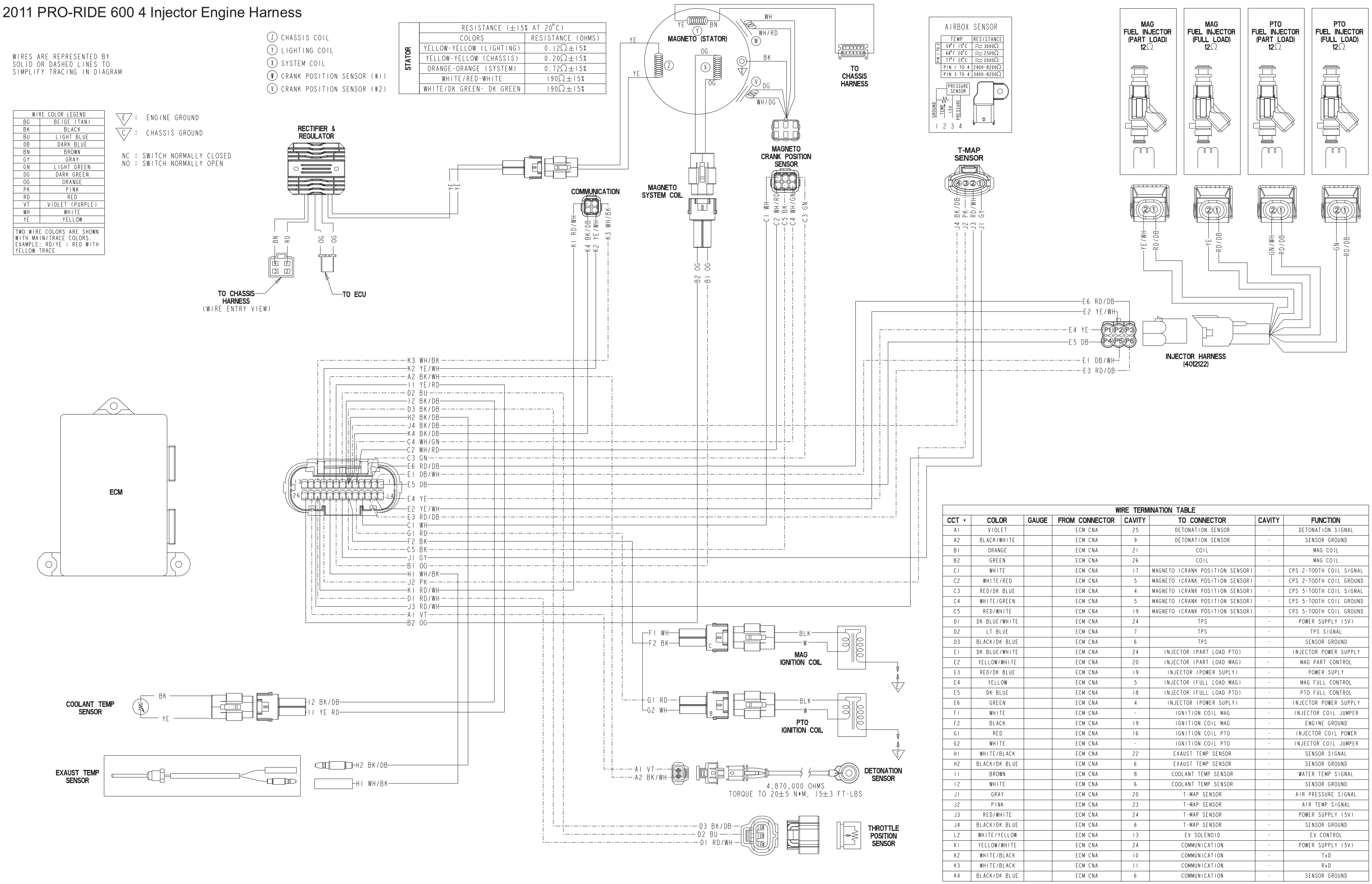
WIRE COLOR LEGEND	
BEIGE (TAN)	BG
BLACK	BK
LIGHT BLUE	BU
DARK BLUE	DB
BROWN	BN
GRAY	GY
LIGHT GREEN	GN
DARK GREEN	DG
ORANGE	OG
PINK	PK
RED	RD
VIOLET (PURPLE)	VT
WHITE	WH
YELLOW	YE
CLEAR	CL

NC = SWITCH NORMALLY CLOSED
NO = SWITCH NORMALLY OPEN



WIRE TERMINATION TABLE							
CCT #	COLOR	GAUGE	FROM CONNECTOR	CAVITY	TO CONNECTOR	CAVITY	FUNCTION
001	YELLOW/RED	1.0	CHASSIS/HOOD	1	HI BEAM SPLICE	-	HI BEAM
002	RED/WHITE	0.8	CHASSIS/HOOD	2	CHASSIS POWER SPLICE	-	DC GAUGE POWER
003	BROWN/WHITE	0.8	CHASSIS/HOOD	3	ECM GROUND SPLICE	-	DC GAUGE GROUND
004	WHITE/BLACK	0.8	CHASSIS/HOOD	4	GAUGE	11	SET SWITCH
005	RED/YELLOW	0.8	CHASSIS/HOOD	5	ACC POWER	.180F	ACCESSORY POWER
006	WHITE	0.8	CHASSIS/HOOD	6	IGNITION SWITCH	P2	STARTER SOLENOID GROUND
007	DK GREEN/WHITE	0.8	CHASSIS/HOOD	7	IGNITION SWITCH	P3	STARTER LOCKOUT
008	BROWN	1.0	CHASSIS/HOOD	8	AC GROUND SPLICE	-	AC GROUND
009	DK GREEN/YELLOW	1.0	CHASSIS/HOOD	9	LO BEAM SPLICE	-	LO BEAM
010	VIOLET/WHITE	0.8	CHASSIS/HOOD	10	GAUGE	23	FUEL LEVEL
011	BLACK/WHITE	0.5	CHASSIS/HOOD	11	GAUGE	14	ABS DIAGNOSTIC
012	WHITE/RED	0.8	CHASSIS/HOOD	12	GAUGE	10	MODE SWITCH
013	BLACK/DK BLUE	0.8	CHASSIS/HOOD	13	IGNITION SWITCH	P1	SENSOR GROUND
014	BLACK	0.8	CHASSIS/HOOD	14	IGNITION SWITCH	P4	HARD STOP
015	YELLOW	0.5TP	CHASSIS/HOOD	15	GAUGE	4	CAN HI
016	DK GREEN	0.5TP	CHASSIS/HOOD	16	GAUGE	5	CAN LO
017	BROWN	1.0	LEFT HEADLIGHT	2	AC GROUND SPLICE	-	AC GROUND
018	BROWN	1.0	RIGHT HEADLIGHT	2	AC GROUND SPLICE	-	AC GROUND
019	DK GREEN/YELLOW	1.0	LEFT HEADLIGHT	1	LO BEAM SPLICE	-	LO BEAM
020	DK GREEN/YELLOW	1.0	RIGHT HEADLIGHT	1	LO BEAM SPLICE	-	LO BEAM
021	YELLOW/RED	1.0	LEFT HEADLIGHT	3	HI BEAM SPLICE	-	HI BEAM
022	YELLOW/RED	1.0	RIGHT HEADLIGHT	3	HI BEAM SPLICE	-	HI BEAM
023	YELLOW/RED	0.8	GAUGE	20	HI BEAM SPLICE	-	HI BEAM INDICATOR
024	BROWN/WHITE	0.8	GAUGE	2	ECM GROUND SPLICE	-	DC GAUGE GROUND
025	BROWN/WHITE	0.8	ACC POWER	.180M	ECM GROUND SPLICE	-	ECM GROUND
026	BROWN/WHITE	0.8	GAUGE	24	ECM GROUND SPLICE	-	SYSTEM GROUND
027	RED/WHITE	0.8	GAUGE	1	CHASSIS POWER SPLICE	-	DC GAUGE POWER
028	RED/WHITE	0.8	GAUGE	3	CHASSIS POWER SPLICE	-	DC GAUGE POWER

2011 PRO-RIDE 600 4 Injector Engine Harness



WIRE TERMINATION TABLE							
CCT #	COLOR	GAUGE	FROM CONNECTOR	CAVITY	TO CONNECTOR	CAVITY	FUNCTION
A1	VIOLET		ECM CNA	25	DETONATION SENSOR	-	DETONATION SIGNAL
A2	BLACK/WHITE		ECM CNA	9	DETONATION SENSOR	-	SENSOR GROUND
B1	ORANGE		ECM CNA	21	COIL	-	MAG COIL
B2	GREEN		ECM CNA	26	COIL	-	MAG COIL
C1	WHITE		ECM CNA	17	MAGNETO (CRANK POSITION SENSOR)	-	CPS 2-TOOTH COIL SIGNAL
C2	WHITE/RED		ECM CNA	5	MAGNETO (CRANK POSITION SENSOR)	-	CPS 2-TOOTH COIL GROUND
C3	RED/DK BLUE		ECM CNA	4	MAGNETO (CRANK POSITION SENSOR)	-	CPS 5-TOOTH COIL SIGNAL
C4	WHITE/GREEN		ECM CNA	5	MAGNETO (CRANK POSITION SENSOR)	-	CPS 5-TOOTH COIL GROUND
C5	RED/WHITE		ECM CNA	19	MAGNETO (CRANK POSITION SENSOR)	-	CPS 5-TOOTH COIL GROUND
D1	DK BLUE/WHITE		ECM CNA	24	TPS	-	POWER SUPPLY (5V)
D2	LT BLUE		ECM CNA	7	TPS	-	TPS SIGNAL
D3	BLACK/DK BLUE		ECM CNA	6	TPS	-	SENSOR GROUND
E1	DK BLUE/WHITE		ECM CNA	24	INJECTOR (PART LOAD PTO)	-	INJECTOR POWER SUPPLY
E2	YELLOW/WHITE		ECM CNA	20	INJECTOR (PART LOAD MAG)	-	MAG PART CONTROL
E3	RED/DK BLUE		ECM CNA	19	INJECTOR (POWER SUPLY)	-	POWER SUPLY
E4	YELLOW		ECM CNA	5	INJECTOR (FULL LOAD MAG)	-	MAG FULL CONTROL
E5	DK BLUE		ECM CNA	18	INJECTOR (FULL LOAD PTO)	-	PTO FULL CONTROL
E6	GREEN		ECM CNA	4	INJECTOR (POWER SUPLY)	-	INJECTOR POWER SUPPLY
F1	WHITE		ECM CNA	-	IGNITION COIL MAG	-	INJECTOR COIL JUMPER
F2	BLACK		ECM CNA	19	IGNITION COIL MAG	-	ENGINE GROUND
G1	RED		ECM CNA	16	IGNITION COIL PTO	-	INJECTOR COIL POWER
G2	WHITE		ECM CNA	-	IGNITION COIL PTO	-	INJECTOR COIL JUMPER
H1	WHITE/BLACK		ECM CNA	22	EXAUST TEMP SENSOR	-	SENSOR SIGNAL
H2	BLACK/DK BLUE		ECM CNA	6	EXAUST TEMP SENSOR	-	SENSOR GROUND
I1	BROWN		ECM CNA	8	COOLANT TEMP SENSOR	-	WATER TEMP SIGNAL
I2	WHITE		ECM CNA	6	COOLANT TEMP SENSOR	-	SENSOR GROUND
J1	GRAY		ECM CNA	20	T-MAP SENSOR	-	AIR PRESSURE SIGNAL
J2	PINK		ECM CNA	23	T-MAP SENSOR	-	AIR TEMP SIGNAL
J3	RED/WHITE		ECM CNA	24	T-MAP SENSOR	-	POWER SUPPLY (5V)
J4	BLACK/DK BLUE		ECM CNA	6	T-MAP SENSOR	-	SENSOR GROUND
L2	WHITE/YELLOW		ECM CNA	13	EV SOLENOID	-	EV CONTROL
K1	YELLOW/WHITE		ECM CNA	24	COMMUNICATION	-	POWER SUPPLY (5V)
K2	WHITE/BLACK		ECM CNA	10	COMMUNICATION	-	TxD
K3	WHITE/BLACK		ECM CNA	11	COMMUNICATION	-	RxD
K4	BLACK/DK BLUE		ECM CNA	6	COMMUNICATION	-	SENSOR GROUND

