

FOREWORD

This Arctic Cat Service Manual contains service, maintenance, and troubleshooting information for the 2010 Arctic Cat 450 ATV. The complete manual is designed to aid service personnel in service-oriented applications.

This manual is divided into sections. Each section covers a specific ATV component or system and, in addition to the standard service procedures, includes disassembling, inspecting, and assembling instructions. When using this manual as a guide, the technician should use discretion as to how much disassembly is needed to correct any given condition.

The service technician should become familiar with the operation and construction of each component or system by carefully studying the complete manual. This manual will assist the service technician in becoming more aware of and efficient with servicing procedures. Such efficiency not only helps build consumer confidence but also saves time and labor.

All Arctic Cat ATV publications and decals display the words Warning, Caution, Note, and At This Point to emphasize important information. The symbol  **WARNING** identifies personal safety-related information. Be sure to follow the directive because it deals with the possibility of severe personal injury or even death. A **CAUTION** identifies unsafe practices which may result in ATV-related damage. Follow the directive because it deals with the possibility of damaging part or parts of the ATV. The symbol  **NOTE:** identifies supplementary information worthy of particular attention. The symbol  **AT THIS POINT** directs the technician to certain and specific procedures to promote efficiency and to improve clarity.

At the time of publication, all information, photographs, and illustrations were technically correct. Some photographs used in this manual are used for clarity purposes only and are not designed to depict actual conditions. Because Arctic Cat Inc. constantly refines and improves its products, no retroactive obligation is incurred.

All materials and specifications are subject to change without notice.

Keep this manual accessible in the shop area for reference.

**Product Service and
Warranty Department
Arctic Cat Inc.**

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450

ATV Service Manual

Sample manual. Download All pages at:
<https://www.aresairmanual.com/downloads/2010-arctic-cat-450-atv-service-repair-workshop-manual/>



SECTION 1 - GENERAL INFORMATION/ SPECIFICATIONS

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General Specifications*

CHASSIS	
Brake Type	Hydraulic w/Brake Lever Lock and Auxiliary Brake
Tire Size	Front - 25 x 8-12 Rear - 25 x 10-12
Tire Inflation Pressure	0.35 kg/cm ² (5 psi)
MISCELLANY	
Gas Tank Capacity	21.6 L (5.7 U.S. gal.)
Coolant Capacity	2.9 L (3.0 U.S. qt)
Differential Capacity	275 ml (9.3 fl oz)**
Rear Drive Capacity	250 ml (8.5 fl oz)***
Engine Oil Capacity	2.85 L (3.0 U.S. qt) - Overhaul 2.5 L (2.6 U.S. qt) - Change
Gasoline (recommended)	87 Octane Regular Unleaded
Engine Oil (recommended)	Arctic Cat ACX All Weather (Synthetic)
Differential/Rear Drive Lubricant	SAE Approved 80W-90 Hypoid
Drive Belt Width	28.5 mm (1.12 in.)
Brake Fluid	DOT 4
Taillight/Brakelight	12V/8W/27W
Headlight	12V/27W (2)

* Specifications subject to change without notice.

** One inch below plug threads.

*** At the plug threads.

Torque Specification

EXHAUST COMPONENTS			
Part	Part Bolted To	Torque	
		ft-lb	N-m
Exhaust Pipe	Engine	20	27
Spark Arrester	Muffler	48 in.-lb	5.5
ELECTRICAL COMPONENTS			
Ground Cable Cap Screw	Crankcase	8	11
Coil	Air Filter Housing	7	10
Fuel Injector	Intake Pipe	8	11
STEERING COMPONENTS			
Steering Post Bearing Housing	Frame	20	27
Steering Post Bearing Flange	Frame	20	27
Lower Steering Bearing Washer Cap Screw***	Steering Post	40	54
Tie Rod End	Knuckle/Steering Post	30	41
BRAKE COMPONENTS			
Brake Disc*	Hub	15	20
Brake Hose	Caliper	20	27
Brake Hose	Master Cylinder	20	27
Brake Hose	Auxiliary Brake Cylinder	20	27
Master Cylinder (Rear)	Frame	12	16
Brake Caliper****	Knuckle/Axle Housing	20	27
Master Cylinder Clamp	Master Cylinder	6	8
Brake Pedal	Brake Pedal Axle	25	34
CHASSIS COMPONENTS			
Footrest	Frame (8 mm)	20	27
Footrest	Frame (10 mm)	40	54

