

# 2016

## SERVICE MANUAL



**WILDCAT® TRAIL**



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WT066A

### CAUTION

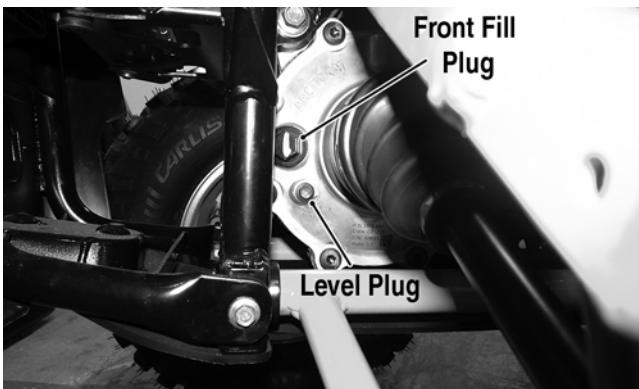
**Do not over-fill the engine with oil. Always make sure that the oil level is not above the upper mark.**

12. Inspect the area around the drain plug and oil filter for leaks.

## Front Differential - Transaxle Lubricant

To check front differential lubricant, use the following procedure.

1. Remove the level plug; lubricant should be level with the bottom threads.

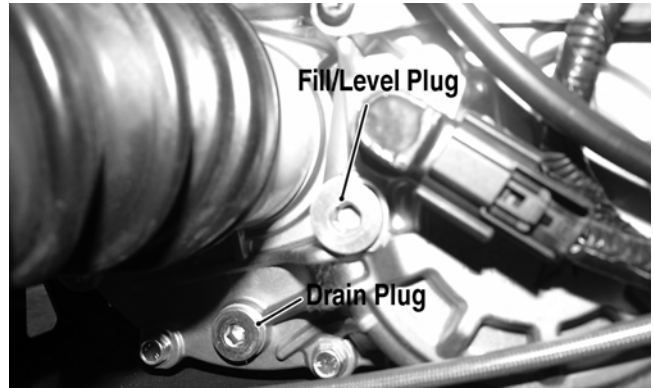


WT041A

2. If low, remove the fill plug and add lubricant until it appears at the level plug threads. Tighten the fill plug to 16 ft-lb and the level plug to 45 in.-lb.

To check transaxle lubricant, use the following procedure.

1. Remove the fill/level plug; the lubricant level should be level with the bottom of the plug threads.



WT025A

2. If low, add Arctic Cat Transaxle Fluid as necessary. Tighten the fill/level plug to 16 ft-lb.

To change the lubricant, use the following procedure.

1. Place the vehicle on level ground.
2. Remove each drain and fill plug.
3. Drain the lubricant into a drain pan.
4. After all the lubricant has been drained, install the drain plug and tighten to 18 ft-lb.
5. Pour the appropriate amount of recommended lubricant into the fill hole.
6. Install the fill plug and tighten to 16 ft-lb.

**NOTE: If the lubricant is contaminated with water, inspect the drain plug, fill plug, and/or bladder.**

## Headlight - Taillight-Brakelight

### HEADLIGHT BULB REPLACEMENT

1. Remove the wiring harness connector from the back of the headlight.
2. Remove the rubber seal; then release the retaining clip. Remove the bulb.
3. Install the new bulb; then attach the retaining clip and press on the rubber boot.
4. Connect the wiring harness.
5. Adjust the headlight using the Checking/Adjusting Headlight Aim instructions in this sub-section.

### REMOVING HEADLIGHT ASSEMBLY

1. Remove the grille.

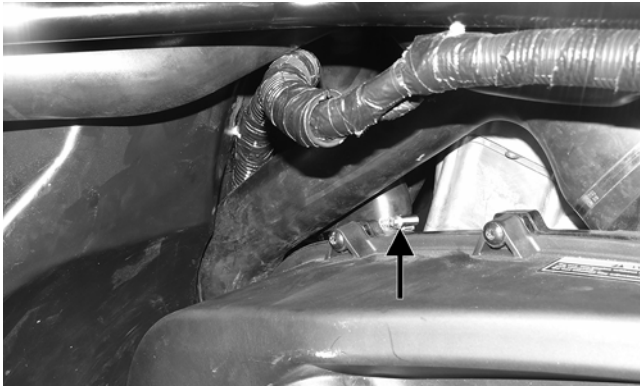
**NOTE: Removing the front fender will aid in replacing the headlight assembly.**

2. Remove the headlight adjustment cap screw.



WT028A

8. Loosen the clamp securing the clutch air intake tube to engine; then pry the tube off of engine. Account for the clamp.



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9. Remove the fasteners securing the left rear body panel.



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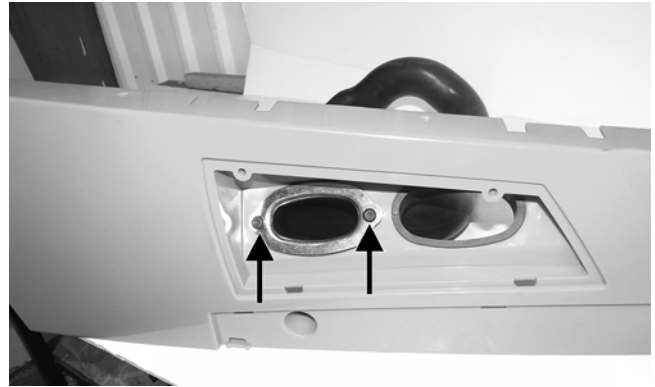
10. Remove the panel with the air/clutch intake tubes.



WT486

## INSTALLING REAR BODY PANELS

1. If removed, install the clutch air intake tube through the left rear body opening and secure it with the plate and existing cap screws. Tighten securely.



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2. Install the tabs of the body panel into the slots in the side panel; then route the air intake clutch tube to the engine.

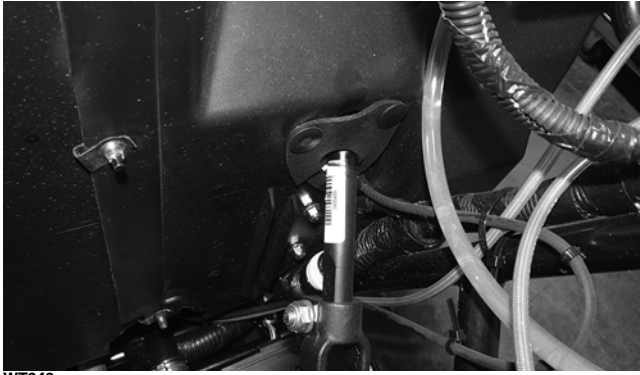


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3. With the panel tabs in place, press the panel towards the frame and maneuver the air intake tube inside the boot.



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6. Install the dash; then install the steering wheel and hood.

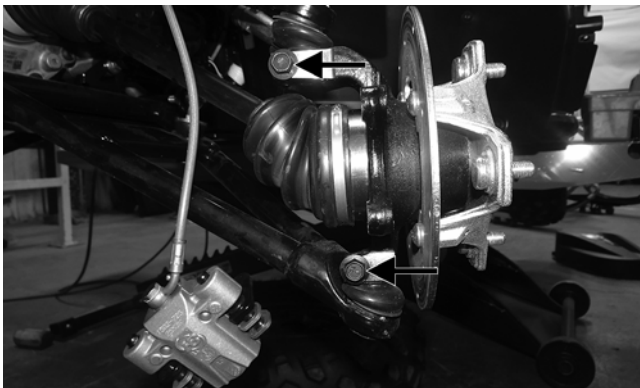
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## Steering Knuckles

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### REMOVING AND DISASSEMBLING

1. Secure the vehicle on a support stand to elevate the wheel; then remove the wheel.
2. Remove the nut securing the hub.
3. Remove the brake caliper.
4. Remove the hub assembly.
5. Remove the cotter pin from the tie rod end and remove the tie rod end from the knuckle.
6. Remove the upper cap screw securing the ball joint in the knuckle.
7. Tap the ball joint end out of the knuckle; then slide the axle out of the knuckle.
8. Remove the cap screw securing the lower ball joint to the knuckle and remove the knuckle.