2011 PRO-RIDE 800 2 Injector Engine Harness

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

E = ENGINE GROUND
C = CHASSIS GROUND

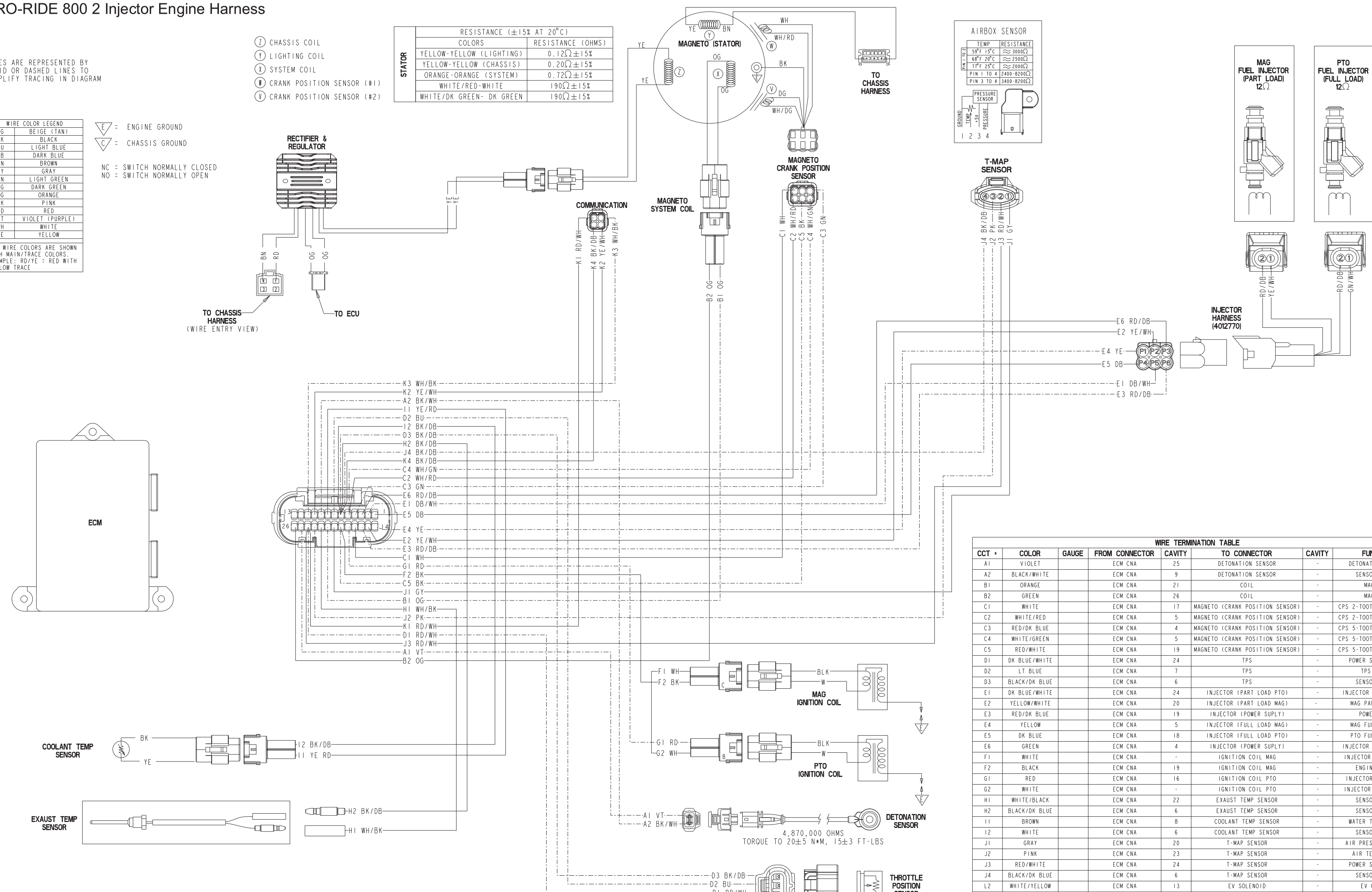
NC = SWITCH NORMALLY CLOSED
NO = SWITCH NORMALLY OPEN

Z CHASSIS COIL
Y LIGHTING COIL
X SYSTEM COIL
W CRANK POSITION SENSOR (#1)
V CRANK POSITION SENSOR (#2)

STATOR	RESISTANCE (±15% AT 20°C)	
	COLORS	RESISTANCE (OHMS)
	YELLOW-YELLOW (LIGHTING)	0.12Ω±15%
	YELLOW-YELLOW (CHASSIS)	0.20Ω±15%
	ORANGE-ORANGE (SYSTEM)	0.72Ω±15%
	WHITE/RED-WHITE	190Ω±15%
	WHITE/DK GREEN- DK GREEN	190Ω±15%

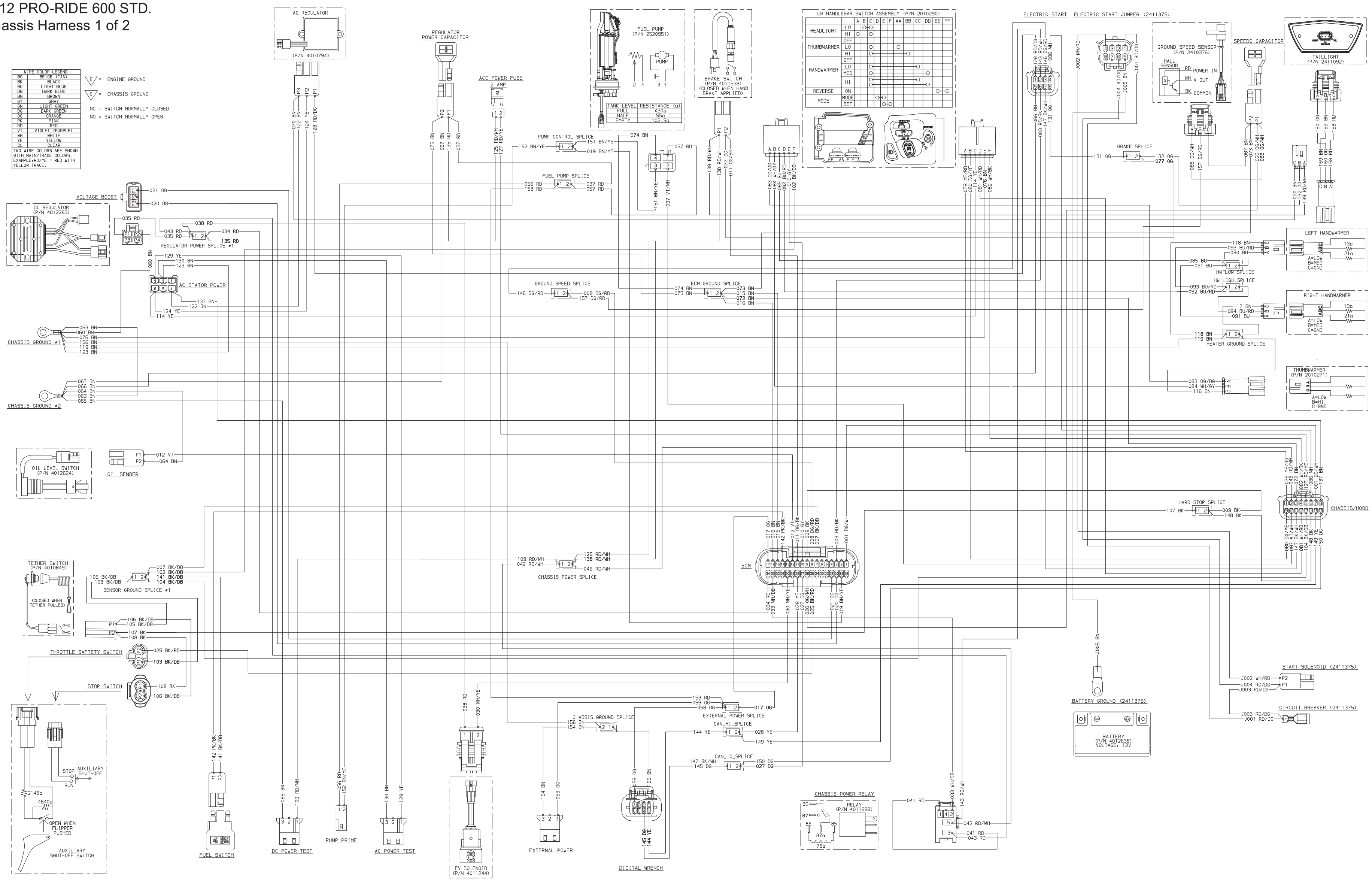
AIRBOX SENSOR

	TEMP	RESISTANCE
PIN 1 TO 2	59°F 15°C	≈ 3000Ω
	68°F 20°C	≈ 2500Ω
	77°F 25°C	≈ 2000Ω
	PIN 1 TO 4	2400-8200Ω
	PIN 3 TO 4	3400-8200Ω



WIRE TERMINATION TABLE							
CCT #	COLOR	GAUGE	FROM CONNECTOR	CAVITY	TO CONNECTOR	CAVITY	FUNCTION
A1	VIOLET		ECM CNA	25	DETONATION SENSOR	-	DETONATION SIGNAL
A2	BLACK/WHITE		ECM CNA	9	DETONATION SENSOR	-	SENSOR GROUND
B1	ORANGE		ECM CNA	21	COIL	-	MAG COIL
B2	GREEN		ECM CNA	26	COIL	-	MAG COIL
C1	WHITE		ECM CNA	17	MAGNETO (CRANK POSITION SENSOR)	-	CPS 2-TOOTH COIL SIGNAL
C2	WHITE/RED		ECM CNA	5	MAGNETO (CRANK POSITION SENSOR)	-	CPS 2-TOOTH COIL GROUND
C3	RED/DK BLUE		ECM CNA	4	MAGNETO (CRANK POSITION SENSOR)	-	CPS 5-TOOTH COIL SIGNAL
C4	WHITE/GREEN		ECM CNA	5	MAGNETO (CRANK POSITION SENSOR)	-	CPS 5-TOOTH COIL GROUND
C5	RED/WHITE		ECM CNA	19	MAGNETO (CRANK POSITION SENSOR)	-	CPS 5-TOOTH COIL GROUND
D1	DK BLUE/WHITE		ECM CNA	24	TPS	-	POWER SUPPLY (5V)
D2	LT BLUE		ECM CNA	7	TPS	-	TPS SIGNAL
D3	BLACK/DK BLUE		ECM CNA	6	TPS	-	SENSOR GROUND
E1	DK BLUE/WHITE		ECM CNA	24	INJECTOR (PART LOAD PTO)	-	INJECTOR POWER SUPPLY
E2	YELLOW/WHITE		ECM CNA	20	INJECTOR (PART LOAD MAG)	-	MAG PART CONTROL
E3	RED/DK BLUE		ECM CNA	19	INJECTOR (POWER SUPLY)	-	POWER SUPLY
E4	YELLOW		ECM CNA	5	INJECTOR (FULL LOAD MAG)	-	MAG FULL CONTROL
E5	DK BLUE		ECM CNA	18	INJECTOR (FULL LOAD PTO)	-	PTO FULL CONTROL
E6	GREEN		ECM CNA	4	INJECTOR (POWER SUPLY)	-	INJECTOR POWER SUPPLY
F1	WHITE		ECM CNA	-	IGNITION COIL MAG	-	INJECTOR COIL JUMPER
F2	BLACK		ECM CNA	19	IGNITION COIL MAG	-	ENGINE GROUND
G1	RED		ECM CNA	16	IGNITION COIL PTO	-	INJECTOR COIL POWER
G2	WHITE		ECM CNA	-	IGNITION COIL PTO	-	INJECTOR COIL JUMPER
H1	WHITE/BLACK		ECM CNA	22	EXAUST TEMP SENSOR	-	SENSOR SIGNAL
H2	BLACK/DK BLUE		ECM CNA	6	EXAUST TEMP SENSOR	-	SENSOR GROUND
I1	BROWN		ECM CNA	8	COOLANT TEMP SENSOR	-	WATER TEMP SIGNAL
I2	WHITE		ECM CNA	6	COOLANT TEMP SENSOR	-	SENSOR GROUND
J1	GRAY		ECM CNA	20	T-MAP SENSOR	-	AIR PRESSURE SIGNAL
J2	PINK		ECM CNA	23	T-MAP SENSOR	-	AIR TEMP SIGNAL
J3	RED/WHITE		ECM CNA	24	T-MAP SENSOR	-	POWER SUPPLY (5V)
J4	BLACK/DK BLUE		ECM CNA	6	T-MAP SENSOR	-	SENSOR GROUND
L2	WHITE/YELLOW		ECM CNA	13	EV SOLENOID	-	EV CONTROL
K1	YELLOW/WHITE		ECM CNA	24	COMMUNICATION	-	POWER SUPPLY (5V)
K2	WHITE/BLACK		ECM CNA	10	COMMUNICATION	-	TxD
K3	WHITE/BLACK		ECM CNA	11	COMMUNICATION	-	RxD
K4	BLACK/DK BLUE		ECM CNA	6	COMMUNICATION	-	SENSOR GROUND