SUSPENSION COMPONENTS (Front)			
Part	Part Bolted To	Torque	
		ft-lb	N-m
A-Arm	Frame	50	68
Shock Absorber	Frame	50	68
Shock Absorber (Lower)	Upper A-Arm	50	68
Knuckle	A-Arm	50	68
SUSPENSION COMPONENTS (Rear)			
Shock Absorber (Upper)	Frame	50	68
Shock Absorber (Lower)	Lower A-Arm	20	27
A-Arm	Frame	50	68
Knuckle	A-Arm	50	68
DRIVE TRAIN COMPONENTS			
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Output Drive Flange	Rear Flange Output Joint	20	27
Pinion Housing	Differential Housing	23	31
Differential Housing Cover***	Differential Housing	23	31
Drive Bevel Gear Nut***	Shaft	72	98
Differential Gear Case***	Hub	19	26
Lock Collar	Differential Housing	125	169
Hub Nut	Shaft/Axle (max)	200	272
Oil Drain Plug	Front Differential/ Rear Drive	45 in.-lb	5
Oil Fill Plug	Front Differential/ Rear Drive	16	22
Oil Drain Plug	Engine	16	22
Rear Drive Input Shaft/Housing	Differential Housing	23	31
Wheel	Hub	40	54
Rear Drive Gear Case	Frame	38	52
Engine Output Shaft **	Rear Gear Case Input Flange	20	27
ENGINE/TRANSMISSION			
Clutch Shoe**	Crankshaft	147	199
Clutch Cover/Housing Assembly	Crankcase	8	11
Magneto Cover	Crankcase	8	11
Crankcase Half (6 mm)	Crankcase Half	10	13.5
Crankcase Half (8 mm)	Crankcase Half	21	28
Cylinder Head (Cap Screw)	Crankcase	28	38
Cylinder Head Nut	Cylinder	8	11
Cylinder Head Nut (Lower)	Cylinder	20	27
Cylinder Head Cover	Cylinder Head	8	11
Oil Pump Drive Gear**	Crankshaft	63	86
Driven Pulley Nut**	Driveshaft	147	199
Ground Cable	Engine	8	11
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Cam Sprocket**	Camshaft	11	15
Cam Chain Tensioner Guide	Cylinder Head	11	15
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Starter Motor	Crankcase	8	11
V-Belt Cover	Crankcase	8	11
Valve Adjuster Jam Nut	Valve Adjuster	7	9.5
Oil Pump**	Crankcase	8	11
Movable Drive Face Nut**	Clutch Shaft	147	199
Oil Cooler Hose Clamps	Engine/Oil Cooler	30 in.-lb	3.4
Valve Cover (Three Bond)	Cylinder Head	8	11
Tappet Cover	Crankcase	8	11
Water Pump Cover/Housing	Magneto Cover	8	11
Water Pump Drive Gear**	Crankshaft	28	38

* w/Blue Loctite #243

** w/Red Loctite #271

*** w/Green Loctite #609

****w/Patch-Lock

Torque Conversions (ft-lb/N-m)

ft-lb	N-m	ft-lb	N-m	ft-lb	N-m	ft-lb	N-m
1	1.4	26	35.4	51	69.4	76	103.4
2	2.7	27	36.7	52	70.7	77	104.7
3	4.1	28	38.1	53	72.1	78	106.1
4	5.4	29	39.4	54	73.4	79	107.4
5	6.8	30	40.8	55	74.8	80	108.8
6	8.2	31	42.2	56	76.2	81	110.2
7	9.5	32	43.5	57	77.5	82	111.5
8	10.9	33	44.9	58	78.9	83	112.9
9	12.2	34	46.2	59	80.2	84	114.2
10	13.6	35	47.6	60	81.6	85	115.6
11	15	36	49	61	83	86	117
12	16.3	37	50.3	62	84.3	87	118.3
13	17.7	38	51.7	63	85.7	88	119.7
14	19	39	53	64	87	89	121
15	20.4	40	54.4	65	88.4	90	122.4
16	21.8	41	55.8	66	89.8	91	123.8
17	23.1	42	57.1	67	91.1	92	125.1
18	24.5	43	58.5	68	92.5	93	126.5
19	25.8	44	59.8	69	93.8	94	127.8
20	27.2	45	61.2	70	95.2	95	129.2
21	28.6	46	62.6	71	96.6	96	130.6
22	29.9	47	63.9	72	97.9	97	131.9
23	31.3	48	65.3	73	99.3	98	133.3
24	32.6	49	66.6	74	100.6	99	134.6
25	34	50	68	75	102	100	136

Tightening Torque (General Bolts)

Type of Bolt	Thread Diameter A (mm)	Tightening Torque
(Conventional or 4 Marked Bolt) 	5	12-36 in.-lb
	6	36-60 in.-lb
	8	7-11 ft-lb
	10	16-25 ft-lb
(7 Marked Bolt) 	5	24-48 in.-lb
	6	6-8 ft-lb
	8	13-20 ft-lb
	10	29-43 ft-lb

Break-In Procedure

A new ATV and an overhauled ATV engine require a “break-in” period. The first 10 hours (or 200 miles) are most critical to the life of this ATV. Proper operation during this break-in period will help assure maximum life and performance from the ATV.