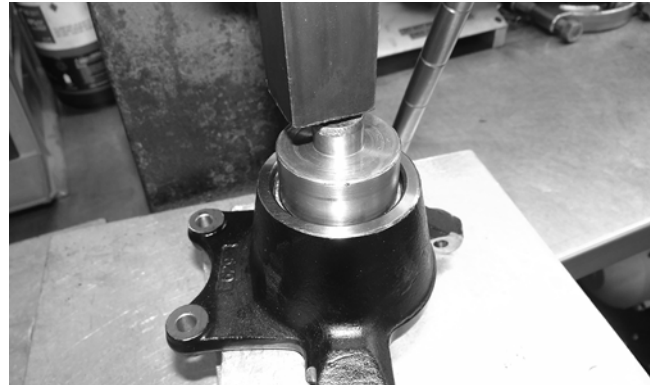
WT329A

9. Remove the snap ring securing the bearing in the knuckle; then press the bearing out of the knuckle.



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10. Using a suitable press, remove the bearing from the knuckle.



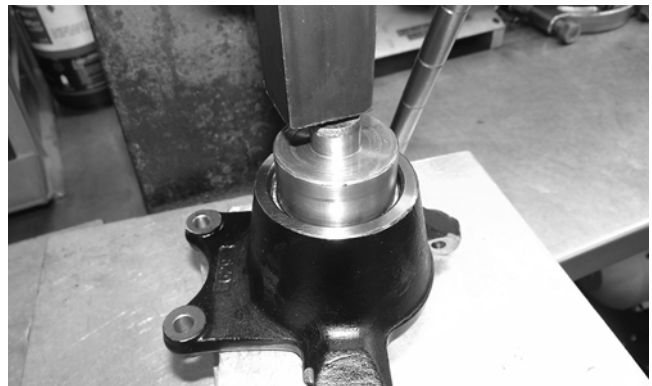
WT327

### CLEANING AND INSPECTING

1. Clean all knuckle components.
2. Inspect the bearing for pits, scoring, rusting, or premature wear.
3. Inspect the knuckle for cracks, breaks, or galling of the bearing surface.

### ASSEMBLING AND INSTALLING

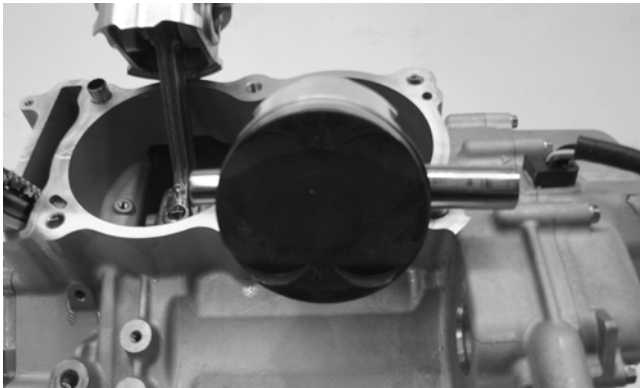
1. Using a suitable press and driver, press the bearing into the knuckle until firmly seated; then install the snap ring.



WT327

# Troubleshooting

<b>Problem: Engine will not start or is hard to start (Compression too low)</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. <b>Gasoline</b> bad - contaminated</li> <li>2. <b>Valve clearance</b> out of adjustment</li> <li>3. <b>Valve guides</b> worn</li> <li>4. <b>Valves</b> mistimed</li> <li>5. <b>Piston rings</b> worn - broken</li> <li>6. <b>Cylinder bore</b> worn</li> <li>7. <b>Starter motor</b> cranks too slowly - does not turn</li> </ol>	<ol style="list-style-type: none"> <li>1. Drain gas - replace with clean gas</li> <li>2. Adjust clearance</li> <li>3. Replace cylinder head</li> <li>4. Retime engine</li> <li>5. Replace rings</li> <li>6. Replace cylinder</li> <li>7. See Electrical System</li> </ol>
<b>Problem: Engine will not start or is hard to start (No spark)</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. <b>Spark plug(s)</b> fouled</li> <li>2. <b>Spark plug(s)</b> wet</li> <li>3. <b>Magneto</b> defective</li> <li>4. <b>ECM</b> defective</li> <li>5. <b>Ignition coil</b> defective</li> <li>6. <b>High-tension lead open</b> - shorted</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean - replace plug(s)</li> <li>2. Clean - dry plug(s)</li> <li>3. Replace stator coil</li> <li>4. Replace ECM</li> <li>5. Replace ignition coil</li> <li>6. Replace high tension lead</li> </ol>
<b>Problem: Engine will not start or is hard to start (No fuel reaching the fuel injector)</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. <b>Gas tank vent hose</b> obstructed</li> <li>2. <b>Fuel hose</b> obstructed</li> <li>3. <b>Fuel screens</b> obstructed</li> <li>4. <b>Fuel pump</b> defective</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean vent hose</li> <li>2. Clean - replace hose</li> <li>3. Clean - replace inlet screen</li> <li>4. Replace fuel pump</li> </ol>
<b>Problem: Engine stalls easily</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. <b>Gasoline</b> bad - contaminated</li> <li>2. <b>Spark plug(s)</b> fouled</li> <li>3. <b>Magneto</b> defective</li> <li>4. <b>ECM</b> defective</li> <li>5. <b>Fuel injector</b> obstructed</li> <li>6. <b>Valve clearance</b> out of adjustment</li> </ol>	<ol style="list-style-type: none"> <li>1. Drain gas - replace with clean gas</li> <li>2. Clean - replace plug(s)</li> <li>3. Replace stator coil</li> <li>4. Replace ECM</li> <li>5. Replace fuel injector</li> <li>6. Adjust clearance</li> </ol>
<b>Problem: Engine noisy (Excessive valve chatter)</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. <b>Valve clearance</b> excessive</li> <li>2. <b>Valve spring(s)</b> weak - broken</li> <li>3. <b>Camshaft</b> worn</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust clearance</li> <li>2. Replace spring(s)</li> <li>3. Replace camshaft</li> </ol>
<b>Problem: Engine noisy (Noise seems to come from piston)</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. <b>Piston - cylinder</b> worn</li> <li>2. <b>Combustion chamber</b> carbon buildup</li> <li>3. <b>Piston pin - piston pin bore</b> worn</li> <li>4. <b>Piston rings - ring groove(s)</b> worn</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace - service piston - cylinder</li> <li>2. Clean cylinder head and piston</li> <li>3. Replace - service pin - replace connecting rod</li> <li>4. Replace rings - piston</li> </ol>
<b>Problem: Engine noisy (Noise seems to come from timing chain)</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. <b>Chain</b> stretched</li> <li>2. <b>Sprockets</b> worn</li> <li>3. <b>Tension adjuster</b> malfunctioning</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace chain</li> <li>2. Replace sprockets</li> <li>3. Repair - replace adjuster</li> </ol>
<b>Problem: Engine noisy (Noise seems to come from crankshaft)</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. <b>Main bearing</b> worn - burned</li> <li>2. <b>Lower rod-end bearing</b> worn - burned</li> <li>3. <b>Rotor/flywheel</b> loose</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace bearing</li> <li>2. Replace bearing</li> <li>3. Tighten - replace flywheel - crankshaft</li> </ol>
<b>Problem: Engine noisy (Noise seems to come from crankcase)</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. <b>Gears</b> worn - chipped</li> <li>2. <b>Splines</b> worn</li> <li>3. <b>Bearings</b> worn</li> <li>4. <b>Bushing</b> worn</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace gears</li> <li>2. Replace shaft(s)</li> <li>3. Replace bearings</li> <li>4. Replace bushing</li> </ol>



ROV1-044

17. Repeat step 16 for the other piston.

**⚠ AT THIS POINT**

To service center crankcase components only, proceed to Removing Bottom-Side Components.