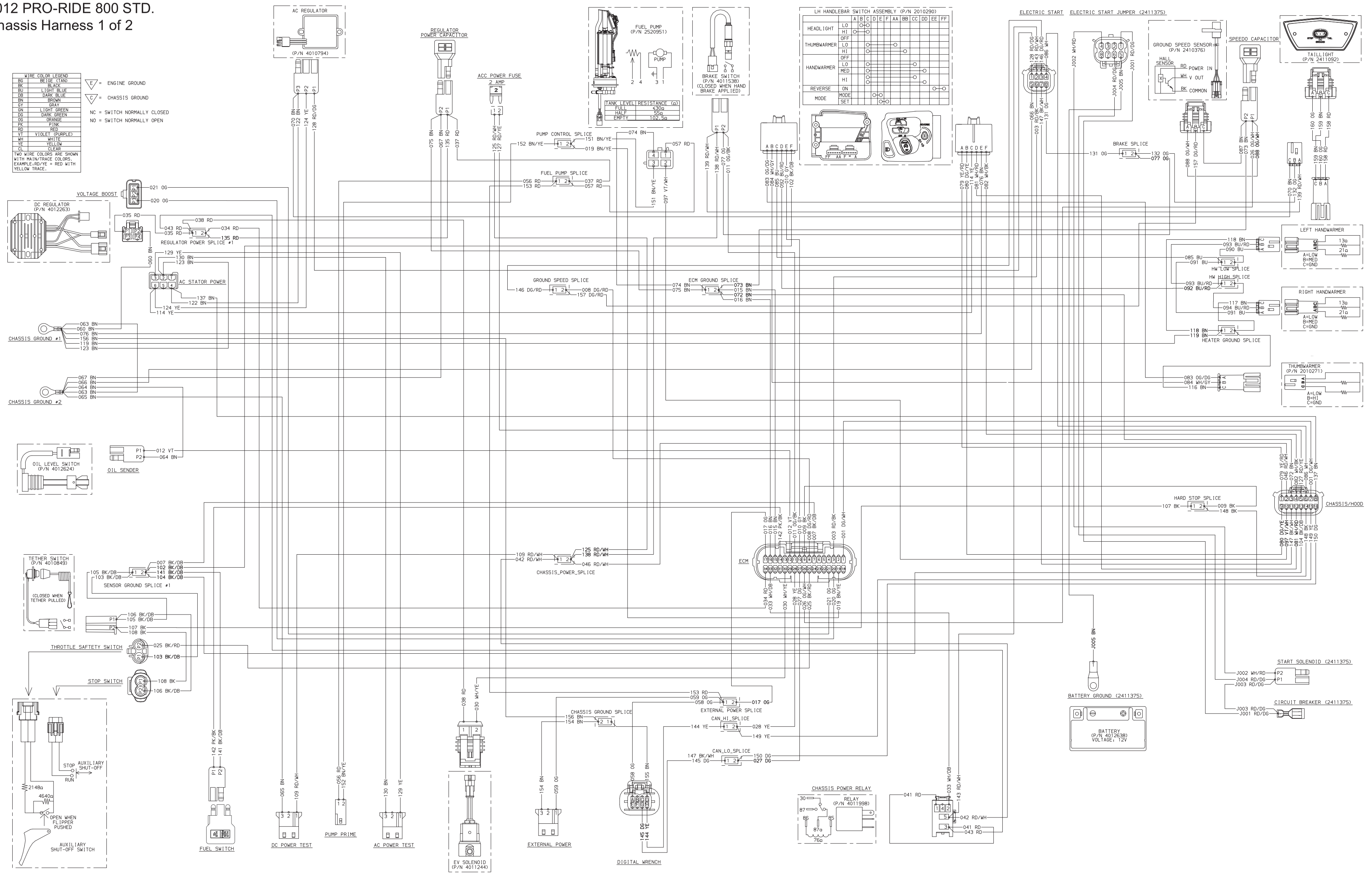
2012 PRO-RIDE 600 STD.
Chassis Harness 1 of 2



SCHEMATIC CABLE/WIRE TERMINATION TABLE

INDEX	CCT #	TYPE	GAUGE	COLOR	FROM COMPONENT	FROM PORT	TO COMPONENT	TO PORT	FUNCTION
1	001	TXL	0.5	DG/WH	ECM	1	HOOD CHASSIS	7	STARTER LOCKOUT
2	003	TXL	0.5	RD/BK	ECM	3	ELECTRIC START	6	BATTERY
3	007	TXL	0.5	BK/DB	SENSOR GROUND SPLICE #1	2	ECM	7	SENSOR GROUND
4	008	TXL	0.5	DG/RD	ECM	8	GROUND SPEED SPLICE	2	GROUND SPEED SIGNAL
5	009	TXL	0.5	BK	ECM	9	HARD STOP SPLICE	2	HARD STOP
6	010	TWP	0.5	GY	ECM	10	TBD	E	REVERSE SIGNAL
7	011	TXL	0.5	OG/BK	ECM	11	BRAKE SWITCH	P1	BRAKE SWITCH
8	012	TXL	0.5	VT	ECM	12	OIL SENDER	P1	LOW OIL
9	015	TXL	0.5	BN	ECM	15	ECM GROUND SPLICE	2	ECM GROUND
10	016	TXL	0.5	BN	ECM	16	ECM GROUND SPLICE	2	ECM GROUND
11	017	TXL	0.5	OG	ECM	17	EXTERNAL POWER SPLICE	2	EXTERNAL POWER
12	019	TXL	0.5	BN/YE	ECM	19	PUMP CONTROL SPLICE	2	FUEL PUMP CONTROL
13	020	TXL	0.5	OG	ECM	20	VOLTAGE BOOST	P3	VOLTAGE BOOST #2
14	021	TXL	0.5	OG	ECM	21	VOLTAGE BOOST	P1	VOLTAGE BOOST#2
15	025	TXL	0.5	BK/RD	ECM	25	THROTTLE SAFTETY SWITCH	P2	SOFT STOP
16	026	TXL	0.5	OG/WH	ECM	26	SPEEDO CAPACITOR	P1	GROUND SPEED POWER
17	027	TXL	0.5TP	DG	ECM	27	CAN_LO_SPLICE	2	CAN LO
18	028	TXL	0.5TP	YE	ECM	28	CAN_HI_SPLICE	2	CAN HI
19	030	TXL	0.5	WH/YE	ECM	30	EV SOLENOID	2	EV SOLENOID CONTROL
20	033	TXL	0.5	WH/DB	ECM	33	CHASSIS POWER RELAY	2	CHASSIS RELAY CONTROL
21	034	TXL	0.5	RD	ECM	34	REGULATOR POWER SPLICE #1	2	DC REGULATOR POWER
22	035	TXL	1.0	RD	DC REGULATOR	P1	REGULATOR POWER SPLICE #1	1	DC REGULATOR POWER
23	037	TXL	0.8	RD	CHASSIS CAPACITOR	P1	FUEL PUMP SPLICE	2	DC REGULATOR POWER
24	038	TXL	0.8	RD	EV SOLENOID	1	REGULATOR POWER SPLICE #1	1	DC REGULATOR POWER
25	041	TXL	0.5	RD	CHASSIS POWER RELAY	3	CHASSIS POWER RELAY	1	DC REGULATOR POWER
26	042	TXL	1.0	RD/WH	CHASSIS POWER RELAY	5	CHASSIS_POWER_SPLICE	1	DC POWER
27	043	TXL	1.0	RD	REGULATOR POWER SPLICE #1	1	CHASSIS POWER RELAY	3	DC REGULATOR POWER
28	046	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	HOOD CHASSIS	2	DC POWER
29	056	TXL	0.5	RD	FUEL PUMP SPLICE	1	PUMP PRIME	1	DC POWER
30	057	TXL	0.8	RD	FUEL PUMP SPLICE	2	FUEL PUMP	1	FUEL PUMP POWER
31	058	TXL	0.5	OG	DIGITAL WRENCH	A	EXTERNAL POWER SPLICE	1	EXTERNAL POWER
32	059	TXL	0.5	OG	EXTERNAL POWER	1	EXTERNAL POWER SPLICE	1	EXTERNAL POWER
33	060	TXL	1.0	BN	DC REGULATOR	P2	CHASSIS ROUND #1	1	DC GROUND
34	063	TXL	1.0	BN	CHASSIS GROUND #2	1	CHASSIS ROUND #1	1	DC GROUND
35	064	TXL	0.8	BN	CHASSIS GROUND #2	1	OIL SENDER	P2	DC GROUND
36	065	TXL	1.0	BN	CHASSIS GROUND #2	1	DC POWER TEST	3	DC GROUND
37	066	TXL	1.0	BN	CHASSIS GROUND #2	1	ELECTRIC START	5	DC GROUND
38	067	TXL	1.0	BN	CHASSIS GROUND #2	1	CHASSIS CAPACITOR	P2	DC GROUND
39	070	TXL	0.8	BN	AC_REGULATOR	P3	TAILLIGHT	C	AC GROUND
40	072	TXL	0.8	BN	ECM GROUND SPLICE	2	HOOD CHASSIS	3	ECM GROUND
41	073	TXL	0.5	BN	SPEEDO CAPACITOR	P2	ECM GROUND SPLICE	2	ECM GROUND
42	074	TXL	0.5	BN	ECM GROUND SPLICE	1	FUEL PUMP	4	ECM GROUND
43	075	TXL	1.0	BN	CHASSIS CAPACITOR	P2	ECM GROUND SPLICE	1	ECM GROUND
44	076	TXL	0.8	BN	CHASSIS ROUND #1	1	TBD	E	DC GROUND
45	077	TXL	0.8	OG	BRAKE SPLICE	2	BRAKE SWITCH	P1	BRAKE GROUND
46	079	TXL	1.0	YE/RD	HOOD CHASSIS	1	TBD	A	HI BEAM GROUND
47	080	TXL	1.0	DG/YE	TBD	B	HOOD CHASSIS	9	LO BEAM GROUND
48	081	TXL	0.5	WH/RD	TBD	D	HOOD CHASSIS	12	MODE SWITCH
49	082	TXL	0.5	WH/BK	HOOD CHASSIS	4	TBD	F	SET SWITCH
50	083	TWP	0.5	OG/DG	TBD	A	THUMBWARMER	A	THUMBWARMER LO
51	084	TWP	0.5	WH/GY	TBD	B	THUMBWARMER	B	THUMBWARMER HI
52	085	TWP	0.5	BU	TBD	C	HW LOW SPLICE	1	HANDWARMER LO
53	086	TXL	0.5	WH	ELECTRIC START	4	HOOD CHASSIS	6	STARTER SOLENOID CONTROL
54	087	TXL	0.5	BN	GROUND SPEED SENSOR	C	SPEEDO CAPACITOR	P2	SPEED CAPACITOR GROUND
55	088	TXL	0.5	OG/WH	SPEEDO CAPACITOR	P1	GROUND SPEED SENSOR	A	SPEED CAPACITOR POWER
56	090	TWP	0.5	BU	HW LOW SPLICE	2	LH WARMER	A	HANDWARMER LO
57	091	TWP	0.5	BU	HW LOW SPLICE	1	RH WARMER	A	HANDWARMER LO
58	092	TWP	0.5	BU/RD	TBD	D	HW HIGH SPLICE	1	HANDWARMER HI
59	093	TWP	0.5	BU/RD	HW HIGH SPLICE	1	LH WARMER	B	HANDWARMER HI
60	094	TWP	0.5	BU/RD	HW HIGH SPLICE	2	RH WARMER	B	HANDWARMER HI
61	097	TXL	0.5	VT/WH	FUEL PUMP	2	HOOD CHASSIS	10	FUEL LEVEL
62	102	TWP	0.5	BK/DB	SENSOR GROUND SPLICE #1	2	TBD	F	SENSOR GROUND
63	103	TXL	0.5	BK/DB	SENSOR GROUND SPLICE #1	1	THROTTLE SAFTETY SWITCH	P1	SENSOR GROUND
64	104	TXL	0.5	BK/DB	HOOD CHASSIS	13	SENSOR GROUND SPLICE #1	2	SENSOR GROUND
65	105	TXL	0.5	BK/DB	SENSOR GROUND SPLICE #1	1	TETHER SWITCH	P1	SENSOR GROUND
66	106	TXL	0.5	BK/DB	TETHER SWITCH	P1	HARD STOP SWITCH	P2	SENSOR GROUND
67	107	TXL	0.5	BK	HARD STOP SPLICE	1	TETHER SWITCH	P2	HARD STOP
68	108	TXL	0.5	BK	TETHER SWITCH	P2	HARD STOP SWITCH	P1	HARD STOP
69	109	TXL	1.0	RD/WH	CHASSIS_POWER_SPLICE	1	DC POWER TEST	1	CHASSIS POWER
70	114	TXL	1.0	YE	TBD	C	AC STATOR POWER	6	AC_POWER
71	116	TXL	0.8	BN	HEATER GROUND SPLICE	2	THUMBWARMER	C	AC GROUND
72	117	TXL	0.8	BN	HEATER GROUND SPLICE	2	RH WARMER	C	AC GROUND
73	118	TXL	0.8	BN	HEATER GROUND SPLICE	1	LH WARMER	C	AC GROUND
74	119	TXL	0.8	BN	HEATER GROUND SPLICE	1	CHASSIS ROUND #1	1	AC GROUND
75	122	TXL	1.0	BN	AC_REGULATOR	P3	AC STATOR POWER	4	AC GROUND
76	123	TXL	1.0	BN	AC STATOR POWER	2	CHASSIS ROUND #1	1	AC GROUND
77	124	TXL	1.0	YE	AC STATOR POWER	6	AC_REGULATOR	P2	AC POWER
78	125	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	ACC POWER FUSE	1	DC POWER
79	127	TXL	0.8	RD/YE	ACC POWER FUSE	2	HOOD CHASSIS	5	ACCESSORY DC POWER
80	128	TXL	1.0	RD/DG	AC_REGULATOR	P1	ELECTRIC START	1	BATTERY CHARGE POWER
81	129	TXL	1.0	YE	AC STATOR POWER	3	AC POWER TEST	1	AC POWER
82	130	TXL	1.0	BN	AC STATOR POWER	2	AC POWER TEST	3	AC GROUND
83	131	TXL	0.8	OG	BRAKE SPLICE	1	ELECTRIC START	8	BRAKE SWITCH
84	132	TXL	0.8	OG	BRAKE SPLICE	2	TAILLIGHT	B	BRAKE SWITCH
85	135	TXL	0.8	RD	REGULATOR POWER SPLICE #1	2	CHASSIS CAPACITOR	P1	CHASSIS POWER
86	137	TXL	1.0	BN	AC STATOR POWER	4	HOOD CHASSIS	8	AC GROUND
87	138	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	BRAKE SWITCH	P2	CHASSIS DC POWER
88	139	TXL	0.8	RD/WH	BRAKE SWITCH	P2	TAILLIGHT	A	CHASSIS DC POWER
89	141	TXL	0.8	BK/DB	SENSOR GROUND SPLICE #1	2	FUEL SWITCH	P2	SENSOR GROUND
90	142	TXL	0.5	PK/BK	ECM	14	FUEL SWITCH	P1	FUEL SWITCH
91	143	TXL	0.8	RD/WH	CHASSIS POWER RELAY	5	ELECTRIC START	2	CHASSIS DC POWER
92	144	TXL	0.5TP	YE	DIGITAL WRENCH	H	CAN_HI_SPLICE	1	CAN HI
93	145	TXL	0.5TP	DG	DIGITAL WRENCH	G	CAN_LO_SPLICE	1	CAN LO
94	146	TXL	0.5	DG/RD	GROUND SPEED SPLICE	1	ELECTRIC START	3	GROUND SPEED SIGNAL
95	147	TXL	0.5	BK/WH	HOOD CHASSIS	11	ELECTRIC START	7	ABS MIL
96	148	TXL	0.8	BK	HARD STOP SPLICE	2	HOOD CHASSIS	14	HARD STOP
97	149	TXL	0.5TP	YE	CAN_HI_SPLICE	2	HOOD CHASSIS	15	CAN_HI (GAUGE)
98	150	TXL	0.5TP	DG	CAN_LO_SPLICE	2	HOOD CHASSIS	16	CAN_LO_(GAUGE)
99	151	TXL	0.5	BN/YE	FUEL PUMP	3	PUMP CONTROL SPLICE	2	FUEL PUMP CONTROL
100	152	TXL	0.8	BN/YE	PUMP CONTROL SPLICE	1	PUMP PRIME	2	FUEL PUMP CONTROL
101	153	TXL	0.8	RD	EXTERNAL POWER SPLICE	1	FUEL PUMP SPLICE	1	REGULATOR POWER
102	154	TXL	0.8	BN	EXTERNAL POWER	3	CHASSIS GROUND SPLICE	2	SENSOR GROUND
103	155	TXL	0.8	BN	CHASSIS GROUND SPLICE	1	DIGITAL WRENCH	D	SENSOR GROUND
104	156	TXL	0.8	BN	CHASSIS ROUND #1	1	CHASSIS GROUND SPLICE	2	GROUND
105	157	TXL	0.5	DG/RD	GROUND SPEED SENSOR	B	GROUND SPEED SPLICE	2	GROUND SPEED SIGNAL
106	158	TXL	0.8	RD	TAILLIGHT HARNESS JUMPER 1	C	TAILLIGHT HARNESS JUMPER 2	A	DC POWER
107	159	TXL	0.8	BN	TAILLIGHT HARNESS JUMPER 1	B	TAILLIGHT HARNESS JUMPER 2	C	AC GROUND
108	160	TXL	0.8	OG	TAILLIGHT HARNESS JUMPER 1	A	TAILLIGHT HARNESS JUMPER 2	B	BRAKE INPUT
109	J001	TXL	0.8	RD/DG	ELECTRIC START (2411375)	1	CIRCUIT BREAKER (2411375)	1	BATTERY CHARGE
110	J002	TXL	0.8	WH/RD	ELECTRIC START (2411375)	4	START SOLENOID (2411375)	P2	START SOLENOID CONTROL
111	J003	TXL	0.8	RD/DG	CIRCUIT BREAKER (2411375)	1	START SOLENOID (2411375)	P1	START SOLENOID POWER
112	J004	TXL	0.8	RD/DG	ELECTRIC START (2411375)	6	START SOLENOID (2411375)	P1	BATTERY VOLTAGE
113	J005	TXL	0.8	BN	ELECTRIC START (2411375)	5	BATTERY GROUND (2411375)	1	CHASSIS GROUND

