CHAPTER 1
GENERAL INFORMATION

1

9924125 - 2013 *RANGER* RZR / RZR S / RZR 4 Service Manual

VEHICLE IDENTIFICATION

Model Number Designation

Example: R13VH76AD

GROUP	MODEL YEAR	CHASSIS	DRIVELINE	ENGINE		CATEGORY	OPTION	REGION
1st digit	2/3rd digit	4th digit*	5th digit*	6th digit*	7th digit*	8th digit	9th digit**	10th digit
A = ATV R = *RANGER*	11 12 13	C = Sportsman 6x6 D = Sportsman Tour E = Trail Boss F = Sportsman Youth G = Sport H = *RANGER* 6x6 J = RZR XP K = Sport Youth M = Sportsman N = Trail Blazer P = Phoenix R = *RANGER* Midsize S = RZR T = Sportsman X2 U = *RANGER* Fullsize V = RZR W = Multi-pass RGR X = Multi-pass RZR Z = Sportsman XP	A = 2x4 Chain B = 2x4 Shaft C = 4x4 AC Drive E = 4x4 Shaft / IRS G = 4x4 Chain rear / shaft front H = 4x4 Shaft / IRS J = 2x4 Swing arm Manual N = 4x4 Shaft ADC P = 2x4 / IRS Manual R = 6x6 Shaft / IRS T = 4x4 Shaft / Trailing Arm X = 4x4 Shaft EBS	Displacement in cc divided by 10 and rounded to two digits (i.e. 50 = 498cc) - - - - - - - - - - - - For electric vehicles 08 = 48 Volt 12 = 72 Volt **- - OR - -** 5 = 550 6 = 570 7 = 760 8 = 850 9 = 875	E = EPS D = Diesel F = D + E	A = ORV D = Diesel E = EU On-road F = INT'L G = EV L = LSV M = Military S = Scandinavian V = EU On-road		C = Calif.

* = 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.

Engine Designation Number

1204620 RZR800-13.....Twin Cylinder, Liquid Cooled, OHV 4 Stroke, Electric Start

Vehicle Identification Number (VIN) Designation

Example: 4XAVH76A4DB000000

World Mfg. ID			Vehicle Descriptors						Vehicle Identifiers							
			Chassis	Driveline	Engine Size	Engine Modifier	Category	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
4	X	A	V	H	7	6	A	4	D	B	0	0	0	0	0	0

* Model Year: A = 2010; B = 2011; C = 2012; D = 2013

Vehicle and Engine Serial Number Locations

Whenever corresponding about a Polaris ORV, refer to the vehicle identification number (VIN) and engine serial number.

The VIN can be found stamped on the rear upper frame rail, behind the left rear fender, near the air box (see Figure 1-1).

The engine model and serial number can be found on a decal applied to the side of the engine's cylinder (see Figure 1-2).

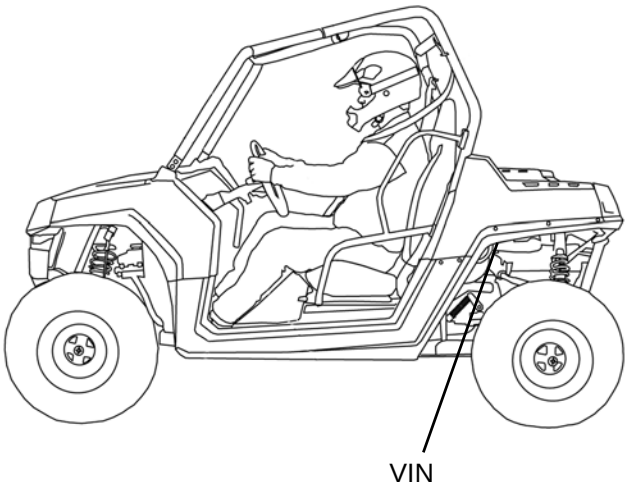


Figure 1-1

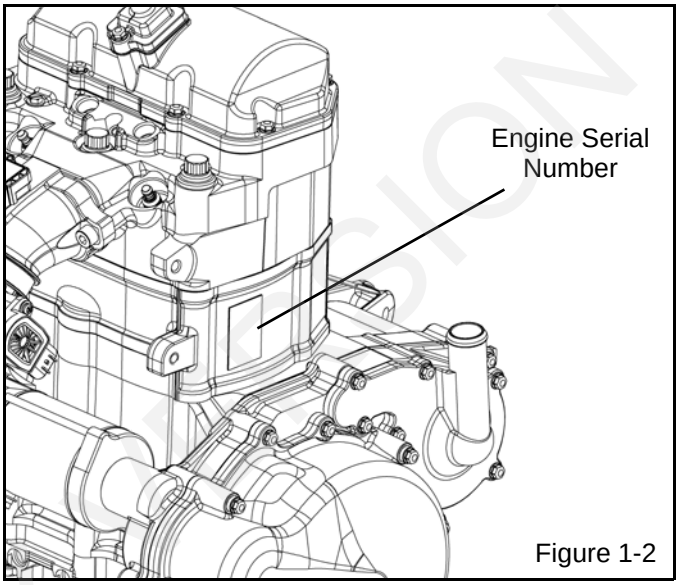


Figure 1-2

VEHICLE INFORMATION

Publication Numbers

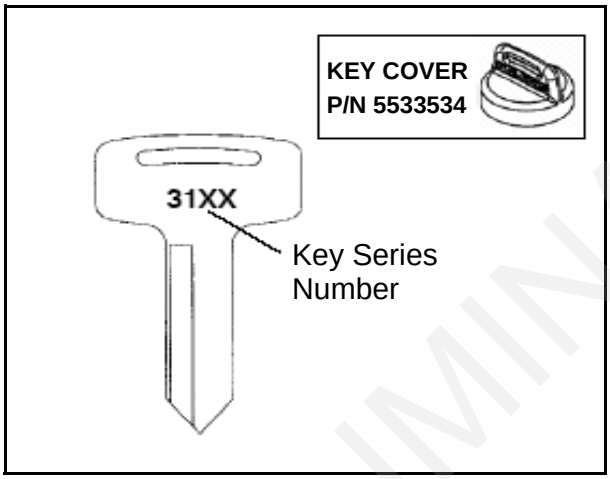
Model	Model No.	Owner's Manual	Parts Manual
2013 *RANGER* RZR	R13VH76AC, AD, AN, AS	9924099	9924104
2013 *RANGER* RZR EPS	R13VH7EAI	9924099	9924104
2013 *RANGER* RZR S	R13VE76AD, AI, AS, AW	9924099	9924100
2013 *RANGER* RZR S INT'L	R13VE76FI, FX	9924099	9924101
2013 *RANGER* RZR 4	R13XE76AD	9924099	9924106
2013 *RANGER* RZR 4 EPS	R13XE7EAI	9924099	9924106

NOTE: When ordering service parts be sure to use the correct parts manual.

NOTE: Polaris factory publications can be found at www.polarisindustries.com or purchased from www.purepolaris.com.

Replacement Keys

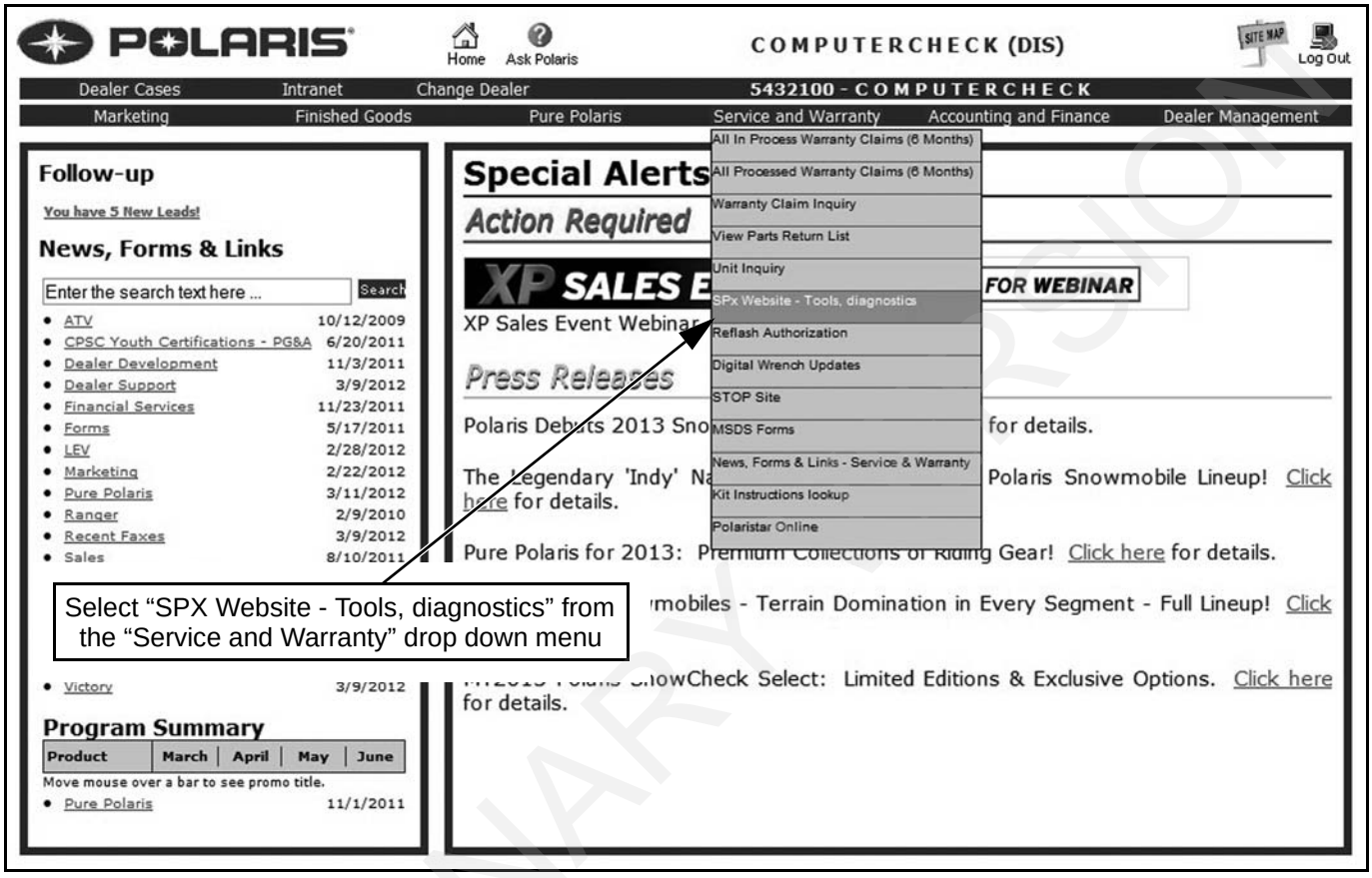
Replacement keys can be made from the original key. To identify which series the key is, take the first two digits on the original key and refer to the chart to the right for the proper part number.



Series#	Part Number
20	4010278
21	4010278
22	4010321
23	4010321
27	4010321
28	4010321
31	4110141
32	4110148
67	4010278
68	4010278

SPECIAL TOOLS

Special tools may be required while servicing this vehicle. Some of the tools listed or depicted are mandatory, while other tools may be substituted with a similar tool, if available. Polaris recommends the use of Polaris Special Tools when servicing any Polaris product. Dealers may order special tools through Polaris' official tool supplier, SPX Corporation, by phone at 1-800-328-6657 or on-line at http://polaris.spx.com/.



GENERAL SPECIFICATIONS

MODEL: 2013 *RANGER* RZR

MODEL NUMBER: R13VH76AC, AD, AN, AS
ENGINE NUMBER: 1204670

Category	Dimension / Capacity
Length	103 in. / 261.6 cm
Width	50 in. / 127 cm
Height	69 in. / 175.3 cm
Wheel Base	77 in. / 196 cm
Ground Clearance	10 in. / 25.4 cm
Dry Weight	945 lbs. / 429 kg
Gross Vehicle Weight	1727 lbs. / 783 kg
Front Storage Capacity	25 lbs. / 11.3 kg
Cargo Box Dimension	42 in. x 22 in. / 107 cm x 56 cm
Cargo Box Capacity	300 lbs. / 136 kg
Maximum Weight Capacity (Payload)	740 lbs. / 335.6 kg (Includes rider(s), cargo, accessories and trailer tongue weight)
Hitch Towing Capacity	1500 lbs. / 680 kg
Hitch Tongue Capacity	150 lbs. / 68 kg

MODEL: 2013 *RANGER* RZR EPS

MODEL NUMBER: R13VH7EAI
ENGINE NUMBER: 1204670

Category	Dimension / Capacity
Length	103 in. / 261.6 cm
Width	50 in. / 127 cm
Height	69 in. / 175.3 cm
Wheel Base	77 in. / 196 cm
Ground Clearance	10 in. / 25.4 cm
Dry Weight	961 lbs. / 436 kg
Gross Vehicle Weight	1727 lbs. / 783 kg
Front Storage Capacity	25 lbs. / 11.3 kg
Cargo Box Dimension	42 in. x 22 in. / 107 cm x 56 cm
Cargo Box Capacity	300 lbs. / 136 kg
Maximum Weight Capacity (Payload)	740 lbs. / 335.6 kg (Includes rider(s), cargo, accessories and trailer tongue weight)
Hitch Towing Capacity	1500 lbs. / 680 kg
Hitch Tongue Capacity	150 lbs. / 68 kg

MODEL: 2013 *RANGER* RZR / EPS

MODEL NUMBER: R13VH76AC, AD, AN, AS
MODEL NUMBER: R13VH7EAI
ENGINE NUMBER: 1204670

Engine	
Platform	H.O. Domestic Twin Cylinder, Liquid Cooled, 4-Stroke
Engine Number	1204670 RZR800-13
Engine Displacement	760cc H.O.
Number of Cylinders	2
Bore & Stroke (mm)	80 x 76.5 mm
Compression Ratio	11:1
Compression Pressure	165 - 185 psi
Engine Idle Speed	1250 ± 100 RPM
Engine Max Operating RPM	6600 RPM
Lubrication	Pressurized Wet Sump
Oil Requirements	PS-4 Plus Synthetic
Oil Capacity	2 qts. / 1.9 liters
Coolant Capacity	4.8 qts. / 4.5 liters
Overheat Warning	Instrument Cluster Indicator
Exhaust System	Dual Headpipe / Single Silencer
Fuel System	
Fuel System Type	Bosch M17 EFI
Fuel Delivery	Electronic Fuel Pump (in tank)
Fuel Pressure	45 +/- 2 psi (310 +/- 14kPa)
Fuel Filters	See Chapter 4
Fuel Capacity / Requirement	7.25 gal. (27.4 liters) 87 Octane (minimum)
Electrical	
Alternator Max Output	500 Watts @ 3000 RPM
Headlights (Halogen)	2 - Halogen: Low 55 W / High 60 W
Headlights (LED)	2 - Dual Beam LED: Low 27 Watts; High 40 Watts
Tail / Brake	2 - 6 Watts / 2 - 27 Watts
Starting System	Electric Start
Ignition System	Bosch M17 (ECU Controlled)
Ignition Timing (Variable)	3° - 10° BTDC @ 1200 RPM
Spark plug / Gap	RC7YC3 / .035 in. (0.9 mm)
Battery (RZR)	Yuasa YTX20HL / 18 Amp Hr. / 310 CCA / 12 Volt
Battery (RZR EPS)	Deka ETX30L / 30 AH 365 CCA / 12 Volt
Instrument Type	Multifunction Instrument Cluster
DC Outlet	Standard 12 Volt
Relays	Chassis / EFI / Fan Fuel Pump / EPS
Circuit Breaker	Fan Motor: 20 Amp
Fuses (Fuse/Relay Box)	Drive / Fuel Pump: 10 Amp Lights / EFI / Accessory: 20 Amp
Fuses (Power Fuse Holder)	EFI: 20 Amp Chassis / EPS: 30 Amp

Drivetrain	
Transmission Type	Polaris Automatic PVT
Drive Ratio - Front	3.82:1
Drive Ratio - Final	3.70:1
Shift Type	In Line Shift - H / L / N / R / P
Front Gearcase Fluid Type / Capacity	Polaris Demand Drive Plus 6.75 oz. (200 ml)
Transmission: Main Gearcase Fluid Type / Capacity	Polaris AGL Plus 24 oz. (710 ml)
Transmission: Transfer Case Fluid Type / Capacity	Polaris AGL Plus 14 oz. (414 ml)
Rear Gearcase Fluid Type / Capacity	Polaris Premium ADF 26 oz. (769 ml)
Clutch Type (**Standard Model**)	Standard PVT
Clutch Type (**EPS Model**)	PVT with EBS
Drive Belt	3211113
Steering / Suspension	
Front Suspension	Independent Dual A-arm w/Anti-Sway Bar
Front Travel	9 in. / 23 cm
Rear Suspension	Rolled IRS w/Anti-Sway Bar
Rear Travel	9.5 in. / 24 cm
Shock Preload Adjustment Front / Rear	Cam Adjustment
Toe Out	1/8 - 1/4 in. (3 - 6.4 mm)
Wheels / Brakes	
Front Wheel Type / Size	Steel / 12 x 6 Aluminum / 12 x 6
Rear Wheel Type / Size	Steel / 12 x 8 Aluminum / 12 x 8
Front Tire Type / Size	Ancla / 25 x 8 R12 Maxxis / 25 x 8 R12
Rear Tire Type / Size	Ancla / 25 x 10 R12 Maxxis / 25 x 10 R12
Tire Air Pressure - Front / Rear	8 psi (55 kPa)
Brake - Front / Rear	Foot Actuated - 4 Wheel Hydraulic Disc
Brake Fluid	DOT 4

CLUTCH CHART (All Non-EPS Models)

Altitude		Shift Weight	Drive Spring	Driven Spring
Meters (Feet)	**0-1500 (0-5000)**	23-62 (5632337)	Green (7043789)	Blk / Almond (7043167)
	1500-3700 (5000 - 12000)	23-58 (B) (1322911)	Green (7043789)	Blk / Almond (7043167)

CLUTCH CHART (EPS Model with EBS)

Altitude		Shift Weight	Drive Spring	Driven Spring
Meters (Feet)	**0-1500 (0-5000)**	23-66 (5632763)	Green (7043789)	Red (3234452)
	1500-3700 (5000 - 12000)	23-62 (5632337)	Green (7043789)	Red (3234452)

MODEL: 2013 *RANGER* RZR S

MODEL NUMBER: R13VE76AD, AI, AS, AW
ENGINE NUMBER: 1204670

Category	Dimension / Capacity
Length	104 in. / 264.2 cm
Width	60.5 in. / 154 cm
Height	70.5 in. / 179 cm
Wheel Base	77 in. / 196 cm
Ground Clearance	12.5 in. / 32 cm
Dry Weight	1000 lbs. / 454 kg
Gross Vehicle Weight	1782 lbs. / 808 kg
Front Storage Capacity	25 lbs. / 11.3 kg
Cargo Box Dimension	42 in. x 22 in. / 107 cm x 56 cm
Cargo Box Capacity	300 lbs. / 136 kg
Maximum Weight Capacity (Payload)	740 lbs. / 335.6 kg (Includes rider(s), cargo, accessories and trailer tongue weight)
Hitch Towing Capacity	1500 lbs. / 680 kg
Hitch Tongue Capacity	150 lbs. / 68 kg

MODEL: 2013 *RANGER* RZR S INT'L

MODEL NUMBER: R13VE76FI, FX
ENGINE NUMBER: 1204670

Category	Dimension / Capacity
Length	104 in. / 264.2 cm
Width	60.5 in. / 154 cm
Height	70.5 in. / 179 cm
Wheel Base	77 in. / 196 cm
Ground Clearance	12.5 in. / 32 cm
Dry Weight	1016 lbs. / 461 kg
Gross Vehicle Weight	1782 lbs. / 808 kg
Front Storage Capacity	25 lbs. / 11.3 kg
Cargo Box Dimension	42 in. x 22 in. / 107 cm x 56 cm
Cargo Box Capacity	300 lbs. / 136 kg
Maximum Weight Capacity (Payload)	740 lbs. / 335.6 kg (Includes rider(s), cargo, accessories and trailer tongue weight)
Hitch Towing Capacity	1500 lbs. / 680 kg
Hitch Tongue Capacity	150 lbs. / 68 kg

MODEL: 2013 *RANGER* RZR S / INT'L

MODEL NUMBER: R13VE76AD, AI, AS, AW
MODEL NUMBER: R13VE76FI, FX
ENGINE NUMBER: 1204670

Engine	
Platform	H.O. Domestic Twin Cylinder, Liquid Cooled, 4-Stroke
Engine Number	1204670 RZR800-13
Engine Displacement	760cc H.O.
Number of Cylinders	2
Bore & Stroke (mm)	80 x 76.5 mm
Compression Ratio	11:1
Compression Pressure	165 - 185 psi
Engine Idle Speed	1250 ± 100 RPM
Engine Max Operating RPM	6750 RPM
Lubrication	Pressurized Wet Sump
Oil Requirements	PS-4 Plus Synthetic
Oil Capacity	2 qts. / 1.9 liters
Coolant Capacity	4.8 qts. / 4.5 liters
Overheat Warning	Instrument Cluster Indicator
Exhaust System	Dual Headpipe / Single Silencer
Fuel System	
Fuel System Type	Bosch M17 EFI
Fuel Delivery	Electronic Fuel Pump (in tank)
Fuel Pressure	45 +/- 2 psi (310 +/- 14kPa)
Fuel Filters	See Chapter 4
Fuel Capacity / Requirement	7.25 gal. (27.4 liters) 87 Octane (minimum)
Electrical	
Alternator Max Output	500 Watts @ 3000 RPM
Headlights (Halogen)	2 - Halogen: Low 55 W / High 60 W
Headlights (LED)	2 - Dual Beam LED: Low 27 Watts; High 40 Watts
Tail / Brake	2 - 6 Watts / 2 - 27 Watts
Starting System	Electric Start
Ignition System	Bosch M17 (ECU Controlled)
Ignition Timing (Variable)	3° - 10° BTDC @ 1200 RPM
Spark plug / Gap	RC7YC3 / .035 in. (0.9 mm)
Battery	Yuasa YTX20HL / 18 Amp Hr. / 310 CCA / 12 Volt
Instrument Type	Multifunction Instrument Cluster
DC Outlet	Standard 12 Volt
Relays	Chassis / EFI / Fan Fuel Pump
Circuit Breaker	Fan Motor: 20 Amp
Fuses (Fuse/Relay Box)	Drive / Fuel Pump: 10 Amp Lights / EFI / Accessory: 20 Amp
Fuses (Power Fuse Holder)	EFI: 20 Amp Chassis: 30 Amp

Drivetrain	
Transmission Type	Polaris Automatic PVT
Drive Ratio - Front	3.82:1
Drive Ratio - Final	3.70:1
Shift Type	In Line Shift - H / L / N / R / P
Front Gearcase Fluid Type / Capacity	Polaris Demand Drive Plus 6.75 oz. (200 ml)
Transmission: Main Gearcase Fluid Type / Capacity	Polaris AGL Plus 24 oz. (710 ml)
Transmission: Transfer Case Fluid Type / Capacity	Polaris AGL Plus 14 oz. (414 ml)
Rear Gearcase Fluid Type / Capacity	Polaris Premium ADF 26 oz. (769 ml)
Rear Gearcase (INT'L) Fluid Type / Capacity	Polaris Premium ADF 22 oz. (650 ml)
Clutch Type	Standard PVT
Drive Belt	3211133
Steering / Suspension	
Front Suspension / Shock	Independent Dual A-arm **Standard:** Monotube **FOX™:** PODIUM
Front Travel	12 in. / 30.5 cm
Rear Suspension / Shock	Rolled IRS w/Anti-Sway Bar **Standard:** Monotube **FOX™:** PODIUM
Rear Travel	12 in. / 30.5 cm
Shock Preload Adjustment Front / Rear	**Standard:** Cam Adjustment
	FOX™: Threaded Spanner Wrench Adjustment
Toe Out	1/8 - 1/4 in. (3 - 6.4 mm)
Wheels / Brakes	
Front Wheel Type / Size	Aluminum / 12 x 6
Rear Wheel Type / Size	Aluminum / 12 x 8
Front Tire Type / Size	ITP "900XCT" / 27 x 9 R12 Maxxis Bighorn / 26 x 9 R12
Rear Tire Type / Size	ITP "900XCT" / 27 x 11 R12 Maxxis Bighorn / 26 x 12 R12
Tire Air Pressure - Front / Rear	8 psi (55 kPa)
Brake - Front / Rear	Foot Actuated - 4 Wheel Hydraulic Disc
Brake Fluid	DOT 4

CLUTCH CHART

Altitude		Shift Weight	Drive Spring	Driven Spring
Meters (Feet)	**0-1500 (0-5000)**	23-62 (5632337)	Green (7043789)	Blk / Almond (7043167)
	1500-3700 (5000 - 12000)	23-58 (B) (1322911)	Green (7043789)	Blk / Almond (7043167)

MODEL: 2013 *RANGER* RZR 4

MODEL NUMBER: R13XE76AD
ENGINE NUMBER: 1204671

Category	Dimension / Capacity
Length	130 in. / 330 cm
Width	60.5 in. / 154 cm
Height	75 in. / 190.5 cm
Wheel Base	103 in. / 262 cm
Ground Clearance	11.5 in. / 29 cm
Dry Weight	1255 lbs. / 569 kg
Gross Vehicle Weight	2206 lbs. / 1000 kg
Front Storage Capacity	25 lbs. / 11.3 kg
Cargo Box Dimension	42 in. x 22 in. / 107 cm x 56 cm
Cargo Box Capacity	300 lbs. / 136 kg
Maximum Weight Capacity (Payload)	900 lbs. / 408 kg (Includes rider(s), cargo, accessories and trailer tongue weight)
Hitch Towing Capacity	1500 lbs. / 680 kg
Hitch Tongue Capacity	150 lbs. / 68 kg

MODEL: 2013 *RANGER* RZR 4 EPS

MODEL NUMBER: R13XE7EAI
ENGINE NUMBER: 1204671

Category	Dimension / Capacity
Length	130 in. / 330 cm
Width	60.5 in. / 154 cm
Height	75 in. / 190.5 cm
Wheel Base	103 in. / 262 cm
Ground Clearance	11.5 in. / 29 cm
Dry Weight	1271 lbs. / 577 kg
Gross Vehicle Weight	2206 lbs. / 1000 kg
Front Storage Capacity	25 lbs. / 11.3 kg
Cargo Box Dimension	42 in. x 22 in. / 107 cm x 56 cm
Cargo Box Capacity	300 lbs. / 136 kg
Maximum Weight Capacity (Payload)	900 lbs. / 408 kg (Includes rider(s), cargo, accessories and trailer tongue weight)
Hitch Towing Capacity	1500 lbs. / 680 kg
Hitch Tongue Capacity	150 lbs. / 68 kg

MODEL: 2013 *RANGER* RZR 4 / EPS

MODEL NUMBER: R13XE76AD
MODEL NUMBER: R13XE7EAI
ENGINE NUMBER: 1204671

Engine	
Platform	H.O. Domestic Twin Cylinder, Liquid Cooled, 4-Stroke
Engine Number	1204671 RZR800-13
Engine Displacement	760cc H.O.
Number of Cylinders	2
Bore & Stroke (mm)	80 x 76.5 mm
Compression Ratio	11:1
Compression Pressure	165 - 185 psi
Engine Idle Speed	1250 ± 100 RPM
Engine Max Operating RPM	6750 RPM
Lubrication	Pressurized Wet Sump
Oil Requirements	PS-4 Plus Synthetic
Oil Capacity	2 qts. / 1.9 liters
Coolant Capacity	5.5 qts. / 5.2 liters
Overheat Warning	Instrument Cluster Indicator
Exhaust System	Dual Headpipe / Single Silencer
Fuel System	
Fuel System Type	Bosch M17 EFI
Fuel Delivery	Electronic Fuel Pump (in tank)
Fuel Pressure	45 +/- 2 psi (310 +/- 14kPa)
Fuel Filters	See Chapter 4
Fuel Capacity / Requirement	7.25 gal. (27.4 liters) 87 Octane (minimum)
Electrical	
Alternator Max Output	500 Watts @ 3000 RPM
Headlights (Halogen)	2 - Halogen: Low 55 W / High 60 W
Headlights (LED)	2 - Dual Beam LED: Low 27 Watts; High 40 Watts
Tail / Brake	2 - 6 Watts / 2 - 27 Watts
Starting System	Electric Start
Ignition System	Bosch M17 (ECU Controlled)
Ignition Timing (Variable)	3° - 10° BTDC @ 1200 RPM
Spark plug / Gap	RC7YC3 / .035 in. (0.9 mm)
Battery	Deka ETX30L / 30 AH 365 CCA / 12 Volt
Instrument Type	Multifunction Instrument Cluster
DC Outlets	(2) Standard 12 Volt
Relays	Chassis / EFI / Fan Fuel Pump / EPS
Circuit Breaker	Fan Motor: 20 Amp
Fuses (Fuse/Relay Box)	Drive / Fuel Pump: 10 Amp Lights / EFI / Accessory: 20 Amp
Fuses (Power Fuse Holder)	EFI: 20 Amp Chassis / EPS: 30 Amp

Drivetrain	
Transmission Type	Polaris Automatic PVT
Drive Ratio - Front	3.82:1
Drive Ratio - Final	3.70:1
Shift Type	In Line Shift - H / L / N / R / P
Front Gearcase Fluid Type / Capacity	Polaris Demand Drive Plus 6.75 oz. (200 ml)
Transmission: Main Gearcase Fluid Type / Capacity	Polaris AGL Plus 24 oz. (710 ml)
Transmission: Transfer Case Fluid Type / Capacity	Polaris AGL Plus 14 oz. (414 ml)
Rear Gearcase Fluid Type / Capacity	Polaris Premium ADF 26 oz. (769 ml)
Clutch Type	Standard PVT
Drive Belt	3211133
Steering / Suspension	
Front Suspension / Shock	Independent Dual A-arm FOX™ 2.0 PODIUM Top Fill FOX™ 2.0 PODIUM Piggyback
Front Travel	12 in. / 30.5 cm
Rear Suspension / Shock	Rolled IRS w/Anti-Sway Bar FOX™ 2.0 PODIUM Top Fill FOX™ 2.0 PODIUM Piggyback
Rear Travel	12 in. / 30.5 cm
Shock Preload Adjustment Front / Rear	Threaded Spanner Wrench Adjustment
Toe Out	1/8 - 1/4 in. (3 - 6.4 mm)
Wheels / Brakes	
Front Wheel Type / Size	Aluminum / 12 x 6
Rear Wheel Type / Size	Aluminum / 12 x 8
Front Tire Type / Size	ITP “900XCT” / 27 x 9 R12 Maxxis Bighorn / 26 x 9 R12
Rear Tire Type / Size	ITP “900XCT” / 27 x 11 R12 Maxxis Bighorn / 26 x 12 R12
Tire Air Pressure	Front: 10 psi (69 kPa) Rear: 12 psi (83 kPa)
Brake - Front / Rear	Foot Actuated - 4 Wheel Hydraulic Disc
Brake Fluid	DOT 4

CLUTCH CHART

Altitude		Shift Weight	Drive Spring	Driven Spring
Meters (Feet)	**0-1500 (0-5000)**	23-62 (5632337)	Green (7043789)	Blk / Almond (7043167)
	1500-3700 (5000 - 12000)	23-58 (B) (1322911)	Green (7043789)	Blk / Almond (7043167)

MISC. SPECIFICATIONS AND CHARTS

Conversion Table

Unit of Measure	Multiplied by	Converts to
ft. lbs.	x 12	= in. lbs.
in. lbs.	x .0833	= ft. lbs.
ft. lbs.	x 1.356	= Nm
in. lbs.	x .0115	= kg-m
Nm	x .7376	= ft.lbs.
kg-m	x 7.233	= ft. lbs.
kg-m	x 86.796	= in. lbs.
kg-m	x 10	= Nm
in.	x 25.4	=mm
mm	x .03937	= in.
in.	x 2.54	= cm
mile (mi.)	x 1.6	= km
km	x .6214	= mile (mi.)
Ounces (oz)	x 28.35	= Grams (g)
Fluid Ounces (fl. oz.)	x 29.57	= Cubic Centimeters (cc)
Cubic Centimeters (cc)	x .03381	= Fluid Ounces (fl. oz.)
Grams (g)	x 0.035	= Ounces (oz)
lb.	x .454	= kg
kg	x 2.2046	= lb.
Cubic inches (cu in)	x 16.387	= Cubic centimeters (cc)
Cubic centimeters (cc)	x 0.061	= Cubic inches (cu in)
Imperial pints (Imp pt)	x 0.568	= Liters (l)
Liters (l)	x 1.76	= Imperial pints (Imp pt)
Imperial quarts (Imp qt)	x 1.137	= Liters (l)
Liters (l)	x 0.88	= Imperial quarts (Imp qt)
Imperial quarts (Imp qt)	x 1.201	= US quarts (US qt)
US quarts (US qt)	x 0.833	= Imperial quarts (Imp qt)
US quarts (US qt)	x 0.946	= Liters (l)
Liters (l)	x 1.057	= US quarts (US qt)
US gallons (US gal)	x 3.785	=Liters (l)
Liters (l)	x 0.264	= US gallons (US gal)
Pounds - force per square inch (psi)	x 6.895	= Kilopascals (kPa)
Kilopascals (kPa)	x 0.145	= Pounds - force per square inch (psi)
Kilopascals (kPa)	x 0.01	= Kilograms - force per square cm
Kilograms - force per square cm	x 98.1	= Kilopascals (kPa)
π (3.14) x R^2 x H (height)		= Cylinder Volume

°C to °F: °C x 9/5 + 32 = °F °F to °C: °F - 32 x 5/9 = °C

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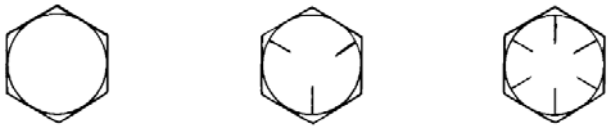
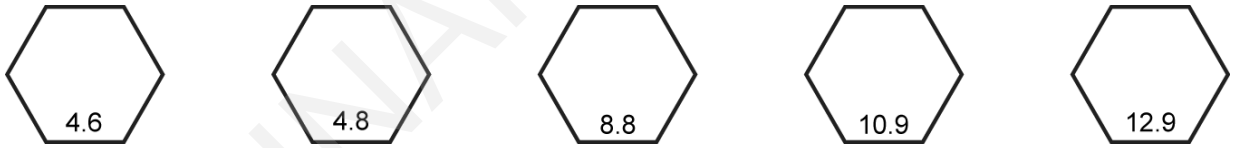
Standard Bolt Torque Specification



Grade 2 Grade 5 Grade 8

Bolt Size	Grade 2 ft-lbs (Nm)	Grade 5 ft-lbs (Nm)	Grade 8 ft-lbs (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-lbs (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)	11 (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)

SAE Tap / Drill Sizes

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

Metric Tap / Drill Sizes

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

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

CHAPTER 2
MAINTENANCE

2

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PERIODIC MAINTENANCE CHART

Periodic Maintenance Overview

Inspection, adjustment and lubrication of important components are explained in the periodic maintenance chart.

Inspect, clean, lubricate, adjust and replace parts as necessary. When inspection reveals the need for replacement parts, use genuine Pure Polaris parts available from your Polaris dealer.

NOTE: Service and adjustments are critical. If you're not familiar with safe service and adjustment procedures, have a qualified dealer perform these operations.

Maintenance intervals in the following chart are based upon average riding conditions and an average vehicle speed of approximately 10 miles per hour. Vehicles subjected to severe use must be inspected and serviced more frequently.

Severe Use Definition

- Frequent immersion in mud, water or sand
- Racing or race-style high RPM use
- Prolonged low speed, heavy load operation
- Extended idle
- Short trip cold weather operation

Pay special attention to the oil level. A rise in oil level during cold weather can indicate contaminants collecting in the oil sump or crankcase. Change oil immediately if the oil level begins to rise. Monitor the oil level, and if it continues to rise, discontinue use and determine the cause or see your dealer.

Break-In Period

The break-in period consists of the first 25 hours of operation, or the time it takes to use 14 gallons (53 liters) of fuel. Careful treatment of a new engine and drive components will result in more efficient performance and longer life for these components.

- Drive vehicle slowly at first while varying the throttle position. Do not operate at sustained idle.
- Pull only light loads.
- Perform regular checks on fluid levels and other areas outlined on the daily pre-ride inspection checklist.
- Change both the engine oil and filter after 25 hours or one month.
- See "Owner's Manual" for additional break-in information.

Maintenance Chart Key

The following symbols denote potential items to be aware of during maintenance:

■ = **CAUTION: Due to the nature of these adjustments, it is recommended this service be performed by an authorized Polaris dealer.**

◗ = **SEVERE USE ITEM: See information provided above.**

E = **Emission Control System Service (California).**

NOTE: Inspection may reveal the need for replacement parts. Always use genuine Polaris parts.

⚠ WARNING
Improperly performing the procedures marked ■ could result in component failure and lead to serious injury or death. Have an authorized Polaris dealer perform these services.

Pre-Ride - 50 Hour Maintenance Interval

	Item	Maintenance Interval (whichever comes first)			Remarks
		Hours	Calendar	Miles (KM)	
■	Steering	-	Pre-Ride	-	Make adjustments as needed. See Pre-Ride Checklist on Page 2.10.
▸	Front / Rear Suspension	-	Pre-Ride	-	
	Tires	-	Pre-Ride	-	
▸	Brake Fluid Level	-	Pre-Ride	-	
▸	Brake Pedal Travel	-	Pre-Ride	-	
	Brake Systems	-	Pre-Ride	-	
	Wheels / Fasteners	-	Pre-Ride	-	
	Frame Fasteners	-	Pre-Ride	-	
▸ E	Engine Oil Level	-	Pre-Ride	-	
▸ E	Air Filter	-	Pre-Ride	-	Inspect; replace as needed
	Coolant Level	-	Daily	-	Check level daily, change coolant every 2 years
	Head Lamp / Tail Lamp	-	Daily	-	Check operation; apply dielectric grease if replacing
▸ E	Air Filter	-	Weekly	-	Inspect; replace as needed
▸ ■	Brake Pad Wear	10 H	Monthly	100 (160)	Inspect periodically
	Battery	25 H	Monthly	250 (400)	Check terminals; clean; test
▸ E	Engine Breather Filter (if equipped)	25 H	Monthly	250 (400)	Inspect; replace if necessary
▸ E	Engine Oil Change (Break-In Period)	25 H	1 M	250 (400)	Perform a break-in oil change after the first 25 hours or one month of operation
▸	Front Gearcase Oil (Demand Drive Plus)	25 H	1 M	250 (400)	Initial fluid level inspection; add lubricant if needed
▸	Rear Gearcase Oil (ATV Angle Drive Fluid)	25 H	1 M	250 (400)	Initial fluid level inspection; add lubricant if needed
▸	Transmission - Main (AGL Gearcase Lubricant)	25 H	1 M	250 (400)	Initial fluid level inspection; add lubricant if needed
▸	Transmission - Transfer (AGL Gearcase Lubricant)	25 H	1 M	250 (400)	Initial fluid level inspection; add lubricant if needed
▸	General Lubrication	50 H	3 M	500 (800)	Lubricate all fittings, pivots, cables, etc.
	Shift Linkage	50 H	6 M	500 (800)	Inspect, lubricate, adjust
■	Steering	50 H	6 M	500 (800)	Lubricate
▸	Front / Rear Suspension	50 H	6 M	500 (800)	Lubricate
■ E	Throttle Cable / Throttle Pedal	50 H	6 M	500 (800)	Inspect; adjust; lubricate; replace if necessary
E	Throttle Body Air Intake Ducts / Flange	50 H	6 M	500 (800)	Inspect ducts for proper sealing / air leaks
	Cooling System	50 H	6 M	500 (800)	Inspect coolant strength seasonally; pressure test system yearly

▸ Perform these procedures more often for vehicles subjected to severe use.
E Emission Control System Service (California)
■ Have an authorized Polaris dealer perform these services.

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100 - 300 Hour Maintenance Interval

	Item	Maintenance Interval (whichever comes first)			Remarks
		Hours	Calendar	Miles (KM)	
▸ E	Engine Oil and Oil Filter Change	100 H	6 M	1000 (1600)	Perform a break-in oil change at 25 hours or one month / always replace oil filter when changing engine oil
▸	Front Gearcase Oil (Demand Drive Plus)	100 H	12 M	1000 (1600)	Change lubricant
▸	Rear Gearcase Oil (ATV Angle Drive Fluid)	100 H	12 M	1000 (1600)	Change lubricant
▸	Transmission - Main (AGL Gearcase Lubricant)	100 H	12 M	1000 (1600)	Change lubricant
▸	Transmission - Transfer (AGL Gearcase Lubricant)	100 H	12 M	1000 (1600)	Change lubricant
■ E	Fuel System	100 H	12 M	1000 (1600)	Check for leaks at fill cap, fuel line / rail, and fuel pump. Replace lines every two years.
■ E	Spark Plug	100 H	12 M	1000 (1600)	Inspect; replace as needed
	Drive Belt	100 H	12 M	1000 (1600)	Inspect; replace as needed
▸	Radiator	100 H	12 M	1000 (1600)	Inspect; clean external surfaces
▸	Cooling Hoses	100 H	12 M	1000 (1600)	Inspect for leaks
▸	Engine Assembly Mounts	100 H	12 M	1000 (1600)	Inspect, torque to specification
	Exhaust Muffler / Pipe	100 H	12 M	1000 (1600)	Inspect
▸	Wiring	100 H	12 M	1000 (1600)	Inspect for wear, routing, security; apply dielectric grease to connectors subjected to water, mud, etc.
■	Clutches (Drive and Driven)	100 H	12 M	1000 (1600)	Inspect; clean; replace worn parts
■	Front Wheel Bearings	100 H	12 M	1000 (1600)	Inspect; replace as needed
▸	Shocks	100 H	-	-	Visually inspect shock seals
▸ ■	Shocks	-	12 M	1500 (2400)	Change shock oil and inspect seals
■	Brake Fluid	200 H	24 M	2000 (3200)	Change every two years (DOT 4)
	Spark Arrestor	300 H	36 M	3000 (4800)	Clean out
■	Toe Adjustment	-			Inspect periodically; adjust when parts are replaced
	Headlight Aim	-			Adjust as needed

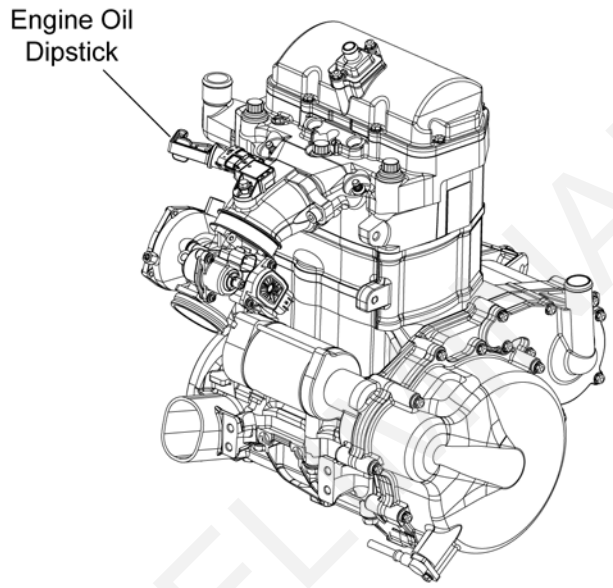
▸ Perform these procedures more often for vehicles subjected to severe use.
E Emission Control System Service (California)
■ Have an authorized Polaris dealer perform these services.

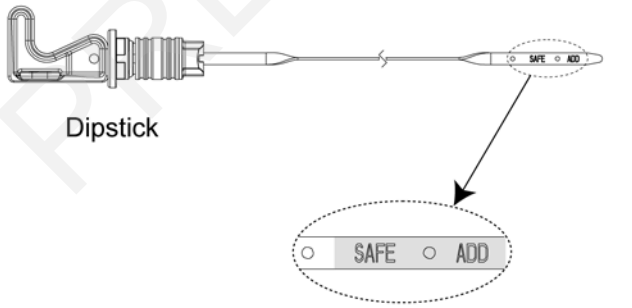
Maintenance Quick Reference

Ill. #	Item	Lube Rec.	Method	Frequency*
1	Engine Oil	Polaris PS-4 Plus Performance Synthetic 4-Cycle Engine Oil	Add oil to proper level on dipstick	Change after 1st month or first 25 hours of operation, 100 hours thereafter; Change more often (25 hours) in severe duty conditions or short trip cold weather operation
2	Engine Coolant	Polaris 60/40 Coolant	Maintain coolant level in coolant reservoir bottle.	Check level daily, change coolant every 2 years
3	Brake Fluid	Polaris DOT 4 Brake Fluid	Maintain fluid level between “MAX and “MIN” lines on the master cylinder reservoir	Check level during pre-ride inspection; change fluid every two years

* More often under severe use, such as operated in water or under severe loads.

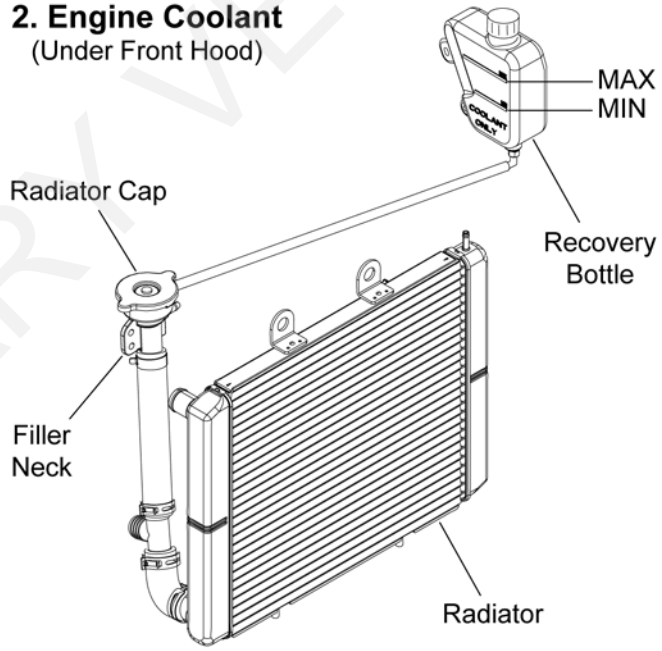
1. Engine Oil
(Behind Passenger Seat)



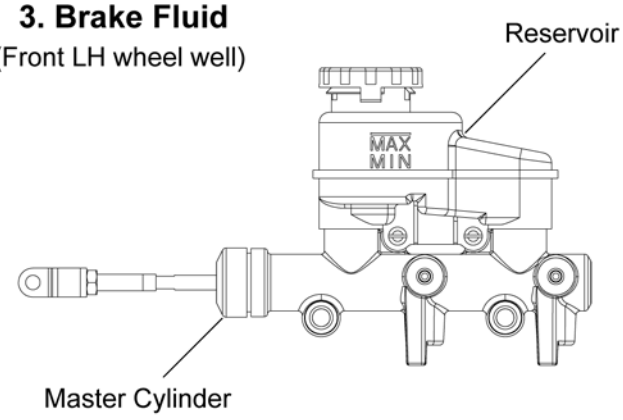


Maintain Oil Level in the “SAFE” range

2. Engine Coolant
(Under Front Hood)



3. Brake Fluid
(Front LH wheel well)

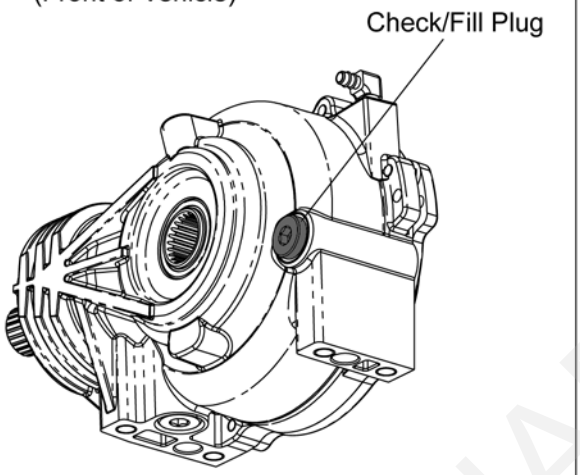


Maintenance Quick Reference, Continued.....

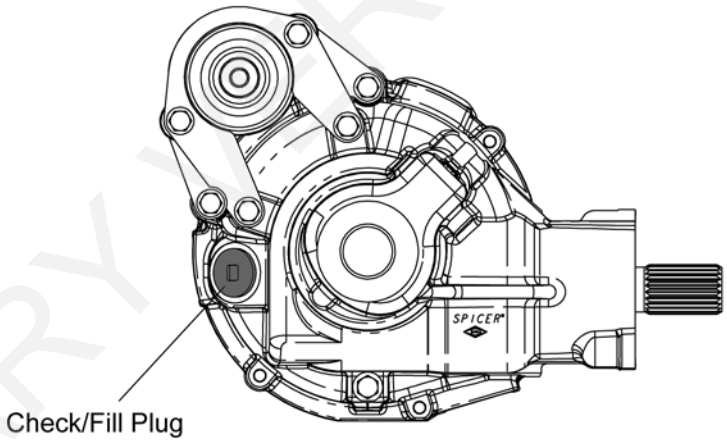
Ill. #	Item	Lube Rec.	Method	Frequency*
4	Front Gearcase	Polaris Demand Drive Plus	Add lubricant until it is visible at the fill hole threads	Initial level check at 25 hours; change according to intervals
5	Rear Gearcase	Polaris ATV Angle Drive Fluid (ADF)	Add lubricant until it is visible at the fill hole threads	Initial level check at 25 hours; change according to intervals
6	Transmission	Polaris AGL Plus Gearcase Lubricant	Add lubricant until it is visible at the fill hole threads	Initial level check at 25 hours; change according to intervals

***** More often under severe use, such as operated in water or under severe loads.

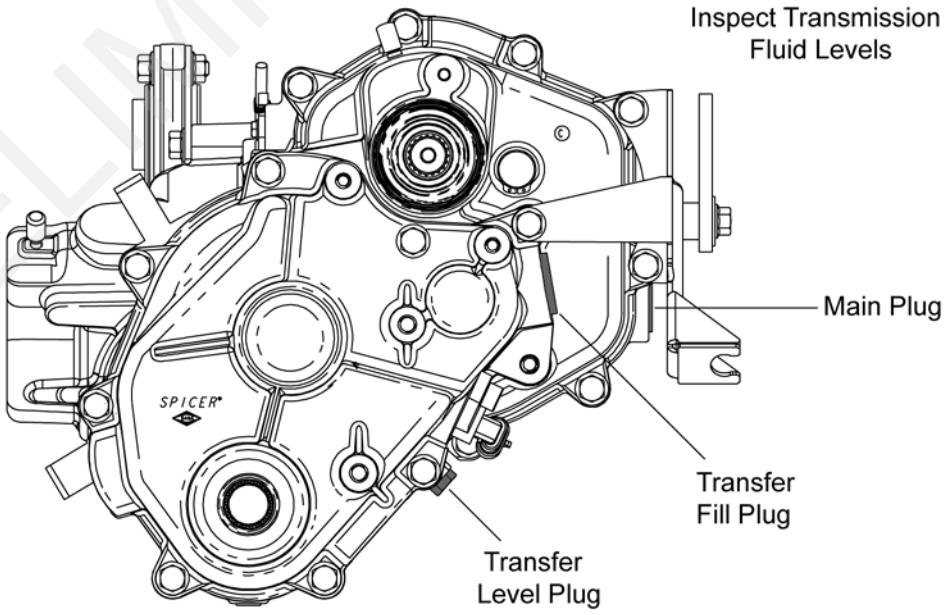
4. Front Gearcase
(Front of Vehicle)



5. Rear Gearcase
(Rear of Vehicle)



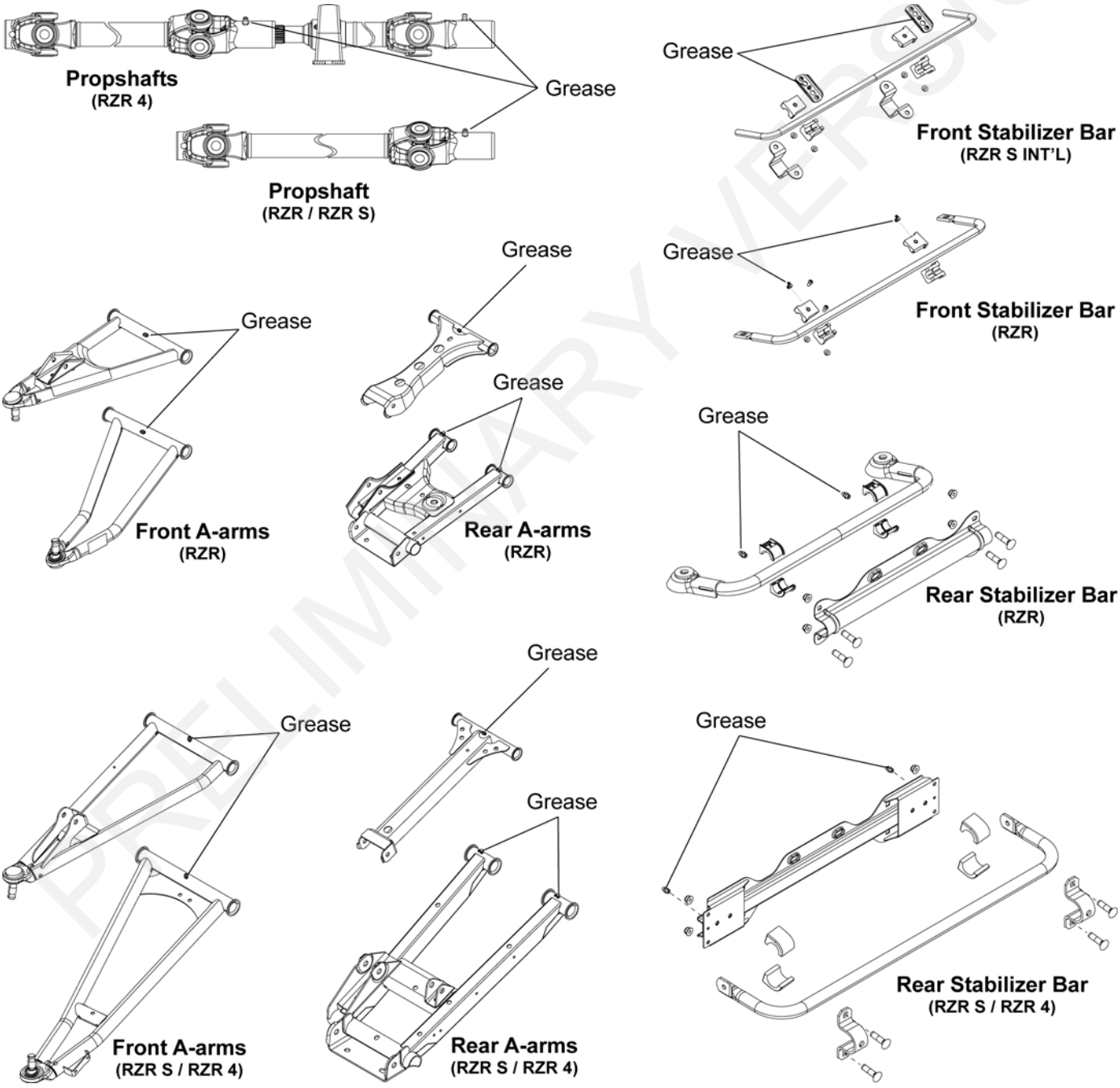
6. Transmission
(Rear LH Wheel Well)



Grease Lubrication Points

There are grease fittings at each A-arms pivot point, each front or rear stabilizer bushing, and on the front propshaft yoke. Apply grease until all traces of water have been purged out at each of these areas.

Item	Recommended Lube	Method	Frequency
Front Propshaft Yoke(s)	Polaris Premium U-Joint Grease	Grease fittings every 500 miles (800 km).	Grease before long periods of storage, and after thoroughly washing or submerging the vehicle.
A-arm Pivot Bushings			
Stabilizer Bar Bushings			



LUBRICANTS / SERVICE PRODUCTS

Polaris Lubricants, Maintenance and Service Products

Part No.	Description
Engine Lubricant	
2870791	Fogging Oil (12 oz. Aerosol)
2876244	PS-4 Plus Performance Synthetic 4-Cycle Engine Oil (Quart)
2876245	PS-4 Plus Performance Synthetic 4-Cycle Engine Oil (Gallon)
2540086	Engine Oil Filter
2202166	Engine Oil Change Kit (Twin Cylinder)
Gearcase / Transmission Lubricants	
2878068	AGL Plus Gearcase Lubricant (1 Qt.) (12 Count)
2878069	AGL Plus Gearcase Lubricant (1 Gal.) (4 Count)
2878070	AGL Plus Gearcase Lubricant (2.5 Gal.) (2 Count)
2876160	ATV Angle Drive Fluid (8 oz.) (12 Count)
2872276	ATV Angle Drive Fluid (2.5 Gal) (2 Count)
2877922	Demand Drive Plus (Quart)
2877923	Demand Drive Plus (2.5 Gallon)
2870465	Oil Pump for 1 Gallon Jug
Grease / Specialized Lubricants	
2871312	Grease Gun Kit
2871322	Premium All Season Grease (3 oz. cartridge) (24 Count)
2871423	Premium All Season Grease (14 oz. cartridge) (10 Count)
2871460	Starter Drive Grease (12 Count)
2871515	Premium U-Joint Lube (3 oz.) (24 Count)
2871551	Premium U-Joint Lube (14 oz.) (10 Count)
2871329	Dielectric Grease (Nyogel™)
Coolant	
2871323	60/40 Coolant (Gallon) (6 Count)
2871534	60/40 Coolant (Quart) (12 Count)

NOTE: Each item can be purchased separately at your local Polaris dealer.

Part No.	Description
Additives / Sealants / Thread Locking Agents / Misc.	
2871950	Loctite™ Threadlock 242 (6 ml.) (12 count)
2871326	Premium Carbon Clean (12 oz.) (12 count)
2870652	Fuel Stabilizer (16 oz.) (12 count)
2872189	DOT 4 Brake Fluid (12 count)
2871557	Crankcase Sealant, 3-Bond 1215 (5 oz.)

NOTE: The number count indicated by each part number in the table above indicates the number of units that are shipped with each order.

GENERAL VEHICLE INSPECTION AND MAINTENANCE

Pre-Ride / Daily Inspection

Perform the following pre-ride inspection daily, and when servicing the vehicle at each scheduled maintenance.

- Tires - check condition and pressures
- Fuel tank - fill to proper level
- All brakes - check operation and adjustment
- Throttle - check for free operation and closing
- Headlights/Taillights/Brakelights - also check operation of all indicator lights and switches
- Ignition switch - check for proper function
- Wheels - check for tightness of wheel nuts and axle nuts; check to be sure axle nuts are secured by cotter pins
- Air cleaner element - check for dirt; clean or replace
- Steering - check for free operation noting any unusual looseness in any area
- Loose parts - visually inspect vehicle for any damaged or loose nuts, bolts or fasteners
- Engine coolant - check for proper level at the recovery bottle
- Check all front and rear suspension components for wear or damage.

Frame, Nuts, Bolts, and Fasteners

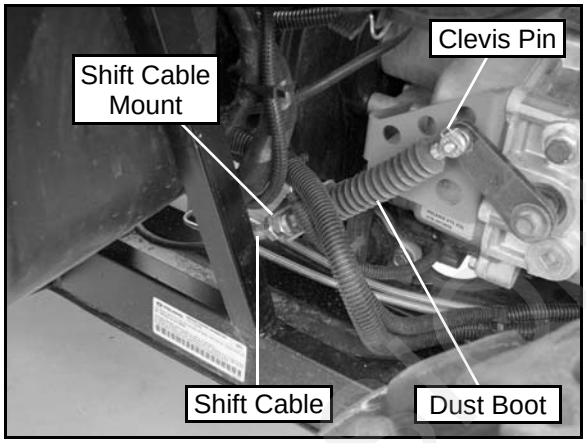
Periodically inspect the torque of all fasteners in accordance with the maintenance schedule. Check that all cotter pins are in place. Refer to specific fastener torques listed in each chapter.

Shift Cable Inspection / Adjustment

Shift cable adjustment may be necessary if symptoms include:

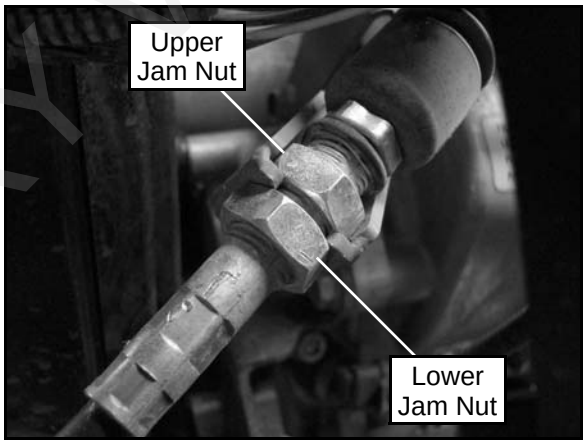
- No AWD or gear position display on instrument cluster
- Ratcheting noise on deceleration
- Inability to engage into a gear
- Excessive gear lash (noise)
- Gear selector moving out of desired range

1. Locate the shift cable in the rear LH wheel well area.



2. Inspect shift cable, clevis pin, pivot bushings, and dust boot. Replace if worn or damaged.

3. If adjustment is required, loosen the lower jam nut and pull the cable out of the mount to move the upper jam nut.



4. Adjust the shift cable so there is the same amount of cable travel when shifting slightly past the detents of HIGH (H) gear and PARK (P).

5. Thread the upper or lower jam nut as required to obtain proper cable adjustment.

NOTE: This procedure may require a few attempts to obtain the proper adjustment.

6. Once the proper adjustment is obtained, place the shift cable and upper jam nut into the mount. Tighten the lower jam nut against the mount.

7. Start engine and shift through all gears to ensure the shift cable is properly adjusted. If transmission still ratchets after cable adjustment, the transmission will require service.

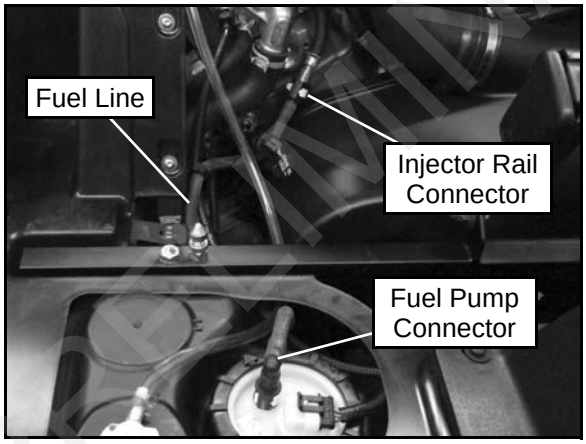
FUEL SYSTEM AND AIR INTAKE

Fuel System

> **⚠ WARNING**
>
> Gasoline is extremely flammable and explosive under certain conditions.
> Always stop the engine and refuel outdoors or in a well ventilated area.
> Do not smoke or allow open flames or sparks in or near the area where refueling is performed or where gasoline is stored.
> Do not overfill the tank. Do not fill the tank neck.
> If you get gasoline in your eyes or if you swallow gasoline, seek medical attention immediately.
> If you spill gasoline on your skin or clothing, immediately wash it off with soap and water and change clothing.
> Never start the engine or let it run in an enclosed area. Engine exhaust fumes are poisonous and can result in loss of consciousness or death in a short time.
> Never drain the fuel when the engine is hot. Severe burns may result.

Fuel Line

1. Check the quick-connect fuel line for signs of wear, deterioration, damage or leakage. Replace if necessary.



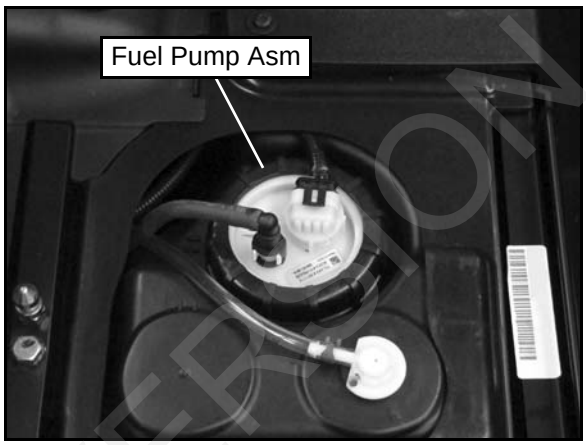
2. Be sure fuel line is routed and retained properly.

IMPORTANT: Make sure line is not kinked or pinched.

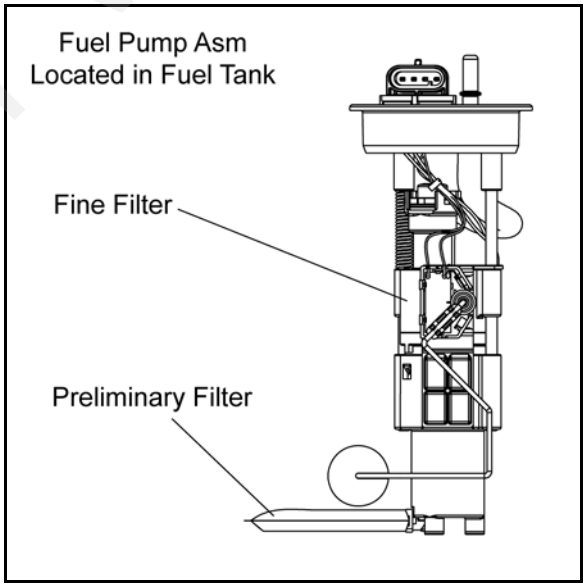
3. Replace fuel line every two years.

Fuel Pump / Fuel Filters

The RZR 800 EFI engine uses a serviceable, high-volume, high-pressure, fuel pump that includes a preliminary filter and an internal fine filter located before the pump regulator.



NOTE: Neither filter is servicable individually. Must replace the fuel pump as an assembly.



NOTE: Refer to Chapter 4 for fuel pump replacement and all other information related to the EFI System.

Vent Lines

1. Check fuel tank, front gearcase, rear gearcase and transmission vent lines for signs of wear, deterioration, damage or leakage. Replace every two years.

2. Be sure vent lines are routed properly and secured with cable ties.

IMPORTANT: Ensure lines are not kinked or pinched.

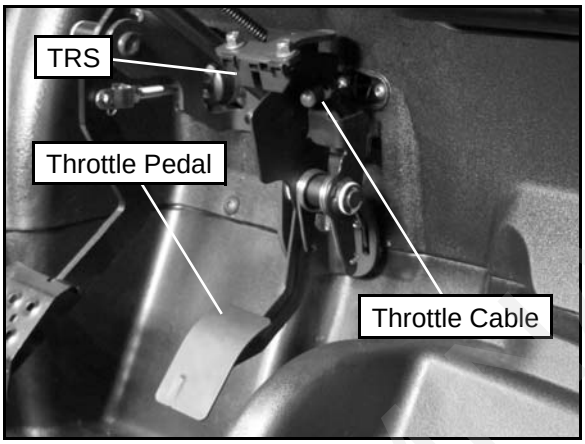
Throttle Pedal Inspection

This vehicle is equipped with a Throttle Release Switch (TRS) used to detect when the throttle pedal has returned to the rest position.

NOTE: The throttle pedal lever is designed to have a few degrees of freeplay prior to engaging the throttle arm that pulls the throttle cable.

Always check that the throttle pedal moves independently of the cable pull lever at the start of throttle pedal travel and that the throttle pedal returns normally before starting the engine.

There should be minimal freeplay between the throttle cable and the cable pull lever. If there is excessive play due to cable stretch or misadjustment, it will cause a delay in throttle response, especially at low engine speed. The throttle may also not open fully. If the throttle cable has no freeplay, the throttle may be hard to control, and the idle speed may be erratic.

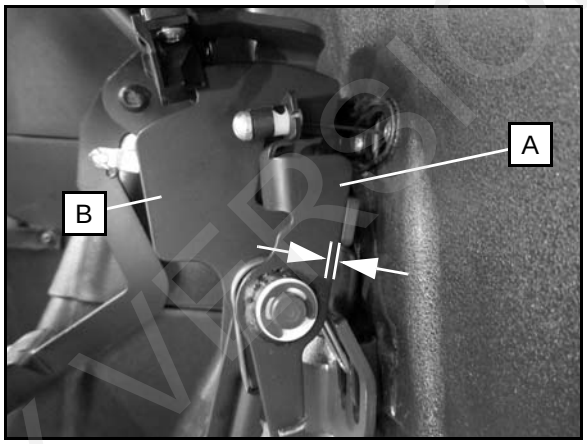


Check throttle pedal freeplay periodically in accordance with the Periodic Maintenance Chart. Adjust the freeplay if necessary (see “Throttle Freeplay Adjustment”).

Throttle Freeplay Adjustment

Inspection

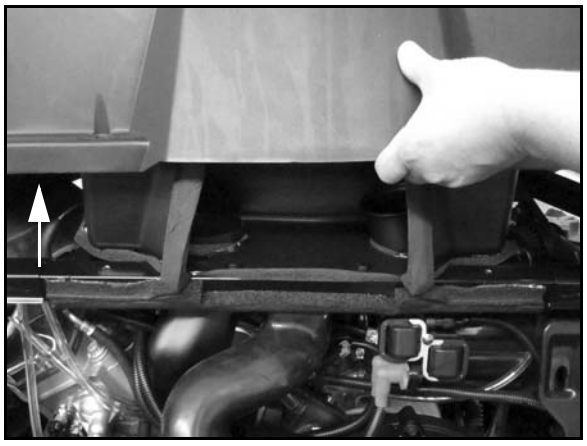
1. Place the transmission in PARK.
2. Start the engine, and warm it up thoroughly.
3. Measure the distance the throttle arm (A) moves before the engine begins to pick up speed. Throttle cable freeplay should be 1/16” - 1/8” (1.5 - 3 mm).



NOTE: The throttle pedal lever (B) is designed to have a few degrees of freeplay prior to engaging the throttle arm (A) that pulls the throttle cable.

Adjustment

1. Remove both seats and rear service panel.
2. Remove cargo box as an assembly (see Chapter 5).



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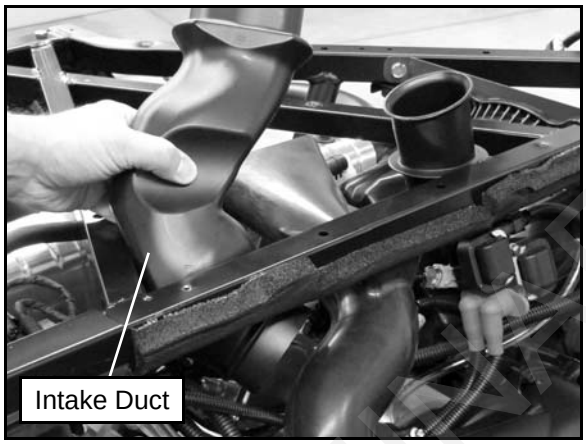
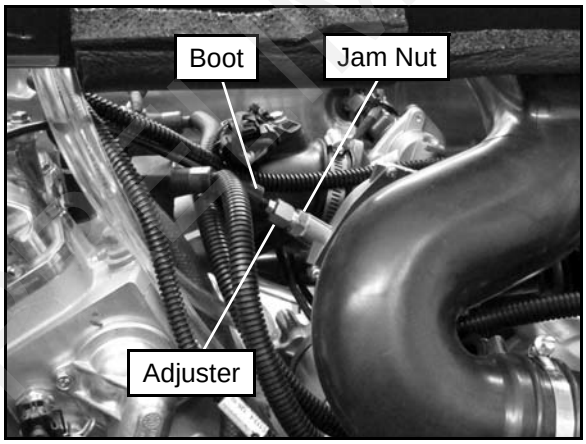
3. Remove the (2) push rivets retaining the air intake box and remove the box from the frame.

4. Loosen the hose clamp retaining the PVT intake duct and remove the duct from the vehicle to access the throttle cable freeplay adjustment.



5. Slide back the cable adjuster boot.



6. Using a 14 mm open-end wrench, loosen the adjustment jam nut. Using a 12 mm open-end wrench, move the cable adjuster until 1/16" to 1/8" (1.5 - 3 mm) of freeplay is achieved at the throttle pedal.

NOTE: While adjusting, lightly move the throttle pedal in and out.

7. Re-tighten the jam nut after final adjustment is made.
8. Apply a small amount of grease to the inside of the boot and slide it over the cable adjuster to its original position.
9. Reinstall the PVT intake duct and tighten the hose clamp.
10. Reinstall the air intake box and (2) push rivets.
11. Reinstall the cargo box, all fasteners and reconnect the taillight harness.
12. Reinstall the rear service panel and seats.

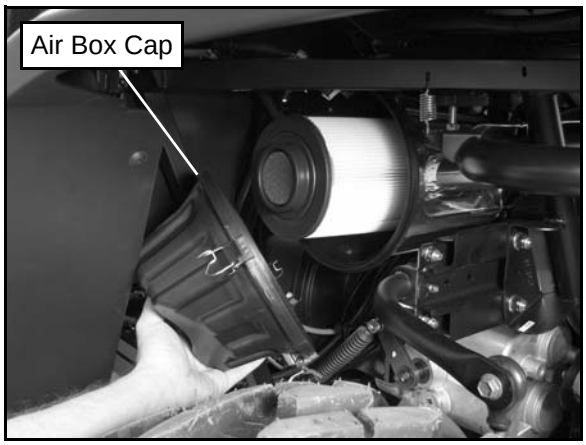
Air Filter Service

It is recommended that the air filter be inspected as part of pre-ride inspection. Always apply grease to the seal under the air box cap and on the sealing edges of the air filter when servicing. In extremely dusty conditions, air filter replacement will be required more often.

The filter should be inspected using the following procedure:

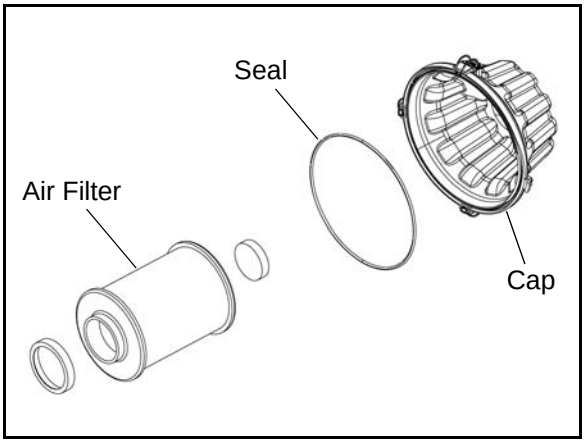
Removal

1. The air box is located just above the left rear wheel in the wheel well area.
2. Unlatch the (3) clips and remove the air box cap. Inspect the seal. It should adhere tightly to the cover and seal all the way around.



3. Remove the air filter assembly.
4. Inspect the air filter element and replace if necessary. Do not attempt to clean the air filter, the filter should be replaced.

NOTE: If the filter has been soaked with fuel or oil it must be replaced.

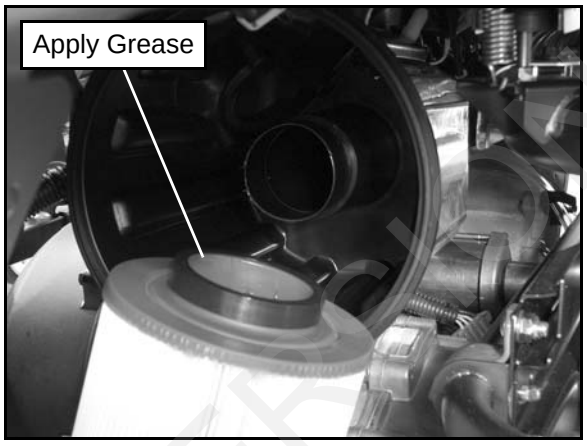


NOTE: Service more frequently if vehicle is operated in wet conditions or at high throttle operation for extended periods.

Installation

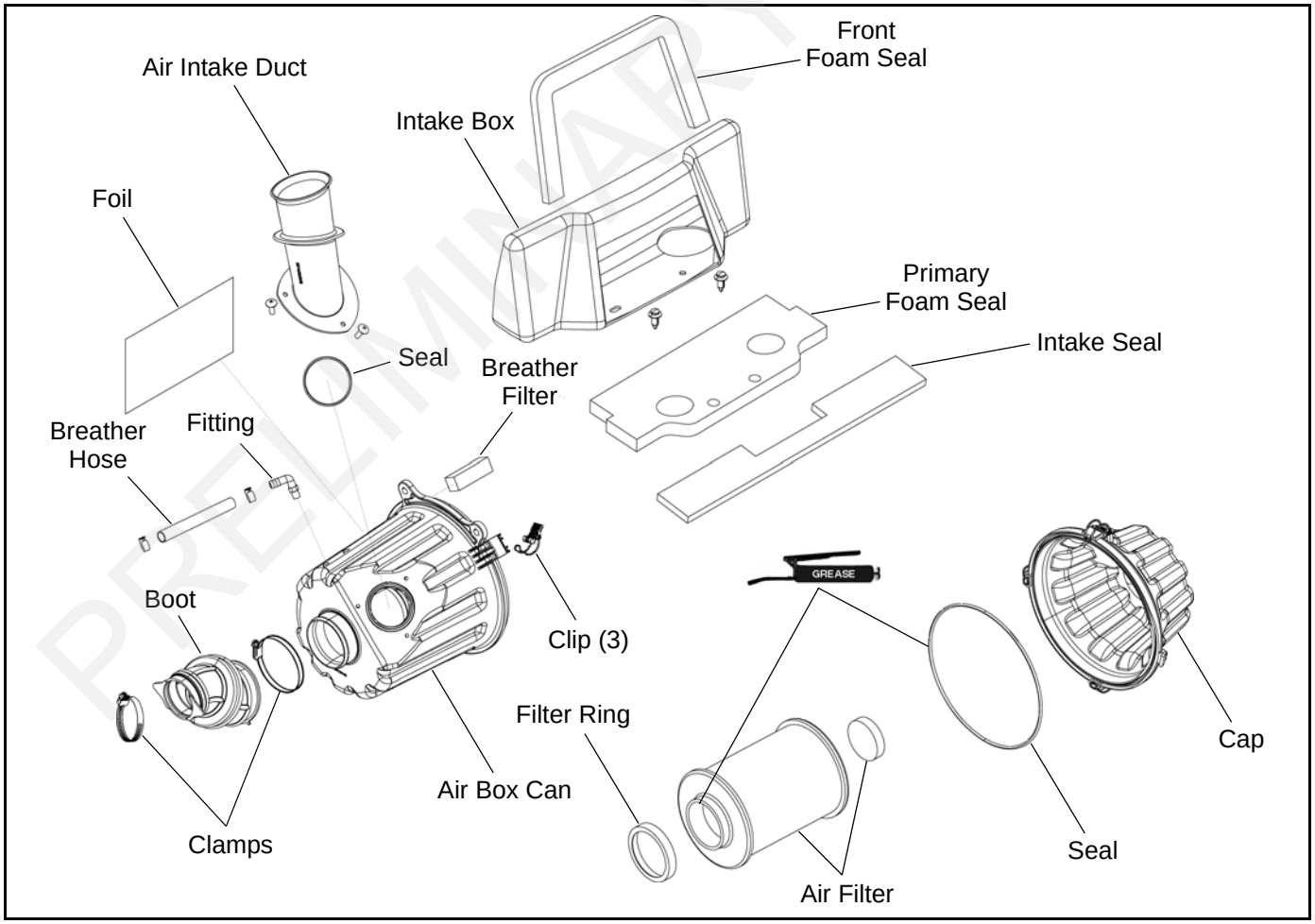
1. Clean the air box thoroughly.
2. Place the filter ring over the end of the filter.

NOTE: Apply a small amount of general purpose grease to the sealing edges of the filter and the air box cap seal before installing.



3. Install the filter into the air box and be sure it fits tightly.
4. Install air box cap and secure with clips.

Air Box / Air Filter Exploded View



ENGINE

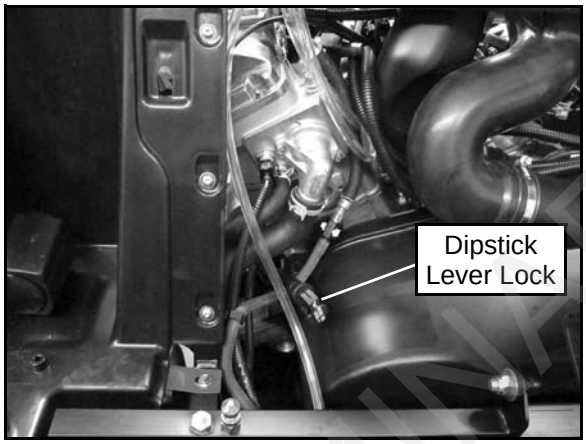
Engine Oil Level

The twin cylinder engine is a wet-sump engine, meaning the oil is contained in the bottom of the crankcase. To check the oil level follow the procedure listed below:

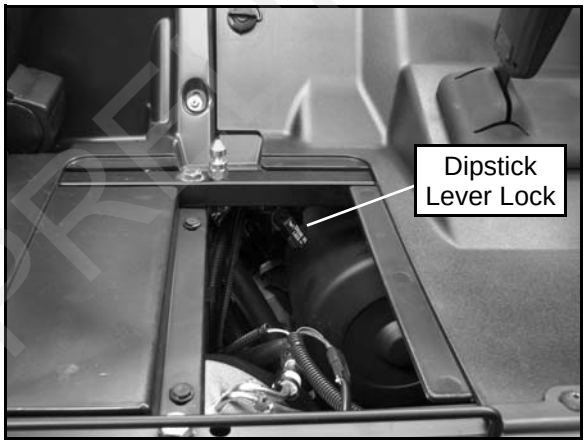
1. Position vehicle on a level surface.
2. Place the transmission in Park (P).
3. Stop the engine and allow it to cool down before removing the dipstick.

IMPORTANT: Do not run the machine and then check the dipstick.

4. Locate the engine oil dipstick:
   - **RZR / RZR S:** Remove both seats and the rear service panel to access the dipstick.



   - **RZR 4:** Remove the right rear passenger seat to access the dipstick.



5. Lift the lever lock, remove dipstick and wipe dry with a clean cloth.
6. Reinstall the dipstick completely, but do not lock it.

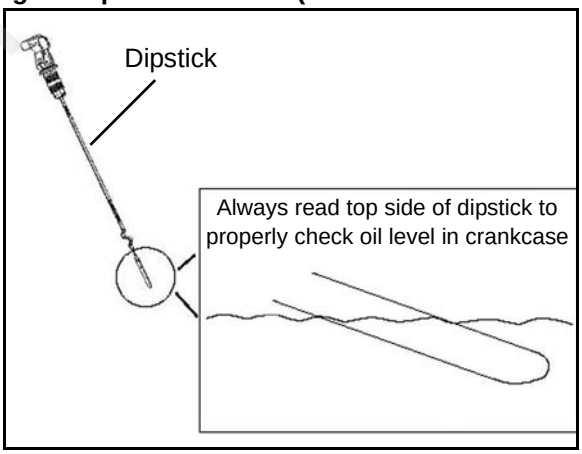
NOTE: Make certain the dipstick is inserted all the way into the filler tube to keep the angle and depth of dipstick consistent.

7. Remove dipstick and check to see that the oil level is in the SAFE range. Add oil as indicated by the level on the dipstick. Do not overfill (see NOTE below!).

Maintain Oil Level In SAFE Range

DO NOT Overfill the Engine

NOTE: Due to the dipstick entry angle into the crankcase, the oil level will read higher on the bottom side of the dipstick. Proper level indication is determined on the upper surface of the dipstick as it is being removed, regardless of the level marks being on top or on bottom (see the next illustration).



NOTE: A rising oil level between checks in cool weather driving can indicate contaminants such as gas or moisture collecting in the crankcase. If the oil level is over the full mark, change the oil immediately.

8. Reinstall the dipstick and lock the lever.

Engine Oil and Filter Service

Always change engine oil and filter at the intervals outlined in the Periodic Maintenance Chart. Always change the oil filter whenever changing the engine oil.

WARNING

Personal injury can occur when handling used oil. Hot oil can cause burns or skin damage.

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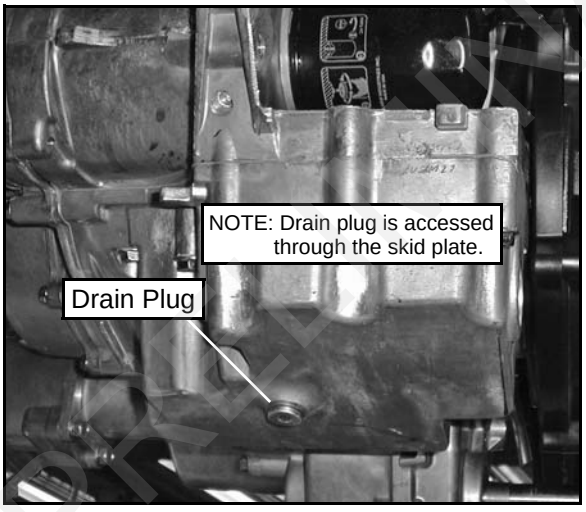
Recommended Engine Oil / Filter:
PS-4 Plus Synthetic 4-Cycle Engine Oil (PN 2876244) (Quart)

Engine Oil Filter (PN 2540086)

Capacity: 2 Quarts (1.9 L)

1. Position vehicle on a level surface.
2. Place the transmission in PARK (P).
3. Start the engine. Allow it to idle for two to three minutes until warm. Stop the engine.
4. Clean area around oil drain plug at bottom of engine.



CAUTION

Oil may be hot. Do not allow hot oil to come into contact with skin, as serious burns may result.

5. Place a drain pan beneath engine crankcase and remove the drain plug.
6. Allow oil to drain completely.
7. Replace the sealing washer on drain plug.

NOTE: The sealing surface on the drain plug should be clean and free of burrs, nicks or scratches.

8. Reinstall drain plug and torque to specification.

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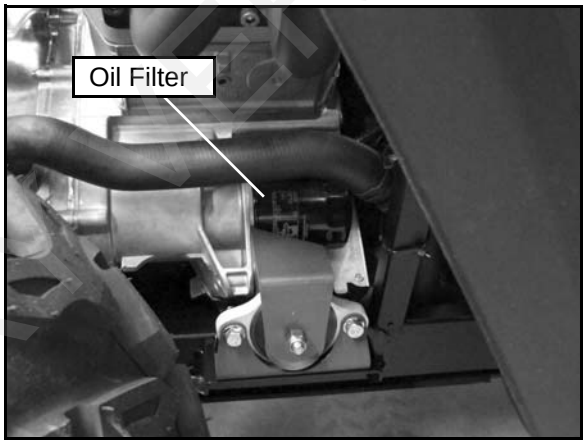
Crankcase Drain Plug:
16 ft-lbs (22 Nm)

9. Place shop towels beneath oil filter. Using Oil Filter Wrench (PU-50105) and a 3/8” extension, turn the oil filter counter-clockwise to remove it.



Oil Filter Wrench:
PU-50105: 2.5” (64 mm)

10. Using a clean dry cloth, clean filter sealing surface on the crankcase.
11. Lubricate O-ring on new filter with a film of fresh engine oil. Check to make sure the O-ring is in good condition.
12. Install new filter to specification.

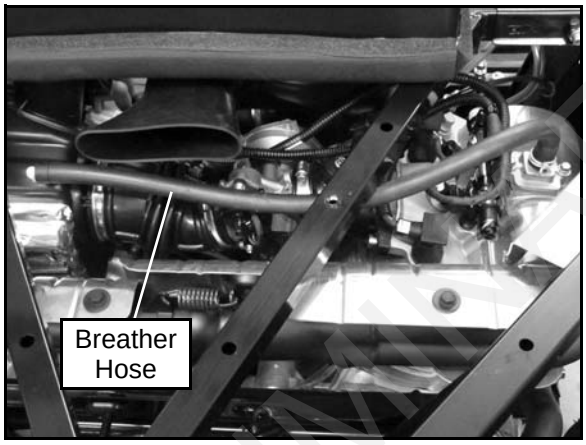
= **T**

Oil Filter:
Turn by hand until filter O-ring contacts sealing surface, then turn an additional 1/2 turn

13. Remove the engine oil dipstick (see “Engine Oil Level”).
14. Fill the sump with 2 qts. (1.9 L) of PS-4 Plus Synthetic Engine Oil (2876244).
15. Verify the transmission is still positioned in PARK (P).
16. Start the engine and let it idle for one to two minutes.
17. Stop the engine and inspect for leaks.
18. Re-check the oil level on the dipstick and add oil as necessary to bring the level to the upper mark on the dipstick.
19. Dispose of used oil and oil filter properly.

Engine Breather Hose Inspection

The engine is equipped with a breather hose. Inspect the breather hose for possible kinks or wear. The hose is formed for a proper fit. Follow the breather hose from the side of the airbox to the engine valve cover.



NOTE: Make sure line is not kinked or pinched.

Engine and Transmission Mounts

Periodically inspect engine and transmission mounts for cracks or damage.

Refer to Chapter 3 “Engine Assembly and Installation” for mounting fastener torque values.

Compression and Leakdown Test

NOTE: This engine does NOT have decompression components. Compression readings will vary in proportion to cranking speed during the test.

A smooth idle generally indicates good compression. Low engine compression is rarely a factor in running condition problems above idle speed.

A cylinder leakdown test is the best indication of engine condition. Follow manufacturer's instructions to perform a cylinder leakage test (never use high pressure leakage testers, as crankshaft seals may dislodge and leak).

Cylinder Compression:
165-185 PSI

Cylinder Leakdown
Service Limit: 15%
(Inspect for cause if test exceeds 15%)

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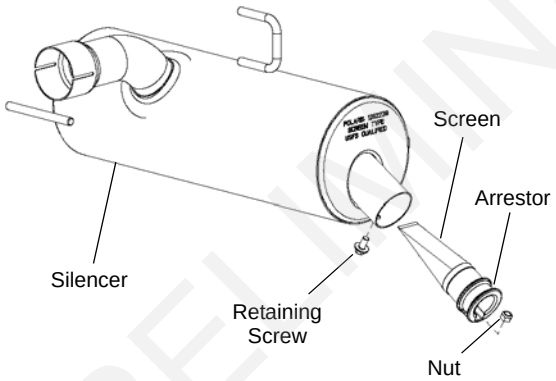
Exhaust - Spark Arrestor

⚠ WARNING

Do not clean spark arrestor immediately after the engine has been run, as the exhaust system becomes very hot. Serious burns could result from contact with the exhaust components. Allow components to cool sufficiently before proceeding. Wear eye protection and gloves.
Never run the engine in an enclosed area. Exhaust contains poisonous carbon monoxide gas that can cause loss of consciousness or death in a very short time.

Periodically clean spark arrestor to remove accumulated carbon (see “Periodic Maintenance Chart”).

1. Remove the retaining screw, nut and spark arrestor from the end of the silencer.
2. Use a non-synthetic brush to clean the arrestor screen. A synthetic brush may melt if components are warm.
3. Inspect the screen for wear and damage. Replace if needed.
4. Reinstall the arrestor and torque the screw to specification.



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Spark Arrestor Screw:
40 in-lbs (4.5 Nm)

TRANSMISSION AND GEARCASES

Transmission / Gearcase Specification Chart

Gearcase	Lubricant	Capacity	Fill Plug Torque	Drain / Level Check Plug Torque
Transmission (Main Gearcase)	AGL Plus Gearcase Lubricant	24 oz. (710 ml)	40-50 ft-lbs (54-68 Nm)	30-45 in-lbs (3-5 Nm)
Transmission (Transfer Case)	AGL Plus Gearcase Lubricant	14 oz. (414 ml)	40-50 ft-lbs (54-68 Nm)	30-45 in-lbs (3-5 Nm)
Front Gearcase	Demand Drive Plus	6.75 oz. (200 ml)	8-10 ft-lbs (11-14 Nm)	8-10 ft-lbs (11-14 Nm)
Rear Gearcase	ATV Angle Drive Fluid	26 oz. (769 ml)	40-50 ft-lbs (54-68 Nm)	30-45 in-lbs (3-5 Nm)
Rear Gearcase Differential (INT'L)	ATV Angle Drive Fluid	22 oz. (650 ml)	40-50 ft-lbs (54-68 Nm)	30-45 in-lbs (3-5 Nm)

Transmission Lubrication

Transmission Specifications

Specified Lubricant:
AGL Plus Gearcase Lubricant (PN 2878068)

Approximate Capacity at Change:
Main Gearcase - 24 oz. (710 ml)
Transfer Case - 14 oz. (414 ml)

Drain / Level Plug Torque:
30-45 in-lbs (3-5 Nm)

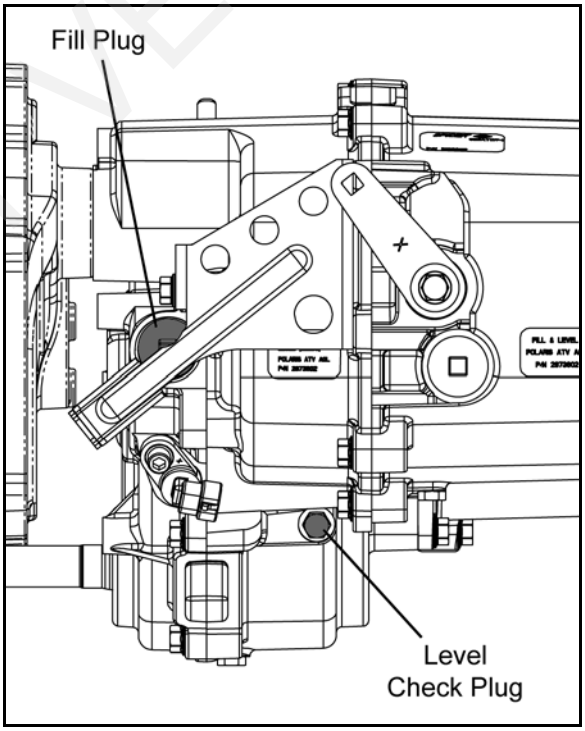
Fill Plug Torque:
40-50 ft-lbs (54-68 Nm)

The transmission lubricant levels should be checked and changed in accordance with the maintenance schedule.

- Be sure vehicle is positioned on a level surface when checking or changing fluid.
- Check vent hose to be sure it is routed properly and unobstructed.

Transfer Case - Lubricant Level Check:

1. Position vehicle on a level surface.
2. Remove the fill plug.
3. Remove the level check plug.
4. Add the recommended fluid through the fill plug hole until it begins to flow out the level check plug hole.



5. Reinstall level check plug and torque to specification.

= T
Level Check Plug: **30-45 in-lbs (3-5 Nm)**

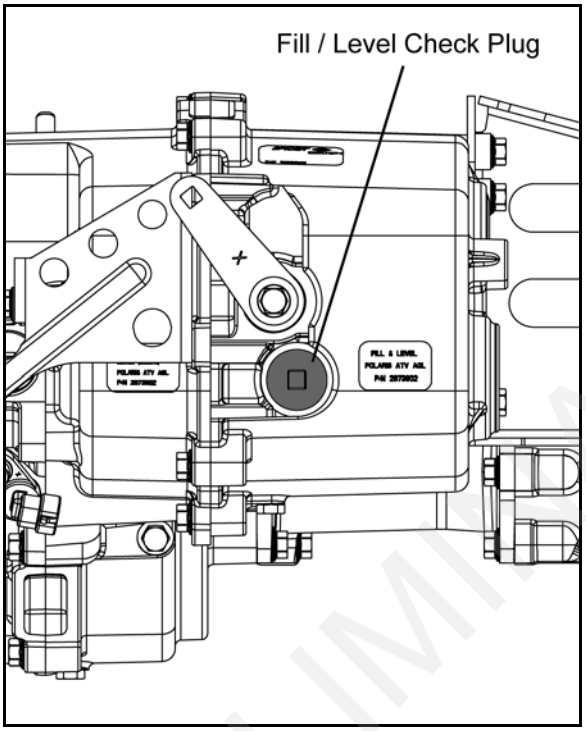
6. Reinstall the fill plug and torque to specification.

= T
Fill Plug: **40-50 ft-lbs (54-68 Nm)**

Main Gearcase - Lubricant Level Check:

The fill plug is located on the side of the gearcase just below the shift lever bell crank. Maintain the fluid level even with the bottom of the fill plug hole.

1. Position vehicle on a level surface.
2. Remove the fill / level plug and check the fluid level.



3. If fluid level is not at fill plug hole, add the recommended fluid as needed.
4. Reinstall the fill / level plug and torque to specification.

= T
Fill / Level Plug: **40-50 ft-lbs (54-68 Nm)**

Transmission Lubricant Change:

The lubricant change procedure is relatively the same for the main gearcase and the transfer case. To minimize confusion, perform the lubricant change on only one gearcase at a time. Access the drain plugs through the drain holes in the skid plate.

Transfer Case Lubricant Change:

1. Remove the fill plug and the level check plug (refer to “Transfer Case - Lubricant Level Check”).
2. Place a drain pan under the transfer case drain plug.
3. Remove the drain plug and allow to drain completely.
4. Clean and reinstall the drain plug with a new O-ring. Torque drain plug to specification.

= T
Drain Plug: **30-45 in-lbs (3-5 Nm)**

5. Add the recommended fluid through the fill plug hole until it begins to flow out the level plug hole. Do not overfill.
6. Reinstall level check plug and torque to specification.

= T
Level Check Plug: **30-45 in-lbs (3-5 Nm)**

7. Reinstall the fill plug and torque to specification.

= T
Fill Plug: **40-50 ft-lbs (54-68 Nm)**

Main Gearcase Lubricant Change:

1. Remove the fill / level plug (refer to “Main Gearcase - Lubricant Level Check”).
2. Place a drain pan under the main gearcase drain plug.
3. Remove the drain plug and allow to drain completely.

4. Clean and reinstall the drain plug with a new O-ring. Torque drain plug to specification.

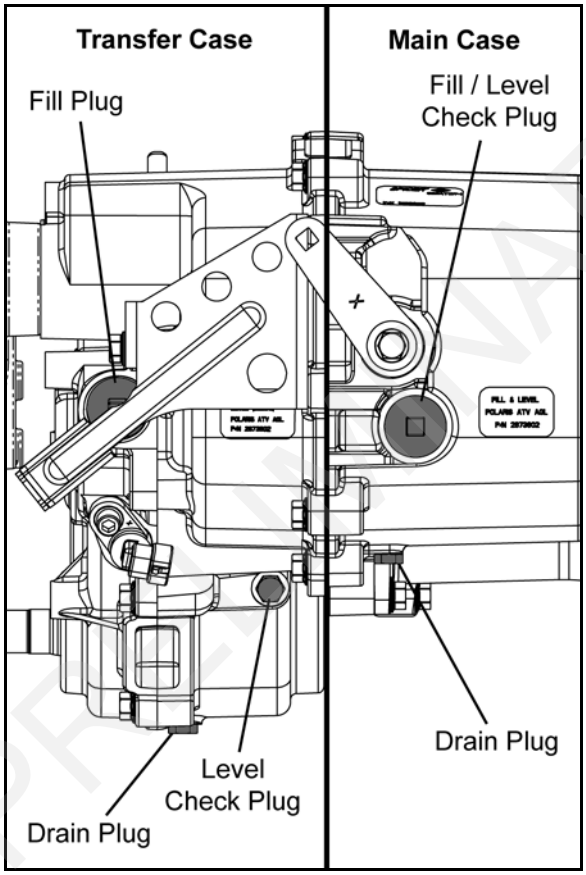
= T
Drain Plug: **30-45 in-lbs (3-5 Nm)**

5. Add the recommended fluid through the fill plug hole. Maintain the fluid level at the bottom of the fill plug hole when filling the Main Gearcase. Do not overfill.

6. Reinstall the fill / level plug and torque to specification.

= T
Fill / Level Plug: **40-50 ft-lbs (54-68 Nm)**

7. Check for leaks. Dispose of used lubricant properly.



Front Gearcase Lubrication

The front gearcase lubricant level should be checked and changed in accordance with the maintenance schedule.

- Be sure vehicle is positioned on a level surface when checking or changing fluid.
- Check vent hose to be sure it is routed properly and unobstructed.

Front Gearcase Specifications

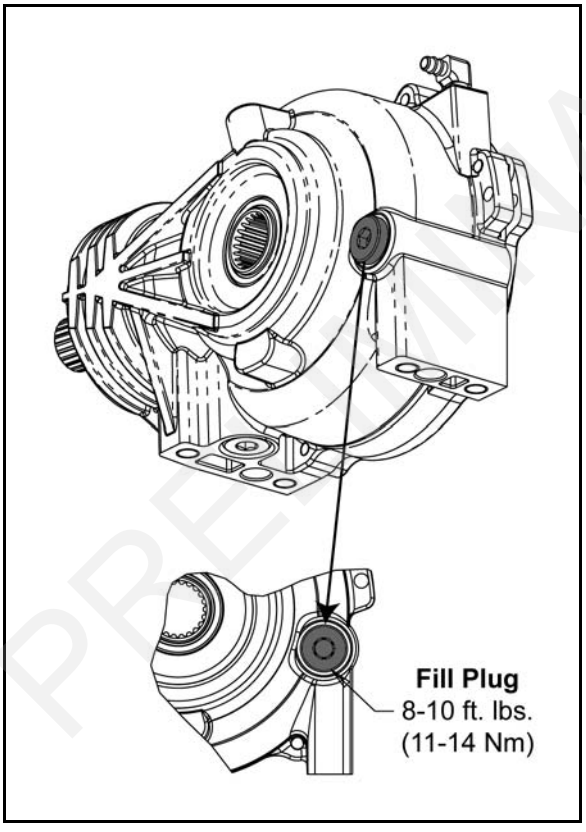
Specified Lubricant:
Polaris Demand Drive Plus (PN 2877922)

Capacity: 6.75 oz. (200 ml)

Fill Plug: 8-10 ft-lbs (11-14 Nm)
Drain Plug: 8-10 ft-lbs (11-14 Nm)

Lubricant Level Check:

The fill plug is located on the bottom right side of the front gearcase. Maintain the lubricant level even with the bottom threads of the fill plug hole.

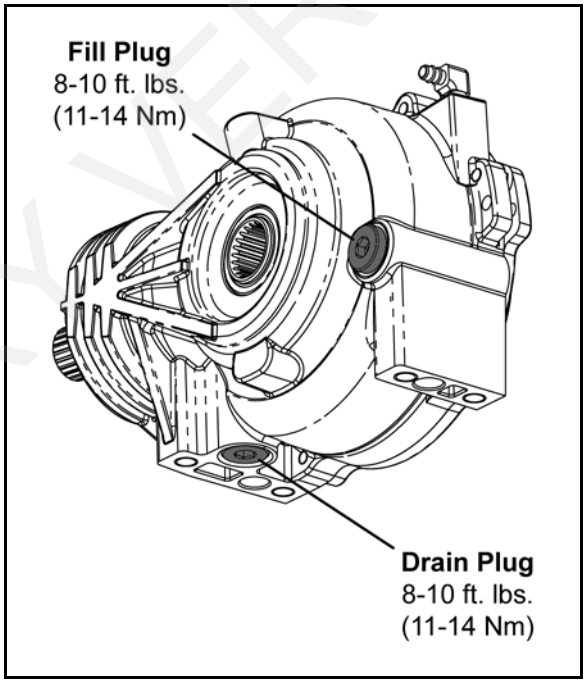


1. Position vehicle on a level surface.
2. Remove the fill plug and check the fluid level.
3. Add the recommended fluid as needed. Maintain the lubricant level even with the bottom threads of the fill plug hole.
4. Reinstall the fill plug and torque to specification.

= T
Fill Plug: **8-10 ft-lbs (11-14 Nm)**

Lubricant Change:

The drain plug is located on the bottom of the gearcase.



1. Remove the fill plug.
2. Place a drain pan under the drain plug.
3. Remove the drain plug and allow fluid to drain completely.
4. Clean the drain plug.
5. Reinstall the drain plug with a new O-ring and torque to specification.
6. Add the recommended fluid. Maintain the lubricant level even with the bottom threads of the fill plug hole.

7. Reinstall the fill plug and torque to specification.

= T
Fill / Drain Plug: **8-10 ft-lbs (11-14 Nm)**

8. Check for leaks. Dispose of used lubricant properly.

Rear Gearcase Lubrication

The rear gearcase lubricant level should be checked and changed in accordance with the maintenance schedule.

- Be sure vehicle is positioned on a level surface when checking or changing fluid.
- Check vent hose to be sure it is routed properly and unobstructed.

Rear Gearcase Specifications

Specified Lubricant:
ATV Angle Drive Fluid (PN 2876160)

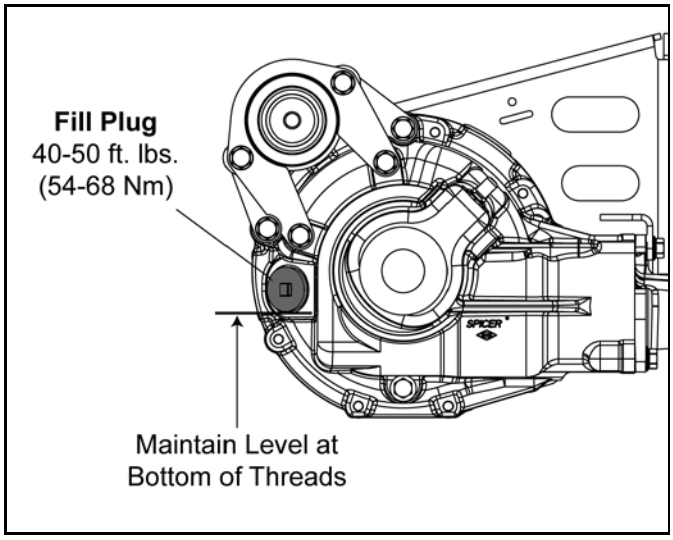
Capacity: 26 oz. (769 ml)
RZR S INT'L Capacity: 22 oz. (650 ml)

Fill Plug Torque: 40-50 ft-lbs (54-68 Nm)
Drain Plug Torque: 30-45 in-lbs (3-5 Nm)

Lubricant Level Check:

The fill plug is located on the right side of the rear gearcase. Maintain the fluid level even with the bottom of the threads of the fill plug hole.

1. Position the vehicle on a level surface.
2. Remove the fill plug and check the fluid level. The lubricant level should be even with the bottom of the threads of the fill plug hole.



3. Add the recommended lubricant as needed.

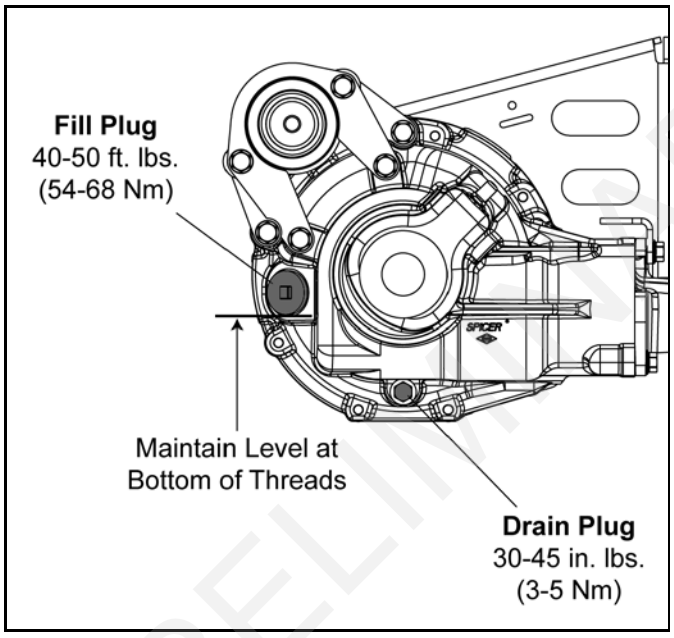
4. Reinstall the fill plug and torque to specification.

= T
Fill Plug: **40-50 ft-lbs (54-68 Nm)**

Lubricant Change:

The drain plug is located on the bottom right side of the rear gearcase.

1. Remove the fill plug.
2. Place a drain pan under the drain plug.
3. Remove the drain plug and allow the lubricant to drain completely.
4. Clean the drain plug.
5. Reinstall the drain plug with new O-ring and torque to specification.



= T
Drain Plug: **30-45 in-lbs (3-5 Nm)**

6. Add the recommended lubricant. Maintain the fluid level even with the bottom threads of the fill plug hole.
7. Reinstall the fill plug and torque to specification.

= T
Fill Plug: **40-50 ft-lbs (54-68 Nm)**

8. Check for leaks. Dispose of used lubricant properly.

COOLING SYSTEM

Cooling System Overview

The engine coolant level is controlled, or maintained, by the recovery system. The recovery system components are the recovery bottle, radiator filler neck, radiator pressure cap and connecting hose.

As coolant operating temperature increases, the expanding (heated) excess coolant is forced out of the radiator past the pressure cap and into the recovery bottle. As engine coolant temperature decreases the contracting (cooled) coolant is drawn back up from the tank past the pressure cap and into the radiator.

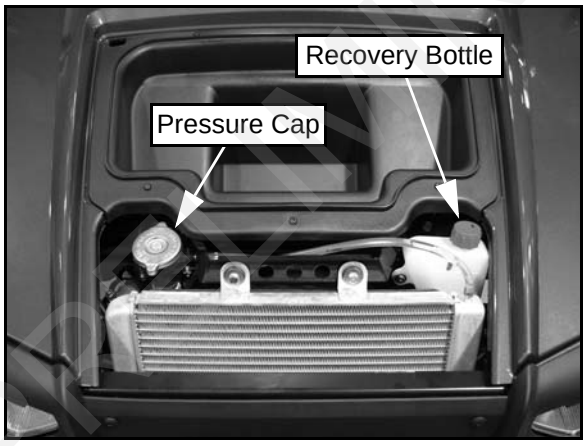
NOTE: Some coolant level drop on new machines is normal as the system is purging itself of trapped air. Observe coolant levels often during the break-in period.

NOTE: Overheating of engine could occur if air is not fully purged from system.

Polaris Premium 60/40 coolant is already premixed and ready to use. Do not dilute with water.

Coolant Level Inspection

The pressure cap and recovery bottle are located under the front hood of the vehicle. The coolant level must be maintained between the minimum and maximum levels indicated on the recovery bottle.



With the engine at operating temperature, the coolant level should be between the upper and lower marks on the coolant recovery bottle. If not, perform the following procedure:

1. Position the vehicle on a level surface.
2. Remove the hood from the front cab.
3. View the coolant level in the recovery bottle.
4. If the coolant level is below the MIN line, inspect the coolant level in the radiator.

NOTE: If overheating is evident, allow system to cool completely and check coolant level in the radiator and inspect for signs of trapped air in system.

> **⚠ WARNING**
>
> Never remove the pressure cap when the engine is warm or hot. Escaping steam can cause severe burns. The engine must be cool before removing the pressure cap.

5. Remove the pressure cap. Using a funnel, add coolant to the top of the filler neck.
6. Reinstall the pressure cap.

NOTE: Use of a non-standard pressure cap will not allow the recovery system to function properly.

7. Remove recovery bottle cap and add coolant using a funnel.
8. Fill recovery bottle to MAX level with Polaris 60/40 premix Anti Freeze/Coolant or 50/50 or 60/40 mixture of antifreeze and distilled water as required for freeze protection in your area.
9. Reinstall the recovery bottle cap.
10. If coolant was required, start engine and check for leaks. Make sure radiator fins are clean to prevent overheating.

Coolant Strength / Type

Test the strength of the coolant using an antifreeze hydrometer.

Antifreeze Hydrometer

- A 50/50 or 60/40 mixture of antifreeze and distilled water will provide the optimum cooling, corrosion protection, and antifreeze protection.
- Do not use tap water, straight antifreeze, or straight water in the system. Tap water contains minerals and impurities which build up in the system.
- Straight water or antifreeze may cause the system to freeze, corrode, or overheat.

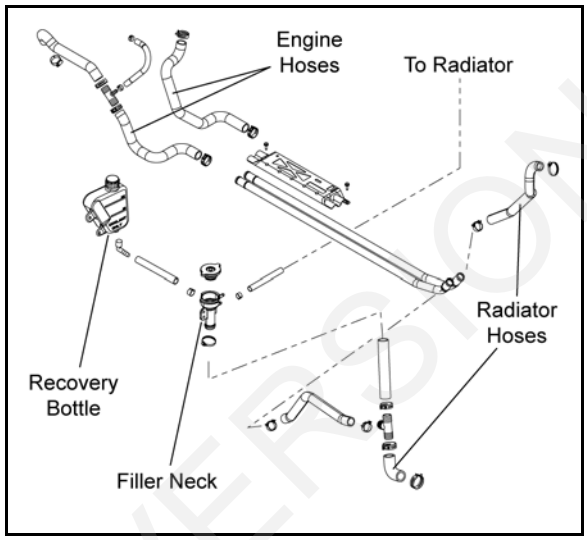
Polaris 60/40 Anti-Freeze / Coolant (PN 2871323)

Cooling System Pressure Test

Refer to Chapter 3 for cooling system pressure test procedure.

Cooling System Hoses

1. Inspect all hoses for cracks, deterioration, abrasion or leaks. Replace if necessary.



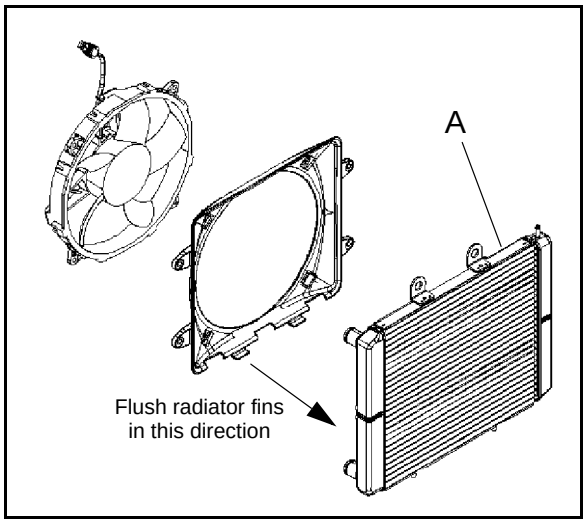
2. Check tightness of all hose clamps.

CAUTION

Do not over-tighten hose clamps at radiator, or radiator fitting may distort, causing a restriction to coolant flow.
Radiator hose clamp torque is **36 in-lbs (4 Nm)**.

Radiator

1. Check radiator (A) air passages for restrictions or damage.



2. Carefully straighten any bent radiator fins.

3. Remove any obstructions with compressed air or low pressure water.

⚠ CAUTION

Washing the vehicle with a high-pressure washer could damage the radiator fins and impair the radiators effectiveness. Use of a high-pressure washer is not recommended.

Coolant Drain

1. Remove the hood from the front cab.

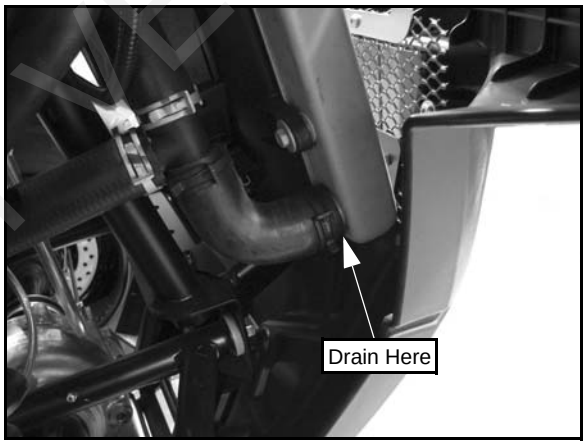
⚠ WARNING

Never drain the coolant when the engine and radiator are warm or hot. Hot coolant can cause severe burns. Allow engine and radiator to cool.

2. Slowly remove the pressure cap to relieve any cooling system pressure.

3. Place a suitable drain pan underneath the radiator fitting on the front RH side of the vehicle.

4. Drain the coolant from the radiator by removing the lower coolant hose from the radiator as shown. Properly dispose of the coolant.

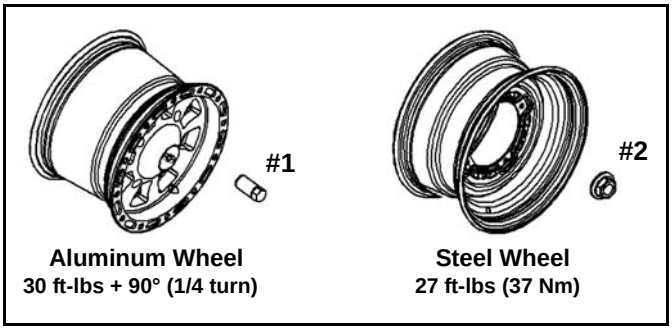


5. Allow coolant to completely drain.

FINAL DRIVE / WHEEL AND TIRE

Wheel and Hub Torque Table

Item	Nut Type	Specification
Aluminum Wheels (Cast)	Lug Nut #1	30 ft-lbs + 90° (1/4 turn)
Steel Wheels (Black / Camo)	Flange Nut #2	27 ft-lbs (37 Nm)
Hub Retaining Nuts	-	80 ft-lbs (108 Nm)



Aluminum Wheel
30 ft-lbs + 90° (1/4 turn)

Steel Wheel
27 ft-lbs (37 Nm)

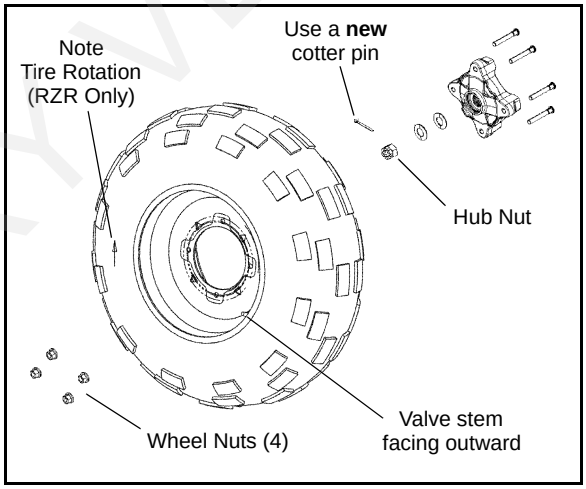
NOTE: Do not lubricate the stud or the lug nut.

Wheel Removal

1. Position the vehicle on a level surface.
2. Place the transmission in PARK (P) and stop the engine.
3. Loosen the wheel nuts slightly. If wheel hub removal is required, remove the cotter pin and loosen the hub nut slightly.
4. Elevate the appropriate side of the vehicle by placing a suitable stand under the frame.
5. Remove the wheel nuts and remove the wheel.
6. If hub removal is required, remove the hub nut and washers.

Wheel Installation

1. Verify the transmission is still in PARK (P).
2. Install the wheel hub, washers, and hub nut, if previously removed.
3. Place the wheel in the correct position on the wheel hub. Be sure the valve stem is toward the outside and rotation arrows on the tire point toward forward rotation.
4. Attach the wheel nuts and finger tighten them.
5. Carefully lower the vehicle to the ground.
6. Torque the wheel nuts and/or hub nut to the proper torque specification listed in the torque table at the beginning of this section.
7. If hub nut was removed, install a new cotter pin after the hub nut has been tightened.



CAUTION

If wheels are improperly installed it could affect vehicle handling and tire wear. On vehicles with tapered rear wheel nuts, make sure tapered end of nut goes into taper on wheel.

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Tire Inspection

- Improper tire inflation may affect vehicle maneuverability.
- When replacing a tire always use original equipment size and type.
- The use of non-standard size or type tires may affect vehicle handling.

⚠ WARNING

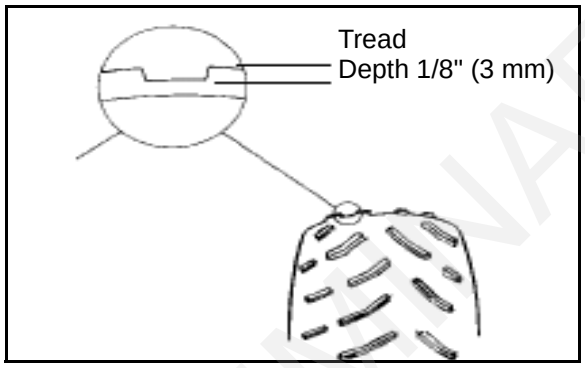
Operating with worn tires will increase the possibility of the vehicle skidding easily with possible loss of control.

Worn tires can cause an accident.

Always replace tires when the tread depth measures 1/8", (.3 cm) or less.

Tire Tread Depth

Replace tires when tread depth is worn to 1/8" (3 mm) or less.



Tire Pressure

Remove the valve stem cap and check tire pressure using the tire pressure gauge included in the vehicle's tool kit.

⚠ CAUTION

Maintain proper tire pressure.
Refer to the warning tire pressure decal applied to the vehicle.

RZR / RZR S

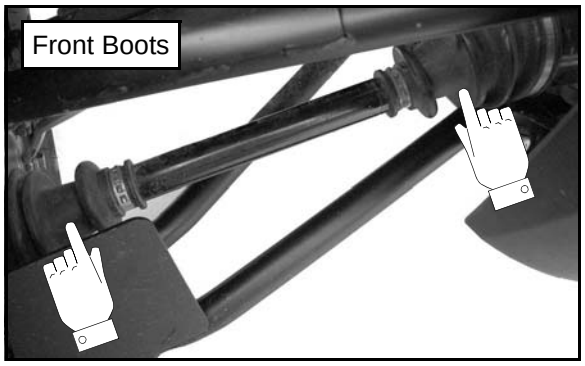
Tire Pressure Inspection (Cold)	
Front	Rear
8 psi (55 kPa)	8 psi (55 kPa)

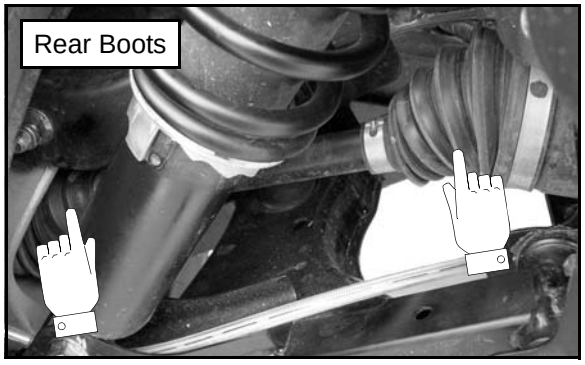
RZR 4

Tire Pressure Inspection (Cold)	
Front	Rear
10 psi (69 kPa)	12 psi (83 kPa)

Drive Shaft Boot Inspection

Inspect the drive shaft boots for damage, tears, wear or leaking grease. If the boots exhibit any of these symptoms, they should be replaced. Refer to Chapter 7 for drive shaft boot replacement.





ELECTRICAL AND IGNITION SYSTEM

Battery Maintenance

Keep battery terminals and connections free of corrosion. If cleaning is necessary, remove the corrosion with a stiff wire brush. Wash with a solution of one tablespoon baking soda and one cup water. Rinse well with tap water and dry off with clean shop towels. Coat the terminals with dielectric grease or petroleum jelly.

⚠ WARNING

CALIFORNIA PROPOSITION 65 WARNING:
Batteries, battery posts, terminals and related accessories contain lead and lead compounds, and other chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.
WASH HANDS AFTER HANDLING.

⚠ WARNING

Battery electrolyte is poisonous. It contains sulfuric acid. Serious burns can result from contact with 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.

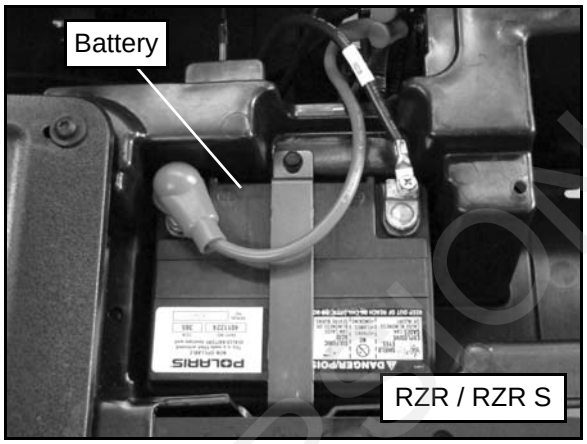
Eyes: Flush with water for 15 minutes and get prompt medical attention.

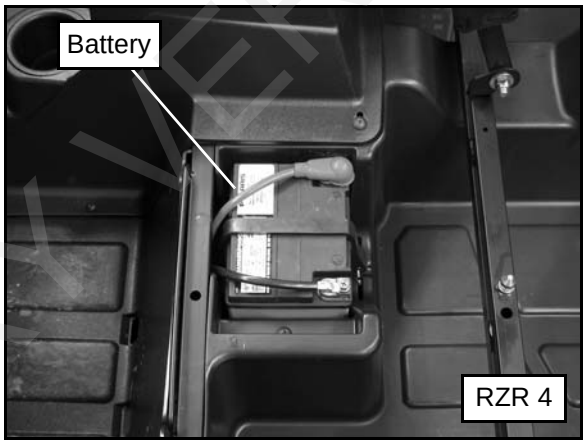
Batteries produce explosive gases.
Keep sparks, flame, cigarettes, etc. away.
Ventilate when charging or using in an enclosed space. Always shield eyes when working near batteries.
KEEP OUT OF REACH OF CHILDREN.

NOTE: Batteries must be fully charged before use or battery life will be reduced by 10-30% of full potential. Charge battery according to "Charging Procedure" provided in Chapter 10. Do not use the vehicle's stator/alternator to charge a new battery.

Battery Removal

1. Remove the driver's seat to access the battery.





2. Disconnect the black (negative) battery cable.
3. Disconnect the red (positive) battery cable.
4. Remove the hold-down strap and lift the battery out of the vehicle.

⚠ CAUTION

To reduce the chance of sparks: Whenever removing the battery, disconnect the black (negative) cable first. When reinstalling the battery, install the black (negative) cable last.

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Battery Installation

IMPORTANT: Using a new battery that has not been fully charged can damage the battery and result in a shorter life. It can also hinder vehicle performance. Follow the battery charging procedure in Chapter 10 "Electrical" before installing the battery.

1. Ensure the battery is fully charged.
2. Place the battery in the battery holder and secure with hold-down strap.
3. Coat the terminals with dielectric grease or petroleum jelly.
4. Connect and tighten the red (positive) cable first.
5. Connect and tighten the black (negative) cable last.

6. Verify that cables are properly routed and reinstall the driver's seat.

Battery Off Season Storage

Refer to Chapter 10 "Electrical" for off season storage procedures.

Battery Charging (Maintenance Free)

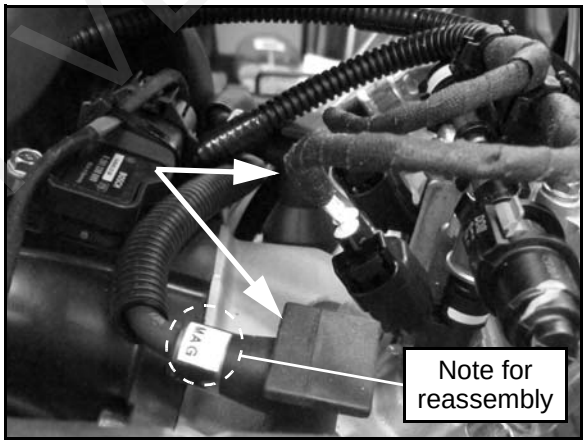
Refer to Chapter 10 "Electrical" for charging procedure.

Spark Plug Service

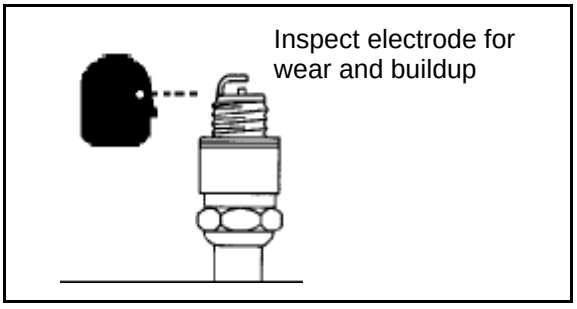
1. Remove the rear service panel:
   - **RZR / RZR S:** Remove the driver and passenger seats.
   - **RZR 4:** Remove both rear passenger seats.

> **WARNING**
>
> A hot exhaust system and engine can cause serious burns. Allow engine to cool or wear protective gloves when removing the spark plugs.

2. Remove the cargo box assembly to access the spark plugs (see Chapter 5).
3. Remove both spark plug caps and clean plug area so no dirt or debris can fall into engine when plugs are removed.

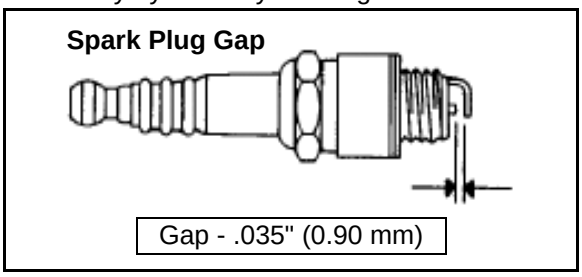


4. Clean plug area so no dirt and debris can fall into engine when plugs are removed.
5. Remove spark plugs.
6. Inspect electrodes for wear and carbon buildup. Look for a sharp outer edge with no rounding or erosion of the electrodes.



7. Clean with electrical contact cleaner or a glass bead spark plug cleaner only. **CAUTION:** A wire brush or coated abrasive should not be used.

8. Measure gap with a wire gauge. Adjust gap if necessary by carefully bending the side electrode.



9. If necessary, replace spark plug with proper type. **CAUTION:** Severe engine damage may occur if the incorrect spark plug is used.

10. Apply anti-seize compound to the spark plug threads.

11. Install spark plugs and torque to specification.

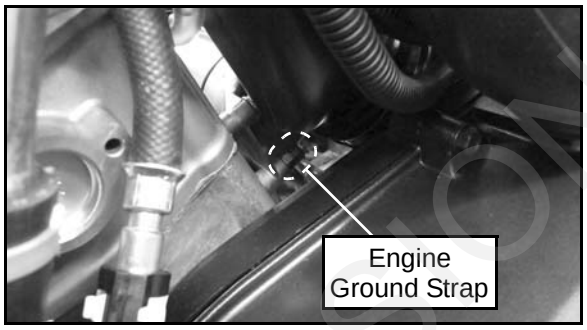
= T
Spark Plug: **18 ft-lbs (24 Nm)**

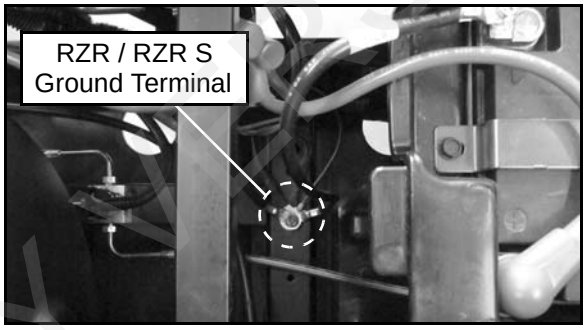
Recommended Spark Plug:
Champion RC7YC3

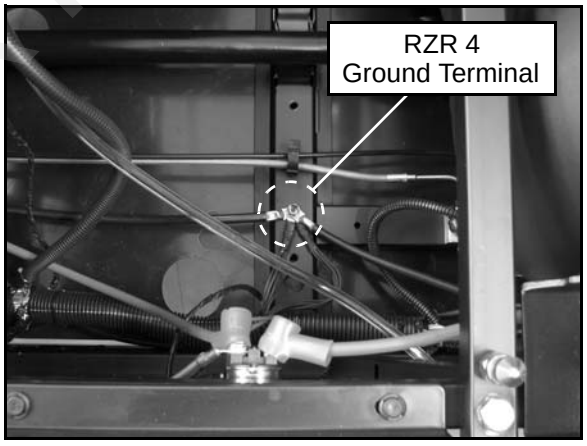
12. Install the plug caps to the appropriate cylinder by referencing the MAG and PTO spark plug cap decals.

Engine To Frame Ground

Inspect ground cable connections. Be sure they are clean and tight. The engine ground cable runs from the starter motor to the chassis ground terminal.







STEERING

Steering Inspection

The steering components should be checked periodically for loose fasteners, worn tie rod ends, ball joints, and damage. Also check to make sure all cotter pins are in place. If cotter pins are removed, they must not be reused. Always use new cotter pins.

Replace any worn or damaged steering components. Steering should move freely through the entire range of travel without binding. Check routing of all cables, hoses, and wiring to be sure the steering mechanism is not restricted or limited.

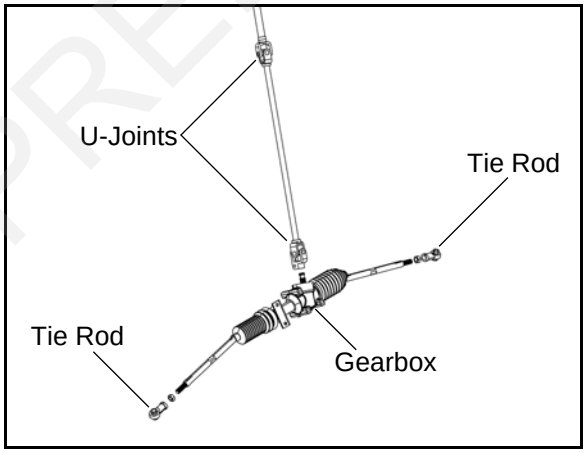
NOTE: Whenever steering components are replaced, check front end alignment.

> **⚠ WARNING**
>
> Due to the critical nature of the procedures outlined in this chapter, Polaris recommends steering component repair and adjustment be performed by an authorized Polaris MSD certified technician.
> Use only genuine Polaris replacement parts.

Steering Wheel Freeplay

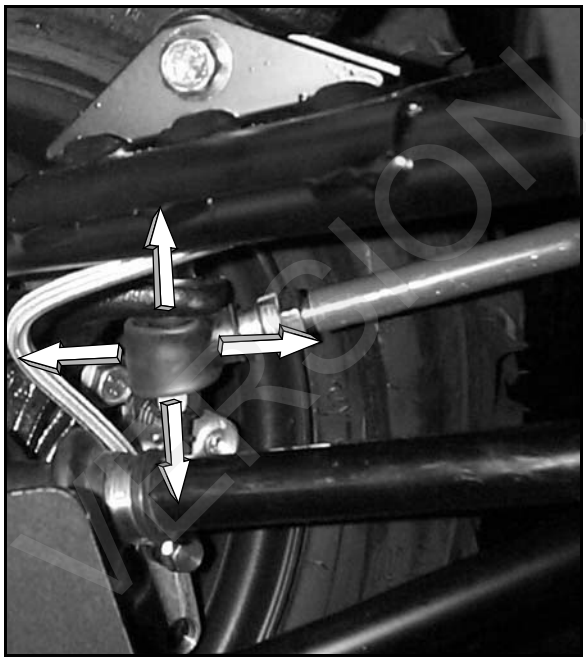
Check steering wheel for specified freeplay and operation.

1. Position the vehicle on level ground.
2. Lightly turn the steering wheel left and right.
3. There should be 0.8”-1.0” (20-25 mm) of freeplay.
4. If there is excessive freeplay or the steering feels rough, inspect the following components.
   - Tie Rod Ends
   - Steering Shaft U-Joints
   - Steering Gearbox

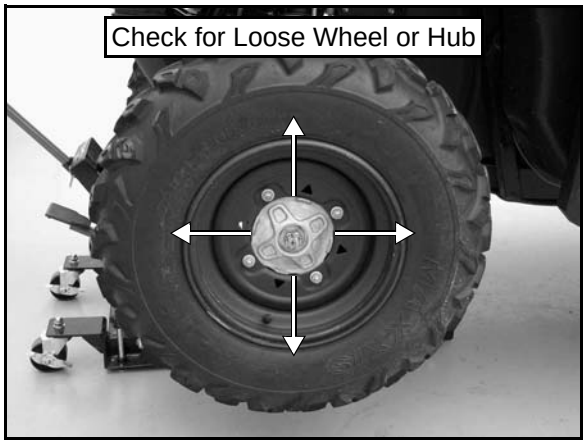


Tie Rod End / Wheel Hub Inspection

- To check for play in the tie rod end, grasp the steering tie rod, pull in all directions feeling for movement.



- Replace any worn steering components. Steering should move freely through entire range of travel without binding.
- Elevate front end of machine so front wheels are off the ground. Check for any looseness in front hub/wheel assembly by grasping the tire firmly at top and bottom first, and then at front and rear. Try to move the wheel and hub by pushing inward and pulling outward.

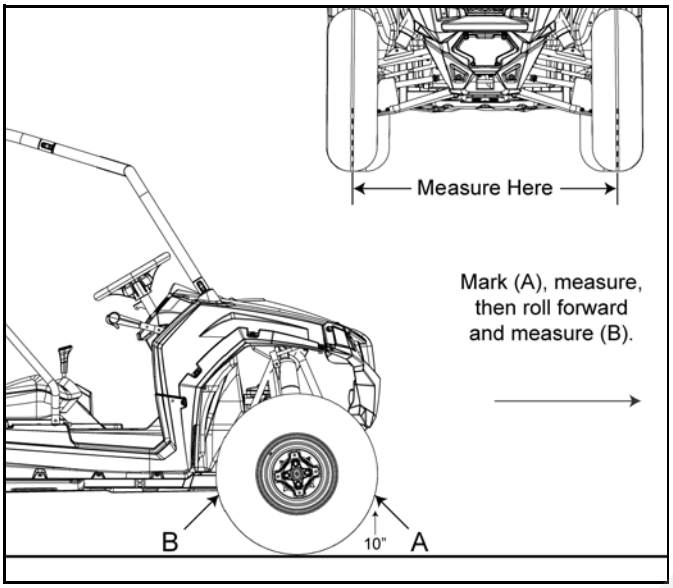


- If abnormal movement is detected, inspect the hub and wheel assembly to determine the cause (loose wheel nuts or loose front hub nut).
- Refer to Chapter 7 “Final Drive” for front hub service procedures.

Wheel Toe Alignment Inspection

1. Place machine on a smooth level surface and set steering wheel in a straight ahead position. Secure the steering wheel in this position.

2. Place a chalk mark on the center line of the front tires approximately 10” (25.4 cm) from the floor or as close to the hub/axle center line as possible.

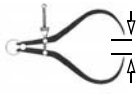


NOTE: It is important the height of both marks be equally positioned to get an accurate measurement.

3. Measure the distance between the marks and record the measurement. Call this measurement “A”.

4. Rotate the tires 180° by moving the vehicle forward. Position chalk marks facing rearward, even with the hub/axle center line.

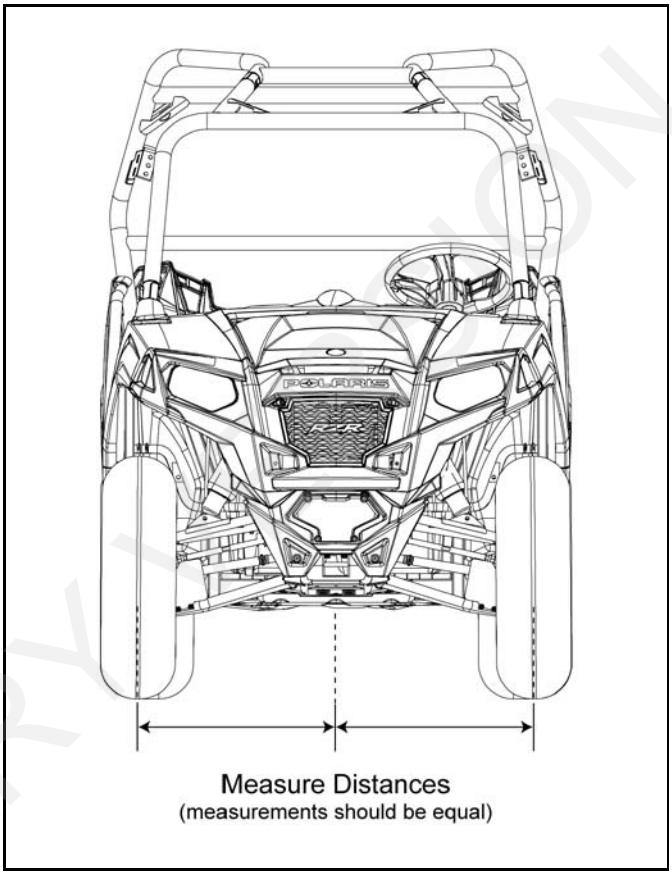
5. Again measure the distance between the marks and record. Call this measurement “B”. Subtract measurement “B” from measurement “A”. The difference between measurements “A” and “B” is the vehicle toe alignment. The recommended vehicle toe tolerance is 1/8” to 1/4” (.3 to .6 cm) toe out. This means the measurement at the front of the tire (A) is 1/8” to 1/4” (.3 to .6 cm) wider than the measurement at the rear (B).

 = **In. / mm.**

Wheel Toe-Out:
(A) - (B) = 1/8 to 1/4" (.3 to .6 cm)

Wheel Toe Adjustment

If toe alignment is incorrect, measure the distance between vehicle center and each wheel. This will tell you which tie rod needs adjusting.



NOTE: Be sure steering wheel is straight ahead before determining which tie rod needs adjustment.

⚠ CAUTION

During tie rod adjustment, it is very important that the following precautions be taken when tightening tie rod end jam nuts.
If the rod end is positioned incorrectly it will not pivot, and may break.

To adjust toe alignment:

- Hold tie rod end to keep it from rotating.
- Loosen jam nuts at both end of the tie rod.
- Shorten or lengthen the tie rod until alignment is as required to achieve the proper toe setting as specified in “Wheel Toe Alignment”.

- **IMPORTANT:** When tightening the tie rod end jam nuts, the rod ends must be held parallel to prevent rod end damage and premature wear. Damage may not be immediately apparent if done incorrectly.
- After alignment is complete, torque jam nuts to specification.

= T
Tie Rod End Jam Nut: **12-14 ft-lbs (16-19 Nm)**

SUSPENSION (STANDARD)

Spring Preload Adjustment

The front and rear shock absorber springs are adjustable by rotating the adjustment cam to change spring tension preload.

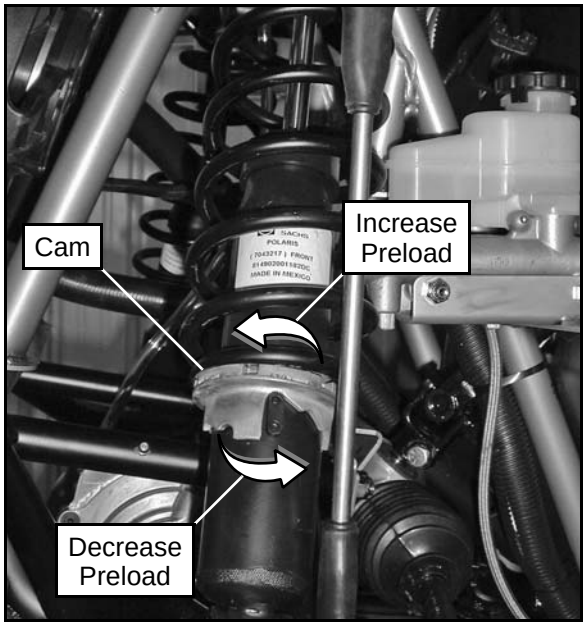
WARNING
Uneven adjustment may cause poor handling of the vehicle, which could result in an accident and serious injury or death. Always adjust both the left and right spring preloads equally.

Suspension Spring Adjustment

1. Position the vehicle on a level surface and stop the engine.
2. Raise and safely support front or rear of vehicle off the ground to allow the suspension to fully extend.

NOTE: The tires should not be touching the ground.

3. To adjust the suspension, rotate the adjustment cam clockwise to increase spring tension or counter-clockwise to decrease spring tension.



Shock Spanner Wrench: PN 2871095

4. Each notch of the adjustment will add 6% - 8% more preload to the spring over the primary position.

SUSPENSION (FOX™)

Spring Preload Adjustment

The front and rear shocks have a spring preload adjustment. Suspension spring preload may be adjusted to suit different riding conditions or vehicle payloads.

> **WARNING**
>
> Uneven adjustment may cause poor handling of the vehicle, which could result in an accident and serious injury or death. Always adjust both the left and right spring preloads equally.

RZR S - Factory Spring Preload Setting

Front	Rear
4.34 in. (11 cm)	5.15 in. (13 cm)

RZR 4 (Base) - Factory Spring Preload Setting

Front	Rear
4.5 in. (11.4 cm)	5.29 in. (13.4 cm)

RZR 4 (L.E.) - Factory Spring Preload Setting

Front	Rear
4.31 in. (10.9 cm)	4.99 in. (12.7 cm)

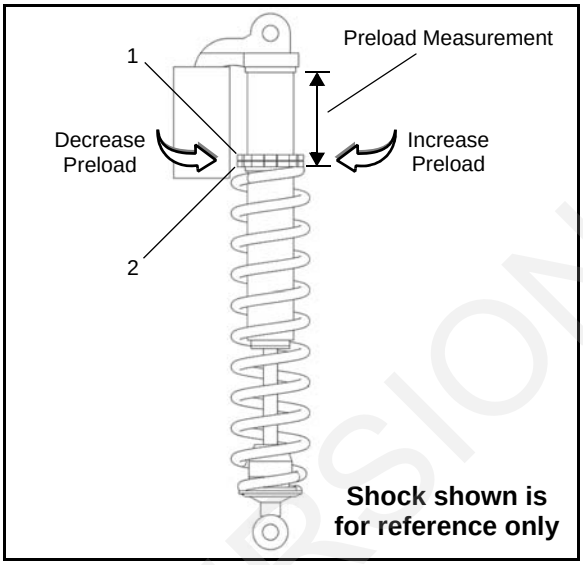
NOTE: Refer to the shock illustration within this procedure for spring preload measurement location.

1. Raise and safely support front or rear of vehicle off the ground to allow the suspension to fully extend.
2. Loosen the upper jam nut adjustment ring (1). Turn the lower adjustment ring (2) clockwise to increase preload or counter-clockwise to decrease preload.

IMPORTANT: DO NOT increase the spring preload by more than one inch (25.4 mm) over the factory setting.

3. Once you have obtained the correct preload, hold the lower adjustment ring while tightening the upper adjustment ring to lock them in place.

Shock Spanner Wrench (PN 2870803)



IMPORTANT: Always return the spring preload to the factory setting after the load is removed from the vehicle. The increased suspension height will negatively impact vehicle stability when operating without a load.

Shock Compression Adjustment

The compression damping adjustment is located on top of the shock 'Piggyback' reservoir of each shock.

Turn the clicker adjuster knob to make damping adjustments.

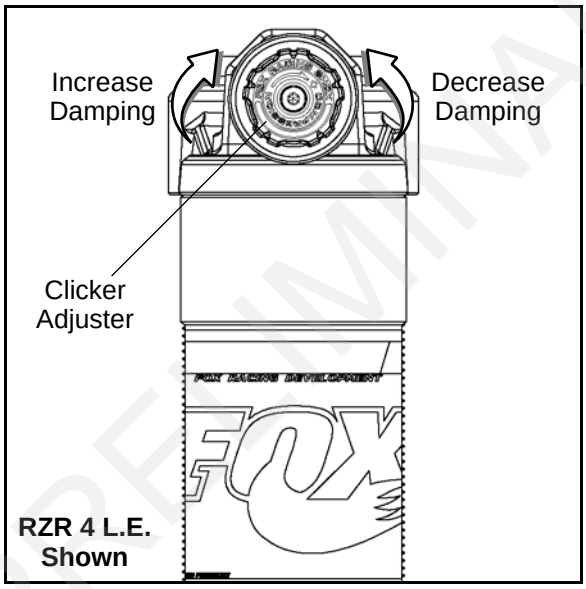
NOTE: When the clicker adjuster is turned clockwise until it stops, the damping is in the fully closed position.

Turn the clicker clockwise to increase compression damping. Turn the clicker counter-clockwise to decrease compression damping.

NOTE: The factory setting is 10 clicks from closed. Refer to the "Compression Adjustment Table" below.

Compression Adjustment Table

Setting	Compression Damping
Softest	Full counter-clockwise position
Factory	**10 clicks from closed**
Firmest	2 clicks from closed



BRAKE SYSTEM

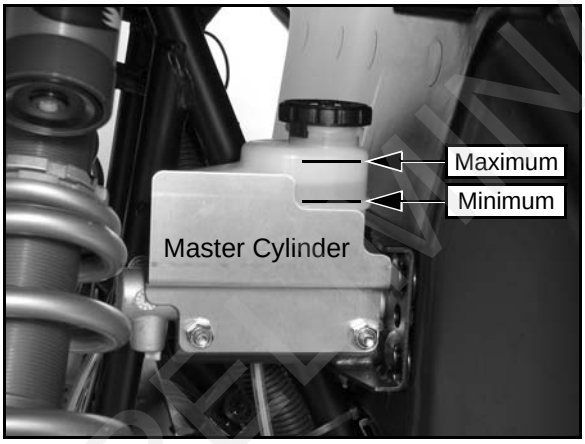
Brake Fluid Inspection

Always check the brake pedal travel and inspect the brake fluid reservoir level before each operation. If the fluid level is low, add DOT 4 brake fluid only.

Brake fluid should be changed every two years. The fluid should also be changed anytime the fluid becomes contaminated, the fluid level is below the minimum level, or if the type and brand of the fluid in the reservoir is unknown.

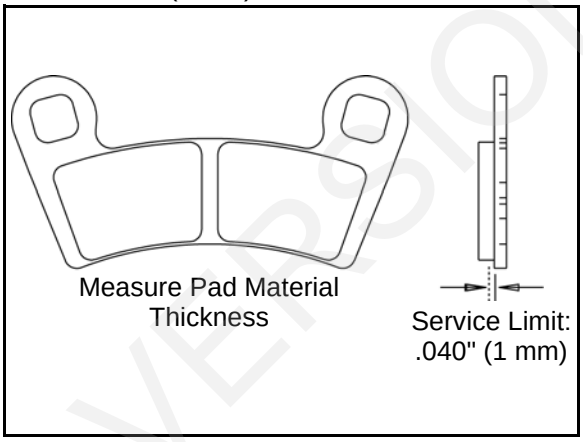
The brake fluid master cylinder reservoir can be accessed through the left front wheel well.

1. Position the vehicle on a level surface.
2. Place the transmission in PARK (P).
3. View the brake fluid level in the reservoir. The level should be between the MAX and MIN level lines.
4. If the fluid level is lower than the MIN level line, add brake fluid until it reaches the MAX level line.
5. Install the reservoir cap and apply the brake pedal forcefully for a few seconds and check for fluid leakage around the master cylinder fittings and the brake caliper fittings.

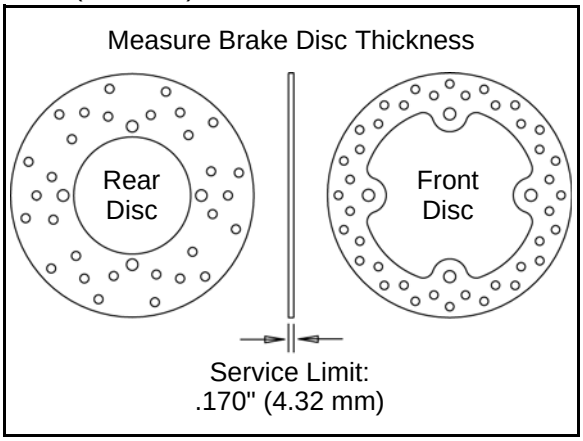


Brake Pad / Disc Inspection

1. Check the brake pads for wear, damage, or looseness.
2. Inspect the brake pad wear surface for excessive wear.
3. Pads should be changed when the friction material is worn to .040” (1 mm).



4. Check surface condition of the brake discs.
5. Measure the thickness of the front and rear brake discs.
6. The disc(s) should be replaced if thickness is less than .170” (4.32 mm).



Brake Hose and Fitting Inspection

Check brake system hoses and fittings for cracks, deterioration, abrasion, and leaks. Tighten any loose fittings and replace any worn or damaged parts.

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CHAPTER 3
ENGINE / COOLING

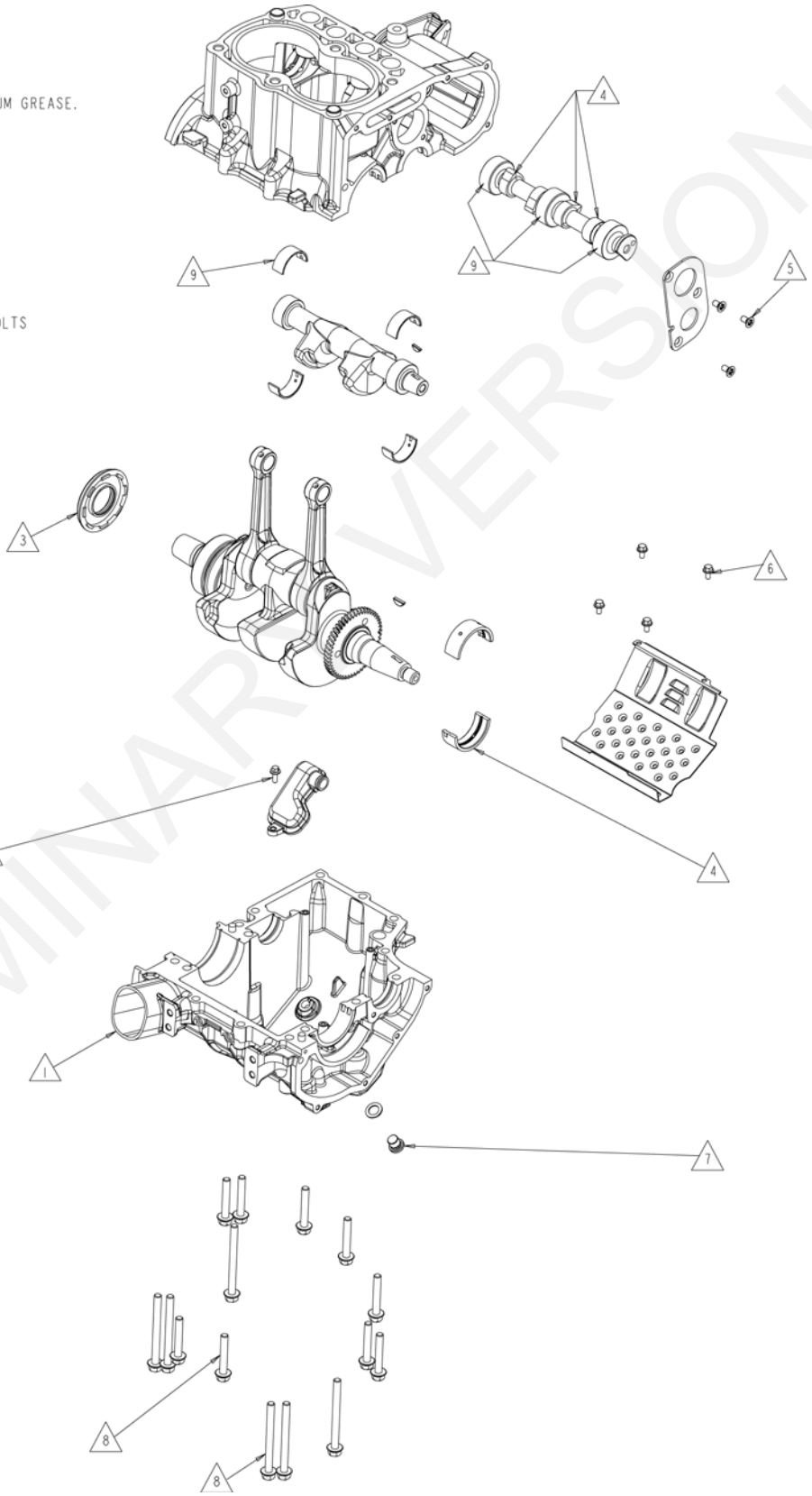
9924125 - 2013 *RANGER* RZR / RZR S / RZR 4 Service Manual

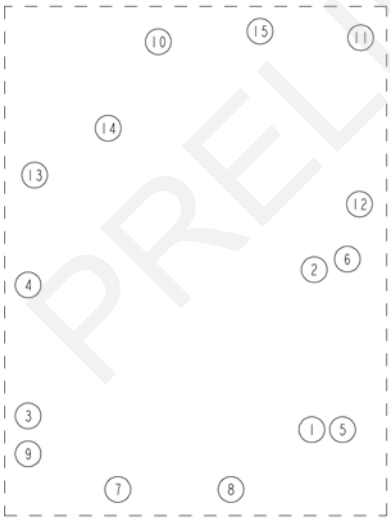
ENGINE SPECIFICATIONS

Crankcase Exploded Views

NOTES:

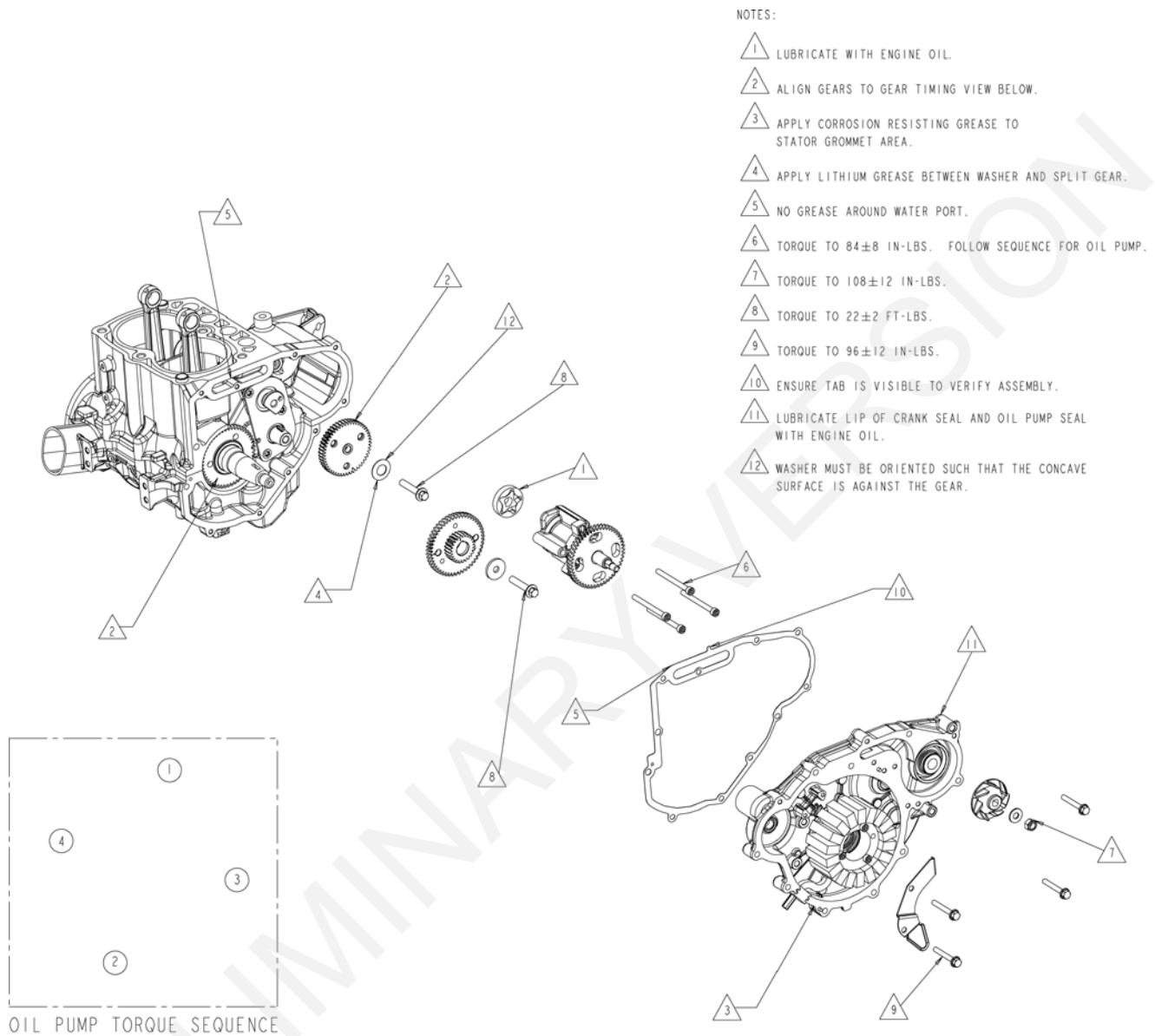
1. SEAL MATING SURFACES WITH SEALANT.
3. LUBRICATE LIP OF SEAL WITH WHITE LITHIUM GREASE.
4. APPLY MOLY LUBE GREASE TO LOBES.
5. TORQUE TO 98±10 IN-LBS.
6. TORQUE TO 60±6 IN-LBS.
7. TORQUE TO 192±24 IN-LBS.
8. TORQUE TO 22±2 FT-LBS. TORQUE CASE BOLTS IN SEQUENCE SHOWN.
9. LUBRICATE WITH ENGINE OIL



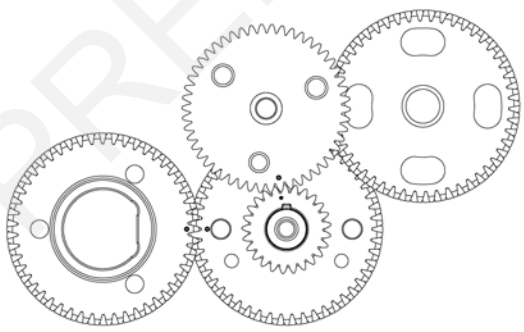


CASE TORQUE SEQUENCE:

Oil Pump / Gears / Engine Cover Exploded View



OIL PUMP TORQUE SEQUENCE



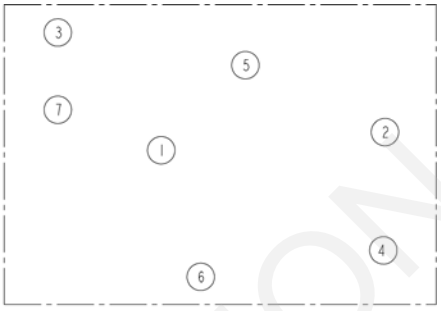
GEAR TIMING AT TDC (MAG CYLINDER)

MAG COVER TORQUE SEQUENCE

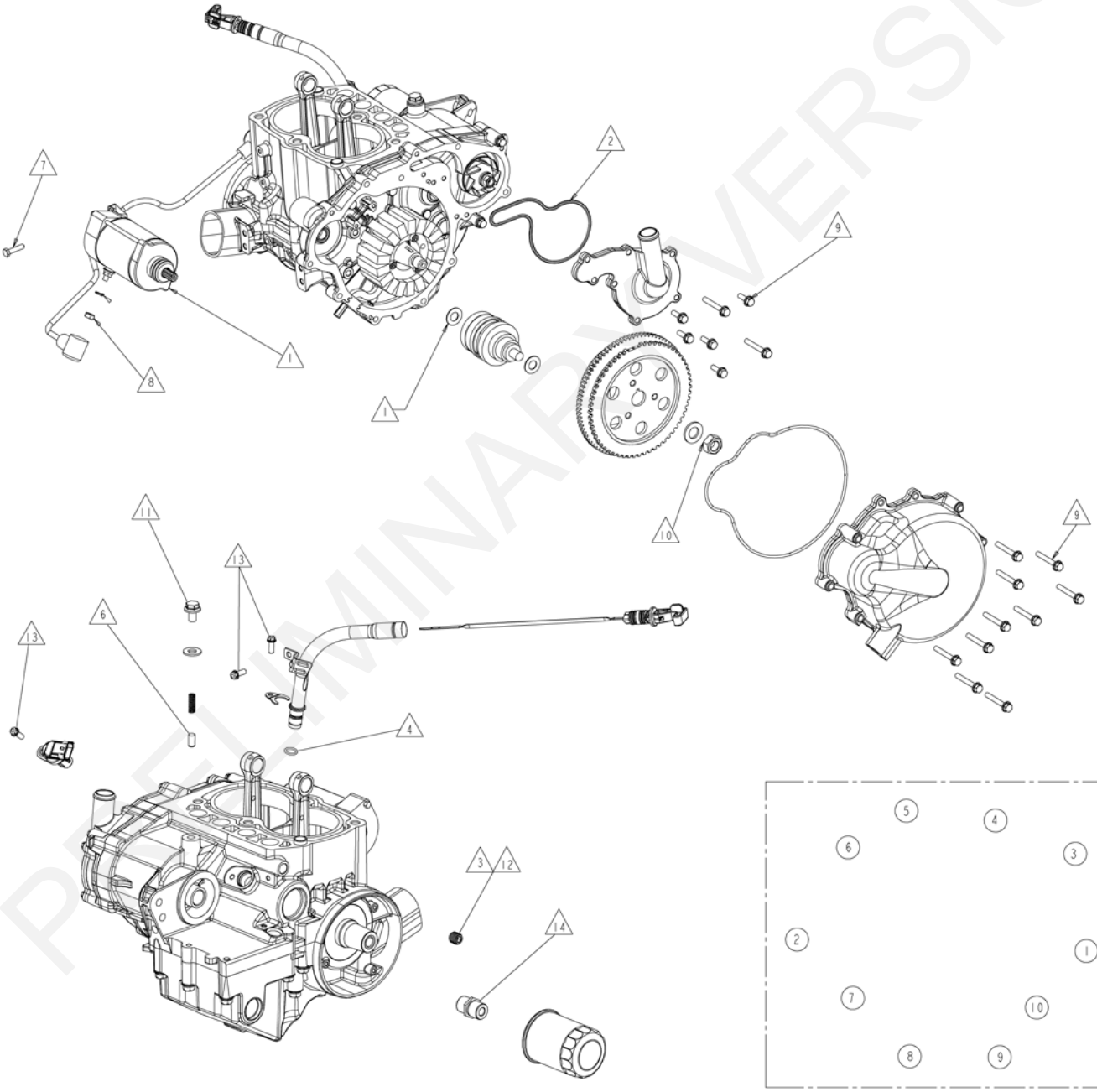
Stator Cover / Starter / Water Pump / Lubrication System Exploded View

NOTES:

1. APPLY GREASE.
2. NO OIL OR GREASE ON O-RING
3. APPLY LOCTITE PIPE SEALANT TO PLUG.
4. LUBRICATE WITH ENGINE OIL.
5. LUBRICATE OIL FILTER GASKET WITH ENGINE OIL.
6. INSTALL PRESSURE RELIEF DOWEL WITH CHAMFER SIDE DOWN.
7. TORQUE TO 84±8 IN-LBS, UPPER BOLT FIRST ON STARTER, FOLLOWED BY LOWER BOLT.
8. TORQUE TO 57±3 IN-LBS.
9. TORQUE TO 96±12 IN-LBS. TORQUE WATER PUMP AND STATOR COVERS IN SEQUENCES SHOWN.
10. TORQUE TO 65±7 FT-LBS.
11. TORQUE TO 22±2 FT-LBS.
12. TORQUE TO 144±12 IN-LBS.
13. TORQUE TO 50±5 IN-LBS.
14. TORQUE TO 35±4 FT-LBS.



WATER PUMP COVER TORQUE SEQUENCE



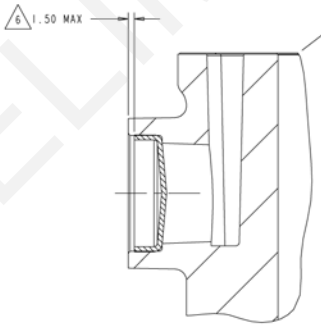
STATOR COVER TORQUE SEQUENCE

Cylinder / Cylinder Head / Piston Exploded View

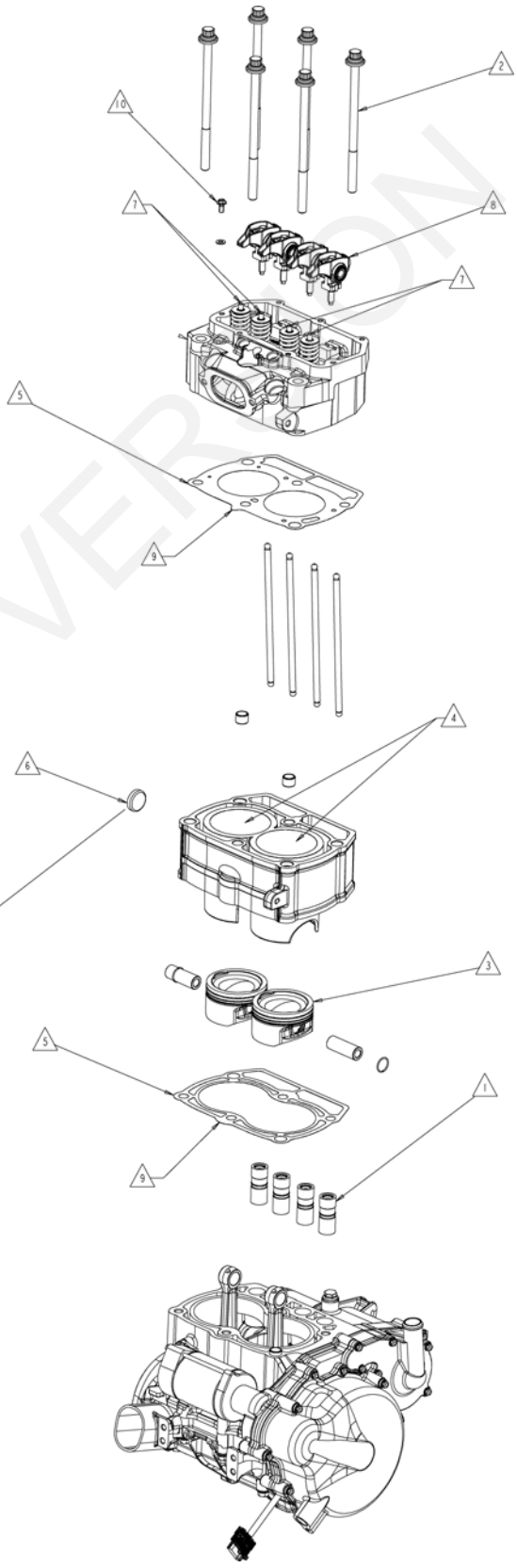
NOTES:

1. LUBRICATE WITH ENGINE OIL.
2. LUBRICATE THREADS WITH ENGINE OIL. TORQUE TO 15±2 FT-LBS, BACK-OFF 5 TURNS, THEN TORQUE TO 35±4 FT-LBS IN SEQUENCE BELOW. FINALLY, TIGHTEN IN SEQUENCE TO 90° (1/4 TURN).
3. INSTALL CIRCLIP WITH OPEN END UP. CHECK PREVIOUSLY INSTALLED CIRCLIP TO ENSURE THAT OPEN END IS UP.
4. APPLY THIN FILM OF ENGINE OIL TO 25-50mm OF CYLINDER BORE.
5. GASKET SURFACE MUST BE FREE OF OIL.
6. INSTALL EXPANSION PLUG AS SHOWN. LOCTITE 603 PERMISSIBLE.
7. APPLY MOLY LUBE GREASE TO ALL VALVE TIPS.
8. TORQUE TO 22±2 FT-LBS.
9. ENSURE TABS ARE VISIBLE TO VERIFY ASSEMBLY.
10. TORQUE TO 70 IN-LBS.

HEAD BOLT TORQUE SEQUENCE:



EXPANSION PLUG DETAIL



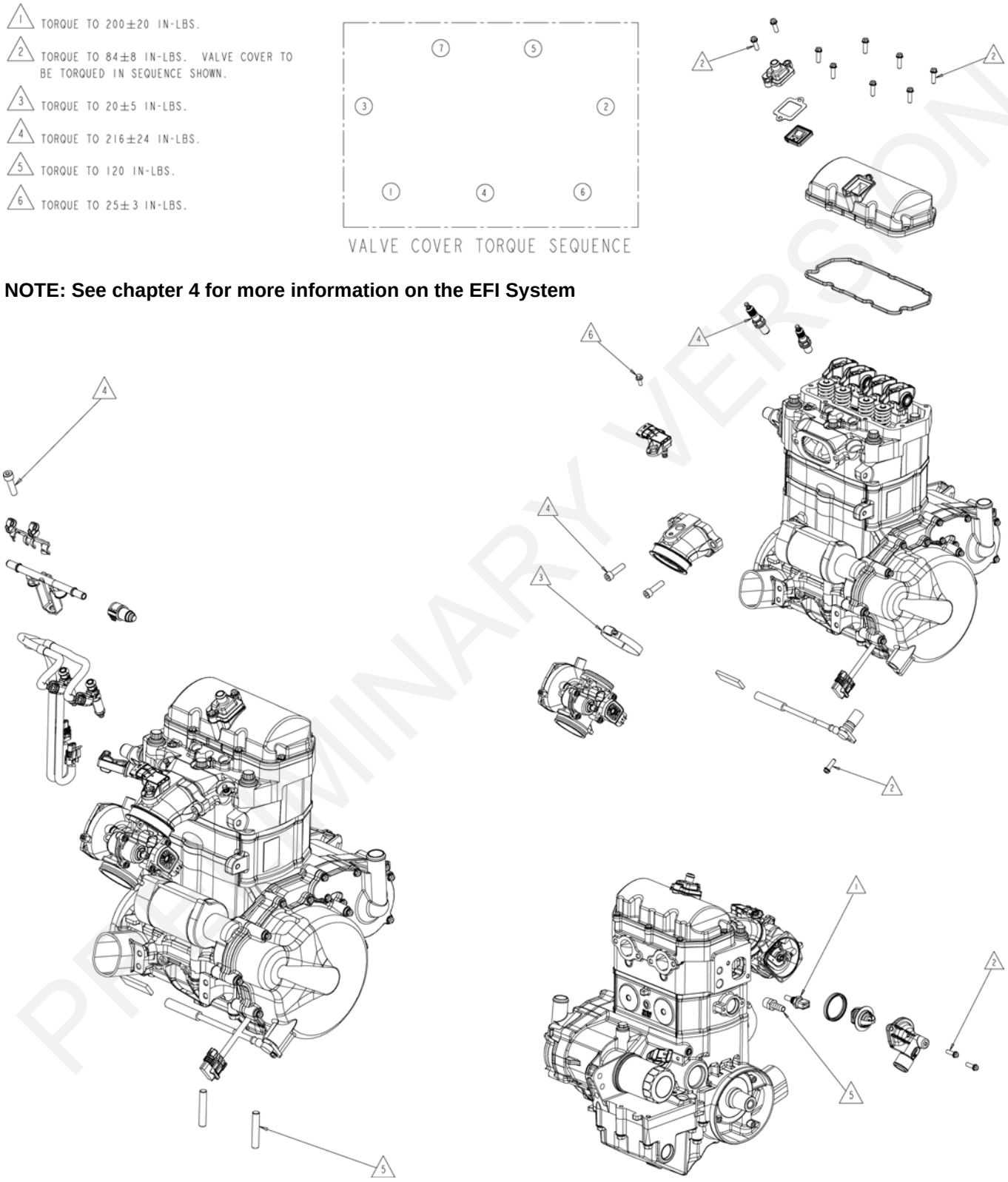
Engine EFI Sensors / Valve Cover / General Components Exploded View

NOTES:

1. TORQUE TO 200±20 IN-LBS.
2. TORQUE TO 84±8 IN-LBS. VALVE COVER TO BE TORQUED IN SEQUENCE SHOWN.
3. TORQUE TO 20±5 IN-LBS.
4. TORQUE TO 216±24 IN-LBS.
5. TORQUE TO 120 IN-LBS.
6. TORQUE TO 25±3 IN-LBS.

VALVE COVER TORQUE SEQUENCE

NOTE: See chapter 4 for more information on the EFI System



Engine Torque Specifications

Fastener	Size	in-lbs (Nm)	ft-lbs (Nm)
Camshaft Gear	8 mm	-	22 ± 2 (30 ± 3)
Camshaft Phase Sensor Bolt	6 mm	50 ± 5 (5.65 ± 0.55)	-
Camshaft Thrust Plate	6 mm	115 ± 12 (13 ± 1.35)	9.5 ± 1 (13 ± 1.35)
Coolant Bleed Screw	6 mm	70 ± 10 (7.9 ± 1.15)	-
Coolant Bypass Hose Fitting	3/8 NPT	120 (13.5)	-
Counterbalance Gear	8 mm	-	22 ± 2 (30 ± 3)
Crankcase Bolts	8 mm	-	* 22 ± 2 (30 ± 3)
Crankcase Breather	5 mm	84 ± 8 (9.5 ± 0.9)	-
Cylinder Head Bolts	11 mm	-	* 35 ± 4 (47.5 ± 5.5)
Exhaust Manifold	8 mm	216 ± 24 (24.5 ± 2.70)	18 ± 2 (24.5 ± 2.7)
Flywheel	14 mm	-	65 ± 7 (88 ± 9.50)
Injector Rail	8 mm	216 ± 24 (24.5 ± 2.70)	18 ± 2 (24.5 ± 2.7)
Magneto Cover	6 mm	* 96 ± 12 (10.85 ± 1.35)	-
Oil Baffle Weldment	5 mm	60 ± 6 (6.8 ± 0.68)	-
Oil Drain Bolt (Crankcase)	12 mm	192 ± 24 (21.7 ± 2.7)	16 ± (21.7)
Oil Fill Tube Bolt	5 mm	50 ± 5 (5.64 ± 0.56)	-
Oil Filter Pipe Fitting	20 mm	-	35 ± 4 (47.5 ± 5.4)
Oil Pick Up	5 mm	60 ± 6 (6.8 ± 0.68)	-
Oil Pressure Relief Plug	10 mm	-	17 ± 2 (23 ± 2.7)
Oil Pump Housing Screw	6 mm	* 84 ± 8 (9.5 ± 0.9)	-
Rocker Arm	8 mm	-	* 22 ± 2 (30 ± 3)
Rocker Cover	6 mm	* 84 ± 8 (9.5 ± 0.9)	-
Spark Plug	14 mm	216 ± 24 (24.5 ± 2.7)	18 ± 2 (24.5 ± 2.7)
Starter Motor	6 mm	* 84 ± 8 (9.5 ± 0.9)	-
Stator Assembly	6 mm	84 ± 8 (9.5 ± 0.9)	-
Stator Housing	6 mm	* 96 ± 12 (10.85 ± 1.35)	-
Stator Wire Retainer Plate	5 mm	* 96 ± 12 (10.85 ± 1.35)	-
Thermistor Sensor	3/8 NPT	-	17 ± 2 (23 ± 3)
Thermostat Housing	6 mm	84 ± 8 (9.5 ± 0.9)	-
Throttle Body Adaptor Bolts	8 mm	216 ± 24 (24.5-± 2.7)	18 ± 2 (24.5 ± 2.7)
T-MAP Sensor Bolt	5 mm	25 ± 3 (2.8 ± 0.3)	
Water Pump Housing Cover	6 mm	* 96 ± 12 (10.85 ± 1.35)	-
Water Pump Impeller Nut	8 mm	108 ± 3 (12 ± 0.35)	-

NOTE: * See exploded views for notes or torque sequences.

800 EFI Engine Service Specifications

Cylinder Head - Engine Specifications

Main Component: Cylinder Head		RZR800-13 (1204620)
Camshaft	Cam Lobe Height - Intake	1.357” (34.477 mm)
	Cam Lobe Height - Exhaust	1.342” (34.096 mm)
	Camshaft Journal Outer Diameter - Mag	1.654" ± 0.00039" (42 ± 0.010 mm)
	Camshaft Journal Outer Diameter - Center	1.634"± 0.00039" (41.50 ± 0.010 mm)
	Camshaft Journal Outer Diameter - PTO	1.614" ± 0.00039" (41 ± 0.010 mm)
	Camshaft Journal Bore Inner Diameter - Mag	1.656" ± 0.00039" (42.07 ± 0.010 mm)
	Camshaft Journal Bore Inner Diameter - Center	1.637" ± 0.00039" (41.58 ± 0.010 mm)
	Camshaft Journal Bore Inner Diameter - PTO	1.617" ± 0.00039" (41.07 ± 0.010 mm)
	Camshaft Oil Clearance	0.00276" ± 0.00079" (0.07 ± 0.02 mm)
	Camshaft End Play	0.0167" ± 0.0098" (0.425 ± 0.25 mm)
Counter Balance	Counter Balance End Play	0.005" (0.127 mm)
Cylinder Head	Cylinder Head - Surface warp limit	0.00394" (0.1 mm)
	Cylinder Head - Standard height	3.478" (88.35 mm)
Valve Seat	Valve Seat - Contacting Width - Intake	0.0472" ± 0.00787" - 0.0039" (1.20 ± 0.20 - 0.10 mm)
	Valve Seat - Contacting Width - Exhaust	0.0591" ± 0.00787" - 0.0039" (1.50 ± 0.20 - 0.10 mm)
	Valve Seat Angle	45.5° ± 0.255°
Valve Guide	Valve Guide Inner diameter	0.2367" ± 0.00029" (6.012 ± 0.007 mm)
	Valve Guide Protrusion Above Head	0.807" ± 0.0039" (20.50 ± 0.01 mm)
Valve	Valve Stem Diameter - Intake	0.2356" ± 0.00039" (5.985 ± 0.01 mm)
	Valve Stem Diameter - Exhaust	0.2351" ± 0.00039" (5.972 ± 0.01 mm)
	Valve Stem Oil Clearance - Intake	0.00228" ± 0.00098" (0.058 ± 0.025 mm)
	Valve Stem Oil Clearance - Exhaust	0.00275" ± 0.00098" (0.0870 ± 0.025 mm)
	Valve Stem Overall Length - Intake	4.51" ± 0.01476" (114.5550 ± 0.375 mm)
	Valve Stem Overall Length - Exhaust	4.5453" ± .01496" (115.45 ± 0.38 mm)
Valve Spring	Valve Spring Overall Length - Free Length	1.735" (46.069 mm)
	Valve Spring Overall Length - Installed Height	Intake - 1.4638" (37.18 mm) Exhaust - 1.4736" (37.43 mm)

Cylinder / Piston - Engine Specifications

Main Components: Cylinder / Piston / Connecting Rod		RZR800-13 (1204620)
Cylinder	Cylinder - Surface warp limit (mating with cylinder head)	0.004" (0.10 mm)
	Cylinder Bore - Standard	3.1495" (80 mm)
	Cylinder Taper Limit	0.00031" (0.008 mm)
	Cylinder Out of Round Limit	0.00030" (0.0075 mm)
	Cylinder to Piston Clearance	.0015" ± .00059" (.040 ± .015 mm)
Lifter	Lifter Outer Diameter Standard	0.84245" ± 0.00025" (21.39 8 ± 0.00635 mm)
	Lifter Block Bore	0.8438" ± 0.00062" (21.4322 ± 0.0157 mm)
Piston	Piston - Standard	3.14803" ± .00028" (79.960 ± .007 mm)
	Piston Standard Inner Diameter of Piston Pin Bore	0.70902" ± .00012" (18.009 ± 0.003 mm)
Piston Pin	Piston Pin Outer Diameter	0.70866" - 0.70846" (18 - 17.995 mm)
	Piston Pin - Standard Clearance - Piston Pin to Pin Bore	0.00047" ± 0.00024" (0.012 ± 0.006 mm)
	Piston Pin - Degree of Fit	Piston pin must be push fit (by hand) at 68° F (20° C)

Piston / Connecting Rod / Crankshaft - Engine Specifications

Main Components: Piston / Connecting Rod			RZR800-13 (1204620)
Piston Ring	Installed Gap	Top Ring - Standard	0.0059 - 0.0138" (0.15 - 0.35 mm)
		Top Ring - Limit	> 15% Leakdown
		Second Ring - Standard	0.0098 - 0.0197" (0.25 - 0.50 mm)
		Second Ring - Limit	> 15% Leakdown
		Oil Ring - Standard	0.0197 ± 0.0098" (0.50 ± 0.25 mm)
		Oil Ring - Limit	> 15% Leakdown
	Ring to Groove Clearance	Top Ring - Standard	0.0024" ± 0.0008" (0.060 ± 0.020 mm)
		Top Ring - Limit	> 15% Leakdown
		Second Ring - Standard	0.0028" ± 0.0008" (0.070 ± 0.020 mm)
		Second Ring - Limit	> 15% Leakdown
Connecting Rod	Connecting Rod Small End I.D.		0.7096"– 0.70846" (18 – 17.995 mm)
	Connecting Rod Small End Radial Clearance		0.00098"± 0.00039" (0.025 ± 0.010 mm)
	Connecting Rod Big End Side Clearance		0.01181"± 0.00591" (0.30 ± 0.15 mm)
	Connecting Rod Big End Radial Clearance		0.0015"± 0.0006" (0.038 ± 0.015 mm)
Crankshaft	Crankshaft Runout Limit		0.00236" (0.060 mm)

Special Tools

Part Number	Tool Description
PU-50105	OIL FILTER WRENCH
PU-45257	VALVE SPRING COMPRESSOR
PU-45652	VALVE PRESSURE HOSE
2871043	FLYWHEEL PULLER
2870390	PISTON SUPPORT BLOCK
PU-45497-1	CAM GEAR SPRING INSTALLATION KIT
PU-45497-2	CAM GEAR TOOTH ALIGNMENT TOOL
PU-45498	CAM SPANNER WRENCH
PU-45838	GEAR HOLDER
PA-44995	WATER PUMP MECHANICAL SEAL INSTALLER
PU-45543	UNIVERSAL DRIVER HANDLE
PA-45483	MAIN SEAL INSTALLER
PU-45658	CRANKSHAFT MAIN SEAL SAVER
PA-45401	WATER PUMP SEAL SAVER
2870975	MITY VAC™ PRESSURE TEST TOOL
PU-45778	OIL SYSTEM PRIMING TOOL

SPX Corporation: 1-800-328-6657 or http://polaris.spx.com/

ENGINE COOLING SYSTEM

Cooling System Specifications

Condition	Coolant Temperature °F (°C)	
Room Temperature	68° F (20° C)	
Thermostat Closed	175° F (79° C)	
Thermostat Open	180° F (82° C)	
Fan Off	194° F (90° C)	
Thermostat Full Open Lift	202° F (94° C)	
Fan On	205° F (96° C)	
Engine Temperature Overheat Indicator	*Moving Vehicle:*	*235°F (113°C)*
	Idle Vehicle:	241° F (116° C)
Engine Protection Ignition Misfire	*Moving Vehicle:*	*239°F (115°C)*
	Idle Vehicle:	244° F (118° C)
Engine Protection Shutdown	*Moving Vehicle:*	*257°F (125°C)*
	Idle Vehicle:	262° F (128° C)

Item	Specification	
Cooling System Capacity	RZR / RZR S	4.8 qts. (4.5 l)
	RZR 4	5.5 qts. (5.2 l)
Pressure Cap Relief	13 PSI	

Polaris Premium Antifreeze
2871534 - Quart
2871323 - Gallon

Recommended Coolant

Use only high quality antifreeze/coolant mixed with distilled water in a 50/50 or 60/40 ratio, depending on freeze protection required in your area.

CAUTION: Using tap water in the cooling system will lead to a buildup of deposits which may restrict coolant flow and reduce heat dissipation, resulting in possible engine damage. Polaris Premium 60/40 Antifreeze/Coolant is recommended for use in all cooling systems and comes pre-mixed, ready to use.

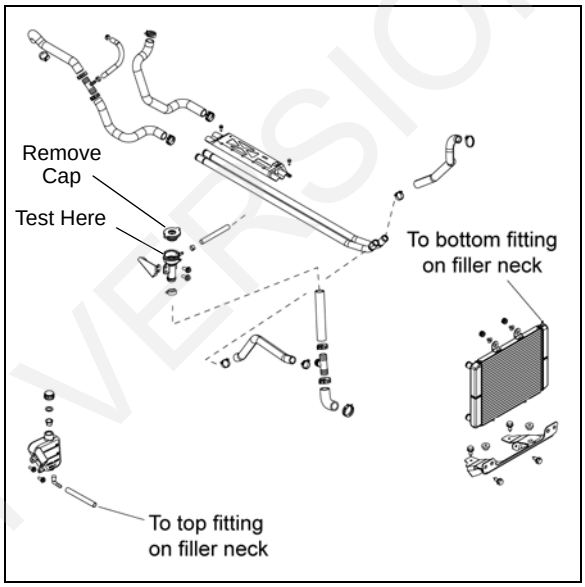
Cooling System Pressure Test

1. Remove the hood from the front cab.

⚠ WARNING

Never remove pressure cap when engine is warm or hot. The cooling system is under pressure and serious burns may result. Allow the engine to cool before servicing.

2. Remove pressure cap and pressure test the cooling system using a commercially available tester.



3. The system must maintain 10 psi for five minutes. If pressure loss is evident within five minutes, check radiator, hoses, clamps and water pump seals.

Pressure Cap Test

1. Remove the front hood (see Warning under “Cooling System Pressure Test”).
2. Remove pressure cap and test using a pressure cap tester (commercially available).
3. The pressure cap relief pressure is 13 psi. Replace cap if it does not meet this specification.

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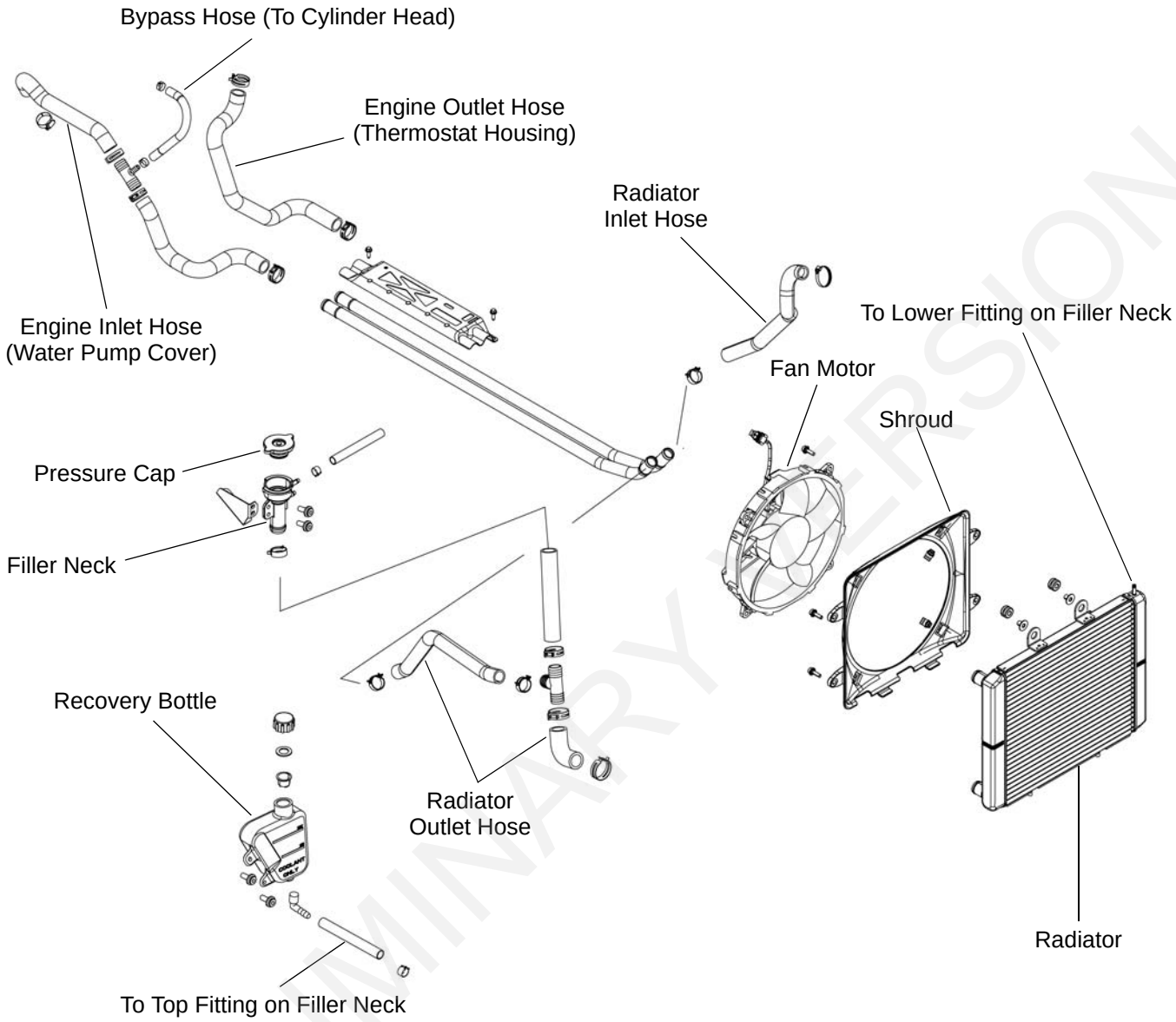
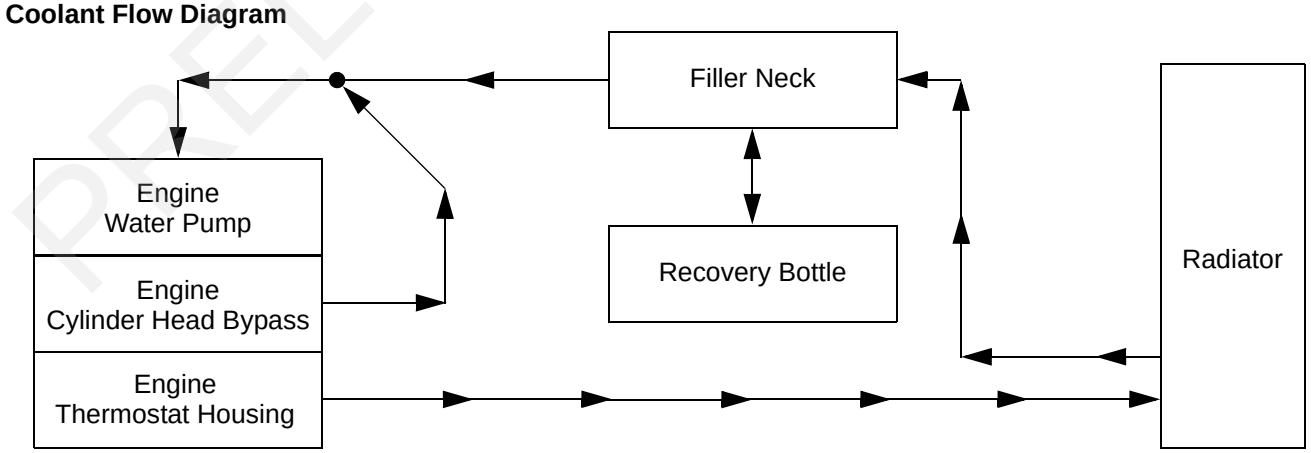
Cooling System Exploded View



Coolant Flow Diagram



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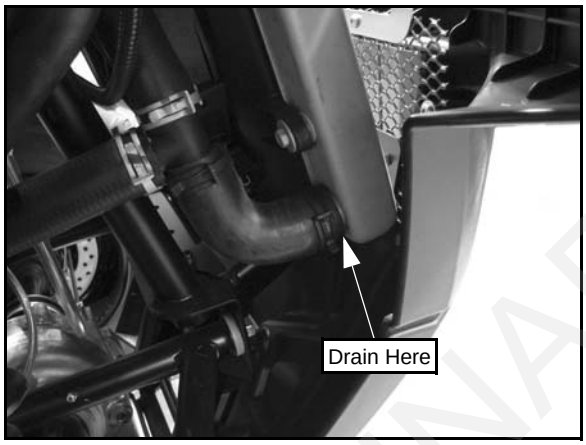
Radiator Removal

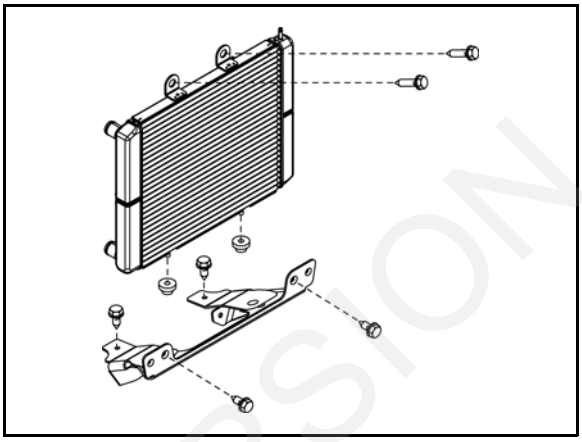
1. Remove the hood from the front cab.

> **WARNING**
>
> Never drain the coolant when the engine and radiator are warm or hot. Hot coolant can cause severe burns. Allow engine and radiator to cool.

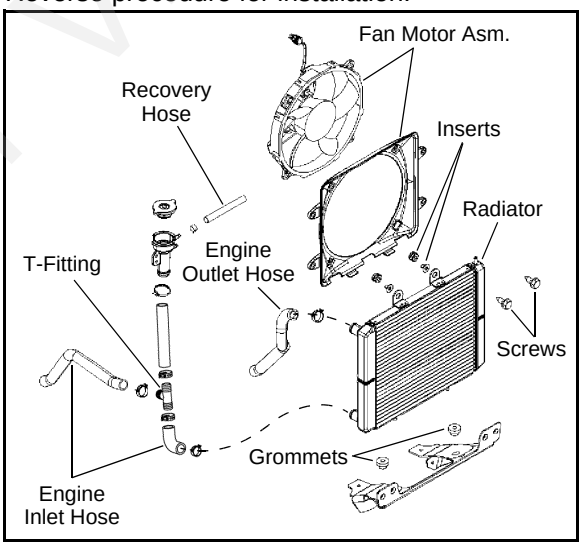
2. Slowly remove the pressure cap to relieve any cooling system pressure.
3. Place a suitable drain pan underneath the radiator fitting on the front RH side of the vehicle.
4. Drain the coolant from the radiator by removing the lower coolant hose from the radiator as shown. Properly dispose of the coolant.



5. Allow coolant to completely drain.
6. Remove the front bumper (see Chapter 5).
7. Remove the upper engine outlet hose and recovery hose from the top of the radiator.
8. Remove the (2) upper radiator retaining bolts and the (4) bolts retaining the lower radiator mount bracket. Remove the bracket from the frame.



9. Disconnect the fan motor and remove the radiator from the vehicle. Take care not to damage the cooling fins.
10. Reverse procedure for installation.



Cooling System Bleeding Procedure

WARNING

Always wear safety glasses and proper shop clothing when performing the procedures in this manual. Failing to do so may lead to possible injury or death.

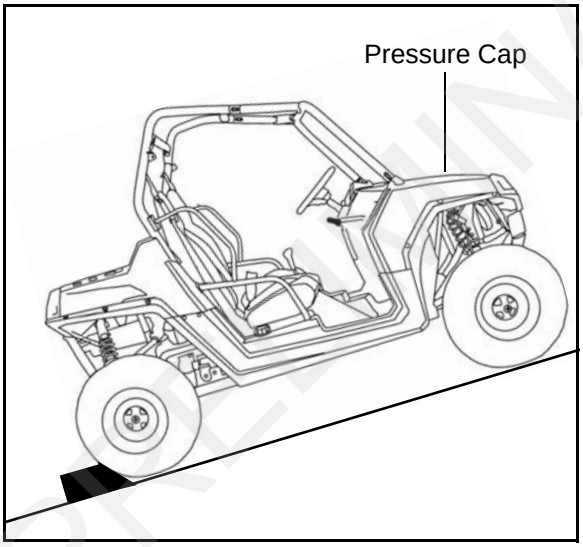
CAUTION

Use caution when performing these procedures. Coolant may be hot and may cause severe injury or burns.

NOTE: If the coolant level is LOW in the radiator, or if there are leaks in the system, the coolant system will not draw coolant from the reservoir tank.

NOTE: Use this procedure when a unit overheats and no apparent leaks in the cooling system are found.

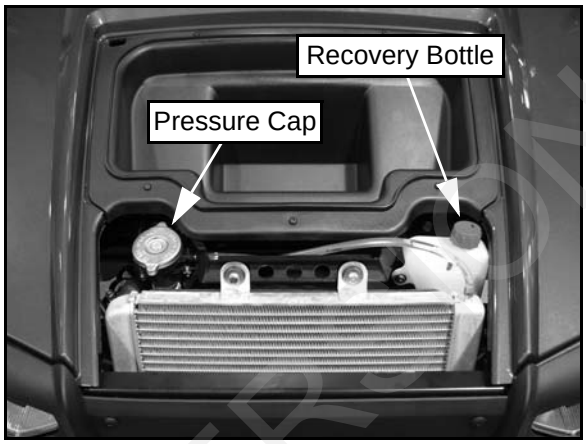
1. Drive the vehicle onto a slight incline or use properly weight rated ramps. If an incline is not available, slightly elevate the front of the vehicle.
2. Place the vehicle in Park and block the rear wheels.



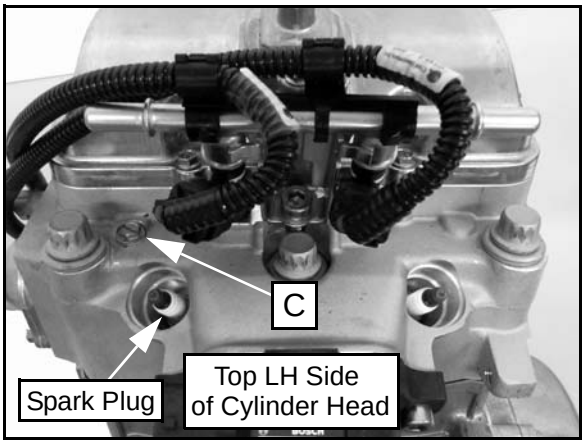
CAUTION

Be sure the engine has cooled and no pressure is built up in the cooling system before removing the pressure cap. The coolant may be hot and could cause severe injury or burns.

3. Remove pressure cap and top off coolant.
4. Remove recovery bottle cap and fill bottle to the full line.



5. Leave the cap off of the radiator to allow any possible air to escape.
6. Start the engine and let it idle for 5-10 minutes or until the thermostat opens and allows coolant to flow through the system.
7. Squeeze the coolant lines by hand to help purge the system of air.
8. Slightly loosen the bleed screw (C) on the cylinder head to let air escape. If no air is present, a steady stream of coolant will stream out. If air is present, the screw will bubble and sputter as the air escapes.



9. Tighten the bleed screw to specification and properly install the pressure cap.

= T
Coolant Bleed Screw: **70 ± 10 in-lbs (8 ± 1.13 Nm)**

NOTE: If there is air in the system you will see air bubbles forming through the radiator filler neck.

10. Add Polaris Premium Antifreeze to the radiator filler neck if the level goes down. If no bubbles are seen at the filler neck, the system should be purged of air.

WARNING
Be sure to install the pressure cap before shutting off the engine. Coolant may spit out of the radiator.

11. Stop the engine and let cool, top off the radiator filler neck with coolant. If you hear or see a “glug” at the filler neck, or there is a dropping of the coolant level, indicating that coolant has been pulled into the system; Fill the recovery bottle only after you have completely filled the cooling system at the radiator filler neck.

12. Repeat this procedure, if overheating still occurs.

GENERAL ENGINE SERVICE

Engine Lubrication Specifications

Oil Capacity: Approximately 2 U.S. Quarts (1.9 l)

Oil Type: Polaris PS-4 PLUS (PN 2876244)
or PS-4 Extreme Duty (PN 2878920)

Oil Filter: PN 2540086

Filter Wrench: PU-50105 - 2.5” (64 mm)

- Oil Pressure Specification -
27-55 PSI @ 6000 RPM, PS-4 PLUS Synthetic
Engine at operating temperature

Oil Pressure Test

1. Remove blind plug/sender from left side of crankcase.
2. Insert a 1/8 NPT oil pressure gauge adaptor into the crankcase and attach the gauge.
3. Start engine and allow it to reach operating temperature, while monitoring the gauge.

NOTE: Use only Polaris PS-4 PLUS or Extreme Duty Synthetic 4-Cycle Engine Oil.

Oil Pressure at 6000 RPM (Engine Hot):
Minimum: 27 PSI
Standard: 31 PSI
Maximum: 55 PSI

Accessible Engine Components

The following components can be serviced or removed with the engine installed:

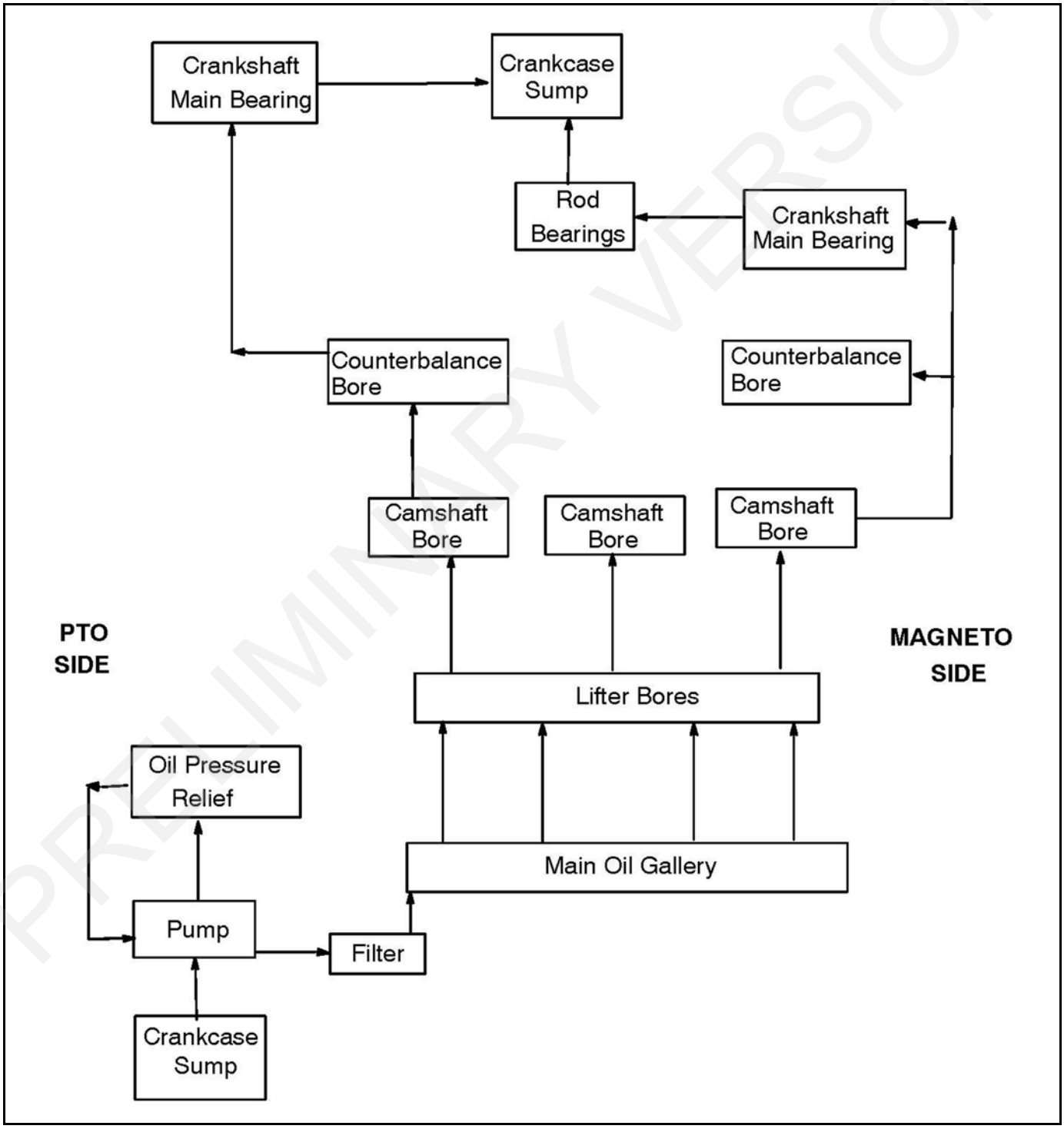
- Starter Motor / Drive
- Cylinder Head
- Cylinder
- Piston / Rings
- Rocker Arms
- Water Pump

The following components require engine removal for service:

- Flywheel
- Alternator (Stator)
- Counterbalance Shaft or Bearings
- Gear Train Components
- Camshaft
- Oil Pump / Oil Pump Drive Gear
- Connecting Rod
- Crankshaft
- Crankshaft Main Bearings
- Crankcase

Oil Flow Chart

This chart describes the flow of oil through the 800 EFI engine. Beginning in the crankcase sump, the oil is drawn through an oil galley to the feed side of the oil pump. The oil is then pumped through the oil filter. If the oil filter is obstructed, a bypass valve contained in the filter allows oil to bypass the filter element. At this point, the oil is supplied to the main oil galley through a crankcase passage. Oil is then diverted three ways from the main oil galley, with the first path entering the camshaft bores, onto the rear balance shaft journal and then draining back into the crankcase sump. The second oil path from the main oil galley feeds the lifter bores and then drains back to the crankcase sump. The third oil path flows through a crankcase galley to the MAG side crankshaft journal and also to the front balance shaft journal and onto the crankcase sump.



Engine Removal

Because of its design configuration and fastener torque requirements, Polaris recommends removing the engine, transmission and rear gearcase as one assembly. Use the following procedure when engine removal is required.