## Servicing Top-Side Components

### MEASURING VALVE/TAPPET CLEARANCE

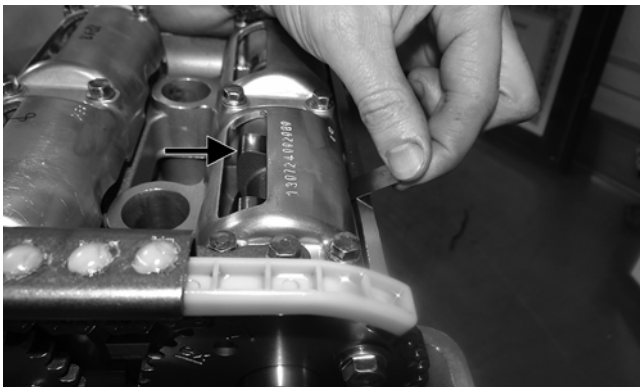
1. Rotate the engine two full revolutions.

■NOTE: Rotating the engine two full revolutions will ensure that any oil trapped in the tappet/shim is purged to maintain an accurate clearance reading.

2. Rotate the engine until the camshaft lobe of the valve being measured is directly away from the tappet.
3. Using an appropriate thickness gauge, measure and record the intake and exhaust valve clearance of the cylinder that is on the compression stroke; then rotate the engine 360° and measure and record the valve clearance of the other cylinder. Valve clearance must be within specifications.

**Valve Clearance (Cold)**

15°-25° C (59°-77° F)	Intake: 0.16 mm (0.006 in.)
	Exhaust: 0.22 mm (0.009 in.)



KC534A

4. To select the correct replacement shim for an out-of-specification clearance, note the three-digit number on the surface of the existing shim; then refer to the appropriate Tappet Shim Selection Table (Exhaust or Intake) on the following pages and use this procedure:
  - A. Find the Measured Tappet Clearance (from step 3) in the left-side vertical column of the table.
  - B. Find the Present Shim Size (three-digit-number) at the top-side horizontal column of the table.
  - C. Match the clearance in the vertical column with the present shim size to obtain the recommended replacement shim.

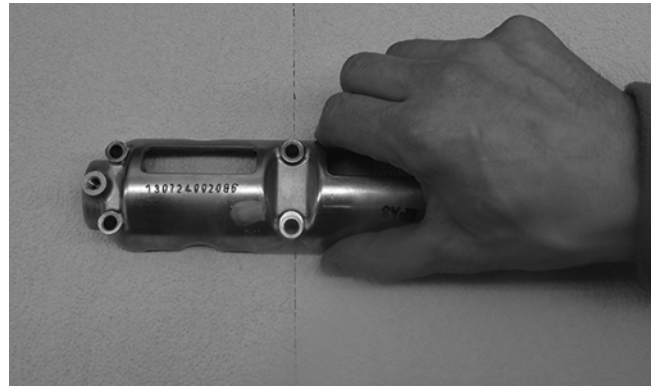
### Cleaning/Inspecting Valve Cover

■NOTE: If the valve cover cannot be trued, the cylinder head assembly must be replaced.

1. Wash the camshaft holder in parts-cleaning solvent.
2. Place the camshaft holder on the Surface Plate covered with #400 grit wet-or-dry sandpaper. Using light pressure, move the camshaft holder in a figure eight motion. Inspect the sealing surface for any indication of high spots. A high spot can be noted by a bright metallic finish. Correct any high spots before assembly by continuing to move the camshaft holder in a figure eight motion until a uniform bright metallic finish is attained.

**CAUTION**

Do not remove an excessive amount of the sealing surface or damage to the camshaft will result. Always check camshaft clearance when resurfacing the valve cover.



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**CAUTION**

Water or parts-cleaning solvent must be used in conjunction with the wet-or-dry sandpaper or damage to the sealing surface may result.

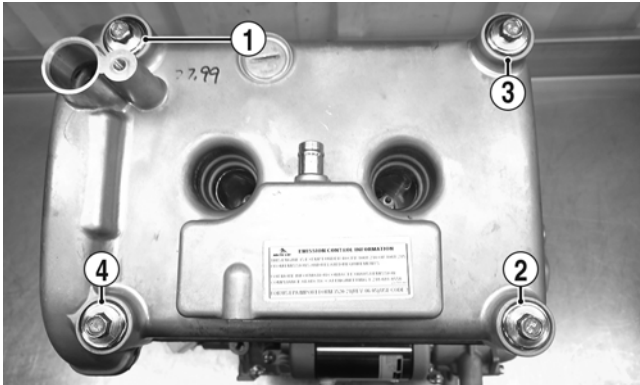
### VALVE ASSEMBLY

When servicing valve assembly, inspect valve seats, valve stems, valve faces, and valve stem ends for pits, burn marks, or other signs of abnormal wear.

■NOTE: Whenever a valve is out of tolerance, it must be replaced.

■NOTE: Applying a small bead of silicone between the head cover and rubber gasket will aid in assembling.

24. Tighten the head cover fasteners in the order shown to 7 ft-lb with the rubber washers and steel cups.



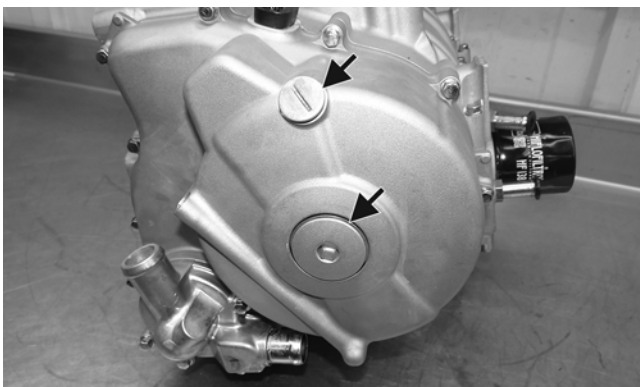
WT163A

25. Install the cam timing sensor with O-ring (lightly coated with grease).



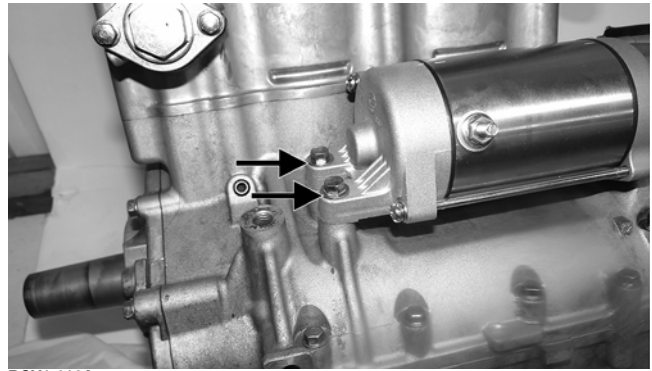
WT165

26. Install the timing inspection and magneto plugs. Tighten the timing inspection plug to 10 ft-lb and the magneto plug to 8 ft-lb.