2012 PRO-RIDE 800 STD.
Chassis Harness 1 of 2



2012 PRO-RIDE 800 STD. Chassis Harness 2 of 2

SCHEMATIC CABLE/WIRE TERMINATION TABLE

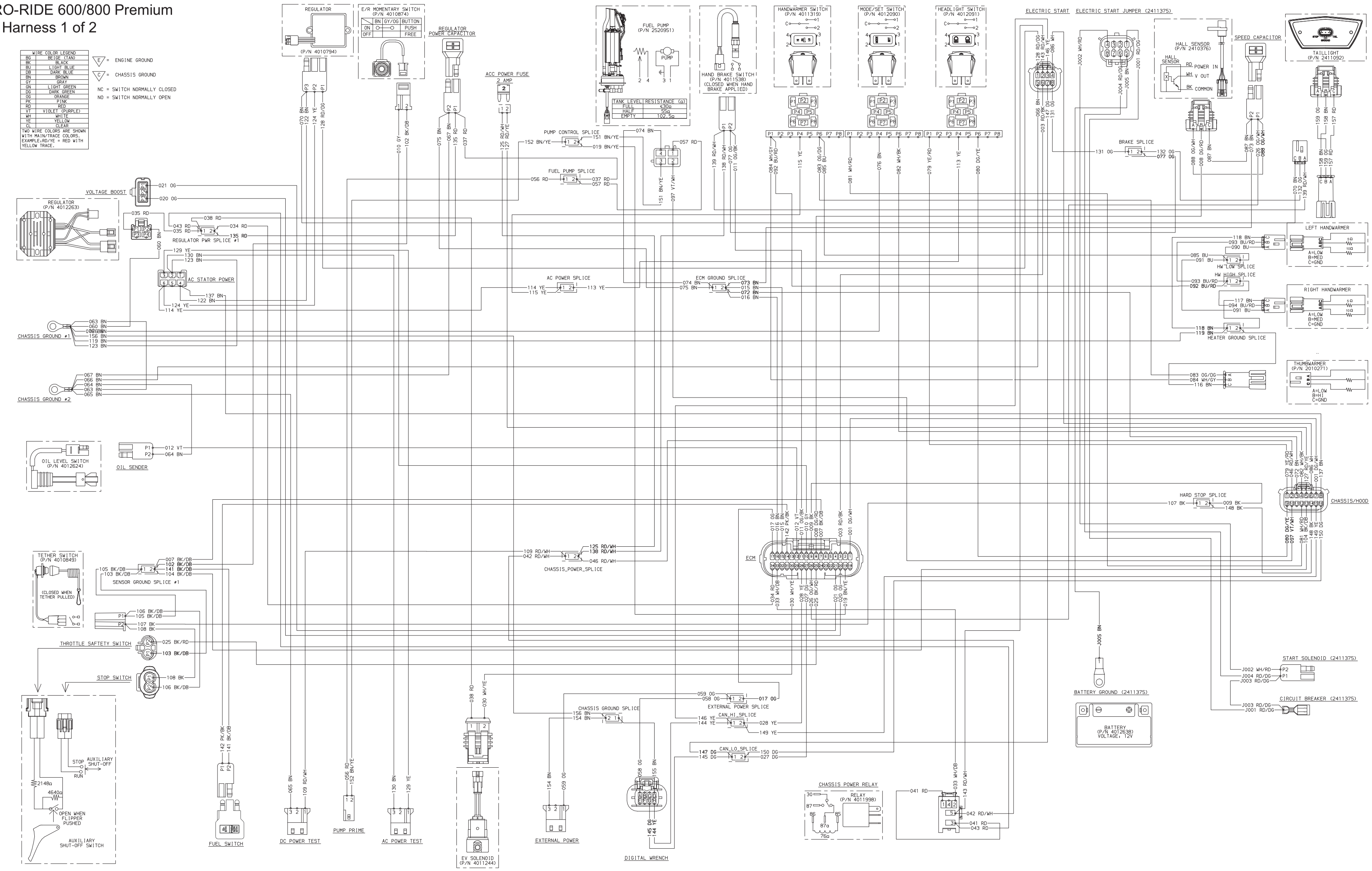
INDEX	CCT #	TYPE	GAUGE	COLOR	FROM COMPONENT	FROM PORT	TO COMPONENT	TO PORT	FUNCTION
1	001	TXL	0.5	DG/WH	ECM	1	HOOD CHASSIS	7	STARTER LOCKOUT
2	003	TXL	0.5	RD/BK	ECM	3	ELECTRIC START	6	BATTERY
3	007	TXL	0.5	BK/DB	SENSOR GROUND SPLICE #1	2	ECM	7	SENSOR GROUND
4	008	TXL	0.5	DG/RD	ECM	8	GROUND SPEED SPLICE	2	GROUND SPEED SIGNAL
5	009	TXL	0.5	BK	ECM	9	HARD STOP SPLICE	2	HARD STOP
6	010	TWP	0.5	GY	ECM	10	TBD	E	REVERSE SIGNAL
7	011	TXL	0.5	OG/BK	ECM	11	BRAKE SWITCH	P1	BRAKE SWITCH
8	012	TXL	0.5	VT	ECM	12	OIL SENDER	P1	LOW OIL
9	015	TXL	0.5	BN	ECM	15	ECM GROUND SPLICE	2	ECM GROUND
10	016	TXL	0.5	BN	ECM	16	ECM GROUND SPLICE	2	ECM GROUND
11	017	TXL	0.5	OG	ECM	17	EXTERNAL POWER SPLICE	2	EXTERNAL POWER
12	019	TXL	0.5	BN/YE	ECM	19	PUMP CONTROL SPLICE	2	FUEL PUMP CONTROL
13	020	TXL	0.5	OG	ECM	20	VOLTAGE BOOST	P3	VOLTAGE BOOST #2
14	021	TXL	0.5	OG	ECM	21	VOLTAGE BOOST	P1	VOLTAGE BOOST#2
15	025	TXL	0.5	BK/RD	ECM	25	THROTTLE SAFTETY SWITCH	P2	SOFT STOP
16	026	TXL	0.5	OG/WH	ECM	26	SPEEDO CAPACITOR	P1	GROUND SPEED POWER
17	027	TXL	0.5TP	DG	ECM	27	CAN_LO_SPLICE	2	CAN LO
18	028	TXL	0.5TP	YE	ECM	28	CAN_HI_SPLICE	2	CAN HI
19	030	TXL	0.5	WH/YE	ECM	30	EV SOLENOID	2	EV SOLENOID CONTROL
20	033	TXL	0.5	WH/DB	ECM	33	CHASSIS POWER RELAY	2	CHASSIS RELAY CONTROL
21	034	TXL	0.5	RD	ECM	34	REGULATOR POWER SPLICE #1	2	DC REGULATOR POWER
22	035	TXL	1.0	RD	DC REGULATOR	P1	REGULATOR POWER SPLICE #1	1	DC REGULATOR POWER
23	037	TXL	0.8	RD	CHASSIS CAPACITOR	P1	FUEL PUMP SPLICE	2	DC REGULATOR POWER
24	038	TXL	0.8	RD	EV SOLENOID	1	REGULATOR POWER SPLICE #1	1	DC REGULATOR POWER
25	041	TXL	0.5	RD	CHASSIS POWER RELAY	3	CHASSIS POWER RELAY	1	DC REGULATOR POWER
26	042	TXL	1.0	RD/WH	CHASSIS POWER RELAY	5	CHASSIS_POWER_SPLICE	1	DC POWER
27	043	TXL	1.0	RD	REGULATOR POWER SPLICE #1	1	CHASSIS POWER RELAY	3	DC REGULATOR POWER
28	046	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	HOOD CHASSIS	2	DC POWER
29	056	TXL	0.5	RD	FUEL PUMP SPLICE	1	PUMP PRIME	1	DC POWER
30	057	TXL	0.8	RD	FUEL PUMP SPLICE	2	FUEL PUMP	1	FUEL PUMP POWER
31	058	TXL	0.5	OG	DIGITAL WRENCH	A	EXTERNAL POWER SPLICE	1	EXTERNAL POWER
32	059	TXL	0.5	OG	EXTERNAL POWER	1	EXTERNAL POWER SPLICE	1	EXTERNAL POWER
33	060	TXL	1.0	BN	DC REGULATOR	P2	CHASSIS ROUND #1	1	DC GROUND
34	063	TXL	1.0	BN	CHASSIS GROUND #2	1	CHASSIS ROUND #1	1	DC GROUND
35	064	TXL	0.8	BN	CHASSIS GROUND #2	1	OIL SENDER	P2	DC GROUND
36	065	TXL	1.0	BN	CHASSIS GROUND #2	1	DC POWER TEST	3	DC GROUND
37	066	TXL	1.0	BN	CHASSIS GROUND #2	1	ELECTRIC START	5	DC GROUND
38	067	TXL	1.0	BN	CHASSIS GROUND #2	1	CHASSIS CAPACITOR	P2	DC GROUND
39	070	TXL	0.8	BN	AC_REGULATOR	P3	TAILLIGHT	C	AC GROUND
40	072	TXL	0.8	BN	ECM GROUND SPLICE	2	HOOD CHASSIS	3	ECM GROUND
41	073	TXL	0.5	BN	SPEEDO CAPACITOR	P2	ECM GROUND SPLICE	2	ECM GROUND
42	074	TXL	0.5	BN	ECM GROUND SPLICE	1	FUEL PUMP	4	ECM GROUND
43	075	TXL	1.0	BN	CHASSIS CAPACITOR	P2	ECM GROUND SPLICE	1	ECM GROUND
44	076	TXL	0.8	BN	CHASSIS ROUND #1	1	TBD	E	DC GROUND
45	077	TXL	0.8	OG	BRAKE SPLICE	2	BRAKE SWITCH	P1	BRAKE GROUND
46	079	TXL	1.0	YE/RD	HOOD CHASSIS	1	TBD	A	HI BEAM GROUND
47	080	TXL	1.0	DG/YE	TBD	B	HOOD CHASSIS	9	LO BEAM GROUND
48	081	TXL	0.5	WH/RD	TBD	D	HOOD CHASSIS	12	MODE SWITCH
49	082	TXL	0.5	WH/BK	HOOD CHASSIS	4	TBD	F	SET SWITCH
50	083	TWP	0.5	OG/DG	TBD	A	THUMBWARMER	A	THUMBWARMER LO
51	084	TWP	0.5	WH/GY	TBD	B	THUMBWARMER	B	THUMBWARMER HI
52	085	TWP	0.5	BU	TBD	C	HW LOW SPLICE	1	HANDWARMER LO
53	086	TXL	0.5	WH	ELECTRIC START	4	HOOD CHASSIS	6	STARTER SOLENOID CONTROL
54	087	TXL	0.5	BN	GROUND SPEED SENSOR	C	SPEEDO CAPACITOR	P2	SPEED CAPACITOR GROUND
55	088	TXL	0.5	OG/WH	SPEEDO CAPACITOR	P1	GROUND SPEED SENSOR	A	SPEED CAPACITOR POWER
56	090	TWP	0.5	BU	HW LOW SPLICE	2	LH WARMER	A	HANDWARMER LO
57	091	TWP	0.5	BU	HW LOW SPLICE	1	RH WARMER	A	HANDWARMER LO
58	092	TWP	0.5	BU/RD	TBD	D	HW HIGH SPLICE	1	HANDWARMER HI
59	093	TWP	0.5	BU/RD	HW HIGH SPLICE	1	LH WARMER	B	HANDWARMER HI
60	094	TWP	0.5	BU/RD	HW HIGH SPLICE	2	RH WARMER	B	HANDWARMER HI