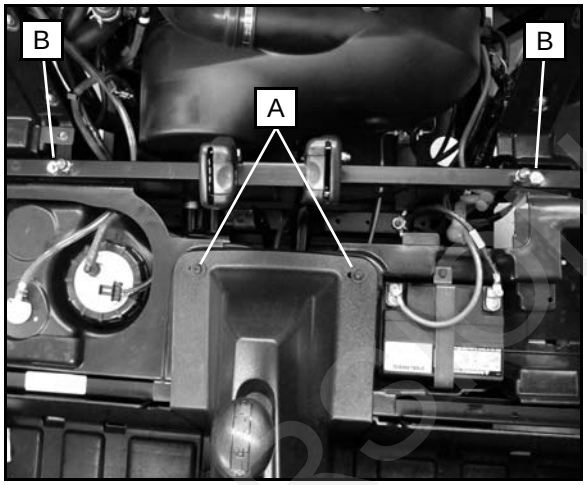
IMPORTANT: Some engine repair procedures can be performed without removing the engine assembly from the vehicle. Refer to "Accessible Engine Components" on Page 3.14 for further information.

NOTE: The use of an overhead or portable engine hoist is the only recommended method for removing and installing the engine / transmission / rear gearcase assembly.

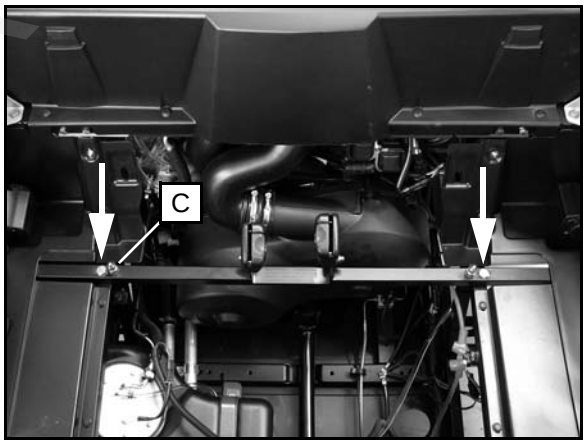
NOTE: Have an assistant help guide the engine in and out of the vehicle while using an engine hoist to prevent personal injury or damage to vehicle components.

> **⚠ WARNING**
>
> Always wear safety glasses and proper shop clothing when performing the procedures in this manual. Failing to do so may lead to possible injury or death.

1. If vehicle was recently operated, allow it to cool down before attempting to perform any work.
2. Clean work area.
3. Thoroughly clean the engine and chassis.
4. Drain appropriate lubricant(s):
   - If servicing the engine, drain engine oil.
   - If servicing the transmission, drain the lubricant from the main gearcase and transfer case.
   - If servicing the rear gearcase, drain the gearcase lubricant.
5. Remove the driver's seat (see Chapter 5).
6. Disconnect (-) negative battery cable.
7. Remove the passenger seat(s) and remove the rear service panel (see Chapter 5).
8. Remove the (2) screws (A) from the rear of the center console (RZR / RZR S only).



9. Remove the rear seat base assembly from the vehicle:
   - **RZR / RZR S:** Remove the (2) fasteners (B) from the rear seat base (as shown above).
   - **RZR 4:** Remove the (2) fasteners and seat latch plunger (C). Slide the rear seat base to the left and remove it.



10. Remove the rear bumper, rear cargo box and box supports from the vehicle (see Chapter 5).

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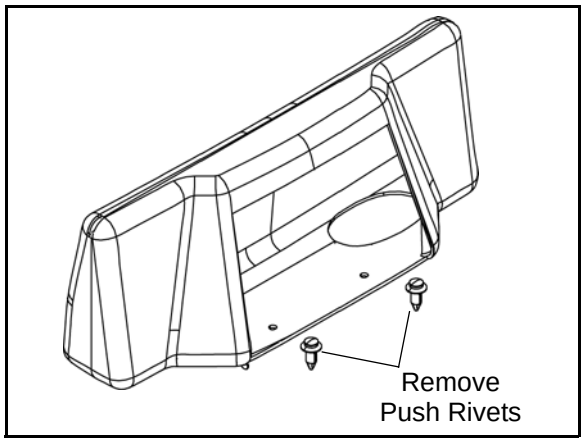
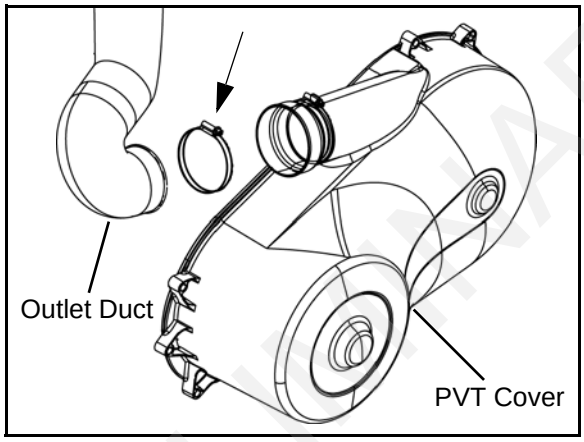
11. Remove the (2) push rivets and remove the intake box from the vehicle.



12. Elevate the rear of the vehicle off the ground using a suitable ATV lift and remove both rear wheels.

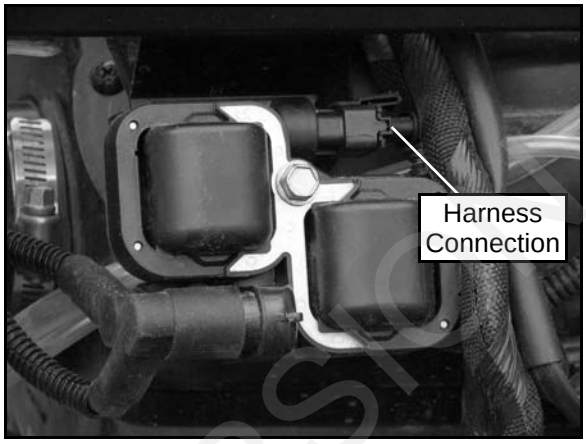
13. Remove all exhaust components from vehicle and engine.

14. Loosen the hose clamp attaching the outlet duct to the PVT cover. Leave the duct attached to the upper frame support.



15. Remove the (8) screws that retain the PVT cover and remove cover.

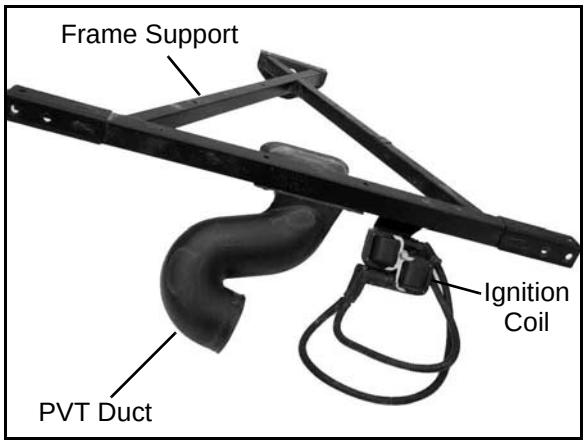
16. Remove the high tension leads from the spark plugs and disconnect the ignition coil harness.



IMPORTANT: Mark or note which ignition coil wire goes to which cylinder and ignition coil post. The engine will misfire if the spark plug wires are installed incorrectly. The spark plug wires are marked with PTO and MAG from the factory and should be installed to the corresponding cylinder and ignition coil post.

17. Remove the vent lines from the upper bolt-in frame brace and plug vent lines to prevent fluid leakage during removal.

18. Remove the (6) fasteners retaining the upper bolt-in frame brace and remove it from the vehicle with the ignition coil and PVT duct attached.



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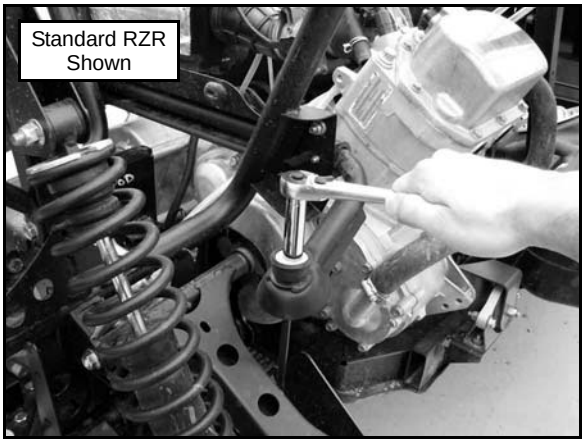
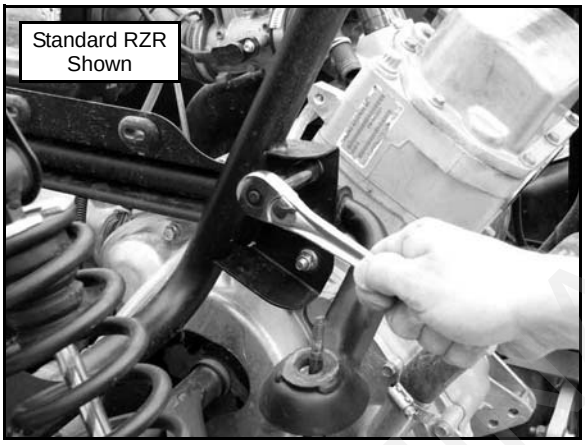
19. Remove the rear stabilizer bar from the linkage on both sides of the vehicle.

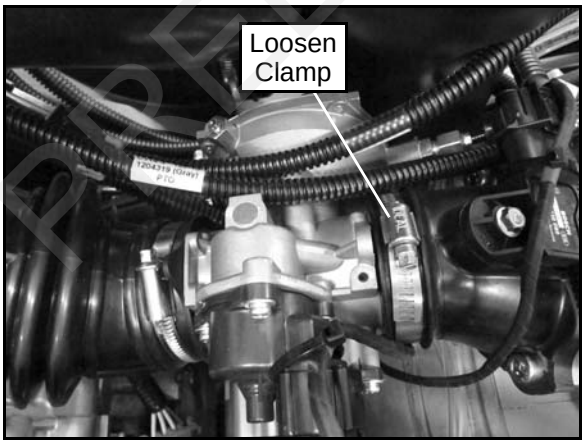


20. Remove the (4) fasteners retaining the stabilizer bar and bracket and remove the assembly from the vehicle.

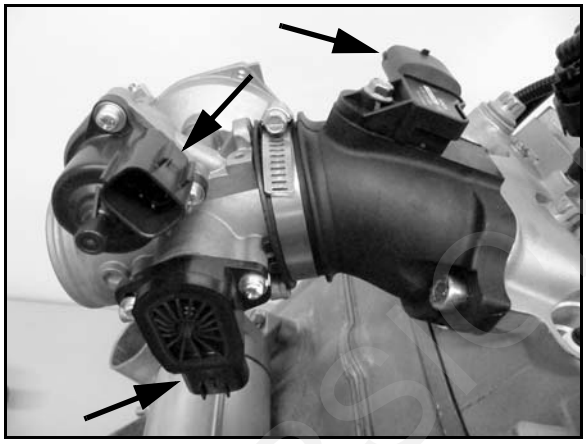


21. Remove the engine breather hose from the valve cover.

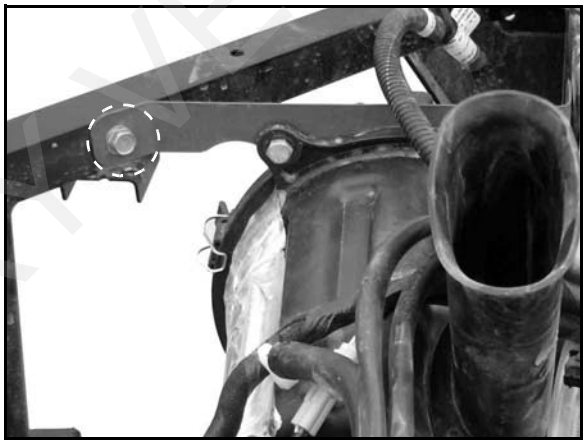
22. Loosen the hose clamp between the throttle body and intake adaptor.



23. Disconnect the T-MAP, IAC and TPS sensor connectors from throttle body.



24. Remove the remaining bolt attaching the airbox to the frame (see photo).

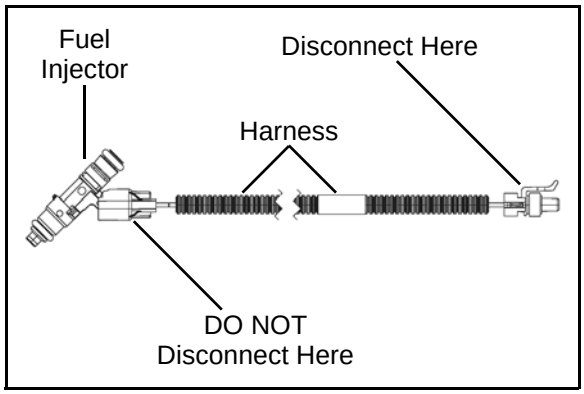


25. Remove the airbox and throttle body from the vehicle as an assembly. Take care in not allowing the throttle cable to bend excessively or kink. Carefully place the assembly on the floor next to the vehicle. Insert a shop towel into the engine intake adaptor to prevent dirt from entering the engine.

NOTE: Ensure throttle cable is not being excessively bent or kinked while removed from the vehicle.

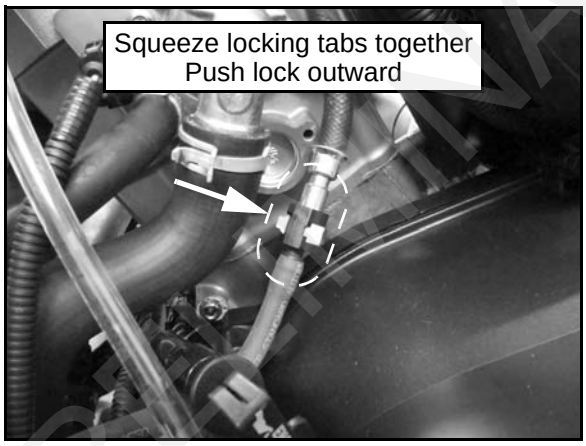
26. Mark the fuel injector harnesses to identify MAG and PTO harness connections to aid during reassembly. Disconnect the fuel injector harnesses.

NOTE: The fuel injector harness connector and locking spring is bonded to the fuel injectors with an epoxy mix. DO NOT attempt to disconnect the connector from the fuel injectors. Damage will occur to the injector and/or harness if attempting to separate at that location. Separate the fuel injector from the vehicle by disconnecting at the end of the harness as shown.

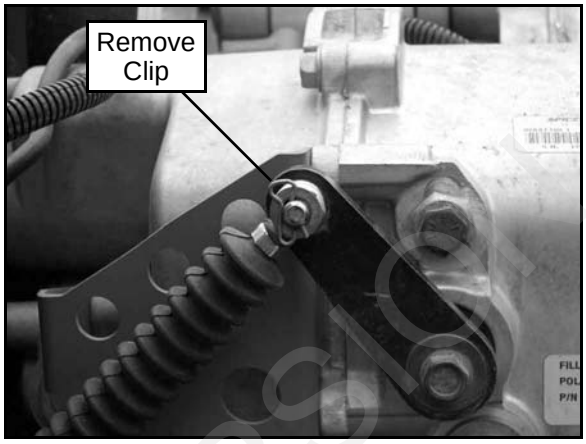


IMPORTANT: Take note of PTO and MAG fuel injector harness connectors before disconnecting them. The harnesses are different and <u>can not</u> be connected incorrectly (PTO - Gray; MAG - Black).

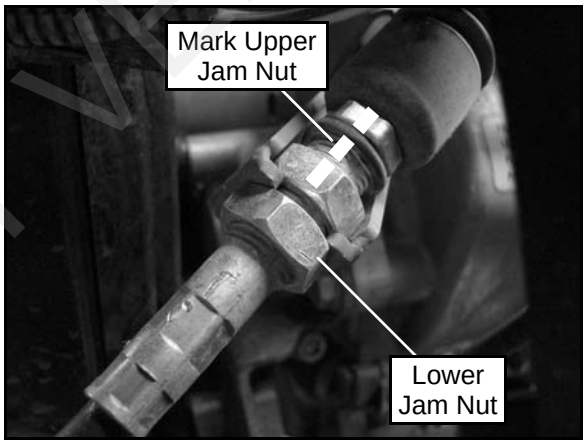
27. Disconnect the fuel line from the fuel injector rail by slightly squeezing the lock tabs and gently pushing the connector lock out. To separate the lines, pull the fuel line from the tank strait down.



28. Disconnect the shift cable from the transmission bell crank.

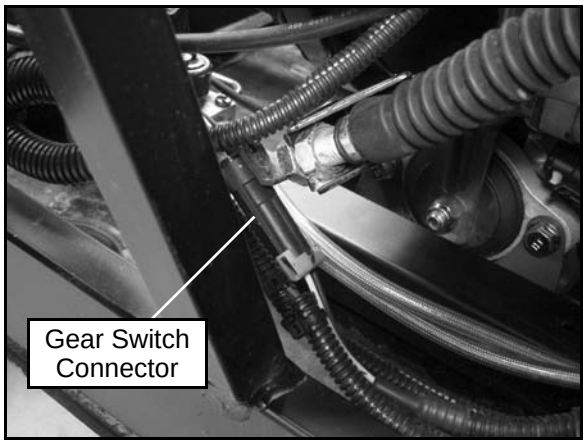


29. Mark the upper jam nut and loosen the lower jam nut. Pull the shift cable out of the mount.



NOTE: If the upper jam nut is moved, shift cable adjustment will be required during engine installation (see Chapter 2 "Shift Cable Inspection / Adjustment").

30. Disconnect the transmission gear indicator switch harness.



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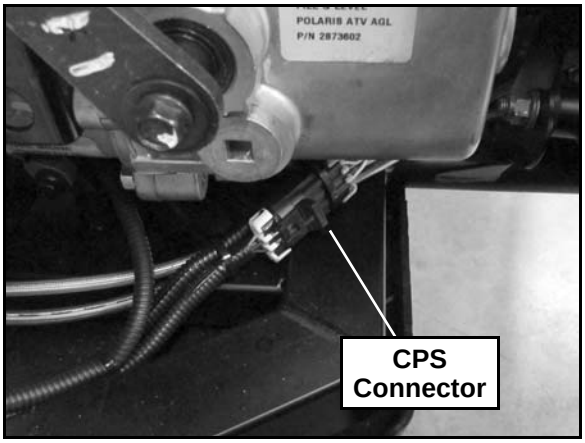
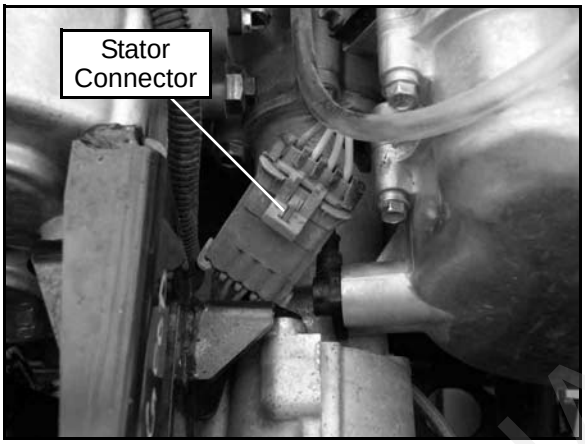
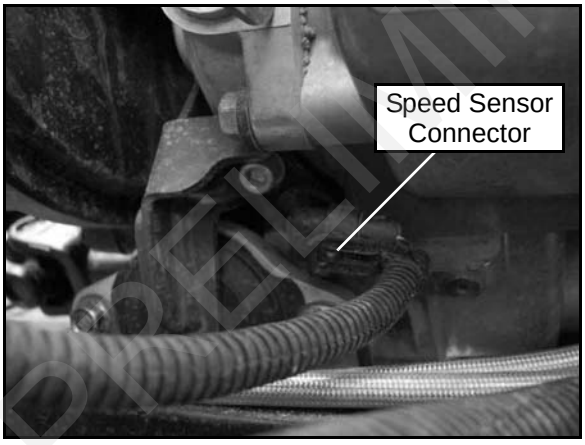
31. Disconnect the CPS harness.



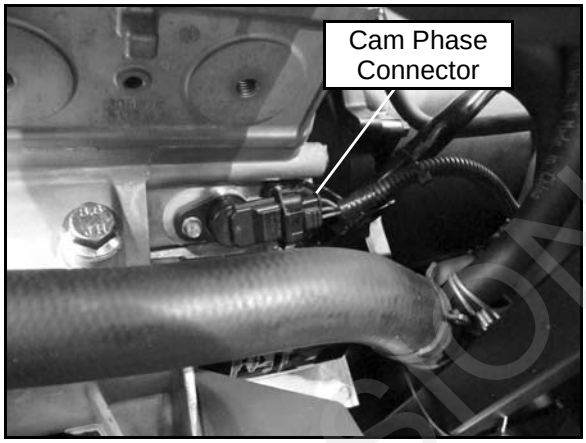
32. Disconnect the stator / alternator harness.



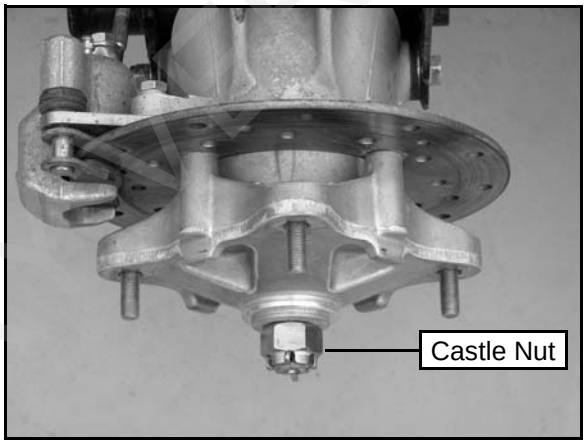
33. Disconnect the transmission speed sensor harness.



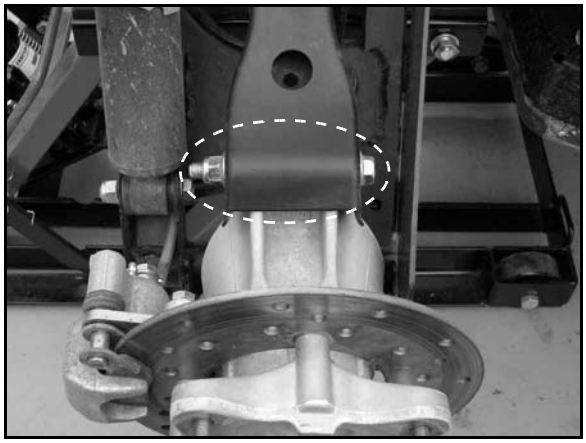
34. Disconnect the cam phase sensor connector.



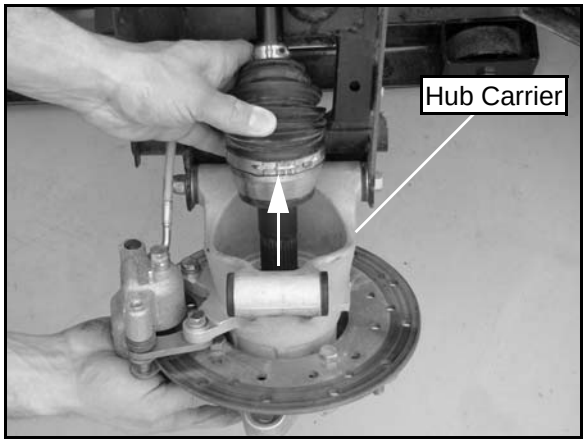
35. Remove the castle nuts from both rear wheel hubs.



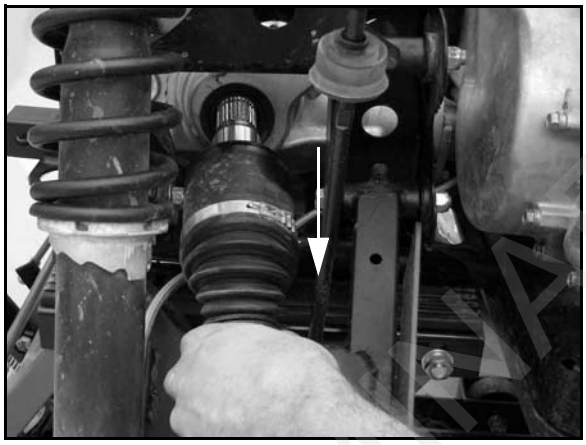
36. Remove the through-bolt that attaches the upper A-arm to the rear hub on both sides of the vehicle.



37. Pivot the A-arms upward and rear hub carriers downward and remove the drive shafts from the hub carriers.

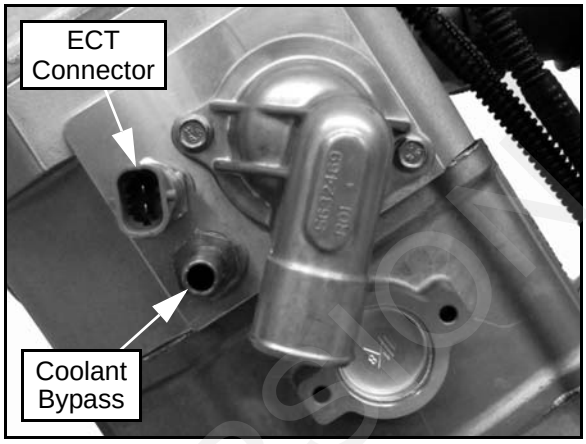


38. Grasp the rear drive shafts and pull sharply outward on the shafts to disengage them from the rear gearcase.

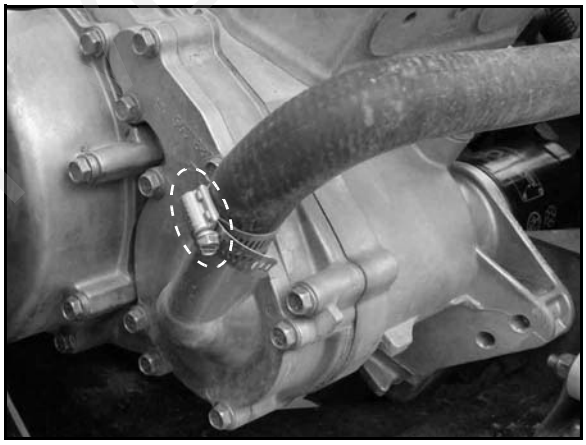


NOTE: Clean area around drive shaft orifices on both sides of rear gearcase and cover orifices using duct tape. This will prevent the lubricant from leaking out during removal.

39. Disconnect the engine coolant temperature (ECT) sensor harness and the bypass coolant hose.



40. Loosen the hose clamp and remove the lower coolant hose from the water pump cover inlet and drain coolant into a suitable container.



41. Remove the filler neck pressure cap to relieve the cooling system vacuum.

NOTE: Use a portable wet-vac or syphon to prevent any coolant from spilling.

42. Remove the upper coolant hose from the thermostat housing outlet to relieve any coolant vacuum created in the engine. Allow engine coolant to completely drain. Properly dispose of the engine coolant / antifreeze.

43. Remove the (+) positive battery cable from the starter motor terminal and (-) negative battery cable from the starter motor engine mount.

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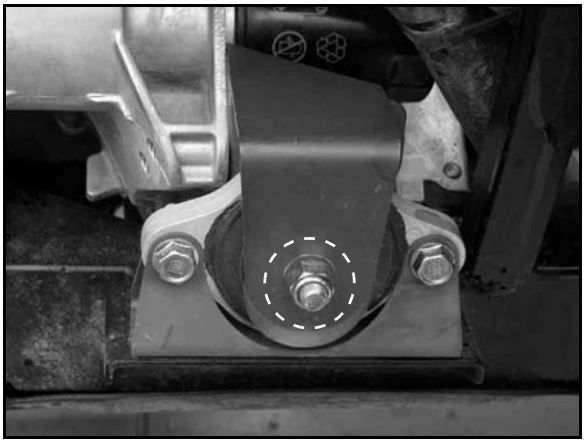
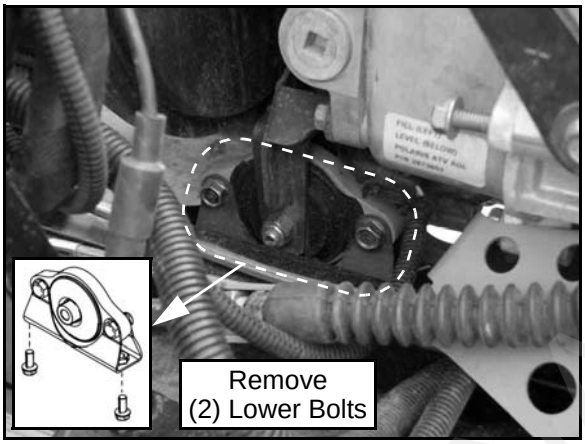
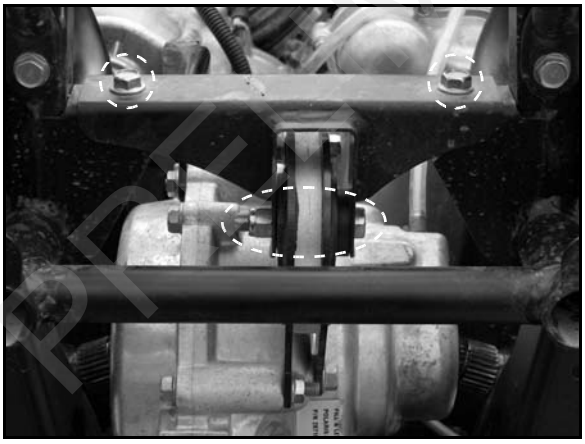
44. Remove RH engine mount fastener.



45. Remove the (2) lower bolts that retain the LH transmission mount to the frame.

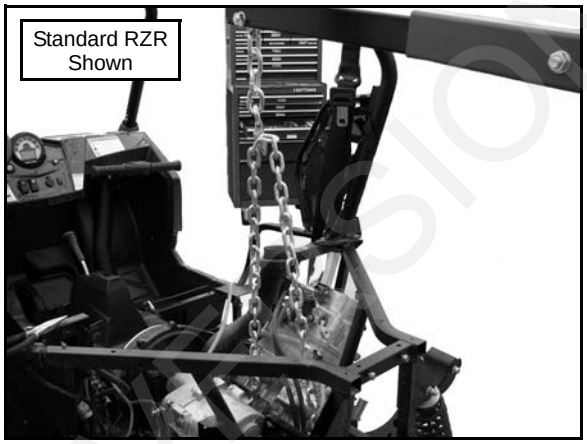


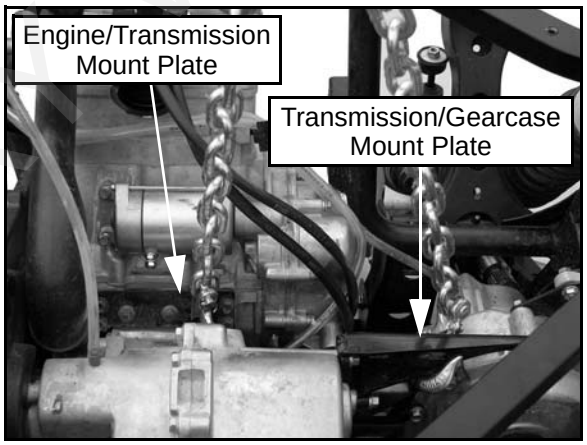
46. Remove the (2) rear gearcase mount bracket fasteners and mount bolt and remove bracket from vehicle.



NOTE: The use of an overhead or portable engine hoist is the only recommended method for removing and installing the engine / transmission / rear gearcase assembly.

47. Using an engine hoist, hook a chain between the engine / transmission mounting plate and the transmission / rear gearcase mounting plate.





NOTE: Have an assistant help guide the engine in and out of the vehicle while using an engine hoist to prevent personal injury or damage to vehicle components.

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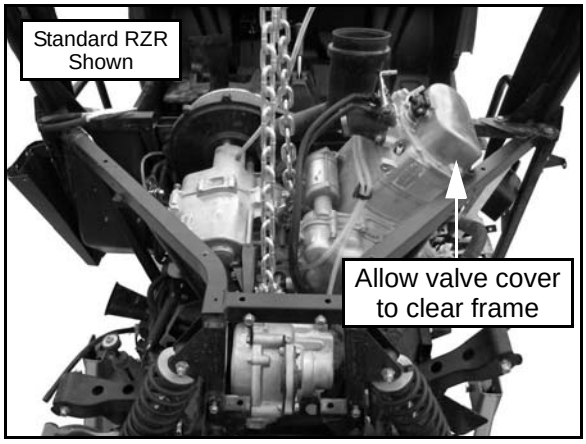
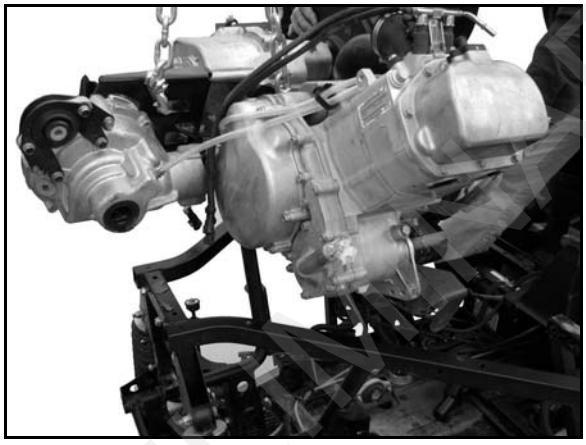
48. Lift the front portion of the assembly out first to allow the engine valve cover to clear the vehicle frame.



49. Remove propshaft from the transmission output shaft.

50. Then move assembly towards the front of the vehicle while lifting it out to allow the rear gearcase to clear the rear portion of the frame.

51. Then lift assembly high enough to clear vehicle frame and completely remove it from the vehicle to a work bench.

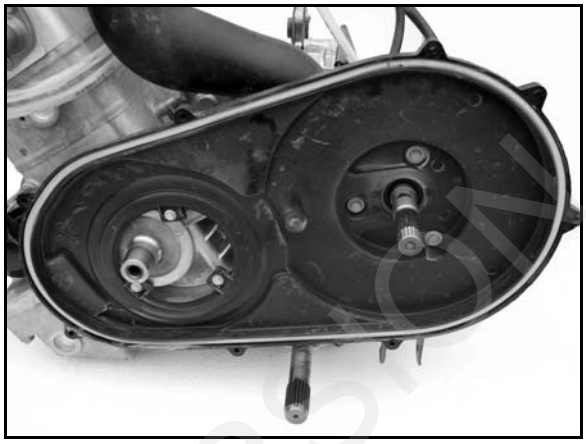


Engine / Transmission Separation

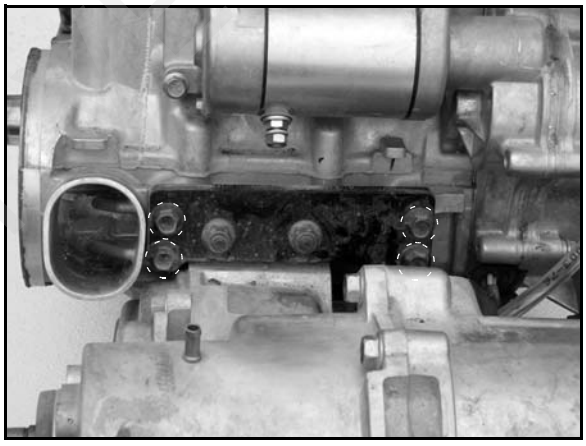
Once the engine / transmission / rear gearcase assembly has been removed from the vehicle, the engine and transmission will need to be separated to allow engine servicing. Use the following procedure to separate the engine from the assembly.

1. Remove the drive belt, drive clutch and driven clutch (see Chapter 6).

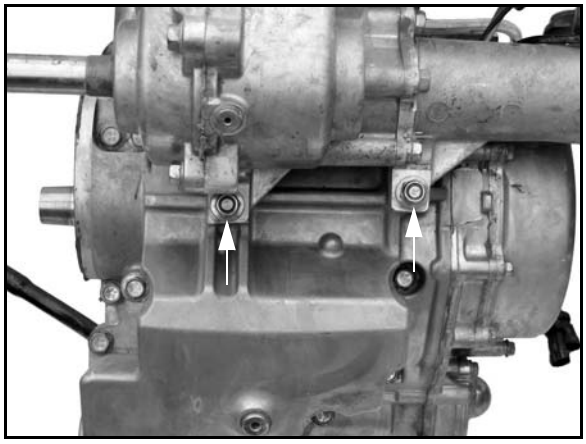
2. Remove the (6) fasteners retaining the inner clutch cover to the engine and transmission.



3. Remove only the (4) outer fasteners retaining the engine to the transmission bracket.



4. Tilt the assembly up and remove the remaining (2) nuts that retain the transmission to the engine.



5. Carefully separate the engine and perform the required service (see “Engine Disassembly and Inspection”).

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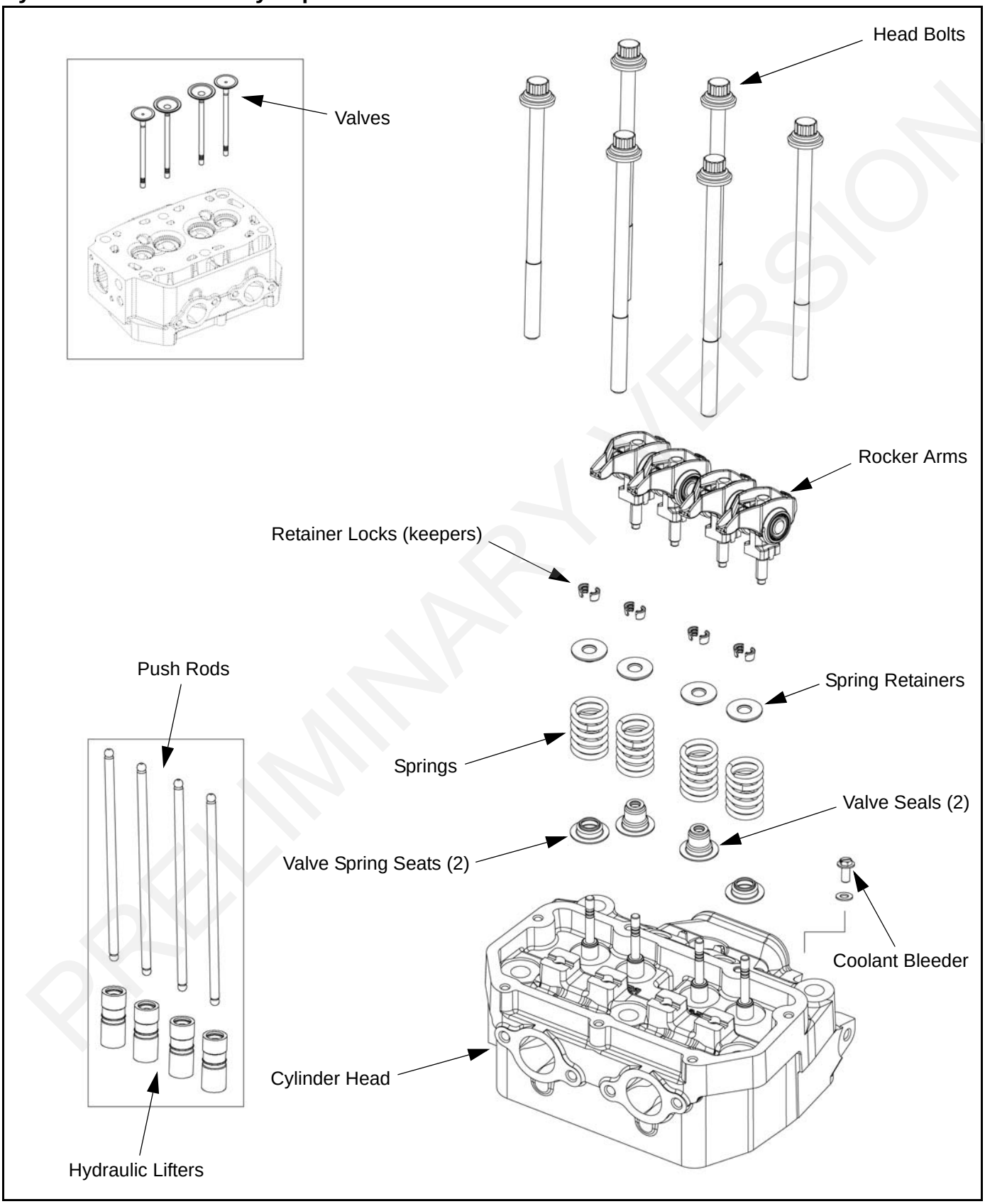
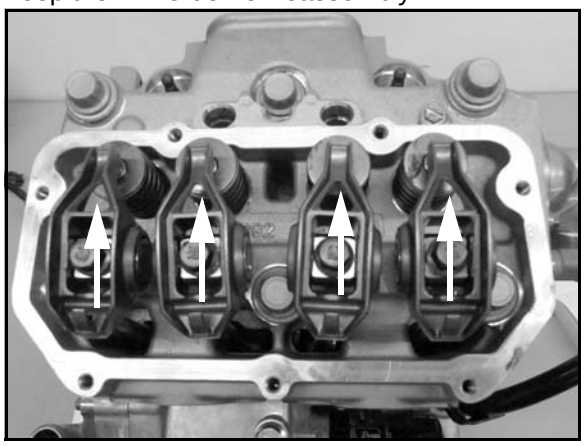
ENGINE DISASSEMBLY AND INSPECTION

Cylinder Head Assembly Exploded View



Rocker Arms

1. Remove the valve cover.
2. Mark or tag rocker arms in order of disassembly to keep them in order for reassembly.



3. Inspect the wear pad at the valve end of the rocker arm for indications of scuffing or abnormal wear. If the pad is grooved, replace the rocker arm.

NOTE: Do not attempt to true this surface by grinding.

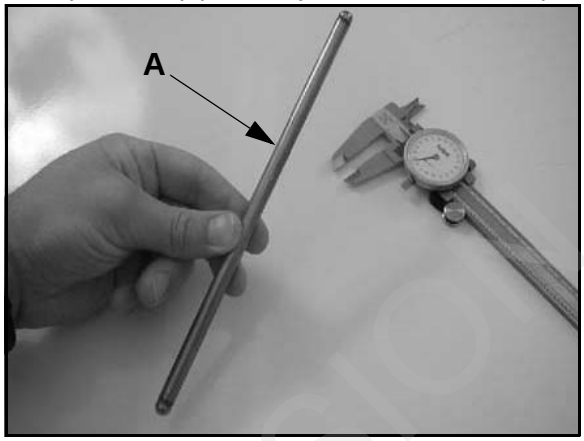
4. Check the rocker arm pad and fulcrum seat for excessive wear, cracks, nicks or burrs.

Push Rods

1. Clean push rods (A) in a suitable solvent. Blow dry push rods with compressed air.
2. Use compressed air to confirm the oil passage is clear in the center of the push rod.

> **WARNING**
>
> Always wear safety glasses when working with compressed air to prevent personal injury.

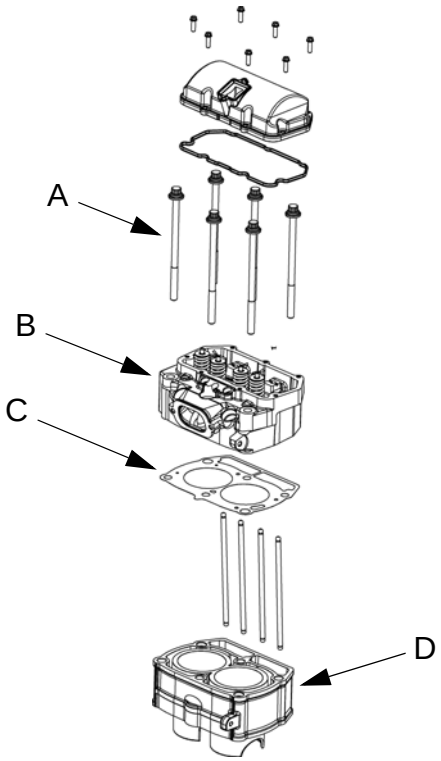
3. Check the ends of the push rods (A) for nicks, grooves, roughness or excessive wear.
4. The push rods (A) can be visually checked for straightness while they are installed in the engine by rotating them with the valve closed. Push rods can also be checked with a dial indicator or rolled across a flat surface to check for straightness.
5. If the push rod (A) is visibly bent, it should be replaced.



Cylinder Head Removal

NOTE: The cargo box assembly and the upper frame bolt-in brace must be removed to allow enough clearance to remove all the cylinder head bolts. Refer to Chapter 5 for removal procedures.

1. Loosen the six cylinder head bolts (A) evenly 1/8 turn each in a criss-cross pattern until loose.
2. Remove bolts (A) and tap cylinder head (B) lightly with a soft face hammer until loose. **CAUTION:** Tap only in reinforced areas or on thick parts of cylinder head casting to avoid damaging the head or cylinder.
3. Remove cylinder head (B) and head gasket (C) from the cylinder (D).



Cylinder Head Inspection

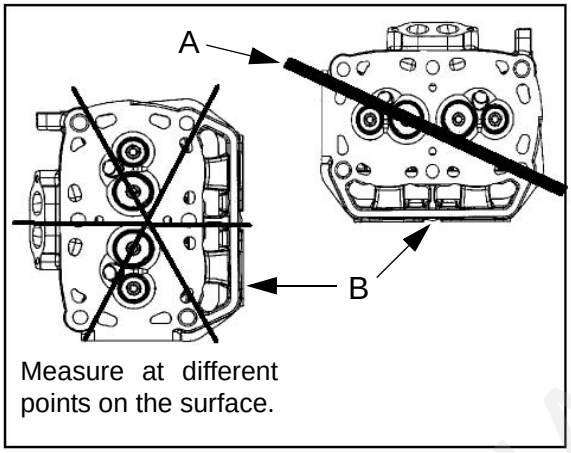
Thoroughly clean cylinder head surface to remove all traces of gasket material and carbon.

CAUTION

Use care not to damage sealing surface.

Cylinder Head Warp

Lay a straight edge (A) across the surface of the cylinder head (B) at several different points and measure warp by inserting a feeler gauge between the straight edge and the cylinder head surface. If warp exceeds the service limit, replace the cylinder head.



Measure at different points on the surface.

Cylinder Head Warp Limit:
.004" (.1016 mm) max

Valve Seal / Spring Service (On Engine)

NOTE: The following procedure is only for servicing the top end of the valve train when replacing valve springs or replacing valve seals.

In some cases the valve train can be serviced while the cylinder head is still on the engine. Keep all parts in order with respect to their location in the cylinder head.

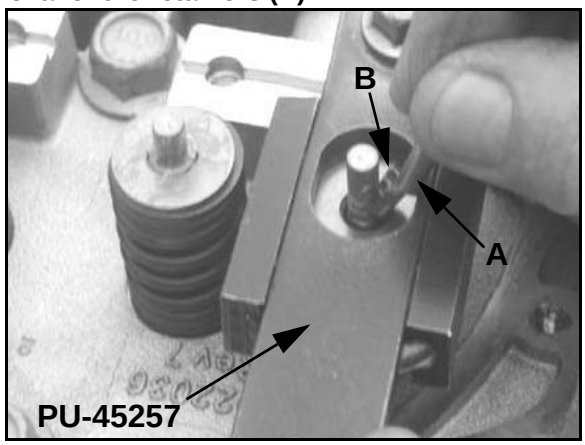
⚠ WARNING

Wear eye protection or a face shield during cylinder head disassembly and reassembly.

1. Having already removed the valve cover, rocker arms and pushrods, align the cylinder to be worked on at top dead center (TDC). Install the Valve Pressure Hose **(PU-45652)** into the spark plug hole. Hook the hose to an air compressor and supply 50 to 100 psi to the hose. This will seat the valves during valve spring removal. Do not remove air supply until reassembly is completed.

2. Using the Valve Spring Compressor **(PU-45257)**, compress the valve spring and remove the valve keepers.

NOTE: A small parts magnet (A) can aid in the removal of the retainers (B).



NOTE: To prevent damage to the valve seals, do not compress the valve spring more than is needed to remove the valve keepers.

3. Remove spring retainer and spring.

4. The valve seals are now serviceable.

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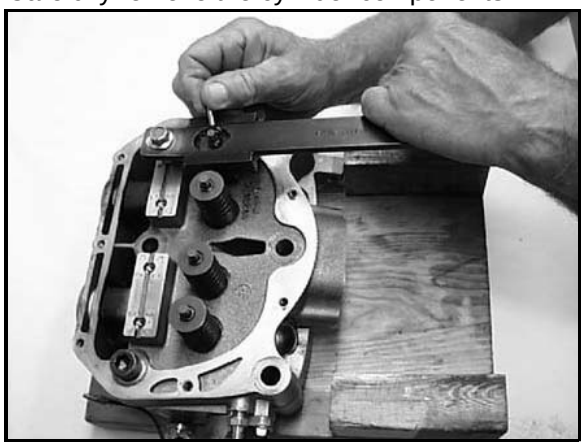
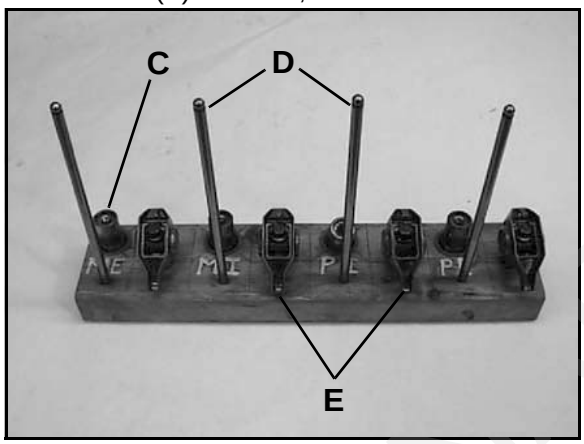
Cylinder Head Disassembly

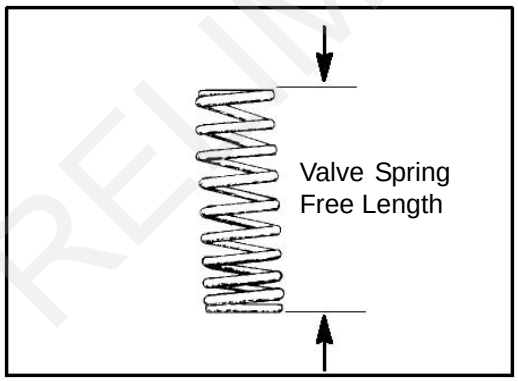
1. Carefully remove the cylinder components.



2. Place the hydraulic lifters (C), pushrods (D), and rocker arms (E) in a safe, clean area.



3. Measure free length of spring with a Vernier caliper. Compare to specifications. Replace spring if measurement is out of specification.

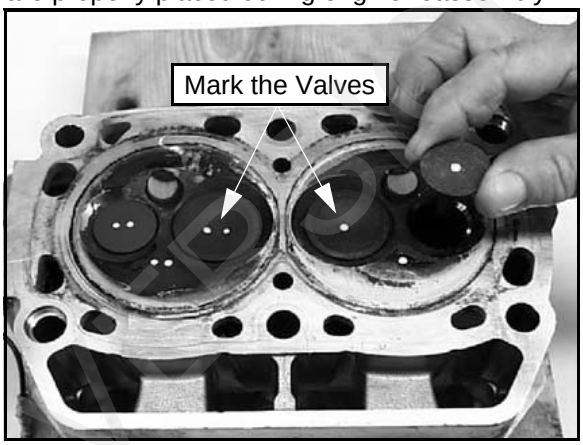


= In. / mm.
Valve Spring Free Length: Std: 1.735" (44.069 mm)

4. Remove valve guide seals.

IMPORTANT: It is recommended to replace seals whenever the cylinder head is disassembled. Hardened, cracked or worn valve seals will cause excessive oil consumption and carbon buildup.

5. Mark the valves with a white pen. Remove the valves from the cylinder head. This will ensure that the valves are properly placed during engine reassembly.



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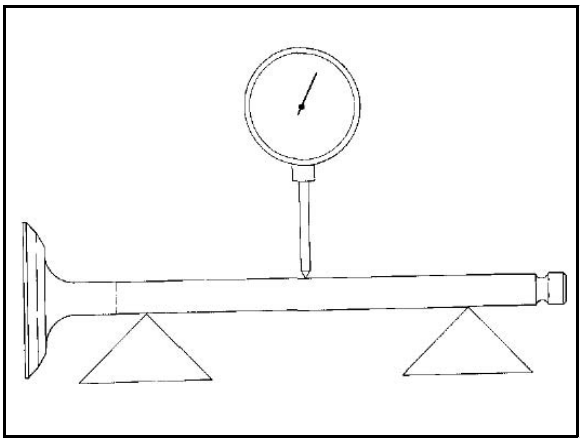
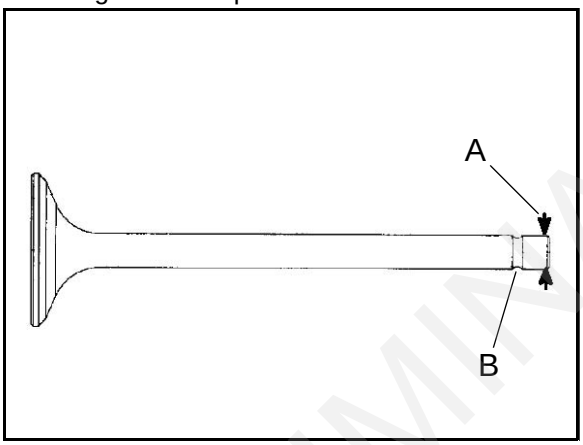
Valve Inspection

1. Remove all carbon from valves with a soft wire wheel or brush.
2. Check valve face for runout, pitting, and burnt spots. To check for bent valve stems, mount valve in a drill or use “V” blocks and a dial indicator.



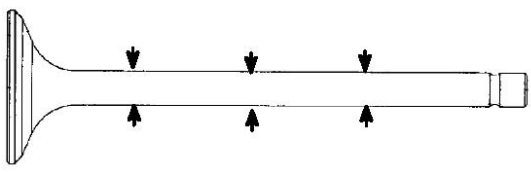
3. Check end of valve stem (A) for flaring, pitting, wear or damage. Inspect split keeper groove (B) for wear or flaring of the keeper seat area.



NOTE: The valves can be re-faced or end ground, if necessary. They must be replaced if extensively worn, burnt, bent, or damaged.

4. Measure diameter of valve stem with a micrometer in three places, then rotate 90 degrees and measure again (six measurements total). Compare to specifications.

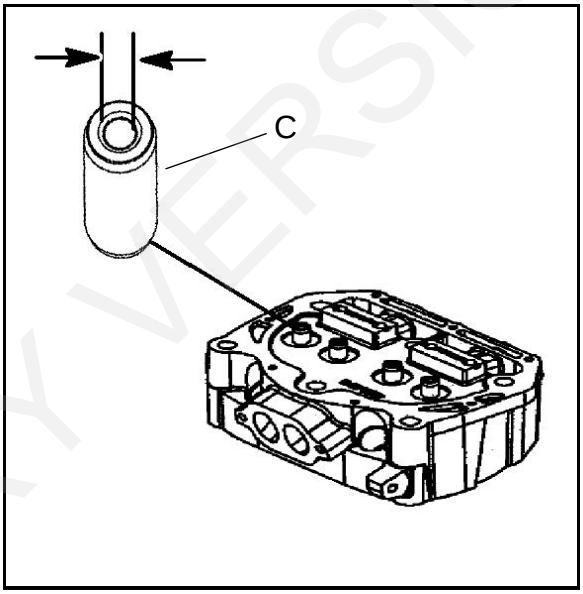
Measure valve stem in several places. Rotate the valve 90 degrees and measure for wear.



= **In. / mm.**

Valve Stem Diameter:
Intake: 0.2356" ± 0.00039"
(5.985 ± 0.01 mm)
Exhaust: 0.2351" ± 0.00039"
(5.972 ± 0.01 mm)

5. Measure valve guide (C) inside diameter at the top middle and end of the guide using a small hole gauge and a micrometer. Measure in two directions.



= **In. / mm.**

Valve Guide I.D.:
0.23672" ± 0.000295"
(6.0617 ± 0.0075 mm)

6. Subtract valve stem measurement from the valve guide measurement to obtain stem to guide clearance.

= **In. / mm.**

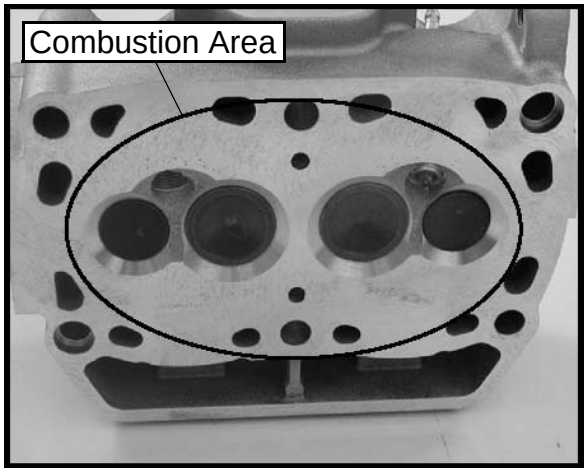
Valve Stem Oil Clearance:
Intake: 0.00228" ± 0.00098"
(0.058 ± 0.025 mm)
Exhaust: 0.00275" ± 0.00098"
(0.087 ± 0.025 mm)

NOTE: The valve guides cannot be replaced. Be sure to measure each guide and valve combination individually.

Combustion Chamber

1. Clean all accumulated carbon deposits from combustion chamber and valve seat area with carbon cleaner and a soft plastic scraper.

IMPORTANT: Do not use a wire brush, metal scraper, or abrasive cleaners to clean the bottom of the cylinder head. Extensive damage to the cylinder head may result. Wear safety glasses during cleaning.



Valve Seat Reconditioning

NOTE: Polaris recommends that the work be done by a local machine shop that specializes in this area.

NOTE: The cylinder head valve guides cannot be replaced.

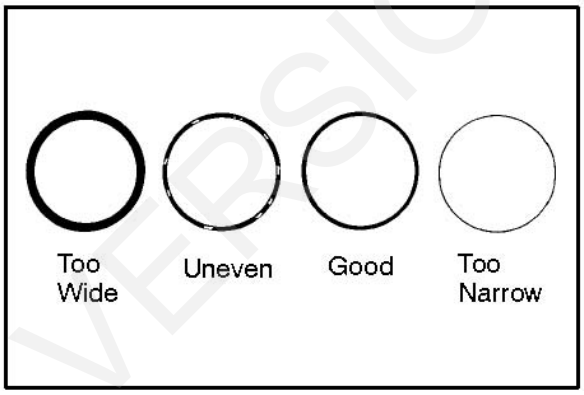
> **WARNING**
>
> Wear eye protection or a face shield during cylinder head disassembly and reassembly.

Valve Seat Inspection

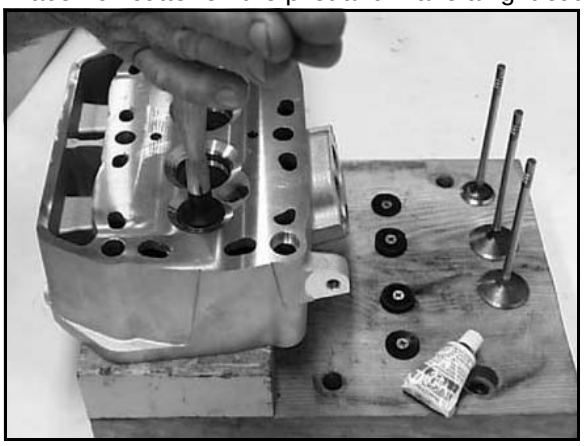
Inspect valve seat in cylinder head for pitting, burnt spots, roughness, and uneven surface. If any of the above conditions exist, the valve seat must be reconditioned. *If the valve seat is cracked the cylinder head must be replaced.*

Follow the manufacturers instructions provided with the valve seat cutters in the commercially available cylinder head reconditioning kit. Abrasive stone seat reconditioning equipment can also be used. Keep all valves in order with their respective seat.

NOTE: Valve seat width and point of contact on the valve face is very important for proper sealing. The valve must contact the valve seat over the entire circumference of the seat, and the seat must be the proper width all the way around. If the seat is uneven, compression leakage will result. If the seat is too wide, seat pressure is reduced, causing carbon accumulation and possible compression loss. If the seat is too narrow, heat transfer from valve to seat is reduced. The valve may overheat and warp, resulting in burnt valves.



1. Install pilot into valve guide.
2. Apply cutting oil to valve seat and cutter.
3. Place 46° cutter on the pilot and make a light cut.



4. Inspect the cut area of the seat:

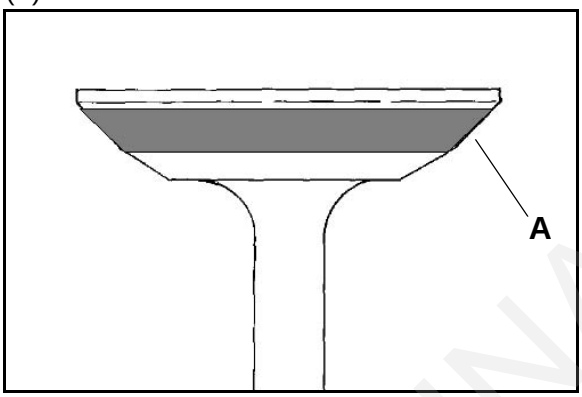
* If the contact area is less than 75% of the circumference of the seat, rotate the pilot 180° and make another light cut.

* If the cutter now contacts the uncut portion of the seat, check the pilot. Look for burrs, nicks, or runout. If the pilot is bent it must be replaced.

* If the contact area of the cutter is in the same place, the valve guide is distorted from improper installation.

* If the contact area of the initial cut is greater than 75%, continue to cut the seat until all pits are removed and a new seat surface is evident. **NOTE:** Remove only the amount of material necessary to repair the seat surface.

5. To check the contact area of the seat on the valve face, apply a thin coating of Prussian Blue™ paste to the valve seat. If using an interference angle (46°) apply black permanent marker to the entire valve face (A).



6. Insert valve into guide and tap valve lightly into place a few times.

7. Remove valve and check where the Prussian Blue™ indicates seat contact on the valve face. The valve seat should contact the middle of the valve face or slightly above, and must be the proper width.

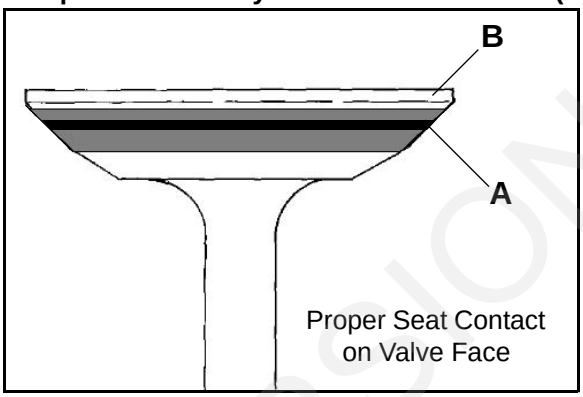
* If the indicated seat contact is at the top edge of the valve face and contacts the margin area (B) it is too high on the valve face. Use the 30° cutter to lower the valve seat.

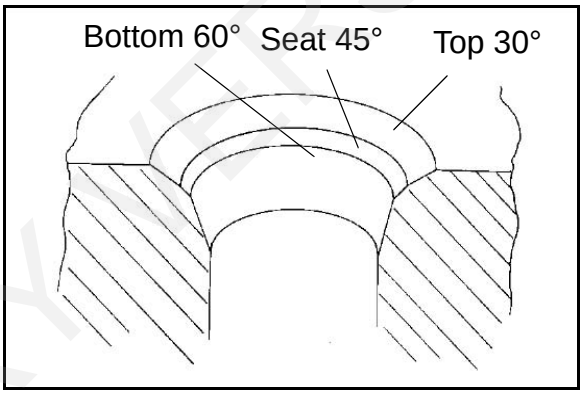
* If too low, use the 60° cutter to raise the seat. When contact area is centered on the valve face, measure seat width.

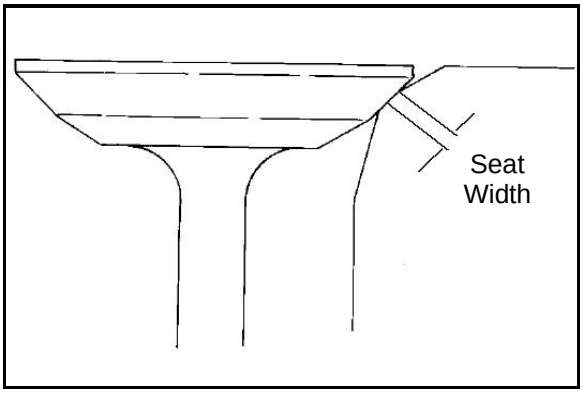
* If the seat is too wide or uneven, use both top and bottom cutters to narrow the seat.

* If the seat is too narrow, widen using the 45° cutter and re-check contact point on the valve face and seat width after each cut.

NOTE: When using an interference angle, the seat contact point on the valve will be very narrow, and is a normal condition. Look for an even and continuous contact point all the way around the valve face (A).







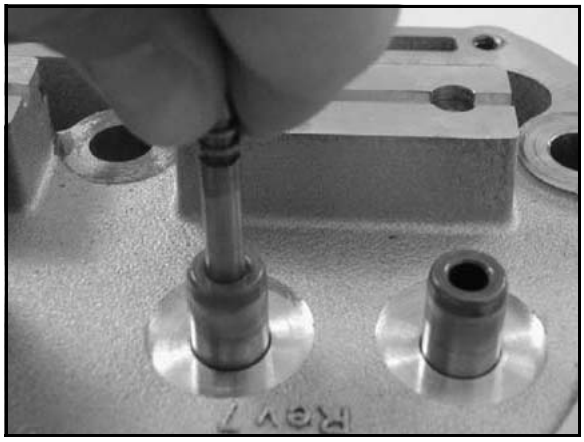
Valve Seat Width:
Intake Std: .028" (.7 mm)
Limit: .055" (1.4 mm)
Exhaust Std: .039” (1.0 mm)
Limit: .071" (1.8 mm)

8. Clean all filings from the area with hot soapy water. Rinse and dry with compressed air.

9. Lubricate the valve guides with clean engine oil, and apply oil or water based lapping compound to the face of the valve.

NOTE: Lapping is not required with an interference angle valve job.

10. Insert the valve into its respective guide and lap using a lapping tool or a section of fuel line connected to the valve stem.



11. Rotate the valve rapidly back and forth until the cut sounds smooth. Lift the valve slightly off of the seat, rotate 1/4 turn, and repeat the lapping process. Do this four to five times until the valve is fully seated, and repeat process for the other valve(s).

12. Thoroughly clean cylinder head and valves.

Cylinder Head Reassembly

NOTE: Assemble the valves one at a time to maintain proper order.

1. Apply engine oil to valve guides and seats.

2. Coat valve stem with molybdenum disulfide grease or synthetic engine oil.

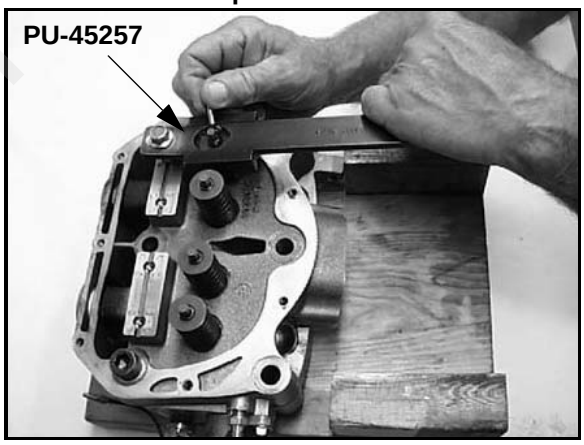
3. Install valve carefully with a rotating motion to avoid damaging valve seal.

4. Valve seals should be installed after the valves are in the head to avoid valve seal damage. Install new valve seals on valve guides.

5. Dip valve spring and retainer in clean engine oil and install.

6. Place retainer on spring and install Valve Spring Compressor **(PU-45257)**. Install split keepers with the gap even on both sides.

NOTE: A small magnet can be used to aid in the installation of the keepers.



7. Repeat procedure for remaining valves. When all valves are installed, tap lightly with soft faced hammer on the end of the valves to seat the split keepers.

NOTE: To prevent damage to the valve seals, do not compress the valve spring more than necessary to install the keepers.

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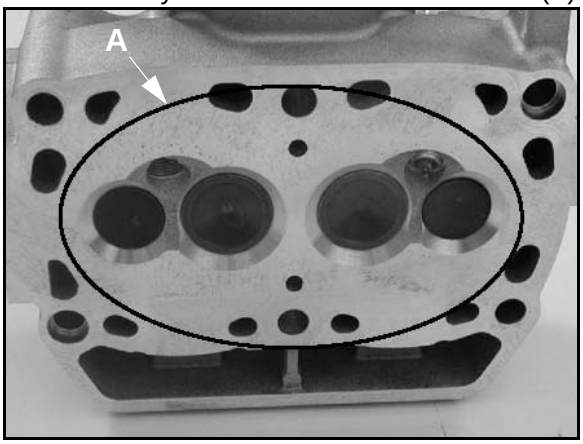
Valve Sealing Test

1. Clean and dry the combustion chamber area (A).



2. Pour a small amount of clean solvent onto the intake port and check for leakage around each intake valve. The valve seats should hold fluid with no seepage.

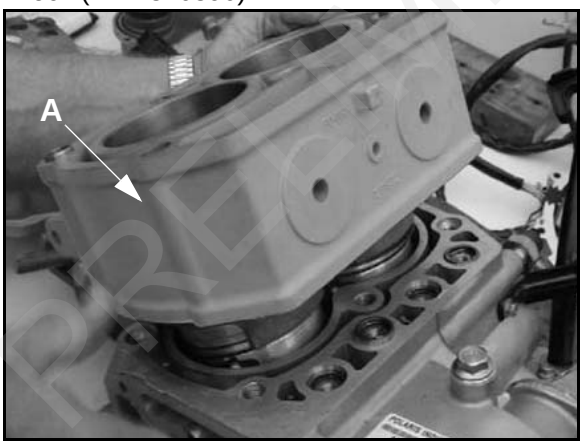
3. Repeat for exhaust valves by pouring fluid into exhaust port.

Cylinder Removal

1. Follow engine disassembly procedures to remove rocker cover and cylinder head.

2. Tap cylinder (A) lightly with a rubber mallet in the reinforced areas only until loose.

3. Rock cylinder forward and backward while lifting it from the crankcase, supporting pistons and connecting rods. Support pistons with Piston Support Block (PN 2870390).

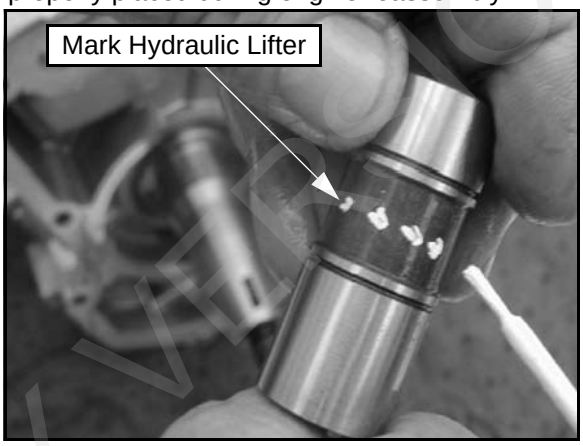


Valve Lifter Removal / Inspection

1. Remove the valve lifters by reaching into the crankcase and pushing the lifter up through the lifter bore by hand.

2. Thoroughly clean the lifters in cleaning solvent and wipe them with a clean, lint-free cloth.

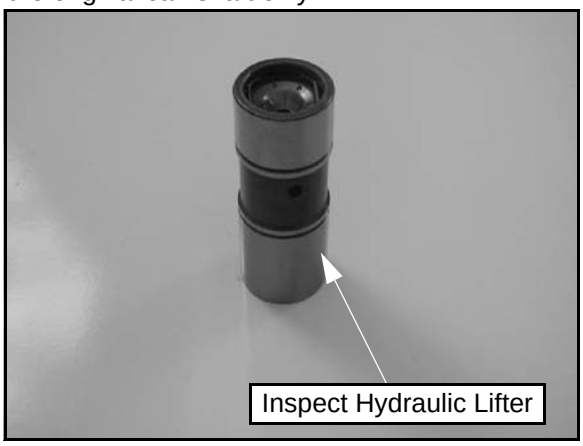
3. Mark the lifters with a white pen if using the lifters for reassembly. This will ensure that the lifters are properly placed during engine reassembly.



4. Check the lifters for wear or scores.

5. Check the bottom end of lifter to make sure that it has a slight convex.

6. If the bottom surface has worn flat, it may be used with the original camshaft only.



NOTE: Lifters that are scored, worn, or if the bottom is not smooth should be replaced with new lifters and cam as an assembly. If replacing the lifters, the camshaft should also be replaced.

Piston Removal

1. Remove the circlip. Mark the piston with a white pen to ensure proper orientation (if reused) during assembly.

NOTE: If the pistons are to be reused, reassemble the pistons in the same cylinder and direction from which they were removed.

NOTE: New pistons are non-directional and can be placed in either cylinder.

2. Remove piston circlip and push piston pin out of piston. If necessary, heat the crown of the piston slightly with a propane torch. **CAUTION:** Do not apply heat to the piston rings. The ring may lose radial tension.

3. Remove top compression ring:

*__Using a piston ring pliers:__ Carefully expand ring and lift it off the piston. **CAUTION:** Do not expand the ring more than the amount necessary to remove it from the piston, or the ring may break.

***By hand:** Placing both thumbs as shown, spread the ring open and push up on the opposite side. Do not scratch the ring lands.

4. Repeat procedure for second ring.

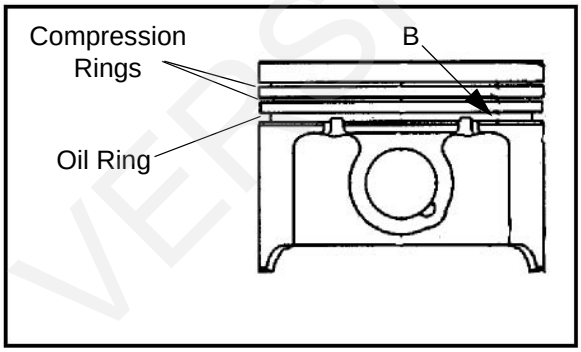
5. Remove the oil control ring.

The oil control ring is a three piece design consisting of a top and bottom steel rail and a center expander section. The top rail has a locating tab on the end which fits into a notch (B) in the upper oil ring land of the piston.

To Remove:

A) Remove the top rail first followed by the bottom rail.

B) Remove the expander.



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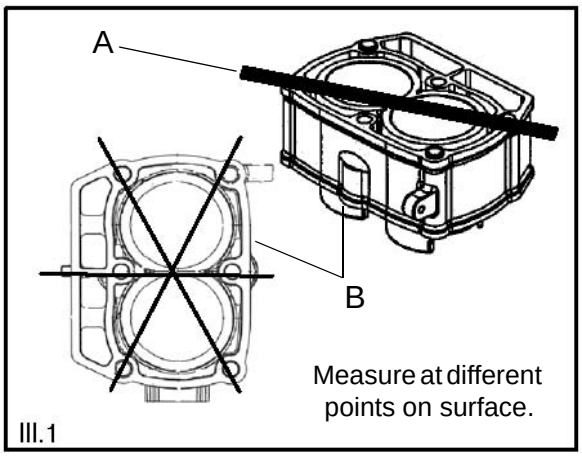
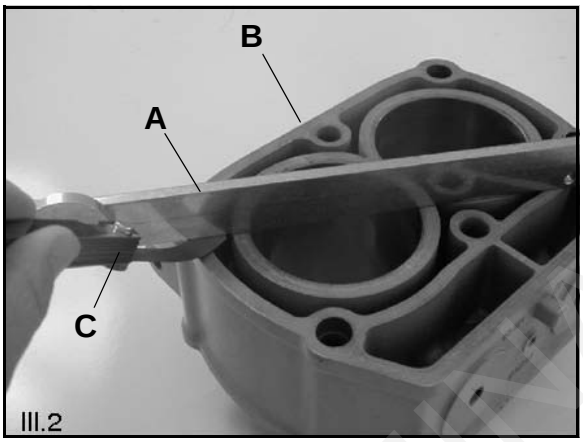
Cylinder Inspection

1. Remove gasket material from cylinder sealing surfaces.
2. Inspect top of the cylinder (B) for warp using a straight edge (A) and feeler gauge (C). Refer to Ill. 1 and Ill. 2.



Ill.1

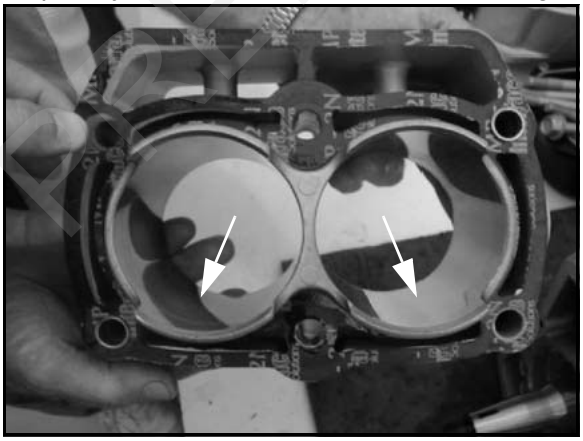


Ill.2

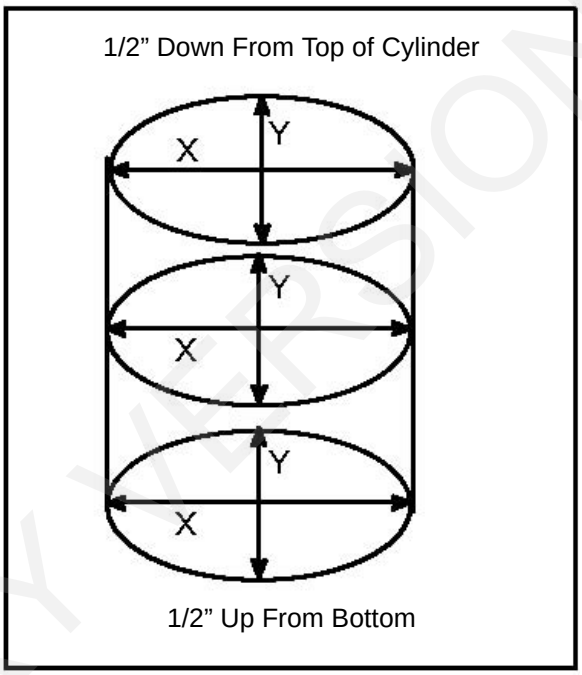
= In. / mm.

Cylinder Warp: .004" (0.1 mm) Max.

3. Inspect cylinder for wear, scratches, or damage.



4. Inspect cylinder for taper and out of round with a telescoping gauge or a dial bore gauge. Measure in two different directions, front to back and side to side, on three different levels (1/2" down from top, in the middle and 1/2" up from bottom). Record measurements. If cylinder is tapered or out of round beyond .002", the cylinder must be replaced.



= In. / mm.

Cylinder Taper Limit:
.002" (.050 mm) Max.
Cylinder Out of Round:
Limit: .002" (.050 mm) Max.

Standard Bore Size
(Both Cylinders): 3.1496" (80 mm)

Cylinder Hone Selection and Honing Procedure

Cylinders may be wet or dry honed depending upon the hone manufacturer's recommendations. Wet honing removes more material faster and leaves a more distinct pattern in the bore.

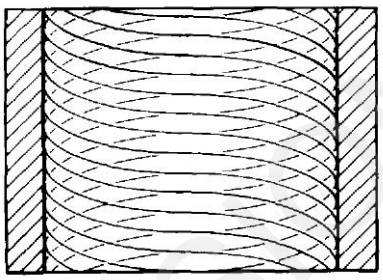
CAUTION
A hone which will straighten as well as remove material from the cylinder is very important. Using a common spring loaded glaze breaker for honing is not advised for nicasil cylinders. Polaris recommends using a rigid hone or arbor honing machine.

Honing To Deglaze

A finished cylinder should have a cross-hatch pattern to ensure piston ring seating and to aid in the retention of the fuel/oil mixture during initial break in. Hone cylinder according to hone manufacturer's instructions, or these guidelines:

- Honing should be done with a diamond hone. Cylinder could be damaged if the hone is not hard enough to scratch the nicasil lining.
- Use a motor speed of approximately 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 (or cylinder centered on arbor) and to bring the stones approximately 1/2" (1.3 cm) above and below the bore at the end of each stroke.
- Release the hone at regular intervals and inspect the bore to determine if it has been sufficiently de-glazed, and to check for correct cross-hatch.
  NOTE: Do not allow cylinder to heat up during honing.
- After honing has been completed, inspect cylinder for thinning or peeling.

If cylinder wear or damage is excessive, it will be necessary to replace the cylinder. The cylinders are lined with a nicasil coating and are not repairable. Hone only enough to de-glaze the outer layer of the cylinder bore.



Example of Cross Hatch Pattern

IMPORTANT: Clean the cylinder after honing

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 Lubricant.

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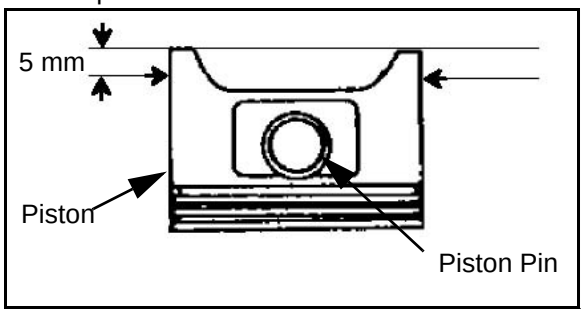
Piston-to-Cylinder Clearance

Measure piston outside diameter at a point 5 mm up from the bottom of the piston at a right angle to the direction of the piston pin.

Subtract this measurement from the maximum cylinder bore measurement obtained during the “Cylinder Inspection” procedure.

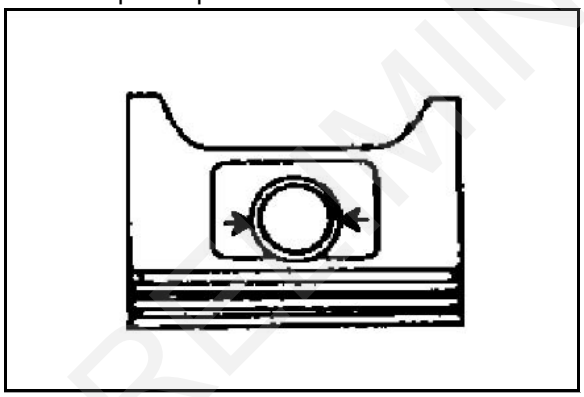


Piston to Cylinder Clearance:
See “800 EFI Engine Service Specifications” on page 3.8

Piston O.D.:
See “800 EFI Engine Service Specifications” on page 3.8

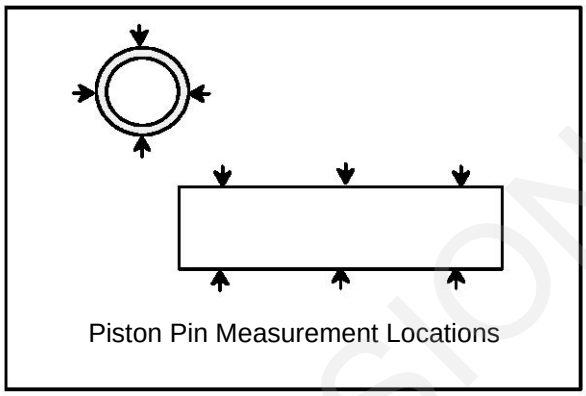
Piston / Rod Inspection

1. Measure piston pin bore.



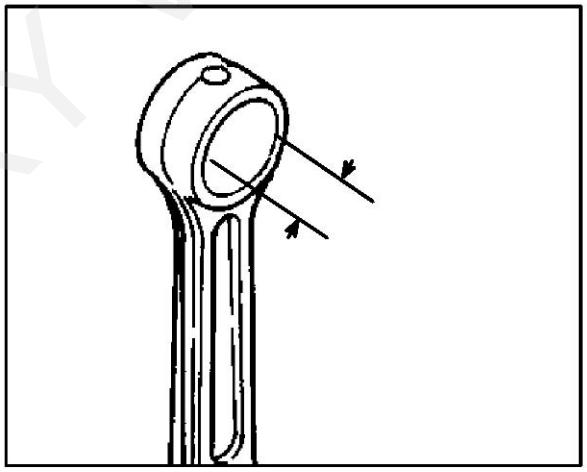
Piston Pin Bore:
See “800 EFI Engine Service Specifications” on page 3.8

2. Measure piston pin O.D. Replace piston and/or piston pin if out of specification.



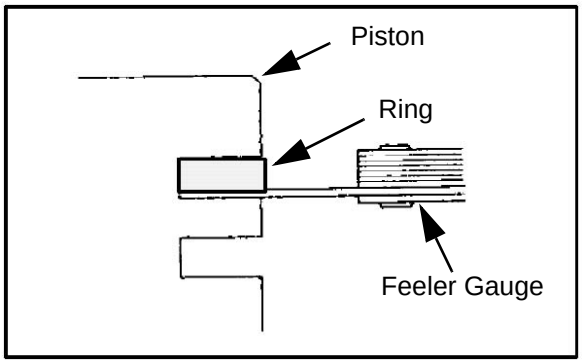
Piston Pin O.D.:
See “800 EFI Engine Service Specifications” on page 3.8

3. Measure connecting rod small end ID.



Connecting Rod Small End I.D.:
See “800 EFI Engine Service Specifications” on page 3.8

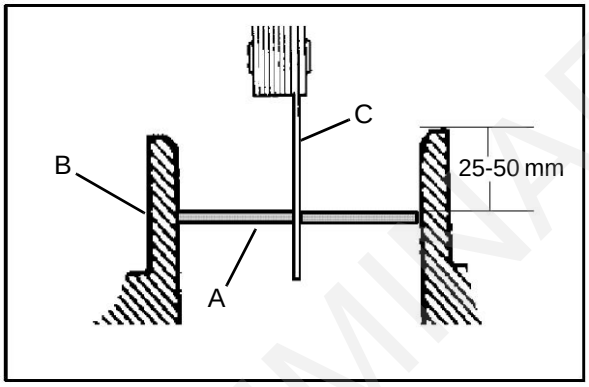
4. Measure piston ring to groove clearance by placing the ring in the ring land and measuring with a thickness gauge. Replace piston and rings if ring-to-groove clearance exceeds service limits.



See "800 EFI Engine Service Specifications" on page 3.8

Piston Ring Installed Gap

1. Place each piston ring (A) inside cylinder (B) using a piston to push ring squarely into place as shown.



**Piston Ring Installed Gap:
See "800 EFI Engine Service Specifications" on page 3.8**

NOTE: Ring should be installed with the mark facing upward.

2. Measure installed gap with a feeler gauge (C) at both the top and bottom of the cylinder.

IMPORTANT: A difference in end gap indicates cylinder taper. The cylinder should be measured for excessive taper and out of round.

3. If the bottom installed gap measurement exceeds the service limit, replace the rings. If ring gap is smaller than the specified limit, file ring ends until gap is within specified range.

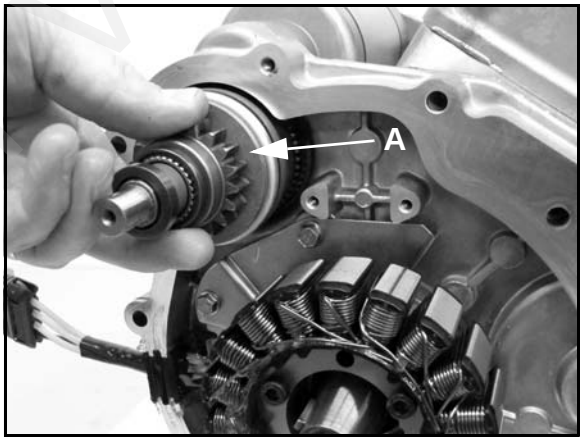
NOTE: Always check piston ring installed gap after re-boring a cylinder or when installing new rings. A re-bored cylinder should always be scrubbed thoroughly with hot soapy water, rinsed, and dried completely. Wipe cylinder bore with oil immediately to remove residue and prevent rust.

Starter Drive Bendix Removal / Inspection

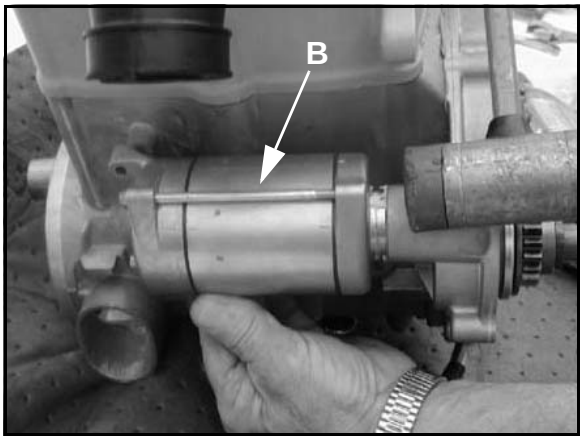
1. Remove stator housing bolts and remove housing.
2. Remove the flywheel nut and washer. Install Flywheel Puller (PN 2871043) and remove flywheel.

NOTE: Do not thread the puller bolts into the flywheel more than 1/4" or stator coils may be damaged.

3. Remove starter bendix assembly (A). Note the thrust washers located on both sides of the bendix.



4. Inspect the thrust washer for wear or damage and replace if necessary.
5. After the bendix is removed, remove the two bolts retaining the starter. Tap on the starter assembly (B) with a soft faced mallet to loosen the starter from the crankcase.



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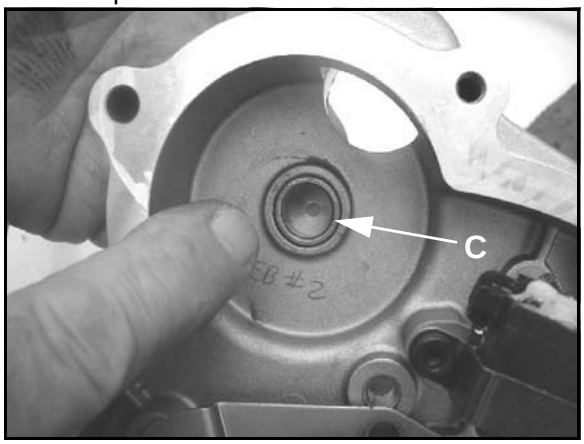
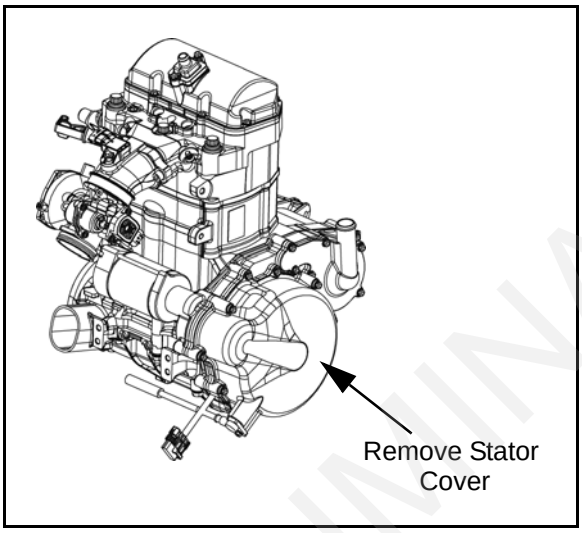
6. Inspect gear teeth on starter drive. Replace starter drive if gear teeth are cracked, worn, or broken.

7. Inspect the bendix bushing (C) in the mag cover for wear. Replace as needed.



Flywheel / Stator Removal / Inspection

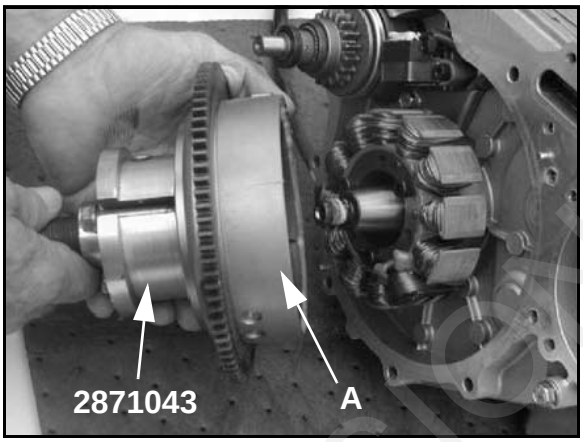
1. Remove stator cover bolts and remove stator cover.



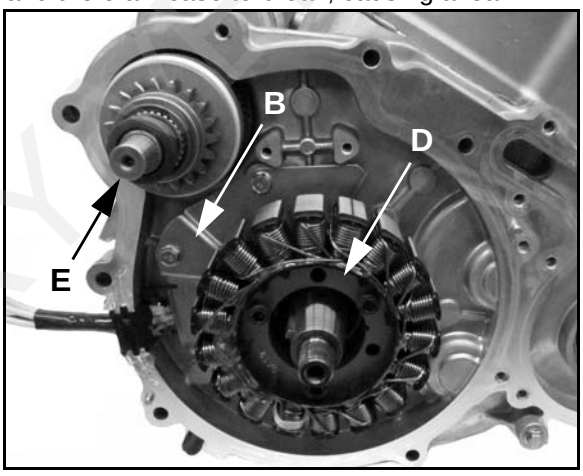
2. Remove flywheel nut and washer.

3. Install Flywheel Puller **(PN 2871043)** and remove flywheel (A).

> **CAUTION**
>
> Do not thread the puller bolts into the flywheel more than 1/4" or stator coils may be damaged.



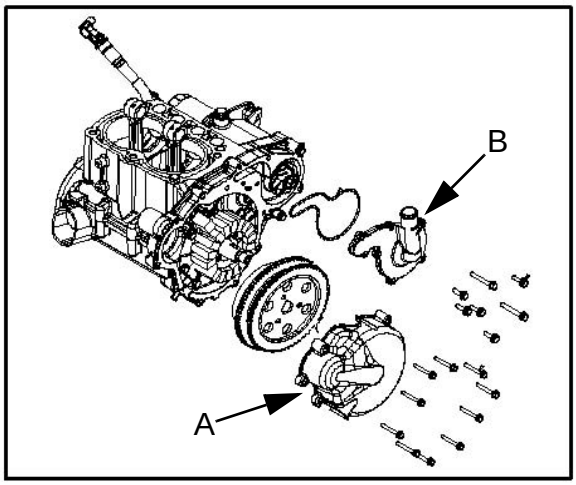
4. Use caution when removing the wire holddown (B) and the stator assembly (D). **Do not tap or bump the gear /stator housing cover or the stator.** This could cause the seal around the gear/stator housing cover and the crankcase to break, causing a leak.



5. Remove the bendix (E) if necessary.

Engine Crankcase Disassembly / Inspection

1. Remove stator cover (A) and water pump cover (B).



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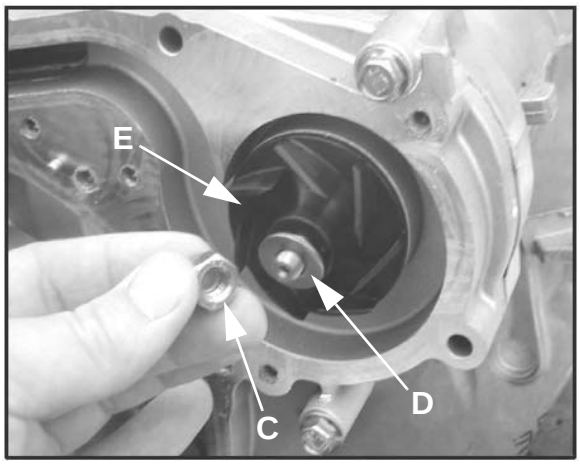
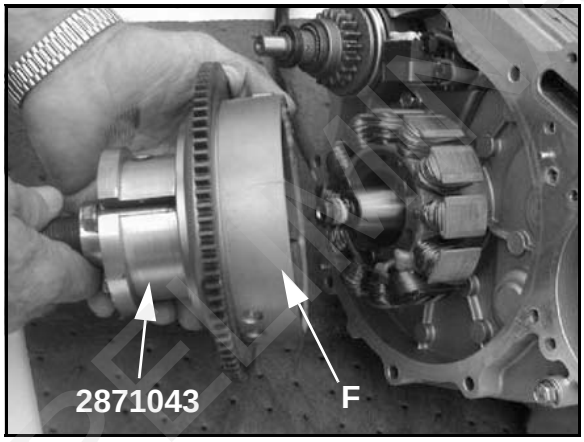
2. Remove the nut (C), washer (D) and water pump impeller (E). Remove part of the water pump seal behind the impeller.



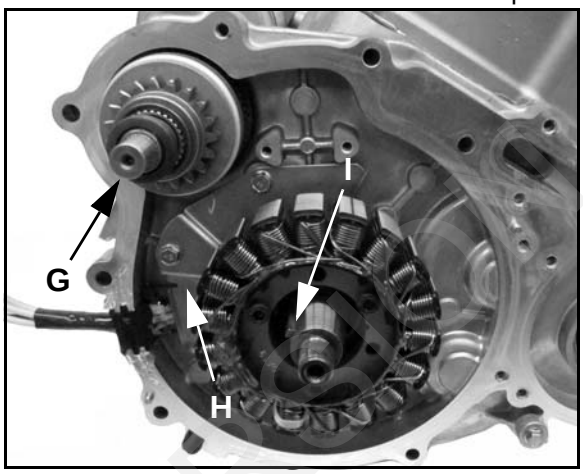
3. Remove flywheel nut and washer.

4. Install Flywheel Puller **(PN 2871043)** and remove flywheel (F).

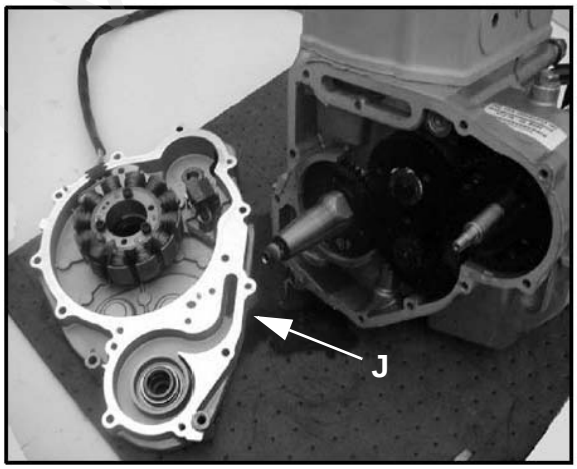
> **CAUTION**
>
> Do not thread the puller bolts into the flywheel more than 1/4" or stator coils may be damaged.



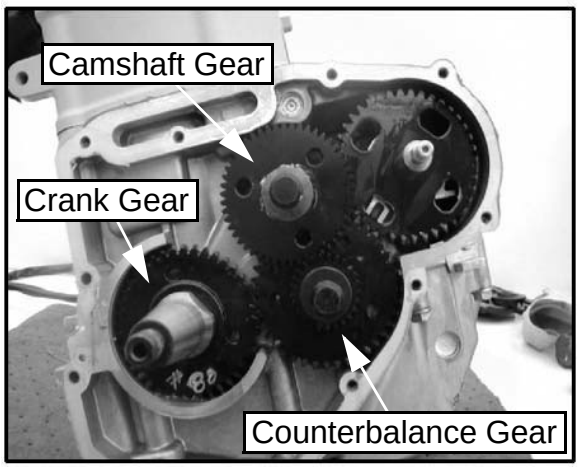
5. Remove the starter bendix (G), wire holddown plate (H), and the woodruff key (I) from the crankshaft. The stator does not have to be removed at this point.



6. Remove the gear/stator housing bolts and remove the gear/stator housing cover (J) and gasket from the crankcase. Be sure to catch the excess oil from the crankcase.



7. Note the position of the gears in the photo.



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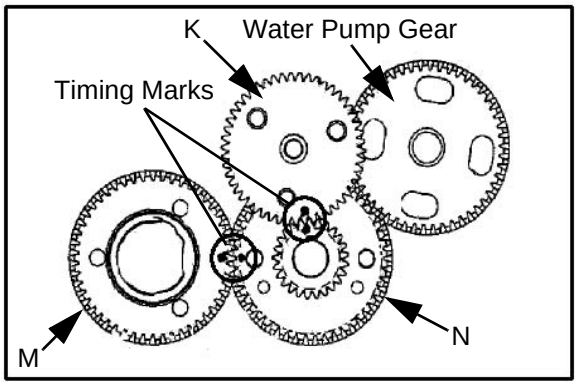
8. Use a white pen to accent the timing marks on the following gears: camshaft gear (K), crankshaft gear (M), or counterbalance gear (N) This will ensure proper gear alignment and timing during reassembly of the gears.

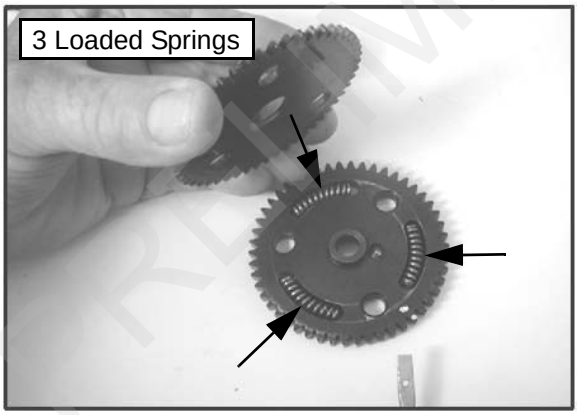


NOTE: If replacing one of the gears, it is recommended that all of the gears be replaced. A gear kit is available.

9. Use the Cam Gear Tooth Alignment Tool (PU-45497-2) to align and hold the cam split gear assembly. With the split gear aligned, remove the bolt and cam gear assembly.

NOTE: Install the Cam Gear Tooth Alignment Tool (PU-45497-2) into the assembly hole counter clockwise from the timing mark (see page 3.42).

10. Inspect the cam gear teeth and check to make sure there is spring tension offsetting the teeth between the two gears. If there is no tension, check the springs inside of the cam gear assembly.



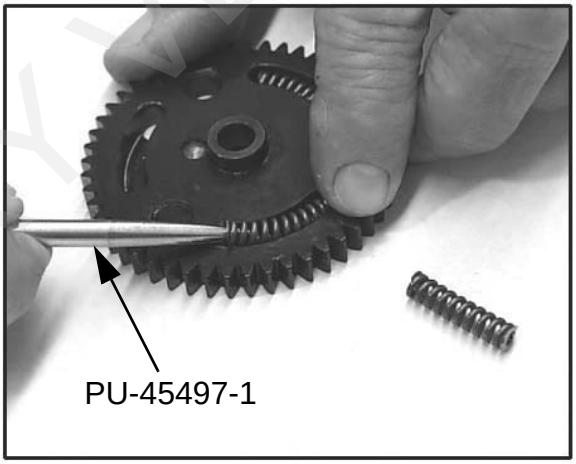
11. The cam gear assembly contains three loaded springs. To open the cam gear assembly:

- Place the cam gear on a flat surface with the timing mark side facing up.
- While holding both gears together, lightly work a small flathead screwdriver between the two gears.
- Remove the top gear. The springs should stay in place.

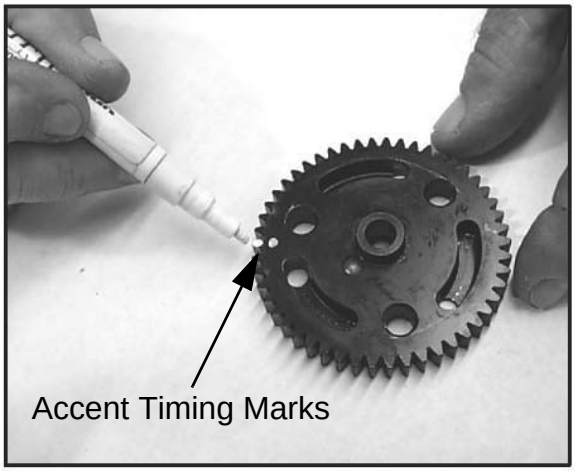
⚠ CAUTION

Wear safety glasses at all times. Use caution when working with the top gear.
The springs could cause injury or become lost should they pop out.

12. Remove all three springs using one of the tapered pins from **(PU-45497-1)**.



13. With a white marking pen, accent the timing mark on the gear that contains the springs.



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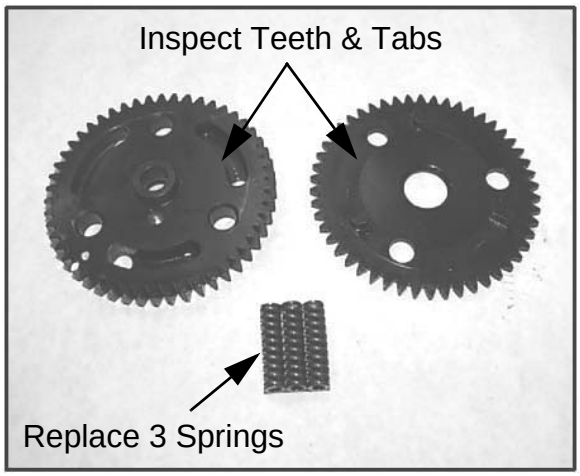
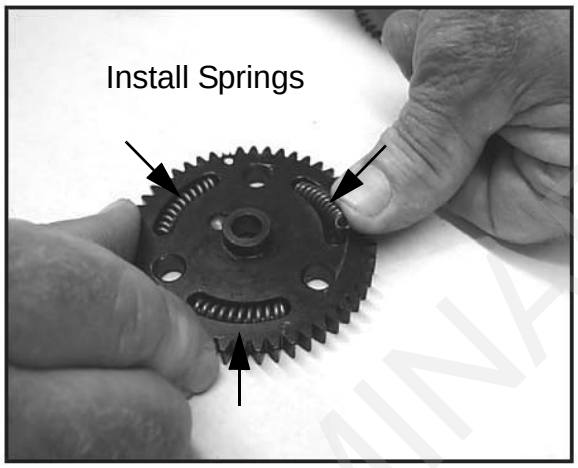
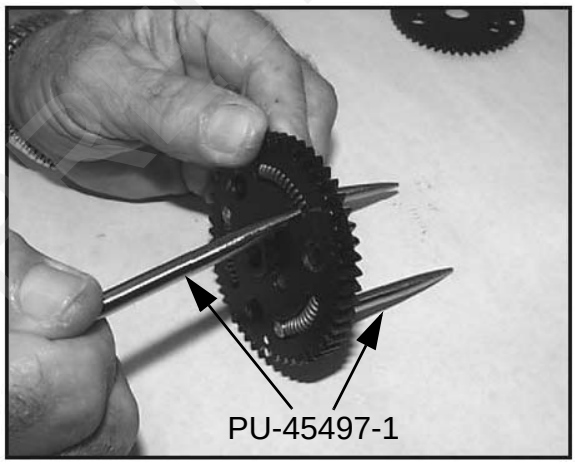
14. Inspect the gear teeth and the three tabs on the gears for wear.



15. Install the new springs into the grooves of the cam gear.



16. Insert the pointed dowels from the Tapered Pins **(PU-45497-1)** into the cam gear.

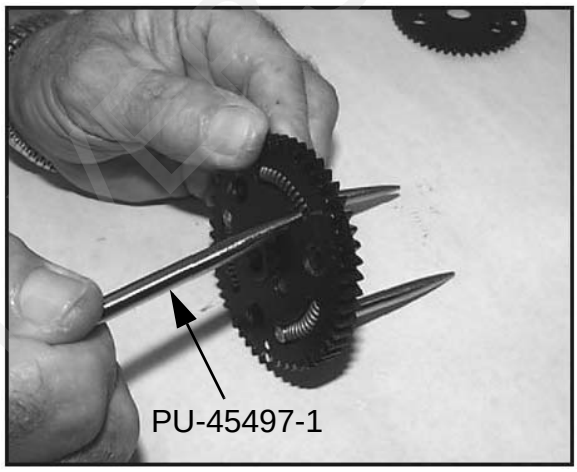


To Assemble:

- Hold the spring with one finger.
- Start the pointed end of the tapered pin into the cam gear hole. Slowly push the dowel through the hole until the end of the dowel is almost flush with the spring.
- Perform this procedure with all three tapered pins.
- Do not push the pins too far through or the springs will pop out.

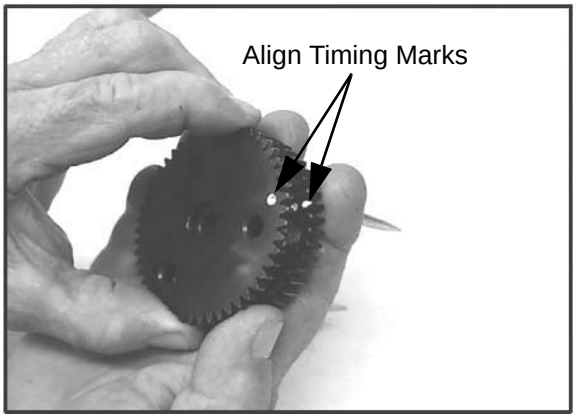
NOTE: Do not remove the tapered pins at this time.

17. Note in photograph that the Tapered Pins **(PU-45497-1)** are below flush with end of the springs. This helps to align the three gear tabs during the next step.

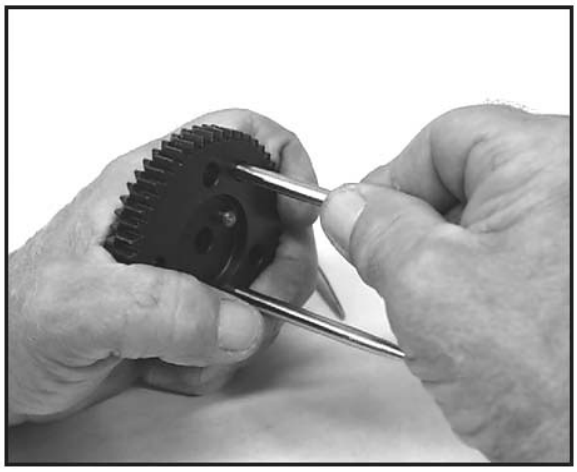


Cam Gear Spring Installation Tool Kit:
(PU-45497)
Tapered Pins:
(PU-45497-1)
Cam Gear Tooth Align Tool:
(PU-45497-2)

18. Line up the two gears using the timing marks and the three gear tabs referenced earlier. Push the gears back together, using both hands and hold securely.

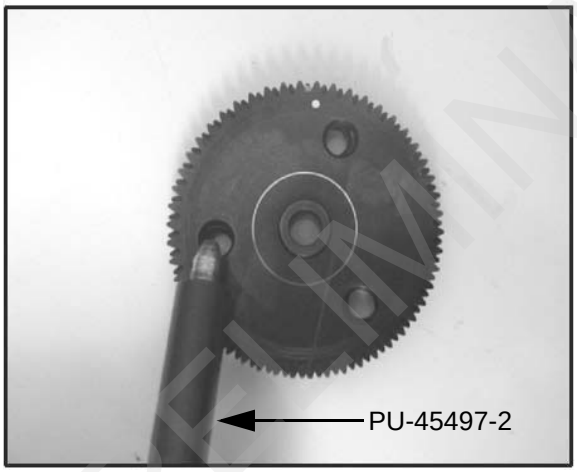


19. Once the gears are pressed together, firmly hold the gears together with one hand. Carefully remove the Tapered Pins **(PU-45497-1)** by pulling them out one at a time with the other hand.



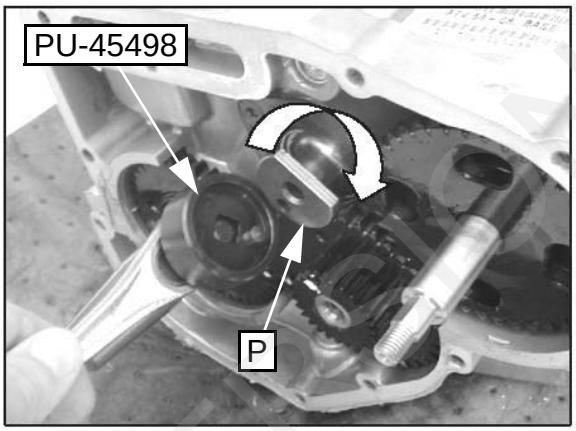
20. After the tapered pins are removed, be sure the cam gear assembly is held together tightly. Place the cam gear assembly on a flat surface. Use the Cam Gear Tooth Alignment Tool **(PU-45497-2)** to align the teeth of the cam gears, as shown in the picture.

NOTE: Install the Cam Gear Alignment Tool (PU-45497-2) into one assembly hole counter clockwise from the timing mark.



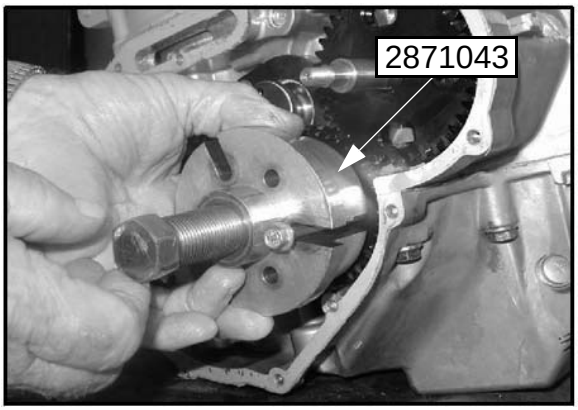
NOTE: For ease of installing the Cam Gear Alignment Tool (PU-45497-2), use a twisting motion when pushing down on the tool.

21. To remove the balance shaft gear, the flat side of the camshaft (P) must face the balance shaft gear. To rotate the camshaft, use the Cam Spanner Wrench (PU-45498) to rotate the camshaft so the flat side of the camshaft faces the balance shaft gear.

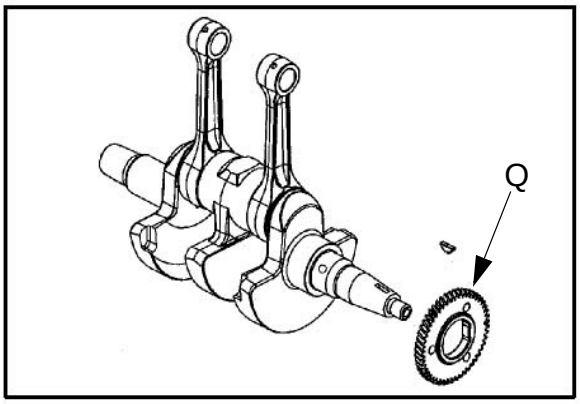


NOTE: This Cam Spanner Wrench (PU-45498) is only needed to rotate the camshaft when the entire valve train is assembled. If the rocker arms are removed, the cam-shaft can be turned by hand.

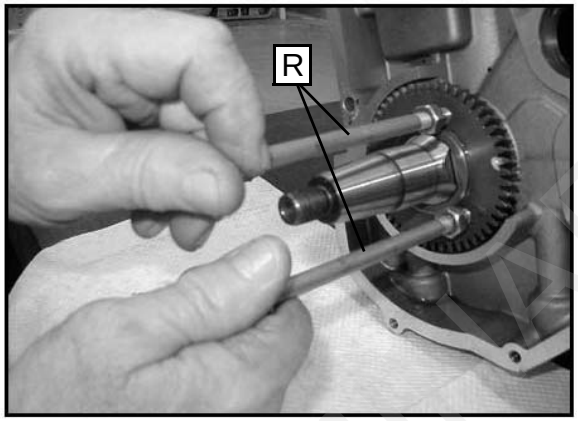
22. Remove the bolt and nut from the balance shaft gear. Try to remove the balance shaft gear. If the gear does not come off manually, use the Flywheel Puller (PN 2871043) to remove the balance shaft gear.



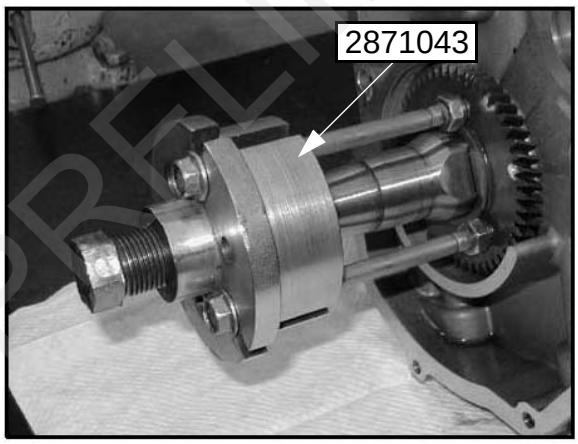
23. Inspect the crankshaft gear (Q) for broken or worn teeth. If the crankshaft gear does not need to be replaced, it does not need to be removed. If the crankshaft gear is damaged, remove the crankshaft gear with the Flywheel Puller **(PN 2871043).**



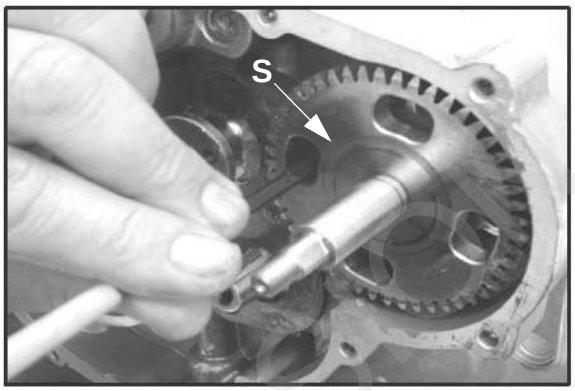
24. Install the two puller bolts (R). Tighten the puller bolts up so that the bolts are at equal length.



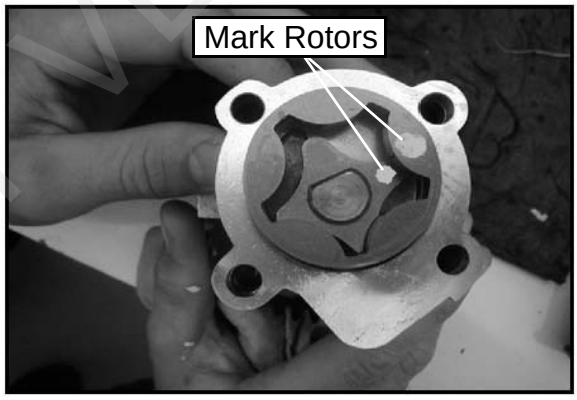
25. Install the Flywheel Puller (**PN 2871043**) and remove the crankshaft gear, if needed.



26. Rotate the water/oil pump gear (S), so that all four bolts are visible though the gear. Remove the four bolts with a hex wrench. Pull out the pump.

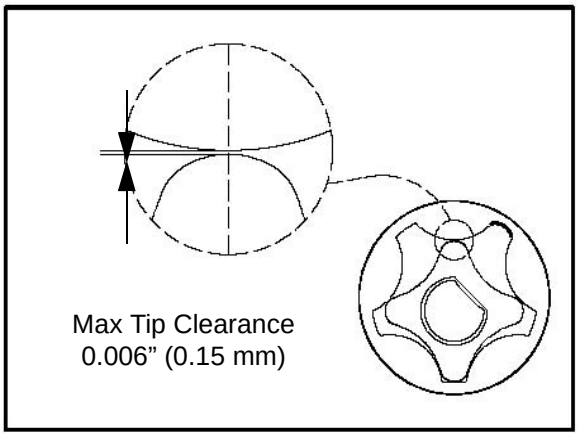


27. Inspect the oil pump rotors for wear. Mark the rotors with a white pen to ensure upon reassembly that the correct sides of the rotors are installed and mesh with the same edges as previously installed.

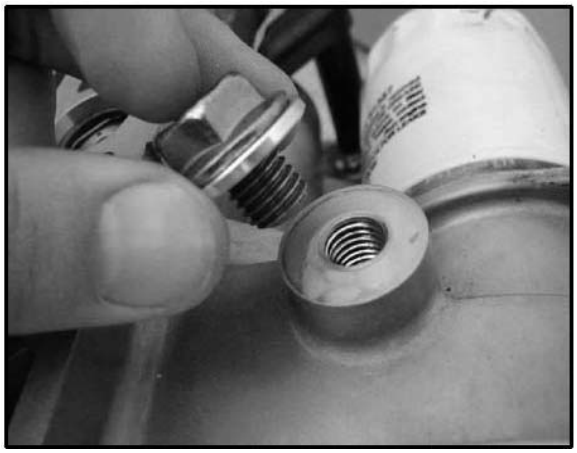


NOTE: If replacing the old rotors, new replacement rotors will fit into the original oil/water pump housing.

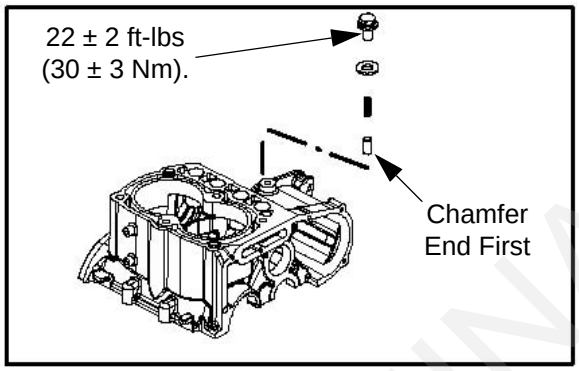
28. Use a feeler gauge to measure the clearance between the two rotors. Measure the gap between the two rotor tips as shown below. **The clearance should not exceed 0.006" (0.15 mm)**.



29. Remove the oil pressure relief. The oil pressure relief consists of a bolt, washer, spring, and valve (dowel). Inspect the valve (dowel) for signs of possible obstructions. Use compressed air to blow out any debris.



30. Reinstall the valve (dowel chamfered end first). Install the spring, washer, and bolt. Torque to specification.



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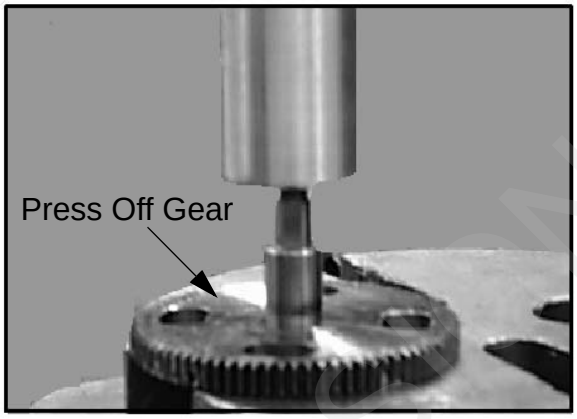
Oil Pressure Relief Bolt: **22 ± 2 ft-lbs (30 ± 3 Nm)**

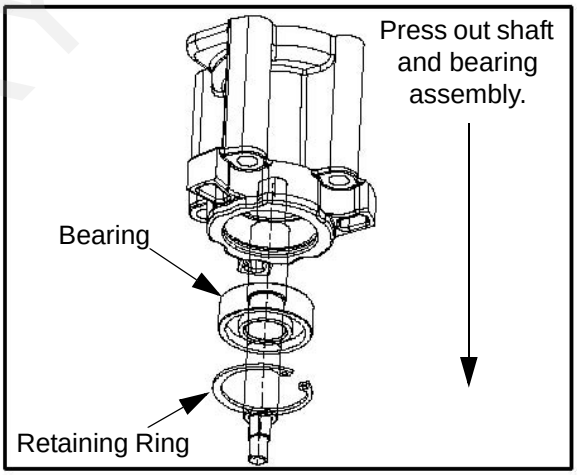
NOTE: Be sure to place the tapered end of the valve (dowel) in first. If the valve is installed incorrectly, oil pressure and oil priming problems will occur.

31. Carefully press the gear off the assembly while supporting the housing assembly.

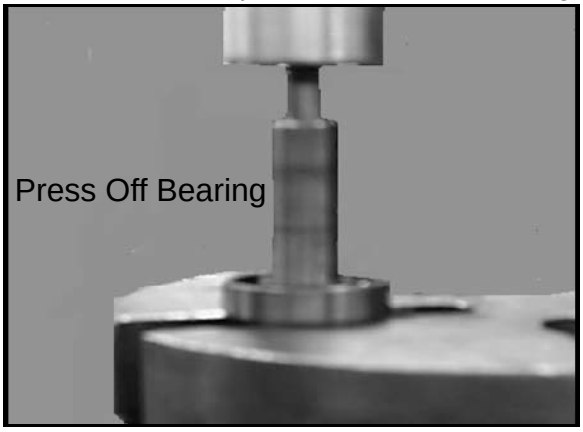


CAUTION
Wear appropriate safety gear during this procedure. Protective gloves, clothing and eye wear are required.

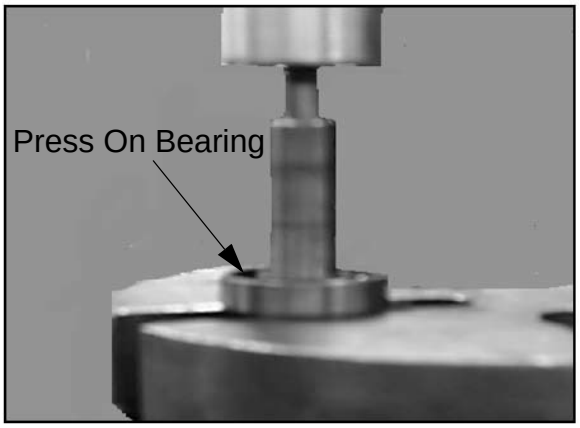
32. Remove snap ring from the assembly. Place housing in a support and press out the bearing/shaft assembly.



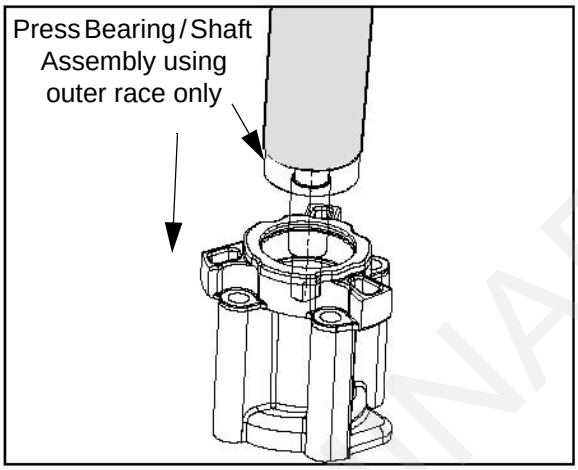
33. Place the shaft in a press to remove the bearing.



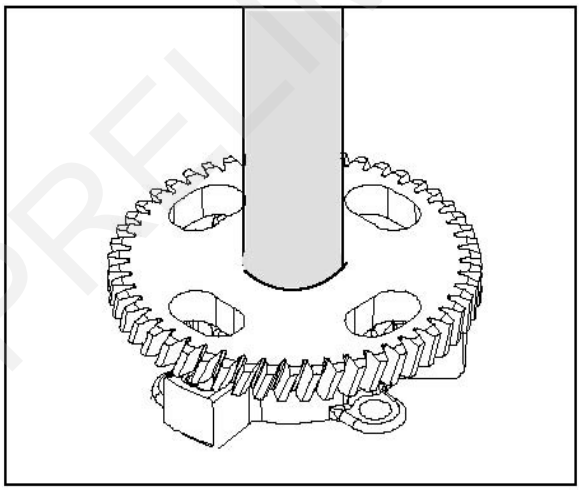
34. Press shaft into the new bearing.



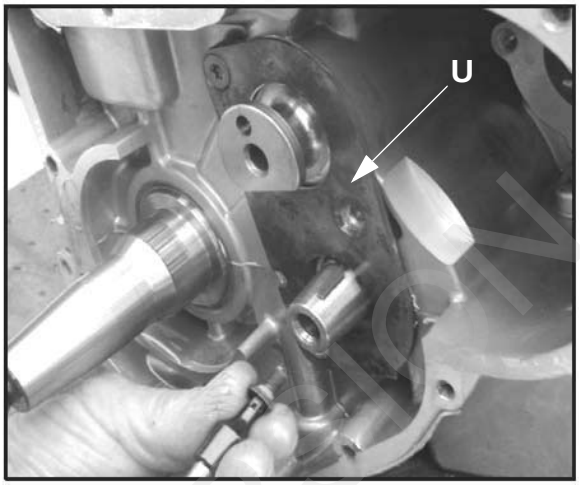
35. Press the bearing/shaft assembly using the bearing's outer race. Do not use the shaft to press the assembly into the housing, as bearing damage may result. Install retaining ring.



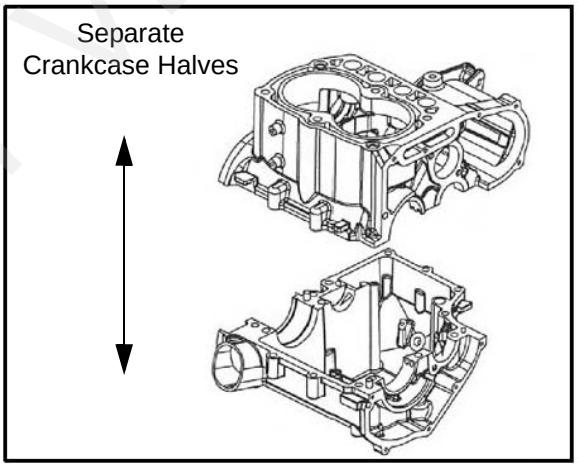
36. Press gear onto shaft while supporting the housing.



37. Remove thrust plate (U).



38. Remove PTO end engine mount. Remove crankcase bolts. Tap on the reinforced areas on the cases using soft hammer. Carefully separate the two crankcase halves.



NOTE: Only remove the oil baffle if the baffle is damaged. When removing the oil baffle bolts, use a heat gun to heat the bolts and loosen the Loctite™. This will prevent any possible damage to the bolts or to the crankcase casting.

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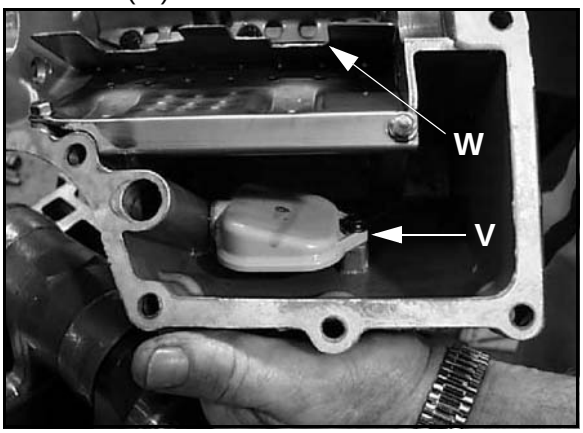
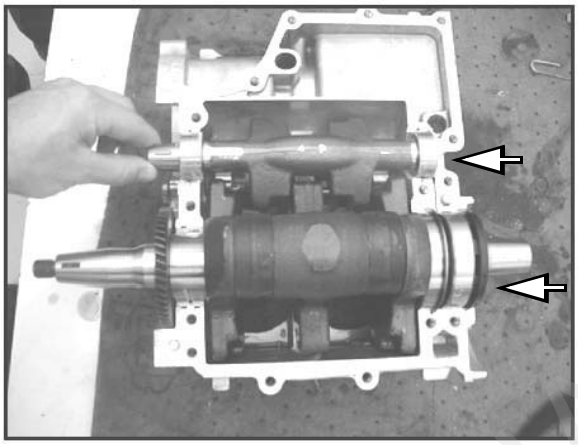
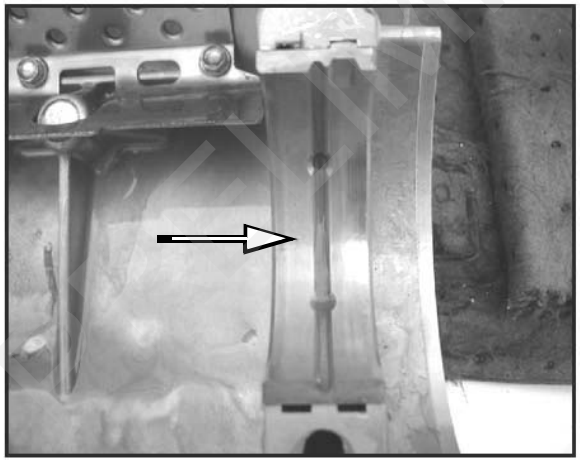
39. Remove and clean oil pick up (V) and oil baffle weldment (W).



40. Remove balance shaft and crankshaft.

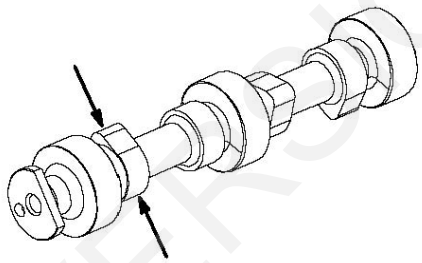


41. Remove and inspect crankshaft main journal bearings for abnormal wear. **It is recommended to replace the bearings anytime the engine is disassembled**.



Camshaft Inspection

1. Thoroughly clean the cam shaft.
2. Visually inspect each cam lobe for wear, chafing or damage.
3. Measure height of each cam lobe using a micrometer. Compare to specification.


Cam Lobe Height

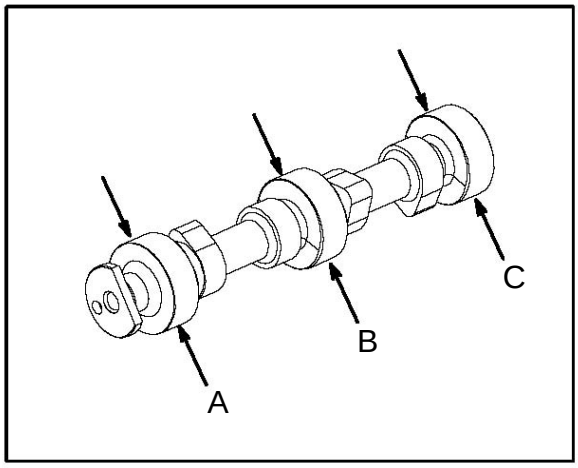
= **In. / mm.**

Cam Lobe Height

Intake (Std):
1.357” (34.477 mm)

Exhaust (Std.):
1.342” (34.096 mm)

4. Measure camshaft journal outside diameters (O.D.).



= In. / mm.

Camshaft Journal O.D.
A. (MAG) 1.654" ± .00039" (42 ± .010 mm)
B. (CTR) 1.634" ± .00039" (41.50 ± .010 mm)
C. (PTO) 1.614" ± .00039" (41 ± .010 mm)

5. Measure ID of camshaft journal bores.

= In. / mm.

Camshaft Journal Bore I.D.
MAG: 1.656" ± 0.00039" (42.07± 0.010 mm)
CTR: 1.637" ± 0.00039" (41.58 ± 0.010 mm)
PTO: 1.617" ± 0.00039" (41.07 ± 0.010 mm)

6. Calculate oil clearance by subtracting journal O.D.s from journal bore I.D.s. Compare to specification.

= In. / mm.

Calculated Camshaft Oil Clearance:
Std: 0.0027" (.070 mm)
Limit: .0039" (.10 mm)

NOTE: Replace camshaft if damaged or if any part is worn past the service limit.

NOTE: Replace the engine crankcase assembly if camshaft journal bores are damaged or worn excessively.

ENGINE REASSEMBLY

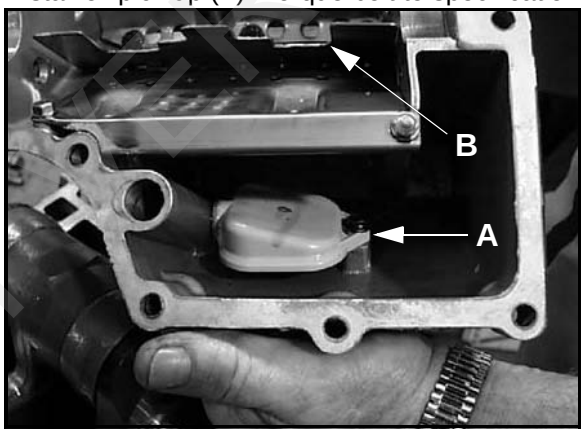
Crankcase Reassembly

CAUTION

After any reassembly or rebuild, the engine must be primed using the Oil Priming Adapter (PU-45778) and a 3/4-full oil filter before initial start-up (see “Oil Pump Priming”).

NOTE: Before assembly, clean the bolts and bolt holes with Loctite Primer N (commercially available) to remove any debris. This will ensure proper sealing when installing bolts.

1. Install oil pick up (A). Torque bolt to specification.



2. Install oil baffle weldment (B). Torque bolts to specification.

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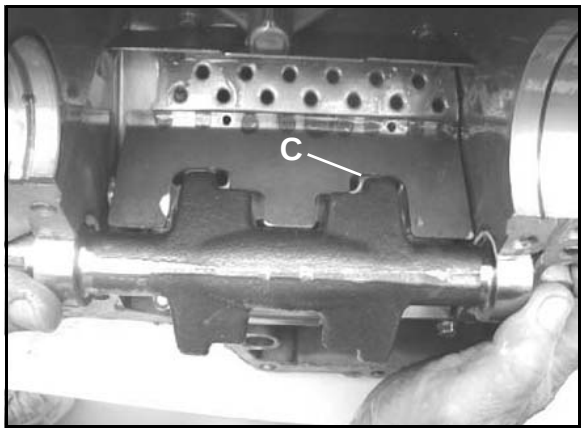
Oil Baffle Weldment and Oil Pick Up Bolt:
60 ± 6 in-lbs (6.8 ± 0.68 Nm)

3. Install balance shaft. Inspect balance shaft clearance (C) in both gearcase halves. Rotate balance shaft to ensure there is clearance between it and the oil baffle weldment.



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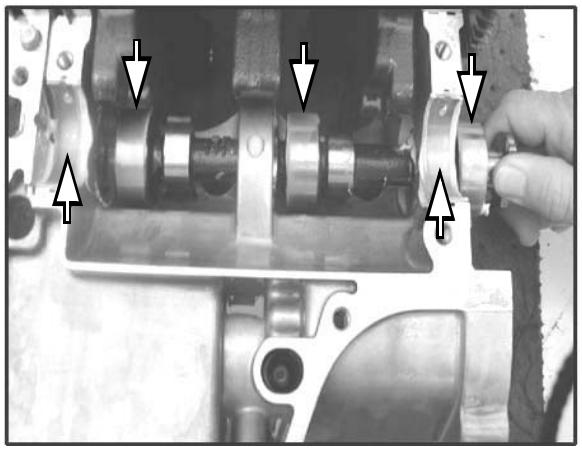
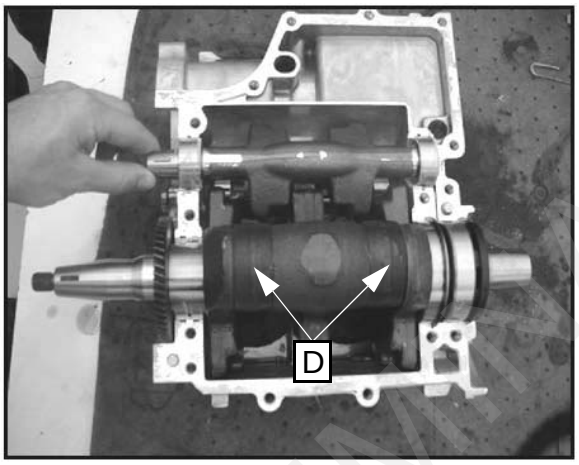
NOTE: Always install new balance shaft bearings.

4. Apply assembly lube to cam journals and balance shaft bearing surfaces of the MAG case half. Install camshaft and balance shaft.

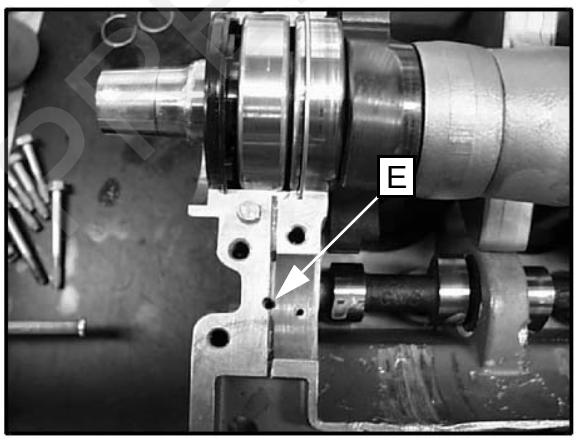


5. Install crankshaft assembly and apply engine oil to crank pins and rods (D). Apply assembly lube to the main journals and bearings.



6. Apply Crankcase Sealant **(PN 2871557)** to the top half of the crankcase.

NOTE: Do not apply sealant to cam relief hole (E).



7. Assemble the crankcase halves. Apply LocTite™ 242 **(PN 2871949)** to the threads and pipe sealant to the bolt flanges. Torque bolts to specification following torque pattern at beginning of this chapter.

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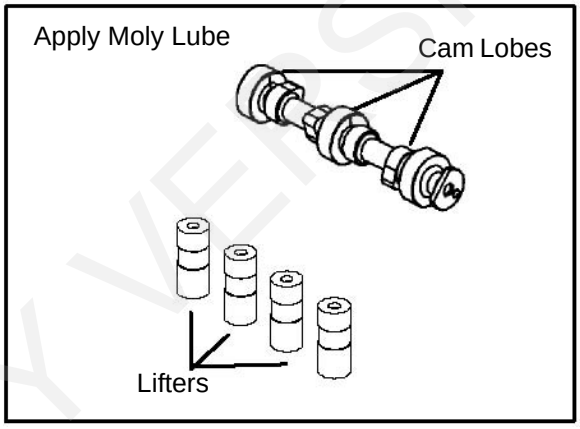
Crankcase Bolts: **22 ± 2 ft-lbs (30 ± 3 Nm)** ***Torque in sequence***

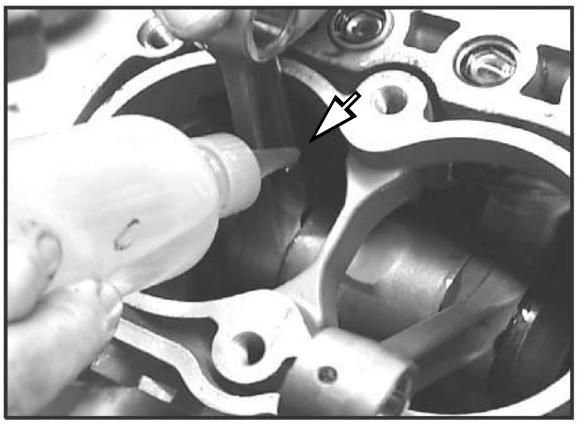
8. Lubricate cam lobes and valve lifters with Moly Lube Grease.



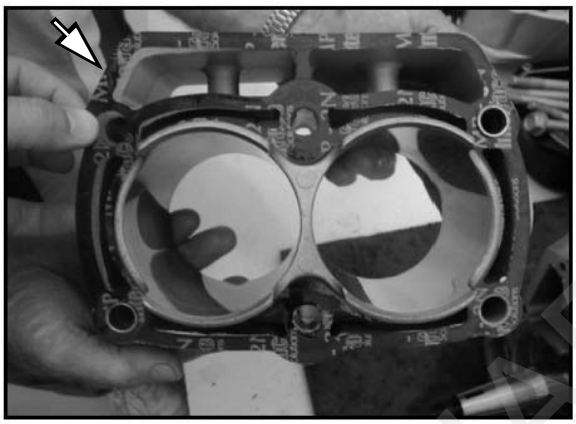
9. Lubricate lifters with engine oil and install in the original order as removed in disassembly. Apply Lubricant or Moly Lube to the ends of the lifters.

NOTE: Always replace camshaft and lifters as a set.

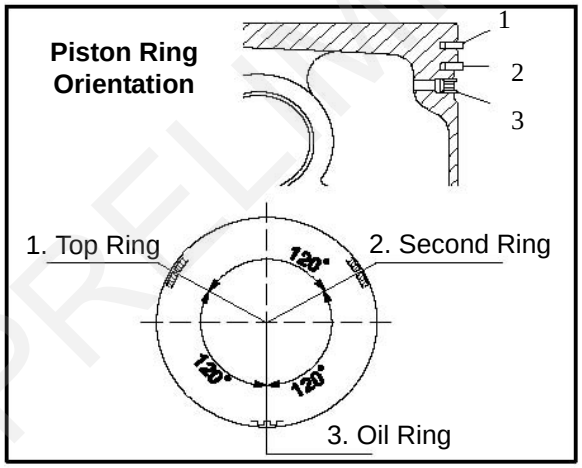
10. Lubricate connecting rods with synthetic engine oil.



11. Install new cylinder gasket on crankcase. Align gasket on the dowel pins for proper gasket alignment.



12. Orientate the piston rings on the piston before installation into the cylinders. Set the gaps of the rings every 120° (see illustration below).

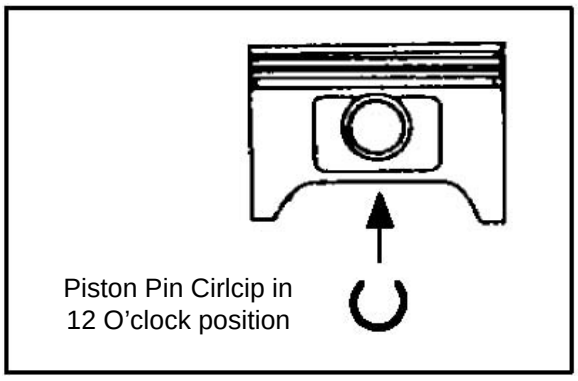


13. Install piston assemblies into cylinder aligning the piston pin holes, to ensure proper alignment of the pistons to the connecting rods upon assembly. Partially install the piston pins into the pistons.

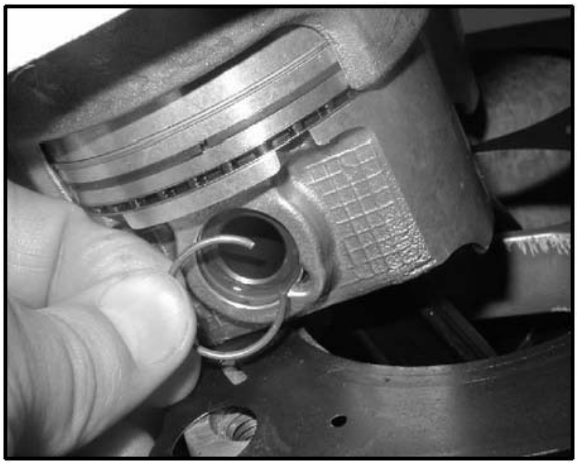
NOTE: To help align the pistons, slide a rod that is close to the same diameter as the wrist pin holes to properly align them in the cylinder.

14. Position cylinder and piston assemblies onto the connecting rods and push the piston pins through the piston and connecting rods.

15. Install the piston pin circlips. The circlip ends should be installed at the 12 O'clock position.

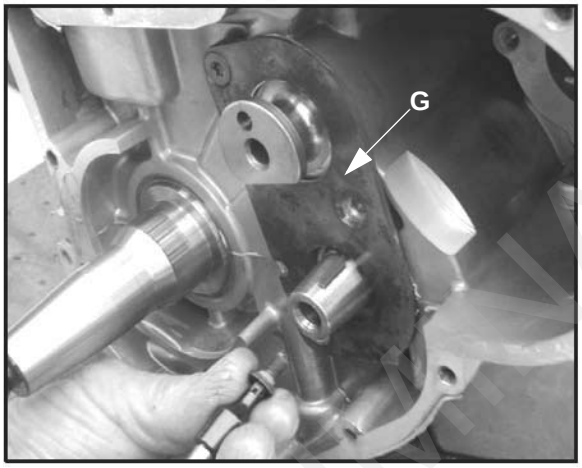


NOTE: While installing piston circlips, cover all engine passages. The clip could fall into the engine during installation.



16. Install camshaft thrust plate (G) with new bolts. Torque bolts to specification.

NOTE: New bolts have patch lock on the threads and do not require Loctite™.



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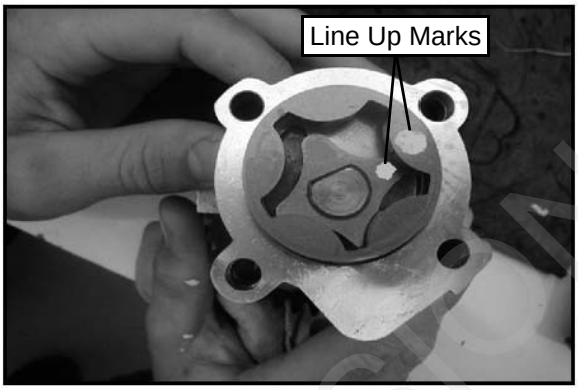
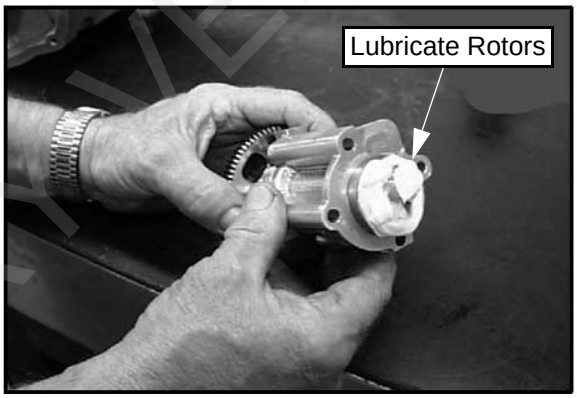
Thrust Plate Screw: **115 ± 12 in-lbs (13 ± 1.35 Nm)**

17. Assemble rotors as marked when disassembled. Use a cleaner to remove marks previously made on rotors.



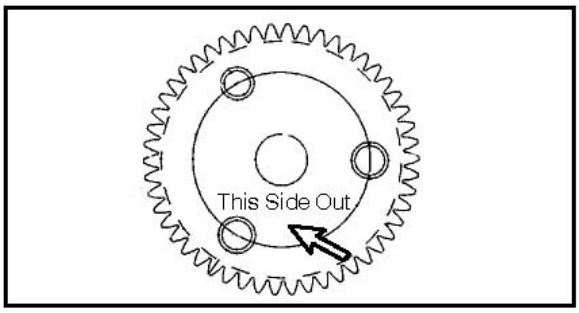
18. Apply assembly lube or oil to the rotors on the oil pump shaft.

NOTE: The application of lubrication aids in priming the oil pump during initial engine start up.



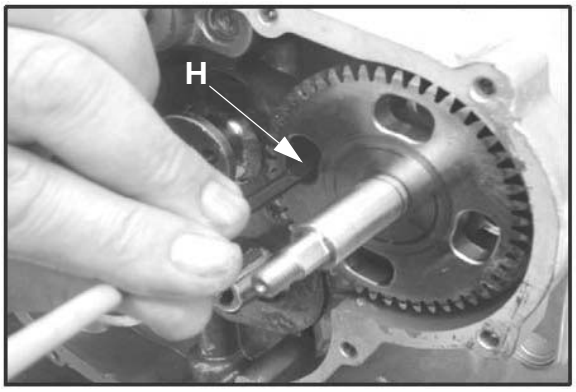
19. Align the bolt holes and install oil pump assembly into crankcase. Rotate the rotors in the housing during installation, as this checks for binding if new rotors are used.

NOTE: For assembly of the gears, the cam gear and the crankshaft gear are stamped with "This Side Out". This indicates the side of the gear that faces outward or away from the case.



NOTE: Before assembly, clean the bolts and bolt holes with Loctite Primer N (commercially available) to remove any debris. This will ensure proper sealing when installing bolts and new Loctite™.

20. Install oil pump housing bolts (H). The new bolts contain patch lock, so Loctite™ is not needed on the new bolts. Torque bolts to specification and follow the torque sequence at beginning of the chapter.



NOTE: Occasionally spin the oil pump when installing bolts to check for binding of the rotors.

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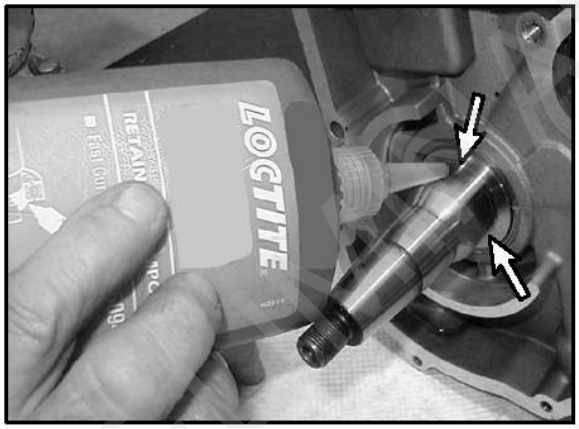
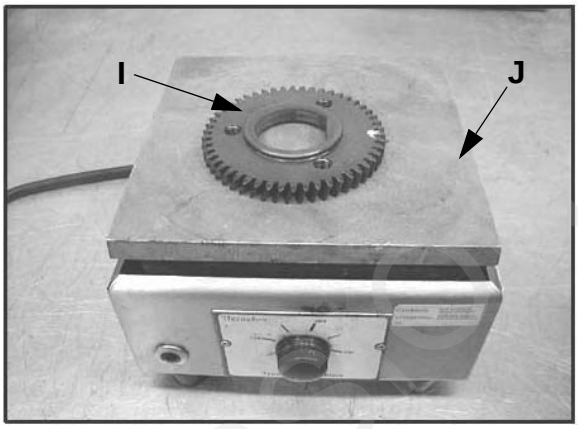
Oil Pump Bolt: **84 ± 8 in-lbs (9.50 ± 0.90 Nm)** ***Torque in Sequence***

21. Apply Loctite™ 242 (PN 2871949) to the crankshaft.



22. Before installing the crankshaft gear (I), heat the crankshaft gear to 250° F (121°C) on a hot plate (J).

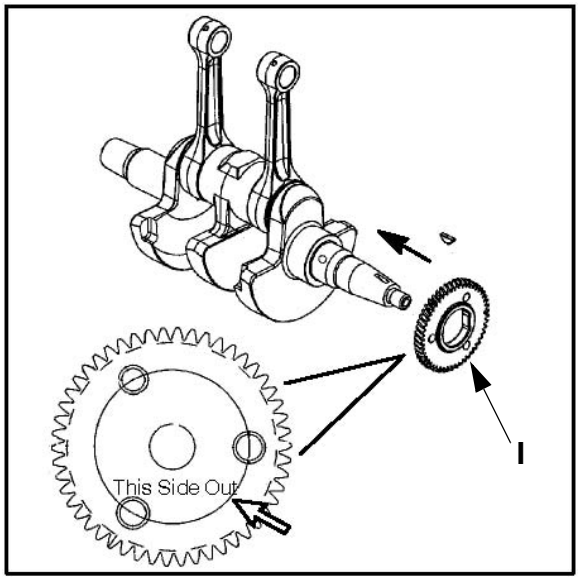


⚠ CAUTION
The crankshaft gear is extremely hot! Severe burns or injury can occur if the gear is not handled with extreme care and caution. Follow the procedure below to help ensure safety.

23. Use extreme caution when removing the crankshaft gear from the hot plate. Use a pair of pliers and leather gloves when handling the crankshaft gear.

24. Install the crankshaft gear (I) onto the crankshaft.

NOTE: For assembly of the gears, the cam gear and the crankshaft gear are stamped with "This Side Out". This indicates the side of the gear that faces outward or away from the case.



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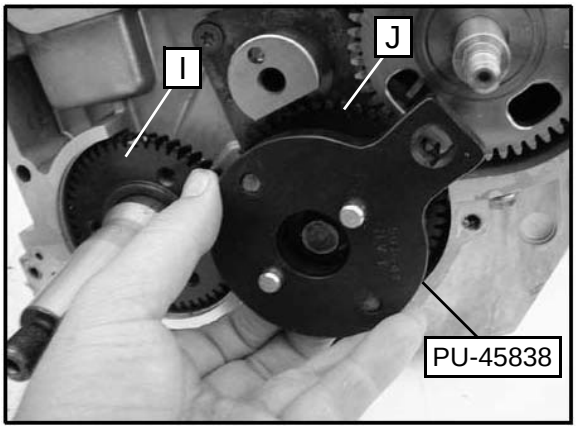
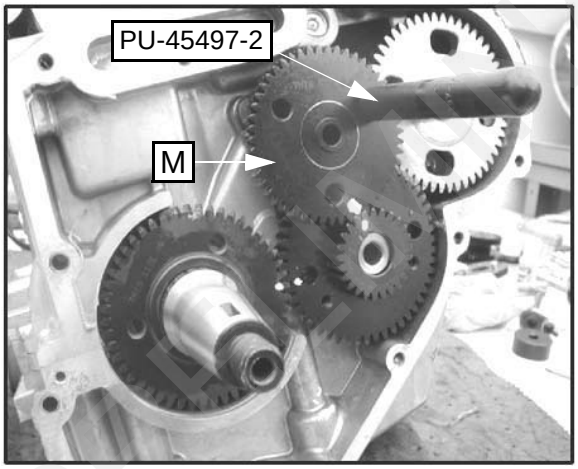
25. Install counter balance shaft gear (J) with new key, aligning timing marks with crankshaft gear (I). Install washer and bolt. Use the Gear Holder **(PU-45838).** Torque to specification.



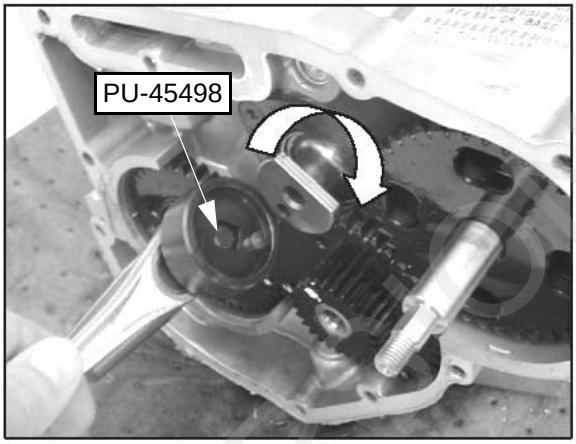
= T
Balance Shaft Gear Bolt: **22 ± 2 ft-lbs (30 ± 3 Nm)**

26. Use the Cam Gear Alignment Tool **(PU-45497-2)** to align the teeth of the cam gear (M). Install the cam gear (M) (with the Cam Gear Alignment Tool still in place) onto the camshaft. The timing marks on the camshaft gear should align with the keyway on the balance shaft gear.



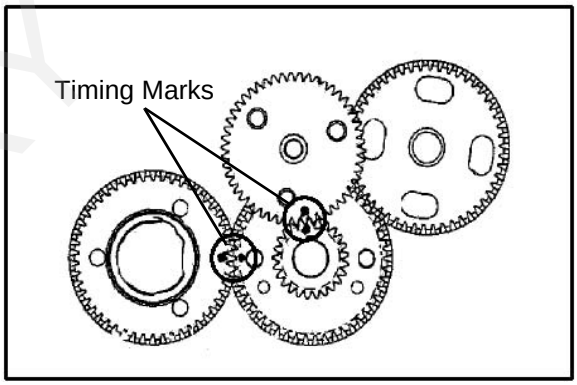
NOTE: If the timing mark on the camshaft gear does not align properly, remove the camshaft gear and tool. Use the Cam Spanner Wrench (PU-45498) to rotate the cam to the proper position.

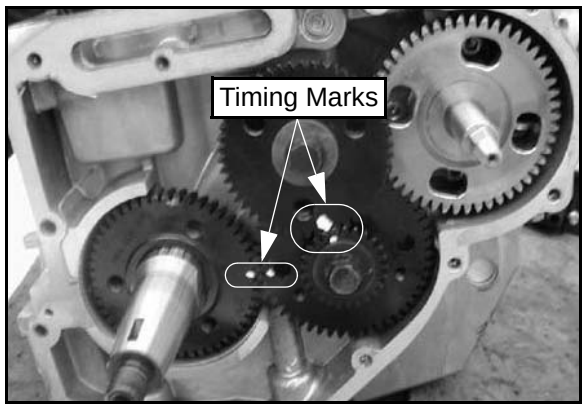
NOTE: Cam Spanner Wrench (PU-45498) is only needed to rotate the camshaft when the entire valve train is assembled.



27. Reinstall the camshaft gear; so the timing marks are properly aligned. Install the washer and bolt. Torque to specification.

NOTE: Be sure all timing marks are aligned.





= T
Counterbalance Gear and Camshaft Gear Bolt: **22 ± 2 ft-lbs (30 ± 3 Nm)**

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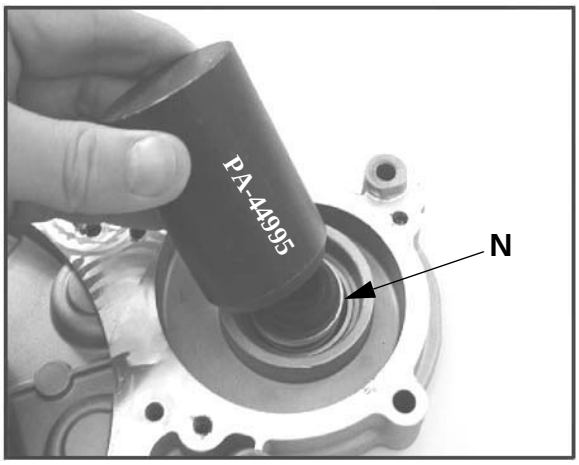
28. Before installing the gear / stator housing, replace the seals in the cover. Install a new water pump seal (N) into the gear / stator housing. Use the Water Pump Mechanical Seal Installer (PA-44995) to properly install the seal to the correct depth in the cover.

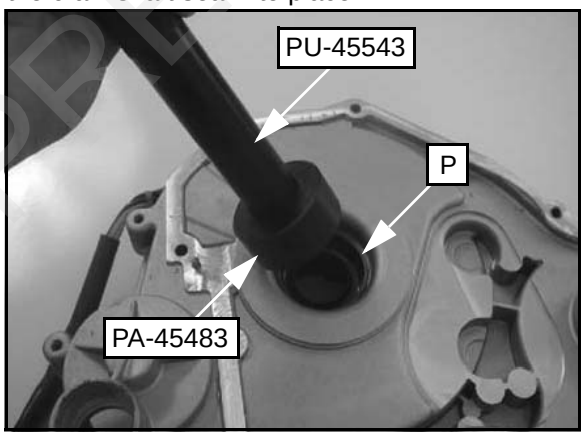


IMPORTANT: Due to seal design and construction, seals MUST be installed DRY (no lubricant) during assembly. Use of lubricants (oil, soapy water, etc.) will not allow the seal to wear-in and seal properly. Do not touch seal surface or allow seal surface to come in contact with contaminants during installation. Thoroughly clean parts, tools and hands before installation.

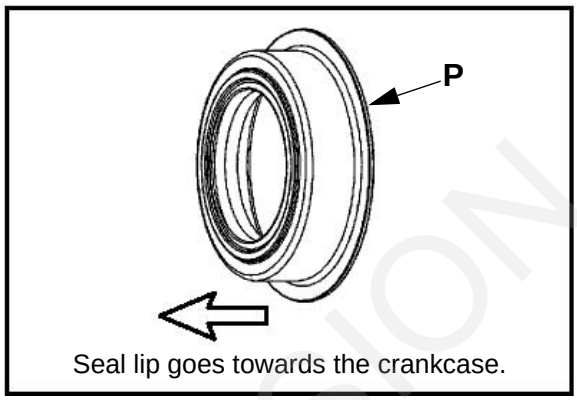
NOTE: To remove the water pump seal, the gear/ stator housing must be removed. The water pump seal cannot be removed or installed with the gear/ stator housing attached to the engine. Shaft damage will occur.

NOTE: Install the water pump seal (N) with the seal lip facing out (towards the crankcase). Use of a hydraulic press is recommended for this procedure.

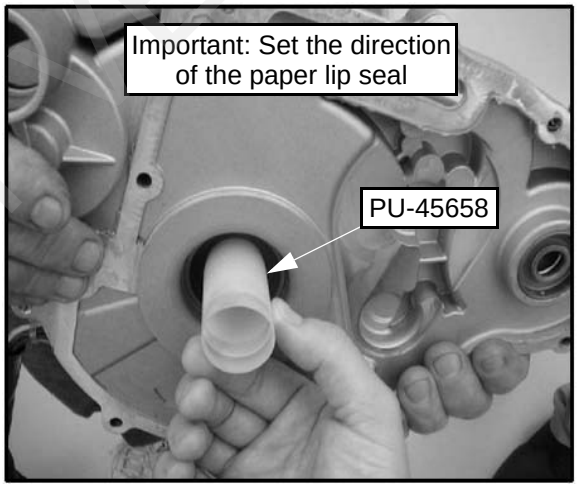
29. Install a new crankshaft seal (P) into the gear/stator housing cover. Use the Universal Driver Handle **(PU-45543)** and the Main Seal Installer **(PA-45483)** to seat the crankshaft seal into place.



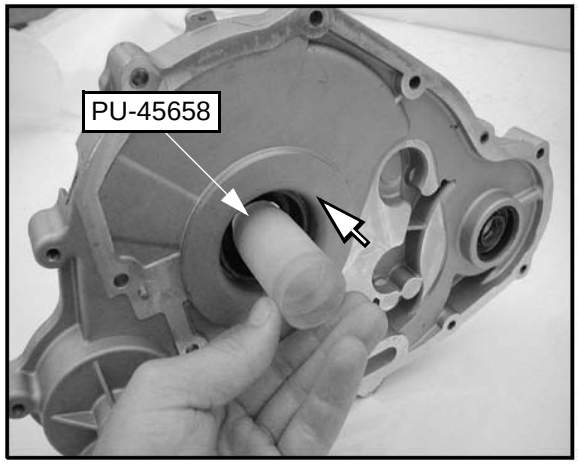
NOTE: Install the crankshaft seal (P) with the seal lip facing out (towards the crankcase).



30. Once crankshaft seal is installed into the gear / stator housing cover, set the direction of the paper lip by sliding the Main Crankshaft Seal Saver **(PA-45658)** into the crankshaft seal from the rubber lipped side to the paper lip side (Back to Front). Remove the tool.



31. Carefully install tapered end of the Crankshaft Seal Protection Tool **(PA-45658)** through the paper side of the crankshaft seal (back to front). Leave the seal protector installed. Check the crankshaft seal lips to verify they have not been rolled or damaged.



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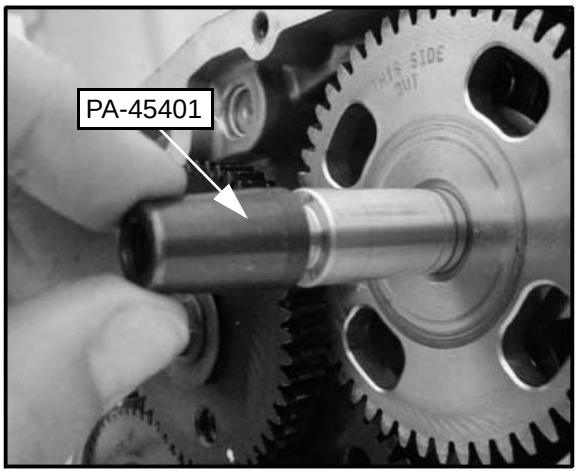
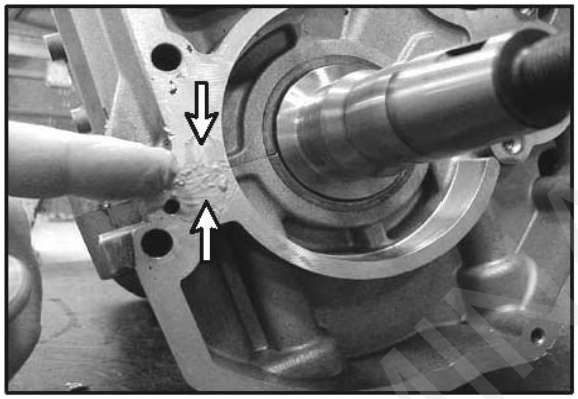
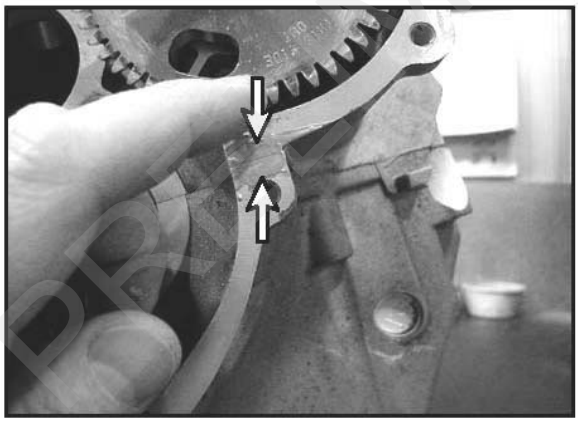
32. Before installing the gear/stator housing cover, install the Water Pump Seal Saver **(PA-45401)** onto the water pump shaft.

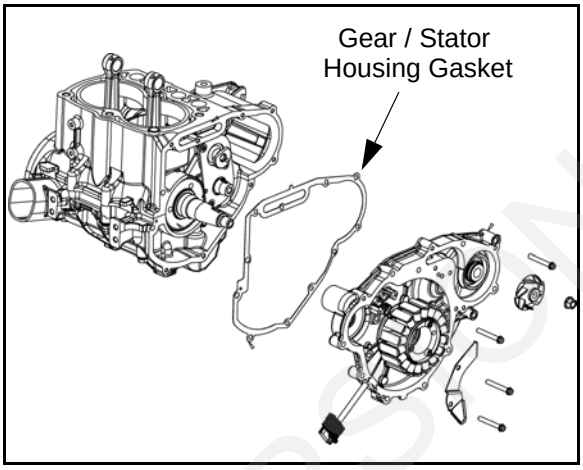


33. Apply Crankcase Sealant **(PN 2871557)** to the outside edges of the crankcase halves (see arrows), where the crankcases mate (see the following photos). This helps to prevent coolant leakage.

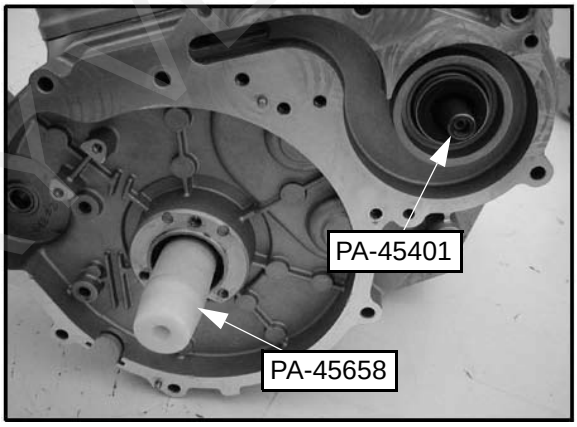




34. Install a new gear/stator housing gasket onto the crankcase.



35. With both seal savers installed, carefully place the gear/stator housing cover over the protection tools and onto the crankcase.

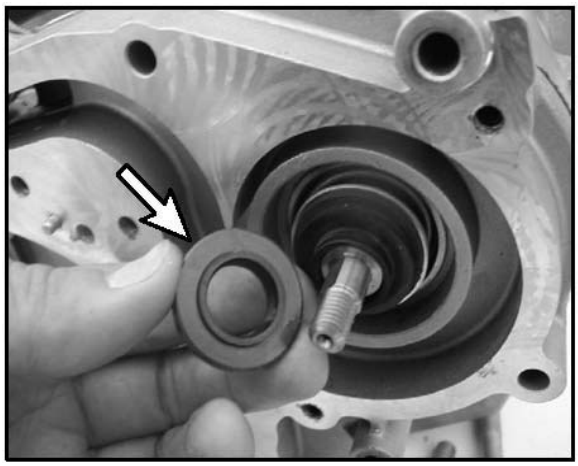


36. Secure the gear / stator housing cover to the crankcase with the cover bolts. Torque bolts in proper sequence to specification. Remove seal protectors from the shaft ends once the cover is secure.

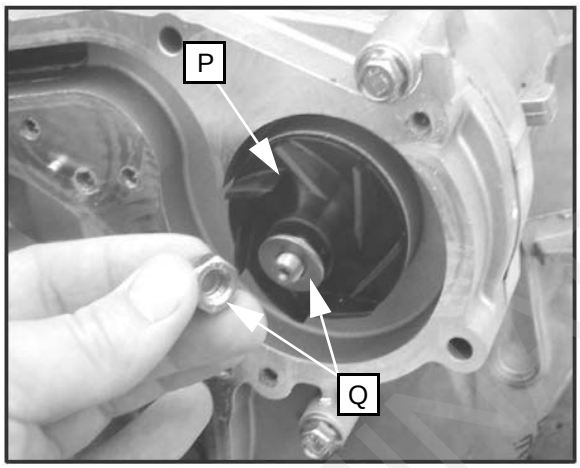
= T
Gear/Stator Housing Bolt: **96 ± 12 in-lbs (10.85 ± 1.35 Nm)** ***Torque in proper sequence***

NOTE: Before assembly, clean the bolts and bolt holes with Loctite Primer N (commercially available) to remove any debris. This will ensure proper sealing when installing bolts.

37. Install shaft seal with ceramic surface facing inward.

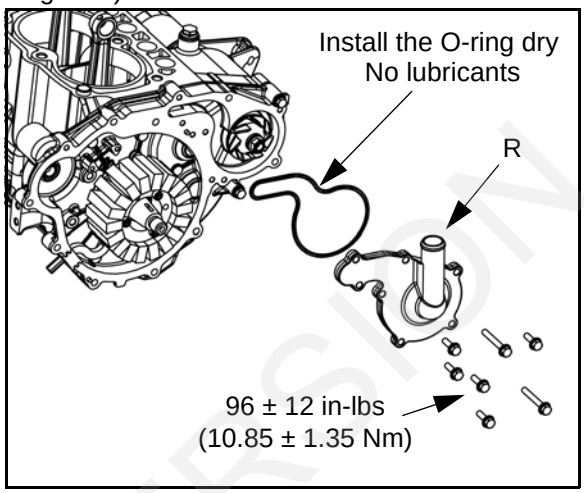


38. Install water pump impeller (P). **Secure the impeller with the washer and a new nut (Q)**. Torque the nut to specification.



= T
Water Pump Impeller Nut: **108 ± 6 in-lbs (6.8 ± 0.68 Nm)**

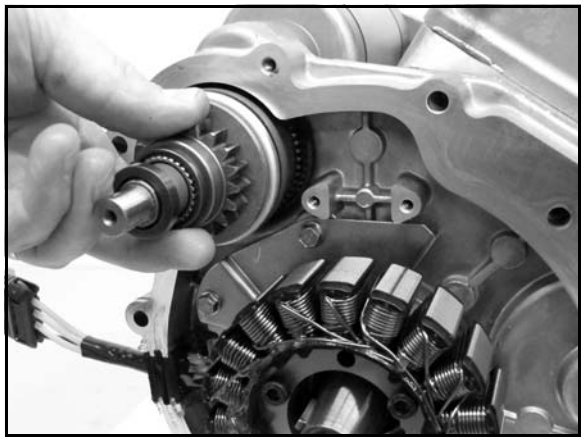
39. Install water pump cover (R) with new O-ring seal. Torque bolts to specification in proper sequence (see Page 3.4).



= T
Water Pump Housing Bolt: **96 ± 12 in-lbs (10.85 ± 1.35 Nm)** ***Torque in proper sequence***

40. Sparingly apply Starter Drive Grease **(PN 2871423)** to the starter drive. Install the starter bendix.

NOTE: There are thrust washers on both sides of starter drive.



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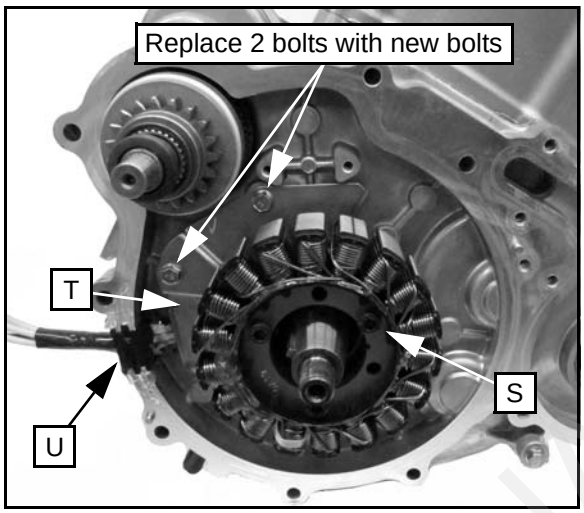
Flywheel / Stator Installation

NOTE: Before assembly, clean the bolts and bolt holes with Loctite Primer N (commercially available) to remove any debris. This will ensure proper sealing when installing bolts.

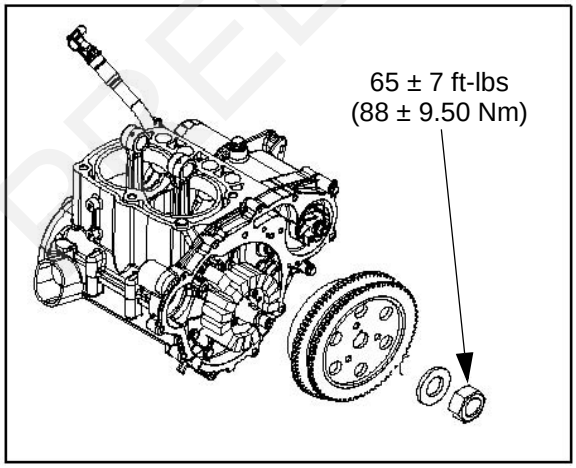
1. Install stator assembly (S) and bolts. Torque bolts to specification.
2. Install the wire hold down bracket (T). Install two new wire hold down bolts. New bolts contain patch-lock. Torque bolts to specification, following the proper bolt torque sequence. Coat the stator wire grommet (U) with Nyogel™ Grease **(PN 2871329)**.

NOTE: Verify stator wires are routed properly under the wire hold down bracket.



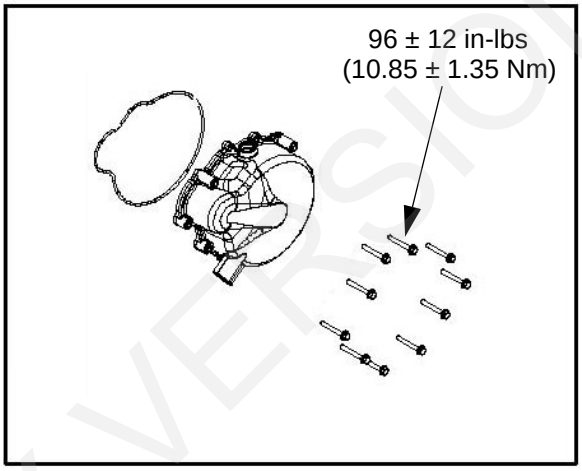
= T
Stator Assembly Bolts: **84 ± 8 in-lbs (9.5 ± 0.9 Nm)**

3. Install the flywheel, washer, nut, and key. Torque flywheel nut to specification.



= T
Flywheel Nut: **65 ± 7 ft-lbs (88 ± 9.50 Nm)**

4. Install stator housing with new O-ring. Torque the bolts to specification and follow proper bolt torque sequence at the beginning of this chapter.

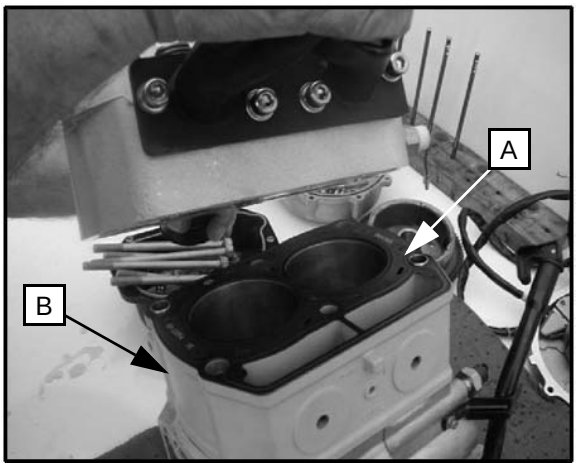


= T
Stator Housing Bolts: **96 ± 12 in-lbs (10.85 ± 1.35 Nm)** ***Torque in proper sequence***

Cylinder Head Reassembly

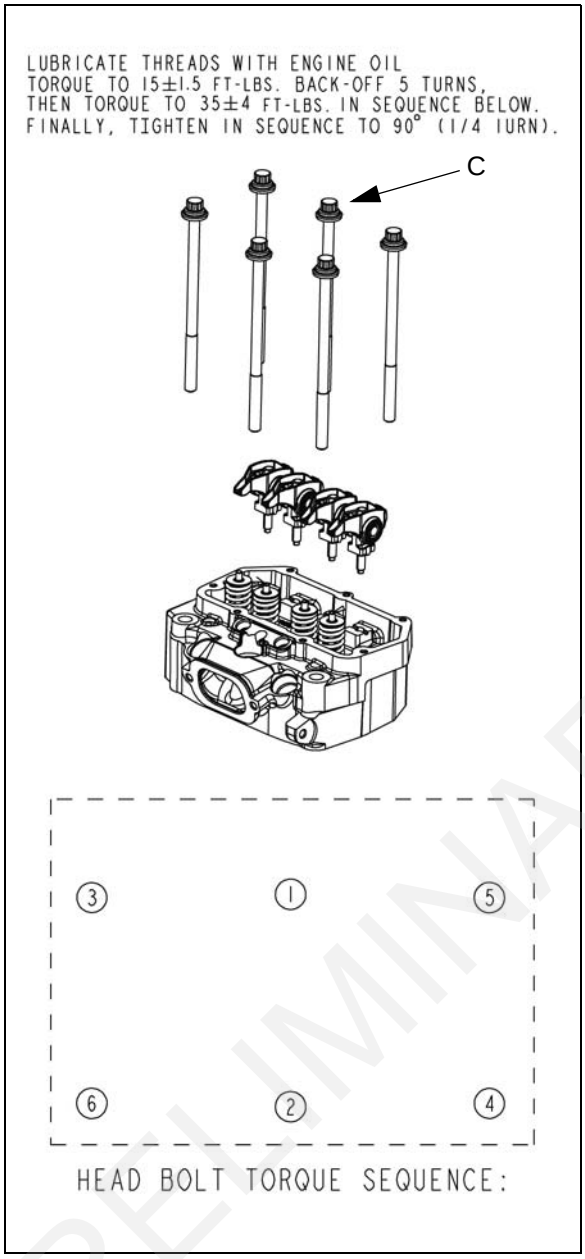
NOTE: Before reassembly, clean the bolts and bolt holes with Loctite Primer N (commercially available) to remove any debris. This will ensure proper sealing when installing bolts.

1. Install the head gasket (A) on the cylinder (B).



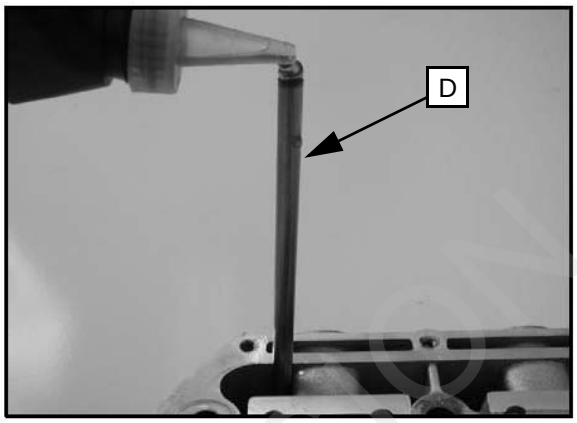
2. Install cylinder head on cylinder.

3. Lubricate threads, top of washers and underside of bolt head with engine oil. Install head bolts (C) and torque ication in sequence.

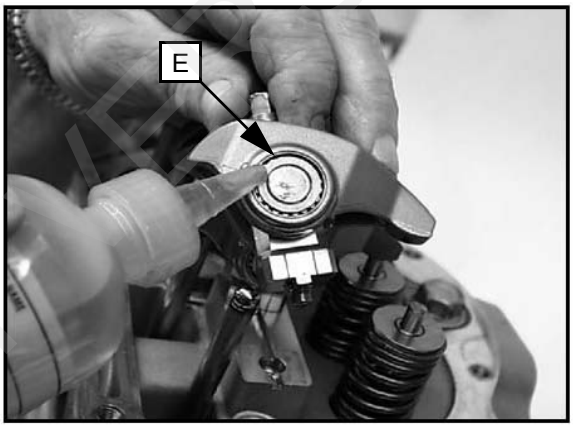


= T
Head Bolts: **1) Torque to 15 ± 1.5 ft-lbs in sequence** **2) Back off all head bolts 5 turns in sequence** **3) Torque to 35 ± 4 ft-lbs in sequence** **4) Tighten all head bolts in sequence another 90° or (1/4 turn)**

4. Lubricate push rods (D) and install into lifters.

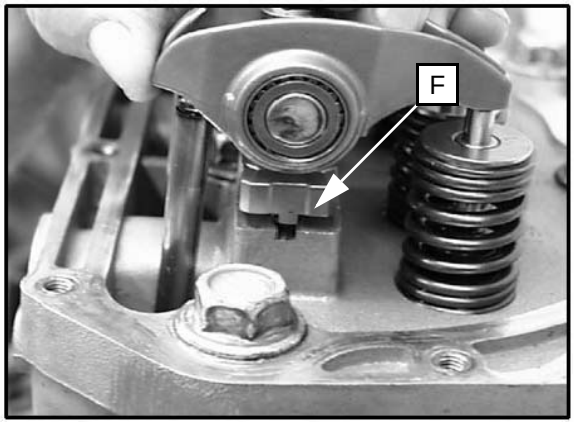


5. Lubricate rockers (E) with engine oil.



6. Verify pushrods are engaged in lifters.

7. Install rockers. Be sure that tab of fulcrum (F) is seated in head stand-off. Torque bolts to specification.



= T
Rocker Arm Bolt: **22 ± 2 ft-lbs (30 ± 3 Nm)**

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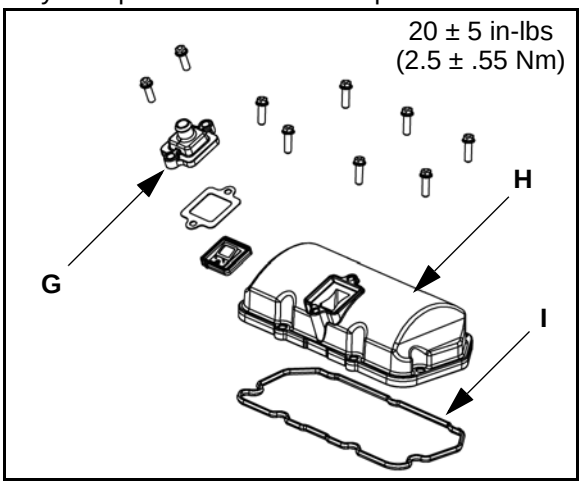
8. Install breather reed (G) into rocker cover (H). Lightly apply black RTV sealant to outer edges of breather reed. The reed has a tab and will assemble one-way only. Torque breather bolts to specification.



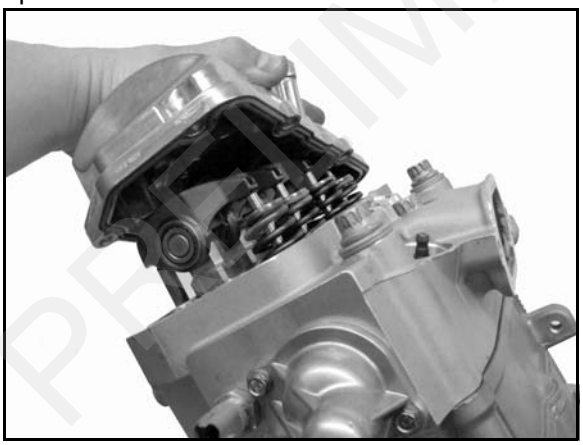
= T
Breather Bolts: **20 ± 5 in-lbs (2.5± 0.55 Nm)**

NOTE: When applying RTV, do not get any RTV inside the reed assembly.

9. Place a new seal (I) into the bottom of the cover. Be sure the seal is seated into the cover properly.

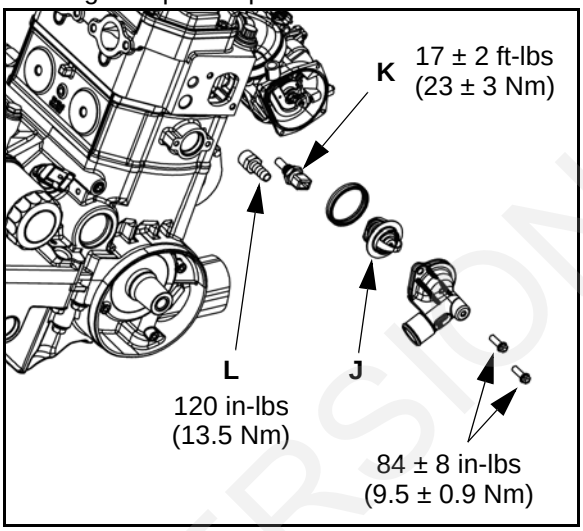
IMPORTANT: Before assembly, clean the bolts and bolt holes with Loctite Primer N (commercially available) to remove any debris.

10. Install rocker cover. Torque bolts in sequence to specification.



= T
Rocker Cover Bolts: **84 ± 8 in-lbs (9.5 ± 0.9 Nm)**

11. Install thermostat (J), new O-ring, and thermostat housing. Torque to specification**.**



= T
Thermostat Housing Bolt: **84 ± 8 in-lbs (9.5± 0.9 Nm)**

12. Install 3/8" coolant hose fitting (L) and torque to specification.

= T
Engine Coolant Hose Fitting: **120 in-lbs (13.5 Nm)**

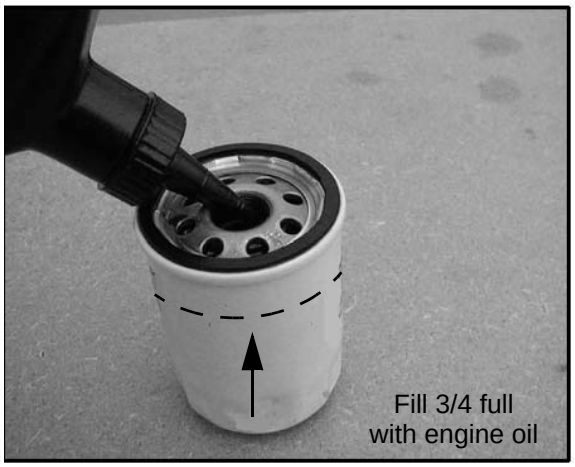
13. Install coolant temperature sensor (K) and torque to specification.

= T
Engine Temperature Sensor: **17 ± 2 ft-lbs (23 ± 3 Nm)**

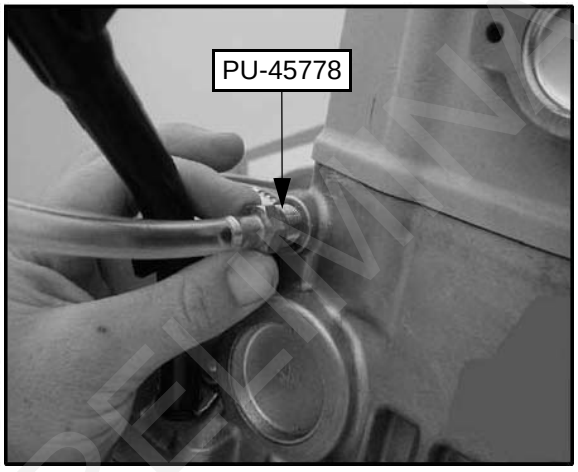
Oil Pump Priming

CAUTION
After any reassembly or rebuild, the engine must be primed using the Oil Priming Adapter (PU-45778) and a 3/4-full oil filter before initial start-up. Follow the steps in this section to properly prime the engine and aid proper engine break in. Failure to perform this procedure may cause internal engine damage on initial start-up.

1. After the engine is completely assembled and ready for installation, the engine must be properly primed with engine oil. Fill the oil filter 3/4 full with Polaris PS-4 PLUS or PS-4 Extreme Duty Synthetic Engine Oil. Let the oil soak into the filter for 8-10 minutes. Install the filter onto the engine.



2. Remove primer plug from the engine. Install Oil System Priming Adapter **(PU-45778)** into the oil plug hole. Push 3-5 oz. (approx.) of Polaris PS-4 PLUS or PS-4 Extreme Duty engine oil into the adapter or until resistance is felt. Remove the adapter. Apply sealant to the plug threads. Install the plug and torque to specification.



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Primer Plug: **18 ± 2 ft-lbs (24.4 ± 2.71 Nm)**

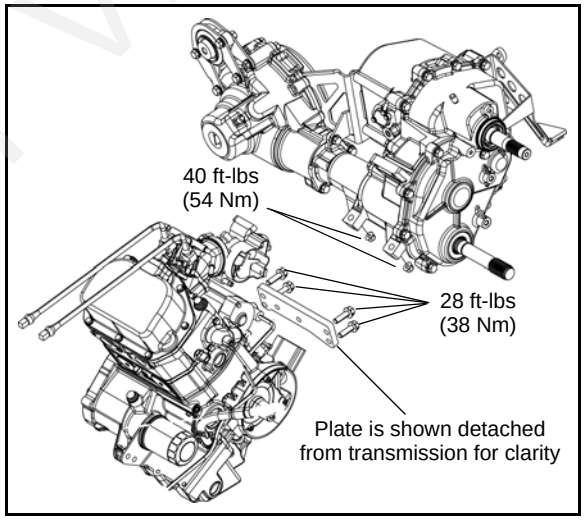
ENGINE INSTALLATION

Engine Assembly and Installation

Use the following procedure to reinstall the engine assembly.

Assemble the engine to the transmission on a work bench prior to installation.

1. Support the transmission / rear gearcase assembly while setting the engine in place.
2. Lightly tighten all fasteners evenly to eliminate any gaps that may be present in the mounting areas.
3. Torque fasteners to specification using a two part sequence.
   - Torque fasteners to half of the specified torque value.
   - Then torque fasteners to the full specified torque value.



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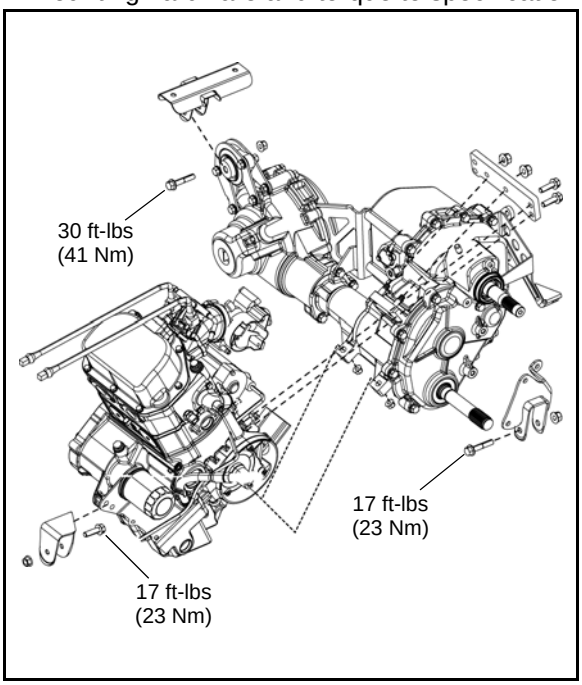
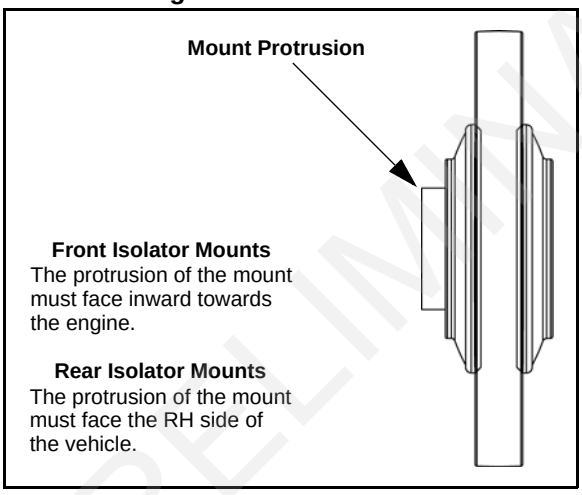
Engine / Transmission Mounting Fasteners: (2) Lower 3/8” Nuts: **40 ft-lbs (54 Nm)** (4) Outer M8 Bolts: **28 ft-lbs (38 Nm)**

4. Install the inner clutch cover, drive clutch, and driven clutch. Torque to specification (see Chapter 6).
   - Clean clutch sheaves thoroughly and inspect inlet and outlet ducts for proper routing and sealing.
5. To install engine assembly, reverse the “Engine Removal” procedure detailed earlier in this Chapter.
   - Properly route all electrical harnesses for engine assembly installation. Check for any possible rubbing points of electrical wires.

- Carefully set the engine assembly into the vehicle while installing the propshaft.
- Install engine / transmission / rear gearcase mounting hardware and torque to specification.



NOTE: If isolator mounts were removed or replaced, use the following illustration to ensure proper orientation during installation.



- Install rear seat base assembly and torque the mounting bolts to specification.

= T
Rear Seat Base Mounting Bolts: **40 ft-lbs (54 Nm)**

- Replace exhaust gaskets. Seal connections with high temp silicone sealant. Check to be sure all exhaust springs are in good condition.
- Inspect transmission operation and adjust linkage if necessary (see Chapter 2 “Shift Linkage Adjustment”).
- Checks fluid levels: engine oil, transmission lubricant, and rear gearcase lubricant.
- Bleed cooling system as described in this Chapter under “Cooling System Bleeding Procedure.”

Engine Break-In Period

The break-in period consists of the first 25 hours of operation, or the time it takes to use 14 gallons (53 liters) of fuel. Careful treatment of a new engine and drive components will result in more efficient performance and longer life for these components.

CAUTION
Use only Polaris PS-4 PLUS or Extreme Duty Synthetic 4-Cycle engine oil or an equivalent. Never substitute or mix oil brands. Serious engine damage and voiding of warranty can result. Do not operate at full throttle or high speeds for extended periods during the first three hours of use. Excessive heat can build up and cause damage to close fitted engine parts.

1. Fill fuel tank with unleaded fuel which has a minimum pump octane number of 87 = (R+ M)/2.
2. Check oil level indicated on dipstick. Add oil if necessary (Refer to Chapter 2, “Engine Oil Level”).
3. Drive slowly at first to gradually bring engine up to operating temperature.
4. Vary throttle positions. Do not operate at sustained idle or sustained high speed.
5. Perform regular checks on fluid levels, controls and all important bolt torques.
6. Pull only light loads during initial break-in.
7. Change oil and oil filter after 25 hour break-in period.

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TROUBLESHOOTING

Engine

Spark Plug Fouling

- Spark plug cap loose or faulty
- Incorrect spark plug heat range or gap
- PVT system calibrated incorrectly/ components worn or mis-adjusted
- Fuel quality poor (old) or octane too high
- Low compression
- Restricted exhaust
- Weak ignition (loose coil ground, faulty coil, or stator)
- Restricted air filter (main or pre-cleaner) or breather system
- Improperly assembled air intake system
- Restricted engine breather system
- Oil contaminated with fuel

Engine Turns Over But Fails To Start

- No fuel
- Dirt in fuel line or filter
- Fuel will not pass through fuel valve
- Fuel pump inoperative/restricted
- Tank vent plugged or pinched
- Engine flooded
- Low compression (high cylinder leakage)
- No spark (Spark plug fouled) ignition component failure

Engine Does Not Turn Over

- Dead battery
- Starter motor does not turn
- Engine seized, rusted, or mechanical failure

Engine Runs But Will Not Idle

- Restricted fuel supply
- Low compression
- Crankcase breather restricted

Engine Idles But Will Not Accelerate

- Spark plug fouled/weak spark
- Broken throttle cable
- Obstruction in air intake
- Air box removed (reinstall all intake components)
- Incorrect ignition timing
- Restricted exhaust system
- Cam worn excessively

Engine Has Low Power

- Spark plug fouled
- Cylinder, piston, ring, or valve wear or damage (check compression)
- PVT not operating properly
- Restricted exhaust muffler
- Cam worn excessively

Piston Failure - Scoring

- Lack of lubrication
- Dirt entering engine through cracks in air filter or ducts
- Engine oil dirty or contaminated

Excessive Smoke and Carbon Buildup

- Excessive piston-to-cylinder clearance
- Wet sumping
- Worn rings, piston, or cylinder
- Worn valve guides or seals
- Restricted breather
- Air filter dirty or contaminated

Piston Failure - Scoring

- Lack of lubrication
- Dirt entering engine through cracks in air filter or ducts
- Engine oil dirty or contaminated

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Excessive Smoke and Carbon Buildup

- Excessive piston-to-cylinder clearance
- Wet sumping due to over-full crankcase
- Worn rings, piston, or cylinder
- Worn valve guides or seals
- Restricted breather
- Air filter dirty or contaminated

Low Compression

- Cylinder head gasket leak
- No valve clearance (cam wear)
- Cylinder or piston worn
- Piston rings worn, leaking, broken, or sticking
- Bent valve or stuck valve
- Valve spring broken or weak
- Valve not seating properly (bent or carbon accumulated on sealing surface)
- Rocker arm sticking

Backfiring

- Fouled spark plug or incorrect plug or plug gap
- Exhaust system air leaks
- Exhaust system air leaks
- Valve sticking
- Ignition system faulty:
  Spark plug cap cracked / broken
  Ignition coil faulty
  Ignition or kill switch circuit faulty
  Poor connections in ignition system
  Ignition timing incorrect
  Sheared flywheel key

Cooling System

Overheating

- Low coolant level
- Air in cooling system
- Wrong type/mix of coolant
- Faulty pressure cap or system leaks
- Restricted system (mud or debris in radiator fins causing restriction to air flow, passages blocked in radiator, lines, pump, or water jacket, accident damage)
- Lean mixture (vents, fuel pump or fuel valve)
- Fuel pump output weak
- Electrical malfunction
- Water pump failure/ Loose impeller
- Thermistor failure
- Cooling fan inoperative or turning too slowly (perform current draw test)
- Low oil level
- Spark plug incorrect heat range
- Faulty hot light circuit
- Thermostat stuck closed or not opening completely
- Radiator is missing its internal diverter plate not allowing coolant to flow through entire radiator

Temperature Too Low

- Thermostat stuck open

Leak at Water Pump Weep Hole

- Faulty water pump mechanical seal (coolant leak)
- Faulty pump shaft oil seal (oil leak)

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CHAPTER 4

ELECTRONIC FUEL INJECTION

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GENERAL INFORMATION

⚠ WARNING

* Gasoline is extremely flammable and explosive under certain conditions.
* EFI components are under high pressure. Verify system pressure has been relieved before disassembly.
* Never drain the fuel system when the engine is hot. Severe burns may result.
* Do not overfill the tank. The tank is at full capacity when the fuel reaches the bottom of the filler neck. Leave room for expansion of fuel.
* 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.
* Do not smoke or allow open flames or sparks in or near the area where refueling is performed or where gasoline is stored.
* If you get gasoline in your eyes or if you should swallow gasoline, seek medical attention immediately.
* If you spill gasoline on your skin or clothing, immediately wash with soap and water and change clothing.
* Always stop the engine and refuel outdoors or in a well ventilated area.

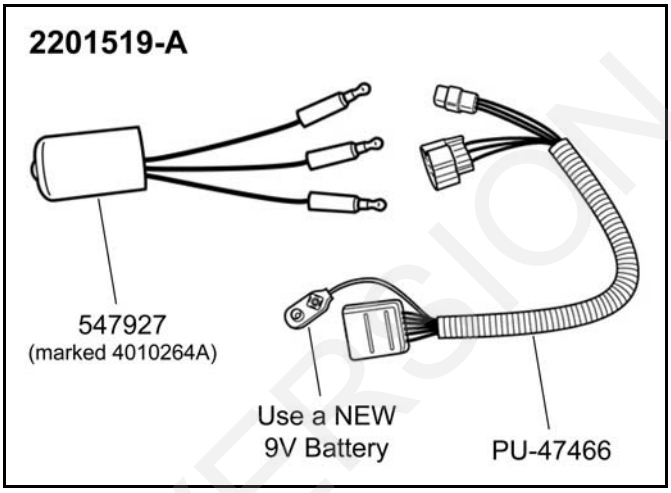
Special Tools

PART NUMBER	TOOL DESCRIPTION	
2201519-A	Throttle Position Sensor (TPS) Tester	
	PU-47466	TPS Tester Wire Harness
	547927	TPS Tester Regulator
PU-43506-A	Fuel Pressure Gauge Kit	
PV-48656	Fuel Pressure Gauge Adaptor	
PU-47063-B	Digital Wrench™ Diagnostic Software (Includes most recent version of software w/ serial number, standard interface cable, USB-Serial Adaptor cable and SmartLink Module Kit)	
PU-47471	Digital Wrench™ SmartLink Module Kit (PU-47470, PU-47469, PU-47468)	
	PU-47470	Digital Wrench™ PC Interface Cable
	PU-47469	Digital Wrench™ Vehicle Interface Cable
	PU-47468	Digital Wrench™ SmartLink Module

SPX Corp: 1-800-328-6657 or http://polaris.spx.com/

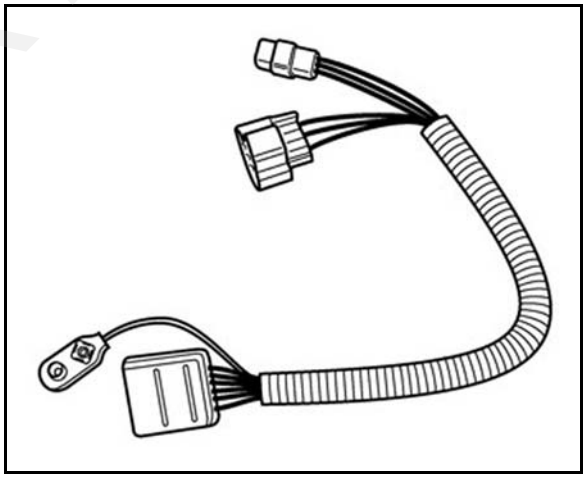
Throttle Position Sensor (TPS) Tester - 2201519-A

This tester allows the use of a digital multi-meter to test TPS function as well as perform the TPS adjustment procedure.



TPS Tester Wire Harness - PU-47466

This TPS wire harness is part of 2201519-A and incorporates two TPS connectors to allow for multi-use applications.



NOTE: Voltage Regulator (547927) is required if using TPS Tester Wire Harness (PU-47466). You may already have this regulator (marked 4010264) as part of another TPS Tester Kit. If you do not have this regulator, you must order one from SPX at 1-800-328-6657.

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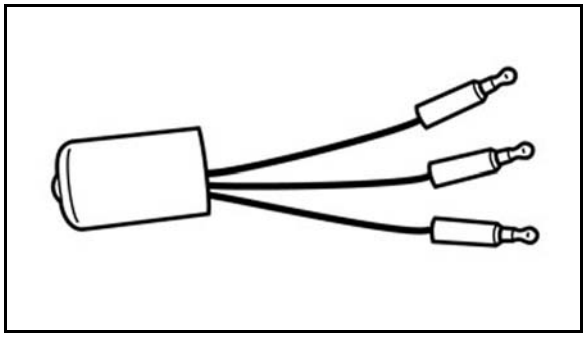
TPS Tester Regulator - 547927

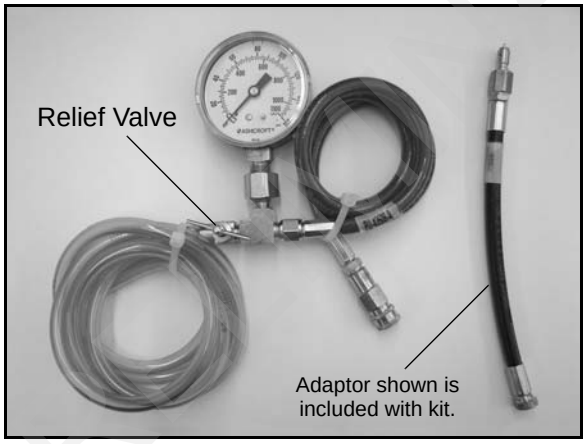
This tester regulator is part of 2201519-A. It regulates the 9 volt battery voltage to a 5 volt reference input, required when using the TPS Tester Wire Harness (PU-47466).



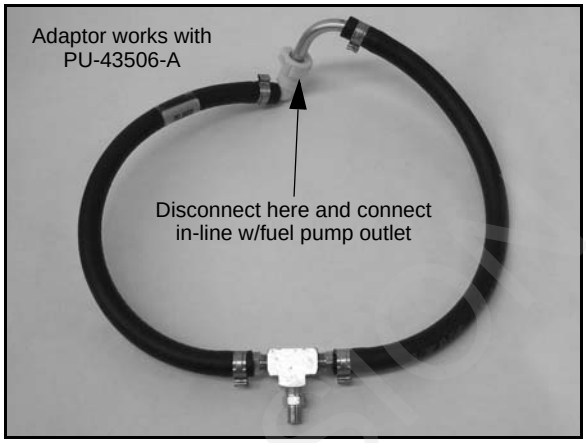
NOTE: You may already have this regulator (marked 4010264) as part of another TPS Tester Kit. If you do not have this regulator, you must order one from SPX at 1-800-328-6657.