WT166A

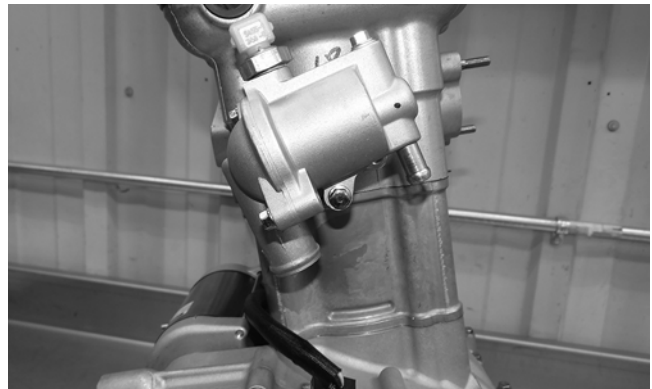
27. Install the starter motor and secure with the two cap screws.



ROV1-116A

28. Install the thermostat housing.

■NOTE: Apply a small amount of grease to the O-ring before installing.



WT168

## Bottom-Side Components

■NOTE: For efficiency, it is preferable to remove and disassemble only those components which need to be addressed and to service only those components. The technician should use discretion and sound judgment.

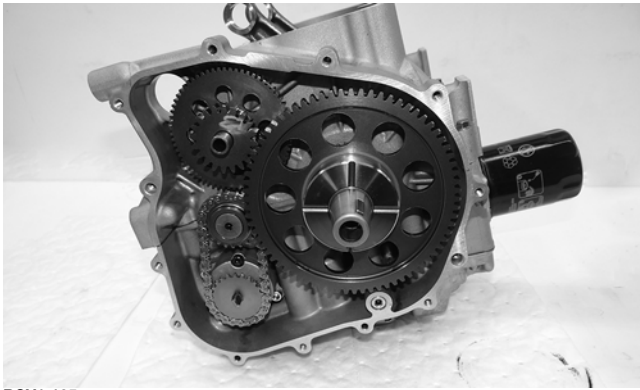
### ⓘ AT THIS POINT

To service any one specific component, only limited disassembly of components may be necessary. Note the AT THIS POINT information in each sub-section.

■NOTE: The engine must be removed from the frame for this procedure.

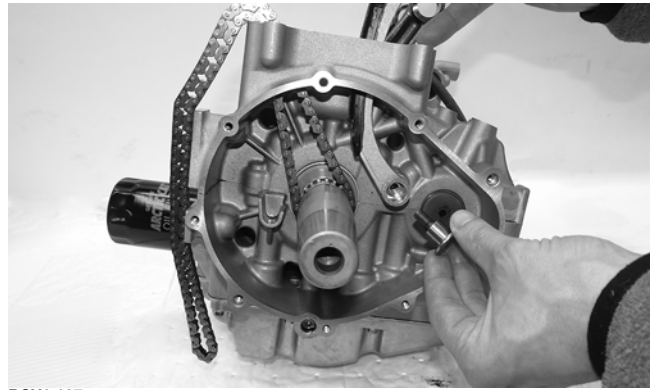
## Removing Bottom-Side Components

1. Remove the cap screws securing the PTO-side cover to crankcase.



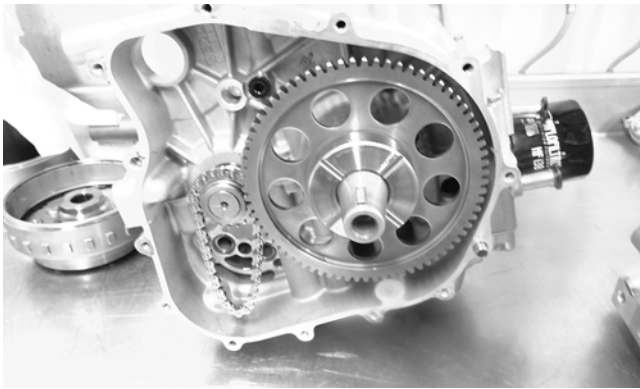
ROV1-105

17. If the flywheel and starter gear were removed, install the starter gear onto the crankshaft; then install the flywheel key.



ROV1-107

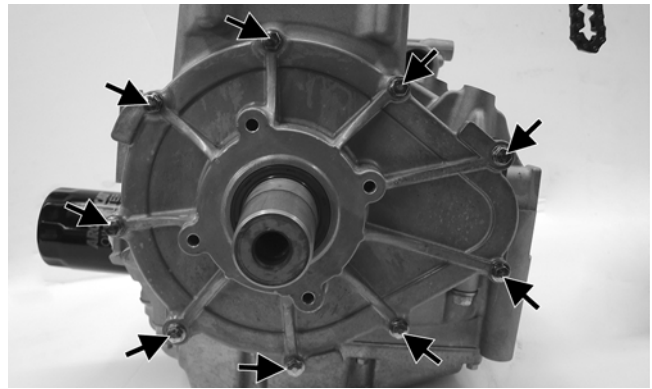
21. With two dowel pins and the gasket in place, install the PTO-side cover onto the crankcase and tighten to 7 ft-lb.



KC543

■NOTE: Be sure to wipe any grease or oil from the end of the crankshaft.

18. Install the flywheel onto the crankshaft and secure with the cap screw. Tighten to 60 ft-lb.



ROV1-045A

## Servicing Left-Side Components

■NOTE: The engine does not need to be removed from the frame for this procedure.

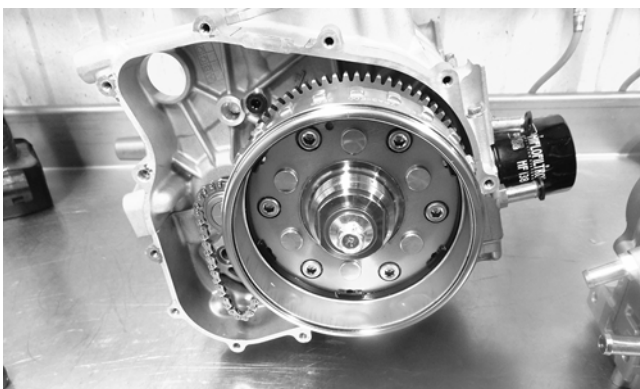
■NOTE: To remove left-side components, see Engine - Removing Engine.

### DRIVE CLUTCH

#### Disassembling

■NOTE: Note the timing marks (X) on the cover, spider, and movable sheave. These must be aligned when assembling the drive clutch for balance purposes.

1. Loosen the machine screws securing the cover. Remove every other cap screw from the cover; then while firmly holding the cover, remove the three remaining screws equally.



KC545

19. Using a gasket scraper, clean off the existing gasket and case from the MAG-side cover. Using a new gasket and dowel pins, install the cover making sure the coolant pump shaft is aligned with the oil pump shaft. Tighten to 7 ft-lb.