61	097	TXL	0.5	VT/WH	FUEL PUMP	2	HOOD CHASSIS	10	FUEL LEVEL
62	102	TWP	0.5	BK/DB	SENSOR GROUND SPLICE #1	2	TBD	F	SENSOR GROUND
63	103	TXL	0.5	BK/DB	SENSOR GROUND SPLICE #1	1	THROTTLE SAFTETY SWITCH	P1	SENSOR GROUND
64	104	TXL	0.5	BK/DB	HOOD CHASSIS	13	SENSOR GROUND SPLICE #1	2	SENSOR GROUND
65	105	TXL	0.5	BK/DB	SENSOR GROUND SPLICE #1	1	TETHER SWITCH	P1	SENSOR GROUND
66	106	TXL	0.5	BK/DB	TETHER SWITCH	P1	HARD STOP SWITCH	P2	SENSOR GROUND
67	107	TXL	0.5	BK	HARD STOP SPLICE	1	TETHER SWITCH	P2	HARD STOP
68	108	TXL	0.5	BK	TETHER SWITCH	P2	HARD STOP SWITCH	P1	HARD STOP
69	109	TXL	1.0	RD/WH	CHASSIS_POWER_SPLICE	1	DC POWER TEST	1	CHASSIS POWER
70	114	TXL	1.0	YE	TBD	C	AC STATOR POWER	6	AC_POWER
71	116	TXL	0.8	BN	HEATER GROUND SPLICE	2	THUMBWARMER	C	AC GROUND
72	117	TXL	0.8	BN	HEATER GROUND SPLICE	2	RH WARMER	C	AC GROUND
73	118	TXL	0.8	BN	HEATER GROUND SPLICE	1	LH WARMER	C	AC GROUND
74	119	TXL	0.8	BN	HEATER GROUND SPLICE	1	CHASSIS ROUND #1	1	AC GROUND
75	122	TXL	1.0	BN	AC_REGULATOR	P3	AC STATOR POWER	4	AC GROUND
76	123	TXL	1.0	BN	AC STATOR POWER	2	CHASSIS ROUND #1	1	AC GROUND
77	124	TXL	1.0	YE	AC STATOR POWER	6	AC_REGULATOR	P2	AC POWER
78	125	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	ACC POWER FUSE	1	DC POWER
79	127	TXL	0.8	RD/YE	ACC POWER FUSE	2	HOOD CHASSIS	5	ACCESSORY DC POWER
80	128	TXL	1.0	RD/DG	AC_REGULATOR	P1	ELECTRIC START	1	BATTERY CHARGE POWER
81	129	TXL	1.0	YE	AC STATOR POWER	3	AC POWER TEST	1	AC POWER
82	130	TXL	1.0	BN	AC STATOR POWER	2	AC POWER TEST	3	AC GROUND
83	131	TXL	0.8	OG	BRAKE SPLICE	1	ELECTRIC START	8	BRAKE SWITCH
84	132	TXL	0.8	OG	BRAKE SPLICE	2	TAILLIGHT	B	BRAKE SWITCH
85	135	TXL	0.8	RD	REGULATOR POWER SPLICE #1	2	CHASSIS CAPACITOR	P1	CHASSIS POWER
86	137	TXL	1.0	BN	AC STATOR POWER	4	HOOD CHASSIS	8	AC GROUND
87	138	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	BRAKE SWITCH	P2	CHASSIS DC POWER
88	139	TXL	0.8	RD/WH	BRAKE SWITCH	P2	TAILLIGHT	A	CHASSIS DC POWER
89	141	TXL	0.8	BK/DB	SENSOR GROUND SPLICE #1	2	FUEL SWITCH	P2	SENSOR GROUND
90	142	TXL	0.5	PK/BK	ECM	14	FUEL SWITCH	P1	FUEL SWITCH
91	143	TXL	0.8	RD/WH	CHASSIS POWER RELAY	5	ELECTRIC START	2	CHASSIS DC POWER
92	144	TXL	0.5TP	YE	DIGITAL WRENCH	H	CAN_HI_SPLICE	1	CAN HI
93	145	TXL	0.5TP	DG	DIGITAL WRENCH	G	CAN_LO_SPLICE	1	CAN LO
94	146	TXL	0.5	DG/RD	GROUND SPEED SPLICE	1	ELECTRIC START	3	GROUND SPEED SIGNAL
95	147	TXL	0.5	BK/WH	HOOD CHASSIS	11	ELECTRIC START	7	ABS MIL
96	148	TXL	0.8	BK	HARD STOP SPLICE	2	HOOD CHASSIS	14	HARD STOP
97	149	TXL	0.5TP	YE	CAN_HI_SPLICE	2	HOOD CHASSIS	15	CAN_HI (GAUGE)
98	150	TXL	0.5TP	DG	CAN_LO_SPLICE	2	HOOD CHASSIS	16	CAN_LO_(GAUGE)
99	151	TXL	0.5	BN/YE	FUEL PUMP	3	PUMP CONTROL SPLICE	2	FUEL PUMP CONTROL
100	152	TXL	0.8	BN/YE	PUMP CONTROL SPLICE	1	PUMP PRIME	2	FUEL PUMP CONTROL
101	153	TXL	0.8	RD	EXTERNAL POWER SPLICE	1	FUEL PUMP SPLICE	1	REGULATOR POWER
102	154	TXL	0.8	BN	EXTERNAL POWER	3	CHASSIS GROUND SPLICE	2	SENSOR GROUND
103	155	TXL	0.8	BN	CHASSIS GROUND SPLICE	1	DIGITAL WRENCH	D	SENSOR GROUND
104	156	TXL	0.8	BN	CHASSIS ROUND #1	1	CHASSIS GROUND SPLICE	2	GROUND
105	157	TXL	0.5	DG/RD	GROUND SPEED SENSOR	B	GROUND SPEED SPLICE	2	GROUND SPEED SIGNAL
106	158	TXL	0.8	RD	TAILLIGHT HARNESS JUMPER 1	C	TAILLIGHT HARNESS JUMPER 2	A	DC POWER
107	159	TXL	0.8	BN	TAILLIGHT HARNESS JUMPER 1	B	TAILLIGHT HARNESS JUMPER 2	C	AC GROUND
108	160	TXL	0.8	OG	TAILLIGHT HARNESS JUMPER 1	A	TAILLIGHT HARNESS JUMPER 2	B	BRAKE INPUT
109	J001	TXL	0.8	RD/DG	ELECTRIC START (2411375)	1	CIRCUIT BREAKER (2411375)	1	BATTERY CHARGE
110	J002	TXL	0.8	WH/RD	ELECTRIC START (2411375)	4	START SOLENOID (2411375)	P2	START SOLENOID CONTROL
111	J003	TXL	0.8	RD/DG	CIRCUIT BREAKER (2411375)	1	START SOLENOID (2411375)	P1	START SOLENOID POWER
112	J004	TXL	0.8	RD/DG	ELECTRIC START (2411375)	6	START SOLENOID (2411375)	P1	BATTERY VOLTAGE
113	J005	TXL	0.8	BN	ELECTRIC START (2411375)	5	BATTERY GROUND (2411375)	1	CHASSIS GROUND

2012 PRO-RIDE 600/800 Premium
Chassis Harness 1 of 2

WIRE COLOR LEGEND	
BG	BEIGE (TAN)
BK	BLACK
BL	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
CL	CLEAR

TWO WIRE COLORS ARE SHOWN WITH MAIN/TRACE COLORS. EXAMPLE: RD/YE = RED WITH YELLOW TRACE.