Fuel Pressure Gauge Kit - PU-43506-A

IMPORTANT: The EFI fuel system remains under high pressure, even when the engine is not running. Before attempting to service any part of the fuel system, pressure must be relieved (if applicable). The Fuel Pressure Gauge Kit has an integrated pressure relief valve that can be used to bleed off pressure once you have completed the fuel pressure test.



Fuel Pressure Gauge Adaptor - PV-48656



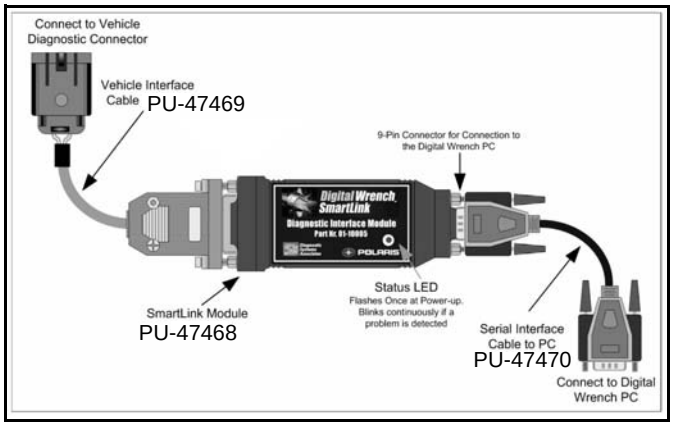
Digital Wrench™ Diagnostic Software - PU-47063-B

This dealer-only software installs on laptop computers equipped with a CD drive and is designed to replace multiple shop tools often used to test EFI components. It also includes step-by-step diagnostic procedures to aid technician repair and troubleshooting.

IMPORTANT: If the PC you are using is not equipped with a 9-pin serial port, a USB to serial port adaptor will be necessary. A USB to serial port adaptor can be purchased through DSA at: www.diagsys.com

Digital Wrench™ SmartLink Module Kit - PU-47471

This module kit contains the necessary cables and hardware to communicate between the vehicle ECU and the Digital Wrench™ diagnostic software. Polaris dealers can also order the following kit components separately: **SmartLink Module PU-47468**, **Vehicle Interface Cable PU-47469** and **PC Interface Cable PU-47470**. This module kit is used on all 8 pin connector-based Polaris EFI systems. This kit is available to Polaris dealers through our tool supplier SPX at http://polaris.spx.com or 1-800-328-6657.

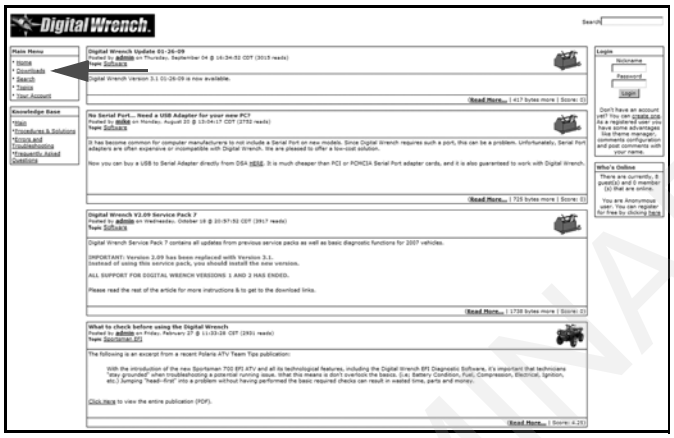


Digital Wrench™ - Diagnostic Connector

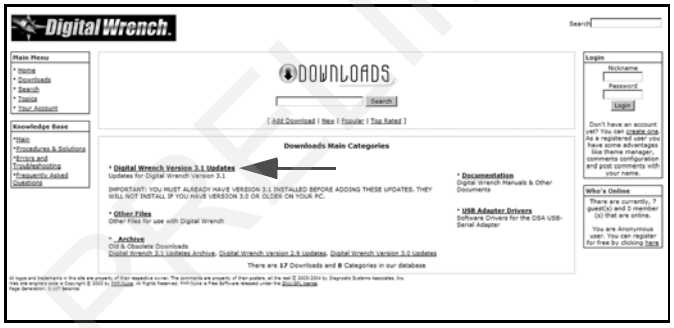
Located under the dash connected to a sealed plug.

Digital Wrench™ - Download Website

Located at: www.polaris.diagsys.com



Download Digital Wrench™ Updates:



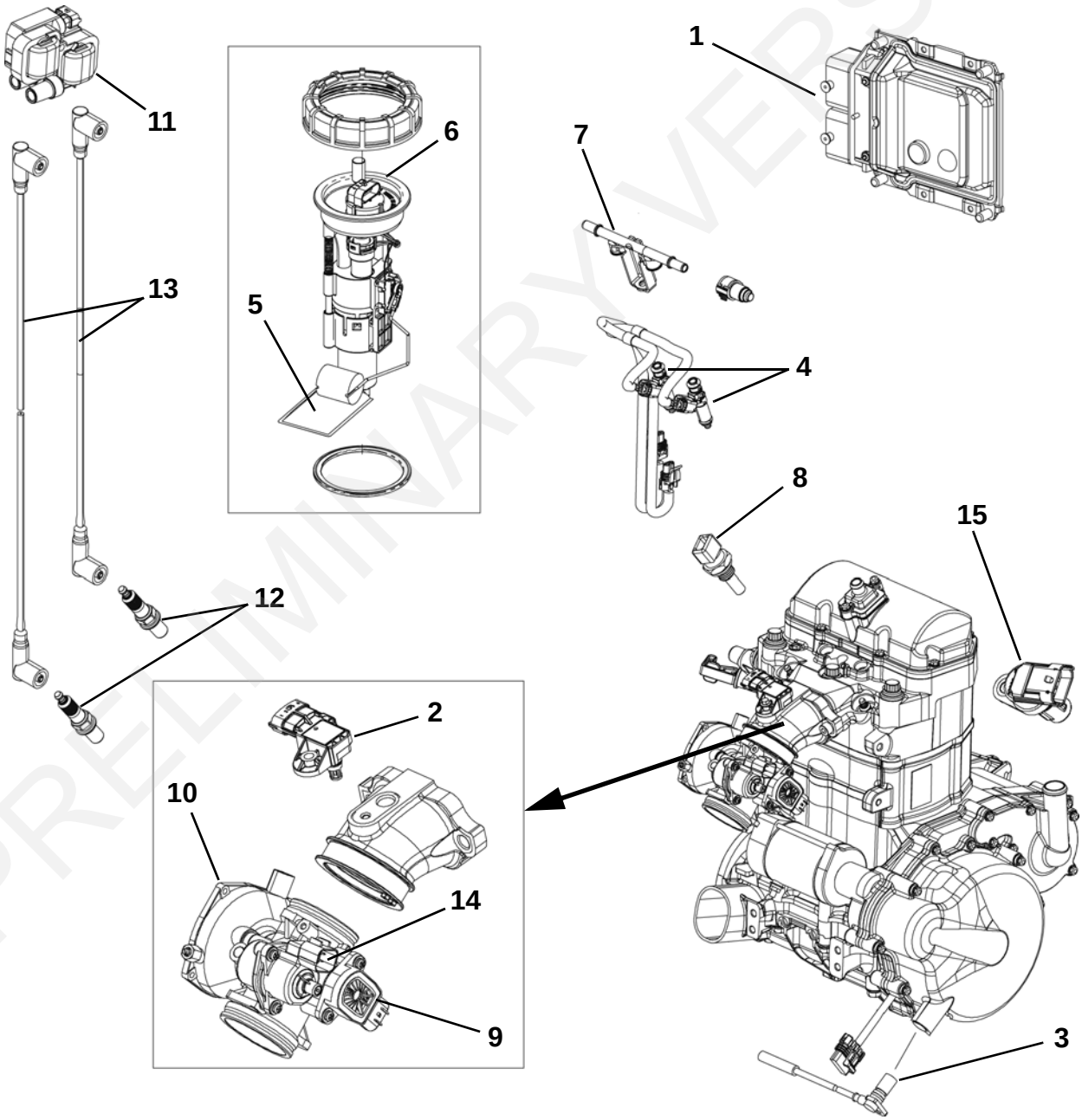
IMPORTANT: For the most recent information on Digital Wrench™ software and update downloads please visit the website: www.polaris.diagsys.com

Service Notes

- For more convenient and accurate testing of EFI components, it is recommended dealers utilize the Digital Wrench™ Diagnostic Software (dealer only), or testing may be done manually using the procedures provided.
- **80% of all EFI problems are caused by wiring harness connections.**
- For the purpose of troubleshooting difficult running issues, a known-good ECU from another *RANGER* RZR 800 EFI of the same model and year may be used without damaging system or engine components.
- Never attempt to service any fuel system component while engine is running or ignition switch is "on."
- Cleanliness is essential and must be maintained at all times when servicing or working on the EFI system. Dirt, even in small quantities, can cause significant problems.
- Do not use compressed air if the system is open. Cover any parts removed and wrap any open joints with plastic if they will remain open for any length of time. New parts should be removed from their protective packaging just prior to installation.
- Clean any connector before opening to prevent dirt from entering the system.
- Although every precaution has been taken to prevent water intrusion failure, avoid direct water or spray contact with system components.
- Do not disconnect or reconnect the wiring harness connector to the control unit or any individual components with the ignition "on." This can send a damaging voltage spike through the ECU.
- Do not allow the battery cables to touch opposing terminals. When connecting battery cables attach the positive (red) cable to positive (+) battery terminal first, followed by negative (black) cable to negative (-) battery terminal.
- Never start the engine when the cables are loose or poorly connected to the battery terminals.
- Never disconnect battery while engine is running.
- Never use a battery boost-pack to start the engine.
- Do not charge battery with key switch "on."
- Always disconnect negative (-) battery cable lead before charging battery.
- Always unplug ECU from the wire harness before performing any welding on the unit.

EFI System Exploded View

1. Electronic Control Unit (ECU) 2. Temperature / Manifold Absolute Pressure Sensor (T-MAP) 3. Crankshaft Position Sensor (CPS) 4. Fuel Injectors 5. Fuel Filter 6. Fuel Pump / Regulator / Fuel Level Sender (located in fuel tank) 7. Fuel Rail 8. Engine Coolant Temperature Sensor (ECT) 9. Throttle Position Sensor (TPS) 10. Throttle Body 11. Ignition Coil 12. Spark Plugs	13. Spark Plug Wires 14. Idle Air Control (IAC) 15. Camshaft Phase Sensor



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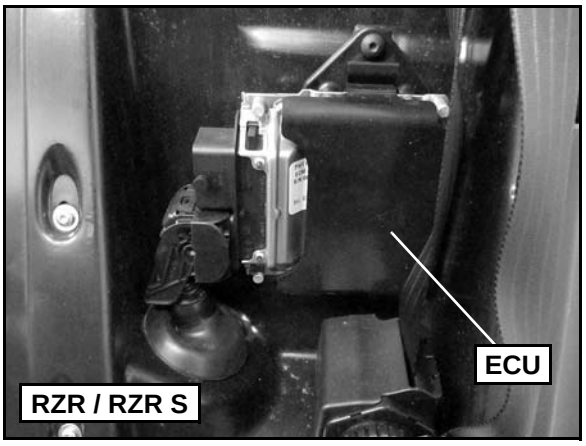
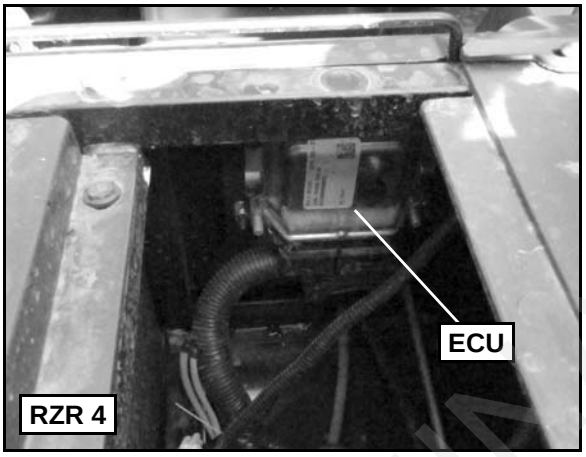
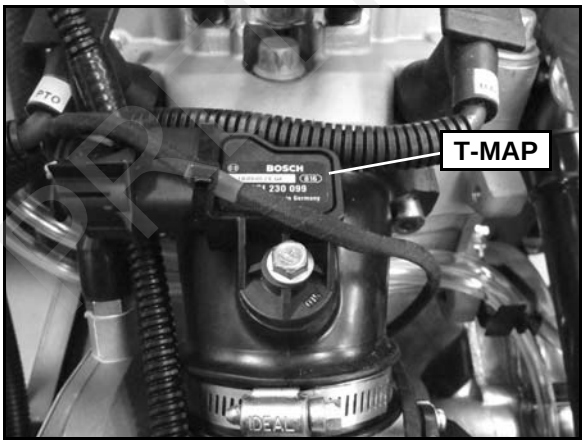
EFI System Component Locations

1. **Electronic Control Unit (ECU)**
   - Located behind the driver's seat (RZR / RZR S) or under the left rear passenger seat (RZR 4).

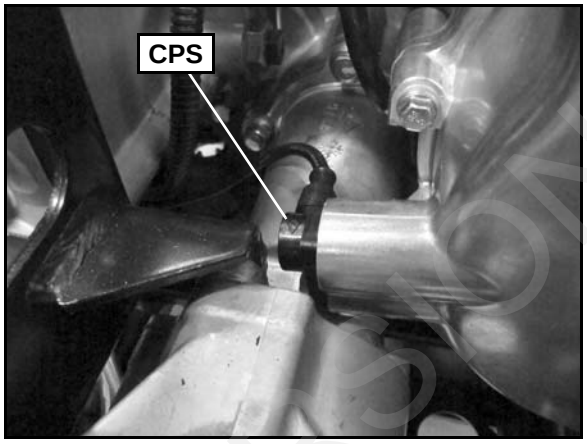




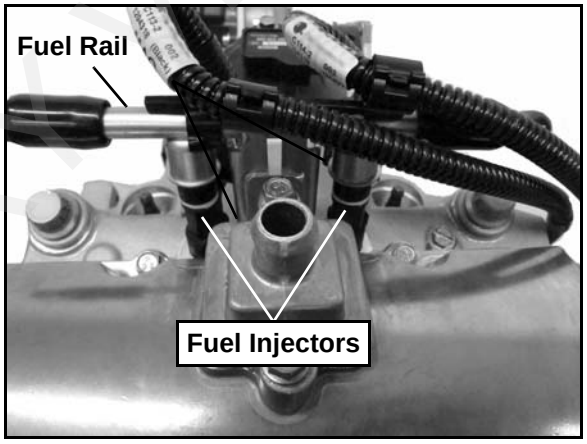
2. **Temperature and Manifold Absolute Pressure Sensor (T-MAP)**
   - Located in the rubber intake boot between the throttle body and the cylinder head.



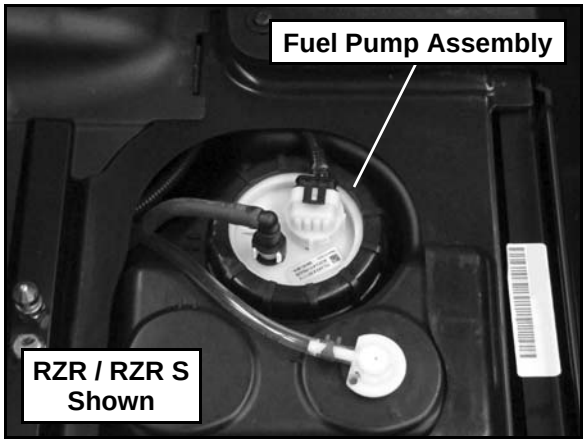
3. **Crankshaft Position Sensor (CPS)**
   - Located in the magneto cover between the engine and transmission, just in front of the rear gear case.

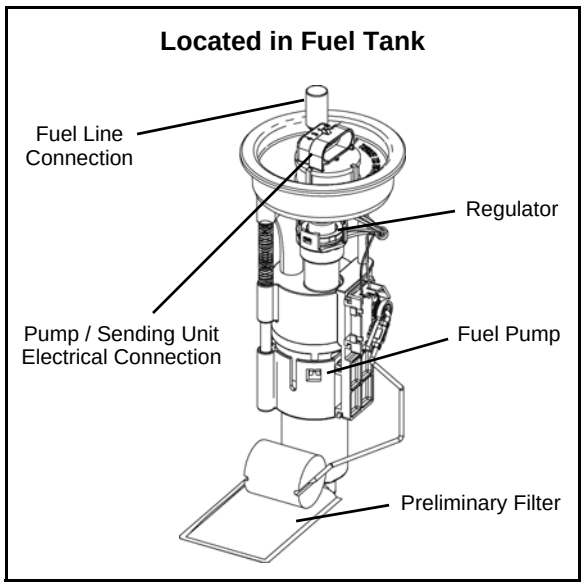


4. **Fuel Injectors / Fuel Rail**
   - Attached to the fuel rail located in the intake track of the cylinder head.



5. **Fuel Pump / Regulator / Fuel Gauge Sender Assembly**
   - Located under the passenger seat (RZR / RZR S) or under the right rear passenger seat (RZR 4).

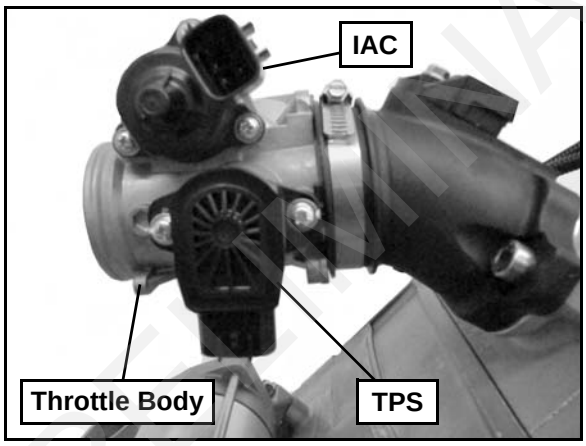




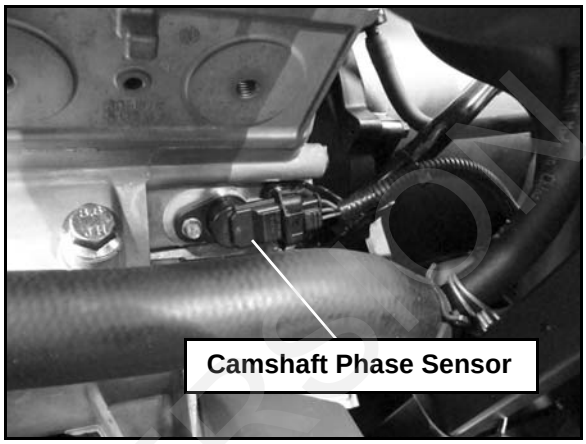
6. **Throttle Body**
   - Located between the rubber air box boot and rubber cylinder head adaptor.

7. **Throttle Position Sensor (TPS)**
   - Located on the right-hand side of the throttle body below the IAC motor.

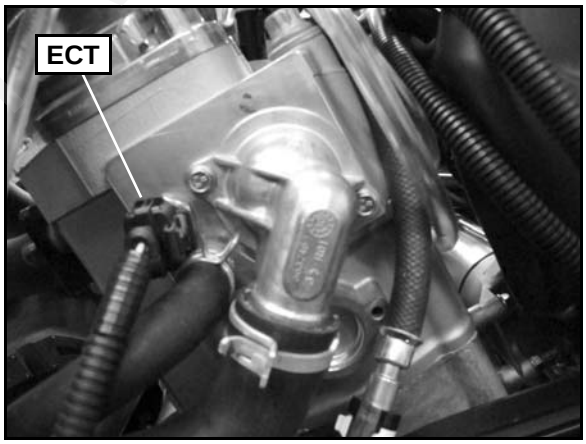
8. **Idle Air Control Motor (IAC)**
   - Located on the upper right-hand side of the throttle body above the TPS.



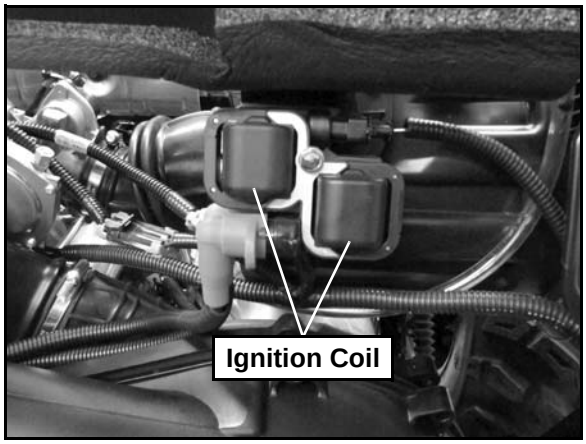
9. **Camshaft Phase Sensor**
   - Located in the engine block above the oil filter. The sensor can be accessed through the right rear wheel well.



10. **Engine Coolant Temperature Sensor (ECT)**
    - Located in the cylinder head next to the thermostat housing. The sensor can be accessed with the rear service panel removed.



11. **Ignition Coil**
    - Located behind the rear service panel just above the outer PVT cover.



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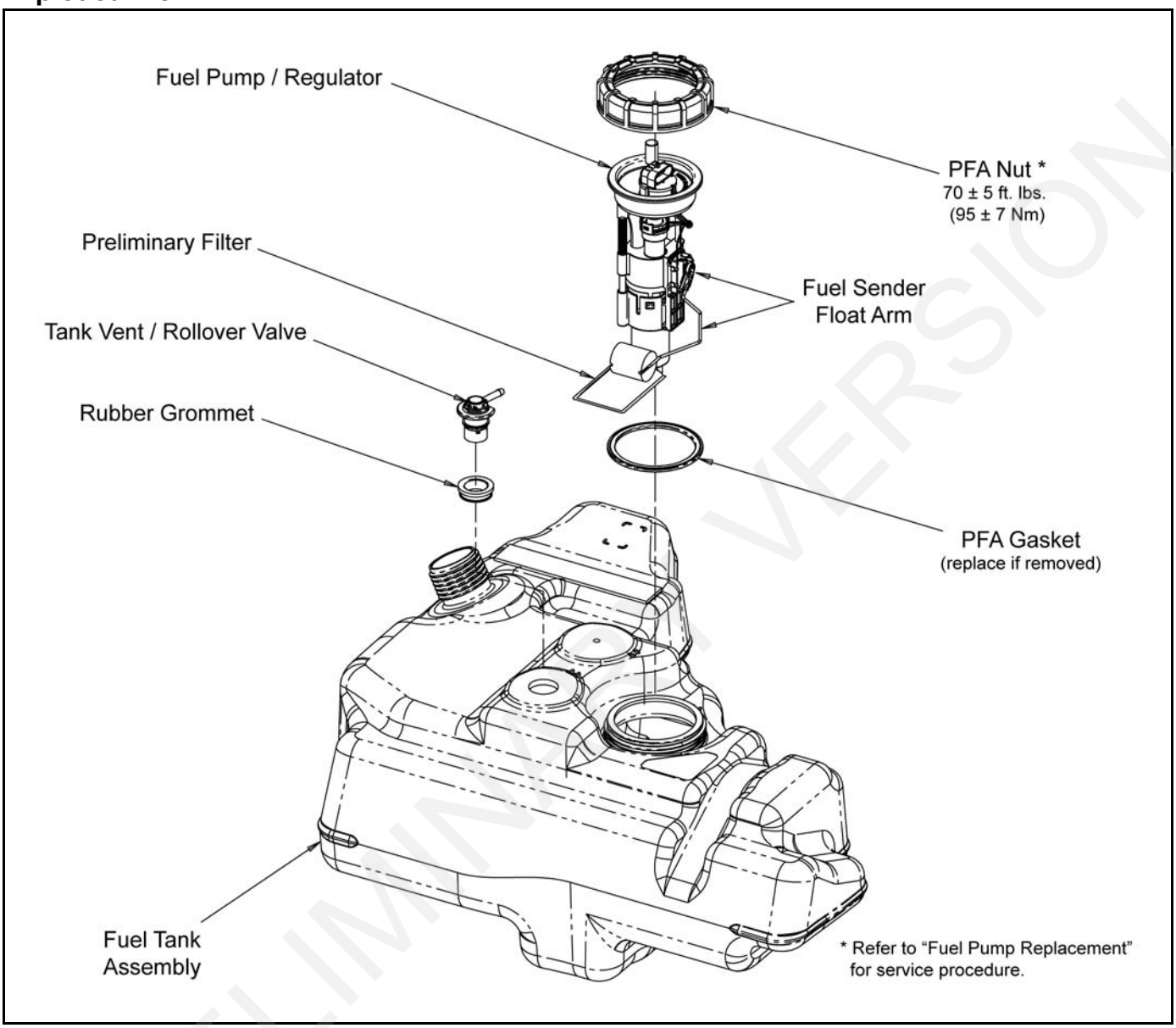
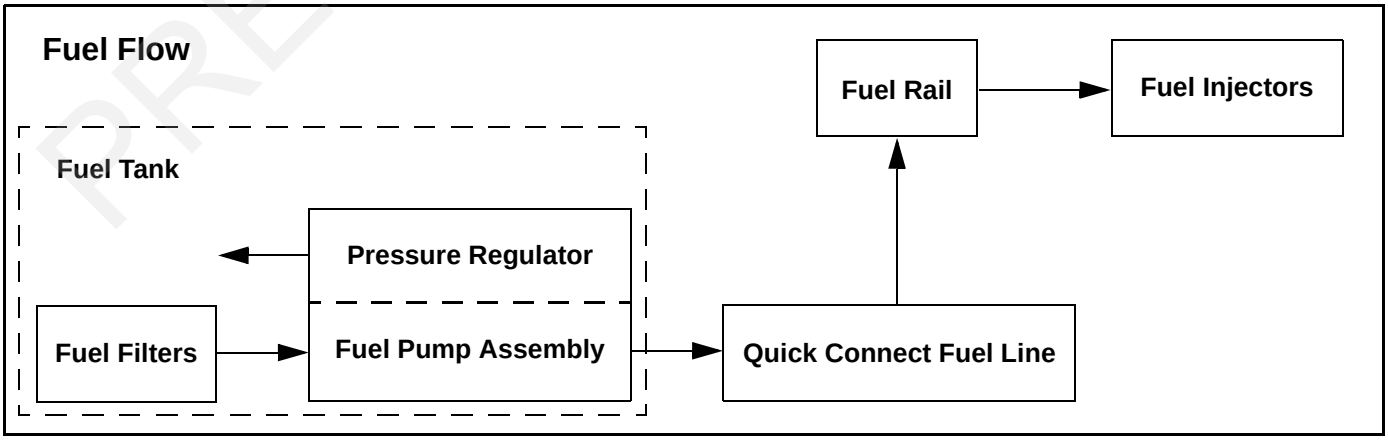
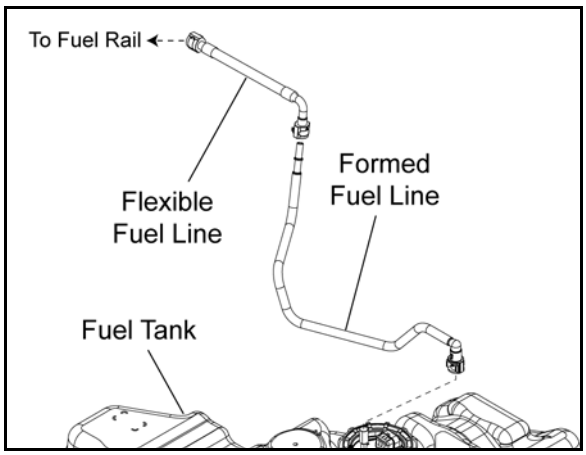
FUEL TANK

Exploded View

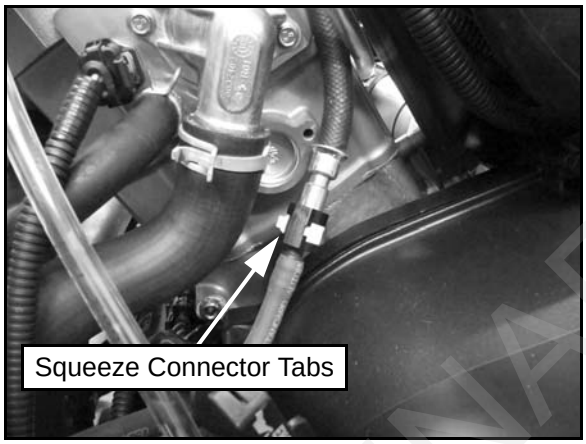


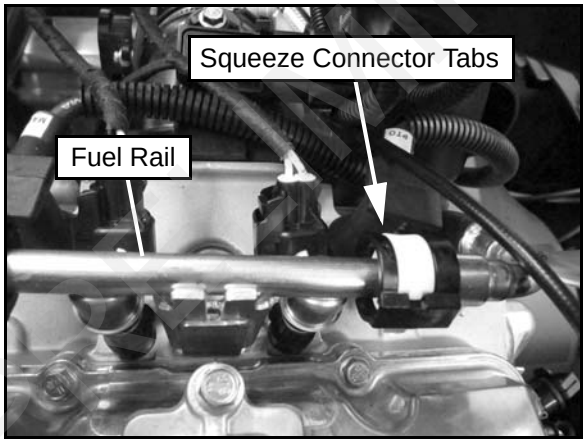


Fuel Line Removal / Installation



1. Place a shop towel around the fuel line to catch any dripping fuel. Squeeze the connector tabs together and push the locking slide back.





2. Pull on the fuel line for removal.
3. To install the line(s), verify the connections are clean and free of debris.
4. Snap the fuel line back over the nipple and slide the locking mechanism back into place. Verify the connector tabs snap back into place.

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ELECTRONIC FUEL INJECTION

Principal Components

The Electronic Fuel Injection (EFI) system is a complete engine fuel and ignition management design. This system includes the following principal components:

- Fuel Pump
- Fuel Rail
- Fuel Line
- Fuel Filter(s)
- Fuel Injectors
- Pressure Regulator
- Throttle Body / lntake Manifold
- Engine Control Unit (ECU)
- Ignition Coils
- Engine Coolant Temperature Sensor (ECT)
- Throttle Position Sensor (TPS)
- Crankshaft Position Sensor (CPS)
- Temperature and Manifold Absolute Pressure Sensor (T-MAP)
- Camshaft Phase Sensor
- Idle Air Control Motor (IAC)
- Wire Harness Assembly
- Check Engine Light

EFI Operation Overview

The EFI system is designed to provide peak engine performance with optimum fuel efficiency and lowest possible emissions. The ignition and injection functions are electronically controlled, monitored and continually corrected during operation to maintain peak performance.

The central component of the system is the Bosch Electronic Control Unit (ECU) which manages system operation, determining the best combination of fuel mixture and ignition timing for the current operating conditions.

An in-tank electric fuel pump is used to move fuel from the tank through the fuel line, to the fuel rail. The in-tank fuel pressure regulator maintains a system operating pressure and returns any excess fuel back into the tank. At the engine, fuel is fed through the fuel rail and into the injectors, which inject into the intake ports.

The ECU controls the amount of fuel by varying the length of time that the injectors are "on." This range can vary depending on fuel requirements. The controlled injection of the fuel occurs every other crankshaft revolution, or once for each 4-stroke cycle. The total amount of fuel needed for one firing of a cylinder is injected during each cycle. When the intake valve opens, the fuel/air mixture is drawn into the combustion chamber, ignited and burned.

The ECU controls the amount of fuel being injected and the ignition timing by monitoring the primary sensor signals for intake air temperature, manifold absolute pressure (load), engine temperature, speed (RPM), camshaft position and throttle position. These primary signals are compared to the programming in the ECU computer chip, and the ECU adjusts the fuel delivery and ignition timing to match the values.

During operation, the ECU has the ability to re-adjust temporarily; providing compensation for changes in overall engine condition and operating environment, so it will be able to maintain the ideal air/fuel ratio.

During certain operating periods such as cold starts, warm up, acceleration, etc., a richer air / fuel ratio is automatically calculated by the ECU.

Initial Priming / Starting Procedure

NOTE: The injection system must be purged of all air prior to the initial start up, and / or any time the system has been disassembled.

If the EFI system is completely empty of fuel or has been disassembled and repaired:

1. Cycle the key switch from “OFF” to “ON” 6 times, waiting for approximately 3 seconds at each “ON” cycle to allow the fuel pump to cycle and shut down.
2. Once step 1 is completed, turn the key switch to “START” until the engine starts or 5 seconds has passed.
3. If the engine failed to start, repeat step 1 for 2 more cycles and attempt to start the engine.

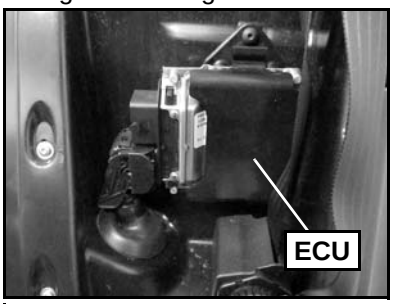
If the engine fails to start, a problem may still exist, and should be diagnosed.

NOTE: Accurate testing of EFI components is recommended utilizing the Digital Wrench™ Diagnostic Software (dealer only).

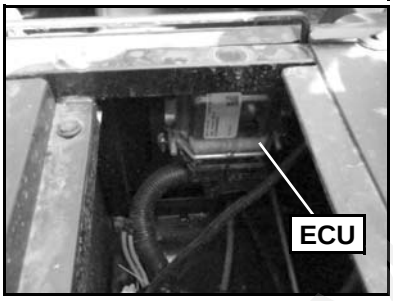
ELECTRONIC CONTROL UNIT (ECU)

Operation Overview

The ECU is the brain or central processing computer of the entire EFI fuel/ignition management system. During operation, sensors continuously gather data which is relayed through the wiring harness to input circuits within the ECU. Signals to the ECU include: ignition (on/off), crankshaft position and speed (RPM), camshaft position (MAG/PTO), throttle position, engine coolant temperature, intake air temperature, intake manifold absolute pressure and battery voltage. The ECU compares the input signals to the programmed maps in its memory and determines the appropriate fuel and spark requirements for the immediate operating conditions. The ECU then sends output signals to set the injector duration and ignition timing.



RZR / RZR S
- Located behind driver's seat



RZR 4
- Located under left rear passenger seat

During operation, the ECU continually performs a diagnostic check of itself, each of the sensors, and system performance. If a fault is detected, the ECU turns on the "Check Engine" light in the speedometer and stores the fault code in its fault memory. Depending on the significance or severity of the fault, normal operation may continue, or "Fail-Safe" operation (slowed speed, richer running) may be initiated. A technician can determine the cause of the "Check Engine" light by referencing the "Instrument Cluster Trouble Code Display" and "Diagnostic Trouble Code Table" or by using Digital Wrench™. The ECU requires a minimum of 7.0 volts to operate. The memory in the ECU is operational the moment the battery cables are connected.

To prevent engine over-speed and possible failure, an RPM limiting feature is programmed into the ECU. If the maximum RPM limit is exceeded, the ECU suppresses the injection signals, cutting off the fuel flow and retards the ignition timing. This process repeats it self in rapid succession, limiting operation to the preset maximum.

***RANGER* RZR 800 EFI RPM Limit:**

Max RPM Limit - Injector and ignition suppression.

- **RZR:** 6600 RPM (All Gears)
- **RZR S / RZR 4:** 6750 RPM (All Gears)

ECU Service

Never attempt to disassemble the ECU. It is sealed to prevent damage to internal components. Warranty is void if the case is opened or tampered with in any way.

All operating and control functions within the ECU are pre-set. No internal servicing or readjustment may be performed. If a problem is encountered, and you determine the ECU to be faulty, contact the Polaris Service Department for specific handling instructions. Do not replace the ECU without factory authorization.

The relationship between the ECU and the throttle position sensor (TPS) is very critical to proper system operation. If the TPS is faulty, or the mounting position of the TPS to the throttle body is altered, the TPS must be adjusted.

For the purpose of troubleshooting, a known-good ECU from another Polaris ***RANGER*** RZR EFI of the same model may be used without system or engine component damage.

ECU Replacement

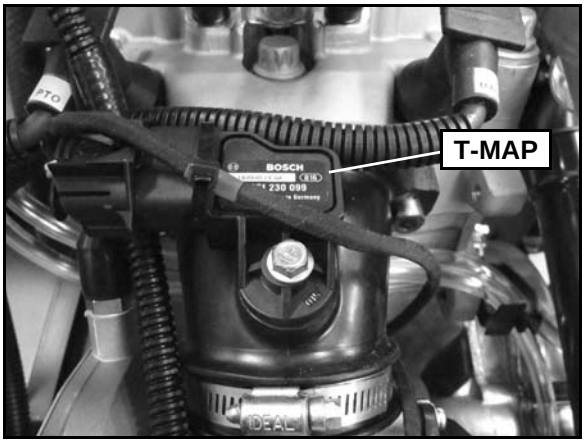
1. Remove the (2) retaining screws holding the ECU.
2. With the ignition turned off, disconnect the wire harness from the ECU.
3. To install, reverse the procedure and tighten screws to specification.

= T
ECU Retaining Screws: **10 in-lbs (1.1 Nm)**

TEMP / MANIFOLD ABSOLUTE PRESSURE SENSOR (T-MAP)

Operation Overview

Mounted on the throttle body intake manifold, the T-MAP sensor performs two functions in one unit.



Air passing through the intake is measured by the T-MAP and relayed to the ECU. These signals, comprised of separate air temperature and manifold absolute pressure readings, are processed by the ECU and compared to its programming for determining the fuel and ignition requirements during operation. The T-MAP sensor provides the ECU with engine load data.

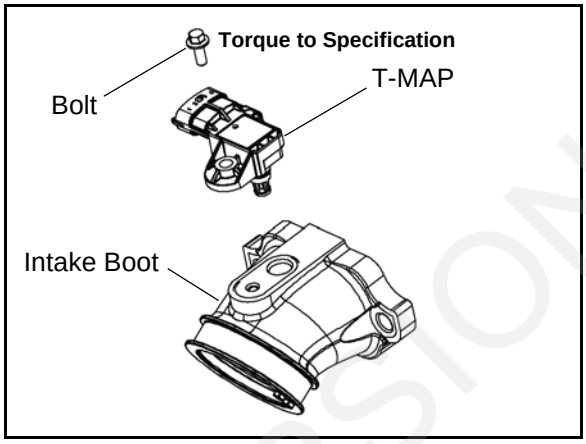
T-MAP Sensor Test

The T-MAP sensor is a non-serviceable item. If it is faulty, it must be replaced.

IMPORTANT: This sensor should only be tested using the Digital Wrench™ Diagnostic Software (dealer only).

T-MAP Sensor Replacement

1. Remove the seats and rear service panel. (see chapter 5).
2. Remove the rear cargo box (see chapter 5).
3. Remove the cable tie from the sensor connector.
4. Disconnect vehicle harness from T-MAP sensor.
5. Remove the retaining bolt and remove the sensor from the intake boot.
6. Use a light coating of soapy water on the grommet to aid installation of the new sensor.
7. Install the sensor by inserting it with a twisting motion to properly seat the grommet.



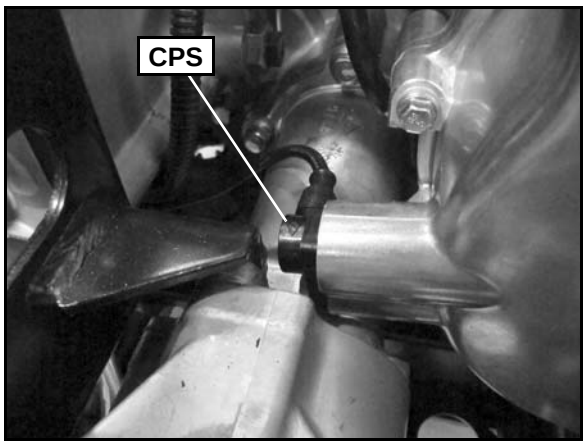
8. Install the retaining bolt and torque to specification.

= T
T-MAP Retaining Bolt: **25 ± 2.5 in-lbs (3 ± .3 Nm)**

CRANKSHAFT POSITION SENSOR (CPS)

Operation Overview

The crankshaft position sensor is essential to engine operation, constantly monitoring the rotational speed (RPM) and position of the crankshaft.



A ferromagnetic 60-tooth ring gear with two consecutive teeth missing is mounted on the flywheel. The inductive speed sensor is mounted 1.0 ± 0.26 mm (0.059 ± 0.010 in.) away from the ring gear. During rotation, an AC pulse is created within the sensor for each passing tooth. The ECU calculates engine speed from the time interval between the consecutive pulses.

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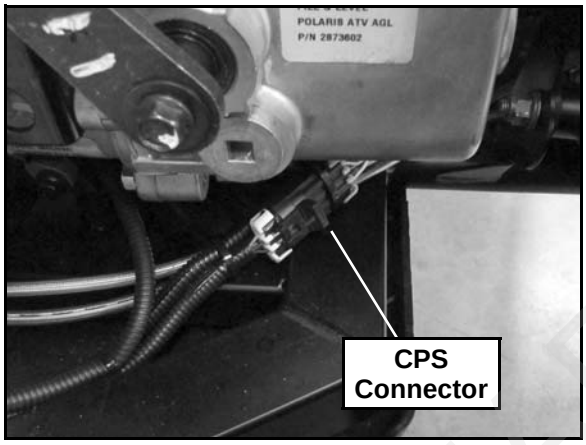
The two-tooth gap creates an “interrupt” input signal, corresponding to specific crankshaft position. This signal serves as a reference for the control of ignition timing by the ECU. Synchronization of the CPS and crankshaft position takes place during the first two revolutions each time the engine is started. This sensor must be properly connected at all times. If the sensor fails or becomes disconnected for any reason, the engine will stop running.

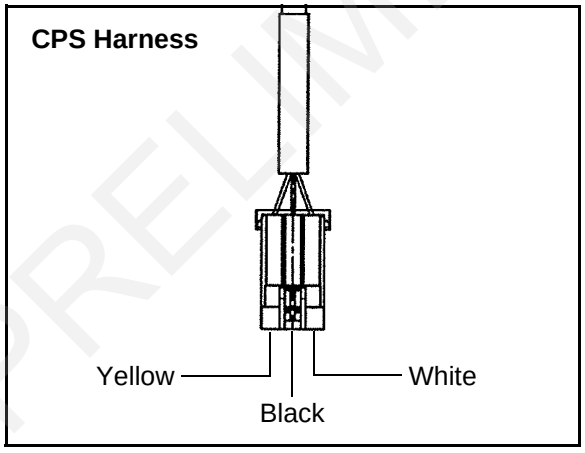
CPS Test

The CPS is a sealed, non-serviceable assembly. If fault code diagnosis indicates a problem with this sensor, test as follows:

1. Disconnect CPS (3-wire) harness connector on left-hand side of vehicle located below the transmission.



2. Connect an ohmmeter between the pin terminals leading from the Yellow and White wires. A resistance value of **560Ω ± 10%** at room temperature should be obtained.



CPS Resistance Specification:
Yellow to White: 560Ω ± 10%

3. If the resistance is correct.
   - Test the main harness circuit between the sensor connector terminals and the corresponding pin terminals at the ECU (see wiring diagram).
   - Check the sensor mounting, air gap, flywheel ring gear for damage or runout, and flywheel key. Follow the “CPS Replacement” procedure to inspect CPS and flywheel ring gear for damage.

4. If the resistance is incorrect, follow the “CPS Replacement” procedure.

CPS Replacement

Removal

1. Safely support the rear of the vehicle off the ground and remove the left-hand rear tire.

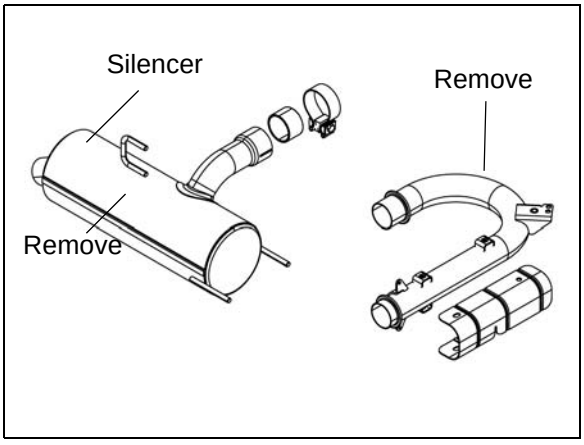
⚠ WARNING

Serious injury may result if machine tips or falls. Be sure the vehicle is secure before beginning this service procedure.

2. If not done already; disconnect the CPS harness connector (see illustration under “CPS Test”).

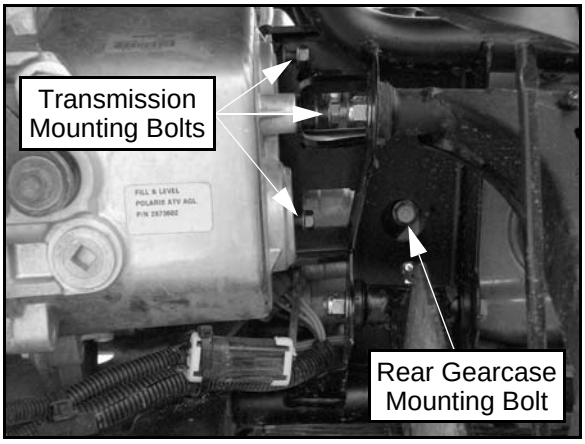
IMPORTANT: In order to remove the CPS, the rear portion of the exhaust system and the mounting bracket between the transmission and rear gearcase will need to be removed.

3. Remove the exhaust pipe between the elbow pipe and the exhaust silencer. Remove the exhaust silencer.

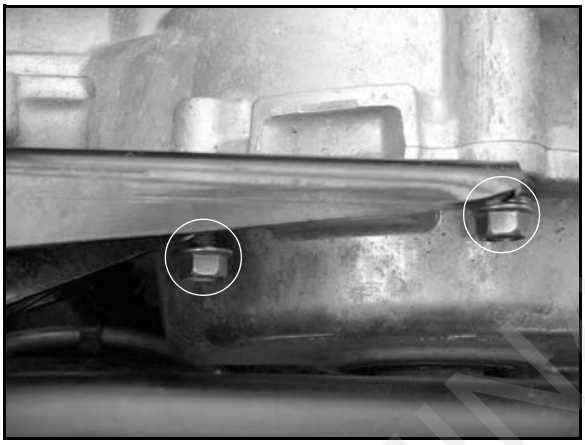


4. Remove the (3) bolts retaining the front portion of the mounting bracket to the transmission. Retain the bolts, washers, and spacers for installation.

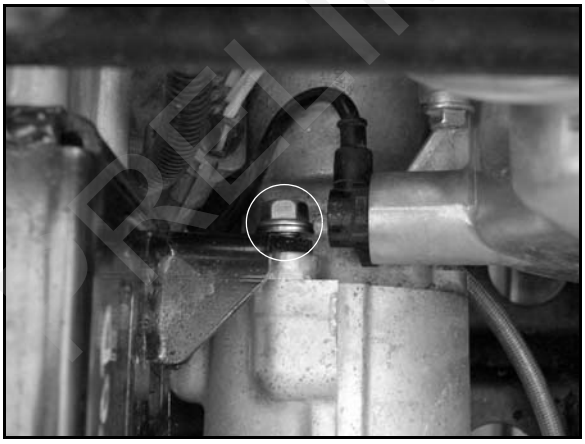
5. Remove the bottom bolt that attaches the bracket to the rear gearcase through the hole in the frame support as shown.



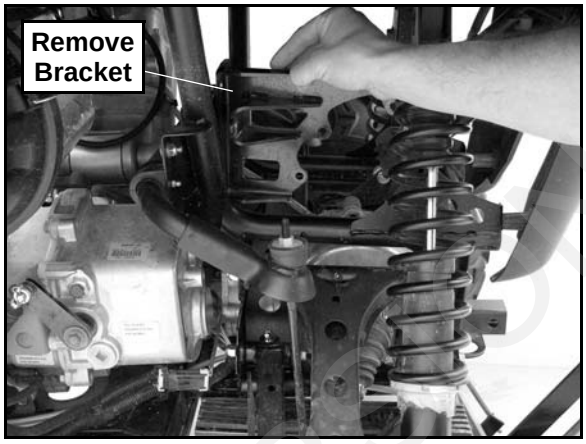
6. Remove the (2) remaining fasteners that attach the bracket to the side of the rear gearcase.



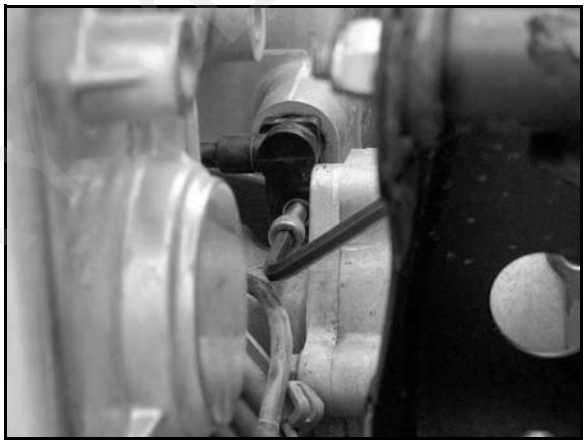
7. Remove the bolt from the bracket at the front of the rear gearcase.



8. Lift the mounting bracket straight up and out from the vehicle.



9. Using a 5 mm hex wrench, remove the CPS retaining bolt and remove the sensor from the magneto housing.



10. Install new sensor using a light coating of oil on the O-ring to aid installation.

11. Torque the CPS retaining bolt to specification.

= T
CPS Retaining Bolt: **25 in-lbs (2.8 Nm)**

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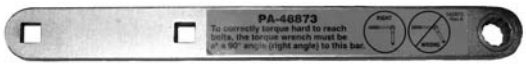
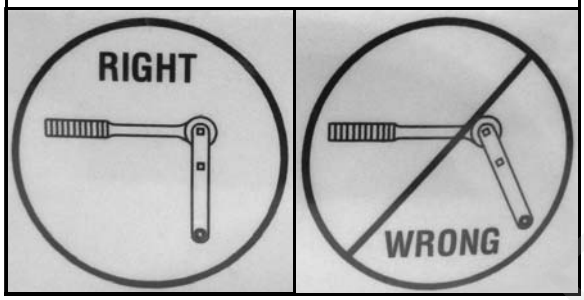
Installation

IMPORTANT: When reinstalling the transmission to rear gearcase mount bracket, it is extremely important to torque all (7) fasteners to specification. Refer to the following procedure.

NOTE: Special tool (PA-48873) will be required to torque the mounting bracket fasteners when the transmission and rear gearcase are installed in the vehicle.

Special Tool
PA-48873





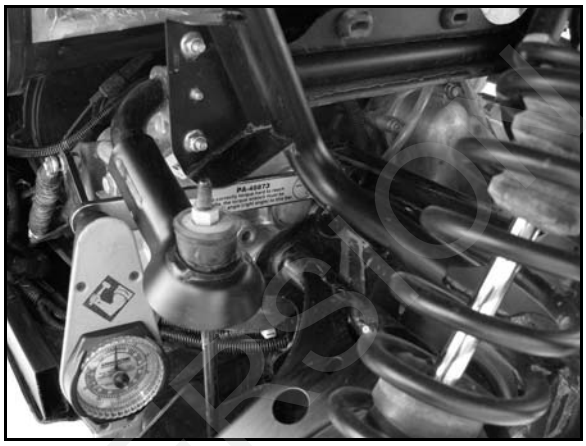
This tool is specifically designed to access the critical transmission to rear gearcase mounting bracket bolts on the *RANGER* RZR when the transmission and rear gearcase are installed in the vehicle. This tool allows for proper torque to be applied to ½" SAE hex head cap screws with limited wrench access. When used at a 90° angle with a torque wrench, no torque multiplier is necessary.

1. Clean bolt threads with solvent and allow them to dry. Coat the circumference of the first 4 threads of the bolts with Loctite® 242® before installing the bolts.
2. Reinstall mounting bracket and hand tighten the (7) bolts.
3. Torque ALL mounting bracket bolts to specification.

= T
Mount Bracket Bolt: **23-27 ft-lbs (31-37 Nm)**

4. Using special tool (PA-48873), torque the (3) bolts that retain the front portion of the mounting bracket to the transmission.

Upper Transmission Bolt



Middle Transmission Bolt

Bottom Transmission Bolt

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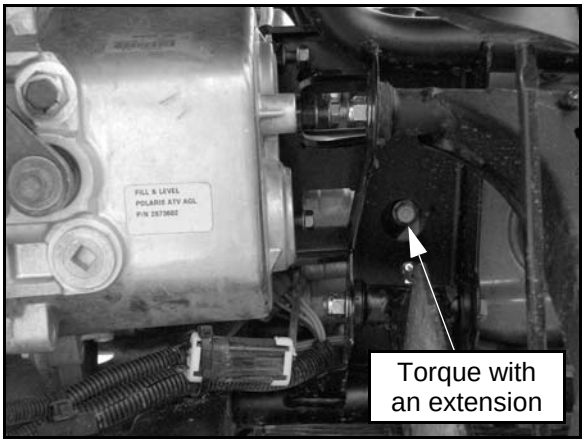
5. Remove the special tool and attach an extension to the torque wrench. Torque the bottom bolt that attaches the bracket to the rear gearcase through the hole in the frame support.

Bottom Rear Gearcase Bolt

NOTE: Special Tool is not required for this torque.



6. Using special tool (PA-48873), torque the upper (2) bolts retaining the mounting bracket to the rear gearcase. Place the torque wrench through the rear exhaust silencer opening to gain access to the bolts.

Middle Rear Gearcase Bolt

Upper Rear Gearcase Bolt

7. Torque the remaining bolt that attaches the bracket to the front side of the rear gearcase.

Front Rear Gearcase Bolt

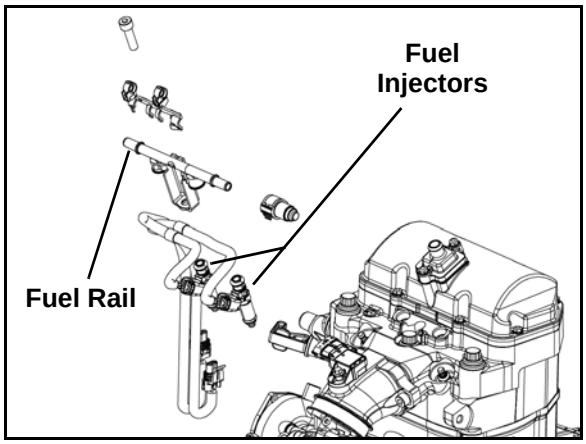
NOTE: A multi-directional torque wrench is required in this application because of the limited access to this bolt. Check with the manufacturer of your torque wrench to see if it can be used to tighten left-hand threaded bolts.

FUEL INJECTORS

Operation Overview

NOTE: All EFI units utilize quick connect fuel lines.

The fuel injectors mount into the cylinder head, and the fuel rail attaches to them at the top end. O-rings on both ends of the injector prevent external fuel leaks and also insulate it from heat and vibration.



When the key switch is on, the fuel rail is pressurized, and the EFI relay provides voltage to the injectors. During engine operation, the ECU completes the ground circuit, energizing the injectors. The valve needle in the injector is opened electromagnetically, and the pressure in the fuel rail forces fuel down through the inside. The “director plate” at the tip of the injector contains a series of calibrated openings which directs the fuel into the intake port in a cone-shaped spray pattern.

The amount of fuel injected is controlled by the ECU and determined by the length of time the valve needle is held open, also referred to as the “injection duration” or “pulse width”. It may vary in length depending on the speed and load requirements of the engine.

The ECU gathers fuel injection timing information from the Crankshaft Position Sensor and Camshaft Phase Sensor to allow for sequential fuel injection.

Fuel Injector Service

Injector problems typically fall into three general categories- electrical, dirty / clogged, or leakage. An electrical problem usually causes one or both of the injectors to stop functioning. Several methods may be used to check if the injectors are operating.

- With the engine running at idle, feel for operational vibration, indicating that they are opening and closing.
- When temperatures prohibit touching, listen for a buzzing or clicking sound with a screwdriver or mechanic's stethoscope.
- Disconnect the electrical connector from an injector and listen for a change in idle performance (only running on one cylinder) or a change in injector noise or vibration.

NOTE: Do not apply voltage directly to the fuel injector(s). Excessive voltage will burn out the injector(s). Do not ground the injector(s) with the ignition on. Injector(s) will open/turn on if relay is energized.

If an injector is not operating, it can indicate either a bad injector, or a wiring/electrical connection problem. Check as follows:

Injector leakage is very unlikely, but in rare instances it can be internal (past the tip of the valve needle), or external (weeping around the injector body). The loss of system pressure from the leakage can cause hot restart problems and longer cranking times.

Injector problems due to dirt or clogging are unlikely due to the design of the injectors, the high fuel pressure, the use of filters and the detergent additives in the gasoline. Symptoms that could be caused by dirty/clogged injectors include rough idle, hesitation/stumble during acceleration, or triggering of fault codes related to fuel delivery. Injector clogging is usually caused by a buildup of deposits on the director plate, restricting the flow of fuel, resulting in a poor spray pattern. Some contributing factors to injector clogging include; dirty air filters, higher than normal operating temperatures, short operating intervals and dirty, incorrect, or poor quality fuel. Cleaning of clogged injectors is not recommended; they should be replaced. Additives and higher grades of fuel can be used as a preventative measure if clogging has been a problem.

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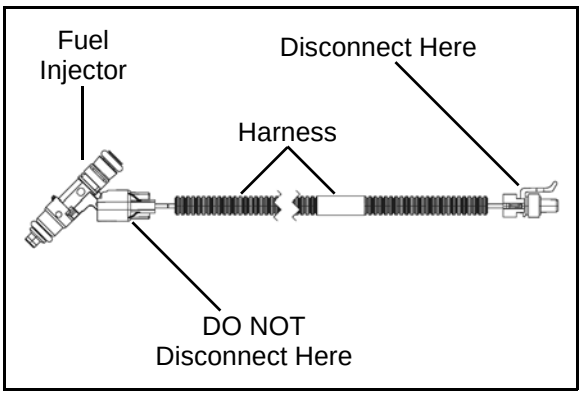
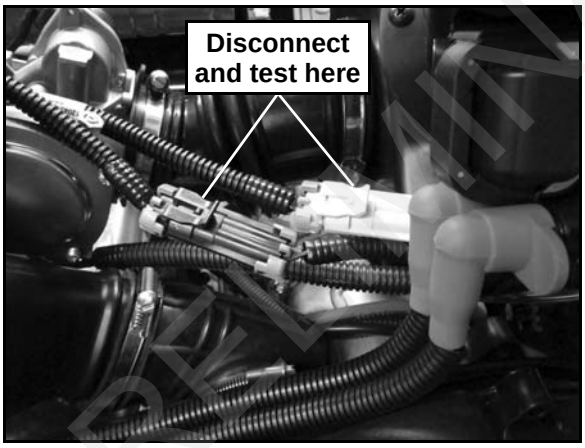
Fuel Injector Test

NOTE: The harness connector and locking spring is bonded to the fuel injectors with an epoxy. DO NOT attempt to disconnect the connector from the fuel injectors. Damage will occur to the injector and/or harness if attempting to separate at that location. Separate the fuel injector from the vehicle harness as shown in the illustration below.



IMPORTANT: Take note of PTO and MAG fuel injector harness connectors before disconnecting them. The harnesses are different and <u>can not</u> be connected incorrectly (PTO - Gray; MAG - Black).

The fuel injectors are non-serviceable. If diagnosis indicates a problem with either injector, test the resistance of the fuel injector(s) by measuring between the two harness pin terminals:

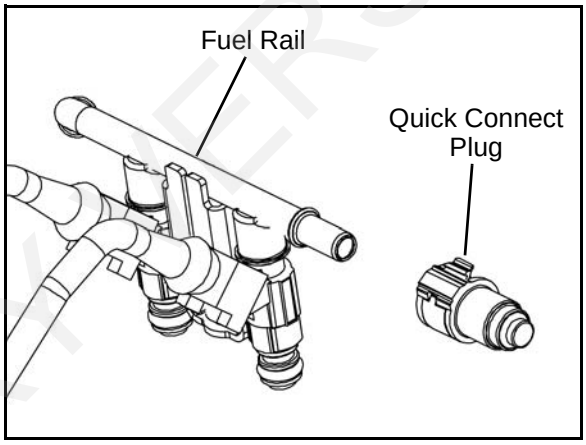


Fuel Injector Resistance Specification:
11.4 Ω - 12.6 Ω

NOTE: Be sure to connect like colored fuel injector connectors for proper engine function (PTO = GRAY, MAG = BLACK).

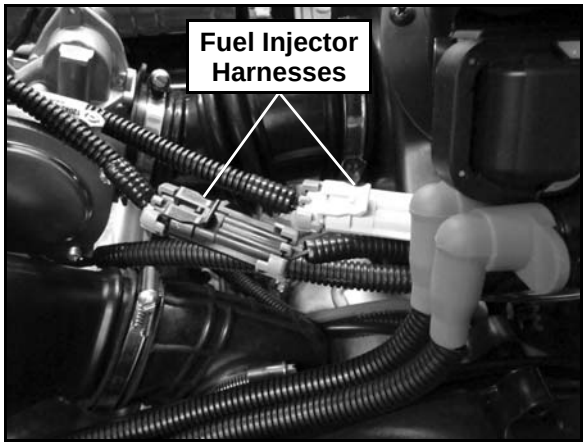
Fuel Injector Replacement

1. Be sure the engine has cooled enough to work on.
2. Remove seats and rear service panel (see chapter 5):
   - **RZR / RZR S:** Remove both driver and passenger seats
   - **RZR 4:** Remove both rear passenger seats
3. Remove the rear cargo box (see chapter 5).
4. Place a suitable container below the quick connect plug at the end of the fuel rail. Hold a shop rag over the plug and remove it to depressurize the fuel system.



5. Disconnect the harness for the fuel injector(s) located next to the ignition coil. Cut the plastic tie strap and push the harness for the fuel injector(s) up over the air box to allow fuel injector removal.

IMPORTANT: Take note of PTO and MAG fuel injector harness connectors before disconnecting them. The harnesses are different and <u>can not</u> be connected incorrectly (PTO - Gray; MAG - Black).



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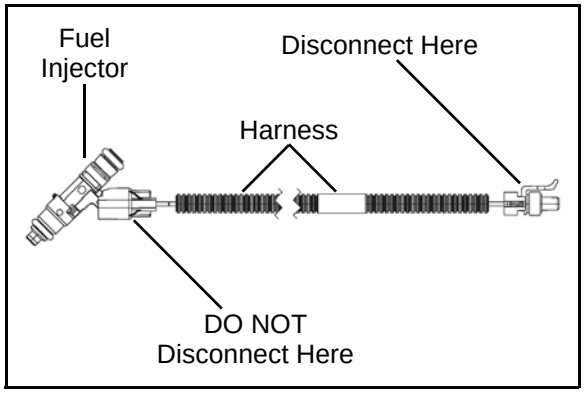
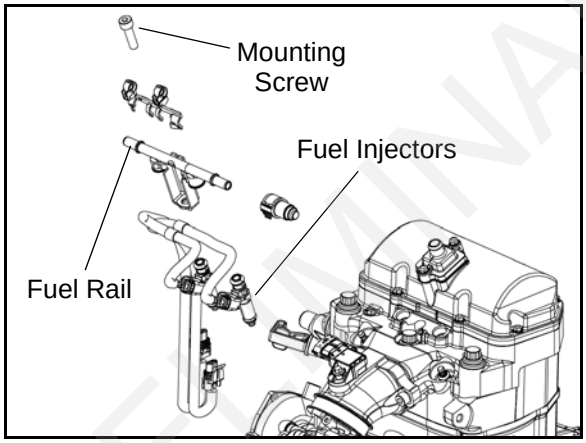
NOTE: The harness connector and locking spring is bonded to the fuel injectors with an epoxy. DO NOT attempt to disconnect the Bosch connector from the fuel injectors. Damage will occur to the injector and/ or harness if attempting to separate at that location. Separate the fuel injector from the vehicle harness as shown in the illustration below.



6. Thoroughly clean the area around the fuel injectors including the throttle body manifold.

7. Using a 6 mm hex wrench, loosen the fuel rail mounting screw from the cylinder head. Carefully pull the rail away from the injectors and remove the injector(s) from the cylinder head along with the harness.



8. Reverse the previous steps to install the new injector(s) and reassemble.

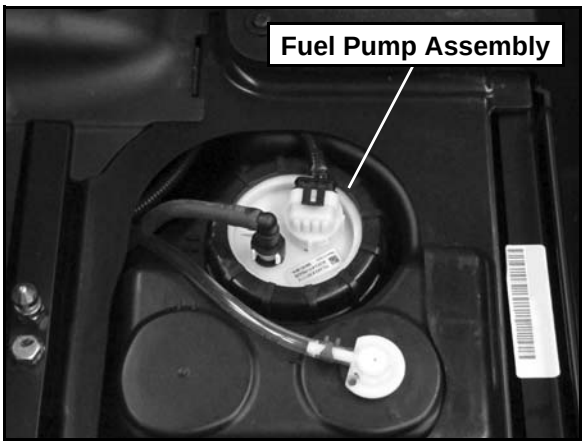
9. Lubricate O-rings lightly with oil to aid installation. Torque the fuel rail mounting screw to specification.

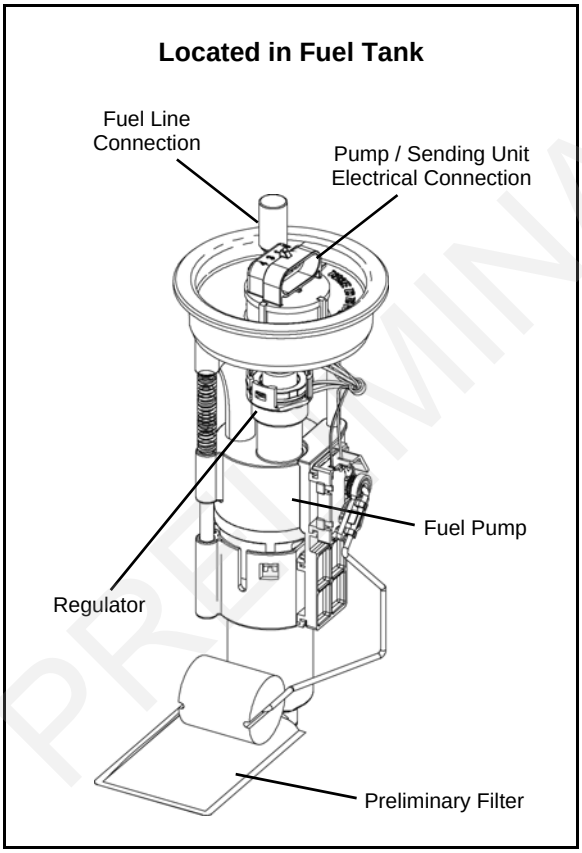
= **T**
Fuel Rail Mounting Screw: **216 ± 24 in-lbs (24 Nm)**

FUEL PUMP

Operation Overview

An electric fuel pump assembly is used to transfer fuel to the EFI system from inside the fuel tank. This assembly includes the fuel pump, fuel filters, regulator and fuel gauge sender. The pump is rated for a minimum output of 25 liters per hour at 45 +/- 2 psi and has two non-serviceable fuel filters.





When the key switch is turned to "ON", the ECU activates the fuel pump, which pressurizes the system for start-up.

The ECU switches off the pump preventing the continued delivery of fuel in these instances:

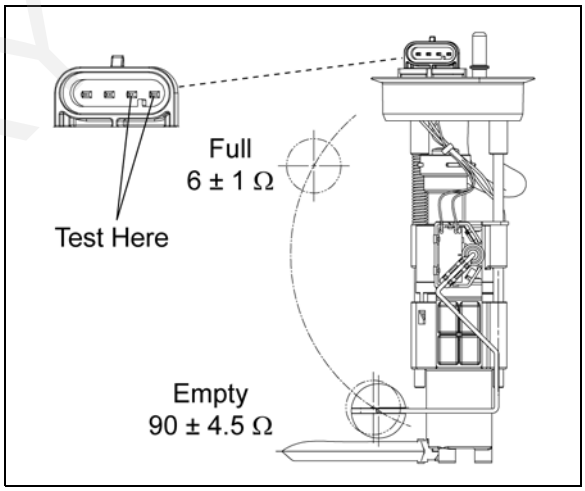
- If the key switch is not promptly turned to the "start" position.
- If the engine fails to start.
- If the engine is stopped with the key switch "on" (as in the case of an accident).

In these situations, the “check engine” light will turn on, but turn off after 4 cranking revolutions if system function is OK. Once the engine is running, the fuel pump remains on.

Fuel Sender Test

If the fuel gauge reading on the instrument cluster is not working, or if the display reading differs in large comparison to the fuel in the tank, perform a resistance test on the fuel sender.

Disconnect the fuel pump / sending unit connection and measure the resistance. If out of specification, replace the fuel pump assembly.



Fuel Sender Resistance Specifications:
Full: 6 ± 1 Ω
Empty: 90 ± 4.5 Ω

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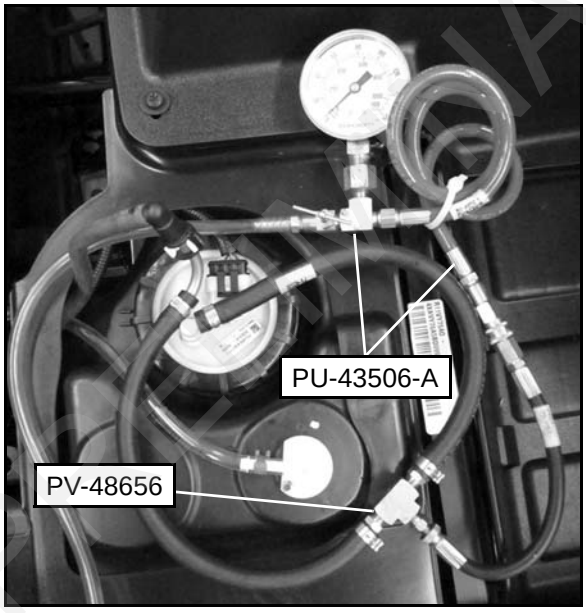
Fuel Pump Test

If a fuel delivery problem is suspected, make certain the fuel pump filters are not plugged, that the pump is being activated through the ECU, all electrical connections are properly secured, the fuses are good, and a minimum of 7.0 volts is being supplied. If during starting the battery voltage drops below 7.0 volts, the ECU will fail to operate the system.

⚠ WARNING

Fuel is extremely flammable and may cause severe burns, injury, or death.
Do not use any device that produces a flame or electrical devices that may spark around fuel or fuel vapors.

1. Remove the passenger seat from the vehicle.
2. Cover the fuel line connection at the fuel tank with a shop towel and disconnect the line from the fuel pump.
3. Install the Fuel Pressure Gauge Adaptor (PV-48656) in-line between the fuel pump outlet and fuel line.
4. Connect the hose from the Fuel Pressure Gauge Kit (PU-43506-A) to the test valve on the Fuel Pressure Gauge Adaptor (PV-48656). Route clear hose into a portable gasoline container or the vehicle's fuel tank.

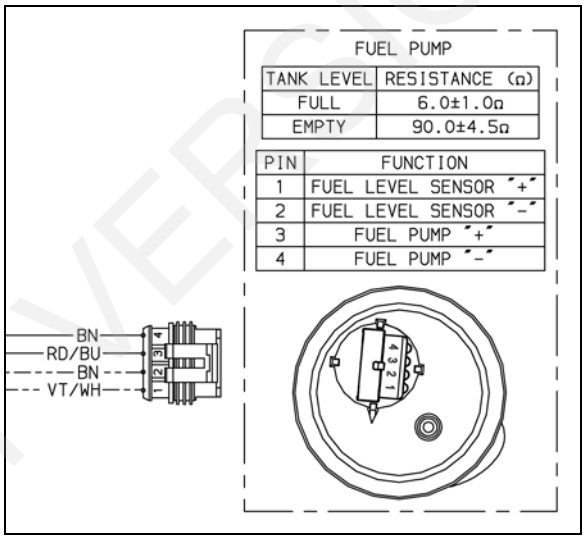


5. Turn on the key switch to activate the pump and check the system pressure on the gauge. If system pressure of 45 psi ± 2 is observed, the ignition switch, ECU, fuel pump, and pressure regulator are working properly. Turn the key switch off and depress the valve button on the tester to relieve the system pressure.

Normal Fuel Pressure: 45 +/- 2 psi.

NOTE: If the fuel pressure is out of specification, replace the fuel pump assembly.

6. If the pump did not activate (Step 5), disconnect the harness connector from the fuel pump. Connect a DC voltmeter across terminals "3" and "4" in the plug on the vehicle fuel pump harness. Turn on the key switch and observe voltage to ensure a minimum of 7 volts is present.



NOTE: If the voltage was below 7 VDC, test the battery, ignition switch, relay(s), wiring harness and ECU.

7. If the reading is between 7 and 14 volts, turn key switch off and connect an ohmmeter between terminals "3" and "4"' at the white fuel pump connector to check for continuity within the fuel pump.

NOTE: If there was no continuity between the pump terminals, replace the fuel pump assembly.

8. If voltage at the plug was within the specified range, and there was continuity across the pump terminals, reconnect the plug to the fuel pump, making sure you have a clean connection. Turn on the key switch and listen for the pump to activate.

NOTE: If the pump starts, repeat steps 3, 4 and 5 to verify correct pressure.

9. If the pump still does not operate, check for correct ECU operation by plugging in a known-good ECU of the same model.

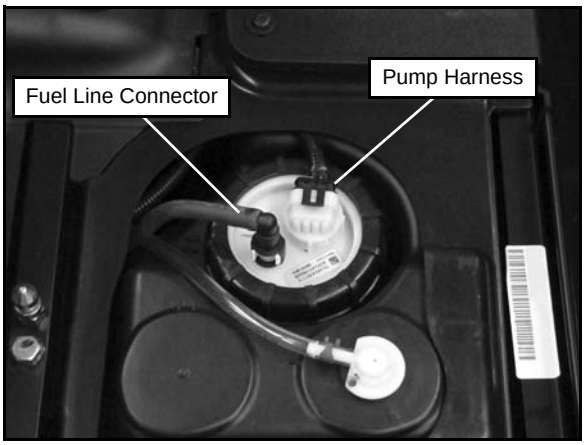
NOTE: If the pump still does not operate, replace the fuel pump assembly.

Fuel Pump Replacement

⚠ WARNING

Always wear safety goggles when working with high pressure or flammable fluids. Failure to do so could result in serious injury or complications.

1. Remove the passenger seat to access the fuel pump.
2. Ensure that static has been discharged by touching a ground source such as the engine or frame.
3. Disconnect the fuel pump electrical harness.



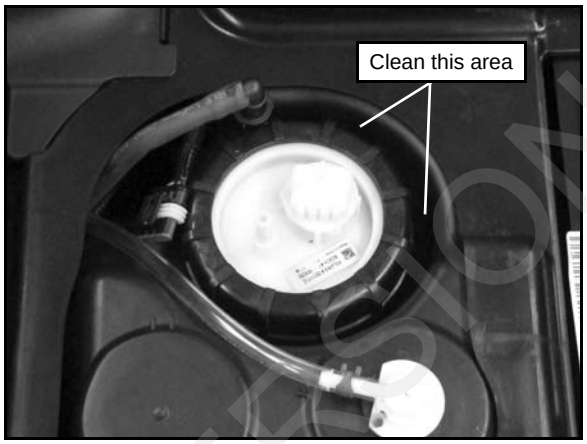
4. While holding a shop towel over the fuel line connector, disconnect the quick connect fuel line from the fuel pump.

⚠ CAUTION

It is possible for pressurized fuel to be present when disconnecting the fuel line.
It is recommended to allow the vehicle to sit for a period of one hour after shutting off the engine before servicing the fuel pump. This allows the exhaust to cool and fuel pressure to drop.

NOTE: A small amount of fuel may come out of the fuel line or tank. Properly drain fuel into a suitable container.

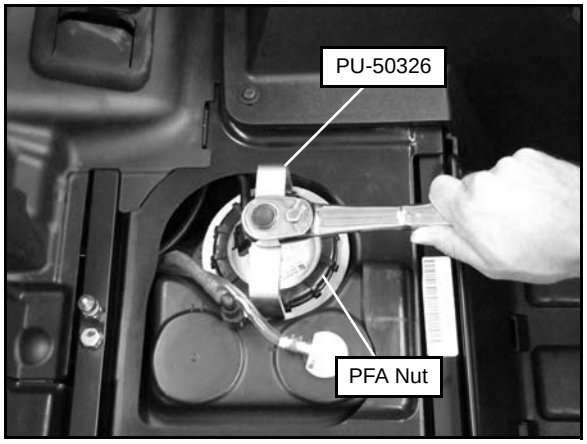
5. Be sure the top of the fuel tank is clean. If it requires cleaning, hand wash the top of the tank to ensure no debris will enter the fuel system when the fuel pump is removed.



CAUTION

Failure to clean area around fuel pump may lead to debris entering the fuel tank during service. Excessive debris in fuel tank may cause premature wear of fuel pump and/or clogging of internal fuel filters.

6. Place the Fuel Pump Service Tool (PU-50326) over the fuel pump PFA nut. Using a 1/2” drive ratchet or breaker bar, loosen and remove the PFA nut. Discard the PFA nut.



NOTE: Apply downward force on the fuel pump flange while removing the fuel pump PFA nut.

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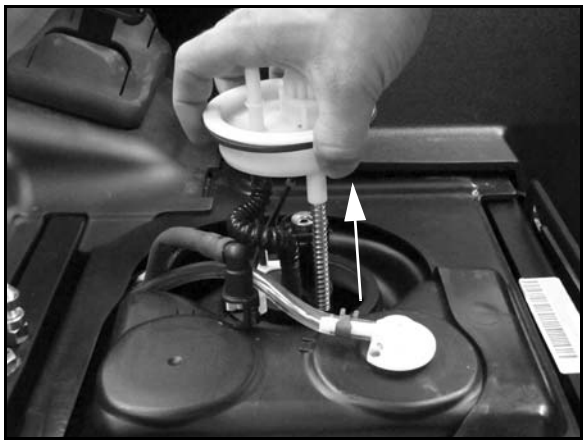
7. Carefully lift the fuel pump out of the fuel tank. As the fuel pump assembly is being removed, be aware of float arm and pump pre-filter. Hold the float arm to the pump body as you lift and tilt the pump to ensure that the float arm is not bent when removed from the tank.



8. Transfer old fuel pump to a suitable container capable of safely holding fuel. The fuel pump will retain some fuel.

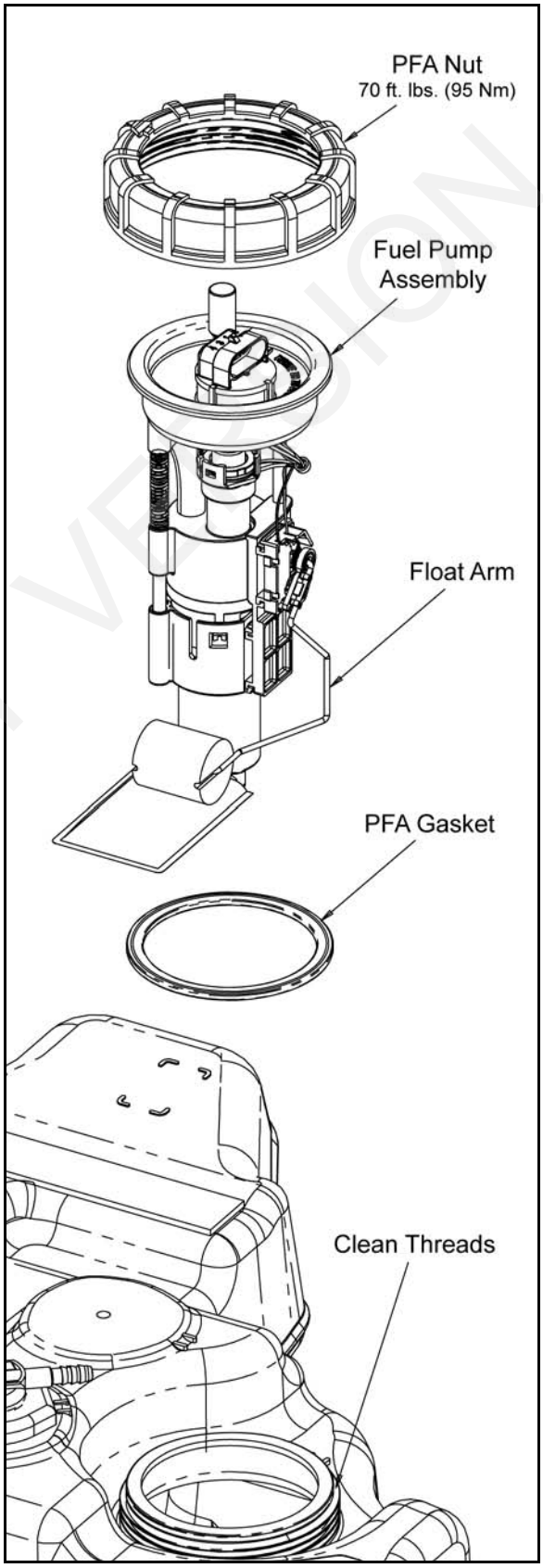
9. Inspect the inside of the fuel tank for debris (may require flashlight and mirror). If debris like mud or sand is present, fuel tank should be flushed and cleaned out prior to installation of new fuel pump assembly.

IMPORTANT: It is recommended to remove the fuel tank from the vehicle and rinse it with a small amount of clean fuel. Do not use water or any other chemicals to remove debris.

10. Remove new fuel pump assembly, gasket and PFA nut from packaging. Use care not to bend float arm during un-packaging. Do not lift or carry fuel pump assembly by the float arm.

11. Use cleaning wipes provided to clean fuel tank surface and threads. Remove all debris, grease and oil. Allow surfaces to dry completely.

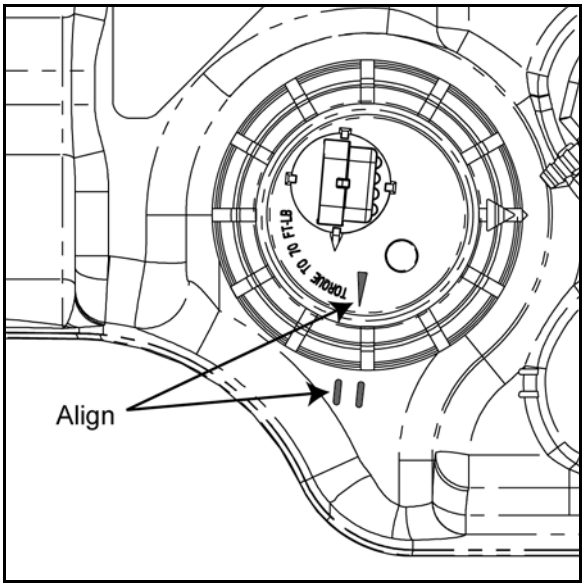
12. Install new PFA gasket onto fuel pump assembly using care not to damage gasket or bend float arm.



13. Install fuel pump into fuel tank, hold float arm to the pump body and tilt assembly to ensure float arm does not get caught or bent during installation.

14. Gently push down on fuel pump flange ensuring flange is centered.

15. Roughly align orientation mark on fuel pump between the orientation marks on fuel tank to ensure float arm does not get bent or snagged.

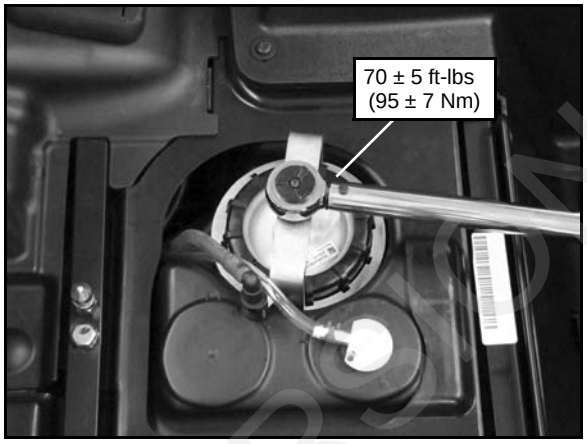


CAUTION

Failure to align the orientation marks may lead to interferences with the fuel level float arm and cause incorrect function.

16. While maintaining downward pressure, thread new PFA nut onto fuel tank and hand tighten. Use care when starting PFA nut, ensuring threads are properly aligned. Verify orientation marks are still aligned between fuel pump and fuel tank.

17. Torque PFA nut to specification using the Fuel Pump Service Tool (PU-50326) and a calibrated torque wrench.



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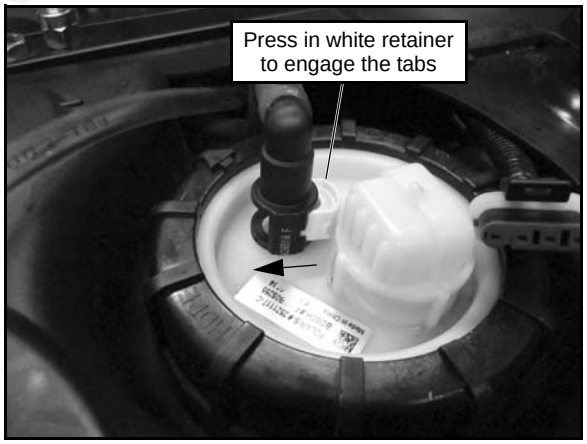
Fuel Pump PFA Nut:
70 ± 5 ft-lbs (95 ± 7 Nm)

18. Verify alignment of fuel pump and tank orientation marks.

19. Connect the fuel line to the fuel pump outlet.



IMPORTANT: Be sure to engage the white retainer on fuel line until it snaps into place. Pull on fuel line lightly to confirm connection.

20. Connect the fuel pump electrical harness.

21. Install the passenger seat.

22. Test the fuel pump by turning on the key and listening for the pump to activate. Cycle the key several times to prime the system.

Fuel Tank Removal (RZR / RZR S)

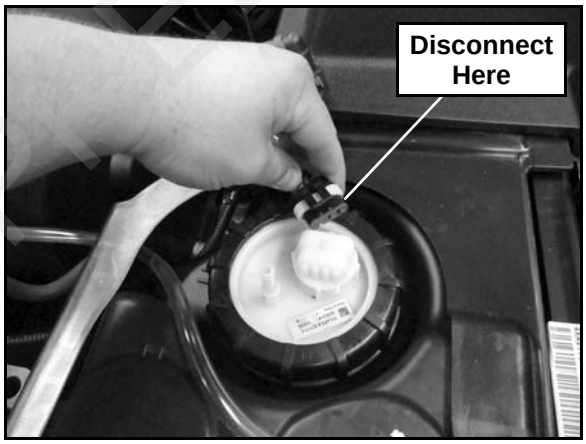
IMPORTANT: Syphon as much fuel from the tank as possible before attempting to remove it from the vehicle.

> **WARNING**
>
> Always wear safety goggles when working with high pressure or flammable fluids. Failure to do so could result in serious injury or complications.

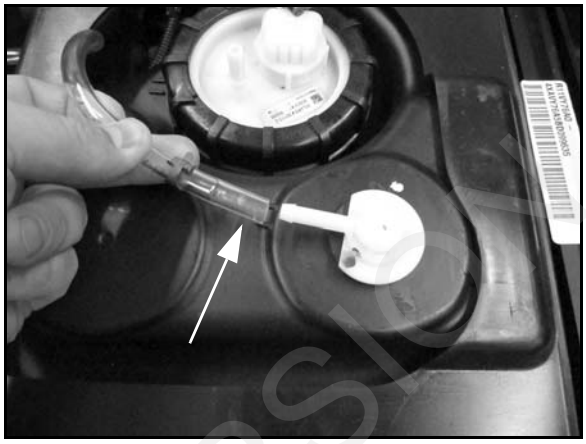
1. Remove the driver and passenger seats along with the rear service panel.
2. Disconnect the negative battery cable from the battery located under the driver's seat.
3. While holding a shop towel over the fuel line connector, disconnect the quick connect fuel line from the fuel pump. Move the fuel line out of the way for tank removal.

NOTE: A small amount of fuel may come out of the fuel line or tank. Properly drain fuel into a suitable container.

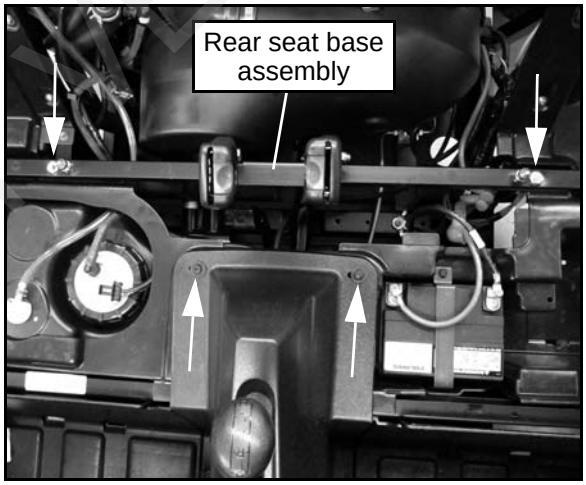
4. Disconnect the fuel pump electrical harness.



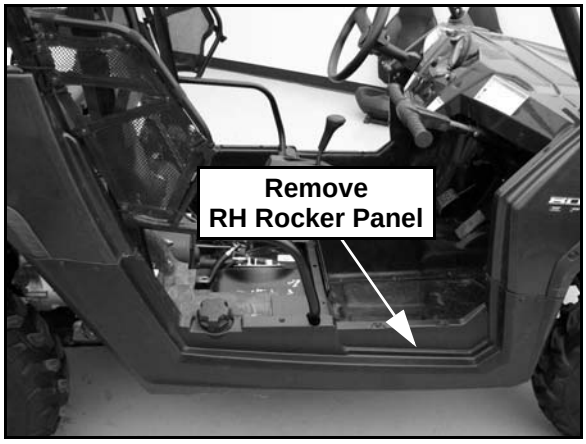
5. Remove fuel tank vent hose clamp with a suitable pliers and remove vent line from the tank vent fitting.



6. Remove rear seat base assembly from the vehicle by removing the (2) fasteners retaining the rear seat base.



7. Remove shift knob and center console from vehicle.
8. Remove the push rivets and screws retaining the RH rocker panel and remove panel from the vehicle (see Chapter 5).



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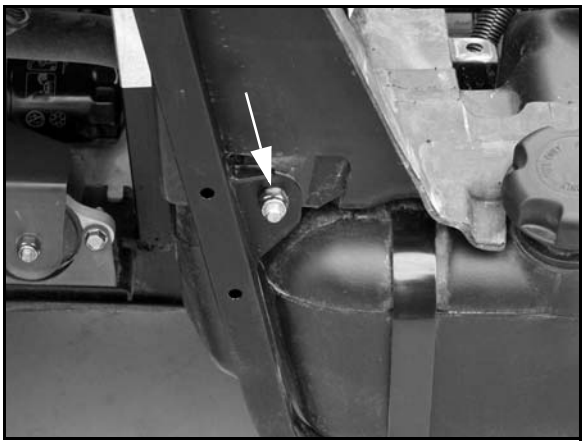
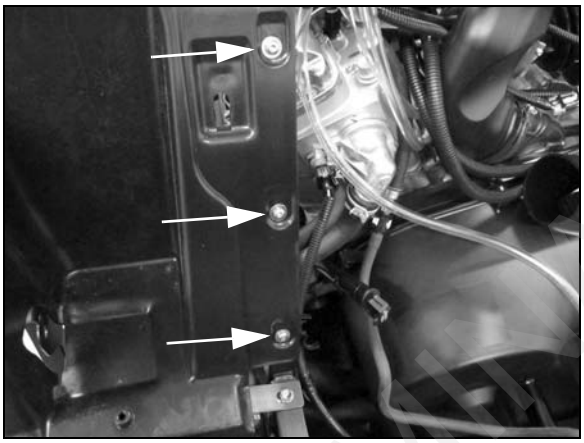
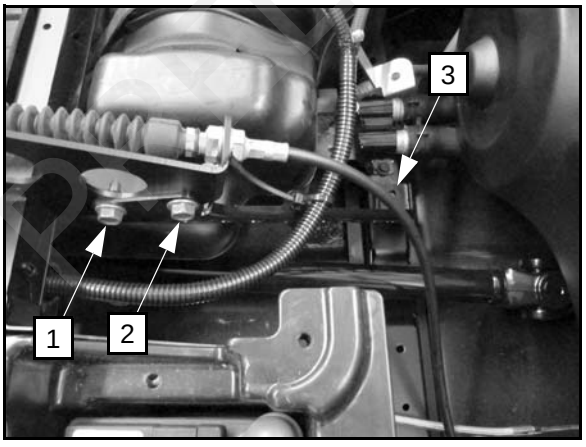
9. Remove the lower bolt retaining the seat belt mechanism near the rear RH portion of the fuel tank. Once removed, place the mechanism in the rear cargo box to keep it out of the way.

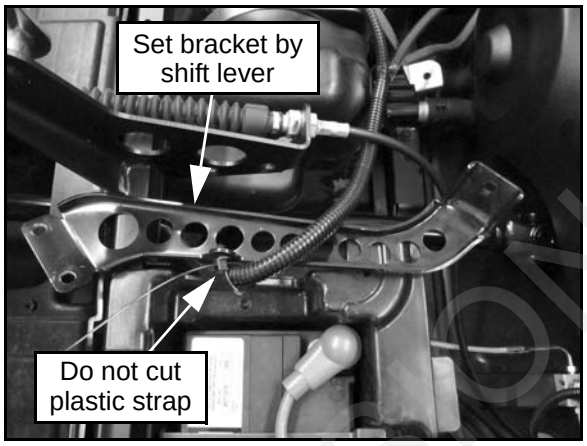


10. Remove the (3) Torx fasteners from the rear RH fender well and remove the fender well from the vehicle (see chapter 5).

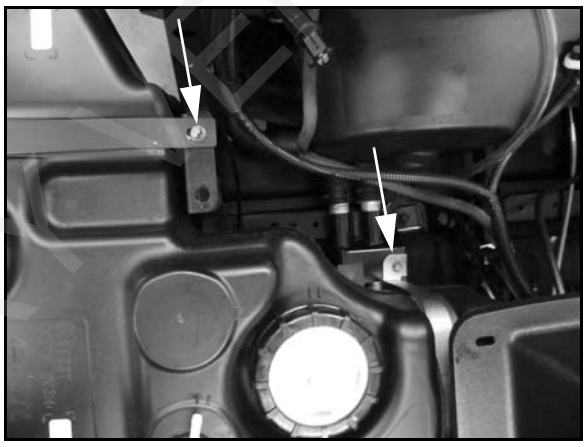


11. Remove the (3) shift lever support bracket bolts and place the bracket out of the way of the fuel tank, but do not remove or cut the plastic wire harness retainer.





12. Remove the (2) tank bracket fasteners that retain the fuel tank in the chassis. Swing the tank brackets clear of the fuel tank for removal.



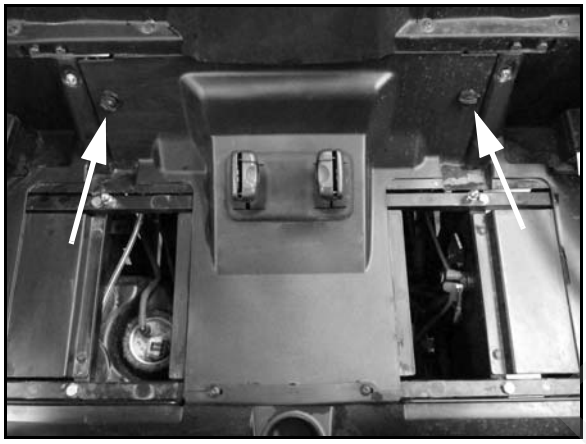
13. Lift the rear of the fuel tank up first and carefully pull it up and out from the vehicle.

Fuel Tank Removal (RZR 4)

IMPORTANT: Syphon as much fuel from the tank as possible before attempting to remove it from the vehicle.

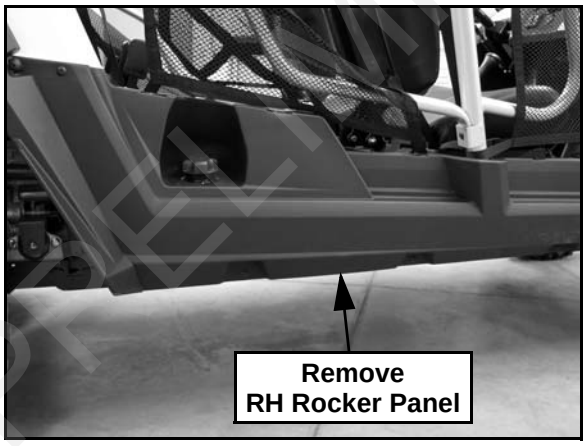
> **WARNING**
>
> Always wear safety goggles when working with high pressure or flammable fluids. Failure to do so could result in serious injury or complications.

1. Remove the rear passenger seats along with the rear service panel.



2. Remove the driver's seat and disconnect the negative battery cable from the battery.

3. Remove the push rivets and T27 Torx screws retaining the RH rocker panel.

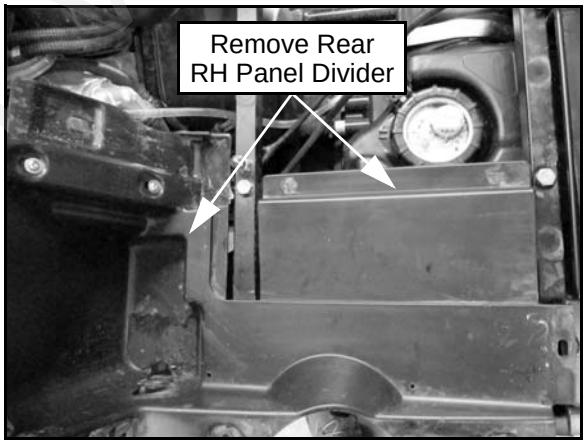


NOTE: Remove the fuel tank cap and carefully lift the rocker panel up over the fuel tank filler neck. Reinstall fuel tank cap once rocker panel is removed.

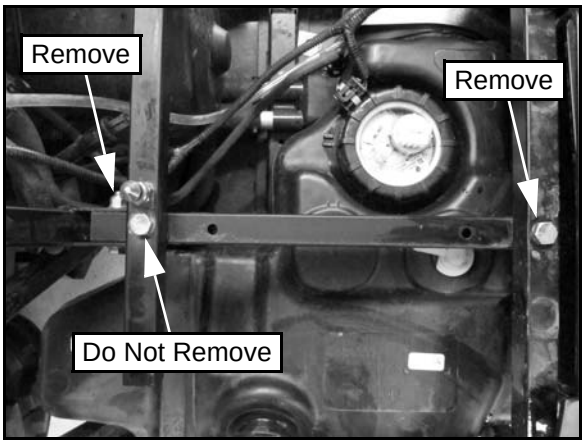
4. Remove the rocker panel from the vehicle.

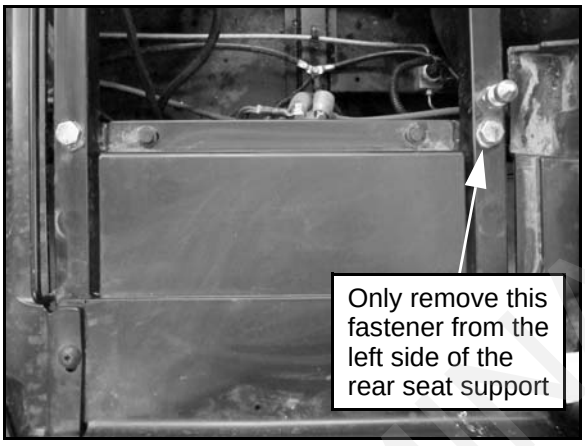
5. Remove the lower bolt retaining the seat belt mechanism near the rear RH portion of the fuel tank. Once removed, place the mechanism in the rear cargo box to keep it out of the way.

6. Remove the (3) Torx fasteners and (2) push rivets from the rear RH panel divider. Remove the panel divider from the vehicle (see Chapter 5).

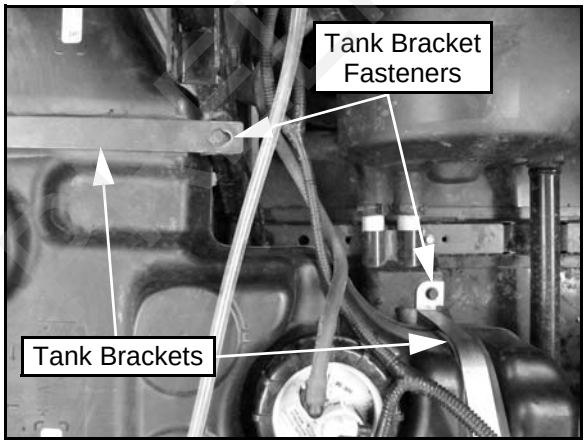


7. Remove the rear seat support by removing the 5/16” fastener and 7/16” fastener retaining the right side of the rear seat support. Remove the 7/16” fastener from the left side of the rear seat support. Remove the rear seat support from the vehicle.

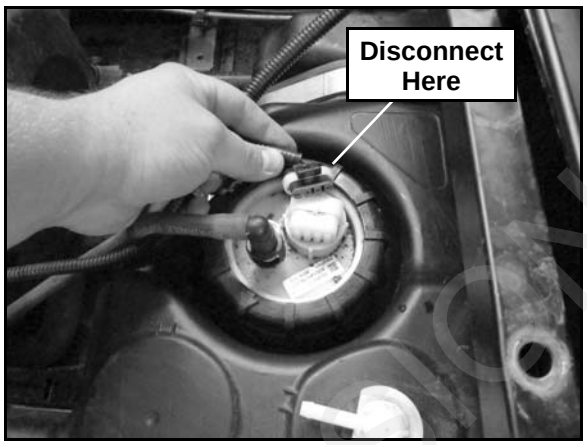




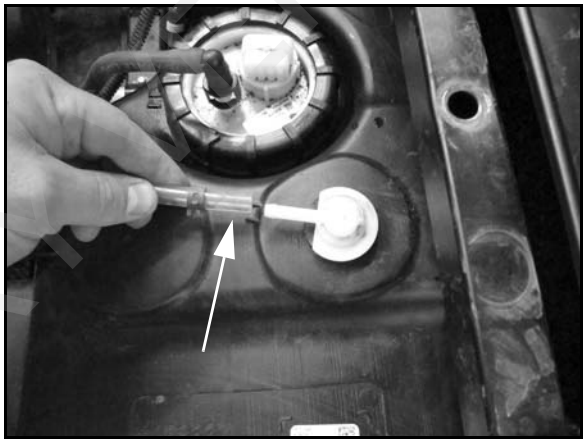
8. Remove both fuel tank bracket fasteners. Move the fuel tank brackets out of the way for removal of fuel tank.



9. Disconnect the fuel pump electrical harness.



10. Remove fuel tank vent hose clamp with a suitable pliers and remove vent line from the tank vent fitting.



11. While holding a shop towel over the fuel line connector, disconnect the quick connect fuel line from the fuel pump. Move the fuel line out of the way for tank removal.

NOTE: A small amount of fuel may come out of the fuel line or tank. Properly drain fuel into a suitable container.

12. Lift the rear of the fuel tank up first and carefully lift the fuel tank up and out from the vehicle.

Fuel Tank Installation

1. Carefully reinstall the fuel tank assembly.
2. Reinstall the (2) fuel tank brackets and fasteners.
3. Reinstall the (3) shift lever support bracket fasteners (RZR / RZR S).
4. Reinstall the rear RH fender well and secure with fasteners (RZR / RZR S only). Reinstall the rear RH panel divider and secure with fasteners (RZR 4).
5. Reinstall the seat belt mechanism and secure the lower bolt.
6. Reinstall the RH rocker panel and all previously removed fasteners.
7. Reinstall the rear seat base / support assembly and secure with the fasteners.
8. Reinstall the center console and shift knob (RZR / RZR S only).
9. Install the fuel line, vent hose and clamp. Verify they are secure.
10. Reconnect the fuel pump electrical harness.
11. Reconnect the negative battery cable. Test the fuel pump by turning the ignition key on and listening for the pump to activate. Check for leaks.
12. Finally, install the rear service panel along with the seats.

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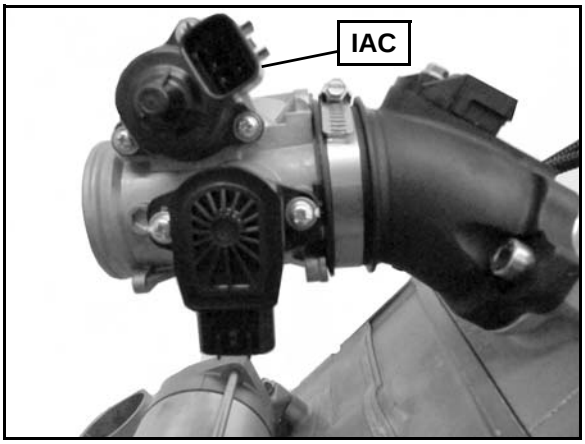
IDLE AIR CONTROL (IAC)

Operation Overview

The Idle Air Control (IAC) is used to stabilize the idle quality of the engine at cold start-up and after warm-up operations.

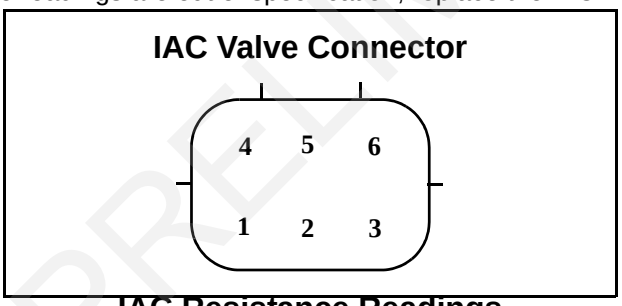


Mounted on the throttle body, the IAC contains 1 stepper motor which receives varying voltage signal pulses from the ECU. These pulses determine the IAC plunger setting, thereby controlling the amount of air bypassing the closed throttle body for idle control. If the IAC is disconnected or inoperative, it will remain at it's last operated position.

IAC Test

The IAC is a non-serviceable item. If it is faulty, it must be replaced. It can be 'bench tested' using the following method:

Set your meter to read Ohms. Check the resistance values at each of the following pin locations of the IAC. If any of the readings are out of specification, replace the IAC.

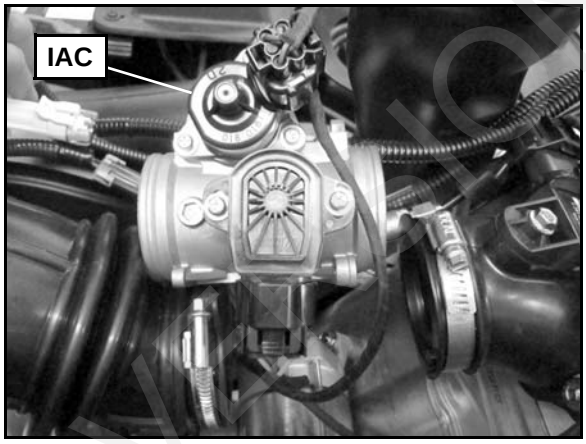


IAC Resistance Readings

Pins	Resistance	Pins	Resistance
1 - 2	30 Ω ± 1.2 Ω	4 - 5	30 Ω ± 1.2 Ω
2 - 3	30 Ω ± 1.2 Ω	5 - 6	30 Ω ± 1.2 Ω
1 - 3	60 Ω ± 2.4 Ω	4 - 6	60 Ω ± 2.4 Ω

IAC Replacement

1. Remove the seats, rear service panel and the rear cargo box (see Chapter 5).
2. Loosen the hose clamps retaining the throttle body.
3. Remove the throttle body from the intake track and plug the intake boots with a clean shop towel.



4. Disconnect the vehicle harness from the IAC motor.
5. Remove the (3) Phillips-head mounting screws and remove the IAC from the throttle body.
6. Install the new IAC and torque the mounting screws to specification.

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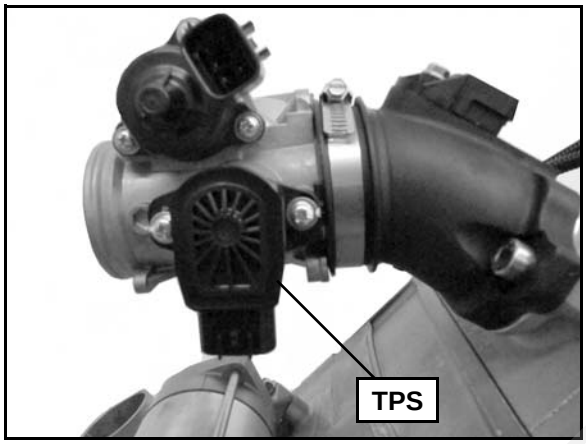
IAC Mounting Screw: **17.7 in-lbs (2 Nm)**

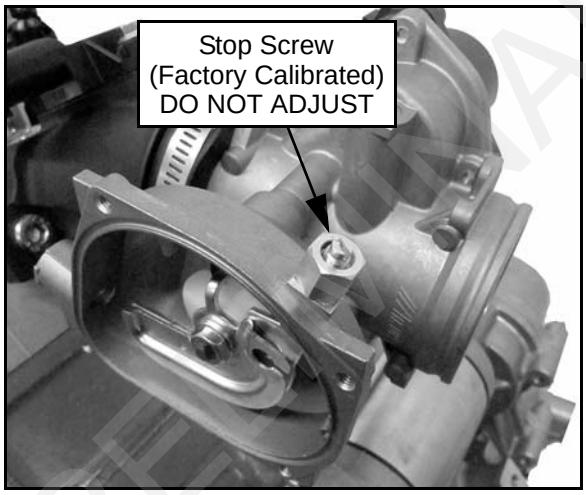
7. Reconnect the vehicle harness to the IAC motor.
8. Reinstall the throttle body and securely tighten the hose clamps.
9. Reinstall the rear cargo box, rear service panel and seats (see Chapter 5).

THROTTLE POSITION SENSOR (TPS)

Operation Overview

The throttle position sensor (TPS) is used to indicate throttle plate angle to the ECU. Mounted on the throttle body and operated directly off the end of the throttle shaft, the TPS works like a rheostat, varying the voltage signal to the ECU in direct correlation to the angle of the throttle plate. This signal is processed by the ECU and compared to the internal pre-programmed “maps” to determine the required fuel and ignition settings for the amount of engine load.



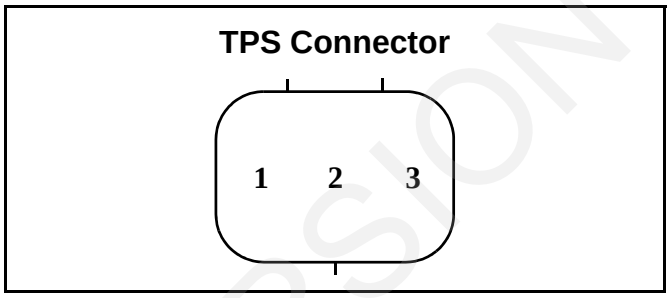


The correct position of the throttle body stop screw is established and set at the factory. DO NOT loosen the throttle body stop screw or alter its position in any manner. The stop screw controls the air flow calibration of the throttle body. If the stop screw is repositioned or adjusted, the throttle body assembly must be replaced.

TPS Resistance Tests

The TPS is a non-serviceable item. If it is faulty, it must be replaced. It can be tested using the following method:

With the test leads connected and the meter set to the ohms scale, observe the reading at the following pin locations of the TPS:



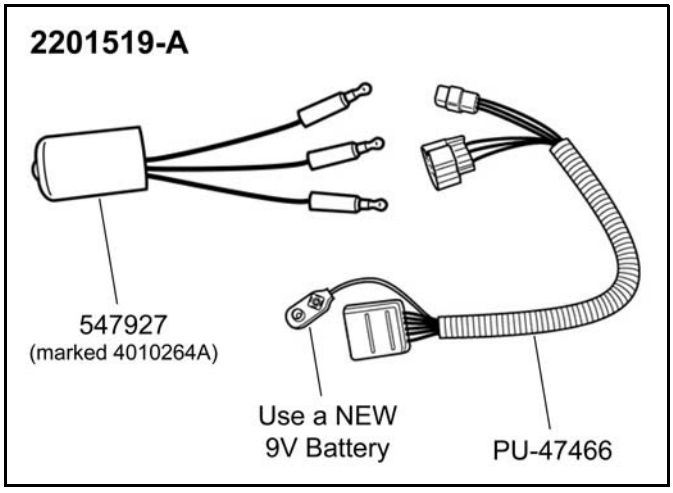
TPS Resistance Readings

Pins	Throttle Position	Resistance
2 - GND	-----	∞
1 - 2	Closed	4kΩ - 5kΩ (reference)
1 - 2	Open	1150Ω - 1250Ω
1 - 3	-----	4kΩ – 6kΩ

TPS Tester / Regulator

The TPS reading can be checked by using the Throttle Position Sensor (TPS) Tester (2201519-A).

Set-up the TPS Tester Wire Harness (PU-47466) and TPS Tester Regulator (547927) according to the instructions that accompanied the tester. Make sure the 9 Volt battery is new.



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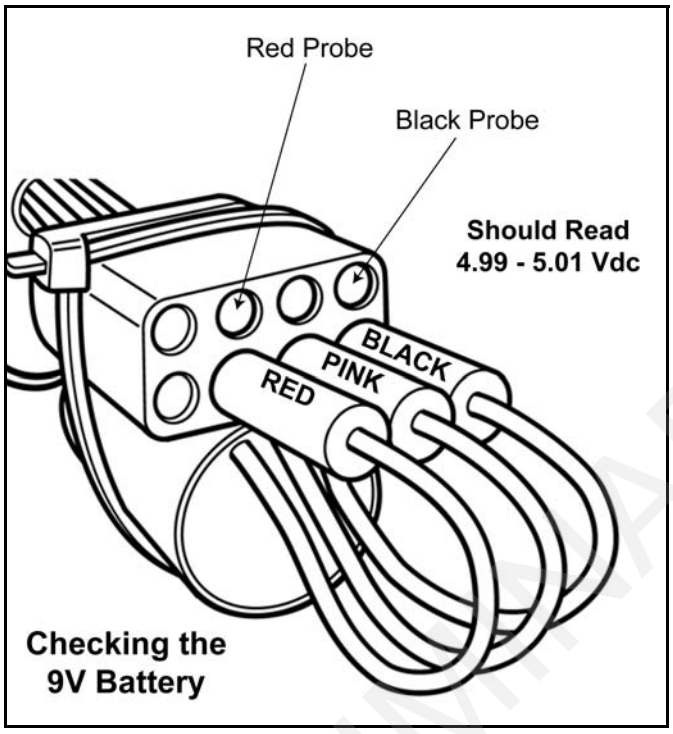
Verify TPS Tester Reference Voltage

A 5 volt reference voltage from the TPS Tester harness is required for the TPS test to be accurate. Refer to the instructions provided with the TPS Tester **(2201519-A)** or follow the bullet point steps below to check reference voltage.

Reference Voltage Test:

- Insert black voltmeter probe into the test port as shown.
- Insert red voltmeter probe into the test port as shown and verify the voltage reads 4.99-5.01 Vdc. If the reading is low, replace the 9 volt battery.



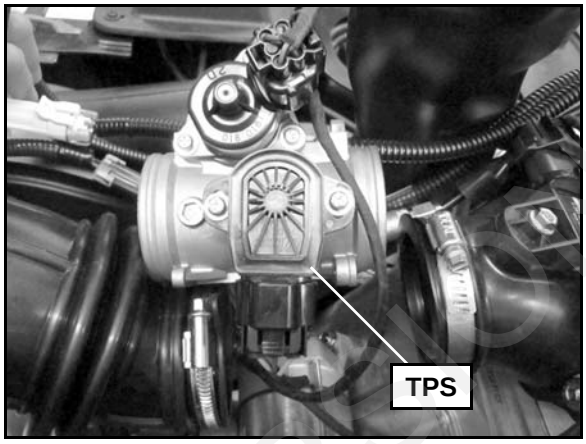
TPS Reference Voltage
5 Vdc Input

IMPORTANT: Always use a fresh 9 Volt battery.

TPS Replacement

NOTE: The correct position of the TPS angle on the throttle body is established and set at the factory. If the TPS is replaced or has been loosened it must be repositioned to obtain the proper voltage reading.

1. Remove the seats, rear service panel and the rear cargo box (see Chapter 5).
2. Loosen the hose clamps retaining the throttle body.
3. Remove the throttle body from the intake track and plug the intake boots with a clean shop towel.



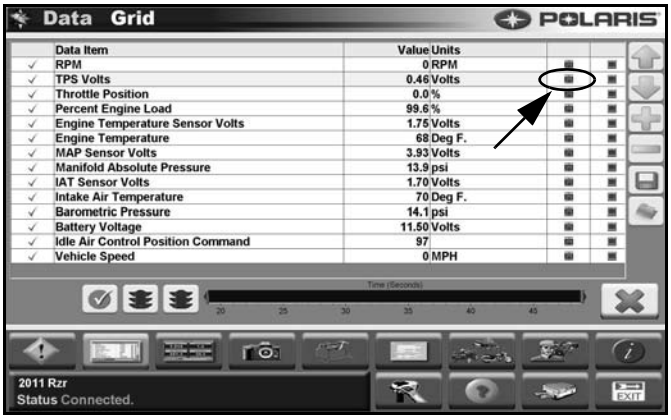
4. Disconnect the vehicle harness from the TPS.
5. Remove the (2) Phillips-head mounting screws and replace the TPS. Reconnect the vehicle harness to the TPS.

NOTE: If replacing the TPS or throttle body, you must set the TPS voltage to specification.

IMPORTANT: The TPS voltage reading using the TPS Tester tool will differ from the reading you get using the Digital Wrench™ data display. Refer to the following procedures.

TPS Adjustment Using Digital Wrench™:

1. Assemble SmartLink Module and connect the diagnostic interface cable to the vehicle to allow Digital Wrench™ use (see “Digital Wrench™ - Diagnostic Connector”).
2. Select the appropriate vehicle and open the data display grid. Click on the meter icon next to “TPS Volts”.



3. Loosen the TPS mounting screws (see Figure 4-31).

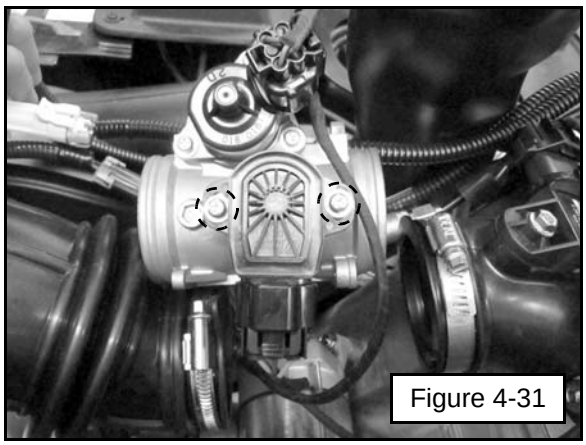
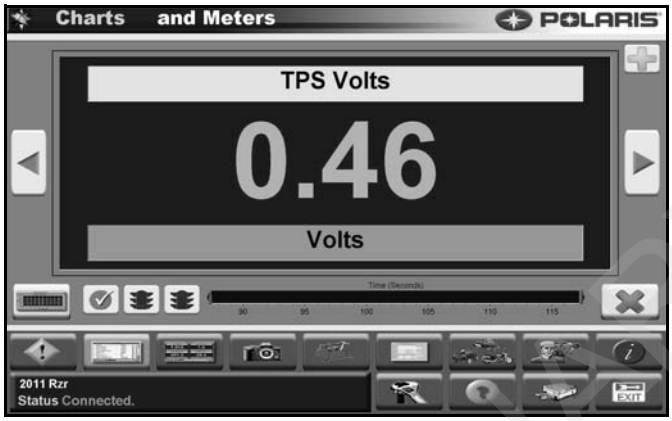


Figure 4-31

4. Rotate the TPS until your display reading is within specification.



TPS Output Reading (Digital Wrench™):
0.46 ± 0.03 Vdc

5. Retighten the TPS mounting screws and torque to specification.

= T
TPS Mounting Screws: **17.7 in-lbs (2 Nm)**

6. Verify voltage reading did not change. If voltage reading is now out of specification, repeat steps 3 - 5.

7. Remove the shop towels from the intake boots and reinstall the throttle body. Securely tighten the hose clamps.

8. Reinstall cargo box, rear service panel and seats (see Chapter 5).

TPS Adjustment Using TPS Tester (PN 2201519-A):

1. If Digital Wrench™ is unavailable, assemble the TPS Tester according to the instructions. Refer to "TPS Tester / Regulator" for proper set-up and testing. Verify the 9 volt tester battery is new.

2. Plug the TPS Tester harness into the new TPS.

3. Set your voltmeter to read DC Volts. Insert the red and black voltmeter probes into the test ports as shown.

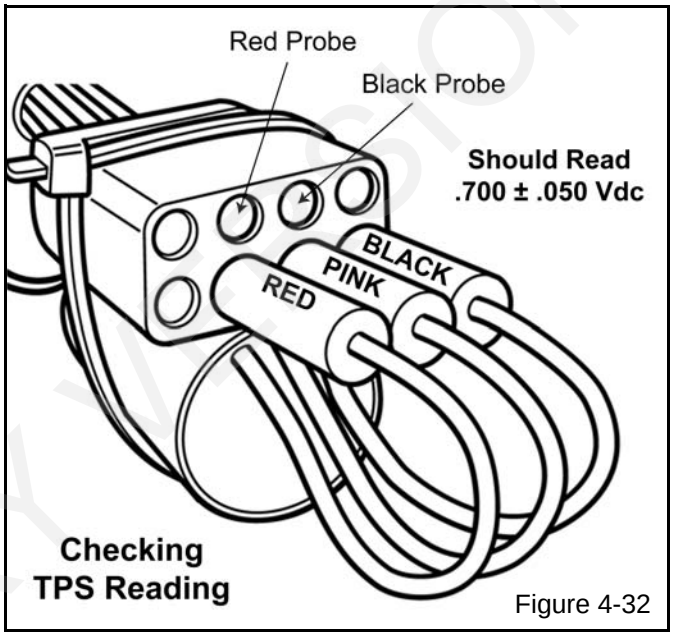


Figure 4-32

4. Loosen the TPS mounting screws (see Figure 4-31).

5. Rotate the TPS until your voltmeter reads within the specification (see Figure 4-32).

TPS Output Reading (TPS Tester):
.700 ± .050 Vdc

6. Retighten the TPS mounting screws and torque to specification.

= T
TPS Mounting Screws: **17.7 in-lbs (2 Nm)**

7. Verify voltage reading did not change. If voltage reading is now out of specification, repeat steps 4 - 6.

8. Reconnect the vehicle harness to the TPS.

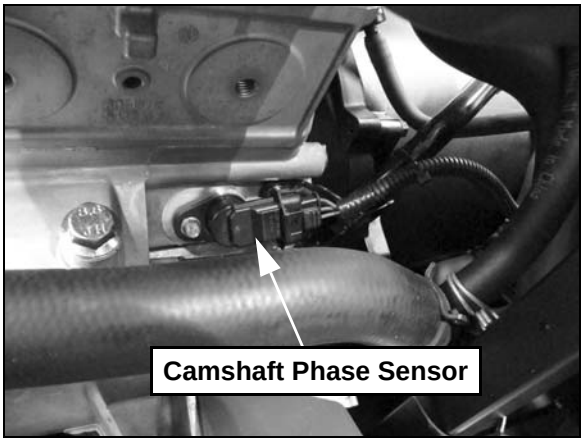
9. Remove shop towels from intake boots and reinstall the throttle body. Securely tighten the hose clamps.

10. Reinstall cargo box, rear service panel and seats (see Chapter 5).

CAMSHAFT PHASE SENSOR

Operation Overview

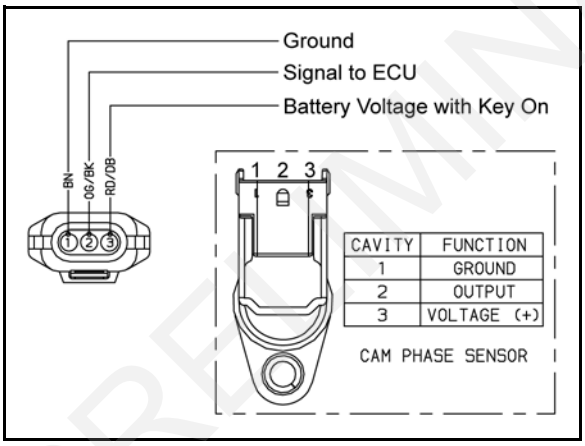
Mounted on the engine crankcase, the Cam Phase Sensor provides camshaft position information to the ECU to be used along with the crankshaft position data to allow for sequential fuel injection.



Cam Phase Sensor Test

The Cam Phase Sensor is a non-serviceable item. If it is faulty, it must be replaced.

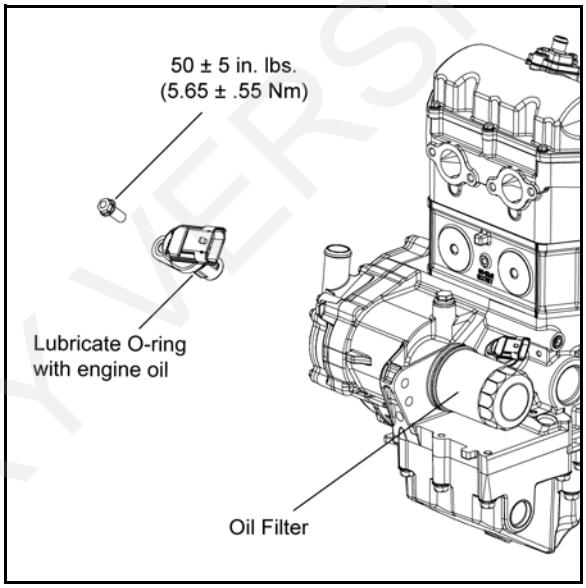
With the ignition key switch on, the sensor should have battery voltage present on the Red / Dark Blue wire and ground present on the Brown wire.



NOTE: Use Digital Wrench™ Diagnostic Software (dealer only) if you suspect this sensor is faulty.

Cam Phase Sensor Replacement

1. Access the sensor through the right rear wheel well.
2. Disconnect vehicle harness from the sensor.
3. Remove the retaining bolt and remove the sensor from the engine.
4. Use a light coating of engine oil to lubricate the O-ring upon installation of the new sensor.
5. Install the sensor by inserting it with a twisting motion to allow it to properly seat.



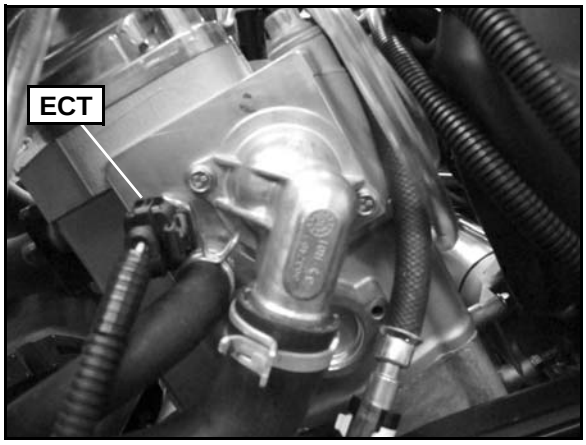
6. Install the retaining bolt and torque to specification.

= T
Cam Phase Sensor Retaining Bolt: **50 ± 5 in-lbs (5.65 ± .55 Nm)**

ENGINE COOLANT TEMPERATURE SENSOR (ECT)

Operation Overview

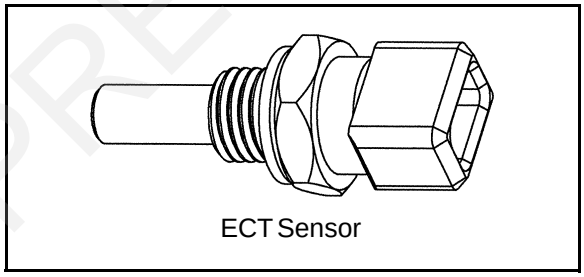
Mounted on the cylinder head, the engine temperature sensor measures coolant temperature. The engine temperature sensor is a Negative Temperature Coefficient (NTC) type sensor, as the temperature increases the resistance decreases.



Coolant passes through the cylinder and by the sensor probe, varying a resistance reading which is relayed to the ECU. This signal is processed by the ECU and compared to its programming for determining the fuel and ignition requirements during operation. The ECU also uses this signal to determine when to activate the fan during operation.

ECT Sensor Test

To quickly rule out other components and wiring related to the ECT, disconnect the harness from the ECT sensor and start the engine. After a few seconds, the fan should turn on and the “Check Engine” indicator should display on the instrument cluster. This indicates all other components are working properly.



ECT Sensor

Refer to Chapter 3 and 10 for additional ECT sensor information. Polaris dealers can test the sensor by using the Digital Wrench™ Diagnostic Software (dealer only).

ECT Sensor Resistance Readings

Temperature °F (°C)	Resistance
68 °F (20 °C)	2.5k Ω ± 6%
86 °F (30 °C)	1.7k Ω ± 6%
104 °F (40 °C)	1.2k Ω ± 6%
122 °F (50 °C)	834 Ω ± 6%
140 °F (60 °C)	596 Ω ± 6%
158 °F (70 °C)	435 Ω ± 6%
176 °F (80 °C)	323 Ω ± 6%
194 °F (90 °C)	243 Ω ± 6%
212 °F (100 °C)	186 Ω ± 6%

ECT Sensor Replacement

1. Remove the driver and passenger seats.
2. Remove the rear service panel to access the ECT sensor.
3. Drain coolant to level below sensor.
4. Disconnect sensor from engine harness.
5. Using a wrench, remove and replace the sensor, applying a light coating of thread sealant to aid installation.
6. Torque the sensor to specification.

= T
ECT Sensor: **17 ft-lbs (23 Nm)**

7. Add the required amount of coolant and properly bleed the cooling system (see Chapter 3).

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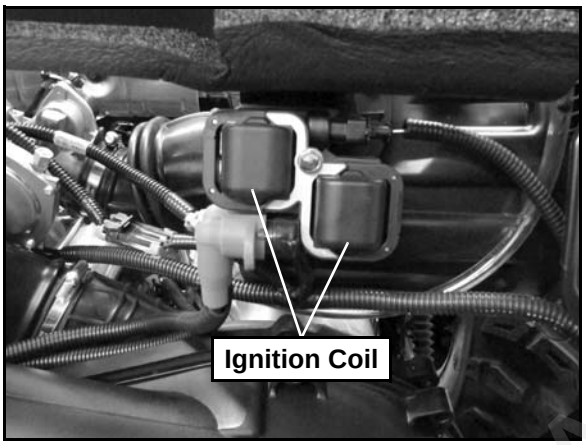
IGNITION COIL

Operation Overview

The ignition coil is used to provide high voltage to fire the spark plugs. When the ignition key is on, DC voltage is present in the primary side of the ignition coil windings. During engine rotation, an AC pulse is created within the crankshaft position sensor for each passing tooth on the flywheel. The two-tooth gap creates an “interrupt” input signal, corresponding to specific crankshaft position. This signal serves as a reference for the control of ignition timing. The ECU then calculates the time interval between the consecutive pulses, and determines when to trigger the voltage spike that induces the voltage from the primary to the secondary coil windings to fire the spark plugs.



Ignition Coil / HT Lead Replacement

NOTE: Mark or note which ignition coil wire goes to which cylinder and ignition coil post. The engine will misfire if the spark plug wires are installed incorrectly. The spark plug wires are marked with PTO and MAG from the factory and should be installed to the corresponding cylinder and ignition coil post.

1. Remove rear service panel to access the ignition coil.
2. Disconnect the ignition coil harness and remove the high tension leads from the coil.
3. Remove the fastener retaining the ignition coil and remove it from the vehicle. If replacing the high tension lead(s), remove the other end of the lead(s) from the spark plug.
4. Install the new ignition coil and/or high tension lead(s).

= T
Ignition Coil Retaining Bolt: **75 in-lbs (8.5 Nm)**

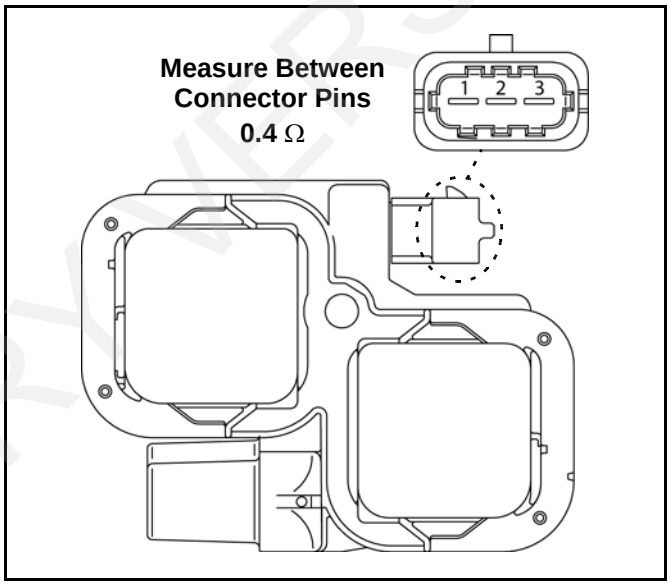
Ignition Coil Tests

The ignition coil can be tested by using an ohm meter. Use the following illustration and specification table to test the ignition coil resistance.

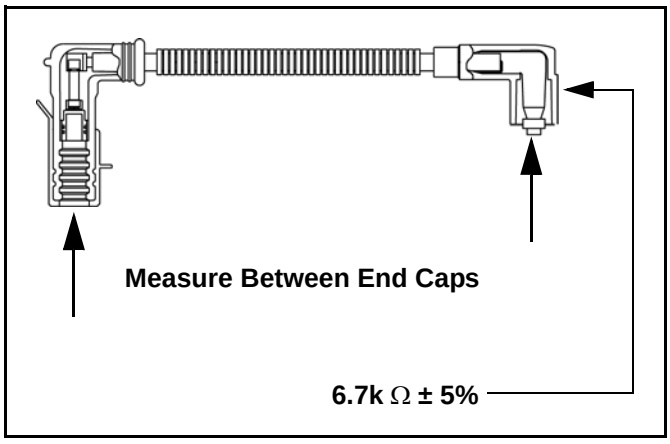
Ignition Coil Resistance Readings

Test	Pin Connection	Resistance
Primary	Between 1 & 2 Between 2 & 3	0.4 Ω
Secondary	Between High Tension Lead End Caps	6.7k Ω ± 5%

Primary Test



Secondary Test



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EFI DIAGNOSTICS

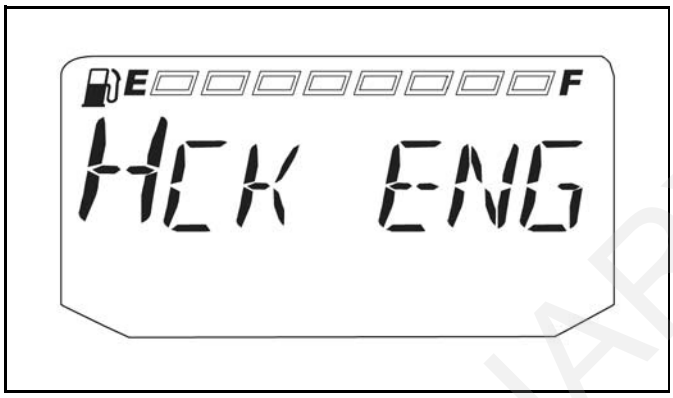
Instrument Cluster Trouble Code Display

NOTE: The diagnostic mode is accessible only when the check engine MIL has been activated.

Use the following procedure to display diagnostic trouble codes that were activated during current ignition cycle causing the MIL to illuminate. Diagnostic trouble codes will remain stored in the gauge (even if MIL turns off) until the key is turned off.

NOTE: If there is a diagnostic problem with the power steering system, the power steering MIL will illuminate and blink in place of the check engine MIL.

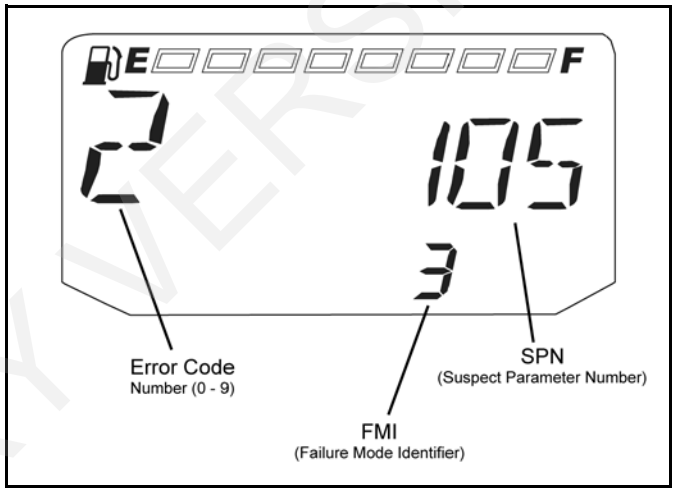
1. If the trouble code(s) are not displayed, use the MODE button to toggle until “CK ENG” displays on the information display area.



2. Press and hold the MODE button to enter the diagnostics code menu.

3. A set of three numbers will appear in the information area.

   - The first number (located far left) can range from 0 to 9. This number represents the total number of trouble code present (example: 2 means there are 3 codes present).
   - The second number (located top right) can be 2 to 6 digits in length. This number equates to the suspected area of fault (SPN).
   - The third number (located bottom right) can be 1 to 2 digits in length. This number equates to the fault mode (FMI).



4. If more than one code exists, press the MODE button to advance to the next trouble code.

5. To exit the diagnostic mode, press and hold the MODE button or turn the ignition key OFF once the codes are recorded.

DIAGNOSTIC TROUBLE CODE TABLE

Component	Condition	SPN	FMI	Digital Wrench™ P-Code
Throttle Position Sensor (TPS)	Voltage Too High	51	3	P0123
	Voltage Too Low		4	P0122
Vehicle Speed Signal	Data Erratic or Intermittent (or missing)	84	2	P0503
	Received Vehicle Speed Has Error		19	C1069
Manifold Absolute Pressure Sensor (T-MAP)	Voltage Too High	102	3	P0108
	Voltage Too Low		4	P0107
Intake Air Temperature (T-MAP)	Voltage Too High	105	3	P0113
	Voltage Too Low		4	P0112

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DIAGNOSTIC TROUBLE CODE TABLE

Component	Condition	SPN	FMI	Digital Wrench™ P-Code
Engine Temperature Sensor (ECT)	Voltage Too High	110	3	P0118
	Voltage Too Low		4	P0117
	Temperature Too High		16	P0217
	Engine Overheat Shutdown		0	P1217
System Power (Battery Potential / Power Input)	Voltage Too High	168	3	P0563
				C1063
	Voltage Too Low		4	P0562
				C1064
Engine Speed (This is applicable when the EPS module gets the engine speed from the ECM)	Engine Speed Too High	190	0	C1059
	Received Engine Speed Has Error		19	C1066
Gear Sensor Signal	Voltage Too Low	523	4	P0916
ECU Memory	EEPROM: Read/Write Failure	628	12	C1073
Calibration	Checksum/CRC Error	630	13	C1074
Crankshaft Position Sensor (CPS)	Plausibility Fault	636	2	P0335
Camshaft Phase Sensor	Circuit Fault	637	8	P0340
Injector 1 (MAG)	Driver Circuit Open / Grounded	651	5	P0261
	Driver Circuit Short to B+		3	P0262
	Driver Circuit Grounded		4	P1262
Injector 2 (PTO)	Driver Circuit Open / Grounded	652	5	P0264
	Driver Circuit Short to B+		3	P0265
	Driver Circuit Grounded		4	P1265
Rear Differential Output	Driver Circuit Open / Grounded	746	5	P1691
	Driver Circuit Short to B+		3	P1692
	Driver Circuit Grounded		4	P1693
Fan Relay Driver Circuit	Driver Circuit Open / Grounded	1071	5	P1481
	Driver Circuit Short to B+		3	P1482
	Driver Circuit Grounded		4	P1483
Ignition Coil Primary Driver 1 (MAG)	Driver Circuit Short to B+	1268	3	P1353
Ignition Coil Primary Driver 2 (PTO)	Driver Circuit Short to B+	1269	3	P1354
Fuel Pump Driver Circuit	Driver Circuit Open / Grounded	1347	5	P0230
	Driver Circuit Short to B+		3	P0232
	Driver Circuit Grounded		4	P0231
ECU Output Supply Voltage 1	Voltage Too High	3597	3	P16A2
	Voltage Too Low		4	P16A1
ECU Output Supply Voltage 2	Voltage Too High	3598	3	P16A9
	Voltage Too Low		4	P16A8
All Wheel Drive Control Circuit (AWD)	Driver Circuit Open / Grounded	520207	5	P1836
	Driver Circuit Short to B+		3	P1835
	Driver Circuit Grounded		4	P1834
Steering Over Current Shut Down	Current Above Normal or Grounded	520221	6	C1050

DIAGNOSTIC TROUBLE CODE TABLE

Component	Condition	SPN	FMI	Digital Wrench™ P-Code
Steering Excessive Current Error	Current Above Normal or Grounded	520222	6	C1051
Steering Torque Partial Failure	Condition Exists	520223	31	C1052
Steering Torque Full Failure	Condition Exists	520224	31	C1053
EPS Inverter Temperature	Greater than 110° C (230° F)	520225	16	C1054
	Greater than 120° C (248° F)		0	C1055
EPS CAN Communications Receive Error	No RX Message for 2 Seconds	520226	2	U0100
EPS CAN Communications Transmit Error	No TX Message for 2 Seconds	520227	2	U1100
Position Encoder Error	Position Encoder Error	520228	11	C1065
EPS Software Error	Software Error	520229	12	C1070
IC CAN Communication with EPS	EPS Off Line (EPS DM1 not seen)	520230	31	U0131
Idle Air Control Valve (IAC) M17; IAC Stepper Pin 3	Driver Circuit Open / Grounded	520268	5	P1515
	Driver Circuit Short to B+		3	P1519
	Driver Circuit Grounded		4	P1518
Idle Air Control Valve (IAC) M17; IAC Stepper Pin 4	Driver Circuit Open / Grounded	520269	5	P1525
	Driver Circuit Short to B+		3	P1529
	Driver Circuit Grounded		4	P1528
Idle Air Control Valve (IAC) M17; IAC Stepper Pin 6	Driver Circuit Open / Grounded	520270	5	P1535
	Driver Circuit Short to B+		3	P1539
	Driver Circuit Grounded		4	P1538
Idle Air Control Valve (IAC) M17; IAC Stepper Pin 1	Driver Circuit Open / Grounded	520271	5	P1505
	Driver Circuit Short to B+		3	P1509
	Driver Circuit Grounded		4	P1508

EFI Troubleshooting

Fuel Starvation / Lean Mixture

Symptoms: Hard start or no start, bog, backfire, popping through intake / exhaust, hesitation, detonation, low power, spark plug erosion, engine runs hot, surging, high idle, idle speed erratic.

- No fuel in tank
- Restricted tank vent, or routed improperly
- Fuel lines or fuel injectors restricted
- Fuel filter plugged
- Fuel pump inoperative
- Air leak in system
- Intake air leak (throttle shaft, intake ducts, airbox or air cleaner cover)
- Incorrect throttle stop screw adjustment

Rich Mixture

Symptoms: Fouls spark plugs, black, sooty exhaust smoke, rough idle, poor fuel economy, engine runs rough/misses, poor performance, bog, engine loads up, backfire.

- Air intake restricted (inspect intake duct)
- Air filter dirty/plugged
- Poor fuel quality (old fuel)
- Fouled spark plug
- TPS setting incorrect
- Injector failure

Poor Idle

Symptom: Idle Too High (If greater than 1300 RPM when engine is warm).

- Throttle stop screw set incorrect
- Throttle cable sticking, improperly adjusted, routed incorrectly
- Faulty electrical connection

Symptom: Idle Too Low (if less than 900 RPM when engine is warm).

- Plugged air filter
- Leaking injector (rich condition)
- Belt dragging
- Throttle stop screw tampering

Symptom: Erratic Idle.

- Throttle cable incorrectly adjusted
- Air Leaks, dirty injector
- TPS damaged or adjusted
- Tight valves
- Ignition timing incorrect
- Belt dragging
- Dirty air cleaner
- Engine worn
- Spark Plug fouled
- Throttle stop screw set incorrectly (out of sync with ECU)
- Faulty electrical connection

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DIGITAL WRENCH™ OPERATION

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 (some models)

Special Tools (also refer to page 4.2)

DIGITAL WRENCH™ DIAGNOSTIC SOFTWARE	PART NUMBER
Digital Wrench™ Diagnostic Kit	PU-47063-B
PU-47063-B (listed above) INCLUDES:	Digital Wrench™ Software: PU-48731
	Standard Interface Cable: PU-47151
	SmartLink Module Kit: PU-47471
	USB-Serial Adapter Cable: PU-50621
Fuel Pressure Gauge Kit	PU-43506-A
Fuel Pressure Gauge Adapter	PV-48656
Fluke 73 Digital Multi-Meter or Fluke 77 DMM	PV-43546 (Fluke 77: PV-43568)
Laptop or Desktop Computer	Commercially Available (refer to diagnostic software user manual or HELP section for minimum requirements)

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 Diagnostic Available

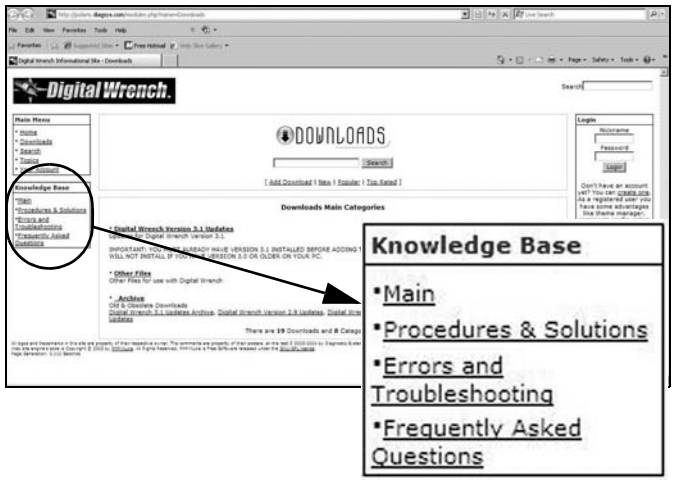
Guided diagnostics are available within Digital Wrench™ for all supported Trouble Codes (that is, any fault that will turn on the ‘Check Engine’ indicator).

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/.***



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Digital Wrench™ - Diagnostic Connector

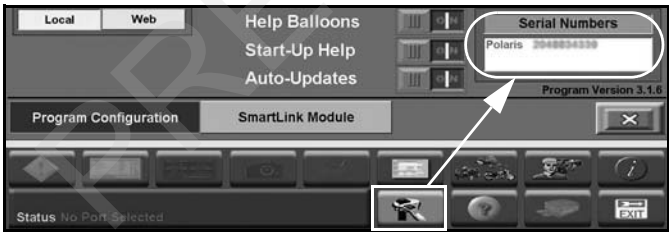
Located under the dash connected to a sealed plug.

Follow these steps to connect the diagnostic interface cable to the vehicle to allow Digital Wrench™ use:

1. Assemble the SmartLink Module and attach the PC Interface Cable to your laptop (see page 4.3).
2. Remove the protective cap from the Digital Wrench™ connector.
3. Connect the Vehicle Interface Cable to the Digital Wrench™ diagnostic connector.
4. Turn the ignition key to the 'ON' position, select the appropriate vehicle and wait for the status to display 'Connected' in the lower left corner of the screen.
5. Once connected, proceed with using Digital Wrench™.

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.

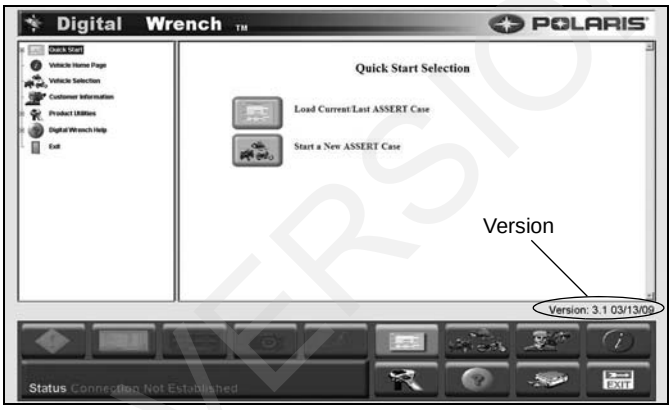


Digital Wrench™ Version and Update ID

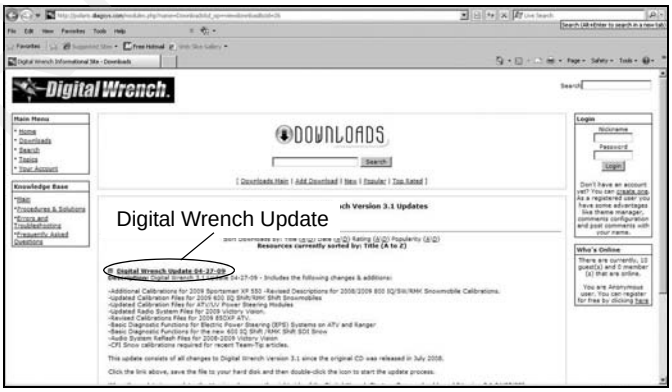
Knowing what Digital Wrench™ version and update is installed will help determine which updates are required.

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").

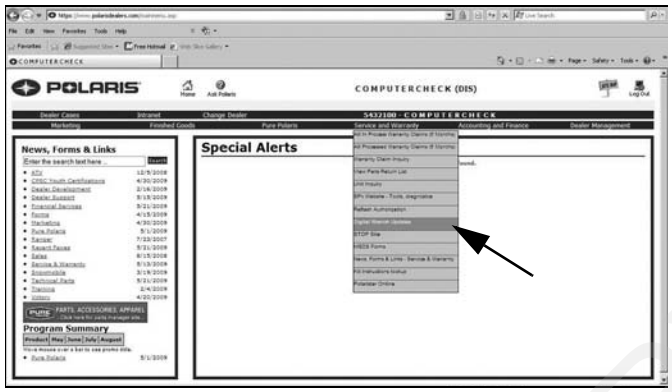
IMPORTANT: Always operate with the latest update.

Digital Wrench™ Updates

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

NOTE: Only authorized Polaris dealers and distributors can access the dealer 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 Digital Wrench™ portal website should appear in a new web browser.
5. Click on "**Digital Wrench Version Updates**".

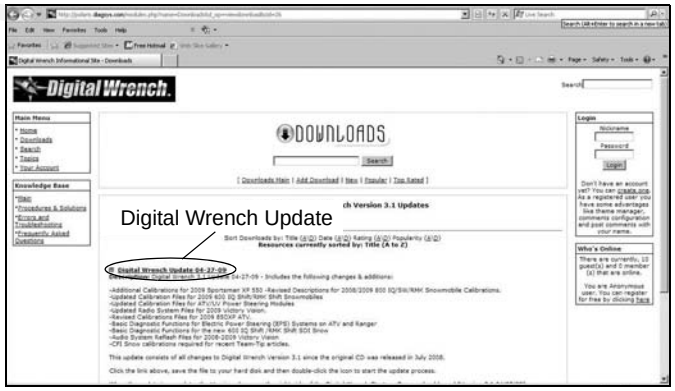
IMPORTANT: You must already have the current version installed before adding an update. Updates will not install if you are using an older version loaded on your PC.

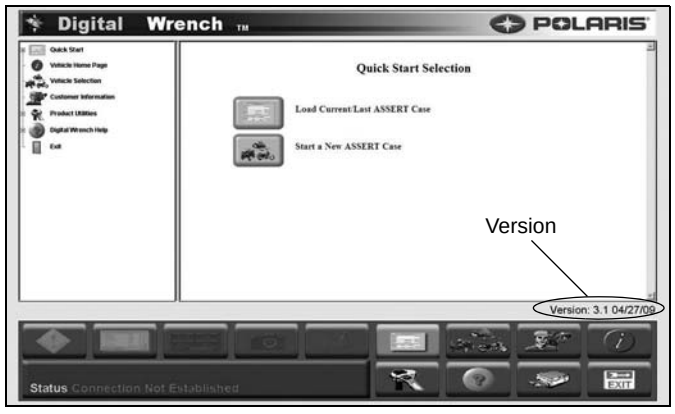
6. If the update file date listed is newer than your current version and update (see "Digital Wrench™ Version and Update ID"), download the file.

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 from where they are. Select "save" and download them to your PC before running the install.

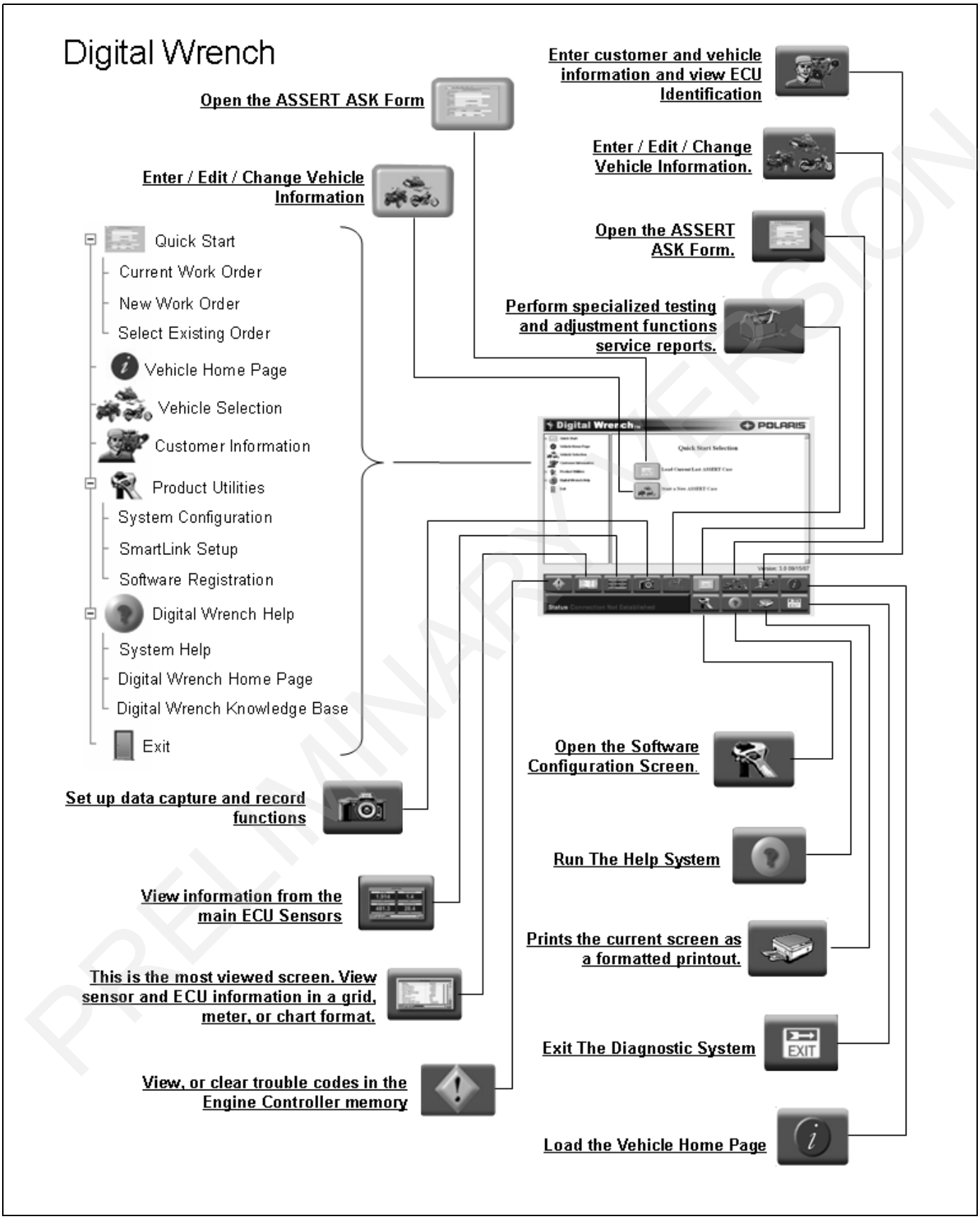
8. When the update is complete, the version shown on the right side of the Digital Wrench™ start-up screen should match the update you just downloaded.





NOTE: Versions and updates are subject to change.

Digital Wrench™ Feature Map



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.

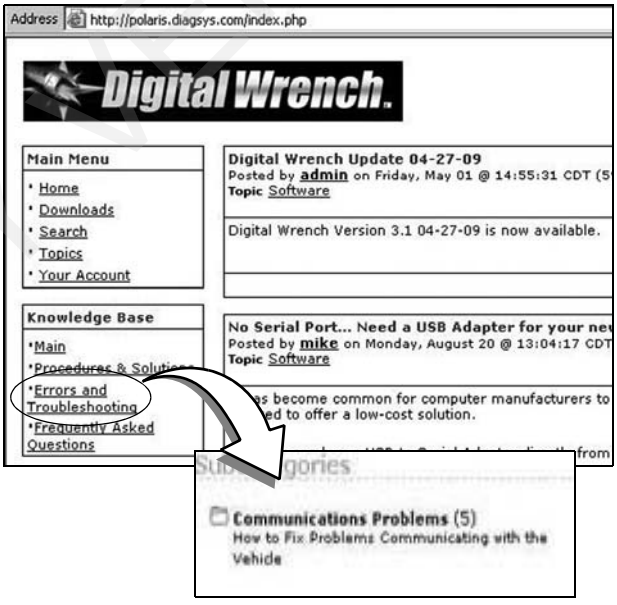
The Digital Wrench™ Engine Controller Reprogramming (or "Reflash") feature allows reprogramming of the ECU fuel and ignition map. To successfully reprogram the ECU, an Authorization Key must be obtained by entering a Request Code in the box provided on the Reflash Authorization site. The Request Code 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.

Reprogramming (Reflash) Procedure:

If you are not familiar with the reprogramming process, review the "Reprogramming (Reflash) Tips" before you begin. Follow the on-screen instructions as you progress through the steps. If you encounter a problem, always check the On-Line help for current tips and information.

1. Verify the most current update has been downloaded and loaded into Digital Wrench™. See "Digital Wrench™ Version and Update ID" on page 4.42.

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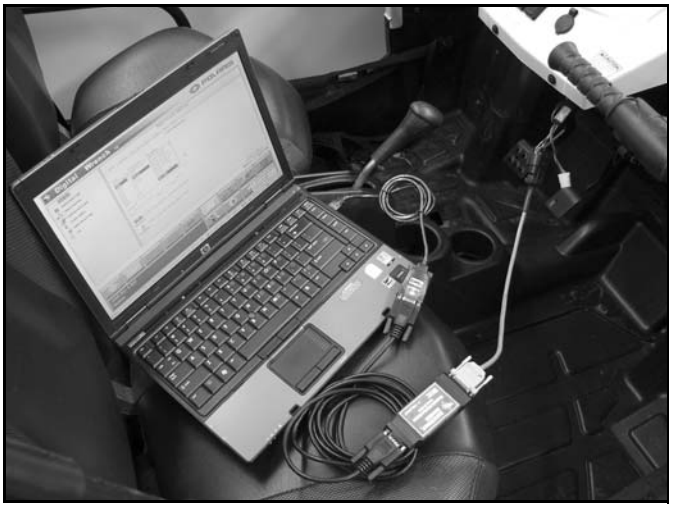
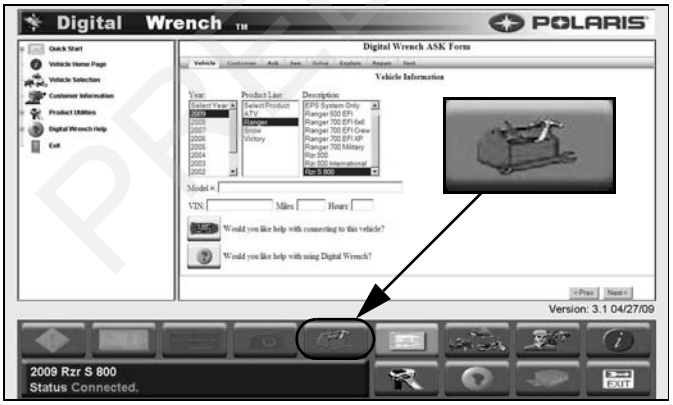
2. Connect the SmartLink Module cables to the PC and vehicle. See “Digital Wrench™ - Diagnostic Connector” on page 4.42.



3. Open the Digital Wrench™ program.

4. Select the model year, product line and vehicle description by selecting the “Change Vehicle Type” icon.

5. Select the “Special Tests” icon.



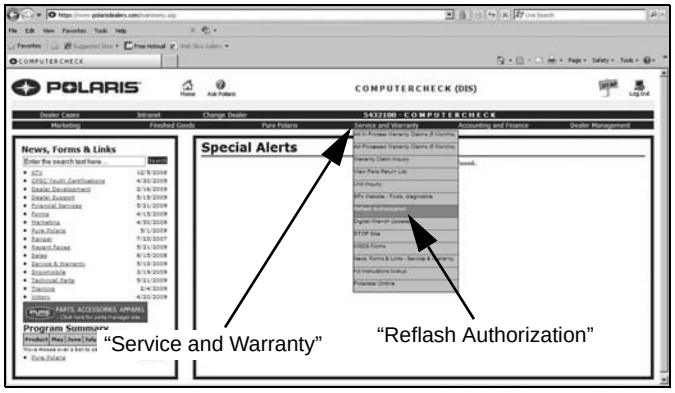
6. Select “Engine Controller Reprogramming”.

7. Select the file you want to load into the ECU then click the “Continue” icon to proceed to the Integrity Check and obtain a Request Code.

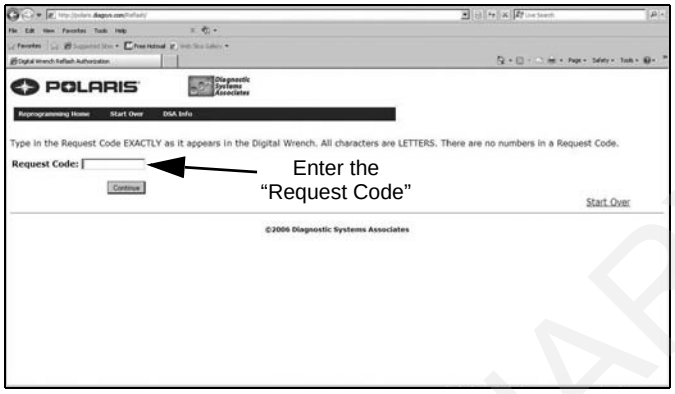
8. Copy (CTRL+C) the Request Code that will be required on the dealer website in the next step. DO NOT CLOSE Digital Wrench™ or the Request Code will be invalid. **NOTE: All characters are letters; there are no numbers in a request code.**

NOTE: Request Codes and Authorization Keys must be entered EXACTLY as they appear on the screen.

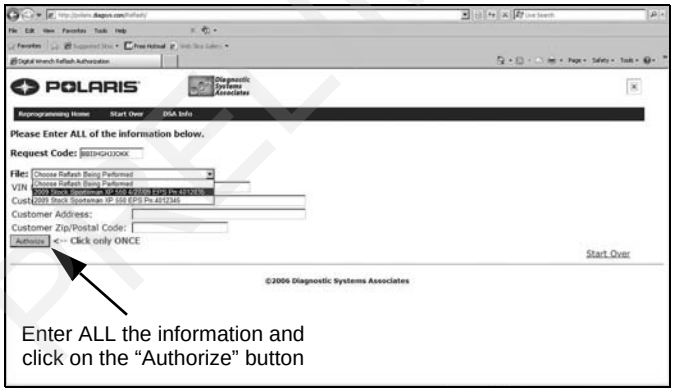
9. Go to ***www.polarisdealers.com*** and click on "ReFlash Authorization" from the "Service and Warranty" drop-down menu.



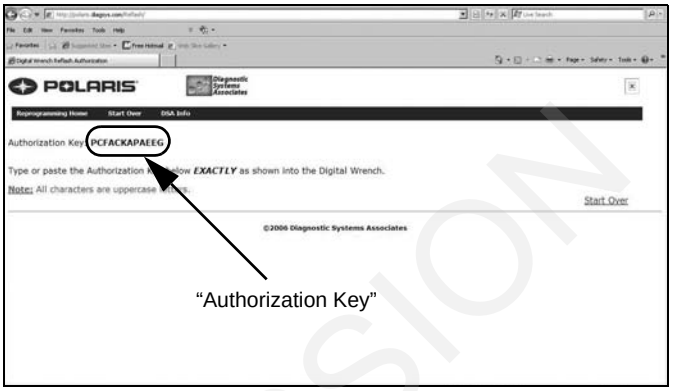
10. Enter or paste (CTRL+V) the Request Code into the box.



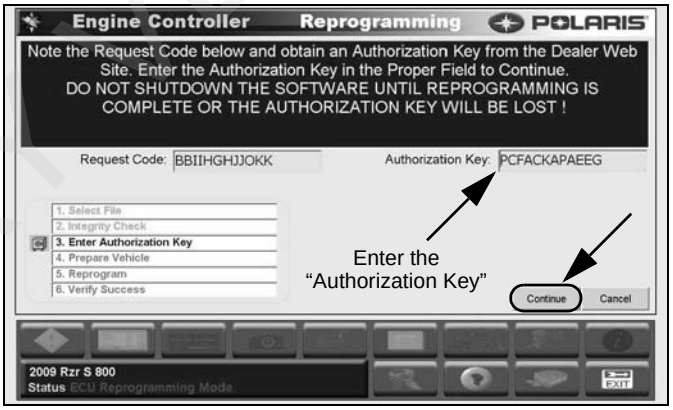
11. Select the same file type from the list that you selected previously while in Digital Wrench™. Enter the VIN along with the customer's name and address. When completed, click the Authorize button **once** to proceed.



12. An "Authorization Key" will appear in the upper left corner of the screen. Copy (CTRL+C) this key exactly as it appears.



13. Enter or paste (CTRL+C) the Authorization Key in the box located on the Digital Wrench™ screen. Click the 'Continue' button and follow instructions provided to complete the reprogramming procedure.



14. At this point the reflash process will begin. Do not touch the vehicle or PC during the process.

15. Once the ECU reprogramming procedure is complete, click the 'Finish' button on the screen. Verify the reflash was a success by starting the vehicle.

NOTES

CHAPTER 5

BODY / STEERING / SUSPENSION

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TORQUE SPECIFICATIONS

ITEM	TORQUE VALUE
Front LH/RH Upper / Lower A-Arm Bolt	**RZR** 37 ft-lbs (50 Nm)
	RZR S / RZR 4 40 ft-lbs (54 Nm)
Rear LH/RH Upper / Lower A-Arm Bolt	**RZR** 33 ft-lbs (45 Nm)
	RZR S / RZR 4 40 ft-lbs (54 Nm)
Lower LH/RH Rear Bearing Carrier	**RZR** 38 ft-lbs (52 Nm)
	RZR S / RZR 4 40 ft-lbs (54 Nm)
Upper LH/RH Rear Bearing Carrier	**RZR** 33 ft-lbs (45 Nm)
	RZR S / RZR 4 40 ft-lbs (54 Nm)
Outer Tie Rod to Bearing Carrier Housing	42.5 ft-lbs (58 Nm)
Front Ball Joint Pinch Bolts	23 ft-lbs (31 Nm)
Shock Mounting Bolts	**RZR** 30 ft-lbs (41 Nm)
	RZR S / RZR 4 37 ft-lbs (50 Nm)
Wheel Hub Castle Nuts	80 ft-lbs (108 Nm)
Wheel Nuts (Cast Rims)	30 ft-lbs (41 Nm) + 90°
Wheel Nuts (Steel Rims)	27 ft-lbs (37 Nm)
Tie Rod End Jam Nut	13 ft-lbs (18 Nm)
Seat Belt to Seat Base	40 ft-lbs (54 Nm)
Tilt Shock Upper Fastener	7 ft-lbs (10 Nm)
Tilt Shock Lower Fastener	12 ft-lbs (16 Nm)
Steering Pivot Tube Fasteners	23 ft-lbs (31 Nm)
Steering Wheel to Shaft	28 ft-lbs (38 Nm)
Upper Steering Shaft to Power Steering Unit	**EPS Models** 15 ft-lbs (20 Nm)
Lower Steering Shaft to Power Steering Unit	**EPS Models** 17 ft-lbs (23 Nm)
Power Steering Unit to Mount Bracket	**EPS Models** 22 ft-lbs (30 Nm)
Lower Steering Shaft to Box	30 ft-lbs (41 Nm)
Steering Gear Box	17 ft-lbs (23 Nm)
Main Frame Coupler M10 Bolts	**RZR 4** 38 ft-lbs (52 Nm)
Outer Frame Coupler M8 Bolts	**RZR 4** 17 ft-lbs (23 Nm)

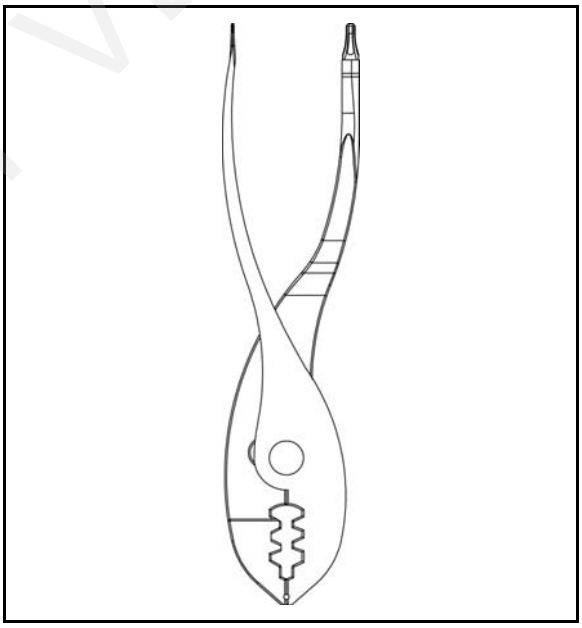
SPECIAL TOOLS

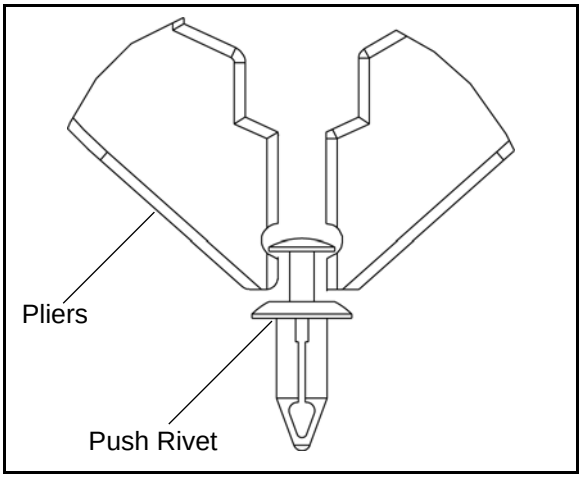
PART NUMBER	TOOL DESCRIPTION
2200421	**Gas Shock Recharging Kit**
2201640	**Shock Shaft Seal Protector .625" Diameter**
PS-45908	**IFP Tool**
2871095	**Shock Spanner Wrench**
2870803	**Shock Spanner Wrench (Fox Shocks)**
2870623	**Shock Spring Compressor Tool**
2876389	**Multi-Function Pliers**

SPX Corp: 1-800-328-6657 or http://polaris.spx.com/

Multi-Function Pliers

Included in the tool kit, this multi-function pliers is designed to remove plastic push rivets and install body components.





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CAB FRAME (RZR / RZR S)

Assembly / Removal

NOTE: Finger tighten all components until cab frame is completely assembled on vehicle, then tighten to specifications listed.

1. Assemble the rear cab frame and the front cab frame at the coupler joints and secure with four (3/8-16 x 1 1/4) screws and (3/8-16 Nyloc) nuts. Tighten screws to specification.

= T
Screws: **25-28 ft-lbs (34-38 Nm)**

2. Place the assembled cab frame onto the vehicle and align the rear mount holes. Fasten the rear cab frame brackets to vehicle with four (M10x1.5x25) bolts and (M10x1.5) nuts. Tighten bolts to specification. Fasten the two self-tapping screws to the rear inner portion of the bracket on each side. Tighten screws to specification.

= T
Bolts: **30 ft-lbs (41 Nm)**

= T
Screws: **15 ft-lbs (20 Nm)**

3. Place the straps from the safety net over the front coupler posts.

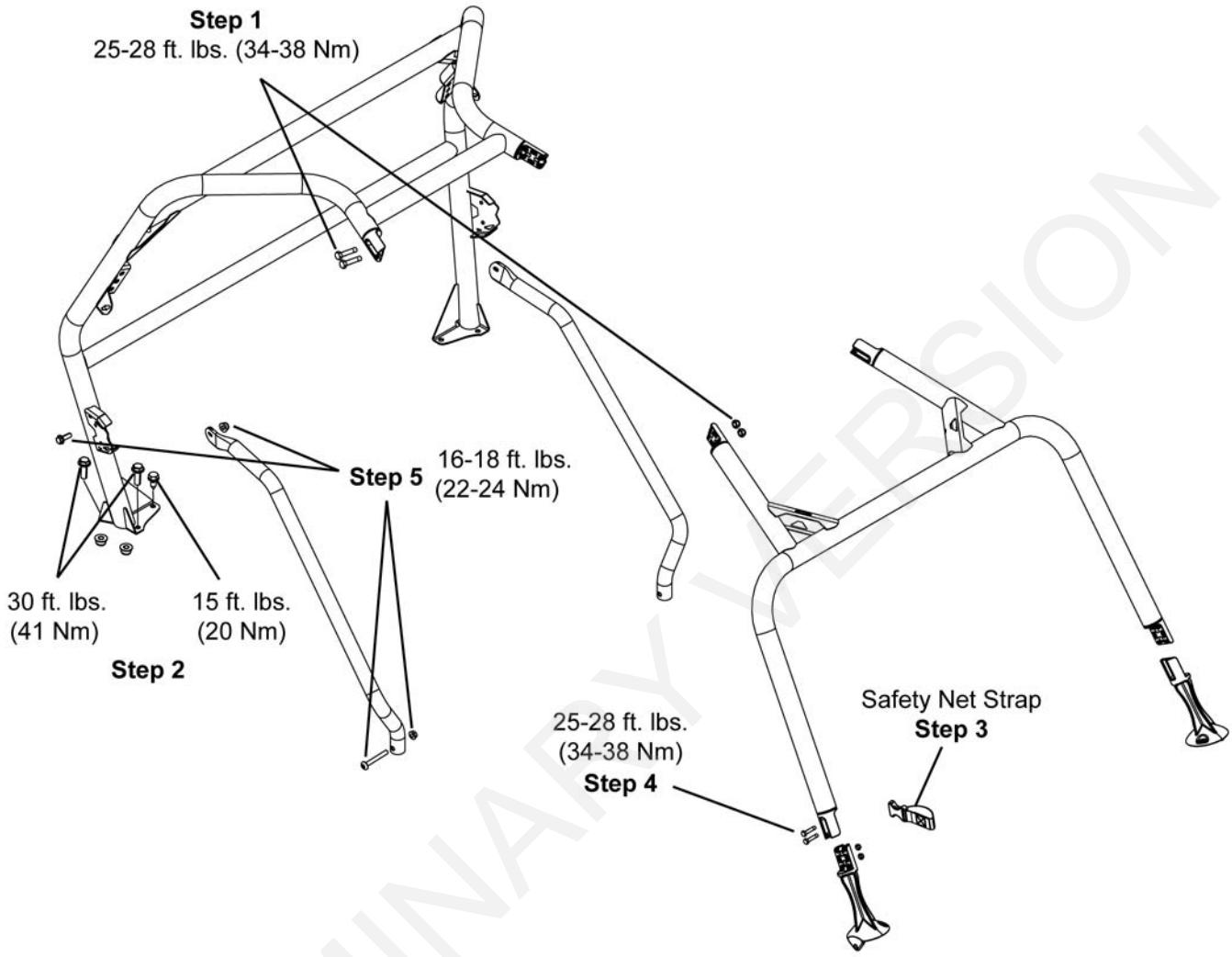
4. Fasten the front of the cab frame to the base brackets and secure with four (3/8-16 x 1 1/4) screws and (3/8-16 Nyloc) nuts. Tighten screws to specification.

= T
Screws: **25-28 ft-lbs (34-38 Nm)**

5. Attach side bars to cab frame using M6 screws and nuts on top and M8 screws and nuts on the bottom. Tighten to specification.

= T
Screws: **8-10 ft-lbs (10.8-13.5 Nm)**

6. To remove the cab frame, reverse the assembly procedure (steps 1-5).



CAB FRAME (RZR 4)

Assembly / Removal

NOTE: Finger tighten all components until cab frame is completely assembled on vehicle, then tighten to specifications listed.

1. Place rear cab frame and mid cab frame in the vehicle so they line up with the mounting holes. You may have to pull the rocker panels out slightly to get the mid cab frame into place. Assemble at the coupler joint and secure with (3/8-16 x 1 1/4) bolts and (3/8-16 Nyloc) nuts. Tighten bolts to specification.

= T
Bolts: **25-28 ft-lbs (34-38 Nm)**

2. Fasten rear cab frame brackets to vehicle with (5/16-18 x 3/4) bolts and (5/16-18 Nyloc) nuts. Tighten bolts to specification. Fasten a (5/16-18 x 3/4) tap screw to the rear of the bracket on each side. Tighten tap screws to specification.

= T
Bolts: **16-18 ft-lbs (22-24 Nm)**

= T
Screws: **15 ft-lbs (20 Nm)**

3. Insert strap from safety net over front coupler post on front cab frame. Fasten the front of the cab frame to the base brackets and mid cab frame using the (3/8-16 x 1 1/4) bolts and (3/8-16 Nyloc) nuts. Tighten bolts to 25-28 ft-lbs (34-38 Nm).

= T
Bolts: **25-28 ft-lbs (34-38 Nm)**

4. Fasten mid cab frame brackets to the vehicle with (5/16-18 x 1) bolts and (5/16-18 Nyloc) nuts. Tighten bolts to specification. Fasten (5/16-18 x 3/4) tap screws to the outsides of each bracket. Tighten tap screws to specification.

= T
Bolts: **16-18 ft-lbs (22-24 Nm)**

= T
Tap Screws: **15 ft-lbs (20 Nm)**

5. Fasten side bars by sliding the lower portion into the U-shaped bracket on the mid cab frame. Fasten the upper portion to the rear cab frame using (1/4-20 x 3/4) Phillips-head screws and (1/4-20 Nyloc) nuts. Tighten screws to specification. Fasten (1/4-20 x 3/4) Torx-head screws into lower portion of side bars through bracket slot. Tighten tap screws to specification.

= T
Screws: **6-8 ft-lbs (8-11 Nm)**

= T
Tap Screws: **6-8 ft-lbs (8-11 Nm)**

6. To remove the cab frame, reverse the assembly procedure (steps 1-5).

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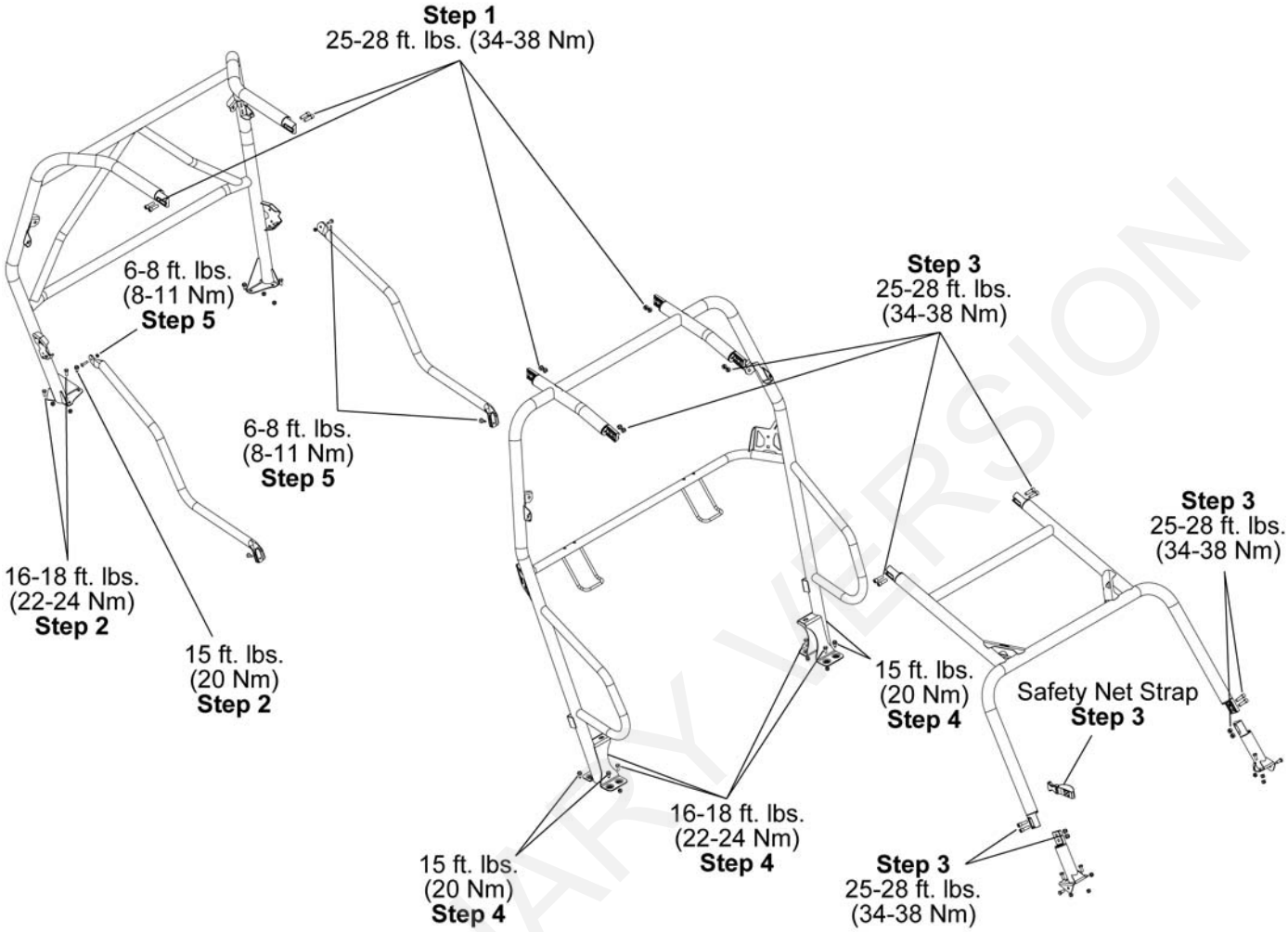
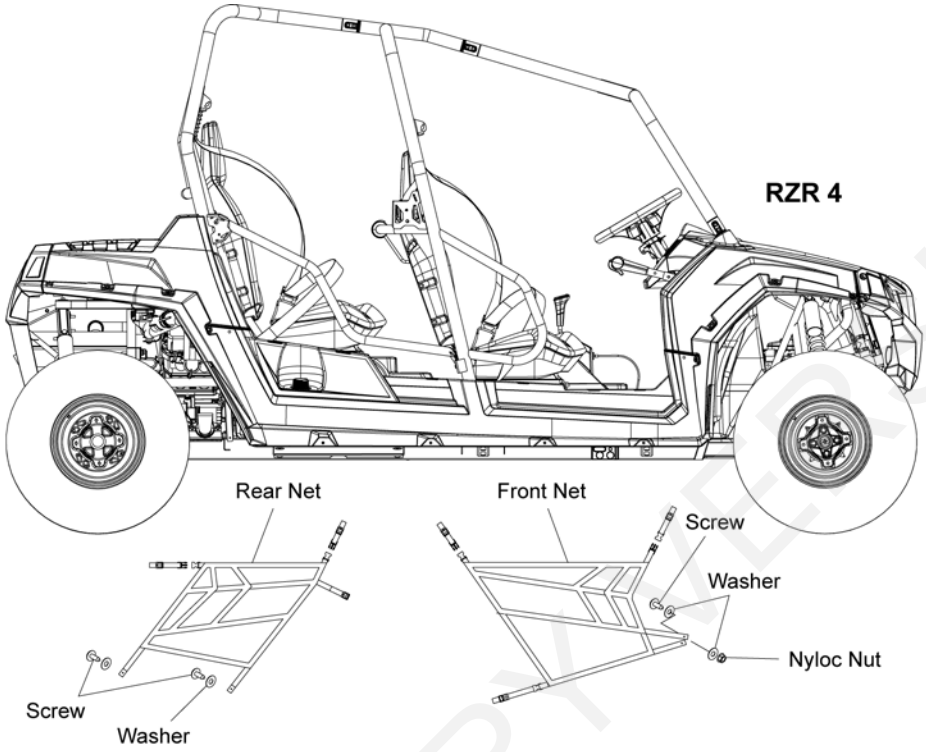
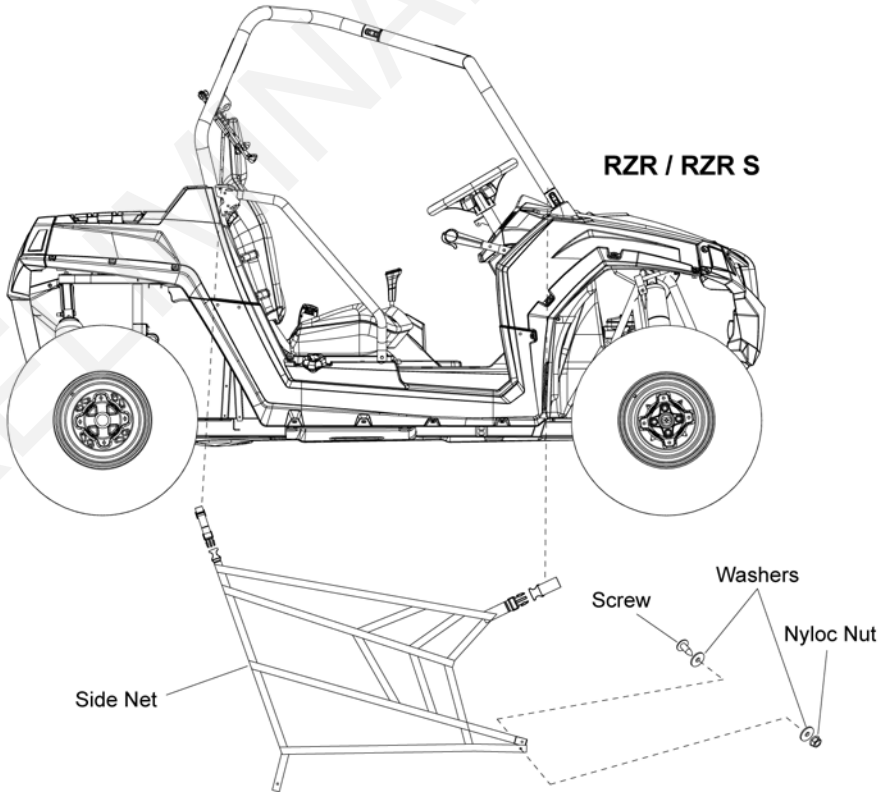


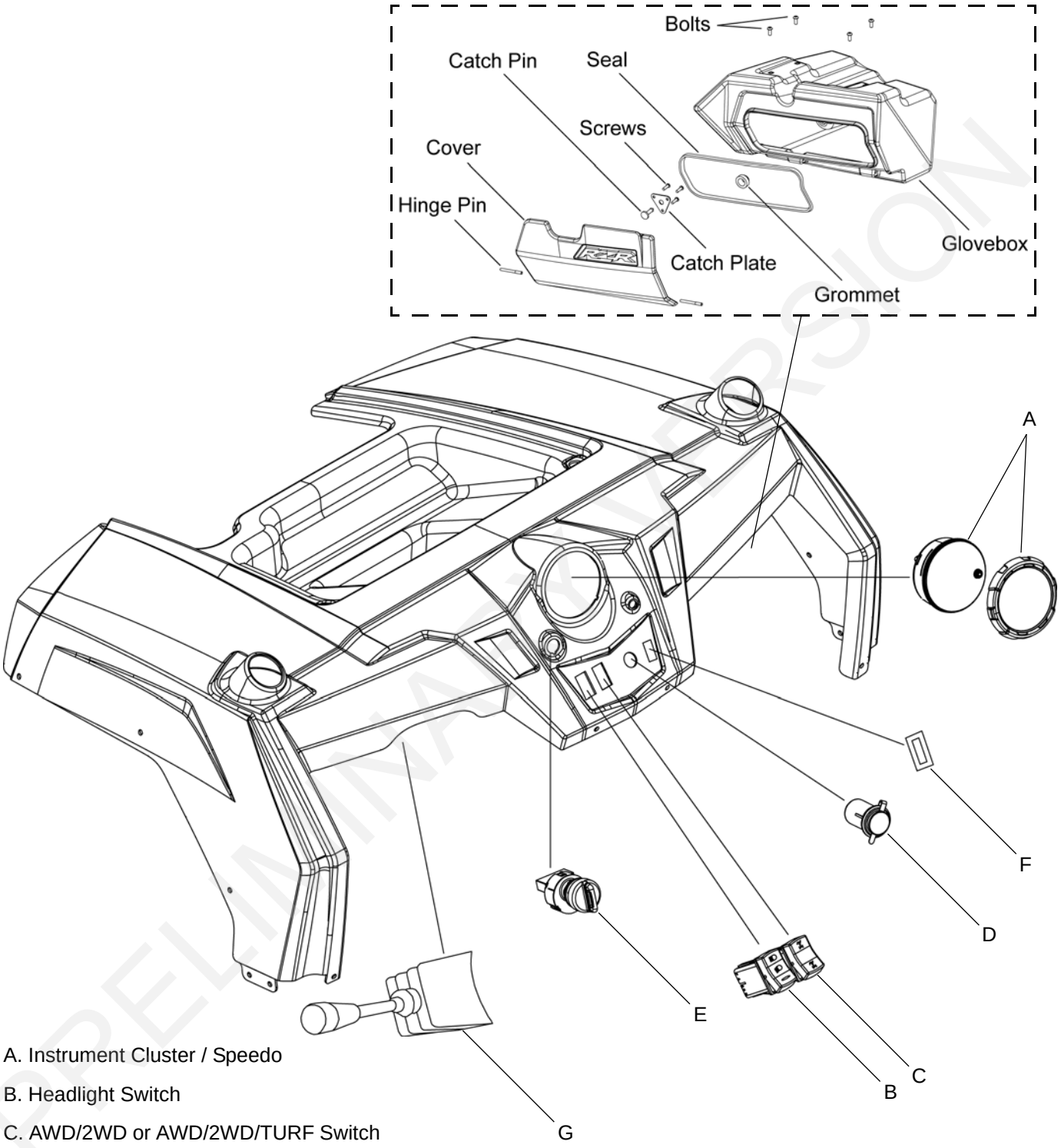
BODY EXPLODED VIEWS

Side Safety Nets





Dash Instruments / Controls / Glovebox



A. Instrument Cluster / Speedo

B. Headlight Switch

C. AWD/2WD or AWD/2WD/TURF Switch

D. 12 Volt Accessory Receptacle

E. Key Switch

F. Hazard Switch (INT'L)

G. Switch; Turn, Lights, Horn (INT'L)

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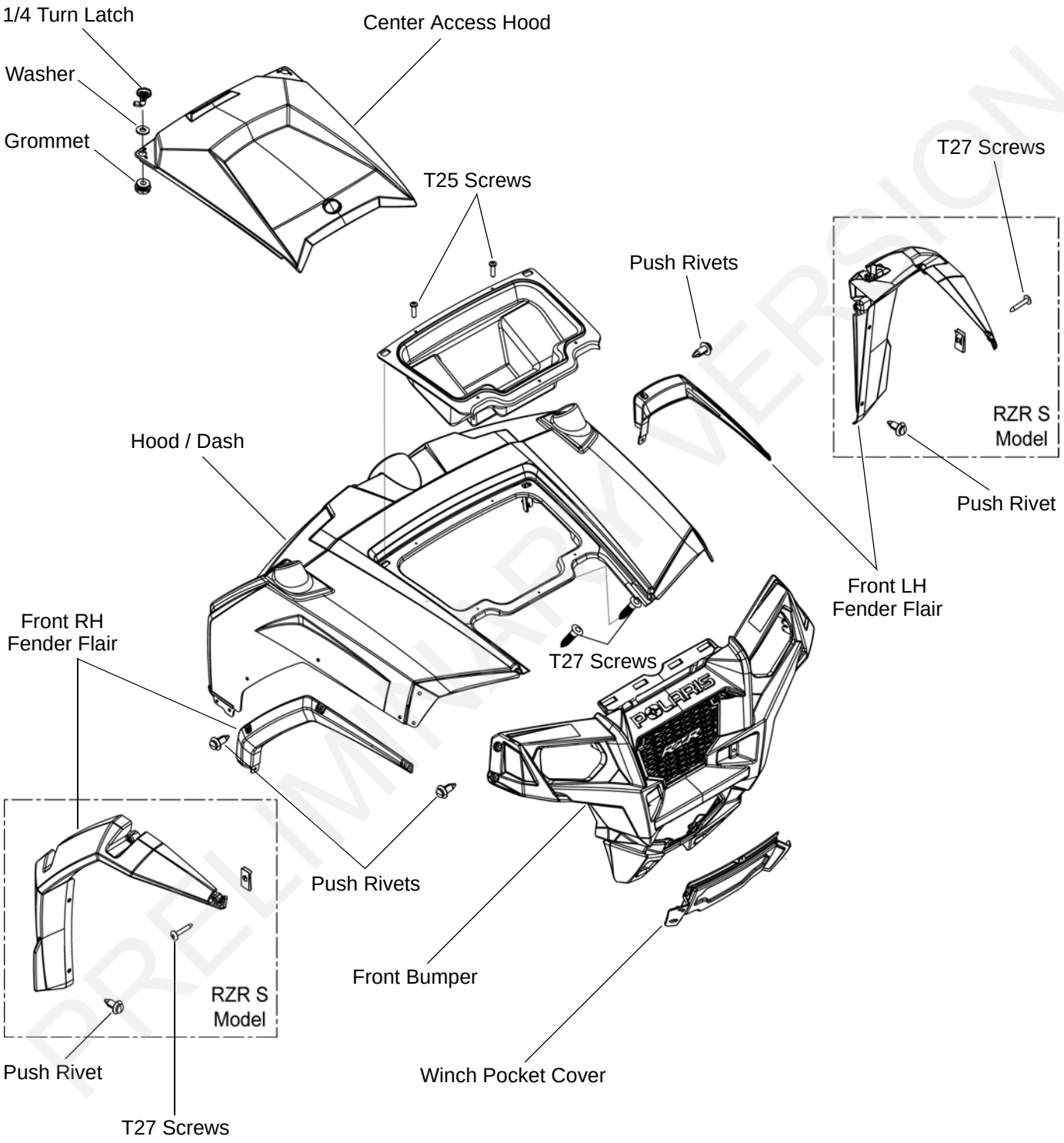
Hood / Front Body Work



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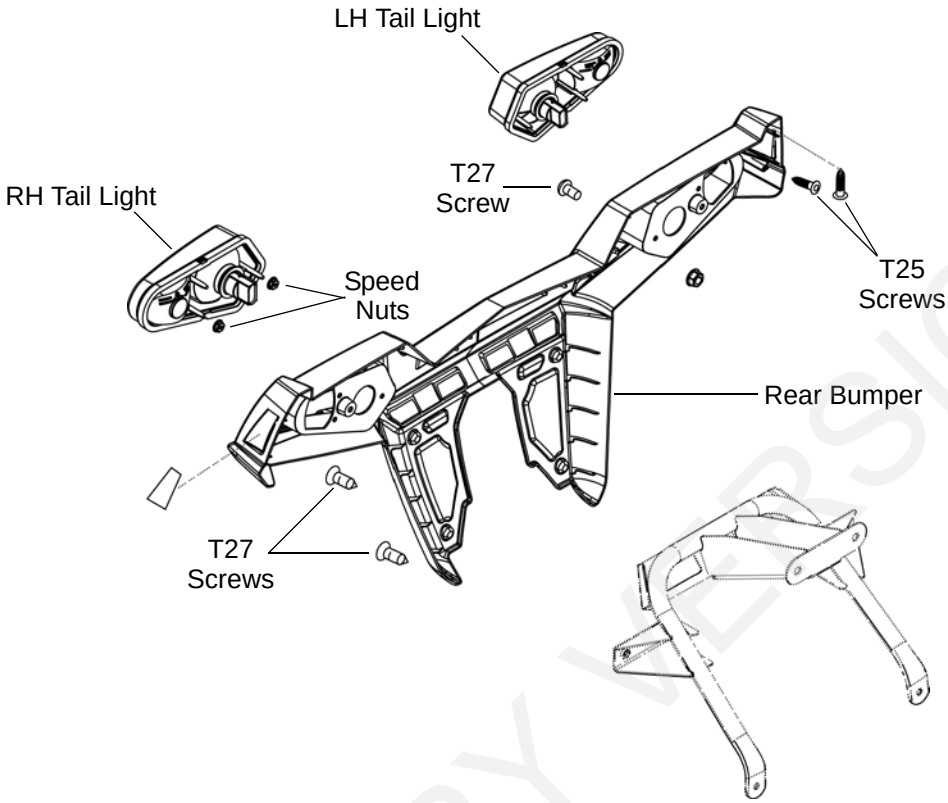
Rear Bumper



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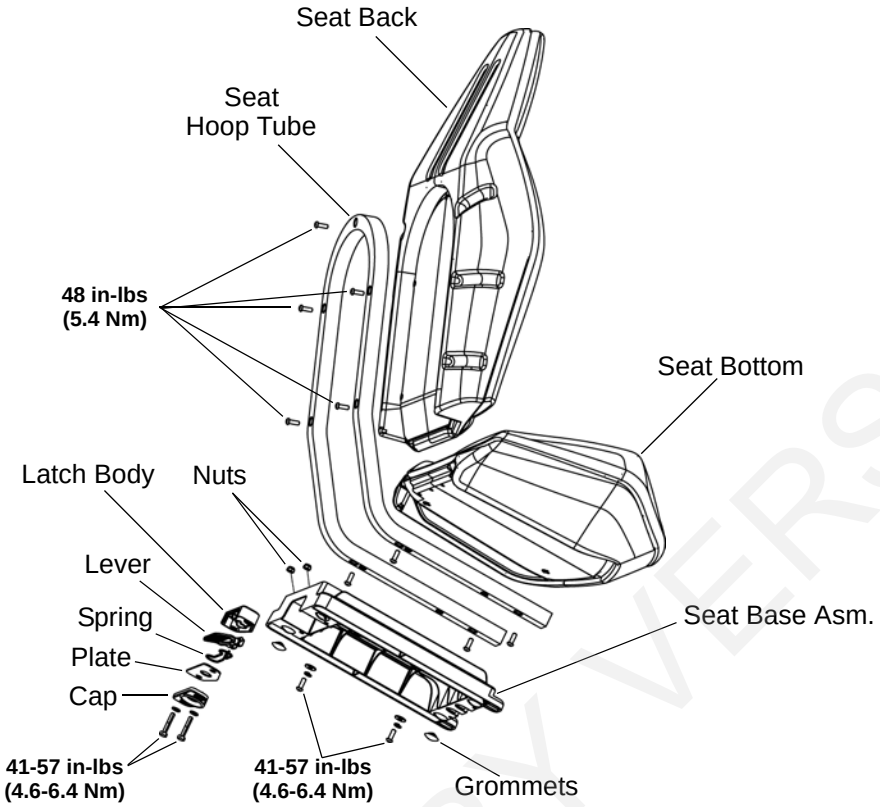
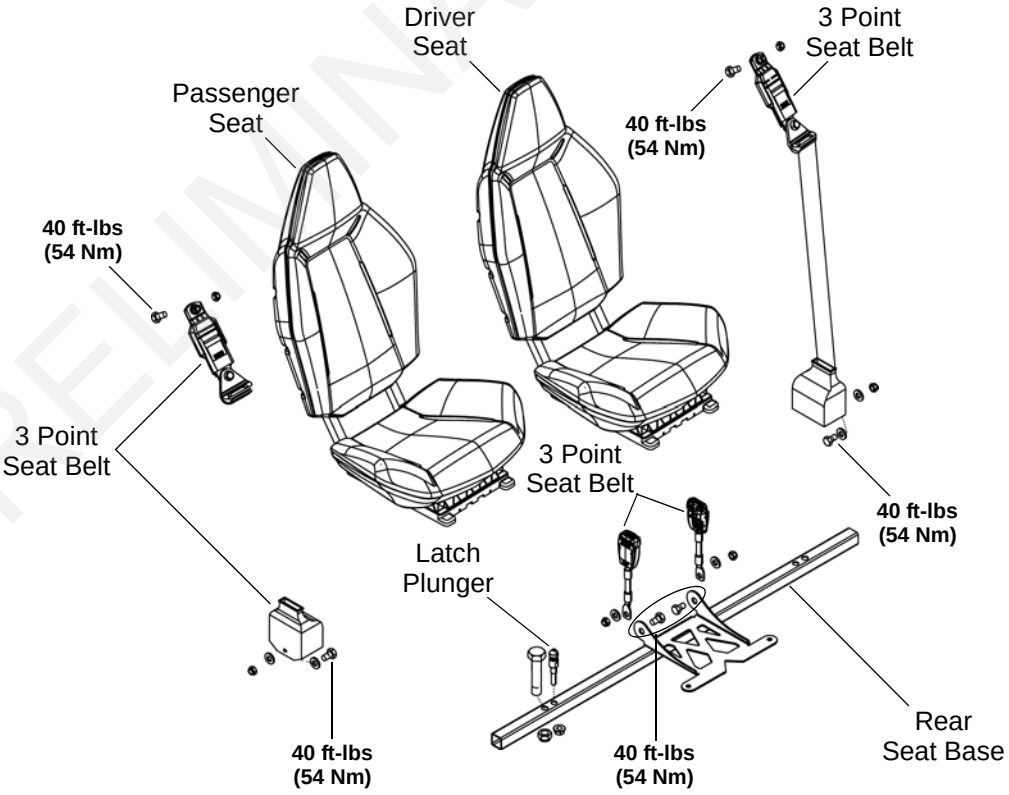
Seat Assembly



Seat Belts / Mounting (RZR / RZR S)



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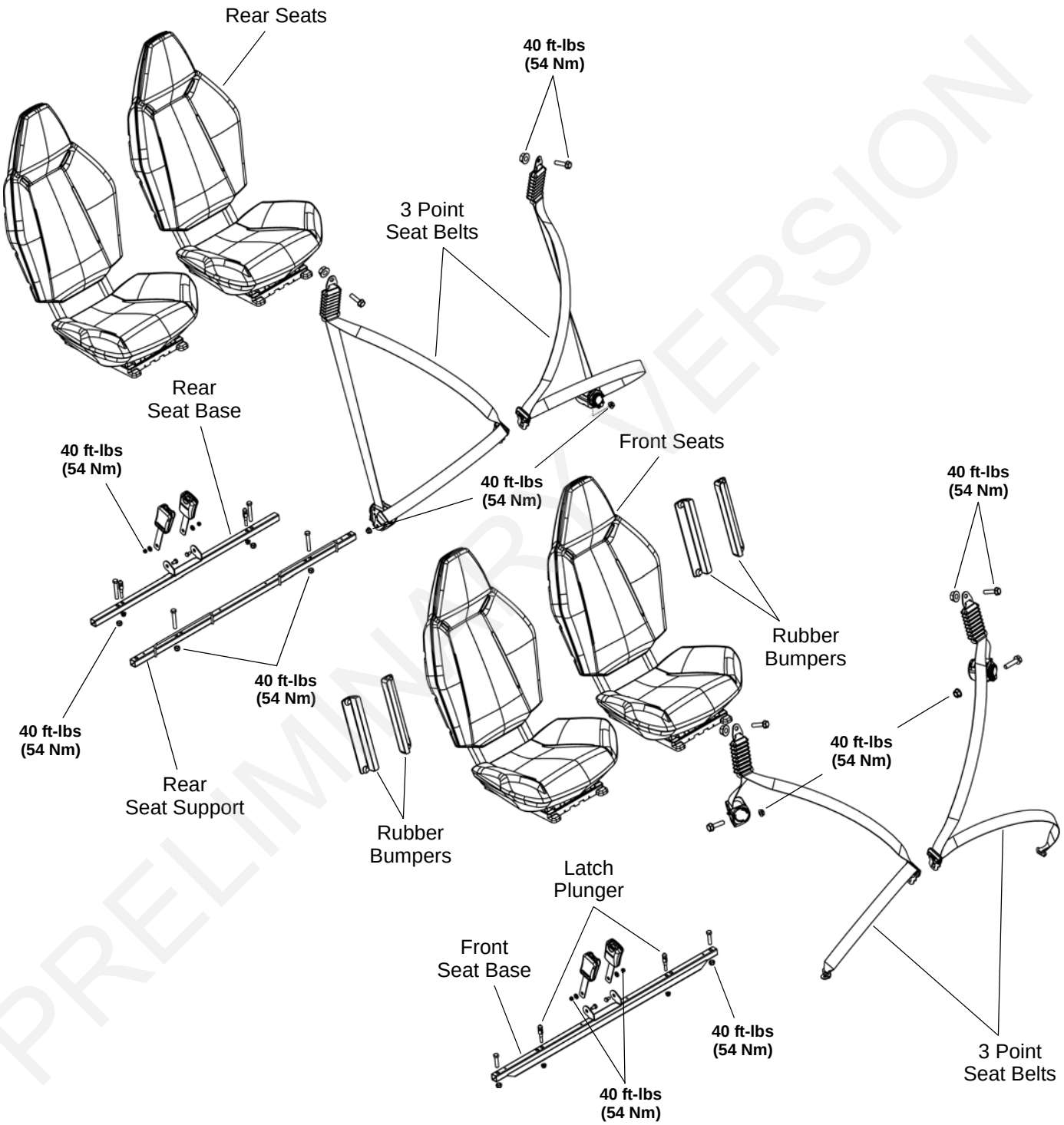
Seat Belts / Mounting (RZR 4)



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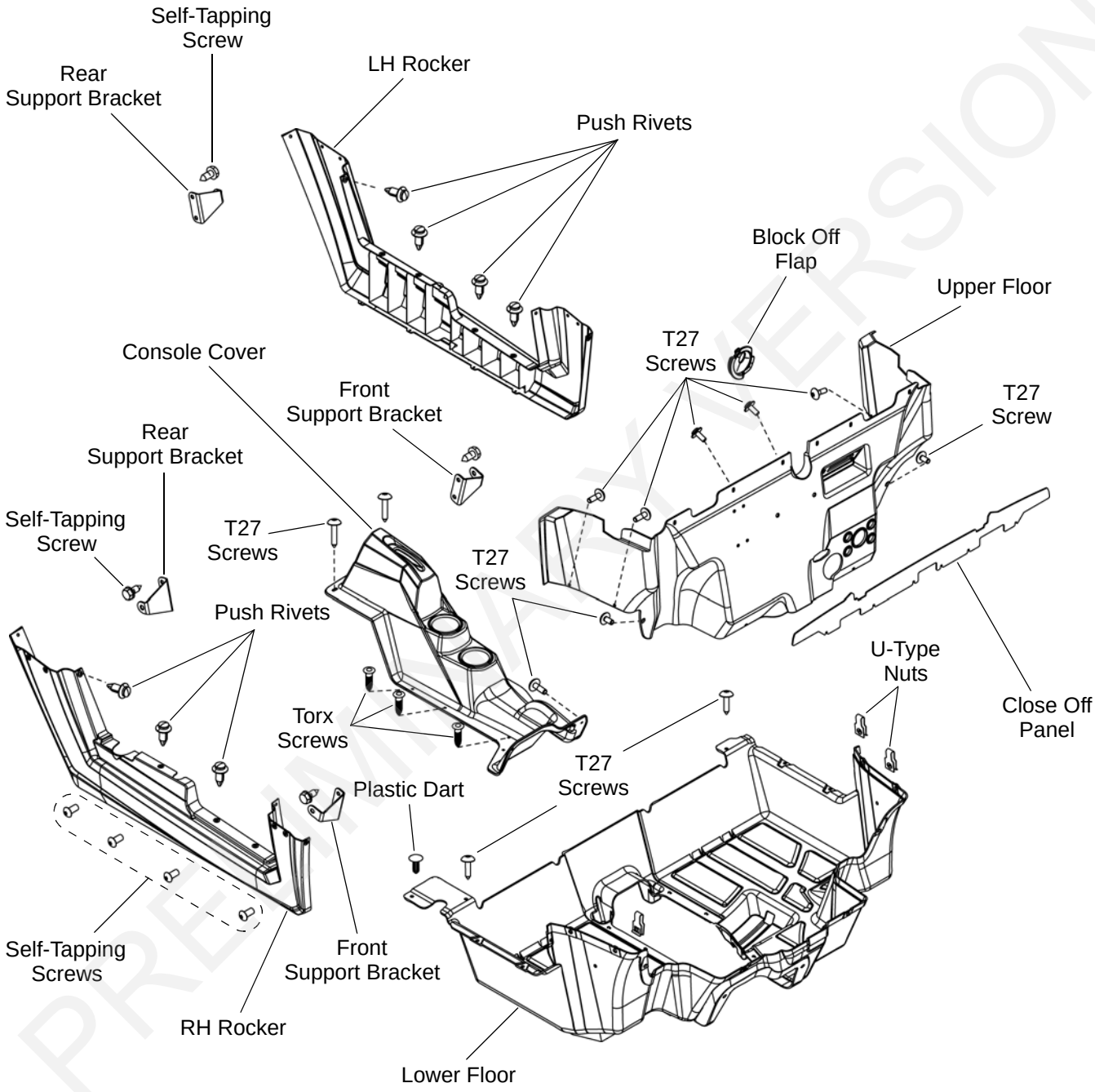
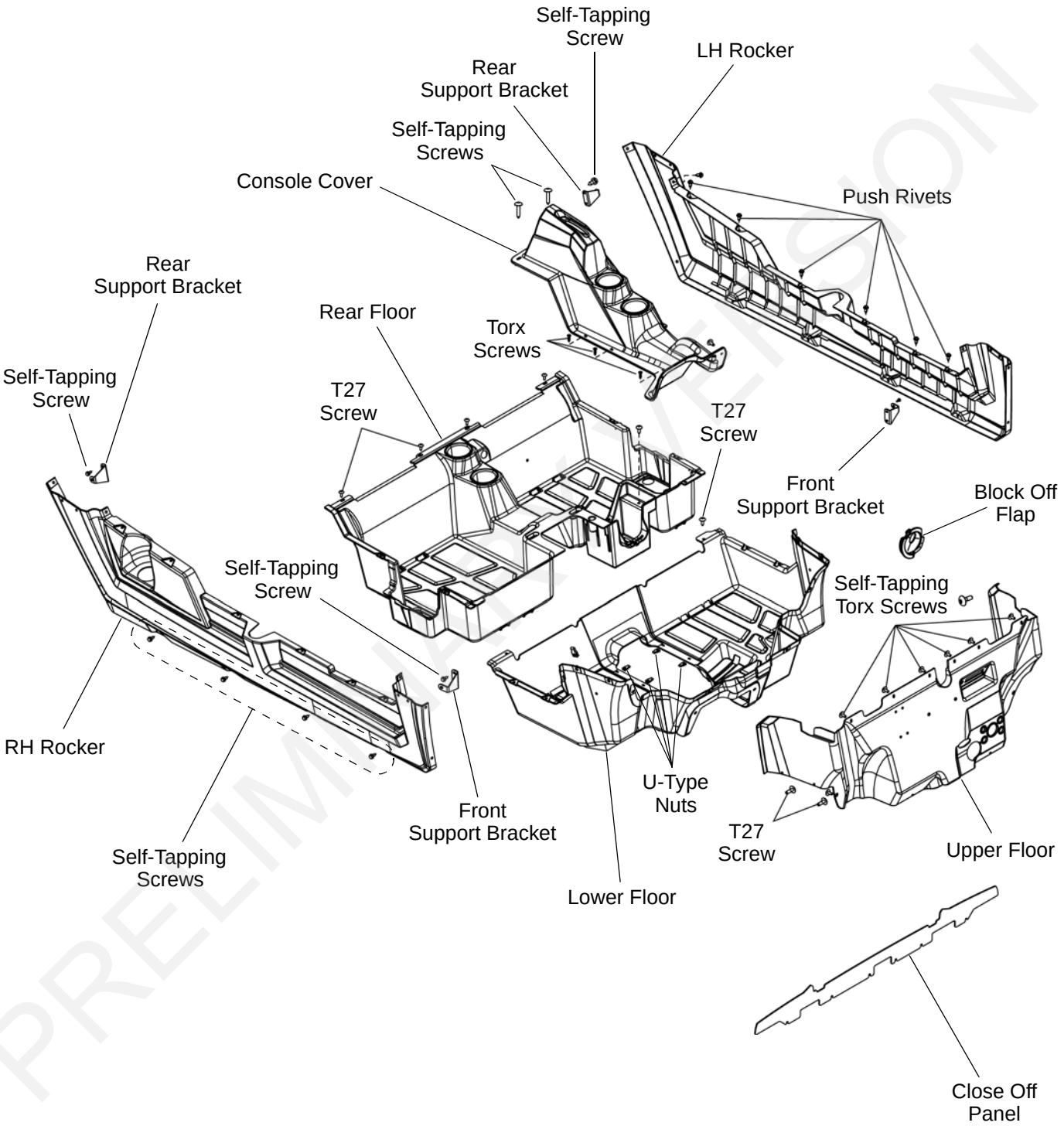
Floor / Rocker Panels (RZR / RZR S)



Floor / Rocker Panels (RZR 4)



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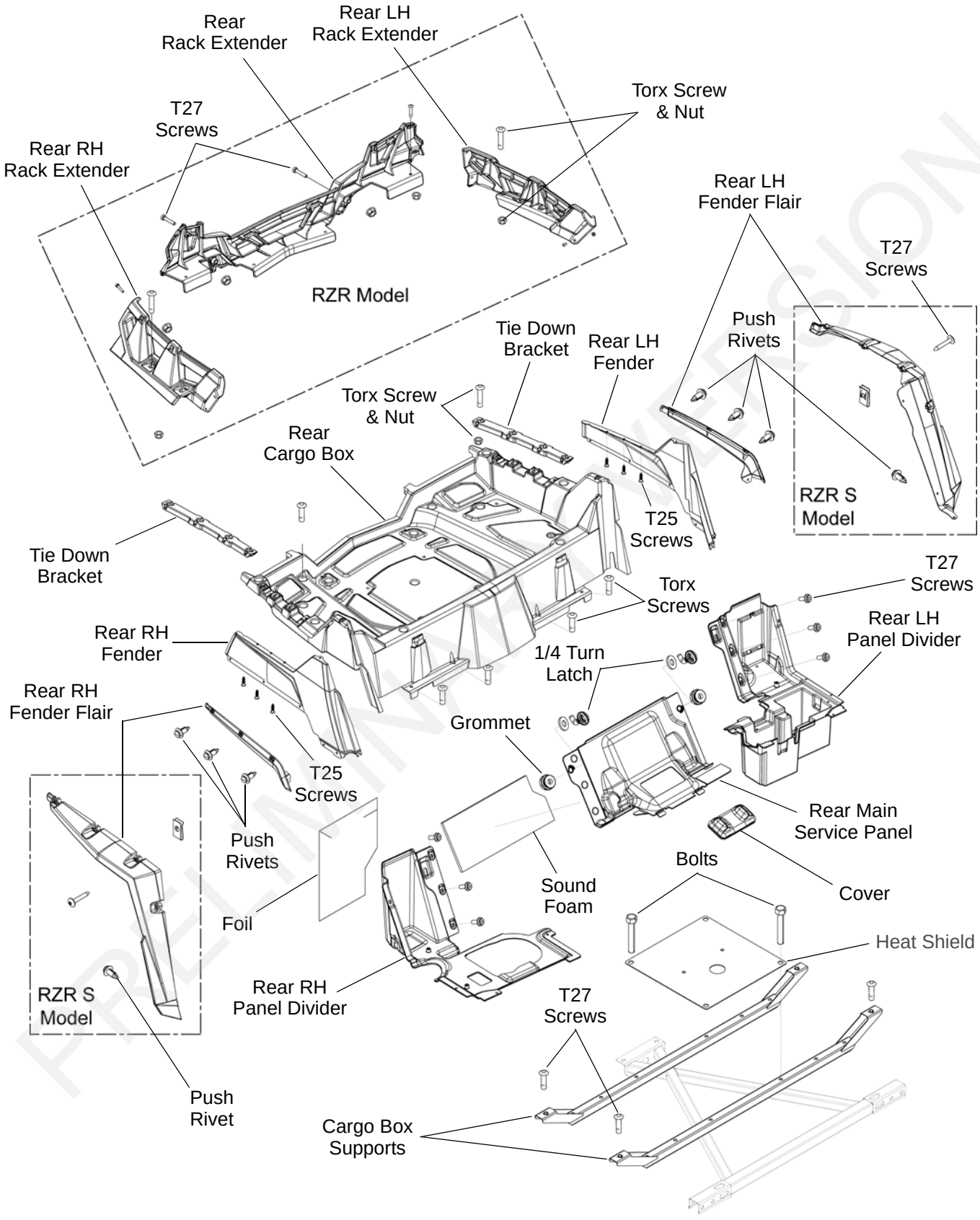
Rear Cargo Box / Fenders (RZR / RZR S)



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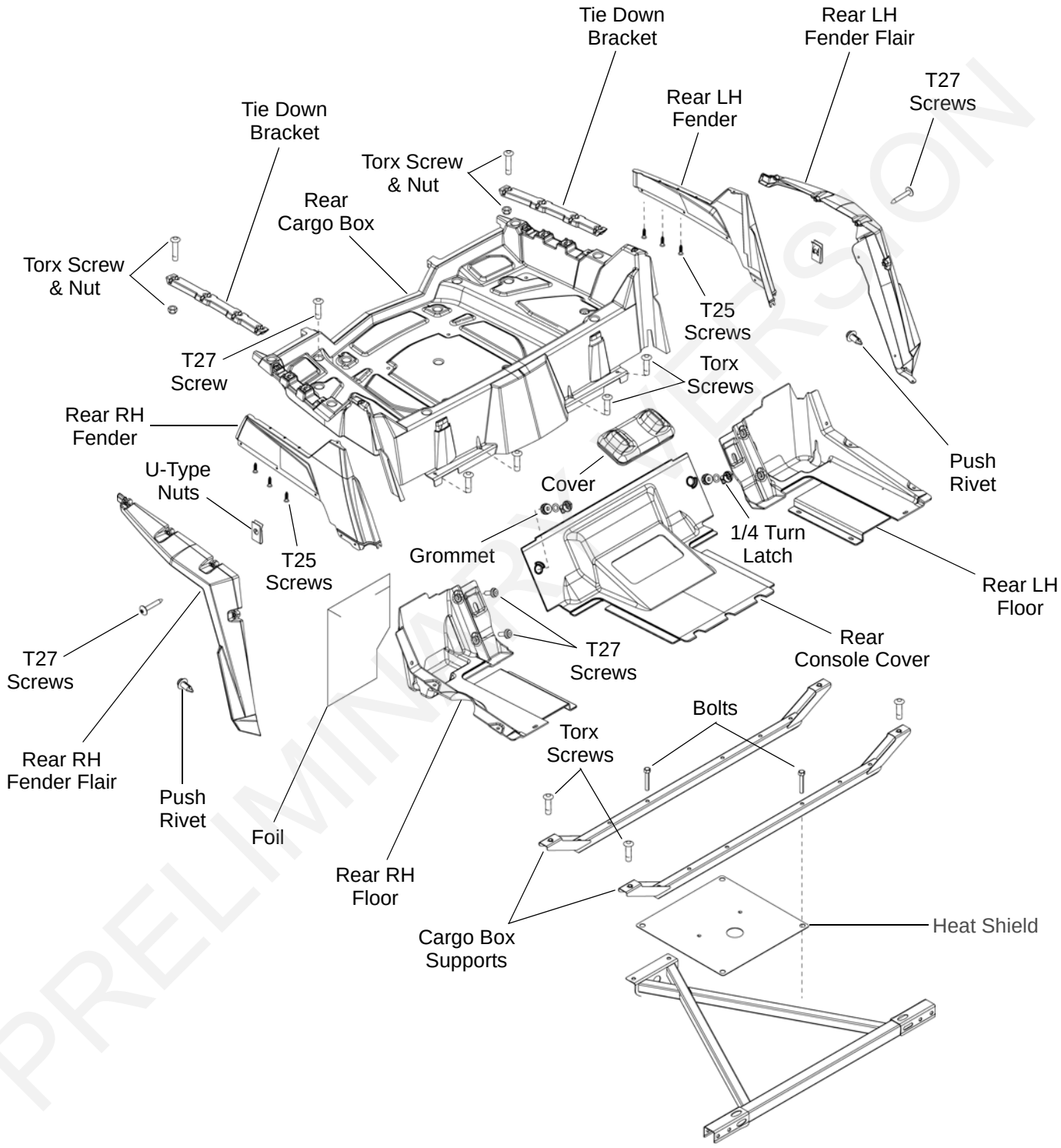
Rear Cargo Box / Fenders (RZR 4)



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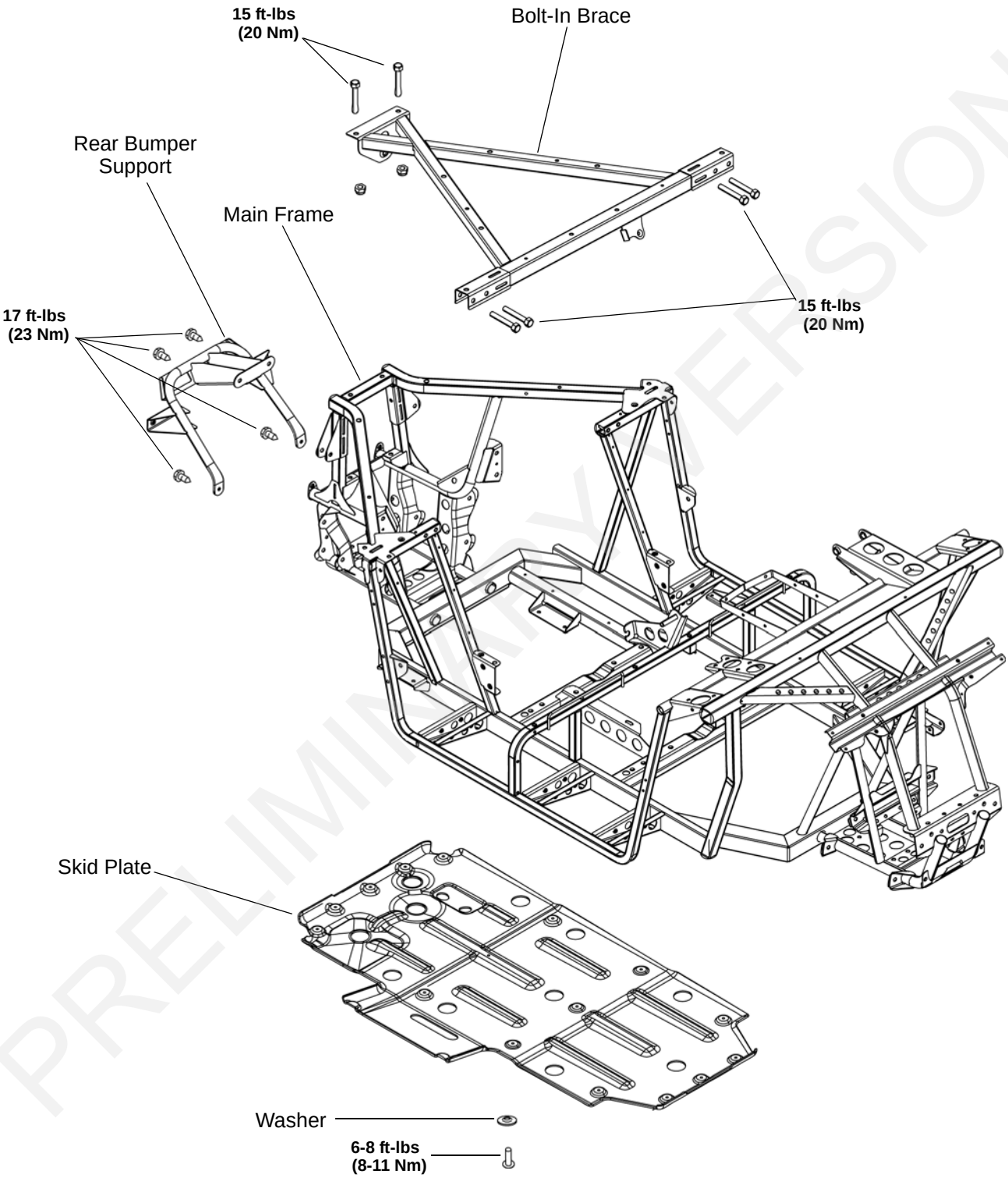
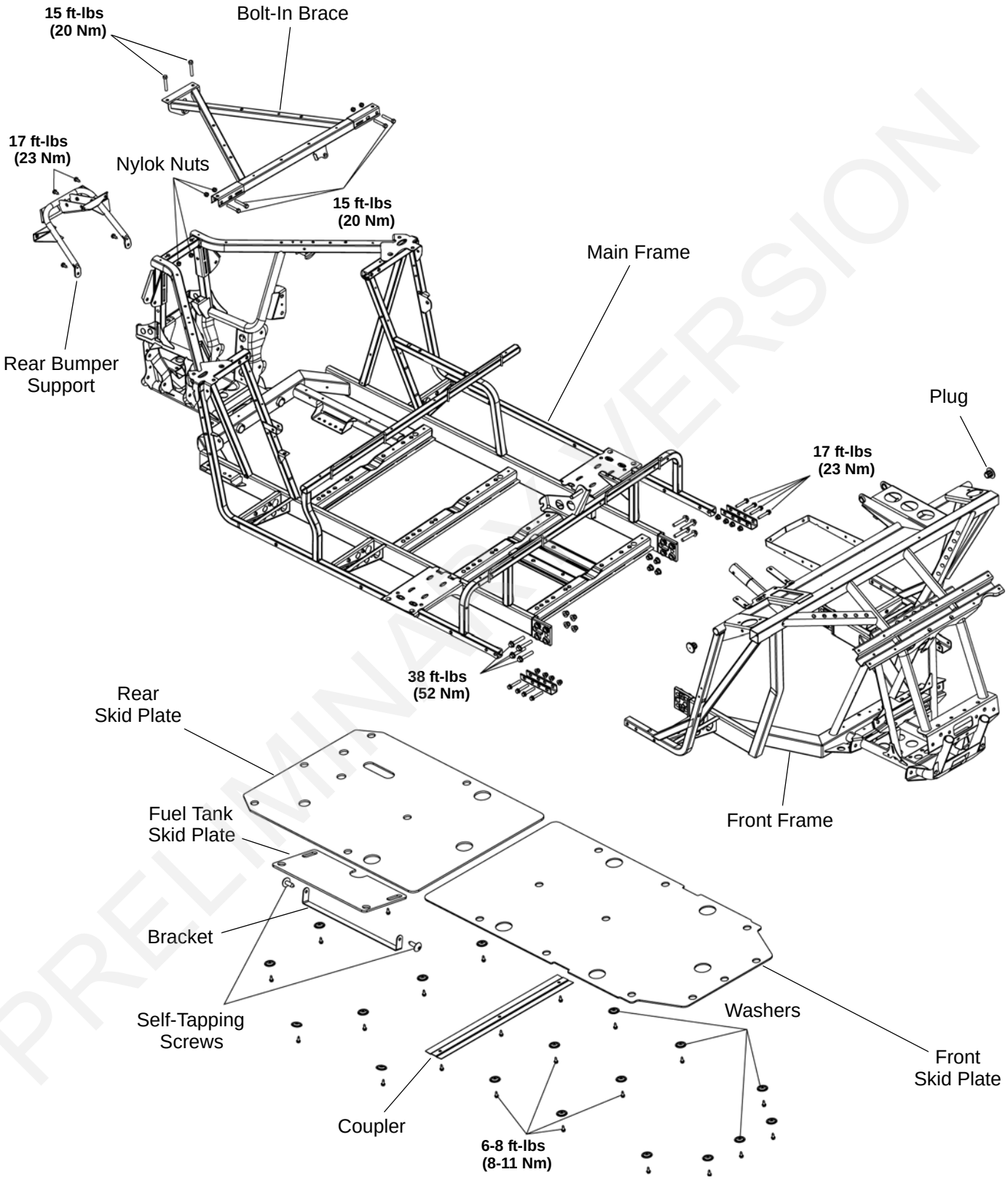
Chassis / Main Frame (RZR / RZR S)



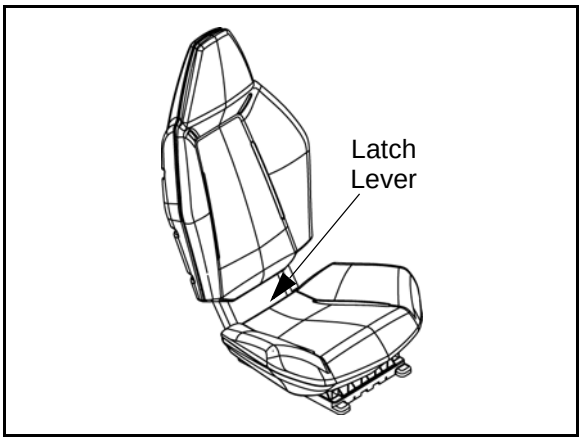
Chassis / Main Frame (RZR 4)



BODY COMPONENT REMOVAL

Seats

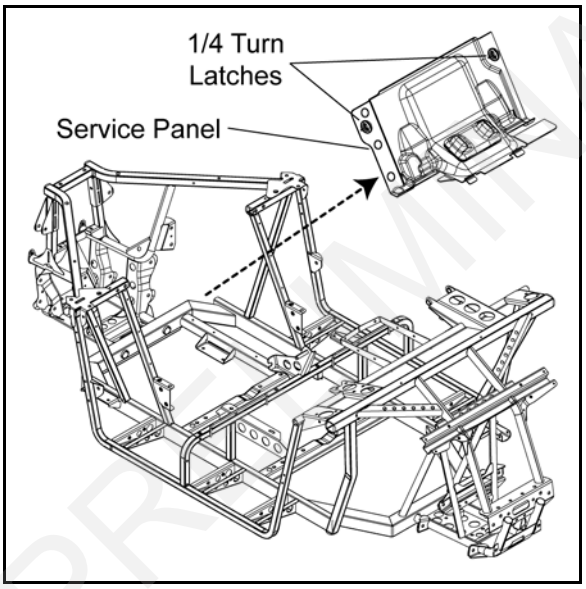
1. To remove any of the seats, lift upward on the latch lever located behind the seat bottom.