20. Install the chain guide and secure with the fastener.

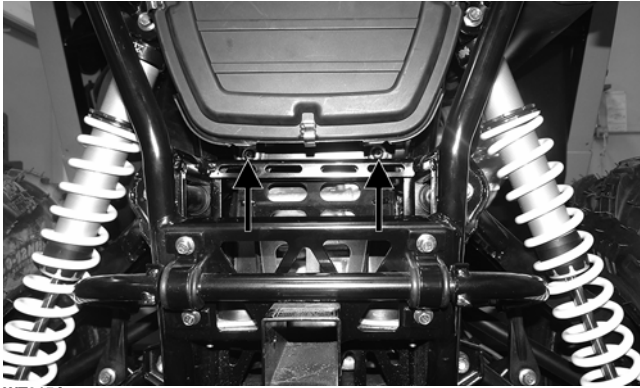
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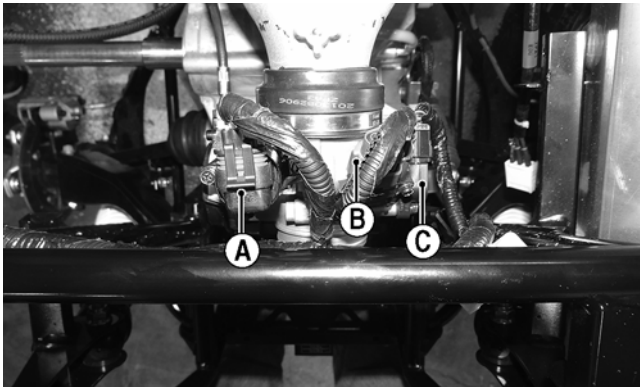
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7. Remove the air filter housing.
8. Remove the ISC connector (A), MAP/IAT connector (B), and TPS connector (C).

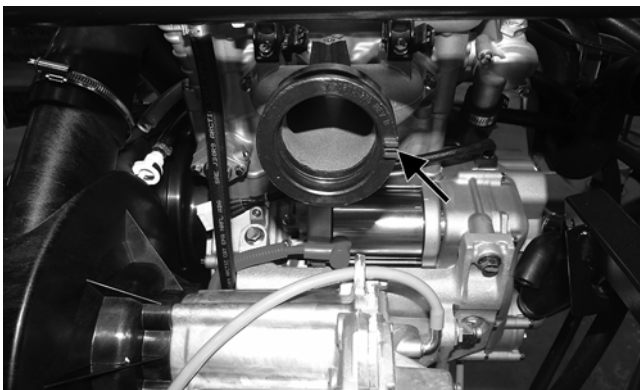


WT397A

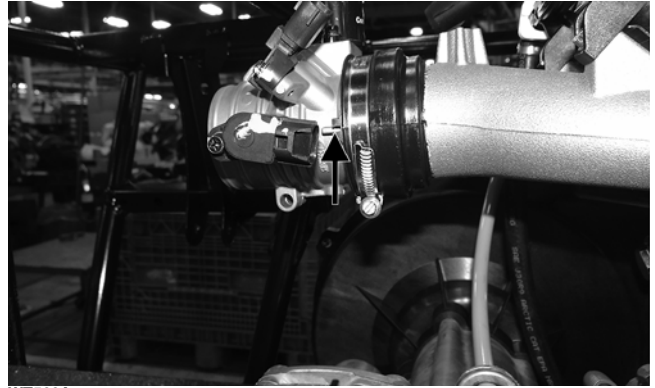
9. Remove the throttle arm cover; then disconnect the throttle cable.
10. Loosen the clamp securing the throttle body to the intake manifold; then remove the throttle body.

## INSTALLING

1. Connect the throttle cable to the throttle arm; then install the throttle cable housing cover to the throttle body. Tighten to 8 ft-lb.
2. Make sure the alignment tab on the throttle body aligns with the slot in the intake boot and install the throttle body fully into the boot. Secure with worm clamps and tighten securely.

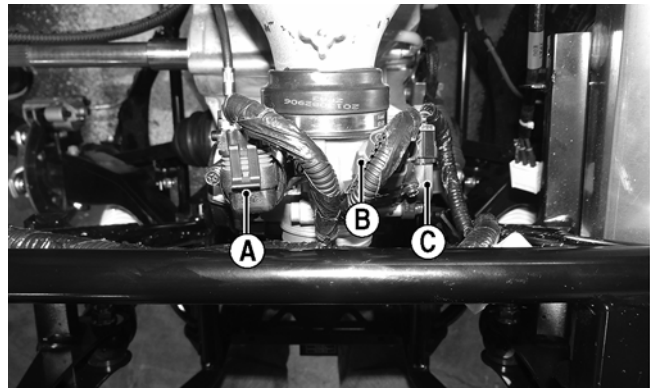


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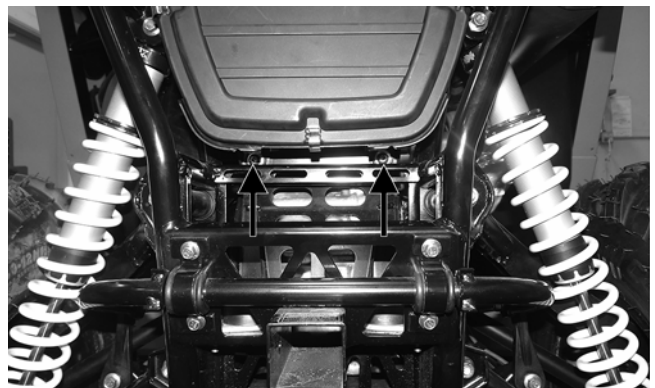
WT566A

3. Connect the ISC connector (A), MAP/IAT connector (B), and the TPS connector (C).



WT397A

4. Install the air filter housing in place and install the outlet boot of the housing over the throttle body. Secure with the clamp.
5. With the existing cap screws, grommets, and spacers, secure the lower portion of air filter housing to the frame. Tighten to 5 ft-lb.



WT315A

6. Using new "patch lock" cap screws, secure the air filter housing mount to the intake manifold (A). Tighten to 5 ft-lb; then secure the mount to the air filter housing (B). Tighten to 36 in.-lb.
7. Install the engine intake tube and air intake to the air filter housing and secure with the clamps.

■NOTE: The two longer cap screws go in the dowel pin locations.

7. Install the coolant hoses; then add the appropriate mixture of coolant until the appropriate level is reached (see Fuel/Lubrication/Cooling).

8. If removed, install the muffler, exhaust pipe, and right-side inner splash panel.

9. If drained, add the appropriate engine oil until the correct level has been reached.

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## Troubleshooting

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Problem: Starting impaired	
Condition	Remedy
1. <b>Gas</b> contaminated 2. <b>Throttle cable</b> too tight	1. Drain gas tank and fill with clean gas 2. Adjust throttle cable and synchronize EFI system (see Electrical System)
Problem: Idling or low speed impaired	
Condition	Remedy
1. <b>TPS</b> out of adjustment 2. <b>Throttle cable</b> too tight 3. <b>Throttle body</b> dirty	1. Adjust TPS (out of warranty) or replace the throttle body (under warranty) 2. Adjust throttle cable and synchronize EFI system (see Electrical System) 3. Clean throttle body
Problem: Medium or high speed impaired	
Condition	Remedy
1. <b>High RPM</b> "cut out" against RPM limiter	1. Decrease RPM speed

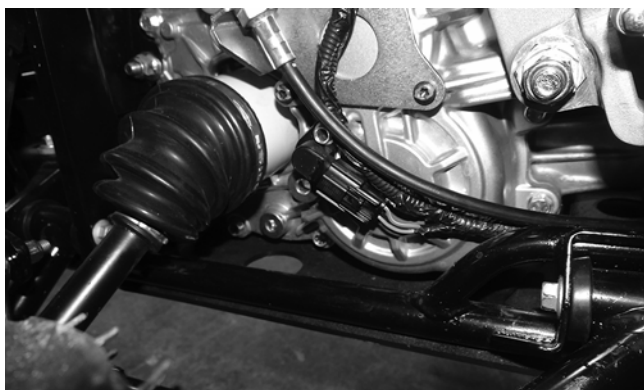
- If the readings are not as indicated, the sensor must be replaced.
- Install the sensor and tighten securely.
- Connect the leads.