E = ENGINE GROUND
C = CHASSIS GROUND
NC = SWITCH NORMALLY CLOSED
NO = SWITCH NORMALLY OPEN



2012 PRO-RIDE 600/800 Premium Chassis Harness 2 of 2

SCHEMATIC CABLE/WIRE TERMINATION TABLE

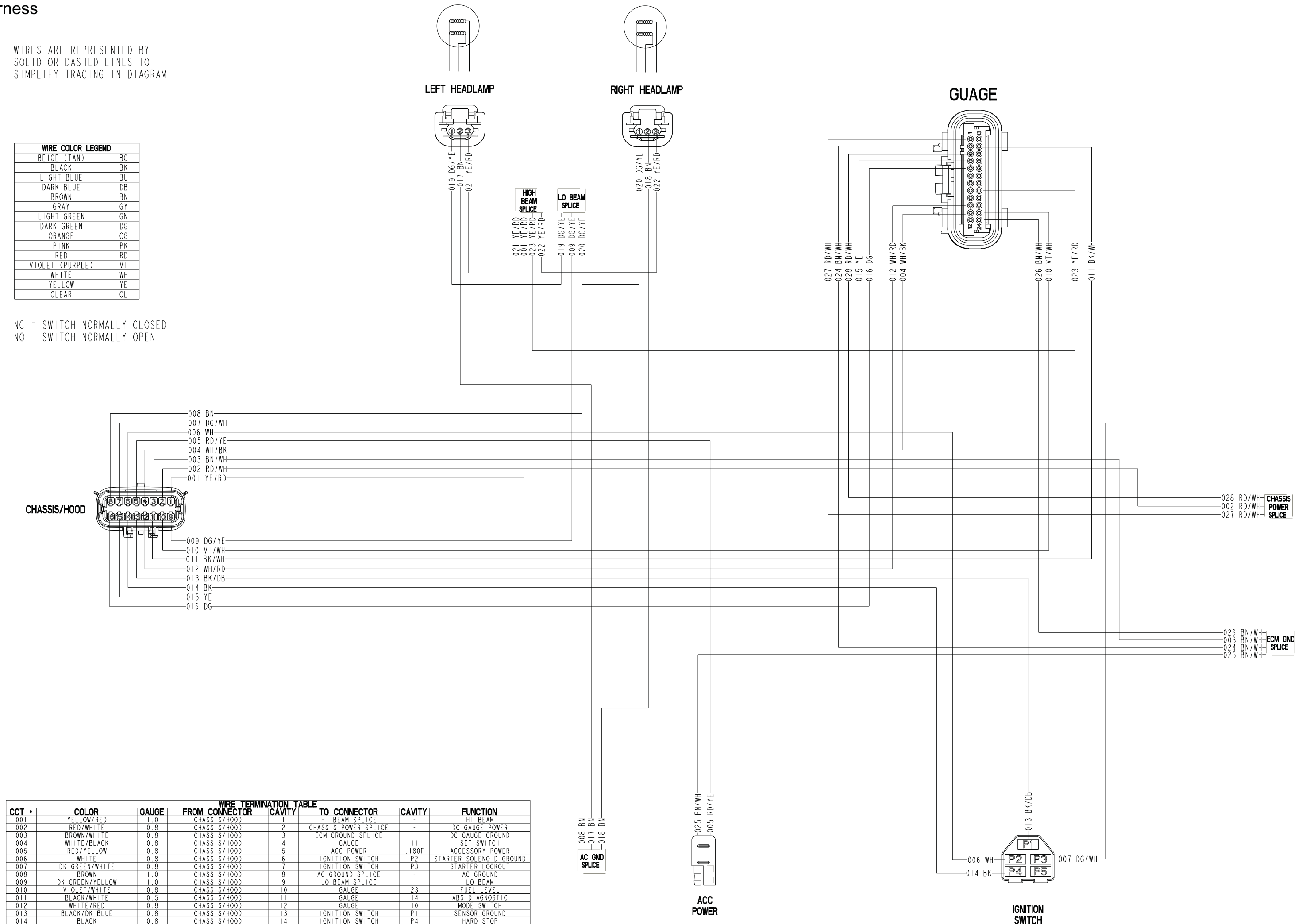
INDEX	CCT #	TYPE	GAUGE	COLOR	FROM COMPONENT	FROM PORT	TO COMPONENT	TO PORT	FUNCTION
1	001	TXL	0.5	DG/WH	ECM	1	HOOD CHASSIS	7	STARTER LOCKOUT
2	003	TXL	0.5	RD/BK	ECM	3	ELECTRIC START	6	BATTERY
3	007	TXL	0.5	BK/DB	SENSOR GROUND SPLICE #1	2	ECM	7	SENSOR GROUND
4	008	TXL	0.5	DG/RD	ECM	8	GROUND SPEED SENSOR	B	GROUND SPEED SIGNAL
5	009	TXL	0.5	BK	ECM	9	HARD STOP SPLICE	2	HARD STOP
6	010	TWP	0.5	GY	ECM	10	TBD	1	REVERSE SIGNAL
7	011	TXL	0.5	OG/BK	ECM	11	BRAKE SWITCH	P1	BRAKE SWITCH
8	012	TXL	0.5	VT	ECM	12	OIL SENDER	P1	LOW OIL
9	015	TXL	0.5	BN	ECM	15	ECM GROUND SPLICE	2	ECM GROUND
10	016	TXL	0.5	BN	ECM	16	ECM GROUND SPLICE	2	ECM GROUND
11	017	TXL	0.5	OG	ECM	17	EXTERNAL POWER SPLICE	2	EXTERNAL POWER
12	019	TXL	0.5	BN/YE	ECM	19	PUMP CONTROL SPLICE	2	FUEL PUMP CONTROL
13	020	TXL	0.5	OG	ECM	20	VOLTAGE BOOST	P3	VOLTAGE BOOST #2
14	021	TXL	0.5	OG	ECM	21	VOLTAGE BOOST	P1	VOLTAGE BOOST#2
15	025	TXL	0.5	BK/RD	ECM	25	THROTTLE SAFTETY SWITCH	P2	SOFT STOP
16	026	TXL	0.5	OG/WH	ECM	26	SPEEDO CAPACITOR	P1	GROUND SPEED POWER
17	027	TXL	0.5	DG	ECM	27	CAN_LO_SPLICE	2	CAN LO
18	028	TXL	0.5	YE	ECM	28	CAN_HI_SPLICE	2	CAN HI
19	030	TXL	0.5	WH/YE	ECM	30	EV SOLENOID	2	EV SOLENOID CONTROL
20	033	TXL	0.5	WH/DB	ECM	33	CHASSIS POWER RELAY	2	CHASSIS RELAY CONTROL
21	034	TXL	0.5	RD	ECM	34	REGULATOR PWR SPLICE #1	2	DC REGULATOR POWER
22	035	TXL	1.0	RD	DC REGULATOR	P1	REGULATOR PWR SPLICE #1	1	DC REGULATOR POWER
23	037	TXL	0.8	RD	CHASSIS CAPACITOR	P1	FUEL PUMP SPLICE	2	DC_REG_PWR
24	038	TXL	0.8	RD	EV SOLENOID	1	REGULATOR PWR SPLICE #1	1	DC REGULATOR POWER
25	041	TXL	0.5	RD	CHASSIS POWER RELAY	3	CHASSIS POWER RELAY	1	DC REGULATOR POWER
26	042	TXL	1.0	RD/WH	CHASSIS POWER RELAY	5	CHASSIS_POWER_SPLICE	1	DC POWER
27	043	TXL	1.0	RD	REGULATOR PWR SPLICE #1	1	CHASSIS POWER RELAY	3	DC REGULATOR POWER
28	046	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	HOOD CHASSIS	2	DC POWER
29	056	TXL	0.5	RD	FUEL PUMP SPLICE	1	PUMP PRIME	1	DC POWER
30	057	TXL	0.8	RD	FUEL PUMP SPLICE	2	FUEL PUMP	1	FUEL PUMP POWER
31	058	TXL	0.5	OG	DIGITAL WRENCH	A	EXTERNAL POWER SPLICE	1	EXTERNAL POWER
32	059	TXL	0.5	OG	EXTERNAL POWER	1	EXTERNAL POWER SPLICE	1	EXTERNAL POWER
33	060	TXL	1.0	BN	DC REGULATOR	P2	CHASSIS ROUND #1	1	DC GROUND
34	063	TXL	1.0	BN	CHASSIS GROUND #2	1	CHASSIS ROUND #1	1	DC GROUND
35	064	TXL	0.8	BN	CHASSIS GROUND #2	1	OIL SENDER	P2	DC GROUND
36	065	TXL	1.0	BN	CHASSIS GROUND #2	1	DC POWER TEST	3	DC GROUND
37	066	TXL	1.0	BN	CHASSIS GROUND #2	1	ELECTRIC START	5	DC GROUND
38	067	TXL	1.0	BN	CHASSIS GROUND #2	1	CHASSIS CAPACITOR	P2	DC GROUND
39	070	TXL	0.8	BN	AC_REGULATOR	P3	TAILLIGHT	C	AC GROUND
40	072	TXL	0.8	BN	ECM GROUND SPLICE	2	HOOD CHASSIS	3	ECM GROUND
41	073	TXL	0.5	BN	SPEEDO CAPACITOR	P2	ECM GROUND SPLICE	2	ECM GROUND
42	074	TXL	0.5	BN	ECM GROUND SPLICE	1	FUEL PUMP	4	ECM GROUND
43	075	TXL	1.0	BN	CHASSIS CAPACITOR	P2	ECM GROUND SPLICE	1	ECM GROUND
44	076	TXL	0.8	BN	CHASSIS ROUND #1	1	MODE SET SWITCH	P4	DC GROUND
45	077	TXL	0.8	OG	BRAKE SPLICE	2	BRAKE SWITCH	P1	BRAKE GROUND
46	079	TXL	1.0	YE/RD	HOOD CHASSIS	1	HEADLAMP SWITCH	P1	HI BEAM GROUND
47	080	TXL	1.0	DG/YE	HEADLAMP SWITCH	P6	HOOD CHASSIS	9	LO BEAM GROUND
48	081	TXL	0.5	WH/RD	MODE SET SWITCH	P1	HOOD CHASSIS	12	MODE SWITCH
49	082	TXL	0.5	WH/BK	HOOD CHASSIS	4	MODE SET SWITCH	P6	SET SWITCH
50	083	TWP	0.5	OG/DG	HEATER SWITCH	P6	THUMBWARMER	A	THUMBWARMER LO
51	084	TWP	0.5	WH/GY	HEATER SWITCH	P1	THUMBWARMER	B	THUMBWARMER HI
52	085	TWP	0.5	BU	HEATER SWITCH	P6	HW LOW SPLICE	1	HANDWARMER LO
53	086	TXL	0.5	WH	ELECTRIC START	4	HOOD CHASSIS	6	STARTER SOLENOID CONTROL
54	087	TXL	0.5	BN	GROUND SPEED SENSOR	C	SPEEDO CAPACITOR	P2	SPEED CAPACITOR GROUND
55	088	TXL	0.5	OG/WH	SPEEDO CAPACITOR	P1	GROUND SPEED SENSOR	A	SPEED CAPACITOR POWER
56	090	TWP	0.5	BU	HW LOW SPLICE	2	LH WARMER	A	HANDWARMER LO
57	091	TWP	0.5	BU	HW LOW SPLICE	1	RH WARMER	A	HANDWARMER LO
58	092	TWP	0.5	BU/RD	HEATER SWITCH	P1	HW HIGH SPLICE	1	HANDWARMER HI
59	093	TWP	0.5	BU/RD	HW HIGH SPLICE	1	LH WARMER	B	HANDWARMER HI
60	094	TWP	0.5	BU/RD	HW HIGH SPLICE	2	RH WARMER	B	HANDWARMER HI
61	097	TXL	0.5	VT/WH	FUEL PUMP	2	HOOD CHASSIS	10	FUEL LEVEL
62	102	TWP	0.5	BK/DB	SENSOR GROUND SPLICE #1	2	TBD	2	SENSOR GROUND
63	103	TXL	0.5	BK/DB	SENSOR GROUND SPLICE #1	1	THROTTLE SAFTETY SWITCH	P1	SENSOR GROUND
64	104	TXL	0.5	BK/DB	HOOD CHASSIS	13	SENSOR GROUND SPLICE #1	2	SENSOR GROUND
65	105	TXL	0.5	BK/DB	SENSOR GROUND SPLICE #1	1	TETHER SWITCH	P1	SENSOR GROUND
66	106	TXL	0.5	BK/DB	TETHER SWITCH	P1	HARD STOP SWITCH	P2	SENSOR GROUND
67	107	TXL	0.5	BK	HARD STOP SPLICE	1	TETHER SWITCH	P2	HARD STOP
68	108	TXL	0.5	BK	TETHER SWITCH	P2	HARD STOP SWITCH	P1	HARD STOP
69	109	TXL	1.0	RD/WH	CHASSIS_POWER_SPLICE	1	DC POWER TEST	1	CHASSIS POWER
70	113	TXL	1.0	YE	HEADLAMP SWITCH	P4	AC POWER SPLICE	2	AC POWER
71	114	TXL	1.0	YE	AC POWER SPLICE	1	AC STATOR POWER	6	AC_PWR
72	115	TXL	0.8	YE	HEATER SWITCH	P4	AC POWER SPLICE	1	AC POWER
73	116	TXL	0.8	BN	HEATER GROUND SPLICE	2	THUMBWARMER	C	AC GROUND
74	117	TXL	0.8	BN	HEATER GROUND SPLICE	2	RH WARMER	C	AC GROUND
75	118	TXL	0.8	BN	HEATER GROUND SPLICE	1	LH WARMER	C	AC GROUND
76	119	TXL	0.8	BN	HEATER GROUND SPLICE	1	CHASSIS ROUND #1	1	AC GROUND
77	122	TXL	1.0	BN	AC_REGULATOR	P3	AC STATOR POWER	4	AC GROUND
78	123	TXL	1.0	BN	AC STATOR POWER	2	CHASSIS ROUND #1	1	AC GROUND
79	124	TXL	1.0	YE	AC STATOR POWER	6	AC_REGULATOR	P2	AC POWER
80	125	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	ACC POWER FUSE	1	DC POWER
81	127	TXL	0.8	RD/YE	ACC POWER FUSE	2	HOOD CHASSIS	5	ACCESSORY DC POWER
82	128	TXL	1.0	RD/DG	AC_REGULATOR	P1	ELECTRIC START	1	BATTERY CHARGE POWER
83	129	TXL	1.0	YE	AC STATOR POWER	3	AC POWER TEST	1	AC POWER
84	130	TXL	1.0	BN	AC STATOR POWER	2	AC POWER TEST	3	AC GROUND
85	131	TXL	0.8	OG	BRAKE SPLICE	1	ELECTRIC START	8	BRAKE SWITCH
86	132	TXL	0.8	OG	BRAKE SPLICE	2	TAILLIGHT	B	BRAKE SWITCH
87	135	TXL	0.8	RD	REGULATOR PWR SPLICE #1	2	CHASSIS CAPACITOR	P1	CHASSIS POWER
88	137	TXL	1.0	BN	AC STATOR POWER	4	HOOD CHASSIS	8	AC GROUND
89	138	TXL	0.8	RD/WH	CHASSIS_POWER_SPLICE	2	BRAKE SWITCH	P2	CHASSIS DC POWER
90	139	TXL	0.8	RD/WH	BRAKE SWITCH	P2	TAILLIGHT	A	CHASSIS DC POWER
91	141	TXL	0.8	BK/DB	SENSOR GROUND SPLICE #1	2	FUEL SWITCH	P2	SENSOR GROUND
92	142	TXL	0.5	PK/BK	ECM	14	FUEL SWITCH	P1	FUEL SWITCH
93	143	TXL	0.8	RD/WH	CHASSIS POWER RELAY	5	ELECTRIC START	2	CHASSIS DC POWER
94	144	TXL	0.5	YE	DIGITAL WRENCH	H	CAN_HI_SPLICE	1	CAN HI
95	145	TXL	0.5	DG	DIGITAL WRENCH	G	CAN_LO_SPLICE	1	CAN LO
96	146	TXL	0.5	YE	CAN_HI_SPLICE	1	ELECTRIC START	3	CAN_HI
97	147	TXL	0.5	DG	CAN_LO_SPLICE	1	ELECTRIC START	7	CAN_LO
98	148	TXL	0.8	BK	HARD STOP SPLICE	2	HOOD CHASSIS	14	HARD STOP
99	149	TXL	0.5	YE	CAN_HI_SPLICE	2	HOOD CHASSIS	15	CAN_HI (GAUGE)
100	150	TXL	0.5	DG	CAN_LO_SPLICE	2	HOOD CHASSIS	16	CAN_LO_(GAUGE)
101	151	TXL	0.5	BN/YE	FUEL PUMP	3	PUMP CONTROL SPLICE	2	FUEL PUMP CONTROL
102	152	TXL	0.8	BN/YE	PUMP CONTROL SPLICE	1	PUMP PRIME	2	FUEL PUMP CONTROL
103	154	TXL	0.8	BN	EXTERNAL POWER	3	CHASSIS GROUND SPLICE	2	SENSOR GROUND
104	155	TXL	0.8	BN	CHASSIS GROUND SPLICE	1	DIGITAL WRENCH	D	SENSOR GROUND
105	156	TXL	0.8	BN	CHASSIS ROUND #1	1	CHASSIS GROUND SPLICE	2	GROUND
106	157	TXL	0.8	RD	TAILLIGHT HARNESS JUMPER 1	C	TAILLIGHT HARNESS JUMPER 2	A	DC POWER
107	158	TXL	0.8	BN	TAILLIGHT HARNESS JUMPER 1	B	TAILLIGHT HARNESS JUMPER 2	C	AC GROUND
108	159	TXL	0.8	OG	TAILLIGHT HARNESS JUMPER 1	A	TAILLIGHT HARNESS JUMPER 2	B	BRAKE INPUT
109	J001	TXL	0.8	RD/DG	ELECTRIC START (2411375)	1	CIRCUIT BREAKER (2411375)	1	BATTERY CHARGE
110	J002	TXL	0.8	WH/RD	ELECTRIC START (2411375)	4	START SOLENOID (2411375)	P2	START SOLENOID CONTROL
111	J003	TXL	0.8	RD/DG	CIRCUIT BREAKER (2411375)	1	START SOLENOID (2411375)	P1	START SOLENOID POWER
112	J004	TXL	0.8	RD/DG	ELECTRIC START (2411375)	6	START SOLENOID (2411375)	P1	BATTERY VOLTAGE
113	J005	TXL	0.8	BN	ELECTRIC START (2411375)	5	BATTERY GROUND (2411375)	1	CHASSIS GROUND