2. Lift upward and forward on the seat while lifting up on the latch lever and remove the seat from the vehicle.

Rear Service Panel (RZR / RZR S)

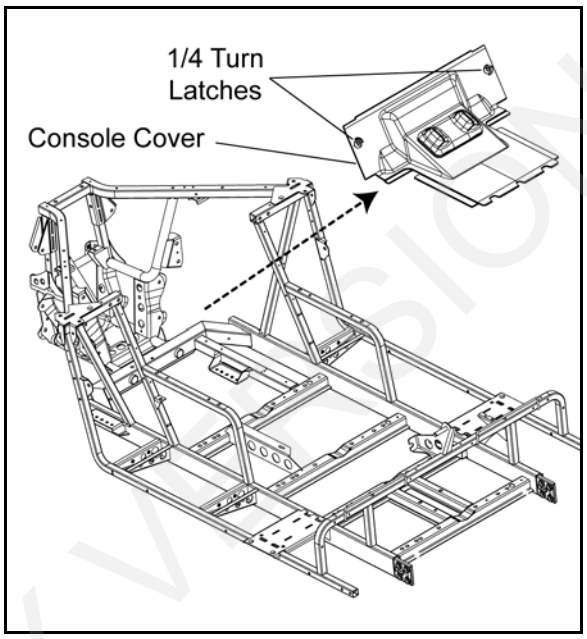
1. Remove driver and passenger seats.
2. Turn both latches 1/4 turn to disengage the panel.



3. Lift the panel upward and towards the front of the vehicle to remove it.

Rear Console Cover (RZR 4)

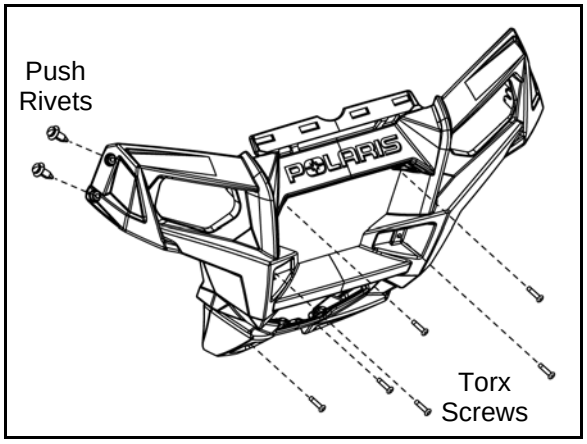
1. Remove the rear passenger seats.
2. Turn both latches 1/4 turn to disengage the cover.



3. Pull out on the top while pressing on the center of the lower portion of the cover to free it from the vehicle.
4. Lift the cover upward and towards the front of the vehicle to remove it.

Front Bumper

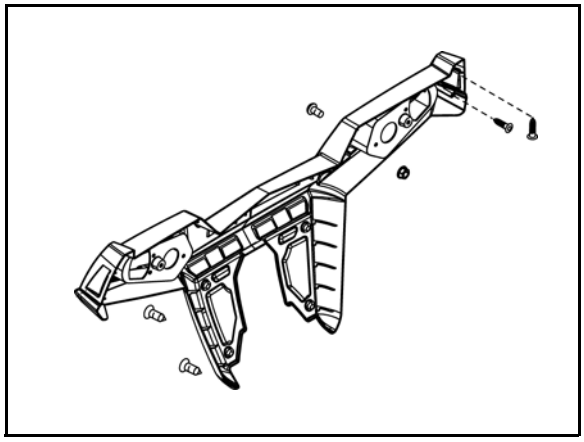
1. Remove the (4) push rivets from the sides of the front bumper.



2. Remove the (6) Torx screws retaining the upper, middle and lower portion of the bumper.
3. Disconnect the front head lamp connectors and remove the front bumper from the vehicle.

Rear Bumper

1. Remove the (4) Torx screws retaining the upper portion of the rear bumper to the cargo box.



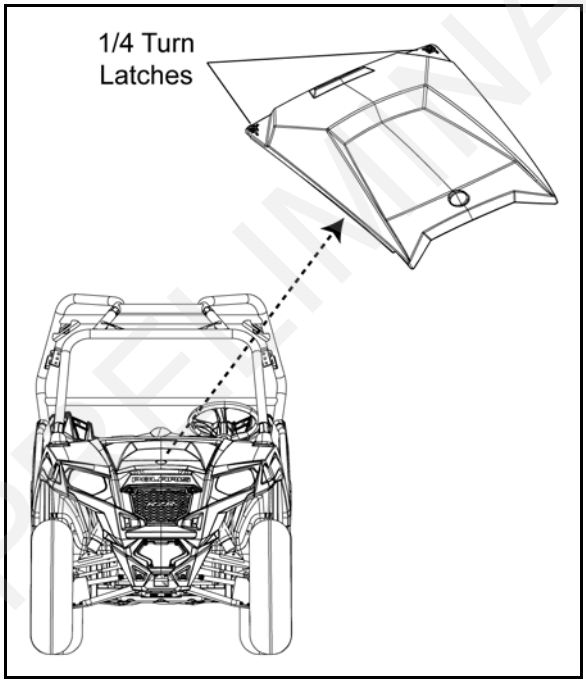
2. Remove the (4) Torx screws retaining the lower portion of the rear bumper to the frame.

3. Remove the (2) fasteners retaining the middle portion of the rear bumper to the cargo box.

Hood and Front Body Work

Hood Removal

1. To remove the hood, turn both latches to disengage the rear portion of the hood.



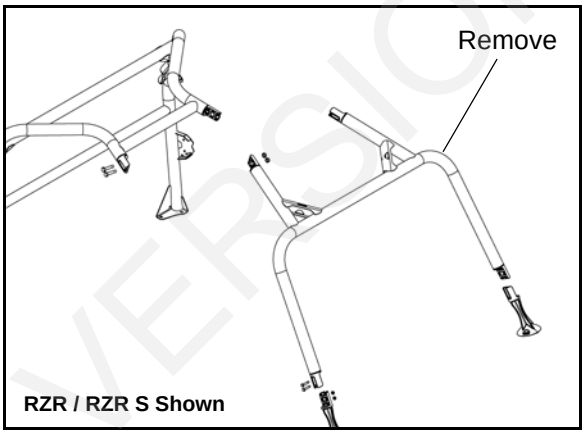
2. Tilt the hood back to disengage the front tabs and remove the hood from the vehicle.

Front Body / Dash Removal

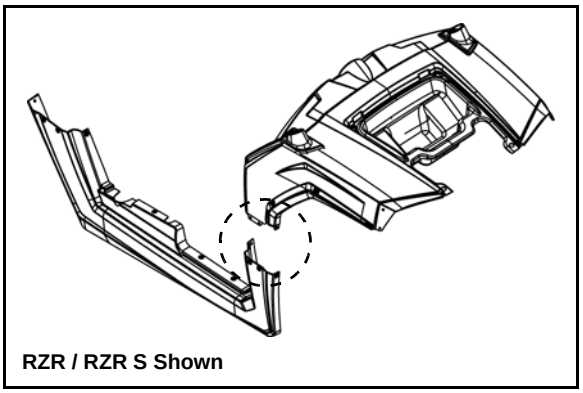
1. Remove the hood as previously described.

2. Remove the front bumper (see “BODY COMPONENT REMOVAL - Front Bumper”).

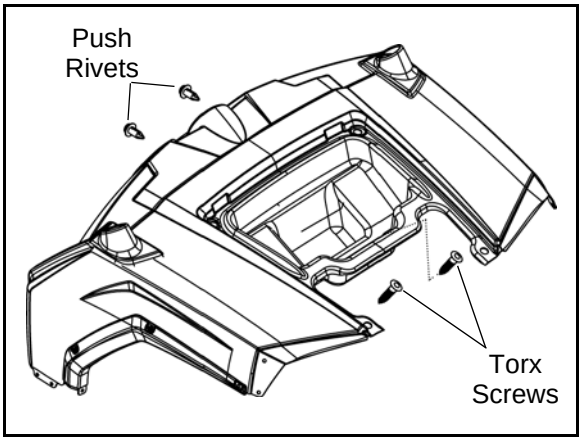
3. Remove the front portion of the cab frame assembly to allow dash removal. Refer to appropriate “CAB FRAME - Assembly / Removal” procedure for assembly torque specifications.



4. Remove the push rivets that attach the dash assembly to the rocker panels on each side.



5. Remove the (2) Torx screws and (2) push rivets that retain the front and rear of the dash assembly.



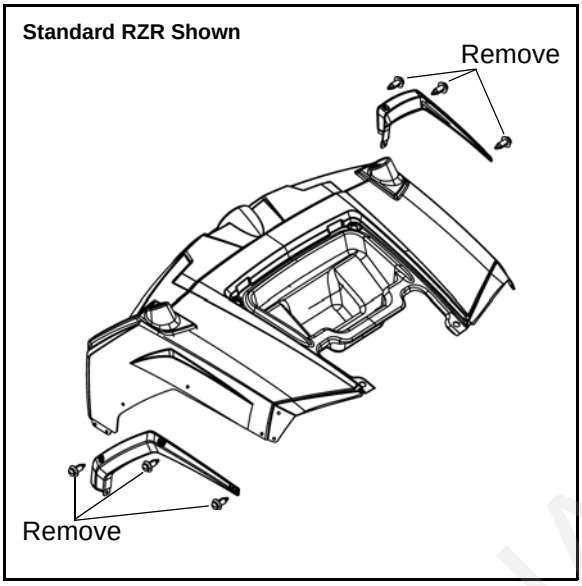
6. Disconnect all electrical dash components noting their location and wire routing.

7. Remove the dash assembly from the vehicle.

Front Fender Flair Removal

1. If dash is installed, remove the (2) push rivets that attach the lower portion of the fender flair to the rocker panels.

2. Remove the (6) push rivets (RZR) or (8) T27 Torx screws (RZR-S/RZR-4) and remove fender flairs from the dash assembly.

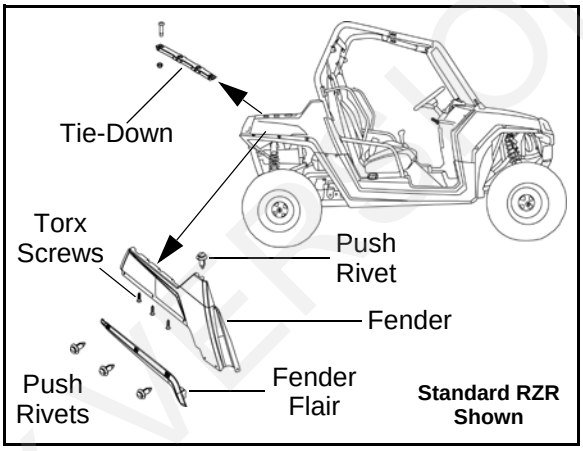


Rear Fender, Flair and Tie Down Removal

1. Remove the rear bumper (see “BODY COMPONENT REMOVAL - Rear Bumper”).

2. Remove the push rivets that retain the rear portion of the rocker panels to the rear fenders.

3. Remove the (3) push rivets (RZR) or (8) T27 Torx screws (RZR-S / RZR-4) and remove the fender flair.

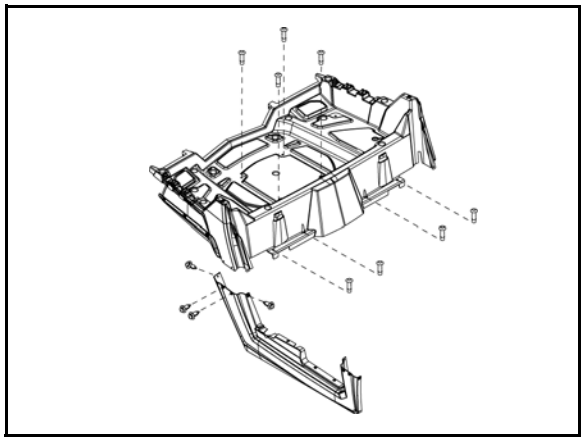


4. Remove the (3) Torx screws from the bottom side of the fender and the upper push rivet from the top side. Remove the fender from the vehicle.

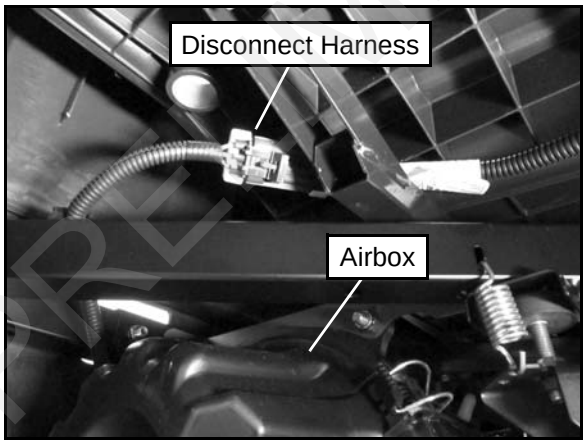
5. Remove the (4) fasteners that retain the tie-down brackets to the cargo box and remove from vehicle.

Cargo Box Assembly Removal

1. Remove the seats and rear panel or cover (see “Seats”, “Rear Service Panel” or “Rear Console Cover”).
2. Remove the (4) Torx screws retaining the lower portion of the rear bumper to the frame (see “Rear Bumper”).
3. Remove the (4) screws from the middle of the cargo box.



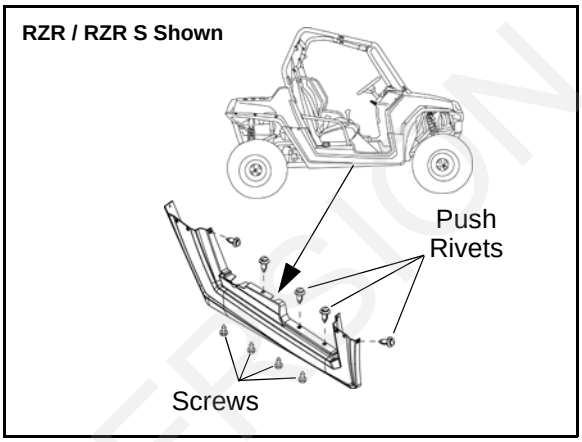
4. Remove the (4) Torx screws that attach the front portion of the cargo box to the frame.
5. Remove the (6) Torx screws and (2) push rivets that attach the rocker panels to the cargo box on each side.
6. Disconnect the taillight harness from the chassis harness located above the airbox and remove the cargo box assembly from the vehicle.



Rocker Panels, Console and Floor

Rocker Panel Removal

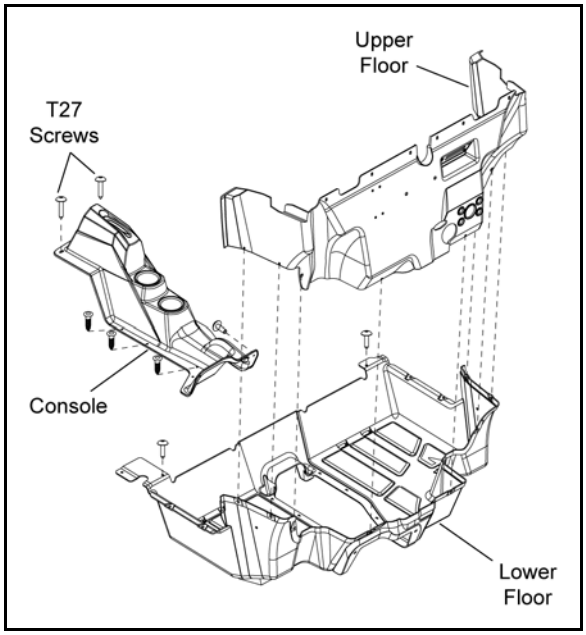
1. Remove the push rivets and Torx screws retaining the rocker panel and remove panel from the vehicle.



NOTE: If removing RH rocker panel from a RZR 4, reinstall the gas cap once panel is removed.

Console and Lower Floor Removal (RZR / RZR S)

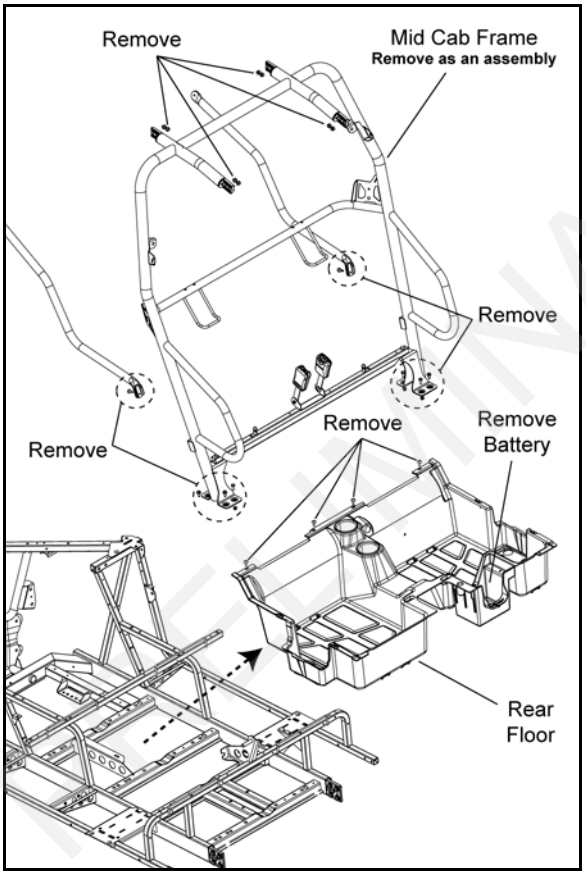
1. Remove both seats and rocker panels (see “Rocker Panel Removal”).
2. Remove T27 screws retaining the console to the floor.
3. Remove shift handle knob and remove the console.



4. Remove the Torx screws retaining the upper floor to the lower floor.
5. Remove the Torx screws retaining the rear portion of the floor and remove the lower floor from the vehicle.

Rear Floor Removal (RZR 4)

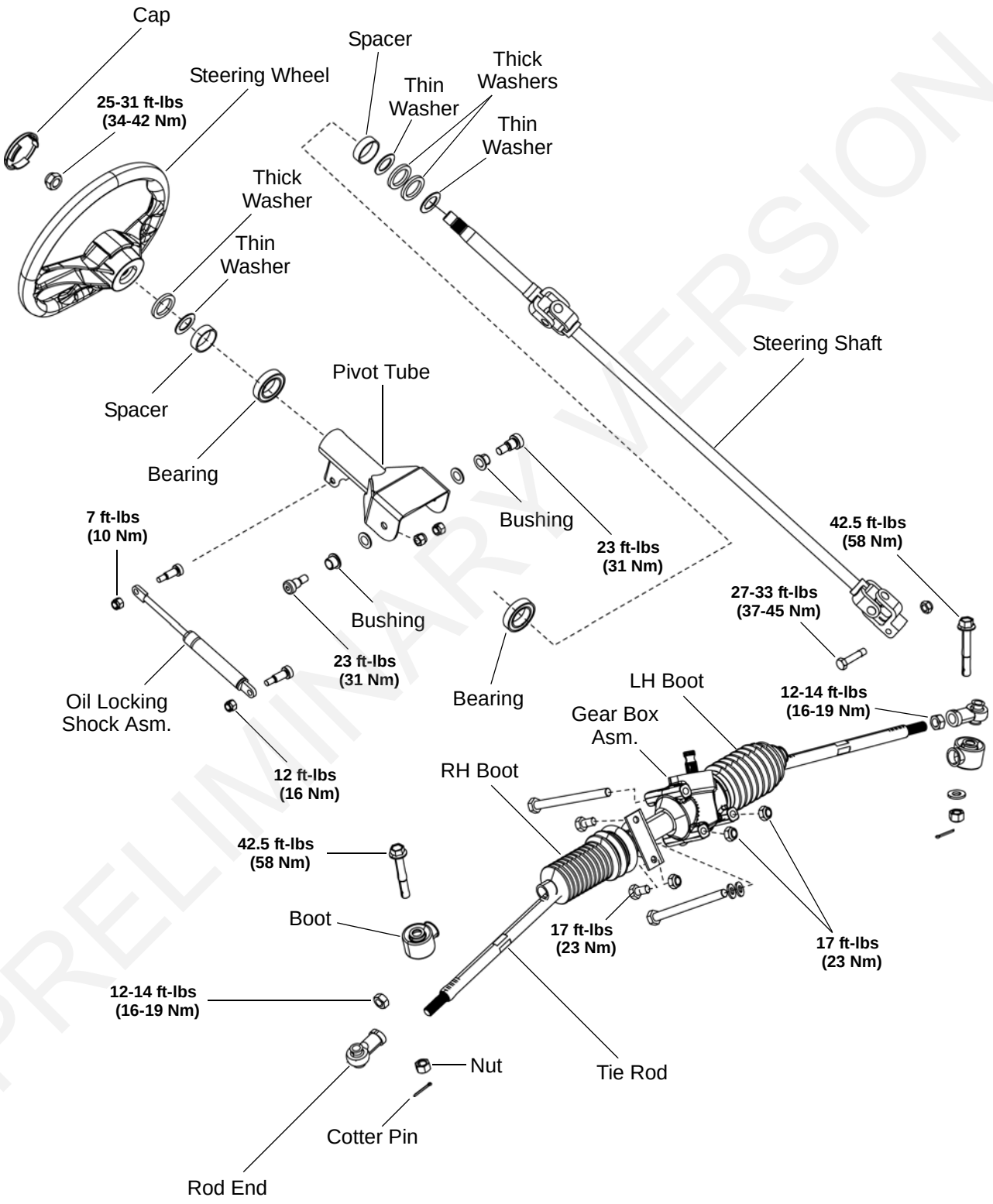
1. Remove all four seats and both rocker panels (see “Rocker Panel Removal”).
2. Remove the T27 screws retaining the console to the floor.
3. Remove the shift handle knob and remove the console.
4. Disconnect the battery and remove it from the vehicle.
5. Remove the (8) fasteners that retain the lower portion of the mid cab frame to the main frame.
6. Remove the (2) fasteners that retain the side bars to the mid cab frame.
7. Remove the (8) fasteners that retain the upper portion of the mid cab frame.
8. Using care, remove the mid cab frame from the vehicle as an assembly.



9. Remove the Torx screws retaining the rear floor.
10. Disconnect the 12V outlet and ECU connector.
11. Remove the rear floor from the vehicle.

STEERING ASSEMBLY

Exploded View (Non-EPS Models)



Steering Wheel Removal (Non-EPS Models)

CAUTION
This procedure should NOT be used on EPS models. Using this procedure on an EPS model can permanently damage the EPS unit and cause a Power Steering Fault.

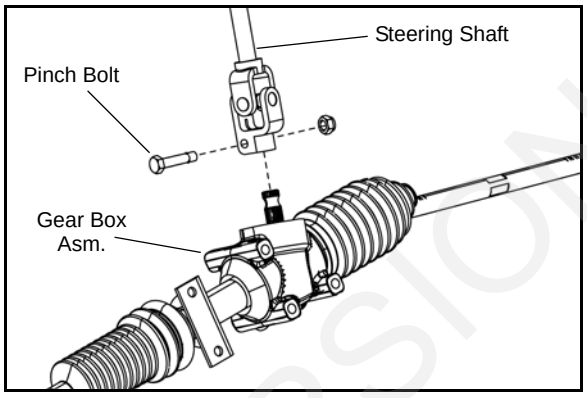
1. Remove the steering wheel cap.
2. Loosen the nut and back it half way off the steering shaft.
3. With a glove on your hand, place it under the steering wheel. Lift upward on the inner portion of the steering wheel while using a hammer to strike the steering shaft nut.

IMPORTANT: If the steering wheel will not pop loose, proceed to "Steering Shaft Removal".

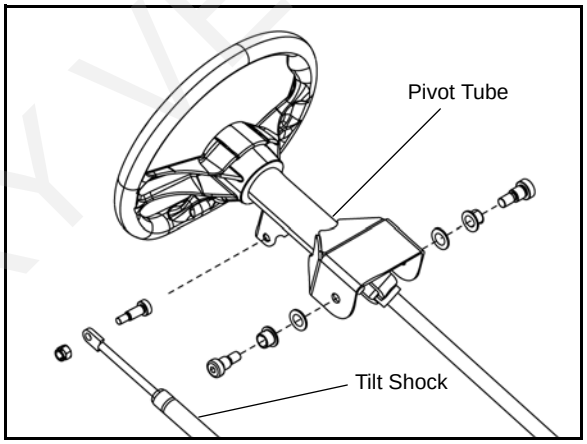
4. Once the steering wheel pops loose, completely remove the nut and lift the steering wheel off the shaft.

Steering Shaft Removal (Non-EPS Models)

1. Remove the pinch bolt retaining the lower portion of the steering shaft to the steering gear box assembly.



2. Remove the fastener retaining the upper portion of the steering wheel tilt shock to the pivot tube.



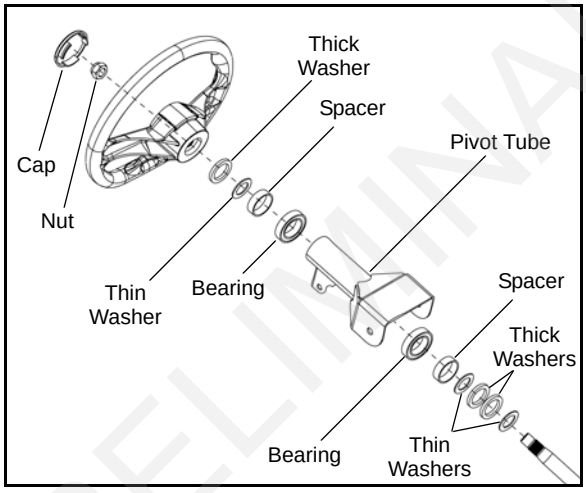
3. Remove the (2) fasteners that retain the pivot tube.
4. Remove the steering shaft, pivot tube and steering wheel from the vehicle as an assembly.
5. Refer to steps 11-13 of the "Steering Shaft Bearing Replacement" procedure for installation.

Steering Shaft Bearing Replacement

IMPORTANT: Replacement pivot tube assembly comes with new upper and lower bearings installed. Use this procedure if replacing the bearings only.

1. Perform the “Steering Shaft Removal” procedure.
2. Remove the steering wheel cap and retaining nut.
3. Press steering shaft out of the steering wheel and pivot tube.
4. Note the order and location of the washers and spacers between the steering wheel and pivot tube.
5. Drive the bearings out of the pivot tube using a drift punch.
6. Inspect the pivot tube bearing surfaces for signs of excessive wear or damage.
7. Apply Loctite® 271™ (Red) to the outer circumference of the new lower bearing race. Slide the new lower bearing onto the steering shaft and install the steering shaft through the pivot tube.

NOTE: Use care not to allow any of the Loctite® to get in the bearing.



NOTE: Be sure the lower washers and spacers are still on the steering shaft.

8. Apply Loctite® 271™ (Red) to the outer circumference of the new upper bearing race. Slide the new upper bearing onto the steering shaft and press it into the pivot tube by hand.

NOTE: Use care not to allow any of the Loctite® to get in the bearing.

NOTE: Bearings will be seated in the pivot housing upon tightening the steering wheel nut in step 14.

9. Reinstall the upper washers and spacers in the order in which they were removed.
10. Install the steering wheel and hand tighten the nut.
11. Reinstall the steering shaft assembly in the vehicle. Install the lower portion of the steering shaft onto the steering gear box assembly. Refer to “Steering Shaft Removal (Non-EPS Models)”. Torque the lower pinch bolt to specification.

= T
Lower Pinch Bolt: **30 ft-lbs (41 Nm)**

12. Install the (2) fasteners that retain the pivot tube. Refer to “Steering Shaft Removal (Non-EPS Models)”. Torque fasteners to specification.

= T
Fasteners: **23 ft-lbs (31 Nm)**

13. Install the fastener retaining the upper portion of the steering wheel tilt shock to the pivot tube. Refer to “Steering Shaft Removal (Non-EPS Models)”. Torque fastener to specification.

= T
Fastener: **7 ft-lbs (10 Nm)**

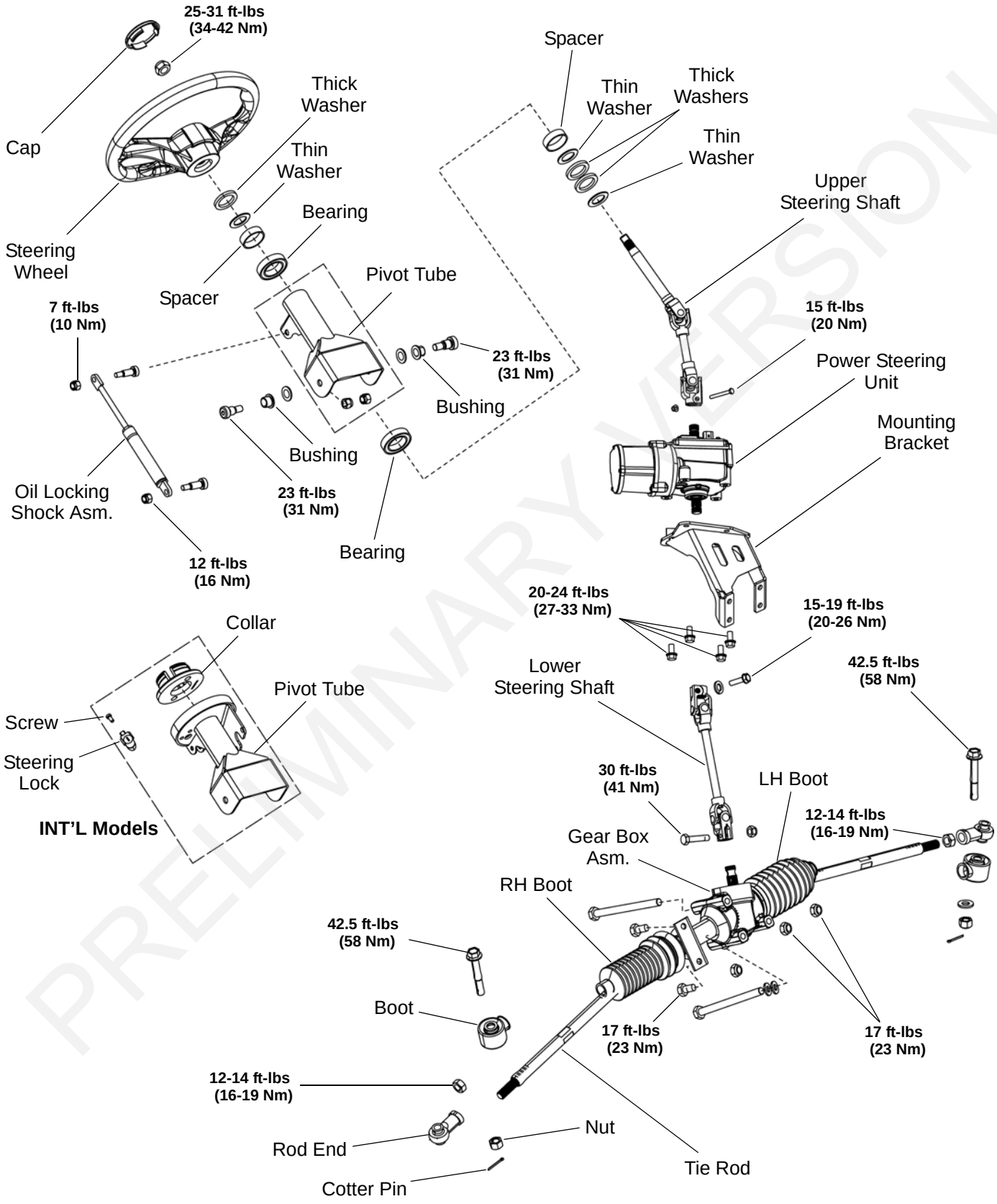
14. Be sure the front wheels are facing straight forward. Remove the steering wheel and align as needed. Torque the steering wheel nut to specification.

= T
Steering Wheel Nut: **28 ft-lbs (38 Nm)**

15. Wipe the pivot tube clean of any excess Loctite®.
16. Install steering wheel cap and field test steering operation.

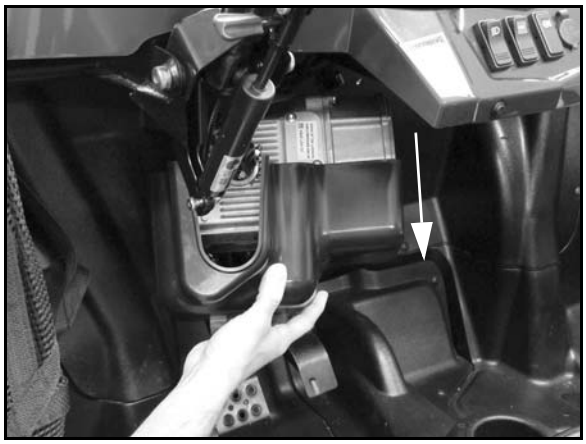
ELECTRONIC POWER STEERING ASSEMBLY

Exploded View (EPS Models)

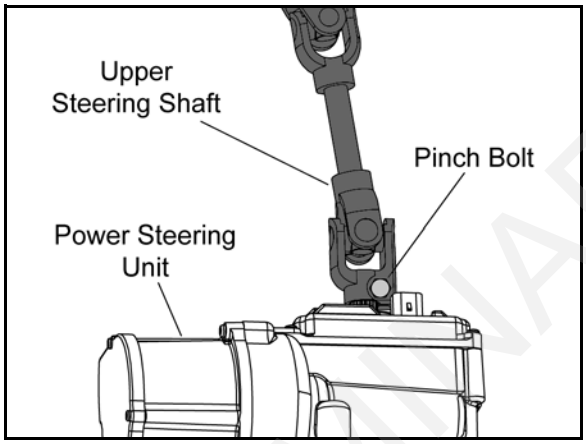


Upper Steering Shaft Removal (EPS Models)

1. Remove the (2) Torx-head fasteners retaining the black plastic cover and remove the cover from the vehicle.

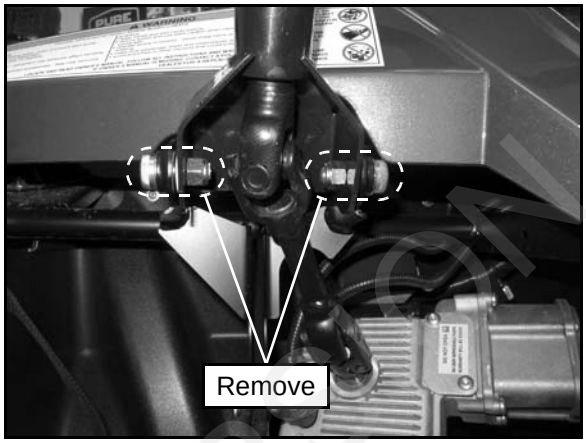


2. Remove the pinch bolt retaining the upper steering shaft to the power steering unit.



3. Remove the fastener retaining the upper portion of the steering wheel tilt shock to the pivot tube. Swing the shock down out of the way.

4. Lift the steering wheel up and remove the (2) fasteners that retain the pivot tube.



5. Remove the steering shaft, pivot tube and steering wheel from the vehicle as an assembly.

6. If replacing the upper steering shaft or steering wheel, refer to “Steering Wheel Removal (EPS Models)”.

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Steering Wheel Removal (EPS Models)

1. Remove the upper steering shaft, pivot tube and steering wheel as an assembly *before* attempting to remove the steering wheel. Refer to “Upper Steering Shaft Removal (EPS Models)”.

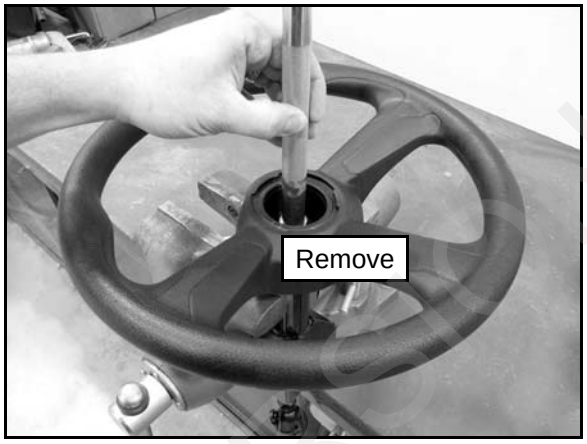
CAUTION
Striking the steering wheel or steering shaft while installed in the vehicle can permanently damage the EPS unit and cause a Power Steering Fault.

2. Remove the steering wheel cap.

3. Loosen the nut and back it half way off the steering shaft.

4. Place the assembly in a vise.

5. Using a large bronze drift and hammer, strike the steering shaft nut to pop the steering wheel off the shaft taper.



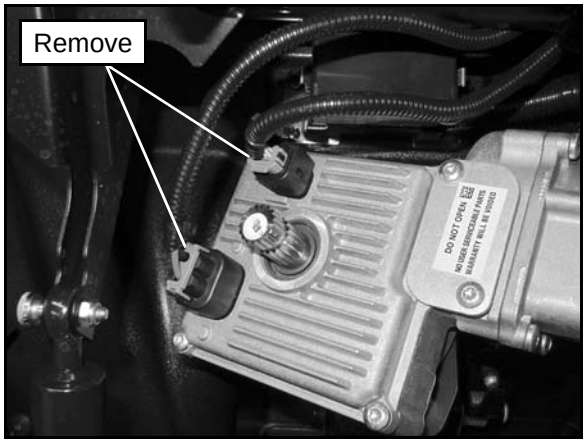
6. Once the steering wheel pops loose, completely remove the nut and lift the steering wheel off the shaft.

Power Steering Unit Removal

1. Remove the upper steering shaft, pivot tube and steering wheel from the vehicle as an assembly. Refer to “Upper Steering Shaft Removal (EPS Models)”.

CAUTION
Striking the steering wheel or steering shaft while installed in the vehicle can permanently damage the EPS unit and cause a Power Steering Fault.

2. Disconnect the (2) electrical harnesses from the power steering unit.



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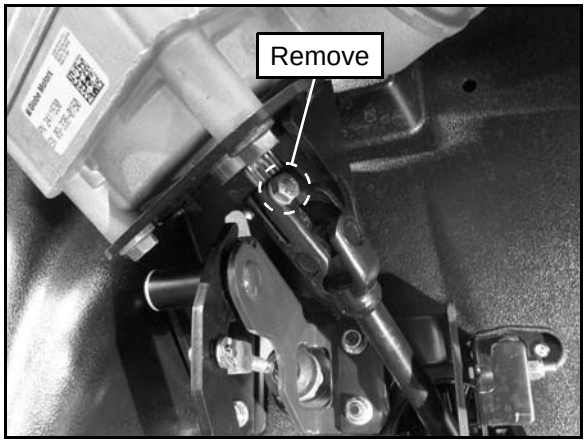
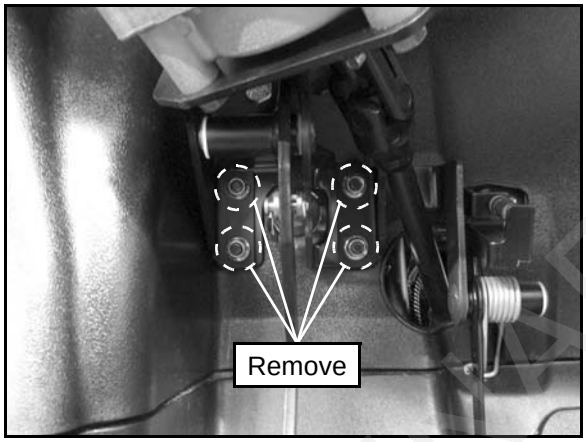
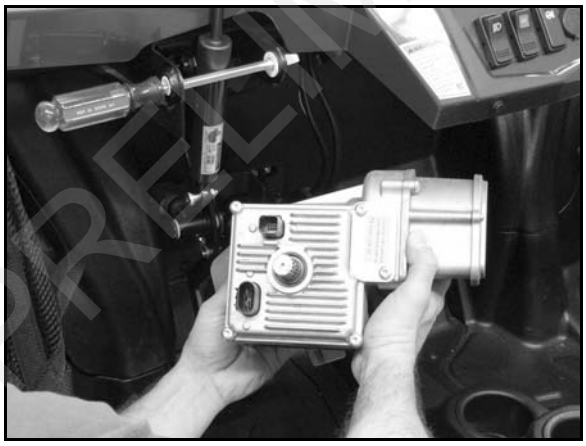
3. Remove the pinch bolt retaining the lower steering shaft to the power steering unit.



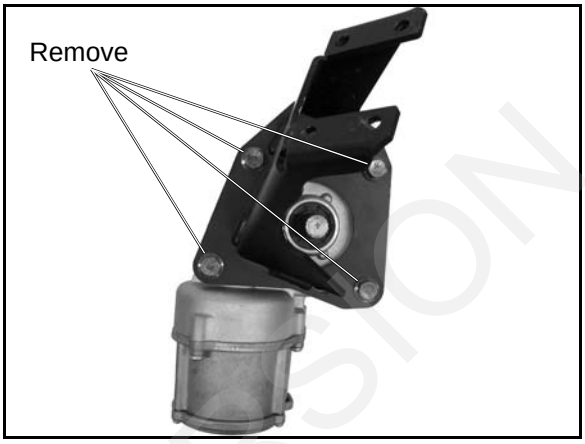
4. While supporting the power steering unit, remove the (4) nuts from the mount bracket.



5. Carefully remove the power steering unit and mount bracket from the vehicle as an assembly.



6. If replacing the power steering unit, remove the (4) bolts that retain the power steering unit to the mount bracket.



WARNING

Electronic Power Steering (EPS) units are programmed to be vehicle specific and are not interchangeable between product lines.

Lower Steering Shaft Removal (EPS Models)

1. Use the steering wheel to position the front wheels so they point straight ahead.

2. Locate the lower steering shaft through the left front wheel well. Mark the lower steering shaft, gear box stub shaft and gear box to aid installation.

3. Remove the power steering unit (see “Power Steering Unit Removal” procedure).

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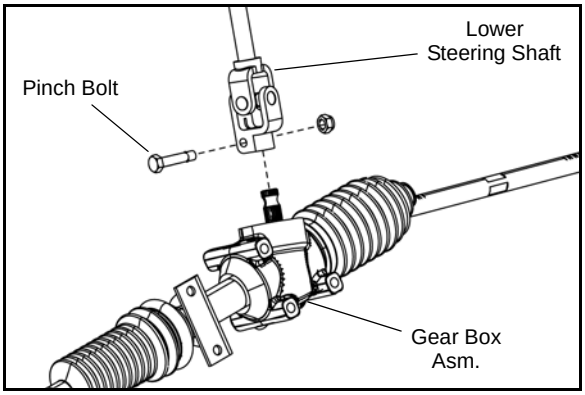
4. Remove the pinch bolt retaining the lower steering shaft to the steering gear box assembly.



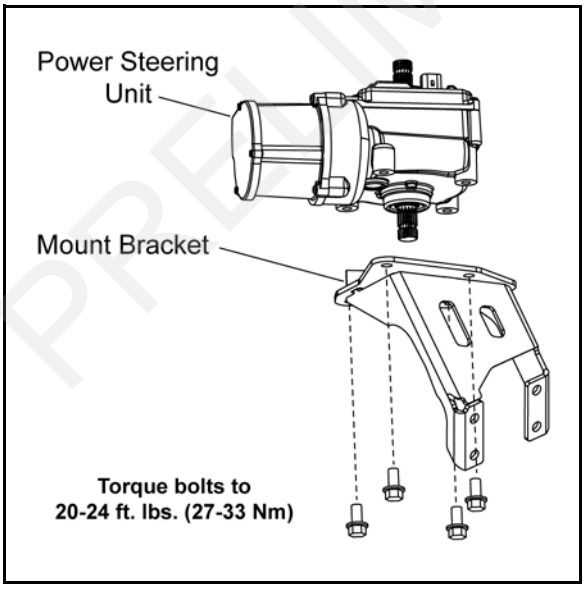
5. Lift up on the shaft and remove it through the floor panel.

Lower Steering Shaft Installation (EPS Models)

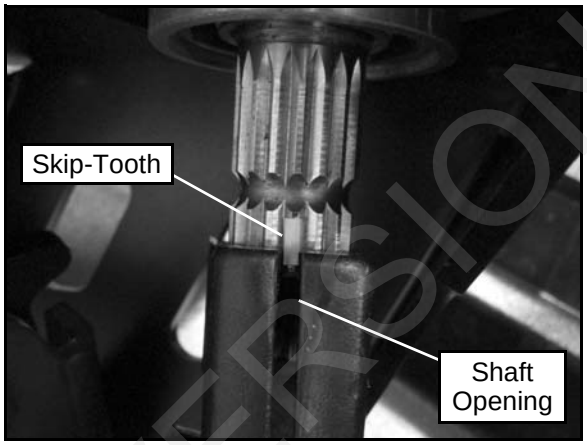
1. Install the lower steering shaft onto the gear box and align the marks made during step 2 of the "Lower Steering Shaft Removal (EPS Models)" procedure.
2. Install the pinch bolt that retains the lower steering shaft to the gear box assembly and torque to **30 ft-lbs (41 Nm)**.
3. Install the power steering unit and reassemble the vehicle (see "Power Steering Unit Installation" procedure).

Power Steering Unit Installation

1. If the power steering unit was removed from the mount bracket, reinstall it prior to vehicle installation. Torque the mounting bolts to specification.



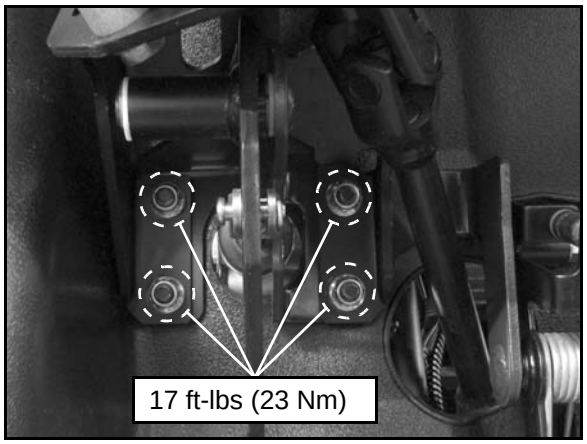
2. Remove the throttle pedal return spring to ease power steering unit installation.
3. Install the power steering unit into the vehicle and align the skip-tooth spline on the power steering stub shaft with the opening in the lower steering shaft.



4. Place power steering mount bracket over the brake pedal mount studs and finger tighten the (4) nuts.
5. Position the lower steering shaft on the power steering unit stub shaft and install the pinch bolt. Torque to specification.

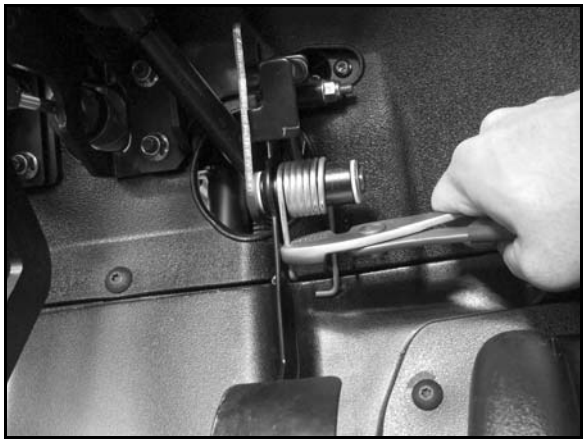
= T
Lower Steering Shaft Pinch Bolt: **17 ft-lbs (23 Nm)**

6. Torque the (4) mount bracket nuts to specification.



= T
Power Steering Unit Mount Bracket Nuts: **17 ft-lbs (23 Nm)**

7. Reinstall the throttle pedal return spring.



8. Proceed to "Upper Steering Shaft Installation (EPS Models)" to complete the installation procedure.

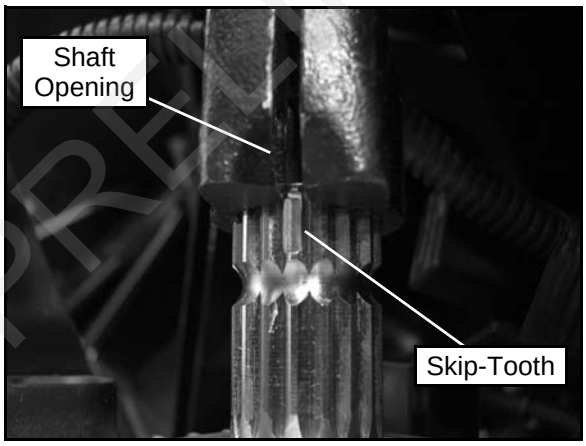
Upper Steering Shaft Installation (EPS Models)

IMPORTANT: If steering wheel was removed, follow this procedure to ensure the upper steering shaft is properly positioned on the power steering stub shaft.

CAUTION
Striking the steering wheel or steering shaft can permanently damage the EPS unit and cause a Power Steering Fault.

NOTE: Be sure upper steering shaft hardware is positioned correctly (see "Exploded View').

1. Install the upper steering shaft and align the skip-tooth spline on the power steering stub shaft with the opening in the upper steering shaft.



2. Install pivot tube and torque fasteners to specification.

= T
Pivot Tube Fasteners: **23 ft-lbs (31 Nm)**

3. Install tilt shock and torque fastener to specification.

= T
Upper Tilt Shock Fastener: **7 ft-lbs (10 Nm)**

4. Be sure the front wheels are pointing straight ahead and install the steering wheel and retaining nut. Torque the nut to specification and reinstall the plastic wheel cover.

= T
Steering Wheel Nut: **28 ft-lbs (38 Nm)**

5. Install a new upper steering shaft pinch bolt and nut. Torque pinch bolt to specification.

= T
Upper Steering Shaft Pinch Bolt: **15 ft-lbs (20 Nm)**

6. Reconnect both electrical harnesses onto the power steering unit. Be sure the connectors snap into place.

7. Reinstall the black plastic cover over the power steering unit and install the (2) Torx-head fasteners.

8. Turn the key switch on and test EPS operation.

FRONT A-ARMS

Removal / Replacement

The following procedure details upper and lower A-arm removal and replacement on one side of the vehicle.

1. Elevate and safely support the front of the vehicle and remove the front wheel.
2. Remove lower shock fastener (A) from upper A-arm.
3. Remove upper ball joint pinch bolt (B) from bearing carrier.
4. Using a soft face hammer, tap on bearing carrier to loosen the upper A-arm ball joint end while lifting upward on the upper A-arm. Completely remove the ball joint end from the bearing carrier.
5. Remove the front bumper to allow A-arm bolt removal.
6. Loosen and remove the upper A-arm through-bolt fastener (C) and remove upper A-arm from vehicle.
7. Examine A-arm bushings and pivot tube (see "Exploded View"). Replace if worn. Discard hardware.

> **WARNING**
>
> The locking agent on the existing bolts was destroyed during removal. DO NOT reuse old hardware. Serious injury or death could result if fasteners come loose during operation.

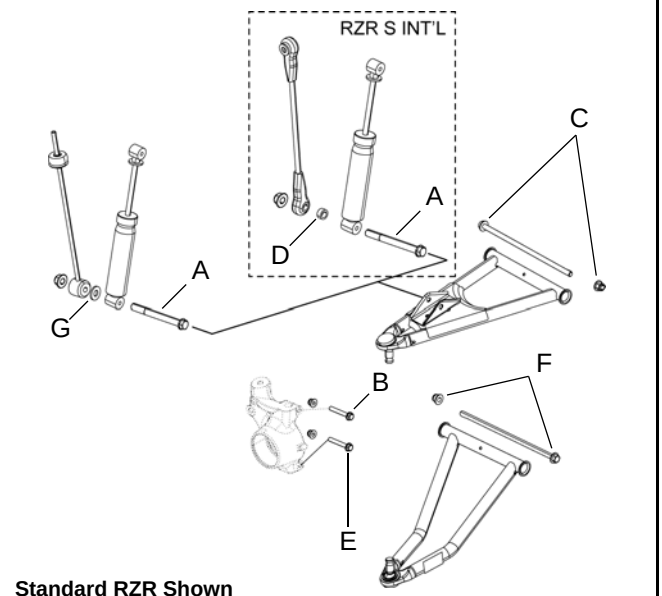
8. If not replacing the A-arm, thoroughly clean the A-arm and pivot tube.
9. Install new ball joint into A-arm. Refer to "Ball Joint Replacement" section.
10. Insert new bushings and pivot tube into new A-arm.
11. Install new upper A-arm assembly onto vehicle frame. Torque new bolt to specification.
12. Insert upper A-arm ball joint end into the bearing carrier. Install upper ball joint pinch bolt (B) into the bearing carrier and torque bolt to specification.
13. Attach shock to A-arm with spacer (D) or washer (G) and fastener (A). Torque lower shock bolt to specification.
14. Remove lower ball joint pinch bolt (E) from bearing carrier.
15. Using a soft face hammer, tap on bearing carrier to loosen the lower A-arm ball joint end while pushing downward on the lower A-arm. Completely remove the ball joint end from the bearing carrier.
16. Loosen and remove the lower A-arm through-bolt fastener (F) and remove lower A-arm from the vehicle.
17. Examine A-arm bushings and pivot tube (see "Exploded View"). Replace if worn. Discard hardware.
18. If not replacing the A-arm, thoroughly clean the A-arm and pivot tube.
19. Install new ball joint into A-arm. Refer to "Ball Joint Service" section.
20. Insert new bushings and pivot tube into new A-arm.
21. Install new lower A-arm assembly onto vehicle frame. Torque new bolt to specification.
22. Insert lower A-arm ball joint end into the bearing carrier. Install lower ball joint pinch bolt (E) into the bearing carrier and torque bolt to specification.

> **WARNING**
>
> Upon A-arm installation completion, test vehicle at low speeds before putting into service.

> = **T**
>
> Front Upper / Lower A-arm Bolts:
> RZR: **37 ft-lbs (50 Nm)**
> RZR S / RZR 4: **40 ft-lbs (54 Nm)**

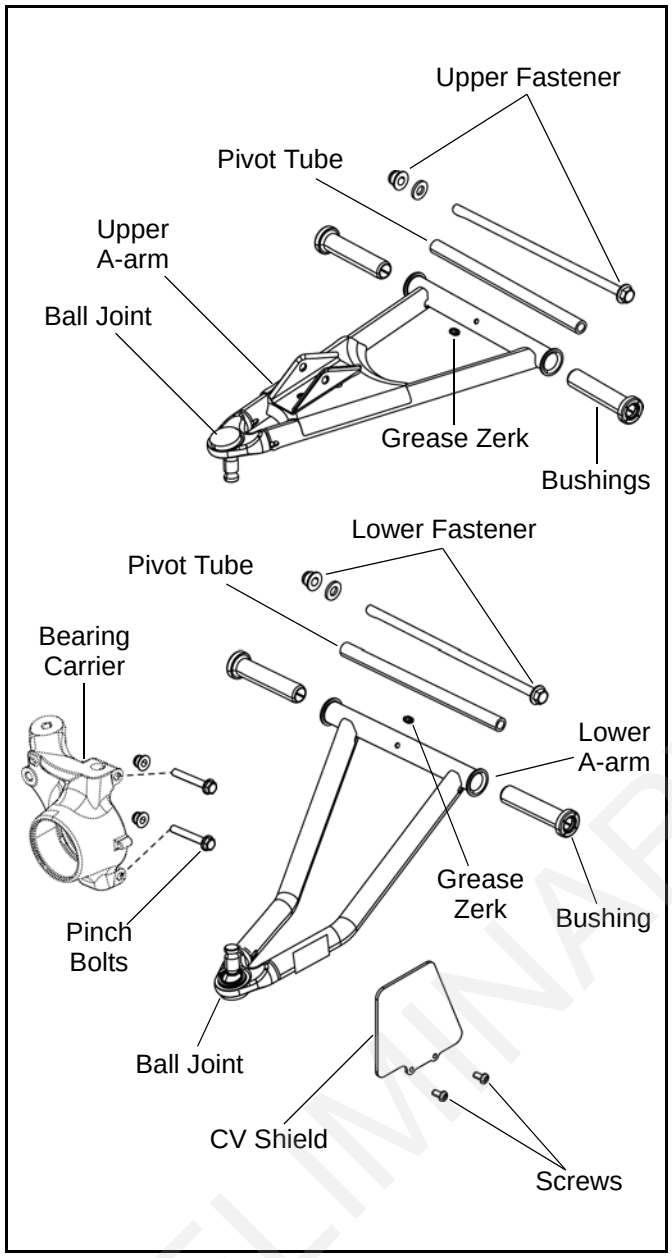
> = **T**
>
> Front Ball Joint Pinch Bolts:
> **23 ft-lbs (31 Nm)**

> = **T**
>
> Shock Mounting Bolts:
> RZR: **30 ft-lbs (41 Nm)**
> RZR S / RZR 4: **37 ft-lbs (50 Nm)**

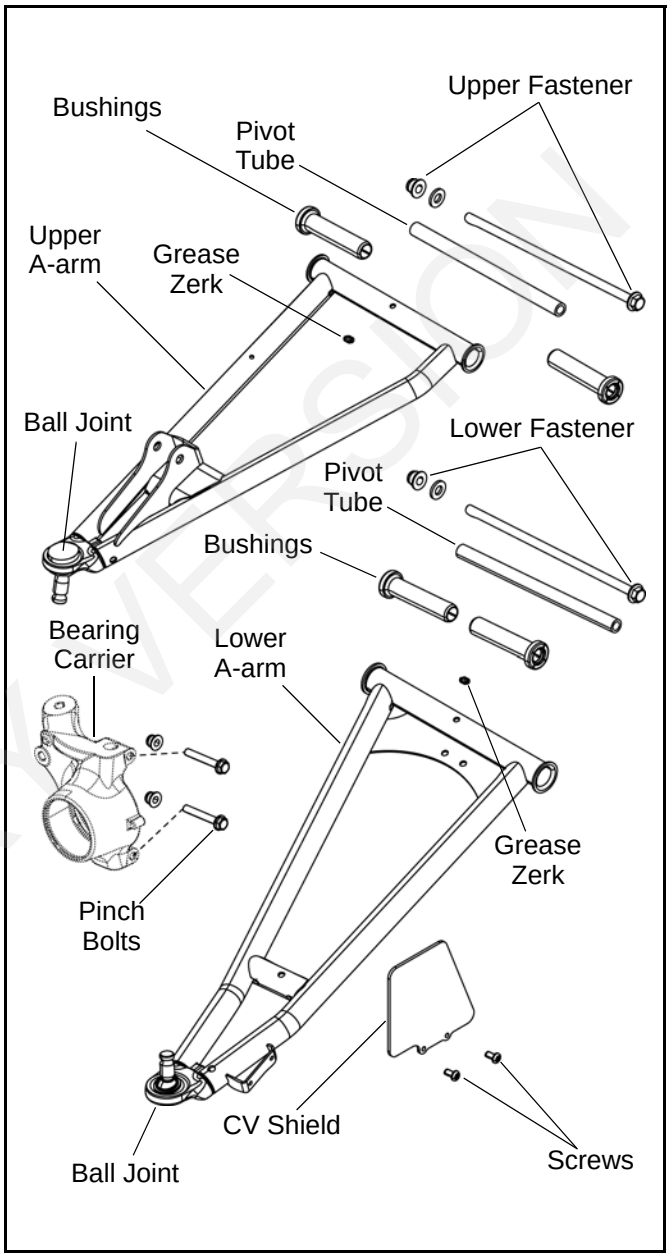


Standard RZR Shown

Exploded View (RZR)



Exploded View (RZR S / RZR 4)



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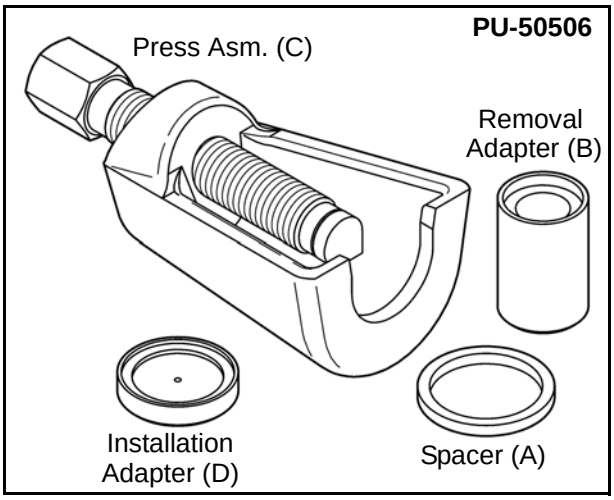
BALL JOINT SERVICE

Service Preparation

IMPORTANT: Do not reuse a ball joint if it has been removed. If removed, it must be replaced. Use this removal procedure only when replacing the ball joint.

NOTE: Ball joint tool PU-50506 will allow the upper and lower ball joints to be replaced with the A-arm installed on the vehicle.



The A-arm does not need to be removed to perform this procedure if ball joint tool PU-50506 is used.

1. Properly lift and support the vehicle by the frame.
2. Remove the appropriate front wheel.
3. **To service the upper ball joint:**

   - Remove and discard the two front brake caliper mounting bolts and remove the caliper from the brake disc (see “Brakes” chapter).

   - Remove and discard the upper ball joint pinch bolt.

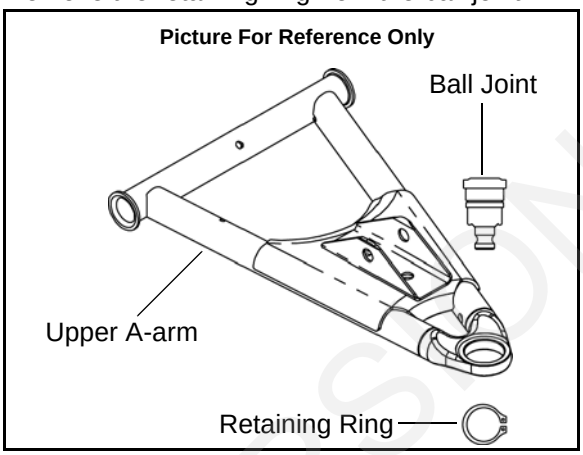
   - If necessary, remove the lower front shock fastener from the A-arm to gain enough clearance to install ball joint tool (PU-50506) on the upper ball joint.
4. **To service the lower ball joint:**

   - Remove and discard the lower ball joint pinch bolt.

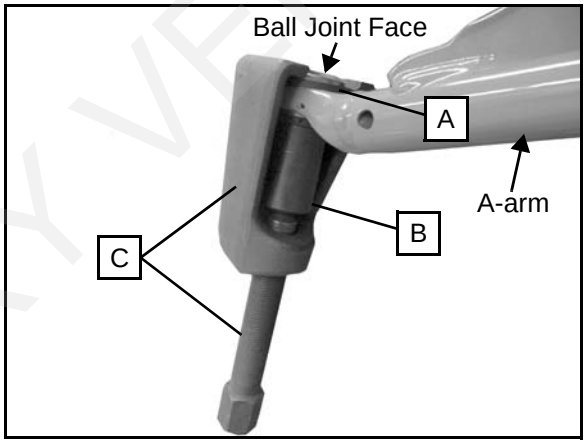
   - If necessary, remove the lower front shock fastener from the A-arm to gain enough clearance to install ball joint tool (PU-50506) on the lower ball joint.

Ball Joint Removal

1. Remove the retaining ring from the ball joint.



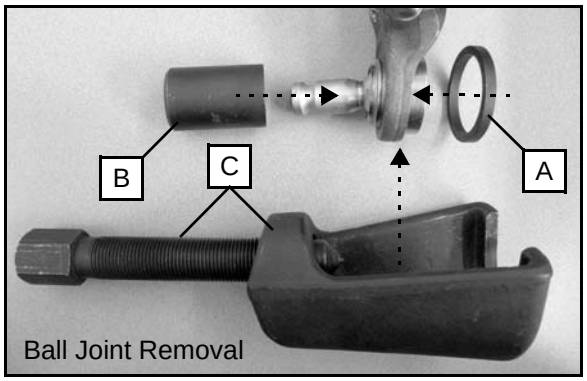
2. Install Spacer (A) over the top of the ball joint face.



3. Place Removal Adaptor (B) over the ball joint shaft.
4. Install the Press Asm. (C) onto the A-arm to engage the ball joint Removal Adapter.

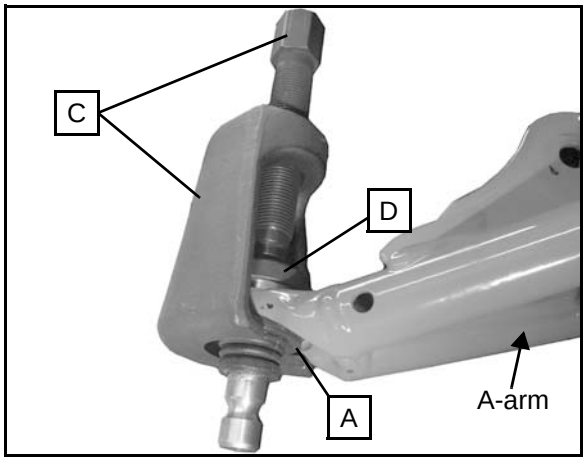
IMPORTANT: Be sure the Press Asm. opening is only contacting the Spacer (A) and not the ball joint face.

5. Tighten the Press Asm. screw and fully remove the ball joint from the A-arm.

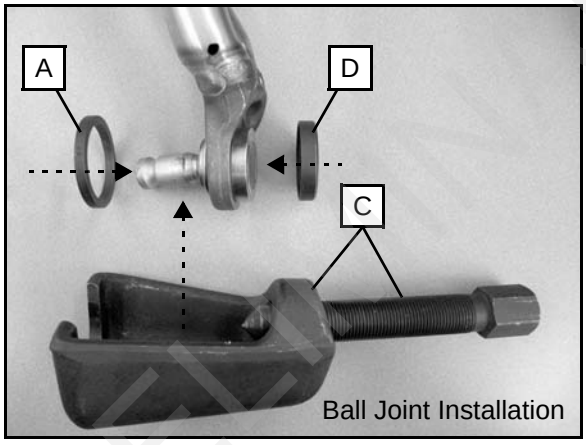


Ball Joint Installation

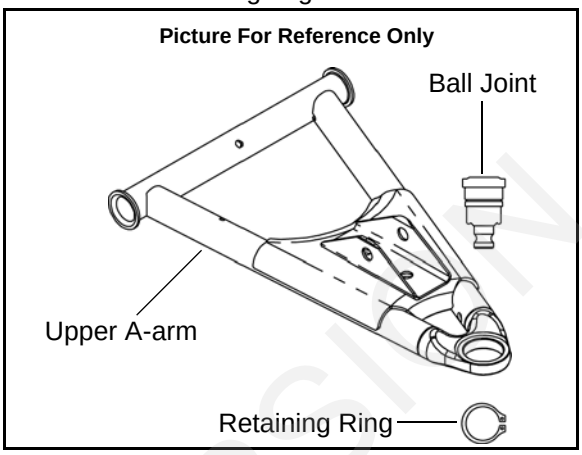
1. By hand, install the NEW ball joint into the A-arm.
2. Position the Installation Adapter (D) over the face of the ball joint.



3. Position the Spacer (A) over the shaft of the ball joint so it is against the A-arm.
4. Install the Press Asm. (C) onto the A-arm to engage the Installation Adapter and Spacer.
5. Tighten the Press Asm. screw and fully install the ball joint into the arm.



6. After the new ball joint is fully installed into the A-arm, install a new retaining ring.



7. Repeat the ball joint service procedure for any additional A-arm ball joint replacements.
8. Insert upper / lower A-arm ball joint end into the bearing carrier. Install new pinch bolts and nuts. Torque to specification.
9. If needed, install new brake caliper mounting bolts and torque to specification.

⚠ CAUTION

New bolts have a pre-applied locking agent which is destroyed upon removal. Always use new brake caliper mounting bolts upon assembly.

10. Install wheel and (4) wheel nuts. Torque wheel nuts to specification.

= T
Front Ball Joint Pinch Bolts: **23 ft-lbs (31 Nm)**
Shock Mount Bolts (RZR): **30 ft-lbs (41 Nm)**
Shock Mount Bolts (RZR S/RZR 4): **37 ft-lbs (50 Nm)**
Front Caliper Mount Bolts: **31-34 ft-lbs (42-46 Nm)**
Wheel Nuts (Alum): **30 ft-lbs (41 Nm) + 90° (1/4 turn)**
Wheel Nuts (Steel): **27 ft-lbs (37 Nm)**

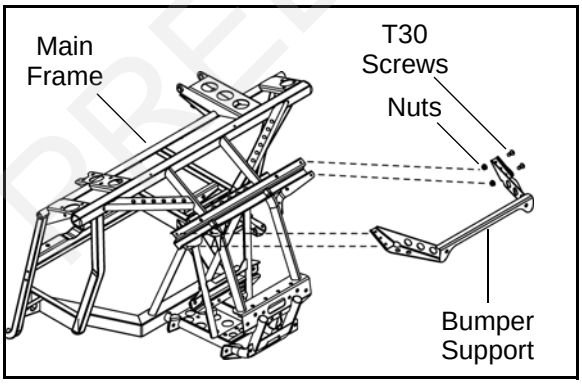
FRONT STABILIZER BAR (RZR / RZR S INT'L)

Stabilizer Bar Linkage Removal

1. Elevate and safely support the front of the vehicle.
2. Remove the lower shock mounting fastener from the upper A-arm on each side of the vehicle (see "Exploded View").
3. Remove the upper portion of the linkage from the stabilizer bar on each side of the vehicle (see "Exploded View"):
   - **RZR:** Remove the nut and linkage bushings, and remove the linkages from the vehicle.
   - **RZR S INT'L:** Remove the bolts that attach the upper portion of the linkages to the stabilizer bar clamps and remove the linkages from the vehicle.
4. Inspect the linkage assemblies for signs of excessive wear or damage. Replace linkage assembly if damaged.
5. Reverse the procedure for installation. Torque the linkage fasteners to specification (see "Exploded View").

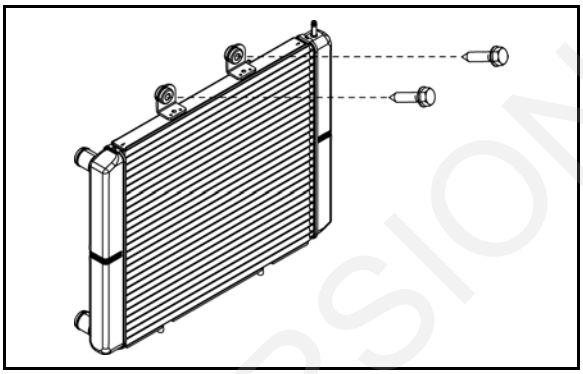
Stabilizer Bar Removal

1. If stabilizer bar linkages are installed:
   - **RZR:** Remove the nut and linkage bushings (see "Exploded View").
   - **RZR S INT'L:** Remove the bolts that attach the upper portion of the linkages to the stabilizer bar clamps (see "Exploded View").
2. Remove the hood and front bumper (see "BODY COMPONENT REMOVAL").
3. Remove the (4) T30 Torx fasteners retaining the front bumper support to the frame.

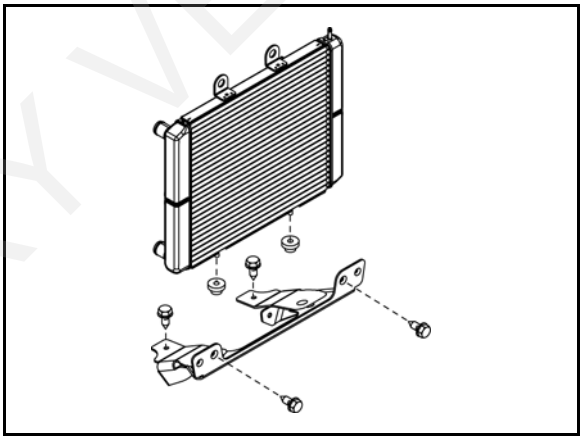


NOTE: Properly support the bumper support and wires that are attached.

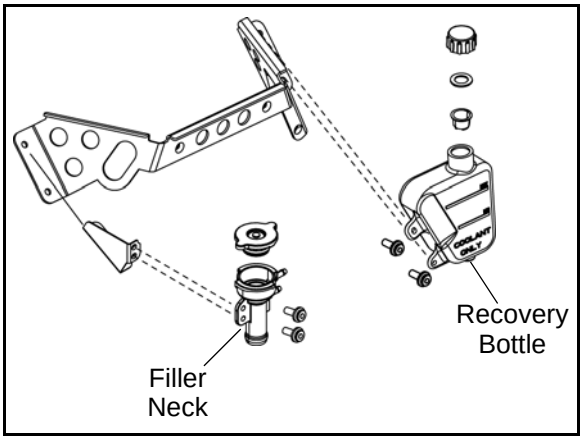
4. Remove the (2) upper radiator retaining bolts.



5. Remove the (4) bolts retaining the lower radiator mount bracket and remove the bracket from the frame.



6. Allow radiator to sag down to allow access to recovery bottle retaining screws and filler neck retaining screws.
7. Remove retaining screws from recovery bottle and filler neck. Allow the recovery bottle and filler neck to hang down to access the (4) bolts retaining the upper radiator mount bracket.



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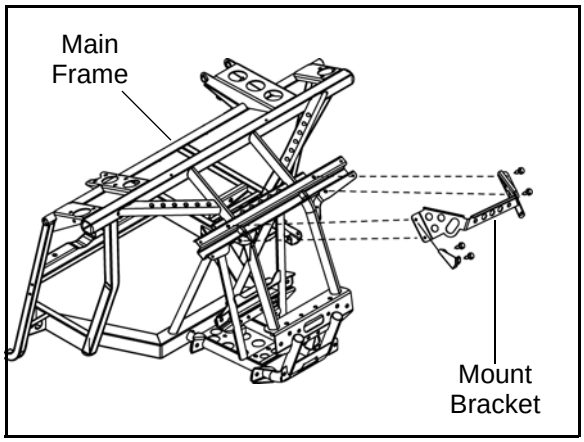
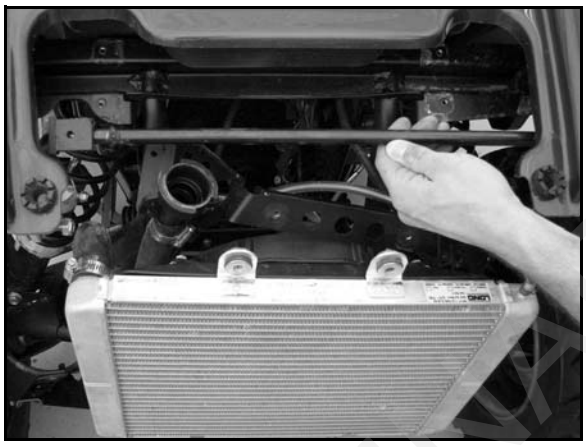
8. Remove the (4) bolts retaining the upper radiator mount bracket and remove the bracket from the frame.



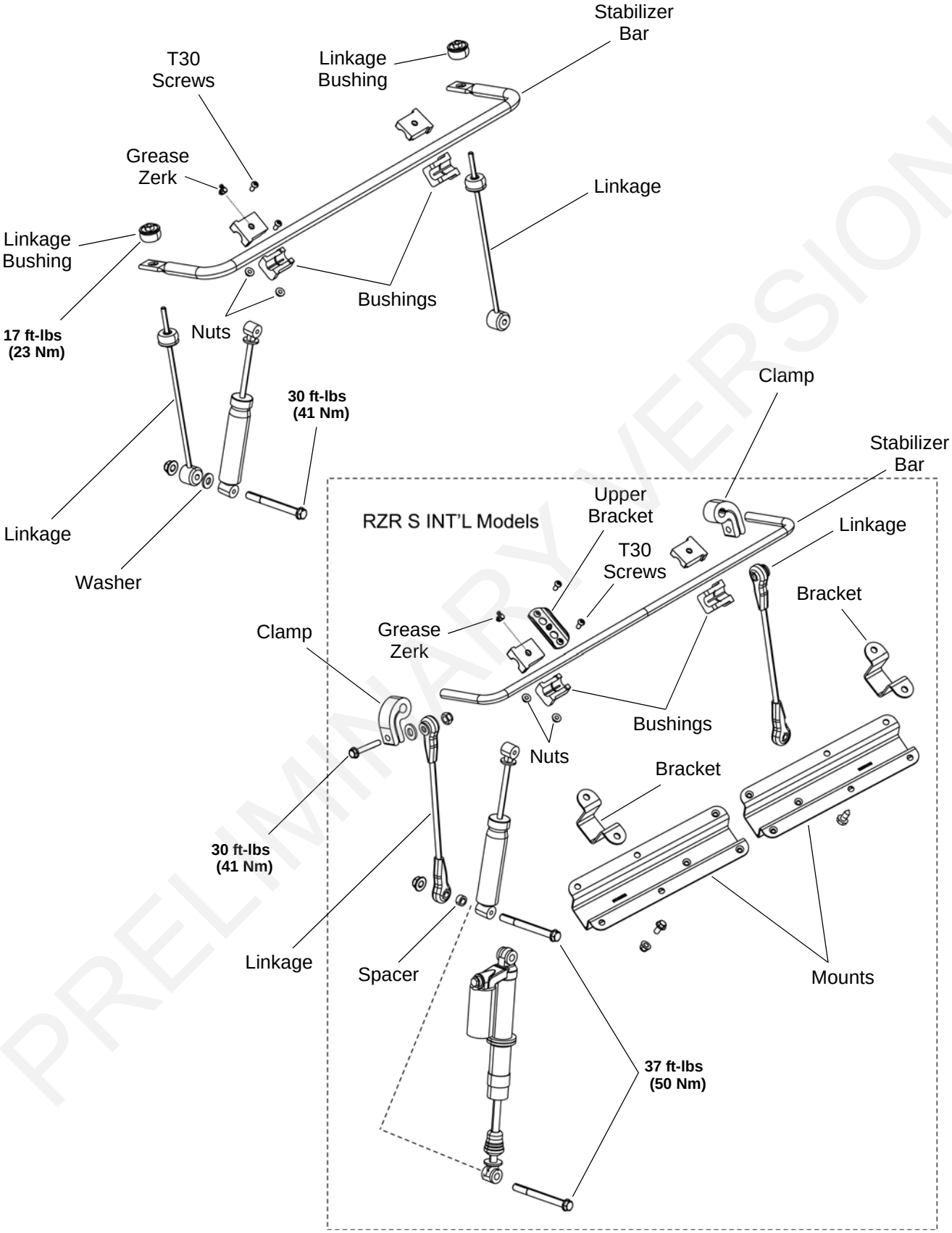
9. Lift up on the stabilizer bar and remove it from the vehicle.



10. Inspect the stabilizer bar for straightness. Inspect the bushings and replace if needed.

11. Reverse the procedure for installation. Torque the linkage fasteners to specification (see “Exploded View”).

Exploded View



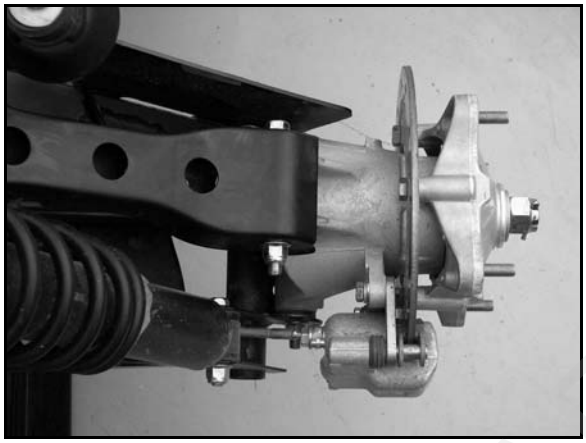
REAR A-ARMS

Removal

The following procedure details upper and lower rear A-arm removal and replacement on one side of the vehicle. Repeat the following steps to remove the A-arm(s) from the opposite side.

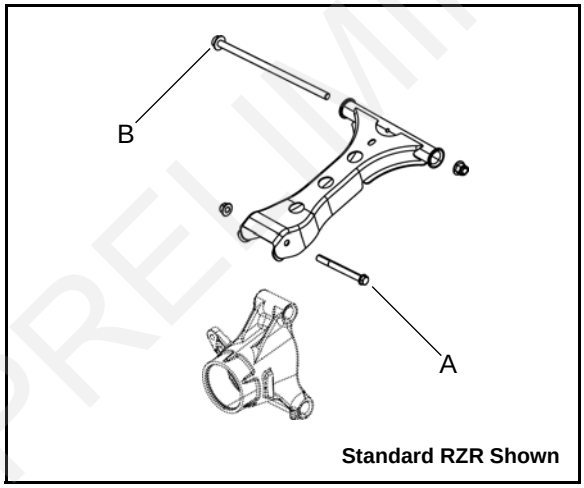
NOTE: Use the exploded views in this section as a reference during the procedure (see page 5.40).

1. Elevate and safely support the rear of the vehicle off the ground.
2. Remove the wheel nuts, and rear wheel.



Upper A-arm Removal

1. Remove the fastener (A) attaching the upper A-arm to the bearing carrier.



Standard RZR Shown

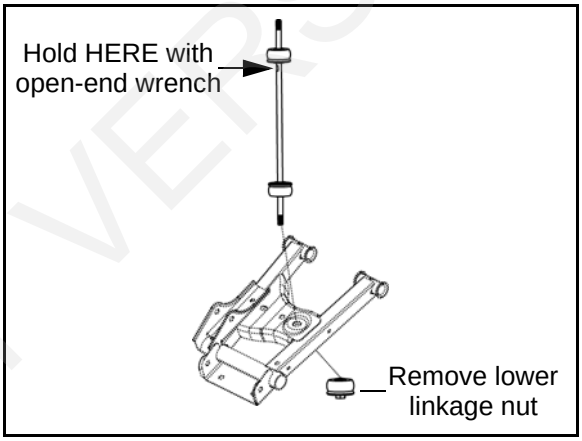
2. Remove fastener (B) attaching the upper A-arm to the frame and remove the upper A-arm from the vehicle.
3. Examine bushings and pivot tubes (see “Exploded View” on page 5.40). Replace if worn. Discard hardware.
4. If not replacing the A-arm, thoroughly clean the a-arm and pivot tubes.

> **WARNING**
>
> The locking agent on the existing bolts was destroyed during removal. DO NOT reuse old hardware. Serious injury or death could result if fasteners come loose during operation.

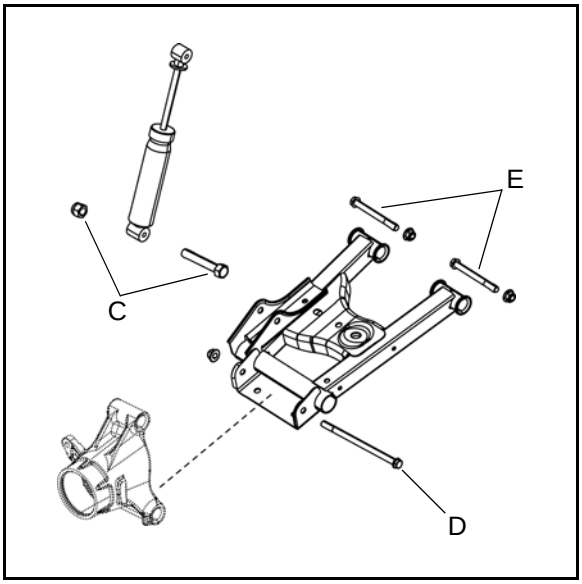
5. Insert new bushings and pivot tubes into new A-arm.

Lower A-arm Removal (RZR)

1. While holding the stabilizer bar linkage, remove the lower nut retaining the linkage to the lower A-arm.



2. Remove the fastener (C) retaining the lower portion of the shock to the lower A-arm.



3. Remove the fastener (D) attaching the lower A-arm to the bearing carrier.
4. Remove the (2) fasteners (E) attaching the lower A-arm to the frame. Remove the A-arm from the vehicle.

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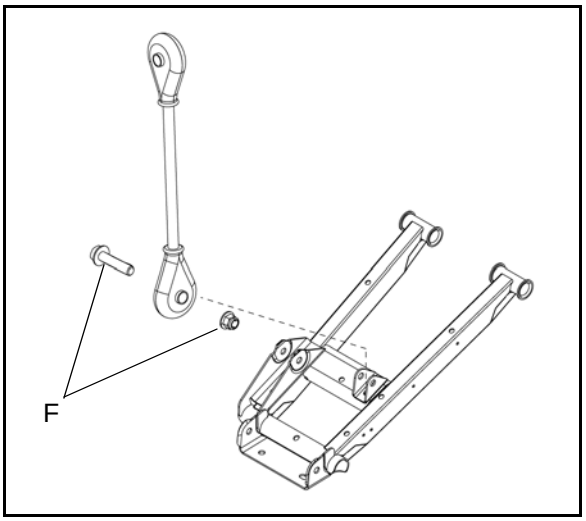
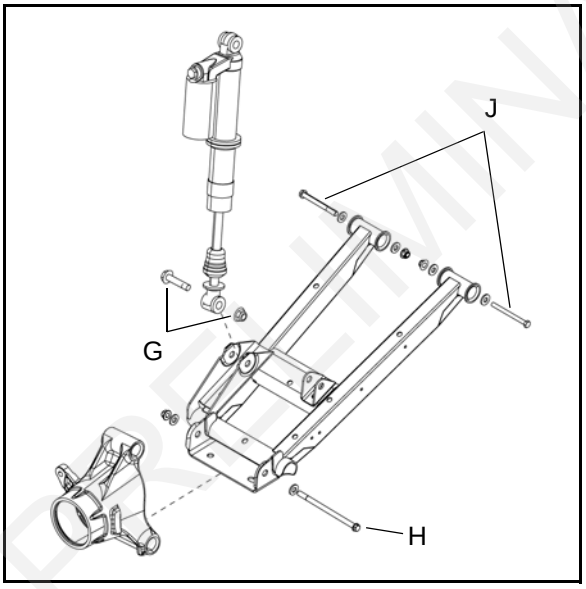
5. Examine bushings and pivot tubes (see “Exploded View”). Replace if worn. Discard hardware.
6. If not replacing the A-arm, thoroughly clean the A-arm and pivot tubes.
7. Insert new bushings and pivot tubes into new A-arm.

Lower A-arm Removal (RZR S / RZR 4)

1. Remove the lower fastener (F) retaining the stabilizer bar linkage to the lower A-arm.



2. Remove the fastener (G) retaining the lower portion of the shock to the lower A-arm.



3. Remove the fastener (H) attaching the lower A-arm to the bearing carrier.
4. Remove the (2) fasteners (J) attaching the lower A-arm to the frame. Remove the A-arm from the vehicle.
5. Examine bushings and pivot tubes (see “Exploded View”). Replace if worn. Discard hardware.
6. If not replacing A-arm, thoroughly clean A-arm and pivot tubes.
7. Insert new bushings and pivot tubes into new A-arm.

Installation

1. Install lower A-arm assembly onto vehicle frame. Torque new fasteners to specification.
2. Attach lower A-arm to bearing carrier. Torque new fastener to specification.
3. Route brake line on top of the lower A-arm and between lower shock mounting tabs.
4. Reinstall the lower portion of the shock to the lower A-arm. Torque shock fastener to specification.
5. Install upper A-arm assembly onto vehicle frame. Torque new fastener to specification.
6. Attach upper A-arm to bearing carrier. Torque new fastener to specification.
7. Install wheel and torque wheel nuts to specification.

WARNING

Upon A-arm installation completion, test vehicle at low speeds before putting into service.

= **T**

Rear Upper / Lower A-arm Bolts:
RZR: **33 ft-lbs (45 Nm)**
RZR S / RZR 4: **40 ft-lbs (54 Nm)**

= **T**

Lower Rear Bearing Carrier Bolts:
RZR: **38 ft-lbs (52 Nm)**
RZR S / RZR 4: **40 ft-lbs (54 Nm)**

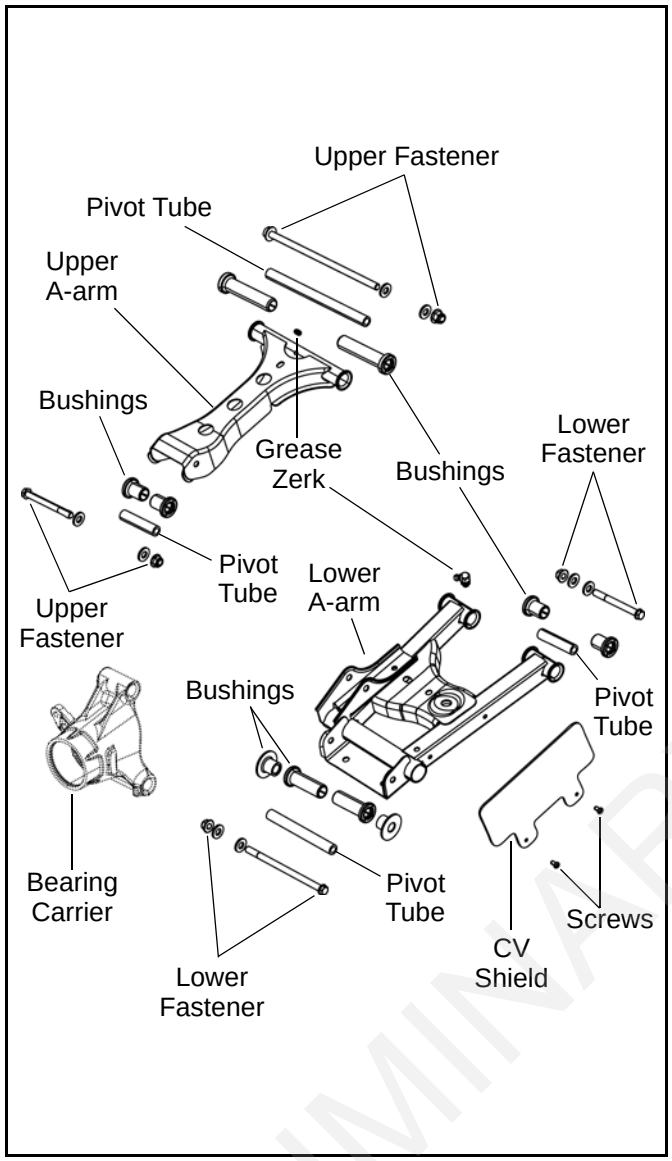
= **T**

Shock Mounting Bolts:
RZR: **30 ft-lbs (41 Nm)**
RZR S / RZR 4: **37 ft-lbs (50 Nm)**

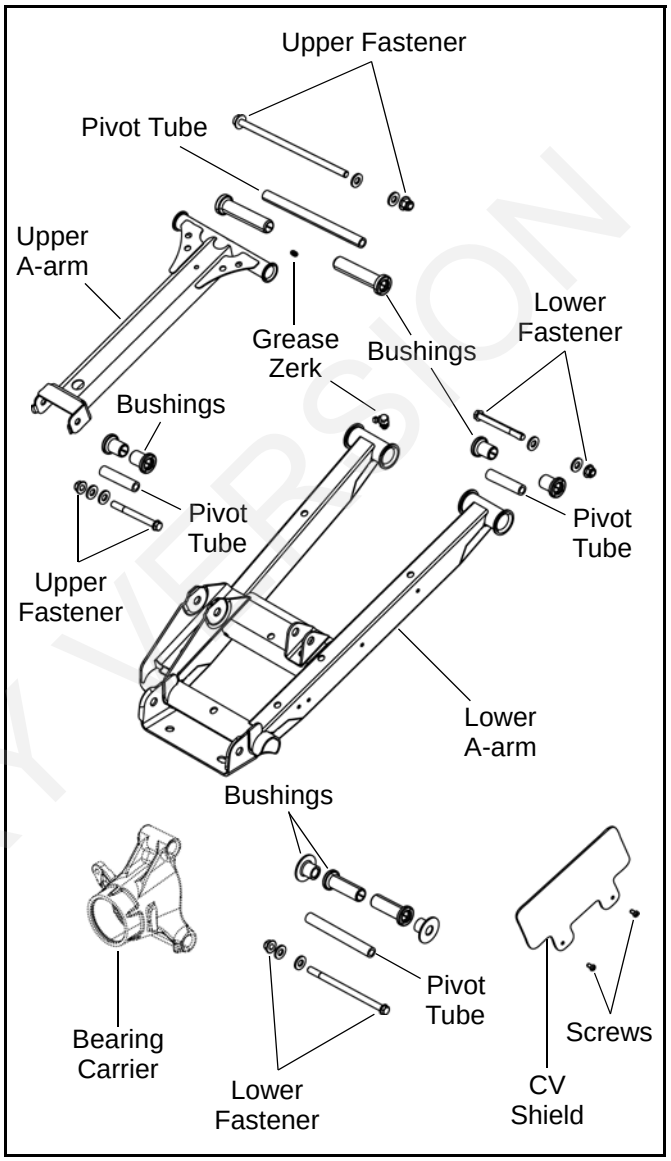
= **T**

Upper Rear Bearing Carrier Bolts:
RZR: **33 ft-lbs (45 Nm)**
RZR S / RZR 4: **40 ft-lbs (54 Nm)**

Exploded View (RZR)



Exploded View (RZR S / RZR 4)



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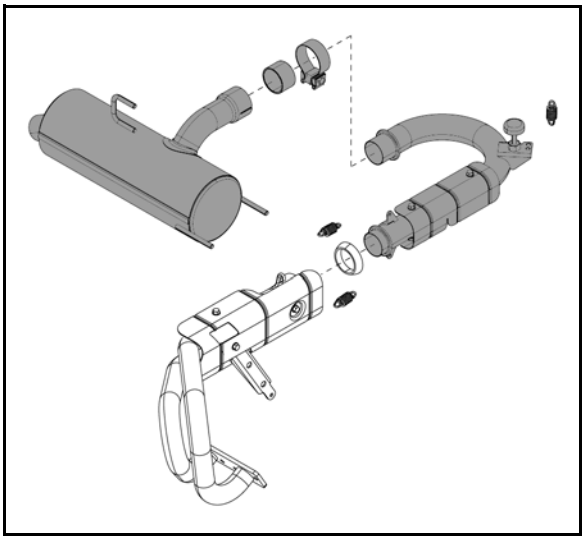
REAR STABILIZER BAR (RZR)

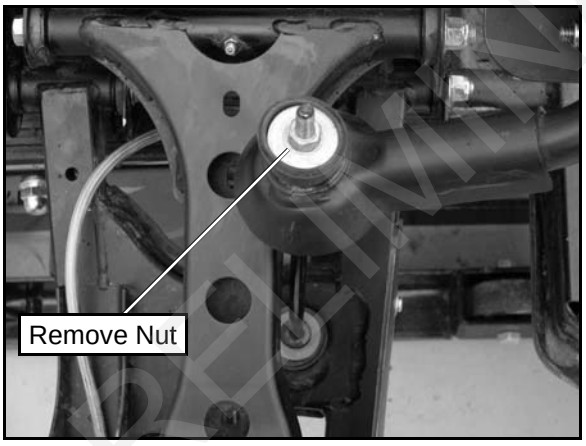
Removal / Installation

1. Remove the exhaust pipe and exhaust silencer from the vehicle.



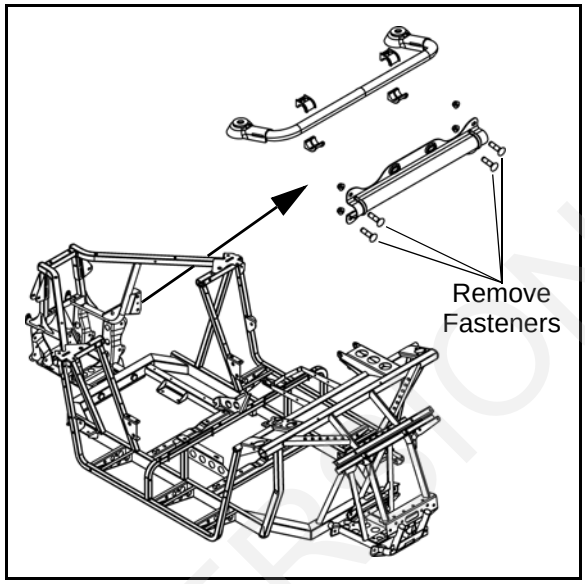
NOTE: The exhaust silencer can be removed through the side of the vehicle after the exhaust pipe is detached from the header pipe.

2. Remove the retaining nut from the upper portion of the stabilizer bar linkage bushing on each side of the vehicle.



3. Remove the (4) fasteners retaining the stabilizer bar bracket to the frame.

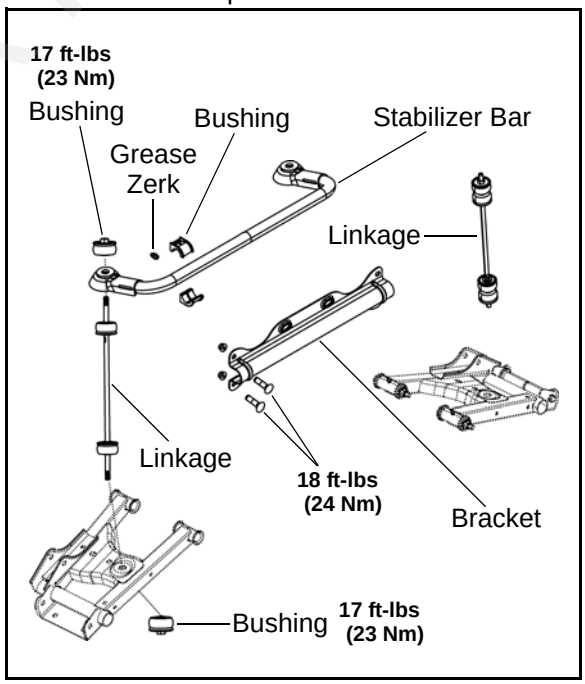
4. Remove the stabilizer bar and bracket from the frame as an assembly.



5. Inspect the stabilizer bar for straightness. Inspect the bushings and replace if needed.

6. Inspect the rubber bushings on the linkage rod and replace if needed.

7. Reverse the procedure for installation. Torque the stabilizer bolts to specification.



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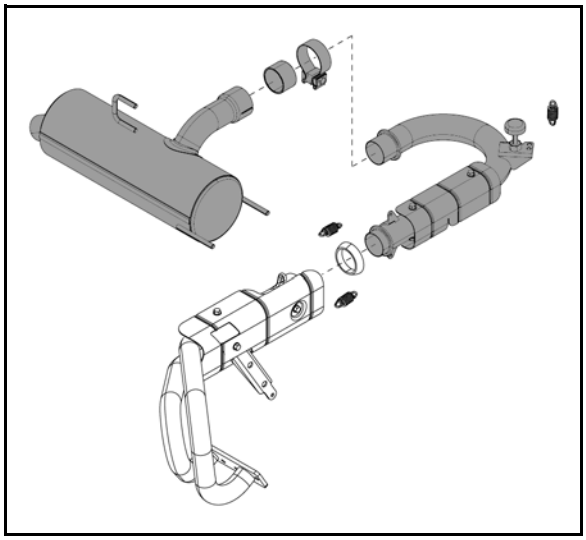
Stabilizer Mounting Bolts:
18 ft-lbs (24 Nm)

REAR STABILIZER BAR (RZR S / RZR 4)

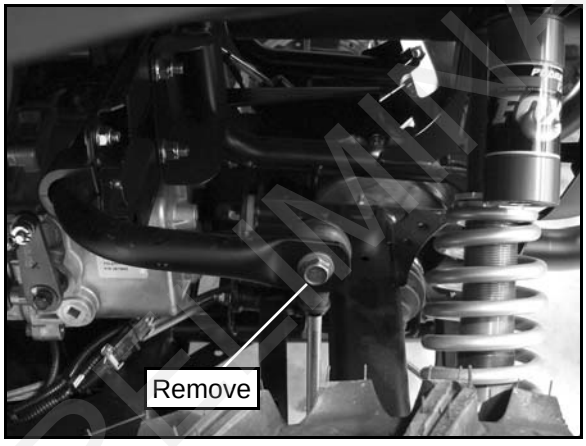
Removal / Installation

1. Remove the exhaust pipe and exhaust silencer from the vehicle.



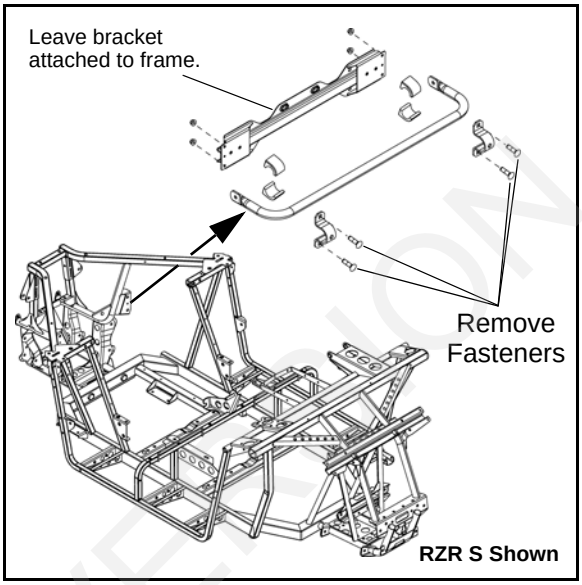
NOTE: The exhaust silencer can be removed through the side of the vehicle after the exhaust pipe is detached from the header pipe.

2. Remove the fastener retaining the stabilizer bar to the linkage on each side of the vehicle.



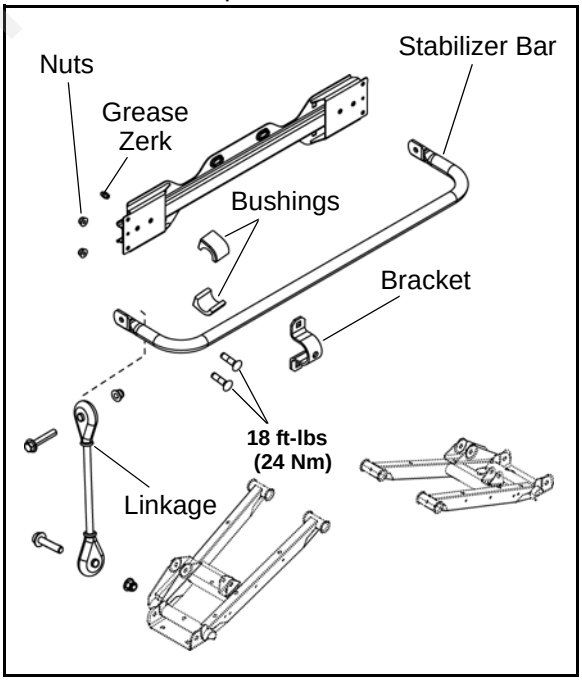
3. Remove the (4) fasteners retaining the stabilizer bar to the bracket.

4. Remove the stabilizer bar from the bracket (bracket can remain attached to the frame).



5. Inspect the stabilizer bar for straightness. Inspect the bushings and replace if needed.

6. Reverse the procedure for installation. Torque the stabilizer bolts to specification.



= T
Stabilizer Mounting Bolts: **18 ft-lbs (24 Nm)**

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DECAL REPLACEMENT

> **WARNING**
>
> The following procedure involves the use of an open flame. Perform this procedure in a well ventilated area, away from gasoline or other flammable materials. Be sure the area to be flame treated is clean and free of gasoline or flammable residue.

> **WARNING**
>
> Do not flame treat components that are installed on the vehicle. Remove the component from the vehicle before flame treating.

The side panels, front and rear fender cabs are plastic polyethylene material. Therefore, they must be “flame treated” prior to installing a decal to ensure good adhesion. A bonus of the flame treating procedure is it can be used to reduce or eliminate the whitish stress marks that are sometimes left after a fender or cab is bent, flexed, or damaged.

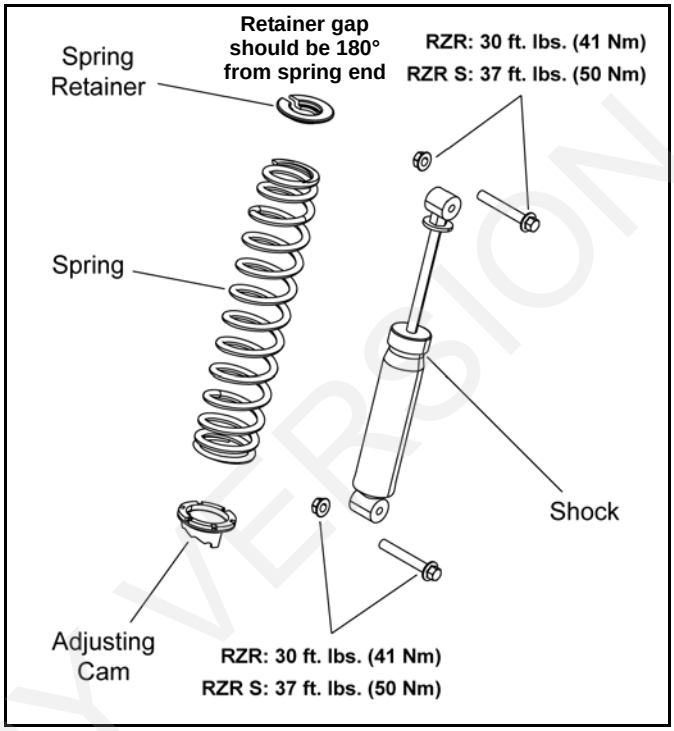
> **CAUTION**
>
> Do not flame treat painted plastic components. Painted plastic surfaces should only be wiped clean prior to decal adhesion.

To flame treat the decal area:

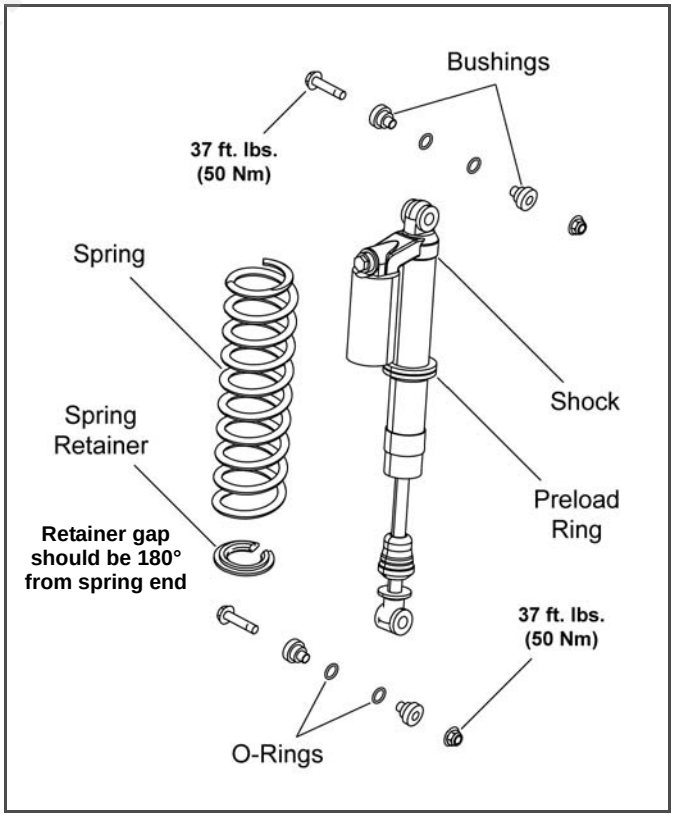
1. Pass the flame of a propane torch back and forth quickly over the area where the decal is to be applied until the surface appears slightly glossy. This should occur after just a few seconds of flame treating. Do not hold the torch too close to the surface (2-3 inches from the flame tip is recommended). Keep the torch moving to prevent damage.
2. Apply the decal on one edge first. Slowly lay down remainder of the decal while rubbing lightly over the decal surface to eliminate any air bubbles during the application.

SHOCKS / SPRINGS / FASTENERS

Exploded View (RZR / RZR S)



Exploded View (RZR S / RZR S INT’L)



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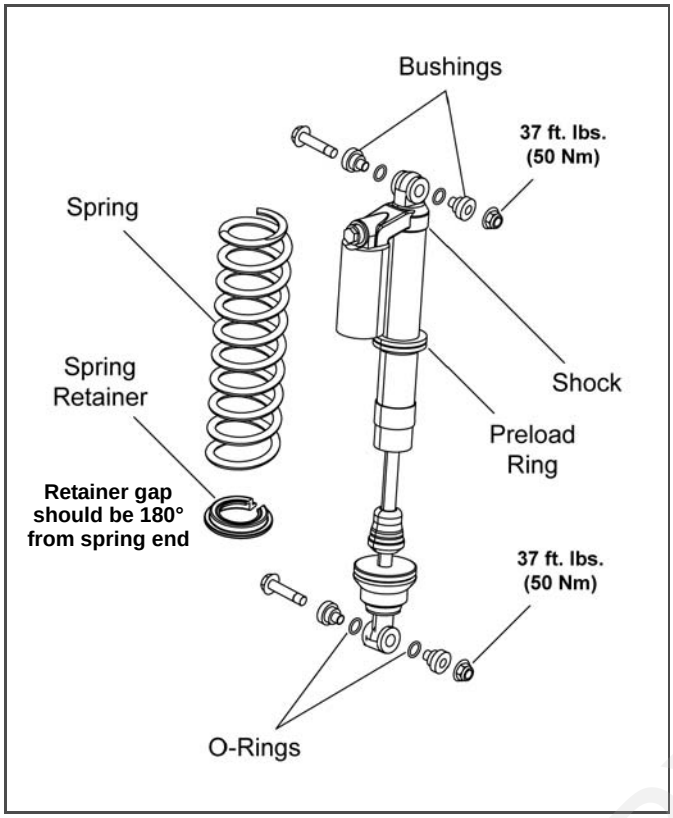
Exploded View (RZR 4)

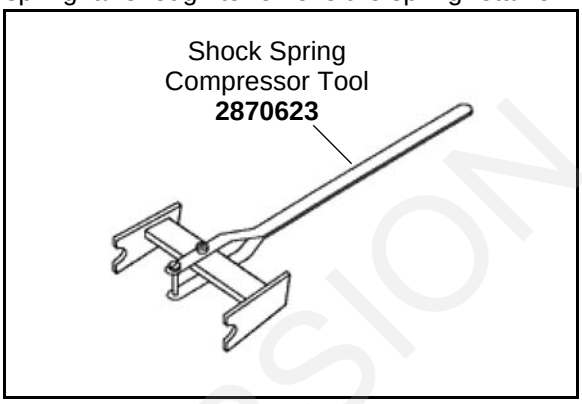


Shock Removal / Installation

1. Elevate the vehicle off the ground to relieve the suspension load.
2. Remove the upper and lower fasteners retaining the shock and remove the shock from the vehicle.
3. Reverse the procedure to reinstall the shock. Torque new fasteners to specification (refer to exploded views).

Shock Replacement

1. Using a spring compressor, compress the shock spring far enough to remove the spring retainer.



2. Remove the spring and adjusting cam from the existing shock and install components onto the new shock.
3. Compress the shock spring and install the spring retainer.

IMPORTANT: The spring retainer gap should be 180° from the end of the spring upon installation.

4. Reinstall the shock onto the vehicle and torque new fasteners to specification (refer to exploded views).

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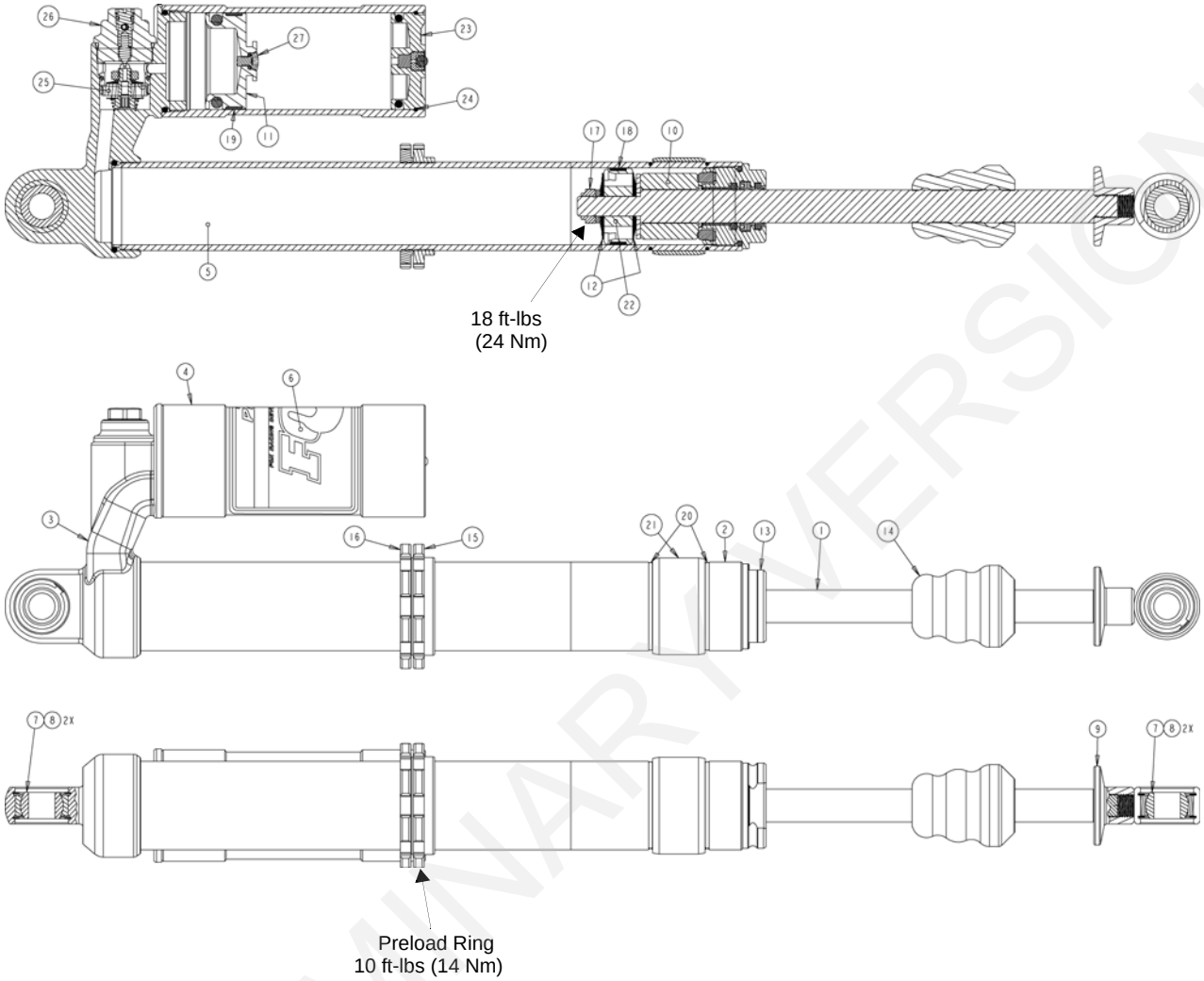
FOX™ PODIUM PIGGYBACK SHOCK SERVICE

FOX™ 1.5 PODIUM 'Piggyback' Shock (RZR S)



Ref.	Qty	Description	Ref.	Qty	Description
1.	1	Shaft	15.	1	Preload Ring
2.	1	Body	16.	1	Preload Ring
3.	1	Body Cap Asm.	17.	1	Lock Nut
4.	1	Reservoir	18.	1	Bearing, External
5.	-	Shock Oil (2870995)	19.	1	Bearing, External
6.	1	Decal	20.	2	Retaining Ring, Wire
7.	2	Bearing, Spherical	21.	1	Spring Guide
8.	4	Retaining Ring	22.	1	Piston, Damping
9.	1	Eyelet	23.	1	Reservoir End Cap Asm.
10.	1	Spacer	24.	1	Retaining Ring, Wire
11.	1	Piston Asm, Floating (IFP)	25.	1	Damping Adjust Asm., Piston
12.	1	Valving Asm.	26.	1	Damping Adjust Asm., Concentric
13.	1	Bearing Asm.	27.	1	Screw Asm.
14.	1	Bumper			

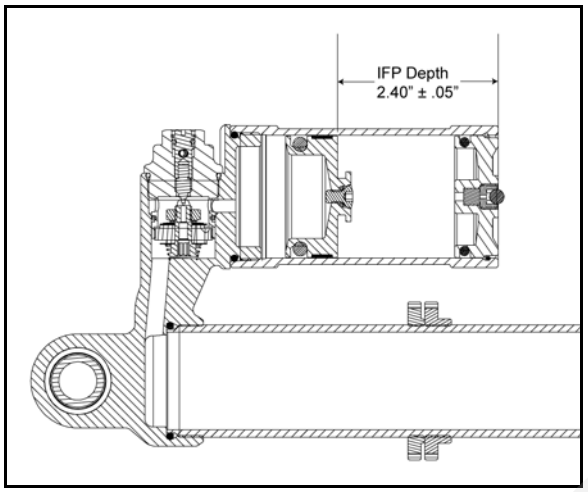
FOX™ 1.5 PODIUM 'Piggyback - General Service Information

Recommended Service Intervals

FOX™ Racing Shocks will perform the best if serviced at regular intervals:

- Every ride - Wash and dry the vehicle and suspension
- Every 100 hours - Visually inspect shock seals
- Every 1500 miles or annually - Change shock oil and replace seals

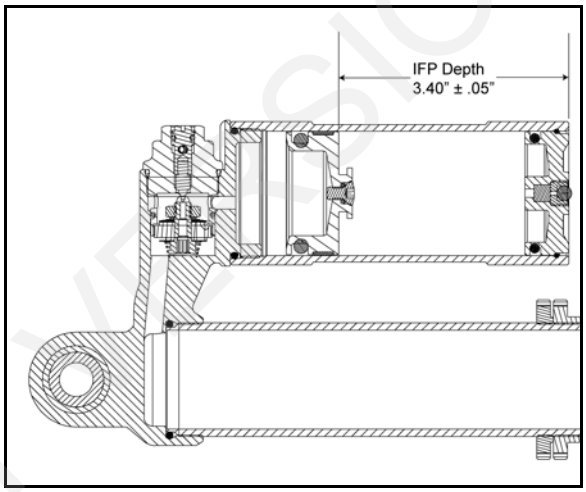
Front Shock Service (RZR S)



SHOCK DESIGN DETAILS	
Travel	6.22"
Extended Length	19.66"
IFP Location	2.40"
Nitrogen Pressure	150 psi
Gas Shock Oil	2870995 (qt.)

SHOCK VALVING	
COMPRESSION	REBOUND
1.300 x 0.008	1.250 x 0.006
1.300 x 0.008	1.250 x 0.006
0.800 x 0.004	1.250 x 0.008
1.250 x 0.008	1.100 x 0.006
1.100 x 0.006	1.000 x 0.006
1.000 x 0.006	0.900 x 0.008
0.900 x 0.010	0.800 x 0.010
0.800 x 0.010	0.700 x 0.010
0.700 x 0.010	0.620 x .093 Back-Up
1.125 x .093 Top-Out	
Piston Orifice: 0.098	

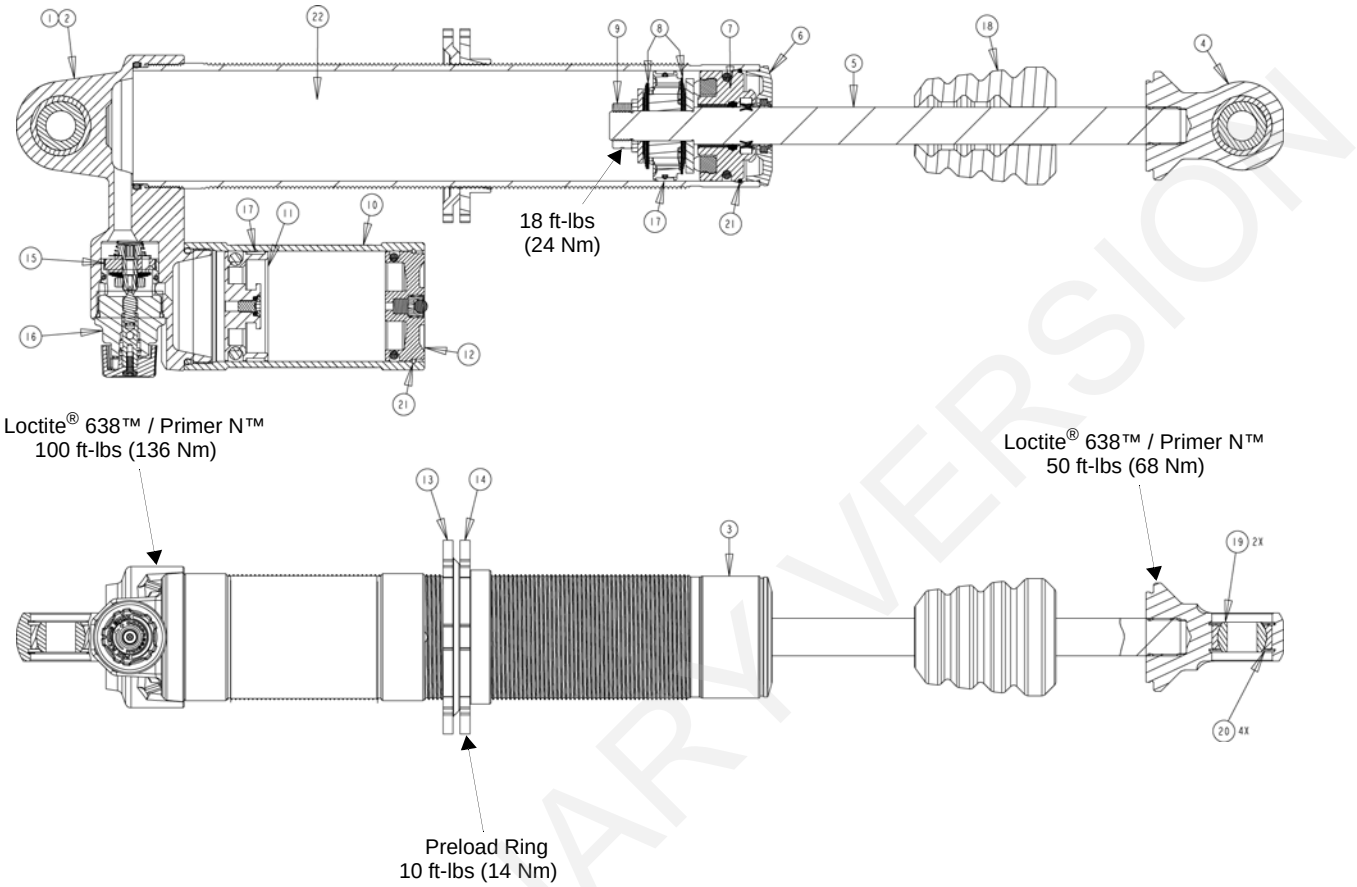
Rear Shock Service (RZR S)



SHOCK DESIGN DETAILS	
Travel	6.22"
Extended Length	21.34"
IFP Location	3.40"
Nitrogen Pressure	150 psi
Gas Shock Oil	2870995 (qt.)

SHOCK VALVING	
COMPRESSION	REBOUND
1.300 x 0.012	1.250 x 0.010
1.250 x 0.008 (R)	1.250 x 0.008
1.100 x 0.006 (C)	1.100 x 0.012
0.800 x 0.008	1.000 x 0.012
1.300 x 0.012	0.900 x 0.010
1.250 x 0.012	0.800 x 0.010
1.100 x 0.012	0.700 x 0.015
1.100 x 0.012	0.620 x .093 Back-Up
1.000 x 0.015	
0.900 x 0.015	
0.800 x 0.015	
1.125 x .093 Top-Out	
Piston Orifice: 0.081	

FOX™ 2.0 PODIUM 'Piggyback' Shock (RZR 4 L.E. Models)



Ref.	Qty	Description	Ref.	Qty	Description
1.	1	Body Cap Asm.	12.	1	Reservoir End Cap Asm.
2.	1	Body Cap	13.	1	Preload Ring, Jam Nut
3.	1	Body	14.	1	Preload Ring
4.	1	Eyelet	15.	1	Damping Adjust Asm., Piston
5.	1	Shaft	16.	1	Damping Adjust Asm., Concentric
6.	1	Bearing Cap Asm.	17.	2	Bearing, External
7.	1	Bearing Asm.	18.	1	Bumper
8.	1	Valving Asm.	19.	2	Bearing, Spherical
9.	1	Lock Nut	20.	4	Retaining Ring
10.	1	Reservoir	21.	2	Retaining Ring
11.	1	Piston Asm, Floating (IFP)	22.	-	Shock Oil (2870995)

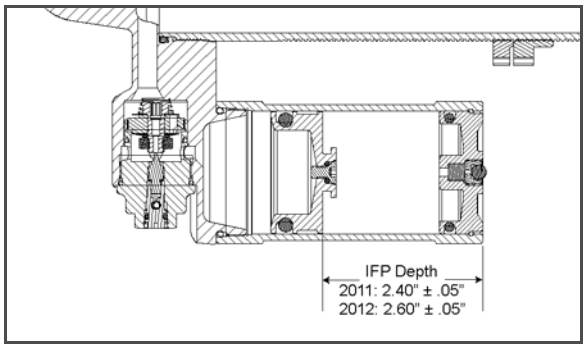
FOX™ 2.0 PODIUM 'Piggyback - General Service Information

Recommended Service Intervals

FOX™ Racing Shocks will perform the best if serviced at regular intervals:

- Every ride - Wash and dry the vehicle and suspension
- Every 100 hours - Visually inspect shock seals
- Every 1500 miles or annually - Change shock oil and replace seals

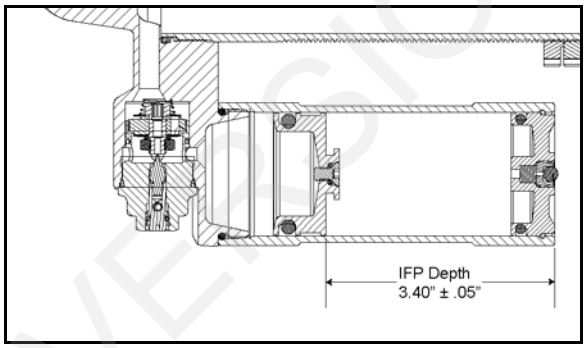
Front Shock Service (RZR 4 L.E Models)



SHOCK DESIGN DETAILS	
Travel	6.22"
Extended Length	19.66"
IFP Location	2.60"
Nitrogen Pressure	200 psi
Gas Shock Oil	2870995 (qt.)

SHOCK VALVING	
COMPRESSION	REBOUND
1.600 x 0.010	1.425 x 0.008
1.600 x 0.006	1.425 x 0.008
1.425 x 0.010	1.425 x 0.008
1.350 x 0.010	1.425 x 0.008
1.250 x 0.012	1.425 x 0.008
1.100 x 0.012	1.100 x 0.004
0.950 x 0.012	1.425 x 0.012
0.800 x 0.010	1.350 x 0.012
1.570 x 0.128 Top-Out	1.250 x 0.015
	1.100 x 0.015
	0.950 x 0.015
	1.230 x .082 Top-Out
	0.750 x .100 Back-Up
Piston Orifice: 2x 0.070	

Rear Shock Service (RZR 4 L.E. Models)



SHOCK DESIGN DETAILS	
Travel	6.22"
Extended Length	21.34"
IFP Location	3.40"
Nitrogen Pressure	200 psi
Gas Shock Oil	2870995 (qt.)

SHOCK VALVING	
COMPRESSION	REBOUND
1.600 x 0.015	1.425 x 0.008
1.600 x 0.015	1.425 x 0.008
1.425 x 0.015	1.425 x 0.008
1.350 x 0.015	1.100 x 0.004
1.250 x 0.015	1.425 x 0.012
1.100 x 0.015	1.350 x 0.012
1.100 x 0.015	1.250 x 0.012
0.950 x 0.015	1.100 x 0.015
1.570 x 0.128 Top-Out	0.950 x 0.015
	1.230 x .082 Top-Out
	0.750 x .100 Back-Up
Piston Orifice: 2x 0.070	

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FOX™ PODIUM 'Piggyback' Rebuild Information

When performing maintenance on FOX™ shocks, use the Gas Shock Recharging Kit (PN 2200421), as it contains the necessary valves, pressure gauge, and fittings to deflate and pressurize shocks.

⚠ WARNING

FOX™ shocks contain high pressure nitrogen gas. Extreme caution must be used while handling and working with FOX™ shocks and related high pressure service equipment. The pressure must be released from the shock before disassembly. It is strongly recommended you wear safety glasses and ear protection during these procedures.

TIP: Extreme cleanliness is very important during all disassembly and reassembly operations. This prevents dirt or foreign particles from entering the shock, which causes premature failure.

FOX™ PODIUM 'Piggyback' Special Tools

PART NUMBER	DESCRIPTION
2200421	Gas Shock Recharging Kit
7052069-A	Gas Shock Recharging Needle
2871351	IFP Tool
PS-45281-A	Shock Body Holding Tool (Front and Rear)
2872429	Shock Rod Holding Tool
PU-50939	Shock Seal Protector Sleeve

SPX Corp: 1-800-328-6657 or http://polaris.spx.com/

FOX™ PODIUM 'Piggyback' Disassembly

IMPORTANT: To prevent damage or marks to the shock, the use of special tools and a soft jaw vise is recommended.

⚠ WARNING

FOX™ shocks contain high pressure nitrogen gas. Extreme caution must be used while handling and working with FOX™ shocks and related high pressure service equipment. The pressure must be released from the shock before disassembly. It is strongly recommended you wear safety glasses and ear protection during these procedures.

1. Remove the shock from the vehicle and note the spring preload distance (see Chapter 2 for factory settings).
2. Thoroughly clean all shock components and shock body prior to disassembly.
3. Back preload adjuster all the way down and carefully remove spring retainer and spring.
4. Use the appropriate shock body holding tool (PS-45281-A) to properly secure the shock body assembly into a vice for service.
5. Remove the nylon ball from the reservoir cap using a heavy duty pick. Discard nylon ball and replace with new upon assembly.

6. Slowly loosen nylon ball retainer from reservoir cap and allow nitrogen to completely escape.
7. Remove the nylon ball retainer.

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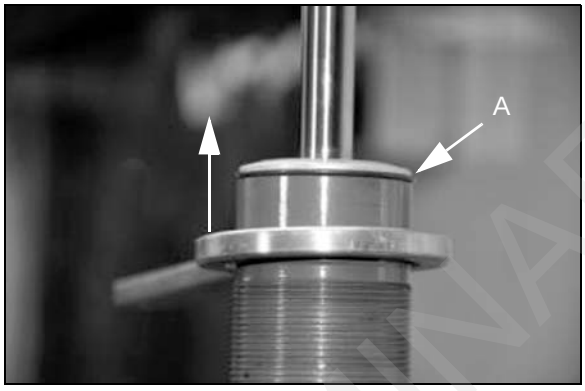
8. Depress reservoir cap and remove retaining ring from the reservoir.

9. Remove the reservoir cap.

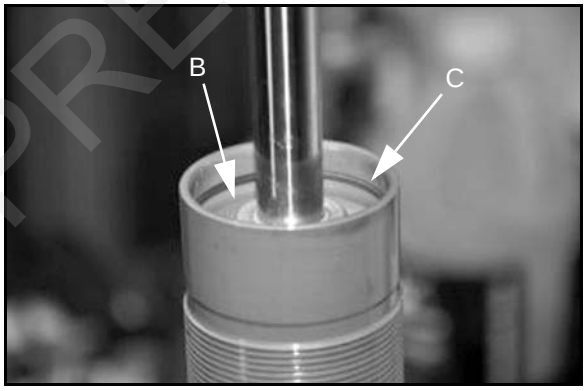
10. Install the Bearing Cap Removal Tool (commercially available) around shock body.

11. Place a retaining ring (A) in the groove between the body and the cap.



12. Tap tool upward with a rubber mallet to release and remove bearing cap.

13. Press downward on the bearing assembly (B) to expose the retaining ring (C). Remove the retaining ring from the shock body.



14. Install the Shock IFP Tool (2871351) onto the IFP located in the reservoir.

15. Push downward on the IFP tool while pulling upward on the shock shaft to remove the shock shaft assembly.

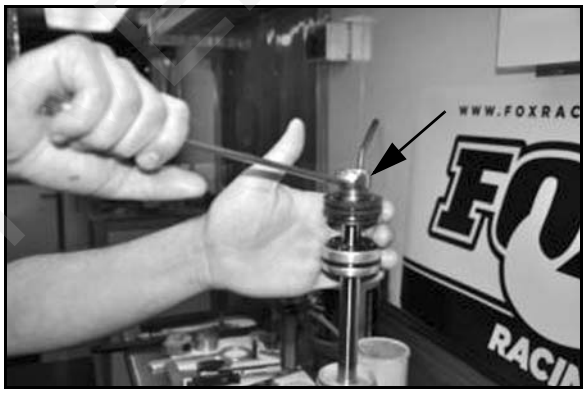
16. Remove the center screw and O-ring from the IFP.

17. Remove the IFP using the Shock IFP Tool (2871351).

18. Remove shock body assembly from the vise. Drain and properly dispose of shock oil.

19. Secure the shock rod in a vice using the shock rod holding tool (2872429). Position the shock rod so the threaded end is facing upward.

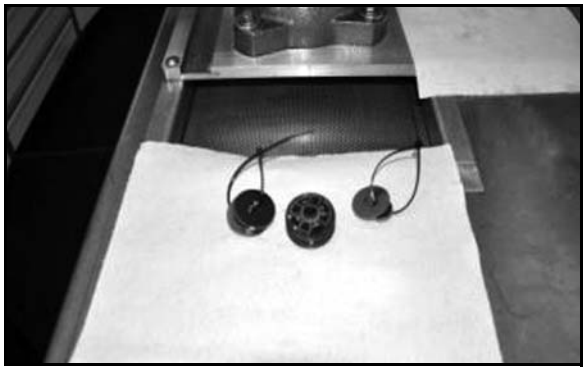
20. Using a 3/4" wrench, remove and discard the lock nut from the end of shock rod.



IMPORTANT: Keep the rebound and compression valve stacks in the order they were removed. If unsure of order, refer to “Shock Valving” under the “Shock Service Information” provided earlier in this section.

21. Remove the shims and piston from the shock rod.

22. A tie strap can be used to keep the shims in the proper order.



23. Inspect the valve shims for kinks, waves, pits or foreign material.

24. Inspect the piston wear band and replace if damaged or worn.

25. Replace the piston O-ring (if equipped).

26. Make note of the positioning of the piston for proper assembly. The compression side of the piston has larger ports with raised edges.

27. Remove and replace jounce bumper from shock rod.

FOX™ PODIUM 'Piggyback' Body and Reservoir Service

> **⚠ WARNING**
>
> The following procedure involves the use of an open flame. Perform this procedure in a well-ventilated area, away from gasoline or other flammable materials. Be sure the area to be flame treated is clean and free of gasoline or flammable residue.
>
> Do not flame treat components that are installed on the vehicle. Remove the component from the vehicle before flame treating.

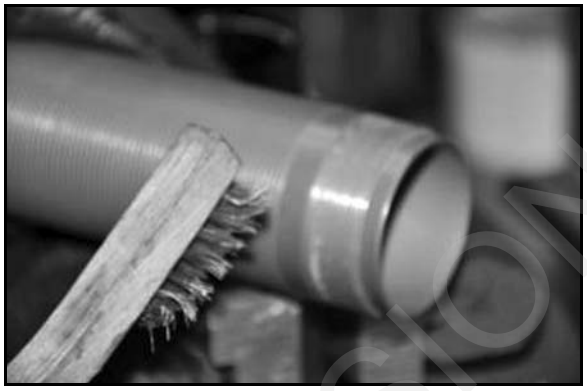
Disassembly

1. Use the appropriate shock body holding tool (PS-45281-A) to properly secure the shock body assembly into a vice for service.

2. Heat the body cap and reservoir base with a small heating torch to break the adhesive bond between cap and shock body.

3. Use a spanner or strap wrench to remove the shock body tube and reservoir from the body cap.

4. Clean the adhesive out of the threads with a wire brush and/or a small pick.



5. Apply Loctite® 7649™ primer to shock body and reservoir threads and let dry for reassembly.

6. Remove the low speed compression cap using a #10 Torx bit driver.

7. Use a 5/8" socket to remove the LSC / DSC compression control.

8. Replace the O-rings on the low speed compression piston.

9. Inspect the LSC / DSC blow out control with low pressure compressed air and replace O-rings.

10. Replace the internal and external O-rings on the reservoir body. Be sure O-rings are lubricated with shock oil before and after installation.

Assembly

1. Apply Loctite® 620™ on primed shock body and reservoir threads.

2. Use a spanner or strap wrench to torque the reservoir body to specification.

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Reservoir Body: **30 ft-lbs (40 Nm)** Shock Body: **50 ft-lbs (40 Nm)**

3. Remove excess Loctite® 620™ from body surface.

4. Install and torque the DSC and LSC to specification.

= T
DSC: **35 ft-lbs (47 Nm)** LSC: **14 ft-lbs (19 Nm)**

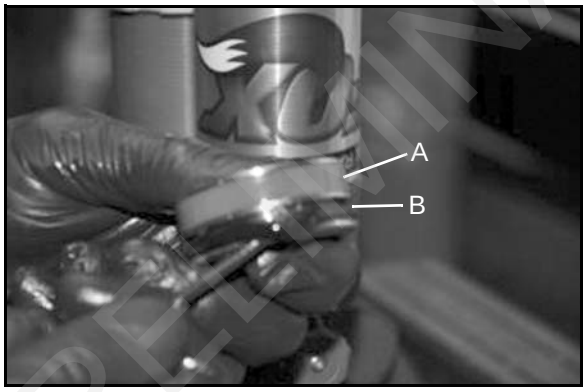
FOX™ PODIUM 'Piggyback' Component Rebuild

IMPORTANT: To prevent damage or marks to the shock, the use of special tools and a soft jaw vise is recommended.

> **⚠ WARNING**
>
> FOX™ shocks contain high pressure nitrogen gas. Extreme caution must be used while handling and working with FOX™ shocks and related high pressure service equipment. The pressure must be released from the shock before disassembly. It is strongly recommended you wear safety glasses and ear protection during these procedures.

IFP and Reservoir Cap

1. Use a small pick to remove the IFP piston bearing (A), IFP O-ring (B) and the reservoir cap O-ring (not shown).
2. Lubricate NEW O-rings and bearing with shock oil before and after installation onto the piston and cap.
3. Install a new pellet into the reservoir cap.
4. Refer to the assembly instructions for component installation onto the shock asm.



Bearing Cap

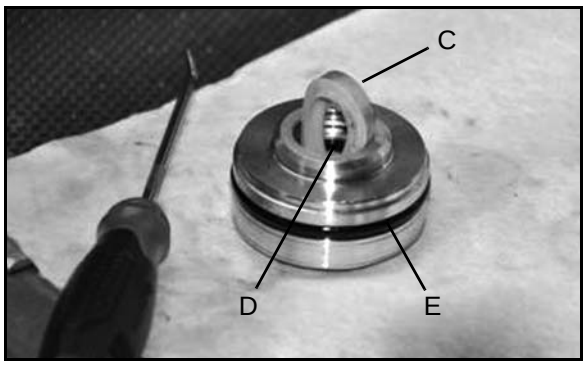
1. Use a small pick to remove seal from the bearing cap.

2. Lubricate a new seal and fully install into bearing cap.
3. Push the Shock Seal Protector Sleeve (PU-50939) through the bearing cap seal to insure proper installation.

4. Refer to the assembly instructions for component installation onto the shock asm.

Bearing Assembly

1. Use a small pick to remove the U-cup seal (C), internal (D) and external (E) O-rings from the bearing assembly.



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2. Thread a 5/8" NC tap into the bearing.

3. Use a large punch to drive out the bearing.

4. Using an arbor press, install a new bearing into the bearing assembly.

5. Lubricate and install the O-rings and U-cup seal.

6. Push the Shock Seal Protector Sleeve (PU-50939) through the bearing assembly O-ring and U-cup seal to insure proper installation.

FOX™ PODIUM 'Piggyback' Assembly

IMPORTANT: To prevent damage or marks to the shock, the use of special tools and a soft jaw vise is recommended.

⚠ WARNING

FOX™ shocks contain high pressure nitrogen gas. Extreme caution must be used while handling and working with FOX™ shocks and related high pressure service equipment. The pressure must be released from the shock before disassembly. It is strongly recommended you wear safety glasses and ear protection during these procedures.

⚠ WARNING

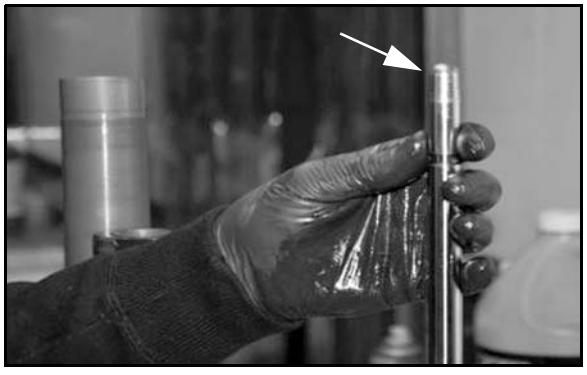
The following procedure involves the use of an open flame. Perform this procedure in a well-ventilated area, away from gasoline or other flammable materials. Be sure the area to be flame treated is clean and free of gasoline or flammable residue.

Do not flame treat components that are installed on the vehicle. Remove the component from the vehicle before flame treating.

1. Secure the shock rod in a vice using the shock rod holding tool (2872429) so the threaded end is facing upward.

2. Install the jounce bumper onto the shock rod.

3. Install the Shock Seal Protector Sleeve (PU-50939) onto the shaft threads.



4. Lubricate the shock rod and the Shock Seal Protector Sleeve with new shock oil.

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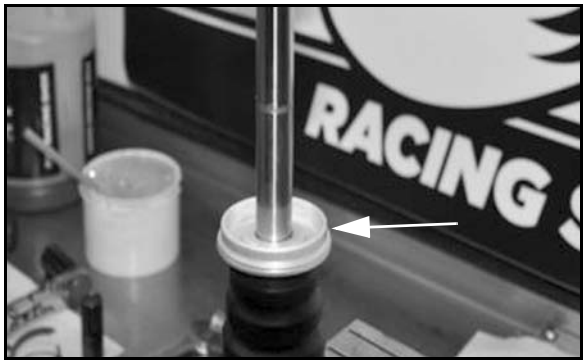
5. Lubricate and install the bearing cap onto the shock rod.



6. Lubricate and install the bearing assembly onto the shock rod.

7. Remove the Shock Seal Protector Sleeve.

8. Lubricate and install the compression valve stack. If your compression valve stack had a bleed shim, it must be installed in time with the compression ports.

9. Install the piston assembly onto shock rod. Be sure rebound side of the piston is facing up.

10. Lubricate and install the rebound valve stack.

11. Install NEW lock nut and torque to specification.

IMPORTANT: Be sure to keep the piston compression ports and shim in time while torquing nut (if equipped).

= **T**
Shock Rod Nut: **18 ft-lbs (24 Nm)**

12. Remove the shock rod assembly from the vise and place on a clean shop towel.

13. Use the appropriate shock body holding tool (PS-45281-A) to properly secure the shock body assembly into a vice for service.

14. Fill the reservoir 3/4 full with the proper shock oil.

15. Verify the center screw and O-ring are not installed into the IFP.

16. Install the IFP into the reservoir. Keep top of reservoir covered with a clean shop towel.

17. Press IFP downward until 1/4" (6.35 mm) of shock oil is on top of the IFP.

18. Install a new O-ring on the IFP center screw and install the screw. Tighten the screw sufficiently.

19. Install the IFP tool and fully depress IFP into the reservoir bore until bottomed. Measure IFP height for later reference.

20. Fill the main shock body with shock oil until it is 2" (50.8 mm) from the top of the shock body.

21. Pass a small heating torch over the shock body to remove any air bubbles from the oil.

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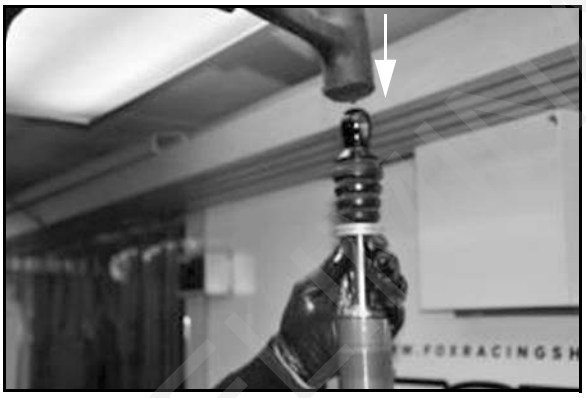
22. Insert the shock rod / piston assembly into shock body. Be sure the piston band stays in the proper position. Do not install bearing assembly at this time.

23. Press shaft downward. Rotate and wiggle the shaft as it submerges in the shock oil until no more air bubbles rise out of the shock oil.

24. Hold pressure downward on IFP tool. Stroke shock rod assembly up and down 1/4" (6.35 mm) to work the air bubbles out of the piston and piston ports.

25. Slide the bearing assembly partially into the shock body.

26. Tap shock rod eyelet with a rubber mallet 3-5 times to remove any trapped air from the valve shims.



27. Slide bearing assembly up and pass a small heating torch over the shock body to remove any air bubbles from the oil.

28. Add shock oil to 1/8" (3.18 mm) below the top of the shock body.

29. Wrap a clean shop towel around top of shock body and depress the bearing assembly downward below the retaining ring groove.

30. Install the bearing assembly retaining ring and clean excess shock oil. Properly dispose of shop towel.

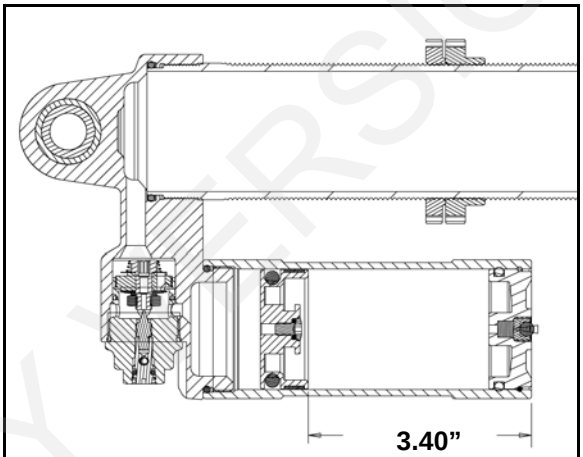
31. Add shock oil to reservoir until it is 1" (25.4 mm) above the top of the IFP.

32. Remove the IFP center screw and O-ring.

33. Pull upward on shock shaft until fully extended and seated against the bearing assembly retaining ring.

34. Set the IFP depth to the recommended height.

IMPORTANT: Keep sufficient amount of shock oil above the IFP and pull it past the recommended IFP depth.



IFP Depth - Front and Rear

NOTE: ALWAYS reset IFP depth in a downward motion.

35. Remove the IFP tool.

36. Hold IFP with a 9/16" wrench to prevent IFP rotation.

37. Install the IFP center screw and O-ring; tighten the IFP center screw sufficiently.

38. Drain and properly dispose of the shock oil from on top of the IFP.

39. Remove oil residue from above the IFP with a clean shop towel.
40. Lubricate and install a new pellet into the reservoir cap.
41. Install the pellet retainer.
42. Lubricate the reservoir cap O-ring.
43. Install and depress the reservoir cap past the retaining ring groove.
44. Install the reservoir cap retaining ring.

> **⚠ WARNING**
>
> CHARGE THE SHOCK USING NITROGEN GAS ONLY. DO NOT FILL WITH ANY OTHER GASES. Doing so compromises the performance of the shock and may be EXTREMELY DANGEROUS!

45. Use the nitrogen charging needle (7052069-A) and safely charge the reservoir to the recommended pressure.

Nitrogen Pressure (Front and Rear):
200 psi (1379 kPa) +/- 5%

46. Stroke the shock through its travel and adjust the external adjusters to ensure they are functioning properly.
47. Use a rubber mallet to fully seat the bearing cap into position.

48. Use a dead blow hammer to fully seat a new nylon ball into the reservoir cap.

49. Install suspension spring(s) and reset preload to factory settings.
50. Adjust external adjusters to the factory settings
51. Install shock onto the vehicle and torque fasteners to specification.

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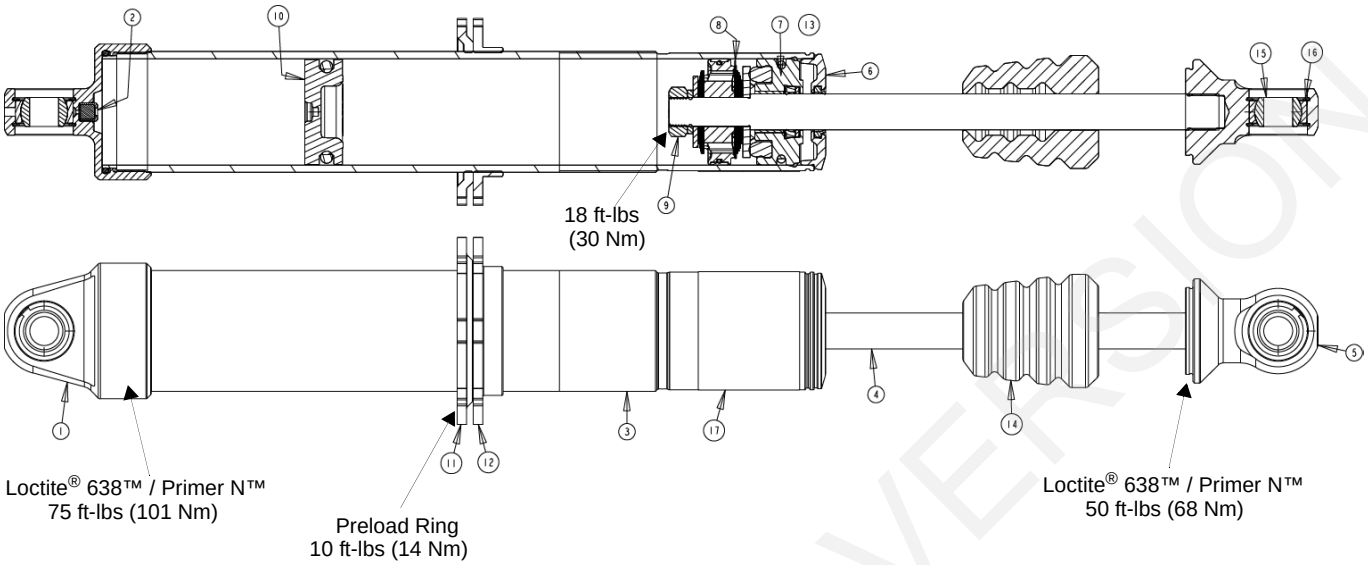
FOX™ PODIUM TOP FILL SHOCK SERVICE

FOX™ 2.0 PODIUM Top Fill Shock (RZR 4 Base Models)



Ref.	Qty	Description	Ref.	Qty	Description
1.	1	Body Cap Asm.	12.	1	Preload Ring
2.	1	Air Valve Asm.	13.	1	Retaining Ring
3.	1	Body	14.	1	Bumper
4.	1	Shaft .620” O.D.	15.	2	Spherical Bearing
5.	1	Eyelet	16.	1	Spiral Retaining Ring
6.	1	Bearing Cap Asm.	-	-	Shock Oil (2870995)
7.	1	Bearing Asm.			
8.	1	Valving Asm.			
9.	1	Lock Nut			
10.	1	Piston Asm. Floating			
11.	1	Preload Ring			

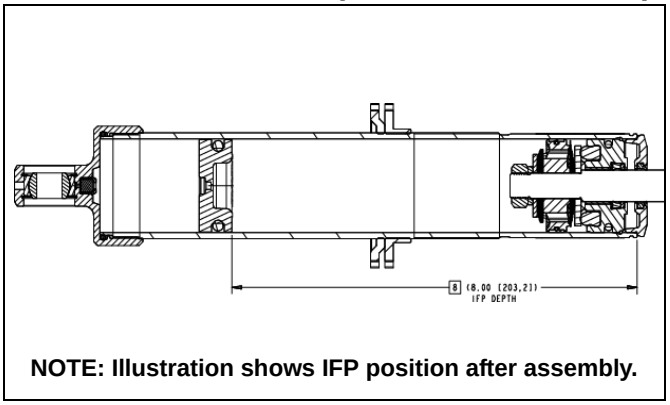
FOX™ 2.0 PODIUM Top Fill - General Service Information

Recommended Service Intervals

FOX™ Racing Shocks will perform the best if serviced at regular intervals:

- Every ride - Wash and dry the vehicle and suspension
- Every 100 hours - Visually inspect shock seals
- Every 1500 miles or annually - Change shock oil and replace seals

Front Shock Service (RZR 4 Base Models)

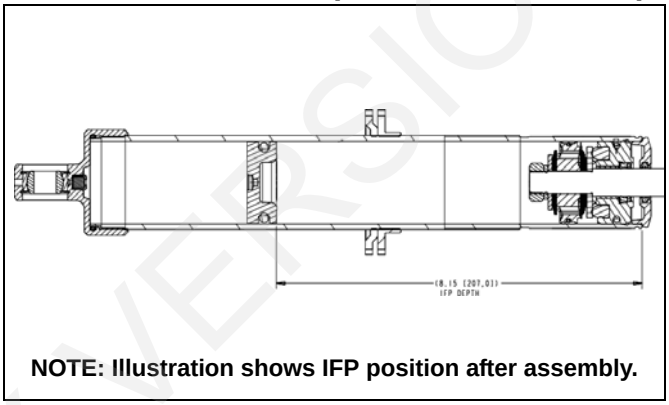


NOTE: Illustration shows IFP position after assembly.

SHOCK DESIGN DETAILS	
Travel	6.22”
Extended Length	19.63”
IFP Location	
Initial Setting	7.50” (190.5mm)
Position After Assembly	8.00” (203mm)
Nitrogen Pressure	200 psi
Gas Shock Oil	2870995 (qt.)

SHOCK VALVING	
COMPRESSION	REBOUND
1.600 x 0.008 (DB)	1.425 x 0.008
1.600 x 0.008	1.425 x 0.008
1.425 x 0.012	1.425 x 0.008
1.350 x 0.012	1.425 x 0.008
1.250 x 0.012	1.425 x 0.008
1.100 x 0.012	1.100 x 0.004
0.950 x 0.015	1.425 x 0.012
0.850 x 0.012	1.350 x 0.012
1.570 x 0.128 Top-Out	1.250 x 0.015
	1.100 x 0.015
	0.950 x 0.015
	1.230 x 0.082 Top-Out
	0.750 x 0.100 Back-Up

Rear Shock Service (RZR 4 Base Models)



NOTE: Illustration shows IFP position after assembly.

SHOCK DESIGN DETAILS	
Travel	6.22”
Extended Length	21.33”
IFP Location	
Initial Setting	7.65” (194mm)
Position After Assembly	8.15” (207mm)
Nitrogen Pressure	200 psi
Gas Shock Oil	2870995 (qt.)

SHOCK VALVING	
COMPRESSION	REBOUND
1.600 x .010 (DB)	1.425 x 0.008
1.600 x 0.015	1.425 x 0.008
1.425 x 0.015	1.425 x 0.008
1.425 x 0.008	1.425 x 0.008
1.350 x 0.015	1.100 x 0.004
1.350 x 0.010	1.425 x 0.012
1.250 x 0.015	1.350 x 0.012
1.250 x 0.012	1.250 x 0.012
1.100 x 0.015	1.100 x 0.012
1.100 x 0.010	1.100 x 0.008
0.950 x 0.010	0.950 x 0.012
1.570 x 0.128 Top-Out	1.230 x 0.082 Top-Out
	0.750 x 0.100 Back-Up

FOX™ 2.0 PODIUM Top Fill Disassembly

NOTE: Read through all of these instructions first to familiarize yourself with the rebuild procedure. Make sure you have a clean work area, and all of the necessary tools are available. Always use proper safety equipment when working on shock absorbers.

⚠ WARNING

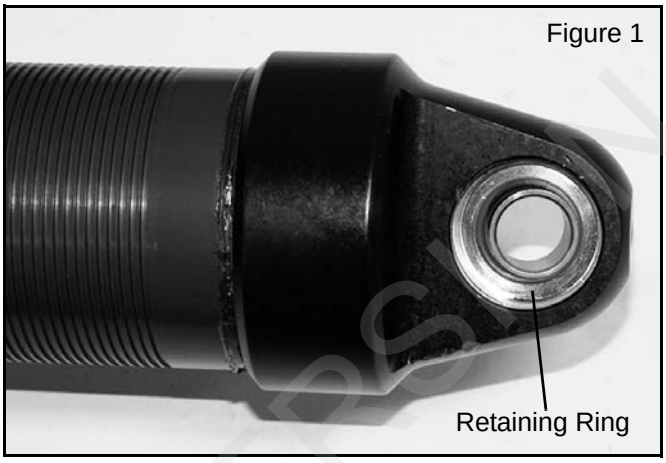
FOX™ shocks contain high pressure nitrogen gas. Extreme caution must be used while handling and working with FOX™ shocks and related high pressure service equipment. The pressure must be released from the shock before disassembly. It is strongly recommended you wear safety glasses and ear protection during these procedures.

TIP: Extreme cleanliness is very important during all disassembly and reassembly operations. This prevents dirt or foreign particles from entering the shock, which causes premature failure.

FOX™ 2.0 Podium Top Fill Special Tools:
The following list of tools is required in addition to the standard shop tool list:
1. Low Temperature Grease
2. Loctite™ Primer N
3. Loctite™ 638 Green
4. 2 1/8" Shock Body Holding Tool - SPX: PU-45281-A
5. 5/8" Shock Seal Protector Sleeve - SPX: PU-50939
6. Top Fill Shock Fill Tool - SPX: PU-51039
7. FOX Body Cap Removal Tool - Commercially Available
8. 5/8" Shock Shaft Holding Tool - SPX: 2872429

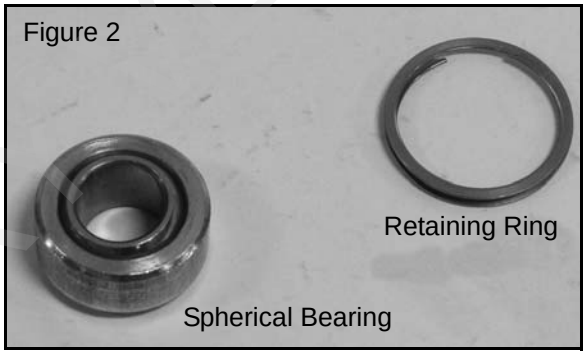
1. If your shock DOES NOT have a spring installed, skip to Step #4. Measure the spring preload set length and record this number.
2. Back the preload adjustment ring off until spring is loose on the body. Remove the lower spring retaining clip.
3. Remove the spring.
4. Clean entire shock assembly with soapy water. Try to remove as much dirt and grime as possible by scrubbing with a soft bristle brush. Never pressure wash shock, as this can force water and debris inside which will damage the seals. Dry the shock assembly with compressed air, if available, or use clean towels.
5. Locate the retaining rings holding the spheical bearing in the ear of the body cap assembly.
6. Use a small pick or flat-blade screw driver to remove the retaining rings (Fig. 1).

Figure 1



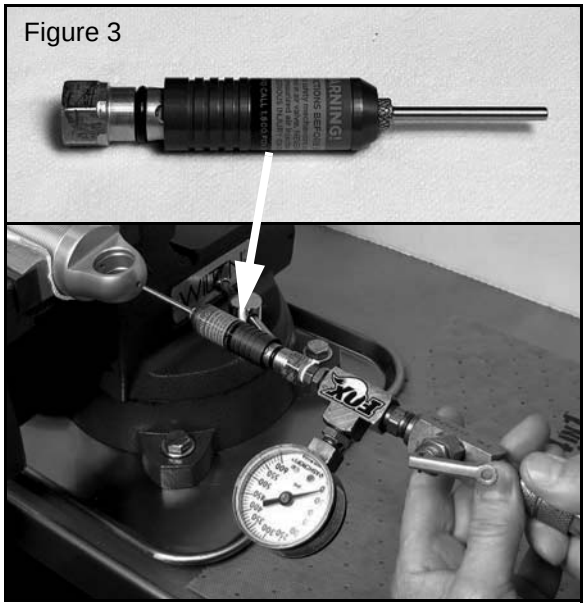
7. Press out the spherical bearing (Fig. 2).

Figure 2



8. Secure shock in a bench vise. Insert the Top Fill Shock Fill Tool into the hole in the body. Fully depress the needle into the body cap to release the nitrogen gas pressure (Fig. 3).

Figure 3



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⚠ CAUTION

Point air valve away from face and body when charging or discharging any shock.

NOTE: The following procedure utilizes the FOX™ Body Cap Removal Tool (commerically available). The cap can also be removed by carefully prying with a small flat-blade screwdriver.

9. Install the cap removal tool onto the shock body. Insert the retaining ring in the groove between the cap and body (Fig. 4).
10. Tap upward on the cap removal tool to release the cap from the shock body.

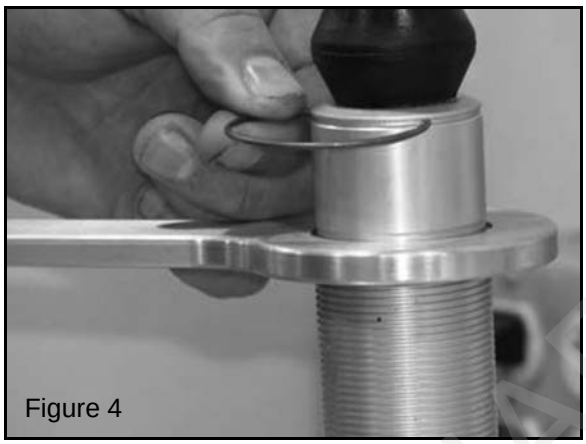
Figure 4

11. Depress the bearing assembly into the shock to expose the retaining ring (Fig. 5).

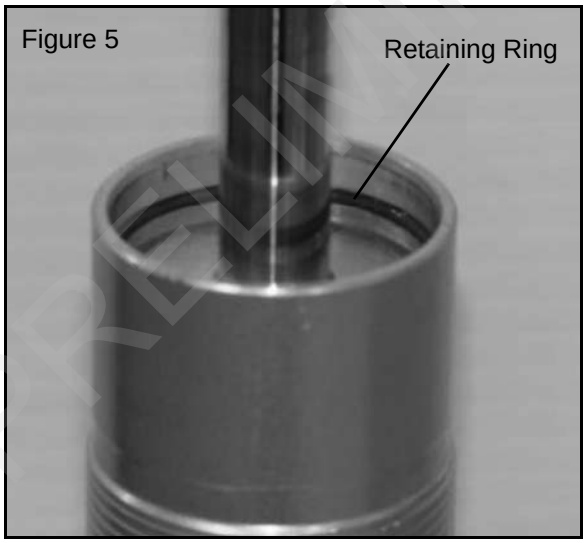

Figure 5

12. Use a small pick to remove the retinaing ring. Carefully and slowly pull the shock rod shaft assembly out of the shock body.
13. Remove the shock from the vise and pour shock oil into a proper disposal container. DO NOT RE-USE OIL SHOCK OIL.
14. Mount the shock body using body clamp tools in the bench vise with the bearing cap assembly upwards.
15. Using a propane torch, carefully heat the bearing cap to soften thread lock (Fig. 6).

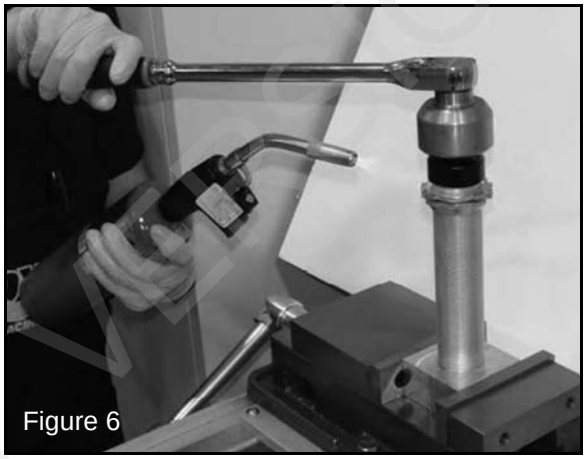
Figure 6

16. Remove the bearing cap assembly from the shock body with a pipe wrench.
17. Remove residual thread lock from the threads with a wire brush and small pick.
18. Remove and discard the o-ring from the bearing cap (Fig. 7).

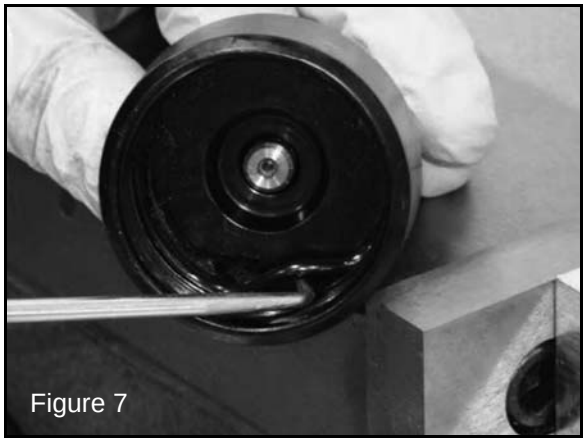
Figure 7

NOTE: If the shock has been rebuilt several times, body cap assembly replacement is recommended as the air valve assembly is not servicable.

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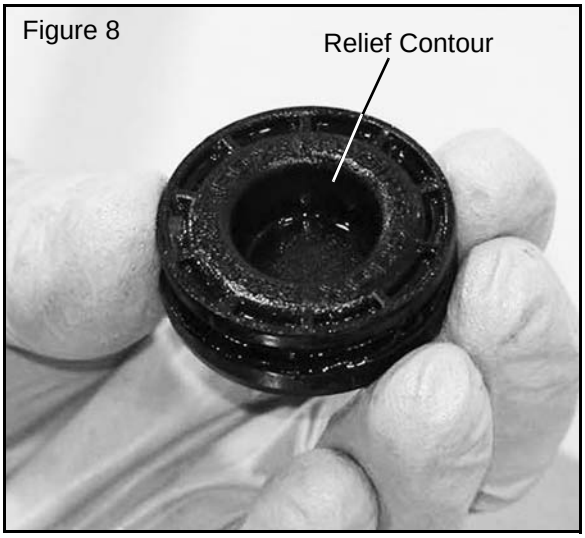
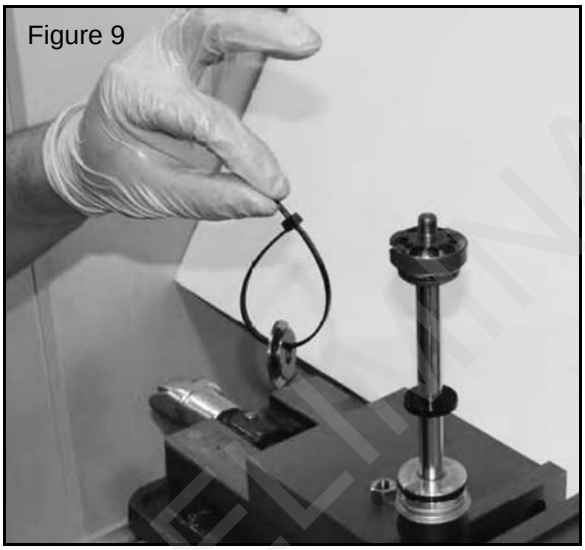
19. Push the IFP out of the shock body. Note the orientation of the IFP as the relief contour must face the shock shaft assembly during installation (Fig. 8).



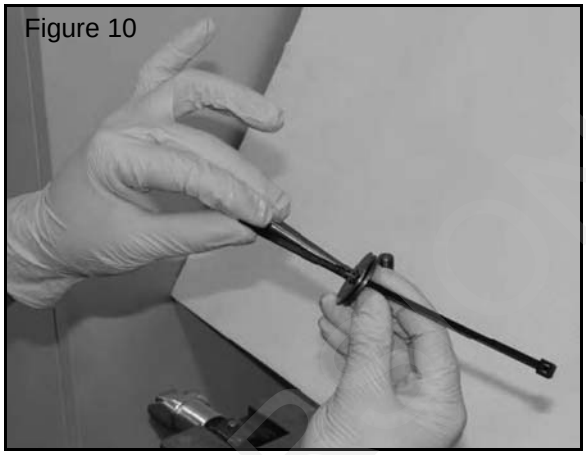
20. Mount the shock rod assembly eyelet in a bench vise. Remove the lock nut.

21. Remove the rebound valve stack. Zip tie the valves together (Fig. 9).



22. Remove the piston/wear band (if still attached). Discard wear band. Note the orientation of the rebound and compression sides of the piston.

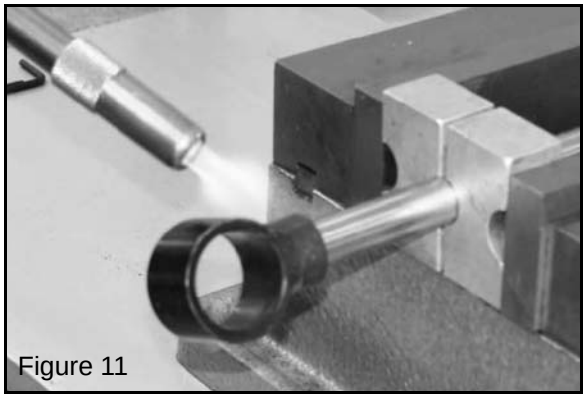
23. Remove the compression valve stack (Fig. 10). Zip tie the valves together. Note that the valve shim closest to the piston is ported. This is the air bleed valve shim.



24. Remove the bearing cap, body cap, and bumper. Discard all o-rings. Inspect bumper and replace as required.

25. If shock shaft eyelet service is required, mount the shock shaft in a bench vise using the shaft blocks.

26. Using a propane torch, heat the eyelet to soften the thread lock. Remove the eyelet from the shaft. Remove residual thread lock using a wire brush and small pick (Fig. 11).



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27. Use a small pick to remove the bearing assembly and body cap seals. Discard these parts (Fig. 12).

Figure 12

NOTE: If the bearing assembly inner bearing (bushing) requires service, replace the bearing assembly.

28. Inspect the piston valve and compression/rebound valve shims. Remember to keep the valve shims in their specified order. Replace the piston valve and/or valve shims if required.
29. Clean all parts with solvent and use compress air to dry. Place clean parts on a lint-free towel/shop rag.

FOX™ 2.0 PODIUM Top Fill Reassembly

NOTE: Lubricate all seals, o-rings, and wear bands with low temperature grease during assembly procedure.

1. If the shock shaft eyelet was removed for service, clamp the shock shaft using the 5/8" shaft blocks in a bench vise.
2. Apply Loctite™ Primer N to the shaft threads. Allow for proper curing time before apply Loctite™ Green 638 to threads.
3. Install the eyelet and torque to specification.

= T
Podium 2.0 Shock Shaft Eyelet: **50 ft-lbs (68 Nm)**

4. Mount the shock shaft eyelet in a bench vise with the threaded end upwards.
5. Install the bumper; narrow end upwards.
6. Install a new wiper seal in the body cap (Fig. 13).

Figure 13

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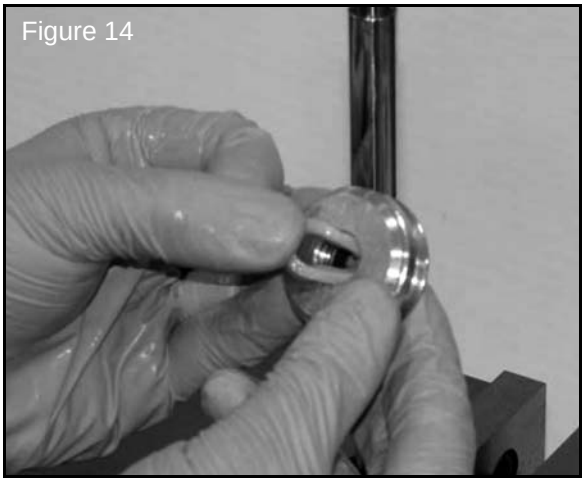
7. Install a new u-cup seal into bearing assembly (Fig. 14). After installing u-cup seal, install a new o-ring.

Figure 14



8. Install the 5/8” shock shaft seal protector tool onto the shock shaft. Install the body cap (Fig. 15), and then the bearing assembly (Fig. 16) onto the shock shaft.

Figure 15

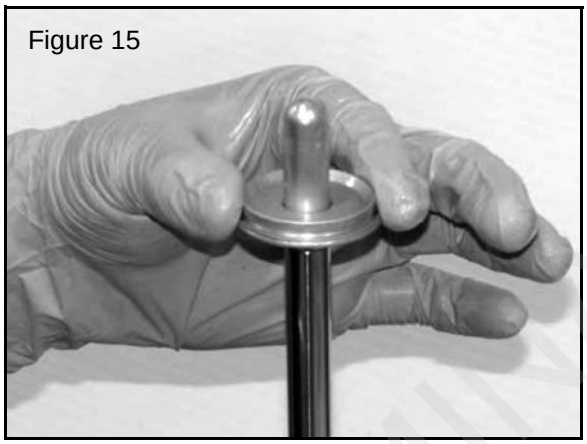
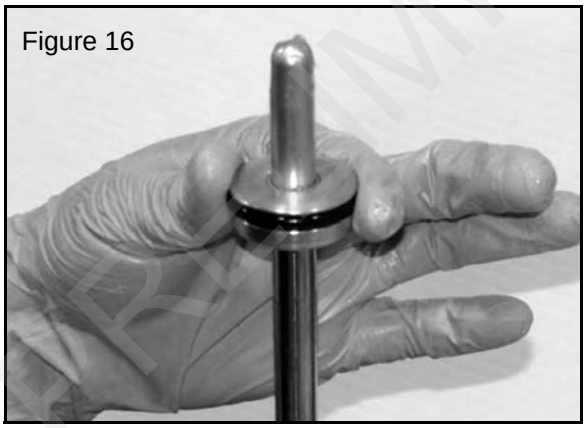


Figure 16



9. Install the compression valve shim stack onto the shock shaft.

NOTE: The last compression valve shim is the air bleed shim. The shim must be orientated correctly with the piston valve to allow air to bleed through the assembly during installation.

10. Replace the o-ring on the piston valve and lubricate with low temeperature grease. Install the piston valve as follows:

    - This is the COMPRESSION side of the piston valve (Fig. 17). When installed, the compression side FACES the compresion valve stack.

Figure 17

    - The bleed shim tabs are centered in the middle of the compression ports (Fig. 18).

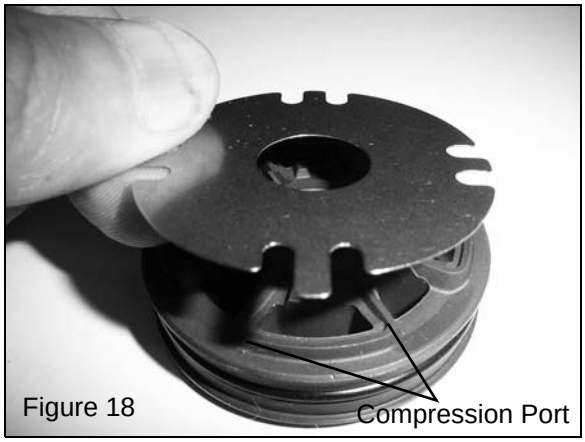


Figure 18

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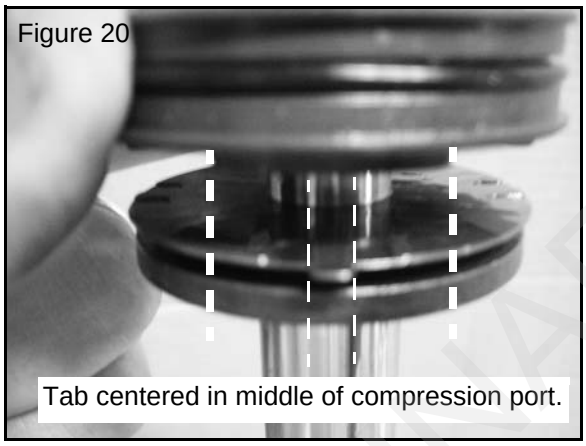
- Note the orientation of the bleed shim tabs as the assembly would be installed on the shock shaft (Fig. 19).

Figure 19

Bleed shim / piston valve installation direction.

11. Install the piston valve as shown in the photo (Fig 20). Install the lock nut and torque to specification. Keep the bleed shim tab aligned with the piston valve when tightening the lock nut.

Figure 20



Tab centered in middle of compression port.

12. Install the rebound valve stack onto the shock shaft. Tighten the lock nut to specification.

NOTE: Verify the bleed valve shim tab is orientated correctly with the piston valve when tightening lock nut.

= T
Shock Shaft Lock Nut: **22 ft-lbs (30 Nm)**

13. Replace the IFP o-ring. Apply a thin layer of low temerpature grease to the IFP.

14. Install the IFP into the shock body with the relief contour facing the shock shaft end of the shock (Fig. 21).

Figure 21

15. Apply Loctite Primer N to the shock body bearing cap threads (Fig. 22).

Figure 22

16. While the primer is curing, set the IFP depth to the INITAL SETTING specification noted at the beginning of this chapter (Fig. 23).

Figure 23

17. Handle the shock body with care after setting the IFP depth. Do not move the IFP after initial setting is established.

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18. Replace the o-ring in the body cap. Apply Loctite 638 Green two threads wide for 360 degrees to the first two threads of the body cap. DO NOT ALLOW thread lock to come into contact with the o-ring.
19. Torque body cap to specification.

= T
Shock Body Cap: **75ft-lbs (101 Nm)**

20. Place the body cap in a bench vise. Check the IFP depth location is correct.
21. Fill the shock body with shock oil. Fill until level is 3/8" from the top of the shock body. Pass a propane torch quickly over the shock body to eliminate any air bubbles.

Polaris Gas Shock Oil - 5 wt.
PN 2870995 - qt.
PN 2872279 - 2.5 gal.

22. Slide the piston valve and bearing as an assembly down against the shock shaft valve stack (Fig. 24).


Figure 24

23. Install the valve stack/piston and bearing as an assembly into the shock body slowly. Allow air bubles to escape the valve stack/piston drop into the oil (Fig. 25).


Figure 25

24. Carefully and slowly push the bearing down just past the retainer groove in the shock body. Install the retainer ring into the shock body (Fig. 26).

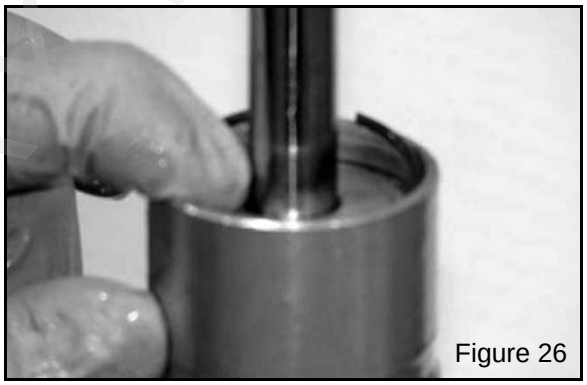
Figure 26

25. Once the retainer ring is installed, slowly push the shock shaft down into the shock body. DO NOT PULL THE SHAFT OUT. Do not move the shock shaft once the shaft bottoms out.

NOTE: If the shock shaft rebounds upwards, it has come into contact with the IFP. If this occurs, the IFP position must be reset.

26. Secure the shock assembly in a bench vise.

27. Use the Top Fill Shock Fill Tool to charge the shock to specification. Charge the shock for approximately 10 seconds (Fig. 27). During the charging process, the shock rod must extend outwards.

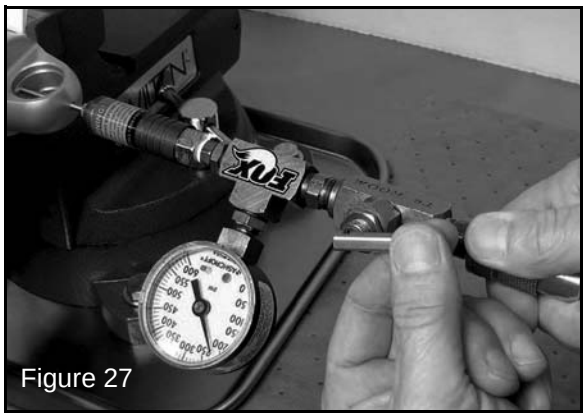
Figure 27

28. Inspect both ends of the shock assembly for leaks.
29. Slide the shock body cap down to the body. Use a soft-faced hammer to drive the cap into the shock body (Fig. 28).

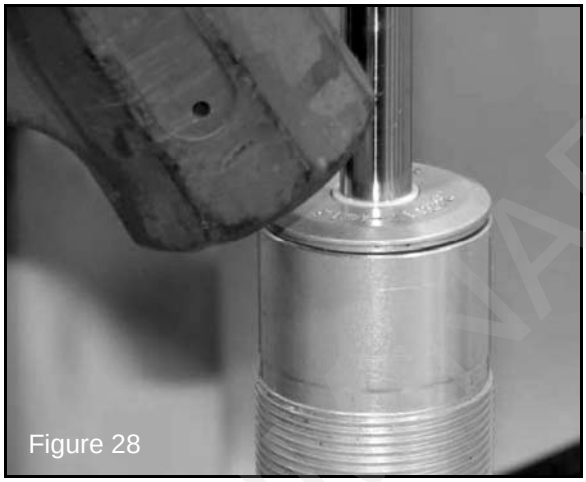
Figure 28

30. Install the body cap and eyelet spherical bearings using an arbor press. Install the spiral rings on both sides of the spherical bearings.

NOTE: After installation, be sure to RIDE SLOWLY initially to ensure the shock and the vehicle's suspension is performing correctly.

NOTES

CHAPTER 6
CLUTCHING

SPECIAL TOOLS AND SUPPLIES

PART NUMBER	TOOL DESCRIPTION
2871025	Clutch Bushing Replacement Tool Kit
2871226	Clutch Bushing Replacement Tool Kit
2871358-A	Clutch Holding Fixture
9314177	Clutch Holding Wrench
PA-48595	Drive Clutch Puller (Short)
2870341	Drive Clutch Spider Removal and Installation Tool
2870386	Piston Pin Puller
2870910	Roller Pin Tool
PU-50518	Universal Clutch Compressor

SPX Corp: 1-800-328-6657 or http://polaris.spx.com/

PART NUMBER	SPECIAL SUPPLIES
N/A	Loctite™ 609
8560054	RTV Silicone Sealer

TORQUE SPECIFICATIONS

PVT System Fastener Torques

ITEM	TORQUE VALUE
Drive Clutch Retaining Bolt	40 ft-lbs (54 Nm)
Driven Clutch Retaining Bolt	17 ft-lbs (23 Nm)
PVT Inner Cover Bolts	12 ft-lbs (16 Nm)
PVT Outer Cover Bolts	45-50 in. lbs (5-5.6 Nm)
Drive Clutch Spider	200 ft-lbs (271 Nm)
Drive Clutch Cover Plate	90 in-lbs (10 Nm)

HIGH ALTITUDE CLUTCH CHARTS

RANGER RZR / RZR S / RZR 4

Altitude		Shift Weight	Drive Spring	Driven Spring
Meters (Feet)	**0-1500 (0-5000)**	23-62 (5632337)	Green (7043789)	Blk / Almond (7043167)
	1500-3700 (5000 - 12000)	23-58 (B) (1322911)	Green (7043789)	Blk / Almond (7043167)

RANGER RZR EPS (EBS Model)

Altitude		Shift Weight	Drive Spring	Driven Spring
Meters (Feet)	**0-1500 (0-5000)**	23-66 (5632763)	Green (7043789)	Red (3234452)
	1500-3700 (5000 - 12000)	23-62 (5632337)	Green (7043789)	Red (3234452)

PVT SYSTEM OVERVIEW

General Operation

WARNING

All PVT maintenance or repairs should be performed by a certified Polaris Master Service Dealer (MSD) technician who has received the proper training and understands the procedures outlined in this manual. **Because of the critical nature and precision balance incorporated into the PVT components, it is absolutely essential that no disassembly or repair be made without factory authorized special tools and service procedures.**

The Polaris Variable Transmission (PVT) consists of three major assemblies:

1) The Drive Clutch

2) The Driven Clutch

3) The Drive Belt

The internal components of the drive clutch and driven clutch control engagement (initial vehicle movement), clutch upshift and backshift. During the development of the Polaris vehicle, the PVT system is matched first to the engine power curve; then to average riding conditions and the vehicle's intended usage. Therefore, modifications or variations of components at random are never recommended. Proper clutch setup and careful inspection of existing components must be the primary objective when troubleshooting and tuning.

Drive Clutch Operation

Drive clutches primarily sense engine RPM. The two major components which control its shifting function are the shift weights and the coil spring. Whenever engine RPM is increased, centrifugal force is created, causing the shift weights to push against rollers on the moveable sheave, which is held open by coil spring preload. When this force becomes higher than the preload in the spring, the outer sheave moves inward and contacts the drive belt. This motion pinches the drive belt between the spinning sheaves and causes it to rotate, which in turn rotates the driven clutch.

At lower RPM, the drive belt rotates low in the drive clutch sheaves. As engine RPM increases, centrifugal force causes the drive belt to be forced upward on drive clutch sheaves.

Driven Clutch Operation

Driven clutches primarily sense torque, opening and closing according to the forces applied to it from the drive belt and the transmission input shaft. If the torque resistance at the transmission input shaft is greater than the load from the drive belt, the drive belt is kept at the outer diameter of the driven clutch sheaves.

As engine RPM and horsepower increase, the load from the drive belt increases, resulting in the belt rotating up toward the outer diameter of the drive clutch sheaves and downward into the sheaves of the driven clutch. This action, which increases the driven clutch speed, is called upshifting.

Should the throttle setting remain the same and the vehicle is subjected to a heavier load, the drive belt rotates back up toward the outer diameter of the driven clutch and downward into the sheaves of the drive clutch. This action, which decreases the driven clutch speed, is called backshifting.

In situations where loads vary (such as uphill and downhill) and throttle settings are constant, the drive and driven clutches are continually shifting to maintain optimum engine RPM. At full throttle a perfectly matched PVT system should hold engine RPM at the peak of the power curve. This RPM should be maintained during clutch upshift and backshift. In this respect, the PVT system is similar to a power governor. Rather than vary throttle position, as a conventional governor does, the PVT system changes engine load requirements by either upshifting or backshifting.

PVT Break-In (Drive Belt / Clutches)

A proper break-in of the clutches and drive belt will ensure a longer life and better performance. Break in the clutches and drive belt by operating at slower speeds during the 10 hours as recommended (see Chapter 3 “Engine Break-In Period” for break-in example). Pull only light loads. Avoid aggressive acceleration and high speed operation during the break-in period.

Maintenance / Inspection

Under normal use the PVT system will provide years of trouble free operation. Periodic inspection and maintenance is required to keep the system operating at peak performance. The following list of items should be inspected and maintained to ensure maximum performance and service life of PVT components. Refer to the troubleshooting checklist at the end of this chapter for more information.