## SPEED SENSOR

■NOTE: Preliminary checks may be performed on this component using the diagnostic mode on the LCD gauge (see EFI Diagnostic System in this section).

■NOTE: Prior to testing the speed sensor, inspect the three-wire connector on the speed sensor for contamination, broken pins, and/or corrosion.

- Set the meter selector to the DC Voltage position.
- Using MaxiClips, connect the red tester lead to the orange wire; then connect the black tester lead to the black wire.



WT554

- Turn the ignition switch to the ON position.
- The meter must show battery voltage.
- Leave the black tester lead connected; then connect the red tester lead to the pink/white wire.
- Slowly move the vehicle forward or backward; the meter must show 0 and battery voltage alternately.

■NOTE: If the sensor tests are not within specifications, the sensor must be replaced.

To replace a speed sensor, use the following procedure.

- Disconnect the three-wire connector from the speed sensor; then remove the cap screw securing the sensor to the transaxle.
- Install the new speed sensor into the transaxle with new O-ring lightly coated with multi-purpose grease; then secure the sensor with the cap screw. Tighten to 10 ft-lb.

## FUEL PUMP/FUEL LEVEL SENSOR



Component data can be retrieved using the CATT II. Utilize the Sensor Data screen.

■NOTE: Preliminary checks may be performed on this component using the diagnostic mode on the LCD gauge (see EFI Diagnostic System in the Electrical System section).

The fuel pump and fuel level sensor are not serviceable components. If either component fails, it must be replaced.

### Testing

#### ⚠ WARNING

Whenever any maintenance or inspection is made on the fuel system during which there may be fuel leakage, there should be no welding, smoking, open flames, etc., in the area.

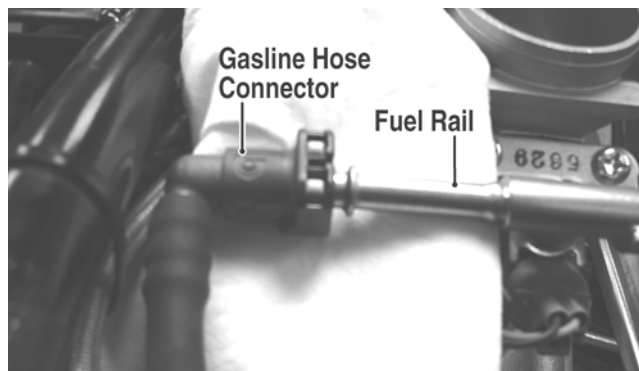
#### 👉 AT THIS POINT

Prior to removing the fuel pump, the following test should be performed to determine that removal is necessary.

- Turn the ignition switch ON and listen for a momentary “whirring” sound of the pump building pressure. If the sound is heard (10 seconds), no electrical checks are necessary. Turn the ignition switch OFF.
- Disconnect the gasoline hose from the fuel rail; then install a suitable pressure gauge.

#### ⚠ WARNING

Gasoline may be under pressure. Place an absorbent towel under the connector to absorb any gasoline spray when disconnecting.

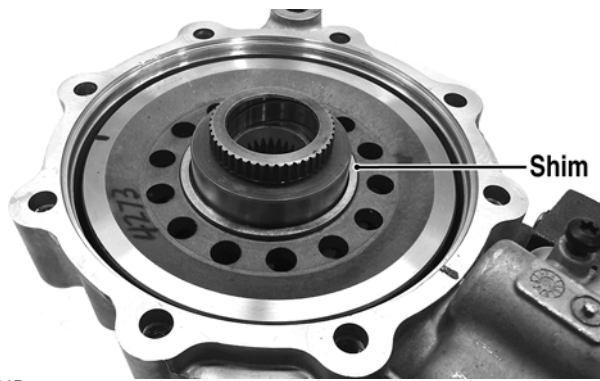


FI092A

- Turn the ignition switch to the ON position. The fuel pressure should build until the pump shuts off. Pressure should read 3.0 kg-cm<sup>2</sup> (43 psi).
- Check for any flashing DTC (Diagnostic Trouble Code) on the digital gauge. A disconnected or faulty tilt sensor will cause the fuel pump not to run and a code to flash.
- If the pump is not running, check the 10 amp FUEL fuse in the PDM under the passenger seat. Replace as necessary and check for fuel pump operation.

# Troubleshooting

<b>Problem: Spark absent or weak</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. Ignition coil defective</li> <li>2. Spark plug(s) defective</li> <li>3. CKP sensor defective</li> <li>4. ECM defective</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace ignition coil</li> <li>2. Replace plug(s)</li> <li>3. Replace CKP sensor</li> <li>4. Replace ECM</li> </ol>
<b>Problem: Spark plug fouled with carbon</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. Gasoline incorrect</li> <li>2. Air cleaner element dirty</li> <li>3. Spark plug(s) incorrect (too cold)</li> <li>4. Valve seals cracked - missing</li> <li>5. Oil rings worn - broken</li> </ol>	<ol style="list-style-type: none"> <li>1. Change to correct gasoline</li> <li>2. Clean element</li> <li>3. Replace plug(s)</li> <li>4. Replace seals</li> <li>5. Replace rings</li> </ol>
<b>Problem: Spark plug electrodes overheat or burn</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. Spark plug(s) incorrect (too hot)</li> <li>2. Engine overheats</li> <li>3. Spark plug(s) loose</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace plug(s)</li> <li>2. Service cooling system</li> <li>3. Tighten plug(s)</li> </ol>
<b>Problem: Battery does not charge</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. Lead wires/connections shorted - loose - open</li> <li>2. Stator coils shorted - grounded - open</li> <li>3. Regulator/rectifier shorted</li> </ol>	<ol style="list-style-type: none"> <li>1. Repair - replace - tighten lead wires</li> <li>2. Replace stator coils</li> <li>3. Replace regulator/rectifier</li> </ol>
<b>Problem: Battery charges, but charging rate is below the specification</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. Lead wires shorted - open - loose (at terminals)</li> <li>2. Stator coils grounded - open</li> <li>3. Regulator/rectifier defective</li> <li>4. Cell plates (battery) defective</li> </ol>	<ol style="list-style-type: none"> <li>1. Repair - tighten lead wires</li> <li>2. Replace stator coils</li> <li>3. Replace regulator/rectifier</li> <li>4. Replace battery</li> </ol>
<b>Problem: Magneto overcharges</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. Battery short circuited</li> <li>2. Regulator/rectifier defective</li> <li>3. Regulator/rectifier poorly grounded</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace battery</li> <li>2. Replace regulator/rectifier</li> <li>3. Clean - tighten ground connection</li> </ol>
<b>Problem: Charging unstable</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. Lead wire intermittently shorting</li> <li>2. Magneto internally shorted</li> <li>3. Regulator/rectifier defective</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace lead wire</li> <li>2. Replace stator coil</li> <li>3. Replace regulator/rectifier</li> </ol>
<b>Problem: Starter does not engage</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. Battery charge low</li> <li>2. Switch contacts defective</li> <li>3. Starter motor brushes not seating</li> <li>4. Starter relay defective</li> <li>5. Wiring connections loose - disconnected</li> <li>6. Start-in-gear/neutral relay defective</li> </ol>	<ol style="list-style-type: none"> <li>1. Recharge - replace battery</li> <li>2. Replace switch</li> <li>3. Replace starter</li> <li>4. Replace relay</li> <li>5. Connect - tighten - repair connections</li> <li>6. Replace relay</li> </ol>
<b>Problem: Battery "sulfation" (Acidic white powdery substance or spots on surfaces of cell plates)</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. Charging rate too low - too high</li> <li>2. Battery discharged</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace battery</li> <li>2. Charge battery</li> </ol>
<b>Problem: Battery discharges too rapidly</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. Charging system (charging operation) not set properly</li> <li>2. Cell plates overcharged - damaged</li> <li>3. Battery short-circuited</li> <li>4. Electrical load too high</li> </ol>	<ol style="list-style-type: none"> <li>1. Check AC generator - regulator/rectifier - circuit connections</li> <li>2. Replace battery - correct charging system</li> <li>3. Replace battery</li> <li>4. Reduce load</li> </ol>
<b>Problem: Battery polarity reversed</b>	
<b>Condition</b>	<b>Remedy</b>
<ol style="list-style-type: none"> <li>1. Battery incorrectly connected</li> </ol>	<ol style="list-style-type: none"> <li>1. Reverse connections - replace battery</li> </ol>