2012 PRO-RIDE Hood Harness

WIRES ARE REPRESENTED BY SOLID OR DASHED LINES TO SIMPLIFY TRACING IN DIAGRAM

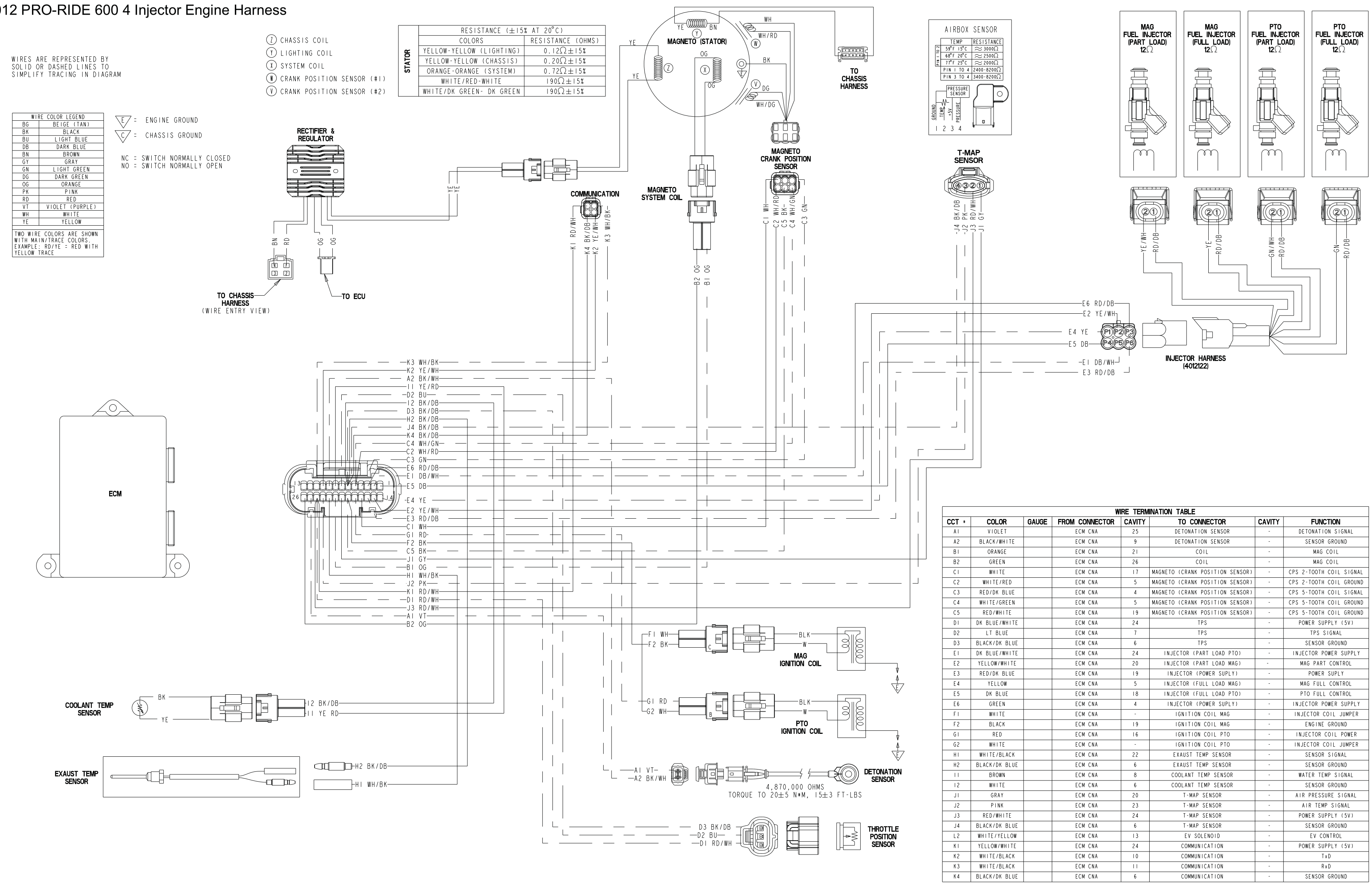
WIRE COLOR LEGEND	
BEIGE (TAN)	BG
BLACK	BK
LIGHT BLUE	BU
DARK BLUE	DB
BROWN	BN
GRAY	GY
LIGHT GREEN	GN
DARK GREEN	DG
ORANGE	OG
PINK	PK
RED	RD
VIOLET (PURPLE)	VT
WHITE	WH
YELLOW	YE
CLEAR	CL

NC = SWITCH NORMALLY CLOSED
NO = SWITCH NORMALLY OPEN



WIRE TERMINATION TABLE							
CCT #	COLOR	GAUGE	FROM CONNECTOR	CAVITY	TO CONNECTOR	CAVITY	FUNCTION
001	YELLOW/RED	1.0	CHASSIS/HOOD	1	HI BEAM SPLICE	-	HI BEAM
002	RED/WHITE	0.8	CHASSIS/HOOD	2	CHASSIS POWER SPLICE	-	DC GAUGE POWER
003	BROWN/WHITE	0.8	CHASSIS/HOOD	3	ECM GROUND SPLICE	-	DC GAUGE GROUND
004	WHITE/BLACK	0.8	CHASSIS/HOOD	4	GAUGE	11	SET SWITCH
005	RED/YELLOW	0.8	CHASSIS/HOOD	5	ACC POWER	.180F	ACCESSORY POWER
006	WHITE	0.8	CHASSIS/HOOD	6	IGNITION SWITCH	P2	STARTER SOLENOID GROUND
007	DK GREEN/WHITE	0.8	CHASSIS/HOOD	7	IGNITION SWITCH	P3	STARTER LOCKOUT
008	BROWN	1.0	CHASSIS/HOOD	8	AC GROUND SPLICE	-	AC GROUND
009	DK GREEN/YELLOW	1.0	CHASSIS/HOOD	9	LO BEAM SPLICE	-	LO BEAM
010	VIOLET/WHITE	0.8	CHASSIS/HOOD	10	GAUGE	23	FUEL LEVEL
011	BLACK/WHITE	0.5	CHASSIS/HOOD	11	GAUGE	14	ABS DIAGNOSTIC
012	WHITE/RED	0.8	CHASSIS/HOOD	12	GAUGE	10	MODE SWITCH
013	BLACK/DK BLUE	0.8	CHASSIS/HOOD	13	IGNITION SWITCH	P1	SENSOR GROUND
014	BLACK	0.8	CHASSIS/HOOD	14	IGNITION SWITCH	P4	HARD STOP
015	YELLOW	0.5TP	CHASSIS/HOOD	15	GAUGE	4	CAN HI
016	DK GREEN	0.5TP	CHASSIS/HOOD	16	GAUGE	5	CAN LO
017	BROWN	1.0	LEFT HEADLIGHT	2	AC GROUND SPLICE	-	AC GROUND
018	BROWN	1.0	RIGHT HEADLIGHT	2	AC GROUND SPLICE	-	AC GROUND
019	DK GREEN/YELLOW	1.0	LEFT HEADLIGHT	1	LO BEAM SPLICE	-	LO BEAM
020	DK GREEN/YELLOW	1.0	RIGHT HEADLIGHT	1	LO BEAM SPLICE	-	LO BEAM
021	YELLOW/RED	1.0	LEFT HEADLIGHT	3	HI BEAM SPLICE	-	HI BEAM
022	YELLOW/RED	1.0	RIGHT HEADLIGHT	3	HI BEAM SPLICE	-	HI BEAM
023	YELLOW/RED	0.8	GAUGE	20	HI BEAM SPLICE	-	HI BEAM INDICATOR
024	BROWN/WHITE	0.8	GAUGE	2	ECM GROUND SPLICE	-	DC GAUGE GROUND
025	BROWN/WHITE	0.8	ACC POWER	.180M	ECM GROUND SPLICE	-	ECM GROUND
026	BROWN/WHITE	0.8	GAUGE	24	ECM GROUND SPLICE	-	SYSTEM GROUND
027	RED/WHITE	0.8	GAUGE	1	CHASSIS POWER SPLICE	-	DC GAUGE POWER
028	RED/WHITE	0.8	GAUGE	3	CHASSIS POWER SPLICE	-	DC GAUGE POWER

2012 PRO-RIDE 600 4 Injector Engine Harness



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

STATOR	RESISTANCE (±15% AT 20°C)	
	COLORS	RESISTANCE (OHMS)
	YELLOW-YELLOW (LIGHTING)	0.12Ω±15%
	YELLOW-YELLOW (CHASSIS)	0.20Ω±15%
	ORANGE-ORANGE (SYSTEM)	0.72Ω±15%
	WHITE/RED-WHITE	190Ω±15%
	WHITE/DK GREEN- DK GREEN	190Ω±15%

AIRBOX SENSOR

	TEMP	RESISTANCE
PIN 1 TO 2	59°F 15°C	≈3000Ω
PIN 1 TO 2	68°F 20°C	≈2500Ω
PIN 1 TO 2	77°F 25°C	≈2000Ω
	PIN 1 TO 4	2400-8200Ω
	PIN 3 TO 4	3400-8200Ω