1. **Belt Inspection.**
2. **Drive and Driven Clutch Buttons and Bushings, Drive Clutch Shift Weights and Pins, Drive Clutch Spider Rollers and Roller Pins, Drive and Driven Clutch Springs.**
3. **Sheave Faces.** Clean and inspect for wear.
4. **PVT System Sealing.** Refer to the appropriate illustration(s) on the following pages. The PVT system is air cooled by fins on the drive clutch stationary sheave. The fins create a low pressure area in the crankcase casting, drawing air into the system through an intake duct. The opening for this intake duct is located at a high point on the vehicle (location varies by model). The intake duct draws fresh air through a vented cover. All connecting air ducts (as well as the inner and outer covers) must be properly sealed to ensure clean air is being used for cooling the PVT system and also to prevent water and other contaminants from entering the PVT area. This is especially critical on units subjected to frequent water forging.

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Overheating / Diagnosis

During routine maintenance, or whenever PVT system overheating is evident, it's important to check the inlet *and* outlet ducting for obstructions. Obstructions to air flow through the ducts will significantly increase PVT system operating temperatures. The vehicle should be operated in Low when plowing or pulling heavy loads, or if extended low speed operation is anticipated.

CLUTCH DRIVE BELT & COVER RELATED ISSUES: DIAGNOSIS	
Possible Causes	**Solutions / What to do**
Loading the vehicle into a truck or tall trailer when in high range.	Shift transmission to Low during loading of the vehicle to prevent belt burning.
Starting out going up a steep incline from a stopped position.	When starting out on an incline, use Low gear. Shift transmission to Low during loading of the vehicle to prevent belt burning.
Driving at low RPM or low ground speed (at approximately 3-7 MPH).	Drive at higher speed or use Low. The use of Low is highly recommended for cooler PVT operating temperatures and longer component life.
Insufficient engine warm-up when exposed to low ambient temperatures.	Warm engine at least 5 min., then with transmission in neutral, advance throttle to approx. 1/8 throttle in short bursts, 5 to 7 times. The belt will become more flexible and prevent belt burning.
Slow and easy clutch engagement.	Fast, effective use of the throttle for efficient engagement.
Towing/Pushing at low RPM or low ground speed.	Use Low only.
Plowing snow, dirt, etc./utility use.	Use Low only.
Stuck in mud or snow.	Shift the transmission to Low, carefully use fast, aggressive throttle application to engage clutch. **WARNING:** Excessive throttle may cause loss of control and vehicle overturn.
Climbing over large objects from a stopped position.	Shift the transmission to Low, carefully use fast, aggressive, brief throttle application to engage clutch. **WARNING:** Excessive throttle may cause loss of control and vehicle overturn.
Belt slippage from water or snow ingestion into the PVT system.	Shift the transmission to neutral. Using the throttle, vary the engine rpm from idle to full throttle. Repeat several times as required. During this procedure, the throttle should not be held at the full position for more than 10 seconds. Clutch seals should be inspected for damage if repeated leaking occurs.
Clutch malfunction.	Clutch component inspection should be performed by a Polaris MSD certified technician.
Poor engine performance.	Fouled spark plugs, foreign material in fuel tank, restricted fuel lines, or faulty fuel pump may cause symptoms similar to clutching malfunction.
GENERAL RANGE OPERATION GUIDELINES:	Low: Heavy pulling, basic operational speeds less than 7 MPH, riding through rough terrain (swamps, mountains, ect.), or low ground speeds.
	High: High ground speeds, or speeds above 7 MPH.

Operating in Low Gear

Low gear should be used when pulling heavy loads, riding through rough terrain, or when basic operational ground speeds are less than 7 MPH. Use High gear when basic operational ground speeds are more than 7 MPH.

IMPORTANT: Using High gear for heavy loads, hilly terrain, or in wet, muddy conditions will increase the chance of drive belt burning.

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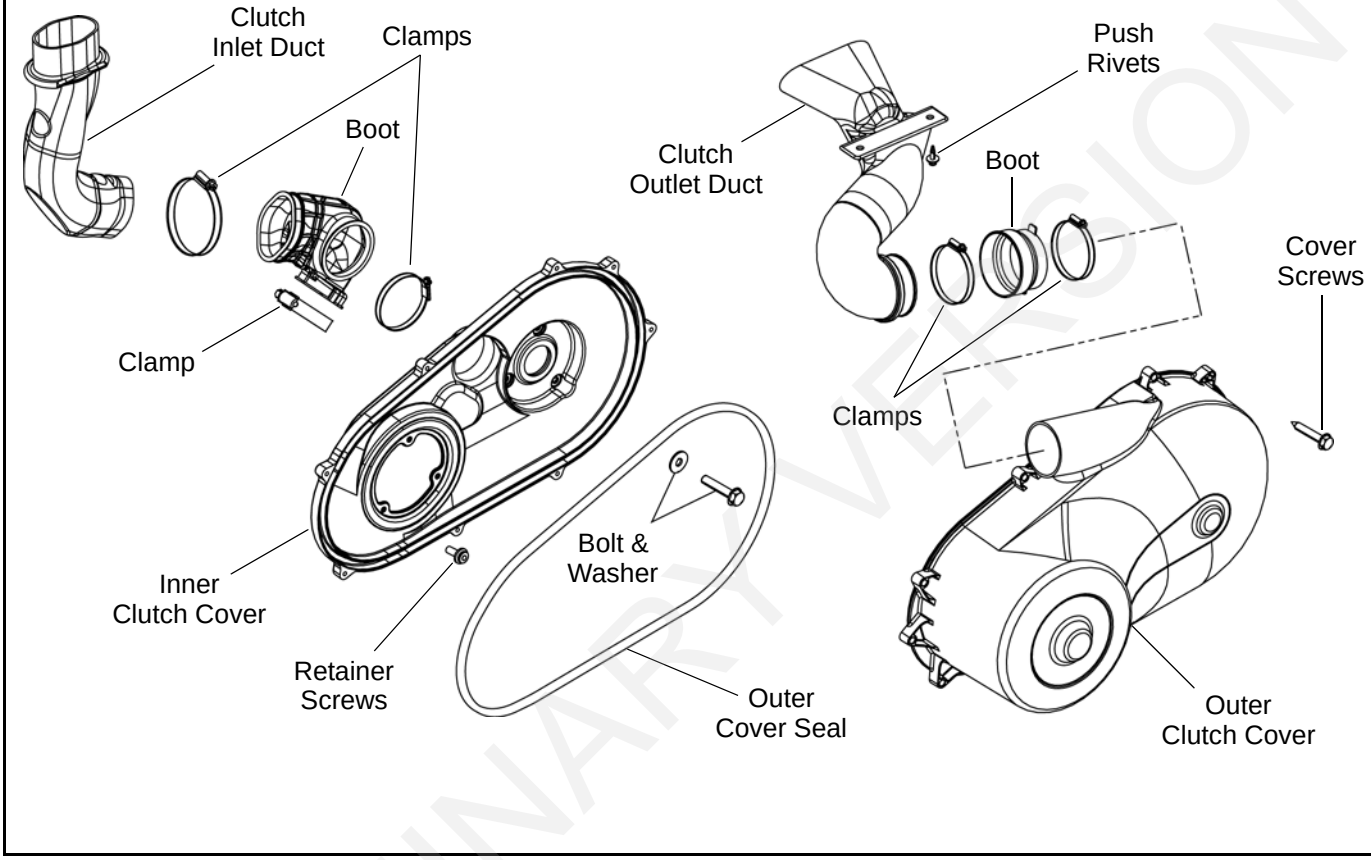
PVT SYSTEM SERVICE

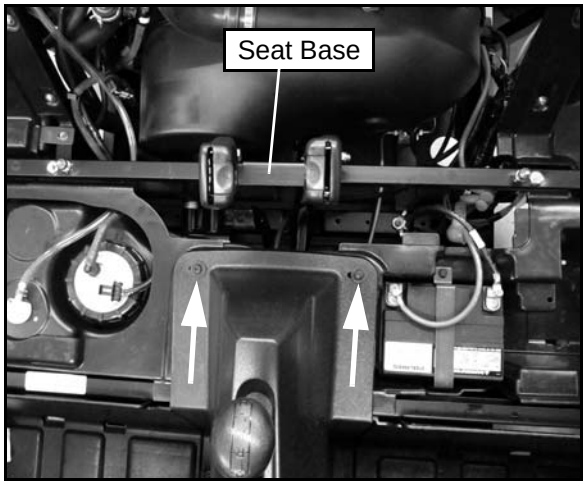
PVT Covers and Ducting Components



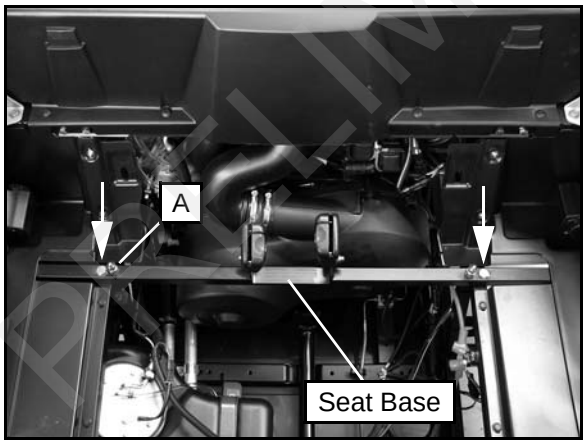
PVT Disassembly

Some fasteners and procedures will vary. Refer to the Electronic Parts Catalog for proper fastener placement.

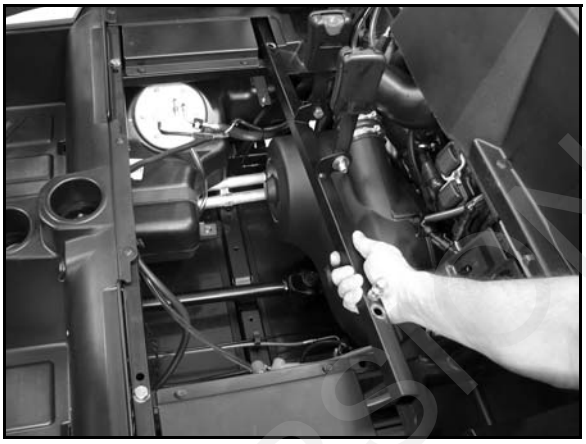
1. Remove the driver's seat (RZR / RZR S only).
2. Remove passenger seat(s) and rear service panel to gain access to the outer clutch cover (see Chapter 5).
3. Remove the (2) screws from the rear of the center console (RZR / RZR S only).



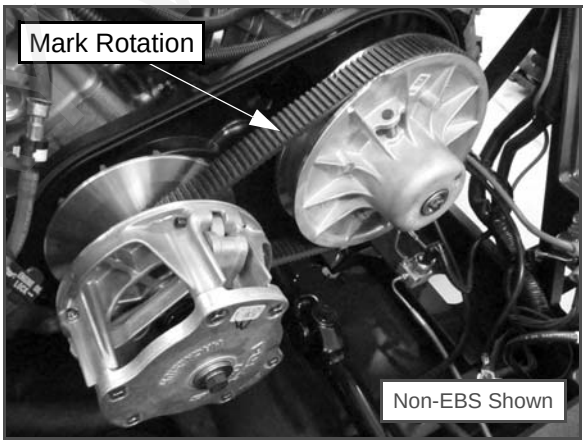
4. Remove the rear seat base assembly from the vehicle to allow outer clutch cover removal:
   - **RZR / RZR S:** Remove the (2) fasteners from the rear seat base as shown and remove it from the vehicle.
   - **RZR 4:** Remove the (2) fasteners and seat latch plunger (A).



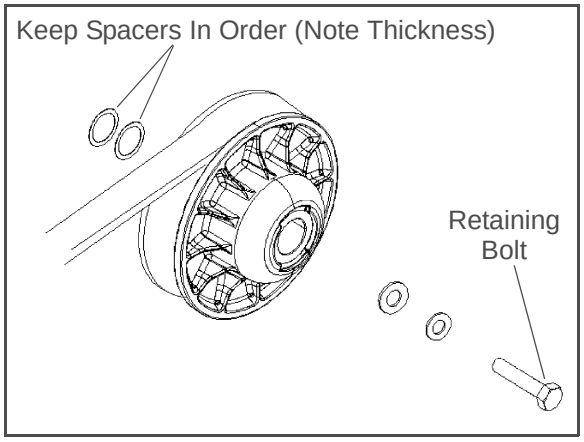
   - **RZR 4:** Slide rear seat base towards left side of the vehicle to free it from the plastic and remove it.



5. Loosen the hose clamp on the clutch outlet duct.
6. Remove outer clutch cover screws and clutch cover.
7. Mark the drive belt direction of rotation and remove drive belt (see "DRIVE BELT - Belt Removal").

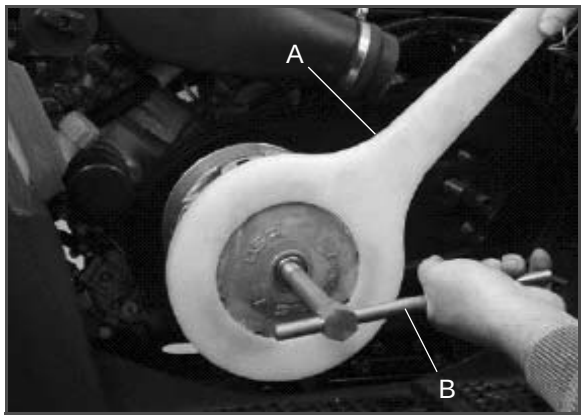


8. Remove driven clutch retaining bolt and driven clutch.
9. Remove driven clutch offset spacers from the transmission input shaft if present.



10. Install the Drive Clutch Holder (PN 9314177) (A).

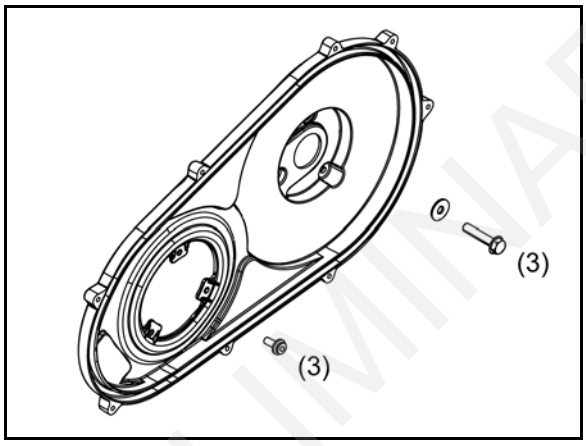
11. Remove drive clutch retaining bolt and remove drive clutch using the Drive Clutch Puller (PA-48595) (B).



Drive Clutch Puller: PA-48595

Drive Clutch Holder: 9314177

12. Remove the (3) screws and (3) bolts that retain the inner clutch cover to the engine and transmission.

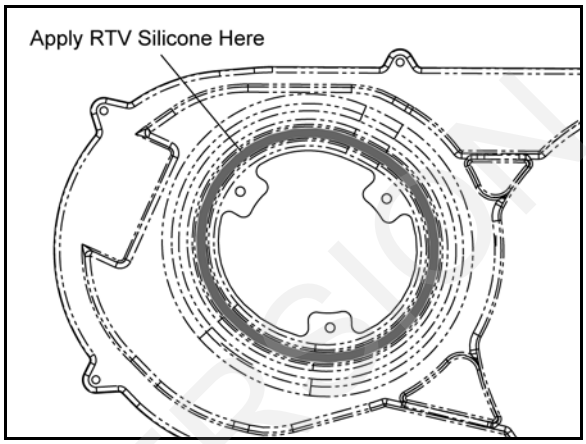


PVT Assembly

1. Inspect inner clutch cover. Replace if cracked or damaged.

2. Inspect the seal on the transmission input shaft. Replace if damaged.

3. Apply RTV silicone sealant to the back side of the inner clutch cover to ensure a water tight fit between the engine and inner clutch cover. Both surfaces must be clean to ensure adhesion of silicone sealant.



4. Install and properly align the inner clutch cover.

5. Install the bolts and washers that retain the cover to the transmission. Torque bolts to specification (see next page).

6. Install the screws that retain the cover to the engine. Torque screws to specification (see next page). Remove any excess silicone sealant.

7. Install clutch offset washers on the transmission input shaft.

8. Clean the splines inside the driven clutch and on the transmission input shaft.

9. Apply a light film of grease to the splines on the shaft.

10. Install the driven clutch, washer, lock washer, and retaining bolt. Torque to specification (see next page).

11. Clean end of taper on crankshaft and the taper bore inside drive clutch.

12. Install drive clutch and torque retaining bolt to specification.

13. Reinstall drive belt noting direction of belt rotation (see “DRIVE BELT - Belt Installation”). If a new belt is installed, install so numbers can be easily read.

14. Replace the outer clutch cover rubber gasket with the narrow side out.

15. Reinstall outer clutch cover and secure with screws. Torque screws to specification.

= T
Inner Cover Bolt (Rear): **12 ft-lbs (16.6 Nm)**
Outer Cover Bolt: **45-50 in-lbs (5-5.6 Nm)**
Driven Clutch Retaining Bolt: **17 ft-lbs (23.5 Nm)**
Drive Clutch Retaining Bolt: **40 ft-lbs (54 Nm)**

16. Install the clutch cover outlet duct and tighten the clamps.

17. Reinstall the rear seat base assembly and torque the mounting bolts to specification.

= T
Mounting Bolts: **40 ft-lbs (54 Nm)**

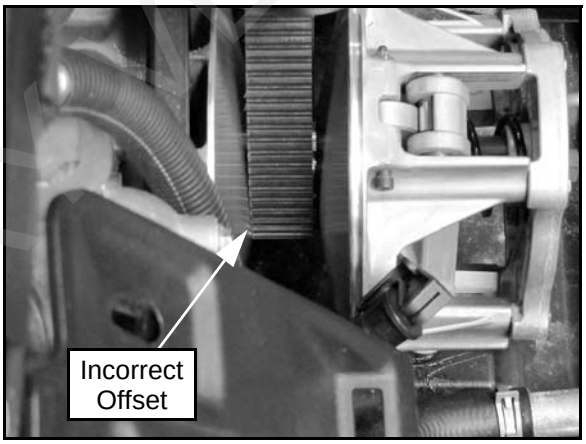
Clutch Offset Procedure

If the vehicle exhibits drive clutch drag or hard shifting while at idle speed, a clutch offset adjustment is required. Washers located behind the driven clutch on the transmission input shaft may need to be added or removed in order to obtain the proper offset. Refer to the “Clutch Offset Procedure” provided below.

1. Follow steps 1-6 of the “PVT Disassembly” procedure.

⚠ CAUTION
Do not start the engine with the outer clutch cover removed. Serious injury may result.

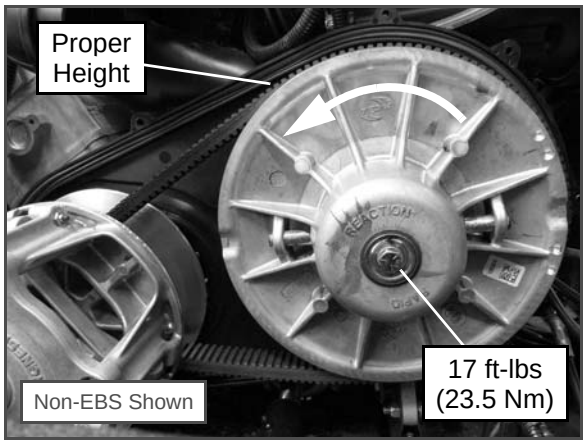
2. Inspect the drive clutch belt to sheave clearance. If the belt is contacting either sheave, remove the drive belt and driven clutch.



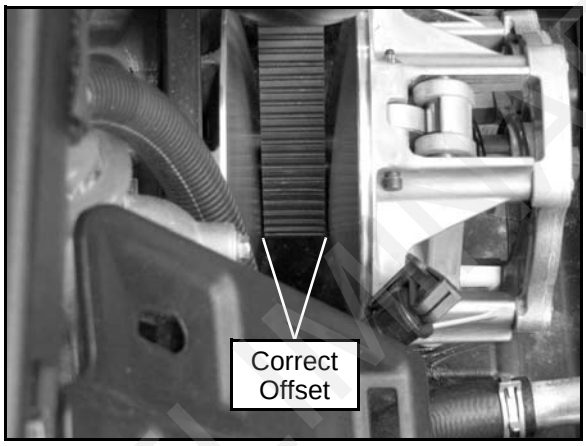
3. Add or remove offset washers behind the driven clutch accordingly to avoid belt contact with either drive clutch sheave.

- **.030" Offset Washer - PN 7556454**
- **.060" Offset Washer - PN 7556120**

4. Reinstall the driven clutch and drive belt. Torque the driven clutch retaining bolt to **17 ft-lbs (23.5 Nm)**. Be sure to rotate the driven clutch counterclockwise several times to ensure the belt is tight and riding at the proper height in the clutch.



5. Inspect the belt to sheave clearance again. If the belt rests evenly between the drive clutch stationary and moveable sheaves, the offset is correct and the vehicle can be reassembled. If the belt is still contacting either sheave, repeat steps 2 - 5 until the correct offset is achieved.



6. Inspect the outer clutch cover gasket. Replace if damaged.

7. Install the outer clutch cover and torque the cover screws to specification.

= T
Cover Screws: **45-50 in-lbs (5-5.6 Nm)**

8. Install the clutch cover outlet duct and tighten the clamps.

9. Sit in the driver's seat, apply the brake and start the engine. Place the gear selector in high range and test the vehicle for drive clutch drag or hard shifting while at idle speed. If shifting remains difficult, refer to the note below.

NOTE: If the vehicle or drive clutch is new (less than 0.2 hours), remain in the driver's seat with the gear selector in high range. Allow the engine to idle for five minutes to break in the drive clutch hub bearing.

CAUTION
Do not leave the vehicle unattended.

10. Reinstall the rear seat base assembly and torque the mounting bolts to specification.

= T
Mounting Bolts: **40 ft-lbs (54 Nm)**

11. Reinstall the rear service panel and seats.

DRIVE BELT (NON-EBS)

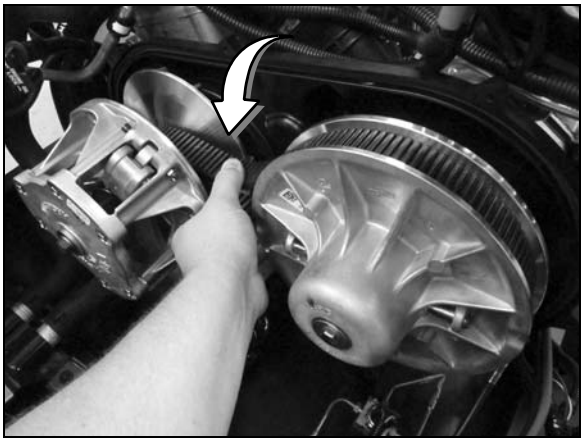
Belt Removal

1. Remove outer PVT cover as described in “PVT SYSTEM SERVICE - PVT Disassembly”.

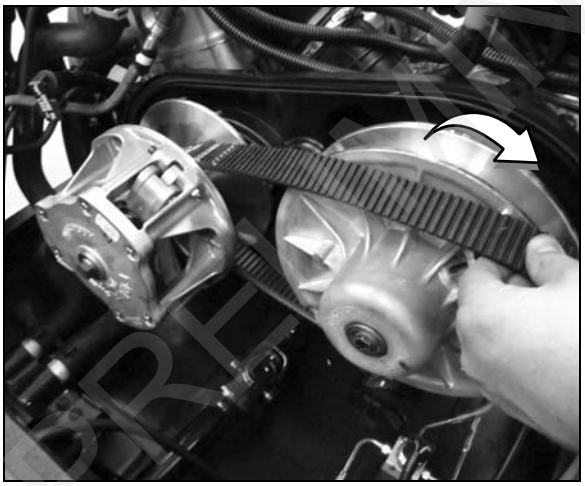
2. Mark the drive belt direction of rotation so that it can be installed in the same direction.

NOTE: Belt is normally positioned so that the part number can be easily read.

3. To remove drive belt, place the transmission in “Park” and push down on the belt firmly to open the clutch sheaves.



4. Then lift upward on the belt while pulling it out and down over the driven clutch outer sheave.



Belt Inspection

1. Inspect belt for hour glassing (extreme circular wear in at least one spot and on both sides of the belt). Hour glassing occurs when the drive train does not move and the drive clutch engages the belt.

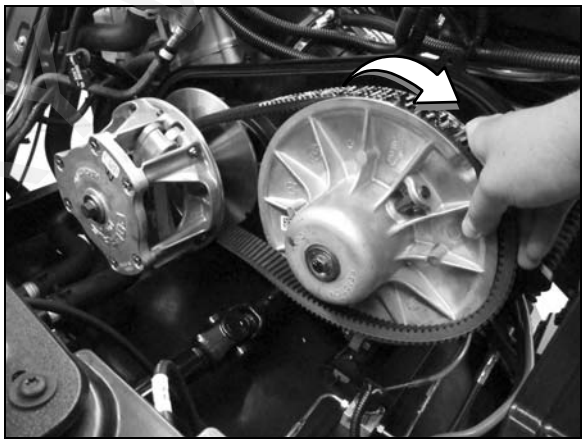
2. Inspect belt for loose cords, missing cogs, cracks, abrasions, thin spots, or excessive wear. Compare belt measurements with a new drive belt. Replace if necessary.

3. Belts with thin spots, burn marks, etc., should be replaced to eliminate noise, vibration, or erratic PVT operation. See the Troubleshooting Chart at the end of this chapter for possible causes.

Belt Installation

NOTE: Be sure to install belt in the same direction as it was removed.

1. Loop belt over drive clutch and over driven sheave.



2. While pushing down on top of belt, turn the back, or moveable driven sheave, clockwise.

3. The belt then should be able to be pushed down into and between the sheaves.

4. Continue rotating the driven clutch and belt clockwise until the belt is fully installed.

5. Install outer PVT cover as described in “PVT SYSTEM SERVICE - PVT Assembly”.

6. See “PVT Break-In (Drive Belt / Clutches)” on page 6.3.

DRIVE BELT (EBS)

Belt Removal

1. Remove outer PVT cover as described in “PVT SYSTEM SERVICE - PVT Disassembly”.

2. Mark the drive belt direction of rotation so that it can be installed in the same direction.

NOTE: Belt is normally positioned so that part numbers are easily read.

3. Insert the belt removal tool (PN 2877408) into the driven clutch as shown (tool included with vehicle’s tool kit).

NOTE: Make sure the tool is square with the moveable sheave surface of the driven clutch.

4. Rotate the tool towards the clutch to open the sheaves.

5. Walk the belt out of the driven clutch and drive clutch. Remove the belt from the vehicle.

Belt Inspection

1. Inspect belt for hour glassing (extreme circular wear in at least one spot and on both sides of the belt). Hour glassing occurs when the drive train does not move and the drive clutch engages the belt.

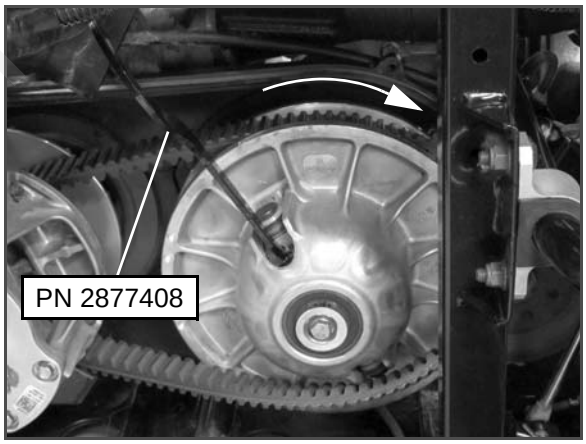
2. Inspect belt for loose cords, missing cogs, cracks, abrasions, thin spots, or excessive wear. Compare belt measurements with a new drive belt. Replace if necessary.

3. Belts with thin spots, burn marks, etc., should be replaced to eliminate noise, vibration, or erratic PVT operation. See the troubleshooting chart at the end of this chapter for possible causes.

Belt Installation

NOTE: Be sure to install belt in the same direction as it was removed.

1. With the belt removal tool installed (PN 2877408), loop the belt over the drive clutch and over the driven clutch.



2. Rotate the driven clutch and walk the belt into the clutch.

3. Remove the belt removal tool from driven clutch

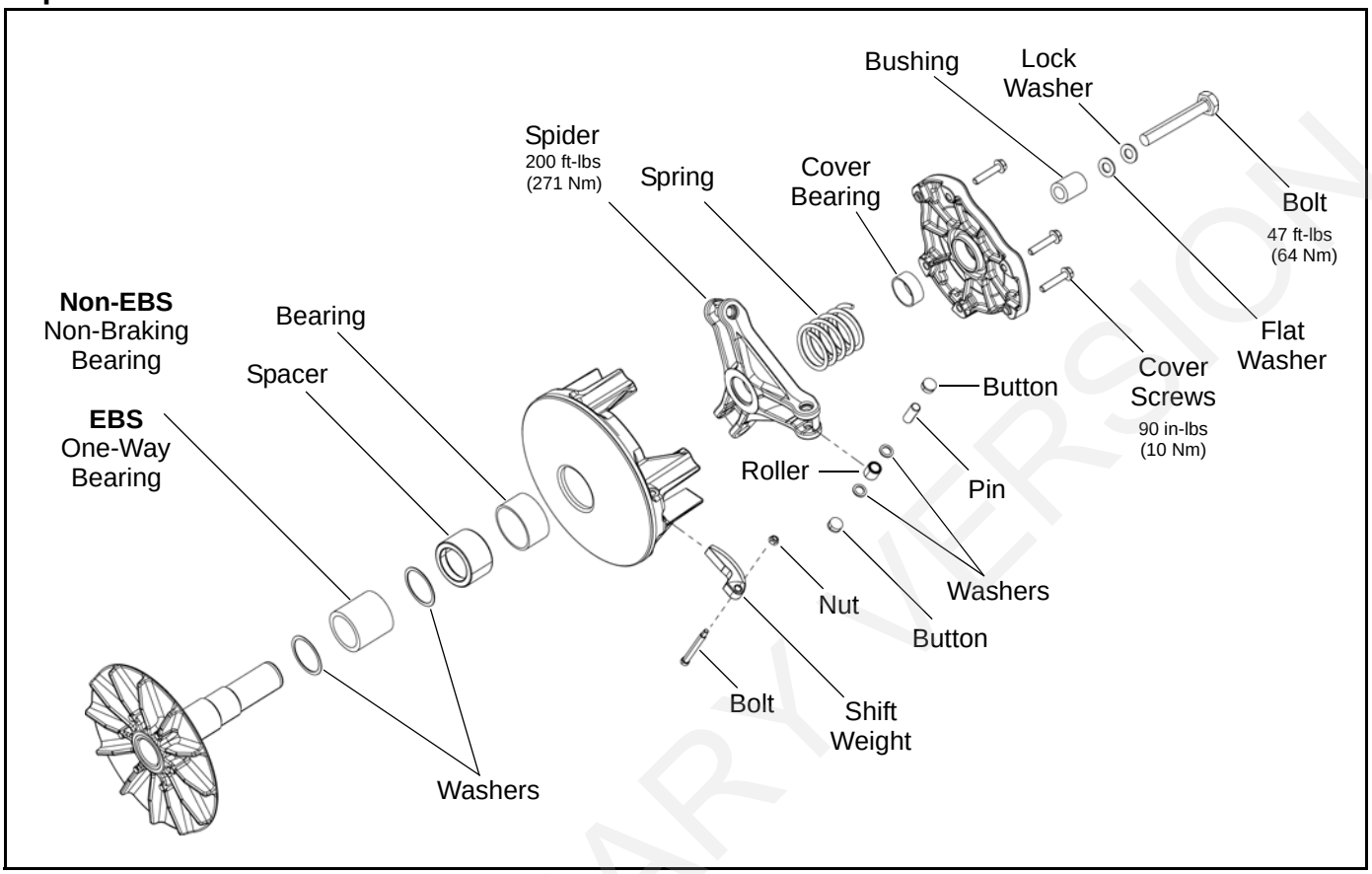
4. Rotate / spin the driven clutch and belt approximately 5-7 times to properly seat the belt in the driven clutch.

5. Install outer PVT cover as described in “PVT SYSTEM SERVICE - PVT Assembly”.

6. See “PVT Break-In (Drive Belt / Clutches)” on page 6.3.

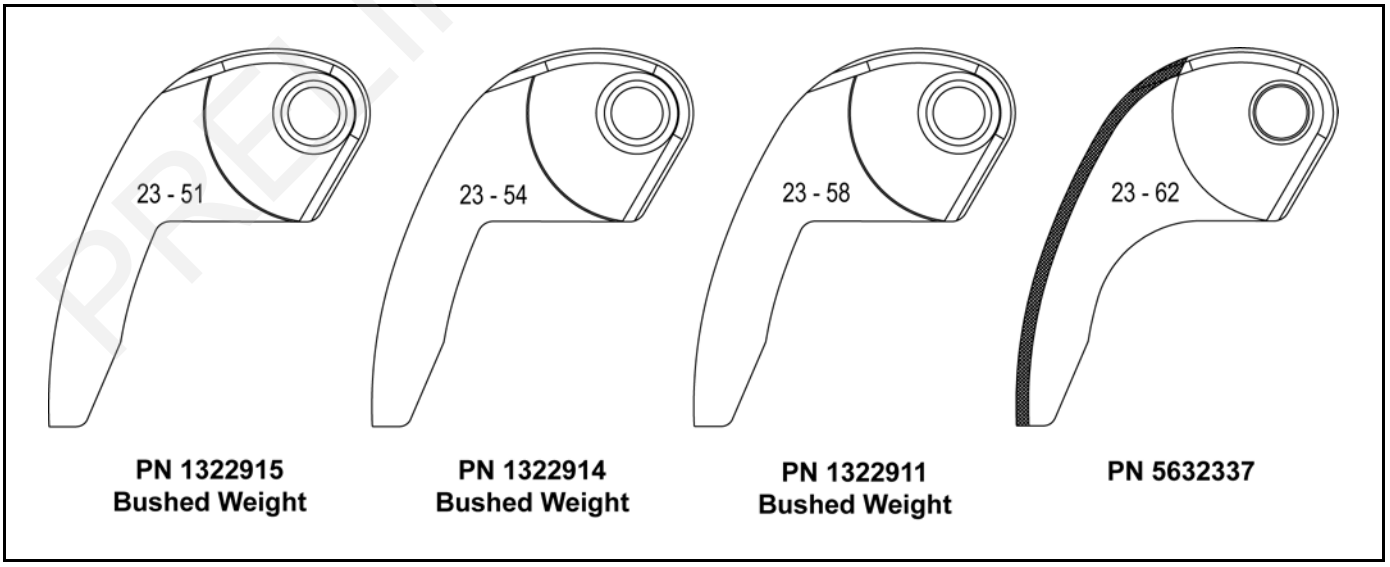
DRIVE CLUTCH SERVICE

Exploded View



Shift Weights

Shown below are the shift weights which have been designed for the PVT system. These shift weights have many factors designed into them for controlling engagement RPM and shifting patterns. Shift weights should not be changed or altered without first having a thorough understanding of their positioning and the effects they may have on belt to sheave clearance, clutch balance and shifting pattern.



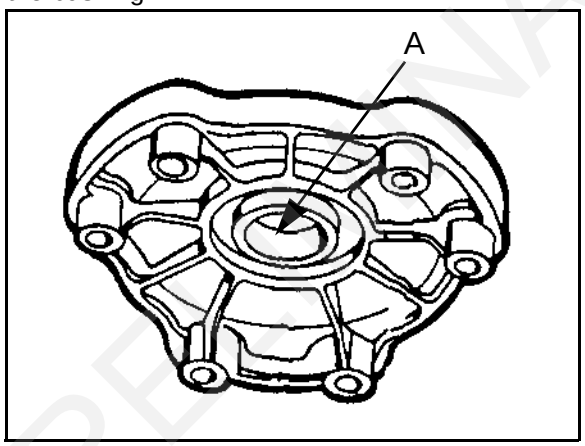
Clutch Disassembly

1. Using a permanent marker, mark the cover, spider, and moveable and stationary sheaves for reference, as the cast in X's may not have been in alignment before disassembly.

2. Mark the stationary sheave and clutch shaft to verify the shaft has not turned in the sheave after tightening the spider during clutch assembly.

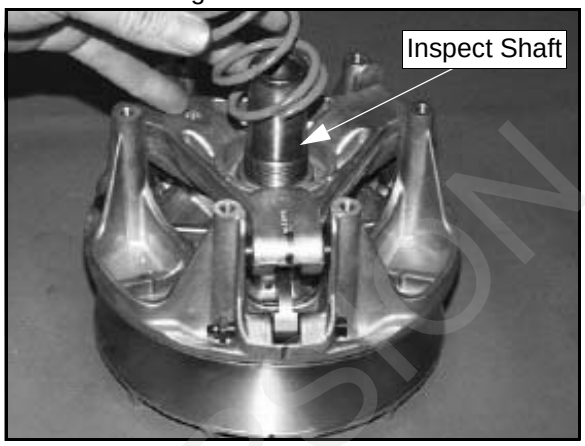
3. Remove cover bolts evenly in a cross pattern and remove cover plate.

4. Inspect cover bushing (A). The outer cover bushing is manufactured with a Teflon™ coating. Wear is determined by the amount of Teflon™ remaining on the bushing.



Cover Bushing Inspection: Replace the cover bushing if more brass than Teflon™ is visible on the bushing. Refer to bushing replacement in this chapter.

5. Inspect area on shaft where bushing rides for wear, galling, nicks, or scratches. Replace clutch assembly if worn or damaged.



6. Remove and inspect the clutch spring. Refer to “Drive Clutch Spring Inspection”.

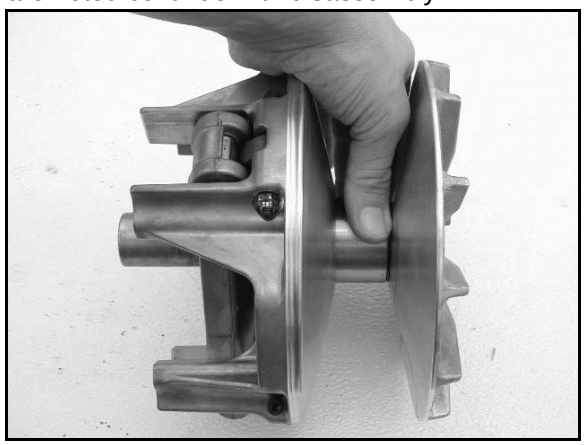
Bearing Inspection

1. Rotate the clutch bearing in both clockwise and counter-clockwise directions.

   - **Non-EBS:** The non-braking bearing should rotate both directions on the shaft with only a slight amount of drag.

   - **EBS:** The one-way bearing should rotate clockwise (when viewed from cover plate side) with only a slight amount of drag. When rotated counter-clockwise the one-way bearing should lock to the shaft without slipping.

2. Verify there is no binding or rough spots. If problems are noted continue with disassembly.



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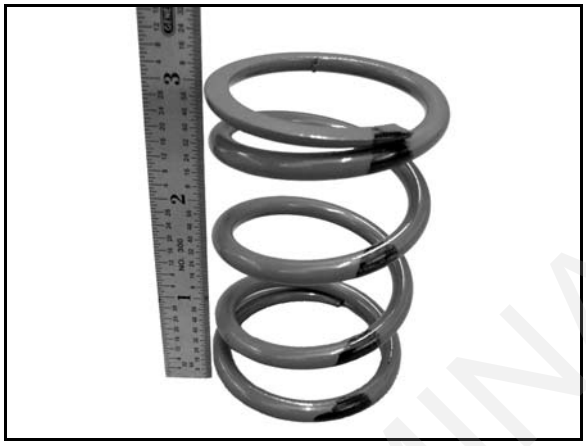
Drive Clutch Spring Inspection

> **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.

The drive clutch spring is one of the most critical components of the PVT system. It is also one of the easiest to service. Due to the severe relaxation the spring is subject to during operation, it should always be inspected for tolerance limits during any clutch operation diagnosis or repair.

With the spring resting on a flat surface, measure its free length from the outer coil surfaces. Also check to see that spring coils are parallel to one another. Distortion of the spring indicates stress fatigue, requiring replacement.

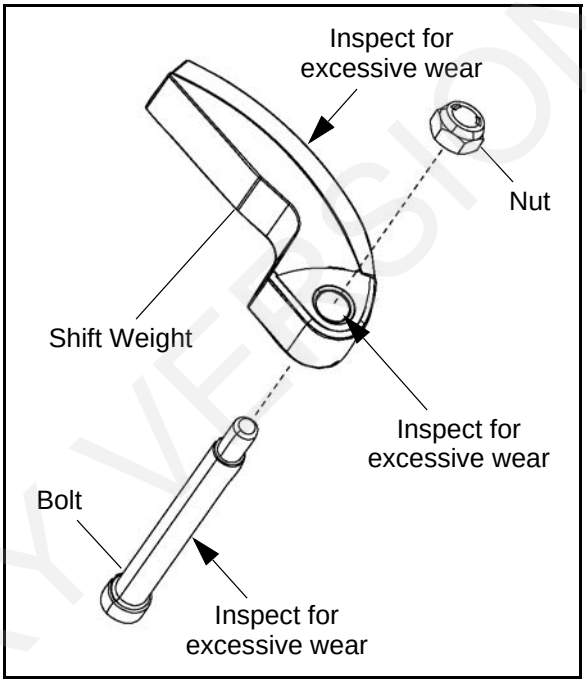


Drive Clutch Spring Specifications

Part Number	7043789
Color	Neon Green
Free Length	2.72 in. (6.90 cm)

Shift Weight Inspection

1. Remove shift weight bolts and weights. Inspect the contact surface of the weight. The surface should be smooth and free of dents or gall marks. Inspect the weight pivot bore and bolts for wear or galling. If weights or bolts are worn or broken, replace in sets of three with new bolts and nuts.



> **WARNING**
>
> The clutch assembly is a precisely balanced unit. Never replace parts with used parts from another clutch assembly!

NOTE: A damaged shift weight is usually caused by a damaged or stuck roller in the spider assembly. See “Roller, Pin and Thrust Washer Inspection”.

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Button To Tower Clearance Inspection

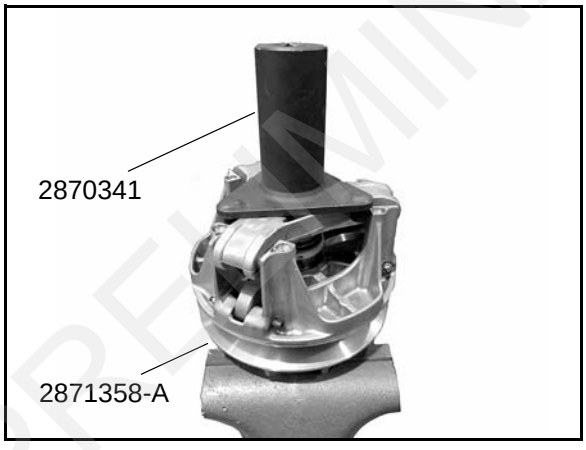
1. Inspect for any clearance between spider button to tower. If clearance exceeds specification, replace all buttons and inspect surface of towers. See “Spider Removal” procedure.

Button to Tower Clearance:
000-.005”

2. Inspect sheave surfaces. Replace the entire clutch if worn, damaged or cracked.

Spider Removal

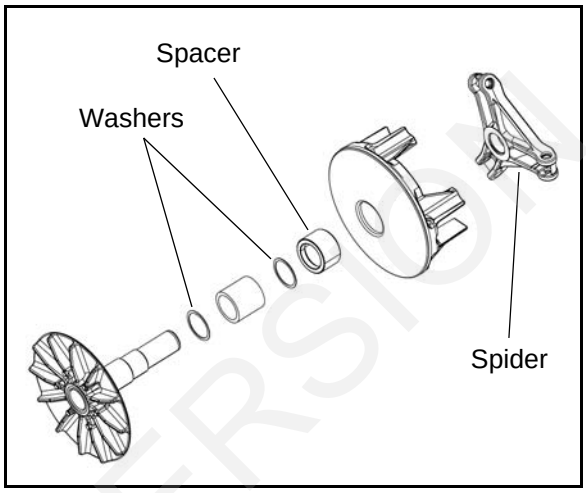
1. Install clutch in holding fixture (PN 2871358-A) and loosen the spider (counterclockwise) using Clutch Spider Removal Tool (PN 2870341).



Clutch Holding Fixture: PN 2871358-A

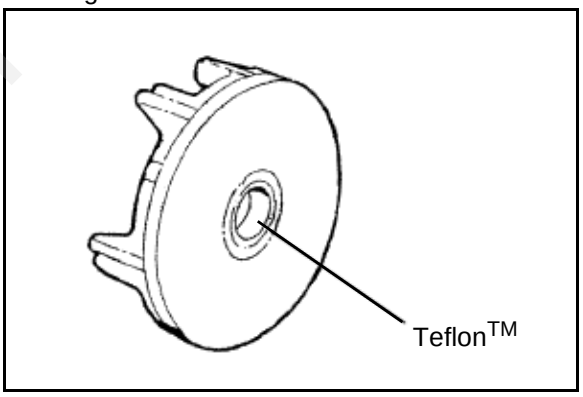
Spider Removal Tool: PN 2870341

NOTE: To maintain proper clutch balance and belt-to-sheave clearance, be sure to reinstall the original quantity and thickness of washers/spacers beneath the spider during assembly.



Moveable Sheave Bushing Inspection

2. Inspect the Teflon™ coating on the moveable sheave bushing.



Moveable Sheave Bushing Inspection:

Replace the cover bushing if more brass than Teflon™ is visible on the bushing. Refer to bushing replacement in this chapter.

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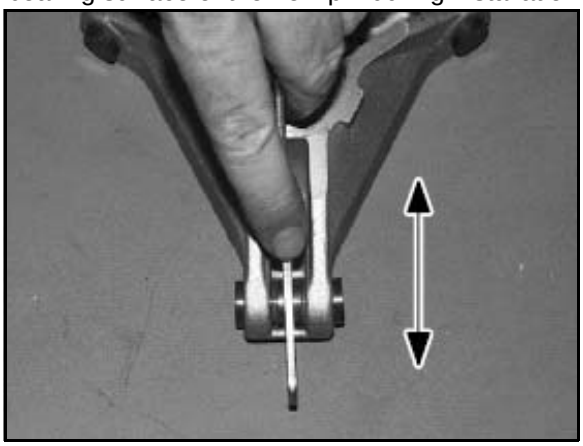
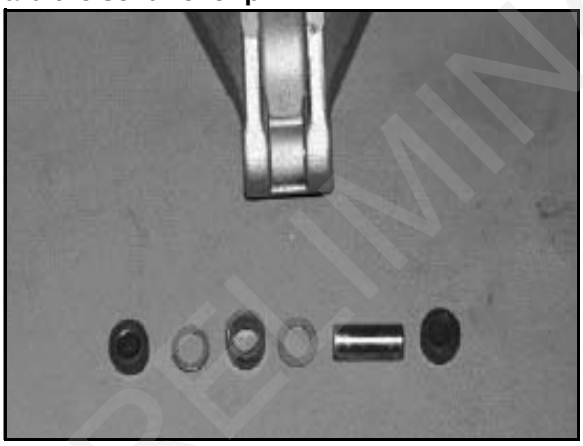
Roller, Pin, and Thrust Washer Inspection

1. Inspect all rollers, bushings and roller pins by pulling a flat metal rod across the roller. Turn roller with your finger. If you notice resistance, galling, or flat spots, replace rollers, pins and thrust washers in sets of three. Also inspect to see if roller and bushing are separating. Bushing must fit tightly in roller. Use the Roller Pin Tool (PN 2870910) to replace rollers and pins. Take care not to damage roller bushing or bearing surface of the new pin during installation.



2. Rubber backed buttons can be used in all *RANGER* clutches if the hollow roller pin is changed to the solid roller pin.

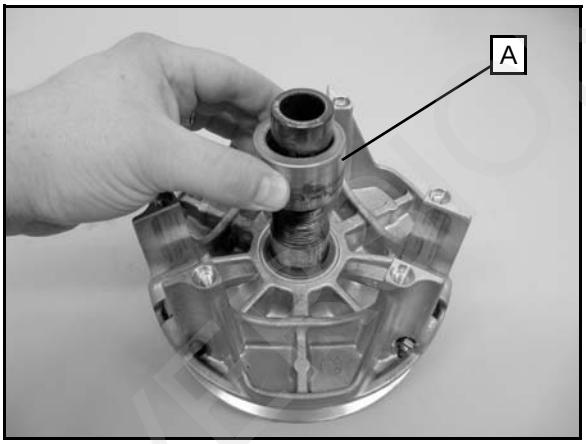
NOTE: The rubber side of the button is positioned toward the solid roller pin.



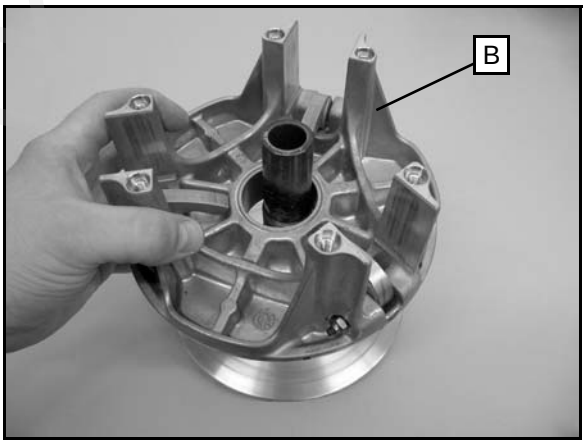
Clutch Inspection

NOTE: Remove cover, spring and spider following instructions for drive clutch disassembly, then proceed as follows:

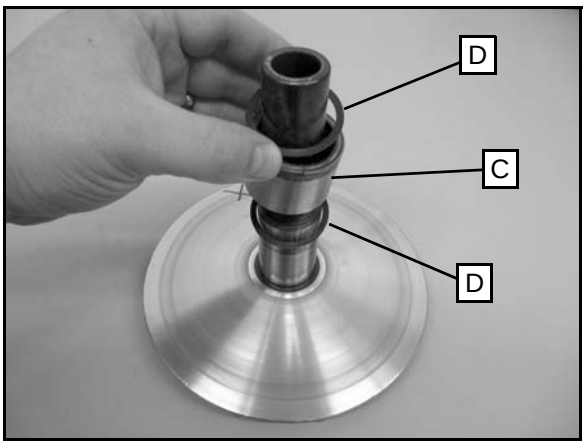
1. Remove the moveable sheave spacer (A). Inspect for damage or wear.



2. Remove the moveable clutch sheave (B). Inspect for damage or wear.



3. Lift bearing (C) and PTFE washers (D) off the shaft. Replace as an assembly if worn, damaged, or if problems were noted.



4. Inspect surface of shaft for pitting, grooves, or damage. Measure the outside diameter and compare to specifications. Replace the drive clutch assembly if shaft is worn or damaged.

= In. / mm.

Shaft Diameter:
Standard: 1.3745” - 1.375” (34.91 - 34.93 mm)
Service Limit: 1.3730” (34.87 mm)

5. Visually inspect PTFE thrust washers for damage. Measure the thickness and compare to specification. Replace if worn or damaged.

= In. / mm.

PTFE Washer Thickness
Standard: .030” (.76 mm)
Service Limit: .025” (.64 mm)

Moveable Sheave Bushing Inspection

Inspect the Teflon™ coating (arrow) on the moveable sheave bushing. Inspect both sheaves for signs of wear, grooving or cracking. De-glaze sheave surfaces with a 3M™ Scotch-Brite Pad if needed.

Moveable Sheave Bushing Inspection: Replace the cover bushing if more brass than Teflon™ is visible on the bushing. Refer to bushing replacement in this chapter.

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Bushing Service

IMPORTANT: Special Tools Required

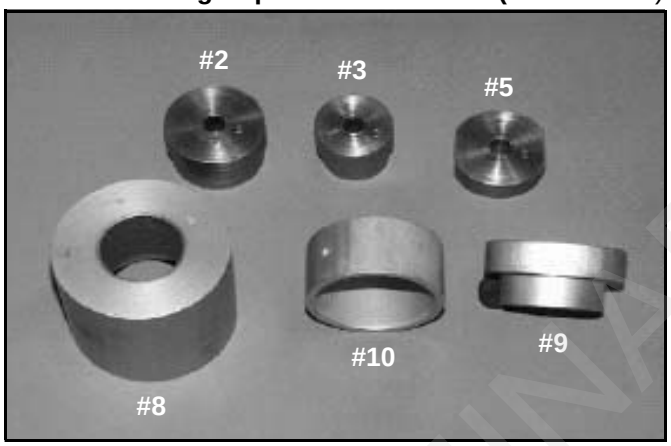
EBS Clutch Bushing Tool Kit - 2201379

Item	Qty.	Part #	Tool Description
A, B	1	5132027	EBS Puller Tool
C	1	5132501	EBS Puller Nut
D	1	5132029	EBS Main Adapter
E	1	5132028	EBS Bushing Removal
--	1	9915111	Instructions

Additional Special Tools

Qty.	Part #	Tool Description
1	2871226	Clutch Bushing Replacement Tool
1	2870386	Piston Pin Puller

***Clutch Bushing Replacement Tool Kit (PN 2871226)**



Item	Qty.	Part #	Tool Description
#2	1	5020628	P-90 Drive/Driven Clutch Bushing Install Tool
#3	1	5020629	Drive Clutch Cover Bushing Removal / Installation Tool (all clutches)
#5	1	5020631	P-90 Driven Clutch Cover Bushing Removal Tool
#8	1	5020632	Main Puller Adapter
#9	1	5010279	Adapter Reducer
#10	1	5020633	Number Two Puller Adapter

NOTE: Bushings are installed at the factory using Loctite™ 609. In order to remove bushings it will be necessary to apply heat evenly to the area around each bushing. Clean all residual Loctite™ from bushing bore prior to installing new bushing.

⚠ CAUTION

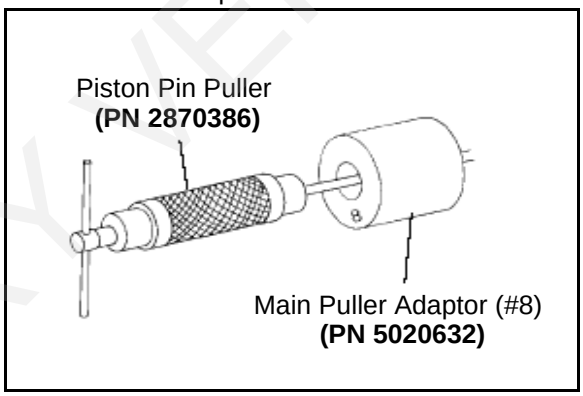
Clutch components will be hot! In order to avoid serious burns, wear insulated gloves during the removal process.

Moveable Sheave - Bushing Removal

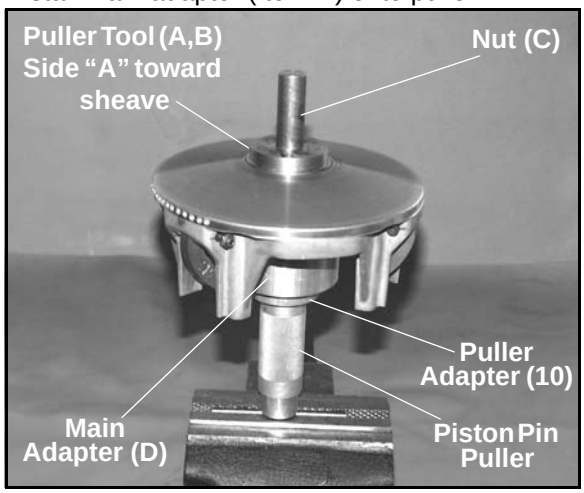
1. Remove clutch as outlined previously in this chapter.
2. Install handle end of the Piston Pin Puller **(PN 2870386)** securely into bench vise and lightly grease puller threads.

Piston Pin Puller: PN 2870386

3. Remove nut from puller rod and set aside.



4. Install puller adapter (Item 10 from kit **PN 2871226**).
5. Install main adapter (Item D) onto puller.



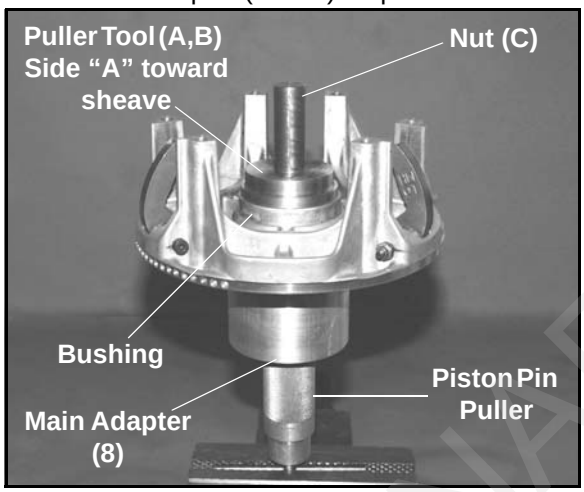
6. With towers pointing toward the vise, slide sheave onto puller rod.
7. Install removal tool (Item A, B) into center of sheave with "A side" toward sheave.

NOTE: Use Bushing Tool PA-47336.

8. Install nut (C) onto end of puller rod and hand tighten. Turn puller barrel to increase tension on sheave if needed. Using a hand held propane torch, apply heat around outside of bushing until tiny smoke tailings appear.
9. Turn sheave counterclockwise on puller rod until it comes free. Lift sheave off puller.
10. Remove nut from puller rod and set aside.
11. Pull bushing removal tool and adapter from puller rod. Remove bushing from tool and discard.

Drive Clutch Bushing Installation

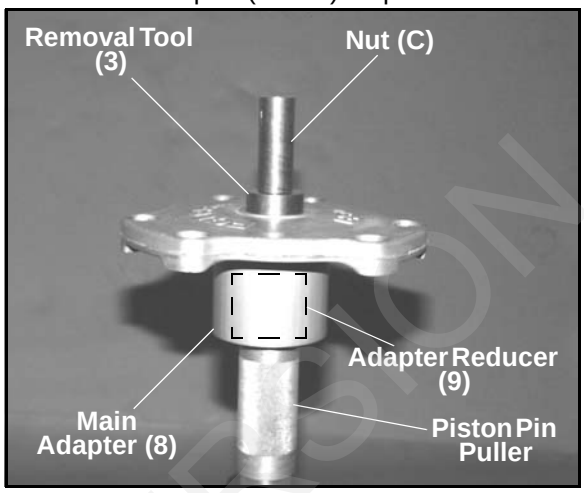
1. Place main adapter (Item 8) on puller.



2. Apply Loctite™ 609 evenly to bushing bore inside moveable sheave.
3. Set bushing in place on sheave.
4. Insert installation puller tool (Item A/B) with "A" side down, into center of bushing. **NOTE:** 800 EFI Clutch - Use **Bushing Tool PA-47336**.
5. With towers pointing upward, slide sheave, bushing and tool onto puller rod.
6. Install nut on puller rod and hand tighten. Turn barrel to apply additional tension if needed.
7. Turn sheave counterclockwise, making sure bushing is drawn straight into bore. Continue until bushing is seated.
8. Remove nut from puller rod and set aside.
9. Remove sheave from puller.
10. Remove installation tool.

Cover Bushing Removal

1. Install main adapter (Item 8) on puller.



2. Install adapter reducer (Item 9).
3. From outside of clutch cover, insert removal tool (Item 3) into cover bushing.
4. With inside of cover toward vise, slide cover onto puller.
5. Install nut onto puller rod and hand tighten. Turn puller barrel to increase tension as needed.
6. Turn clutch cover counterclockwise on puller rod until bushing is removed and cover comes free.
7. Remove nut from puller rod and set aside.
8. Remove bushing and bushing removal tool from puller. Discard bushing.

Cover Bushing Installation

1. Apply Loctite™ 609 evenly to bushing bore in cover.
2. Working from inside of cover, insert new bushing and bushing installation tool into center of clutch cover.
3. With main adapter on puller, insert cover onto puller rod, placing outside of cover toward vise.
4. Install nut on rod and hand tighten. Turn puller barrel to apply more tension if needed.
5. Turn clutch cover counterclockwise on puller rod until bushing is seated.
6. Remove nut from puller rod. Take installation tool and clutch cover off rod.

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Clutch Assembly

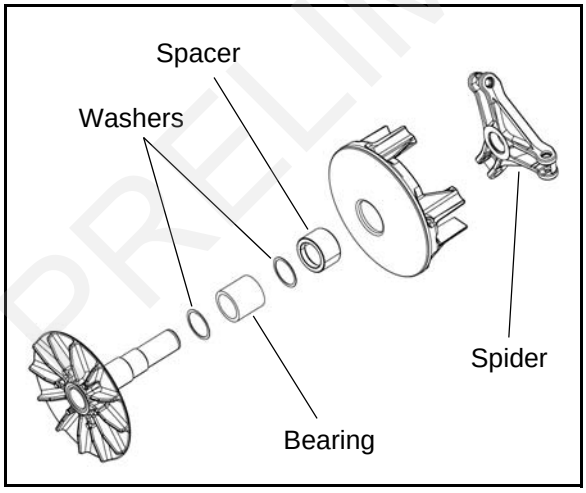
NOTE: The Teflon™ bushings are self-lubricating.

> **CAUTION**
>
> **Do not apply oil or grease to the bushings.**

Reassemble the drive clutch in the following sequence. Be sure the "X", or the marks that were made earlier are aligned during each phase of assembly.

1. Install the PTFE washers and bearing over the clutch shaft. There should be one PTFE washer on each side of the bearing.
2. Install the moveable sheave and spacer onto the clutch shaft.

NOTE: To maintain proper clutch balance and belt-to-sheave clearance, be sure to reinstall the original quantity and thickness of washers/spacers beneath the spider during assembly.



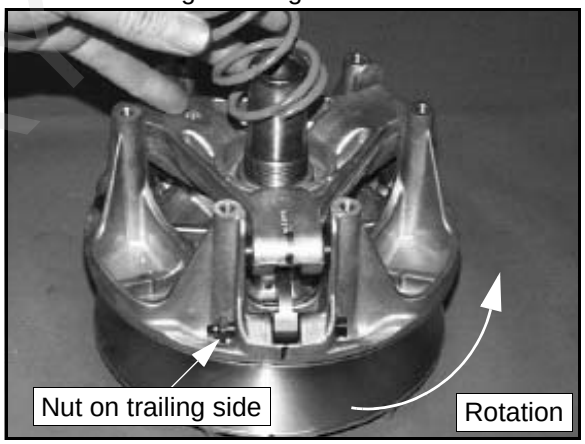
3. Compress spider buttons for each tower and install spider, making sure that "X" or the marks that were made earlier on the spider, aligns with "X" or the marks that were made earlier on the moveable sheave.
4. Torque spider to specification using the holding fixture and spider tool. Torque with smooth motion to avoid damage to the stationary sheave.

= T
Spider: **200 ft-lbs (271 Nm)**

5. After the spider has been torqued, remove the clutch assembly from the holding fixture and inspect the shaft and sheave alignment marks made during disassembly.

IMPORTANT: If the marks are no longer in alignment, the clutch will not be in balance and the drive clutch assembly must be replaced.

6. Install shift weights using new lock nuts on the bolts.

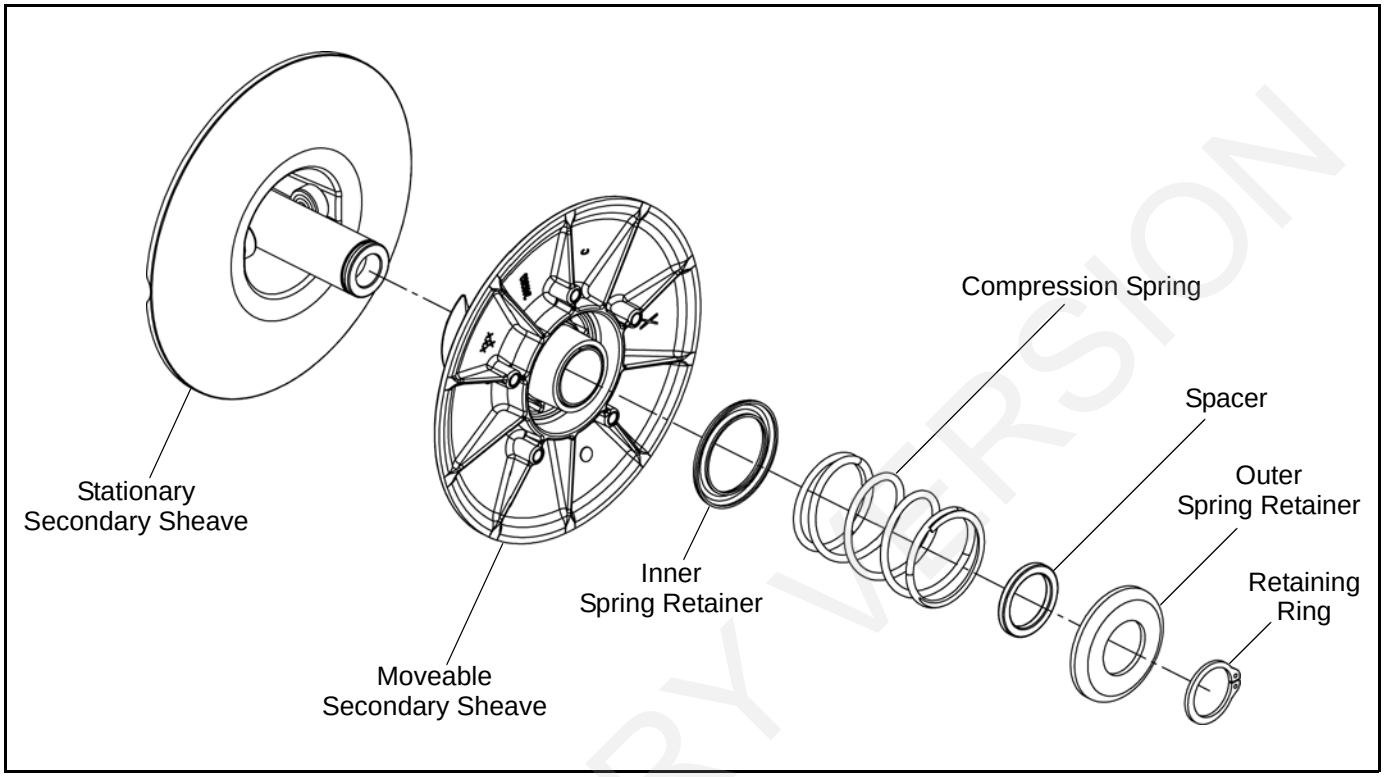


7. Reinstall clutch spring.
8. Reinstall cover, making sure that "X" or the marks that were made earlier the on spider, aligns with "X" or the marks that were made earlier on the cover.
9. Torque cover bolts evenly to specification.

= T
Cover Screw: **90 in-lbs (10.4 Nm)**

DRIVEN CLUTCH SERVICE (NON-EBS)

Exploded View

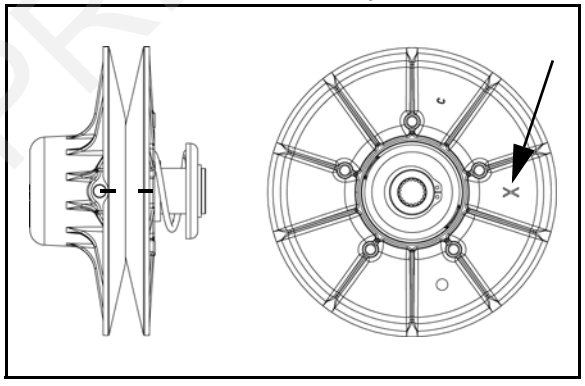


Clutch Disassembly / Inspection

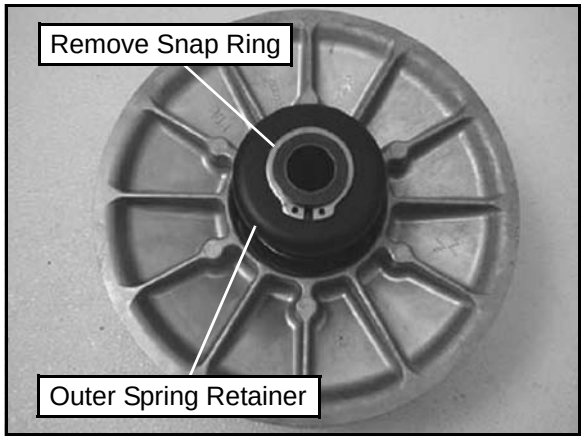
⚠ CAUTION

Wear eye protection when removing snap ring to prevent serious personal injury.
Use caution when removing, the snap ring pressure is loaded by the compression spring.

1. Remove driven clutch from transmission input shaft.
2. Mark the position of the clutch sheaves before disassembly or use the X's on the sheaves for reference. This aids in reassembly and maintains clutch balance after reassembly.

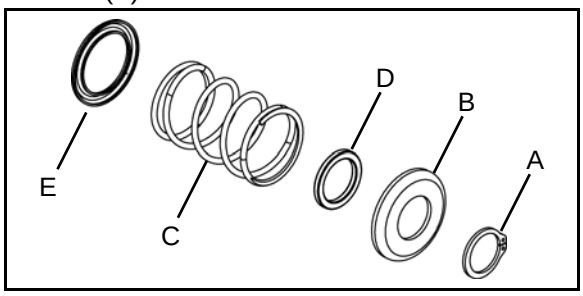


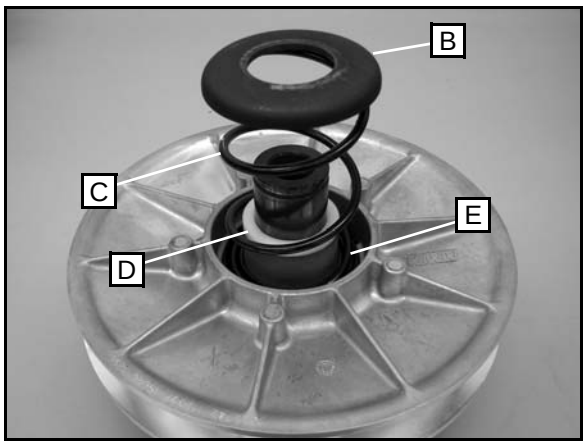
3. Place the driven clutch into the Universal Clutch Compressor **PU-50518.** Apply and hold downward pressure on the outer spring retainer. Carefully remove the snap ring. Remember the outer spring retainer contains strong spring pressure.



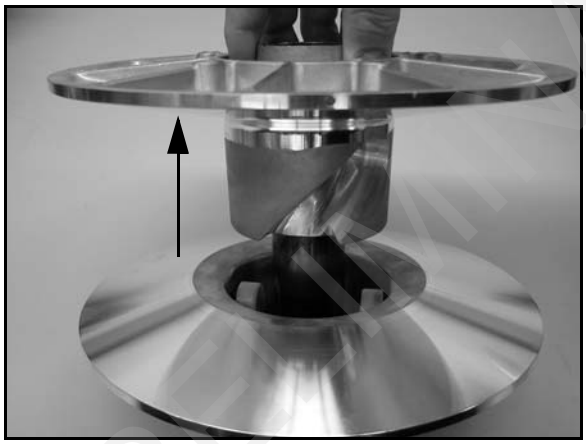
NOTE: Spring is compression only and has no torsional wind.

4. With the snap ring (A) removed and spring pressure relieved, remove the outer spring retainer (B), compression spring (C), spacer (D), and inner spring retainer (E).





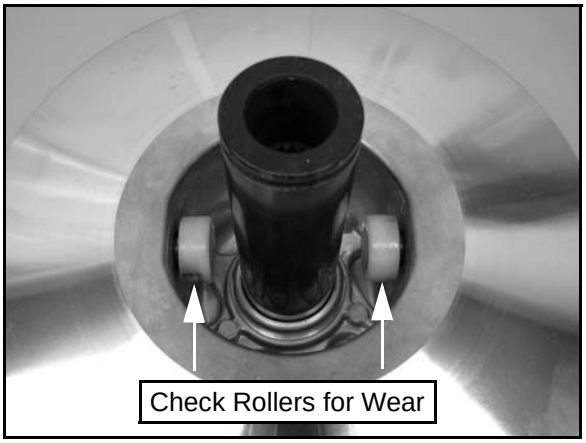
5. Separate the two clutch sheaves.



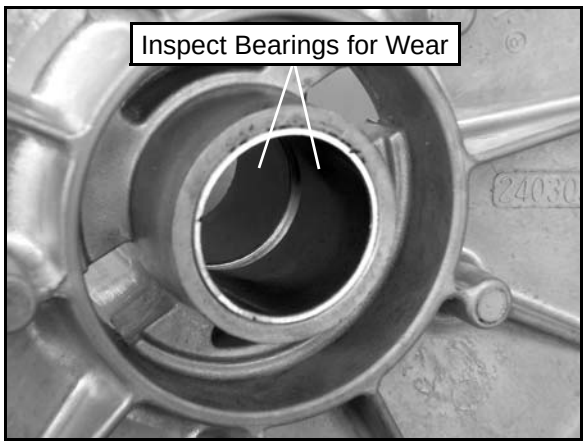
6. Inspect the helix on the moveable sheave.

7. Inspect the inner spring retainer for wear and replace as needed.

8. Check the rollers in the stationary sheave for wear. If rollers are worn, a new driven clutch assembly may be needed.



9. Inspect the bearings inside the moveable sheave.



Moveable Sheave Bearing Inspection:
Replace the clutch assembly if more brass than Teflon™ is visible on the bearing.

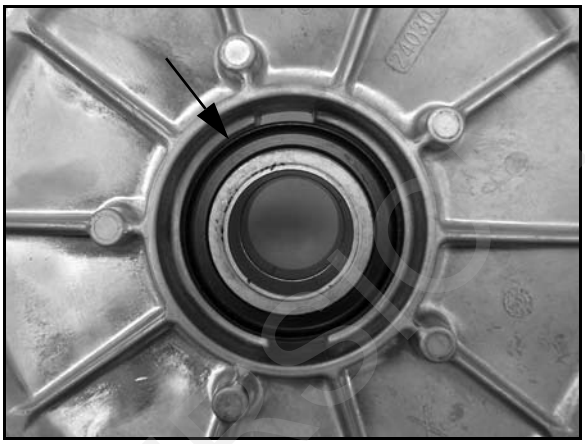
10. Inspect driven clutch sheave faces for wear or damage.

11. Clean and inspect splines on helix and transmission input shaft.

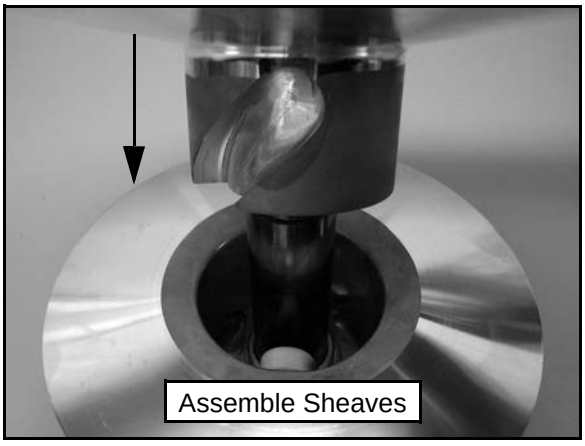
12. Lube splines with a light film of grease. **Do not lubricate the bearings!**

Clutch Assembly

1. Install the inner spring retainer if removed. **Do not apply oil or grease to the bearings.**



2. Align the “X” marks on each of the sheaves during reassembly.



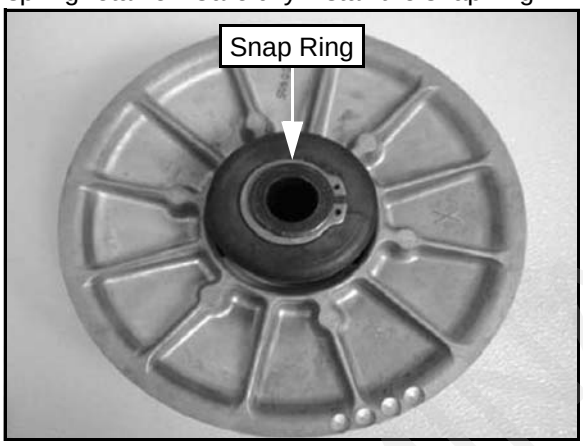
3. Install the spring into the inner retainer.

4. Install the spacer over the shaft.

5. Install the outer retainer on top of the spring.

6. Place the driven clutch into the Universal Clutch Compressor **PU-50518.**

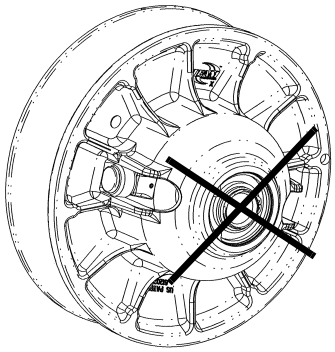
7. Apply and hold downward pressure on the outer spring retainer. Carefully install the snap ring.



DRIVEN CLUTCH SERVICE (EBS)

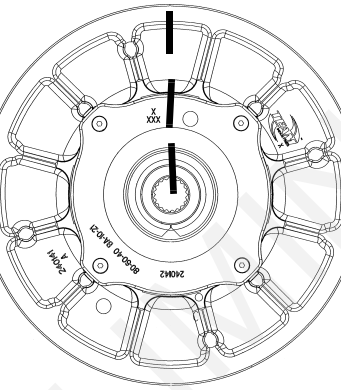
Clutch Disassembly

1. Remove driven clutch from the transmission input shaft. Do not attempt disassembly of the driven clutch from the outside snap ring. The driven clutch must be disassembled from the helix side.

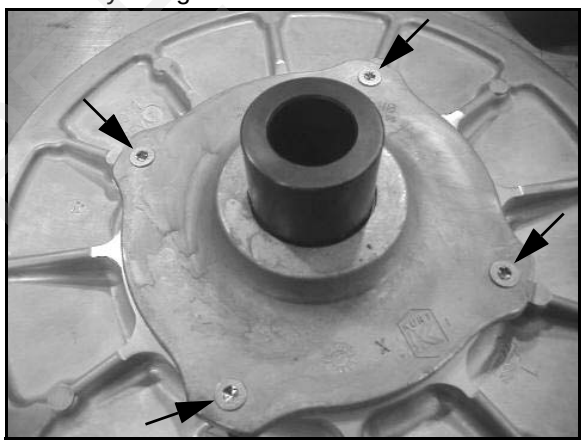


Do not disassemble from this side

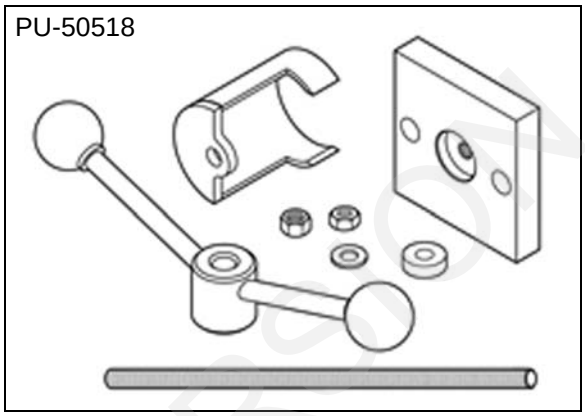
2. It is important to mark the position of the shaft, cam cover and sheave before disassembly or use the X's on the components for reference. This will aid in reassembly and helps to maintain clutch balance after reassembly.



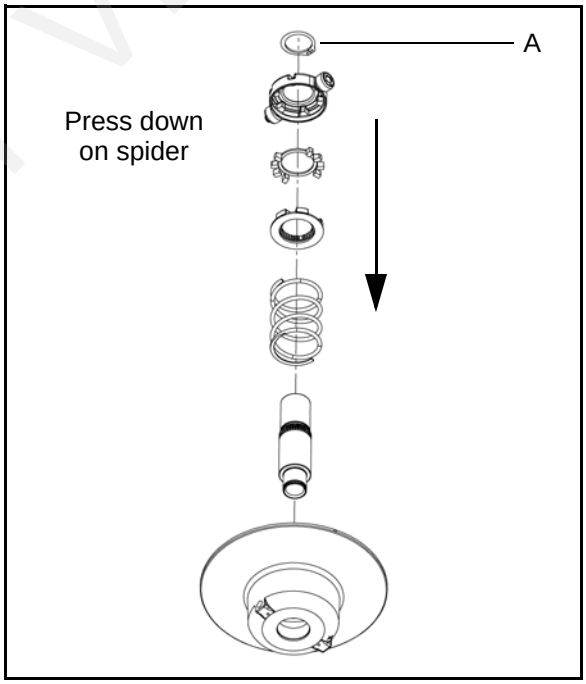
3. Remove the four screws that secure the cam (helix) assembly using a T25 Torx driver.



4. Place the driven clutch into the Universal Clutch Compressor **PU-50518**.

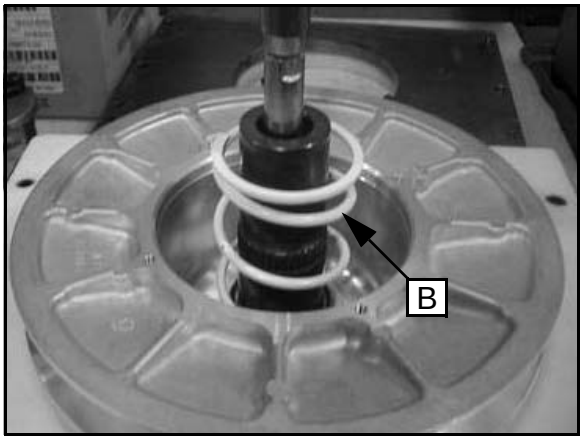


5. Press down on the top of the spider assembly, pushing the spider onto the shaft. Remove snap ring (A) and slowly release the assembly.

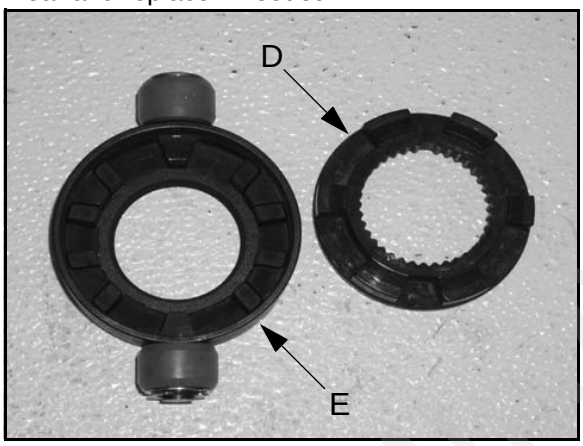


6. Remove the spider assembly and spring (B).

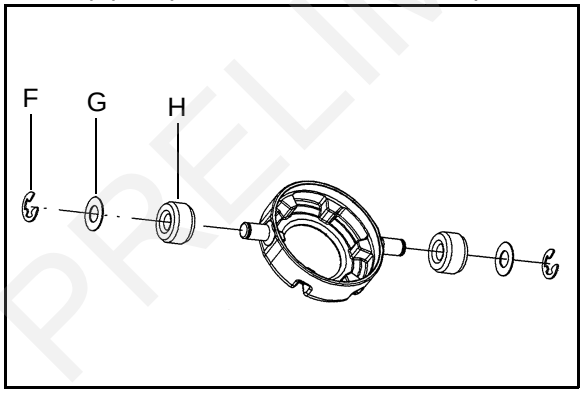
NOTE: Spring is compression only and has no torsional wind.



7. Remove the inside spider plate (D) and spider dampener (E). Inspect the spider dampener (E) for wear and replace if needed.

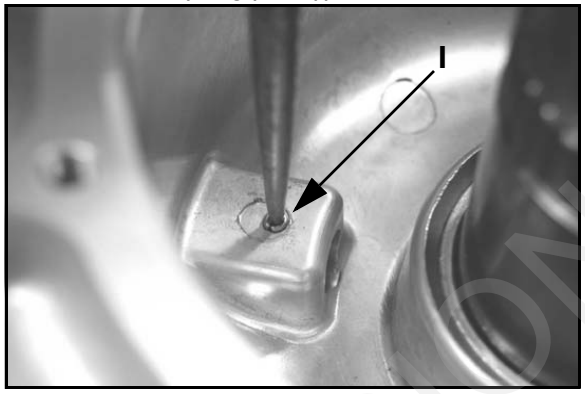


8. Remove the E-clips (F), washers (G), and the clutch rollers (H). Inspect the rollers for wear; replace if worn.

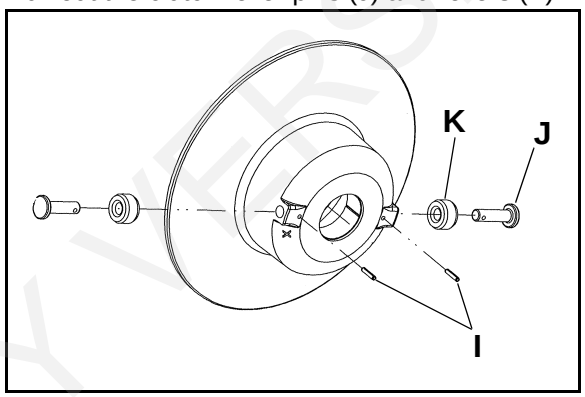


9. Remove the clutch assembly from the holding tool.

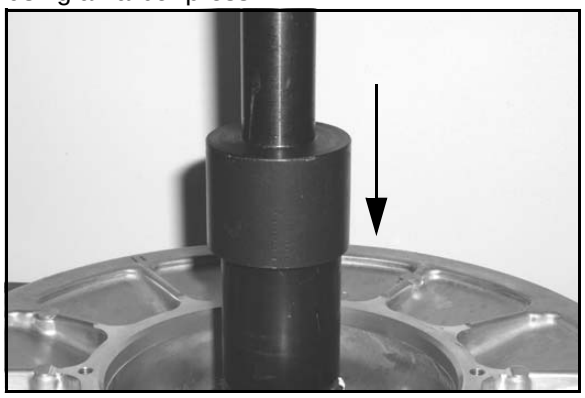
10. Press out the spring pins (I) in the inner sheave.



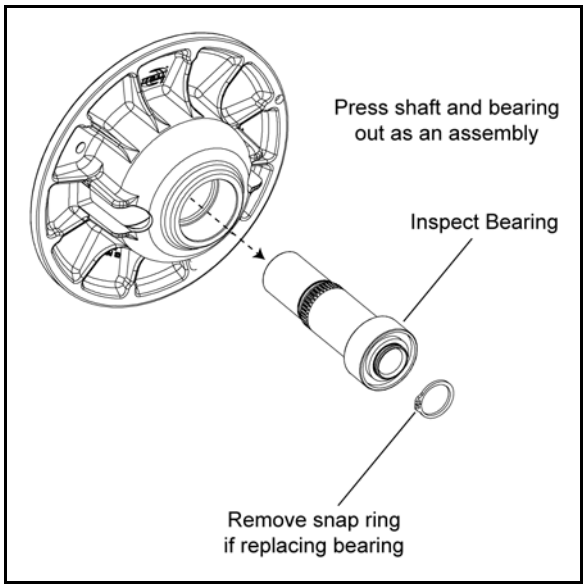
11. Pull out the clutch roller pins (J) and rollers (K).



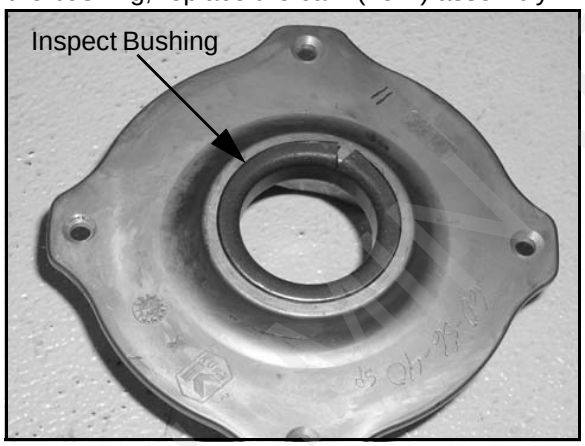
12. Press the shaft and bearing out of the outer sheave using an arbor press.



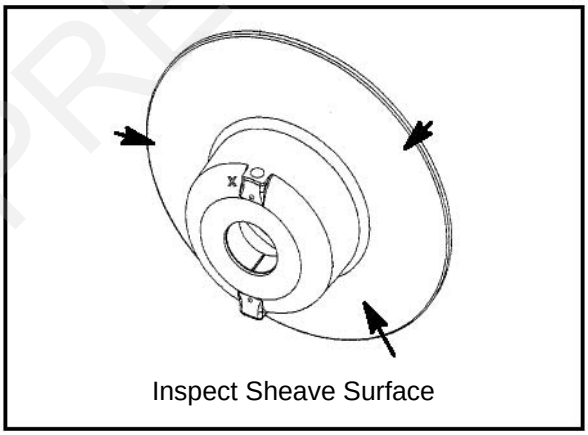
13. Inspect the bearing for wear. Spin the bearing, if the bearing does not spin smoothly, replace it. To replace the bearing, remove the snap ring from the end of the shaft and press the bearing off the shaft.



14. Inspect the cam (helix) assembly bushing for wear. If the bushing is worn or the shaft does not fit snug into the bushing, replace the cam (helix) assembly.



15. Inspect the clutch sheaves for excessive wear or damage.



Bushing Service

IMPORTANT: Special Tools Required

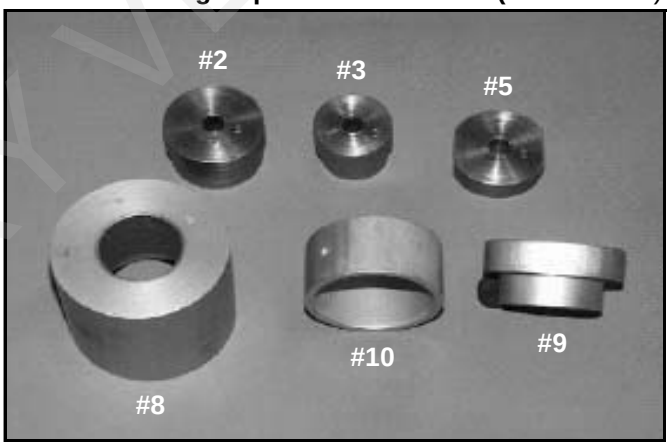
EBS Clutch Bushing Tool Kit - 2201379

Item	Qty.	Part #	Tool Description
A, B	1	5132027	EBS Puller Tool
C	1	5132501	EBS Puller Nut
D	1	5132029	EBS Main Adapter
E	1	5132028	EBS Bushing Removal
--	1	9915111	Instructions

Additional Special Tools

Qty.	Part #	Tool Description
1	2871226	Clutch Bushing Replacement Tool
1	2870386	Piston Pin Puller

***Clutch Bushing Replacement Tool Kit (PN 2871226)**

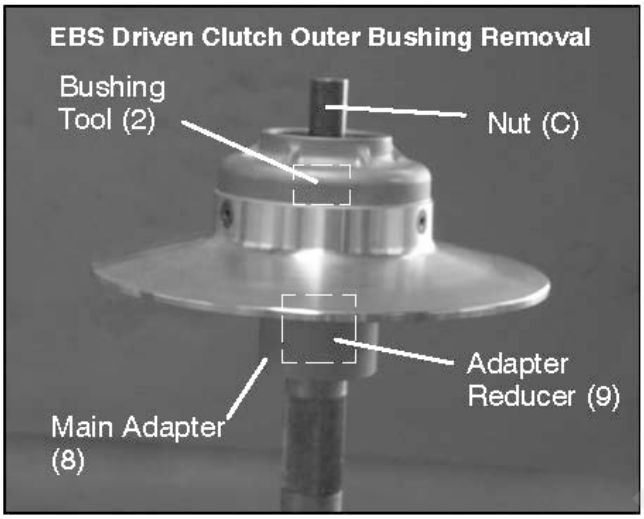


Item	Qty.	Part #	Tool Description
#2	1	5020628	P-90 Drive/Driven Clutch Bushing Install Tool
#3	1	5020629	Drive Clutch Cover Bushing Removal / Installation Tool (all clutches)
#5	1	5020631	P-90 Driven Clutch Cover Bushing Removal Tool
#8	1	5020632	Main Puller Adapter
#9	1	5010279	Adapter Reducer
#10	1	5020633	Number Two Puller Adapter

NOTE: Bushings are installed at the factory using Loctite™ 609. In order to remove bushings it will be necessary to apply heat evenly to the area around each bushing. Clean all residual Loctite™ from bushing bore prior to installing new bushing.

Clutch Bushing Removal

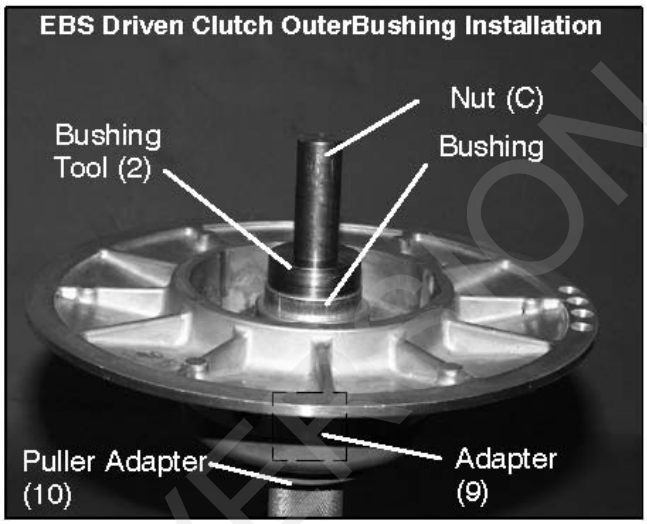
1. Install main puller adapter (Item 8) onto puller.
2. Install adapter reducer (Item 9).
3. Using a hand held propane torch, apply heat around outside of bushing until tiny smoke tailings appear.
4. Flip sheave over so bushing faces downward and install onto puller.
5. Install bushing tool (Item 2).



6. Install left hand nut (C) and spacer onto puller rod and tighten by hand. Turn puller barrel for further tension if needed.
7. Turn clutch sheave counterclockwise until bushing is removed and sheave comes free.
8. Remove nut (C) (left hand thread) from puller rod and set aside.
9. Remove adapters from puller.
10. Remove bushing and removal tool from adapters. Discard bushing.

Clutch Bushing Installation

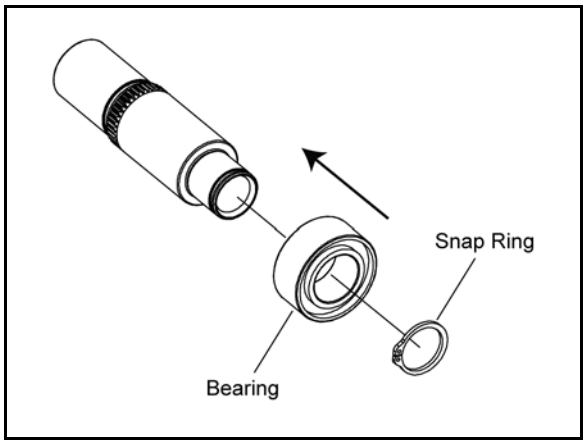
1. Install puller adapter (Item 10) onto puller.
2. Install adapter (Item 9) onto puller.



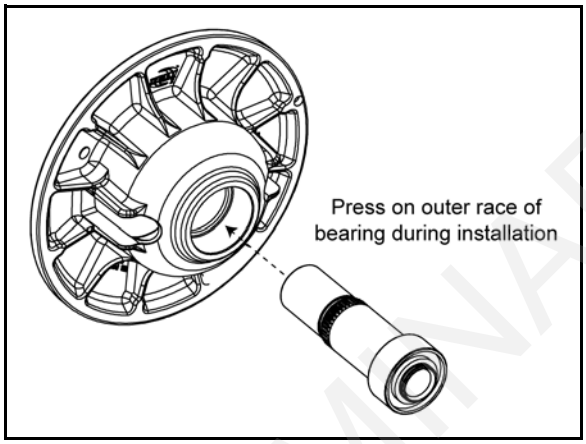
3. Apply Loctite™ 609 evenly to bushing bore inside moveable sheave.
4. Install sheave face down on puller.
5. Install new bushing on installation tool (Item 2) and install assembly into sheave.
6. Install left hand thread nut (C) onto puller rod and hand tighten against installation tool.
7. Turn clutch sheave counterclockwise, making sure bushing is drawn straight into bore. Continue until bushing is seated.
8. Remove nut (C) from puller rod and set aside.
9. Remove installation tool and clutch sheave from puller.

Clutch Assembly

1. Install a new bearing onto the clutch shaft using an arbor press. Once bearing is fully seated, install a new snap ring.

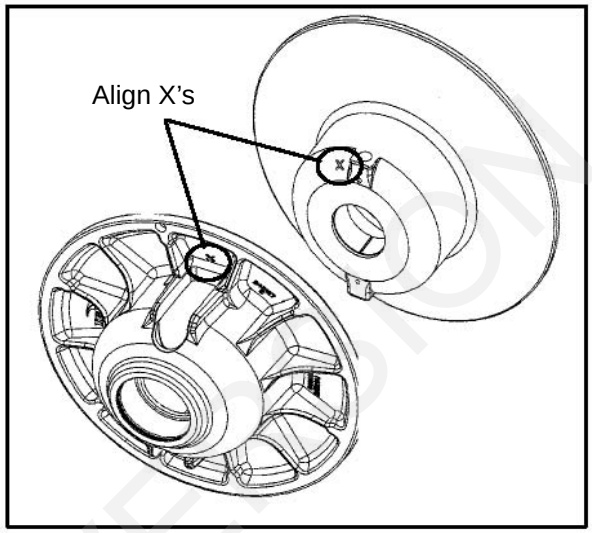


2. Install the shaft and bearing assembly into the outer sheave.

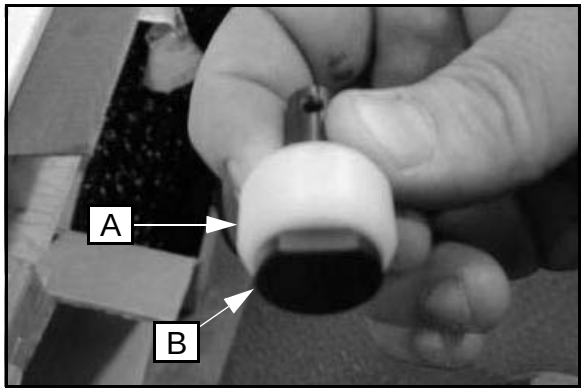


NOTE: Press only on the outer race of the bearing during installation to prevent damaging the bearing.

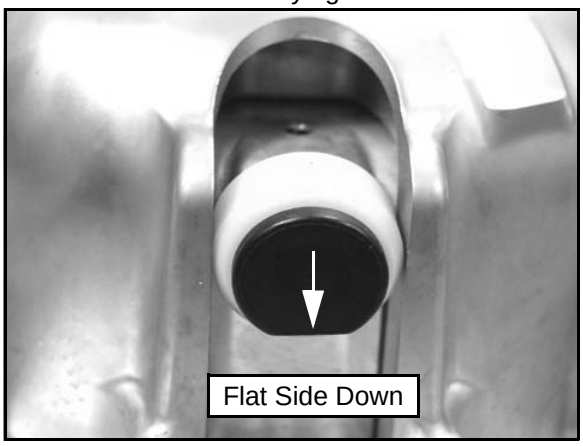
3. Line up the “X” on the moveable sheave with the “X” on the stationary sheave or use the marks previously used. Put the sheaves together.



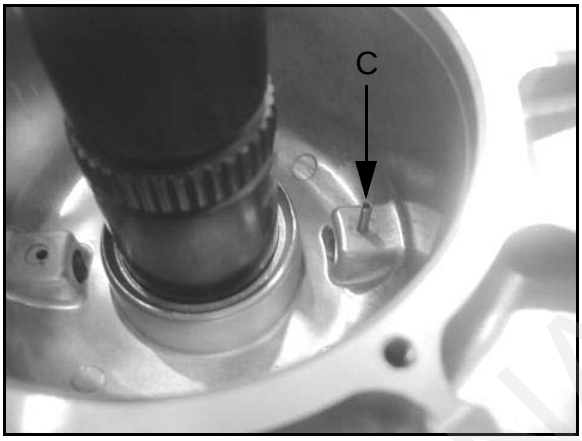
4. Install the roller (A) onto the roller pin (B) on both sides.



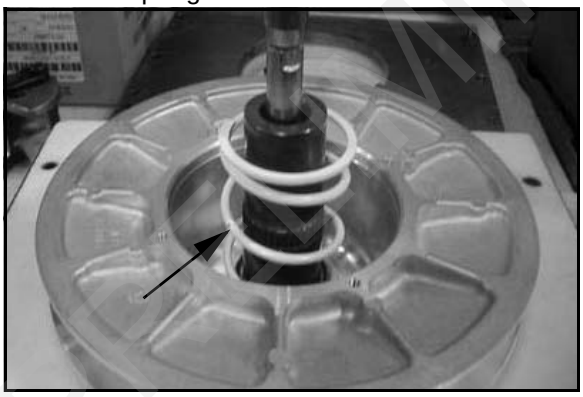
5. Install the roller pin into the sheave assembly on both sides. The flat side of the roller pin faces downward when the shaft side is laying flat on the bench.



6. Install the spring pins (C) to secure the roller pins. Install until flush with sheave surface.

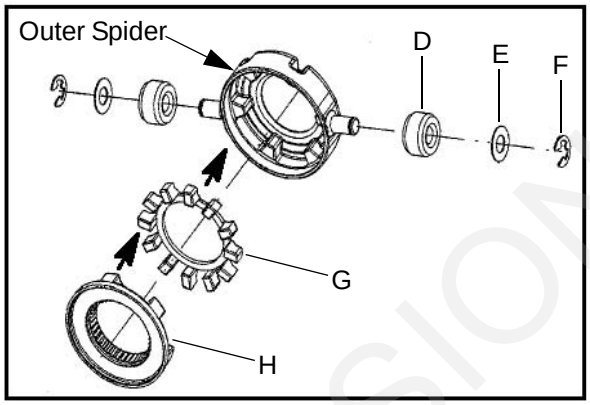


7. Install the spring over the shaft.

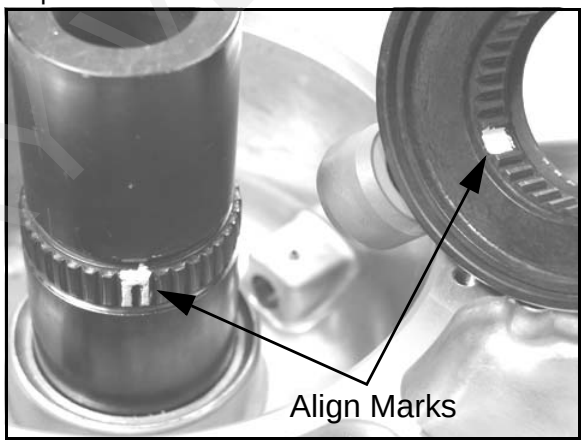


8. Install the clutch rollers (D) onto each side of the outside spider. Install the washers (E) and E-clips (F) to secure the rollers. The rollers should spin freely.

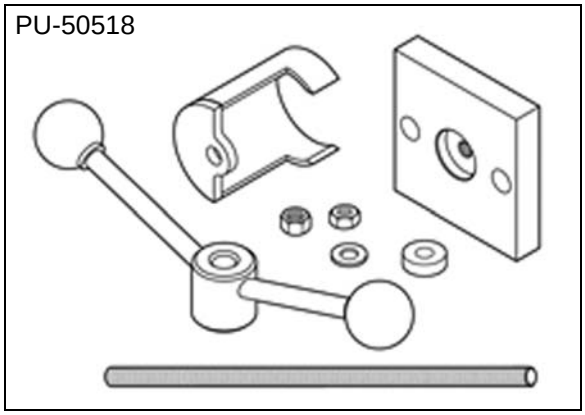
9. Install the spider dampener (G) inside the outer spider and install the inside spider plate (H).



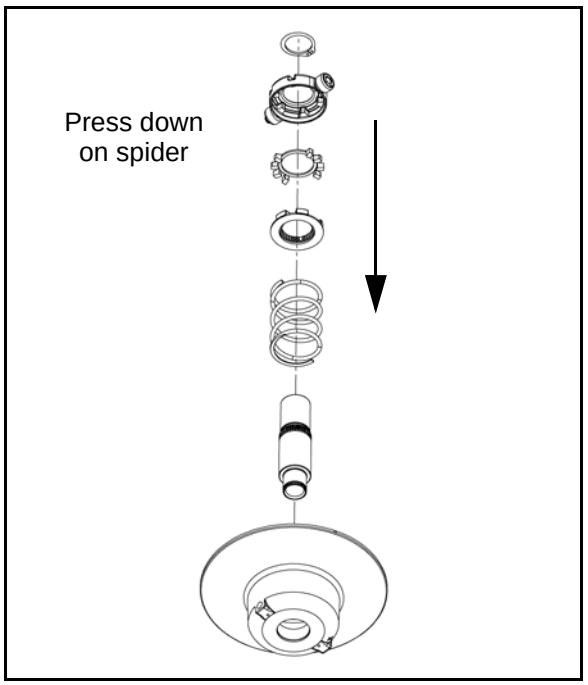
10. Install the spider assembly onto the shaft with the retaining ring on top of the spider. **NOTE:** Use the marks previously made to align the skip tooth spider, or use the "X" on top of the spider and align it with the skip tooth on the shaft.



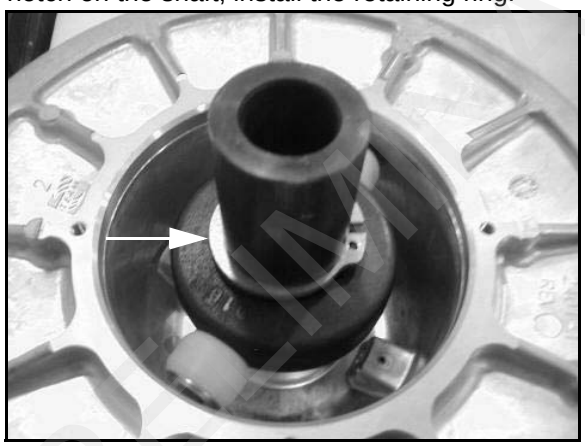
11. Place the driven clutch into the Universal Clutch Compressor **PU-50518**.



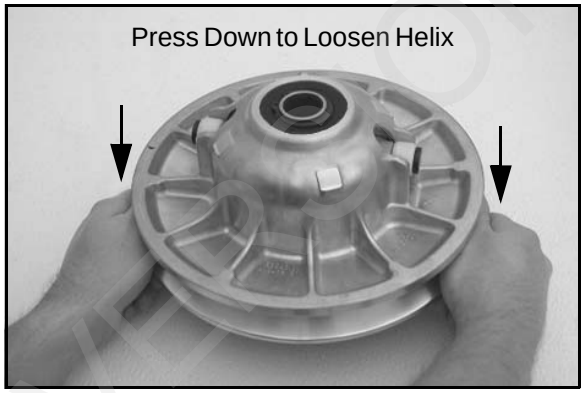
12. Press down on the top of the spider assembly, pushing the spider onto the shaft.



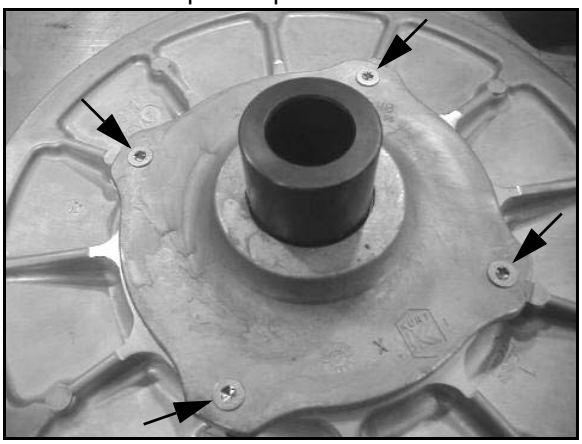
13. Slowly compress the spider into place. If the spider appears to bind while compressing, stop and make sure the skip-tooth on the shaft and the spider are aligned. Once the spider passes the retaining ring notch on the shaft, install the retaining ring.



14. Install the cam (helix) assembly over the shaft. Line up the “X” on the cam, “X” on spider, and “X” on the stationary sheave or use the marks previously made before disassembly. **NOTE:** If the cam assembly (helix) is difficult to install, be sure the sheaves are aligned. To align the sheaves place the clutch assembly on a flat surface with the cam assembly (helix) side down. Press down on the moveable sheave belt face with both hands and the helix will release.

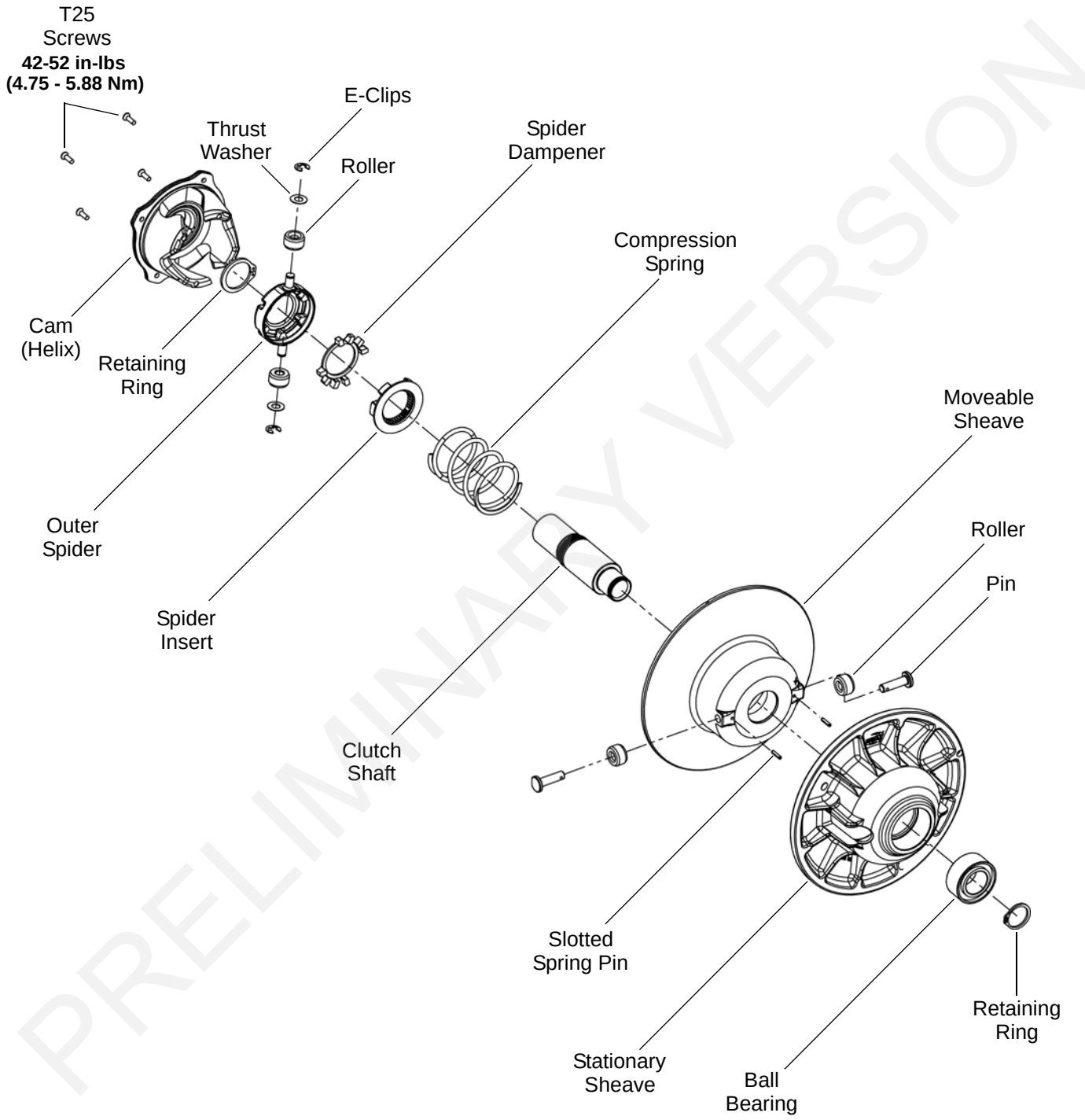


15. Use a T25 Torx driver to install the four helix retaining screws and torque to specification.



= T
Helix Retaining Screws: **42-52 in-lbs (4.75 - 5.88 Nm)**

Exploded View



TROUBLESHOOTING

Situation	Probable Cause	Remedy
Engine RPM below specified operating range, although engine is properly tuned.	-Wrong or broken drive clutch spring.	-Replace with recommended spring.
	-Drive clutch shift weight too heavy.	-Install correct shift weight kit to match engine application.
	-Driven clutch spring broken or installed in wrong helix location.	-Replace spring; refer to proper installation location.
Erratic engine operating RPM during acceleration or load variations.	-Drive clutch binding.	A. Disassemble drive clutch; inspect shift weights for wear and free operation. B. Clean and polish stationary shaft hub; reassemble clutch without spring to determine problem area.
	-Belt worn unevenly - thin / burnt spots.	Replace belt.
	-Driven clutch malfunction.	A. Replace ramp buttons. B. Inspect movable sheave for excessive bushing clearance.
	-Sheave face grooved.	-Replace the clutch.
Engine RPM above specified operating range.	-Incorrect drive clutch spring (too high of rate).	-Install correct recommended spring.
	-Drive clutch shift weights incorrect for application (too light).	-Install correct recommended shift weights.
	-Drive clutch binding.	-Disassemble and clean clutch, inspecting shift weights and rollers. Reassemble without the spring and move sheaves through entire range to further determine probable cause.
	-Driven clutch binding.	-Disassemble, clean, and inspect driven clutch, noting worn sheave bushing and ramp buttons and helix spring location.
	-Converter sheaves greasy; belt slipage.	-Clean sheaves with denatured alcohol or brake cleaner, install new belt.
Harsh drive clutch engagement.	-Drive belt worn too narrow.	-Replace belt.
	-Excessive belt / sheave clearance with new belt.	-Perform belt / sheave clearance adjustment with shim washers beneath spider.
Drive belt turns over	-Wrong belt for application.	-Replace with correct belt.
Belt burnt, thin spots	-Abuse (continued throttle application when vehicle is stationary, excess load)	-Caution operator to operate machine within guidelines.
	-Dragging brake	-Inspect brake system.
	-Slow, easy clutch engagement	-Fast, effective use of throttle for efficient engagement.

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Troubleshooting, Continued.....

Situation	Probable Cause	Remedy
PVT cover overheating (melting)	-Plugged air intake or outlet.	-Clear obstruction
	-Belt slippage due to water, oil, grease, etc., rubbing on cover.	-Inspect system. Clean, repair or replace as necessary. Seal PVT system ducts.
	-Clutches or weight being applied to cover while in operation.	-Remove weight. Inform operator.
	-High vs. low range.	-Instruct operator on guidelines for operation in proper driving range for different terrain as outlined in Owner's Safety and Maintenance Manual.
Water ingestion	-Cover seals or ducts leaking	-Find leak and repair as necessary.
	-Operator error	-Instruct operator on guidelines for operation in wet terrain as outlined in Owner's Safety and Maintenance Manual.
Belt slippage	-Belt worn out	-Replace belt.
	-Water ingestion	-Inspect and seal PVT system.
	-Belt contaminated with oil or grease	-Inspect and clean.
PVT noise	-Belt worn or separated, thin spots, loose belt	-Replace belt.
	-Broken or worn clutch components, cover hitting clutches	-Inspect and repair as necessary.
Engagement erratic or stabby	-Thin spots on belt, worn belt	-Replace belt. Refer to belt burnt troubleshooting and instruct operator.
	-Drive clutch bushings stick	-Inspect and repair clutches.

CHAPTER 7
FINAL DRIVE

SPECIAL TOOLS

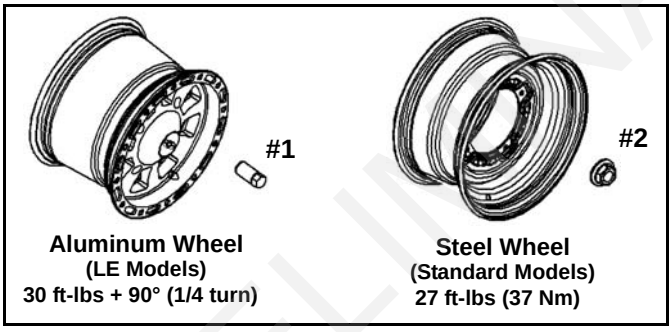
PART NUMBER	TOOL DESCRIPTION
2872608	Roll Pin Removal Tool
8700226	CV Boot Clamp Pliers (earless type)
PU-48951	Axle Boot Clamp Tool

SPX Corp: 1-800-328-6657 or http://polaris.spx.com/

TORQUE SPECIFICATIONS

Wheel and Hub Torque Table

ITEM	NUT TYPE	SPECIFICATION
Aluminum Wheels (Cast)	Lug Nut (1)	30 ft-lbs + 90° (1/4 turn)
Steel Wheels (Black / Camo)	Flange Nut (2)	27 ft-lbs (37 Nm)
Front Hub Castle Nut	-	80 ft-lbs (108 Nm)
Rear Hub Castle Nut	-	80 ft-lbs (108 Nm)



Aluminum Wheel
(LE Models)
30 ft-lbs + 90° (1/4 turn)

Steel Wheel
(Standard Models)
27 ft-lbs (37 Nm)

FRONT BEARING CARRIER

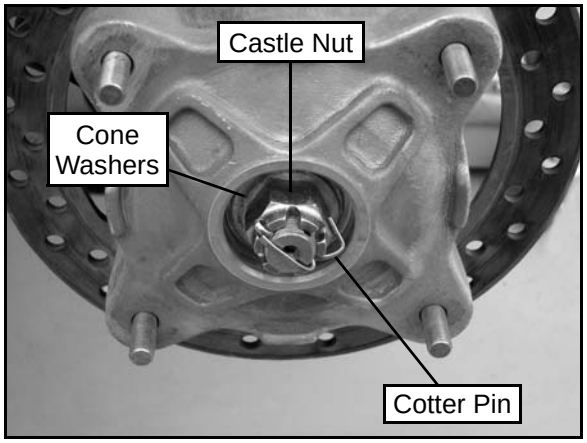
Bearing Carrier Inspection / Removal

1. Elevate front of vehicle and safely support machine under the frame area.

> **⚠ CAUTION**
>
> Serious injury may result if machine tips or falls. Be sure machine is secure before beginning this service procedure. Wear eye protection when removing bearings and seals.

2. Check bearings for side play by grasping the top and bottom of the tire firmly and checking for movement. The tire should rotate smoothly without binding or rough spots.

3. Remove the (4) wheel nuts and remove front wheel.
4. Remove the cotter pin and loosen the front wheel hub castle nut. Remove the nut, and (2) cone washers from the front wheel hub assembly.

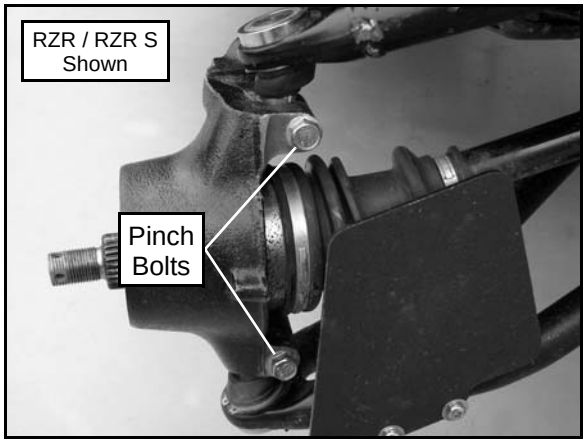


5. Remove the fastener retaining the steering tie rod end to the front bearing carrier.

6. Remove the two front brake caliper mounting bolts and remove the caliper from the brake disc (see Chapter 9). **CAUTION:** Do not hang the caliper by the brake line. Use wire to hang caliper to prevent damage to the brake line.

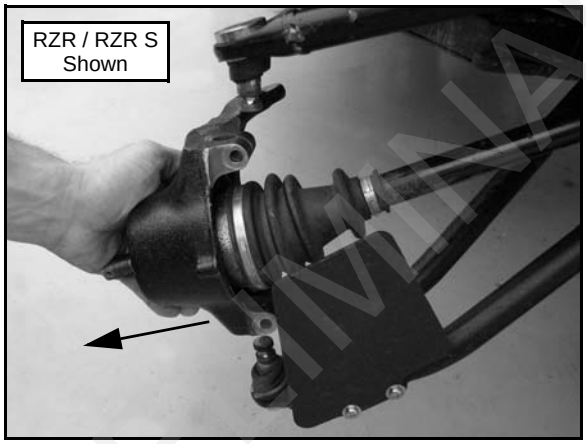
7. Remove the front wheel hub assembly.

8. Remove the upper and lower ball joint pinch bolts.



9. Using a soft faced hammer, lightly tap on bearing carrier while removing upper and lower ball joint ends.

10. Remove the bearing carrier from the front drive shaft.



11. Rotate bearing by hand and check for smooth rotation. Visually inspect bearing for moisture, dirt, or corrosion.

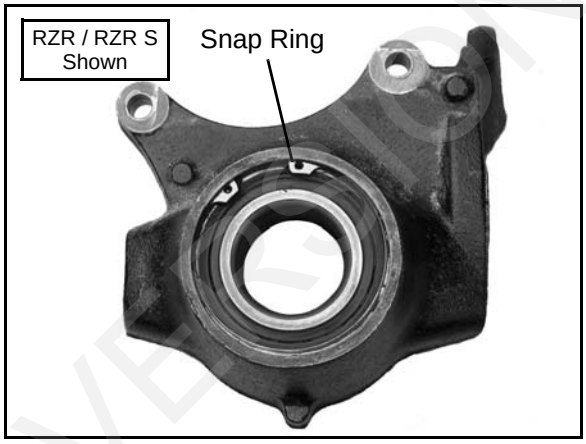
NOTE: Due to extremely close tolerances and minimal wear, the bearings must be inspected visually, and by feel. While rotating bearings by hand, inspect for rough spots, discoloration, or corrosion. The bearings should turn smoothly and quietly, with no detectable up and down movement and minimal movement sideways between inner and outer race.

12. Replace bearing if moisture, dirt, corrosion, or roughness is evident.

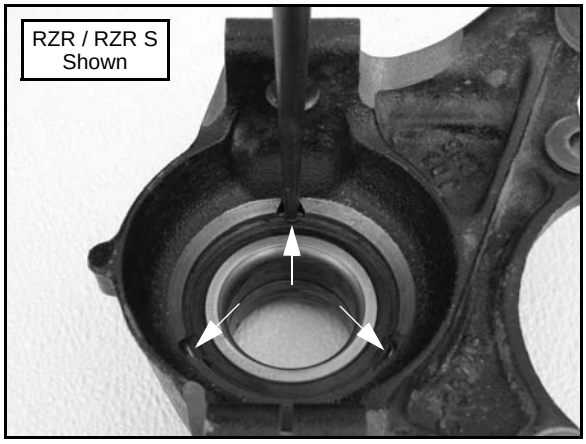
Bearing Replacement

Bearing Removal

1. Remove the outer snap ring.



2. From the back side of the bearing carrier, tap on the outer bearing race with a drift punch in the reliefs as shown.



3. Drive bearing out evenly by tapping on outer race only. Once bearing is at bottom of casting, support casting on outer edges so bearing can be removed.

4. Inspect the bearing carrier housing for scratches, wear or damage. Replace front bearing carrier if damaged.

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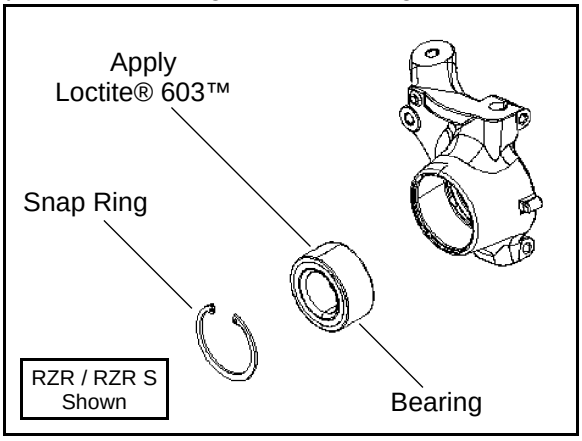
Bearing Installation

5. Thoroughly clean the front bearing carrier housing and the outer race on the new bearing. Be sure that all oil residue has been removed from each surface.

6. Support the bottom of the bearing carrier housing.

> **⚠ CAUTION**
>
> Use an arbor and press only on the outer race, otherwise bearing damage may occur.

7. Apply **Loctite® 603™** retaining compound to outer circumference of new bearing race and carefully press new bearing into the bearing carrier housing.



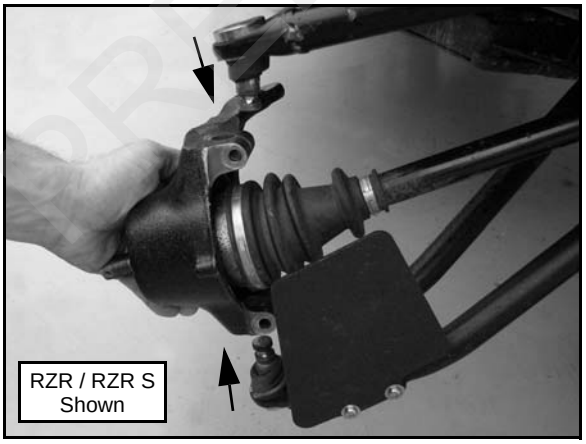
NOTE: Use care to not allow any of the Loctite® compound to get in the bearing.

8. Wipe the housing clean of any excess compound and install the snap ring.

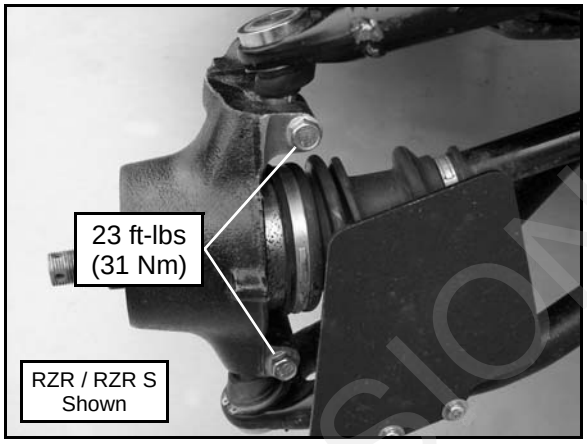
Bearing Carrier Installation

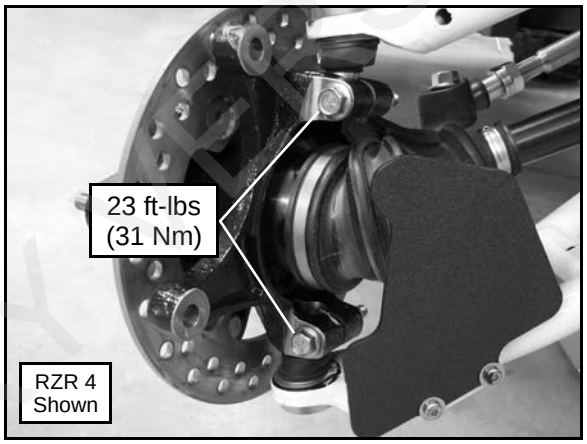
1. Install drive shaft axle through the backside of the bearing carrier.

2. Install the upper and lower ball joint ends into the front bearing carrier.



3. Install pinch bolts and torque to specification.

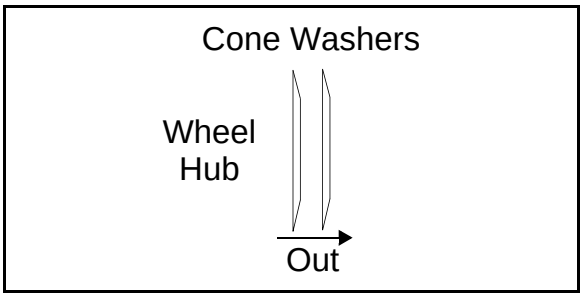




= T
Ball Joint Pinch Bolts: **23 ft-lbs (31 Nm)**

4. Apply grease to drive shaft axle splines.

5. Install front wheel hub assembly, cone washers, and hand tighten the castle nut. Install washers with domed side out.



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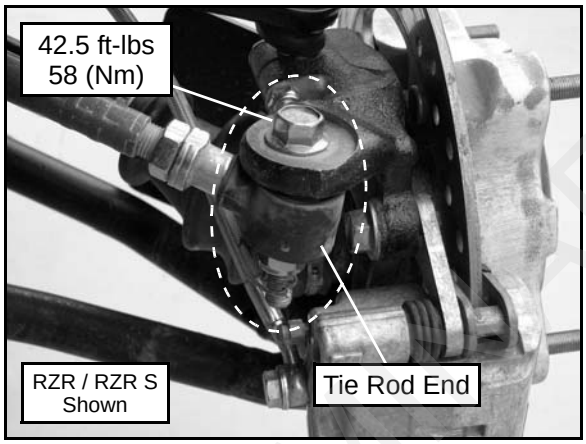
6. Install brake caliper and mounting bolts. Torque bolts to specification.

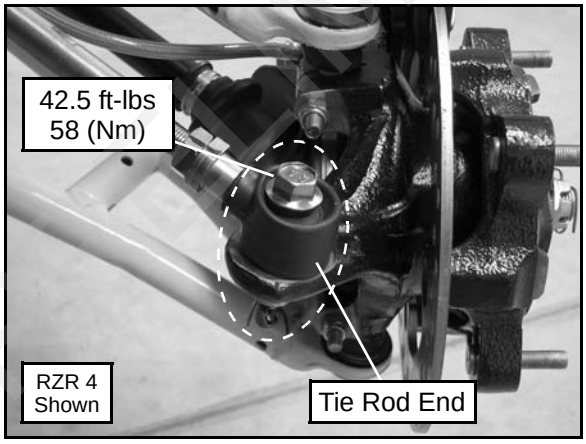
= T
Front Caliper Mounting Bolts: **31-34 ft-lbs (42-46 Nm)**

⚠ CAUTION
New bolts have a pre-applied locking agent which is destroyed upon removal. Always use new brake caliper mounting bolts upon assembly.

7. Install the steering tie rod end onto the front bearing carrier.

NOTE: Refer to the photos below to ensure proper placement of the tie rod end.

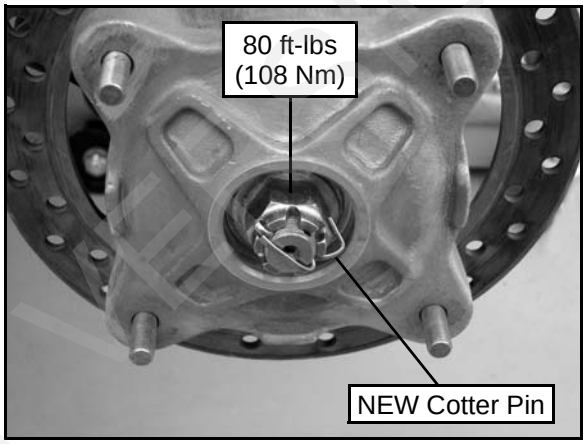




8. Torque the tie rod end fastener to specification and install a **new** cotter pin.

= T
Tie Rod End Fastener: **42.5 ft-lbs (58 Nm)**

9. Torque wheel hub nut to specification and install a **new** cotter pin. Tighten nut slightly if necessary to align cotter pin holes.



= T
Wheel Hub Castle Nut: **80 ft-lbs (108 Nm)**

10. Install wheel and (4) wheel nuts. Torque wheel nuts to specification.

= T
Wheel Nuts: Steel Wheels: **27 ft-lbs (37 Nm)** Aluminum Wheels: **30 ft-lbs + 90° (1/4 turn)**

11. Rotate wheel and check for smooth operation. Bend both ends of cotter pin around end of spindle in different directions.

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FRONT DRIVE SHAFT

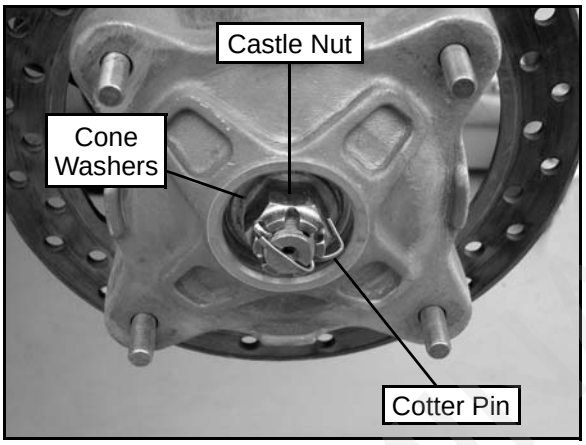
Drive Shaft Removal

1. Elevate front of vehicle and safely support machine under the frame area.

> **⚠ CAUTION**
>
> Serious injury may result if machine tips or falls. Be sure machine is secure before beginning this service procedure. Wear eye protection when removing bearings and seals.

2. Remove the (4) wheel nuts and remove the front wheel.

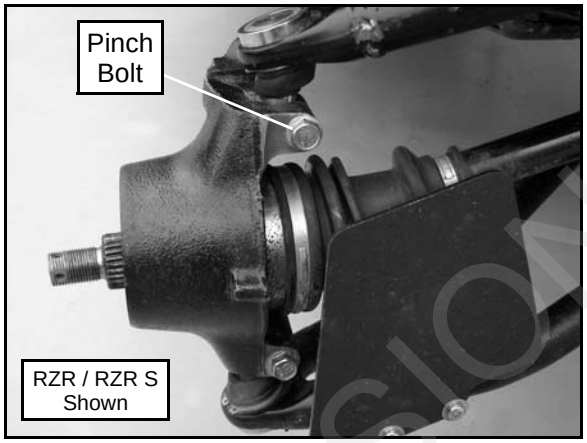
3. Remove the cotter pin and loosen the front wheel hub castle nut. Remove the nut, and (2) cone washers from the front wheel hub assembly.



4. Remove the two front brake caliper mounting bolts and remove the caliper from the brake disc (see Chapter 9).
   CAUTION: Do not hang the caliper by the brake line. Use wire to hang caliper to prevent damage to the brake line.

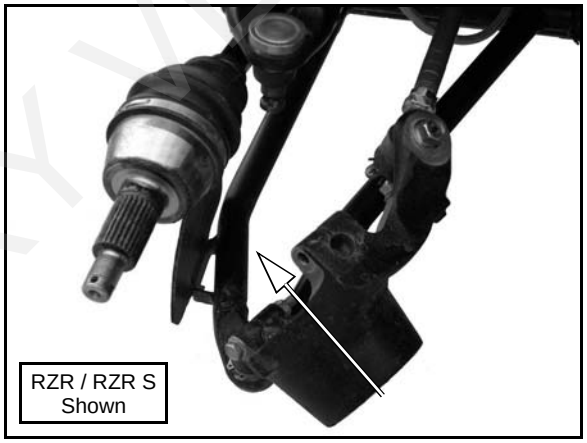
5. Remove the front wheel hub assembly.

6. Remove the upper ball joint pinch bolt.



7. Using a soft faced hammer, lightly tap on the bearing carrier while removing the upper ball joint end.

8. Remove the drive shaft from the front bearing carrier.



9. With a short, sharp jerk, remove drive shaft from the front gearcase.

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Drive Shaft / CV Joint Handling Tips

Care should be exercised during drive shaft removal or when servicing CV joints. Drive shaft components are precision parts.

Cleanliness and following these instructions is very important to ensure proper shaft function and a normal service life.

- The complete drive shaft and joint should be handled by getting hold of the interconnecting shaft to avoid disassembly or potential damage to the drive shaft joints.
- Over-angling of joints beyond their capacity could result in boot or joint damage.
- Make sure surface-ground areas and splines of shaft are protected during handling to avoid damage.
- Do not allow boots to come into contact with sharp edges or hot engine and exhaust components.
- The drive shaft is not to be used as a lever arm to position other suspension components.
- Never use a hammer or sharp tools to remove or to install boot clamps.
- Be sure joints are thoroughly clean and that the proper amount and type of grease is used to refill when joint boots are replaced and when joints are cleaned. Refer to text for grease capacity of CV joints and CV joint boots.

Outer CV Joint / Boot Replacement

NOTE: Refer the "Electronic Parts Catalog" for the required parts to service the drive shaft. Some drive shafts have "Boot Replacement Kits" that include a new boot, clamps, and the required amount of grease.

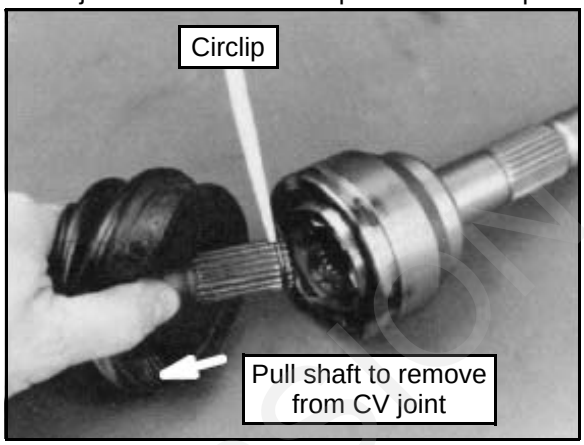
1. Remove clamps from rubber boot using the proper boot clamp pliers.

CV Boot Clamp Pliers:
Earless Type - 8700226

2. Remove the large end of the boot from the CV joint and slide the boot back.
3. Use a soft-faced hammer or brass drift to separate the outer CV joint from the drive shaft.

NOTE: If using a brass drift, be sure to tap on the inner race of the joint only.

4. Make sure the circlip remains on the shaft and not left in the joint. Discard the circlip as it will be replaced.



5. Remove small clamp and boot from the drive shaft.

IMPORTANT: If the grease in the joint is obviously contaminated with water and/or dirt, the joint should be replaced.

6. Thoroughly clean the joint with an appropriate solvent and dry the joint to prevent any residual solvent from being left in the joint upon reassembly.
7. Visually inspect the joint by tilting the inner race to one side to expose each ball. Severe pitting, galling, play between the ball and its cage window, any cracking or damage to the cage, pitting or galling or chips in raceways call for joint replacement.
8. Apply a light coat of grease to the end of the drive shaft and slide the new clamp and boot (small end first) over the shaft and position the boot in its groove machined in the shaft.
9. Install a NEW circlip on the end of the shaft.
10. Grease the joint with the special CV joint grease provided in the boot replacement kit. Fill the cavity behind the balls and the splined hole in the joint's inner race. Pack the ball tracks and outer face flush with grease. Place any remaining grease into the boot. Install small boot clamp.

NOTE: It is very important to use the correct type and quantity of grease by using all the grease included with the boot kit. DO NOT use a substitute grease and DO NOT overfill or under fill the CV joint.

Boot Replacement Grease Requirement:

Outer CV Joint Capacity: 80g

Grease Service Kit: PN 1350047 (50g)

11. Slide the joint onto the drive shaft splines and align the circlip with the lead-in chamfer on the inner race.

12. Use a soft-faced hammer to tap the CV joint into the splines of the axle. Pull on the joint to ensure it's securely installed.

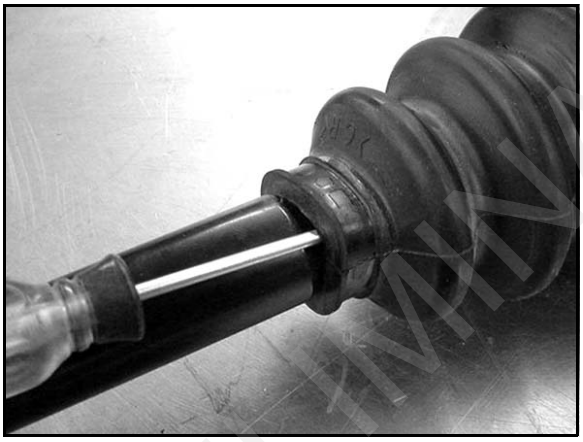
13. Add the remaining grease through large end of boot.

14. Pull the boot over the joint and position the boot lips into the grooves on the joint housing and shaft. Make sure the boot is not dimpled or collapsed.

15. Install and secure the CV boot with the large clamp using the "earless" clamp pliers.

CV Boot Clamp Pliers
Earless Type: 8700226

16. While pulling out on the CV shaft, slide a straight O-ring pick or a small slotted screw driver between the small end of the boot and the shaft. This will allow the air pressure to equalize in the CV boot in the position that the joint will spend most of its life. Before you remove your instrument, be sure the small end of the boot is in its correct location on the shaft.



17. Install and secure the small clamp on the boot using the "earless" clamp pliers.

CV Boot Clamp Pliers
Earless Type: 8700226

Inner Plunging Joint / Boot Replacement

1. Remove the front drive shaft from the vehicle (see "FRONT DRIVE SHAFT - Removal").

2. Remove and discard the boot clamps.

CV Boot Clamp Pliers
Earless Type: 8700226

3. Remove the large end of the boot from the plunging joint and slide the boot back.

4. Use a soft-faced hammer or brass drift to separate the plunging joint from the drive shaft.

NOTE: If using a brass drift, be sure to tap on the inner race of the joint only.

5. Make sure the circlip remains on the shaft and not left in the joint. Discard the circlip.

6. Remove the boot from the drive shaft.

⚠ CAUTION

Complete disassembly of the plunging joint is NOT recommended. The internal components are precision fit and develop their own characteristic wear patterns. Intermixing the internal components could result in looseness, binding, and/or premature failure of the joint.

IMPORTANT: If the grease in the joint is obviously contaminated with water and/or dirt, the joint should be replaced.

7. Thoroughly clean the joint with an appropriate solvent and dry the joint to prevent any residual solvent from being left in the joint upon reassembly.

8. Visually inspect the joint by tilting the inner race to one side to expose each ball. Severe pitting, galling, play between the ball and its cage window, any cracking or damage to the cage, pitting or galling or chips in raceways call for joint replacement.

9. Clean the splines on the end of the shaft and apply a light coat of grease prior to reassembly.

10. Slide the small boot clamp and boot (small end first) onto the drive shaft and position the boot in it's groove machined in the shaft.

11. Install a NEW circlip on the end of the shaft.

12. Grease the joint with the special joint grease provided in the boot replacement kit. Fill the cavity behind the balls and the splined hole in the joint's inner race. Pack the ball tracks and outer face flush with grease. Place any remaining grease into the boot.

> **⚠ CAUTION**
>
> The grease provided in the replacement kit is specially formulated for wear resistance and durability. DO NOT use substitutes or mix with other lubricants.

NOTE: It is very important to use the correct type and quantity of grease by using all the grease included with the boot kit. DO NOT use a substitute grease and DO NOT overfill or under fill the CV joint.

Boot Replacement Grease Requirement:

Inner Plunging Joint Capacity: 80g

Grease Service Kit: PN 1350047 (50g)

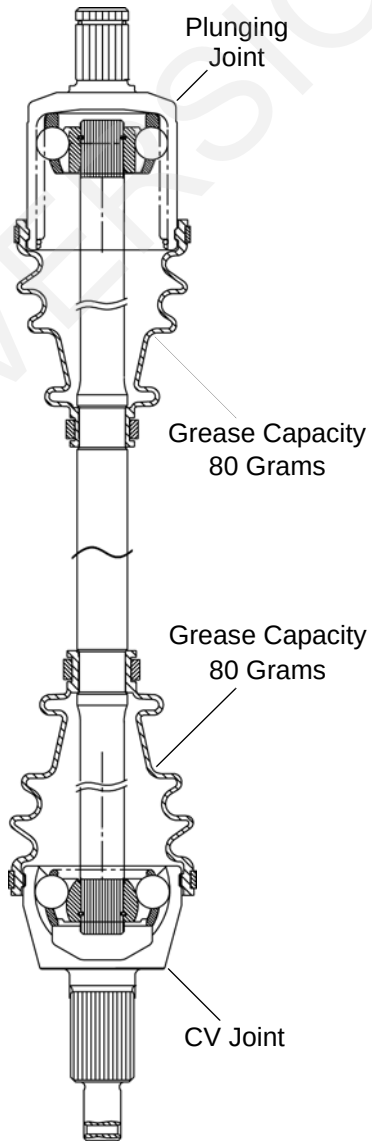
13. Fully compress the joint and push the drive shaft firmly into the inner race.
14. Align the circlip with the lead-in chamfer.
15. Use a soft-faced hammer to tap the joint onto the drive shaft until it locks into place.
16. Pull on the joint to make sure it is securely locked into place.
17. Remove excess grease from plunging joint's external surfaces and place the excess grease in the boot.
18. Pull the boot over the joint and position the boot lips into the grooves on the joint housing and shaft. Make sure the boot is not dimpled or collapsed.
19. Install and secure the small clamp on the boot using the "earless" clamp pliers.

CV Boot Clamp Pliers
Earless Type: 8700226

20. Pull out on drive shaft to center the joint in the housing. Slide a straight O-ring pick or a small slotted screw driver between the large end of the boot and joint housing and lift up to equalize air pressure in the boot.
21. Position the boot lip in its groove. Install and secure the boot with the large clamp using the "earless" clamp pliers.

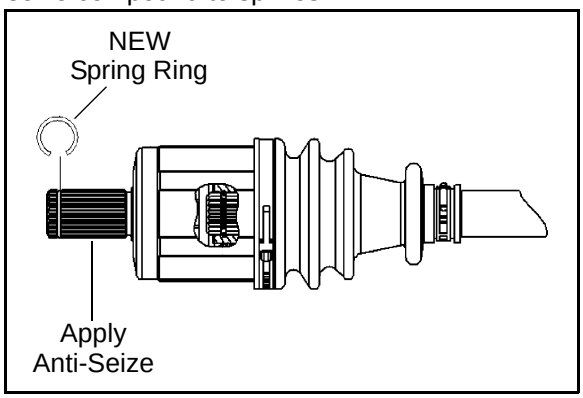
CV Boot Clamp Pliers
Earless Type: 8700226

FRONT DRIVE SHAFT



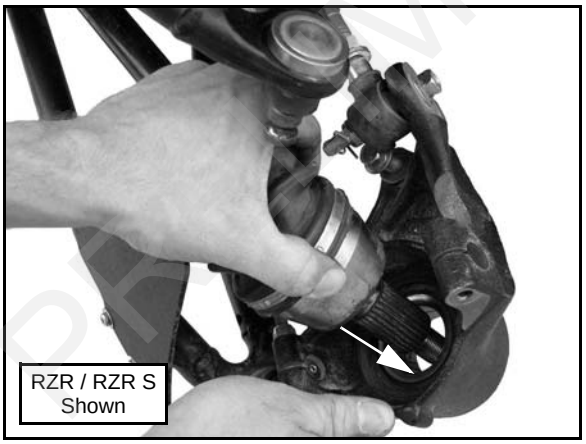
Drive Shaft Installation

1. Install new spring ring on drive shaft. Apply an anti-seize compound to splines.



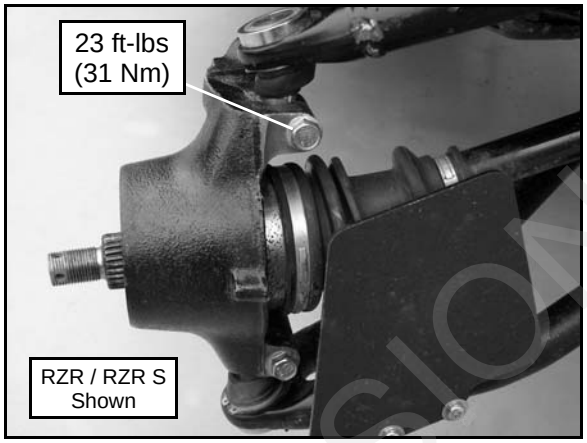
2. Align splines of drive shaft with front gearcase and reinstall the drive shaft. Use a rubber mallet to tap on the outboard end of the drive shaft if necessary

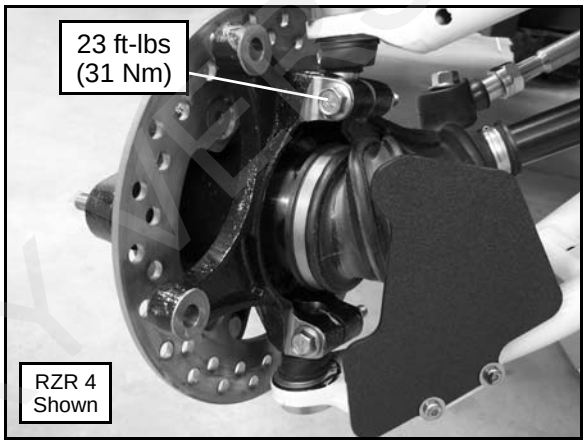
3. Install drive shaft into the front bearing carrier.



4. Install the upper ball joint end into the front bearing carrier.

5. Install the upper pinch bolt and torque to specification.





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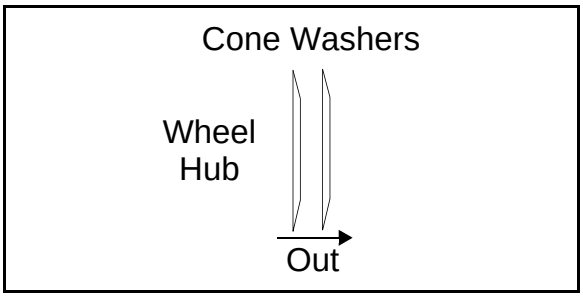
Ball Joint Pinch Bolts:
23 ft-lbs (31 Nm)

6. Apply grease to drive shaft axle splines.

7. Install front wheel hub assembly, cone washers, and hand tighten the castle nut. Install washers with domed side out.



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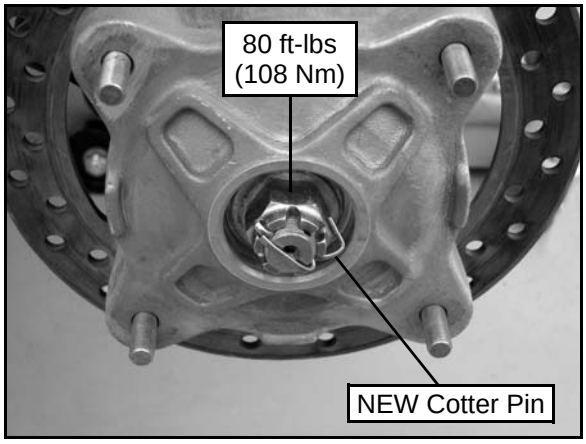
8. Torque wheel hub nut to specification and install a **new** cotter pin. Tighten nut slightly if necessary to align cotter pin holes.



= T
Wheel Hub Castle Nut: **80 ft-lbs (108 Nm)**

9. Install brake caliper mounting bolts and torque to specification.

= T
Front Caliper Mounting Bolts: **31-34 ft-lbs (42-46 Nm)**

CAUTION
New bolts have a pre-applied locking agent which is destroyed upon removal. Always use new brake caliper mounting bolts upon assembly.

10. Install wheel and (4) wheel nuts. Torque wheel nuts to specification.

= T
Wheel Nuts: Steel Wheels: **27 ft-lbs (37 Nm)** Aluminum Wheels: **30 ft-lbs + 90° (1/4 turn)**

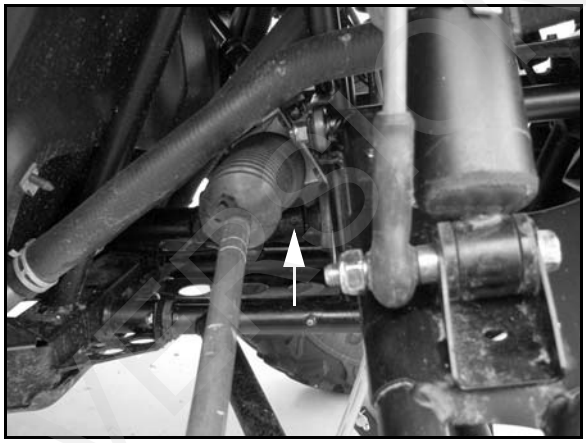
11. Rotate wheel and check for smooth operation. Bend both ends of cotter pin around end of spindle in different directions.

PROPSHAFT SERVICE

Removal / Installation (RZR / RZR S)

1. Locate the propshaft roll pin and use the Roll Pin Removal Tool (PN 2872608) to remove the roll pin.

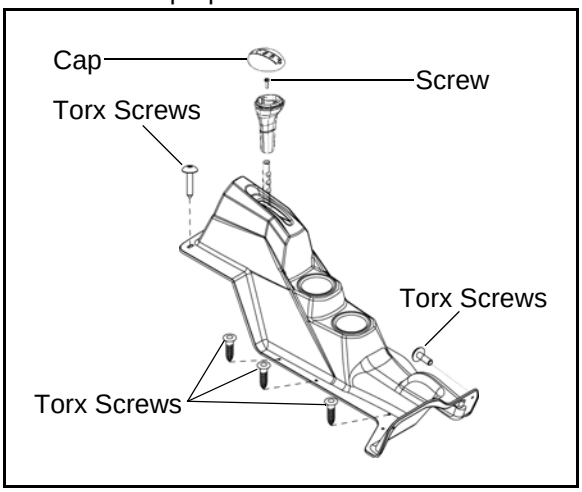
NOTE: Front wheel can be removed to gain better access to the propshaft roll pin.



Roll Pin Removal Tool: PN 2872608

2. Remove the gear selector cap and the retaining screw. Remove the shift handle from the lever.

3. Remove the Torx screws retaining the center console to access the propshaft.

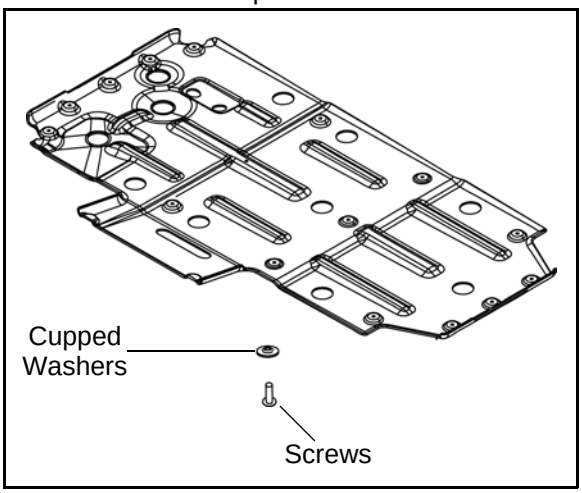


4. Slide prop shaft back far enough to remove it from the front gearcase input shaft.

5. Pull sharply forward to remove it from transmission shaft.

NOTE: You may have to loosen the front gearcase mounting bolts to allow for propshaft removal.

6. Remove the fasteners retaining the plastic skid plate and remove the skid plate from the vehicle.



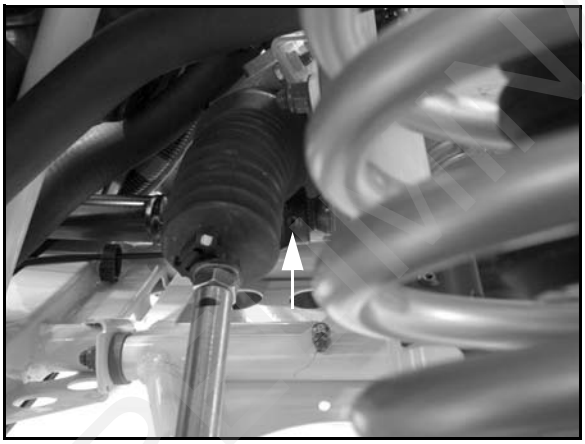
7. Remove the propshaft from the vehicle.

8. Reverse removal steps to reinstall propshaft. Use a NEW Roll Pin (Spring Pin) upon reassembly.

Removal / Installation (RZR 4)

1. Locate the propshaft roll pin and use the Roll Pin Removal Tool (PN 2872608) to remove the roll pin.

NOTE: Front wheel can be removed to gain better access to the propshaft roll pin.



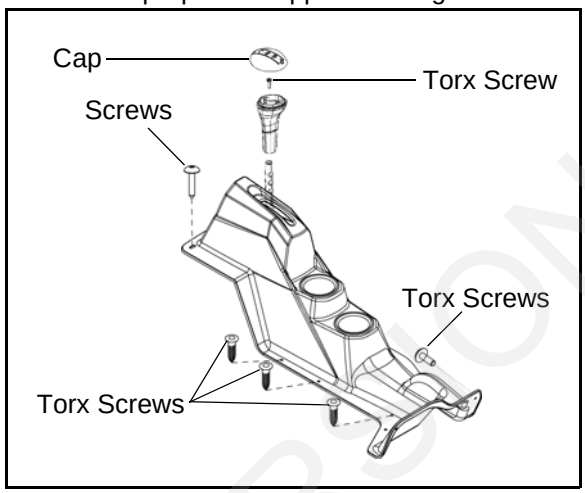
Roll Pin Removal Tool (PN 2872608)

2. Remove both front seats.

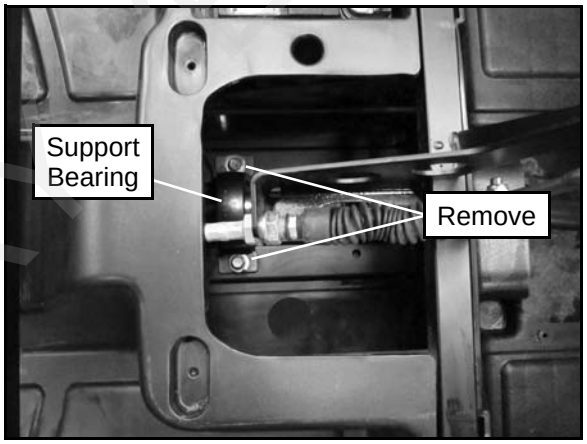
3. Remove the gear selector cap.

4. Remove the retaining screw and the gear selector handle.

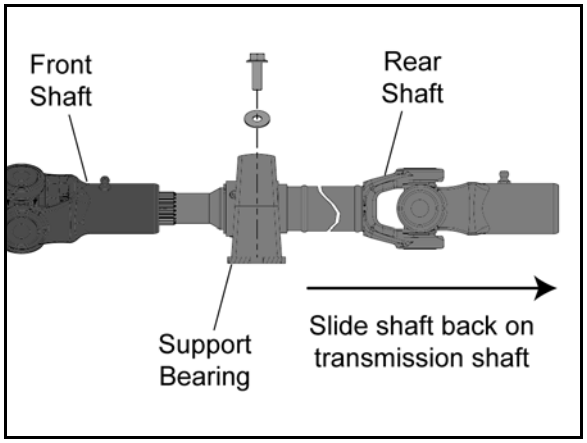
5. Remove the fasteners retaining the center console to access the propshaft support bearing.



6. Remove the (2) bolts and washers retaining the support bearing.



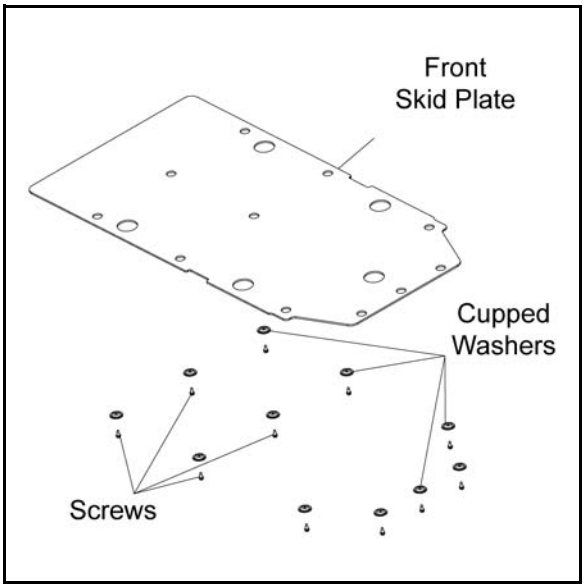
7. Slide the rear portion of the propshaft back to separate it from the front portion.



8. Slide the front portion of the propshaft back and away from the front gearcase to remove it.

9. If removing the rear portion of the propshaft, remove the bearing support (upper & lower half) from the shaft.

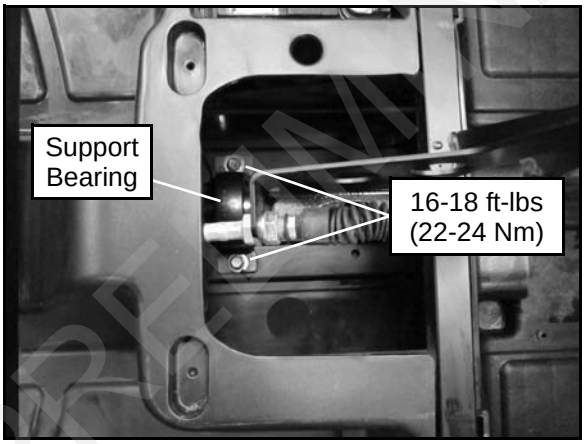
10. Remove the fasteners retaining the front plastic skid plate to allow for propshaft removal.



11. Using care, slide the rear portion of the propshaft out through the bottom of the vehicle.

12. Reverse this procedure to reinstall and assemble the front and rear portions of the propshaft.

13. Torque the support bearing fasteners to specification.



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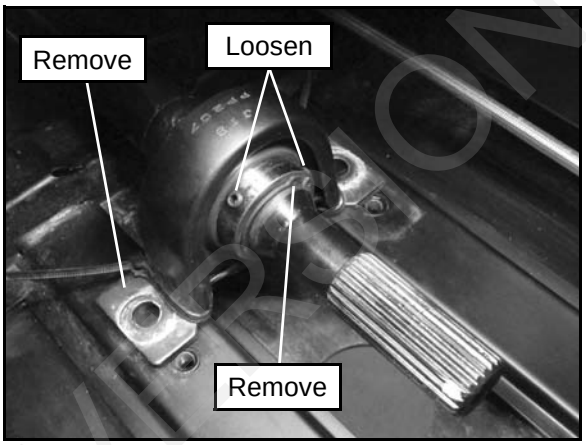
Support Bearing Fasteners: **16-18 ft-lbs (22-24 Nm)**

14. When installing the front portion of the propshaft, use a NEW roll pin.

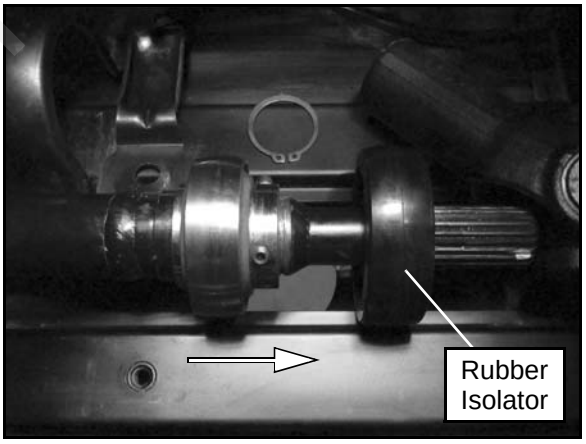
Support Bearing Replacement (RZR 4)

1. Follow steps 1-8 of the **"Removal / Installation (RZR 4)"** procedure.

2. Remove the bearing support (upper and lower half) and the retaining ring. Loosen the (2) set screws retaining the bearing to the shaft.



3. Remove the rubber isolator from the bearing and slide the bearing off the end of the shaft.

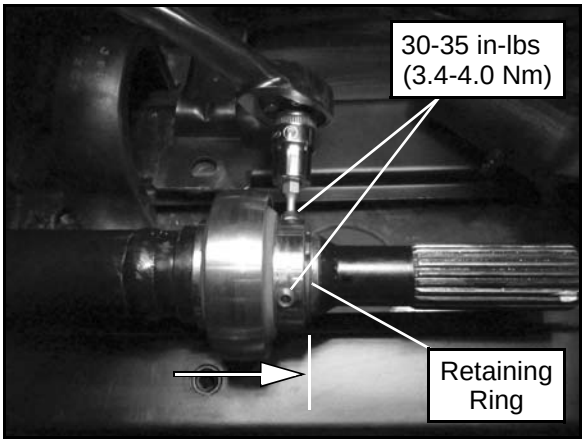


NOTE: If bearing is seized on the shaft, remove the rear portion of the shaft from the vehicle. Refer to "Removal / Installation (RZR 4)".

4. Clean the mounting surface of the shaft and install the new bearing.

5. Install a new retaining ring and slide the bearing tight against the retaining ring.

6. Apply Loctite® 242™ to the set screw threads and torque the (2) bearing set screws to specification.



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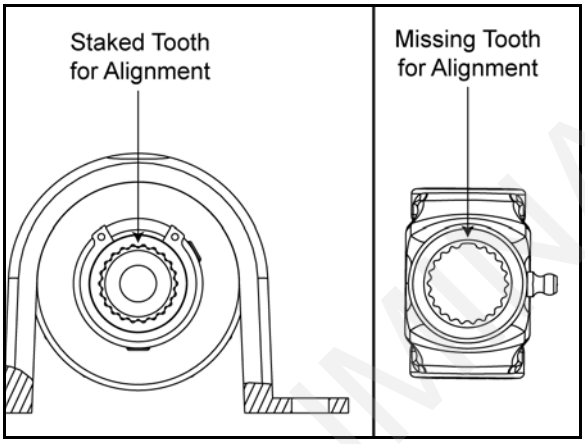
Bearing Set Screws: **30-35 in-lbs (3.4-4.0 Nm)**

7. Align the front and rear portions of the propshaft as shown below and slide them together.



8. Install the rubber isolator over the bearing.
9. Install the upper and lower halves of the bearing support along with the (2) fasteners. Torque the support bearing fasteners to specification.

= T
Support Bearing Fasteners: **16-18 ft-lbs (22-24 Nm)**

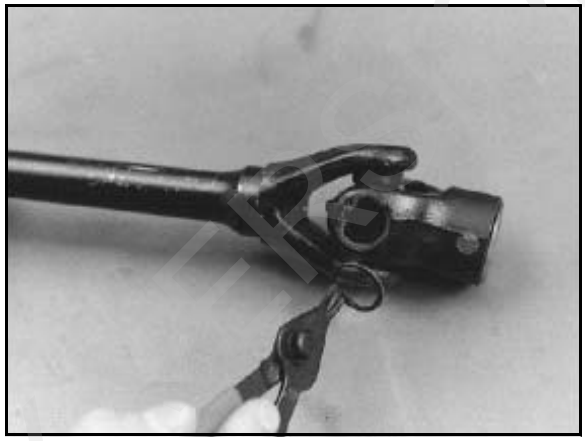
10. Install the front portion of the propshaft onto the front gearcase and install a NEW roll pin.
11. Reinstall the center console, selector handle and front seats.

PROPSHAFT U-JOINT SERVICE

Disassembly

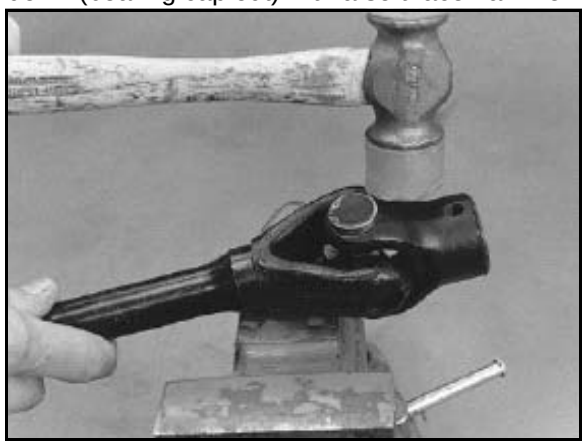
1. Remove internal or external snap ring from bearing caps.

⚠ CAUTION
Always wear eye protection.



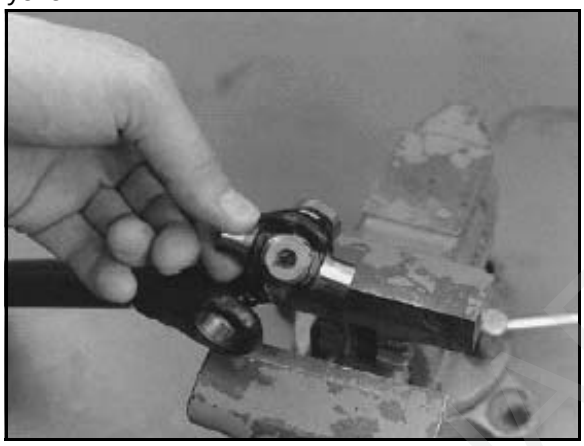
NOTE: If yoke or bearing is removed, cross bearing must be replaced. Note orientation of grease fitting and mark inner and outer yoke for correct re-positioning during installation.

2. Support inner yoke as shown and drive outer yoke down (bearing cap out) with a soft face hammer.



3. Support U-joint in vise as shown and drive inner yoke down to remove remaining bearing caps.

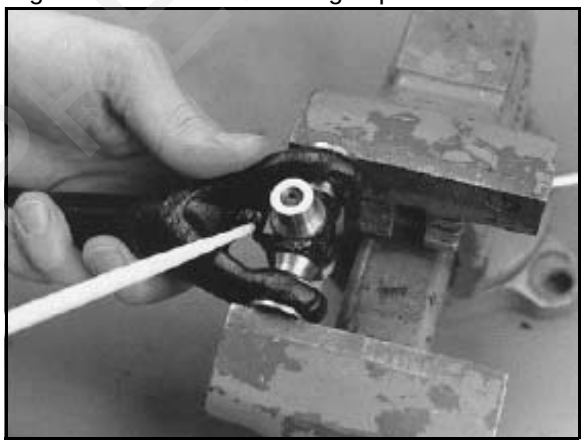
4. Force U-joint cross to one side and lift out of inner yoke.



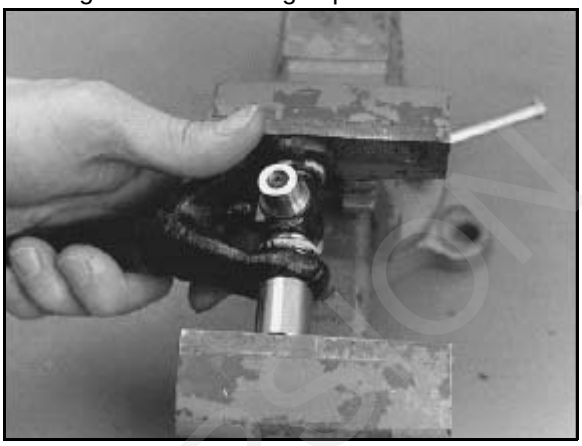
Assembly

1. Install new bearing caps in yoke by hand. Carefully install U-joint cross with grease fitting properly positioned inward toward center of shaft. Take care not to dislodge needle bearings upon installation of cross joint.

2. Tighten vise to force bearing caps in.



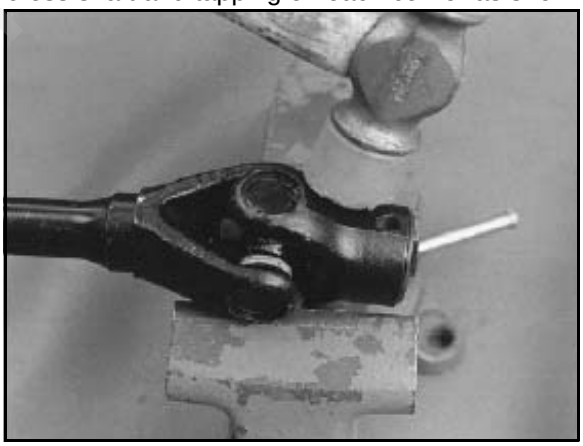
3. Using a suitable arbor, fully seat the bearing cap in one side. Continually check for free movement of bearing cross as bearing caps are assembled.



4. Install snap ring to contain bearing cap just installed. Repeat procedure for other side.

5. Install outer yoke, aligning marks made at disassembly and repeat Steps 1-3 to install bearing caps on outer yoke.

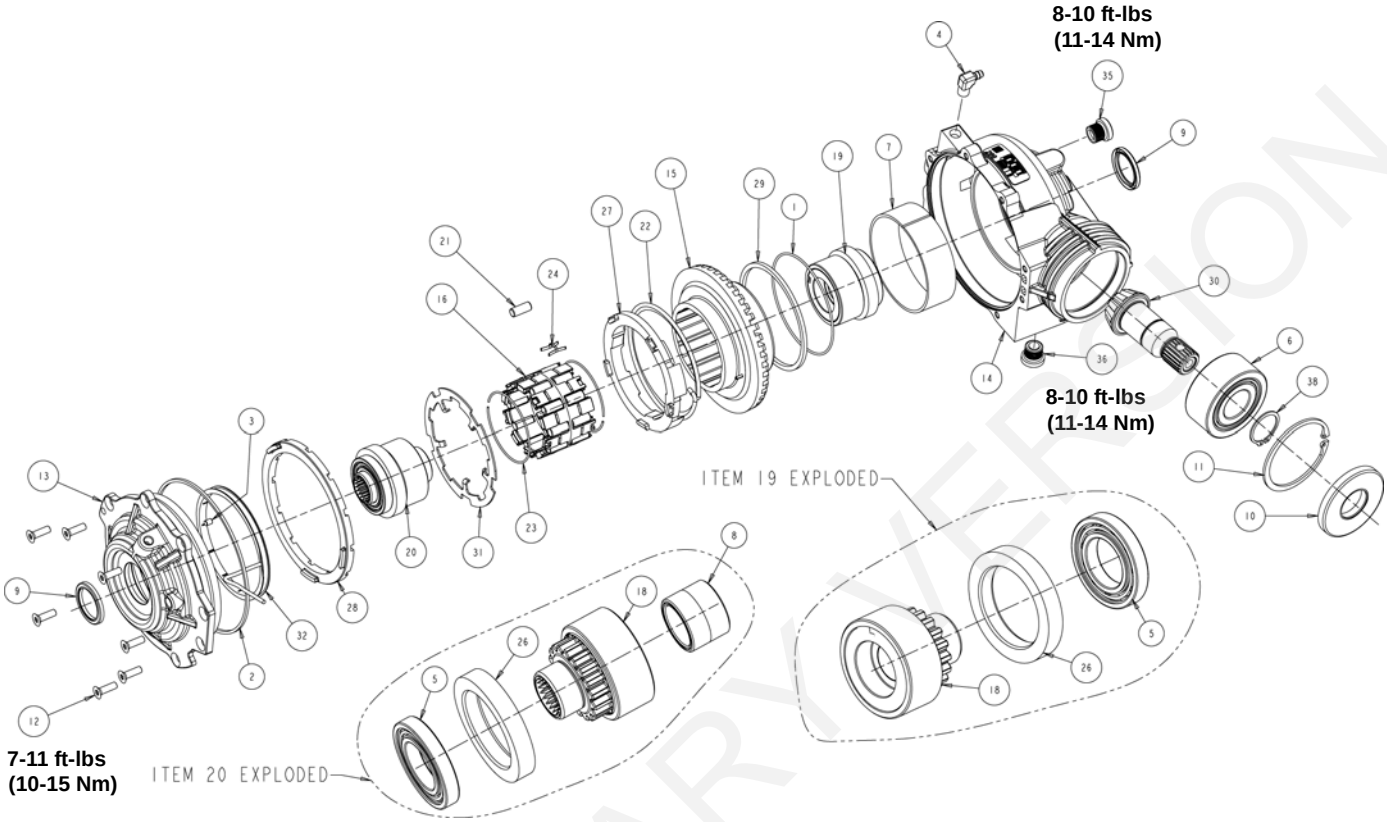
6. Seat all bearing caps against snap rings by supporting cross shaft and tapping on each corner as shown.



7. When installation is complete, yokes must pivot freely in all directions without binding. If the joint is stiff or binding, tap the yoke lightly to center the joint until it pivots freely.

FRONT GEARCASE / CENTRALIZED HILLIARD

Centralized Hilliard Exploded View



REF#	DESCRIPTION	QTY	REF#	DESCRIPTION	QTY
1	O-Ring	1	19	Hub Sub-Assembly (Female)	1
2	O-Ring	1	20	Hub Sub-Assembly (Male)	1
3	Dowel Pin	1	21	Rollers	20
4	Vent Hose Fitting	1	22	Torsion Spring	1
5	Ball Bearing	2	23	Spring, Wireform	2
6	Ball Bearing (Double Row)	1	24	H-Clip Spring	20
7	Bushing	1	26	Nylon Spacer	2
8	Bushing	1	27	Torsion Spring Retainer	1
9	Oil Seal	2	28	Backlash Spacer	1
10	Oil Seal	1	29	Ring Gear Spacer	1
11	Retaining Ring, Internal	1	30	Pinion Gear	1
12	Cover Screws, M6 (T30 Torx)	7	31	Armature Plate	1
13	Cover Plate Assembly	1	32	AWD Coil	1
14	Gearcase Housing	1	35	Fill Plug	1
15	Clutch Housing (Ring Gear)	1	36	Drain Plug, Magnetic	1
16	Roll Cage	1	38	Retaining Ring, External	1
18	Hub / Race Assembly	2			

All Wheel Drive Operation

The AWD switch may be turned on or off while the vehicle is moving, however, AWD will not enable until the engine RPM drops below 3100. Once the AWD is enabled, it remains enabled until the switch is turned off.

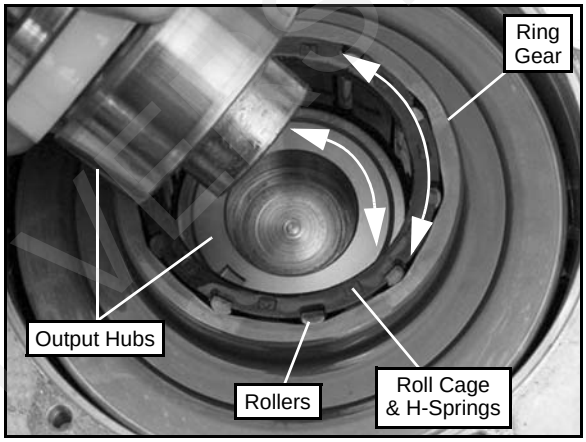
Engage the AWD switch before getting into conditions where the front wheel drive may be needed. If the rear wheels are spinning, release the throttle before switching to AWD.

> **⚠ CAUTION**
>
> Switching to AWD while the rear wheels are spinning may cause severe drive shaft and gearcase damage. Always switch to AWD while the rear wheels have traction or are at rest.

With the AWD switch off, the vehicle drives through the rear wheels only (2 wheel drive). When the AWD is enabled, the front drive acts as an on-demand AWD system. This means, the front drive will engage once the rear wheels have lost traction, and will remain engaged until the torque requirement goes away (i.e. rear wheels regain traction).

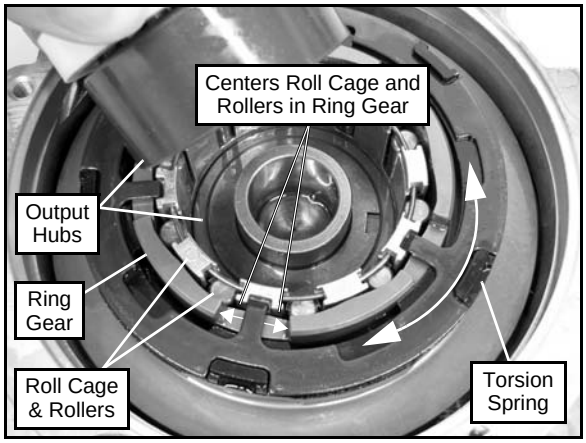
> **⚠ CAUTION**
>
> If the rear wheels are spinning, release the throttle before turning the AWD switch on. If AWD is engaged while the wheels are spinning, severe drive shaft and front gearcase damage could result.

AWD Engagement: When the AWD switch is activated, the AWD coil is powered by a 12 Vdc input which creates a magnetic field. This magnetic field attracts an armature plate that is keyed to the roll cage. When the ring gear and roll cage are spinning (vehicle is moving), the energized coil and armature plate will apply drag to the roll cage that indexes the rollers inside the ring gear to an engagement position. While in the engagement position, the front drive will be in an “over-running” condition (not engaged), until the rear wheels lose traction. Once the rear wheels begin to lose traction, the front drive will engage by coupling the output hubs to the ring gear via the rollers. The front drive will remain engaged until the torque requirement goes away (i.e. rear wheels regain traction).



AWD Disengagement: Once the rear wheels regain traction, the front wheels will return to the “over-running” condition. The vehicle is now back to rear wheel drive until the next loss of rear wheel traction occurs.

Torsion Spring Operation: The torsion spring acts as a return mechanism to help disengage the coupling of the output hubs and ring gear by creating an “over-running” condition for the rollers upon disengagement.



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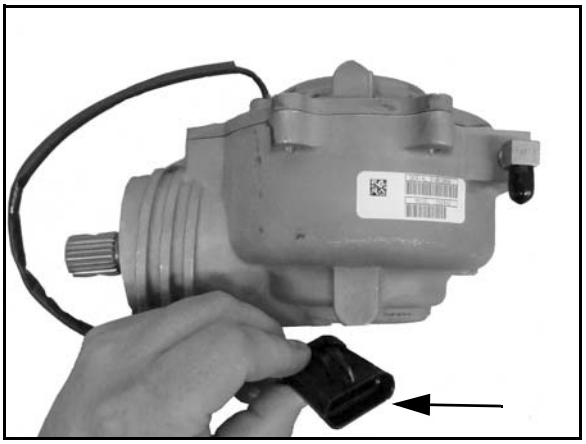
AWD Diagnosis

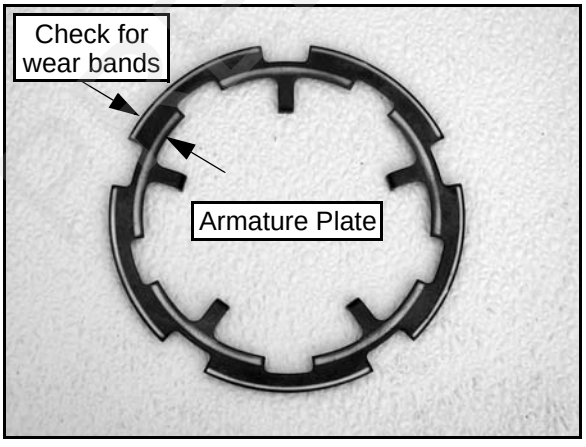
Symptom: AWD Will Not Engage

1. Check the gearcase coil resistance. To test the coil resistance, measure between Grey and Brown/White wires. Measurement should be within specification.

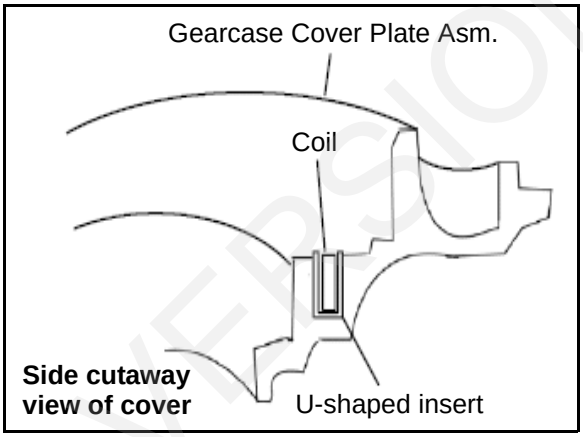


Front Gearcase Coil Resistance:
21.6 - 26.4 Ohms

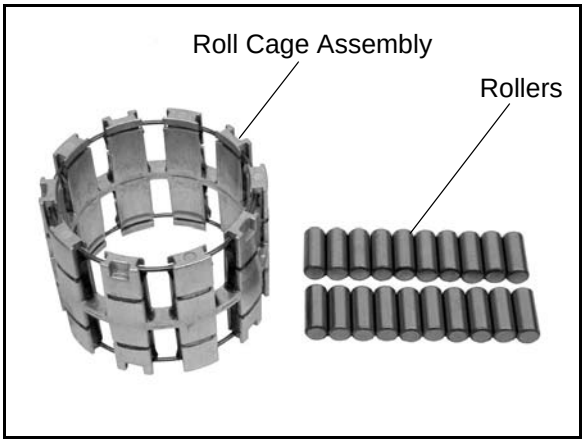
2. Turn the ignition and AWD switches on and place gear selector in High or Low gear. Check for minimum battery voltage at the Gray and Brown/White chassis wires that power the coil. A minimum of 11 Vdc should be present.
3. If electrical tests are within specification, remove gearcase (see “Gearcase Removal”) and inspect components.
4. Inspect armature plate for a consistent wear pattern. There should be two distinct wear bands (one band inside the other). If only one band of wear is present (or if there is wear between the two bands), inspect the coil area as indicated in Step 5. A wear band with an interrupted wear mark may indicate a warped plate, which may cause intermittent operation.



5. Check to make sure the coil is seated in the U-shaped insert that is pressed into the gearcase cover. The top of the coil should be seated below the U-shaped insert. The U-shaped insert controls the pole gap. If the top of the coil is above the surface of the U-shaped insert it raises the armature plate, thereby increasing pole gap. If the pole gap increases the coil will not be strong enough to engage the AWD system. If this is found, replace the cover plate assembly.



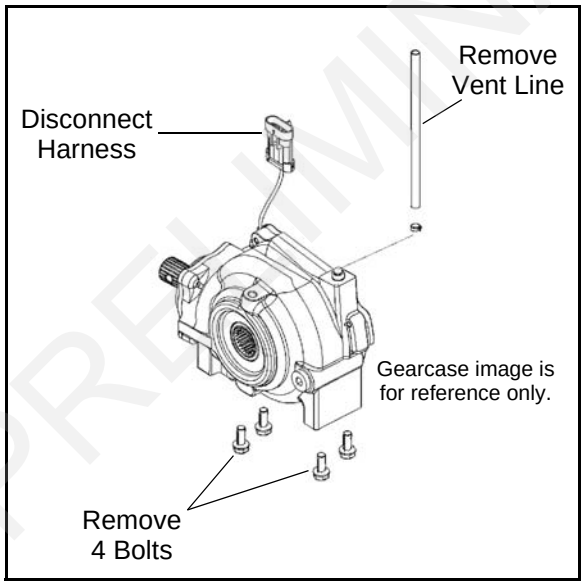
6. Inspect the rollers for nicks and scratches. The rollers must slide up, down, in and out freely within the roll cage sliding surfaces and H-springs.
7. Inspect the roll cage assembly for cracks or excessive wear. If damaged, replace the roll cage assembly.



Gearcase Removal

1. Stop engine and place gear selector in Park.
2. Refer to “FRONT DRIVE SHAFT - Drive Shaft Removal” and remove both front drive shafts from the front gearcase.
3. Remove the propshaft (see “PROPSHAFT SERVICE”).
4. Disconnect the wire harness above the front gearcase and remove the harness from the retaining dart.

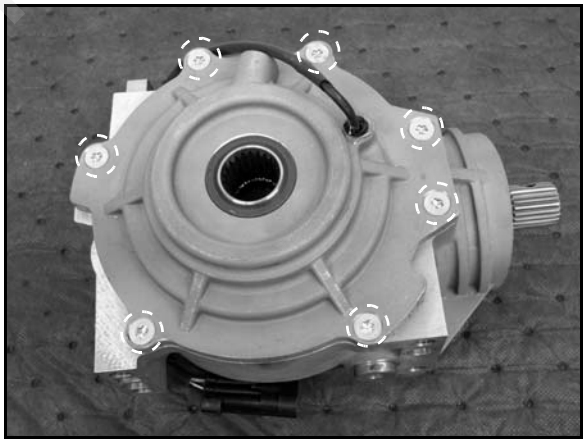
5. Remove the vent line from the front gearcase.
6. Remove the (4) bolts securing the front gearcase to frame.

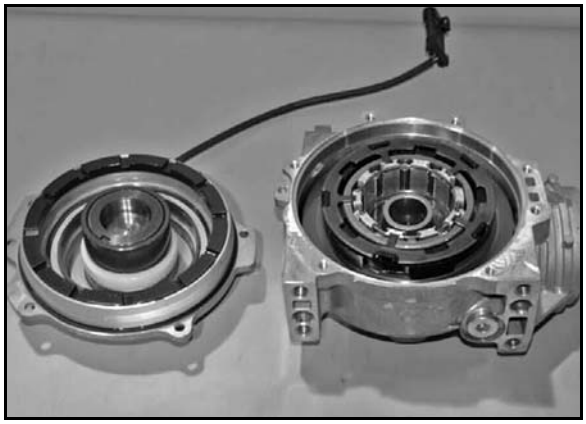


7. Remove the gearcase from the front LH wheel well area and slide it between the upper and lower A-arm.

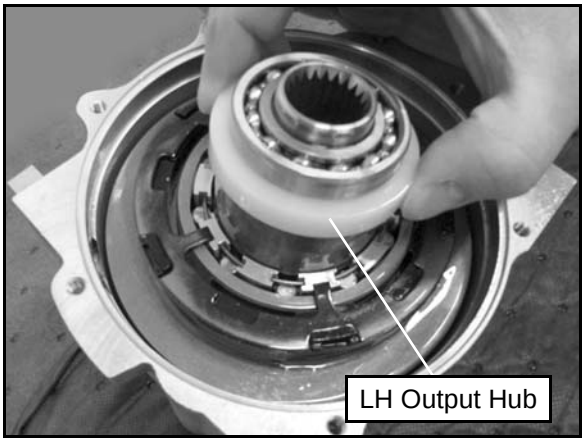
Gearcase Disassembly / Inspection

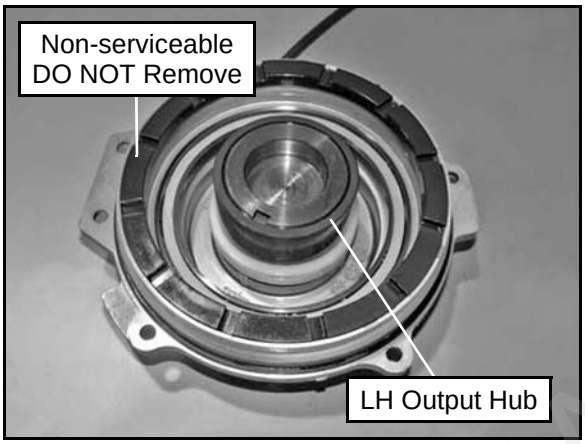
1. Drain and properly dispose of gearcase fluid. Remove any metal particles from the drain plug magnet.
2. Remove the (7) cover screws and remove the cover plate assembly.





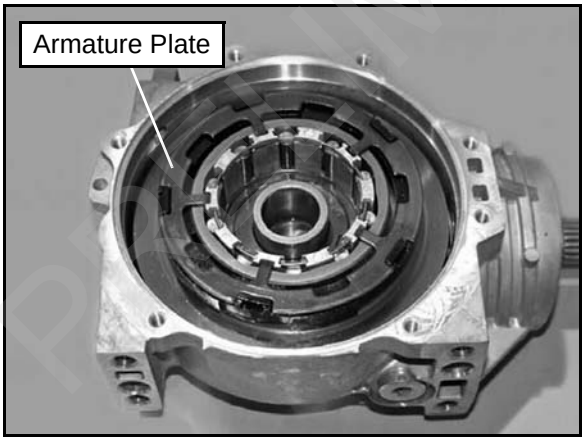
3. Remove the LH output hub assembly from the clutch housing or outer cover plate assembly.



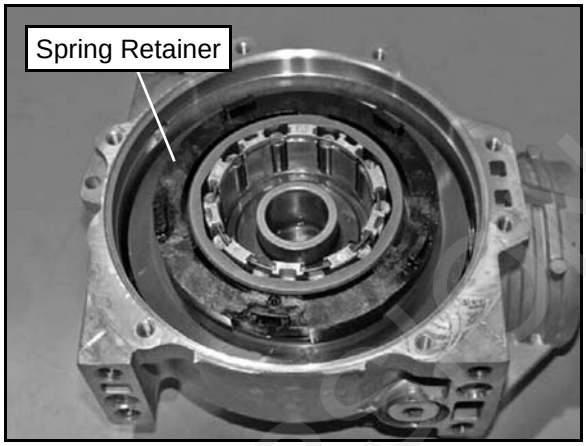


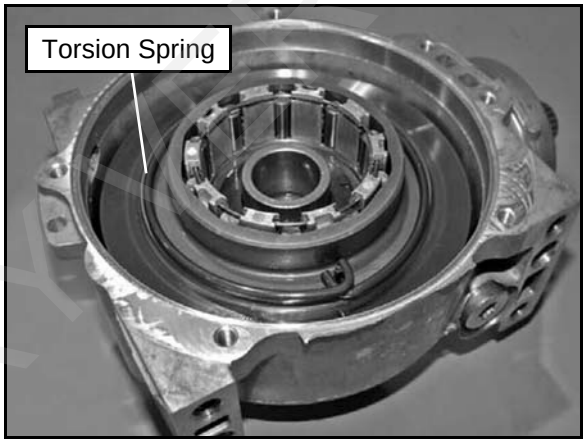
NOTE: Nylon spacer is non-serviceable and should not be removed.

4. Remove and inspect the armature plate. Refer to “AWD Diagnosis” for detailed inspection process.

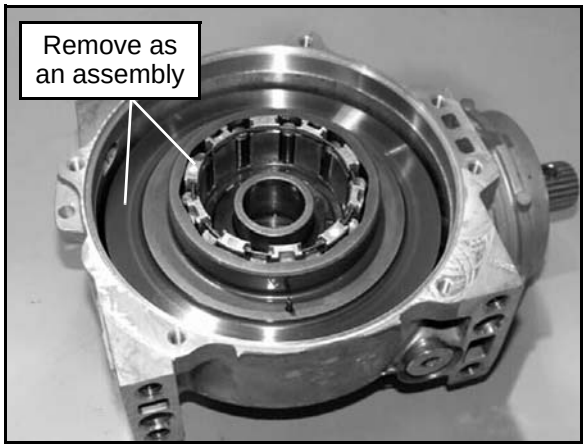


5. Remove the torsion spring retainer and torsion spring from the top of the ring gear.



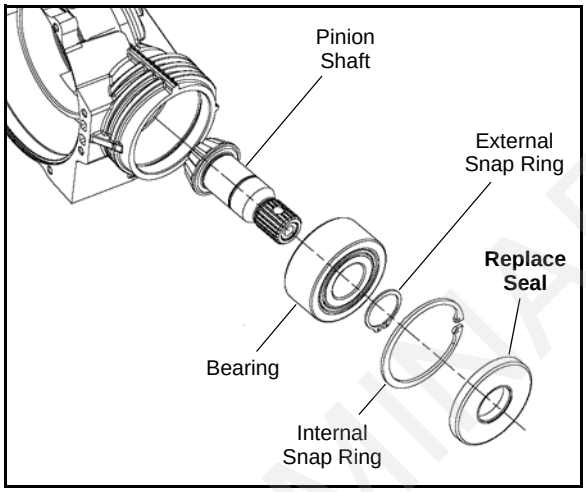


6. Remove the clutch housing / ring gear and roll cage assembly from the gearcase housing.

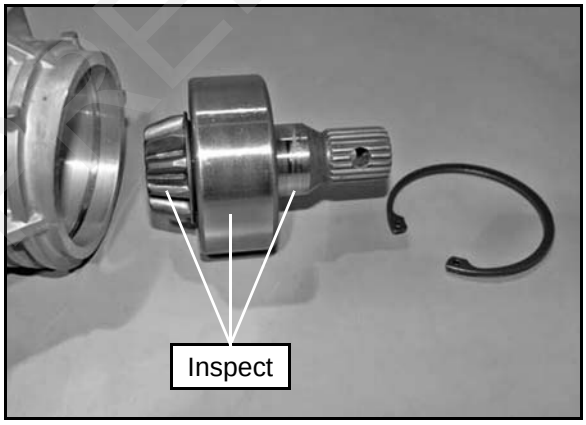


7. Remove the RH output hub assembly from the gearcase housing.

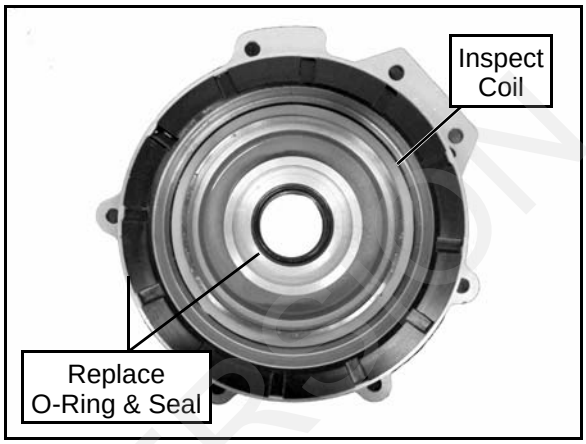
8. Remove pinion seal, internal retaining ring and pinion gear assembly from the gearcase housing. Inspect and clean the gearcase housing and replace all oil seals and O-rings.



9. Inspect the pinion gear for chipped, broken or missing teeth. Inspect the pinion bearing for signs of wear and the pinion shaft seal surface for pitting.



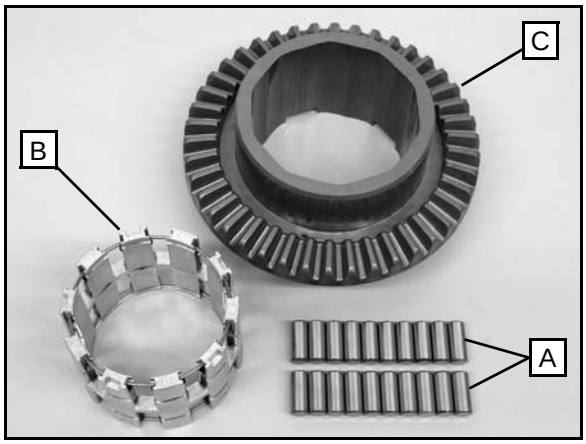
10. Inspect the AWD coil located in the outer cover plate assembly. Refer to “AWD Diagnosis” for detailed inspection process. Replace the cover plate seal and O-ring.



11. Remove the roll cage assembly and rollers from the clutch housing. Use a shop towel to cover the housing in order to retain all the rollers.

NOTE: Rollers are spring loaded. Take care not to allow them to fall out or lose them upon removal of the roll cage.

12. Thoroughly clean all parts and inspect the rollers (A) for nicks and scratches. The rollers must slide up and down and in and out freely within the roll cage (B) sliding surfaces and H-springs.



IMPORTANT: Refer to the “Electronic Parts Catalog” for individual part availability. Most parts are to be replaced as an assembly or as a complete kit.

13. Inspect clutch housing ring gear (C) for a consistent wear pattern. Inspect the ring gear for chipped, broken, or missing teeth.

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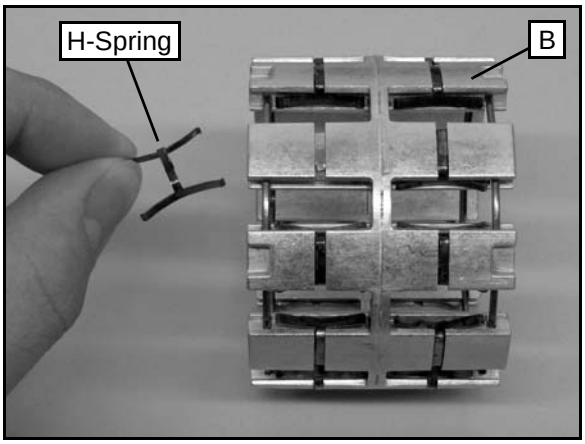
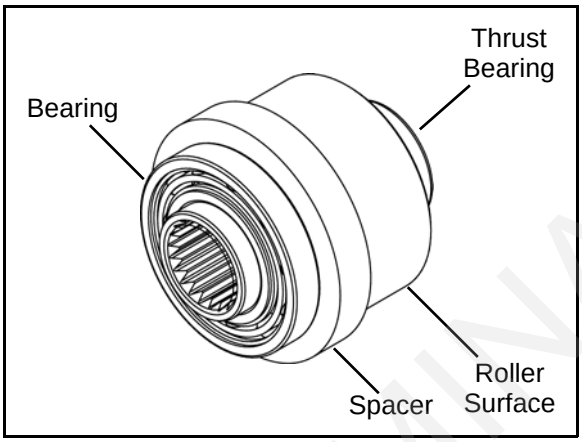
14. Inspect the roll cage assembly (B) sliding surfaces and H-springs. The sliding surfaces must be clean and free of nicks, burrs or scratches. If damaged, replace the roll cage assembly.



15. Inspect both output hub assemblies. Inspect the bearings and replace if needed.



16. Clean and inspect all remaining front gearcase components. Check each for excessive wear or damage.

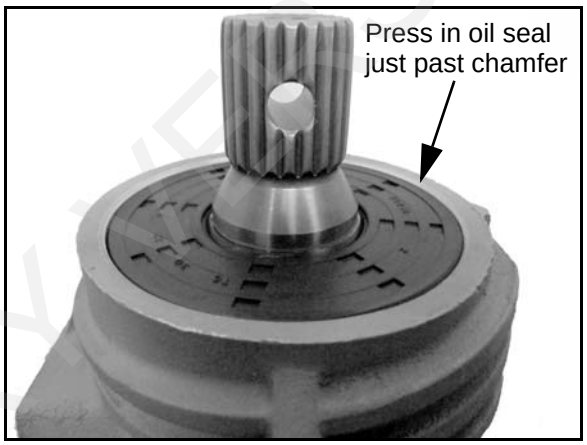
Gearcase Assembly

1. As mentioned during gearcase disassembly section, replace all O-rings, seals and worn components.

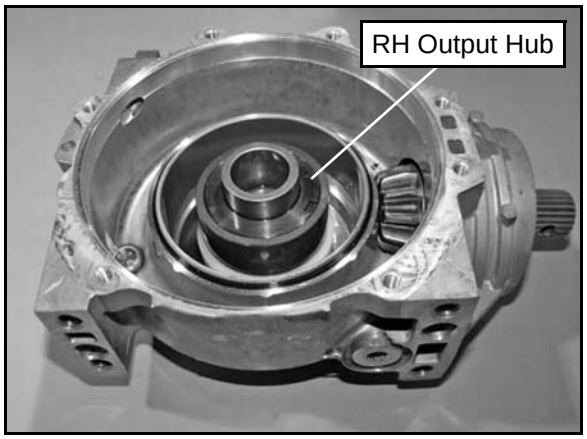
2. Install pinion shaft assembly and install internal snap ring.

NOTE: If bearing replacement was required, press new bearing onto the pinion shaft and install a new external snap ring.

3. Install a new pinion shaft seal into the pinion gear housing. Using a universal seal installer, press the new seal into the housing until the seal is just below the housing chamfer.

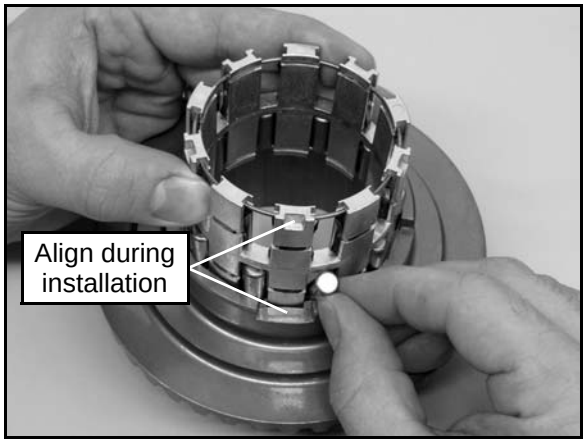


4. Install the RH output hub into the gearcase housing.

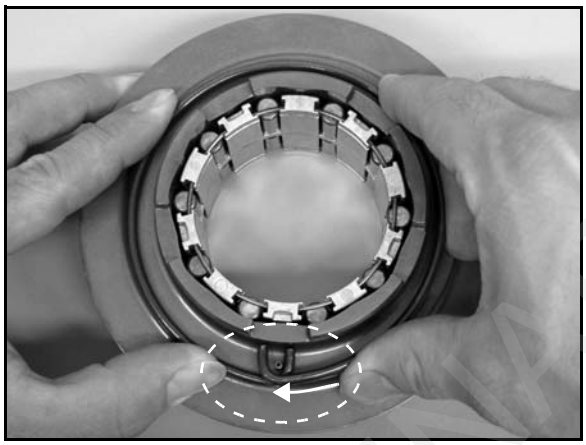


5. Carefully install the rollers into the roll cage assembly while installing the assembly into the clutch housing.

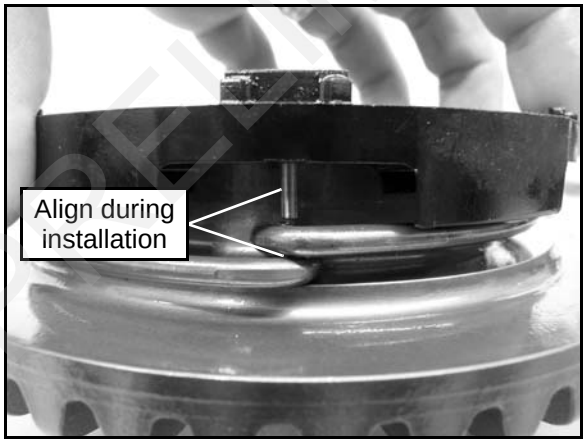
NOTE: Install the roll cage so that the ring gear grooves line up with the roll cage slots (see below).



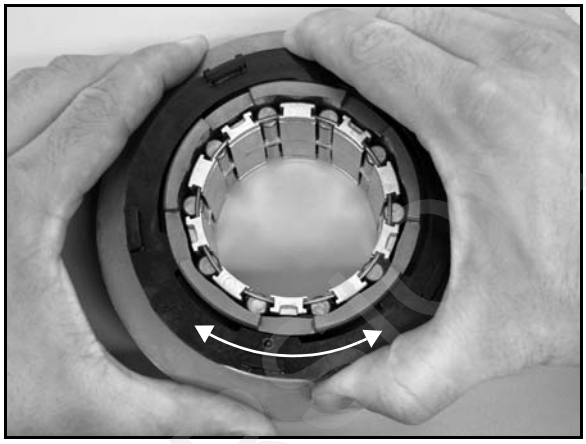
6. Install the torsion spring by wrapping each leg of the spring around the dowel pin on the ring gear.



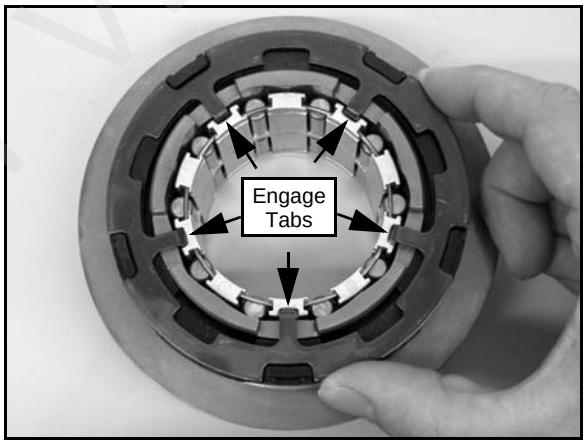
7. Align the spring retainer dowel pin with the ring gear dowel pin and install the retainer on top of the torsion spring.



8. Check the action of the torsion spring by rotating in both directions to ensure the spring and retainer are installed properly.

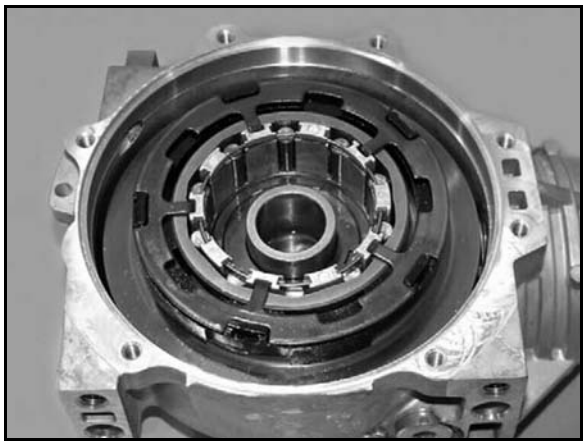


9. Be sure the armature plate tabs are fully engaged into the roll cage assembly and are resting on the cut-grooves of the ring gear.



NOTE: Verify armature plate tabs are in the slots on the roll cage and are resting in the ring gear grooves.

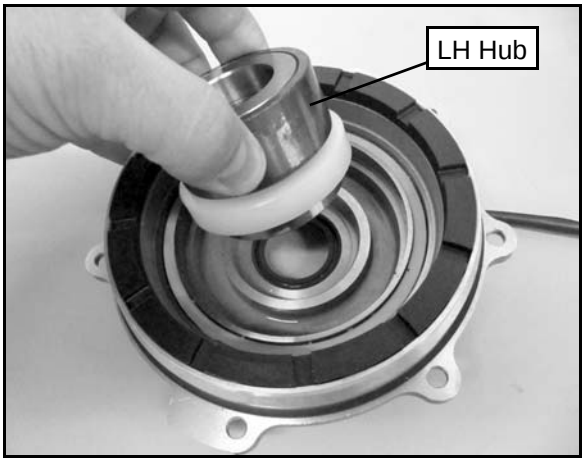
10. Carefully install the ring gear and roll cage assembly into the gearcase housing.