GC036B

- Place the Backlash Measuring Tool into the splines of the ring gear and install a dial indicator making sure it contacts the gauge at a 90° angle and on the index mark.



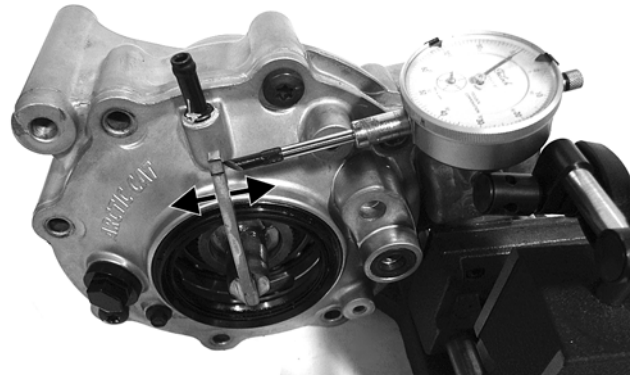
GC040



GC039A

- Zero the dial indicator; then while holding the pinion stationary, rock the ring gear assembly forward and back and record the backlash. Backlash must be 0.011-0.015 in. If backlash is within specifications, proceed to Ring Gear End-Play. If backlash is not within specifications, increase shim thickness to increase backlash or decrease shim thickness to decrease backlash.

■NOTE: Higher backlash settings usually result in quieter gear operation.



GC037A

### Ring Gear End-Play

After correcting backlash, ring gear end-play can be adjusted. To adjust end-play, use the following procedure.

- Secure the gear case in a holding fixture with the cover side up; then install a dial indicator contacting the ring gear axle flange.



GC035

- Zero the dial indicator; then push the ring gear toward the dial indicator and release. End-play should be 0.004-0.008 in.
- To increase end-play, decrease the shim thickness. To decrease end-play, increase the shim thickness.

■NOTE: Once proper backlash and end-play are established, the gear case can be assembled (see Disassembling Differential Assembly in this sub-section).

### Assembling Differential Assembly

- With the pinion gear and new bearings installed, place the selected (backlash) shim on the gear case side of the ring gear with the chamfered side toward the ring gear; then install into gear case/differential housing.



TA004

■NOTE: Tip the transaxle towards the drain to get any remaining fluid.

■NOTE: Install the drain plug and tighten to 18 ft-lb.

2. Lay the transaxle flat on the bench; then remove the 19 mm detent (gold plug) near the gear position switch. Account for the spring and O-ring.

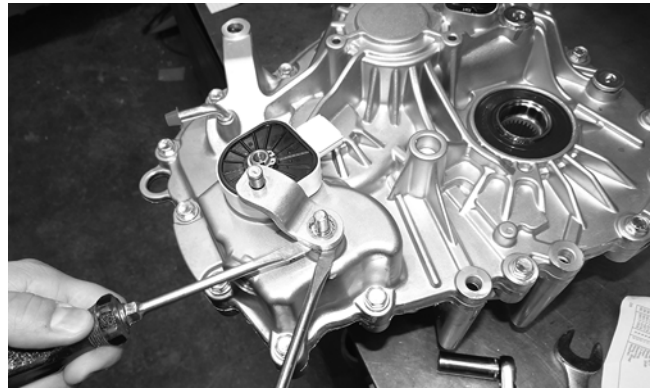


TA012A

3. Remove and discard the lock nut securing the bell crank; then using two screwdrivers, pry the bell crank off the shift shaft.

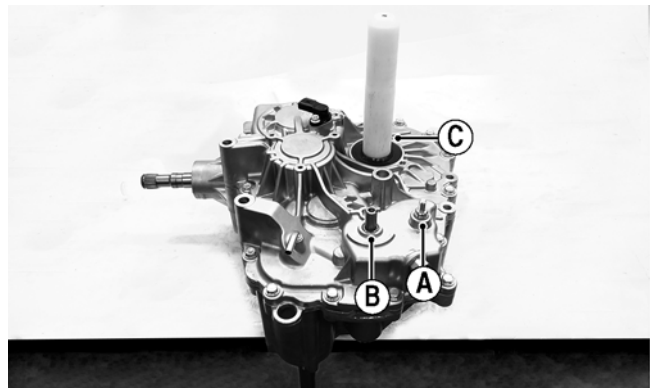


TA012B



TA027

4. Remove the clip securing the gear position switch. Gently pry the switch off the shift rail and account for the wave washer.
5. Remove the screws securing the case halves together.
6. While prying the two halves apart with an assistant, use a rubber mallet to gently tap the shift shaft (A), shift drum (B), and output shaft (C) into the lower half.



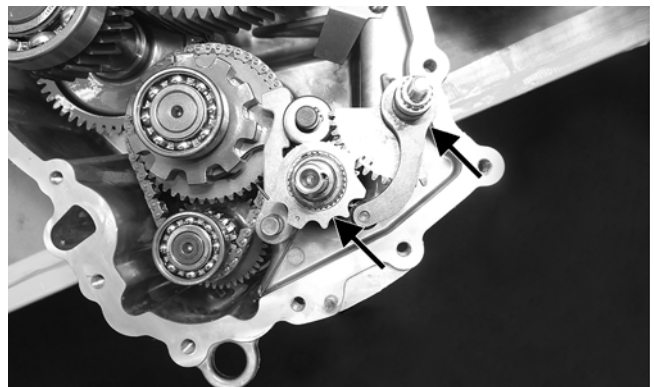
TA131A

■NOTE: Use a suitable bearing seal protection tool and when driving the bearing and gears into the lower half of the transaxle.

7. Clean any silicone residue from the case halves.

## DISASSEMBLING HALVES

1. Remove the shift shaft assembly and the detent.



TA006A

2. Remove the park pawl with dowel pin and account for the spring.



TA065A

7. Install the shift drum gear onto the shift drum aligning the appropriate splines of the drum with the gear.
8. Install the shift shaft gear onto the shift shaft with the timing marks facing up; then install into the case with the gear aligning with the shift drum gear.