PRESSURE SENSOR
1 GROUND 2 TEMP 3 +5V 4 PRESSURE

WIRE TERMINATION TABLE

CCT #	COLOR	GAUGE	FROM CONNECTOR	CAVITY	TO CONNECTOR	CAVITY	FUNCTION
A1	VIOLET		ECM CNA	25	DETONATION SENSOR	-	DETONATION SIGNAL
A2	BLACK/WHITE		ECM CNA	9	DETONATION SENSOR	-	SENSOR GROUND
B1	ORANGE		ECM CNA	21	COIL	-	MAG COIL
B2	GREEN		ECM CNA	26	COIL	-	MAG COIL
C1	WHITE		ECM CNA	17	MAGNETO (CRANK POSITION SENSOR)	-	CPS 2-TOOTH COIL SIGNAL
C2	WHITE/RED		ECM CNA	5	MAGNETO (CRANK POSITION SENSOR)	-	CPS 2-TOOTH COIL GROUND
C3	RED/DK BLUE		ECM CNA	4	MAGNETO (CRANK POSITION SENSOR)	-	CPS 5-TOOTH COIL SIGNAL
C4	WHITE/GREEN		ECM CNA	5	MAGNETO (CRANK POSITION SENSOR)	-	CPS 5-TOOTH COIL GROUND
C5	RED/WHITE		ECM CNA	19	MAGNETO (CRANK POSITION SENSOR)	-	CPS 5-TOOTH COIL GROUND
D1	DK BLUE/WHITE		ECM CNA	24	TPS	-	POWER SUPPLY (5V)
D2	LT BLUE		ECM CNA	7	TPS	-	TPS SIGNAL
D3	BLACK/DK BLUE		ECM CNA	6	TPS	-	SENSOR GROUND
E1	DK BLUE/WHITE		ECM CNA	24	INJECTOR (PART LOAD PTO)	-	INJECTOR POWER SUPPLY
E2	YELLOW/WHITE		ECM CNA	20	INJECTOR (PART LOAD MAG)	-	MAG PART CONTROL
E3	RED/DK BLUE		ECM CNA	19	INJECTOR (POWER SUPLY)	-	POWER SUPLY
E4	YELLOW		ECM CNA	5	INJECTOR (FULL LOAD MAG)	-	MAG FULL CONTROL
E5	DK BLUE		ECM CNA	18	INJECTOR (FULL LOAD PTO)	-	PTO FULL CONTROL
E6	GREEN		ECM CNA	4	INJECTOR (POWER SUPLY)	-	INJECTOR POWER SUPPLY
F1	WHITE		ECM CNA	-	IGNITION COIL MAG	-	INJECTOR COIL JUMPER
F2	BLACK		ECM CNA	19	IGNITION COIL MAG	-	ENGINE GROUND
G1	RED		ECM CNA	16	IGNITION COIL PTO	-	INJECTOR COIL POWER
G2	WHITE		ECM CNA	-	IGNITION COIL PTO	-	INJECTOR COIL JUMPER
H1	WHITE/BLACK		ECM CNA	22	EXAUST TEMP SENSOR	-	SENSOR SIGNAL
H2	BLACK/DK BLUE		ECM CNA	6	EXAUST TEMP SENSOR	-	SENSOR GROUND
I1	BROWN		ECM CNA	8	COOLANT TEMP SENSOR	-	WATER TEMP SIGNAL
I2	WHITE		ECM CNA	6	COOLANT TEMP SENSOR	-	SENSOR GROUND
J1	GRAY		ECM CNA	20	T-MAP SENSOR	-	AIR PRESSURE SIGNAL
J2	PINK		ECM CNA	23	T-MAP SENSOR	-	AIR TEMP SIGNAL
J3	RED/WHITE		ECM CNA	24	T-MAP SENSOR	-	POWER SUPPLY (5V)
J4	BLACK/DK BLUE		ECM CNA	6	T-MAP SENSOR	-	SENSOR GROUND
L2	WHITE/YELLOW		ECM CNA	13	EV SOLENOID	-	EV CONTROL
K1	YELLOW/WHITE		ECM CNA	24	COMMUNICATION	-	POWER SUPPLY (5V)
K2	WHITE/BLACK		ECM CNA	10	COMMUNICATION	-	TxD
K3	WHITE/BLACK		ECM CNA	11	COMMUNICATION	-	RxD
K4	BLACK/DK BLUE		ECM CNA	6	COMMUNICATION	-	SENSOR GROUND

2012 PRO-RIDE 600/800 2 Injector Engine Harness

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

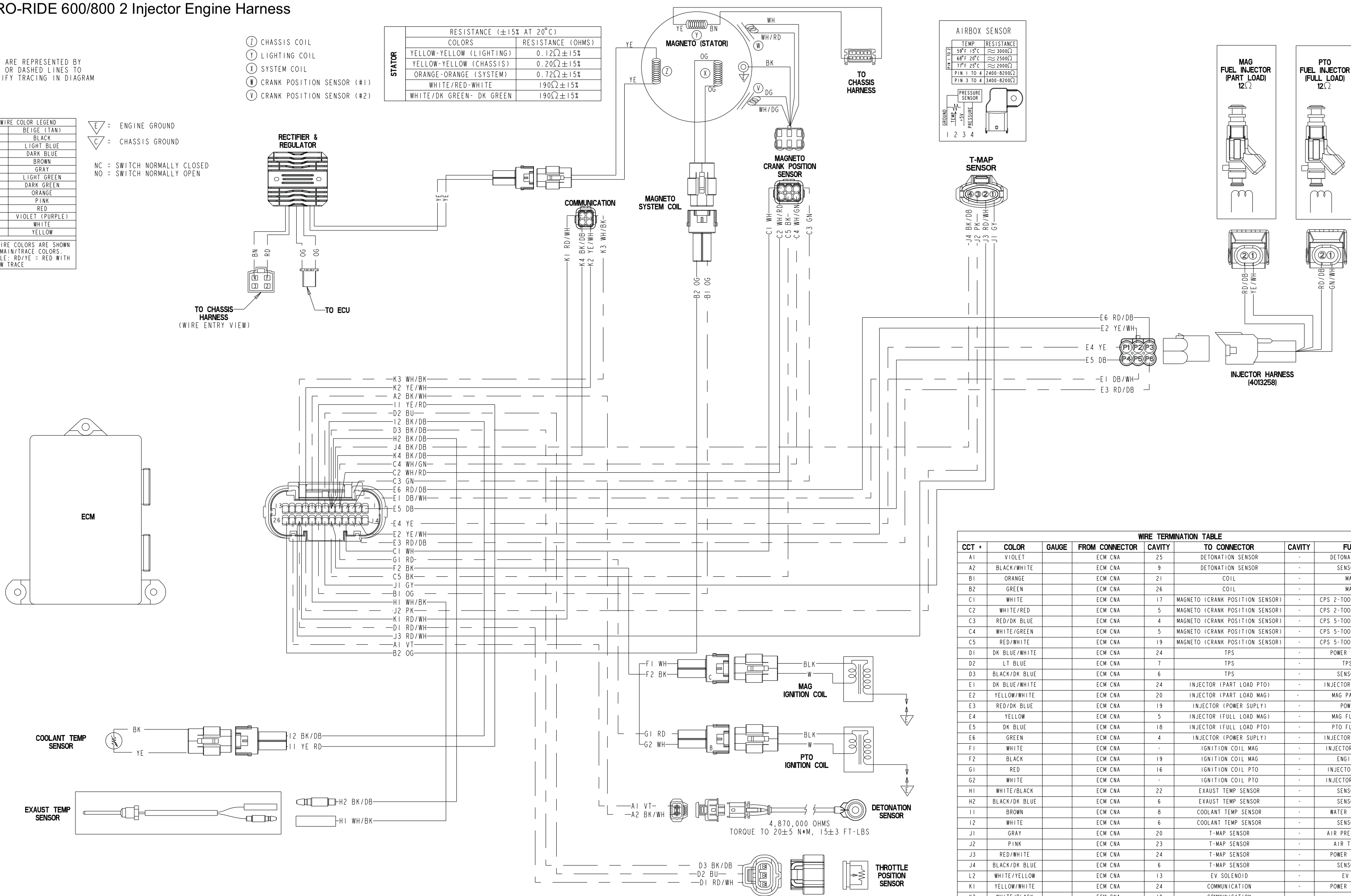
TWO WIRE COLORS ARE SHOWN WITH MAIN/TRACE COLORS. EXAMPLE: RD/YE = RED WITH YELLOW TRACE

E = ENGINE GROUND
C = CHASSIS GROUND

NC = SWITCH NORMALLY CLOSED
NO = SWITCH NORMALLY OPEN

Z CHASSIS COIL
Y LIGHTING COIL
X SYSTEM COIL
W CRANK POSITION SENSOR (#1)
V CRANK POSITION SENSOR (#2)

STATOR	RESISTANCE (±15% AT 20°C)	
	COLORS	RESISTANCE (OHMS)
	YELLOW-YELLOW (LIGHTING)	0.12Ω±15%
	YELLOW-YELLOW (CHASSIS)	0.20Ω±15%
	ORANGE-ORANGE (SYSTEM)	0.72Ω±15%
	WHITE/RED-WHITE	190Ω±15%
	WHITE/DK GREEN- DK GREEN	190Ω±15%



WIRE TERMINATION TABLE							
CCT #	COLOR	GAUGE	FROM CONNECTOR	CAVITY	TO CONNECTOR	CAVITY	FUNCTION
A1	VIOLET		ECM CNA	25	DETONATION SENSOR	-	DETONATION SIGNAL
A2	BLACK/WHITE		ECM CNA	9	DETONATION SENSOR	-	SENSOR GROUND
B1	ORANGE		ECM CNA	21	COIL	-	MAG COIL
B2	GREEN		ECM CNA	26	COIL	-	MAG COIL
C1	WHITE		ECM CNA	17	MAGNETO (CRANK POSITION SENSOR)	-	CPS 2-TOOTH COIL SIGNAL
C2	WHITE/RED		ECM CNA	5	MAGNETO (CRANK POSITION SENSOR)	-	CPS 2-TOOTH COIL GROUND
C3	RED/DK BLUE		ECM CNA	4	MAGNETO (CRANK POSITION SENSOR)	-	CPS 5-TOOTH COIL SIGNAL
C4	WHITE/GREEN		ECM CNA	5	MAGNETO (CRANK POSITION SENSOR)	-	CPS 5-TOOTH COIL GROUND
C5	RED/WHITE		ECM CNA	19	MAGNETO (CRANK POSITION SENSOR)	-	CPS 5-TOOTH COIL GROUND
D1	DK BLUE/WHITE		ECM CNA	24	TPS	-	POWER SUPPLY (5V)
D2	LT BLUE		ECM CNA	7	TPS	-	TPS SIGNAL
D3	BLACK/DK BLUE		ECM CNA	6	TPS	-	SENSOR GROUND
E1	DK BLUE/WHITE		ECM CNA	24	INJECTOR (PART LOAD PTO)	-	INJECTOR POWER SUPPLY
E2	YELLOW/WHITE		ECM CNA	20	INJECTOR (PART LOAD MAG)	-	MAG PART CONTROL
E3	RED/DK BLUE		ECM CNA	19	INJECTOR (POWER SUPLY)	-	POWER SUPLY
E4	YELLOW		ECM CNA	5	INJECTOR (FULL LOAD MAG)	-	MAG FULL CONTROL
E5	DK BLUE		ECM CNA	18	INJECTOR (FULL LOAD PTO)	-	PTO FULL CONTROL
E6	GREEN		ECM CNA	4	INJECTOR (POWER SUPLY)	-	INJECTOR POWER SUPPLY
F1	WHITE		ECM CNA	-	IGNITION COIL MAG	-	INJECTOR COIL JUMPER
F2	BLACK		ECM CNA	19	IGNITION COIL MAG	-	ENGINE GROUND
G1	RED		ECM CNA	16	IGNITION COIL PTO	-	INJECTOR COIL POWER
G2	WHITE		ECM CNA	-	IGNITION COIL PTO	-	INJECTOR COIL JUMPER
H1	WHITE/BLACK		ECM CNA	22	EXAUST TEMP SENSOR	-	SENSOR SIGNAL
H2	BLACK/DK BLUE		ECM CNA	6	EXAUST TEMP SENSOR	-	SENSOR GROUND
I1	BROWN		ECM CNA	8	COOLANT TEMP SENSOR	-	WATER TEMP SIGNAL
I2	WHITE		ECM CNA	6	COOLANT TEMP SENSOR	-	SENSOR GROUND
J1	GRAY		ECM CNA	20	T-MAP SENSOR	-	AIR PRESSURE SIGNAL
J2	PINK		ECM CNA	23	T-MAP SENSOR	-	AIR TEMP SIGNAL
J3	RED/WHITE		ECM CNA	24	T-MAP SENSOR	-	POWER SUPPLY (5V)
J4	BLACK/DK BLUE		ECM CNA	6	T-MAP SENSOR	-	SENSOR GROUND
L2	WHITE/YELLOW		ECM CNA	13	EV SOLENOID	-	EV CONTROL
K1	YELLOW/WHITE		ECM CNA	24	COMMUNICATION	-	POWER SUPPLY (5V)
K2	WHITE/BLACK		ECM CNA	10	COMMUNICATION	-	TxD
K3	WHITE/BLACK		ECM CNA	11	COMMUNICATION	-	RxD
K4	BLACK/DK BLUE		ECM CNA	6	COMMUNICATION	-	SENSOR GROUND