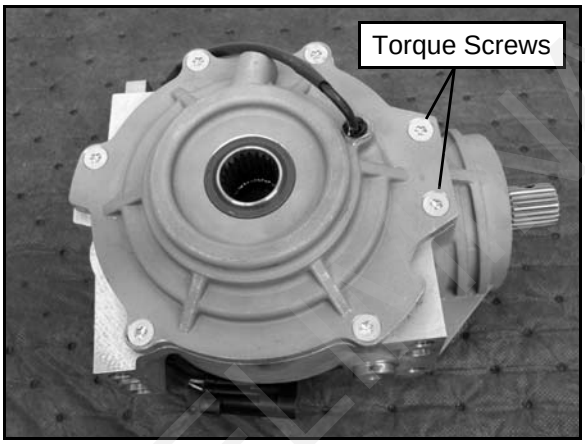
11. Install a new O-ring on the cover plate assembly.

NOTE: Be sure the square O-ring is placed flat on the cover surface. If the O-ring is twisted fluid leakage may occur.

12. Carefully install the LH output hub assembly into the cover plate. Take care not to damage the new cover plate seal while installing the output hub.



13. Install the output cover assembly onto the gearcase housing. Install the (7) cover plate screws and torque to specification.



= T
Cover Plate Screws: **7-11 ft-lbs (10-15 Nm)**

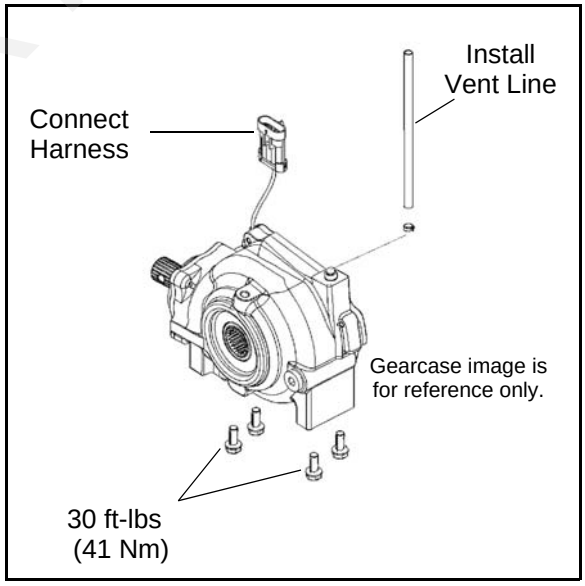
Gearcase Installation

1. Install the gearcase back into the vehicle through the LH wheel well area, between the upper and lower A-arms.

2. Install the propshaft onto the front gearcase input shaft. Use a NEW roll pin in the front propshaft.

3. Install the (4) bolts that secure the front gearcase to the frame and torque to **30 ft-lbs (41 Nm)**.

4. Install the vent line.



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Front Gearcase Mounting Bolts: **30 ft-lbs (41 Nm)**

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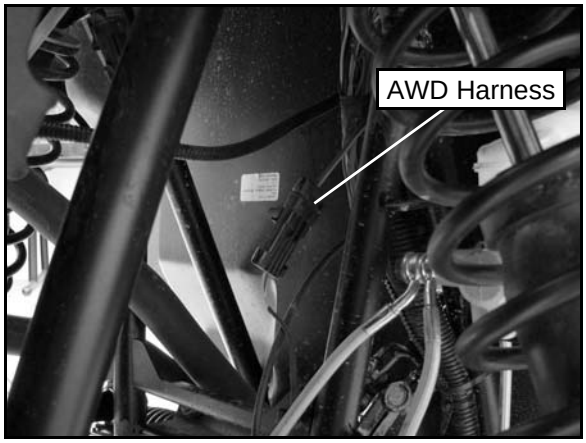
5. Connect the AWD wire harness.



6. Refer to “FRONT DRIVE SHAFT - Drive Shaft Installation” and install both front drive shafts into the gearcase.

7. Add the proper lubricant to the front gearcase. Refer to Chapter 2 for fluid fill and change information.

Polaris Demand Drive Plus
(PN 2877922)

Front Housing Capacity
6.75 fl. oz. (200 ml)

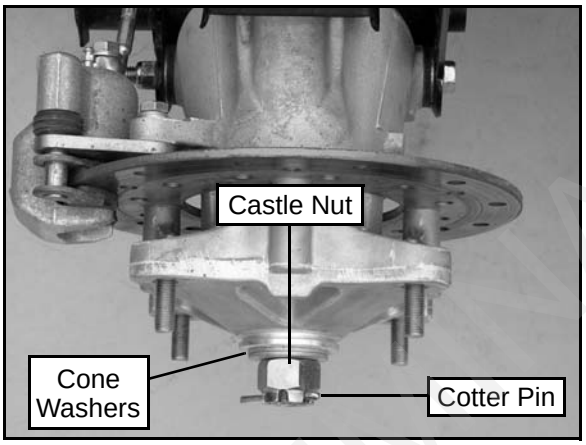
REAR BEARING CARRIER

Bearing Carrier Inspection / Removal

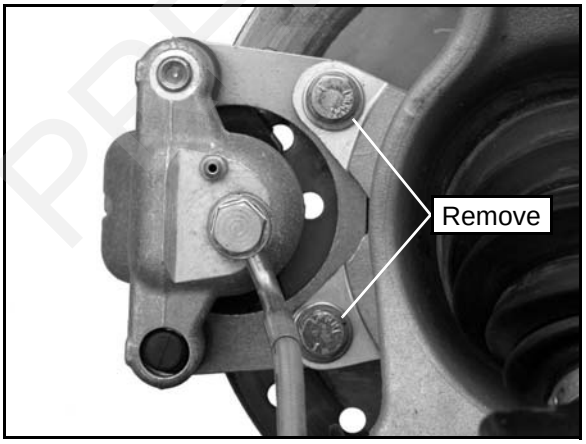
1. Elevate rear of vehicle and safely support machine under the frame area.

> **⚠ CAUTION**
>
> Serious injury may result if machine tips or falls. Be sure machine is secure before beginning this service procedure. Wear eye protection when removing bearings and seals.

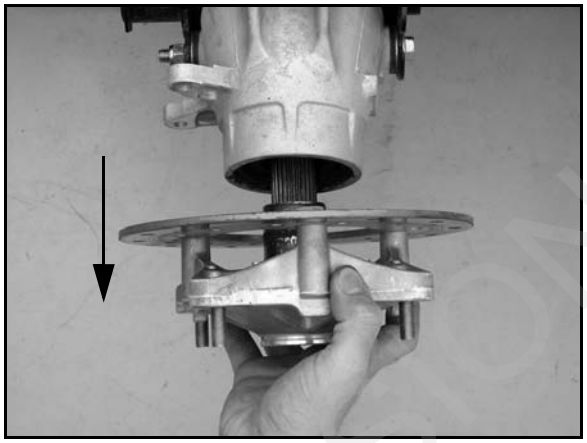
2. Check bearings for side play by grasping the top and bottom of the tire firmly and checking for movement. The tire should rotate smoothly without binding or rough spots.
3. Remove the (4) wheel nuts and remove rear wheel.
4. Remove the cotter pin and loosen the rear wheel hub castle nut. Remove the nut, and (2) cone washers from the rear wheel hub assembly.



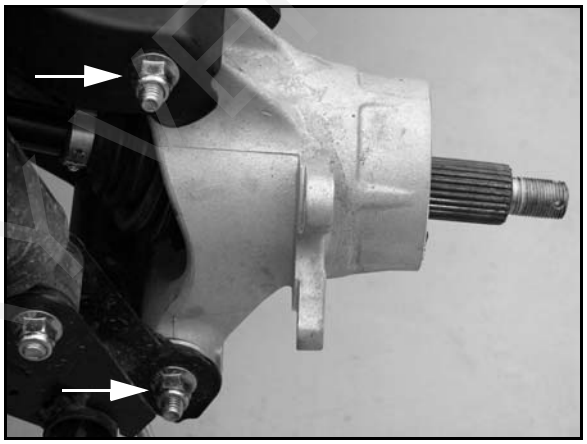
5. Remove the two brake caliper mounting bolts. **CAUTION:** Do not hang caliper by the brake line. Use wire to hang caliper to prevent damage to brake line.



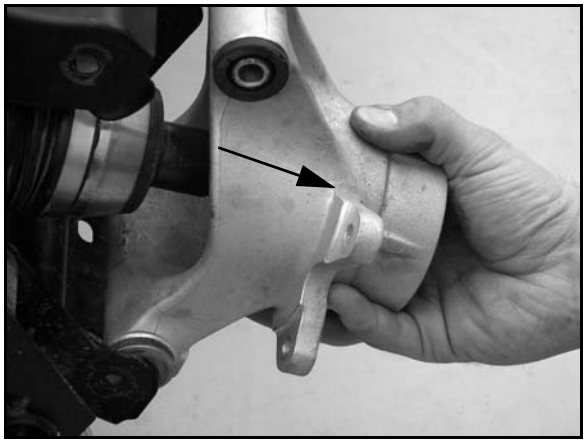
6. Remove the rear wheel hub assembly.



7. Remove the bolts that attach the rear bearing carrier to the upper and lower A-arms.



8. Remove the bearing carrier from the rear drive shaft.



9. Rotate bearing by hand and check for smooth rotation. Visually inspect bearing for moisture, dirt, or corrosion. Replace bearing if any of these things are evident.

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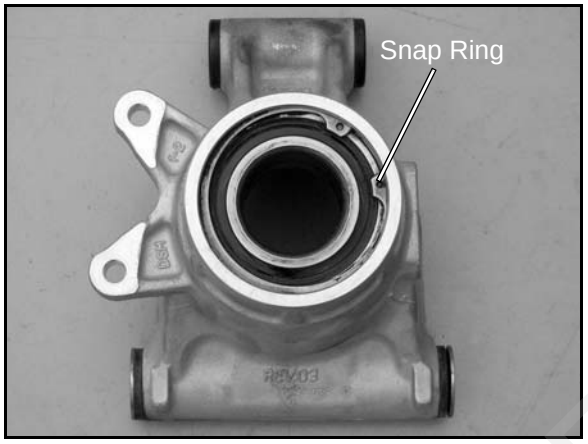
NOTE: Due to extremely close tolerances and minimal wear, the bearings must be inspected visually, and by feel. While rotating bearings by hand, inspect for rough spots, discoloration, or corrosion. The bearings should turn smoothly and quietly, with no detectable up and down movement and minimal movement sideways between inner and outer race.

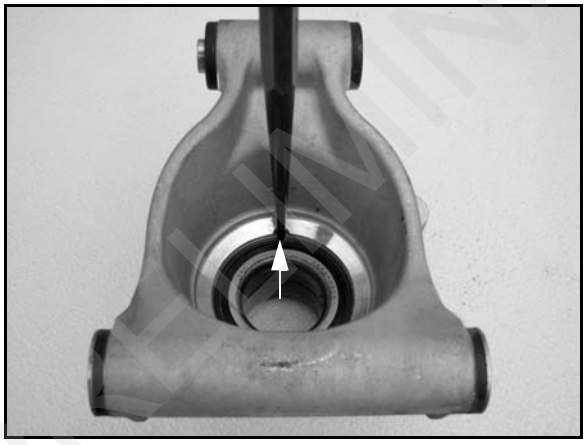
Bearing Replacement

Bearing Removal

1. Remove outer snap ring.



2. From the back side of the bearing carrier, tap on the outer bearing race with a drift punch in the reliefs as shown.



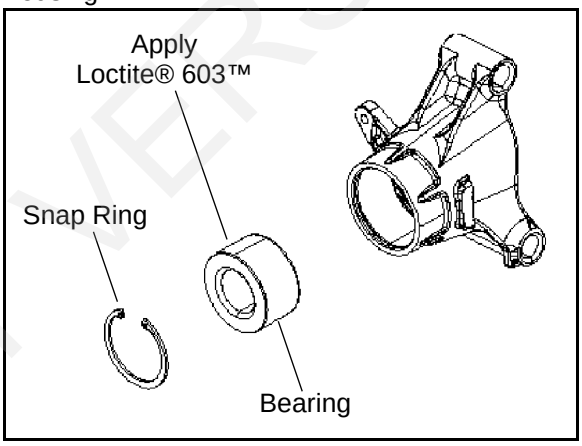
3. Drive bearing out evenly by tapping on outer race only. Once bearing is at bottom of casting, support casting on outer edges so bearing can be removed.
4. Inspect the bearing carrier housing for scratches, wear or damage. Replace rear bearing carrier if damaged.

Bearing Installation

5. Thoroughly clean the rear bearing carrier housing and the outer race on the new bearing. Be sure that all oil residue has been removed from each surface.
6. Support the bottom of the bearing carrier housing.

> **⚠ CAUTION**
>
> Use an arbor and press only on the outer race, otherwise bearing damage may occur.

7. Apply **Loctite® 603™** retaining compound to the outer circumference of the new bearing race and carefully press the new bearing into the bearing carrier housing.

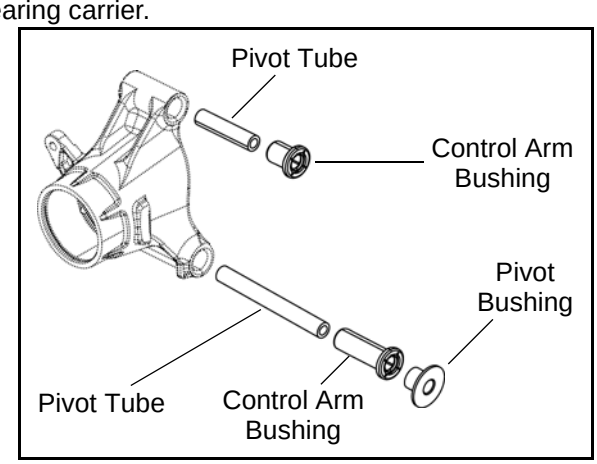


NOTE: Use care to not allow any of the Loctite® compound to get in the bearing.

8. Wipe the housing clean of any excess compound and install the snap ring.

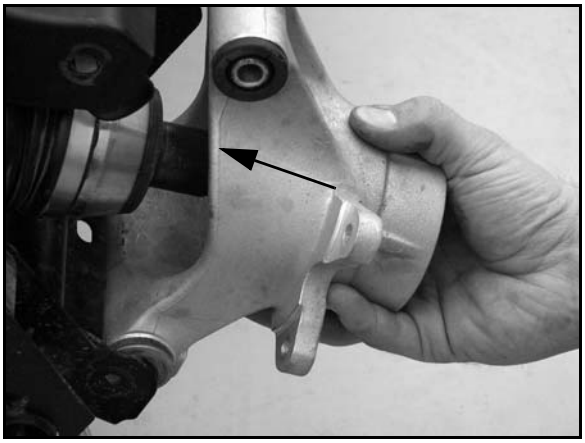
Bearing Carrier Bushing Replacement

Check bearing carrier bushings and pivot tubes for excessive wear or damage. If replacement is required, slide pivot tubes out and remove bushings with a drift punch. Install new bushings by pressing them into the bearing carrier.

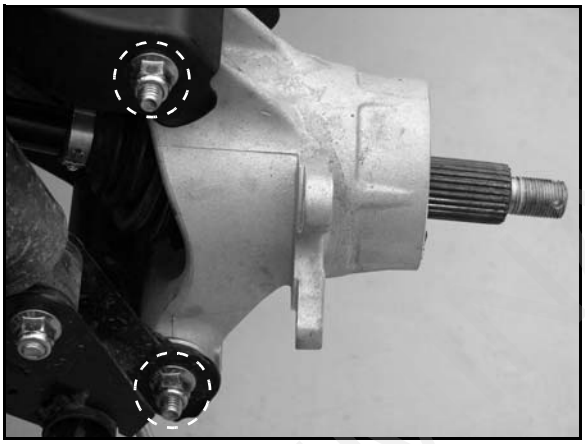


Bearing Carrier Installation

1. Install drive shaft axle through the backside of the bearing carrier. Be sure bushings and pivot tubes are installed.



2. Install the fasteners that attach the rear bearing carrier to the upper and lower A-arms. Torque bolts to specification.



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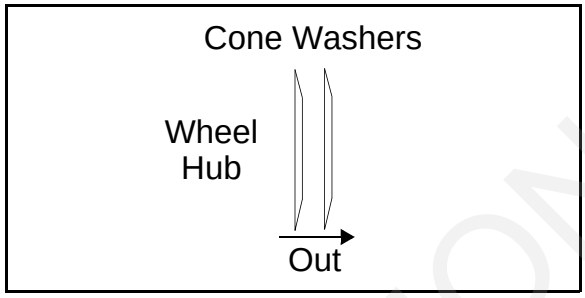
Upper Rear Bearing Carrier Bolts: RZR: **33 ft-lbs (45 Nm)** RZR S / RZR 4: **40 ft-lbs (54 Nm)**

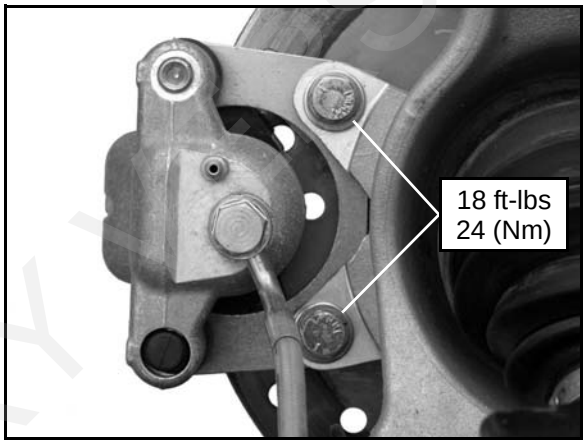
= T
Lower Rear Bearing Carrier Bolts: RZR: **38 ft-lbs (52 Nm)** RZR S / RZR 4: **40 ft-lbs (54 Nm)**

3. Apply grease to drive shaft axle splines.

4. Install rear wheel hub assembly, cone washers, and hand tighten the castle nut. Install washers with domed side out.



5. Install brake caliper mounting bolts and torque to **18 ft-lbs (24 Nm)**.



= T
Rear Caliper Mounting Bolts: **18 ft-lbs (24 Nm)**

⚠ CAUTION
New bolts have a pre-applied locking agent which is destroyed upon removal. Always use new brake caliper mounting bolts upon assembly.

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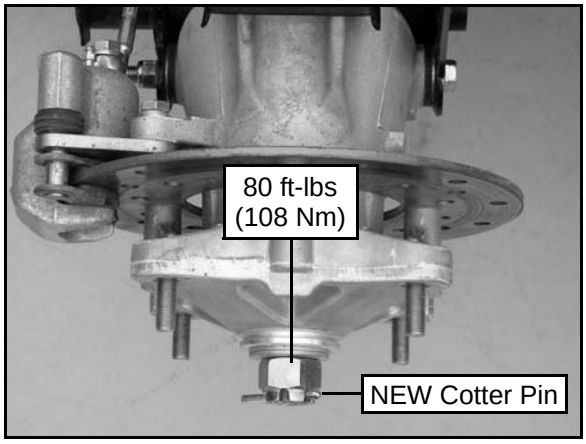
6. Torque wheel hub nut to **80 ft-lbs (108 Nm)** and install a NEW cotter pin. Tighten nut slightly if necessary to align cotter pin holes.



= T
Wheel Hub Castle Nut: **80 ft-lbs (108 Nm)**

7. Install wheel and (4) wheel nuts. Torque wheel nuts to specification.

= T
Wheel Nuts: Steel Wheels: **27 ft-lbs (37 Nm)** Aluminum Wheels: **30 ft-lbs + 90° (1/4 turn)**

8. Rotate wheel and check for smooth operation. Bend both ends of cotter pin around end of spindle in different directions.

REAR DRIVE SHAFT

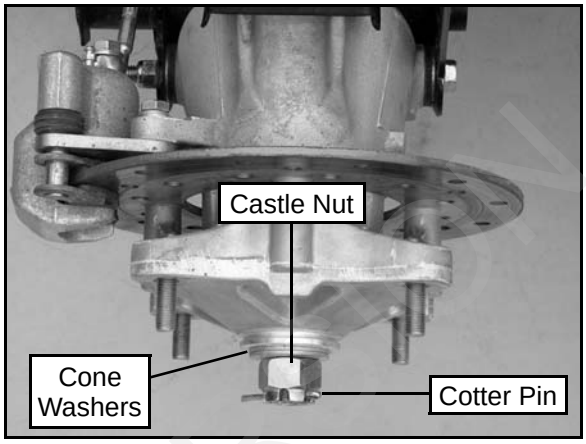
Drive Shaft Removal

1. Elevate rear of vehicle and safely support machine under the frame area.

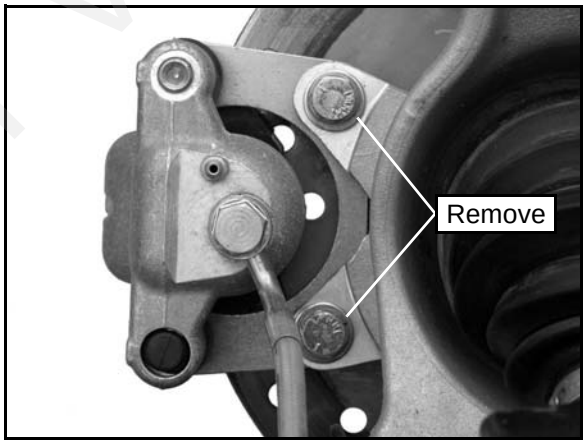
CAUTION
Serious injury may result if machine tips or falls. Be sure machine is secure before beginning this service procedure. Wear eye protection when removing bearings and seals.

2. Remove the (4) wheel nuts and remove rear wheel.

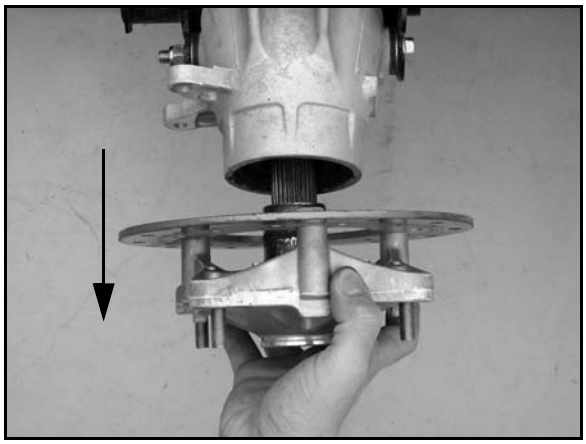
3. Remove the cotter pin and loosen the rear wheel hub castle nut. Remove the nut, and (2) cone washers from the rear wheel hub assembly.



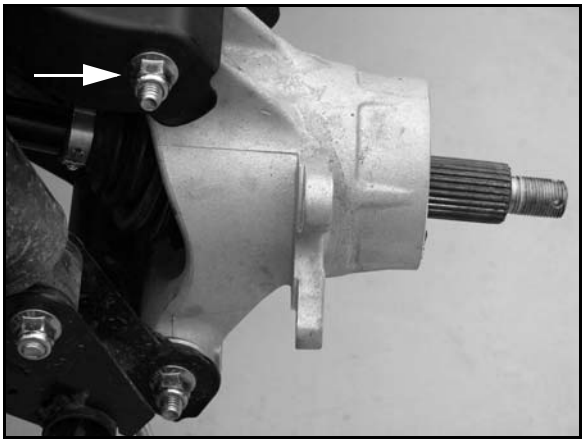
4. Remove the two brake caliper mounting bolts.
CAUTION: Do not hang the caliper by the brake line. Use wire to hang caliper to prevent damage to the brake line.



5. Remove the rear wheel hub assembly.



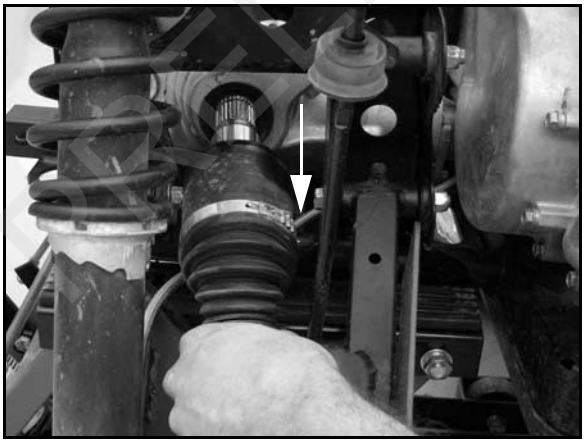
6. Remove the bolt that attaches the rear bearing carrier to the upper A-arm.



7. Slide the rear drive shaft out of the bearing carrier by pulling the bearing carrier assembly outward and tipping it down to remove the shaft.

8. Grasp the rear drive shaft and pull sharply outward on the shaft to disengage it from the rear gearcase.

NOTE: Take care when removing to prevent damaging the seal.

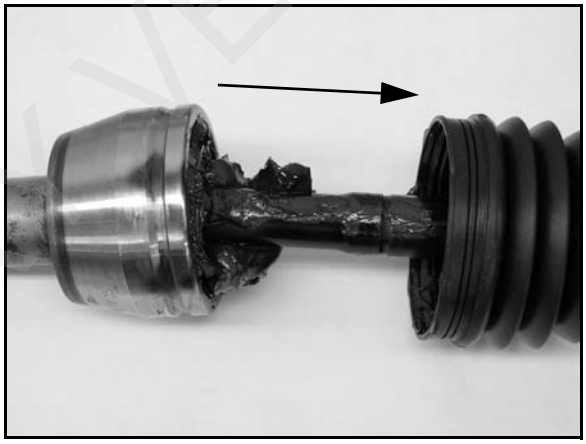


9. Inspect axle splines and CV boots for any damage.

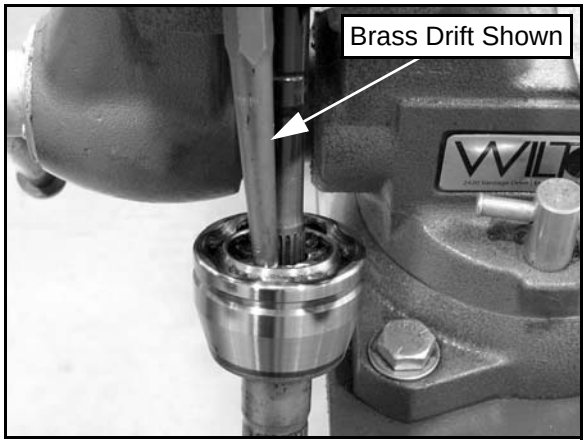
Outer CV Joint / Boot Replacement

1. Use a side cutters to cut and discard the boot clamps.

2. Remove the large end of the boot from the CV joint and slide the boot down the shaft.

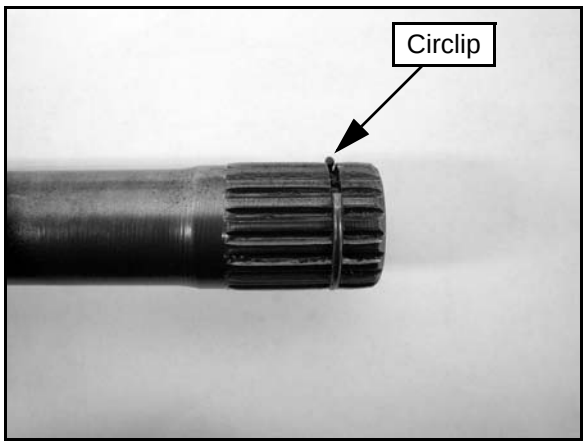


3. Clean the grease from the face of the joint.
4. Place the drive shaft in a soft-jawed vise. Using a soft-faced hammer, or brass drift, strike the inner race of the joint to drive the joint off the drive shaft. Be sure to tap evenly around the joint to avoid binding.



IMPORTANT: Tap on inner race only!

5. Make sure circlip is on the shaft and not left in the joint.



6. Remove the CV boot from the shaft.

> **⚠ CAUTION**
>
> Complete disassembly of the CV joint is NOT recommended. The internal components are precision fit and develop their own characteristic wear patterns. Intermixing the internal components could result in looseness, binding, and/or premature failure of the joint.

IMPORTANT: If the grease in the joint is obviously contaminated with water and/or dirt, the joint should be replaced.

7. Thoroughly clean the joint with an appropriate solvent and dry the joint to prevent any residual solvent from being left in the joint upon reassembly.

8. Visually inspect the joint by tilting the inner race to one side to expose each ball. Severe pitting, galling, play between the ball and its cage window, any cracking or damage to the cage, pitting or galling or chips in raceways call for joint replacement.

NOTE: Shiny areas in ball tracks and on the cage spheres are normal. Do not replace CV joints because parts have polished surfaces. Replace CV joint only if components are cracked, broken, worn or otherwise unserviceable.

9. Clean the splines on the end of the shaft and apply a light coat of grease prior to reassembly.

10. Slide the small boot clamp and boot (small end first) onto the drive shaft and position the boot in it's groove machined in the shaft.

11. Install a NEW circlip on the end of the shaft.

12. Grease the joint with the special CV joint grease provided in the boot replacement kit. Fill the cavity behind the balls and the splined hole in the joint's inner race. Pack the ball tracks and outer face flush with grease. Place any remaining grease into the boot.

> **⚠ CAUTION**
>
> The grease provided in the replacement kit is specially formulated for wear resistance and durability. DO NOT use substitutes or mix with other lubricants.

NOTE: It is very important to use the correct type and quantity of grease by using all the grease included with the boot kit. DO NOT use a substitute grease and DO NOT overfill or under fill the CV joint.

Boot Replacement Grease Requirement:

Outer CV Joint Capacity:
RZR - 80g
RZR S / RZR 4 - 90g

Grease Only Service Kit: PN 1350047 (50g)

13. Slide the joint onto the drive shaft splines and align the circlip with the lead-in chamfer on the inner race of the joint.

14. Use a soft-faced hammer to tap the joint onto the drive shaft until it locks into place.

15. Pull on the joint to make sure it is securely locked in place.

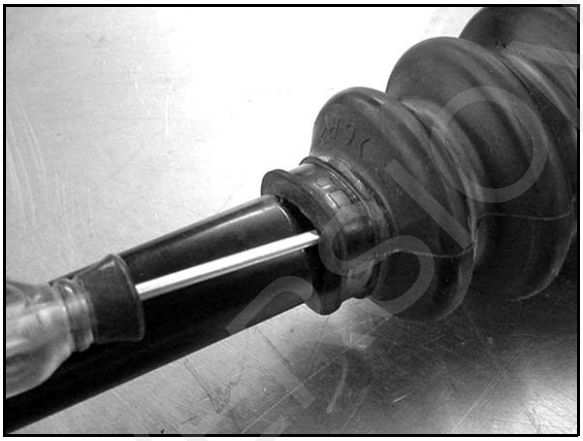
16. Remove excess grease from the CV joint's external surfaces and place the excess grease in the boot.

17. Pull the boot over the joint and position the boot lips into the grooves on the joint housing and shaft. Make sure the boot is not dimpled or collapsed.

18. Install and tighten the large clamp using the appropriate clamp tool.

Axle Boot Clamp Tool: PU-48951
or
CV Boot Clamp Pliers: 8700226

19. While pulling out on the CV shaft, slide a straight O-ring pick or a small slotted screw driver between the small end of the boot and the shaft. This will allow the air pressure to equalize in the CV boot in the position that the joint will spend most of its life. Before you remove your instrument, be sure the small end of the boot is in its correct location on the shaft.

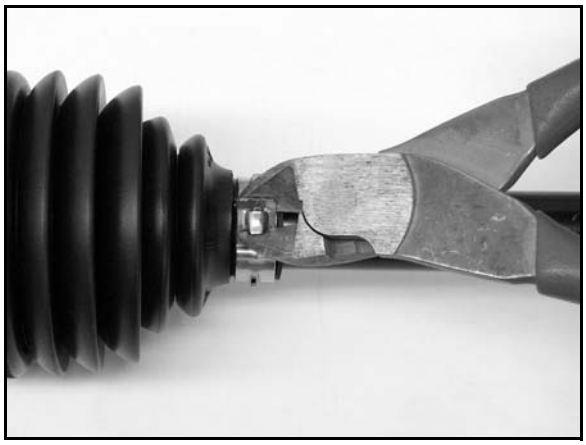


20. Install and tighten the small clamp on the boot using the appropriate clamp tool.

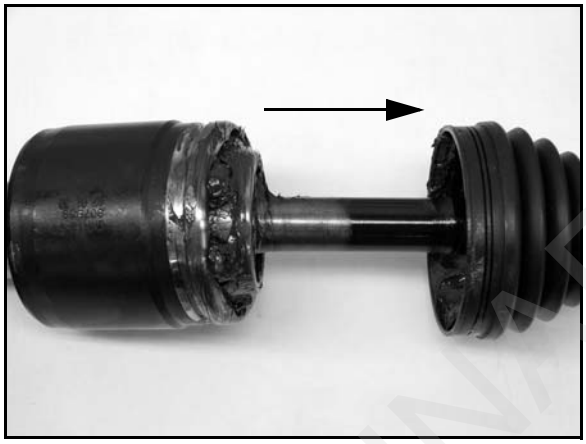
Axle Boot Clamp Tool: PU-48951
or
CV Boot Clamp Pliers: 8700226

Inner Plunging Joint / Boot Replacement

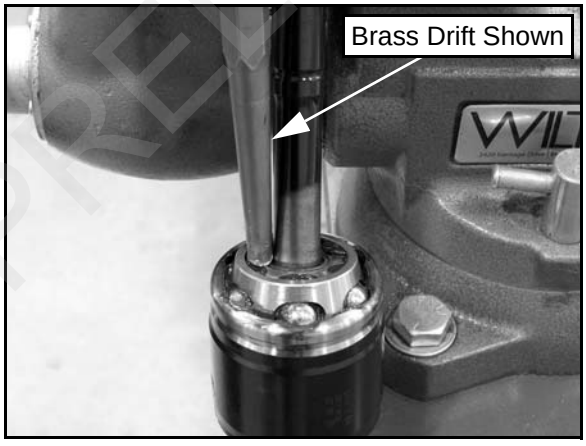
1. Use a side cutters to cut and discard the boot clamps.



2. Remove the large end of the boot from the plunging joint and slide the boot down the shaft.

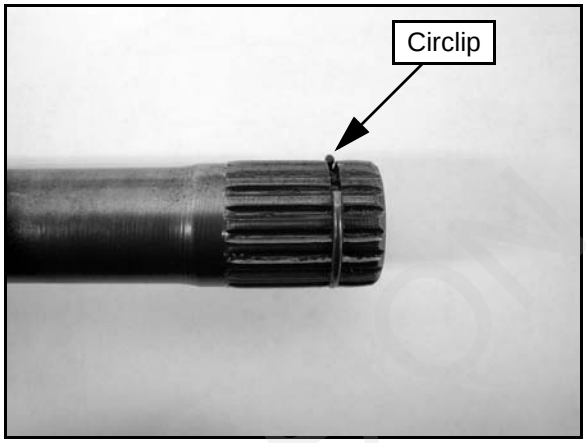


3. Clean the grease from the face of the joint and place the drive shaft in a soft-jawed vise.
4. Using a soft-faced hammer, or brass drift, strike inner race of the joint to drive the joint off the drive shaft. Be sure to tap evenly around the joint to avoid binding.



IMPORTANT: Tap on inner race only!

5. Make sure circlip is on the shaft and not left in the joint.



6. Remove the boot from the shaft.

⚠ CAUTION

Complete disassembly of the plunging joint is NOT recommended. The internal components are precision fit and develop their own characteristic wear patterns. Intermixing the internal components could result in looseness, binding, and/or premature failure of the joint.

IMPORTANT: If the grease in the joint is obviously contaminated with water and/or dirt, the joint should be replaced.

7. Thoroughly clean the joint with an appropriate solvent and dry the joint to prevent any residual solvent from being left in the joint upon reassembly.
8. Visually inspect joint for damage. Replace if needed.
9. Clean the splines on the end of the shaft and apply a light coat of grease prior to reassembly.
10. Slide the small boot clamp and boot (small end first) onto the drive shaft and position the boot in its groove machined in the shaft.

11. Install a NEW circlip on the end of the shaft.

12. Grease the joint with the special joint grease provided in the boot replacement kit. Fill the cavity behind the balls and the splined hole in the joint's inner race. Pack the ball tracks and outer face flush with grease. Place any remaining grease into the boot.

> **⚠ CAUTION**
>
> The grease provided in the replacement kit is specially formulated for wear resistance and durability. DO NOT use substitutes or mix with other lubricants.

NOTE: It is very important to use the correct type and quantity of grease by using all the grease included with the boot kit. DO NOT use a substitute grease and DO NOT overfill or under fill the CV joint.

Boot Replacement Grease Requirement:

Inner Plunging Joint Capacity:
RZR - 80g
RZR S / RZR 4 - 90g

Grease Only Service Kit: PN 1350047 (50g)

13. Fully compress the joint and push the drive shaft firmly into the inner race.

14. Align the circlip with the lead-in chamfer.

15. Use a soft-faced hammer to tap the joint onto the drive shaft until you reach the end of the splines and the joint locks in place.

16. Pull on the joint to test that the circlip is seated and that the joint is securely fastened to the shaft.

17. Remove excess grease from plunging joint's external surfaces and place the excess grease in the boot.

18. Pull the boot over the joint and position the boot lips into the grooves on the joint housing and shaft. Make sure the boot is not dimpled or collapsed.

19. Install and tighten the small clamp using the appropriate clamp tool.

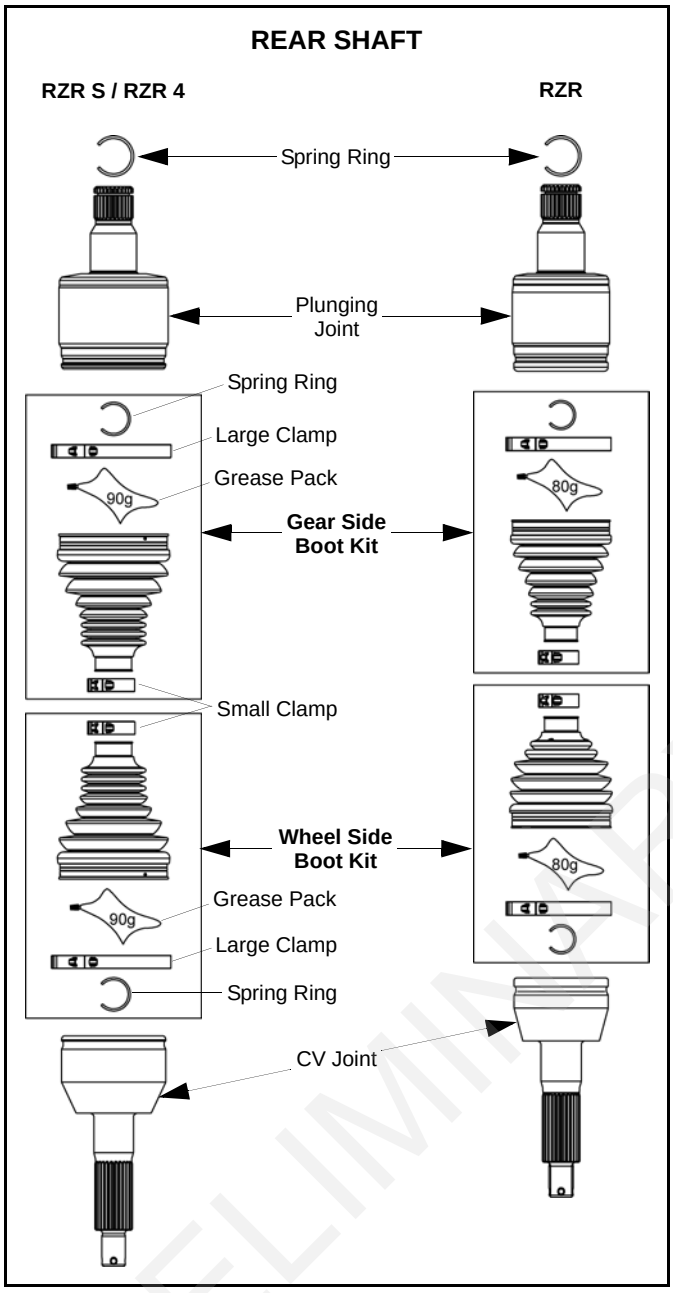
Axle Boot Clamp Tool: PU-48951
or
CV Boot Clamp Pliers: 8700226

20. Pull out on drive shaft to center the joint in the housing. Slide a straight O-ring pick or a small slotted screw driver between the large end of the boot and joint housing and lift up to equalize air pressure in the boot.

21. Position the boot lip in its groove. Install and tighten the large clamp using the appropriate clamp tool.

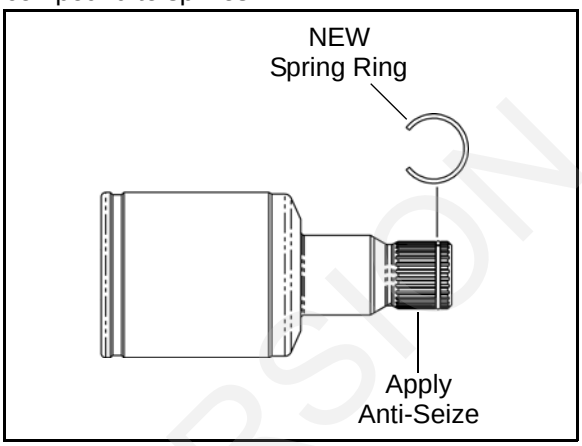
Axle Boot Clamp Tool: PU-48951
or
CV Boot Clamp Pliers: 8700226

Drive Shaft Exploded View



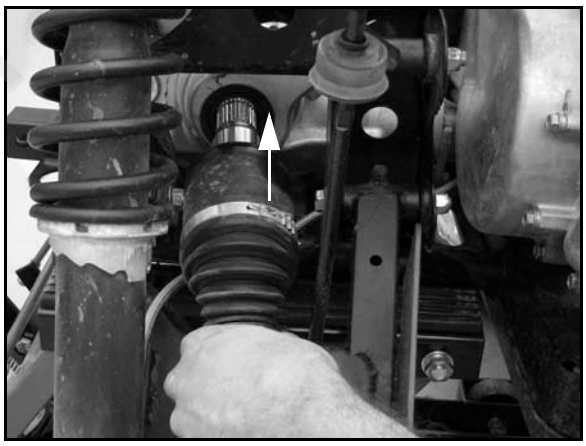
Drive Shaft Installation

1. Install new spring ring on drive shaft. Apply anti-seize compound to splines.

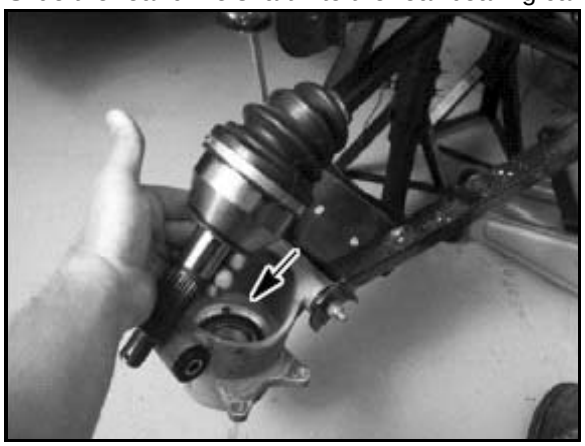


2. Align splines of drive shaft with rear gearcase and reinstall the drive shaft. Use a soft faced hammer to tap on the outboard end of the drive shaft if necessary.

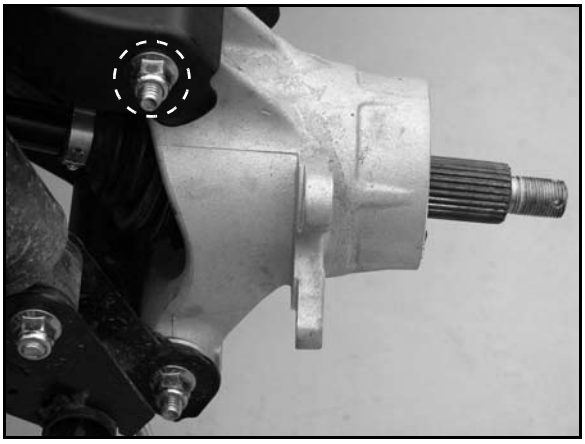
NOTE: Take care when installing the drive shaft to prevent damaging the seal.



3. Slide the rear drive shaft into the rear bearing carrier.



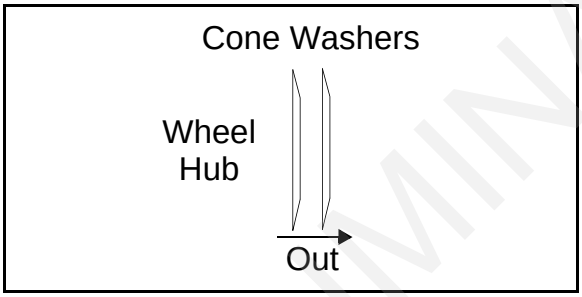
4. Lift bearing carrier into place and install the bolt attaching the bearing carrier to the upper A-arm. Torque fastener to specification.



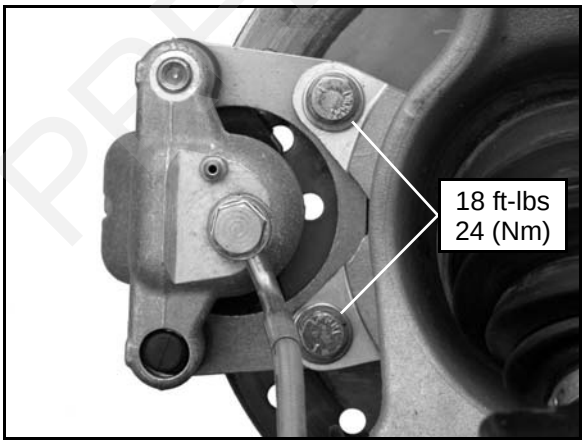
= T
Upper Rear Bearing Carrier Bolt: RZR: **33 ft-lbs (45 Nm)** RZR S / RZR 4: **40 ft-lbs (54 Nm)**

5. Apply grease to drive shaft axle splines.

6. Install rear wheel hub assembly, cone washers, and hand tighten the castle nut. Install washers with domed side out.



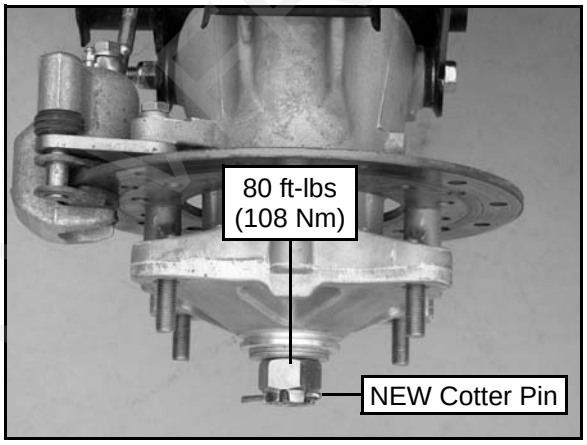
7. Install brake caliper mounting bolts and torque to specification.



= T
Rear Caliper Mounting Bolts: **18 ft-lbs (24 Nm)**

CAUTION
New bolts have a pre-applied locking agent which is destroyed upon removal. Always use new brake caliper mounting bolts upon assembly.

8. Torque wheel hub nut to specification and install a NEW cotter pin. Tighten nut slightly if necessary to align cotter pin holes.



= T
Wheel Hub Castle Nut: **80 ft-lbs (108 Nm)**

9. Install wheel and (4) wheel nuts. Torque wheel nuts to specification.

= T
Wheel Nuts: Steel Wheels: **27 ft-lbs (37 Nm)** Aluminum Wheels: **30 ft-lbs + 90° (1/4 turn)**

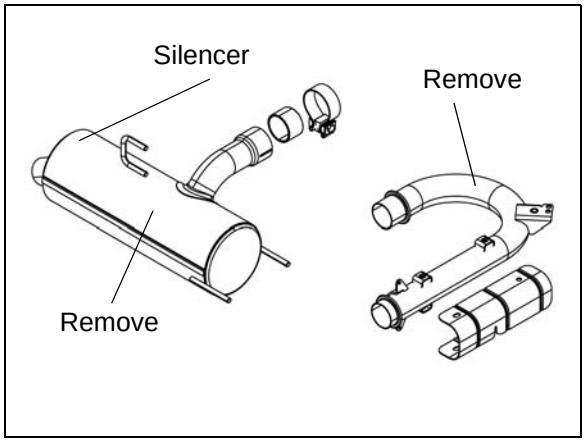
REAR GEARCASE

Gearcase Removal

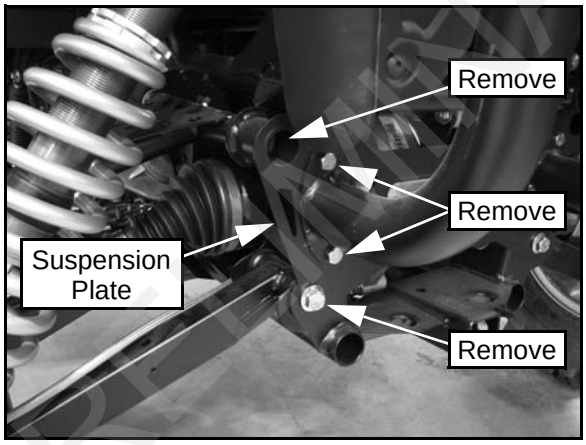
1. Drain the fluid from the rear gearcase and remove the rear drive shafts from each side of the rear gearcase.

See “REAR DRIVE SHAFT” on page 7.29

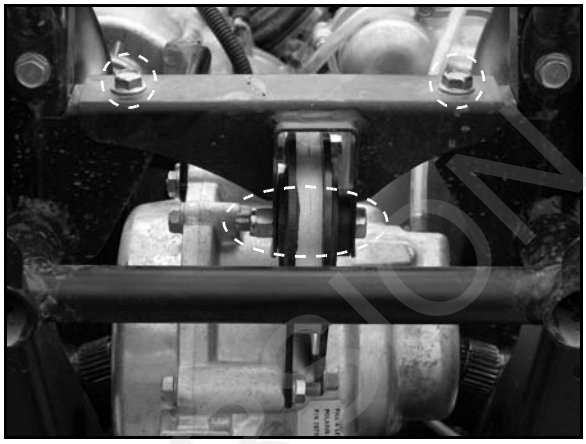
2. Remove the exhaust pipe and exhaust silencer to allow for gearcase removal.



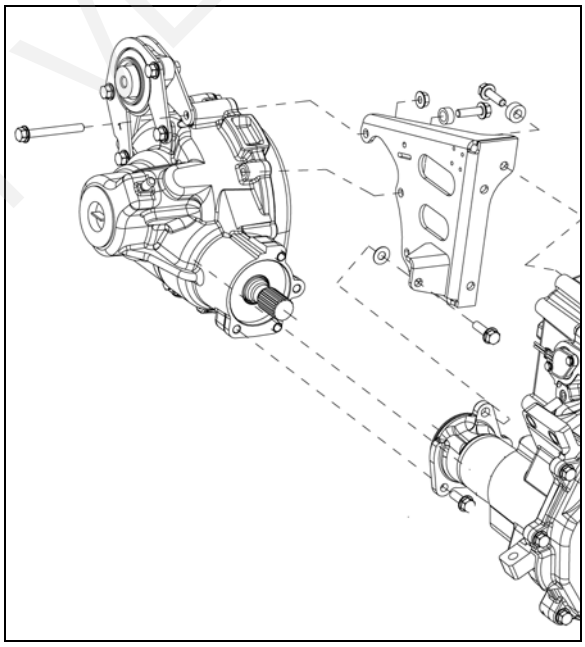
3. **RZR S Only:** Remove the upper A-arm bolts, lower rear A-arm bolts, and suspension plate. **NOTE: If accessory rear rack cab frame is installed, remove the (4) bolts retaining it to the rear suspension plate (see photo).**



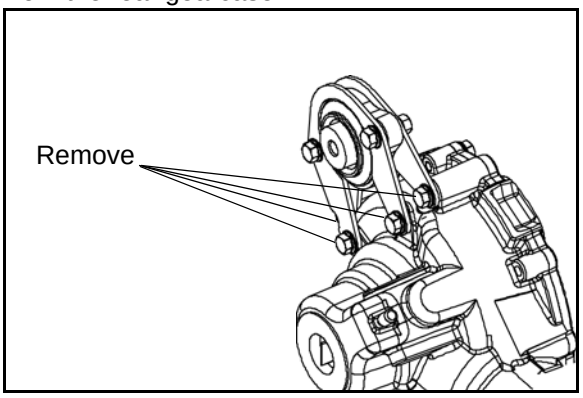
4. Remove the (2) rear gearcase mount bracket fasteners and mount bolt and remove bracket from vehicle.



5. Remove the fasteners and bracket that secure the rear gearcase to the transmission.



6. Remove the (4) fasteners and remove the rear mount from the rear gearcase.



7. Pull the rear gearcase towards the rear of the vehicle to disengage it from the transmission.

NOTE: If the splined coupler doesn't slide off the input shaft on the rear gearcase, use a screwdriver to hold back the coupler while pulling the rear gearcase back further to disengage it.

8. Remove the vent line and lift the rear gearcase upward and on its side to remove it from the vehicle.

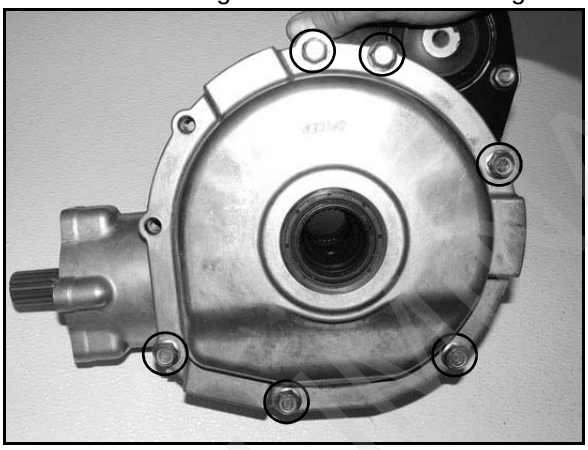
Gearcase Disassembly

IMPORTANT: Due to the manufacturing process, the pinion and ring gear assembly are NOT intended to be disassembled and replaced.

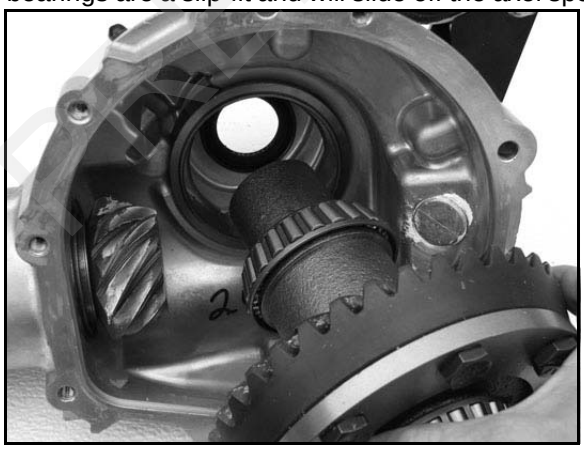
Pinion and ring gear shimming information is NOT provided. The components are matched at the factory which requires special OEM tooling in order to properly assemble and shim the gears.
In the event damage to the gears or housing requires replacement, the entire assembly must be replaced.

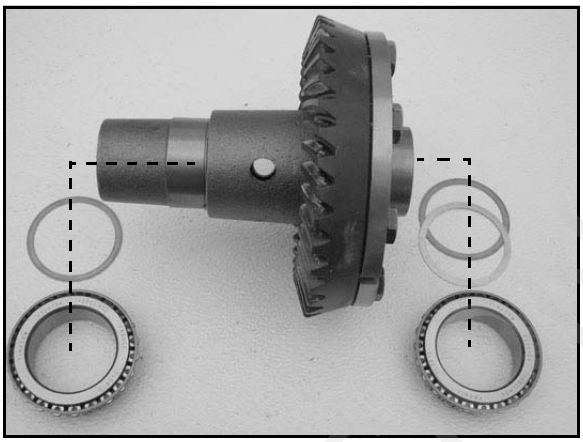
1. Drain and properly dispose of used gearcase fluid.

2. Remove remaining cover screws from rear gearcase.



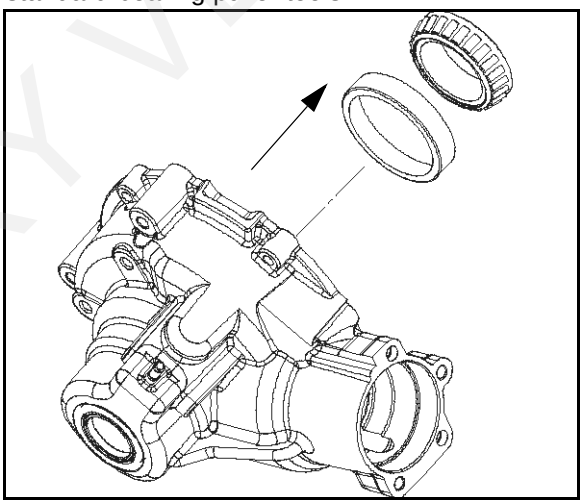
3. Remove the ring gear/axle spool assembly. The bearings are a slip-fit and will slide off the axel spool.

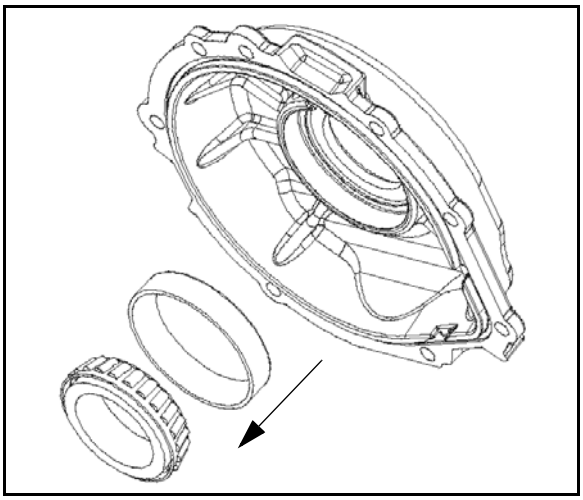




NOTE: Record the thickness of the shim pack located under each bearing. Keep the shims together for reassembly.

4. Inspect each axle spool bearing and race for signs of wear or damage. Replace races if required using standard bearing puller tools.





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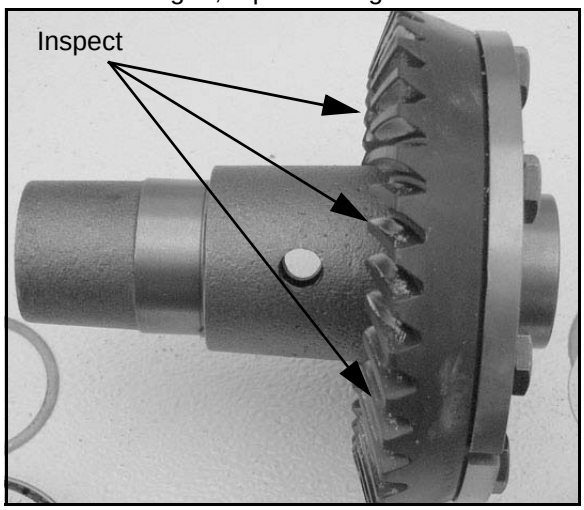
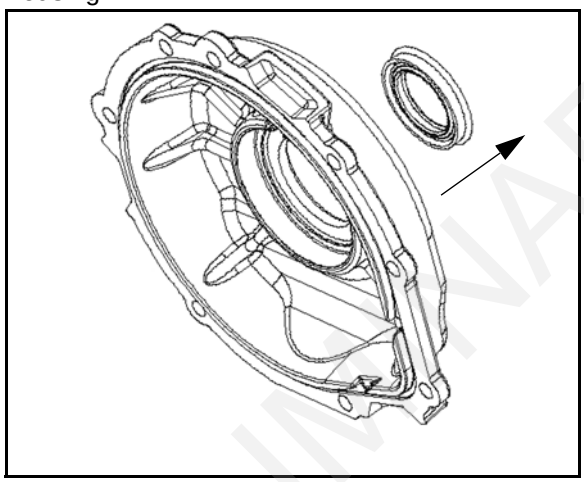
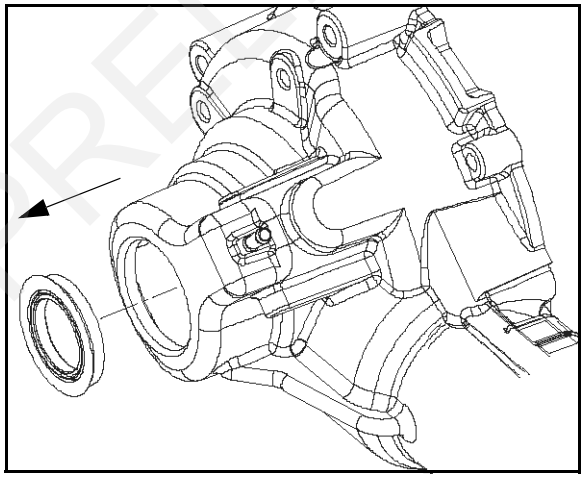
5. Inspect the ring gear for chipped, worn, or broken teeth. If damaged, replace the gearcase assembly.



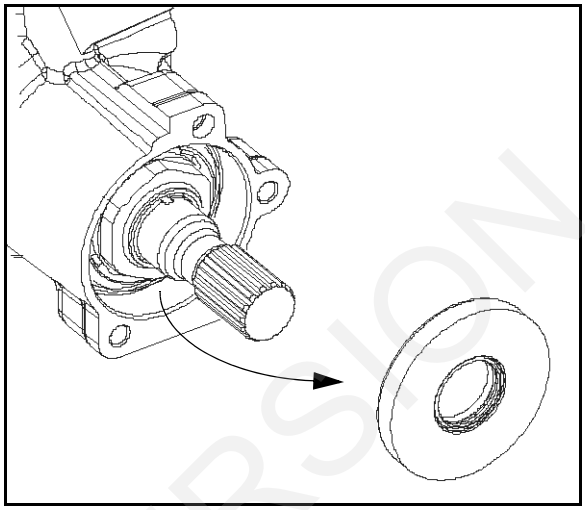
NOTE: In the event damage to the gears or housing requires replacement, the entire assembly must be replaced.

6. Remove the seals from each side of the gearcase housing.

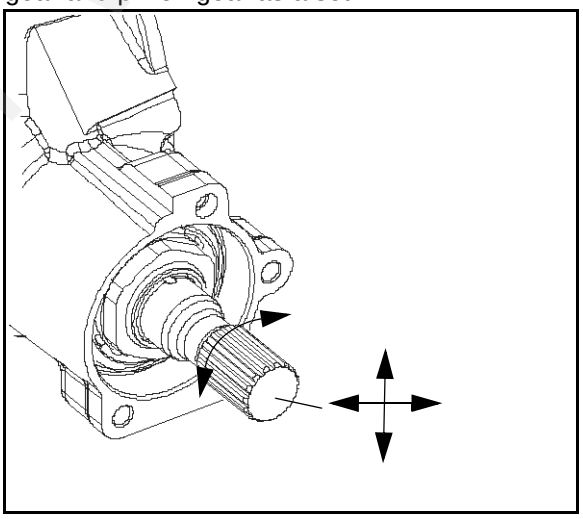




7. Remove the input shaft seal using a seal puller or other suitable method.



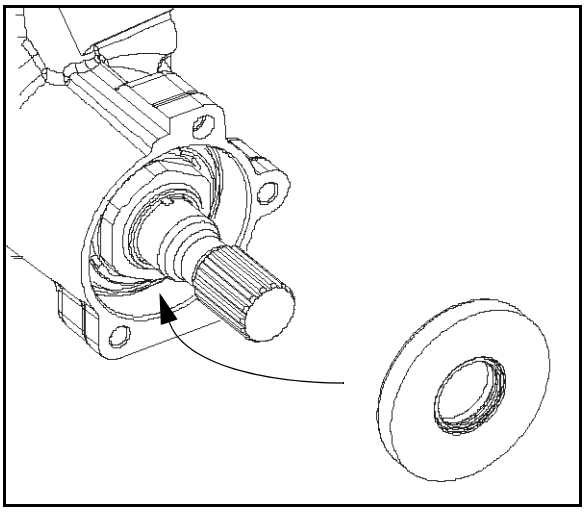
8. Inspect the input shaft by rotating the assembly in the gearcase housing while checking for any looseness or roughness. Inspect the pinion gear teeth for chipped, worn, or broken teeth. If damaged, replace the ring gear and pinion gear as a set.



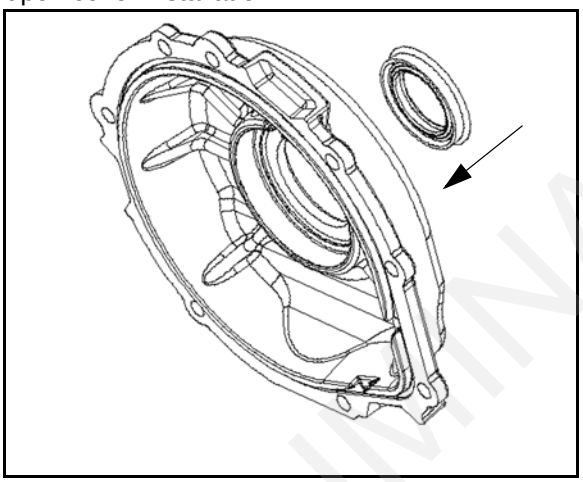
NOTE: In the event damage to the gears, pinion bearings or housing requires replacement, the entire assembly must be replaced.

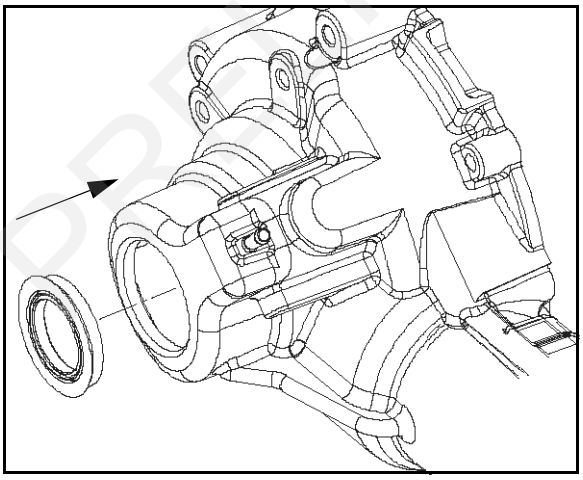
Gearcase Assembly

1. Install a new input shaft seal using a standard seal installer or other suitable method.

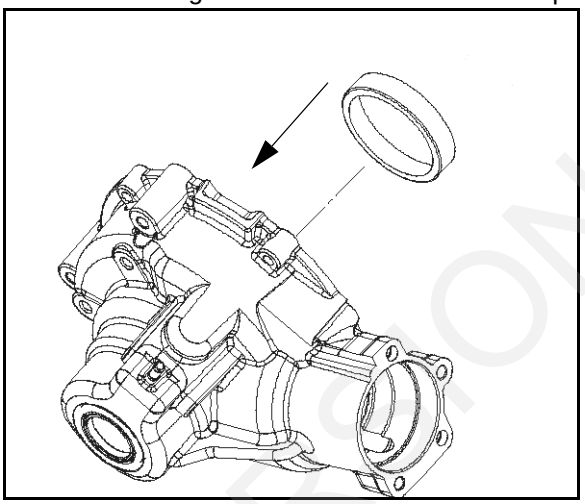


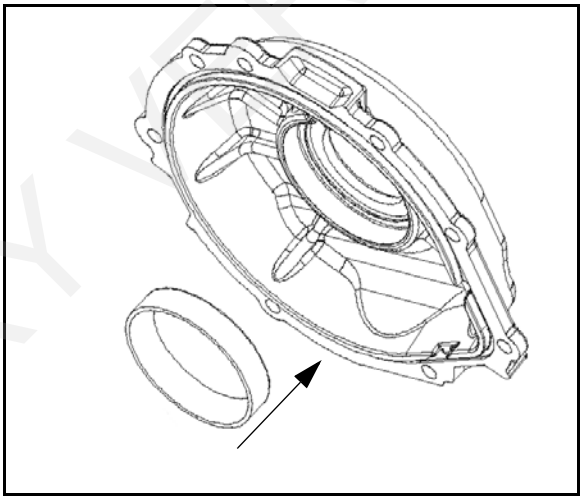
2. Install new seals on each side of gearcase housing using a standard seal installer. Apply a thin coat of case sealant (2871557) to gearcase mating surfaces upon cover installation.





3. If removed, install each axle spool bearing race using standard bearing installation tools and an arbor press.

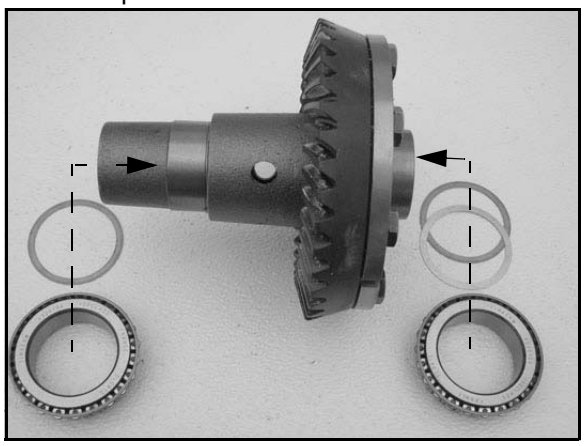




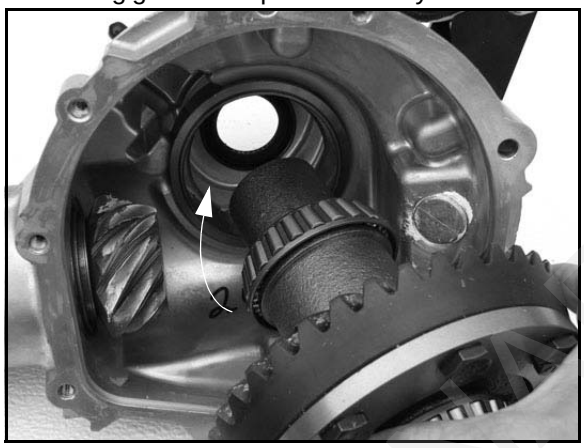
⚠ WARNING

Wear the appropriate safety equipment while installing bearing races to reduce the risk of injury.

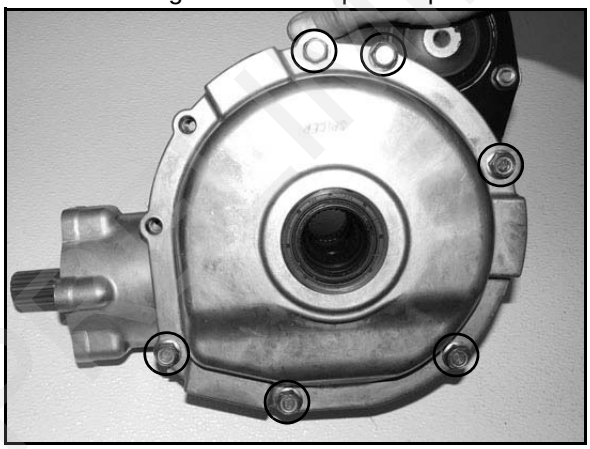
4. Install the shim(s) previously removed onto the appropriate sides of the axle spool. Install the bearings. The bearings are a slip-fit and will slide onto the axle spool.



5. Install ring gear/axle spool assembly into the housing.



6. Install the gearcase cover. Install the cover screws onto the rear gearcase. Torque to specification.



= T
Cover Screws: **23-27 ft-lbs (31-37 Nm)**

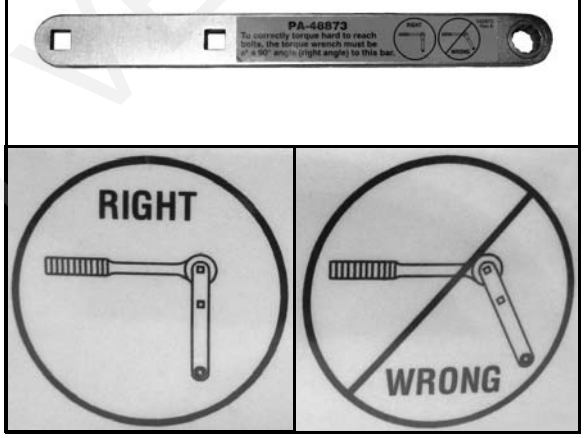
Gearcase Installation

1. Install the rear gearcase by reversing the procedure listed under "REAR GEARCASE - Gearcase Removal" at the beginning of this section.

IMPORTANT: When reinstalling the transmission to rear gearcase mount bracket, it is extremely important to torque all (7) fasteners to specification. Refer to the "Installation" procedure listed on page 4.14.

NOTE: Special tool (PA-48873) will be required to torque the mounting bracket fasteners when the transmission and rear gearcase are installed in the vehicle. Refer to the "Installation" procedure listed on page 4.14.

Special Tool
PA-48873

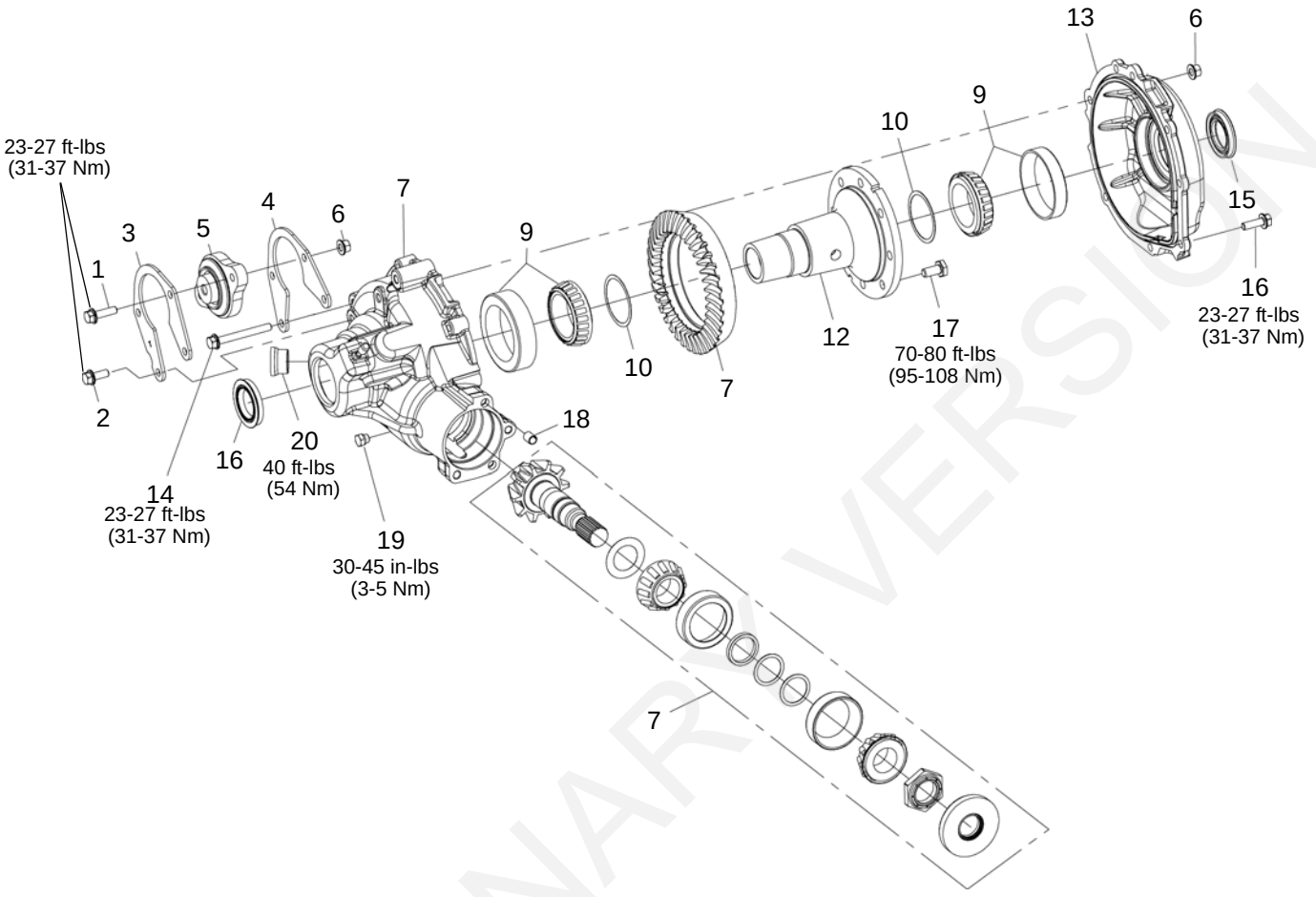


2. Add Polaris ATV Angle Drive Fluid to rear gearcase. Refer to maintenance information in Chapter 2 for more details. Torque drain and fill plugs to specification.

=
Rear Gearcase Capacity: 26 fl. oz. (769 ml) or to bottom of fill plug hole threads See Chapter 2

= T
Drain / Fill Plug: **Drain Plug - 30-45 in-lbs (3-5 Nm)** **Fill Plug - 40 ft-lbs (54 Nm)**

Gearcase Exploded View

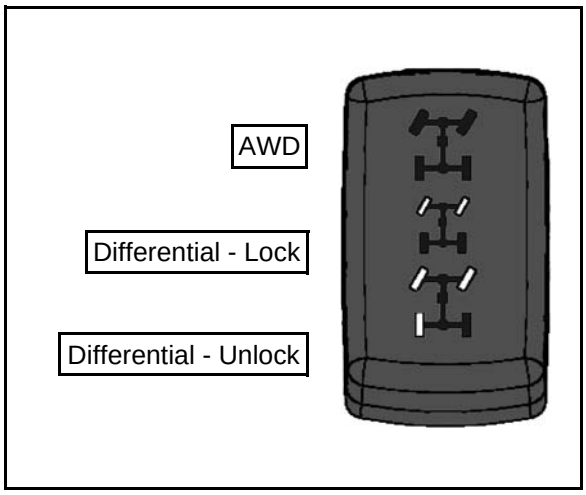


REF#	DESCRIPTION	QTY	REF#	DESCRIPTION	QTY
1	Screw	2	11	N/A	1
2	Screw	2	12	Axle, Spool	1
3	Bracket, Rear Mount, RH	1	13	Housing, Rear, LH	1
4	Bracket, Rear Mount, LH	1	14	Screw, Flange Head	2
5	Mount, Rear	1	15	Seal, Oil	2
6	Nut, Flanged	4	16	Screw, Flange Head	4
7	Assembly, Rear Housing, RH	1	17	Screw	8
8	N/A	1	18	Dowel	2
9	Assembly, Tapered Roller Bearing	2	19	Plug, Drain w/O-Ring	1
10	Shim	2	20	Plug, Fill w/O-Ring	1

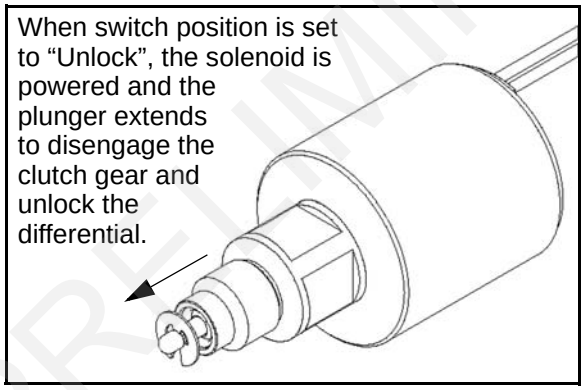
REAR GEARCASE (RZR S INT'L)

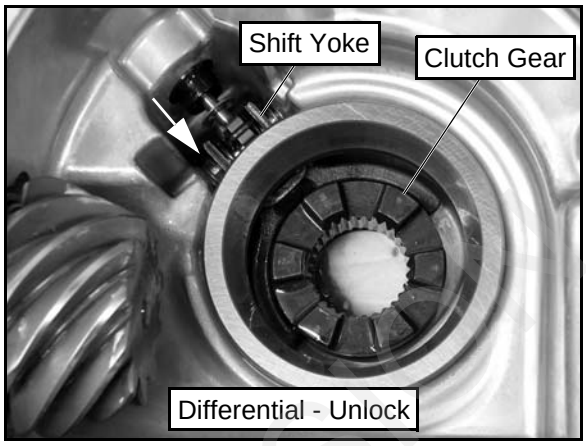
General Operation

The RZR S INT'L rear gearcase has three traction operational modes: AWD, Differential Lock, and Differential Unlock. Locking the rear differential is beneficial in low traction and rough terrain conditions. Unlocking the rear differential makes maneuvering easier and minimizes damage to turf and sensitive terrains.

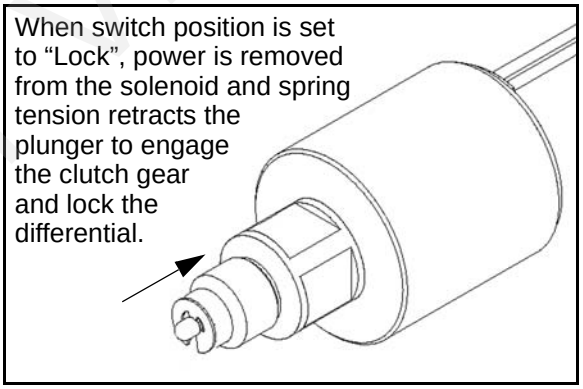


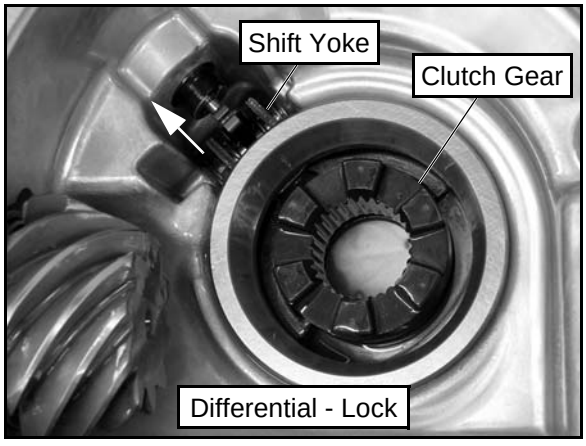
When "Differential-Unlock" is selected on the switch, the rear differential becomes unlocked for tighter turns. An electrical solenoid mounted in the rear gearcase housing actuates the shift yoke. The solenoid plunger extends out to move the shift yoke and slides the clutch gear away from the engagement dogs that are attached to the differential gear assembly. This unlocks the rear differential.



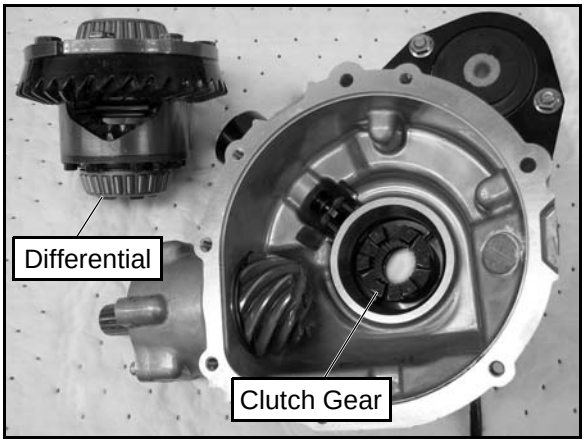


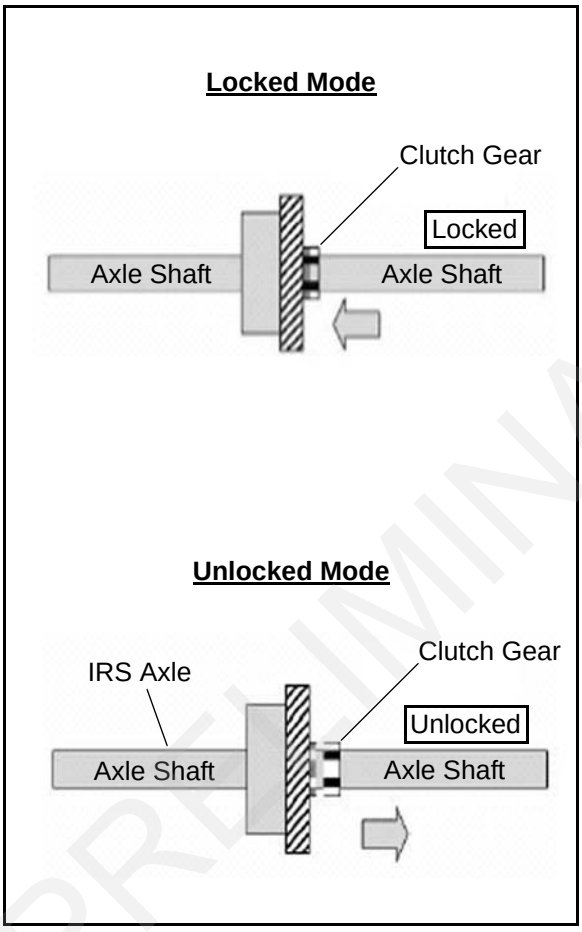
When "Differential-Lock" is selected on the switch, power is removed from the electrical solenoid allowing the solenoid plunger to retract. Spring tension moves the shift yoke back into place and engages the clutch gear into the engagement dogs that are attached to the differential gear assembly, locking the rear differential as a solid rear axle.





When the clutch gear is unlocked the rear drive shafts are dependent on the differential allowing tighter turns. When it's locked it becomes a solid rear axle increasing traction.



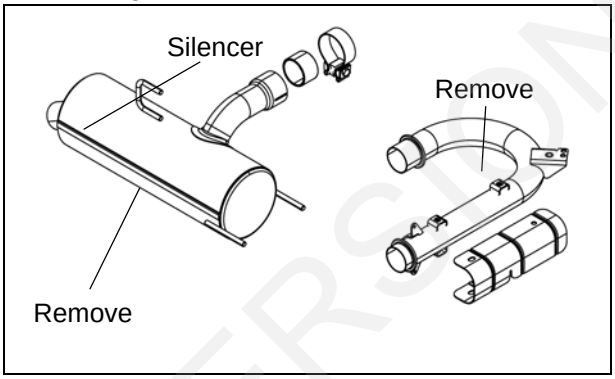


Gearcase Removal

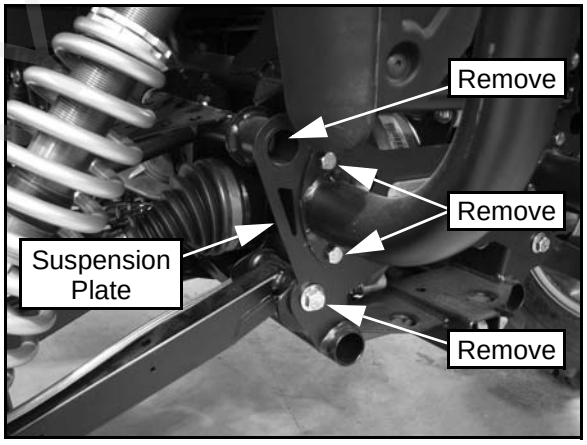
1. Drain the fluid from the rear gearcase and remove the rear drive shafts from each side of the rear gearcase.

See "REAR DRIVE SHAFT" on page 7.29

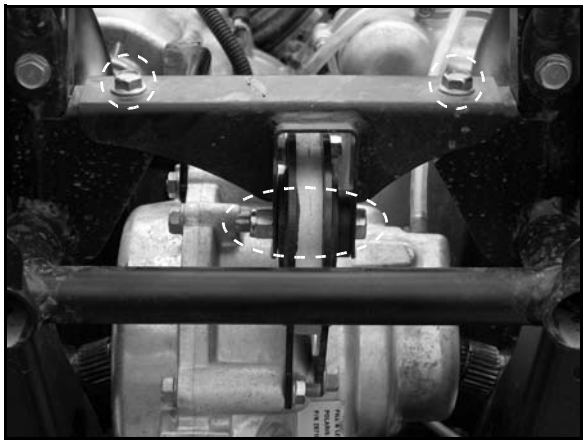
2. Remove the exhaust pipe and exhaust silencer to allow for gearcase removal.



3. Remove upper A-arm bolts, lower rear A-arm bolts and suspension plate. **NOTE: If accessory rear rack cab frame is installed, remove the (4) bolts retaining it to the suspension plate (see photo).**



4. Remove the (2) rear gearcase mount bracket fasteners and mount bolt and remove bracket from vehicle.



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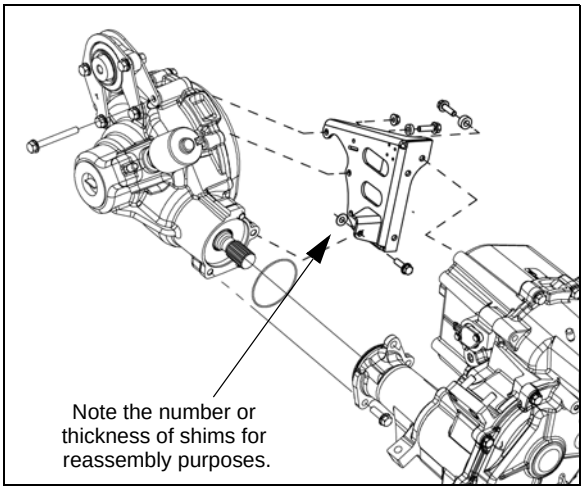
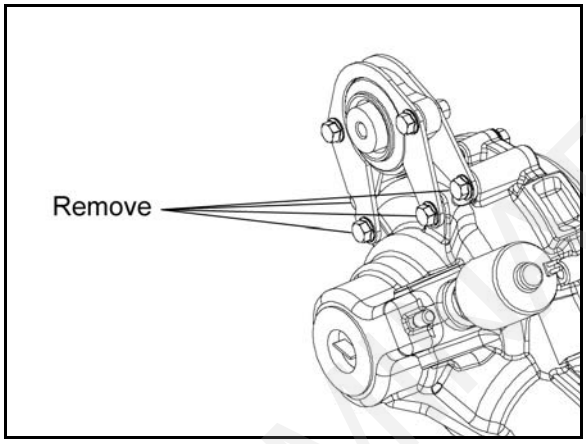
5. Disconnect the differential solenoid 2-wire harness.

6. Remove the fasteners and bracket that secure the rear gearcase to the transmission.



7. Remove the (4) fasteners and remove the rear mount from the rear gearcase.



8. Pull the rear gearcase towards the rear of the vehicle to disengage it from the transmission.

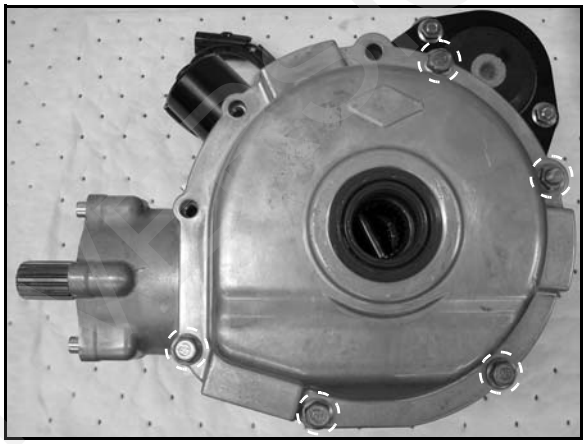
NOTE: If the splined coupler doesn't slide off the input shaft on the rear gearcase, use a screwdriver to hold back the coupler while pulling the rear gearcase back further to disengage it.

9. Remove the vent line and lift the rear gearcase upward and on its side to remove it from the vehicle.

Gearcase Disassembly

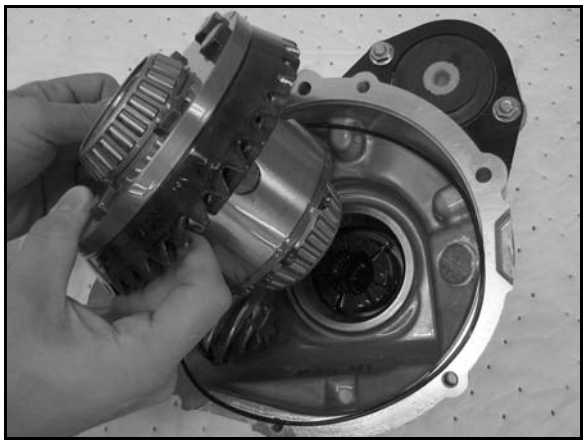
IMPORTANT: The pinion gear assembly is NOT intended to be disassembled from the case, as it requires special OEM tooling in order to properly reassemble. If there is any damage to the pinion gear, bearings or case, the entire gearcase assembly must be replaced. Pinion and ring gear shimming information is NOT provided in this Service Manual due to OEM manufacturing requirements.

1. Remove the remaining cover bolts from the rear gearcase.



2. Remove the cover from the gearcase.

3. Remove the differential assembly from the housing.



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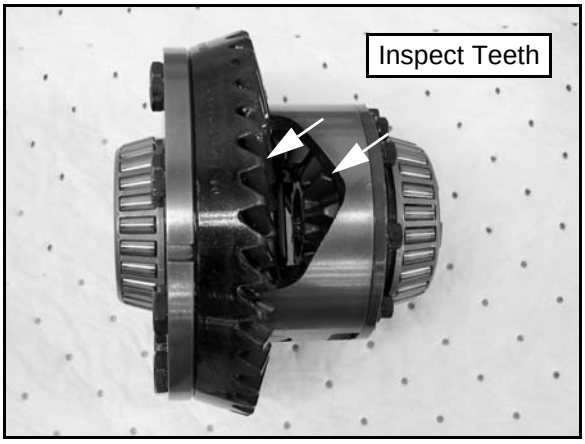
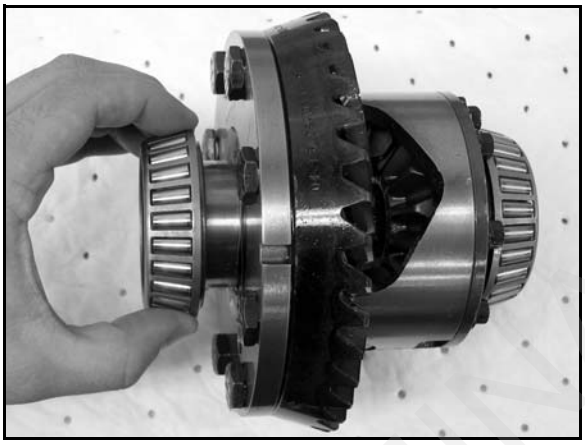
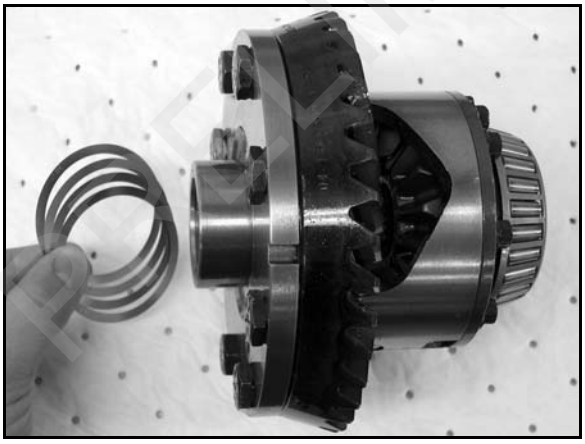
4. Inspect the ring gear and differential gears for chipped, worn, or broken teeth.



5. Remove the bearing from the top portion of the differential assembly. Inspect the bearing for smoothness and wear.

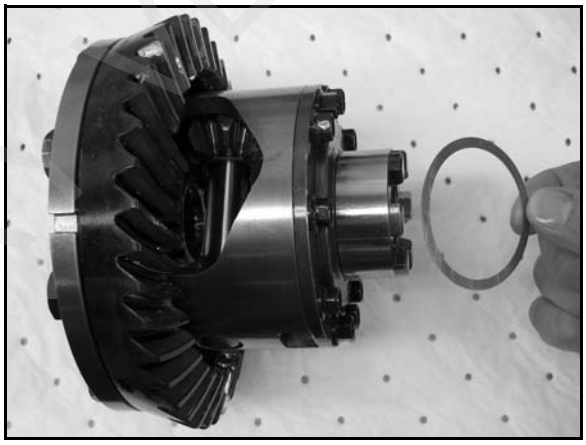


6. Remove the shim(s) from the differential assembly. Be sure to keep the shims together for reassembly.



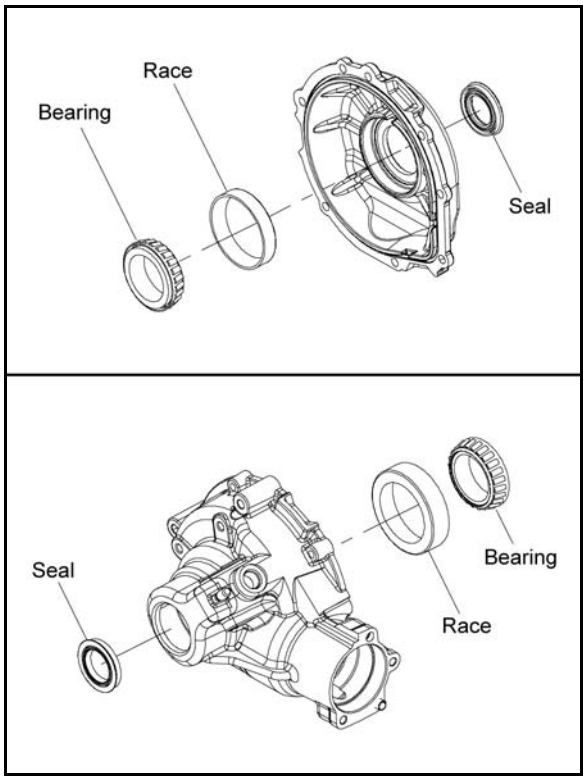
7. Remove the bearing from the lower portion of the differential assembly. Inspect the bearing for smoothness and wear.

8. Remove the shim(s) from the differential assembly. Be sure to keep the shims together for reassembly.

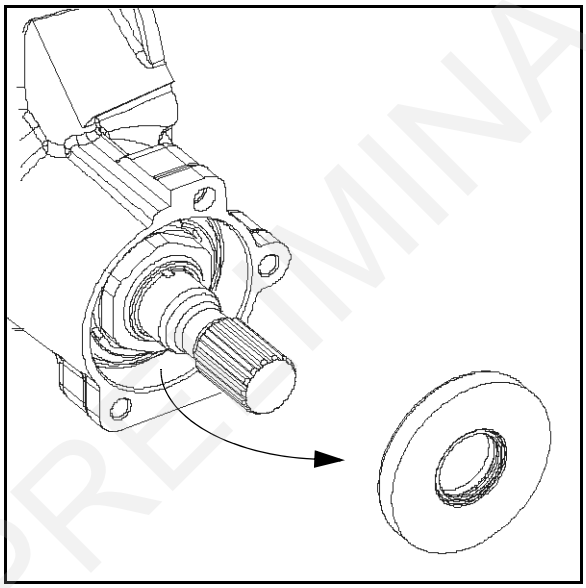


9. Inspect each differential bearing and race for signs of wear or damage. If bearing replacement is required, use standard bearing puller tools to remove the bearing races.

10. Remove seals from the gearcase housing and cover.



11. Remove the pinion shaft seal using a seal puller or other suitable method.

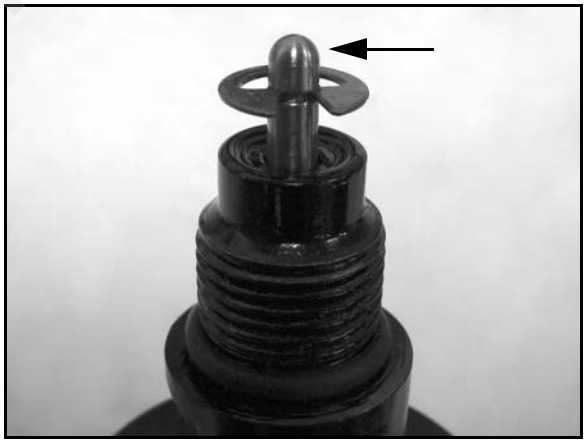


12. Inspect the pinion shaft by rotating the assembly in the gearcase housing while checking for any looseness or roughness. Inspect the pinion gear for chipped, worn, or broken teeth. If damaged, replace the gearcase assembly.

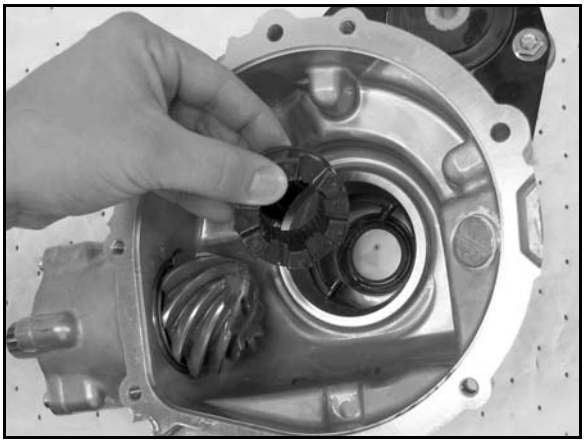
NOTE: In the event damage to the gears, pinion bearings or housing requires replacement, the entire assembly must be replaced.

13. Remove the differential solenoid from the gearcase if servicing the solenoid, shift lever, shift lever spring, or shift yoke. If none of these items are being serviced, the solenoid can remain installed in the gearcase.

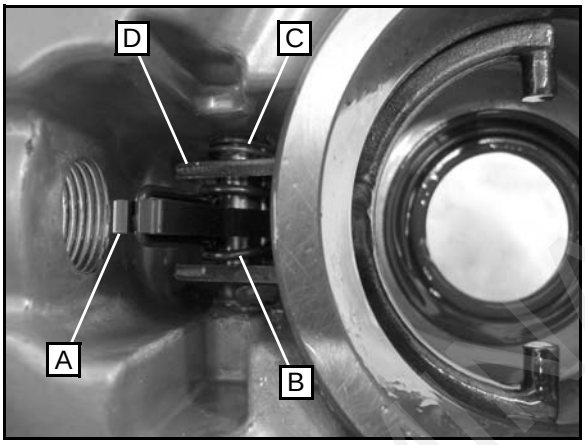
14. If the solenoid was removed for servicing, inspect the tip of the solenoid for wear. If the tip of the solenoid is flattened, the solenoid must be replaced.



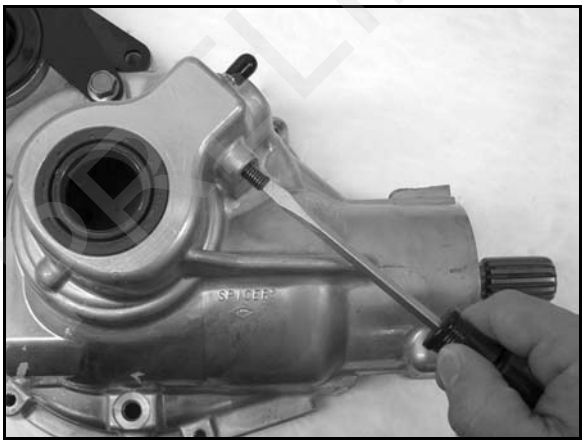
15. Remove the clutch gear from the gearcase.



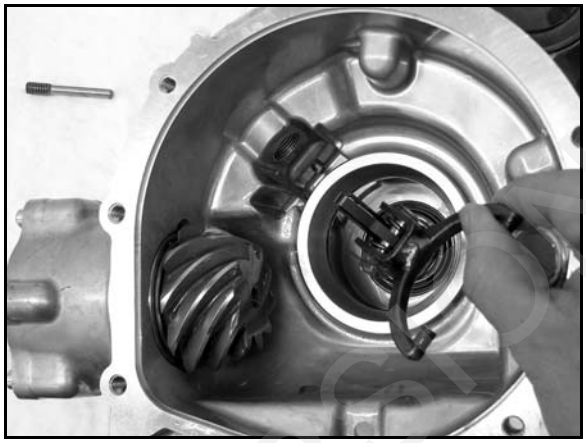
16. Inspect the shift lever (A), shift lever spring (B), shift return springs (C), and shift yoke (D) for excessive wear or damage. If disassembly is required, proceed to the next step. If no disassembly is required, proceed to “Gearcase Assembly”.



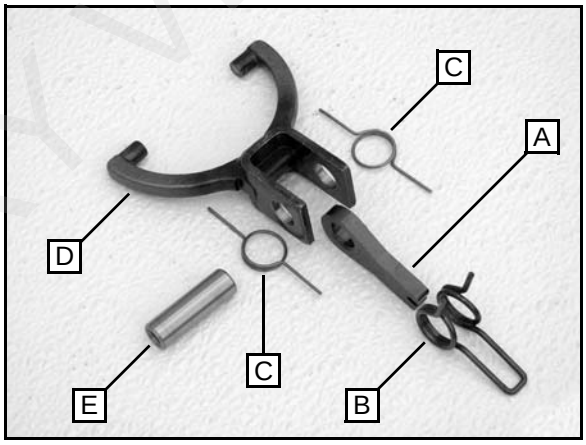
17. Loosen and remove the lock pin assembly from the gearcase housing.



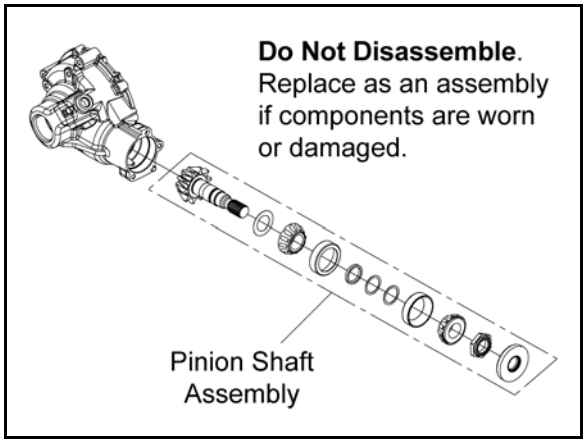
18. Carefully remove the shift yoke assembly from the gearcase cover.



19. Inspect the shift lever (A), shift lever spring (B), shift return springs (C), shift yoke (D), and lock pin bushing (E). Inspect the components for excessive wear or damage and replace as needed.



NOTE: The pinion shaft assembly is NOT intended to be disassembled from the case, as it requires special OEM tooling in order to properly reassemble. If there is any damage to the pinion gear, bearings or case, the gearcase assembly must be replaced.



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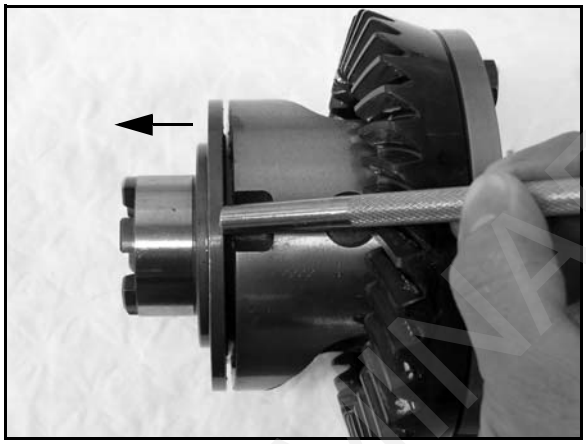
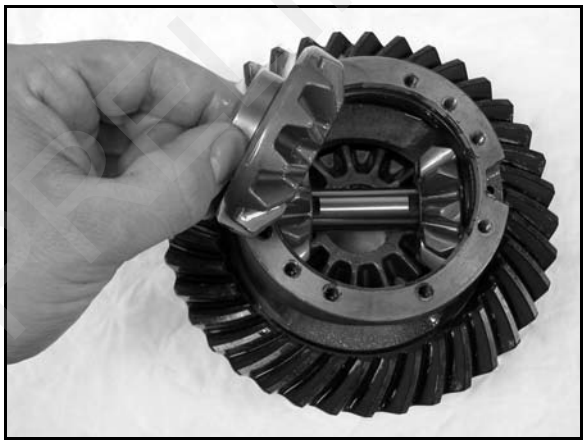
Differential Disassembly

1. Use a scribe to mark the differential cover and case. Remove the (10) screws retaining the differential cover.

2. Use a brass punch in the recessed area as shown to remove the differential cover.

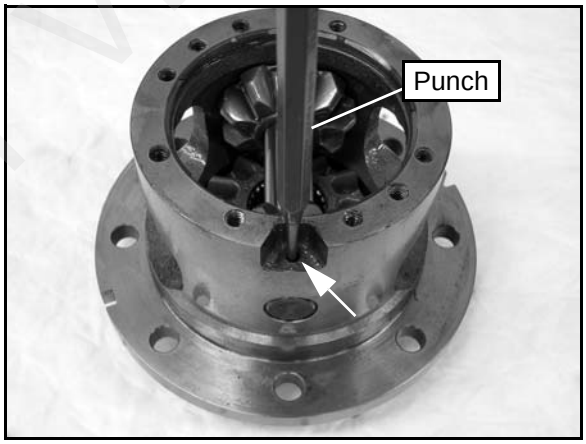


3. Remove the upper differential gear.

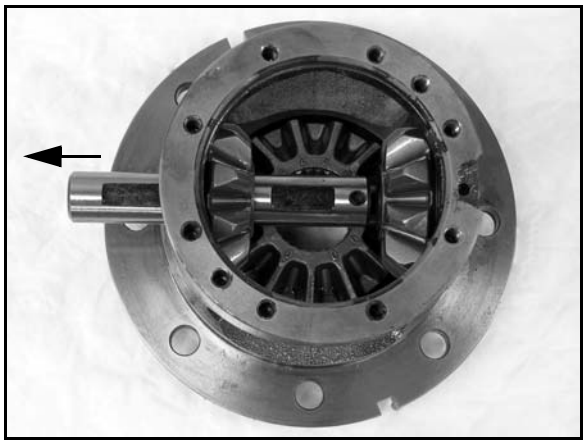


4. Use a scribe to mark the ring gear and differential case. Remove the (8) bolts that secure the ring gear to the differential and allow the ring gear to slide down and off.

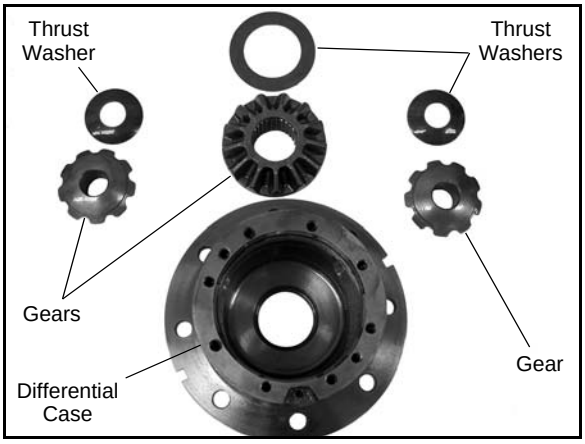
5. Place the differential assembly upright. Use a roll pin punch to remove the roll pin from the differential case.



6. With the roll pin removed, slide the cross pin out and remove the remaining differential gears.

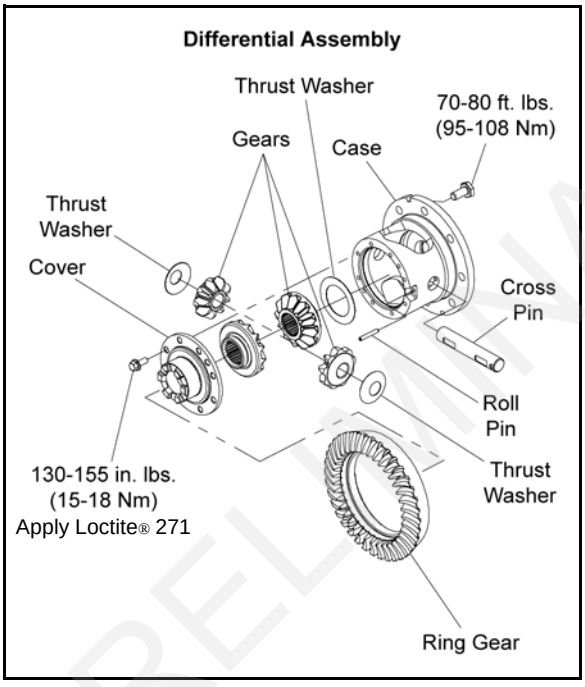


7. Inspect the gears, thrust washers and differential case for excessive wear or damage. Replace components if needed.



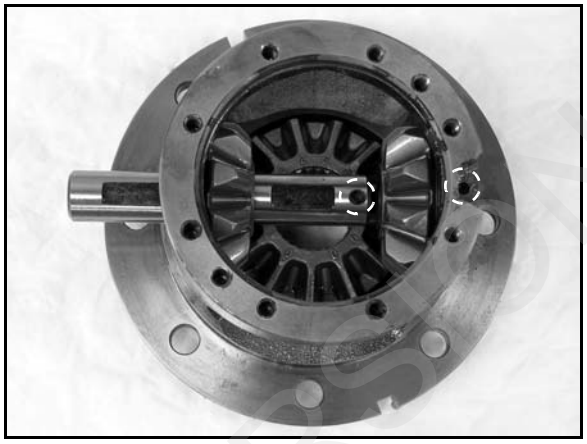
Differential Assembly

1. Thoroughly clean the differential components prior to reassembly.



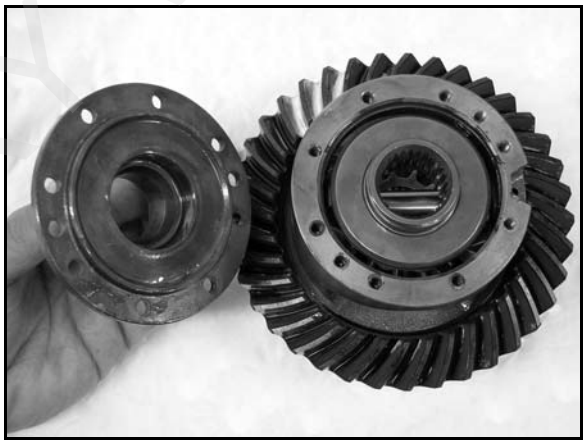
2. Install the lower differential gear and thrust washer.

3. Install the side differential gears and thrust washers and slide the cross pin into position with the hole side facing the hole in the differential case.



4. Install a new roll pin.

5. Install the upper differential gear and differential cover. Apply Loctite® 271 to the cover screws and torque the screws to specification.



= T
Differential Cover Screws: **130-155 in-lbs (15-18 Nm)**

6. Install the ring gear and torque the retaining bolts to specification.

= T
Ring Gear Bolts: **70-80 ft-lbs (95-108 Nm)**

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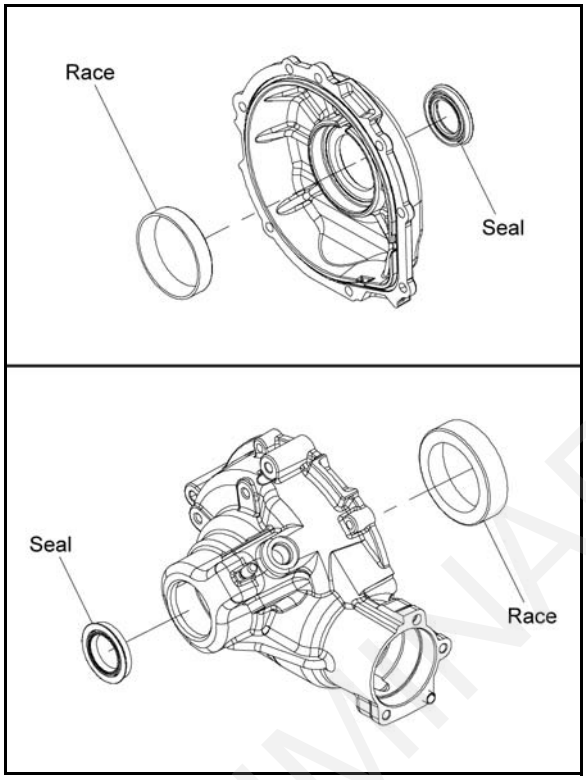
Gearcase Assembly

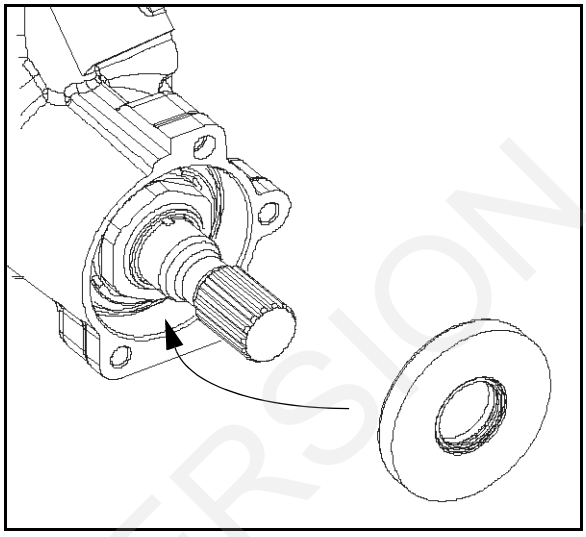
1. Replace all worn components.
2. If removed, install new bearing races using standard bearing installation tools and an arbor press.

> **WARNING**
>
> Wear the appropriate safety equipment while installing races to reduce the risk of injury.

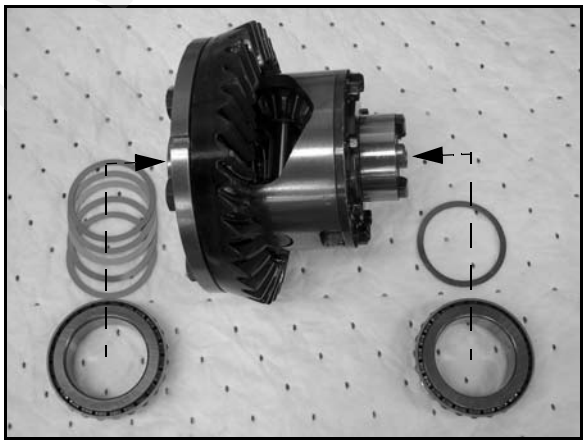


NOTE: Grease all seals with Polaris All Season Grease (PN 2871322) upon assembly.

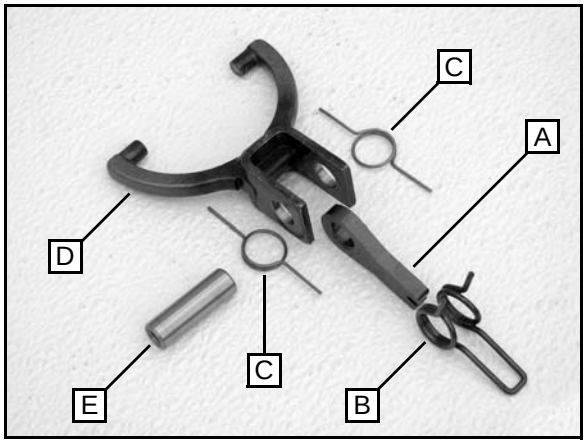
3. Install new seals into the gearcase housing and gearcase cover using a standard seal installer or other suitable method.
4. Apply a thin coat of case sealant (PN 2871557) to the gearcase mating surfaces upon cover installation.
5. Install a new pinion shaft seal using a standard seal installer or other suitable method.



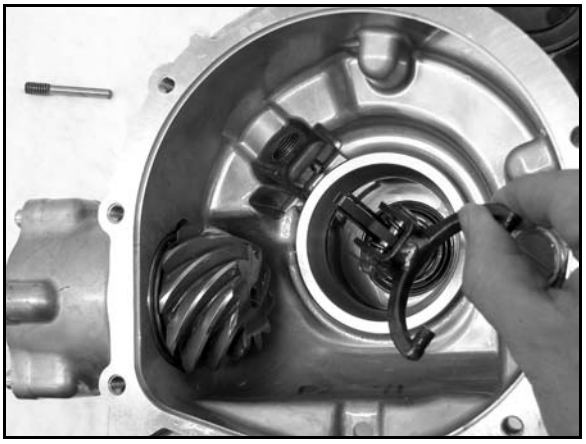
6. Install the original shim(s) previously removed onto the appropriate sides of the differential assembly. Install the bearings by hand as they are a slip-fit.



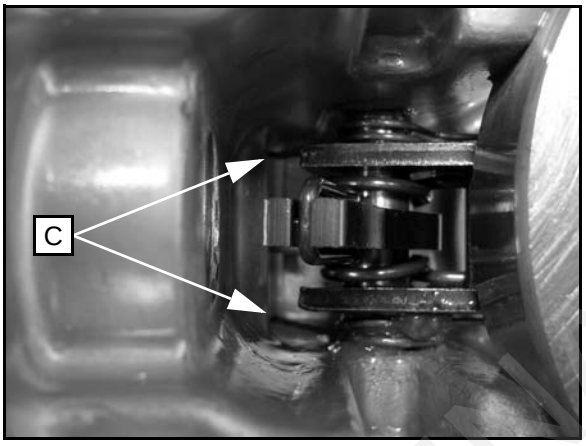
7. If previously removed; assembly the shift lever (A), shift lever spring (B), shift return springs (C), shift yoke (D), and lock pin bushing (E).



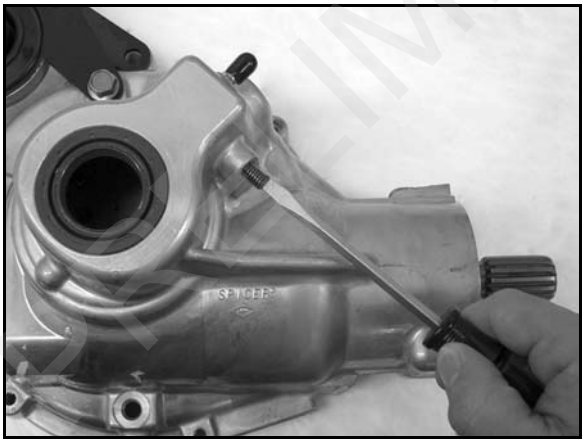
8. Carefully install the shift yoke assembly into the gearcase.



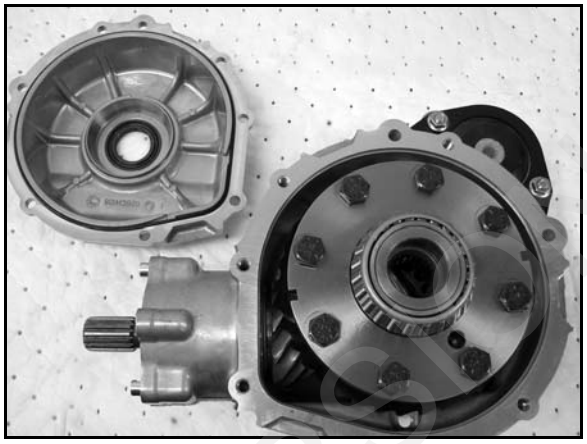
9. Install the shift yoke assembly with the shift return springs (C), facing down in the housing.



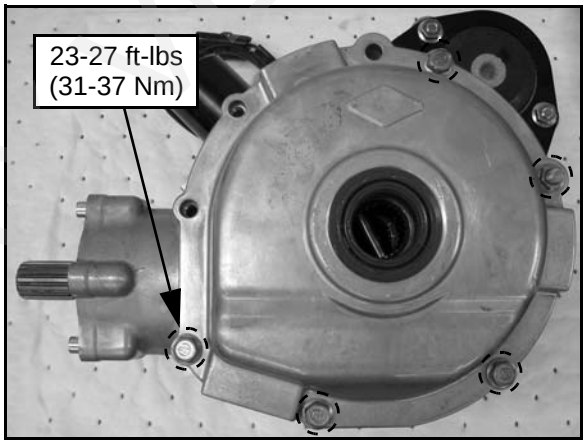
10. Install the lock pin assembly and tighten.



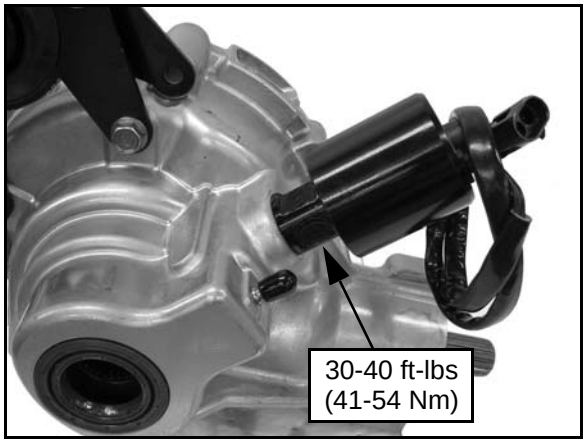
11. Install the differential assembly into the gearcase housing.



12. Assemble the gearcase halves and install the bolts that secure the cover to the housing. Torque the bolts in a criss-cross pattern to **23-27 ft-lbs (31-37 Nm)**.



13. If previously removed, install the differential solenoid. Torque the solenoid to **30-40 ft-lbs (41-54 Nm)**.



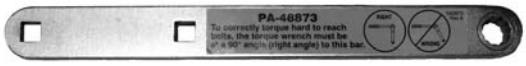
Gearcase Installation

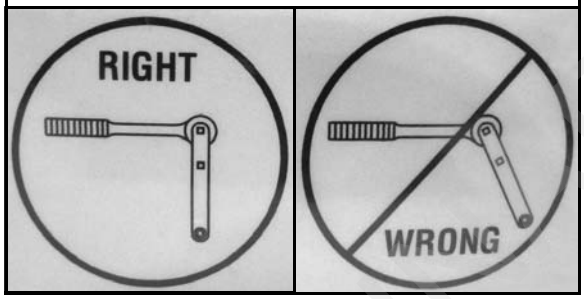
1. Install the rear gearcase by reversing the procedure listed under “REAR GEARCASE - Gearcase Removal” at the beginning of this section.

IMPORTANT: When reinstalling the transmission to rear gearcase mount bracket, it is extremely important to torque all (7) fasteners to specification. Refer to the “Installation” procedure listed on page 4.14.

NOTE: Special tool (PA-48873) will be required to torque the mounting bracket fasteners when the transmission and rear gearcase are installed in the vehicle. Refer to the “Installation” procedure listed on page 4.14.

Special Tool
PA-48873



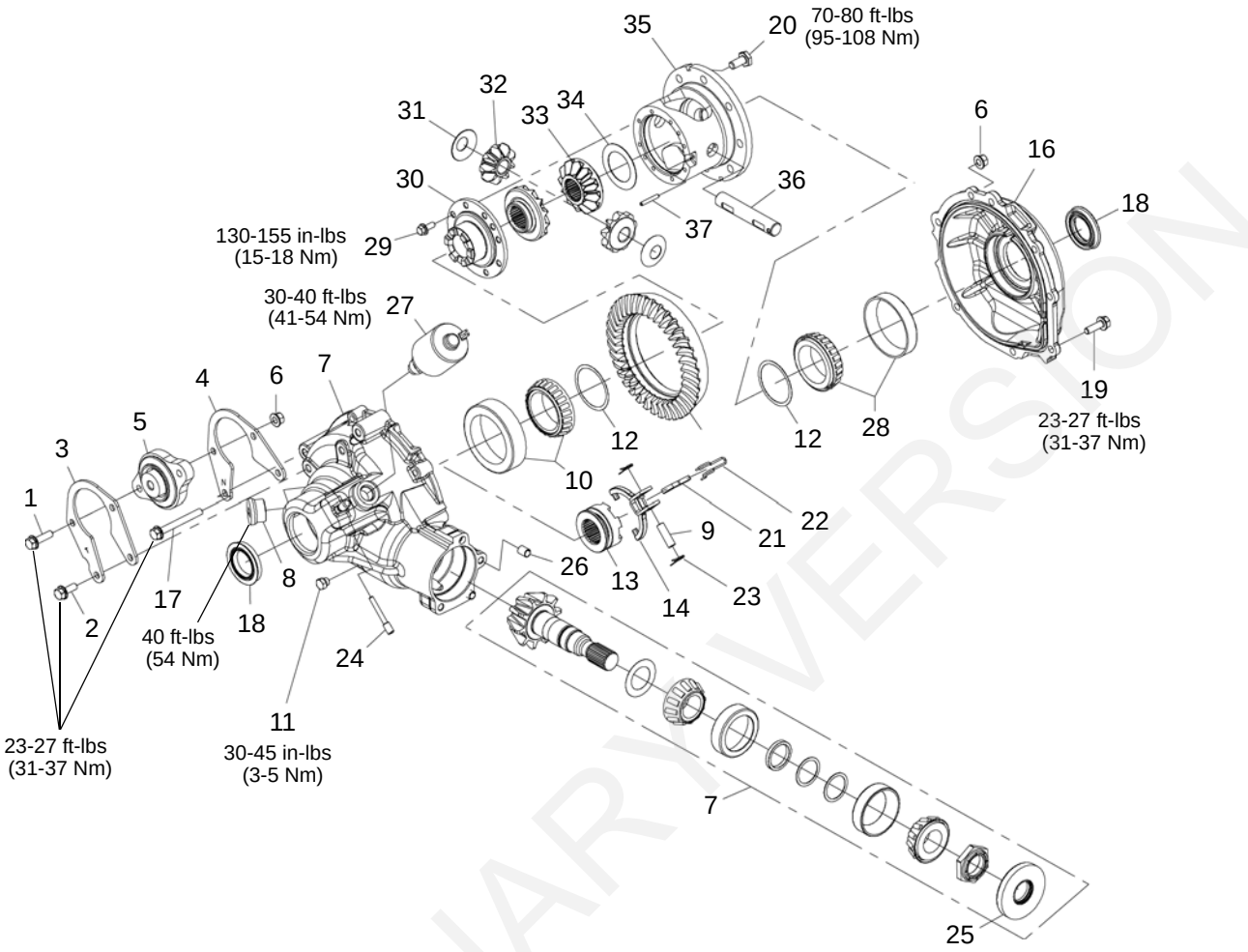


2. Add Polaris ATV Angle Drive Fluid to rear gearcase. Refer to maintenance information in Chapter 2 for more details. Torque drain and fill plugs to specification.

=
Rear Gearcase Capacity: 22 fl. oz. (650 ml) or to bottom of fill plug hole threads See Chapter 2

= **T**
Drain / Fill Plug: **Drain Plug - 30-45 in-lbs (3-5 Nm)** **Fill Plug - 40 ft-lbs (54 Nm)**

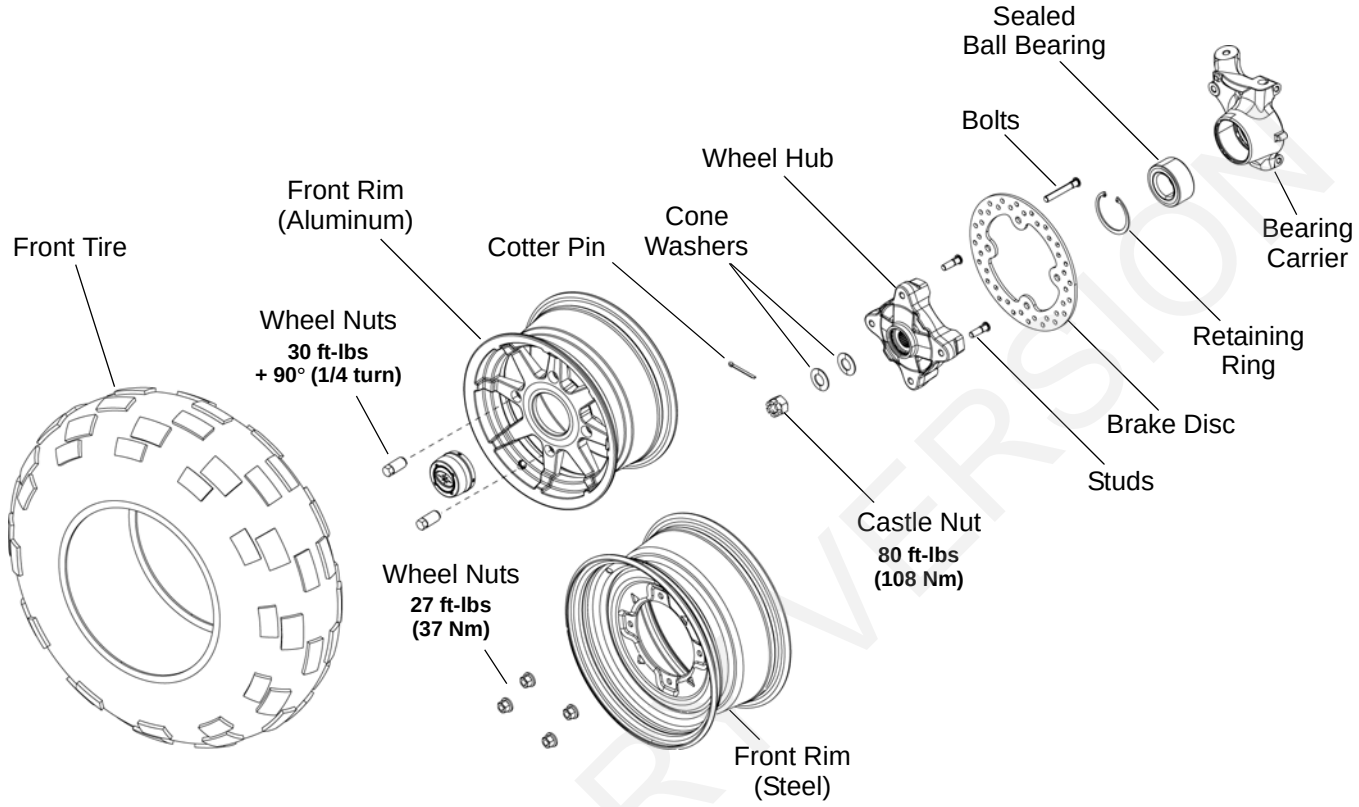
Gearcase Exploded View



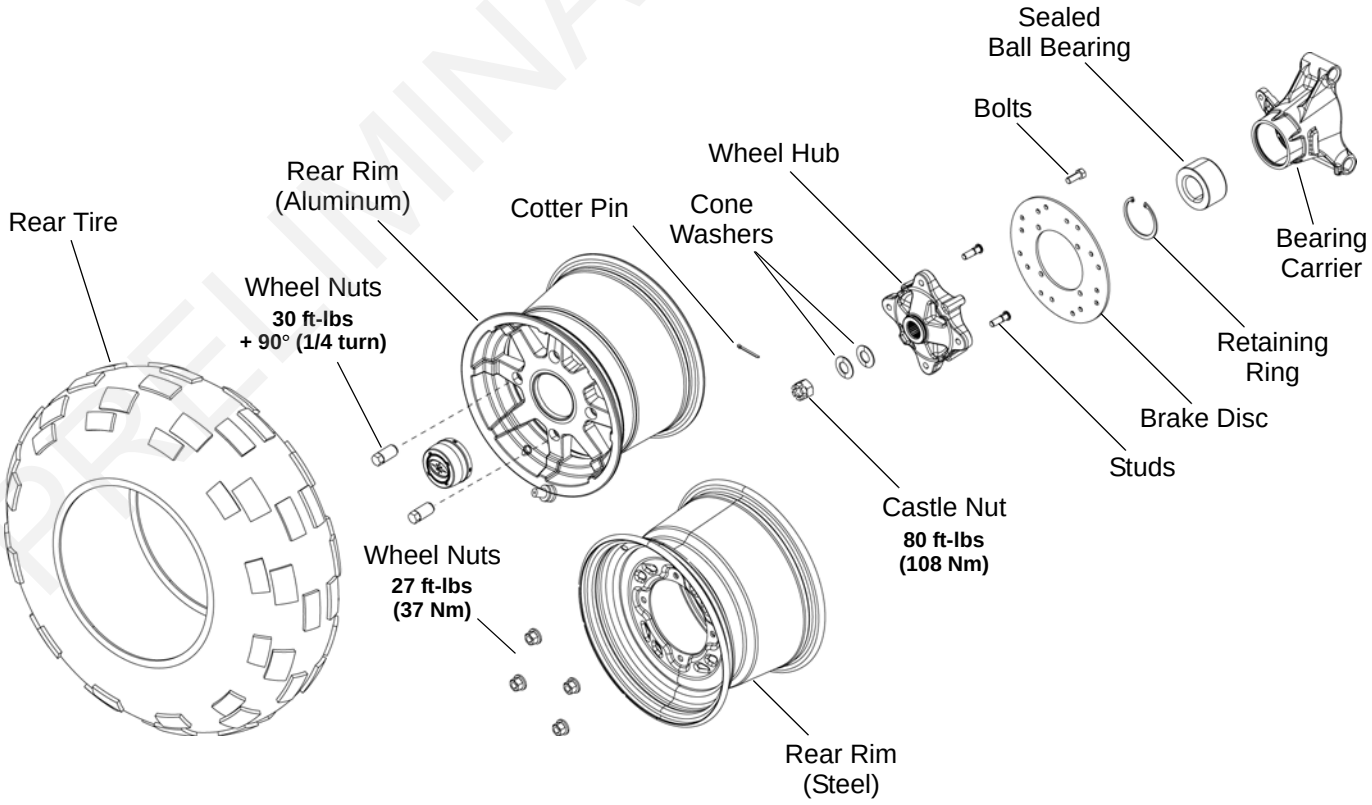
REF#	DESCRIPTION	QTY	REF#	DESCRIPTION	QTY
1	Screw	2	20	Screw	8
2	Screw	2	21	Lever, Shift	1
3	Bracket, Rear Mount, RH	1	22	Spring, Shift Lever	1
4	Bracket, Rear Mount, LH	1	23	Spring, Shift Return	2
5	Mount, Rear	1	24	Pin Lock Asm.	1
6	Nut, Flanged	2	25	Seal	1
7	Assembly, Rear Housing, RH	1	26	Bushing, Dowel	2
8	Plug, Fill w/O-Ring	1	27	Solenoid, Diff Lock	1
9	Bushing, Pin Lock	1	28	Bearing, Tapered Roller	1
10	Bearing, Ball	2	29	Screw, Flange Head	10
11	Plug, Drain	1	30	Case, Diff Cover Half	1
12	Shim Kit	2	31	Thrust Washer, Pinion	2
13	Gear, Clutch	1	32	Gear, Diff, Pinion Mate	2
14	Yoke, Shift	1	33	Gear, Diff Side	2
15	N/A	1	34	Thrust Washer, Side Gear	1
16	Cover Asm., Rear	1	35	Case, Diff Half	1
17	Screw	2	36	Pin, Diff, Cross	1
18	Seal, Oil	2	37	Pin, Spring	1
19	Screw, Flanged	4			

WHEEL HUBS

Front Hub Exploded View



Rear Hub Exploded View



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NOTES

CHAPTER 8
TRANSMISSION

TORQUE VALUES / SPECIFICATIONS

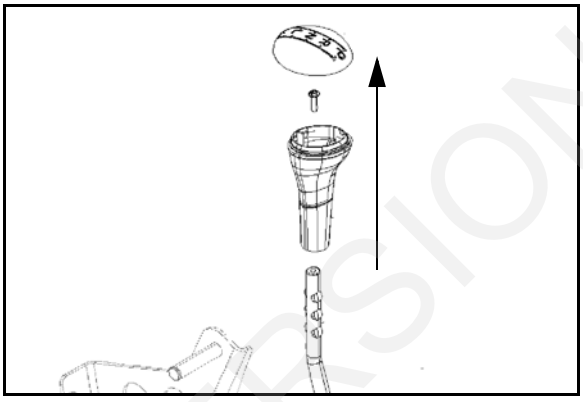
Maintain and check/change these items in accordance with the maintenance schedule in Chapter 2 or during service repairs.

ITEM	TORQUE VALUE
Transmission Fill Plugs	40-50 ft-lbs (54-67 Nm)
Transmission Drain / Level Plugs	30-45 in-lbs (0.2-0.3 Nm)
Transmission Case Screws	23-27 ft-lbs (31-36 Nm)
Shift Cable Lever Screw	15-20 ft-lbs (20-27 Nm)
Detent Sleeve Assembly	40-45 ft-lbs (54-61 Nm)
Outer Detent Screw	23-27 ft-lbs (31-37 Nm)
Drain Plugs / Check Plug	30-45 in-lbs (0.2-0.3 Nm)
Ground Speed Sensor Screw	130-155 in-lbs (15-18 Nm)
Gear Position Sensor Screws	25-40 in-lbs (3-5 Nm)
Pivot Pin Set Screw	100-125 in-lbs (11-14 Nm)
Park Flange Screws	130-155 in-lbs (15-18 Nm)
Transmission Isolator Mounting Screws	23-27 ft-lbs (31-36 Nm)
Transmission Lubricant Capacity	AGL Plus PN 2878068 24 oz. (710 ml)
Transfer Case Lubricant Capacity	AGL Plus PN 2878068 14 oz. (414 ml)
Rear Gearcase Fluid Capacity	ADF PN 2871653 26 oz. (769 ml)
Rear Gearcase Fluid Capacity (INT'L)	ADF PN 2871653 22 oz. (650 ml)

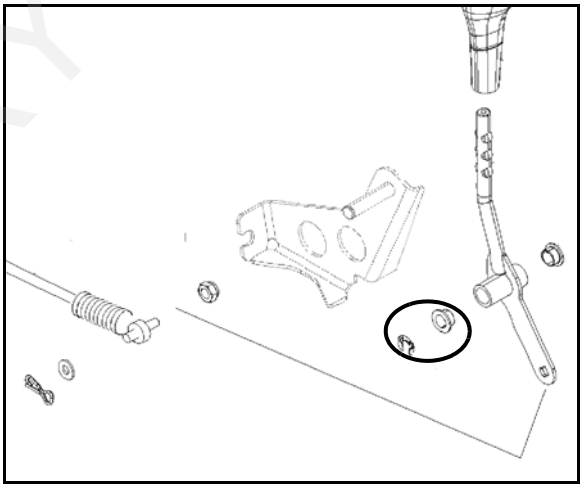
SHIFT LEVER

Removal

1. Pry the shift lever cover using a suitable tool and remove the screw. Pull knob off the shifter.



2. Refer to Chapter 5 for console cover removal.
3. Disconnect cable from shifter.
4. Remove the clip attaching the gear selector to the machine frame.



5. Lift the gear shift selector out of mounting bracket and away from frame.

Installation

1. Perform the steps in reverse order to install the gear shift selector (shifter, cable, console, shift knob).
2. Tighten the shift cable nut to specification.

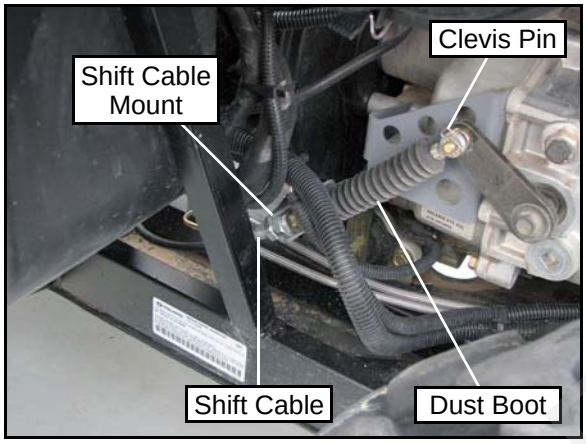
= T
Shift Cable Nut: **130-155 in-lbs (14.7-17.5 Nm)**

Shift Cable Inspection / Adjustment

Shift cable adjustment may be necessary if symptoms include:

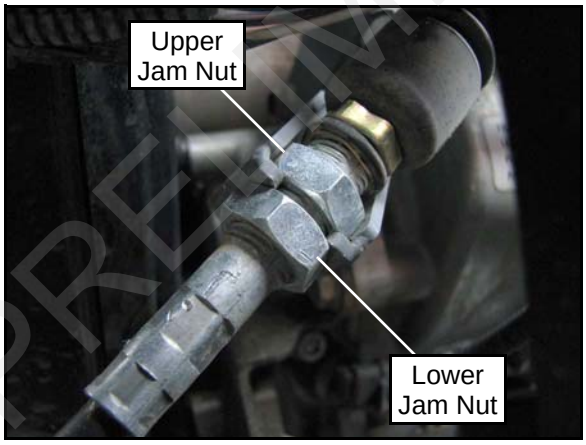
- No AWD or gear position display on instrument cluster
- Ratcheting noise on deceleration
- Inability to engage a gear
- Excessive gear lash (noise)
- Gear selector moving out of desired range

1. Locate the shift cable in the rear LH wheel well area.



2. Inspect shift cable, clevis pin, pivot bushings, and dust boot. Replace if worn or damaged.

3. If adjustment is required, loosen the lower jam nut and pull the cable out of the mount to move the upper jam nut.



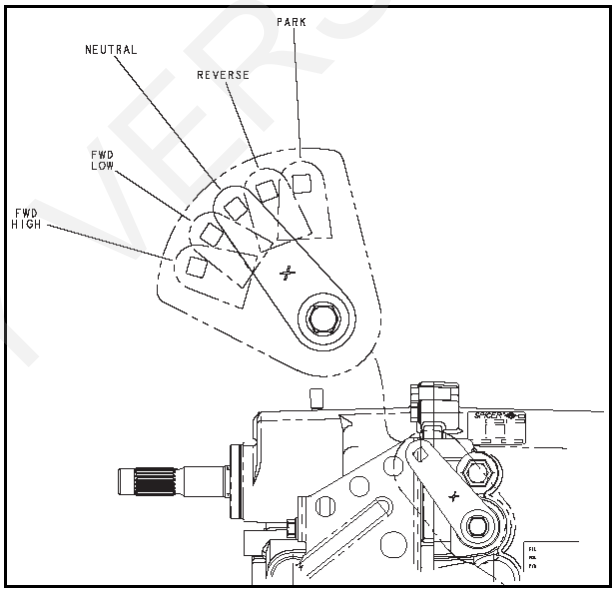
4. Adjust the shift cable so there is the same amount of cable travel when shifting slightly past the detents of HIGH (H) gear and PARK (P).

5. Thread the upper or lower jam nut as required to obtain proper cable adjustment.

NOTE: This procedure may require a few attempts to obtain the proper adjustment.

6. Once the proper adjustment is obtained, place the shift cable and upper jam nut into the mount. Tighten the lower jam nut against the mount.

7. Start engine and shift through all gears to ensure the shift cable is properly adjusted. If transmission still ratchets after cable adjustment, check the CVT system for belt movement at idle. If difficulty shifting persists, the transmission may require service.



TRANSMISSION SERVICE

Transmission Removal / Service Notes

The engine, transmission and rear differential are bolted together as a unit. Removal of the transmission is not possible without removing the engine and differential.

The shift housing cannot be removed without first disassembling the transfer case.

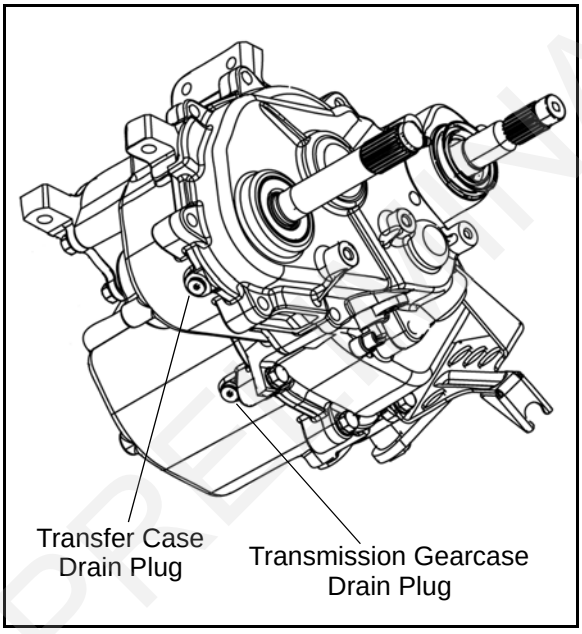
NOTE: Refer to the "Engine Removal" section in Chapter 3 to remove the engine and drivetrain.

Transfer Case Disassembly

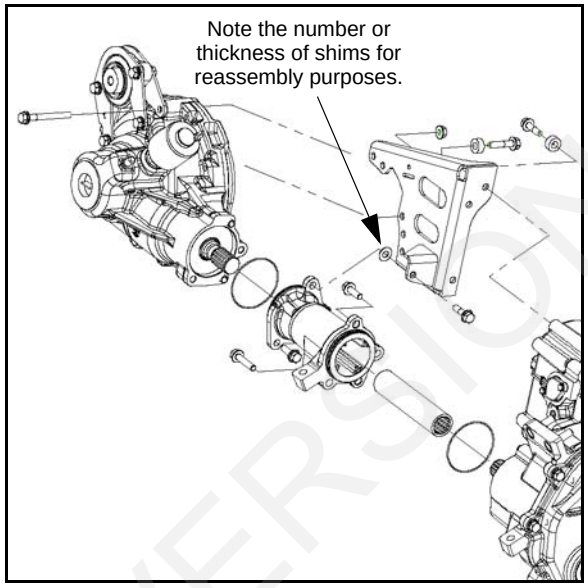
IMPORTANT: Shift housing repairs are not possible without performing transfer case disassembly. Read and understand all instructions before beginning disassembly.

NOTE: Exploded views are located at the end of this chapter for additional information.

1. Place the transmission in the neutral position.
2. Drain both the transfer case and transmission case halves.

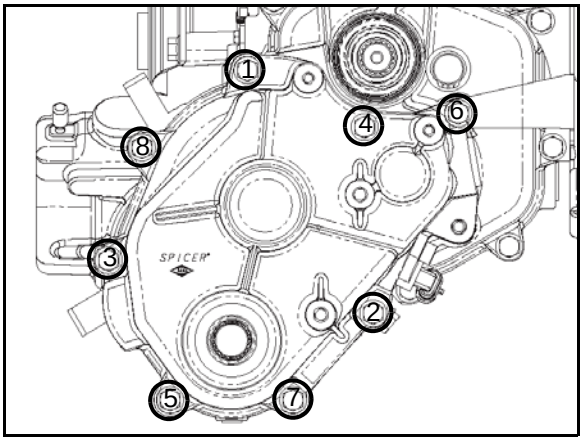


3. Remove the (7) fasteners retaining the transmission to rear gearcase mount bracket.



NOTE: If replacing any components that attach to the rear gearcase mount bracket, be sure to order shim kit PN 2203725. The shims are used to remove any clearance between the mount bracket and rear gearcase connector tube (see illustration above).

4. Remove the connector tube bolts securing the rear gear case and transmission transfer case.
5. Inspect the driveshaft splines for wear and the O-rings for damage. Replace if found to be worn or damaged.
6. Remove the LH front isolator mount bracket. Refer to Chapter 3.
7. Remove the screws from the transfer case cover and remove the cover (note position of the longest screw #4).



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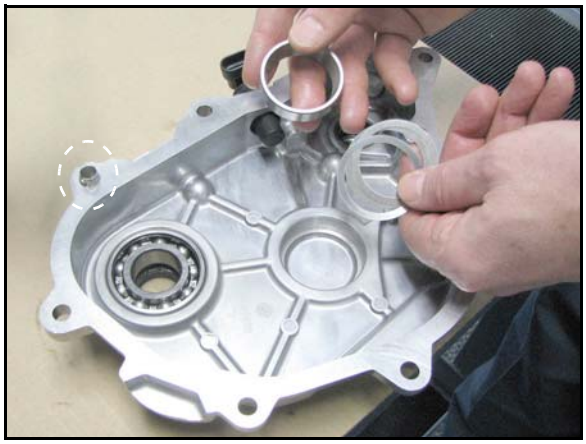
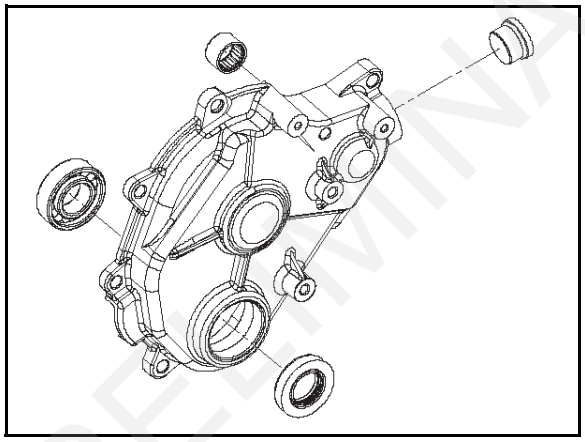
8. After removing the cover, remove the intermediate shaft bearing cup and shims from the cover. Bearing cup is a slip-fit. Note and record the number and thickness of shims and set aside. Also note the two alignment dowels (circle) in the cover for installation.

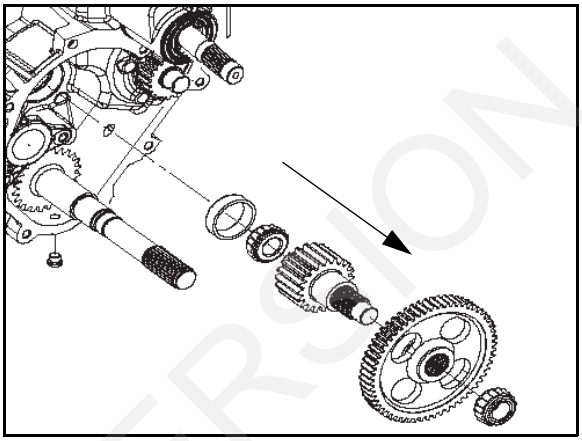
NOTE: Record the number and thickness of shims for reassembly.



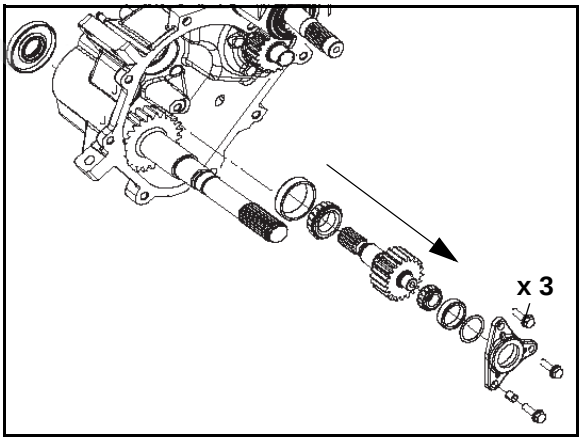
9. Disassemble the cover as required, replacing components that are failed or worn. Check bearings for wear or damage and replace as needed using a press and standard bearing removal tools. *Discard removed bearings as they become damaged by the removal process.*



10. Remove intermediate pinion shaft assembly from the housing. Check bearings and gear teeth for wear or damage and replace as needed. The shaft can be disassembled as shown using a press and standard bearing removal tools.



11. Disassemble the output pinion shaft assembly by removing the retaining screws on the bearing cup/ bracket assembly. Replace the output shaft seal. The output pinion shaft can be disassembled as shown using a press and standard bearing removal tools.



12. Output shaft bearing cup is a slip-fit. Remove and record number and thickness of shims and set aside. Note the alignment dowels (circled) for installation.

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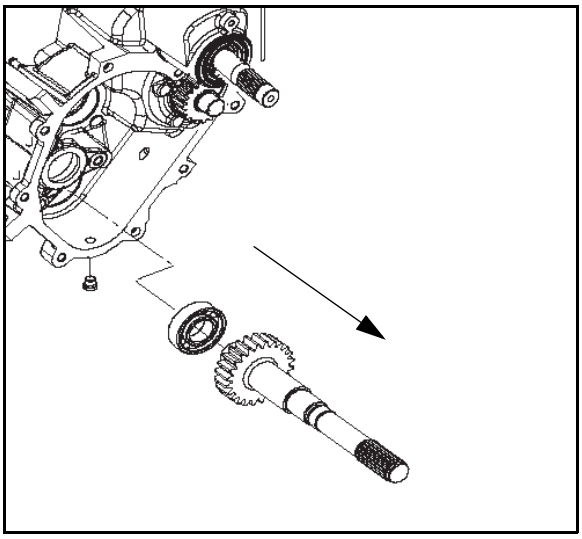
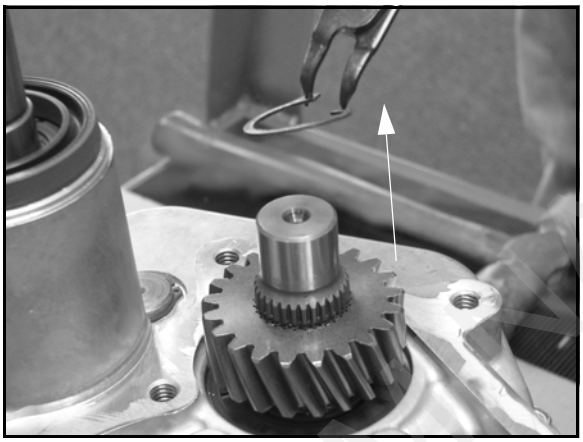
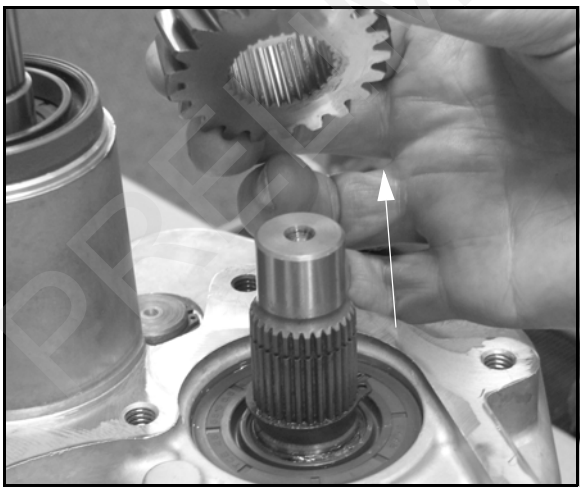
13. Remove the front output pinion shaft assembly. The shaft can be disassembled as shown using a press and standard bearing removal tools.



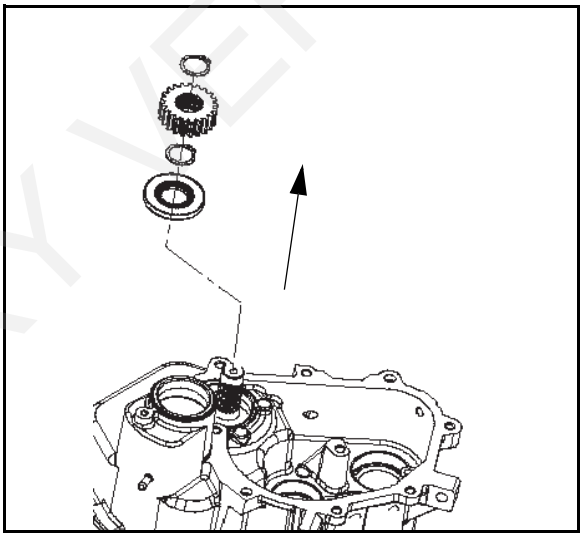
14. Remove the upper snap ring from the top side of the 21T main pinion gear and remove the gear.





15. Remove the lower snap ring from under the gear.

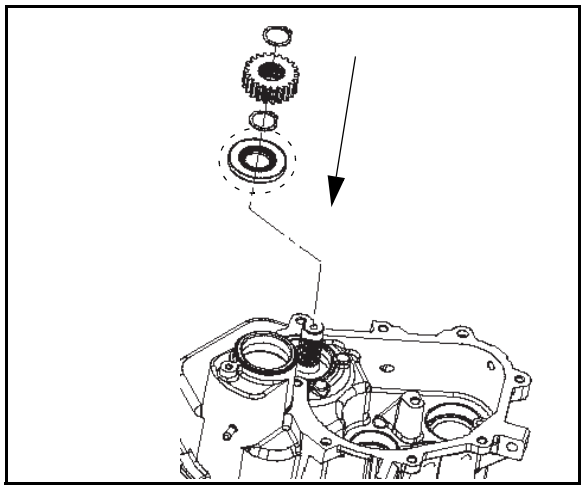
16. Remove the intermediate shaft seal using a seal puller or other suitable method.



Transfer Case Reassembly

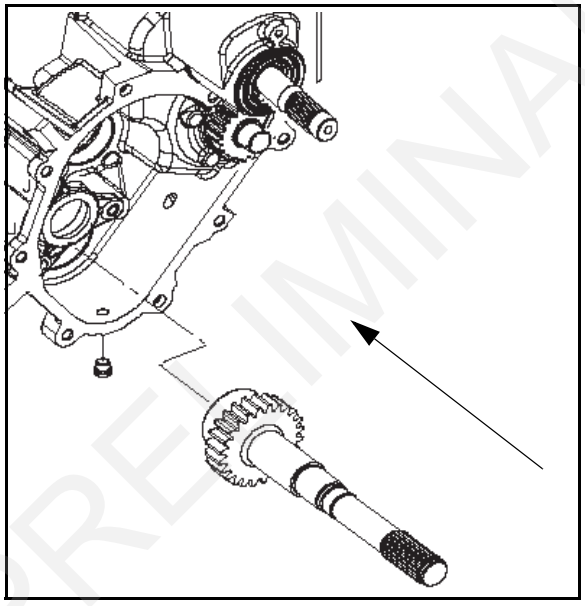
IMPORTANT: Transfer case tapered bearing preload must be checked and/or adjusted for proper transmission operation.

1. Install the intermediate shaft seal (circled) flush or slightly below the case. Install circlips and gear onto the input intermediate shaft as shown.

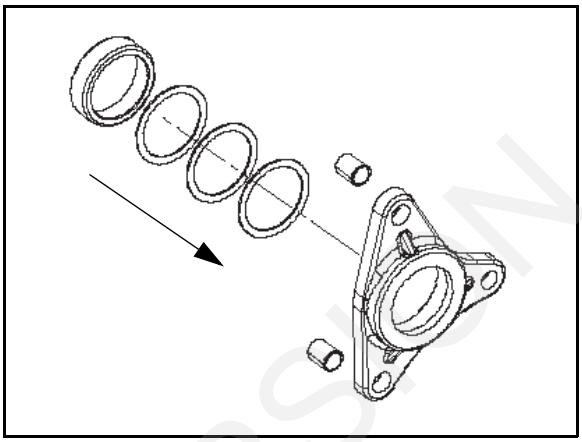


2. Install the front output pinion shaft assembly.

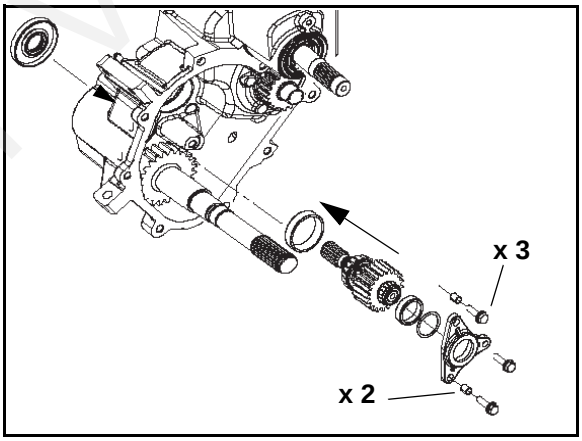
NOTE: Bearing is pressed onto the shaft



3. Install the shims, bearing cup and alignment dowels into the retaining bracket.



4. Install a new output shaft seal flush with the case. Install the output pinion shaft assembly and bearing cup/bracket assembly as shown. Verify the alignment dowels are seated. Torque the bracket screws evenly to specification.

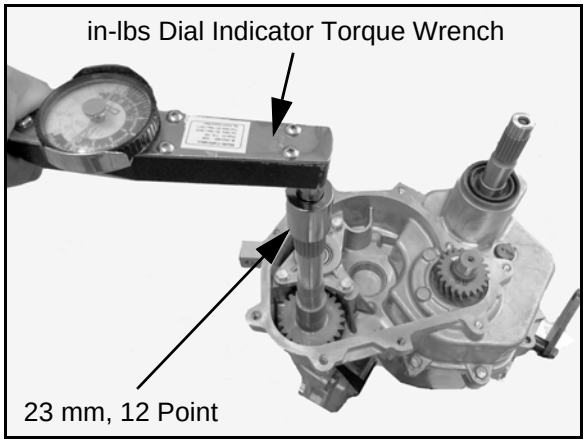


= T
Output Pinion Shaft Bracket Screws: **23-27 ft-lbs (31-37 Nm)**

5. Be sure transmission is in neutral and all bearings are clean and lubricated.

6. Place transmission upright with the output shaft facing up. Rotate output shaft 5-10 times both clockwise and counter-clockwise.

7. Place a 23 mm, 12 point socket over the splines of the output shaft. Attach an Inch Pound (in-lbs) dial indicator torque wrench to the socket. Check the output pinion shaft bearing rolling preload by rotating the output shaft both clockwise and counter-clockwise.

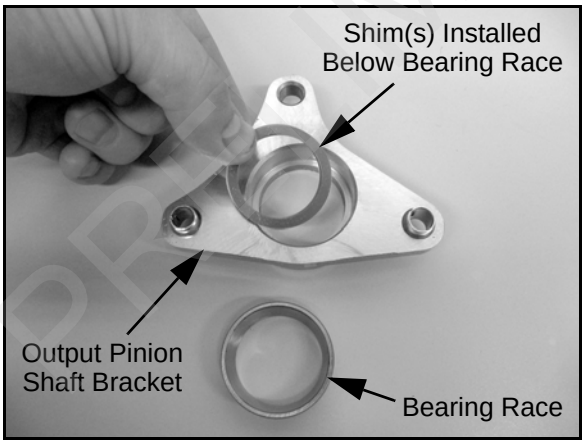


= T
Output Shaft Rolling: **4-8 in-lbs (.45 - .90 Nm)**

8. **A)** If the torque required to rotate the output shaft is out of specification, continue to step 9.
   B) If the torque required to rotate the output shaft is within specification, no adjustment is needed. Proceed to step 18.

9. Remove the three bolts and the output pinion shaft bracket from the transfer case.

10. Remove the slip fit bearing race and shim(s).



11. **A)** If the rolling torque measurement from step 7 was below specification, replace the existing shim(s) with a thicker shim or shim stack from the table below.
    B) If the rolling torque measurement from step 7 was above specification, remove or replace the existing shim(s) with a thinner shim or shim stack from the table below.

Shim Kit 3234567 Includes:	Quantity
.003” (.076mm)	2
.005” (.127mm)	2
.010” (.254mm)	2
.030” (.762mm)	1

12. Install the selected shim(s) into the output pinion shaft bracket.

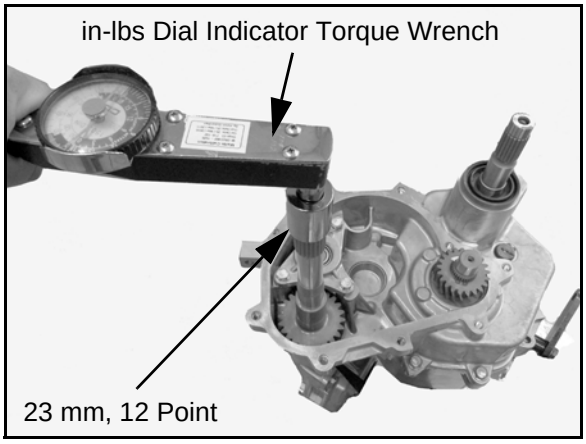
13. Install the slip fit bearing race.

14. Reinstall the output pinion shaft bracket and the three retaining bolts into the transfer case. Torque bolts to specification.

= T
Retaining Bolts: **23-27 ft-lbs (31-37 Nm)**

15. Rotate output shaft 5-10 times both clockwise and counter clockwise.

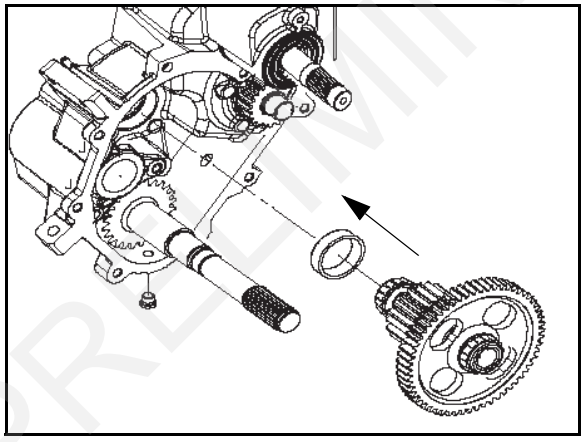
16. Place a 23 mm, 12 point socket over the splines of the output shaft. Attach an Inch Pound (in-lbs) dial indicator torque wrench to the socket. Check the output pinion shaft bearing rolling preload by rotating the output shaft both clockwise and counter-clockwise.



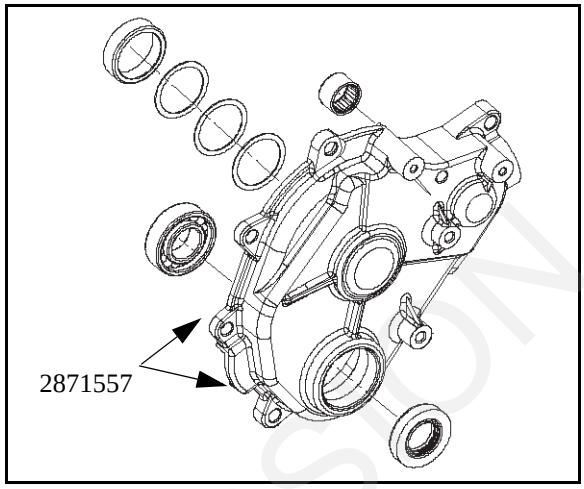
= T
Output Shaft Rolling: **4-8 in-lbs (.45 - .90 Nm)**

17. If output shaft rolling torque is still out of specification, repeat steps 9 through 16 until the output shaft rolling torque is within specification.

18. Reinstall the intermediate pinion shaft assembly and bearing cup.

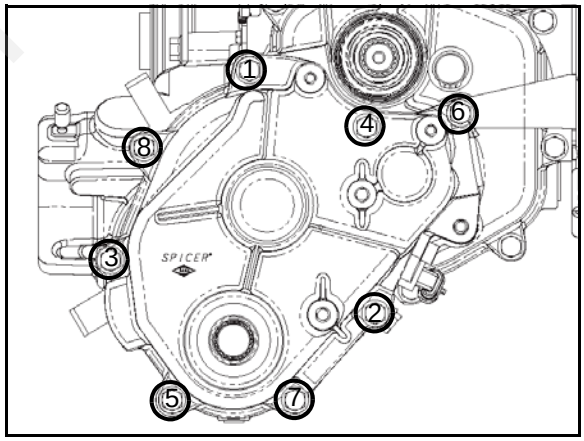


19. Assemble the transfer case cover using new components as required. Press in new bearings and a seal using standard installation tools. (needle bearing is installed round edge inward) Install a new shaft seal flush with the surface, the shims and bearing cup. Apply a thin coat of sealant to the mating surfaces. Apply lubricant to the seal lip.



Apply Sealant PN 2871557 To Case Mating Surfaces

20. Install the transfer case cover. Align the dowels (#1 & #7) and insert the cover screws (note position of the longest screw #4). Torque the screws evenly to specification in sequence as shown.



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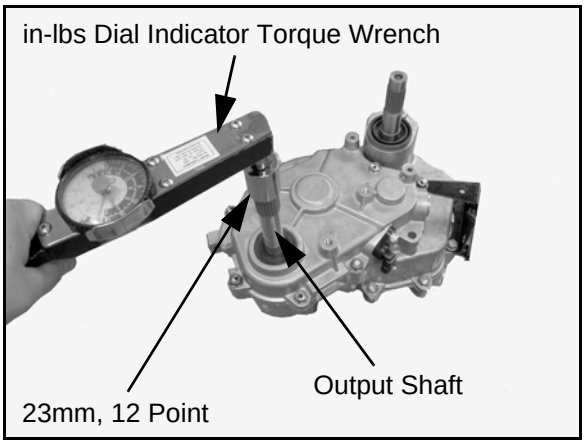
Transfer Case Cover Screws: **23-27 ft-lbs (31-37 Nm)**

21. With the transmission in neutral, rotate the output shaft 5-10 times both clockwise and counter-clockwise.

22. Place a 23 mm, 12 point socket over the splines of the output shaft. Attach an Inch Pound (in-lbs) dial indicator torque wrench to the socket. Check the intermediate pinion shaft assembly bearing rolling preload by rotating the output shaft both clockwise and counter-clockwise.

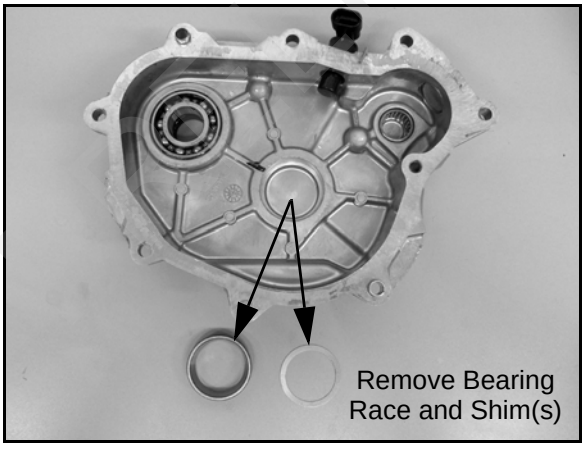


= T
Intermediate Shaft Rolling: **17-22 in-lbs (1.9-2.48 Nm)**

23. **A)** If the torque required to rotate the output shaft is out of specification, continue to step 24.
B) If the torque required to rotate the output shaft is within specification, no adjustment is needed and the transfer case reassembly is complete.

24. Remove the transfer case cover screws and the transfer case cover.

25. After removing the cover, remove the intermediate shaft bearing cup and shim(s) from the cover. The bearing cup is a slip-fit.



26. **A)** If the rolling torque measurement from step 22 was below specification, replace the existing shim(s) with a thicker shim or shim stack from the table below.
B) If the rolling torque measurement from step 22 was above specification, remove or replace the existing shim(s) with a thinner shim or shim stack from the table below.

Shim Kit 3234560 Includes:	Quantity
.003” (.076mm)	2
.005” (.127mm)	2
.010” (.254mm)	2
.030” (.762mm)	1

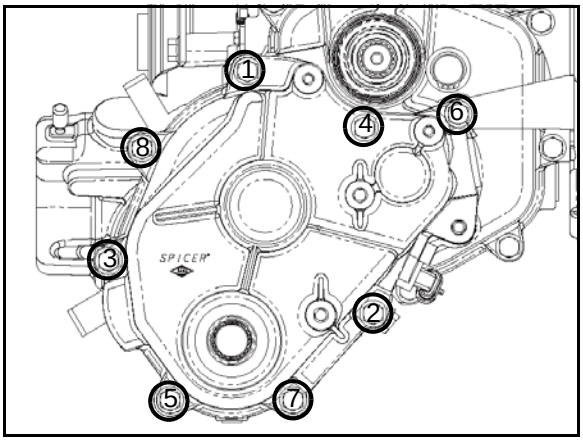
27. Install selected shim(s) and slip fit bearing race into transfer case cover. Coating shim(s) and bearing race with Polaris All Purpose Grease may be necessary to hold the assembly together during installation.

28. Apply a thin coat of sealant to the case mating surfaces.

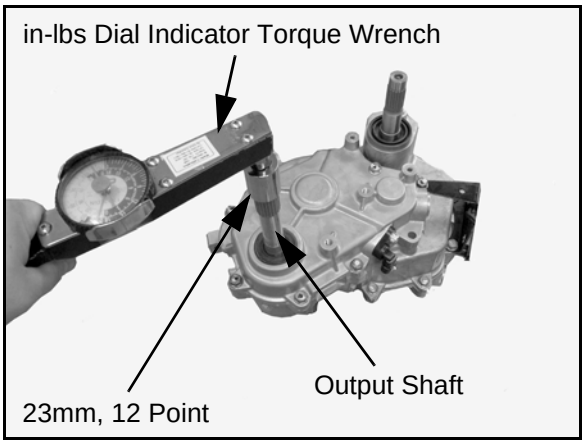
Apply Sealant: PN 2871557 To Case Mating Surfaces

29. Install the transfer case cover. Align the dowels (#1, #7) and insert the cover screws (note position of the longest screw #4). Torque the screws evenly to specification in sequence as shown.

= T
Transfer Case Cover Screws: **23-27 ft-lbs (31-37 Nm)**



30. Place a 23 mm, 12 point socket over the splines of the output shaft. Attach an Inch Pound (in-lbs) dial indicator torque wrench to the socket. Check the intermediate pinion shaft assembly bearing rolling preload by rotating the output shaft both clockwise and counter-clockwise.



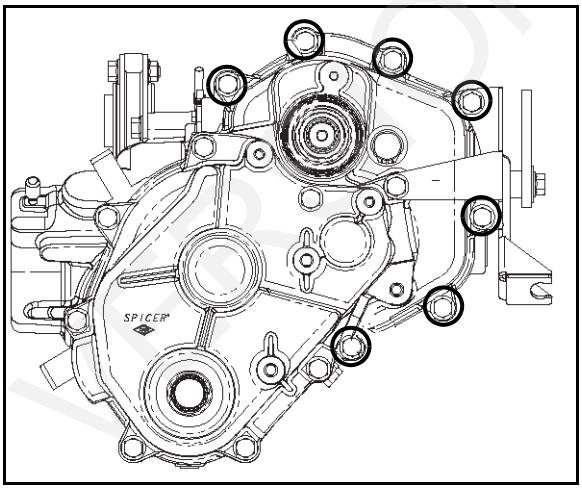
= T
Intermediate Shaft Rolling: **17-22 in-lbs (1.9-2.48 Nm)**

31. **A)** If the torque required to rotate the output shaft is out of specification, repeat steps 24-30 until within specification.
B) If the torque required to rotate the output shaft is within specification, no adjustment is needed and the transfer case reassembly is complete.

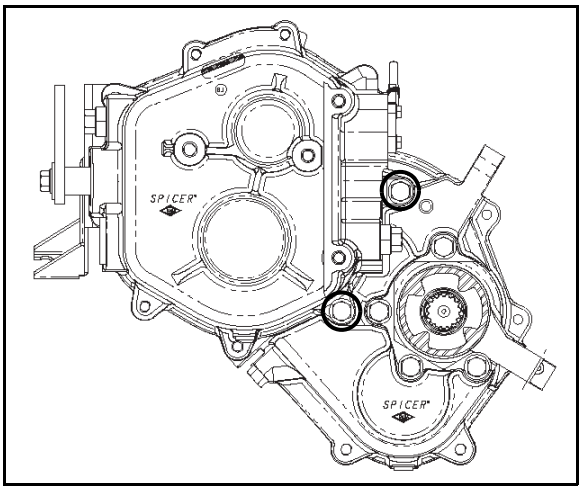
Transmission Shift Housing Disassembly

IMPORTANT: Shift housing repairs are not possible without performing transfer case disassembly. Read and understand all instructions before beginning disassembly.

1. Verify transmission is in neutral. Remove the (7) shift housing case screws from the front of the transmission and (2) from the backside as shown.



NOTE: Shift cable bracket removal is required.



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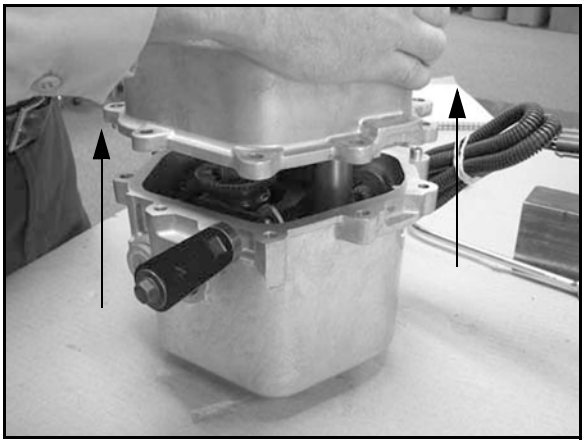
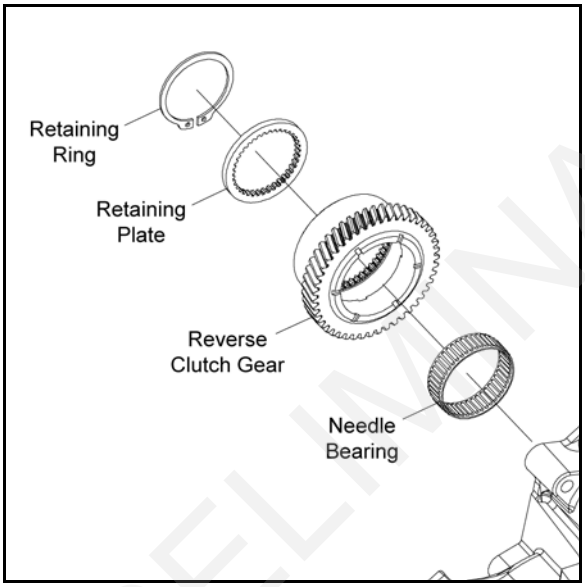
2. Place the transmission shift housing onto a flat surface as shown. Lift the transmission case half straight up and remove.



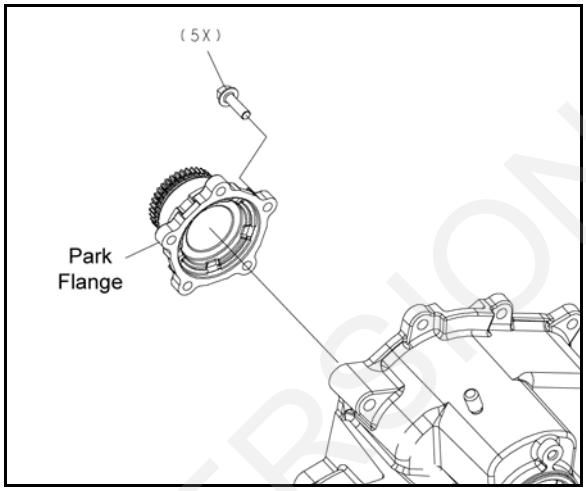
NOTE: Shaft components may "catch" during transmission case half disassembly. Work slowly and deliberately to avoid component loss or damage.

3. Remove the retaining ring and retaining plate.

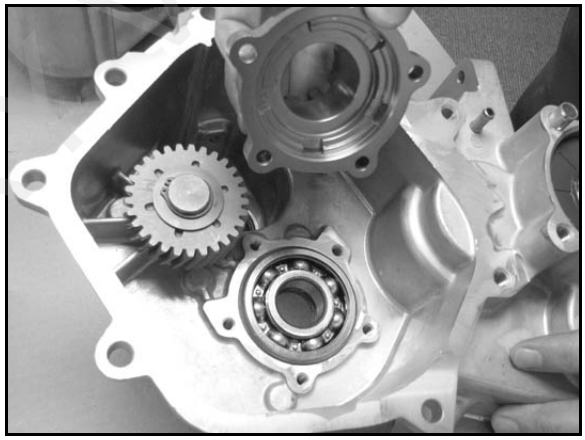


4. Remove the reverse clutch gear assembly from the housing. Inspect these components and replace if needed.

5. Remove the (5) screws retaining the park flange. Inspect the park flange for wear or damage. Replace if needed.

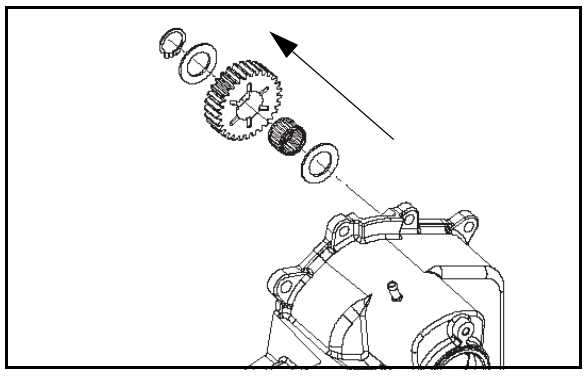


6. Inspect the shaft bearing. Use a standard bearing puller to remove the shaft bearing if required.



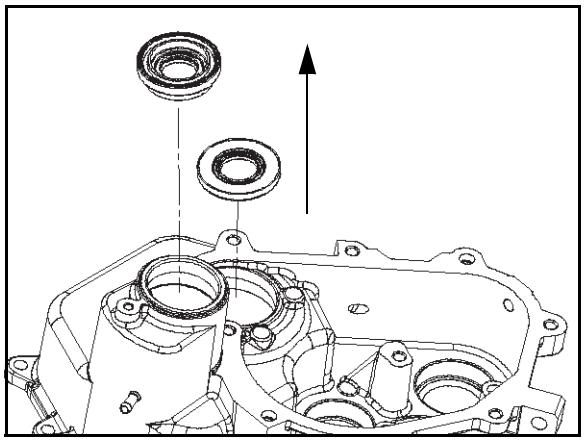
NOTE: Do not pull bearing from case for inspection, as the removal process damages the bearing.

7. Remove the reverse idler snap ring, upper washer, gear, needle bearing, and lower washer from the idler shaft.

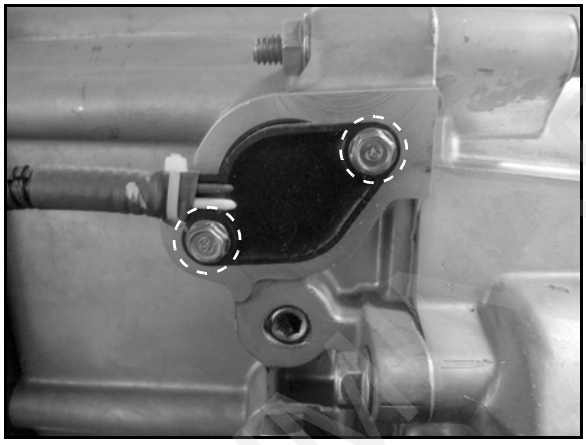


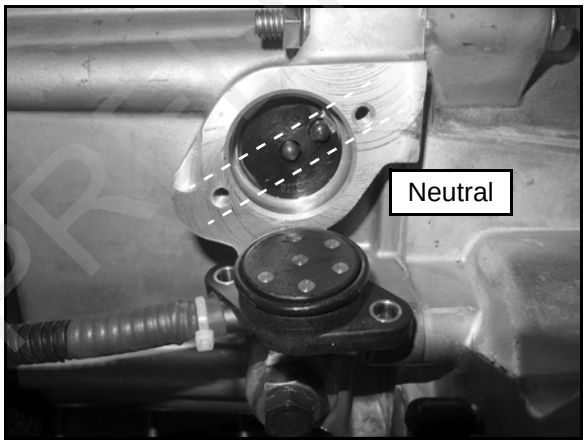
NOTE: The reverse idler shaft is a non-serviceable item and should not be pressed out of the housing.

8. Remove the input shaft seal and clutch intermediate shaft seal using a seal puller or punch.

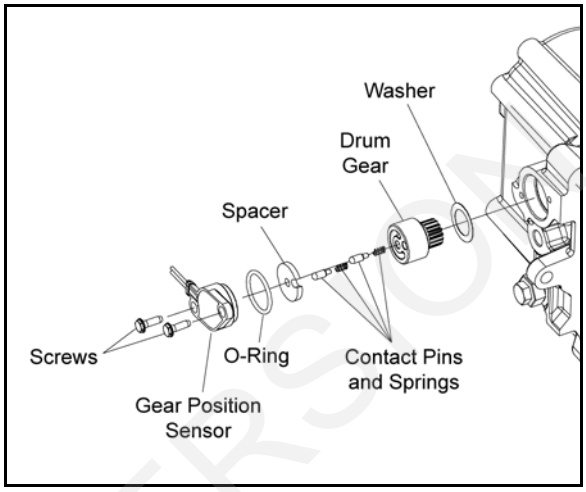


9. Remove the (2) screws that attach the gear position sensor to the shift housing. Inspect the O-ring, switch poles and contact pins for wear or damage. Replace parts as required.

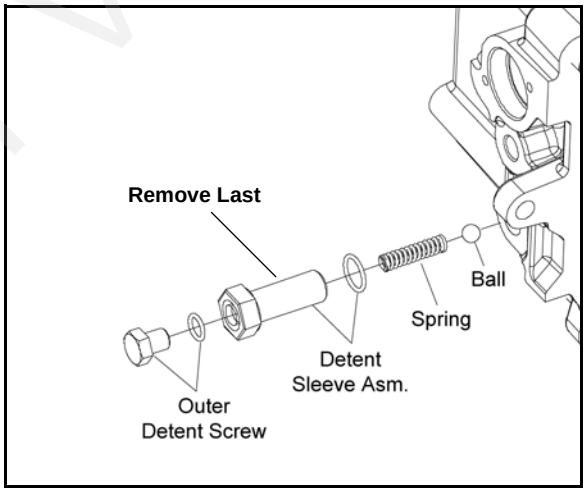




10. Remove the spacer, contact pins, springs, drum gear and washer from the shift housing. Replace any worn or damaged components.



11. Remove the outer detent screw, spring and ball from the shift housing.



NOTE: DO NOT remove the detent sleeve assembly before removing the outer detent screw. Removing the detent sleeve first will allow the detent ball and spring to fall into the shift housing.

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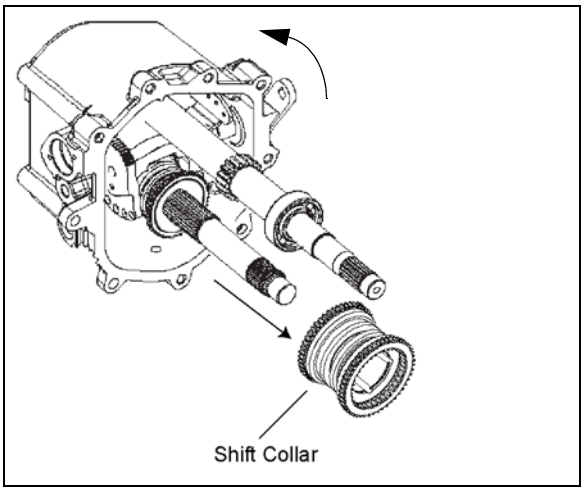
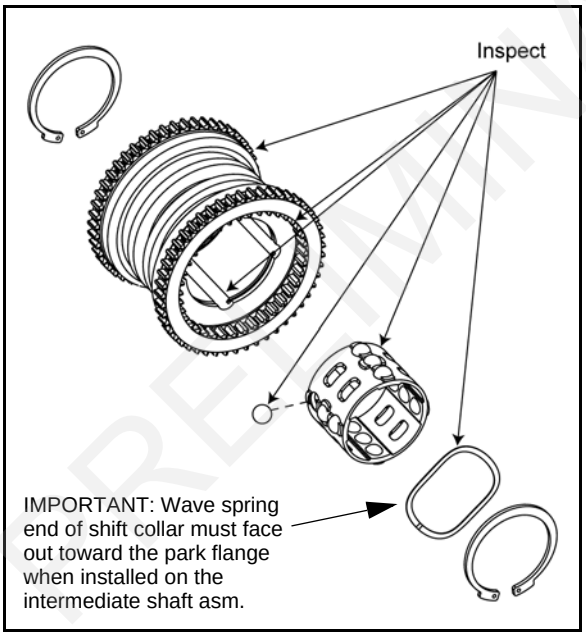
12. Pull back fully on gear selector arm to bring shift collar up and disengage the shift collar from the clutch yoke. Lifting on the clutch shaft may aid in shift collar removal.



13. Inspect the inner and outer gear teeth and splines on both ends of the shift collar for excessive wear or damage.

14. Remove the retaining rings from each end of the shift collar.

15. Remove the wave spring and ball bearing cage assembly from the shift collar as shown.

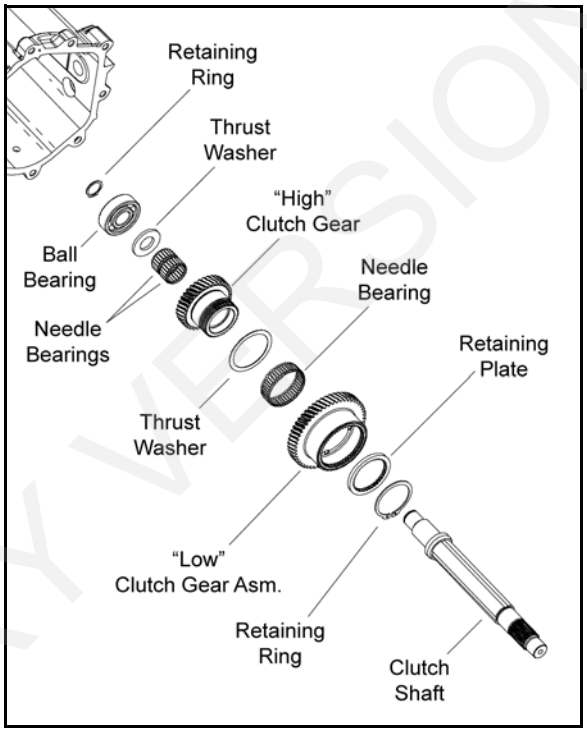


16. Inspect the ball bearing channels on both ends of the shift collar for excessive wear or damage.

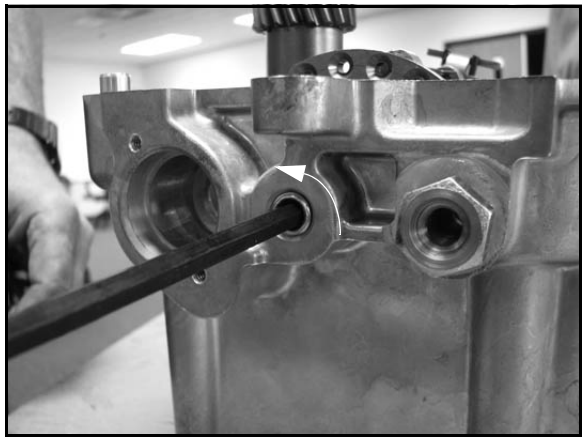
17. Remove the sliding shoes from the clutch yoke.

18. Remove the clutch shaft assembly from the housing. The forward gear assembly and bearings will remain on the shaft upon removal.

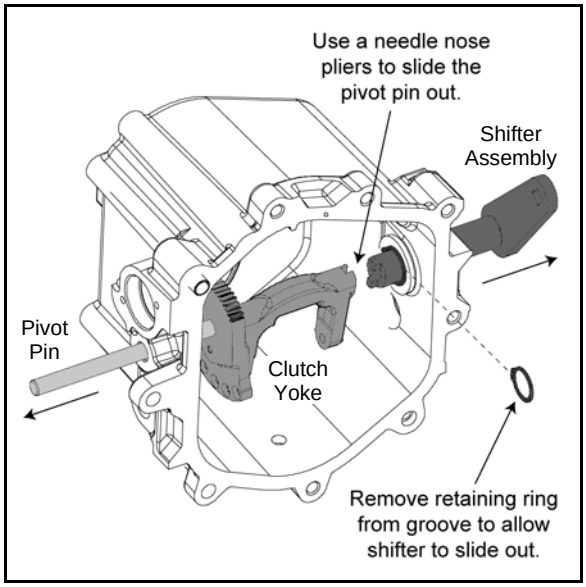
19. Disassemble the clutch shaft as needed by removing both retaining rings and separating the high and low gears from the clutch shaft. Inspect all parts for wear or damage and replace as required.



20. Remove the set screw retaining the pivot pin.



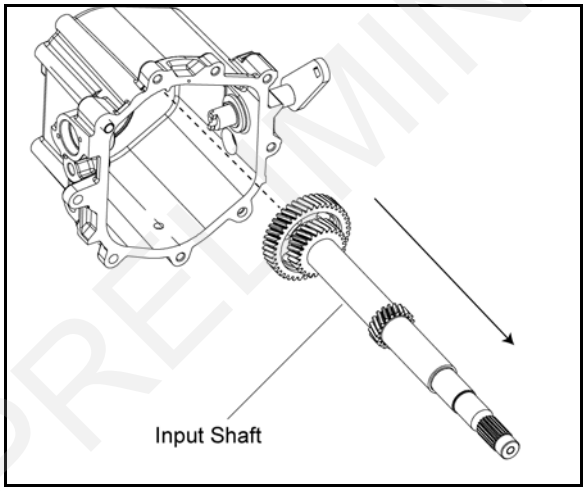
21. Locate the retaining ring on the shifter assembly and move the retaining ring out of the groove to allow the shifter assembly to slide out.



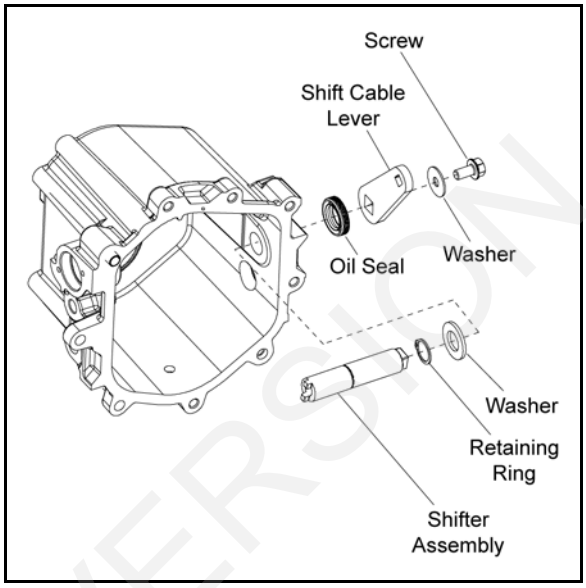
22. Use a needle nose pliers to grab the pivot pin and slide the pin out of the case.

23. Remove the clutch yoke from the shifter assembly and out from the transmission housing.

24. Remove the transmission input shaft from the housing. Inspect the shaft bearing and replace if required using a shop press. Inspect the gears for damage and/or wear. Replace the shaft if required.



25. Remove the screw from the end of the shift cable lever and remove the shifter assembly from the housing.



26. Inspect the shifter assembly shaft and housing for excessive wear or damage. Replace components if needed.

27. Inspect and replace the case bearings if required.

NOTE: Do not pull bearings from case for inspection, as the removal process damages the bearing.

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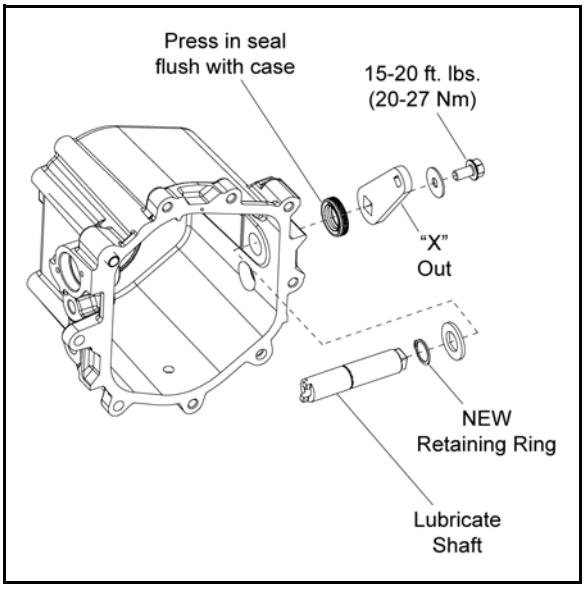
Transmission Shift Housing Reassembly

1. Install a new shift cable lever seal and press it flush with the case. Apply lubricant to the seal lip.

2. Lubricate the shaft of the shifter assembly and install the assembly into the housing with a new retaining ring and washer. Install the shift cable lever ("X" facing out) and torque the retaining screw to specification.



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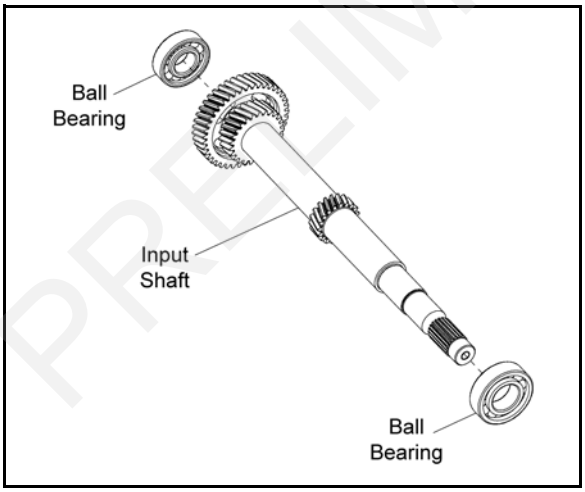
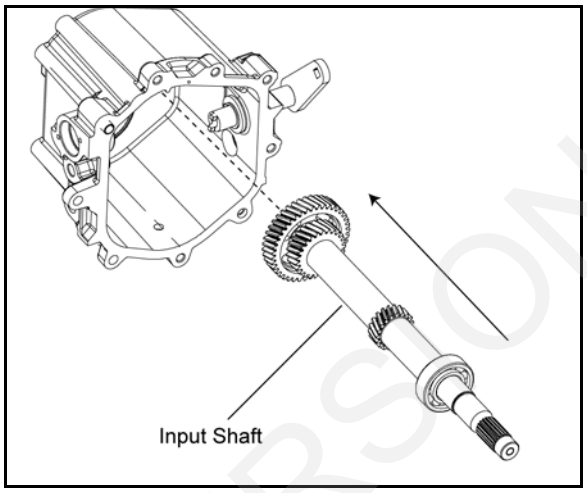
Shift Cable Lever Screw: **15-20 ft-lbs (20 - 27 Nm)**

3. Assemble the input shaft with new ball bearings (if required).

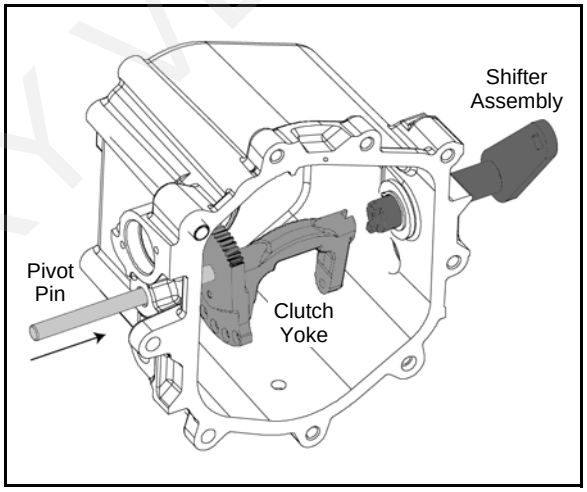


NOTE: Install new bearings and seals by pressing on the inner race only.

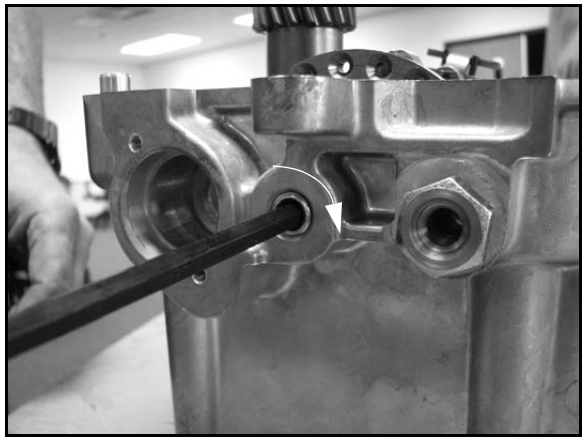
4. Install the input shaft assembly into the transmission housing.



5. Install the clutch yoke into the shifter assembly. Align the holes and install clutch yoke pivot pin.



6. Install the pivot pin set screw and torque to specification.



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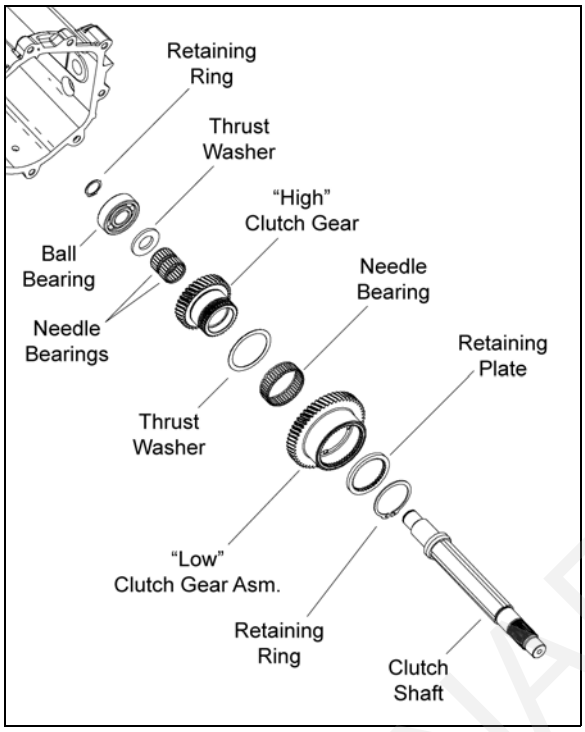
Pivot Pin Set Screw: **100-125 in-lbs (11-14 Nm)**

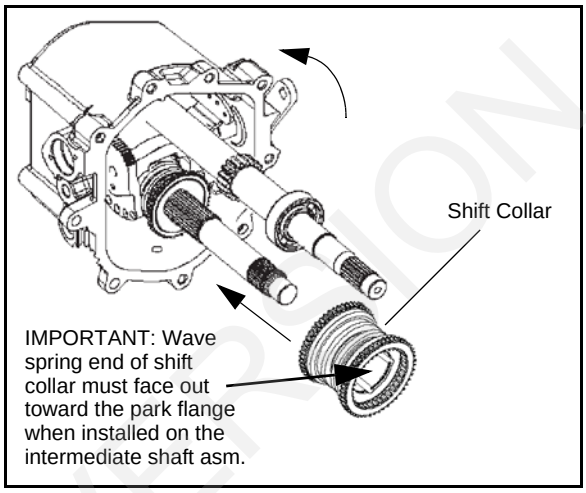
7. Assemble the clutch shaft with new needle bearings. Press a new ball bearing onto the end of the shaft and install a new retaining ring.



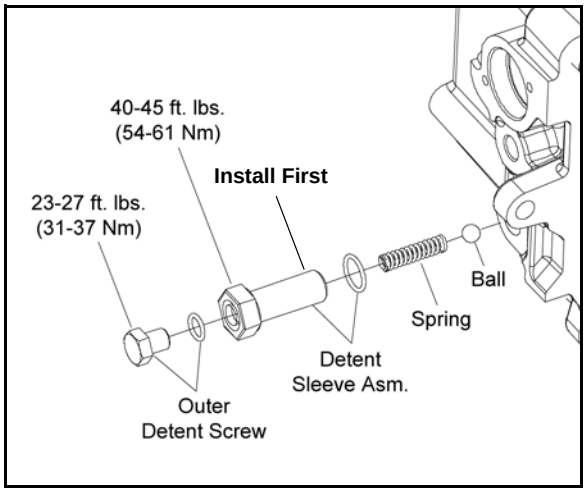
8. Install the clutch shaft into the transmission housing.

9. Install the sliding shoes onto the clutch yoke.

10. Install the shift collar onto the clutch shaft. Pull back fully on gear selector arm to bring the shift yoke arms up and engage the shift shoes onto the center groove of the shift collar. Shifting the clutch shaft position may aid in shift collar installation.



11. If removed, install the detent sleeve assembly first. Install the ball, spring and outer detent screw. Use new O-rings anytime these screws are removed. Torque the detent sleeve assembly to specification. TURN THE OUTER DETENT SCREW ONLY UNTIL LIGHT SHIFTING RESISTANCE IS FELT AT THIS TIME. PLACE THE TRANSMISSION IN NEUTRAL.



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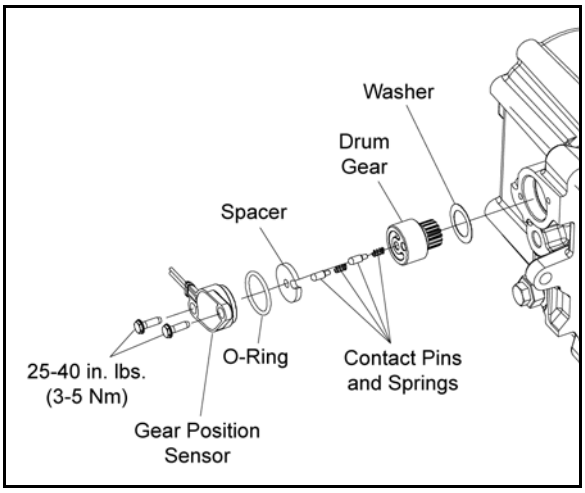
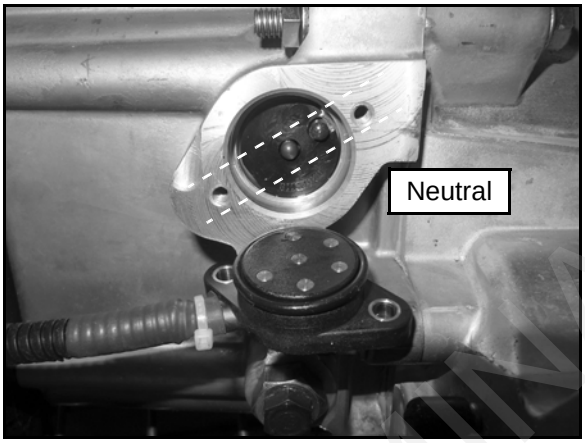
Detent Sleeve Assembly: **40-45 ft-lbs (54-61 Nm)**

12. With the transmission in neutral, lubricate and install thrust washer, drum gear, plate, springs, contact pins and gear position sensor/O-ring assembly. Verify the contact pins are aligned as shown with transmission in neutral. Torque retaining screws to specification.





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Apply Lubricant to shift drum components.