TA066A

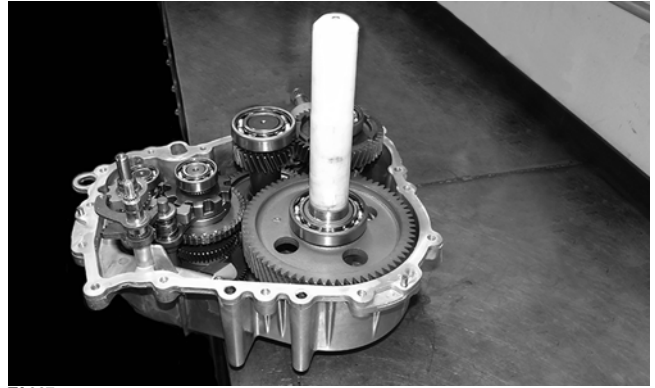
■NOTE: Rotate the shift drum and the shift shaft to ensure the timing marks are correctly aligned.

9. Install the star detent over the shift drum aligning the appropriate splines of the detent with the shaft splines and the dot facing up.



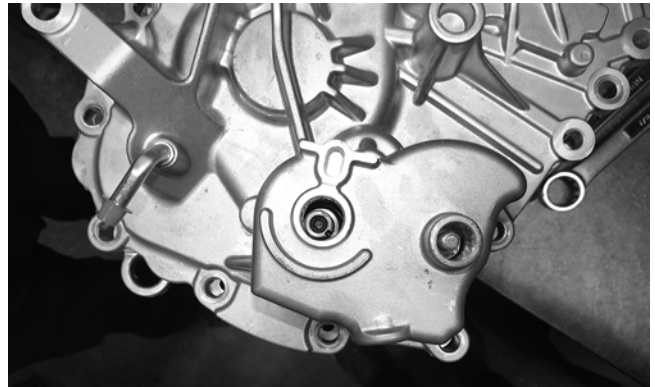
TA134A

10. Install an appropriate bearing seal protector tool onto the bearing of the output shaft.



TA067

11. Apply a coat of Loctite #5699 to the case; then ensuring the shift shaft (O-ring lightly coated with grease) and shift rail are correctly seated, install the cover.



TA068

■NOTE: It will be necessary to tap the cover onto the case using a rubber mallet. Ensure the alignment pins are properly oriented.

12. Secure the cover with the cap screws and tighten to 20 ft-lb.
13. Install the detent (gold plug) with spring and O-ring. Tighten to 20 ft-lb.



TA012A

14. Install the gear position switch. Secure with the wave washer and snap ring.
15. Install the bell crank being sure to correctly align the splines of the bell crank and shift shaft and secure with a new lock nut. Tighten to 15 ft-lb.

- Fill the reservoir; then bleed the brake system (see Periodic Maintenance/Tune-Up).

**⚠ WARNING**

Never use brake fluid from an open container or reuse brake fluid. Moisture-contaminated brake fluid could cause vapor build-up (expansion) during hard braking resulting in greatly increased stopping distance or loss of control leading to injury or death.

- Install the wheels and tighten the wheel nuts in 20 ft-lb increments to a final torque of 40 ft-lb (steel wheel), 60 ft-lb (aluminum wheel w/black nuts), or 80 ft-lb (aluminum wheel w/chrome nuts).
- Remove the vehicle from the support stand and verify brake operation.

## Master Cylinder Assembly

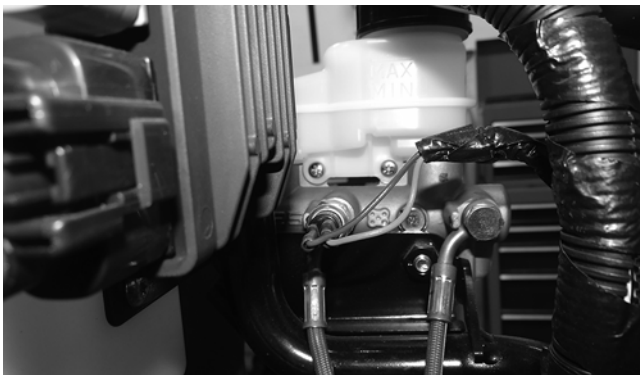
■NOTE: The master cylinder is a non-serviceable component; it must be replaced as an assembly.

### REMOVING

- Slide a piece of flexible tubing over the front left brake caliper bleeder valve and direct the other end into a container. Remove the master cylinder cover; then open the bleeder valve. Allow the brake fluid to drain until the reservoir is empty.
- Remove the cotter pin and pivot pin from the yoke; then disconnect the two spade connectors from the switch.

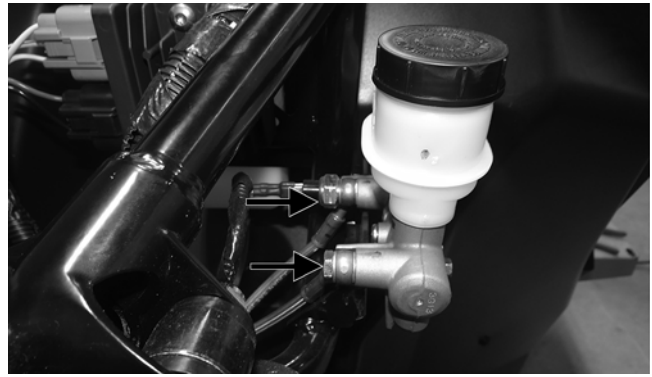


WT514A



WT512

- Remove the two banjo bolts securing the banjo fittings to the master cylinder. Discard the four crush washers.

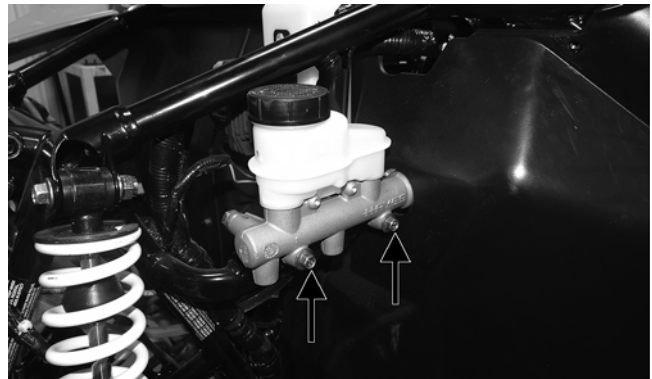


WT511A

**CAUTION**

Brake fluid is highly corrosive. Do not spill brake fluid on any surface of the vehicle.

- Remove the two cap screws securing the master cylinder to the frame.



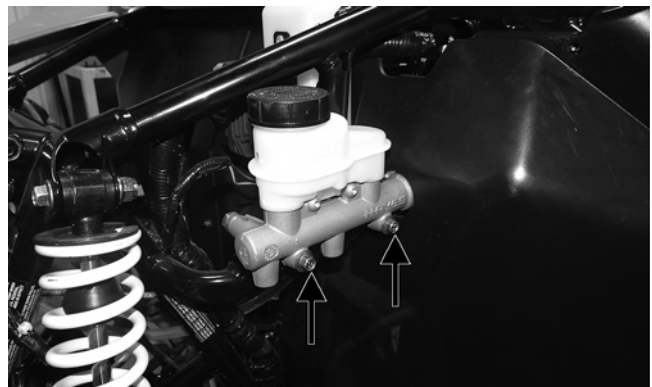
WT513A

### INSPECTING

- Inspect the master cylinder push rod and clevis for wear, bending, or elongation of clevis holes.
- Inspect the push rod boot for tears or deterioration.
- Inspect the reservoir for cracks and leakage.
- Inspect the brake hose for cracks and deterioration and the condition of the banjo-fittings.

### INSTALLING

- Place the master cylinder into position and secure with cap screws. Tighten to 25 ft-lb.



WT513A

- Install the pivot pin and secure with a new cotter pin; then connect the switch.

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