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Gear Position Sensor Screws: **25-40 in-lbs (3-5 Nm)**

13. Complete the shift detent screw installation. Torque the outer detent screws to specification.

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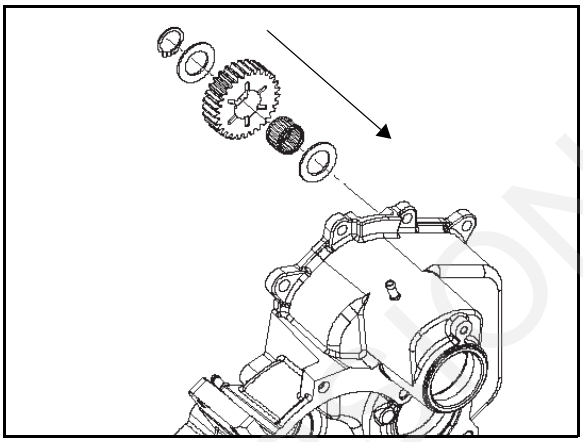
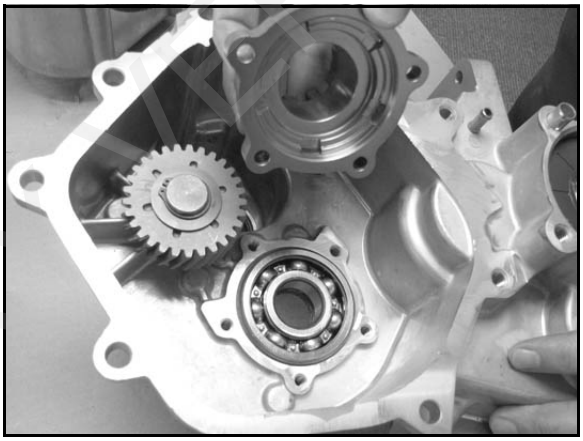
Outer Detent Screws: **23-27 ft-lbs (31-37 Nm)**

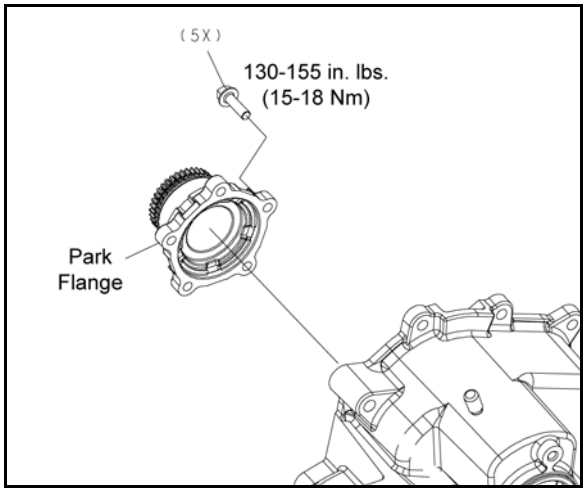
14. Install reverse idler lower washer, needle bearing, gear, upper washer and retaining ring onto idler shaft.



15. Install a new shaft bearing (if required).



16. Install the park flange and torque the (5) screws to specification.



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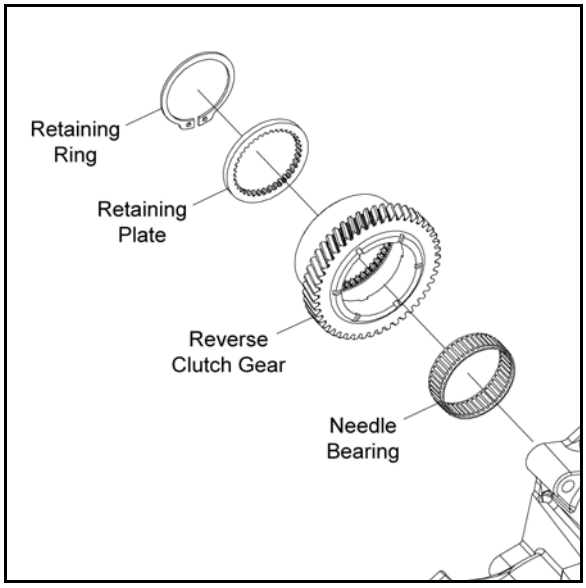
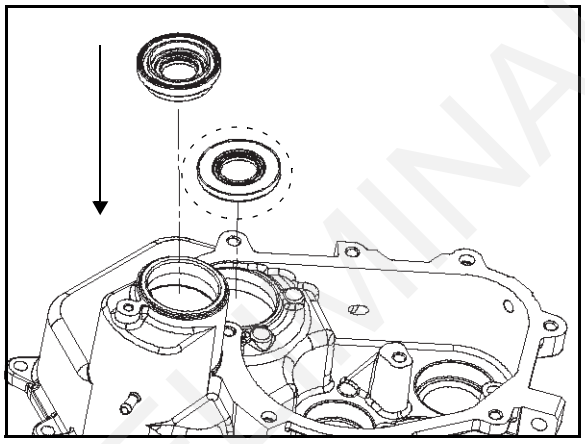
Park Flange Screws: **130-155 in-lbs (15-18 Nm)**

17. Install the reverse clutch assembly onto the park flange. Note the orientation of the needle bearing.

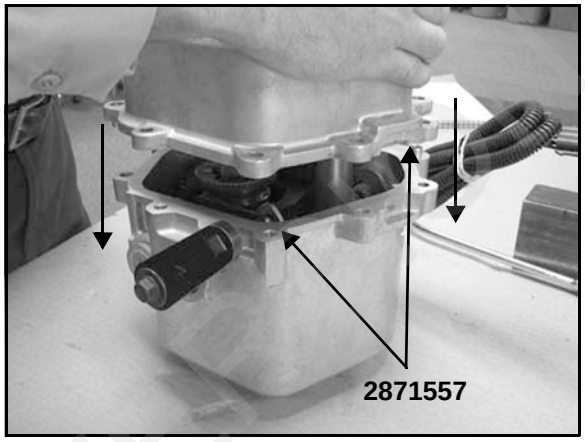


18. Install the retaining plate and a new retaining ring.

19. Install the input shaft seal and verify it is fully seated. Install the intermediate shaft seal (circled) flush or slightly below the case. Apply lubricant to both seal lips.

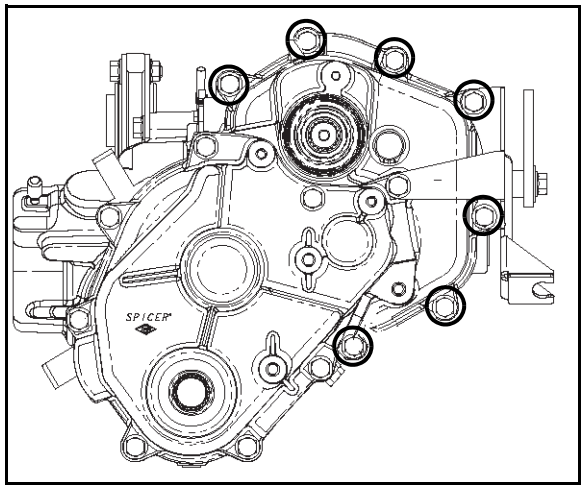


20. Place the transmission shift housing onto a flat surface as shown. Apply a bead of crankcase sealant onto the mating surfaces. Align the dowels and install the transmission case half onto the shift housing while rotating the input shaft, using care not to damage the seal surfaces.



Apply Sealant: PN 2871557 to Case Mating Surfaces

21. Install the shift cable bracket and (7) shift housing case screws to the front of the transmission. Torque to specification.



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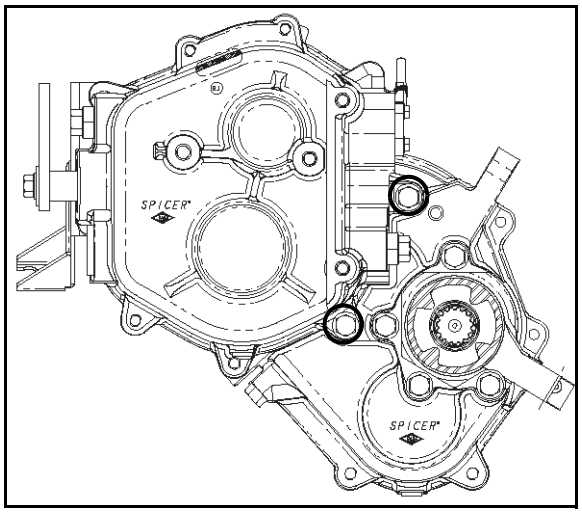
Shift Housing Screws:
23-27 ft-lbs (31-37 Nm)

22. Install the (2) shift housing case screws to the backside as shown. Torque to specification.

NOTE: Shift cable bracket installation is required.



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Shift Housing Screws: **23-27 ft-lbs (31-37 Nm)**

23. Proceed with transfer case reassembly.

See "Transfer Case Reassembly" on page 8.7

TROUBLESHOOTING

Troubleshooting Checklist

Check the following items when shifting difficulty is encountered:

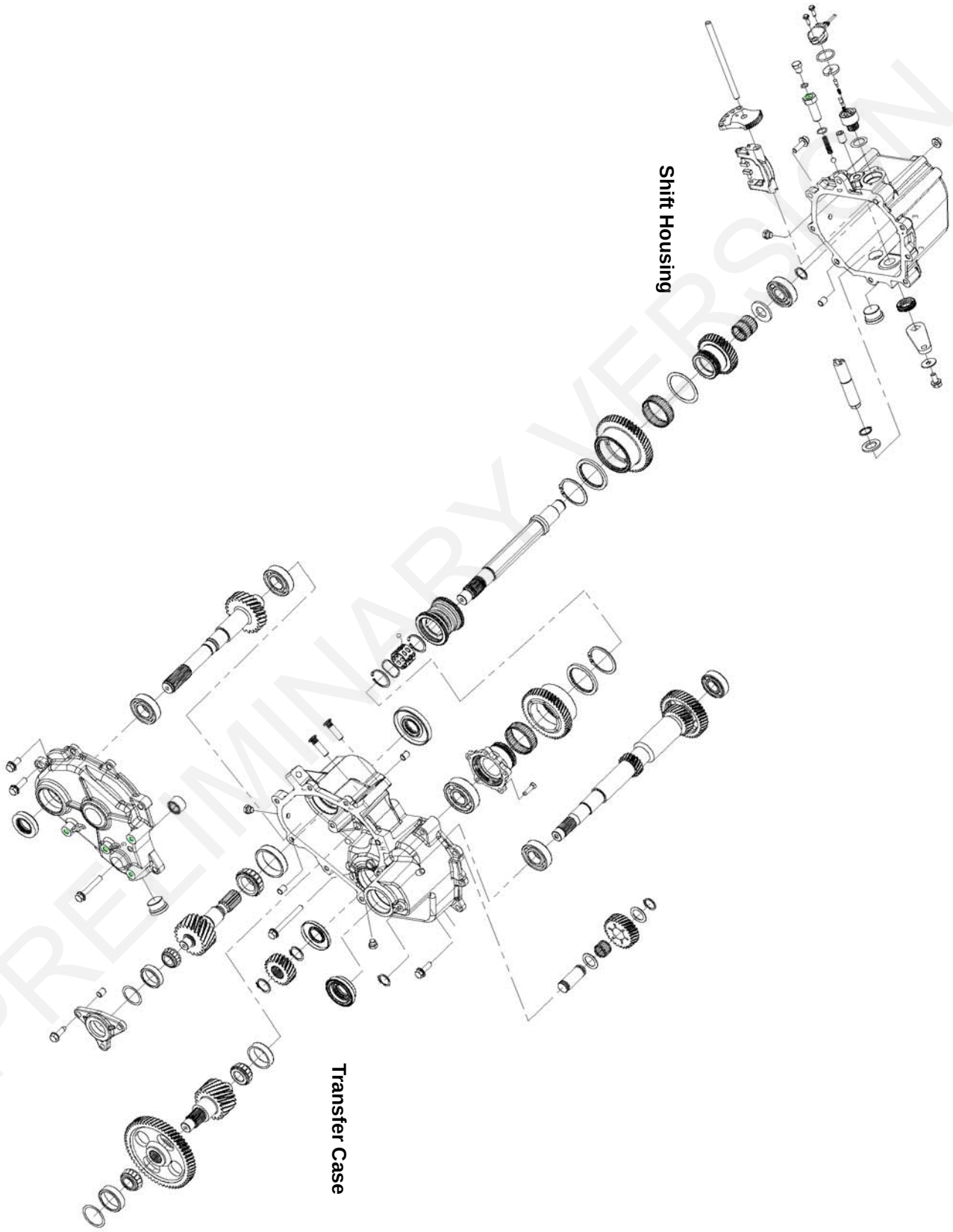
- Idle speed adjustment
- PVT alignment
- Transmission oil type/quality
- Transmission torque stop adjustment (where applicable)
- Engine torque stop adjustment (where applicable)
- Drive belt deflection
- Loose fasteners on rod ends
- Loose fasteners on selector box
- Worn rod ends, clevis pins, or pivot arm bushings
- Linkage rod adjustment and rod end positioning
- Shift selector rail travel
- Worn, broken or damaged internal transmission components

NOTE: To determine if shifting difficulty is caused by an internal transmission problem, isolate the transmission by disconnecting the shifter from transmission bellcrank. Verify the engine RPM is set to specification. Manually select each gear range at the transmission bellcrank, and test ride vehicle. If it functions properly, the problem is outside the transmission.

If transmission problem remains, disassemble transmission and inspect all gear dogs for wear (rounding), damage. Inspect all bearings, circlips, thrust washers and shafts for wear.

TRANSMISSION EXPLODED VIEW

Shift Housing / Transfer Case Exploded View



NOTES

CHAPTER 9
BRAKES

GENERAL SPECIFICATIONS

FRONT BRAKE SYSTEM		
Item	**Standard**	**Service Limit**
Front Brake Pad Thickness	**RZR / RZR S:** .300 ± .007" (7.62 ± .178 mm)	.180" (4.6 mm)
	RZR 4: .297 ± .007" (7.54 ± .178 mm)	
Front Brake Disc Thickness	.188" (4.78 mm)	.170" (4.32 mm)
Front Brake Disc Runout	-	.010" (.254 mm)

REAR BRAKE SYSTEM		
Item	**Standard**	**Service Limit**
Rear Brake Pad Thickness	.298 ± .007" (7.57 ± .178 mm)	.180" (4.6 mm)
Rear Brake Disc Thickness	.188" (4.78 mm)	.170" (4.32 mm)
Rear Brake Disc Runout	-	.010" (.254 mm)

TORQUE SPECIFICATIONS

Item	Torque ft-lbs	Torque Nm
Front Caliper Mounting Bolts	31-34	42-46
Rear Caliper Mounting Bolts	18	24
Brake Line Flare	12-15	16-20
Brake Line Banjo Bolts (Caliper Attachment)	15	20
Brake Line Banjo Bolt (Master Cylinder Attachment)	15	20
Front Brake Disc to Hub Bolts	18	24
Rear Brake Disc to Hub Bolts	28	38
Brake Switch	12-15	16-20
Master Cylinder to Frame	17	23
Brake Pedal Mounting Bracket to Frame	17	23

SPECIAL TOOLS

Part Number	Tool Description
2870975	Mity Vac™ Pressure Test Tool

SPX Corp: 1-800-328-6657 or http://polaris.spx.com/

BRAKE SYSTEM SERVICE NOTES

Disc brake systems are light weight, low maintenance, and perform well in the conditions this vehicle will routinely encounter. There are a few things to remember when replacing disc brake pads or performing brake system service to ensure proper system function and maximum pad service life.

- Optional pads are available to suit conditions in your area. Select a pad to fit riding style and environment.
- DO NOT over-fill the master cylinder fluid reservoir.
- Make sure the brake pedal returns freely and completely.
- Adjust stop pin on front caliper after pad service.
- Check and adjust master cylinder reservoir fluid level after pad service.
- Make sure atmospheric vent on reservoir is unobstructed.
- Test for brake drag after any brake system service and investigate cause if brake drag is evident.
- Make sure caliper moves freely on guide pins (where applicable).
- Inspect caliper piston seals for foreign material that could prevent caliper pistons from returning freely.
- Perform a brake burnishing procedure after installing new pads to maximize service life.
- DO NOT lubricate or clean the brake components with aerosol or petroleum products. Use only approved brake cleaning products.

BRAKE NOISE TROUBLESHOOTING

Dirt or dust buildup on the brake pads and disc is the most common cause of brake noise (squeal caused by vibration). If cleaning does not reduce the occurrence of brake noise, Permatex™ *Disc Brake Quiet* can be applied to the back of the pads. Follow directions on the package. This will keep pads in contact with caliper piston(s) to reduce the chance of squeaks caused by dirt or dust.

Brake Noise Troubleshooting	
Possible Cause	**Remedy**
Dirt, dust, or imbedded material on pads or disc	Spray disc and pads with CRC Brakeleen™ or an equivalent non-flammable aerosol brake cleaner. Remove pads and/or disc hub to clean imbedded material from disc or pads.
Pad(s) dragging on disc (noise or premature pad wear) because of improper adjustment Master cylinder reservoir overfilled Master cylinder compensating port restricted Master cylinder piston not returning completely Caliper piston(s) not returning Operator error (riding the brake)	Adjust pad stop (front calipers) Set to proper level Clean compensating port Inspect. Repair as necessary Clean piston(s) seal Educate operator
Loose wheel hub or bearings	Check wheel and hub for abnormal movement.
Brake disc warped or excessively worn	Replace disc
Brake disc misaligned or loose	Inspect and repair as necessary
Noise is from other source (axle, hub, disc or wheel)	If noise does not change when brake is applied check other sources. Inspect and repair as necessary
Wrong pad for conditions	Change to a softer or harder pad

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HYDRAULIC BRAKE SYSTEM OPERATION

The Polaris brake system consists of the following components or assemblies: brake pedal, master cylinder, hydraulic brake lines, brake calipers, brake pads, and brake discs, which are secured to the drive line.

When the foot activated brake lever is applied it applies pressure on the piston within the master cylinder. As the master cylinder piston moves inward it closes a small opening (compensating port) within the cylinder and starts to build pressure within the brake system. As the pressure within the system is increased, the pistons located in the brake calipers move outward and apply pressure to the moveable brake pads. These pads contact the brake discs and move the calipers in their floating bracket, pulling the stationary side pads into the brake discs. The resulting friction reduces brake disc and vehicle speed.

The friction applied to the brake pads will cause the pads to wear. As these pads wear, the piston within the caliper moves further outward and becomes self adjusting. Fluid from the reservoir fills the additional area created when the caliper piston moves outward.

Brake fluid level is critical to proper system operation. Too little fluid will allow air to enter the system and cause the brakes to feel spongy. Too much fluid could cause brakes to drag due to fluid expansion.

Located within the master cylinder is the compensating port which is opened and closed by the master cylinder piston assembly. As the temperature within the hydraulic system changes, this port compensates for fluid expansion or contraction. 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 fluid expansion. **Never overfill the reservoir! Do not fill the reservoir beyond the MAX LEVEL line!**

When servicing Polaris brake systems use only **Polaris DOT 4 Brake Fluid (PN 2872189)**. **WARNING:** Once a bottle is opened, use what is necessary and discard the rest in accordance with local laws. Do not store or use a partial bottle of brake fluid. Brake fluid is hygroscopic, meaning it rapidly absorbs moisture. This causes the boiling temperature of the brake fluid to drop, which can lead to early brake fade and the possibility of serious injury.

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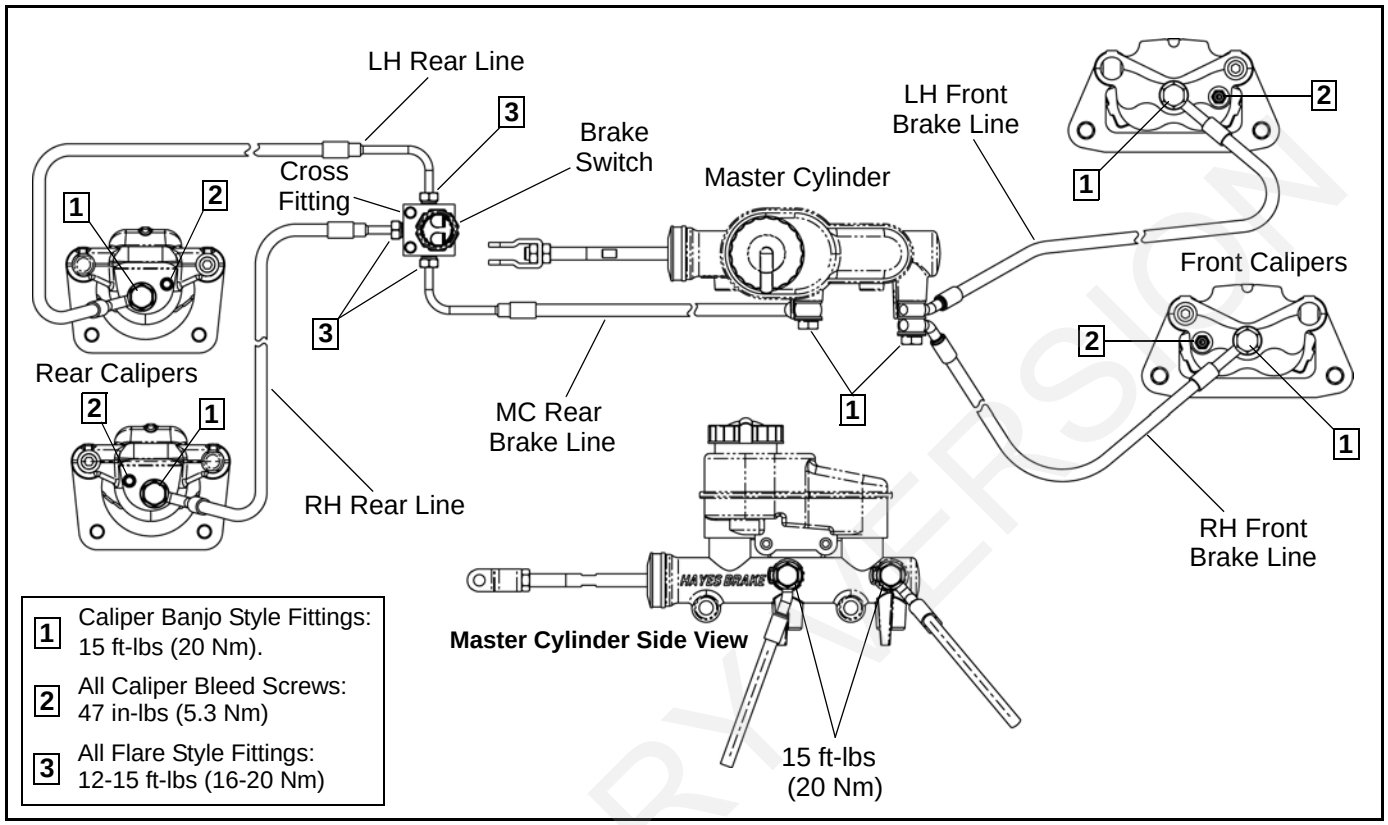
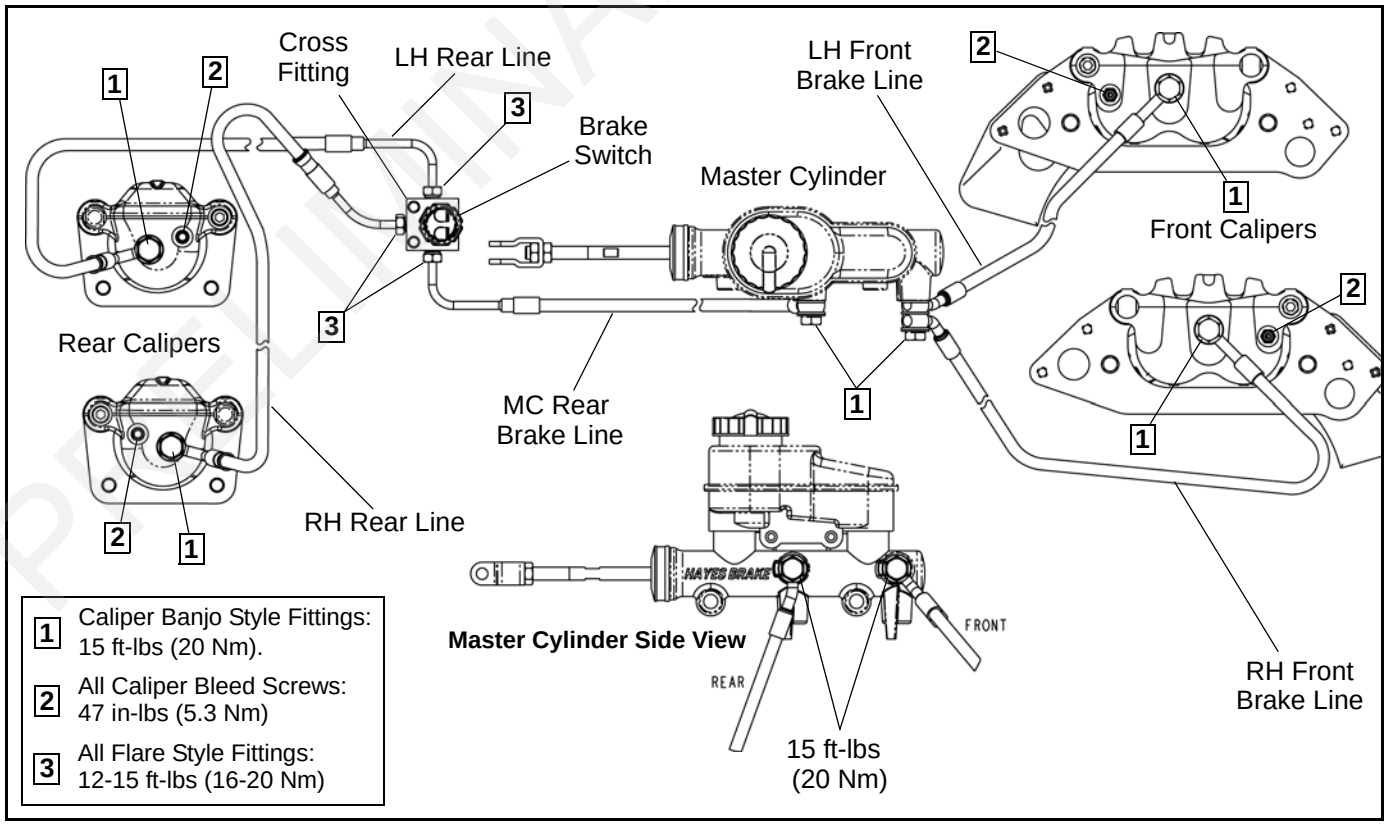
BRAKE SYSTEM EXPLODED VIEW

RZR / RZR S / RZR S INT'L



RZR 4

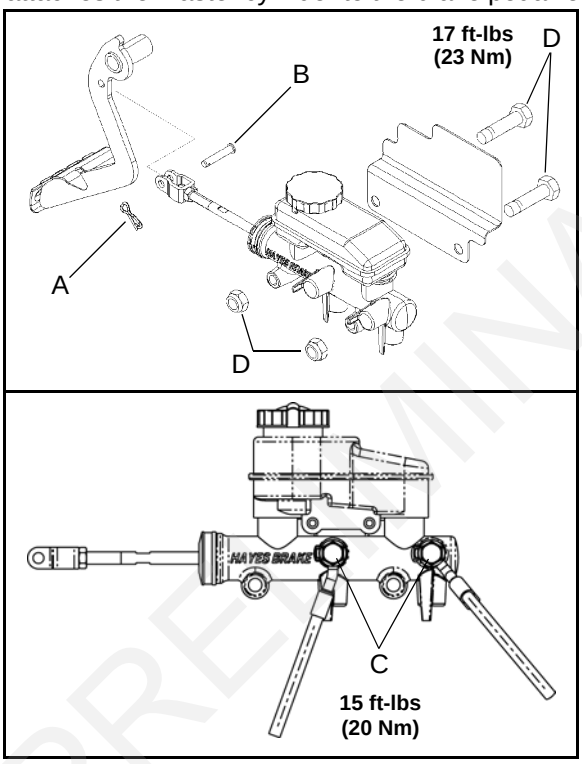


MASTER CYLINDER

Removal

1. Locate the master cylinder above the left front tire in the wheel well area.

2. Remove the clip (A) from the clevis pin (B) that attaches the master cylinder to the brake pedal lever.



3. Place a container to catch brake fluid under the master cylinder brake line banjo bolts (C).

CAUTION

Brake fluid will damage finished surfaces. Do not allow brake fluid to come in contact with finished surfaces.

NOTE: Make note of front and rear brake line locations to master cylinder.

4. Loosen the brake line banjo bolts (C) and allow fluid to drain.

NOTE: Dispose of fluid properly. Do not re-use.

5. Remove the two mounting fasteners (D) that secure the master cylinder to the frame.

Installation

1. Reverse Steps 1-5 for master cylinder installation. **Refer to the torque specifications in the illustration.**

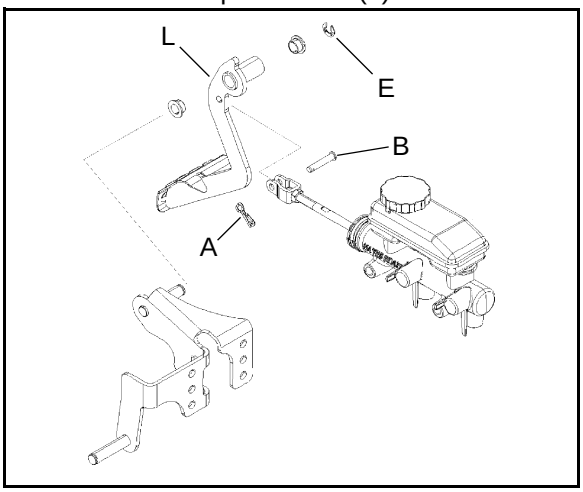
2. After installing the foot brake check pedal freeplay. Pedal freeplay should not exceed .090” (2.286 mm).

BRAKE PEDAL LEVER

Pedal Removal

1. Locate the brake pedal lever (L) and remove the clip (A) and master cylinder clevis pin (B).

2. Remove the E-ring (E) from the pedal mount and remove the brake pedal lever (L) from the vehicle.



Pedal Installation

1. Reverse “Removal” steps to install brake pedal lever. Brake pedal freeplay should not exceed .090” (2.28 mm).

Brake Pedal Freeplay:
.090” (2.28 mm)

BRAKE BLEEDING / FLUID CHANGE

NOTE: When bleeding the brakes or replacing the fluid always start with the furthest caliper from the master cylinder. This procedure should be used to change fluid or bleed brakes during regular maintenance.

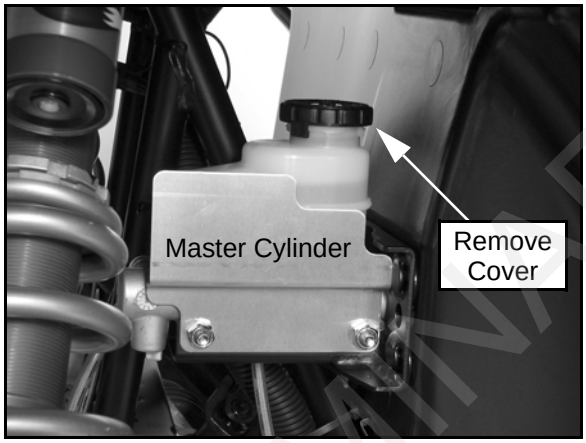
⚠ CAUTION

Always wear safety glasses.

⚠ CAUTION

Brake fluid will damage finished surfaces. Do not allow brake fluid to come in contact with finished surfaces.

1. Clean master cylinder reservoir cover thoroughly and remove the cover.



2. If changing fluid, remove old fluid from reservoir with a Mity Vac™ pump or similar tool.

Mity Vac™ (PN 2870975)

3. Add brake fluid to the indicated MAX level of reservoir.

Polaris DOT 4 Brake Fluid (PN 2872189)

4. Begin bleeding procedure with the caliper that is farthest from the master cylinder. Install a box end wrench on caliper bleeder screw. Attach a clean, clear hose to fitting and place the other end in a clean container. Be sure the hose fits tightly on fitting.
5. Have an assistant slowly pump foot pedal until pressure builds and holds.
6. Hold brake pedal on to maintain pedal pressure, and open bleeder screw. Close bleeder screw and release foot pedal.

NOTE: Do not release foot pedal before bleeder screw is tight or air may be drawn into master cylinder.

7. Repeat procedure until clean fluid appears in bleeder hose and all air has been purged. Add fluid as necessary to maintain level in reservoir.

⚠ CAUTION

Maintain at least 1/2"(1.27 cm) of brake fluid in the reservoir to prevent air from entering the master cylinder.

8. Tighten bleeder screw securely and remove bleeder hose. Torque bleeder screw to specification.

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Bleeder Screw:
47 in-lbs (5.3 Nm)

9. Repeat procedure Steps 5 - 8 for the remaining calipers.
10. Add brake fluid to MAX level inside reservoir.

Master Cylinder Fluid Level: Between the MIN and MAX line shown on the reservoir.

11. Install master cylinder reservoir cover.
12. Field test machine at low speed before putting into service. Check for proper braking action and pedal reserve. With pedal firmly applied, pedal reserve should be no less than 1/2"(1.3 cm).
13. Check brake system for fluid leaks.

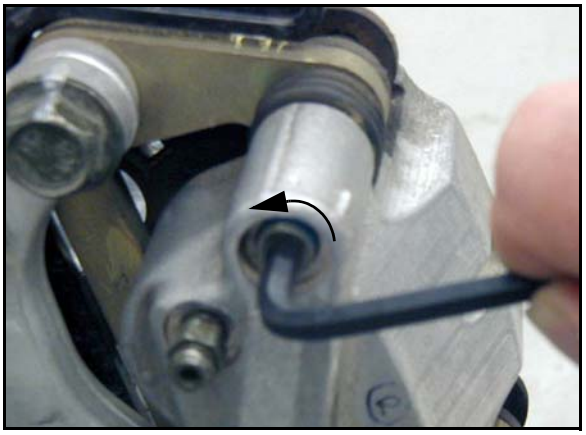
FRONT BRAKE PADS

Pad Removal

1. Elevate and support front of vehicle.

> **⚠ CAUTION**
>
> Use care when supporting vehicle so that it does not tip or fall.
> Severe injury may occur if machine tips or falls.

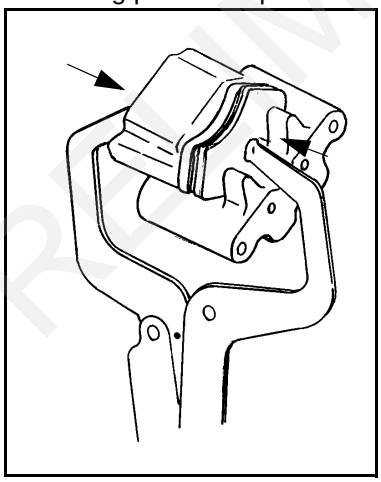
2. Remove the wheel nuts, washers and front wheel.
3. Loosen the pad adjuster screw 2-3 turns.



4. Remove the upper and lower caliper mounting bolts and remove the caliper from the front hub.

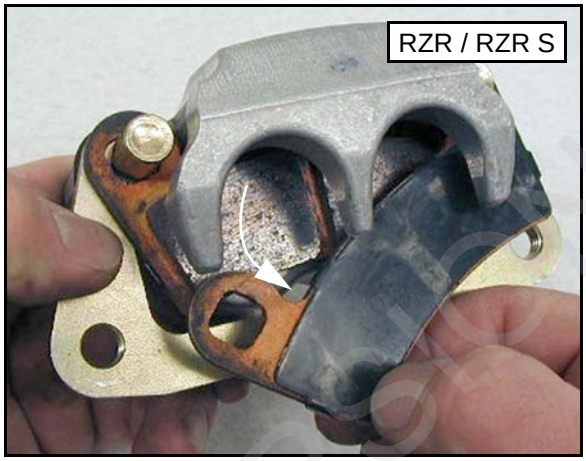
NOTE: When removing caliper, use care not to damage brake line. Support caliper to avoid kinking or bending brake line.

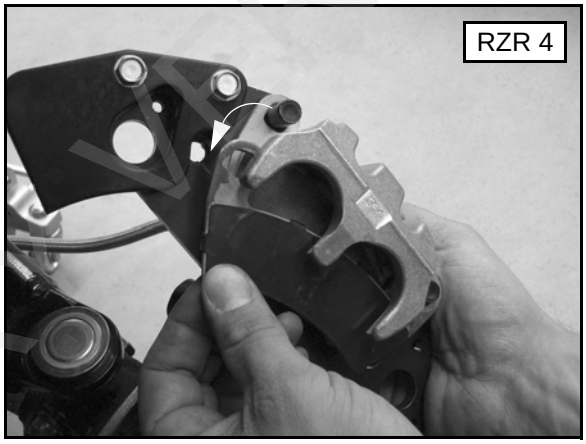
5. Push caliper piston into caliper bore slowly using a C-clamp or locking pliers with pads installed.



NOTE: Brake fluid will be forced through compensating port into master cylinder fluid reservoir when piston is pushed back into caliper. Remove excess fluid from reservoir as required.

6. Push the mounting bracket inward and slip outer brake pad out between the bracket and caliper body.

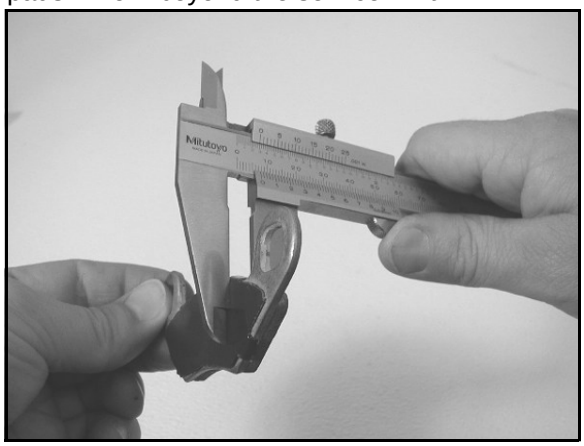


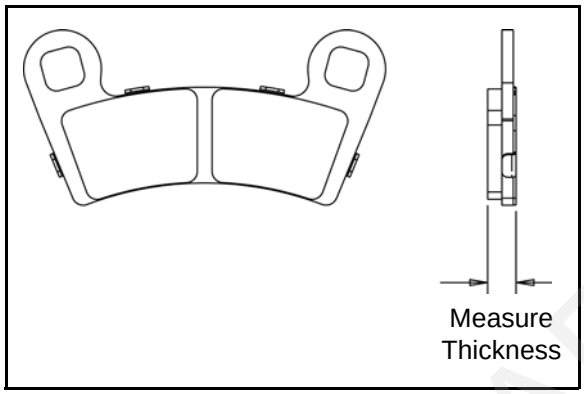


7. Remove the inner pad from the bracket and caliper.

Pad Inspection

1. Measure the thickness of the pad material. Replace pads if worn beyond the service limit.

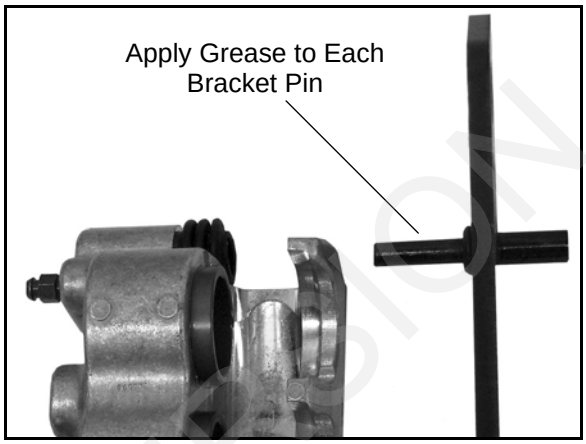




Front Brake Pad Thickness:
RZR/RZR S: .300” ± .007” (7.6 mm ± .178 mm)
RZR 4: .297 ± .007" (7.5 ± .178 mm)
Service Limit: .180” (4.6 mm)

Pad Assembly / Installation

1. Lubricate mounting bracket pins with a light film of silicone grease and install rubber dust boots.

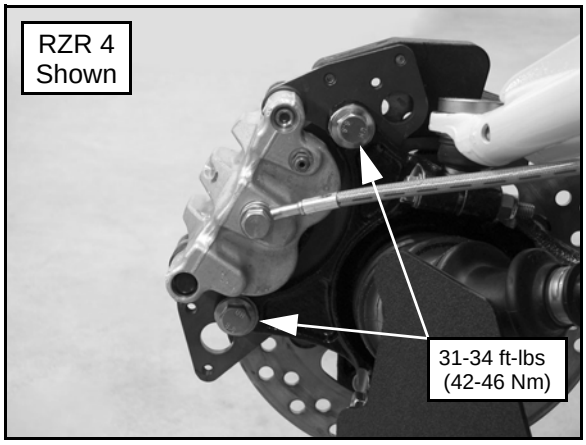


2. Compress mounting bracket and make sure dust boots are fully seated. Install pads with friction material facing each other.

WARNING

If brake pads are contaminated with grease, oil, or liquid soaked do not use the pads. Use only new, clean pads.

3. Install caliper onto front hub and torque mounting bolts to specification.



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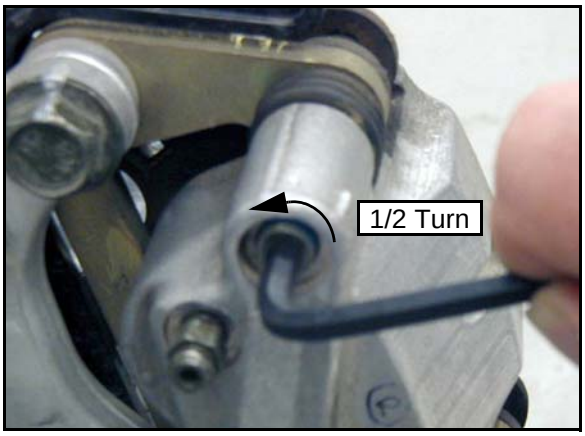
Front Caliper Mount Bolt:
31-34 ft-lbs (42-46 Nm)

4. Slowly pump the brake pedal until pressure has been built up. Maintain at least 1/2" (12.7 mm) of brake fluid in the reservoir to prevent air from entering the brake system.

5. Install the adjustment set screw and turn clockwise until stationary pad contacts disc, then back off 1/2 turn (counterclockwise).



6. Verify fluid level in reservoir is up to MAX line inside reservoir and install reservoir cap.

Master Cylinder Fluid
Up to MAX line inside reservoir

7. Install wheel and torque wheel nuts to specification.

= T
Wheel Nuts: Steel Wheels: **27 ft-lbs (37 Nm)** Aluminum Wheels: **30 ft-lbs + 90° (1/4 turn)**

Brake Burnishing Procedure

It is required that a burnishing procedure be performed after installation of new brake pads to extend service life and reduce noise.

Start machine and slowly increase speed to 30 mph. Gradually apply brakes to stop machine. Allow pads and disc to cool sufficiently during the procedure. Do not allow pads or disc to become hot or warping may result. Repeat this procedure 10 times. **Do not make more than 3 stops per 1 mile (1.6 km)**.

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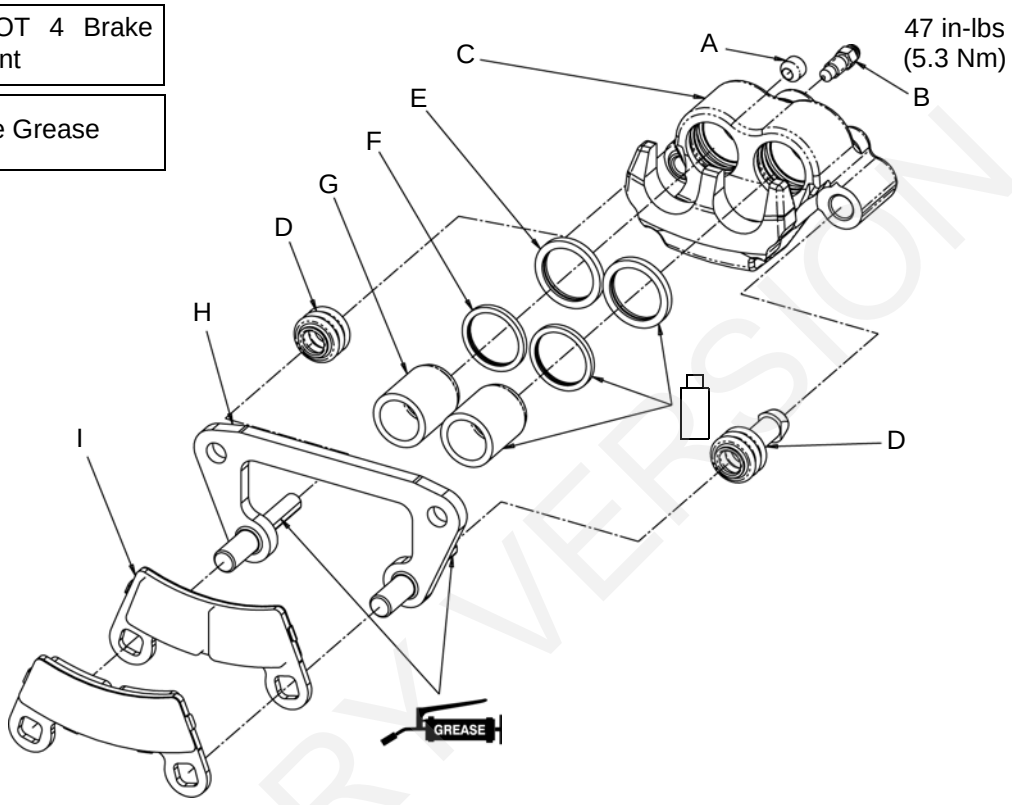
FRONT CALIPER SERVICE

Caliper Exploded View (RZR / RZR S / RZR S INT'L)

Apply Polaris DOT 4 Brake Fluid to Component

GREASE Apply Silicone Grease

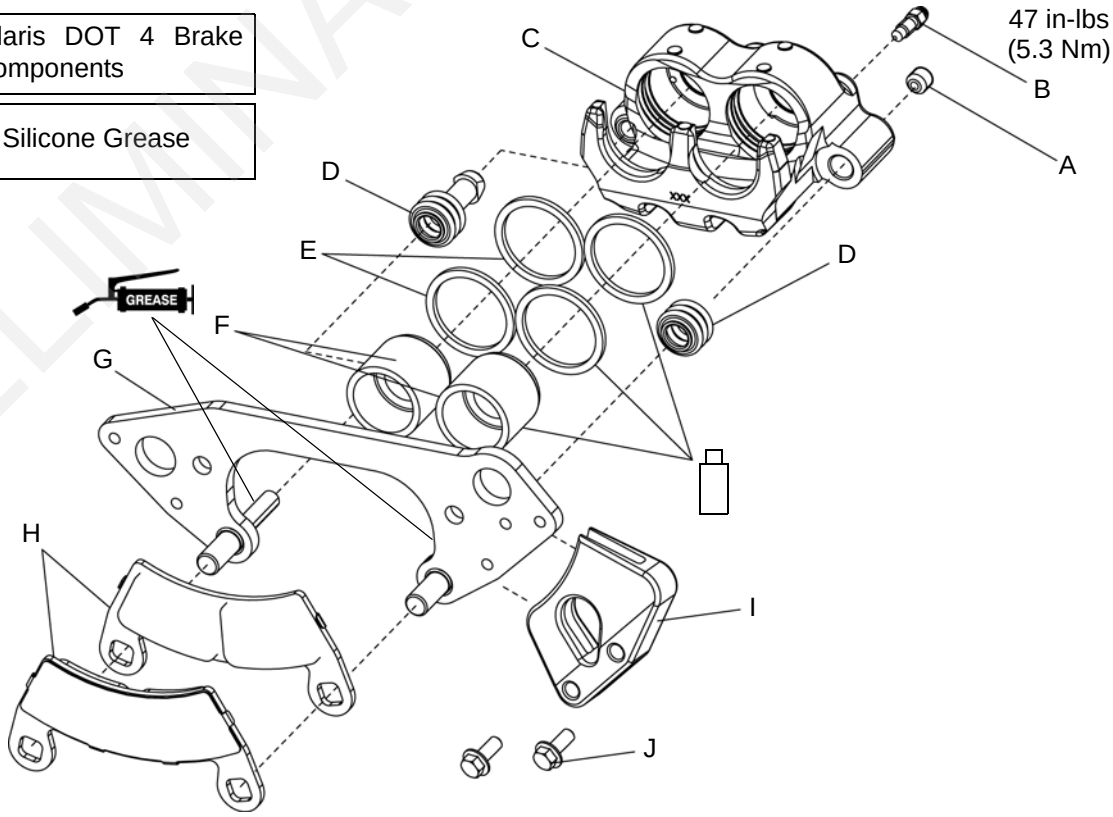


A. Socket Set Screw
B. Bleeder Screw
C. Caliper Assy.
D. Boot
E. Square O-ring (thick)
F. Square O-ring (thin)
G. Piston
H. Caliper Mount
I. Brake Pads

Caliper Exploded View (RZR 4)

Apply Polaris DOT 4 Brake Fluid to Components

GREASE Apply Silicone Grease



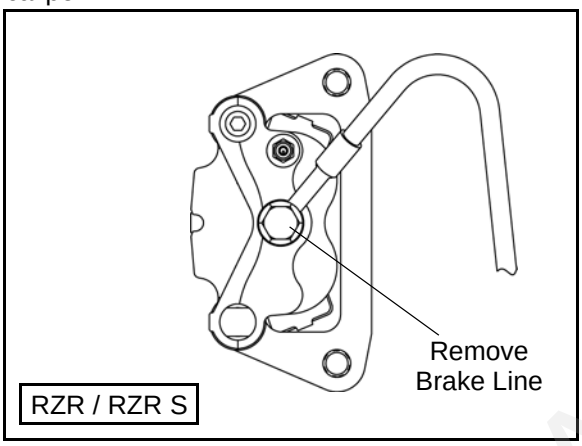
A. Socket Set Screw
B. Bleeder Screw
C. Caliper Assy.
D. Boots
E. Square O-rings
F. Pistons
G. Caliper Mount
H. Brake Pads
I. Brake Scraper
J. Bolts

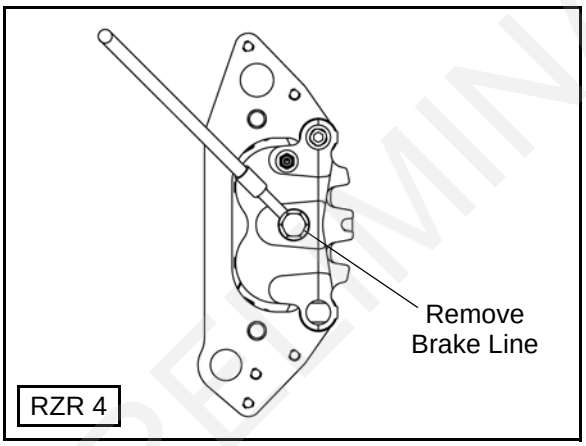
Caliper Removal

1. Elevate and safely support the front of the vehicle.
2. Remove the (4) wheel nuts and the front wheel.

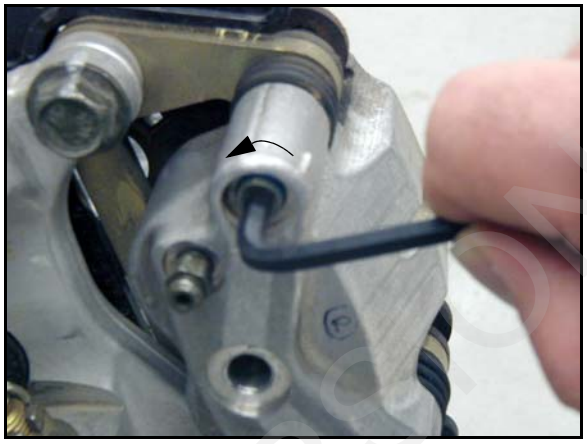
> **⚠ CAUTION**
>
> Use care when supporting vehicle so that it does not tip or fall. Severe injury may occur.

3. Clean caliper area before removal.
4. Place a container below the caliper to catch brake fluid when removing the line. Remove brake line from caliper.

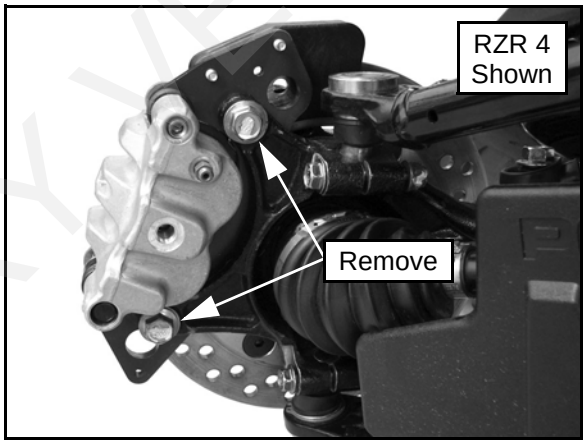




5. Loosen brake pad adjustment set screw 2-3 turns to allow brake pad removal after the caliper is removed.



6. Remove the two caliper mounting bolts and remove the caliper assembly from the front hub.



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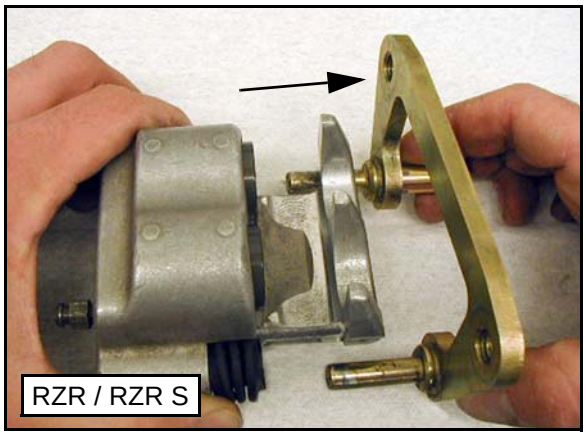
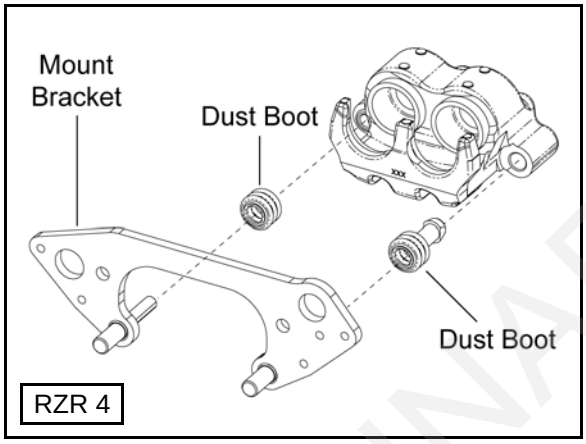
Caliper Disassembly

1. Remove both brake pads from the caliper (see “FRONT BRAKE PADS - Pad Removal”).

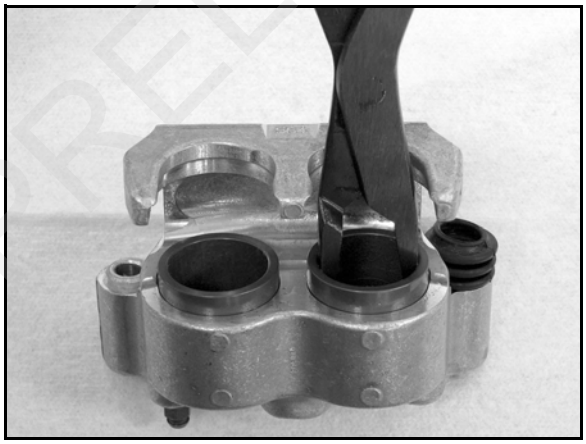
2. Remove mount bracket assembly and dust boots.





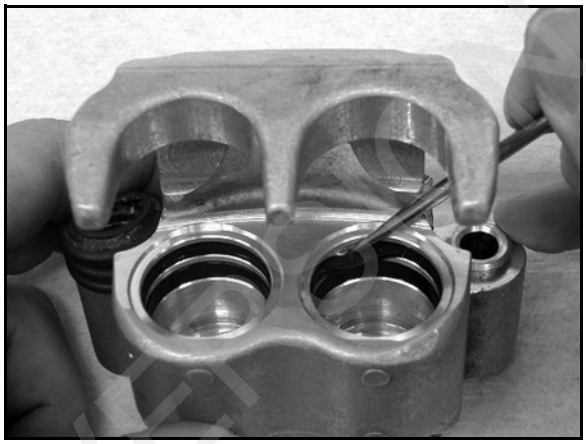
3. Thoroughly clean the caliper before disassembly and prepare a clean work area for disassembly.

4. Use a commercially available caliper piston pliers to extract the pistons from the caliper.

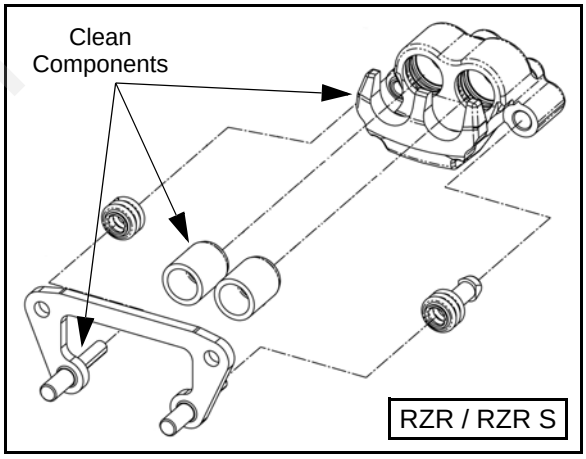


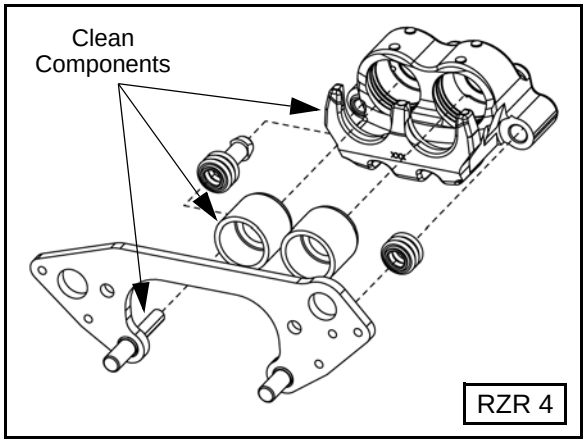
IMPORTANT: Do not remove the caliper pistons with a standard pliers. The piston sealing surfaces will become damaged if a standard pliers is used.

5. Once the pistons are removed, use a pick to carefully remove the square O-rings from the caliper. O-rings should be replaced during caliper service.



6. Clean the caliper body, pistons, and retaining bracket with brake cleaner or alcohol.

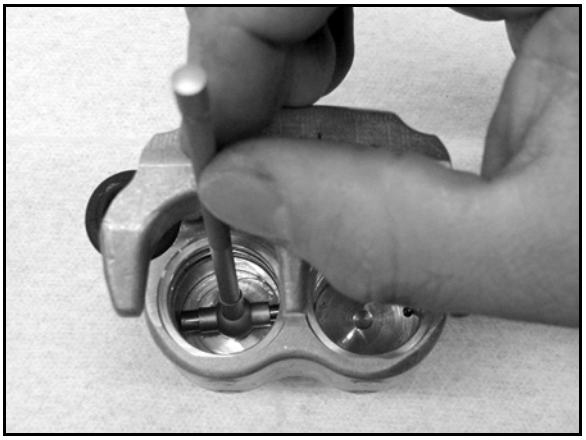




NOTE: Be sure to clean seal grooves in caliper body.

Caliper Inspection

1. Inspect caliper body for nicks, scratches, pitting or wear. Measure bore size and compare to specifications. Replace if damaged or worn beyond service limit.



= In. / mm.
RZR / RZR S: Front Caliper Piston Bore I.D.: Std: 1.004” (25.5 mm) Service Limit: 1.006” (25.55 mm)

= In. / mm.
RZR 4: Front Caliper Piston Bore I.D.: Std: 1.373” (34.87 mm) Service Limit: 1.375” (34.93 mm)

2. Inspect piston for nicks, scratches, pitting or wear. Measure piston diameter and replace if damaged or worn beyond service limit.

= In. / mm.
RZR / RZR S: Front Caliper Piston O.D.: Std: 1.002” (25.45 mm) Service Limit: 1.000” (25.4 mm)

= In. / mm.
RZR 4: Front Caliper Piston O.D.: Std: 1.370” (34.80 mm) Service Limit: 1.368” (34.75 mm)

3. Inspect the brake disc and pads as outlined in this chapter.

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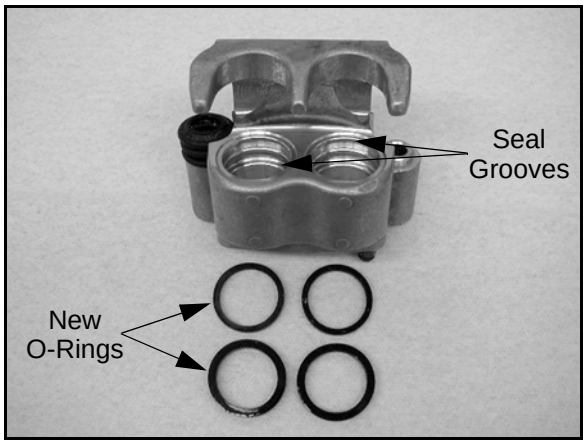
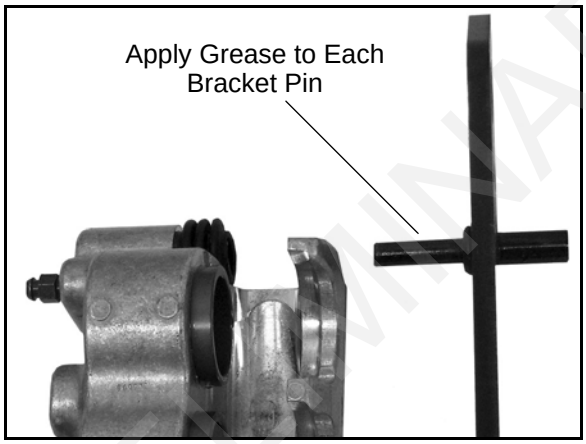
Caliper Assembly

1. Install new O-rings in the caliper body. Be sure the grooves are clean and free of residue or brakes may drag upon assembly.



2. Coat pistons with clean Polaris DOT 4 Brake Fluid. Install pistons with a twisting motion while pushing inward. Piston should slide in and out of bore smoothly, with light resistance.

3. Lubricate the mounting bracket pins with silicone grease and install the rubber dust seal boots.



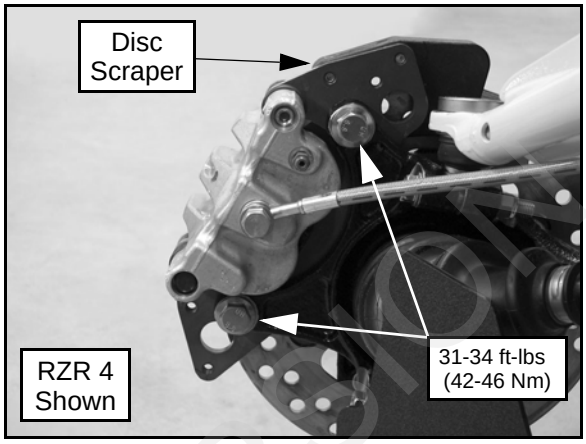
4. Compress the mounting bracket and make sure the dust seal boots are fully seated. Install the brake pads. Clean the disc and pads with brake parts cleaner or denatured alcohol to remove any dirt, oil or grease.

Caliper Installation

1. Install the brake line onto the caliper taking care not to allow any debris to enter the caliper.

2. Install the caliper and torque the mounting bolts to specification.

IMPORTANT: If disc scraper was removed, reinstall it upon caliper installation (RZR 4 Only).



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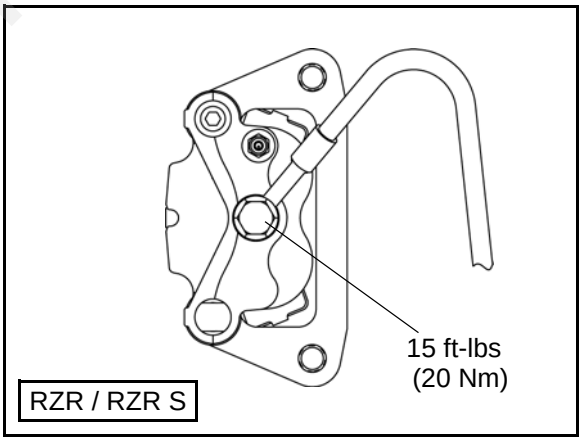
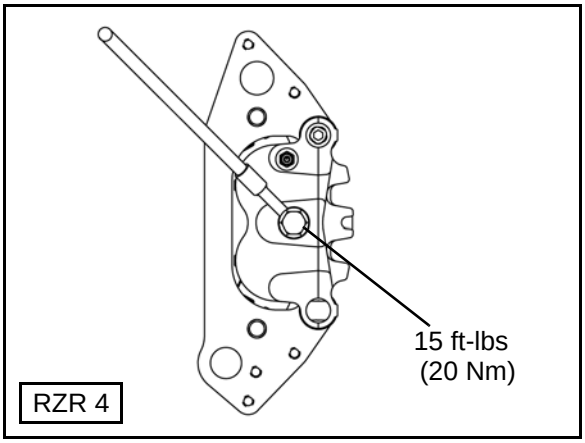
Front Caliper Mount Bolt: **31-34 ft-lbs (42-46 Nm)**

3. Torque the banjo bolt to the proper torque specification.





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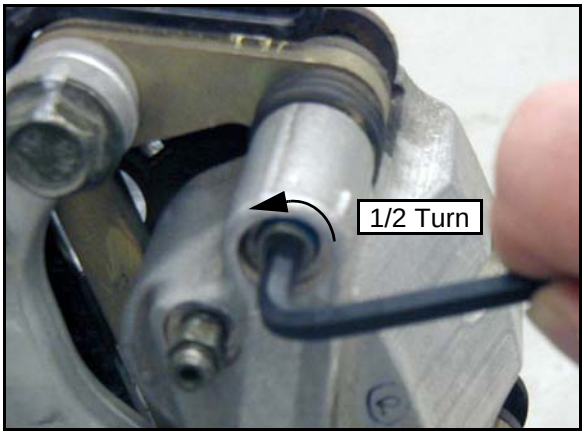
4. Install the adjustment set screw and turn clockwise until stationary pad contacts disc, then back off 1/2 turn (counterclockwise).



5. Perform brake bleeding procedure as outlined earlier in this chapter.

6. Install wheel and torque wheel nuts to specification.

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Wheel Nuts: Steel Wheels: **27 ft-lbs (37 Nm)** Aluminum Wheels: **30 ft-lbs + 90° (1/4 turn)**

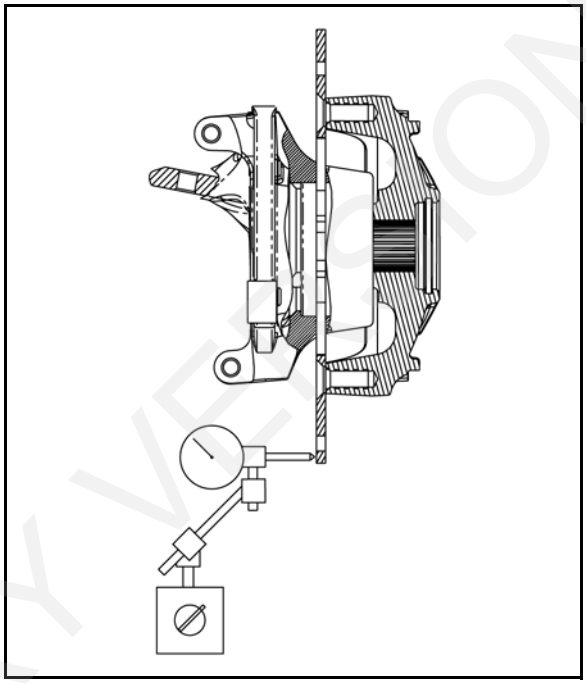
7. Field test unit for proper braking action before putting into service. Inspect for fluid leaks and firm brakes. Make sure the brake is not dragging when pedal is released. If the brake drags, re-check assembly and installation.

NOTE: If new pads are installed, refer to "FRONT BRAKE PADS - Brake Burnishing Procedure".

FRONT BRAKE DISC

Disc Runout

1. Mount dial indicator as shown. Slowly rotate the disc and read total runout on the dial indicator. Replace the disc if runout exceeds specification.

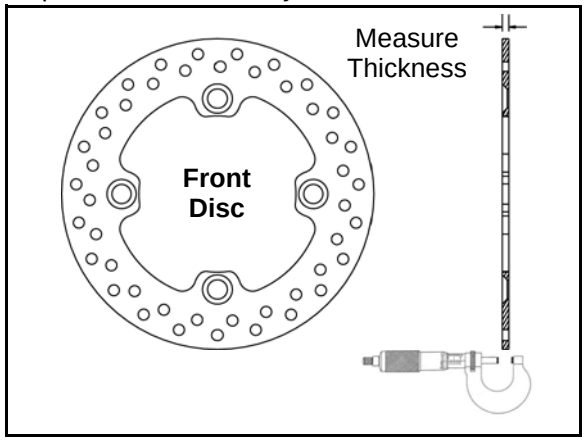


Brake Disc Runout:
Service Limit .010" (.254 mm)

Disc Inspection

1. Visually inspect disc for scoring, scratches or gouges. Replace the disc if any deep scratches are evident.

2. Use a 0-1" micrometer and measure disc thickness at eight different points around the pad contact surface. Replace disc if worn beyond service limit.

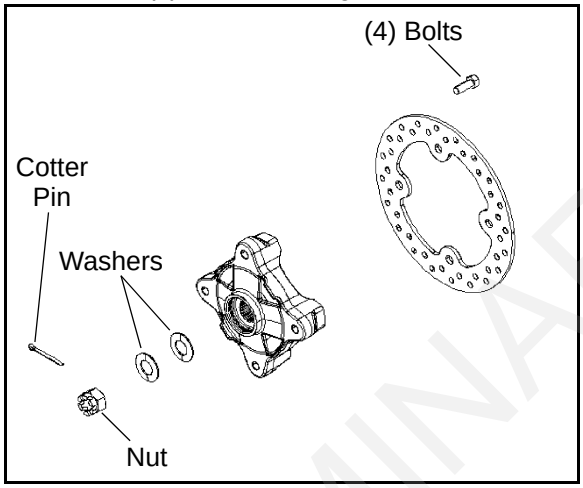


Brake Disc Thickness New .188” (4.78 mm) Service Limit .170” (4.32 mm)

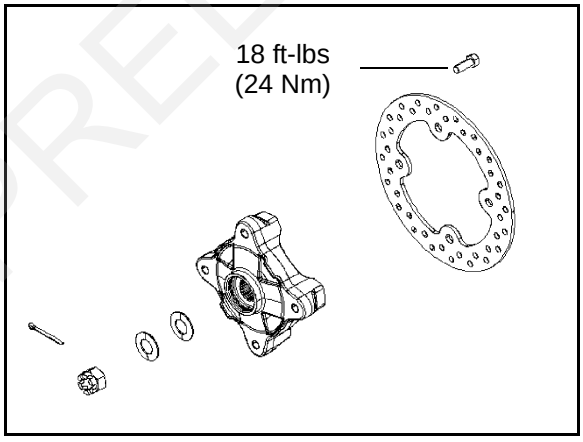
Brake Disc Thickness Variance Service Limit: .002” (.051 mm) difference between measurements

Disc Replacement

1. Remove the front brake caliper (see “FRONT CALIPER SERVICE”).
2. Remove wheel hub cotter pin, castle nut and washers.
3. Remove the wheel hub assembly from the vehicle and remove the (4) bolts retaining the disc to the hub.



4. Clean the wheel hub mating surface and install new disc on wheel hub.
5. Install new bolts and torque to **18 ft-lbs (24 Nm)**.



⚠ CAUTION
Always use new brake disc mounting bolts. The bolts have a pre-applied locking agent which is destroyed upon removal.

6. Install wheel hub assembly, washers, and castle nut. Torque castle nut to specification and install a new cotter pin.

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Castle Nut: **80 ft-lbs (108 Nm)**

7. Install the front brake caliper (see “FRONT CALIPER SERVICE”).
8. Follow bleeding procedure outlined earlier in this chapter.
9. Field test unit for proper braking action before putting into service. Inspect for fluid leaks and firm brakes. Make sure the brake is not dragging when pedal is released. If the brake drags, re-check assembly and installation.

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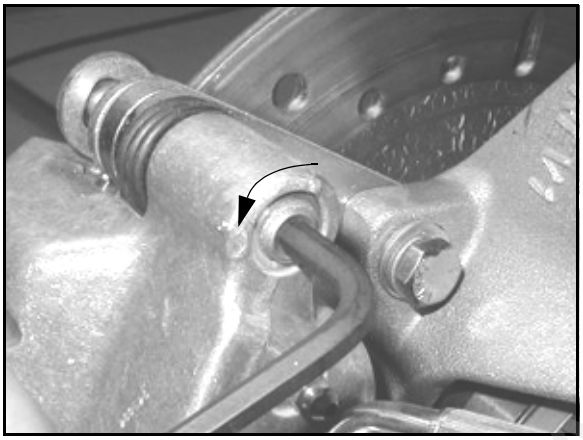
REAR BRAKE PADS

Pad Removal

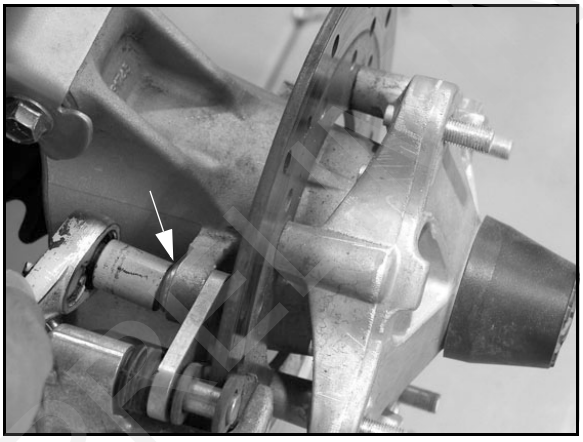
1. Elevate and support rear of vehicle.

> **⚠ CAUTION**
>
> Use care when supporting vehicle so that it does not tip or fall.
> Severe injury may occur if machine tips or falls.

2. Remove the rear wheel.
3. Loosen pad adjuster screw 2-3 turns.

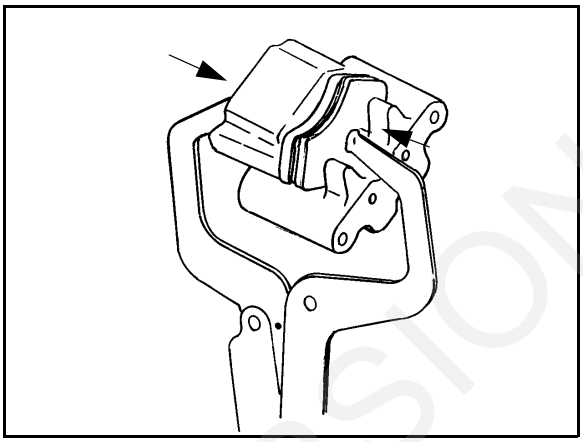


4. Remove the two caliper mounting bolts and lift caliper off the brake disc.



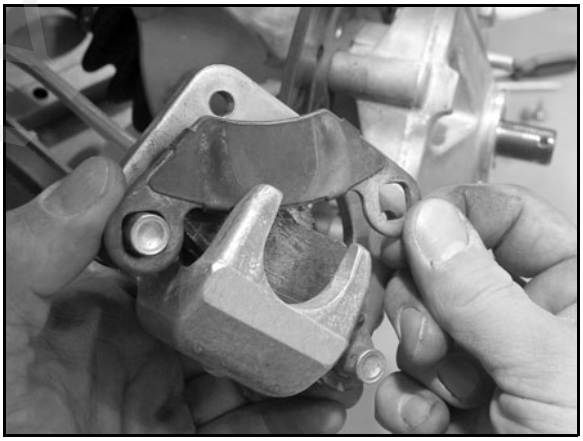
NOTE: When removing caliper, be careful not to damage brake line. Support caliper so as not to kink or bend brake line.

5. Push caliper piston into the caliper bore slowly using a C-clamp or locking pliers with pads installed.

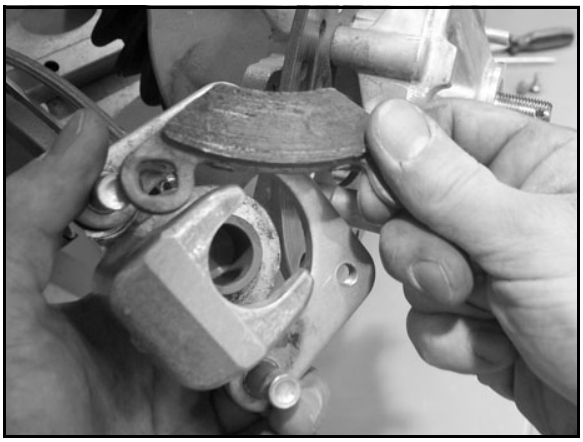


NOTE: Brake fluid will be forced through compensating port into master cylinder fluid reservoir when piston is pushed back into caliper. Remove excess fluid from reservoir as required.

6. Push caliper mounting bracket inward and slip outer brake pad past the edge to remove.

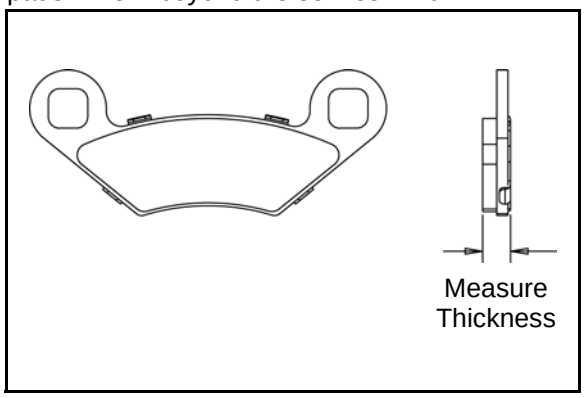


7. Remove the inner brake pad.



Pad Inspection

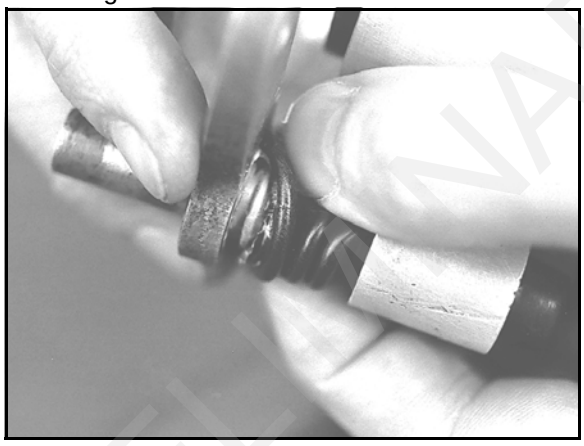
1. Clean the caliper with brake cleaner or alcohol.
2. Measure the thickness of the pad material. Replace pads if worn beyond the service limit.



Rear Brake Pad Thickness
New .298" ± .007" (7.57 mm ± .178 mm)
Service Limit .180" (4.6 mm)

Pad Assembly / Installation

1. Lubricate mounting bracket pins with a light film of silicone grease and install rubber dust boots.

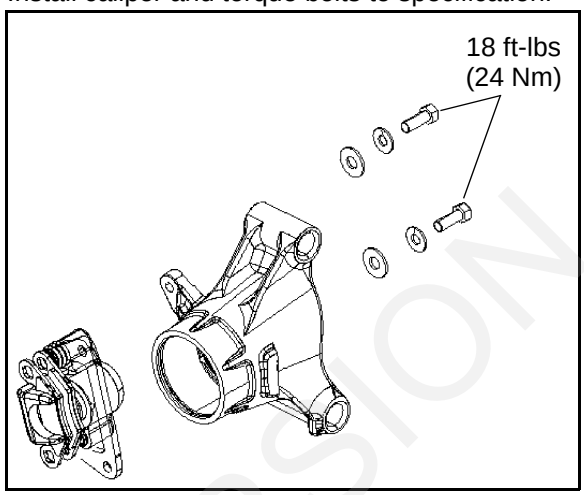


2. Compress mounting bracket and make sure dust boots are fully seated. Install pads with friction material facing each other.

WARNING

If brake pads are contaminated with grease, oil, or liquid soaked do not use the pads. Use only new clean pads.

3. Install caliper and torque bolts to specification.



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Rear Caliper Mount Bolt:
18 ft-lbs (24 Nm)

4. Slowly pump brake pedal until pressure has been built up. Maintain at least 1/2, (12.7 mm) of brake fluid in reservoir to prevent air from entering brake system.
5. Install adjustment set screw and turn clockwise until stationary pad contacts disc, then back off 1/2 turn.
6. Verify fluid level in reservoir is up to the MAX line inside reservoir and install reservoir cap.

Master Cylinder Fluid:
Up to MAX line inside reservoir

7. Install wheel and torque wheel nuts to specification.

= **T**

Wheel Nuts:
Steel Wheels: **27 ft-lbs (37 Nm)**
Aluminum Wheels: **30 ft-lbs + 90° (1/4 turn)**

Brake Burnishing Procedure

It is required that a burnishing procedure be performed after installation of new brake pads to extend service life and reduce noise.

Start machine and slowly increase speed to 30 mph. Gradually apply brakes to stop machine. Allow pads and disc to cool sufficiently during the procedure. Do not allow pads or disc to become hot or warping may result. Repeat this procedure 10 times. **Do not make more than 3 stops per 1 mile (1.6 km)**.

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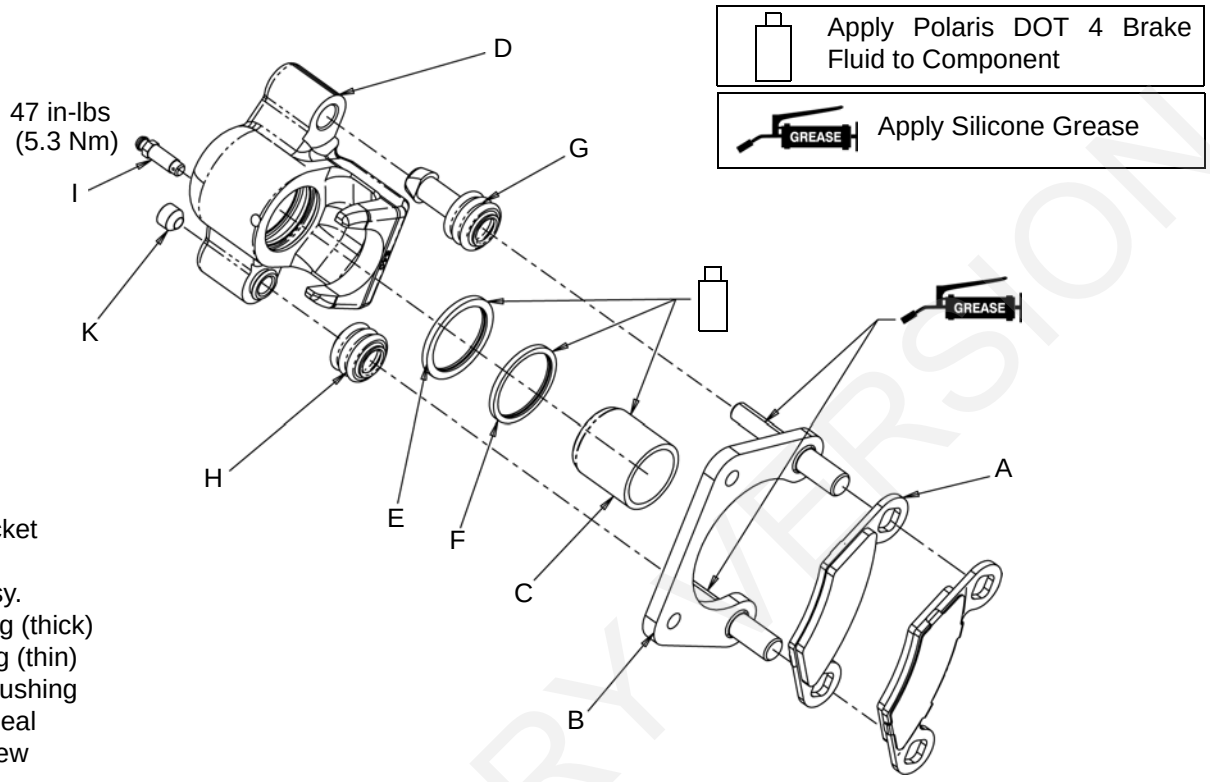
REAR CALIPER SERVICE

Caliper Exploded View



A. Brake Pad
B. Mount Bracket
C. Piston
D. Caliper Assy.
E. Square Ring (thick)
F. Square Ring (thin)
G. Boot, Pin Bushing
H. Boot, Pin Seal
I. Bleeder Screw
K. Set Screw

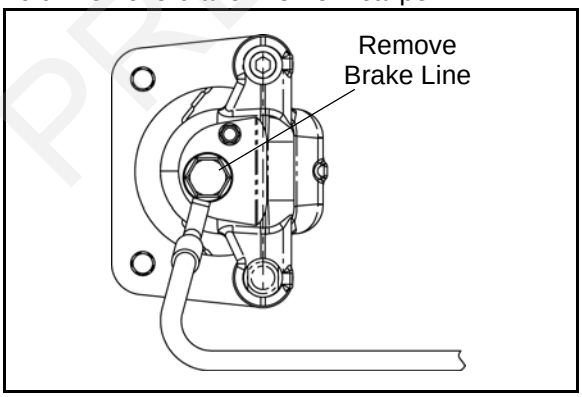
Caliper Removal

1. Elevate and safely support the rear of the vehicle.

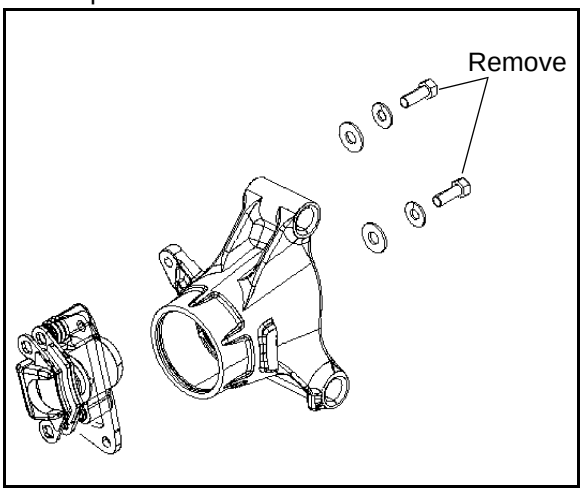
⚠ CAUTION

Use care when supporting vehicle so that it does not tip or fall. Severe injury may occur.

2. Remove the (4) wheel nuts and rear wheel.
3. Clean caliper area before removal.
4. Place a container below the caliper to catch the brake fluid. Remove brake line from caliper.

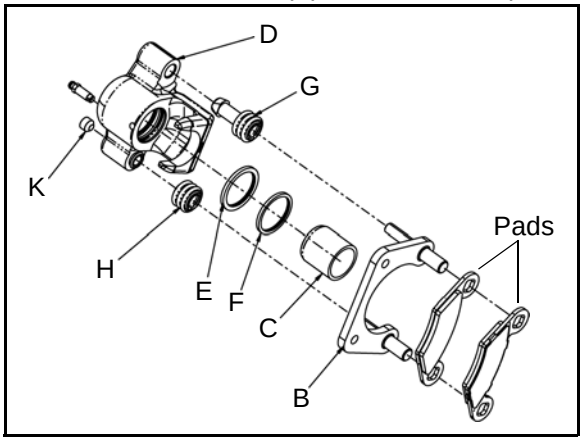


5. Loosen the brake pad adjustment set screw to allow brake pad removal after the caliper is removed.
6. Remove the two caliper mounting bolts and remove the caliper.

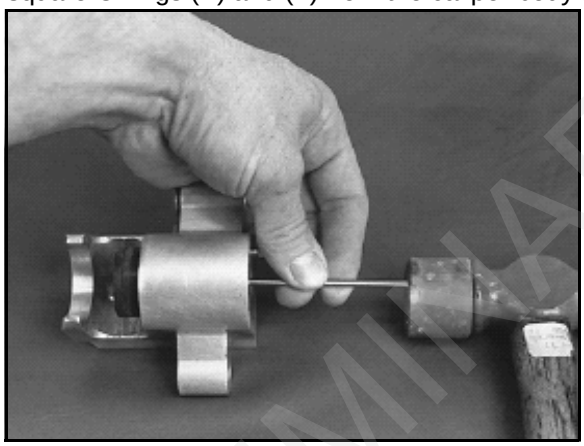


Caliper Disassembly

1. Remove brake pad adjustment set screw (K).
2. Push upper pad retainer pin inward and slip brake pads past the edge and remove from the caliper.
3. Remove mount bracket (B) and dust boots (G and H).

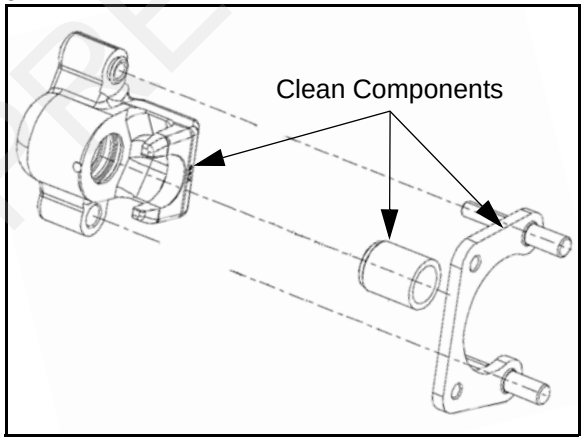


4. Using a hammer and a small punch, remove the piston (C) from the caliper body (D). Remove the square O-rings (E) and (F) from the caliper body (D).



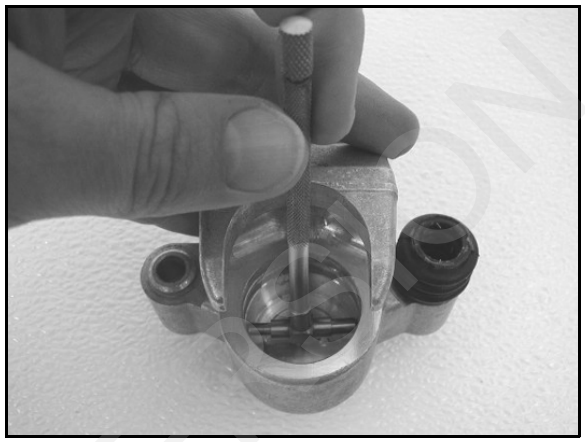
5. Clean the caliper body, piston, and retaining bracket with brake cleaner or alcohol.

NOTE: Be sure to clean seal grooves in caliper body.



Caliper Inspection

1. Inspect caliper body for nicks, scratches or wear. Measure bore size and compare to specifications. Replace if damage is evident or if worn beyond service limit.



= **In. / mm.**

RZR / RZR S: Rear Caliper Piston Bore I.D.
Standard: 1.191” (30.25 mm)
Service Limit: 1.192” (30.28 mm)

= **In. / mm.**

RZR 4: Rear Caliper Piston Bore I.D.:
Standard: 1.505” (38.23 mm)
Service Limit: 1.507” (38.28 mm)

2. Inspect piston for nicks, scratches, wear or damage. Measure diameter and replace if damaged or worn beyond service limit.

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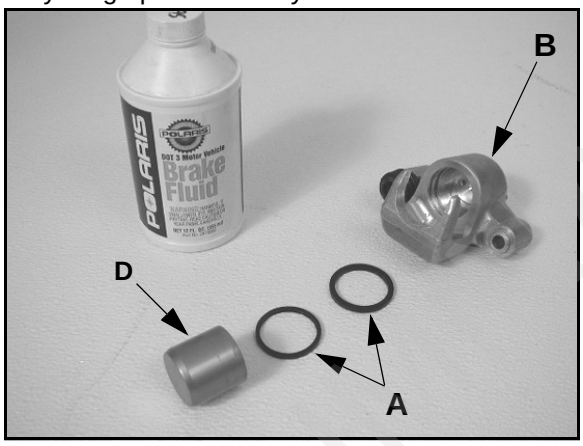
= In. / mm.
RZR / RZR S: Rear Caliper Piston O.D. Standard: 1.1875” (30.16 mm) Service Limit: 1.186” (30.12 mm)

= In. / mm.
RZR 4: Rear Caliper Piston O.D.: Standard: 1.500” (38.10 mm) Service Limit: 1.498” (38.05 mm)

3. Inspect the brake disc and pads as outlined in this chapter.

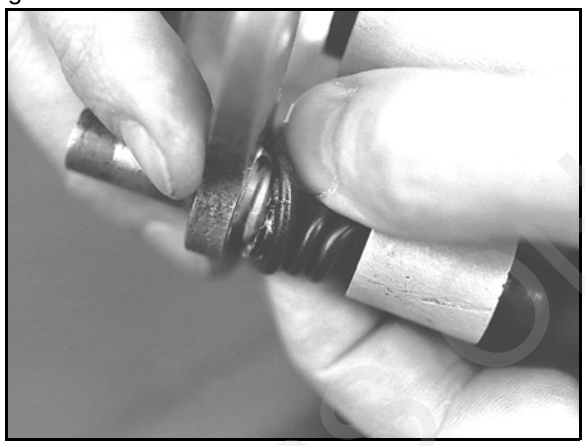
Caliper Assembly

1. Install new caliper seals (A) in the caliper body (B). Be sure groove is clean and free of residue or brakes may drag upon assembly.



2. Coat piston with clean Polaris DOT 4 Brake Fluid **(PN 2872189)**. Install piston (D) with a twisting motion while pushing inward. Piston should slide in and out of bore smoothly with light resistance.

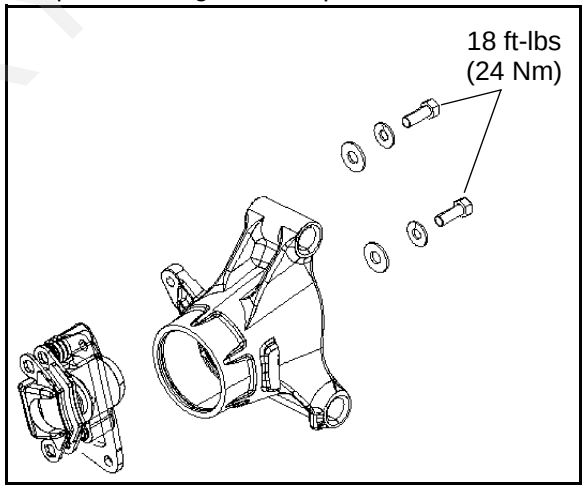
3. Lubricate the mounting bracket pins with silicone grease and install the rubber dust seal boots.



4. Compress the mounting bracket and make sure the dust seals are fully seated. Install the brake pads. Clean the disc and pads with brake parts cleaner or denatured alcohol to remove any dirt, oil or grease.

Caliper Installation

1. Install the rear caliper with the mounting bolts. Torque mounting bolts to specification.



= T
Rear Caliper Mount Bolt: **18 ft-lbs (24 Nm)**

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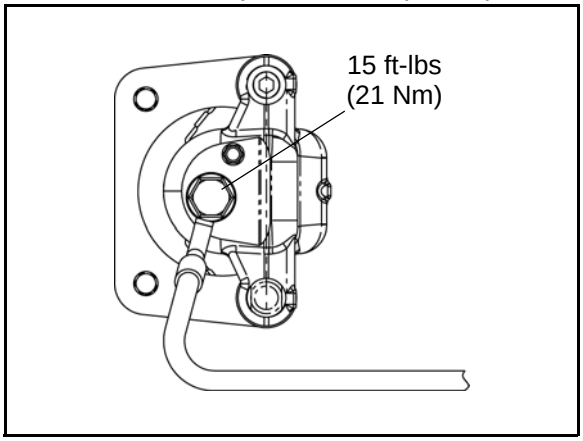
2. Install brake line banjo bolt and torque to specification.



3. Install the pad adjustment screw and turn until stationary pad contacts disc, then back off 1/2 turn.

4. Follow bleeding procedure outlined earlier in this chapter.

5. Install wheel and torque wheel nuts to specification.

= **T**
Wheel Nuts: Steel Wheels: **27 ft-lbs (37 Nm)** Aluminum Wheels: **30 ft-lbs + 90° (1/4 turn)**

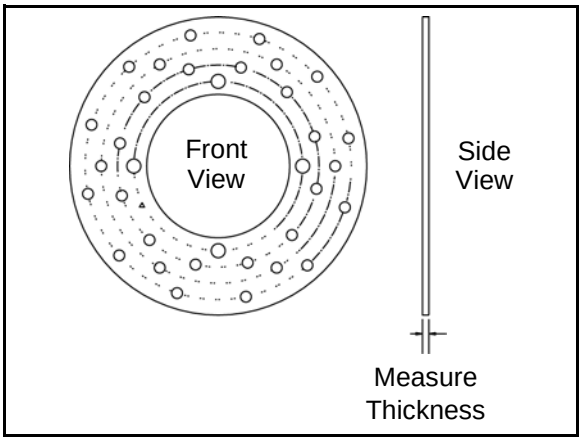
NOTE: If new pads are installed, refer to "REAR BRAKE PADS - Brake Burnishing Procedure".

REAR BRAKE DISC

Disc Inspection

1. Visually inspect disc for scoring, scratches, or gouges. Replace the disc if any deep scratches are evident.

2. Use a 0-1" micrometer and measure the disc thickness at eight different points around the pad contact surface. Replace disc if worn beyond service limit.



Brake Disc Thickness:
New: .188" (4.78 mm)
Service Limit: .170" (4.32 mm)

Brake Disc Thickness Variance:

Service Limit .002" (.051 mm)
difference between measurements

3. Mount a dial indicator and measure disc runout. Slowly rotate the disc and read total runout on the dial indicator. Replace the disc if runout exceeds specifications.

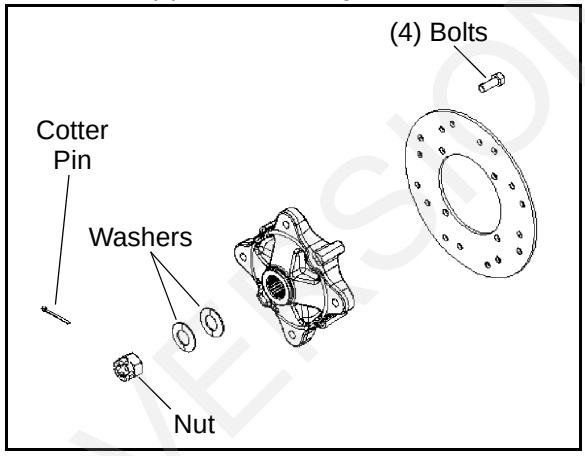
Brake Disc Runout:
Service Limit .010" (.254 mm)

Disc Replacement

1. Remove rear brake caliper (see "REAR CALIPER SERVICE").

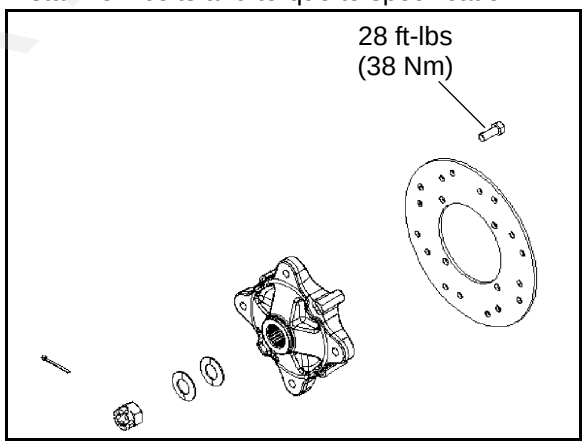
2. Remove wheel hub cotter pin, castle nut and washers.

3. Remove the hub assembly from the vehicle and remove the (4) bolts retaining the disc to the hub.



4. Clean the wheel hub mating surface and install new disc on wheel hub.

5. Install new bolts and torque to specification.



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Brake Disc Mounting Bolts:
28 ft-lbs (38 Nm)

⚠ CAUTION

Always use new brake disc mounting bolts. The bolts have a pre-applied locking agent which is destroyed upon removal.

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6. Install wheel hub assembly, washers and castle nut. Torque castle nut to specification and install a new cotter pin.

= T
Wheel Hub Castle Nut: **80 ft-lbs (108 Nm)**

7. Install rear caliper (see “REAR CALIPER SERVICE”). Follow bleeding procedure outlined earlier in this chapter.

8. Field test unit for proper braking action before putting into service. Inspect for fluid leaks and firm brakes. Make sure the brake is not dragging when pedal is released. If the brake drags, re-check assembly and installation.

TROUBLESHOOTING

Brakes Squeal / Poor Brake Performance

- Air in system
- Water in system (brake fluid contaminated)
- Caliper or disc misaligned
- Caliper dirty or damaged
- Brake line damaged or lining ruptured
- Worn disc and/or friction pads
- Incorrectly adjusted stationary pad
- Worn or damaged master cylinder or components
- Damaged break pad noise insulator
- Brake pads dragging
- Brake caliper dragging

Pedal Vibration

- Disc damaged
- Disc worn (runout or thickness variance exceeds service limit)

Caliper Overheats (Brakes Drag)

- Compensating port plugged
- Pad clearance set incorrectly
- Brake pedal binding or unable to return fully
- Residue build up under caliper seals
- Operator riding brakes

Brakes Lock

- Alignment of caliper to disc
- Caliper pistons sticking
- Improper assembly of brake system components

NOTES

CHAPTER 10
ELECTRICAL

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GENERAL INFORMATION

Special Tools

Part Number	Tool Description
PV-43568	Fluke™ 77 Digital Multimeter
PV-43526	Connector Test Kit
2870630	Timing Light
PU-50338	Battery Hydrometer
2460761	Hall Effect Sensor Probe Harness
2871745	Static Timing Light Harness
-	Digital Wrench™ (see Chapter 4)

SPX Corp: 1-800-328-6657 or http://polaris.spx.com/

Electrical Service Notes

Keep the following notes in mind when diagnosing an electrical problem:

- Refer to wiring diagram for stator and electrical component resistance specifications.
- When measuring resistance of a component that has a resistance value under 10 Ohms, remember to subtract meter lead resistance from the reading. Connect the leads together and record the resistance. The resistance of the component is equal to tested value minus the lead resistance.
- Become familiar with the operation of your meter. Be sure leads are in the proper jack for the test being performed (i.e. 10A jack for current readings). Refer to the Owner's Manual included with your meter for more information.
- Voltage, amperage, and resistance values included in this manual are obtained with a Fluke™ 77 Digital Multimeter (PV-43568). This meter is used when diagnosing electrical problems. Readings obtained with other meters may differ.
- Pay attention to the prefix on the multimeter reading (K, M, etc.) and the position of the decimal point.
- For resistance readings, isolate the component to be tested. Disconnect it from the wiring harness or power supply.

Under-Dash Components

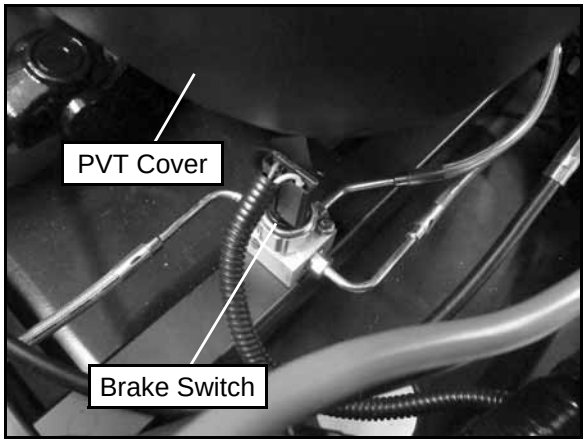
The following switches and components can be accessed underneath the instrument / dash panel:

- Speedometer
- Digital Wrench Diagnostic Connector
- AWD Switch
- Headlamp Switch
- 12 Vdc Accessory Power Point
- Ignition Switch
- Fuse / Relay Box

SWITCHES / CONTROLS

Brake Light Switch

1. The brake switch can be accessed by removing the driver's seat (RZR / RZR S) or the left rear passenger seat (RZR 4). The switch is located under the outer PVT cover along the lower frame. The brake pressure switch is installed into the cross fitting block.



2. Disconnect wire harness from switch and connect an ohmmeter across switch contacts. The reading should be infinite (OL).
3. Apply the brake and check for continuity. If there is no continuity or if resistance is greater than 0.5 ohms, clean the switch terminals. Re-test and replace switch if necessary.

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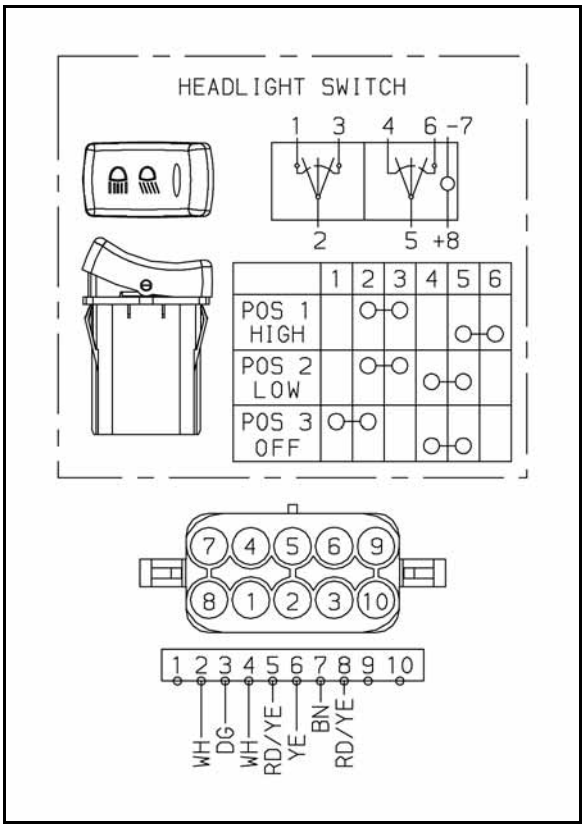
Headlamp Switch

1. Disconnect the headlamp switch harness by depressing the connector locks and pulling on the connector. Do not pull on the wiring.

2. Test between the 3 sets of outputs (OFF / LOW / HIGH). If any of the tests fail, replace headlamp switch assembly.

   - Move the switch to HIGH. There should be continuity between switch pins 2 and 3; 5 and 6.
   - Move the switch to LOW. There should be continuity between switch pins 2 and 3; 4 and 5.
   - Move the switch to OFF. There should be continuity between switch pins 1 and 2; 4 and 5.



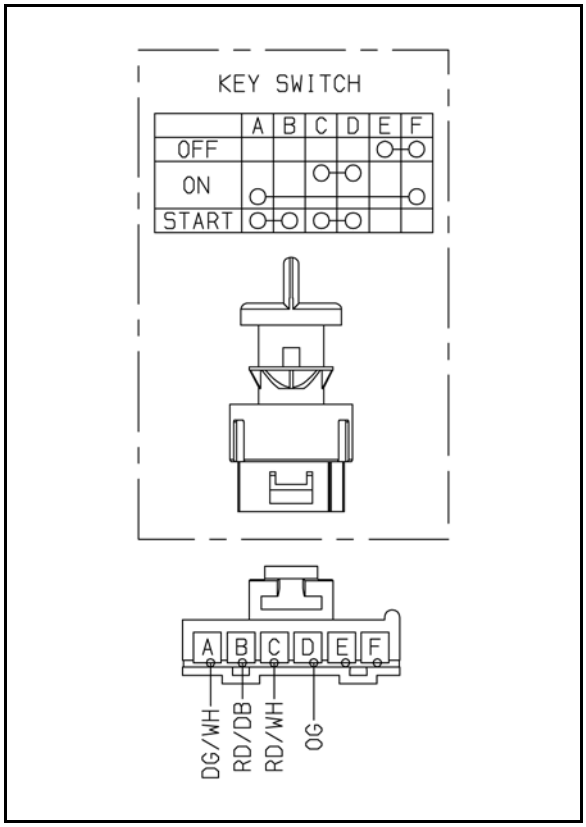
NOTE: Pins 7 and 8 provide power and ground to light the switch lamp.

Ignition Key Switch

1. Disconnect the key switch harness by lifting the connector lock and pulling on the connector. Do not pull on the wiring.

2. Test between the 3 sets of outputs (OFF / ON / START). If any of the tests fail, replace ignition switch assembly.

   - Turn the ignition key to ON. There should be continuity between switch pins C and D; A and F.
   - Turn the ignition key to START. There should be continuity between switch pins A and B; C and D.

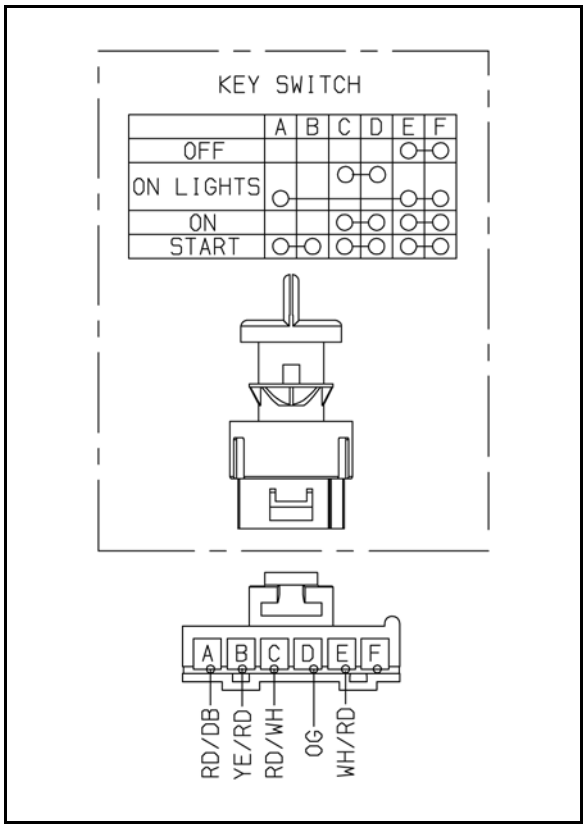


Ignition Key Switch (INT'L)

1. Disconnect the key switch harness by lifting the connector lock and pulling on the connector. Do not pull on the wiring.

2. Test between the 4 sets of outputs (OFF / ON LIGHTS / ON / START). If any of the tests fail, replace ignition switch assembly.

   - Turn the ignition key to ON LIGHTS. There should be continuity between switch pins A, E and F; C and D.
   - Turn the ignition key to ON. There should be continuity between pins C and D; E and F.
   - Turn the ignition key to START. There should be continuity between pins A and B; C and D; E and F.

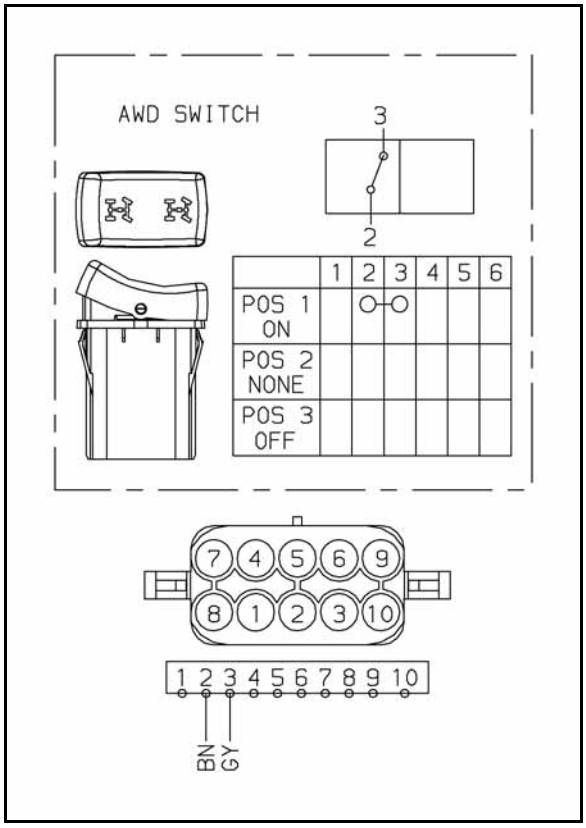


AWD / 2WD Switch

1. Disconnect the AWD / 2WD switch harness by depressing the connector locks and pulling on the connector. Do not pull on the wiring.

2. Test between the 2 sets of outputs (AWD / 2WD). If any of the tests fail, replace the switch assembly.

   - Move the switch to AWD (ON). There should be continuity between switch pins 2 and 3.
   - Move the switch to 2WD (NONE / OFF). There should be no continuity between any pins.



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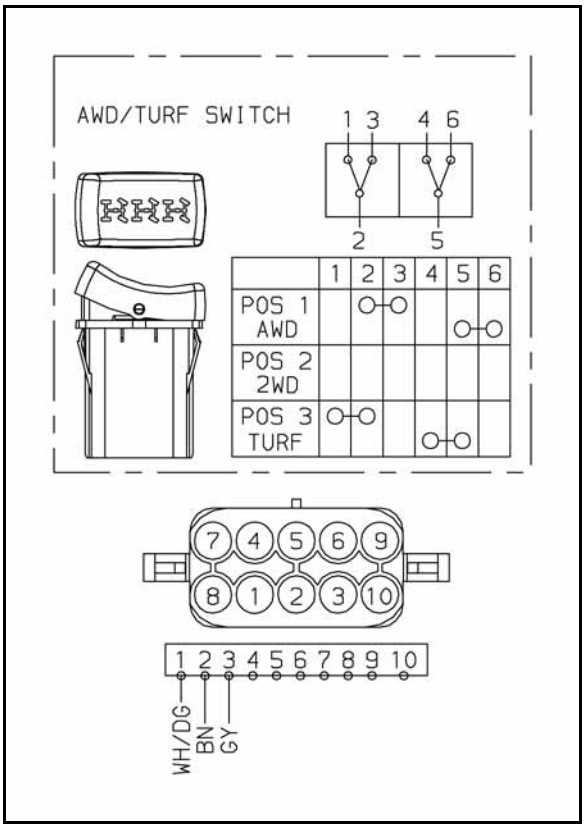
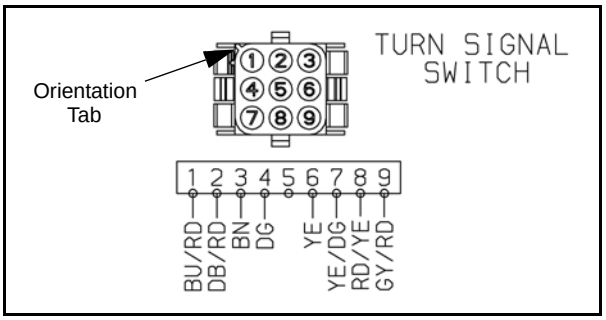
AWD / 2WD / TURF Switch (INT'L)

1. Disconnect the AWD / 2WD / TURF switch harness by depressing the connector locks and pulling on the connector. Do not pull on the wiring.
2. Test between the 3 sets of outputs (AWD / 2WD / TURF). If any of the tests fail, replace the switch assembly.
   - Move the switch to AWD. There should be continuity between switch pins 2 and 3; 5 and 6.
   - Move the switch to 2WD. There should be no continuity between any pins.
   - Move the switch to TURF. There should be continuity between switch pins 1 and 2; 4 and 5.



Turn Signal Switch (INT'L)

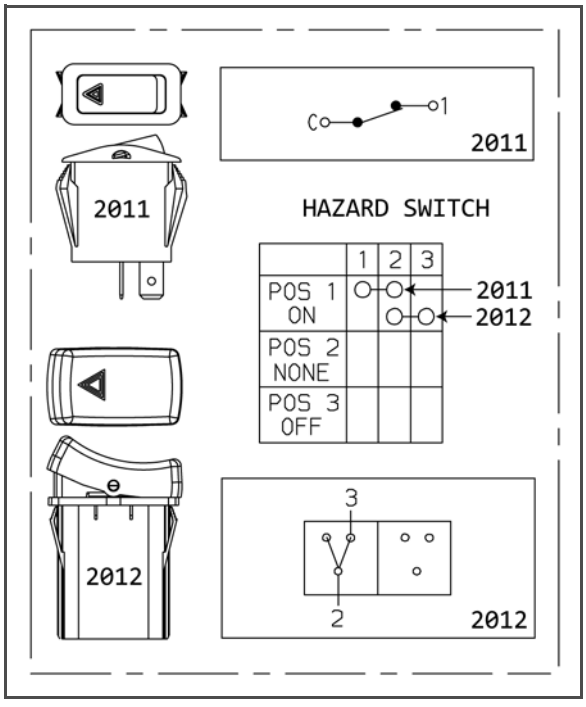
1. Disconnect the Turn Signal switch harness by depressing the connector locks and pulling on the connector. Do not pull on the wiring.
2. Test between the 5 sets of outputs (HI BEAM / LO BEAM / L-TURN / R-TURN / HORN). If any of the tests fail, replace the switch assembly.



	1	2	3	4	6	7	8	9
HI BEAM					○	○		
LO BEAM				○		○		
L - TURN	○		○					
R - TURN		○	○					
HORN							○	○

Hazard Switch (INT'L)

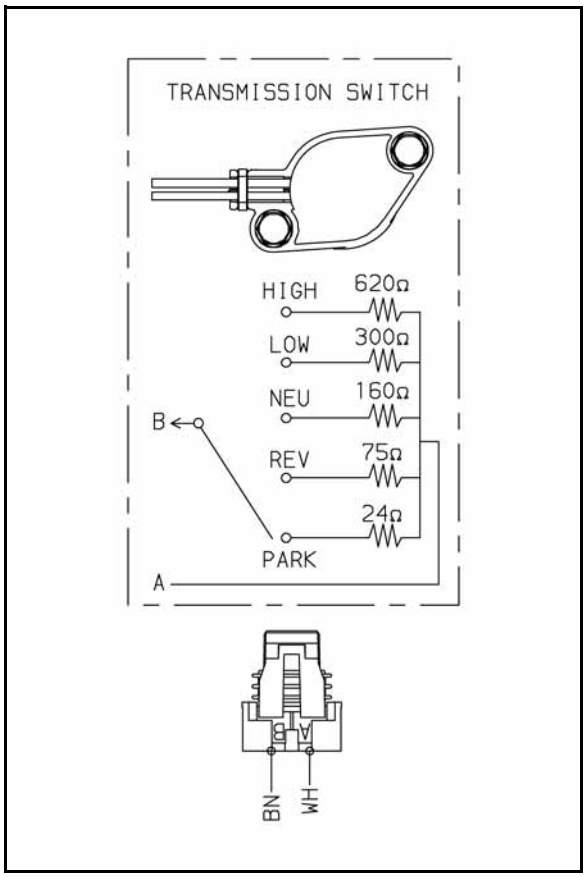
1. Disconnect wires or harness from the Hazard switch.
2. Test between the outputs (ON / NONE / OFF). If any of the tests fail, replace the switch assembly.
   - Move switch to ON. **2011 Models:** There should be continuity between switch legs 1 and 2. **2012 Models:** There should be continuity between switch pins 2 and 3.
   - Move switch to NONE / OFF. There should be no continuity between switch legs or pins.



Transmission (Gear Position) Switch

1. Disconnect the transmission switch harness by lifting the connector lock and pulling on the connector. Do not pull on the wiring.

2. Test the transmission switch continuity readings for each gear position and compare to the specification table below.



Gear Position	**Resistance Value** when measured at terminals A and B
HIGH	620 Ω
LOW	300 Ω
NEU	160 Ω
REV	75 Ω
PARK	24 Ω

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Throttle Release Switch (TRS)

TRS System Operation

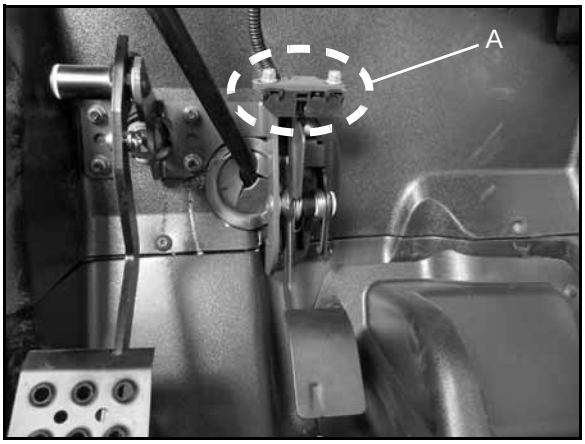
This vehicle is equipped with a throttle release switch (TRS) to detect when the throttle pedal has returned to the rest position.

NOTE: The throttle pedal lever is designed to have a few degrees of freeplay prior to engaging the throttle arm that pulls the throttle cable.

With the pedal in the rest position, the "blade" at the top of the pedal is almost out of the TRS switch slot, exposing the TRS switch to magnetic force in the opposite side of the sensor. When the pedal is depressed, the throttle pedal blade blocks the magnetic force from the TRS switch.

TRS Location

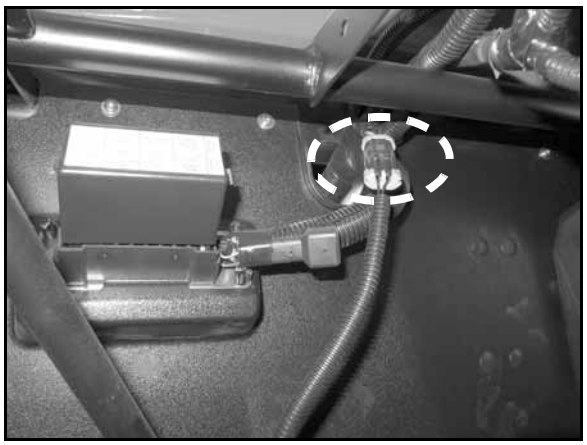
The TRS switch (A) is located in the drivers foot control area, mounted on the top of the throttle pedal asm.



TRS Testing

The TRS is a serviceable item and can be tested using Digital Wrench™ or an Ohm meter.

1. Disconect the TRS harness connection located by the fuse box.



2. With the throttle pedal **"at rest"**, connect an ohmmeter between the TRS pin terminals. A resistance value of **2.15k Ohms +/- 5%** at room temperature should be obtained. If the sensor reading is more than **2.26k Ohms**, it is out of specification and needs to be replaced.

3. With the throttle pedal **fully depressed**, connect an ohmmeter between the TRS pin terminals. A resistance value of **6.80k Ohms +/- 5%** at room temperature should be obtained. If the sensor reading is less than **6.46k Ohms**, it is out of specification and needs to be replaced.

Throttle "At Rest"	Throttle Fully Depressed
2.15k Ohms +/-5%	**6.80k Ohms +/-5%**
Replace sensor if reading is more than: **2.26k Ohms**	Replace sensor if reading is less than: **6.46k Ohms**

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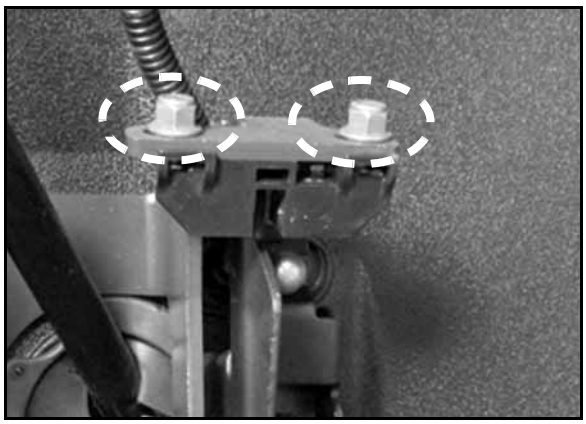
TRS Removal

1. Remove the drivers seat and disconect the negative (-) battery cable.

2. Remove the (2) bolts securing the TRS to the throttle pedal asm.

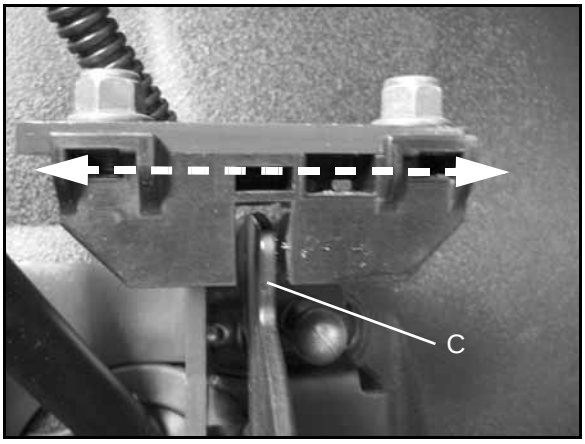


3. Remove the TRS from the vehicle.

TRS Installation / Adjustment

1. Place the TRS on throttle pedal asm and loosley install the (2) fastiners.

2. The TRS mounting holes are oblonged to allow for switch alignment. Visually center the TRS slot with the throttle pedal blade (C). It may be necessary to manually cycle the throttle pedal to verity the center alignment.



3. Torque the (2) mounting bolts to specification and connect the TRS harness connection.

= **T**
TRS Retaining Nuts: **7 ft-lbs (10 Nm)**

4. Manually cycle the throttle pedal to verify the throttle pedal blade is centered in the TRS slot.

5. Connect the negative (-) battery cable and install the drivers seat.

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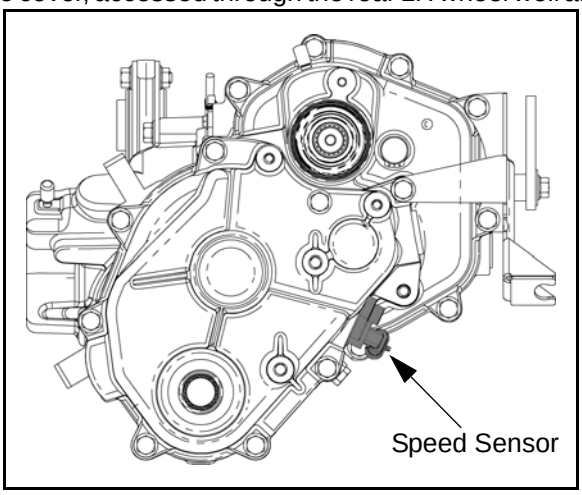
VEHICLE SPEED SENSOR

Speed Sensor Location

The speed sensor is located in the transmission transfer case cover, accessed through the rear LH wheel well area.



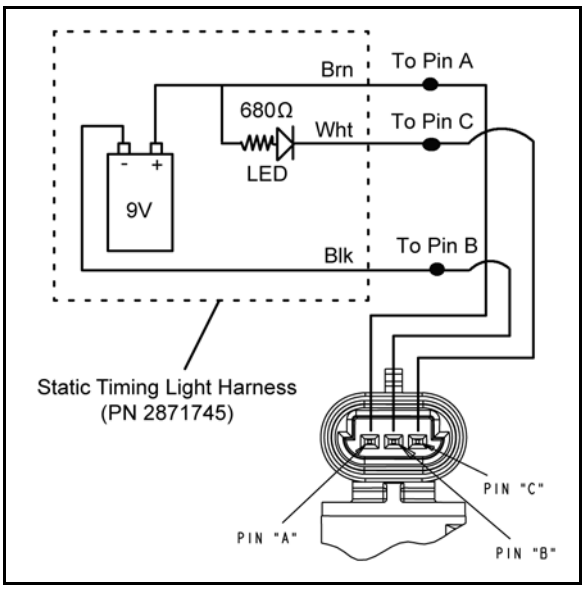
Speed Sensor Testing

Special Tools Required:

Static Timing Light Harness (PN 2871745)

Hall Sensor Probe Harness (PN 2460761)

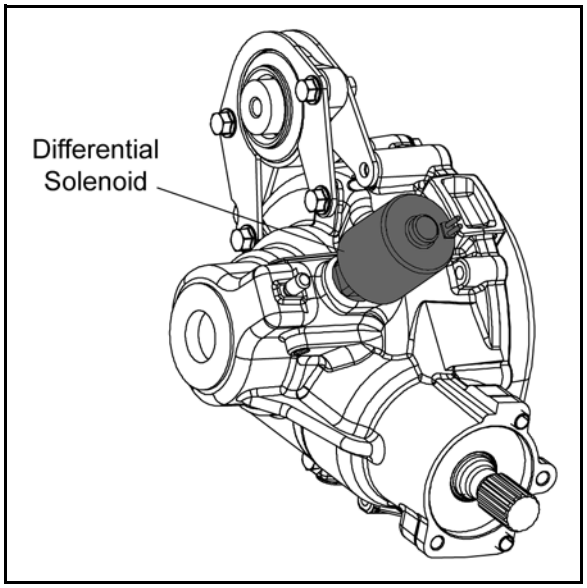
1. Disconnect the 3 wire harness from the speed sensor and remove the sensor from the transmission.
2. Connect the wires from the Static Timing Light Harness to the sensor 3 pin connector using the Hall Sensor Probe Harness (PN 2460761).
3. Pass a screwdriver back and forth in front of the sensor tip.
4. Be sure connections are good and 9V battery is in good condition. If the light flashes, the sensor is good.



REAR DIFF SOLENOID (INT'L)

Differential Solenoid Overview

The differential solenoid is located on the rear gear case. The solenoid actuates an engagement dog, which locks and unlocks the rear differential. Refer to Chapter 7 for more information on the mechanical operation.



Differential Solenoid Circuit Operation

The Rear Diff Solenoid Relay is attached to the rear plastic LH panel divider behind the driver's seat.

When the switch is pushed to activate "TURF", a ground signal is provided to the ECU from the AWD / 2WD / TURF Switch.

Depending on engine speed and gear position criteria, the ECU energizes the Rear Diff Solenoid Relay allowing it to enable the differential solenoid.

If rear differential fails to switch from operational modes:

- Check the solenoid and relay connectors. Look for loose wires or bad connections.
- Check for power from the relay connector, to ensure the solenoid has power to be activated.
- Check the AWD / 2WD / TURF Switch wires for loose connections.
- Remove solenoid from rear differential and ensure the solenoid plunger is actuating.

⚠ CAUTION

Do not power the solenoid with 12 Volts for more than 1 second, or damage may occur to solenoid.

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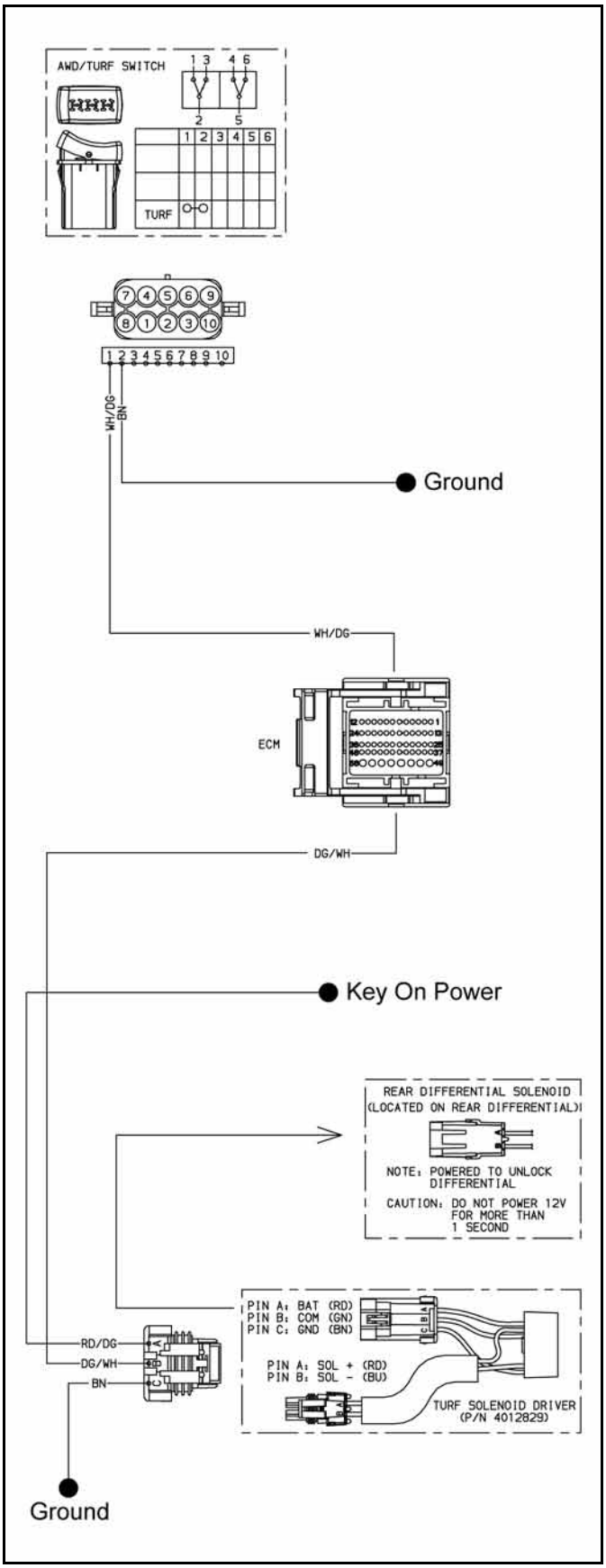


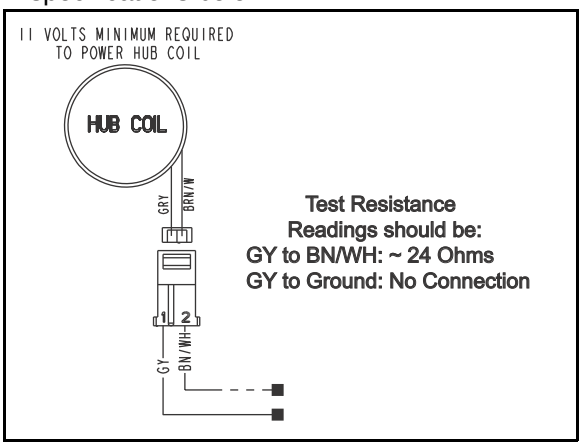
ALL WHEEL DRIVE COIL

Operation Overview

- When the AWD switch is “ON”, 12 VDC power is present at the hub coil.
- If the criteria is met, the Engine Controller provides a ground path (brown/white wire). When this occurs the AWD icon should display in the instrument cluster.
- The AWD system must be grounded to operate.

Diagnosing System Failures

- Verify the AWD switch is functional and that a minimum of 11 volts is present at the hub coil.
- Verify the AWD hub coil is functional. Test the AWD hub coil using an ohm meter. See specifications below:



AWD Hub Coil Resistance:
24 Ω ± 5%

- Verify the wiring harness, wiring, connectors, connector pins and grounds are undamaged, clean and connect properly.
- Verify continuity of wire connections with a known good volt/ohm meter.

IMPORTANT: Verify all wires and wiring connections have been tested properly with a known good volt/ohm meter before suspecting a component failure. 80% of all electrical issues are caused by bad/failed connections and grounds.

10

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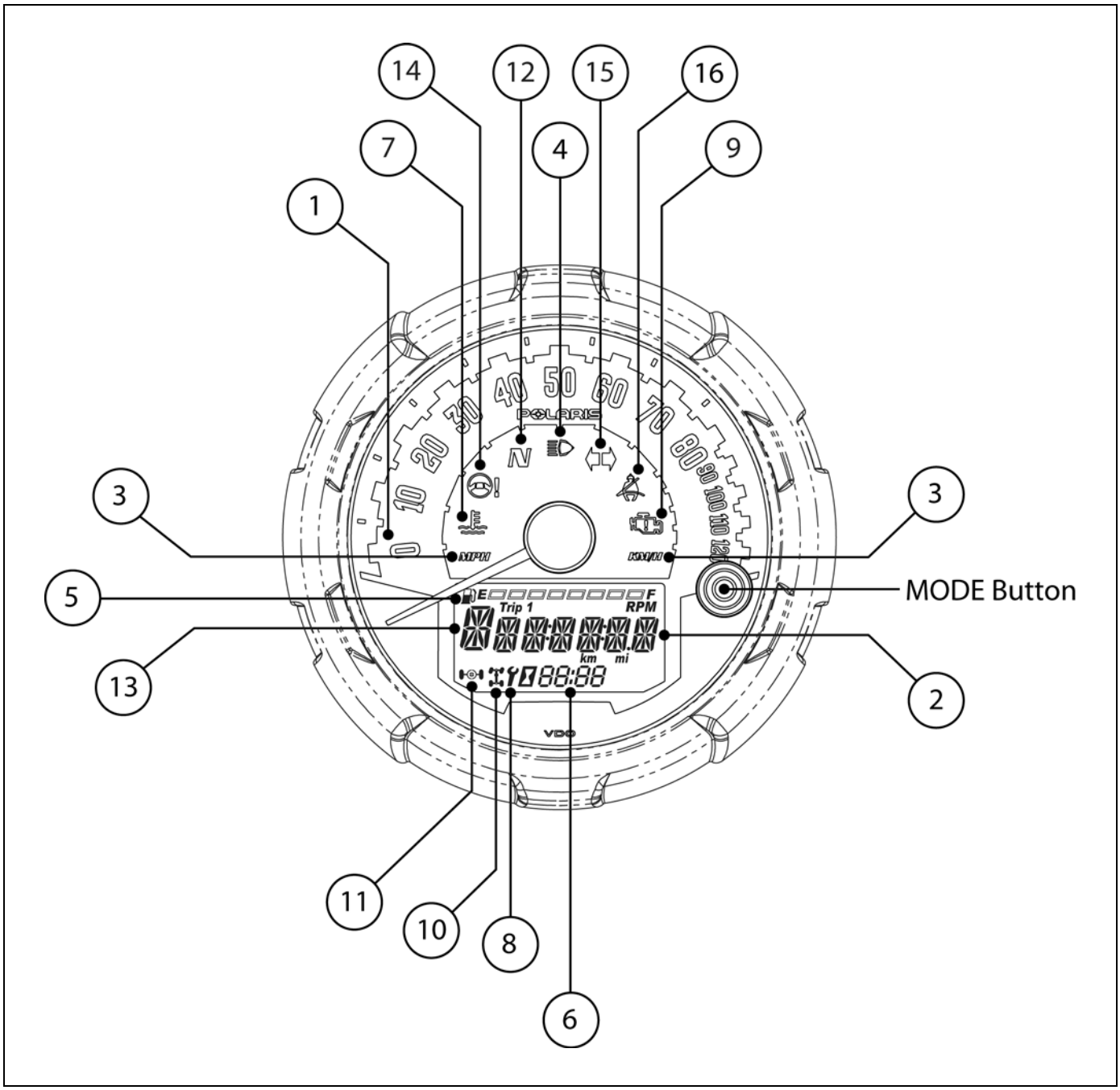
INSTRUMENT CLUSTER

Overview

The instrument cluster displays critical vehicle information to the user. Reference the following page for display functions and descriptions.



NOTE: Some features are not applicable to all models.

IMPORTANT: The use of a high pressure washer may damage the instrument cluster. Wash the vehicle by hand or with a garden hose using mild soap. Certain products, including insect repellents and chemicals, will damage the instrument cluster lens. Do not use alcohol to clean the instrument cluster. Do not allow insect sprays to contact the lens. Immediately clean off any gasoline that splashes on the instrument cluster.

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Rider Information Display

The rider information display is located in the instrument cluster. All segments will light up for 1 second at start-up.

NOTE: If the instrument cluster fails to illuminate, a battery over-voltage may have occurred and the instrument cluster may have shut off to protect the electronic speedometer.

1. **Vehicle Speed Display** - Analog display of vehicle speed in MPH or km/h.
2. **Information Display Area - Odometer / Trip Meter / Tachometer / Engine Temperature / Engine Hours / Service Info / Clock** - LCD display of the service hour interval, total vehicle miles or km., total engine hours, a trip meter, engine RPM and engine temperature.
3. **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.
4. **High Beam Indicator** LED icon illuminates whenever the Headlamp switch is in the high beam position.
5. **Fuel Level Indicator** - LCD bar graph indicating current fuel level. All segments will flash when the last segment is cleared indicating a low fuel warning.
6. **Clock** - Displays current time in either 12-hour or 24-hour formats.
7. **Engine Temperature Indicator** - LED icon illuminates when the ECM determines the engine is overheating. The indicators will initially flash to indicate the engine is overheating. The indicators will stay lit and not flash if a severe overheating condition exists.
8. **Service Interval Indicator** - Preset at the factory and adjustable by the user, a flashing wrench symbol alerts the operator that the preset service interval has been reached and maintenance should be performed. The wrench icon will flash for 10 seconds upon start-up once it reaches 0.
9. **Check Engine MIL** - Illuminated when the ECM has detected a Diagnostic Trouble Code in the engine management system.
10. **AWD Indicator** - Illuminated when the AWD / TURF switch is in the *AWD* position.
11. **TURF Indicator** - Illuminated when the AWD / TURF switch is in the *TURF* position (INT'L Models Only).
12. **Neutral Gear Indicator** - LED icon illuminates when gear selector is in the neutral (N) position.
13. **Gear Position Indicator -** Displays gear selector position.

H = High

L = Low

N = Neutral

R = Reverse

P = Park

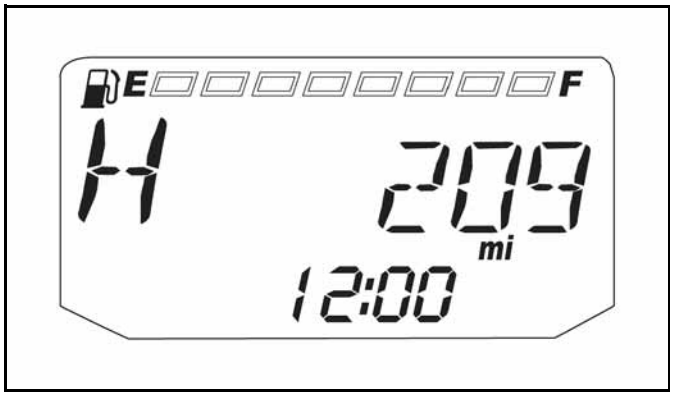
-- = Gear Signal Error (shifter stuck between gears)

14. **Power Steering System MIL -** LED icon illuminates when a fault has occurred with the power steering system. This indicator illuminates when the key is turned to the ON position and goes off when the engine is started.
15. **Turn Signal / Hazard Lamp Indicator** - LED icon illuminates whenever the LH, RH or hazard lamps are activated (INT'L Models Only).
16. **Helmet / Seat Belt Indicator** - LED icon illuminates for several seconds when the key is turned to the ON position. The lamp is a reminder to the operator to ensure all riders are wearing helmets and seat belts before operating the vehicle.

Information Display Area

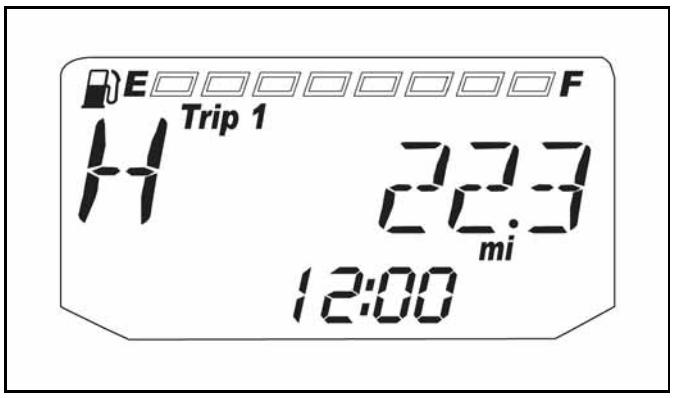
The LCD portion of the instrument cluster is the information display area. Information displayed in this area includes: odometer, trip meter, engine RPM, engine hours, service interval, clock, engine Diagnostic Trouble Codes (DTCs) and power steering DTCs.

Odometer



The odometer records and displays the total distance traveled by the vehicle. The odometer can not be reset.

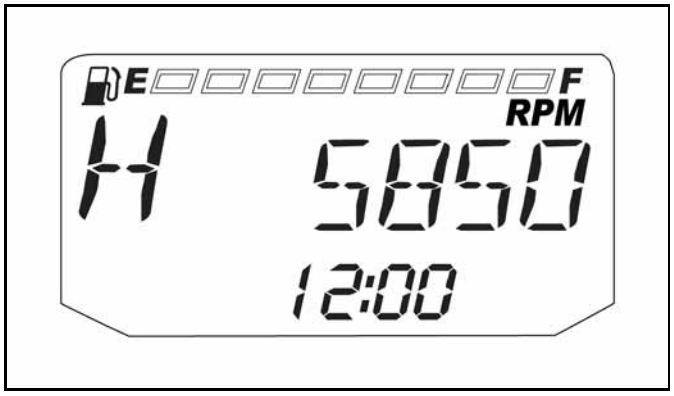
Trip Meter



The trip meter records the miles traveled by the vehicle on each trip. To reset the trip meter:

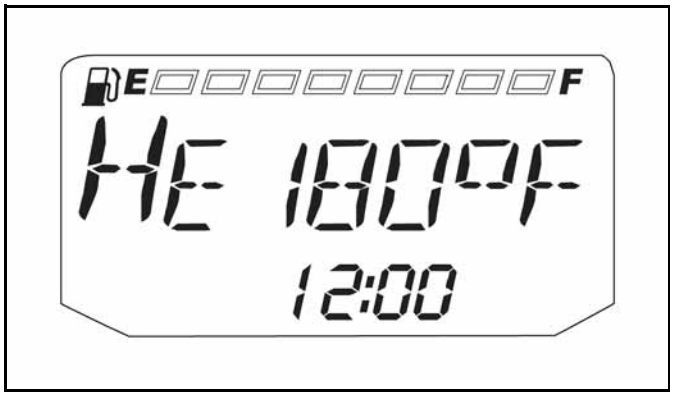
1. Toggle the MODE button to TRIP 1.
2. To reset to 0, push and hold the MODE button until the distance display changes to 0.

Tachometer (RPM)



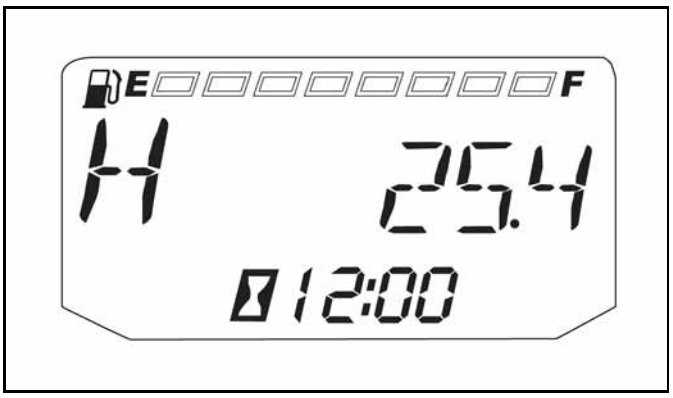
Engine RPM can be displayed digitally.

Engine Temperature



Engine temperature can be displayed in ° F or ° C. Refer to “Units of Measurement” to change the format.

Engine Hours



Engine hours are logged anytime the engine is running. Total hours can not be reset.

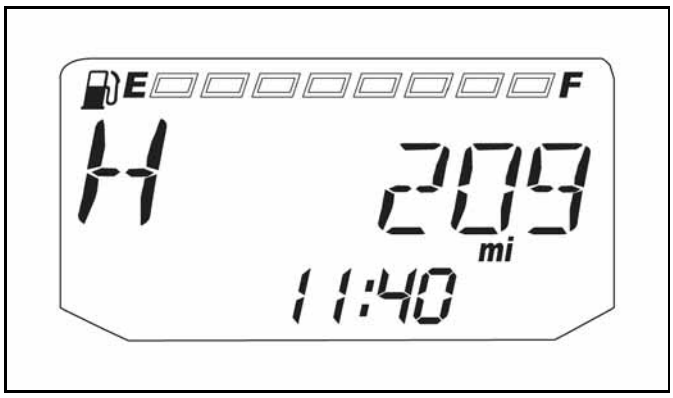
Programmed Service Interval

The initial factory service interval setting is 50 hours. Each time the engine is started, the engine hours are subtracted from the service interval hours. When the service interval reaches 0, the LCD wrench icon will flash for approximately 10 seconds each time the engine is started.

To change the hour setting or reset the function, follow these steps:

1. Toggle the MODE button until the wrench icon is displayed in the information area.
2. Press and hold the MODE button until the information display area begins to flash.
3. Toggle the MODE button to increase the service interval hours in 5 hour increments to a maximum of 100 hours.
4. To turn off the service interval function, toggle the MODE button until “OFF” is displayed.

Clock



The clock displays the time in a 12-hour or 24-hour format. Refer to “Units of Measurement” to change the format (Standard 12-hour / Metric-24 hour). To set the clock, follow these steps:

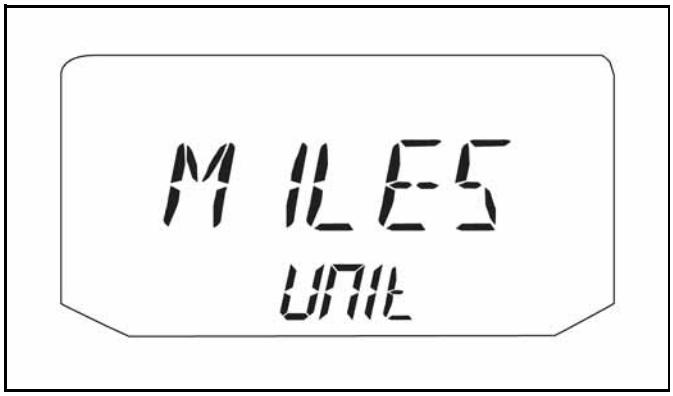
1. Toggle the MODE button until the odometer is displayed.
2. Press and hold the MODE button until the hour segment flashes. Release the button.
3. With the segment flashing, tap the MODE button to advance to the desired setting.
4. Press and hold the MODE button until the next segment flashes. Release the button.
5. Repeat steps 3-4 twice to set the 10 minute and 1 minute segments. After completing the 1-minute segment, step 4 will save the new settings and exit the clock mode.

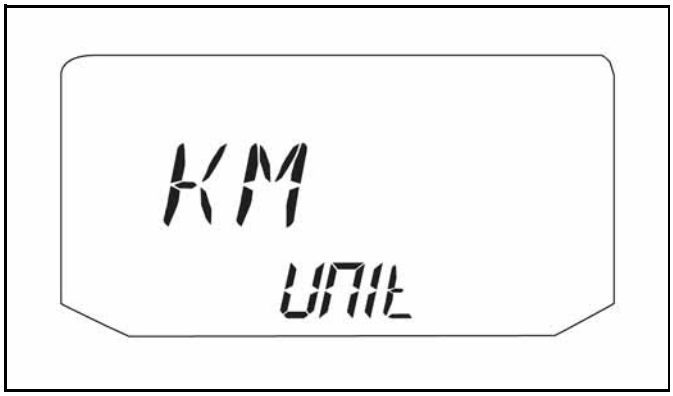
Units of Measurement

	Standard Display	Metric Display
Distance	Miles (MPH)	Kilometers (KM/H)
Time	12-Hour Clock	24-Hour Clock
Temperature	Fahrenheit	Celsius

To change between Standard and Metric units of measurement, follow these steps:

1. Turn the key to the OFF position.
2. Press and hold the MODE button while turning the key to the ON position.
3. When the display flashes the distance setting, tap the MODE button to advance to the desired setting.



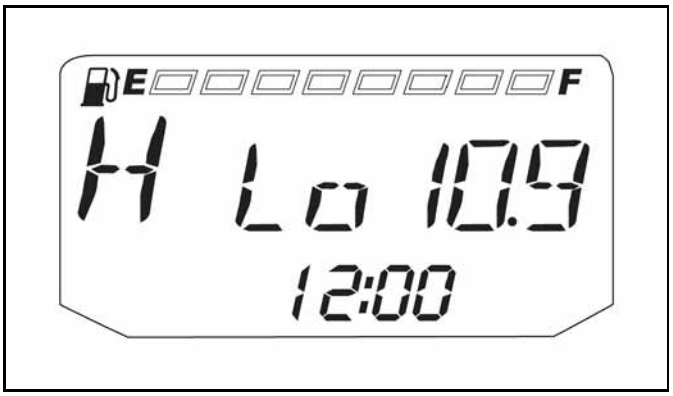


4. Press and hold the MODE button to save the setting and advance to the next display option.
5. Repeat the procedure to change remaining display settings.

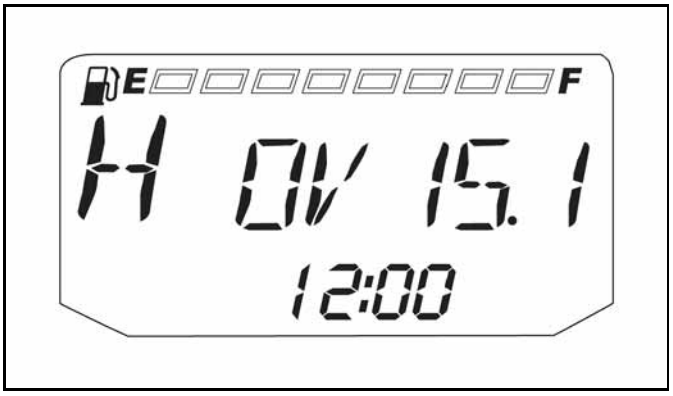
Under / Over Voltage

This warning usually indicates that the vehicle is operating at an RPM too low to keep the battery charged. It may also occur when the engine is at idle and a high electrical load is applied (lights, cooling fan or other accessories).

If battery voltage drops below 11 volts, a warning screen will display “Lo” and provide the present battery voltage. If voltage drops below 8.5 volts, LCD backlighting and icons will turn off.



If battery voltage rises above 15 volts, a warning screen will display “OV” and provide the present battery voltage. If voltage rises above 16.5 volts, LCD backlighting and icons will turn off.

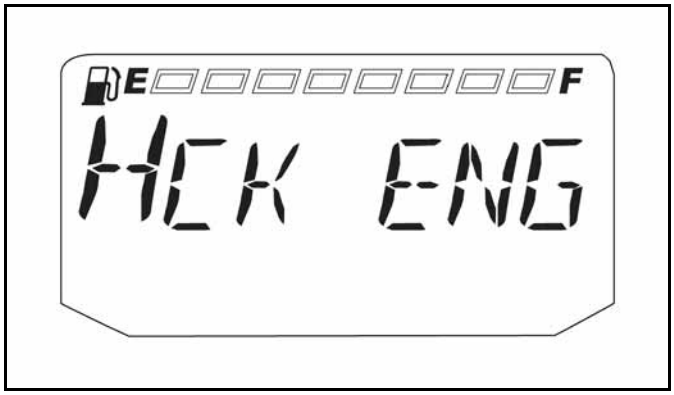


Diagnostic Mode

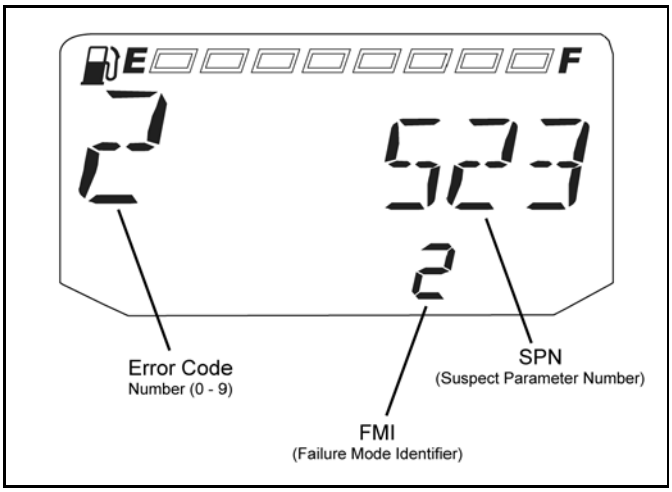
The diagnostic mode is accessible only when the check engine MIL has been activated.

Use the following procedure to display diagnostic trouble codes that were activated during current ignition cycle causing the MIL to illuminate. Diagnostic trouble codes will remain stored in the gauge (even if MIL turns off) until the key is turned off.

1. If the trouble code(s) are not displayed, use the MODE button to toggle until “CK ENG” displays on the information display area.



2. Press and hold the MODE button to enter the diagnostics code menu.
3. A set of three numbers will appear in the information area.
   - The first number (located far left) can range from 0 to 9. This number represents the total number of trouble code present (example: 2 means there are 3 codes present).
   - The second number (located top right) can be 2 to 6 digits in length. This number equates to the suspected area of fault (SPN).
   - The third number (located bottom right) can be 1 to 2 digits in length. This number equates to the fault mode (FMI).

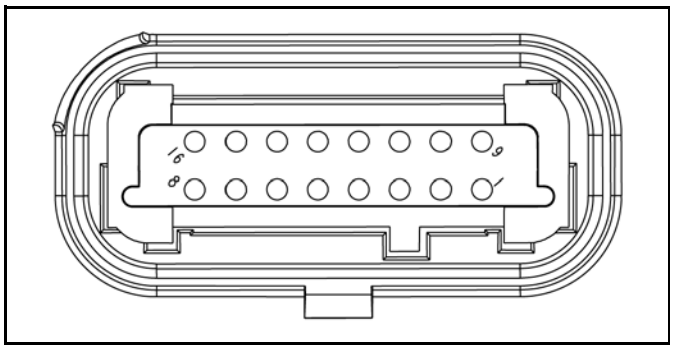


4. Use the trouble code reference table in the EFI Chapter for a description of each code.
5. If more than one code exists, press the MODE button to advance to the next trouble code.

6. To exit the diagnostic mode, press and hold the MODE button or turn the ignition key OFF once the codes are recorded.

NOTE: If there is a diagnostic problem with the power steering system, the power steering MIL will illuminate and blink in place of the check engine MIL.

Instrument Cluster Pinouts

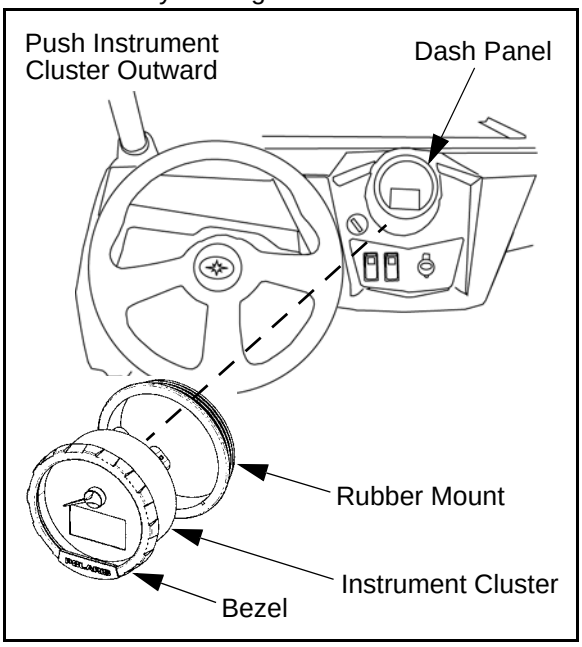


FUNCTION	PIN
CAN High	1
CAN Low	2
Switched Power (Vdc)	3
Constant Power (Vdc)	4
Ground	5
High Beam Input	8
Fuel Level Sensor	11
International Models Only	
Turn Signal Input, LH	6
Turn Signal Input, RH	7

Instrument Cluster Removal

NOTE: Do not allow alcohol or petroleum products to come in contact with the instrument cluster lens.

1. Disconnect the wire harness connector from the back side of the instrument cluster.
2. Push instrument cluster out from back side of the dash while securely holding the dash and rubber mount.



NOTE: Do not remove the rubber mount from the dash panel. Only remove the rubber mount if necessary. The bezel is a snap-on assembly and is a serviceable part.

Instrument Cluster Installation

1. Spray a soap and water mixture onto outer surface area of instrument cluster. This will help the instrument cluster slide into the rubber mount easily.

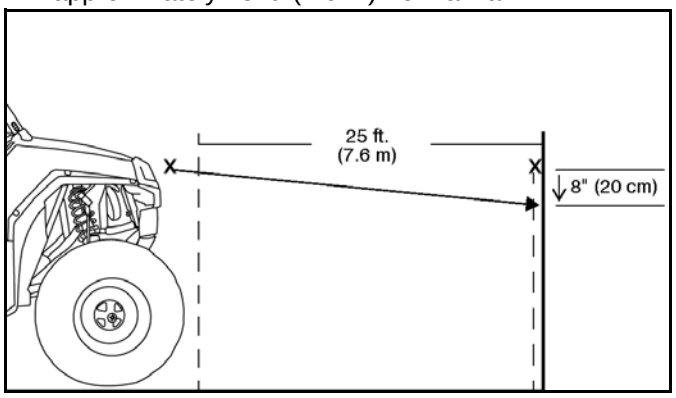
2. Be sure the rubber mount inside the dash is fully installed and that the indexing key on the rubber mount is lined up with the keyway in the dash.
3. Hold dash securely and insert the instrument cluster into the dash. Twist the instrument cluster gently in a clockwise motion to properly seat the instrument cluster into the rubber mount. Apply pressure on the bezel while pressing down on the instrument cluster.

HEAD LIGHTS (INCANDESCENT)

Headlight Adjustment

The headlight beam is adjustable.

1. Place the vehicle on a level surface with the headlight approximately 25 ft. (7.6 m) from a wall.



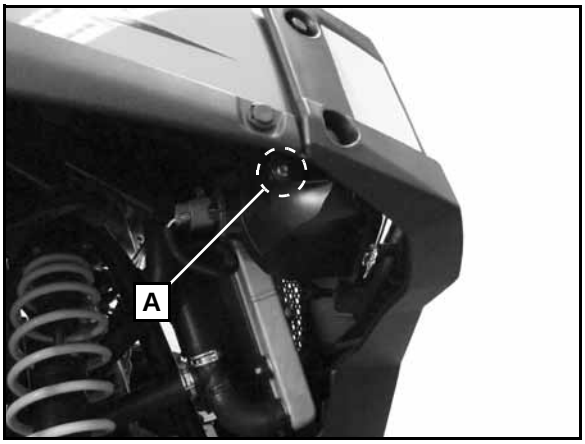
2. Measure the distance from the floor to the center of the headlight and make a mark on the wall at the same height.

3. With the machine in Park, start the engine and turn the headlight switch to on.

4. The most intense part of the headlight beam should be aimed 8 in. (20 cm) below the mark placed on the wall in Step 2.

NOTE: Rider weight must be included in the seat while performing this procedure.

5. Adjust the beam to the desired position by loosening the adjustment screw (A) and moving the lamp to the appropriate height.



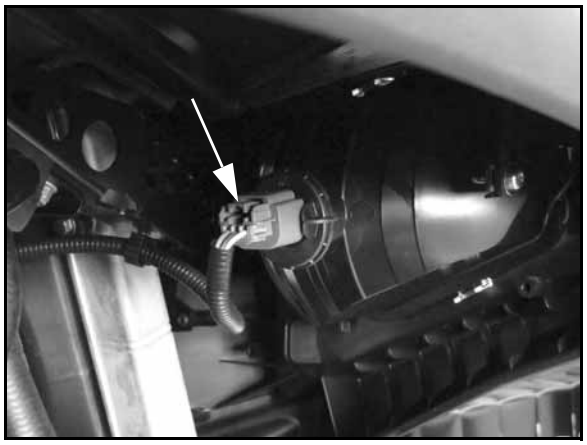
6. Adjust the beam to desired position. Repeat the procedure to adjust the other headlight.

⚠ WARNING

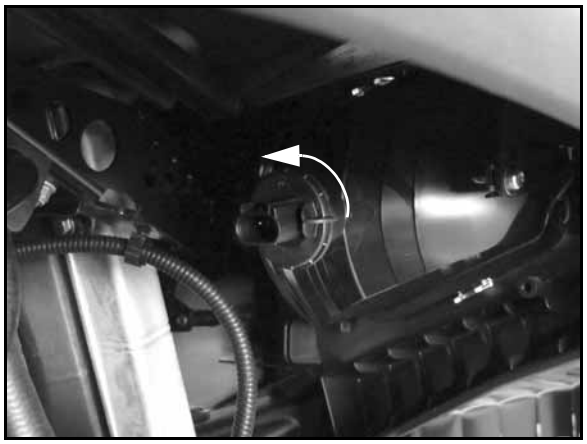
Due to the nature of light utility vehicles and where they are operated, headlight lenses become dirty. Frequent washing is necessary to maintain lighting quality. Riding with poor lighting can result in severe injury or death.

Headlamp Bulb Replacement

1. Disconnect the wire harness from the headlamp bulb. Be sure to pull on the connector, not on the wiring.



2. Turn the bulb counterclockwise to remove it.



3. Insert new bulb. Reinstall the wire harness onto the headlamp assembly.

4. Repeat steps 1-3 if replacing daytime running lights (INT'L Only) also located in the headlamp housing.

NOTE: Make sure the tabs on the bulb locate properly in the housing.

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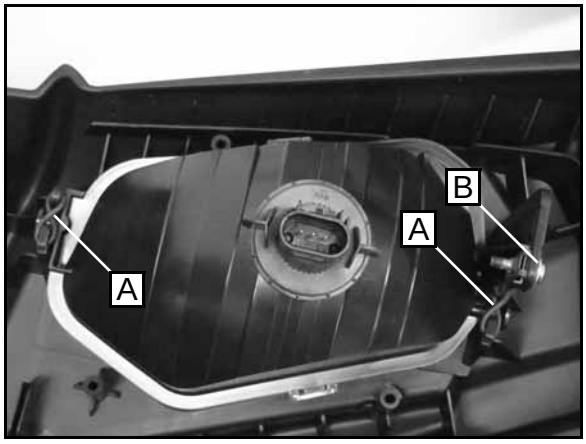
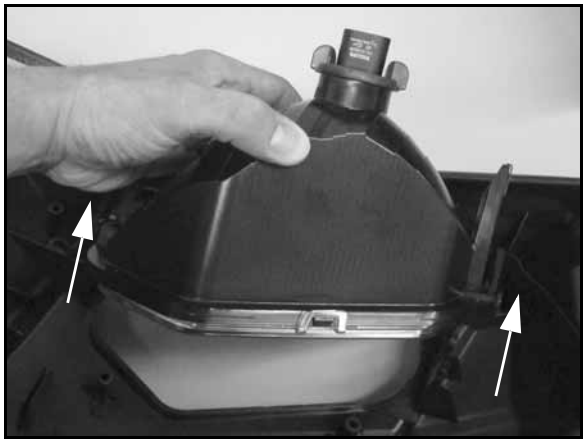
Headlamp Housing Removal

1. Disconnect the wire harness from the headlamp bulb. Be sure to pull on the connector, not on the wiring.
2. Remove the O-rings (A) from the headlamp brackets on both sides of the headlamp.
3. Remove the adjustment screw (B) from the bracket.



4. Carefully remove the headlamp from the front bumper.



Headlamp Housing Installation

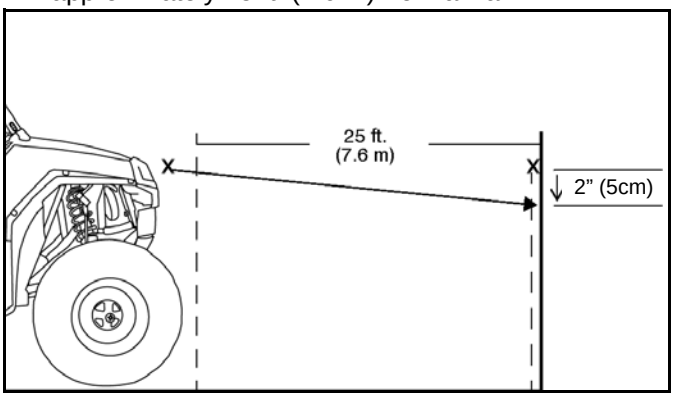
1. Install the headlamp housing back into the front bumper.
2. Secure the headlamp housing with the rubber O-rings (A) on both sides of the headlamp and install the adjustment screw (B).
3. Reconnect wire harness or re-insert bulb if previously removed.
4. Adjust headlights using the “Headlight Adjustment” procedure in this section.

HEAD LIGHTS (LED)

Headlight Adjustment

The headlight beams are adjustable.

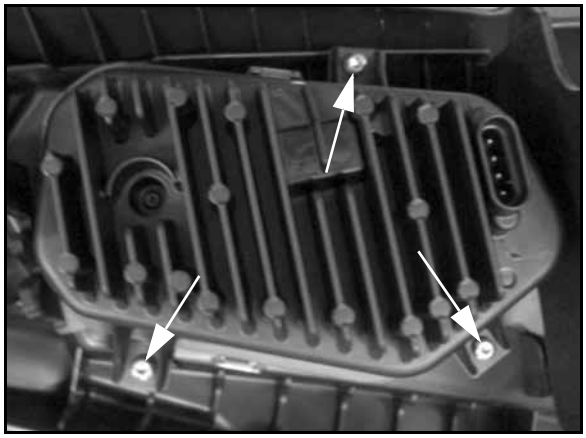
1. Place the vehicle on a level surface with the headlight approximately 25 ft. (7.6 m) from a wall.



2. Measure the distance from the floor to the center of the headlight and make a mark on the wall at the same height.
3. With the machine in Park, start the engine and turn the headlight switch to the LOW position.
4. The most intense part of the LOW beam headlight beam should be aimed 2 in. (5 cm) below the mark placed on the wall in Step 2.

NOTE: Rider weight must be included in the seat while performing this procedure.

5. Adjust the beam to the desired position by loosening or tightening the (3) T-25 adjustment screws and moving the lamp to the appropriate height.



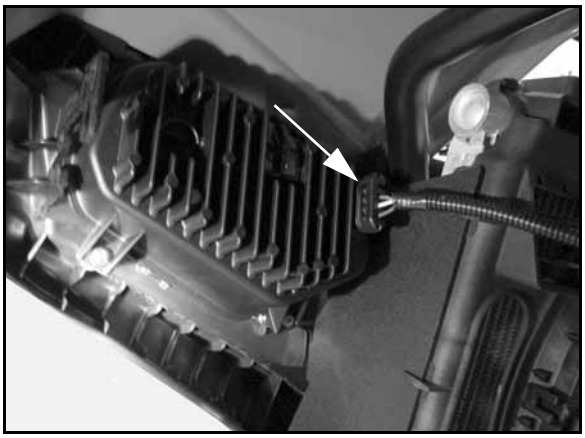
6. Adjust the beam to desired position. Repeat the procedure to adjust the other headlight.

> **⚠ WARNING**
>
> Due to the nature of light utility vehicles and where they are operated, headlight lenses become dirty. Frequent washing is necessary to maintain lighting quality. Riding with poor lighting can result in severe injury or death.

Headlamp Replacement

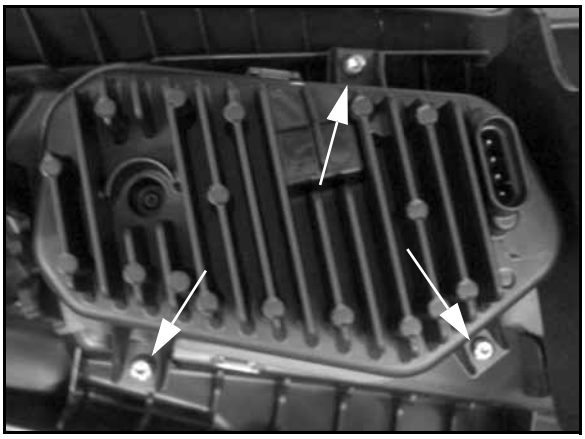
IMPORTANT: If an LED headlamp has fogging or moisture inside, disconnect the wire harness from the headlamp(s) for a few days to allow the moisture to clear out.

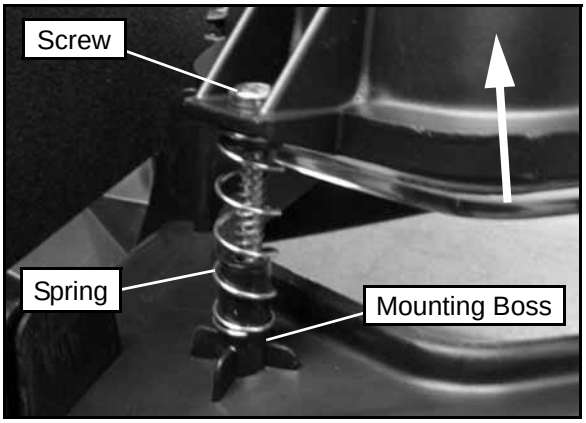
1. Disconnect wire harness from headlamp assembly. Be sure to pull on the connector, not on the wiring.



2. Remove the (3) T-25 headlamp mounting screws and (3) adjustment preload springs.

NOTE: The front bumper can be removed and placed face down on a suitable workbench to ease headlamp replacement (see Chapter 5).

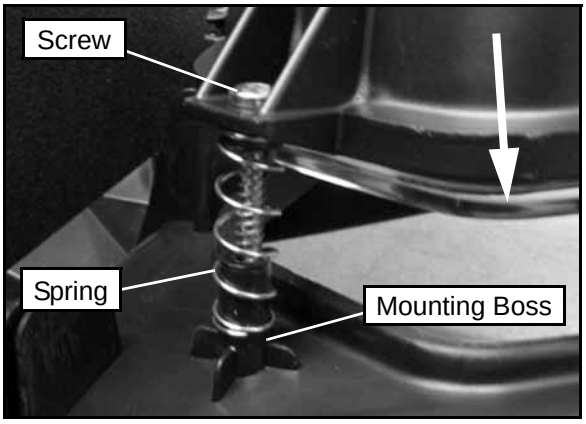




3. Carefully lift and remove headlamp assembly from the bumper.

Headlamp Installation

1. Install the headlamp adjustment springs onto the front bumper mounting bosses.
2. Insert the (3) T-25 headlamp mounting screws into the headlamp assembly mounting holes.
3. Maneuver headlamp assembly into position. Be sure all (3) headlamp springs and mounting screws are properly aligned with mounting bosses on the front bumper.



4. Fully tighten all (3) headlamp screws until the headlamp assembly is fully seated. Back headlamp mounting screws off 1/8” to 1/4” (2-3 turns).
5. Install the front bumper as shown in Chapter 5 if previously removed.
6. Connect headlamp electrical connector to the headlamp assembly. **NOTE: The headlights are different and electrical connectors cannot be interchanged.**
7. Perform the “Headlight Adjustment” procedure as shown in this chapter.

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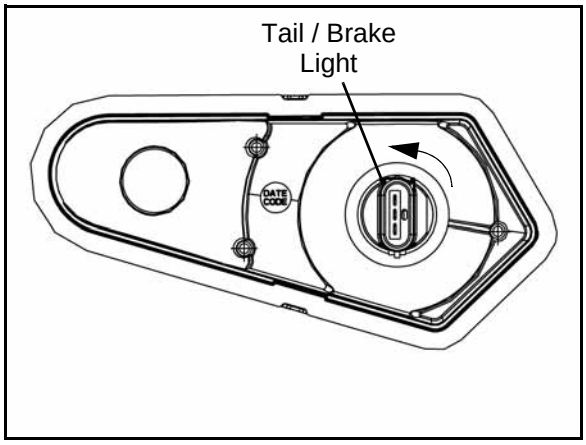
TAIL / BRAKE LIGHTS

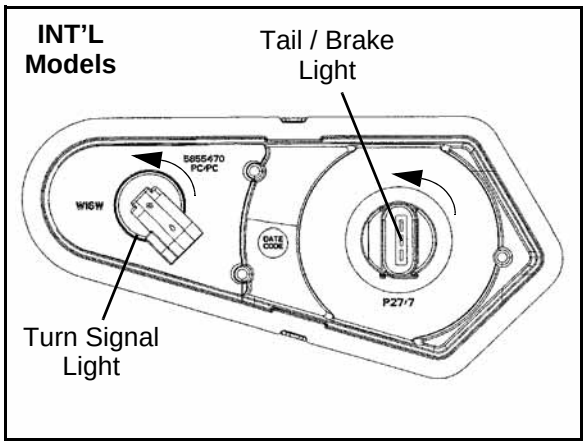
Bulb Replacement

Before replacing the bulb(s), use a digital multi-meter to test the harness to ensure the lamp is receiving 12 volts and that a ground path is present.

If a tail light, brake light or turn signal (INT'L Only) does not work the bulb may need to be replaced.

1. Disconnect the wire harness.
2. Remove bulb by turning the rubber base 1/4 turn and pulling the bulb out. Replace it with recommended bulb. Apply Dielectric Grease (PN 2871329).

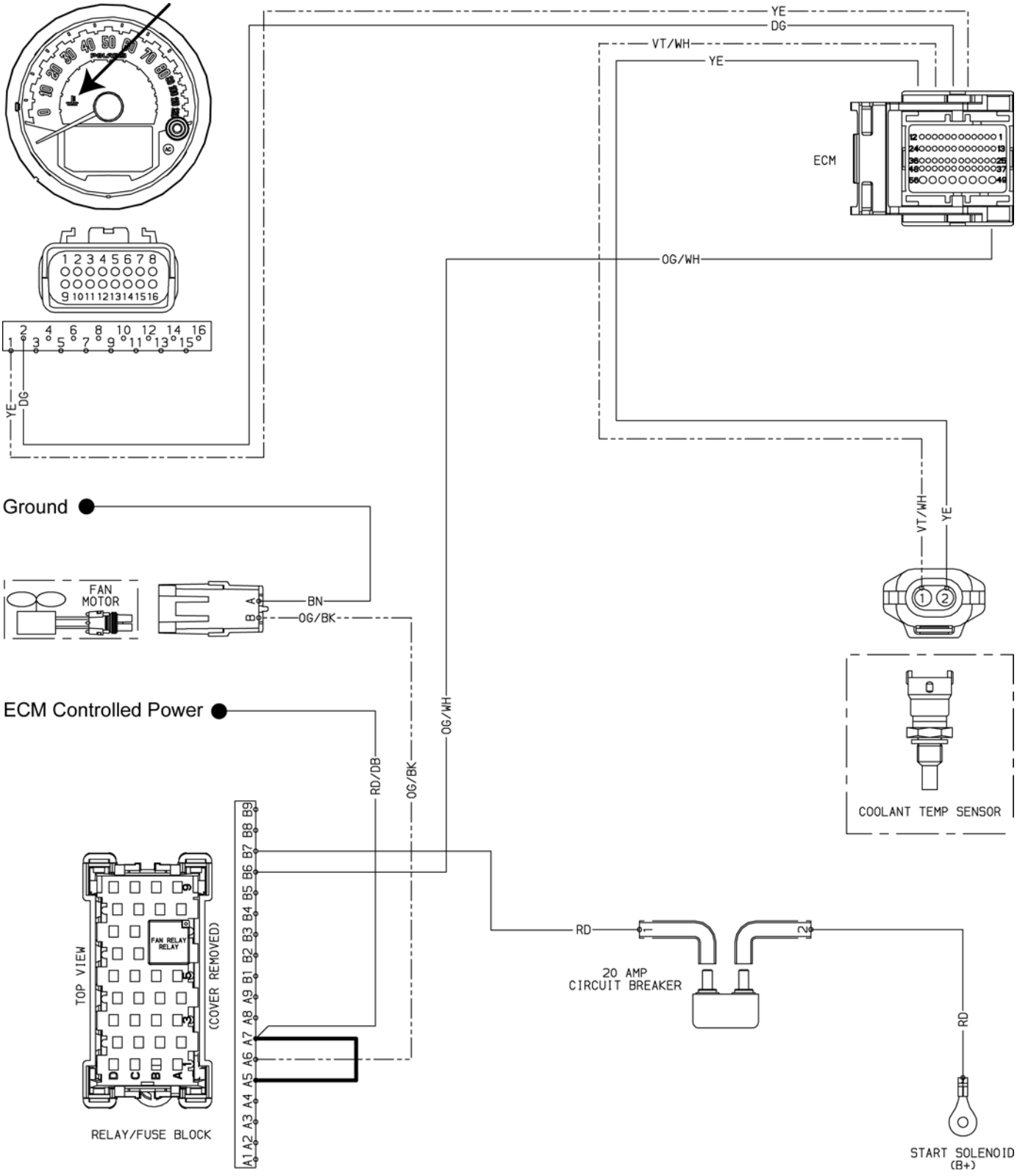




3. Connect the wire harness.
4. Test the tail light, brake light and turn signal (INT'L Only) to verify it is working properly.

COOLING SYSTEM

Cooling System Break-Out Diagram



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Fan Control Circuit Operation / Testing

Power is supplied to the fan via the Orange/Black wire when the relay is ON. The ground path for the fan motor is through the Brown harness wire. Refer to “RELAYS” later in this chapter for more information on fan functions.

> **⚠ CAUTION**
>
> Keep hands away from fan blades during operation. Serious personal injury could result.

NOTE: The fan may not function or operation may be delayed if coolant level is low or if air is trapped in the cooling system. Be sure cooling system is full and purged of air. Refer to Chapter 2 “Maintenance” for cooling system information.

Fan Control Circuit Bypass Test

1. Disconnect harness from coolant temperature sensor on the engine cylinder head (see Chapter 4 for location).
2. With the transmission in Park, start the engine. After a few seconds, the fan should start running and the “Check Engine” indicator should display on the instrument cluster. This indicates all other components are working properly.
3. If the fan does not run or runs slowly, check the fan motor wiring, ground, motor condition, circuit breaker and mechanical relay for proper operation. Repair or replace as necessary. If the fan runs with the sensor harness disconnected, but will not turn on when the engine is hot, check the coolant temperature sensor and connector terminals.

Coolant Temperature Sensor

The coolant temperature sensor can be tested using an ohmmeter or voltmeter.

1. With the engine and temperature sensor at room temperature (68°F = 20°C), disconnect the harness.
2. With the meter in the ohms mode, place the meter leads onto the sensor contacts.
3. Use the table Temperature / Resistance table to determine if the sensor needs to be replaced.

TEMPERATURE °F (°C)	RESISTANCE
68 °F (20 °C)	2.5 k Ω ± 6%
212 °F (100 °C)	186 Ω ± 2%

NOTE: If the coolant temperature sensor or circuit malfunctions the radiator fan will default to 'ON'.

EFI DIAGNOSTICS

EFI Component Testing

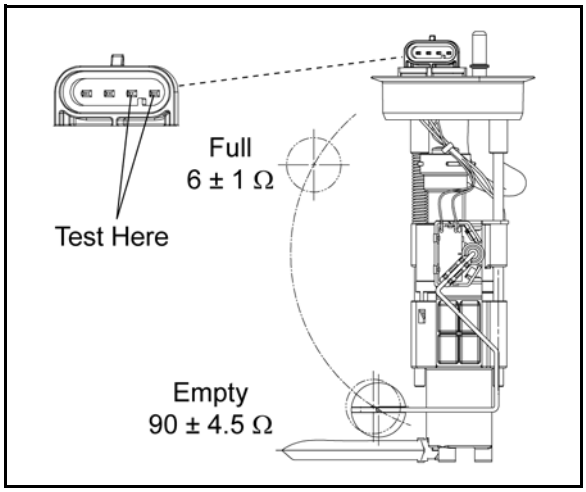
All EFI component information and diagnostic testing procedures are located in **Chapter 4**.

Refer to Chapter 4 “Electronic Fuel Injection System (EFI)” when diagnosing an EFI system or component.

FUEL SENDER

Testing

1. Drain the fuel tank and remove it from the vehicle (see Chapter 4).
2. Set the fuel tank on a flat surface. Using an Ohm meter, measure the resistance of the fuel sender as shown below.



3. Allow the sender float to sit in the **empty position** and compare to specification.

Fuel Sender - Empty: 90 ± 4.5 Ω

4. Slowly tilt the tank so that gravity moves the sender float to the **full position** and compare to specification.

Fuel Sender - Full: 6 ± 1 Ω

5. If the readings are out of specification, or if the reading is erratic or LCD display “sticks”, check the following before replacing the fuel pump assembly:
   - Loose float
   - Float contact with tank
   - Bent float rod

If none of the conditions exist, the fuel sender assembly is faulty. Replace the fuel pump assembly (see Chapter 4).

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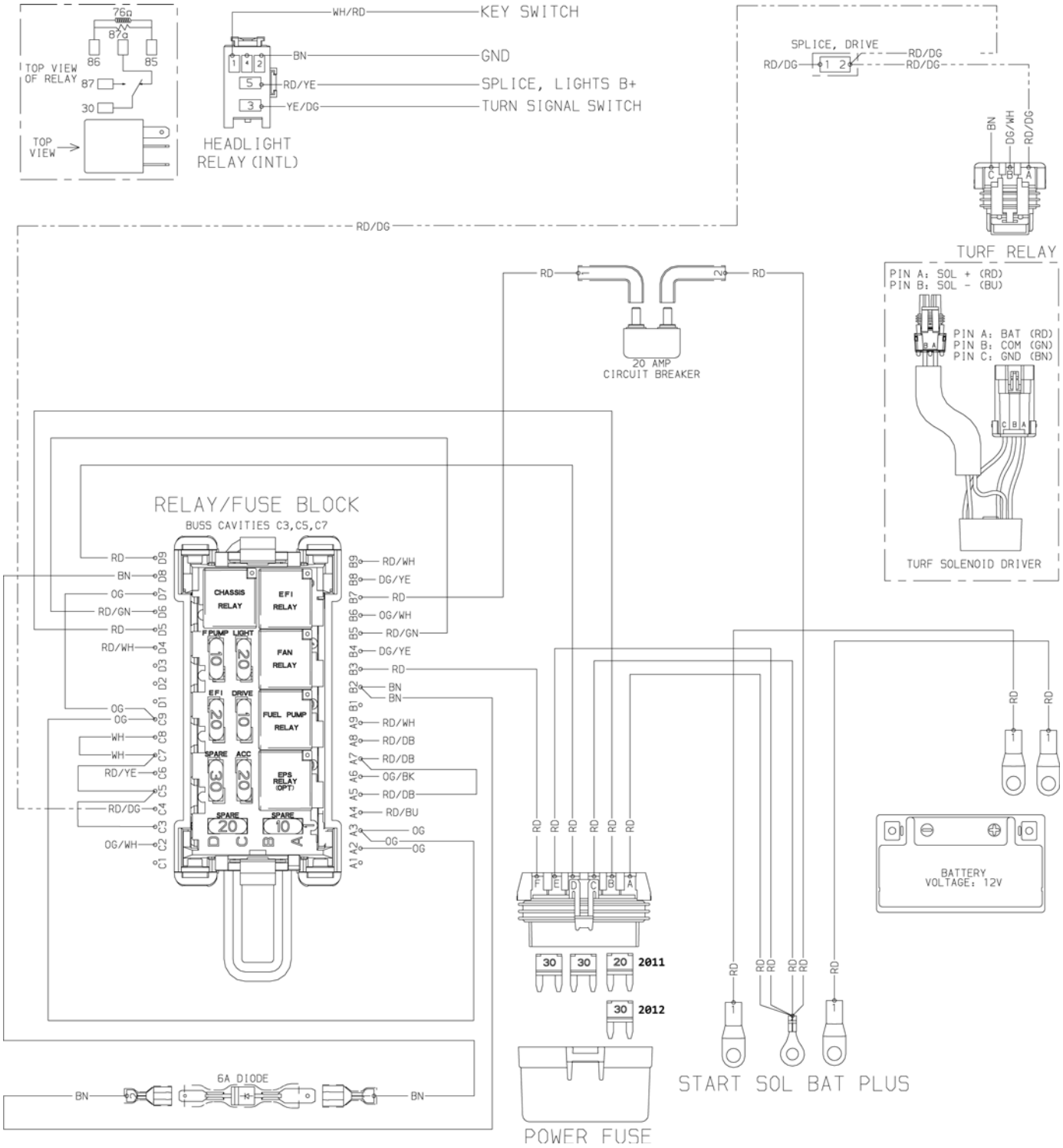
FUSE BOX: FUSES / RELAYS / CIRCUIT BREAKER

Overview / Operation

Located in the fuse box under the dash, the fuses provide overload protection for wiring and components such as the instrument cluster, ECU, EFI system, main harness, lights, accessories and power steering. The relays assist with component operation like the cooling fan, fuel pump, EFI system, drive system and electronic power steering. A separate 20-amp circuit breaker protects the fan motor circuit. A separate relay located under the dash, operates the high beam and low beam headlights on INT'L models.



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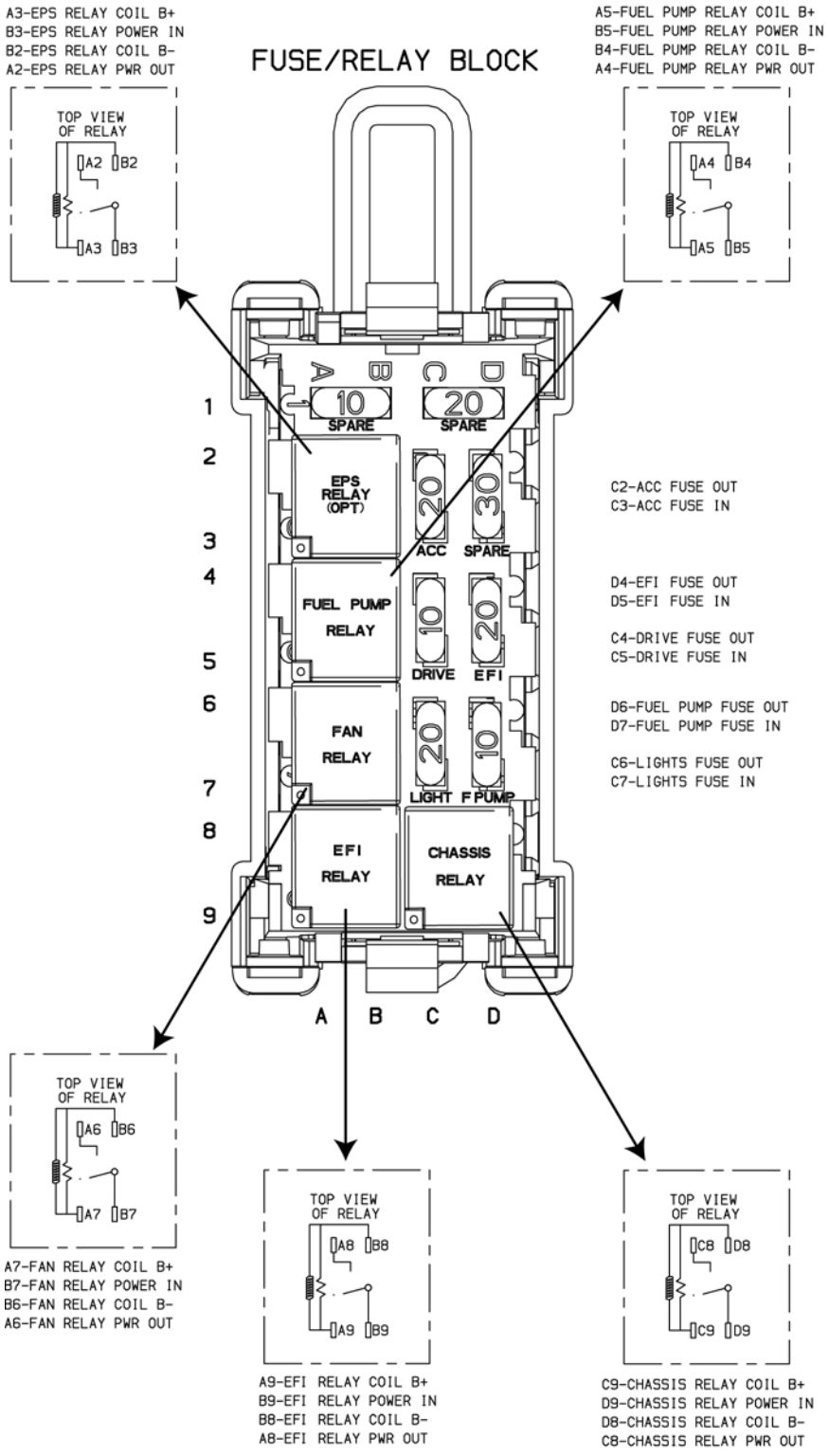
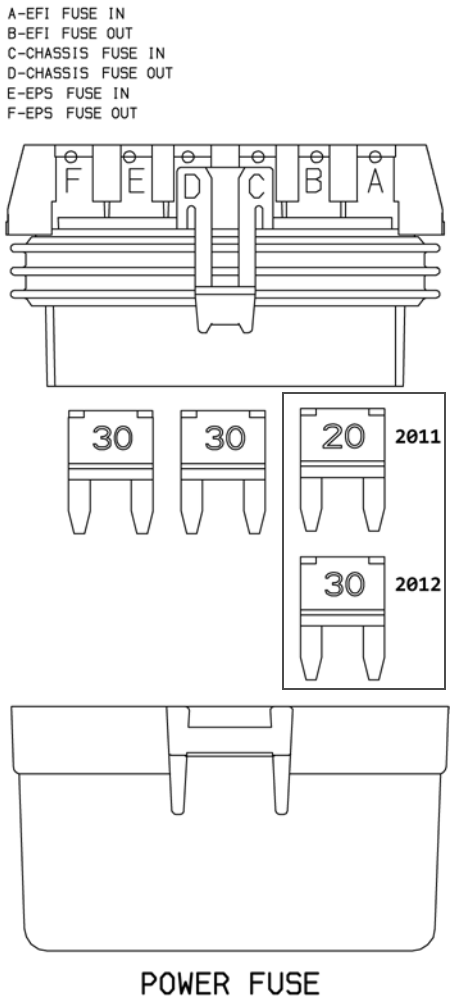
Fuse Box Detail





IMPORTANT: All relays (PN 4011283) located in fuse box are the same and can be swapped out to help diagnose electrical problems.

Relay Operation

Located in the fuse box under the dash, the relays assist with component operation like the cooling fan, fuel pump and EFI system, drive system and EPS.

NOTE: The Rear Diff Solenoid Relay is mounted separately, attached to the rear plastic LH panel divider behind the driver's seat.

CHASSIS RELAY provides power to the following systems:

- Lights (Headlights / Taillights)
- Drive (AWD / TURF)
- Accessory (12V Receptacles / Accessory Options)

COLOR	FUNCTION
Red	30-Amp fuse protected 12 Vdc constant battery voltage.
Brown	Relay coil ground.
Orange	12 Vdc power input from key switch to enable relay.
White	Provides 12 Vdc power for lights, drive and accessory circuits.

EFI RELAY provides power to the following systems:

- Fuel Injectors
- Cam Phase Sensor
- Ignition Coil
- Fan Relay
- Fuel Pump Relay

COLOR	FUNCTION
Red / White	20-Amp fuse protected 12 Vdc constant battery voltage.
Dark Green / Yellow	ECU ground input to enable relay.
Red / White	20-Amp fuse protected 12 Vdc constant battery voltage.
Red / Dark Blue	Provides 12 Vdc power for EFI system circuits.

FAN RELAY provides power to the following system:

- Fan Motor

COLOR	FUNCTION
Red	20-Amp circuit breaker protected 12 Vdc constant battery power.
Orange / White	ECU ground input to enable relay.
Red / Dark Blue	12 Vdc switched power from EFI relay.
Orange / Black	Provides 12 Vdc power for fan operation.

FUEL PUMP RELAY provides power to the following system:

- Fuel Pump

COLOR	FUNCTION
Red / Light Green	10-Amp fuse protected 12 Vdc battery voltage.
Dark Green / Yellow	ECU ground input to enable relay.
Red / Dark Blue	12 Vdc switched power from EFI relay.
Red / Light Blue	Provides 12 Vdc power for fuel pump operation.

EPS RELAY provides power to the following system:

- Electronic Power Steering Unit

COLOR	FUNCTION
Red	30-Amp fuse protected 12 Vdc constant battery voltage.
Brown	Relay coil ground.
Orange	12 Vdc power input from key switch to enable relay.
Orange	Provides 12 Vdc power for EPS operation.

REAR DIFF SOLENOID RELAY (INT'L) provides power to the following system:

- Rear Differential Solenoid

COLOR	FUNCTION
Red / Dark Green	10-Amp fuse protected 12 Vdc battery voltage.
Dark Green / White	ECU input to enable relay.
Brown	Relay coil ground.
Red	Relay switched power to operate the Rear Diff Solenoid.
Blue	Ground to energize the Rear Diff Solenoid.

HEADLIGHT RELAY (INT'L) provides power to the following systems:

- High Beam Headlights
- Low Beam Headlights

COLOR	FUNCTION
Red / Yellow	20-Amp fuse protected 12 Vdc battery voltage.
White / Red	Key switch input to enable relay.
Brown	Relay coil ground.
Yellow / Dark Green	Relay switched power to operate the Headlights.

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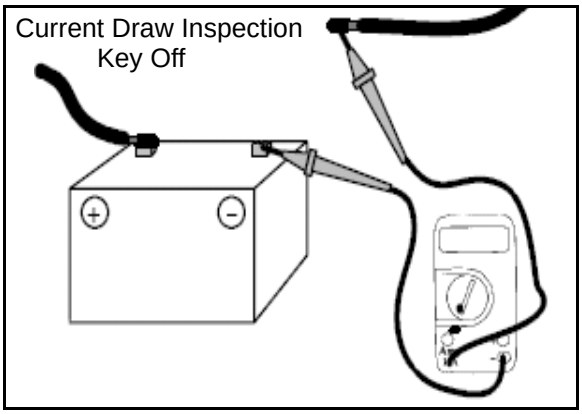
CHARGING SYSTEM

Current Draw - Key Off

CAUTION

Do not connect or disconnect the battery cable or ammeter with the engine running. Damage will occur to electrical components.

Connect an ammeter in series with the negative battery cable. Check for current draw with the key off. If the draw is excessive, loads should be disconnected from the system one by one until the draw is eliminated. Check component wiring as well as the component for partial shorts to ground to eliminate the draw.



Current Draw - Key Off:
Maximum of .01 DCA (10 mA)

Charging System "Break Even" Test

CAUTION

Do not allow the battery cables to become disconnected with the engine running. Follow the steps below as outlined to reduce the chance of damage to electrical components.

The "break even" point of the charging system is the point at which the alternator overcomes all system loads (lights, etc.) and begins to charge the battery. Depending on battery condition and system load, the break even point may vary slightly. The battery should be fully charged before performing this test.

WARNING

Never start the engine with an ammeter connected in series. Damage to the meter or meter fuse will result.
Do not run test for extended period of time.
Do not run test with high amperage accessories.

1. Using an inductive amperage metering device, (set to DC amps) connect to the negative battery cable.
2. With engine off, key switch and lights in the on position, the ammeter should read negative amps (battery discharge).
3. Shift transmission into park and start the engine. With the engine running at idle, observe meter readings.
4. Increase engine RPM while observing ammeter and tachometer. Note the RPM at which the battery starts to charge (ammeter indication is positive).
5. With lights and other electrical loads off, the "break even" point should occur at approximately 1500 RPM or lower.
6. With the engine running, turn the lights on and depress the brake pedal to keep brake lights on.
7. Repeat test, observing ammeter and tachometer. With lights on, charging should occur at or below 2000 RPM.

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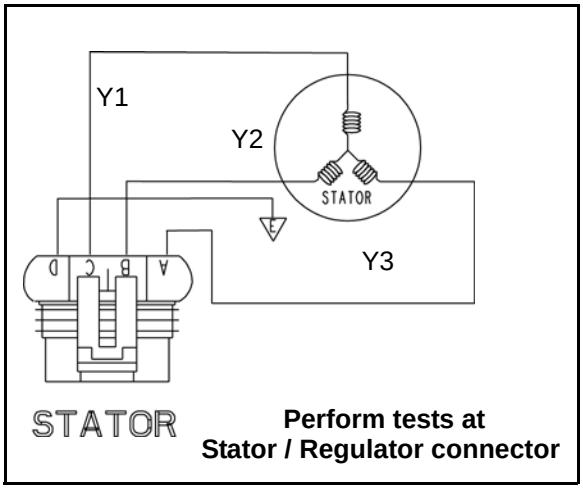
Charging System Alternator Tests

Three tests can be performed using a multi-meter to determine the condition of the stator (alternator).



TEST 1: Resistance Value of Each Stator Leg

1. Measure the resistance value of each of the three stator legs: Y1 to Y2, Y1 to Y3, and Y2 to Y3. Each test should measure: **0.11Ω ± 15%**

Test	Connect Meter Leads To:	Ohms Reading
Battery Charge Coil	Y1 to Y2	0.11Ω ± 15%
Battery Charge Coil	Y1 to Y3	0.11Ω ± 15%
Battery Charge Coil	Y2 to Y3	0.11Ω ± 15%

NOTE: If there are any significant variations in ohm readings between the three legs it is an indication that one of the three stator legs maybe weak or failed.

TEST 2: Resistance Value of Each Stator Leg to Ground

1. Measure the resistance value of each of the stator legs to ground: Y1 to Ground, Y2 to Ground, Y3 to Ground. Each test should measure: **Open Line (OL)**

Test	Connect Meter Leads To:	Ohms Reading
Battery Charge Coil	Y1, Y2, or Y3 to Ground	Open Line (Infinity)

NOTE: Any measurement other than Infinity (open) will indicate a failed or shorted stator leg.

TEST 3: Measure AC Voltage Output of Each Stator Leg at Charging RPM

1. Set the selector dial to measure AC Voltage.
2. Start the engine and let it idle.
3. While holding the engine at a specified RPM, separately measure the voltage across each 'leg' of the stator by connecting the meter leads to the wires leading from the alternator (Y1 to Y2, Y1 to Y3, Y2 to Y3).
4. Refer to the following table for approximate AC Voltage readings according to RPM. Test each leg at the specified RPM in the table.

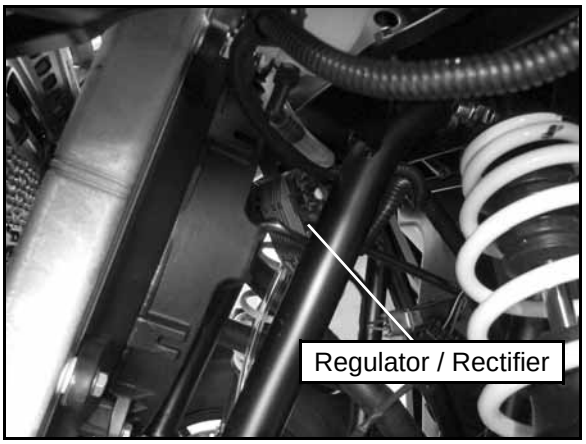
   Example: The alternator current output reading should be approximately **18 VAC at 1300 RPM between each 'leg'**.

NOTE: If one or more of the stator leg output AC voltage varies significantly from the specified value, the stator may need to be replaced.

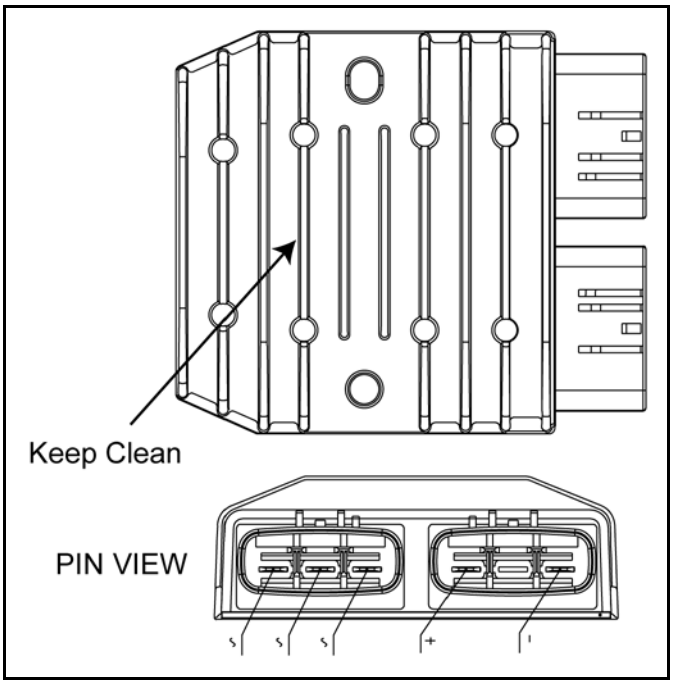
RPM Reading	AC Voltage (VAC) Reading
1300	18 VAC ± 25 %
3000	42 VAC ± 25 %
5000	64 VAC ± 25 %

Regulator / Rectifier

The Regulator / Rectifier is located behind the radiator cooling fan and can be accessed through the front left wheel well.

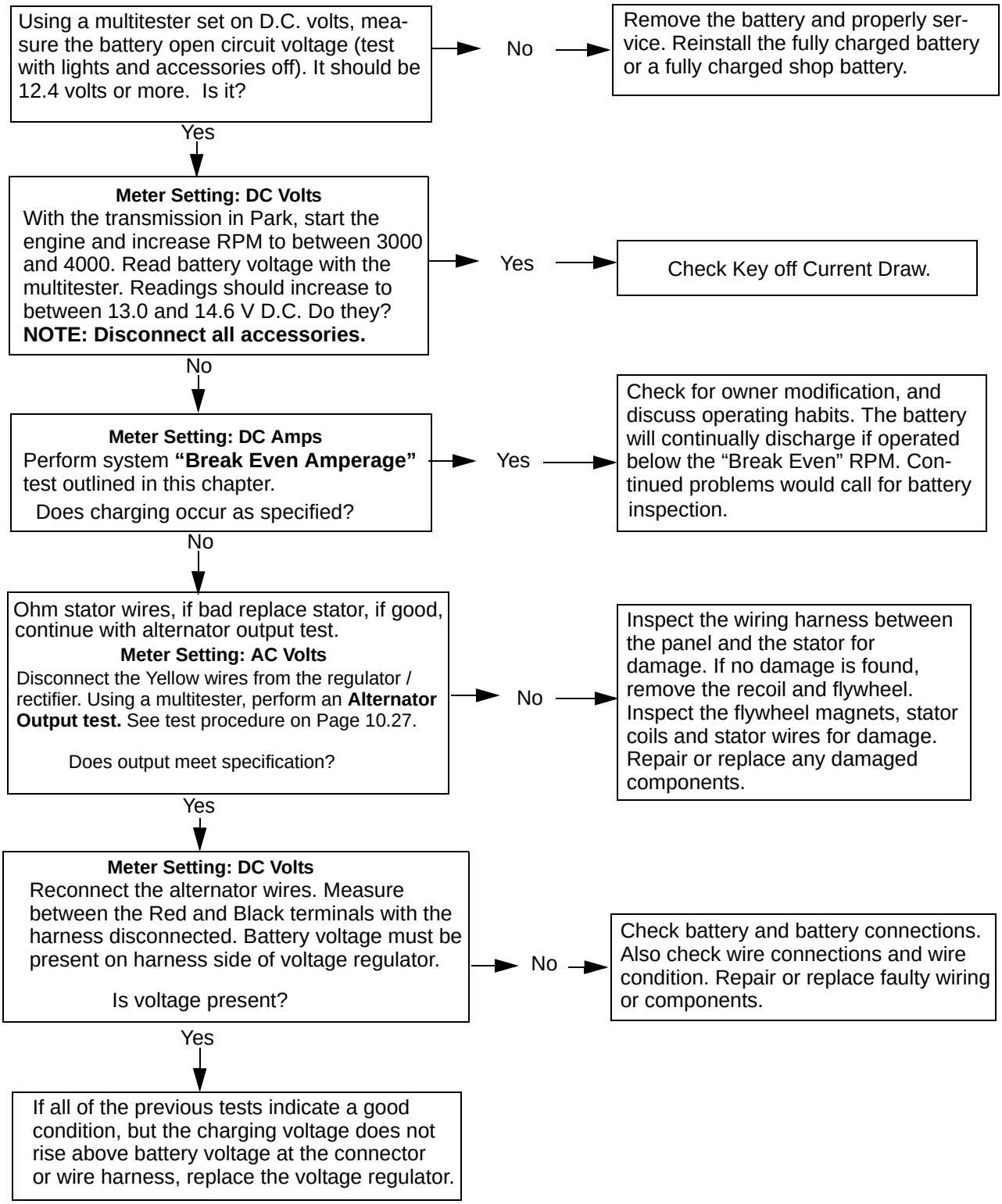


NOTE: If the regulator / rectifier overheats, the unit will turn itself off to cool down. The unit will turn on again after it has cooled down. If it turns off, verify the cooling fins are clean, free from debris and that adequate airflow is present.



Charging System Testing Flow Chart

Whenever charging system problems are suspected, proceed with the following system check after verifying that all wires are in good condition, connected and not exposed or pinched.



BATTERY SERVICE

Battery Specifications

Type	Polaris / Yuasa YTX20HL-BS Sealed - Maintenance Free
Voltage	12 Vdc
Nominal Capacity @ 10 HR Rate	18 AH
CCA	310
Nominal Open Circuit Voltage	12.8 Vdc or more.
Recommended Charging Rate	1.8A @ 5-10 HR or 9.0A @ 1 HR

IMPORTANT: Never attempt to add electrolyte or distilled water to a Maintenance Free battery. Doing so will damage the case and shorten the life of the battery.

Type	Polaris / Deka ETX30L Sealed - Maintenance Free
Voltage	12 Vdc
Nominal Capacity @ 10 HR Rate	30 AH
CCA	365
Nominal Open Circuit Voltage	12.8 Vdc or more.
Recommended Charging Rate	1.8A @ 5-10 HR or 6.0A @ 1 HR

IMPORTANT: Never attempt to open the battery. If the seal is broken, the battery will be ruined and will fail within a few weeks.

General Battery Information

⚠ WARNING

CALIFORNIA PROPOSITION 65 WARNING:
Batteries, battery posts, terminals and related accessories contain lead and lead compounds, and other chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. WASH HANDS AFTER HANDLING.

⚠ WARNING

Battery electrolyte is poisonous. It contains acid! Serious burns can result from contact with the skin, eyes, or clothing.

ANTIDOTE:
External: Flush with water.

Internal: Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call a 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.

1. Check battery voltage with a volt/ohm meter. A fully charged battery should be 12.8 V or higher.
2. If the voltage is below 12.6 V, the battery will need to be recharged (see “Charging Procedure”).

To service a Maintenance Free battery:

1. Remove battery from the vehicle (see Chapter 2).
2. Test battery with a voltage meter or load tester to determine battery condition. This will determine the length of time required to charge the battery to full capacity. Refer to OCV table (see “OCV - Open Circuit Voltage Test”).
3. Charge the battery as recommended (see “Charging Procedure”).

Battery Removal / Installation

See Chapter 2 “Maintenance” for battery removal and installation procedures.

Battery Off Season Storage

Whenever the vehicle is not used for a period of three months or more, remove 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.

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%	13.0 V
75% Charged	12.8 V
50% Charged	12.5 V
25% Charged	12.0 V
0% Charged	11.5 V or less

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.

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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

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 9 amps when charging 4011496 battery.

Do not exceed 6 amps when charging 4011224 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.

NOTE: Allow the battery to stand disconnected for at least 1-2 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.

State of Charge	Voltage (DC)	Action	Charge Time
100%	12.8 - 13.0	None, check again in 3 months	None Required
75% - 100%	12.5 - 12.8	May need slight charge	3 - 6 hrs
50% - 75%	12.0 - 12.5	Needs Charge	5 - 11 hrs
25% - 50%	11.5 - 12.0	Needs Charge	At least 13 hrs
0% - 25%	11.5 or less	Needs Charge	At least 20 hrs

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.

STARTING SYSTEM

Troubleshooting

Starter Motor Does Not Run

- Battery discharged
- Loose or faulty battery cables or corroded connections (see Voltage Drop Tests)
- Related wiring loose, disconnected, or corroded
- Poor ground connections at battery cable, starter motor or starter solenoid (see Voltage Drop Tests)
- Faulty key switch
- Faulty starter solenoid or starter motor
- Engine problem - seized or binding (can engine be rotated easily)

Starter Motor Turns Over Slowly

- Battery discharged
- Excessive circuit resistance - poor connections (see Voltage Drop Test)
- Engine problem - seized or binding (can engine be rotated easily)
- Faulty or worn brushes in starter motor

Starter Motor Turns - Engine Does Not Rotate

- Faulty starter drive
- Faulty starter drive gears or starter motor gear
- Faulty flywheel gear or loose flywheel

Voltage Drop Test

The Voltage Drop Test is used to test for bad connections. When performing the test, you are testing the amount of voltage drop through the connection. A poor or corroded connection will appear as a high voltage reading. Voltage shown on the meter when testing connections should not exceed 0.1 VDC per connection or component.

To perform the test, place the meter on DC volts and place the meter leads across the connection to be tested. Refer to the voltage drop tests on the starter system in this chapter.

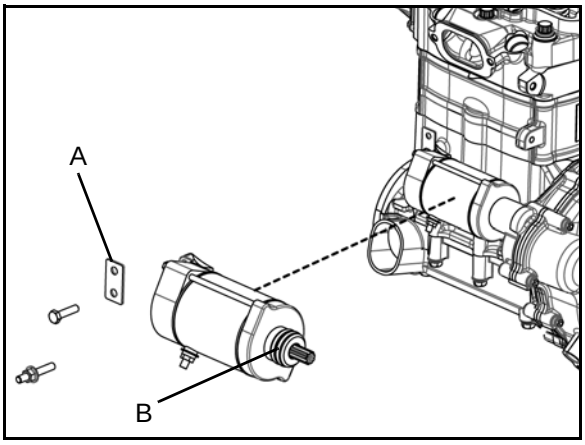
Voltage should not exceed
.1 DC volts per connection

Starter Motor Removal

1. Disconnect the negative (-) battery cable and remove the seat base.
2. Remove the positive (+) battery cable from the starter motor.
3. Remove the nut securing the negative (-) battery cable from the lower starter mounting bolt.
4. Remove the (2) starter motor mounting bolts. The routing bracket (A) is mounted to the upper starter motor bolt.
5. Remove starter from the engine. Use a soft, rubber hammer to aid in starter removal.

Starter Installation

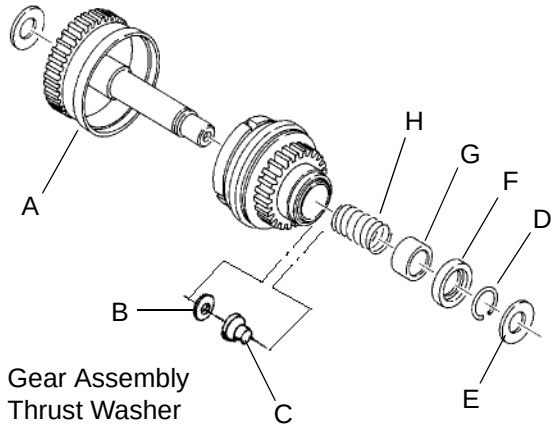
1. Lubricate and install a new O-ring (B) onto the starter motor.
2. Install the starter motor onto the engine.
3. Install the upper and lower starter mounting bolts by hand.
4. Torque the upper starter mounting bolt to specification.
5. Torque the lower starter mounting bolt to specification.
6. Install the negative (-) battery cable to the lower mounting bolt. Install battery cable nut and torque to specification.
7. Install the positive (+) battery cable to the starter motor.
8. Install seat base and connect the battery.



= T
Starter Motor Mounting Bolts: **7 ft-lbs (9.5 Nm)**

Starter Drive Bendix

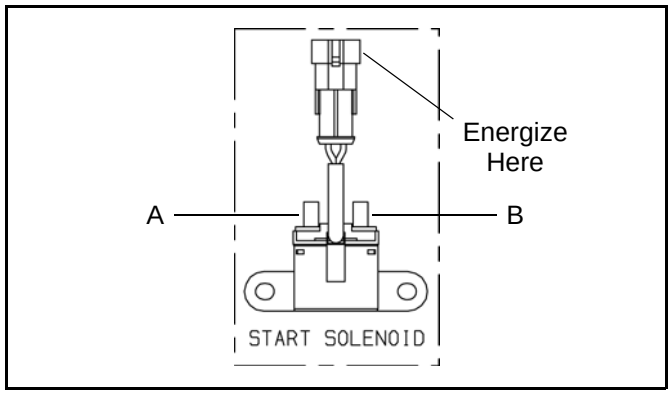
The engine's stator cover must be removed in order to service the starter drive bendix. Refer to "Starter Drive Bendix Removal / Installation", located in Chapter 3.



A. Gear Assembly
B. Thrust Washer
C. Busing
D. Retaining Ring
E. Thrust Washer
F. Stopper
G. Cover
H. Spring

Starter Solenoid Bench Test

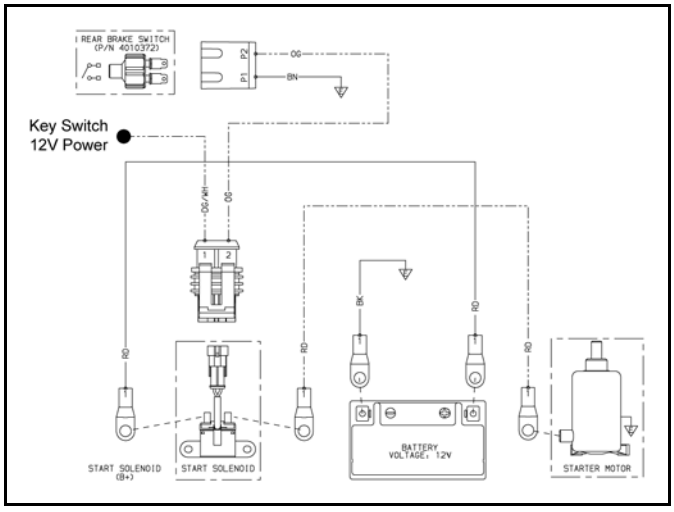
Test the start solenoid by powering the solenoid using battery voltage for a maximum of 5 seconds. With the solenoid energized, resistance should read about 0 - 0.5W between terminals (A) and (B). If resistance measurement is out of specification, replace the starter solenoid.



Starter Solenoid Operation

To energize the Starter Solenoid the following must occur:

- The brake must be applied to provide a ground path via the Orange wire.
- The key switch must be turned to the “start” position to provide 12V power via the Green / White wire.
- Once the pull-in coil is energized, the solenoid provides a current path for 12V power to reach the starter motor.



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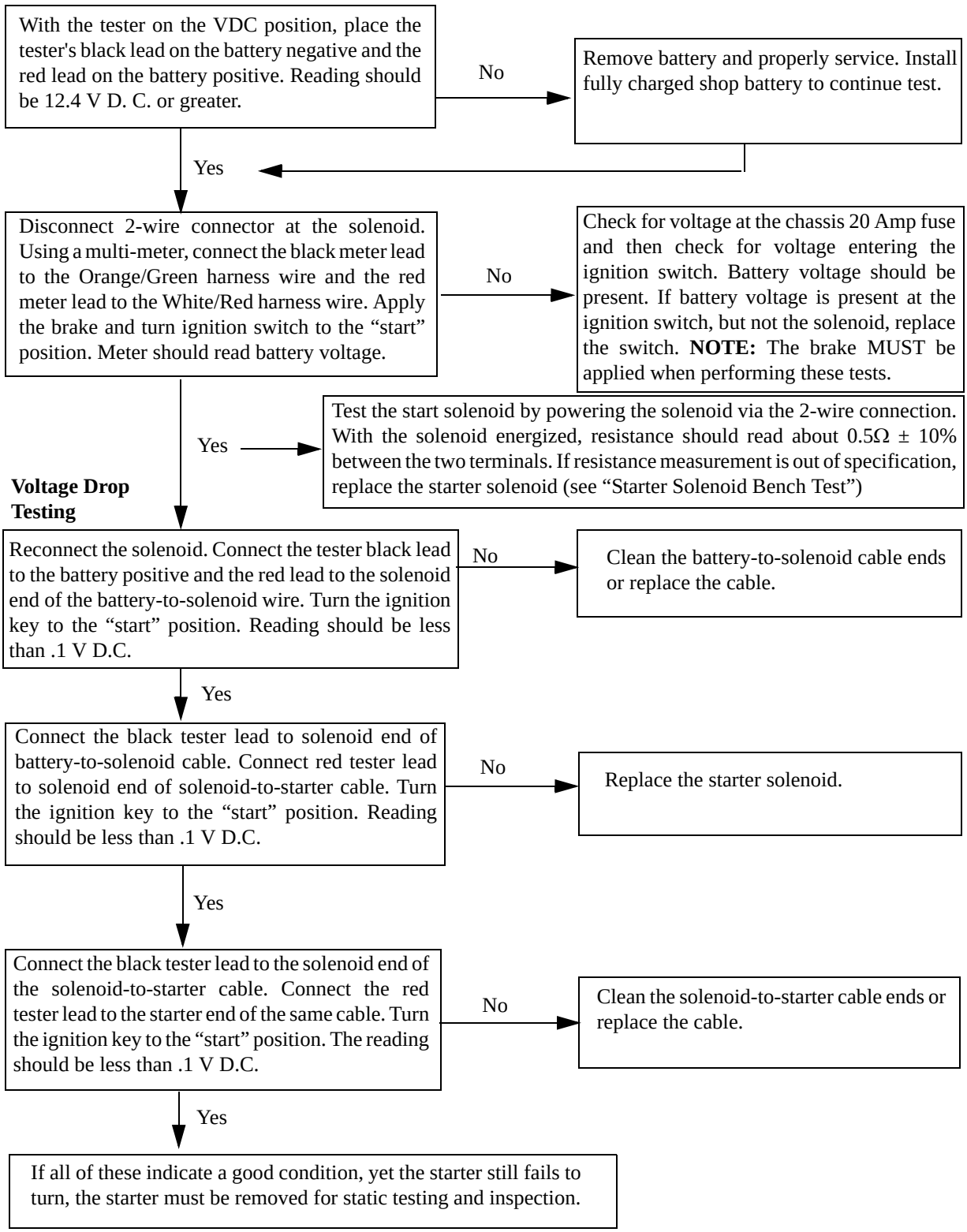
STARTING SYSTEM TESTING FLOW CHART

Condition: Starter fails to turn over the engine.



ELECTRONIC POWER STEERING (EPS)

EPS Operation

The EPS module is an intelligent electronic power steering system that operates off of the vehicle's 12V electrical system. It calculates steering assist by sensing the difference between the input torque of the steering post and the output torque required to turn the wheels, and then provides assist by energizing an electric motor. The process provides a smooth, seamless assist.

The system is continuously running diagnostic checks and monitoring factors such as battery voltage, ground speed and engine speed. In the event an internal or external issue that affects the EPS system is detected, the system will illuminate a fault indicator and transition to a normal mechanically coupled steering system. The system is Polaris Digital Wrench™ compatible for simplified diagnostics and system troubleshooting through the vehicle's diagnostic port.

With the engine off and the key on, the power steering unit will operate for up to five minutes. After the five minutes, you will need to cycle the key switch and restart the engine to regain power steering operation.

The Power Steering 30A Fuse.

- If the fuse fails, the Power Steering Malfunction Indicator Light (MIL) on the instrument cluster will illuminate. During this time, the vehicle will have no power steering operation. You will be able to connect and communicate with the vehicle's Engine Controller, but not the Power Steering Controller, while using Digital Wrench™.

NOTE: DO NOT SPLICE OR CUT INTO THE CAN CIRCUITS.

⚠ WARNING

Electronic Power Steering (EPS) units are not interchangeable between ATV and *RANGER* product lines.

NOTE: See Chapter 5 "Body/Steering/Suspension" for power steering unit removal and installation procedures.

WIRE COLOR	FUNCTION
ORANGE (2-Pin)	Main Power (30A Protected)
BROWN (2-Pin)	Ground

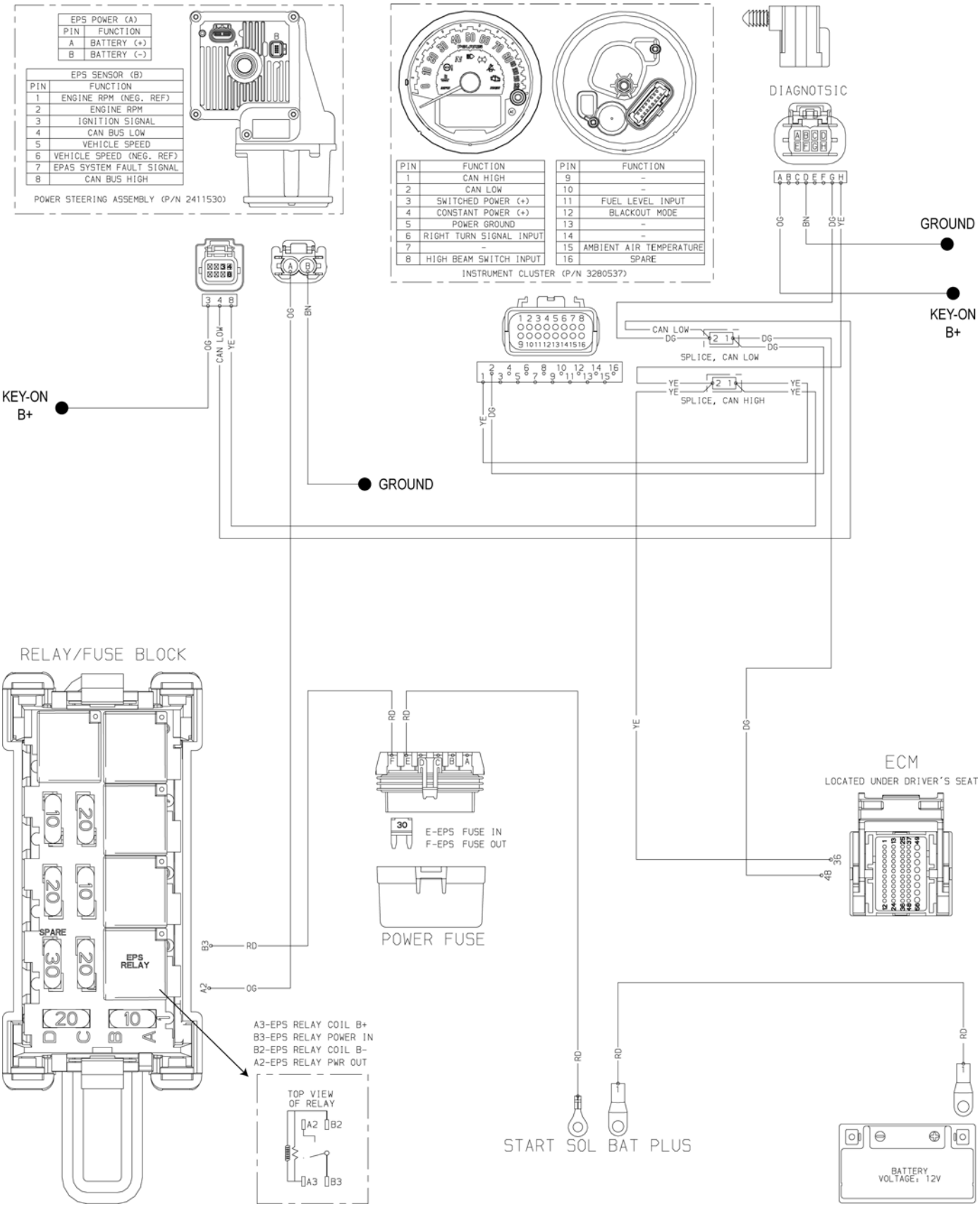
WIRE COLOR	FUNCTION
ORANGE (8-Pin)	Key-On Battery Voltage
YELLOW (8-Pin)	CAN High Signal
GREEN (8-Pin)	CAN Low Signal

Proper EPS System Diagnosing

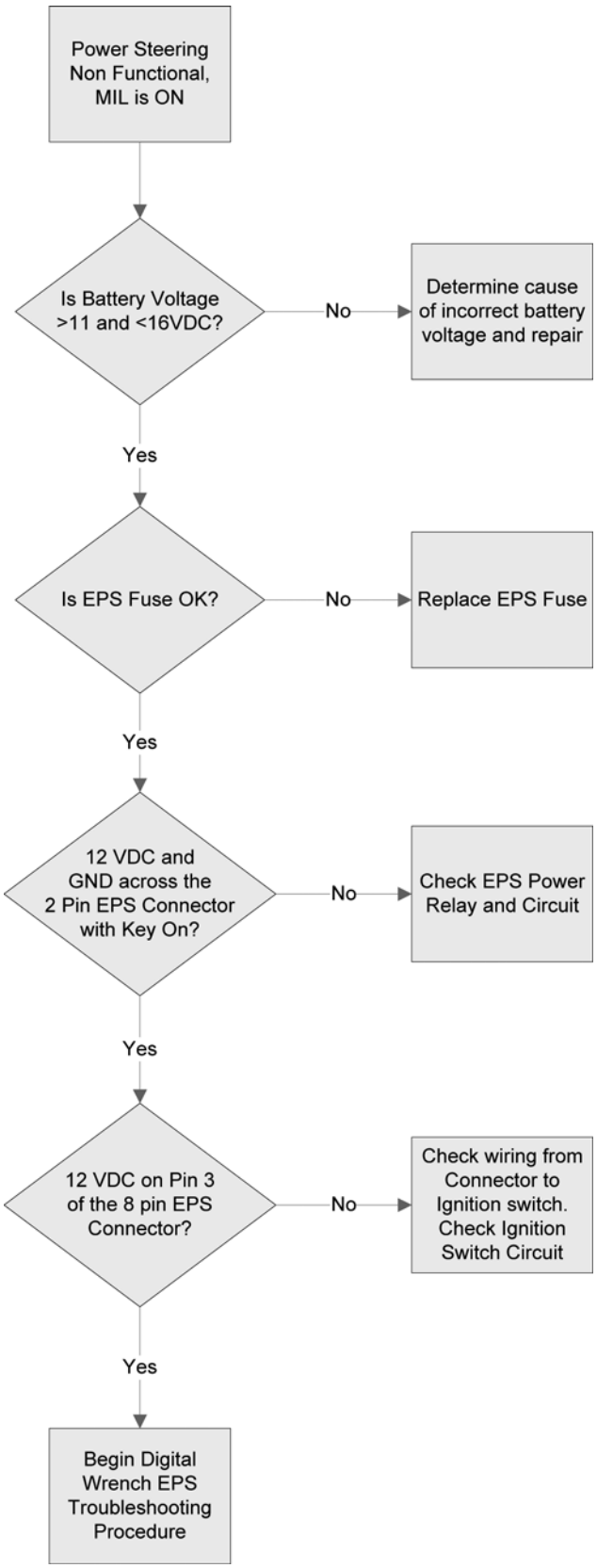
READ BEFORE YOU REPLACE THE EPS UNIT!

IMPORTANT: Try to reflash the EPS unit before attempting to replace it. A simple reflash may be all that is needed to repair the EPS problem. Always reflash the EPS unit as the first step in diagnosing an EPS problem.

EPS System Breakout



EPS Troubleshooting (Power Steering Non-Functional with MIL ON)



EPS Troubleshooting (Power Steering Non-Functional with MIL OFF)

EPS Troubleshooting (Using Digital Wrench™)

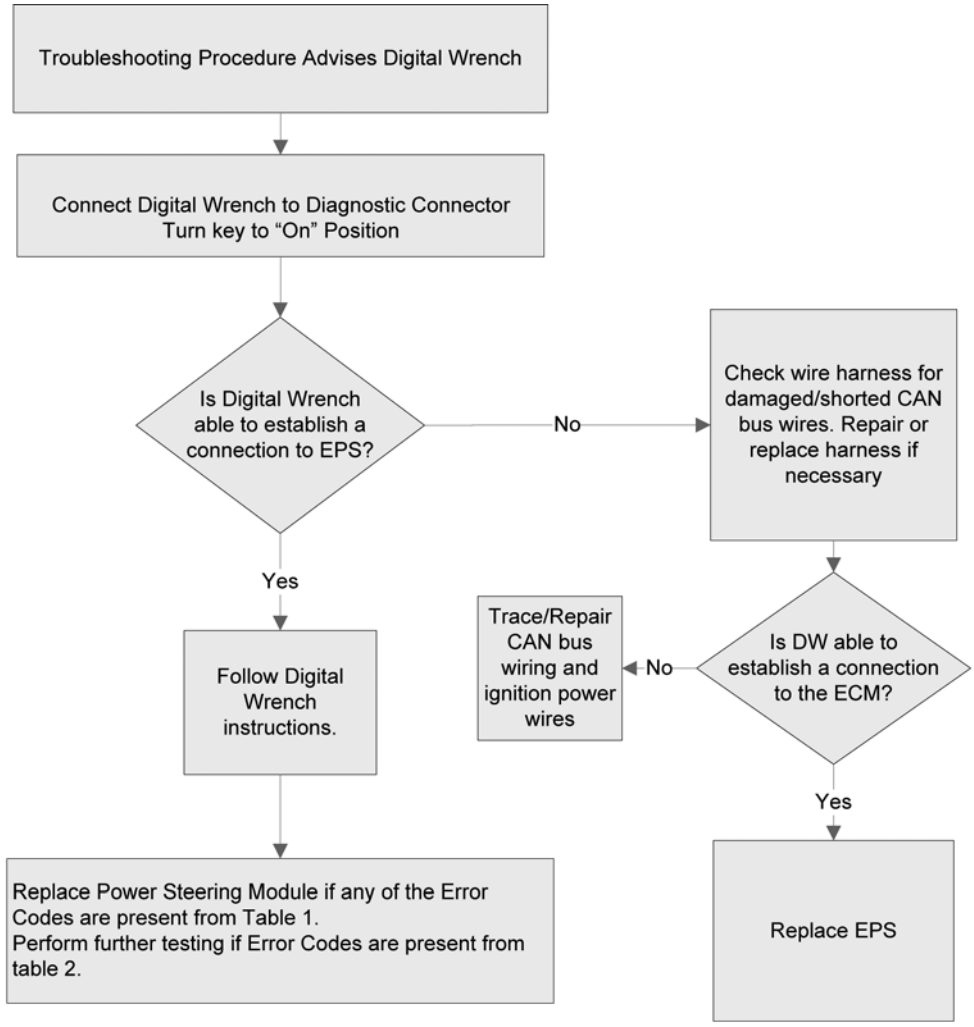


Table 1: Error Codes requiring Power Steering Replacement

1. Position Encoder Error
2. EPS Software Error
3. Steering Torque Sensor Full Failure
4. Steering Excessive Current Error*
5. Steering Over Current Shutdown*

Table 2: Error Codes Requiring Additional Troubleshooting

1. EPS Inverter Temperature- check for mud/debris on EPS
2. Battery Voltage Over / Under- check bike's charging system and battery.
3. Calibration Error – Relfash EPS Unit

EPS Inverter Temperature Test:

1. Verify that Power Steering module heat sink surface (top surface) is clean and free of mud and dirt. Make a note of how much debris was on heat sink before cleaning. Record all power steering error codes and then clear all error codes. EPS inverter temperature can be monitored through Digital Wrench.
2. Allow vehicle to set and cool for at least 2 hours.
3. Drive vehicle for 30 minutes of left and right turning and then Connect Digital wrench and read Power Steering Error Codes. If Inverter Temperature Error Code is present, replace Power Steering Module. If error is not present, Module is OK. EPS inverter temperature can be checked using Digital wrench

Battery Voltage Over / Under Test:

1. Disconnect 2 pin Power Connector to EPS and verify battery voltage (12-14 VDC) is present on pins with key on. If voltage is low, investigate and correct cause. If voltage at pins is correct, check all connections for corrosion, damage, and tightness. Check pin 3 on 8 pin connector for 12V signal with key on.

*** These Error Codes must have multiple occurrences or you must be able to duplicate the condition before replacing the EPS unit.**

NOTES

2013 *RANGER* RZR 800

FILE NAME: 2411764.RSD

WIRE COLOR LEGEND	
BK	BLACK
BL	BLUE
LB	LIGHT BLUE
DB	DARK BLUE
BR	BROWN
GY	GRAY
LG	LIGHT GREEN
DG	DARK GREEN
OR	ORANGE
PK	PINK
RD	RED
VT	VIOLET (PURPLE)
WH	WHITE
YE	YELLOW
CLEAR	CLEAR

TWO WIRE COLORS ARE SHOWN WITH MAIN/TRACE COLORS. EXAMPLE:RD/YE = RED WITH YELLOW TRACE.

⏚ = ENGINE GROUND

⏚ = CHASSIS GROUND

NC = SWITCH NORMALLY CLOSED
NO = SWITCH NORMALLY OPEN

HARNESS: 2411764-01

SHEET NO. 1 OF 2

WINCH SWITCH

SPLICE, B+ ACC FUSE OUT

AND SWITCH (P/N 4012290)

HEADLIGHT SWITCH (P/N 4012290)

IGNITION SWITCH (P/N 4012765)

KEY SWITCH

INSTRUMENT CLUSTER (P/N 3280537)

PIN	FUNCTION
1	CAN HIGH
2	CAN LOW
3	SWITCHED POWER (+)
4	CONSTANT POWER (+)
5	POWER GROUND
6	RIGHT TURN SIGNAL INPUT
7	-
8	HIGH BEAM SWITCH INPUT

PIN	FUNCTION
9	-
10	-
11	FUEL LEVEL INPUT
12	BLACKOUT MODE
13	-
14	-
15	AMBIENT AIR TEMPERATURE
16	SPARE

DIAGNOTSIC

12V RECEPTACLE (P/N 4012780)

SPLICE, CAN LOW

SPLICE, CAN HIGH

TRANSMISSION SWITCH

SPEED SENSOR (LOCATED ON TRANSMISSION)

FUEL PUMP (P/N 2521117)

TANK LEVEL	RESISTANCE (Ω)
FULL	6.0±1.0Ω
EMPTY	90.0±4.5Ω

PIN	FUNCTION
1	FUEL LEVEL SENSOR "+"
2	FUEL LEVEL SENSOR "-"
3	FUEL PUMP "+"
4	FUEL PUMP "-"

SPLICE, DASH GROUND

SPLICE, LIGHTS B+

30 AMP CIRCUIT BREAKER (P/N 2410081)

SPLICE, BRAKE

REAR BRAKE SWITCH (P/N 4010372)

FAN MOTOR

AND HUB COIL

TAILLIGHT

LH HEADLIGHT (P/N 2411492)

RH HEADLIGHT (P/N 2411493)

LOW BEAM SPLICE

HIGH BEAM SPLICE

SPLICE, GROUND FRONT

SPLICE, B+ UNSWITCHED FUSED

SPLICE, GROUND FRONT

SPLICE, ECM B+

SPLICE, A/S B+

THROTTLE RELEASE SWITCH

VANE SENSOR (P/N 4013357)

RELAY/FUSE BLOCK

(BUSS CAVITIES COLOCUT)

(COVER REMOVED)

6A DIODE (P/N 2411283)

MAG FUEL INJECTOR

RESISTANCE: 14.5±0.7Ω MAG FUEL INJECTOR (P/N 1240318)

PTO FUEL INJECTOR

RESISTANCE: 14.5±0.7Ω PTO FUEL INJECTOR (P/N 1240330)

CAM PHASE SENSOR (P/N 2410835)

CAVITY	FUNCTION
1	GROUND
2	OUTPUT
3	VOLTAGE (+5)

4-6 Ne TPS

MAP (P/N 2411528)

COOLANT TEMP SENSOR

THERMISTOR (P/N 4010644) NOMINAL RESISTANCE: AT 20°C=2.5K ohms AT 150°C=0.29K ohms

IDLE AIR CONTROL

RESISTANCE BETWEEN PINS	
PINS	RESISTANCE
1-2	30ohms
2-3	30ohms
1-3	60ohms
4-5	30ohms
5-6	30ohms
4-6	60ohms
ALL OTHER COMBINATIONS	OPEN

POWER FUSE

FUSIBLE SPLICE 1

START SOL BAT PLUS

START SOLENOID

SPLICE, IGNITION POWER

TRIM PUSH

IGNITION COIL (P/N 4010425)

BATTERY VOLTAGE, 12V

STARTER MOTOR

HALL SENSOR

CRANK POSITION SENSOR (P/N 2410720)

LAST 2 DIGITS OF 200 SERIES NUMBER CORRESPOND TO CONNECTOR CAVITY NUMBER (IE. 210=CAVITY 10)

GROUND, REAR 6MM RING

SPLICE, GPS SHIELD

SPLICE, SHIELD

SPLICE, GROUND REAR

FRAME GROUND 1

FRAME GROUND 2

VREG DC OUTPUT

REGULATOR (P/N 4012941)

VREG AC INPUT

STATOR (P/N 4011982)

2013 *RANGER* RZR 800

FILE NAME: 2411764.RSD

WIRE COLOR CODING
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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.

= ENGINE GROUND

= CHASSIS GROUND

NC = SWITCH NORMALLY CLOSED
NO = SWITCH NORMALLY OPEN

HARNESS- 2411764-01

SHEET NO. 2 OF 2

SCHEMATIC CABLE/WIRE TERMINATION TABLE

INDEX	CCT #	TYPE	GAUGE	COLOR	FROM COMPONENT	FROM PORT	TO COMPONENT	TO PORT	FUNCTION
1	20LA	TXL	0.8	DG	HEADLIGHT SWITCH	3	SPLICE,LOW BEAM	2	HEADLIGHT SWITCH LOW BEAM
2	20LB	TXL	0.8	DG	LEFT HEADLIGHT	A	SPLICE,LOW BEAM	1	LH HEADLIGHT LOW BEAM
3	20LC	TXL	0.8	DG	RIGHT HEADLIGHT	A	SPLICE,LOW BEAM	1	RH HEADLIGHT LOW BEAM
4	30A	TXL	0.8	OG	BRAKE SWITCH	P2	SPLICE,BRAKE	1	BRAKE SIGNAL
5	30B	TXL	0.8	OG	DIODE #2 (6 AMP)	2	SPLICE,BRAKE	1	BRAKE SIGNAL PROTECTED
6	30B1	TXL	0.8	OG	TAILLIGHT	B	DIODE #2 (6 AMP)	1	BRAKE SIGNAL
7	30C	TXL	0.8	OG	START SOLENOID	2	SPLICE,BRAKE	2	BRAKE SIGNAL
8	40	TXL	0.8	DG/WH	START SOLENOID	1	KEY SWITCH	A	START SOLENOID CONTROL GROUND
9	4011497-001	SGT	13.0	RD	START SOLENOID (B+)	1	BATTERY (+)	1	START SOLENOID (B+) TO BATTERY (+)
10	4011498-001	SGT	13.0	RD	START SOLENOID (B+)	1	STARTER	1	START SOLENOID (B+) TO STARTER
11	4011499-001	SGT	13.0	BK	STARTER	1	FRAME GROUND #2	1	FRAME GROUND #2 TO STARTER
12	4013201-001	SGT	13.0	BK	BATTERY (-)	1	FRAME GROUND #1	1	FRAME GROUND #1 TO BATTERY (-)
13	50	TXL	1.0	WH	HEADLIGHT SWITCH	2	HEADLIGHT SWITCH JUMPER	4	HEADLIGHT SWITCH JUMPER
14	60A	TXL	0.5	WH	BLKOUT SWITCH	3	BLACKOUT RELAY	1	BLACKOUT RELAY COIL LOW
15	60C	TXL	0.5	DG/YE	SPEEDOMETER	12	BLKOUT SWITCH	1	SPEEDO BLACKOUT
16	70A	TXL	2.0	YE	VREG AC INPUT	P1	STATOR	C	STATOR AC
17	70B	TXL	2.0	YE	VREG AC INPUT	P2	STATOR	B	STATOR AC
18	70C	TXL	2.0	YE	VREG AC INPUT	P3	STATOR	A	VREG AC INPUT
19	80A	TXL	1.0	YE/BN	TR LT SWITCH	3	SPLICE,I.R. HEADLIGHT	2	I.R. HEADLIGHT POWER IN
20	80B	TXL	0.8	YE/BN	RH I.R. LIGHT	P1	SPLICE,I.R. HEADLIGHT	1	RH I.R. HEADLIGHT POWER IN
21	80C	TXL	0.8	YE/BN	LH I.R. LIGHT	P1	SPLICE,I.R. HEADLIGHT	1	LH I.R. HEADLIGHT POWER IN
22	B2A	TXL	2.0	RD	POWER FUSE	C	START SOLENOID (B+)	1	UNSWITCHED B+ CHASSIS IN
23	B2B	TXL	2.0	RD	RELAY/FUSE BLOCK	D9	POWER FUSE	D	UNSWITCHED B+ CHASSIS RELAY POWER IN
24	B3A	TXL	1.0	RD	20A CIRCUIT BREAKER	2	START SOLENOID (B+)	1	UNSWITCHED B+
25	B3B	TXL	1.0	RD	RELAY/FUSE BLOCK	B7	20A CIRCUIT BREAKER	1	UNSWITCHED FUSED B+ FAN RELAY POWER IN
26	B4A	FUSIBLE LINK	1.0	BK	START SOLENOID (B+)	1	SPLICE,FUSIBLE LINK #1	1	FUSELINK VREG OUTPUT V+
27	B4B	TXL	3.0	RD	VREG DC OUTPUT	P3	SPLICE,FUSIBLE LINK #1	2	VOLTAGE REGULATOR OUTPUT B+
28	B5A	TXL	0.8	RD/WH	RELAY/FUSE BLOCK	D4	SPLICE,B+ UNSWITCHED FUSED	1	UNSWITCHED FUSED B+ UNSWITCHED FUSED POWER OUT
29	B5C	TXL	0.5	RD/WH	RELAY/FUSE BLOCK	A9	SPLICE,B+ UNSWITCHED FUSED	1	UNSWITCHED FUSED B+ ECM RELAY COIL POWER
30	B5D	TXL	0.5	RD	SPEEDOMETER	4	SPLICE,B+ UNSWITCHED FUSED	2	UNSWITCHED FUSED B+
31	B5E	TXL	0.8	RD/WH	KEY SWITCH	C	SPLICE,B+ UNSWITCHED FUSED	2	UNSWITCHED FUSED B+
32	B5F	TXL	0.8	RD/WH	RELAY/FUSE BLOCK	B9	SPLICE,B+ UNSWITCHED FUSED	1	UNSWITCHED FUSED B+
33	B6	TXL	1.0	RD/GN	RELAY/FUSE BLOCK	B5	RELAY/FUSE BLOCK	D6	FUEL PUMP FUSE RELAY B+
34	B7A	TXL	2.0	RD	POWER FUSE	A	START SOLENOID (B+)	1	UNSWITCHED B+ ENGINE POWER FUSE IN
35	B7B	TXL	2.0	RD	RELAY/FUSE BLOCK	D5	POWER FUSE	B	UNSWITCHED B+ ENGINE POWER FUSE IN
36	BUSA75	BUS	BUS	BUS	RELAY/FUSE BLOCK	A7	RELAY/FUSE BLOCK	A5	ECM,B+
37	BUSC53	BUS	BUS	BUS	RELAY/FUSE BLOCK	C3	RELAY/FUSE BLOCK	C5	SWITCHED B+
38	BUSD75	BUS	BUS	BUS	RELAY/FUSE BLOCK	C5	RELAY/FUSE BLOCK	C7	UNSWITCHED B+
39	C01_1	TXL	0.5	BK	ECM	227	CRANK POSITION SENSOR	C	CRANK POSITION SENSOR NEGATIVE
40	C01_2	TXL	0.5	WH	ECM	239	CRANK POSITION SENSOR	A	CRANK POSITION SENSOR POSITIVE
41	C01_3	SHLD	0.35	SHLD	SPLICE,SHIELD	2	SPLICE,CPS SHIELD	2	SHIELD,CPS (CO1)
42	C02_1	TXL	0.5	WH	ECM	256	IGNITION COIL	1	IGNITION CONTROL PTO
43	C02_2	TXL	0.5	RD	IGNITION COIL	2	SPLICE,IGNITION POWER	2	ECM,B+
44	C02_3	TXL	0.5	BK	ECM	255	IGNITION COIL	3	IGNITION CONTROL MAG
45	C02_4	SHLD	0.35	SHLD	SPLICE,SHIELD	1	TRIM FLUSH (AT IGNITION COIL)	-	SHIELD,IGNITION COIL (CO2)
46	C1H	TXL	0.5TP	YE	ECM	236	SPLICE,CAN HIGH	2	CAN HIGH
47	C1L	TXL	0.5TP	DG	ECM	248	SPLICE,CAN LOW	2	CAN LOW
48	C2H	TXL	0.5TP	YE	DIAGNOSTIC	H	SPLICE,CAN HIGH	2	CAN HIGH
49	C2L	TXL	0.5TP	DG	DIAGNOSTIC	G	SPLICE,CAN LOW	2	CAN LOW
50	C3H	TXL	0.5TP	YE	SPEEDOMETER	I	SPLICE,CAN HIGH	1	CAN HIGH
51	C3L	TXL	0.5TP	DG	SPEEDOMETER	2	SPLICE,CAN LOW	1	CAN LOW
52	E202	TXL	0.5	DG/YE	ECM	202	RELAY/FUSE BLOCK	B8	ECM RELAY COIL CONTROL
53	E204	TXL	0.5	OG/WH	ECM	204	RELAY/FUSE BLOCK	B6	FAN RELAY COIL CONTROL
54	E205	TXL	0.5	BK	ECM	205	MAG FUEL INJECTOR	A	MAG INJECTOR DRIVER
55	E206	TXL	0.5	OG	ECM	206	TPS	3	3.3V SENSOR SUPPLY V2 (TPS)
56	E207	TXL	0.5	OG	ECM	207	TMAP	3	A/D +5V SOURCE
57	E210	TXL	0.5	DG	ECM	210	TPS	2	TPS SIGNAL
58	E211	TXL	0.5	WH/DG	ECM	211	AWD/TURF SWITCH	1	TURF REQUEST
59	E216	TXL	0.5	WH	ECM	216	PTO FUEL INJECTOR	A	PTO INJECTOR DRIVER
60	E217	TXL	0.5	BN/WH	ECM	217	AWD	B	AWD CONTROL
61	E218	TXL	0.5	DG/WH	ECM	218	TURF RELAY	B	ECM TURF RELAY CONTROL
62	E219	TXL	0.5	DG/YE	ECM	219	RELAY/FUSE BLOCK	B4	FUEL PUMP RELAY COIL CONTROL
63	E222	TXL	0.5	YE	ECM	222	TMAP	4	MANIFOLD PRESSURE SIGNAL
64	E223	TXL	0.5	WH	ECM	223	TRANSMISSION SWITCH	A	TRANSMISSION SWITCH SIGNAL OUTPUT
65	E224	TXL	0.5	DB	ECM	224	TMAP	2	AIR TEMP SENSOR SIGNAL
66	E225	TXL	0.5	RD/DG	ECM	225	IDLE AIR CONTROL	3	IAC PIN 3
67	E226	TXL	0.5	BU/BK	ECM	226	IDLE AIR CONTROL	4	IAC PIN 4
68	E228	TXL	0.5	GY	ECM	228	AWD/TURF SWITCH	3	AWD REQUEST
69	E230	TXL	0.5	VT/WH	ECM	230	SPLICE, SENSOR GROUND	1	SENSOR GROUND
70	E230A	TXL	0.5	VT/WH	COOLANT TEMP SENSOR	1	SPLICE, SENSOR GROUND	1	TEMP SENSOR GROUND
71	E230B	TXL	0.5	VT/WH	THROTTLE RELEASE SWITCH	A	SPLICE, SENSOR GROUND	2	TRS SENSOR GROUND
72	E231	TXL	0.5	VT	ECM	231	TPS	1	TPS GROUND
73	E232	TXL	0.5	DG	THROTTLE RELEASE SWITCH	B	ECM	232	TRS SENSOR HI
74	E233	TXL	0.5	OG/BK	ECM	233	CAM PHASE SENSOR	2	CAM POSITION SIGNAL
75	E237	TXL	0.5	DG/RD	ECM	237	IDLE AIR CONTROL	1	IAC PIN 1
76	E238	TXL	0.5	DB/RD	ECM	238	IDLE AIR CONTROL	6	IAC PIN 6
77	E242	TXL	0.5	VT	ECM	242	TMAP	1	MANIFOLD PRESSURE GROUND
78	E244	TXL	0.5	YE	ECM	244	COOLANT TEMP SENSOR	2	COOLANT TEMP SIGNAL
79	E245	TXL	0.5	GN/RD	ECM	245	VEHICLE SPEED SENSOR	C	VEHICLE SPEED SIGNAL
80	GB1	TXL	1.0	BN/YE	LEFT HEADLIGHT	B	SPLICE,BLACKOUT GROUND	1	GROUND,BLACKOUT SPLICE
81	GB2	TXL	1.0	BN/YE	GROUND, 6MM RING1	1	SPLICE,BLACKOUT GROUND	2	GROUND,BLACKOUT SPLICE
82	GB3	TXL	1.0	BN/YE	RIGHT HEADLIGHT	B	SPLICE,BLACKOUT GROUND	1	GROUND,BLACKOUT SPLICE
83	GB4	TXL	0.5	BN/YE	SPLICE,BLACKOUT GROUND	2	SPLICE,SWITCH LIGHT GROUND	1	GROUND,SWITCH LIGHT BLACKOUT SPLICE
84	GB4A	TXL	0.5	BN/YE	AWD/TURF SWITCH	7	SPLICE,SWITCH LIGHT GROUND	1	GROUND,SWITCH LIGHT BLACKOUT SPLICE
85	GB4B	TXL	0.5	BN/YE	HEADLIGHT SWITCH	7	SPLICE,SWITCH LIGHT GROUND	2	GROUND,SWITCH LIGHT BLACKOUT SPLICE
86	GB4C	TXL	0.5	BN/YE	BLKOUT SWITCH	7	SPLICE,SWITCH LIGHT GROUND	2	GROUND,SWITCH LIGHT BLACKOUT SPLICE
87	GB4D	TXL	0.5	BN/YE	TR LT SWITCH	7	SPLICE,SWITCH LIGHT GROUND	2	GROUND,SWITCH LIGHT BLACKOUT SPLICE
88	GB4E	TXL	0.5	BN/YE	WINCH SWITCH	7	SPLICE,SWITCH LIGHT GROUND	1	GROUND,SWITCH LIGHT BLACKOUT SPLICE
89	GD1	TXL	1.0	BN	GROUND, 6MM RING2	1	SPLICE,DASH GROUND	2	GROUND,FRONT SPLICE
90	GD4A	TXL	0.5	BN	AWD/TURF SWITCH	2	SPLICE,DASH GROUND	1	GROUND,AWD/TURF
91	GD5	TXL	0.5	BN	SPEEDOMETER	5	SPLICE,DASH GROUND	2	GROUND,SPEEDOMETER
92	GD6	TXL	0.5	BN	DIAGNOSTIC	D	SPLICE,DASH GROUND	2	GROUND,DIAGNOSTIC
93	GD7	TXL	0.5	BN	FUEL PUMP/LEVEL	2	SPLICE,DASH GROUND	1	LEVEL GROUND
94	GF1	TXL	3.0	BN	GROUND, 6MM RING2	1	SPLICE,GROUND FRONT	1	GROUND,FRONT
95	GF2B	TXL	0.5	BN	DIODE #1 (6 AMP)	2	SPLICE,GROUND FRONT	2	DIODE OUT
96	GF2B1	TXL	0.5	BN	RELAY/FUSE BLOCK	D8	DIODE #1 (6 AMP)	1	DIODE IN
97	GF4	TXL	1.0	BN	FAN	A	SPLICE,GROUND FRONT	1	GROUND FAN
98	GF5	TXL	1.0	BN	12V RECEPTACLE 1 GROUND	1	SPLICE,GROUND FRONT	2	GROUND,ACCESSORY #1
99	GF5A	TXL	1.0	BN	12V RECEPTACLE 1 GROUND	1	12V RECEPTACLE 2 GROUND	1	GROUND, ACCESSORY #2
100	GR1	TXL	3.0	BN	VREG DC OUTPUT	P1	GROUND, 6MM RING2	1	REGULATOR GROUND
101	GR1A	TXL	1.0	BN	GROUND, 6MM RING1	1	SPLICE,I.R. HEADLIGHT GROUND	2	GROUND,I.R. HEADLIGHT
102	GR1A1	TXL	0.8	BN	RH I.R. LIGHT	P2	SPLICE,I.R. HEADLIGHT GROUND	1	GROUND,I.R. HEADLIGHT RH
103	GR1A2	TXL	0.8	BN	LH I.R. LIGHT	P2	SPLICE,I.R. HEADLIGHT GROUND	1	GROUND,I.R. HEADLIGHT LH
104	GR1B	TXL	0.5	BN	TURF RELAY	C	GROUND, 6MM RING2	1	GROUND,TURF RELAY
105	GR1C	TXL	2.0	BN	STATOR	D	GROUND, 6MM RING1	1	GROUND,STATOR
106	GR1D	TXL	1.0	BN	GROUND, 6MM RING1	1	SPLICE,GROUND REAR	2	GROUND
107	GR250	TXL	0.8	BN	ECM	250	GROUND, 6MM RING1	1	GROUND,ECM BATTERY
108	GR251	TXL	0.8	BN	ECM	251	GROUND, 6MM RING1	1	GROUND,ECM BATTERY
109	GR252	TXL	0.8	BN	ECM	252	GROUND, 6MM RING1	1	GROUND,ECM BATTERY
110	GR2A	TXL	0.8	BN	TAILLIGHT	C	GROUND, 6MM RING2	1	GROUND TAILLIGHT
111	GR2B	TXL	1.0	BN	BLKOUT SWITCH	2	GROUND, 6MM RING2	1	GROUND,BLACKOUT SWITCH
112	GR3A2A	TXL	0.5	BN	CRANK POSITION SENSOR	B	SPLICE,CPS SHIELD	1	SHIELD,CPS
113	GR4B	TXL	0.8	BN	FUEL PUMP/LEVEL	4	SPLICE,GROUND REAR	2	PUMP GROUND
114	GR4C	TXL	0.5	BN	VEHICLE SPEED SENSOR	B	SPLICE,GROUND REAR	1	GROUND
115	GR4E	TXL	0.5	BN	SPLICE,GROUND REAR	2	SPLICE,SHIELD	1	GROUND
116	GR4F	TXL	0.5	BN	CAM PHASE SENSOR	1	SPLICE,GROUND REAR	1	GROUND
117	GR4G	TXL	0.8	BN	BRAKE SWITCH	P1	SPLICE,GROUND REAR	1	GROUND
118	GT1	TXL	0.5	BN	TRANSMISSION SWITCH	B	GROUND, 6MM RING2	1	TRANSMISSION SWITCH GROUND
119	K01	TXL	0.8	OG	KEY SWITCH	D	SPLICE,R/S B+	1	KEY SWITCH,B+
120	K02C	TXL	0.5	OG	RELAY/FUSE BLOCK	C9	SPLICE,R/S B+	1	KEY SWITCH,B+ CHASSIS RELAY COIL POWER
121	K03	TXL	0.5	OG	SPEEDOMETER	3	SPLICE,R/S B+	2	KEY SWITCH,B+
122	K04	TXL	0.5	OG	VEHICLE SPEED SENSOR	A	SPLICE,R/S B+	2	KEY SWITCH,B+
123	K05	TXL	0.5	OG	DIAGNOSTIC	A	SPLICE,R/S B+	2	KEY SWITCH,B+
124	K07	TXL	0.8	OG	RELAY/FUSE BLOCK	C9	RELAY/FUSE BLOCK	D7	KEY SWITCH B+ FUEL PUMP FUSE IN
125	K08	TXL	0.8	OG	WINCH SWITCH	2	SPLICE,R/S B+	2	KEY SWITCH,B+
126	K209	TXL	0.5	OG	ECM	209	SPLICE,R/S B+	1	KEY SWITCH,B+
127	RC2A	TXL	1.0	OG/WH	RELAY/FUSE BLOCK	C2	SPLICE,B+ ACC FUSE OUT	1	ACCESSORIES,B+ ACC FUSE OUT
128	RC2B	TXL	1.0	OG/WH	12V RECEPTACLE 1 B+	1	SPLICE,B+ ACC FUSE OUT	2	SPLICE,B+ ACC FUSE OUT
129	RC2B1	TXL	1.0	OG/WH	12V RECEPTACLE 1 B+	1	12V RECEPTACLE 2 B+	1	B+ ACC FUSE OUT
130	RC2E	TXL	1.0	OG/WH	ACC WINCH SWITCH	P1	SPLICE,B+ ACC FUSE OUT	1	B+ ACCESSORY FUSE OUT
131	RC4A	TXL	1.0	RD/DG	RELAY/FUSE BLOCK	C4	SPLICE,DRIVE	1	SWITCHED B+ DRIVE FUSE
132	RC4B	TXL	0.8	RD/DG	AWD	C	SPLICE,DRIVE	2	SPLICE,AWD B+ DRIVE FUSE
133	RC4C	TXL	0.5	RD/DG	TURF RELAY	A	SPLICE,DRIVE	2	SPLICE,TURF B+ DRIVE FUSE
134	RC6A	TXL	1.0	RD/YE	RELAY/FUSE BLOCK	C6	BLACKOUT RELAY	3	LIGHTS B+ LIGHTS FUSE OUT
135	RC6A1	TXL	0.5	RD/YE	BLACKOUT RELAY	2	BLACKOUT RELAY	3	BLACKOUT RELAY COIL HI
136	RC6B	TXL	1.0	RD/YE	TR LT SWITCH	2	BLACKOUT RELAY	3	LIGHTS B+ I.R. SWITCH
137	RC6C	TXL	1.0	RD/YE	TAILLIGHT	A	SPLICE,LIGHTS B+	1	LIGHT B+ TAILLIGHT
138	RC6D	TXL	0.5	RD/YE	SPLICE,SWITCH LIGHT	1	SPLICE,LIGHTS B+	1	SPLICE,SWITCH LIGHT B+
139	RC6D1	TXL	0.5	RD/YE	BLKOUT SWITCH	8	SPLICE,SWITCH LIGHT	1	SPLICE,BLACKOUT SWITCH LIGHT B+
140	RC6D2	TXL	0.5	RD/YE	TR LT SWITCH	8	SPLICE,SWITCH LIGHT	2	SPLICE,I.R. SWITCH LIGHT B+
141	RC6D3	TXL	0.5	RD/YE	HEADLIGHT SWITCH	8	SPLICE,SWITCH LIGHT	1	SPLICE,HEADLIGHT SWITCH LIGHT B+
142	RC6D4	TXL	0.5	RD/YE	AWD/TURF SWITCH	8	SPLICE,SWITCH LIGHT	2	SPLICE,AWD/TURF SWITCH LIGHT B+
143	RC6D5	TXL	0.5	RD/YE	WINCH SWITCH	8	SPLICE,SWITCH LIGHT	2	SPLICE,WINCH SWITCH LIGHT B+
144	RC6E	TXL	1.0	RD/YE	BLACKOUT RELAY	5	SPLICE,LIGHTS B+	2	LIGHT B+ RELAY OUT
145	RC6G	TXL	0.8	RD/YE	HEADLIGHT SWITCH	5	SPLICE,LIGHTS B+	2	LIGHTS B+ HEADLIGHT SWITCH
146	RC8	TXL	1.0	WH	RELAY/FUSE BLOCK	C7	RELAY/FUSE BLOCK	C8	SWITCHED B+ CHASSIS RELAY POWER OUT
147	RE253	TXL	0.8	RD/DB	ECM	253	SPLICE,ECM B+	2	ECM,B+

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SCHEMATIC CABLE/WIRE TERMINATION TABLE

INDEX	CCT #	TYPE	GAUGE	COLOR	FROM COMPONENT	FROM PORT	TO COMPONENT	TO PORT	FUNCTION
148	REA	TXL	0.8	RD/DB	RELAY/FUSE BLOCK	A8	SPLICE,ECM B+	2	ECM,B+ RELAY OUT
149	REB	TXL	0.8	RD/DB	PTO FUEL INJECTOR	B	SPLICE,ECM B+	1	ECM,B+
150	REC	TXL	0.8	RD/DB	MAG FUEL INJECTOR	B	SPLICE,ECM B+	1	ECM,B+
151	RED	TXL	0.8	RD/DB	KEY SWITCH	B	SPLICE,ECM B+	2	ECM,B+
152	REE	TXL	0.5	RD/DB	CAM PHASE SENSOR	3	SPLICE,ECM B+	1	ECM,B+
153	REF	TXL	0.8	RD/DB	SPLICE,ECM B+	1	SPLICE,IGNITION POWER	1	ECM,B+
154	REH	TXL	0.5	RD/DB	RELAY/FUSE BLOCK	A7	SPLICE,ECM B+	2	ECM,B+
155	RF	TXL	1.0	OG/BK	RELAY/FUSE BLOCK	A6	FAN	B	FAN B+ FAN RELAY OUT
156	RP	TXL	1.0	RD/BU	RELAY/FUSE BLOCK	A4	FUEL PUMP/LEVEL	3	FUEL PUMP RELAY OUT
157	S11	TXL	0.5	VT/WH	SPEEDOMETER	11	FUEL PUMP/LEVEL	1	FUEL SENSOR
158	S8A	TXL	0.8	YE	HEADLIGHT SWITCH	6	SPLICE,HIGH BEAM	2	HEADLIGHT SWITCH HIGH BEAM
159	S8B	TXL	0.8	YE	LEFT HEADLIGHT	C	SPLICE,HIGH BEAM	1	LH HEADLIGHT HI BEAM
160	S8C	TXL	0.8	YE	RIGHT HEADLIGHT	C	SPLICE,HIGH BEAM	1	RH HEADLIGHT HI BEAM
161	S8D	TXL	0.5	YE	SPEEDOMETER	8	SPLICE,HIGH BEAM	2	HIGH BEAM SIGNAL
162	W01	TXL	0.5	DG	WINCH SWITCH	1	WINCH CONTACTOR #1	P1	ECM,B+ WINCH SWITCH
163	W02	TXL	0.8	BK	WINCH SWITCH	3	WINCH CONTACTOR #2	P1	ECM,B+ WINCH SWITCH

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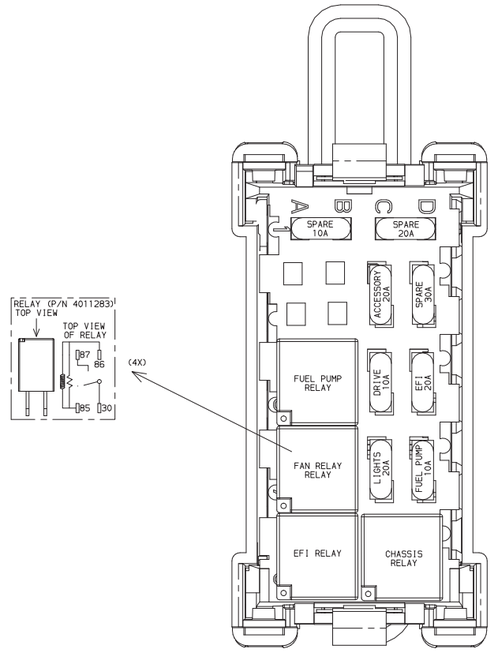


RELAY/FUSE INSTALLATION

2013 *RANGER* RZR 800 (EPS)

FILE NAME: 2411766.RSD

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
CL	CLEAR

TWO WIRE COLORS ARE SHOWN WITH MAIN/TRACE COLORS. EXAMPLE: RD/YE = RED WITH YELLOW TRACE.

E = ENGINE GROUND

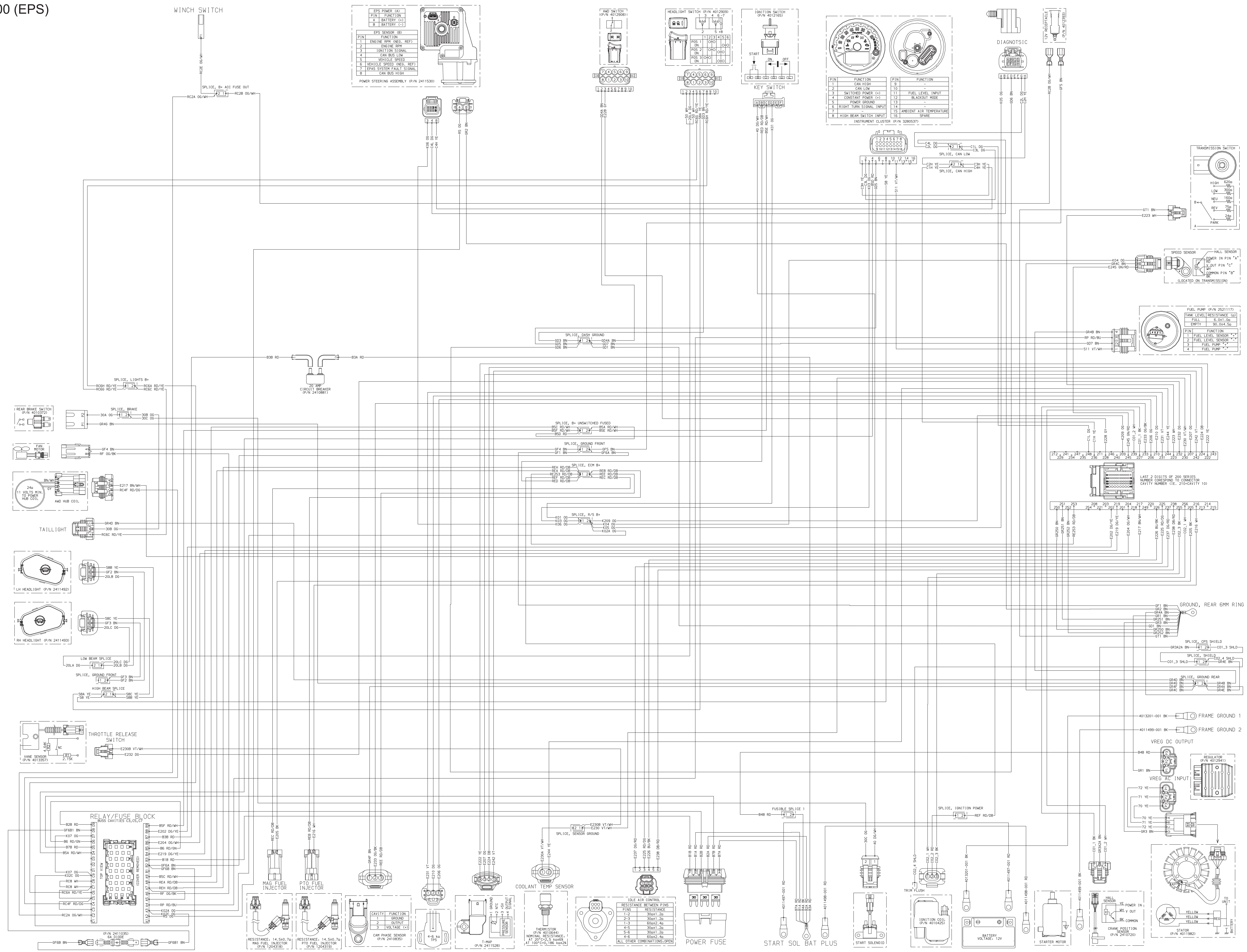
C = CHASSIS GROUND

NC = SWITCH NORMALLY CLOSED

NO = SWITCH NORMALLY OPEN

HARNESS: 2411766-01

SHEET NO. 1 OF 2



2013 *RANGER* RZR 800 (EPS)

FILE NAME: 2411766.XSD

WIRE COLOR CODES
BK BLACK
BN BROWN
BU LIGHT BLUE
DB DARK BLUE
GN GREEN
GY GRAY
LG LIGHT GREEN
DG DARK GREEN
OR 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.

▽ = ENGINE GROUND

▽ = CHASSIS GROUND

NC = SWITCH NORMALLY CLOSED
NO = SWITCH NORMALLY OPEN

HARNESS: 2411766-01

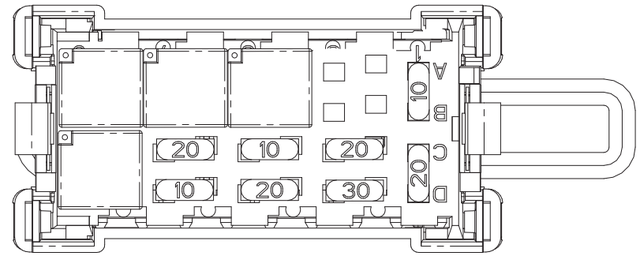
SHEET NO. 2 OF 2

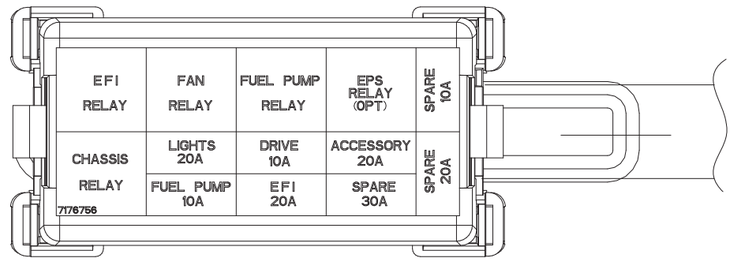
SCHEMATIC CABLE/WIRE TERMINATION TABLE

INDEX	CCT #	TYPE	GAUGE	COLOR	FROM COMPONENT	FROM PORT	TO COMPONENT	TO PORT	FUNCTION
1	20LA	TXL	0.8	DG	LOW BEAM SPLICE	2	HEADLIGHT SWITCH	3	HEADLIGHT SWITCH LOW B-
2	20LB	TXL	0.8	DG	LEFT HEADLIGHT	A	LOW BEAM SPLICE	1	LH HEADLIGHT LOW BEAM
3	20LC	TXL	0.8	DG	RIGHT HEADLIGHT	A	LOW BEAM SPLICE	1	RH HEADLIGHT LOW BEAM
4	30A	TXL	0.8	OG	BRAKE SWITCH	P2	SPLICE, BRAKE	1	BRAKE SIGNAL
5	30B	TXL	0.8	OG	TAILLIGHT	B	SPLICE, BRAKE	2	BRAKE SIGNAL
6	30C	TXL	0.8	OG	START SOLENOID	2	SPLICE, BRAKE	2	BRAKE SIGNAL
7	40	TXL	0.8	DG/WH	START SOLENOID	1	KEY SWITCH	A	START SOLENOID CONTROL GROUND
8	4011497-001	SGT	13.0	RD	TBD	1	START SOL TO BATTERY (+)	1	TBD
9	4011498-001	SGT	13.0	RD	TBD	1	TBD	1	TBD
10	4011499-001	SGT	13.0	BK	FRAME GROUND TO STARTER	1	START SOL TO STARTER	1	TBD
11	4013201-001	SGX	13.0	BK	TBD	1	TBD	1	FRAME GROUND 1 TO BATTERY (-)
12	50	TXL	1.0	WH	HEADLIGHT SWITCH	2	HEADLIGHT SWITCH	4	HEADLIGHT SWITCH JUMPER
13	70	TXL	2.0	YE	VREG AC INPUT	P3	STATOR	A	VREG AC INPUT
14	71	TXL	2.0	YE	VREG AC INPUT	P2	STATOR	B	STATOR AC
15	72	TXL	2.0	YE	VREG AC INPUT	P1	STATOR	C	STATOR AC
16	B1A	TXL	3.0	RD	START SOL BAT PLUS	1	POWER FUSE	E	UNSWITCHED B+ EPS IN
17	B1B	TXL	3.0	RD	RELAY/FUSE BLOCK	B3	POWER FUSE	F	UNSWITCHED B+ EPS FUSE POWER IN
18	B2A	TXL	2.0	RD	START SOL BAT PLUS	1	POWER FUSE	C	UNSWITCHED B+ CHASSIS IN
19	B2B	TXL	2.0	RD	POWER FUSE	D	RELAY/FUSE BLOCK	D9	UNSWITCHED, B+ CHASSIS REL POWER IN
20	B3A	TXL	1.0	RD	START SOL BAT PLUS	1	20A CIRCUIT BREAKER	2	UNSWITCHED B+
21	B3B	TXL	1.0	RD	RELAY/FUSE BLOCK	B7	20A CIRCUIT BREAKER	1	UNSWITCHED FUSED,B+ FAN RELAY POWER IN
22	B4A	FUSIBLE LINK	1.0	BK	START SOL BAT PLUS	1	FUSIBLE SPLICE 1	2	FUSELINK VREG OUTPUT B+
23	B4B	TXL	3.0	RD	VREG DC OUTPUT	P3	FUSIBLE SPLICE 1	1	VOLTAGE REGULATOR OUTPUT B+
24	B5A	TXL	0.8	RD/WH	RELAY/FUSE BLOCK	D4	SPLICE, B+ UNSWITCHED FUSED	2	UNSWITCHED FUSED, B+ UNSW FUSE POWER OUT
25	B5C	TXL	0.5	RD/WH	RELAY/FUSE BLOCK	A9	SPLICE, B+ UNSWITCHED FUSED	1	UNSWITCHED FUSED B+ ECM REL COIL POWER
26	B5D	TXL	0.5	RD	SPEEDOMETER	4	SPLICE, B+ UNSWITCHED FUSED	1	UNSWITCHED FUSED B+
27	B5E	TXL	0.8	RD/WH	KEY SWITCH	C	SPLICE, B+ UNSWITCHED FUSED	2	UNSWITCHED FUSED, B+
28	B5F	TXL	0.8	RD/WH	RELAY/FUSE BLOCK	B9	SPLICE, B+ UNSWITCHED FUSED	1	UNSWITCHED FUSED B+
29	B6	TXL	1.0	RD/GN	RELAY/FUSE BLOCK	D6	RELAY/FUSE BLOCK	B5	FUEL PUMP FUSE RELAY, B+
30	B7A	TXL	2.0	RD	POWER FUSE	A	START SOL BAT PLUS	1	UNSWITCHED, B+ ENGINE POWER FUSE IN
31	B7B	TXL	2.0	RD	POWER FUSE	B	RELAY/FUSE BLOCK	D5	UNSWITCHED, B+ ENGINE POWER FUSE IN
32	BUSA57	BUS	BUS	BUS	RELAY/FUSE BLOCK	A7	RELAY/FUSE BLOCK	A5	ECM, B+
33	BUSC53	BUS	BUS	BUSS C	RELAY/FUSE BLOCK	C5	RELAY/FUSE BLOCK	C3	SWITCHED B+
34	BUSC57	BUS	BUS	BUSS C	RELAY/FUSE BLOCK	C7	RELAY/FUSE BLOCK	C5	SWITCHED B+
35	C1H	TXL	0.5TP	YE	ECM	236	SPLICE, CAN HIGH	2	CAN HIGH
36	C1L	TXL	0.5TP	DG	ECM	248	SPLICE, CAN LOW	1	CAN LOW
37	C2H	TXL	0.5TP	YE	DIAGNOSTIC	H	SPLICE, CAN HIGH	2	CAN HIGH
38	C2L	TXL	0.5TP	DG	DIAGNOSTIC	G	SPLICE, CAN LOW	2	CAN LOW
39	C3H	TXL	0.5TP	YE	SPEEDOMETER	1	SPLICE, CAN HIGH	1	CAN HIGH
40	C3L	TXL	0.5TP	DG	SPEEDOMETER	2	SPLICE, CAN LOW	1	CAN LOW
41	C4H	TXL	0.5TP	YE	EPS SIGNAL	B	SPLICE, CAN HIGH	1	CAN HIGH
42	C4L	TXL	0.5TP	DG	EPS SIGNAL	4	SPLICE, CAN LOW	2	CAN LOW
43	C01_1	TXL	0.5	BK	CRANK POSITION SENSOR	C	ECM	227	CRANK POSITION SENSOR NEG
44	C01_2	TXL	0.5	WH	ECM	239	CRANK POSITION SENSOR	A	CRANK POSITION SENSOR POSITIVE
45	C01_3	SHLD	0.35	SHLD	SPLICE, CPS SHIELD	2	SPLICE, SHIELD	1	SHIELD, CPS (C01)
46	C02_1	TXL	0.8	WH	ECM	256	IGNITION COIL	1	IGNITION CONTROL PTO
47	C02_2	TXL	0.5	RD	IGNITION COIL	2	SPLICE, IGNITION POWER	1	ECM, B+
48	C02_3	TXL	0.8	BK	ECM	255	IGNITION COIL	3	IGNITION CONTROL MAG
49	C02_4	SHLD	0.35	SHLD	TRIM FLUSH	1	SPLICE, SHIELD	2	SHIELD, IGNITION COIL (C02)
50	E202	TXL	0.5	DG/YE	ECM	202	RELAY/FUSE BLOCK	B8	ECM RELAY COIL CONTROL
51	E204	TXL	0.5	OG/WH	ECM	204	RELAY/FUSE BLOCK	B6	FAN RELAY COIL CONTROL
52	E205	TXL	0.5	BK	ECM	205	MAG FUEL INJECTOR	A	MAG INJECTOR DRIVER
53	E206	TXL	0.5	OG	ECM	206	TPS	3	3.3V SENSOR SUPPLY V2 (TPS)
54	E207	TXL	0.5	OG	ECM	207	TMAP	3	A/D +5V SOURCE
55	E210	TXL	0.5	DG	ECM	210	TPS	2	TPS SIGNAL
56	E216	TXL	0.5	WH	ECM	216	PTO FUEL INJECTOR	A	PTO INJECTOR DRIVER
57	E217	TXL	0.5	BN/WH	ECM	217	AWD	B	AWD CONTROL
58	E219	TXL	0.5	DG/YE	ECM	219	RELAY/FUSE BLOCK	B4	FUEL PUMP RELAY COIL CONTROL
59	E222	TXL	0.5	YE	ECM	222	TMAP	4	MANIFOLD PRESSURE SIGNAL
60	E223	TXL	0.5	WH	ECM	223	TRANSMISSION SWITCH	A	TRANSMISSION SWITCH SIGNAL OUTPUT
61	E224	TXL	0.5	DB	ECM	224	TMAP	2	AIR TEMP SENSOR SIGNAL
62	E225	TXL	0.5	RD/DG	ECM	225	IDLE AIR CONTROL	3	IAC PIN 3
63	E226	TXL	0.5	BU/BK	IDLE AIR CONTROL	4	ECM	226	IAC PIN 4
64	E228	TXL	0.5	GY	ECM	228	AWD/TURF SWITCH	3	TURF REQUEST
65	E230	TXL	0.5	VT/WH	ECM	230	SPLICE, SENSOR GROUND	1	SENSOR GROUND
66	E230A	TXL	0.5	VT/WH	SPLICE, SENSOR GROUND	2	COOLANT TEMP SENSOR	1	TEMP SENSOR GROUND
67	E230B	TXL	0.5	VT/WH	THROTTLE RELEASE SWITCH	A	SPLICE, SENSOR GROUND	1	TRS SENSOR GROUND
68	E231	TXL	0.5	VT	ECM	231	TPS	1	TPS GROUND
69	E232	TXL	0.5	DG	THROTTLE RELEASE SWITCH	B	ECM	232	TRS SENSOR HI
70	E233	TXL	0.5	OG/BK	ECM	233	CAM PHASE SENSOR	2	CAM POSITION SIGNAL
71	E237	TXL	0.5	DG/RD	ECM	237	IDLE AIR CONTROL	1	IAC PIN 1
72	E238	TXL	0.5	DB/RD	ECM	238	IDLE AIR CONTROL	6	IAC PIN 6
73	E242	TXL	0.5	VT	ECM	242	TMAP	1	MANIFOLD PRESSURE GROUND
74	E244	TXL	0.5	YE	COOLANT TEMP SENSOR	2	ECM	244	COOLANT TEMP SIGNAL
75	E245	TXL	0.5	GN/RD	VEHICLE SPEED SENSOR	C	ECM	245	VEHICLE SPEED SIGNAL
76	GD1	TXL	1.0	BN	GROUND, REAR 6MM RING	1	SPLICE, DASH GROUND	2	GROUND, FRONT SPLICE
77	GD3	TXL	0.5	BN	HEADLIGHT SWITCH	7	SPLICE, DASH GROUND	1	HEADLIGHT SWITCH MARKER GROUND
78	GD4A	TXL	0.5	BN	AWD/TURF SWITCH	2	SPLICE, DASH GROUND	2	GROUND
79	GD5	TXL	0.5	BN	SPEEDOMETER	5	SPLICE, DASH GROUND	1	GROUND, SPEEDOMETER
80	GD6	TXL	0.5	BN	DIAGNOSTIC	D	SPLICE, DASH GROUND	1	GROUND, DIAGNOSTIC
81	GD7	TXL	0.5	BN	FUEL PUMP/LEVEL	2	SPLICE, DASH GROUND	2	LEVEL GROUND
82	GF1	TXL	3.0	BN	SPLICE, GROUND FRONT	1	GROUND, REAR 6MM RING	1	GROUND, FRONT REAR CONNECTION
83	GF2	TXL	0.8	BN	LEFT HEADLIGHT	B	SPLICE, GROUND FRONT	2	GROUND, HEADLIGHT
84	GF3	TXL	0.8	BN	RIGHT HEADLIGHT	B	SPLICE, GROUND FRONT	2	GROUND, HEADLIGHT
85	GF4	TXL	1.0	BN	FAN	A	SPLICE, GROUND FRONT	1	GROUND, FAN
86	GF5	TXL	1.0	BN	12 VOLT RECEPTACLE A2 GROUND	1	SPLICE, GROUND FRONT	2	GROUND
87	GF6A	TXL	0.5	BN	RELAY/FUSE BLOCK	B2	SPLICE, GROUND FRONT	2	GROUND EPS REL COIL
88	GF6B	TXL	0.5	BN	DIODE 6A	2	RELAY/FUSE BLOCK	B2	CHASSIS RELAY COIL GROUND
89	GF6B1	TXL	0.5	BN	RELAY/FUSE BLOCK	D8	DIODE 6A	1	CHASSIS RELAY COIL GROUND
90	GR1	TXL	3.0	BN	VREG DC OUTPUT	P1	GROUND, REAR 6MM RING	1	REGULATOR GROUND
91	GR2	TXL	3.0	BN	EPS POWER	B	GROUND, REAR 6MM RING	1	GROUND, EPS POWER
92	GR2S0	TXL	0.8	BN	ECM	250	GROUND, REAR 6MM RING	1	GROUND, ECM BATTERY
93	GR2S1	TXL	0.8	BN	ECM	251	GROUND, REAR 6MM RING	1	GROUND, ECM BATTERY
94	GR2S2	TXL	0.8	BN	ECM	252	GROUND, REAR 6MM RING	1	GROUND, ECM BATTERY
95	GR3	TXL	2.0	BN	STATOR	D	GROUND, REAR 6MM RING	1	GROUND, STATOR
96	GR3A2A	TXL	0.5	BN	CRANK POSITION SENSOR	B	SPLICE, CPS SHIELD	1	SHIELD, CPS
97	GR4A	TXL	1.0	BN	SPLICE, GROUND REAR	2	GROUND, REAR 6MM RING	1	GROUND
98	GR4B	TXL	0.8	BN	FUEL PUMP/LEVEL	4	SPLICE, GROUND REAR	2	PUMP GROUND
99	GR4C	TXL	0.5	BN	VEHICLE SPEED SENSOR	B	SPLICE, GROUND REAR	1	GROUND
100	GR4D	TXL	0.8	BN	TAILLIGHT	C	SPLICE, GROUND REAR	1	GROUND
101	GR4E	TXL	0.5	BN	SPLICE, SHIELD	2	SPLICE, GROUND REAR	2	GROUND
102	GR4F	TXL	0.5	BN	CAM PHASE SENSOR	1	SPLICE, GROUND REAR	1	GROUND
103	GR4G	TXL	0.8	BN	BRAKE SWITCH	P1	SPLICE, GROUND REAR	1	GROUND, KEY SWITCH
104	GT1	TXL	0.5	BN	TRANSMISSION SWITCH	B	GROUND, REAR 6MM RING	1	TRANSMISSION SWITCH GROUND
105	K01	TXL	0.8	OG	KEY SWITCH	D	SPLICE, R/S B+	1	KEY SWITCH, B+
106	K02A	TXL	0.5	OG	RELAY/FUSE BLOCK	A3	SPLICE, R/S B+	2	KEY SWITCH, B+ EPS REL COIL POWER
107	K02C	TXL	0.5	OG	RELAY/FUSE BLOCK	A3	RELAY/FUSE BLOCK	C9	KEY SWITCH, B+ CHAS REL COIL POWER
108	K03	TXL	0.5	OG	SPEEDOMETER	3	SPLICE, R/S B+	1	KEY SWITCH, B+
109	K04	TXL	0.5	OG	VEHICLE SPEED SENSOR	A	SPLICE, R/S B+	2	KEY SWITCH, B+
110	K05	TXL	0.5	OG	DIAGNOSTIC	A	SPLICE, R/S B+	2	KEY SWITCH, B+
111	K06	TXL	0.5	OG	EPS SIGNAL	3	SPLICE, R/S B+	1	KEY SWITCH B+
112	K07	TXL	0.8	OG	RELAY/FUSE BLOCK	C9	RELAY/FUSE BLOCK	D7	KEY SWITCH B+, FUEL PUMP FUSE IN
113	K209	TXL	0.5	OG	ECM	209	SPLICE, R/S B+	2	KEY SWITCH, B+
114	RC2A	TXL	1.0	OG/WH	RELAY/FUSE BLOCK	C2	SPLICE, B+ ACC FUSE OUT	2	ACCESSORIES, B+ ACC FUSE OUT
115	RC2B	TXL	1.0	OG/WH	12 VOLT RECEPTACLE A1 B+	1	SPLICE, B+ ACC FUSE OUT	1	SPLICE B+ ACC FUSE OUT
116	RC2E	TXL	1.0	OG/WH	WINCH SWITCH	P1	SPLICE, B+ ACC FUSE OUT	2	B+ ACCESSORY FUSE OUT
117	RC4F	TXL	0.5	RD/DG	AWD	C	RELAY/FUSE BLOCK	C4	SWITCHED, B+
118	RC6A	TXL	1.0	RD/YE	RELAY/FUSE BLOCK	C6	SPLICE, LIGHTS B+	2	LIGHTS, B+ LIGHTS FUSE OUT
119	RC6C	TXL	0.8	RD/YE	TAILLIGHT	A	SPLICE, LIGHTS B+	2	LIGHTS, B+
120	RC6G	TXL	0.8	RD/YE	SPLICE, LIGHTS B+	1	HEADLIGHT SWITCH	5	HEADLIGHT SWITCH POWER
121	RC6H	TXL	0.5	RD/YE	SPLICE, LIGHTS B+	1	HEADLIGHT SWITCH	8	HEADLIGHT SWITCH MARKER POWER
122	RC8	TXL	1.0	WH	RELAY/FUSE BLOCK	C8	RELAY/FUSE BLOCK	C7	SWITCHED, B+ CHASSIS REL POWER OUT
123	RE253	TXL	0.8	RD/DB	ECM	253	SPLICE, ECM B+	1	ECM, B+
124	REA	TXL	0.8	RD/DB	RELAY/FUSE BLOCK	A8	SPLICE, ECM B+	1	ECM, B+ ECM RELAY OUT
125	REB	TXL	0.8	RD/DB	SPLICE, ECM B+	2	PTO FUEL INJECTOR	B	ECM, B+
126	REC	TXL	0.8	RD/DB	MAG FUEL INJECTOR	B	SPLICE, ECM B+	2	ECM, B+
127	RED	TXL	0.8	RD/DB	KEY SWITCH	B	SPLICE, ECM B+	1	ECM, B+
128	REE	TXL	0.5	RD/DB	CAM PHASE SENSOR	3	SPLICE, ECM B+	2	ECM, B+
129	REF	TXL	0.8	RD/DB	SPLICE, ECM B+	1	SPLICE, IGNITION POWER	2	ECM, B+
130	REH	TXL	0.5	RD/DB	RELAY/FUSE BLOCK	A7	SPLICE, ECM B+	1	ECM B+ FAN REL COIL POWER
131	RF	TXL	1.0	OG/BK	RELAY/FUSE BLOCK	A6	FAN	B	FAN, B+ FAN RELAY OUT
132	RP	TXL	1.0	RD/BU	RELAY/FUSE BLOCK	A4	FUEL PUMP/LEVEL	3	FUEL PUMP RELAY OUT
133	RS	TXL	3.0	OG	RELAY/FUSE BLOCK	A2	EPS POWER	A	EPS RELAY POWER OUT
134	S11	TXL	0.5	VT/WH	FUEL PUMP/LEVEL	1	SPEEDOMETER	11	FUEL SENSOR
135	S8	TXL	0.5	YE	SPEEDOMETER	8	HIGH BEAM SPLICE	2	HIGH BEAM SIGNAL
136	S8A	TXL	0.8	YE	HIGH BEAM SPLICE	2	HEADLIGHT SWITCH	6	HEADLIGHT SWITCH HI BEAM
137	S8B	TXL	0.8	YE	LEFT HEADLIGHT	C	HIGH BEAM SPLICE	1	LH HEADLIGHT HI BEAM
138	S8C	TXL	0.8	YE	RIGHT HEADLIGHT	C	HIGH BEAM SPLICE	1	RH HEADLIGHT HI BEAM

02/07/11

FUSE/RELAY BLOCK





2013 *RANGER* RZR S 800

FILE NAME: 2411764.RSD

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
CL	CLEAR

TWO WIRE COLORS ARE SHOWN WITH MAIN/TRACE COLORS. EXAMPLE: RD/YE = RED WITH YELLOW TRACE.

E = ENGINE GROUND

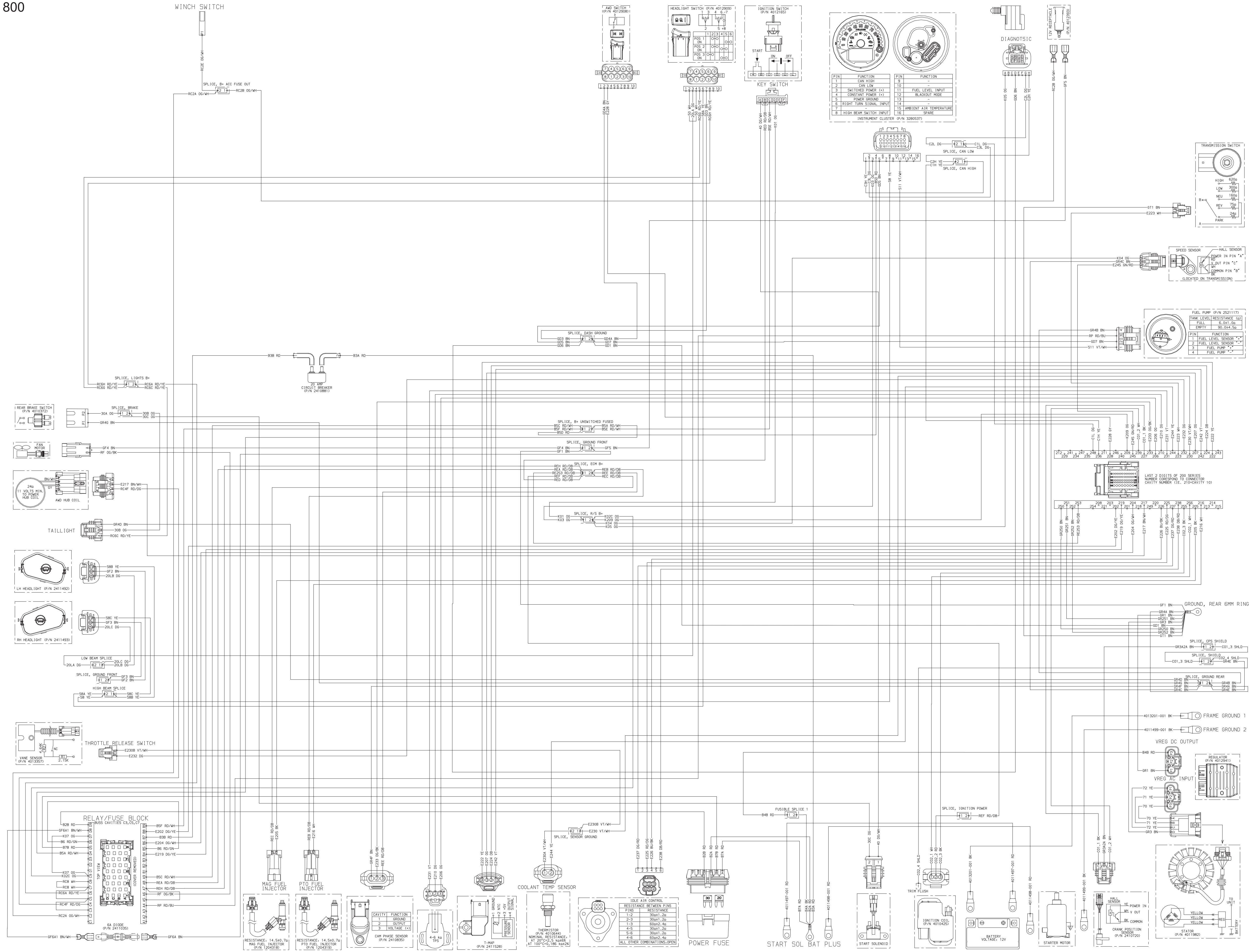
C = CHASSIS GROUND

NC = SWITCH NORMALLY CLOSED

NO = SWITCH NORMALLY OPEN

HARNESS: 2411764-01

SHEET NO. 1 OF 2



2013 *RANGER* RZR S 800

FILE NAME: 2411764.RSD

WIRE COLOR LEGEND	
BE	BEIGE (TAN)
BK	BLACK
BU	LIGHT BLUE
DB	DARK BLUE
GY	GREY
LG	LIME GREEN
DG	DARK GREEN
OG	ORANGE
PK	PINK
RD	RED
VT	VIOLET (PURPLE)
WH	WHITE
YE	YELLOW
CR	CREAM

TWO WIRE COLORS ARE SHOWN WITH A HYPHEN BETWEEN. EXAMPLE: BK/YE = RED WITH YELLOW TRACE.

= ENGINE GROUND

= CHASSIS GROUND

NC = SWITCH NORMALLY CLOSED
NO = SWITCH NORMALLY OPEN

HARNESS: 2411764-01

SHEET NO. 2 OF 2

SCHEMATIC CABLE/WIRE TERMINATION TABLE

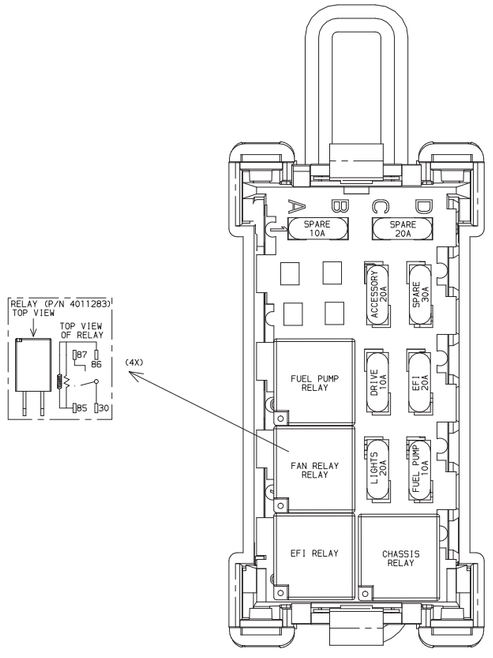
INDEX	CCT #	TYPE	GAUGE	COLOR	FROM COMPONENT	FROM PORT	TO COMPONENT	TO PORT	FUNCTION
1	20LA	TXL	0.8	DG	HEADLIGHT SWITCH	3	SPLICE,LOW BEAM	2	HEADLIGHT SWITCH LOW BEAM
2	20LB	TXL	0.8	DG	LEFT HEADLIGHT	A	SPLICE,LOW BEAM	1	LH HEADLIGHT LOW BEAM
3	20LC	TXL	0.8	DG	RIGHT HEADLIGHT	A	SPLICE,LOW BEAM	1	RH HEADLIGHT LOW BEAM
4	30A	TXL	0.8	OG	BRAKE SWITCH	P2	SPLICE,BRAKE	1	BRAKE SIGNAL
5	30B	TXL	0.8	OG	DIODE #2 (6 AMP)	2	SPLICE,BRAKE	1	BRAKE SIGNAL PROTECTED
6	30B1	TXL	0.8	OG	TAILLIGHT	B	DIODE #2 (6 AMP)	1	BRAKE SIGNAL
7	30C	TXL	0.8	OG	START SOLENOID	2	SPLICE,BRAKE	2	BRAKE SIGNAL
8	40	TXL	0.8	DG/WH	START SOLENOID	1	KEY SWITCH	A	START SOLENOID CONTROL GROUND
9	4011497-001	SGT	13.0	RD	START SOLENOID (B+)	1	BATTERY (+)	1	START SOLENOID (B+) TO BATTERY (+)
10	4011498-001	SGT	13.0	RD	START SOLENOID (B+)	1	STARTER	1	START SOLENOID (B+) TO STARTER
11	4011499-001	SGT	13.0	BK	STARTER	1	FRAME GROUND #2	1	FRAME GROUND #2 TO STARTER
12	4013201-001	SGT	13.0	BK	BATTERY (-)	1	FRAME GROUND #1	1	FRAME GROUND #1 TO BATTERY (-)
13	50	TXL	1.0	WH	HEADLIGHT SWITCH	2	HEADLIGHT SWITCH JUMPER	4	HEADLIGHT SWITCH JUMPER
14	60A	TXL	0.5	WH	BLKOUT SWITCH	3	BLACKOUT RELAY	1	BLACKOUT RELAY COIL LOW
15	60C	TXL	0.5	DG/YE	SPEEDOMETER	12	BLKOUT SWITCH	1	SPEEDO BLACKOUT
16	70A	TXL	2.0	YE	VREG AC INPUT	P1	STATOR	C	STATOR AC
17	70B	TXL	2.0	YE	VREG AC INPUT	P2	STATOR	B	STATOR AC
18	70C	TXL	2.0	YE	VREG AC INPUT	P3	STATOR	A	VREG AC INPUT
19	80A	TXL	1.0	YE/BN	TR LT SWITCH	3	SPLICE,I.R. HEADLIGHT	2	I.R. HEADLIGHT POWER IN
20	80B	TXL	0.8	YE/BN	RH I.R. LIGHT	P1	SPLICE,I.R. HEADLIGHT	1	RH I.R. HEADLIGHT POWER IN
21	80C	TXL	0.8	YE/BN	LH I.R. LIGHT	P1	SPLICE,I.R. HEADLIGHT	1	LH I.R. HEADLIGHT POWER IN
22	B2A	TXL	2.0	RD	POWER FUSE	C	START SOLENOID (B+)	1	UNSWITCHED B+ CHASSIS IN
23	B2B	TXL	2.0	RD	RELAY/FUSE BLOCK	D9	POWER FUSE	D	UNSWITCHED B+ CHASSIS RELAY POWER IN
24	B3A	TXL	1.0	RD	20A CIRCUIT BREAKER	2	START SOLENOID (B+)	1	UNSWITCHED B+
25	B3B	TXL	1.0	RD	RELAY/FUSE BLOCK	B7	20A CIRCUIT BREAKER	1	UNSWITCHED FUSED B+ FAN RELAY POWER IN
26	B4A	FUSIBLE LINK	1.0	BK	START SOLENOID (B+)	1	SPLICE,FUSIBLE LINK #1	1	FUSELINK VREG OUTPUT V+
27	B4B	TXL	3.0	RD	VREG DC OUTPUT	P3	SPLICE,FUSIBLE LINK #1	2	VOLTAGE REGULATOR OUTPUT B+
28	B5A	TXL	0.8	RD/WH	RELAY/FUSE BLOCK	D4	SPLICE,B+ UNSWITCHED FUSED	1	UNSWITCHED FUSED B+ UNSWITCHED FUSED POWER OUT
29	B5C	TXL	0.5	RD/WH	RELAY/FUSE BLOCK	A9	SPLICE,B+ UNSWITCHED FUSED	1	UNSWITCHED FUSED B+ ECM RELAY COIL POWER
30	B5D	TXL	0.5	RD	SPEEDOMETER	4	SPLICE,B+ UNSWITCHED FUSED	2	UNSWITCHED FUSED B+
31	B5E	TXL	0.8	RD/WH	KEY SWITCH	C	SPLICE,B+ UNSWITCHED FUSED	2	UNSWITCHED FUSED B+
32	B5F	TXL	0.8	RD/WH	RELAY/FUSE BLOCK	B9	SPLICE,B+ UNSWITCHED FUSED	1	UNSWITCHED FUSED B+
33	B6	TXL	1.0	RD/GN	RELAY/FUSE BLOCK	B5	RELAY/FUSE BLOCK	D6	FUEL PUMP FUSE RELAY B+
34	B7A	TXL	2.0	RD	POWER FUSE	A	START SOLENOID (B+)	1	UNSWITCHED B+ ENGINE POWER FUSE IN
35	B7B	TXL	2.0	RD	RELAY/FUSE BLOCK	D5	POWER FUSE	B	UNSWITCHED B+ ENGINE POWER FUSE IN
36	BUSA75	BUS	BUS	BUS	RELAY/FUSE BLOCK	A7	RELAY/FUSE BLOCK	A5	ECM,B+
37	BUSC53	BUS	BUS	BUS	RELAY/FUSE BLOCK	C3	RELAY/FUSE BLOCK	C5	SWITCHED B+
38	BUSD75	BUS	BUS	BUS	RELAY/FUSE BLOCK	C5	RELAY/FUSE BLOCK	C7	UNSWITCHED B+
39	C01_1	TXL	0.5	BK	ECM	227	CRANK POSITION SENSOR	C	CRANK POSITION SENSOR NEGATIVE
40	C01_2	TXL	0.5	WH	ECM	239	CRANK POSITION SENSOR	A	CRANK POSITION SENSOR POSITIVE
41	C01_3	SHLD	0.35	SHLD	SPLICE,SHIELD	2	SPLICE,CPS SHIELD	2	SHIELD,CPS (CO1)
42	C02_1	TXL	0.5	WH	ECM	256	IGNITION COIL	1	IGNITION CONTROL PTO
43	C02_2	TXL	0.5	RD	IGNITION COIL	2	SPLICE,IGNITION POWER	2	ECM,B+
44	C02_3	TXL	0.5	BK	ECM	255	IGNITION COIL	3	IGNITION CONTROL MAG
45	C02_4	SHLD	0.35	SHLD	SPLICE,SHIELD	1	TRIM FLUSH (AT IGNITION COIL)	-	SHIELD,IGNITION COIL (CO2)
46	C1H	TXL	0.5TP	YE	ECM	236	SPLICE,CAN HIGH	2	CAN HIGH
47	C1L	TXL	0.5TP	DG	ECM	248	SPLICE,CAN LOW	2	CAN LOW
48	C2H	TXL	0.5TP	YE	DIAGNOSTIC	H	SPLICE,CAN HIGH	2	CAN HIGH
49	C2L	TXL	0.5TP	DG	DIAGNOSTIC	G	SPLICE,CAN LOW	2	CAN LOW
50	C3H	TXL	0.5TP	YE	SPEEDOMETER	I	SPLICE,CAN HIGH	1	CAN HIGH
51	C3L	TXL	0.5TP	DG	SPEEDOMETER	2	SPLICE,CAN LOW	1	CAN LOW
52	E202	TXL	0.5	DG/YE	ECM	202	RELAY/FUSE BLOCK	B8	ECM RELAY COIL CONTROL
53	E204	TXL	0.5	OG/WH	ECM	204	RELAY/FUSE BLOCK	B6	FAN RELAY COIL CONTROL
54	E205	TXL	0.5	BK	ECM	205	MAG FUEL INJECTOR	A	MAG INJECTOR DRIVER
55	E206	TXL	0.5	OG	ECM	206	TPS	3	3.3V SENSOR SUPPLY V2 (TPS)
56	E207	TXL	0.5	OG	ECM	207	TMAP	3	A/D +5V SOURCE
57	E210	TXL	0.5	DG	ECM	210	TPS	2	TPS SIGNAL
58	E211	TXL	0.5	WH/DG	ECM	211	AWD/TURF SWITCH	1	TURF REQUEST
59	E216	TXL	0.5	WH	ECM	216	PTO FUEL INJECTOR	A	PTO INJECTOR DRIVER
60	E217	TXL	0.5	BN/WH	ECM	217	AWD	B	AWD CONTROL
61	E218	TXL	0.5	DG/WH	ECM	218	TURF RELAY	B	ECM TURF RELAY CONTROL
62	E219	TXL	0.5	DG/YE	ECM	219	RELAY/FUSE BLOCK	B4	FUEL PUMP RELAY COIL CONTROL
63	E222	TXL	0.5	YE	ECM	222	TMAP	4	MANIFOLD PRESSURE SIGNAL
64	E223	TXL	0.5	WH	ECM	223	TRANSMISSION SWITCH	A	TRANSMISSION SWITCH SIGNAL OUTPUT
65	E224	TXL	0.5	DB	ECM	224	TMAP	2	AIR TEMP SENSOR SIGNAL
66	E225	TXL	0.5	RD/DG	ECM	225	IDLE AIR CONTROL	3	IAC PIN 3
67	E226	TXL	0.5	BU/BK	ECM	226	IDLE AIR CONTROL	4	IAC PIN 4
68	E228	TXL	0.5	GY	ECM	228	AWD/TURF SWITCH	3	AWD REQUEST
69	E230	TXL	0.5	VT/WH	ECM	230	SPLICE, SENSOR GROUND	1	SENSOR GROUND
70	E230A	TXL	0.5	VT/WH	COOLANT TEMP SENSOR	1	SPLICE, SENSOR GROUND	1	TEMP SENSOR GROUND
71	E230B	TXL	0.5	VT/WH	THROTTLE RELEASE SWITCH	A	SPLICE, SENSOR GROUND	2	TRS SENSOR GROUND
72	E231	TXL	0.5	VT	ECM	231	TPS	1	TPS GROUND
73	E232	TXL	0.5	DG	THROTTLE RELEASE SWITCH	B	ECM	232	TRS SENSOR HI
74	E233	TXL	0.5	OG/BK	ECM	233	CAM PHASE SENSOR	2	CAM POSITION SIGNAL
75	E237	TXL	0.5	DG/RD	ECM	237	IDLE AIR CONTROL	1	IAC PIN 1
76	E238	TXL	0.5	DB/RD	ECM	238	IDLE AIR CONTROL	6	IAC PIN 6
77	E242	TXL	0.5	VT	ECM	242	TMAP	1	MANIFOLD PRESSURE GROUND
78	E244	TXL	0.5	YE	ECM	244	COOLANT TEMP SENSOR	2	COOLANT TEMP SIGNAL
79	E245	TXL	0.5	GN/RD	ECM	245	VEHICLE SPEED SENSOR	C	VEHICLE SPEED SIGNAL
80	GB1	TXL	1.0	BN/YE	LEFT HEADLIGHT	B	SPLICE,BLACKOUT GROUND	1	GROUND,BLACKOUT SPLICE
81	GB2	TXL	1.0	BN/YE	GROUND, 6MM RING1	1	SPLICE,BLACKOUT GROUND	2	GROUND,BLACKOUT SPLICE
82	GB3	TXL	1.0	BN/YE	RIGHT HEADLIGHT	B	SPLICE,BLACKOUT GROUND	1	GROUND,BLACKOUT SPLICE
83	GB4	TXL	0.5	BN/YE	SPLICE,BLACKOUT GROUND	2	SPLICE,SWITCH LIGHT GROUND	1	GROUND,SWITCH LIGHT BLACKOUT SPLICE
84	GB4A	TXL	0.5	BN/YE	AWD/TURF SWITCH	7	SPLICE,SWITCH LIGHT GROUND	1	GROUND,SWITCH LIGHT BLACKOUT SPLICE
85	GB4B	TXL	0.5	BN/YE	HEADLIGHT SWITCH	7	SPLICE,SWITCH LIGHT GROUND	2	GROUND,SWITCH LIGHT BLACKOUT SPLICE
86	GB4C	TXL	0.5	BN/YE	BLKOUT SWITCH	7	SPLICE,SWITCH LIGHT GROUND	2	GROUND,SWITCH LIGHT BLACKOUT SPLICE
87	GB4D	TXL	0.5	BN/YE	TR LT SWITCH	7	SPLICE,SWITCH LIGHT GROUND	2	GROUND,SWITCH LIGHT BLACKOUT SPLICE
88	GB4E	TXL	0.5	BN/YE	WINCH SWITCH	7	SPLICE,SWITCH LIGHT GROUND	1	GROUND,SWITCH LIGHT BLACKOUT SPLICE
89	GD1	TXL	1.0	BN	GROUND, 6MM RING2	1	SPLICE,DASH GROUND	2	GROUND,FRONT SPLICE
90	GD4A	TXL	0.5	BN	AWD/TURF SWITCH	2	SPLICE,DASH GROUND	1	GROUND,AWD/TURF
91	GD5	TXL	0.5	BN	SPEEDOMETER	5	SPLICE,DASH GROUND	2	GROUND,SPEEDOMETER
92	GD6	TXL	0.5	BN	DIAGNOSTIC	D	SPLICE,DASH GROUND	2	GROUND,DIAGNOSTIC
93	GD7	TXL	0.5	BN	FUEL PUMP/LEVEL	2	SPLICE,DASH GROUND	1	LEVEL GROUND
94	GF1	TXL	3.0	BN	GROUND, 6MM RING2	1	SPLICE,GROUND FRONT	1	GROUND,FRONT
95	GF2B	TXL	0.5	BN	DIODE #1 (6 AMP)	2	SPLICE,GROUND FRONT	2	DIODE OUT
96	GF2B1	TXL	0.5	BN	RELAY/FUSE BLOCK	D8	DIODE #1 (6 AMP)	1	DIODE IN
97	GF4	TXL	1.0	BN	FAN	A	SPLICE,GROUND FRONT	1	GROUND FAN
98	GF5	TXL	1.0	BN	12V RECEPTACLE 1 GROUND	1	SPLICE,GROUND FRONT	2	GROUND,ACCESSORY #1
99	GF5A	TXL	1.0	BN	12V RECEPTACLE 1 GROUND	1	12V RECEPTACLE 2 GROUND	1	GROUND, ACCESSORY #2
100	GR1	TXL	3.0	BN	VREG DC OUTPUT	P1	GROUND, 6MM RING2	1	REGULATOR GROUND
101	GR1A	TXL	1.0	BN	GROUND, 6MM RING1	1	SPLICE,I.R. HEADLIGHT GROUND	2	GROUND,I.R. HEADLIGHT
102	GR1A1	TXL	0.8	BN	RH I.R. LIGHT	P2	SPLICE,I.R. HEADLIGHT GROUND	1	GROUND,I.R. HEADLIGHT RH
103	GR1A2	TXL	0.8	BN	LH I.R. LIGHT	P2	SPLICE,I.R. HEADLIGHT GROUND	1	GROUND,I.R. HEADLIGHT LH
104	GR1B	TXL	0.5	BN	TURF RELAY	C	GROUND, 6MM RING2	1	GROUND,TURF RELAY
105	GR1C	TXL	2.0	BN	STATOR	D	GROUND, 6MM RING1	1	GROUND,STATOR
106	GR1D	TXL	1.0	BN	GROUND, 6MM RING1	1	SPLICE,GROUND REAR	2	GROUND
107	GR250	TXL	0.8	BN	ECM	250	GROUND, 6MM RING1	1	GROUND,ECM BATTERY
108	GR251	TXL	0.8	BN	ECM	251	GROUND, 6MM RING1	1	GROUND,ECM BATTERY
109	GR252	TXL	0.8	BN	ECM	252	GROUND, 6MM RING1	1	GROUND,ECM BATTERY
110	GR2A	TXL	0.8	BN	TAILLIGHT	C	GROUND, 6MM RING2	1	GROUND TAILLIGHT
111	GR2B	TXL	1.0	BN	BLKOUT SWITCH	2	GROUND, 6MM RING2	1	GROUND,BLACKOUT SWITCH
112	GR3A2A	TXL	0.5	BN	CRANK POSITION SENSOR	B	SPLICE,CPS SHIELD	1	SHIELD,CPS
113	GR4B	TXL	0.8	BN	FUEL PUMP/LEVEL	4	SPLICE,GROUND REAR	2	PUMP GROUND
114	GR4C	TXL	0.5	BN	VEHICLE SPEED SENSOR	B	SPLICE,GROUND REAR	1	GROUND
115	GR4E	TXL	0.5	BN	SPLICE,GROUND REAR	2	SPLICE,SHIELD	1	GROUND
116	GR4F	TXL	0.5	BN	CAM PHASE SENSOR	1	SPLICE,GROUND REAR	1	GROUND
117	GR4G	TXL	0.8	BN	BRAKE SWITCH	P1	SPLICE,GROUND REAR	1	GROUND
118	GT1	TXL	0.5	BN	TRANSMISSION SWITCH	B	GROUND, 6MM RING2	1	TRANSMISSION SWITCH GROUND
119	K01	TXL	0.8	OG	KEY SWITCH	D	SPLICE,R/S B+	1	KEY SWITCH,B+
120	K02C	TXL	0.5	OG	RELAY/FUSE BLOCK	C9	SPLICE,R/S B+	1	KEY SWITCH,B+ CHASSIS RELAY COIL POWER
121	K03	TXL	0.5	OG	SPEEDOMETER	3	SPLICE,R/S B+	2	KEY SWITCH,B+
122	K04	TXL	0.5	OG	VEHICLE SPEED SENSOR	A	SPLICE,R/S B+	2	KEY SWITCH,B+
123	K05	TXL	0.5	OG	DIAGNOSTIC	A	SPLICE,R/S B+	2	KEY SWITCH,B+
124	K07	TXL	0.8	OG	RELAY/FUSE BLOCK	C9	RELAY/FUSE BLOCK	D7	KEY SWITCH B+ FUEL PUMP FUSE IN
125	K08	TXL	0.8	OG	WINCH SWITCH	2	SPLICE,R/S B+	2	KEY SWITCH,B+
126	K209	TXL	0.5	OG	ECM	209	SPLICE,R/S B+	1	KEY SWITCH,B+
127	RC2A	TXL	1.0	OG/WH	RELAY/FUSE BLOCK	C2	SPLICE,B+ ACC FUSE OUT	1	ACCESSORIES,B+ ACC FUSE OUT
128	RC2B	TXL	1.0	OG/WH	12V RECEPTACLE 1 B+	1	SPLICE,B+ ACC FUSE OUT	2	SPLICE,B+ ACC FUSE OUT
129	RC2B1	TXL	1.0	OG/WH	12V RECEPTACLE 1 B+	1	12V RECEPTACLE 2 B+	1	B+ ACC FUSE OUT
130	RC2E	TXL	1.0	OG/WH	ACC WINCH SWITCH	P1	SPLICE,B+ ACC FUSE OUT	1	B+ ACCESSORY FUSE OUT
131	RC4A	TXL	1.0	RD/DG	RELAY/FUSE BLOCK	C4	SPLICE,DRIVE	1	SWITCHED B+ DRIVE FUSE
132	RC4B	TXL	0.8	RD/DG	AWD	C	SPLICE,DRIVE	2	SPLICE,AWD B+ DRIVE FUSE
133	RC4C	TXL	0.5	RD/DG	TURF RELAY	A	SPLICE,DRIVE	2	SPLICE,TURF B+ DRIVE FUSE
134	RC6A	TXL	1.0	RD/YE	RELAY/FUSE BLOCK	C6	BLACKOUT RELAY	3	LIGHTS B+ LIGHTS FUSE OUT
135	RC6A1	TXL	0.5	RD/YE	BLACKOUT RELAY	2	BLACKOUT RELAY	3	BLACKOUT RELAY COIL HI
136	RC6B	TXL	1.0	RD/YE	TR LT SWITCH	2	BLACKOUT RELAY	3	LIGHTS B+ I.R. SWITCH
137	RC6C	TXL	1.0	RD/YE	TAILLIGHT	A	SPLICE,LIGHTS B+	1	LIGHT B+ TAILLIGHT
138	RC6D	TXL	0.5	RD/YE	SPLICE,SWITCH LIGHT	1	SPLICE,LIGHTS B+	1	SPLICE,SWITCH LIGHT B+
139	RC6D1	TXL	0.5	RD/YE	BLKOUT SWITCH	8	SPLICE,SWITCH LIGHT	1	SPLICE,BLACKOUT SWITCH LIGHT B+
140	RC6D2	TXL	0.5	RD/YE	TR LT SWITCH	8	SPLICE,SWITCH LIGHT	2	SPLICE,I.R. SWITCH LIGHT B+
141	RC6D3	TXL	0.5	RD/YE	HEADLIGHT SWITCH	8	SPLICE,SWITCH LIGHT	1	SPLICE,HEADLIGHT SWITCH LIGHT B+
142	RC6D4	TXL	0.5	RD/YE	AWD/TURF SWITCH	8	SPLICE,SWITCH LIGHT	2	SPLICE,AWD/TURF SWITCH LIGHT B+
143	RC6D5	TXL	0.5	RD/YE	WINCH SWITCH	8	SPLICE,SWITCH LIGHT	2	SPLICE,WINCH SWITCH LIGHT B+
144	RC6E	TXL	1.0	RD/YE	BLACKOUT RELAY	5	SPLICE,LIGHTS B+	2	LIGHT B+ RELAY OUT
145	RC6G	TXL	0.8	RD/YE	HEADLIGHT SWITCH	5	SPLICE,LIGHTS B+	2	LIGHTS B+ HEADLIGHT SWITCH
146	RC9	TXL	1.0	WH	RELAY/FUSE BLOCK	C7	RELAY/FUSE BLOCK	C8	SWITCHED B+ CHASSIS RELAY POWER OUT
147	RE253	TXL	0.8	RD/DB	ECM	253	SPLICE,ECM B+	2	ECM,B+

02/09/11

SCHEMATIC CABLE/WIRE TERMINATION TABLE

INDEX	CCT #	TYPE	GAUGE	COLOR	FROM COMPONENT	FROM PORT	TO COMPONENT	TO PORT	FUNCTION
148	REA	TXL	0.8	RD/DB	RELAY/FUSE BLOCK	A8	SPLICE,ECM B+	2	ECM,B+ RELAY OUT
149	REB	TXL	0.8	RD/DB	PTO FUEL INJECTOR	B	SPLICE,ECM B+	1	ECM,B+
150	REC	TXL	0.8	RD/DB	MAG FUEL INJECTOR	B	SPLICE,ECM B+	1	ECM,B+
151	RED	TXL	0.8	RD/DB	KEY SWITCH	B	SPLICE,ECM B+	2	ECM,B+
152	REE	TXL	0.5	RD/DB	CAM PHASE SENSOR	3	SPLICE,ECM B+	1	ECM,B+
153	REF	TXL	0.8	RD/DB	SPLICE,ECM B+	1	SPLICE,IGNITION POWER	1	ECM,B+
154	REH	TXL	0.5	RD/DB	RELAY/FUSE BLOCK	A7	SPLICE,ECM B+	2	ECM,B+
155	RF	TXL	1.0	OG/BK	RELAY/FUSE BLOCK	A6	FAN	B	FAN B+ FAN RELAY OUT
156	RP	TXL	1.0	RD/BU	RELAY/FUSE BLOCK	A4	FUEL PUMP/LEVEL	3	FUEL PUMP RELAY OUT
157	S11	TXL	0.5	VT/WH	SPEEDOMETER	11	FUEL PUMP/LEVEL	1	FUEL SENSOR
158	S8A	TXL	0.8	YE	HEADLIGHT SWITCH	6	SPLICE,HIGH BEAM	2	HEADLIGHT SWITCH HIGH BEAM
159	S8B	TXL	0.8	YE	LEFT HEADLIGHT	C	SPLICE,HIGH BEAM	1	LH HEADLIGHT HI BEAM
160	S8C	TXL	0.8	YE	RIGHT HEADLIGHT	C	SPLICE,HIGH BEAM	1	RH HEADLIGHT HI BEAM
161	S8D	TXL	0.5	YE	SPEEDOMETER	8	SPLICE,HIGH BEAM	2	HIGH BEAM SIGNAL
162	W01	TXL	0.5	DG	WINCH SWITCH	1	WINCH CONTACTOR #1	P1	ECM,B+ WINCH SWITCH
163	W02	TXL	0.8	BK	WINCH SWITCH	3	WINCH CONTACTOR #2	P1	ECM,B+ WINCH SWITCH

02/09/11



RELAY/FUSE INSTALLATION

2013 *RANGER* RZR S 800 INT'L

FILE NAME: 2412331.RSD

WIRE COLOR CODES
BK BLACK (DRY)
BN BROWN
BU LIGHT BLUE
DB DARK BLUE
BR BROWN
GR GREEN
GY GRAY
LG LIGHT GREEN
DG DARK GREEN
OR ORANGE
PK PINK
RD RED
VT VIOLET (PURPLE)
WH WHITE
YE YELLOW
TN TAN

TWO WIRE COLORS ARE SHOWN WITH MAIN/TRACE COLORS. EXAMPLE: RD/YE = RED WITH YELLOW TRACE.

▽ = ENGINE GROUND

▽ = CHASSIS GROUND

NC = SWITCH NORMALLY CLOSED
NO = SWITCH NORMALLY OPEN

HARNESS: 2412331-01

SHEET NO. 1 OF 2

LH TURN SIGNAL (P/N 2411147)
LH HEADLIGHT (P/N 2412263)
RH HEADLIGHT (P/N 2412264)
RH TURN SIGNAL (P/N 2411147)
TURN/LIGHTS/HORN SWITCH (P/N 4012704)
1: LH TURN SIGNAL
2: RH TURN SIGNAL
3: GROUND
4: LOW BEAM-HEADLIGHT
5: NOT USED
6: HIGH BEAM-HEADLIGHT
7: HEADLIGHT POWER
8: FUSED 13.5 VDC
9: HORN POWER
AWD/TURF SWITCH (P/N 4012833)
LED FLASHER MODULE (P/N 4013043)
1: HAZARD
2: IGNITION SWITCH
3: OIL-RIGHT
4: OIL-LEFT
5: GROUND
6: LOAD TYPE
7: REAR RIGHT
8: FRONT RIGHT
9: FRONT TURN
10: LEFT TURN
11: RIGHT LEFT
12: REAR LEFT
FUEL PUMP (P/N 2521117)

TANK LEVEL	RESISTANCE (Ω)
FULL	6.9±1.5Ω
EMPTY	90.0±4.5Ω

PIN	FUNCTION
1	FUEL LEVEL SENSOR "+"
2	FUEL LEVEL SENSOR "-"
3	FUEL PUMP "+"
4	FUEL PUMP "-"

FUEL PUMP/LEVEL
FAN MOTOR
HAZARD SWITCH (4013393)
FUSE BLOCK DETAIL
RELAY (P/N 4011233)
LEFT FRONT TURN LAMP
LH FRONT RUNNING LAMP
LEFT HEADLIGHT
RIGHT HEADLIGHT
RH FRONT RUNNING LAMP
RIGHT FRONT TURN LAMP
TURN SIGNAL SWITCH
AWD/TURF SWITCH
HAZARD FLASHER
START SOL BAT PLUS
30A 30A 30A
POWER FUSE
FUSIBLE SPLICE 1
FAN
SPLICE, GROUND FRONT
SPLICE, LOW BEAM
SPLICE, HIGH BEAM
SPLICE, LIGHTS B+
SPLICE, RIGHT HEADLIGHT
SPLICE, LEFT HEADLIGHT
SPLICE, GROUND FRONT
SPLICE, DASH GROUND
HORN
(P/N 4011579)
HORN POWER
HORN GROUND
HEADLIGHT RELAY
RELAY (P/N 4011998)
IGNITION SWITCH (P/N 4012663)
KEY SWITCH
CAM PHASE SENSOR (P/N 2410033)
CAM PHASE SENSOR
MAP SENSOR
TMAP
TRANSMISSION SWITCH
TRANSMISSION SWITCH
THROTTLE RELEASE SWITCH
VANE SENSOR (P/N 4013357)
COOLANT TEMP SENSOR
COOLANT TEMP SENSOR
NOMINAL RESISTANCE:
AT 25°C±0.3 K Ω
AT 125°C±2.22 K Ω
BRAKE PRESSURE SWITCH
BRAKE SWITCH
CRANK POSITION SENSOR
CRANK POSITION SENSOR (P/N 2410783)
HALL SENSOR
TPS
TPS
SPLICE, SENSOR GROUND
SPLICE, CPS SHIELD
SPLICE, B/S B+
SPLICE, CAN HIGH
SPLICE, CAN LOW
DIAGNOSTIC
SPEEDOMETER

PIN	FUNCTION
1	CAN HIGH
2	CAN LOW
3	SWITCHED POWER (+)
4	CONSTANT POWER (+)
5	POWER GROUND
6	RIGHT TURN SIGNAL INPUT
7	
8	HIGH BEAM SWITCH INPUT

PIN	FUNCTION
9	
10	
11	FUEL LEVEL INPUT
12	BLACKOUT MODE
13	
14	
15	AMBIENT AIR TEMPERATURE
16	SPARE

INSTRUMENT CLUSTER (P/N 3280537)

VEHICLE SPEED SENSOR
SPEED SENSOR (LOCATED ON TRANSMISSION)
ECU (P/N 4012830)
VREG DC OUTPUT
VREG AC INPUT
REGULATOR (P/N 4012842)
STATOR
STATOR (P/N 4011982)
TURF RELAY
TURF SOLENOID DRIVER (P/N 4012829)
AWD
AWD HUB COIL
GROUND, REAR 6MM RING
IDLE AIR CONTROL

IDLE AIR CONTROL	
RESISTANCE BETWEEN PINS	
PINS	RESISTANCE
1-2	55Ω±1.2Ω
1-3	55Ω±1.2Ω
1-4	45Ω±2.4Ω
2-3	55Ω±1.2Ω
2-4	55Ω±1.2Ω
3-4	45Ω±2.4Ω
ALL OTHER COMBINATIONS OPEN	

12 VOLT RECEPTACLE A1 B+
12 VOLT RECEPTACLE A2 GROUND
12V RECEPTACLE (P/N 4012933)
WINCH SWITCH
SPLICE, B+ ACC FUSE OUT
START SOLENOID
START SOLENOID (P/N 4012001)
SPLICE, BRAKE
SPLICE, B+ UNSWITCHED FUSED
TAILLIGHT
SPLICE, ECM B+
SPLICE, IGNITION POWER
SPLICE, GROUND REAR
SPLICE, SHIELD
SPLICE, DRIVE
TRIM FLUSH
IGNITION COIL
IGNITION COIL (P/N 4016425)
MAG FUEL INJECTOR
PTO FUEL INJECTOR
RESISTANCE: 14.5±0.7Ω
MAG FUEL INJECTOR
(P/N 1043138)
RESISTANCE: 14.5±0.7Ω
PTO FUEL INJECTOR
(P/N 1043139)

2013 *RANGER* RZR S 800 INT'L

FILE NAME: 2412331.RSD

WIRE COLOR CODES
BK BLACK (DASH)
BN BROWN
BU LIGHT BLUE
DB DARK BLUE
DG DARK GREEN
GN GREEN
GY LIGHT GREEN
OG ORANGE
PK PINK
RD RED
VT VIOLET (PURPLE)
WH WHITE
YE YELLOW
SHLD SHIELD

TWO WIRE COLORS ARE SHOWN WITH MAJ/TRACE COLORS. EXAMPLE/BK/YE = RED WITH YELLOW TRACE.

▽ = ENGINE GROUND

▽ = CHASSIS GROUND

NC = SWITCH NORMALLY CLOSED
NO = SWITCH NORMALLY OPEN

HARNESS: 2412331-01

SHEET NO. 2 OF 2

SCHEMATIC CABLE/WIRE TERMINATION TABLE

INDEX	CCT #	TYPE	GAUGE	COLOR	FROM COMPONENT	FROM PORT	TO COMPONENT	TO PORT	FUNCTION
1	002	TXL	0.8	YE/RD	KEY SWITCH	B	START SOLENOID	1	START SOLENOID
2	050	TXL	1.0	YE/DG	HEADLIGHT RELAY	3	TURN SIGNAL SWITCH	7	HEADLIGHT RELAY OUT
3	20LA	TXL	1.0	DG	TURN SIGNAL SWITCH	4	SPLICE, LOW BEAM	2	LOW BEAM SWITCH OUT
4	20LB	TXL	0.8	DG	LEFT HEADLIGHT	P3	SPLICE, LOW BEAM	1	LH HEADLIGHT LOW BEAM
5	20LC	TXL	0.8	DG	RIGHT HEADLIGHT	P3	SPLICE, LOW BEAM	1	RH HEADLIGHT LOW BEAM
6	30A	TXL	0.8	OG	BRAKE SWITCH	P2	SPLICE, BRAKE	2	BRAKE SIGNAL
7	30B	TXL	0.8	OG	TAILLIGHT	B	SPLICE, BRAKE	1	BRAKE SIGNAL
8	30C	TXL	0.8	OG	SPLICE, BRAKE	2	START SOLENOID	2	BRAKE SIGNAL
9	31	TXL	0.8	GY/RD	TURN SIGNAL SWITCH	9	HORN POWER	1	HORN SWITCH OUT
10	40	TXL	0.5	WH/RD	KEY SWITCH	E	HEADLIGHT RELAY	1	HEADLIGHT COIL IN
11	60	TXL	0.8	RD	HAZARD SWITCH	2	HAZARD FLASHER	1	HAZARD SWITCH OUT
12	70	TXL	2.0	YE	VREG AC INPUT	P3	STATOR	A	VREG AC INPUT
13	71	TXL	2.0	YE	VREG AC INPUT	P2	STATOR	B	STATOR AC
14	72	TXL	2.0	YE	VREG AC INPUT	P1	STATOR	C	STATOR AC
15	B2A	TXL	2.0	RD	START SOL BAT PLUS	1	POWER FUSE	C	UNSWITCHED B+ CHASSIS IN
16	B2B	TXL	2.0	RD	POWER FUSE	D	RELAY/FUSE BLOCK	D9	UNSWITCHED, B+ CHASSIS REL POWER IN
17	B3A	TXL	1.0	RD	START SOL BAT PLUS	1	20A CIRCUIT BREAKER IN	1	UNSWITCHED B+
18	B3B	TXL	1.0	RD	RELAY/FUSE BLOCK	B7	20A CIRCUIT BREAKER OUT	1	UNSWITCHED FUSED,B+ FAN RELAY POWER IN
19	B4A	FUSIBLE LINK	1.0	BK	START SOL BAT PLUS	1	FUSIBLE SPLICE 1	2	FUSELINK VREG OUTPUT B+
20	B4B	TXL	3.0	RD	VREG DC OUTPUT	P3	FUSIBLE SPLICE 1	1	VOLTAGE REGULATOR OUTPUT B+
21	B5A	TXL	0.8	RD/WH	RELAY/FUSE BLOCK	D4	SPLICE, B+ UNSWITCHED FUSED	2	UNSWITCHED FUSED, B+ UNSW FUSE POWER OUT
22	B5C	TXL	0.5	RD/WH	RELAY/FUSE BLOCK	A9	SPLICE, B+ UNSWITCHED FUSED	1	UNSWITCHED FUSED B+ ECM REL COIL POWER
23	B5D	TXL	0.5	RD	SPEEDOMETER	4	SPLICE, B+ UNSWITCHED FUSED	1	UNSWITCHED FUSED B+
24	B5E	TXL	1.0	RD/WH	KEY SWITCH	C	SPLICE, B+ UNSWITCHED FUSED	2	UNSWITCHED FUSED, B+
25	B5F	TXL	0.8	RD/WH	RELAY/FUSE BLOCK	B9	SPLICE, B+ UNSWITCHED FUSED	1	SPLICE, B+ UNSWITCHED FUSED
26	B5G	TXL	0.8	RD	SPLICE, B+ UNSWITCHED FUSED	2	HAZARD SWITCH	3	HAZARD SWITCH IN
27	B6	TXL	1.0	RD/GN	RELAY/FUSE BLOCK	D6	RELAY/FUSE BLOCK	B5	FUEL PUMP FUSE RELAY, B+
28	B7A	TXL	2.0	RD	POWER FUSE	A	START SOL BAT PLUS	1	UNSWITCHED, B+ ENGINE POWER FUSE IN
29	B7B	TXL	2.0	RD	POWER FUSE	B	RELAY/FUSE BLOCK	D5	UNSWITCHED, B+ ENGINE POWER FUSE IN
30	BUSA57	BUS	BUS	BUS	RELAY/FUSE BLOCK	A5	RELAY/FUSE BLOCK	A7	ECM B+
31	BUSC53	BUS	BUS	BUSS C	RELAY/FUSE BLOCK	C5	RELAY/FUSE BLOCK	C3	SWITCHED B+
32	BUSC57	BUS	BUS	BUSS C	RELAY/FUSE BLOCK	C7	RELAY/FUSE BLOCK	C5	SWITCHED B+
33	C01_1	TXL	0.5	BK	CRANK POSITION SENSOR	C	ECM	227	CRANK POSITION SENSOR NEG
34	C01_2	TXL	0.5	WH	ECM	239	CRANK POSITION SENSOR	A	CRANK POSITION SENSOR POSITIVE
35	C01_3	SHLD	0.35	SHLD	SPLICE, CPS SHIELD	2	SPLICE, SHIELD	1	SHIELD, CPS (C01)
36	C02_1	TXL	0.5	WH	ECM	256	IGNITION COIL	1	IGNITION CONTROL PTO
37	C02_2	TXL	0.5	RD	IGNITION COIL	2	SPLICE, IGNITION POWER	1	ECM, B+
38	C02_3	TXL	0.5	BK	ECM	255	IGNITION COIL	3	IGNITION CONTROL MAG
39	C02_4	SHLD	0.35	SHLD	TRIM FLUSH	1	SPLICE, SHIELD	1	SHIELD, IGNITION COIL (C02)
40	C1H	TXL	0.5TP	YE	ECM	238	SPLICE, CAN HIGH	2	CAN HIGH
41	C1L	TXL	0.5TP	GN	ECM	248	SPLICE, CAN LOW	1	CAN LOW
42	C2H	TXL	0.5TP	YE	DIAGNOSTIC	H	SPLICE, CAN HIGH	2	CAN HIGH
43	C2L	TXL	0.5TP	GN	DIAGNOSTIC	G	SPLICE, CAN LOW	2	CAN LOW
44	C3H	TXL	0.5TP	YE	SPEEDOMETER	1	SPLICE, CAN HIGH	1	CAN HIGH
45	C3L	TXL	0.5TP	GN	SPEEDOMETER	2	SPLICE, CAN LOW	1	CAN LOW
46	E202	TXL	0.5	DG/YE	ECM	202	RELAY/FUSE BLOCK	B8	ECM RELAY COIL CONTROL
47	E204	TXL	0.5	OG/WH	ECM	204	RELAY/FUSE BLOCK	B6	FAN RELAY COIL CONTROL
48	E205	TXL	0.5	BK	ECM	205	MAG FUEL INJECTOR	A	MAG INJECTOR DRIVER
49	E206	TXL	0.5	OG	ECM	206	TPS	3	3.3V SENSOR SUPPLY V2 (TPS)
50	E207	TXL	0.5	OG	ECM	207	TMAP	3	A/D +5V SOURCE
51	E210	TXL	0.5	DG	ECM	210	TPS	2	TPS SIGNAL
52	E211	TXL	0.5	WH/DG	ECM	211	AWD/TURF SWITCH	1	TURF REQUEST
53	E216	TXL	0.5	WH	ECM	216	PTO FUEL INJECTOR	A	PTO INJECTOR DRIVER
54	E217	TXL	0.5	BN/WH	ECM	217	AWD	B	AWD CONTROL
55	E218	TXL	0.5	DG/WH	ECM	218	TURF RELAY	B	TURF CONTROL
56	E219	TXL	0.5	DG/YE	ECM	219	RELAY/FUSE BLOCK	B4	FUEL PUMP RELAY COIL CONTROL
57	E222	TXL	0.5	YE	ECM	222	TMAP	4	MANIFOLD PRESSURE SIGNAL
58	E223	TXL	0.5	WH	ECM	223	TRANSMISSION SWITCH	A	TRANSMISSION SWITCH SIGNAL OUTPUT
59	E224	TXL	0.5	DB	ECM	224	TMAP	2	AIR TEMP SENSOR SIGNAL
60	E225	TXL	0.5	RD/DG	ECM	225	IDLE AIR CONTROL	3	IAC PIN 3
61	E226	TXL	0.5	BU/BK	IDLE AIR CONTROL	4	ECM	226	IAC PIN 4
62	E228	TXL	0.5	GY	ECM	228	AWD/TURF SWITCH	3	AWD REQUEST
63	E230	TXL	0.5	VT/WH	ECM	230	SPLICE, SENSOR GROUND	1	SENSOR GROUND
64	E230A	TXL	0.5	VT/WH	COOLANT TEMP SENSOR	1	SPLICE, SENSOR GROUND	2	TEMP SENSOR GROUND
65	E230B	TXL	0.5	VT/WH	THROTTLE RELEASE SWITCH	A	SPLICE, SENSOR GROUND	2	TRS SENSOR GROUND
66	E231	TXL	0.5	VT	ECM	231	TPS	1	TPS GROUND
67	E232	TXL	0.5	DG	THROTTLE RELEASE SWITCH	B	ECM	232	TRS SENSOR HI
68	E233	TXL	0.5	OG/BK	ECM	233	CAM PHASE SENSOR	2	CAM POSITION SIGNAL
69	E237	TXL	0.5	DG/RD	ECM	237	IDLE AIR CONTROL	1	IAC PIN 1
70	E238	TXL	0.5	DB/RD	ECM	238	IDLE AIR CONTROL	6	IAC PIN 6
71	E242	TXL	0.5	VT	ECM	242	TMAP	1	MANIFOLD PRESSURE GROUND
72	E244	TXL	0.5	YE	COOLANT TEMP SENSOR	2	ECM	244	COOLANT TEMP SIGNAL
73	E245	TXL	0.5	GN/RD	VEHICLE SPEED SENSOR	C	ECM	245	VEHICLE SPEED SIGNAL
74	GD1	TXL	1.0	BN	GROUND, REAR 6MM RING	1	SPLICE, DASH GROUND	2	GROUND, FRONT SPLICE
75	GD2	TXL	0.5	BN	DIAGNOSTIC	D	SPLICE, DASH GROUND	1	GROUND, DIAGNOSTIC
76	GD3	TXL	0.5	BN	FUEL PUMP/LEVEL	2	SPLICE, DASH GROUND	2	LEVEL GROUND
77	GD4	TXL	0.5	BN	AWD/TURF SWITCH	2	SPLICE, DASH GROUND	2	GROUND
78	GD5	TXL	0.5	BN	SPEEDOMETER	5	SPLICE, DASH GROUND	1	GROUND, SPEEDOMETER
79	GF1	TXL	3.0	BN	SPLICE, GROUND FRONT	1	GROUND, REAR 6MM RING	1	GROUND, FRONT REAR CONNECTION
80	GF2B	TXL	0.5	BN	DIODE 6 AMP	2	SPLICE, GROUND FRONT	1	CHASSIS RELAY COIL GROUND
81	GF2B1	TXL	0.5	BN	DIODE 6 AMP	1	RELAY/FUSE BLOCK	D8	CHASSIS RELAY COIL GROUND
82	GF3	TXL	0.5	BN	HAZARD FLASHER	5	SPLICE, GROUND FRONT	1	GROUND
83	GF4	TXL	1.0	BN	FAN	A	SPLICE, GROUND FRONT	2	GROUND, FAN
84	GF5	TXL	1.0	BN	12 VOLT RECEPTACLE A2 GROUND	1	SPLICE, GROUND FRONT	2	GROUND
85	GF6	TXL	0.5	BN	SPLICE, GROUND FRONT	2	TURN SIGNAL SWITCH	3	TURN SWITCH COMMON
86	GF7	TXL	0.5	BN	HAZARD FLASHER	6	SPLICE, GROUND FRONT	2	GROUND
87	GHL1	TXL	1.0	BN	SPLICE, GROUND FRONT	2	SPLICE, LEFT HEADLIGHT	2	GROUND
88	GHL2	TXL	1.0	BN	SPLICE, LEFT HEADLIGHT	1	LEFT HEADLIGHT	P2	GROUND, HEADLIGHT
89	GHL3	TXL	0.35	BN	SPLICE, LEFT HEADLIGHT	2	LEFT FRONT TURN LAMP	P2	GROUND
90	GHL4	TXL	0.5	BN	LH FRONT RUNNING LAMP	2	SPLICE, LEFT HEADLIGHT	1	GROUND
91	GHL5	TXL	0.8	BN	HORN GROUND	1	SPLICE, LEFT HEADLIGHT	1	GROUND, HORN
92	GHR1	TXL	1.0	BN	SPLICE, GROUND FRONT	1	SPLICE, RIGHT HEADLIGHT	1	GROUND
93	GHR2	TXL	1.0	BN	RIGHT HEADLIGHT	P2	SPLICE, RIGHT HEADLIGHT	2	GROUND, HEADLIGHT
94	GHR3	TXL	0.35	BN	RIGHT FRONT TURN LAMP	P2	SPLICE, RIGHT HEADLIGHT	2	GROUND
95	GHR4	TXL	0.5	BN	RH FRONT RUNNING LAMP	2	SPLICE, RIGHT HEADLIGHT	2	GROUND
96	GR1	TXL	3.0	BN	VREG DC OUTPUT	P1	GROUND, REAR 6MM RING	1	REGULATOR GROUND
97	GR250	TXL	0.8	BN	ECM	250	GROUND, REAR 6MM RING	1	GROUND, ECM BATTERY
98	GR251	TXL	0.8	BN	ECM	251	GROUND, REAR 6MM RING	1	GROUND, ECM BATTERY
99	GR252	TXL	0.8	BN	ECM	252	GROUND, REAR 6MM RING	1	GROUND, ECM BATTERY
100	GR3	TXL	2.0	BN	STATOR	D	GROUND, REAR 6MM RING	1	GROUND, STATOR
101	GR4A	TXL	2.0	BN	SPLICE, GROUND REAR	2	GROUND, REAR 6MM RING	1	GROUND
102	GR4B	TXL	0.8	BN	FUEL PUMP/LEVEL	4	SPLICE, GROUND REAR	2	PUMP GROUND
103	GR4C	TXL	0.5	BN	VEHICLE SPEED SENSOR	B	SPLICE, GROUND REAR	1	GROUND
104	GR4D	TXL	0.8	BN	TAILLIGHT	D	SPLICE, GROUND REAR	2	GROUND
105	GR4E1	TXL	0.5	BN	SPLICE, SHIELD	2	SPLICE, GROUND REAR	2	GROUND
106	GR4E3B	TXL	0.5	BN	CRANK POSITION SENSOR	B	SPLICE, CPS SHIELD	1	SHIELD, CPS
107	GR4E4	TXL	0.5	BN	CAM PHASE SENSOR	1	SPLICE, SHIELD	1	GROUND
108	GR4G	TXL	0.5	BN	HEADLIGHT RELAY	2	SPLICE, GROUND REAR	1	HEADLIGHT COIL GROUND
109	GR4H	TXL	0.5	BN	BRAKE SWITCH	P1	SPLICE, GROUND REAR	1	BRAKE SWITCH GROUND
110	GR5	TXL	1.0	BN	TURF RELAY	C	GROUND, REAR 6MM RING	1	GROUND
111	GT1	TXL	0.5	BN	TRANSMISSION SWITCH	B	GROUND, REAR 6MM RING	1	SENSOR GROUND
112	H03	TXL	0.5	DB/WH	HAZARD FLASHER	3	SPEEDOMETER	6	RIGHT TURN INDICATOR
113	H04	TXL	0.5	BU/WH	HAZARD FLASHER	4	SPEEDOMETER	7	LEFT TURN INDICATOR
114	H07	TXL	0.5	DB/YE	HAZARD FLASHER	7	TAILLIGHT	E	RIGHT REAR TURN SIGNAL
115	H08	TXL	0.35	DB/OG	HAZARD FLASHER	8	RIGHT FRONT TURN LAMP	P1	RIGHT FRONT TURN SIGNAL
116	H09	TXL	0.5	DB/RD	TURN SIGNAL SWITCH	2	HAZARD FLASHER	9	RIGHT TURN COMMAND
117	H10	TXL	0.5	BU/RD	HAZARD FLASHER	10	TURN SIGNAL SWITCH	1	LEFT TURN SIGNAL COMMAND
118	H11	TXL	0.35	BU/OG	HAZARD FLASHER	11	LEFT FRONT TURN LAMP	P1	LEFT FRONT TURN SIGNAL
119	H12	TXL	0.5	BU/YE	HAZARD FLASHER	12	TAILLIGHT	C	LEFT REAR TURN SIGNAL
120	K01	TXL	0.8	OG	KEY SWITCH	D	SPLICE, R/S B+	1	KEY SWITCH, B+
121	K02	TXL	0.8	OG	HAZARD FLASHER	2	SPLICE, R/S B+	2	KEY SWITCH, B+
122	K02C	TXL	0.5	OG	RELAY/FUSE BLOCK	C9	SPLICE, R/S B+	2	KEY SWITCH, B+ CHAS REL COIL POWER
123	K03	TXL	0.5	OG	SPEEDOMETER	3	SPLICE, R/S B+	1	KEY SWITCH, B+
124	K04	TXL	0.5	OG	VEHICLE SPEED SENSOR	A	SPLICE, R/S B+	1	KEY SWITCH, B+
125	K05	TXL	0.5	OG	DIAGNOSTIC	A	SPLICE, R/S B+	2	KEY SWITCH, B+
126	K07	TXL	0.8	OG	RELAY/FUSE BLOCK	C9	RELAY/FUSE BLOCK	D7	KEY SWITCH B+, FUEL PUMP FUSE IN
127	K209	TXL	0.5	OG	ECM	209	SPLICE, R/S B+	2	KEY SWITCH, B+
128	RC2A	TXL	1.0	OG/WH	RELAY/FUSE BLOCK	C2	SPLICE, B+ ACC FUSE OUT	1	ACCESSORIES, B+ ACC FUSE OUT
129	RC2B	TXL	1.0	OG/WH	12 VOLT RECEPTACLE A1 B+	1	SPLICE, B+ ACC FUSE OUT	2	SPLICE B+ ACC FUSE OUT
130	RC2E	TXL	1.0	OG/WH	WINCH SWITCH	P1	SPLICE, B+ ACC FUSE OUT	2	B+ ACCESSORY FUSE OUT
131	RC4A	TXL	1.0	RD/DG	RELAY/FUSE BLOCK	C4	SPLICE, DRIVE	2	SWITCHED, B+ DRIVE FUSE
132	RC4D	TXL	1.0	RD/DG	TURF RELAY	A	SPLICE, DRIVE	2	TBD
133	RC4F	TXL	0.5	RD/DG	AWD	C	SPLICE, DRIVE	1	SWITCHED, B+
134	RC6A	TXL	1.0	RD/YE	RELAY/FUSE BLOCK	C6	SPLICE, LIGHTS B+	2	LIGHTS, B+ LIGHTS FUSE OUT
135	RC6B	TXL	0.5	RD/YE	LH FRONT RUNNING LAMP	1	SPLICE, LIGHTS B+	1	LIGHTS, B+
136	RC6C	TXL	0.8	RD/YE	TAILLIGHT	A	SPLICE, LIGHTS B+	2	LIGHTS, B+
137	RC6D	TXL	1.0	RD/YE	TURN SIGNAL SWITCH	8	SPLICE, LIGHTS B+	2	HORN SWITCH IN
138	RC6F	TXL	0.5	RD/YE	RH FRONT RUNNING LAMP	1	SPLICE, LIGHTS B+	1	LIGHTS, B+
139	RC6G	TXL	1.0	RD/YE	HEADLIGHT RELAY	5	SPLICE, LIGHTS B+	1	RELAY IN
140	RC8	TXL	1.0	WH	RELAY/FUSE BLOCK	C7	RELAY/FUSE BLOCK	C8	SWITCHED, B+ CHASSIS REL POWER OUT
141	RE253	TXL	0.8	RD/DB	ECM	253	SPLICE, ECM B+	1	ECM, B+
142	REA	TXL	0.8	RD/DB	RELAY/FUSE BLOCK	A8	SPLICE, ECM B+	1	ECM, B+ ECM RELAY OUT
143	REB	TXL	0.8	RD/DB	SPLICE, ECM B+	2	PTO FUEL INJECTOR	B	ECM, B+
144	REC	TXL	0.8	RD/DB	MAG FUEL INJECTOR	B	SPLICE, ECM B+	2	ECM, B+
145	RED	TXL	0.5	RD/DB	CAM PHASE SENSOR	3	SPLICE, ECM B+	2	ECM, B+
146	REF	TXL	0.8	RD/DB	SPLICE, ECM B+	1	SPLICE, IGNITION POWER	2	ECM, B+
147	REH	TXL	0.5	RD/DB	RELAY/FUSE BLOCK	A7	SPLICE, ECM B+	1	ECM B+ FAN REL COIL POWER
148	RE1	TXL	0.8	RD/DB	KEY SWITCH	A	SPLICE, ECM B+	2	ECM B+ KEY
149	RF	TXL	1.0	OG/BK	RELAY/FUSE BLOCK	A6	FAN	B	FAN, B+ FAN RELAY OUT
150	RP	TXL	1.0	RD/BU	RELAY/FUSE BLOCK	A4	FUEL PUMP/LEVEL	3	FUEL PUMP RELAY OUT
151	S11	TXL	0.5	VT/WH	FUEL PUMP/LEVEL	1	SPEEDOMETER	11	FUEL SENSOR
152	S8	TXL	0.5	YE	SPEEDOMETER	8	SPLICE, HIGH BEAM	2	HIGH BEAM SIGNAL
153	S8A	TXL	1.0	YE	TURN SIGNAL SWITCH	6	SPLICE, HIGH BEAM	2	HI BEAM SWITCH OUT
154	S8B	TXL	0.8	YE	RIGHT HEADLIGHT	P1	SPLICE, HIGH BEAM	1	LH HEADLIGHT HI BEAM

12/22/11

SCHEMATIC CABLE/WIRE TERMINATION TABLE

INDEX	CCT #	TYPE	GAUGE	COLOR	FROM COMPONENT	FROM PORT	TO COMPONENT	TO PORT	FUNCTION
155	S8C	TXL	0.8	YE	LEFT HEADLIGHT	P1	SPLICE, HIGH BEAM	1	RH HEADLIGHT HI BEAM

12/22/11

2013 *RANGER* RZR 4 800

FILE NAME: 2411808.RSD

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
CL	CLEAR

TWO WIRE COLORS ARE SHOWN WITH MAIN/TRACE COLORS. EXAMPLE: RD/YE = RED WITH YELLOW TRACE.

E = ENGINE GROUND

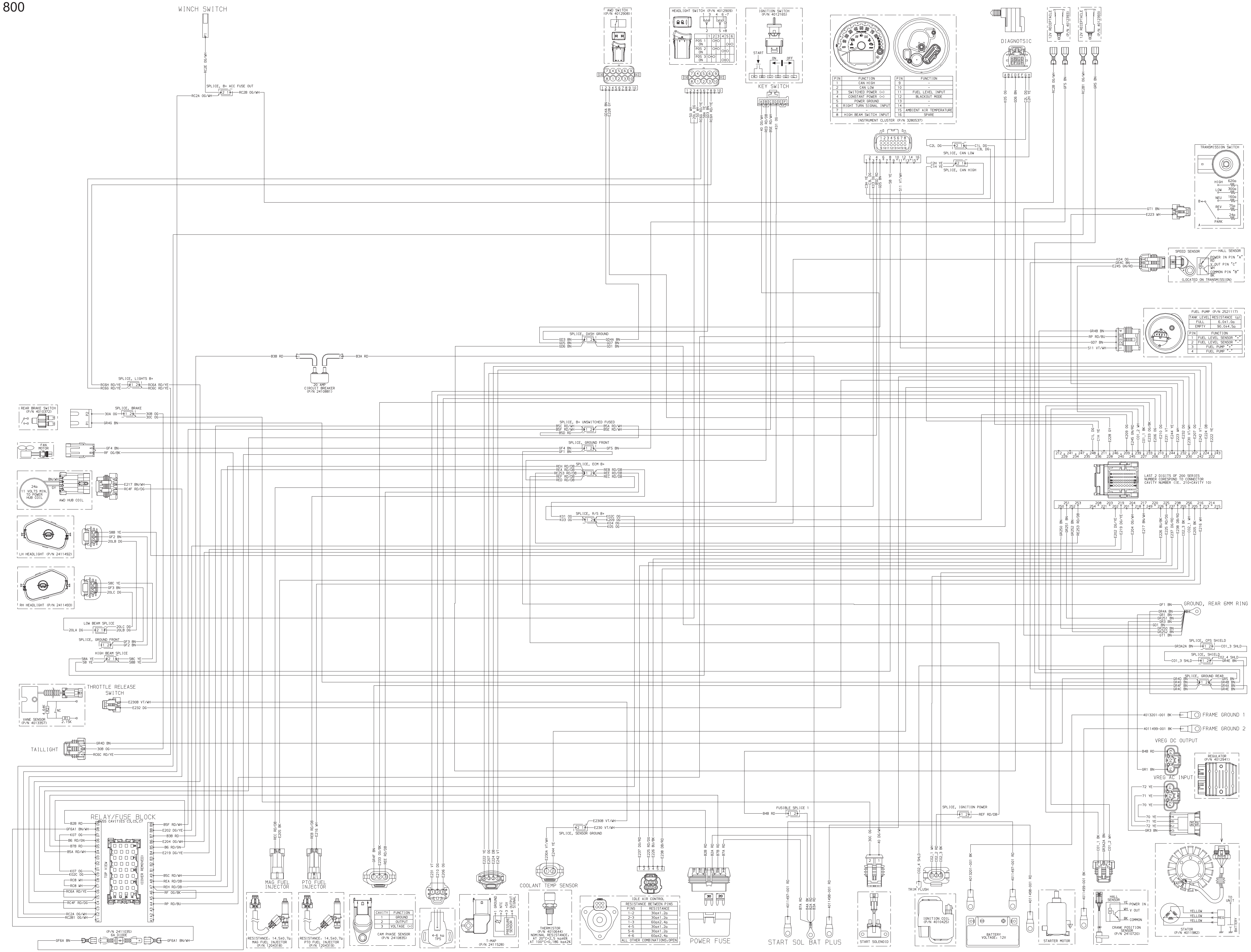
C = CHASSIS GROUND

NC = SWITCH NORMALLY CLOSED

NO = SWITCH NORMALLY OPEN

HARNESS: 2411808-01

SHEET NO. 1 OF 2



2013 *RANGER* RZR 4 800

FILE NAME: 2411808.XSD

WIRE COLOR LEGEND	
BK	BLACK
BL	BLUE (TAN)
BN	BROWN
DB	LIGHT BLUE
GN	DARK BLUE
GY	GRAY
LG	LIGHT GREEN
OG	ORANGE
PK	PINK
RD	RED
VT	VIOLET (PURPLE)
WH	WHITE
YE	YELLOW
CLEAR	CLEAR

TWO WIRE COLORS ARE SHOWN WITH MAJOR/TRACE COLORS. EXAMPLE: RD/YE = RED WITH YELLOW TRACE.

= ENGINE GROUND

= CHASSIS GROUND

NC = SWITCH NORMALLY CLOSED

NO = SWITCH NORMALLY OPEN

HARNESS- 2411808-01

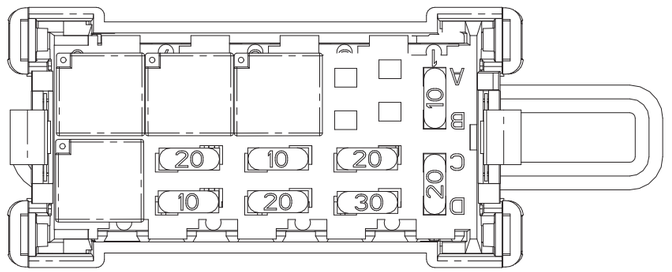
SHEET NO. 2 OF 2

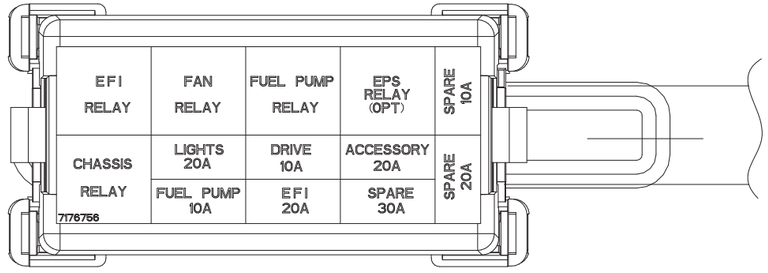
SCHEMATIC CABLE/WIRE TERMINATION TABLE

INDEX	CCT #	TYPE	GAUGE	COLOR	FROM COMPONENT	FROM PORT	TO COMPONENT	TO PORT	FUNCTION
1	20LA	TXL	0.8	DG	LOW BEAM SPLICE	2	HEADLIGHT SWITCH	3	HEADLIGHT SWITCH LOW B-
2	20LB	TXL	0.8	DG	LEFT HEADLIGHT	A	LOW BEAM SPLICE	1	LH HEADLIGHT LOW BEAM
3	20LC	TXL	0.8	DG	RIGHT HEADLIGHT	A	LOW BEAM SPLICE	1	RH HEADLIGHT LOW BEAM
4	30A	TXL	0.8	OG	BRAKE SWITCH	P2	SPLICE, BRAKE	1	BRAKE SIGNAL
5	30B	TXL	0.8	OG	TAILLIGHT	B	SPLICE, BRAKE	2	BRAKE SIGNAL
6	30C	TXL	0.8	OG	START SOLENOID	2	SPLICE, BRAKE	2	BRAKE SIGNAL
7	40	TXL	0.8	DG/WH	START SOLENOID	1	KEY SWITCH	A	START SOLENOID CONTROL GROUND
8	4011497-001	SGT	13.0	RD	TBD	1	START SOL TO BATTERY (+)	1	TBD
9	4011498-001	SGT	13.0	RD	TBD	1	TBD	1	TBD
10	4011499-001	SGT	13.0	BK	FRAME GROUND TO STARTER	1	START SOL TO STARTER	1	TBD
11	4013201-001	SGX	13.0	BK	TBD	1	TBD	1	FRAME GROUND 1 TO BATTERY (-)
12	50	TXL	1.0	WH	HEADLIGHT SWITCH	2	HEADLIGHT SWITCH	4	HEADLIGHT SWITCH JUMPER
13	70	TXL	2.0	YE	VREG AC INPUT	P3	STATOR	A	VREG AC INPUT
14	71	TXL	2.0	YE	VREG AC INPUT	P2	STATOR	B	STATOR AC
15	72	TXL	2.0	YE	VREG AC INPUT	P1	STATOR	C	STATOR AC
16	B2A	TXL	2.0	RD	START SOL BAT PLUS	1	POWER FUSE	C	UNSWITCHED B+ CHASSIS IN
17	B2B	TXL	2.0	RD	POWER FUSE	D	RELAY/FUSE BLOCK	D9	UNSWITCHED, B+ CHASSIS REL POWER IN
18	B3A	TXL	1.0	RD	START SOL BAT PLUS	1	20A CIRCUIT BREAKER	2	UNSWITCHED B+
19	B3B	TXL	1.0	RD	RELAY/FUSE BLOCK	B7	20A CIRCUIT BREAKER	1	UNSWITCHED FUSED,B+ FAN RELAY POWER IN
20	B4A	FUSIBLE LINK	1.0	BK	START SOL BAT PLUS	1	FUSIBLE SPLICE 1	2	FUSELINK VREG OUTPUT B+
21	B4B	TXL	3.0	RD	VREG DC OUTPUT	P3	FUSIBLE SPLICE 1	1	VOLTAGE REGULATOR OUTPUT B+
22	B5A	TXL	0.8	RD/WH	RELAY/FUSE BLOCK	D4	SPLICE, B+ UNSWITCHED FUSED	2	UNSWITCHED FUSED, B+ UNSW FUSE POWER OUT
23	B5C	TXL	0.5	RD/WH	RELAY/FUSE BLOCK	A9	SPLICE, B+ UNSWITCHED FUSED	1	UNSWITCHED FUSED B+ ECM REL COIL POWER
24	B5D	TXL	0.5	RD	SPEEDOMETER	4	SPLICE, B+ UNSWITCHED FUSED	1	UNSWITCHED FUSED B+
25	B5E	TXL	0.8	RD/WH	KEY SWITCH	C	SPLICE, B+ UNSWITCHED FUSED	2	UNSWITCHED FUSED, B+
26	B5F	TXL	0.8	RD/WH	RELAY/FUSE BLOCK	B9	SPLICE, B+ UNSWITCHED FUSED	1	UNSWITCHED FUSED B+
27	B6	TXL	1.0	RD/GN	RELAY/FUSE BLOCK	D6	RELAY/FUSE BLOCK	B5	FUEL PUMP FUSE RELAY, B+
28	B7A	TXL	2.0	RD	POWER FUSE	A	START SOL BAT PLUS	1	UNSWITCHED, B+ ENGINE POWER FUSE IN
29	B7B	TXL	2.0	RD	POWER FUSE	B	RELAY/FUSE BLOCK	D5	UNSWITCHED, B+ ENGINE POWER FUSE IN
30	BUSA57	BUS	BUS	BUSS C	RELAY/FUSE BLOCK	A5	RELAY/FUSE BLOCK	A7	ECM, B+
31	BUSC53	BUS	BUS	BUSS C	RELAY/FUSE BLOCK	C5	RELAY/FUSE BLOCK	C3	SWITCHED B+
32	BUSC57	BUS	BUS	BUSS C	RELAY/FUSE BLOCK	C7	RELAY/FUSE BLOCK	C5	SWITCHED B+
33	C1H	TXL	0.5TP	YE	ECM	236	SPLICE, CAN HIGH	2	CAN HIGH
34	C1L	TXL	0.5TP	DG	ECM	248	SPLICE, CAN LOW	1	CAN LOW
35	C2H	TXL	0.5TP	YE	DIAGNOSTIC	H	SPLICE, CAN HIGH	2	CAN HIGH
36	C2L	TXL	0.5TP	DG	DIAGNOSTIC	G	SPLICE, CAN LOW	2	CAN LOW
37	C3H	TXL	0.5TP	YE	SPEEDOMETER	1	SPLICE, CAN HIGH	1	CAN HIGH
38	C3L	TXL	0.5TP	DG	SPEEDOMETER	2	SPLICE, CAN LOW	1	CAN LOW
39	C01_1	TXL	0.5	BK	CRANK POSITION SENSOR	C	ECM	227	CRANK POSITION SENSOR NEG
40	C01_2	TXL	0.5	WH	ECM	239	CRANK POSITION SENSOR	A	CRANK POSITION SENSOR POSITIVE
41	C01_3	SHLD	0.35	SHLD	SPLICE, CPS SHIELD	2	SPLICE, SHIELD	1	SHIELD, CPS (C01)
42	C02_1	TXL	0.8	WH	ECM	256	IGNITION COIL	1	IGNITION CONTROL PTO
43	C02_2	TXL	0.5	RD	IGNITION COIL	2	SPLICE, IGNITION POWER	1	ECM, B+
44	C02_3	TXL	0.8	BK	ECM	255	IGNITION COIL	3	IGNITION CONTROL MAG
45	C02_4	SHLD	0.35	SHLD	TRIM FLUSH	1	SPLICE, SHIELD	2	SHIELD, IGNITION COIL (C02)
46	E202	TXL	0.5	DG/YE	ECM	202	RELAY/FUSE BLOCK	B8	ECM RELAY COIL CONTROL
47	E204	TXL	0.5	OG/WH	ECM	204	RELAY/FUSE BLOCK	B6	FAN RELAY COIL CONTROL
48	E205	TXL	0.5	BK	ECM	205	MAG FUEL INJECTOR	A	MAG INJECTOR DRIVER
49	E206	TXL	0.5	OG	ECM	206	TPS	3	3.3V SENSOR SUPPLY V2 (TPS)
50	E207	TXL	0.5	OG	ECM	207	TMAP	3	A/D +5V SOURCE
51	E210	TXL	0.5	DG	ECM	210	TPS	2	TPS SIGNAL
52	E216	TXL	0.5	WH	ECM	216	PTO FUEL INJECTOR	A	PTO INJECTOR DRIVER
53	E217	TXL	0.5	BN/WH	ECM	217	AWD	B	AWD CONTROL
54	E219	TXL	0.5	DG/YE	ECM	219	RELAY/FUSE BLOCK	B4	FUEL PUMP RELAY COIL CONTROL
55	E222	TXL	0.5	YE	ECM	222	TMAP	4	MANIFOLD PRESSURE SIGNAL
56	E223	TXL	0.5	WH	ECM	223	TRANSMISSION SWITCH	A	TRANSMISSION SWITCH SIGNAL OUTPUT
57	E224	TXL	0.5	DB	ECM	224	TMAP	2	AIR TEMP SENSOR SIGNAL
58	E225	TXL	0.5	RD/DG	ECM	225	IDLE AIR CONTROL	3	IAC PIN 3
59	E226	TXL	0.5	BU/BK	IDLE AIR CONTROL	4	ECM	226	IAC PIN 4
60	E228	TXL	0.5	GY	ECM	228	AWD/TURF SWITCH	3	AWD REQUEST
61	E230	TXL	0.5	VT/WH	ECM	230	SPLICE, SENSOR GROUND	1	SENSOR GROUND
62	E230A	TXL	0.5	VT/WH	COOLANT TEMP SENSOR	1	SPLICE, SENSOR GROUND	2	TEMP SENSOR GROUND
63	E230B	TXL	0.5	VT/WH	THROTTLE RELEASE SWITCH	A	SPLICE, SENSOR GROUND	1	TRS SENSOR GROUND
64	E231	TXL	0.5	VT	ECM	231	TPS	1	TPS GROUND
65	E232	TXL	0.5	DG	THROTTLE RELEASE SWITCH	B	ECM	232	TRS SENSOR HI
66	E233	TXL	0.5	OG/BK	ECM	233	CAM PHASE SENSOR	2	CAM POSITION SIGNAL
67	E237	TXL	0.5	DG/RD	ECM	237	IDLE AIR CONTROL	1	IAC PIN 1
68	E238	TXL	0.5	DB/RD	ECM	238	IDLE AIR CONTROL	6	IAC PIN 6
69	E242	TXL	0.5	VT	ECM	242	TMAP	1	MANIFOLD PRESSURE GROUND
70	E244	TXL	0.5	YE	COOLANT TEMP SENSOR	2	ECM	244	COOLANT TEMP SIGNAL
71	E245	TXL	0.5	GN/RD	VEHICLE SPEED SENSOR	C	ECM	245	VEHICLE SPEED SIGNAL
72	GD1	TXL	1.0	BN	GROUND, REAR 6MM RING	1	SPLICE, DASH GROUND	2	GROUND, FRONT SPLICE
73	GD3	TXL	0.5	BN	HEADLIGHT SWITCH	7	SPLICE, DASH GROUND	1	HEADLIGHT SWITCH MARKER GROUND
74	GD4A	TXL	0.5	BN	AWD/TURF SWITCH	2	SPLICE, DASH GROUND	2	GROUND
75	GD5	TXL	0.5	BN	SPEEDOMETER	5	SPLICE, DASH GROUND	1	GROUND, SPEEDOMETER
76	GD6	TXL	0.5	BN	DIAGNOSTIC	D	SPLICE, DASH GROUND	1	GROUND, DIAGNOSTIC
77	GD7	TXL	0.5	BN	FUEL PUMP/LEVEL	2	SPLICE, DASH GROUND	2	LEVEL GROUND
78	GF1	TXL	3.0	BN	SPLICE, GROUND FRONT	1	GROUND, REAR 6MM RING	1	GROUND, FRONT REAR CONNECTION
79	GF2	TXL	0.8	BN	LEFT HEADLIGHT	B	SPLICE, GROUND FRONT	2	GROUND, HEADLIGHT
80	GF3	TXL	0.8	BN	RIGHT HEADLIGHT	B	SPLICE, GROUND FRONT	2	GROUND, HEADLIGHT
81	GF4	TXL	1.0	BN	FAN	A	SPLICE, GROUND FRONT	1	GROUND, FAN
82	GF5	TXL	1.0	BN	12 VOLT RECEPTACLE A2 GROUND	1	SPLICE, GROUND FRONT	2	GROUND
83	GF6A	TXL	0.5	BN	DIODE 6A	2	SPLICE, GROUND FRONT	2	CHASSIS RELAY COIL GROUND
84	GF6A1	TXL	0.5	BN/WH	RELAY/FUSE BLOCK	D8	DIODE 6A	1	CHASSIS RELAY COIL GROUND
85	GR1	TXL	3.0	BN	VREG DC OUTPUT	P1	GROUND, REAR 6MM RING	1	REGULATOR GROUND
86	GR250	TXL	0.8	BN	ECM	250	GROUND, REAR 6MM RING	1	GROUND, ECM BATTERY
87	GR251	TXL	0.8	BN	ECM	251	GROUND, REAR 6MM RING	1	GROUND, ECM BATTERY
88	GR252	TXL	0.8	BN	ECM	252	GROUND, REAR 6MM RING	1	GROUND, ECM BATTERY
89	GR3	TXL	2.0	BN	STATOR	D	GROUND, REAR 6MM RING	1	GROUND, STATOR
90	GR3A2A	TXL	0.5	BN	CRANK POSITION SENSOR	B	SPLICE, CPS SHIELD	1	SHIELD, CPS
91	GR4A	TXL	1.0	BN	SPLICE, GROUND REAR	2	GROUND, REAR 6MM RING	1	GROUND
92	GR4B	TXL	0.8	BN	FUEL PUMP/LEVEL	4	SPLICE, GROUND REAR	2	PUMP GROUND
93	GR4C	TXL	0.5	BN	VEHICLE SPEED SENSOR	B	SPLICE, GROUND REAR	1	GROUND
94	GR4D	TXL	0.8	BN	TAILLIGHT	C	SPLICE, GROUND REAR	1	GROUND
95	GR4E	TXL	0.5	BN	SPLICE, SHIELD	2	SPLICE, GROUND REAR	2	GROUND
96	GR4F	TXL	0.5	BN	CAM PHASE SENSOR	1	SPLICE, GROUND REAR	1	GROUND
97	GR4G	TXL	0.8	BN	BRAKE SWITCH	P1	SPLICE, GROUND REAR	1	GROUND, KEY SWITCH
98	GR5	TXL	1.0	BN	12 VOLT RECEPTACLE B2 GROUND	1	SPLICE, GROUND REAR	2	GROUND
99	GT1	TXL	0.5	BN	TRANSMISSION SWITCH	B	GROUND, REAR 6MM RING	1	TRANSMISSION SWITCH GROUND
100	K01	TXL	0.8	OG	KEY SWITCH	D	SPLICE, R/S B+	1	KEY SWITCH, B+
101	K02C	TXL	0.5	OG	SPLICE, R/S B+	2	RELAY/FUSE BLOCK	C9	KEY SWITCH, B+ CHAS REL COIL POWER
102	K03	TXL	0.5	OG	SPEEDOMETER	3	SPLICE, R/S B+	1	KEY SWITCH, B+
103	K04	TXL	0.5	OG	VEHICLE SPEED SENSOR	A	SPLICE, R/S B+	2	KEY SWITCH, B+
104	K05	TXL	0.5	OG	DIAGNOSTIC	A	SPLICE, R/S B+	2	KEY SWITCH, B+
105	K07	TXL	0.8	OG	RELAY/FUSE BLOCK	C9	RELAY/FUSE BLOCK	D7	KEY SWITCH B+, FUEL PUMP FUSE IN
106	K209	TXL	0.5	OG	ECM	209	SPLICE, R/S B+	2	KEY SWITCH, B+
107	RC2A	TXL	1.0	OG/WH	RELAY/FUSE BLOCK	C2	SPLICE, B+ ACC FUSE OUT	2	ACCESSORIES, B+ ACC FUSE OUT
108	RC2B	TXL	1.0	OG/WH	12 VOLT RECEPTACLE A1 B+	1	SPLICE, B+ ACC FUSE OUT	1	SPLICE B+ ACC FUSE OUT
109	RC2B1	TXL	1.0	OG/WH	RELAY/FUSE BLOCK	C2	12 VOLT RECEPTACLE B1 B+	1	FUSE ACCESSORIES, B+ (3/16)
110	RC2E	TXL	1.0	OG/WH	WINCH SWITCH	P1	SPLICE, B+ ACC FUSE OUT	2	B+ ACCESSORY FUSE OUT
111	RC4F	TXL	0.5	RD/DG	AWD	C	RELAY/FUSE BLOCK	C4	SWITCHED, B+
112	RC6A	TXL	1.0	RD/YE	RELAY/FUSE BLOCK	C6	SPLICE, LIGHTS B+	2	LIGHTS, B+ LIGHTS FUSE OUT
113	RC6C	TXL	0.8	RD/YE	TAILLIGHT	A	SPLICE, LIGHTS B+	2	LIGHTS, B+
114	RC6G	TXL	0.8	RD/YE	SPLICE, LIGHTS B+	1	HEADLIGHT SWITCH	5	HEADLIGHT SWITCH POWER
115	RC6H	TXL	0.5	RD/YE	SPLICE, LIGHTS B+	1	HEADLIGHT SWITCH	8	HEADLIGHT SWITCH MARKER POWER
116	RC8	TXL	1.0	WH	RELAY/FUSE BLOCK	C8	RELAY/FUSE BLOCK	C7	SWITCHED, B+ CHASSIS REL POWER OUT
117	RE253	TXL	0.8	RD/DB	ECM	253	SPLICE, ECM B+	1	ECM, B+
118	REA	TXL	0.8	RD/DB	RELAY/FUSE BLOCK	A8	SPLICE, ECM B+	1	ECM, B+ ECM RELAY OUT
119	REB	TXL	0.8	RD/DB	SPLICE, ECM B+	2	PTO FUEL INJECTOR	B	ECM, B+
120	REC	TXL	0.8	RD/DB	MAG FUEL INJECTOR	B	SPLICE, ECM B+	2	ECM, B+
121	RED	TXL	0.8	RD/DB	KEY SWITCH	B	SPLICE, ECM B+	1	ECM, B+
122	REE	TXL	0.5	RD/DB	CAM PHASE SENSOR	3	SPLICE, ECM B+	2	ECM, B+
123	REF	TXL	0.8	RD/DB	SPLICE, ECM B+	1	SPLICE, IGNITION POWER	2	ECM, B+
124	REH	TXL	0.5	RD/DB	RELAY/FUSE BLOCK	A7	SPLICE, ECM B+	1	ECM B+ FAN REL COIL POWER
125	RF	TXL	1.0	OG/BK	RELAY/FUSE BLOCK	A6	FAN	B	FAN, B+ FAN RELAY OUT
126	RP	TXL	1.0	RD/BU	RELAY/FUSE BLOCK	A4	FUEL PUMP/LEVEL	3	FUEL PUMP RELAY OUT
127	S11	TXL	0.5	VT/WH	FUEL PUMP/LEVEL	1	SPEEDOMETER	11	FUEL SENSOR
128	S8	TXL	0.5	YE	SPEEDOMETER	B	HIGH BEAM SPLICE	2	HIGH BEAM SIGNAL
129	S8A	TXL	0.8	YE	HIGH BEAM SPLICE	2	HEADLIGHT SWITCH	6	HEADLIGHT SWITCH HI BEAM
130	S8B	TXL	0.8	YE	LEFT HEADLIGHT	C	HIGH BEAM SPLICE	1	LH HEADLIGHT HI BEAM
131	S8C	TXL	0.8	YE	RIGHT HEADLIGHT	C	HIGH BEAM SPLICE	1	RH HEADLIGHT HI BEAM

02/22/11

FUSE/RELAY BLOCK





2013 *RANGER* RZR 4 800 (EPS)

FILE NAME: 2411767.RSD

WIRE COLOR LEGEND	
BK	BLACK (PAINT)
BL	BLUE
BR	BRAKE LIGHT
BN	BROWN
DG	DARK GREEN
LB	LIGHT BLUE
LG	LIGHT GREEN
OG	ORANGE
PK	PINK
RD	RED
TQ	TOOL QUICKPLAY
WH	WHITE
YE	YELLOW
CL	CLEAR

TWO WIRE COLORS ARE SHOWN AS A STRIPED WIRE. EXAMPLE: RD/YE = RED WITH YELLOW TRACE.

▽ = ENGINE GROUND

▽ = CHASSIS GROUND

NC = SWITCH NORMALLY CLOSED
NO = SWITCH NORMALLY OPEN

HARNESS: 2411767-01

SHEET NO. 1 OF 2

WINCH SWITCH

POWER STEERING ASSEMBLY (P/N 2411530)

EPS POWER (A1)	
PIN	FUNCTION
A	BATTERY (+)
B	BATTERY (-)

EPS SENSOR (B)	
PIN	FUNCTION
1	ENGINE RPM (NEG. REF.)
2	ENGINE RPM
3	IGNITION SIGNAL
4	CAN BUS LOW
5	VEHICLE SPEED
6	VEHICLE SPEED (NEG. REF.)
7	EPAS SYSTEM FAULT SIGNAL
8	CAN BUS HIGH

AUX SWITCH (P/N 4012908)

HEADLIGHT SWITCH (P/N 4012909)

IGNITION SWITCH (P/N 4012465)

KEY SWITCH

INSTRUMENT CLUSTER (P/N 3280537)

PIN	FUNCTION
1	CAN HIGH
2	CAN LOW
3	SWITCHED POWER (+)
4	CONSTANT POWER (+)
5	POWER GROUND
6	RIGHT TURN SIGNAL INPUT
7	
8	HIGH BEAM SWITCH INPUT

PIN	FUNCTION
9	
10	
11	FUEL LEVEL INPUT
12	BLACKOUT MODE
13	
14	
15	AMBIENT AIR TEMPERATURE
16	SPARE

DIAGNOSTIC

ETHERNET (P/N 4012700)

TRANSMISSION SWITCH

SPEED SENSOR (LOCATED ON TRANSMISSION)

FUEL PUMP (P/N 2521117)

TANK LEVEL	RESISTANCE (Ω)
FULL	8.0±1.0Ω
EMPTY	90.0±4.5Ω

PIN	FUNCTION
1	FUEL LEVEL SENSOR "+"
2	FUEL LEVEL SENSOR "-"
3	FUEL PUMP "+"
4	FUEL PUMP "-"

SPLICE, DASH GROUND

SPLICE, B+ UNSWITCHED FUSED

SPLICE, GROUND FRONT

SPLICE, ECM B+

SPLICE, R/S B+

SPLICE, CAN LOW

SPLICE, CAN HIGH

SPLICE, LIGHTS B+

SPLICE, BRAKE

SPLICE, IGNITION POWER

SPLICE, SENSOR GROUND

FUSIBLE SPLICE 1

30 AMP CIRCUIT BREAKER (P/N 2410807)

REAR BRAKE SWITCH (P/N 4010721)

FAN MOTOR

24(C) (1 VOLTS WIRE TO POWER HUB COIL)

AWD HUB COIL

LH HEADLIGHT (P/N 2411492)

RH HEADLIGHT (P/N 2411493)

LOW BEAM SPLICE

HIGH BEAM SPLICE

SPLICE, GROUND FRONT

TAILLIGHT

THROTTLE RELEASE SWITCH

RELAY/FUSE BLOCK

BOSS CAVITIES C9,C6,C7

(P/N 2411035) 64 PLUGS

MAG FUEL INJECTOR

PTO FUEL INJECTOR

RESISTANCE: 14.5±0.7Ω
MAG FUEL INJECTOR
P/N 1043181

RESISTANCE: 14.5±0.7Ω
PTO FUEL INJECTOR
P/N 1043181

CAVITY	FUNCTION
1	GROUND
2	OUTPUT
3	VOLTAGE (+)

CAM PHASE SENSOR (P/N 2410835)

4-5.1Ω TPS

T-MAP (P/N 2411528)

COOLANT TEMP SENSOR

THERMISTOR (P/N 4010641)
NOMINAL RESISTANCE:
AT 20°C/2.5 KΩ±8%
AT 100°C/0.188 KΩ±3%

IDLE AIR CONTROL

RESISTANCE BETWEEN PINS	
PINS	RESISTANCE
1-2	35Ω±8(.2Ω)
2-3	35Ω±8(.2Ω)
1-3	60Ω±2.4Ω
4-5	35Ω±8(.2Ω)
5-6	35Ω±8(.2Ω)
4-6	60Ω±2.4Ω
ALL OTHER COMBINATIONS:OPEN	

POWER FUSE

START SOL BAT PLUS

START SOLENOID

IGNITION COIL (P/N 4010423)

TRIM PLUG

BATTERY VOLTAGE: 12V

STARTER MOTOR

HALL SENSOR

CRANK POSITION SENSOR (P/N 2410720)

LAST 2 DIGITS OF 200 SERIES NUMBER CORESPOND TO CONNECTOR CAVITY NUMBER (1E, 210=CAVITY 10)

STATOR (P/N 4011982)

REGULATOR (P/N 4012941)

VREG DC OUTPUT

VREG AC INPUT

GROUND, REAR 6MM RING

SPLICE, CPS SHIELD

SPLICE, SHIELD

SPLICE, GROUND REAR

4013201-001 BK FRAME GROUND 1

4011499-001 BK FRAME GROUND 2

2013 *RANGER* RZR 4 800 (EPS)

FILE NAME: 2411767.RSD

WIRE COLOR LEGEND	
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
CL	CLEAR

TWO WIRE COLORS ARE SHOWN WITH MAIN STRAND COLOR LISTED FIRST + RED WITH YELLOW TRACE.

▽ = ENGINE GROUND

▽ = CHASSIS GROUND

NC = SWITCH NORMALLY CLOSED
NO = SWITCH NORMALLY OPEN

HARNESS: 2411767-01

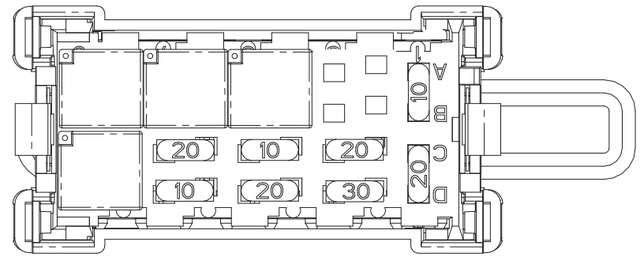
SHEET NO. 2 OF 2

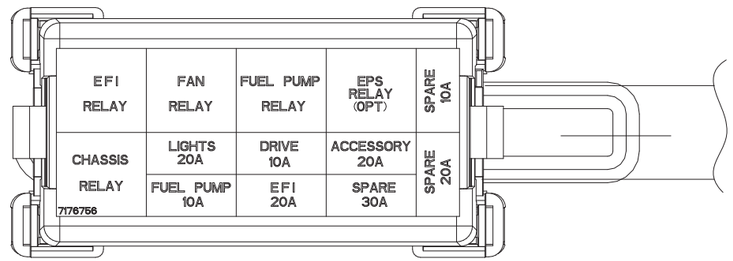
SCHEMATIC CABLE/WIRE TERMINATION TABLE

INDEX	CCT #	TYPE	GAUGE	COLOR	FROM COMPONENT	FROM PORT	TO COMPONENT	TO PORT	FUNCTION
1	20LA	TXL	0.8	DG	LOW BEAM SPLICE	2	HEADLIGHT SWITCH	3	HEADLIGHT SWITCH LOW B-
2	20LB	TXL	0.8	DG	LEFT HEADLIGHT	A	LOW BEAM SPLICE	1	LH HEADLIGHT LOW BEAM
3	20LC	TXL	0.8	DG	RIGHT HEADLIGHT	A	LOW BEAM SPLICE	1	RH HEADLIGHT LOW BEAM
4	30A	TXL	0.8	OG	BRAKE SWITCH	P2	SPLICE, BRAKE	1	BRAKE SIGNAL
5	30B	TXL	0.8	OG	TAILLIGHT	B	SPLICE, BRAKE	2	BRAKE SIGNAL
6	30C	TXL	0.8	OG	START SOLENOID	2	SPLICE, BRAKE	2	BRAKE SIGNAL
7	40	TXL	0.8	DG/WH	START SOLENOID	1	KEY SWITCH	A	START SOLENOID CONTROL GROUND
8	4011497-001	SGT	13.0	RD	TBD	1	START SOL TO BATTERY (+)	1	TBD
9	4011498-001	SGT	13.0	RD	TBD	1	TBD	1	TBD
10	4011499-001	SGT	13.0	BK	FRAME GROUND TO STARTER	1	START SOL TO STARTER	1	TBD
11	4013201-001	SGX	13.0	BK	TBD	1	TBD	1	FRAME GROUND 1 TO BATTERY (-)
12	50	TXL	1.0	WH	HEADLIGHT SWITCH	2	HEADLIGHT SWITCH	4	HEADLIGHT SWITCH JUMPER
13	70	TXL	2.0	YE	VREG AC INPUT	P3	STATOR	A	VREG AC INPUT
14	71	TXL	2.0	YE	VREG AC INPUT	P2	STATOR	B	STATOR AC
15	72	TXL	2.0	YE	VREG AC INPUT	P1	STATOR	C	STATOR AC
16	B1A	TXL	3.0	RD	START SOL BAT PLUS	1	POWER FUSE	E	UNSWITCHED B+ EPS IN
17	B1B	TXL	3.0	RD	RELAY/FUSE BLOCK	B3	POWER FUSE	F	UNSWITCHED B+ EPS FUSE POWER IN
18	B2A	TXL	2.0	RD	START SOL BAT PLUS	1	POWER FUSE	C	UNSWITCHED B+ CHASSIS IN
19	B2B	TXL	2.0	RD	POWER FUSE	D	RELAY/FUSE BLOCK	D9	UNSWITCHED, B+ CHASSIS REL POWER IN
20	B3A	TXL	1.0	RD	START SOL BAT PLUS	1	20A CIRCUIT BREAKER	2	UNSWITCHED B+
21	B3B	TXL	1.0	RD	RELAY/FUSE BLOCK	B7	20A CIRCUIT BREAKER	1	UNSWITCHED FUSED,B+ FAN RELAY POWER IN
22	B4A	FUSIBLE LINK	1.0	BK	START SOL BAT PLUS	1	FUSIBLE SPLICE 1	2	FUSELINK VREG OUTPUT B+
23	B4B	TXL	3.0	RD	VREG DC OUTPUT	P3	FUSIBLE SPLICE 1	1	VOLTAGE REGULATOR OUTPUT B+
24	B5A	TXL	0.8	RD/WH	RELAY/FUSE BLOCK	D4	SPLICE, B+ UNSWITCHED FUSED	2	UNSWITCHED FUSED, B+ UNSW FUSE POWER OUT
25	B5C	TXL	0.5	RD/WH	RELAY/FUSE BLOCK	A9	SPLICE, B+ UNSWITCHED FUSED	1	UNSWITCHED FUSED B+ ECM REL COIL POWER
26	B5D	TXL	0.5	RD	SPEEDOMETER	4	SPLICE, B+ UNSWITCHED FUSED	1	UNSWITCHED FUSED B+
27	B5E	TXL	0.8	RD/WH	KEY SWITCH	C	SPLICE, B+ UNSWITCHED FUSED	2	UNSWITCHED FUSED, B+
28	B5F	TXL	0.8	RD/WH	RELAY/FUSE BLOCK	B9	SPLICE, B+ UNSWITCHED FUSED	1	UNSWITCHED FUSED B+
29	B6	TXL	1.0	RD/GN	RELAY/FUSE BLOCK	D6	RELAY/FUSE BLOCK	B5	FUEL PUMP FUSE RELAY, B+
30	B7A	TXL	2.0	RD	POWER FUSE	A	START SOL BAT PLUS	1	UNSWITCHED, B+ ENGINE POWER FUSE IN
31	B7B	TXL	2.0	RD	POWER FUSE	B	RELAY/FUSE BLOCK	D5	UNSWITCHED, B+ ENGINE POWER FUSE IN
32	BUSA57	BUS	BUS	BUS	RELAY/FUSE BLOCK	A7	RELAY/FUSE BLOCK	A5	ECM, B+
33	BUSC53	BUS	BUS	BUS C	RELAY/FUSE BLOCK	C5	RELAY/FUSE BLOCK	C3	SWITCHED B+
34	BUSC57	BUS	BUS	BUS C	RELAY/FUSE BLOCK	C7	RELAY/FUSE BLOCK	C5	SWITCHED B+
35	C1H	TXL	0.5TP	YE	ECM	236	SPLICE, CAN HIGH	2	CAN HIGH
36	C1L	TXL	0.5TP	DG	ECM	248	SPLICE, CAN LOW	1	CAN LOW
37	C2H	TXL	0.5TP	YE	DIAGNOSTIC	H	SPLICE, CAN HIGH	2	CAN HIGH
38	C2L	TXL	0.5TP	DG	DIAGNOSTIC	G	SPLICE, CAN LOW	2	CAN LOW
39	C3H	TXL	0.5TP	YE	SPEEDOMETER	I	SPLICE, CAN HIGH	1	CAN HIGH
40	C3L	TXL	0.5TP	DG	SPEEDOMETER	2	SPLICE, CAN LOW	1	CAN LOW
41	C4H	TXL	0.5	YE	EPS SIGNAL	8	SPLICE, CAN HIGH	1	CAN HIGH
42	C4L	TXL	0.5	CAN LOW	EPS SIGNAL	4	SPLICE, CAN LOW	2	TBD
43	COI_1	TXL	0.5	BK	CRANK POSITION SENSOR	C	ECM	227	CRANK POSITION SENSOR NEG
44	COI_2	TXL	0.5	WH	ECM	239	CRANK POSITION SENSOR	A	CRANK POSITION SENSOR POSITIVE
45	COI_3	SHLD	0.35	SHLD	SPLICE, CPS SHIELD	2	SPLICE, SHIELD	1	SHIELD, CPS (COI)
46	CO2_1	TXL	0.8	WH	ECM	256	IGNITION COIL	1	IGNITION CONTROL PTO
47	CO2_2	TXL	0.5	RD	IGNITION COIL	2	SPLICE, IGNITION POWER	1	ECM, B+
48	CO2_3	TXL	0.8	BK	ECM	255	IGNITION COIL	3	IGNITION CONTROL MAG
49	CO2_4	SHLD	0.35	SHLD	TRIM FLUSH	1	SPLICE, SHIELD	2	SHIELD, IGNITION COIL (C02)
50	E202	TXL	0.5	DG/YE	ECM	202	RELAY/FUSE BLOCK	B8	ECM RELAY COIL CONTROL
51	E204	TXL	0.5	OG/WH	ECM	204	RELAY/FUSE BLOCK	B6	FAN RELAY COIL CONTROL
52	E205	TXL	0.5	BK	ECM	205	MAG FUEL INJECTOR	A	MAG INJECTOR DRIVER
53	E206	TXL	0.5	OG	ECM	206	TPS	3	3.3V SENSOR SUPPLY V2 (TPS)
54	E207	TXL	0.5	OG	ECM	207	TMAP	3	A/D +5V SOURCE
55	E210	TXL	0.5	DG	ECM	210	TPS	2	TPS SIGNAL
56	E216	TXL	0.5	WH	ECM	216	PTO FUEL INJECTOR	A	PTO INJECTOR DRIVER
57	E217	TXL	0.5	BN/WH	ECM	217	AWD	B	AWD CONTROL
58	E219	TXL	0.5	DG/YE	ECM	219	RELAY/FUSE BLOCK	B4	FUEL PUMP RELAY COIL CONTROL
59	E222	TXL	0.5	YE	ECM	222	TMAP	4	MANIFOLD PRESSURE SIGNAL
60	E223	TXL	0.5	WH	ECM	223	TRANSMISSION SWITCH	A	TRANSMISSION SWITCH SIGNAL OUTPUT
61	E224	TXL	0.5	DB	ECM	224	TMAP	2	AIR TEMP SENSOR SIGNAL
62	E225	TXL	0.5	RD/DG	ECM	225	IDLE AIR CONTROL	3	IAC PIN 3
63	E226	TXL	0.5	BU/BK	IDLE AIR CONTROL	4	ECM	226	IAC PIN 4
64	E228	TXL	0.5	GY	ECM	228	AWD SWITCH	3	TURF REQUEST
65	E230	TXL	0.5	VT/WH	ECM	230	SPLICE, SENSOR GROUND	1	SENSOR GROUND
66	E230A	TXL	0.5	VT/WH	SPLICE, SENSOR GROUND	2	COOLANT TEMP SENSOR	1	SENSOR GROUND
67	E230B	TXL	5.0	VT/WH	THROTTLE RELEASE SWITCH	A	SPLICE, SENSOR GROUND	1	TRS SENSOR GROUND
68	E231	TXL	0.5	VT	ECM	231	TPS	1	TPS GROUND
69	E232	TXL	0.5	DG	THROTTLE RELEASE SWITCH	B	ECM	232	TRS SENSOR HI
70	E233	TXL	0.5	OG/BK	ECM	233	CAM PHASE SENSOR	2	CAM POSITION SIGNAL
71	E237	TXL	0.5	DG/RD	ECM	237	IDLE AIR CONTROL	1	IAC PIN 1
72	E238	TXL	0.5	DB/RD	ECM	238	IDLE AIR CONTROL	6	IAC PIN 6
73	E242	TXL	0.5	VT	ECM	242	TMAP	1	MANIFOLD PRESSURE GROUND
74	E244	TXL	0.5	YE	COOLANT TEMP SENSOR	2	ECM	244	COOLANT TEMP SIGNAL
75	E245	TXL	0.5	GN/RD	VEHICLE SPEED SENSOR	C	ECM	245	VEHICLE SPEED SIGNAL
76	GD1	TXL	1.0	BN	GROUND, REAR 6MM RING	1	SPLICE, DASH GROUND	2	GROUND, FRONT SPLICE
77	GD3	TXL	0.5	BN	HEADLIGHT SWITCH	7	SPLICE, DASH GROUND	1	HEADLIGHT SWITCH MARKER GROUND
78	GD4A	TXL	0.5	BN	AWD SWITCH	2	SPLICE, DASH GROUND	2	GROUND
79	GD5	TXL	0.5	BN	SPEEDOMETER	5	SPLICE, DASH GROUND	1	GROUND, SPEEDOMETER
80	GD6	TXL	0.5	BN	DIAGNOSTIC	D	SPLICE, DASH GROUND	1	GROUND, DIAGNOSTIC
81	GD7	TXL	0.5	BN	FUEL PUMP/LEVEL	2	SPLICE, DASH GROUND	2	LEVEL GROUND
82	GF1	TXL	3.0	BN	SPLICE, GROUND FRONT	1	GROUND, REAR 6MM RING	1	GROUND, FRONT REAR CONNECTION
83	GF2	TXL	0.8	BN	LEFT HEADLIGHT	B	SPLICE, GROUND FRONT	2	GROUND, HEADLIGHT
84	GF3	TXL	0.8	BN	RIGHT HEADLIGHT	B	SPLICE, GROUND FRONT	2	GROUND, HEADLIGHT
85	GF4	TXL	1.0	BN	FAN	A	SPLICE, GROUND FRONT	1	GROUND, FAN
86	GF5	TXL	1.0	BN	12 VOLT RECEPTACLE A2 GROUND	1	SPLICE, GROUND FRONT	2	GROUND
87	GF6A	TXL	0.5	BN	RELAY/FUSE BLOCK	B2	SPLICE, GROUND FRONT	2	GROUND EPS REL COIL
88	GF6B	TXL	0.5	BN	DIODE 6A	2	RELAY/FUSE BLOCK	B2	CHASSIS RELAY COIL GROUND
89	GF6B1	TXL	0.5	BN	RELAY/FUSE BLOCK	D8	DIODE 6A	1	CHASSIS RELAY COIL GROUND
90	GR1	TXL	3.0	BN	VREG DC OUTPUT	P1	GROUND, REAR 6MM RING	1	REGULATOR GROUND
91	GR2	TXL	3.0	BN	EPS POWER	B	GROUND, REAR 6MM RING	1	GROUND, EPS POWER
92	GR250	TXL	0.8	BN	ECM	250	GROUND, REAR 6MM RING	1	GROUND, ECM BATTERY
93	GR251	TXL	0.8	BN	ECM	251	GROUND, REAR 6MM RING	1	GROUND, ECM BATTERY
94	GR252	TXL	0.8	BN	ECM	252	GROUND, REAR 6MM RING	1	GROUND, ECM BATTERY
95	GR3	TXL	2.0	BN	STATOR	D	GROUND, REAR 6MM RING	1	GROUND, STATOR
96	GR3A2A	TXL	0.5	BN	CRANK POSITION SENSOR	B	SPLICE, CPS SHIELD	1	SHIELD, CPS
97	GR4A	TXL	1.0	BN	SPLICE, GROUND REAR	2	GROUND, REAR 6MM RING	1	GROUND
98	GR4B	TXL	0.8	BN	FUEL PUMP/LEVEL	4	PUMP GROUND	2	TBD
99	GR4C	TXL	0.5	BN	VEHICLE SPEED SENSOR	B	SPLICE, GROUND REAR	1	GROUND
100	GR4D	TXL	0.8	BN	TAILLIGHT	C	SPLICE, GROUND REAR	1	GROUND
101	GR4E	TXL	0.5	BN	SPLICE, SHIELD	2	SPLICE, GROUND REAR	2	GROUND
102	GR4F	TXL	0.5	BN	CAM PHASE SENSOR	1	SPLICE, GROUND REAR	1	GROUND
103	GR4G	TXL	0.8	BN	BRAKE SWITCH	P1	SPLICE, GROUND REAR	1	GROUND, KEY SWITCH
104	GT1	TXL	0.5	BN	TRANSMISSION SWITCH	B	GROUND, REAR 6MM RING	1	TRANSMISSION SWITCH GROUND
105	K01	TXL	0.8	OG	KEY SWITCH	D	SPLICE, R/S B+	1	KEY SWITCH, B+
106	K02A	TXL	0.5	OG	RELAY/FUSE BLOCK	A3	SPLICE, R/S B+	2	KEY SWITCH, B+ EPS REL COIL POWER
107	K02C	TXL	0.5	OG	RELAY/FUSE BLOCK	A3	RELAY/FUSE BLOCK	C9	KEY SWITCH, B+ CHAS REL COIL POWER
108	K03	TXL	0.5	OG	SPEEDOMETER	3	SPLICE, R/S B+	1	KEY SWITCH, B+
109	K04	TXL	0.5	OG	VEHICLE SPEED SENSOR	A	SPLICE, R/S B+	2	KEY SWITCH, B+
110	K05	TXL	0.5	OG	DIAGNOSTIC	A	SPLICE, R/S B+	2	KEY SWITCH, B+
111	K06	TXL	0.5	OG	EPS SIGNAL	3	SPLICE, R/S B+	1	KEY SWITCH B+
112	K07	TXL	0.8	OG	RELAY/FUSE BLOCK	C9	RELAY/FUSE BLOCK	D7	KEY SWITCH B+, FUEL PUMP FUSE IN
113	K209	TXL	0.5	OG	ECM	209	SPLICE, R/S B+	2	KEY SWITCH, B+
114	RC2A	TXL	1.0	OG/WH	RELAY/FUSE BLOCK	C2	SPLICE, B+ ACC FUSE OUT	2	ACCESSORIES, B+ ACC FUSE OUT
115	RC2B	TXL	1.0	OG/WH	12 VOLT RECEPTACLE A1 B+	1	SPLICE, B+ ACC FUSE OUT	1	SPLICE B+ ACC FUSE OUT
116	RC2E	TXL	1.0	OG/WH	WINCH SWITCH	P1	SPLICE, B+ ACC FUSE OUT	2	B+ ACCESSORY FUSE OUT
117	RC4F	TXL	0.5	RD/DG	AWD	C	RELAY/FUSE BLOCK	C4	SWITCHED, B+
118	RC6A	TXL	1.0	RD/YE	RELAY/FUSE BLOCK	C6	SPLICE, LIGHTS B+	2	LIGHTS, B+ LIGHTS FUSE OUT
119	RC6C	TXL	0.8	RD/YE	TAILLIGHT	A	SPLICE, LIGHTS B+	2	LIGHTS, B+
120	RC6G	TXL	0.8	RD/YE	SPLICE, LIGHTS B+	1	HEADLIGHT SWITCH	5	HEADLIGHT SWITCH POWER
121	RC6H	TXL	0.5	RD/YE	SPLICE, LIGHTS B+	1	HEADLIGHT SWITCH	8	HEADLIGHT SWITCH MARKER POWER
122	RC8	TXL	1.0	WH	RELAY/FUSE BLOCK	C8	RELAY/FUSE BLOCK	C7	SWITCHED, B+ CHASSIS REL POWER OUT
123	RE253	TXL	0.8	RD/DB	ECM	253	SPLICE, ECM B+	1	ECM, B+
124	REA	TXL	0.8	RD/DB	RELAY/FUSE BLOCK	A8	SPLICE, ECM B+	1	ECM, B+ ECM RELAY OUT
125	REB	TXL	0.8	RD/DB	SPLICE, ECM B+	2	PTO FUEL INJECTOR	B	ECM, B+
126	REC	TXL	0.8	RD/DB	MAG FUEL INJECTOR	B	SPLICE, ECM B+	2	ECM, B+
127	RED	TXL	0.8	RD/DB	KEY SWITCH	B	SPLICE, ECM B+	1	ECM, B+
128	REE	TXL	0.5	RD/DB	CAM PHASE SENSOR	3	SPLICE, ECM B+	2	ECM, B+
129	REF	TXL	0.8	RD/DB	SPLICE, ECM B+	1	SPLICE, IGNITION POWER	2	ECM, B+
130	REH	TXL	0.5	RD/DB	RELAY/FUSE BLOCK	A7	SPLICE, ECM B+	1	ECM B+ FAN REL COIL POWER
131	RF	TXL	1.0	OG/BK	RELAY/FUSE BLOCK	A6	FAN	B	FAN, B+ FAN RELAY OUT
132	RP	TXL	1.0	RD/BU	RELAY/FUSE BLOCK	A4	FUEL PUMP/LEVEL	3	FUEL PUMP RELAY OUT
133	RS	TXL	3.0	OG	RELAY/FUSE BLOCK	A2	EPS POWER	A	EPS RELAY POWER OUT
134	S11	TXL	0.5	VT/WH	FUEL PUMP/LEVEL	1	SPEEDOMETER	11	FUEL SENSOR
135	S8	TXL	0.5	YE	SPEEDOMETER	8	HIGH BEAM SPLICE	2	HIGH BEAM SIGNAL
136	S8A	TXL	0.8	YE	HIGH BEAM SPLICE	2	HEADLIGHT SWITCH	6	HEADLIGHT SWITCH HI BEAM
137	S8B	TXL	0.8	YE	LEFT HEADLIGHT	C	HIGH BEAM SPLICE	1	LH HEADLIGHT HI BEAM
138	S8C	TXL	0.8	YE	RIGHT HEADLIGHT	C	HIGH BEAM SPLICE	1	RH HEADLIGHT HI BEAM

07/11/11

FUSE/RELAY BLOCK





2013 *RANGER* RZR / RZR S / RZR 4 (CARGO BOX)

FILE NAME: 2411384.RSD

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
CL	CLEAR

TWO WIRE COLORS ARE SHOWN WITH MAIN/TRACE COLORS. EXAMPLE:RD/YE = RED WITH YELLOW TRACE.

E = ENGINE GROUND

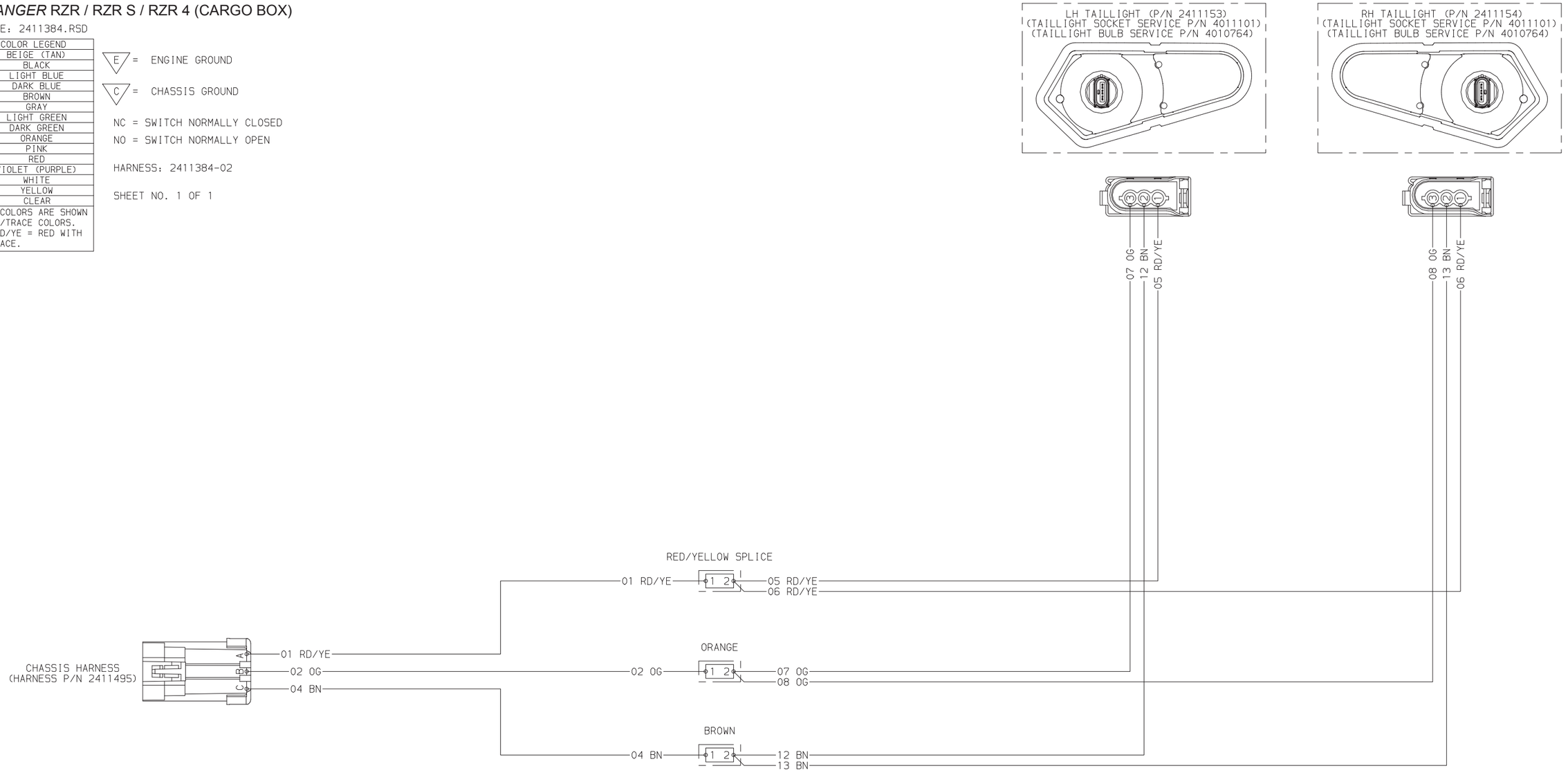
C = CHASSIS GROUND

NC = SWITCH NORMALLY CLOSED

NO = SWITCH NORMALLY OPEN

HARNESS: 2411384-02

SHEET NO. 1 OF 1



SCHEMATIC CABLE/WIRE TERMINATION TABLE									
INDEX	CCT #	TYPE	GAUGE	COLOR	FROM COMPONENT	FROM PORT	TO COMPONENT	TO PORT	FUNCTION
1	01	TXL	0.8	RD/YE	CHASSIS HARNESS	A	RED/YELLOW SPLICE	1	LIGHTS,B+
2	02	TXL	0.8	OG	CHASSIS HARNESS	B	ORANGE	1	BRAKE SIGNAL
3	04	TXL	0.8	BN	CHASSIS HARNESS	C	BROWN	1	GROUND
4	05	TXL	0.8	RD/YE	LH TAILLIGHT	1	RED/YELLOW SPLICE	2	LIGHTS,B+
5	06	TXL	0.8	RD/YE	RH TAILLIGHT	1	RED/YELLOW SPLICE	2	LIGHTS,B+
6	07	TXL	0.8	OG	LH TAILLIGHT	3	ORANGE	2	BRAKE SIGNAL
7	08	TXL	0.8	OG	RH TAILLIGHT	3	ORANGE	2	BRAKE SIGNAL
8	12	TXL	0.8	BN	LH TAILLIGHT	2	BROWN	2	GROUND
9	13	TXL	0.8	BN	RH TAILLIGHT	2	BROWN	2	GROUND

07/18/10

2013 *RANGER* RZR S 800 INT'L (CARGO BOX)

FILE NAME: 2411393.RSD

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
CL	CLEAR

TWO WIRE COLORS ARE SHOWN WITH MAIN/TRACE COLORS. EXAMPLE:RD/YE = RED WITH YELLOW TRACE.

E = ENGINE GROUND

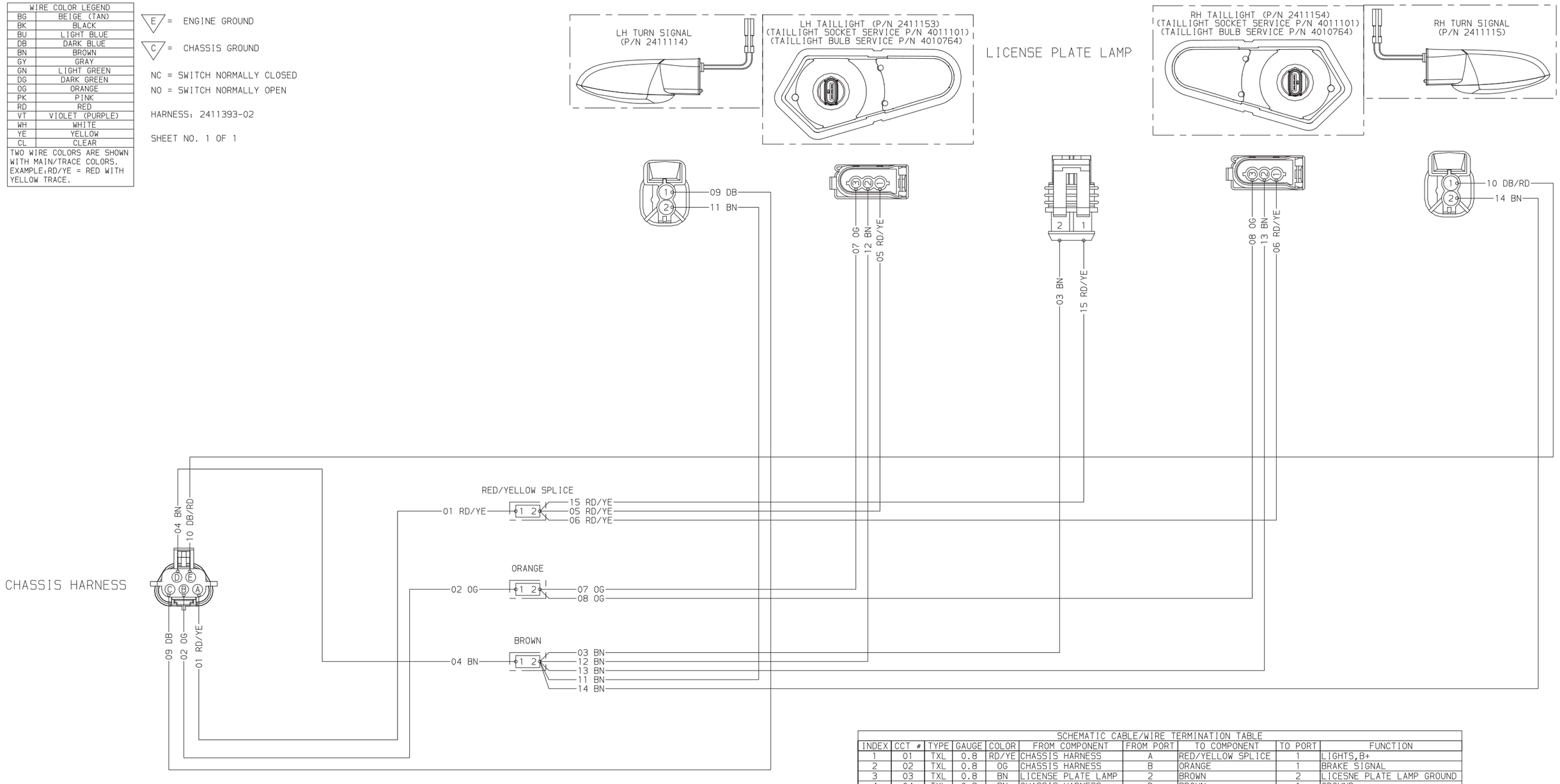
C = CHASSIS GROUND

NC = SWITCH NORMALLY CLOSED

NO = SWITCH NORMALLY OPEN

HARNESS: 2411393-02

SHEET NO. 1 OF 1



SCHEMATIC CABLE/WIRE TERMINATION TABLE

INDEX	CCT #	TYPE	GAUGE	COLOR	FROM COMPONENT	FROM PORT	TO COMPONENT	TO PORT	FUNCTION
1	01	TXL	0.8	RD/YE	CHASSIS HARNESS	A	RED/YELLOW SPLICE	1	LIGHTS,B+
2	02	TXL	0.8	OG	CHASSIS HARNESS	B	ORANGE	1	BRAKE SIGNAL
3	03	TXL	0.8	BN	LICENSE PLATE LAMP	2	BROWN	2	LICESNE PLATE LAMP GROUND
4	04	TXL	0.8	BN	CHASSIS HARNESS	D	BROWN	1	GROUND
5	05	TXL	0.8	RD/YE	LH TAILLIGHT	1	RED/YELLOW SPLICE	2	LIGHTS,B+
6	06	TXL	0.8	RD/YE	RH TAILLIGHT	1	RED/YELLOW SPLICE	2	LIGHTS,B+
7	07	TXL	0.8	OG	LH TAILLIGHT	3	ORANGE	2	BRAKE SIGNAL
8	08	TXL	0.8	OG	RH TAILLIGHT	3	ORANGE	2	BRAKE SIGNAL
9	09	TXL	0.8	DB	CHASSIS HARNESS	C	LH TURN SIGNAL	1	LH TURN SIGNAL POWER
10	10	TXL	0.8	DB/RD	CHASSIS HARNESS	E	RH TURN SIGNAL	1	RH TURN SIGNAL POWER
11	11	TXL	0.8	BN	BROWN	2	LH TURN SIGNAL	2	LH TURN SIGNAL GROUND
12	12	TXL	0.8	BN	LH TAILLIGHT	2	BROWN	2	GROUND
13	13	TXL	0.8	BN	RH TAILLIGHT	2	BROWN	2	GROUND
14	14	TXL	0.8	BN	BROWN	2	RH TURN SIGNAL	2	RH TURN SIGNAL GROUND
15	15	TXL	0.8	RD/YE	LICENSE PLATE LAMP	1	RED/YELLOW SPLICE	2	LICENSE PLATE LAMP POWER

01/06/11