During the first 10 hours (or 200 miles) of operation, always use less than 1/2 throttle. Varying the engine RPM during the break-in period allows the components to “load” (aiding the mating process) and then “unload” (allowing components to cool). Although it is essential to place some stress on the engine components during break-in, care should be taken not to overload the engine too often. Do not pull a trailer or carry heavy loads during the 10-hour break-in period.

When the engine starts, allow it to warm up properly. Idle the engine several minutes until the engine has reached normal operating temperature. Do not idle the engine for excessively long periods of time.

During the break-in period, a maximum of 1/2 throttle is recommended; however, brief full-throttle accelerations and variations in driving speeds contribute to good engine break-in.

After the completion of the break-in period, the engine oil and oil filter should be changed. Other maintenance after break-in should include checking of all prescribed adjustments and tightening of all fasteners (see Periodic Maintenance Chart in Section 2).

Gasoline - Oil - Lubricant

RECOMMENDED GASOLINE

The recommended gasoline to use is 87 minimum octane regular unleaded. In many areas, oxygenates (either ethanol or MTBE) are added to the gasoline. Oxygenated gasolines containing up to 10% ethanol, 5% methane, or 5% MTBE are acceptable gasolines.

When using ethanol blended gasoline, it is not necessary to add a gasoline antifreeze since ethanol will prevent the accumulation of moisture in the fuel system.

CAUTION

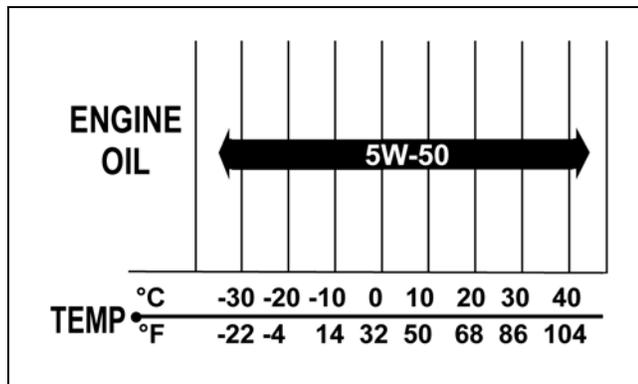
Do not use white gas. Only Arctic Cat approved gasoline additives should be used.

RECOMMENDED ENGINE/ TRANSMISSION OIL

CAUTION

Any oil used in place of the recommended oil could cause serious engine damage. Do not use oils which contain graphite or molybdenum additives. These oils can adversely affect clutch operation. Also, not recommended are racing, vegetable, non-detergent, and castor-based oils.

The recommended oil to use is Arctic Cat ACX All Weather synthetic engine oil, which has been specifically formulated for use in this Arctic Cat engine. Although Arctic Cat ACX All Weather synthetic engine oil is the only oil recommended for use in this engine, use of any API certified SM 5W-50 oil is acceptable.



OILCHART1

RECOMMENDED FRONT DIFFERENTIAL/REAR DRIVE LUBRICANT

The recommended lubricant is Arctic Cat Gear Lube or an equivalent gear lube which is SAE approved 80W-90 hypoid. This lubricant meets all of the lubrication requirements of the Arctic Cat ATV front differentials and rear drives.

CAUTION

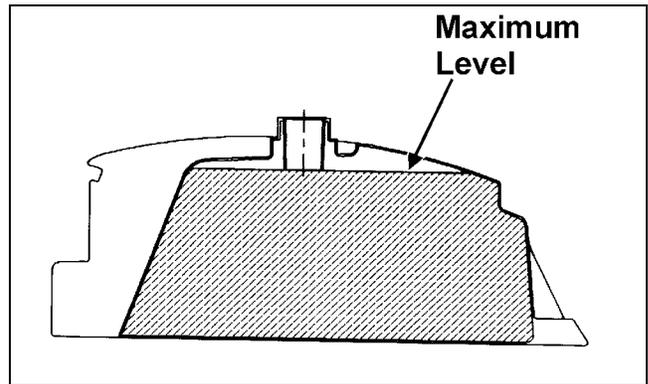
Any lubricant used in place of the recommended lubricant could cause serious front differential/rear drive damage.

FILLING GAS TANK

WARNING

Always fill the gas tank in a well-ventilated area. Never add fuel to the ATV gas tank near any open flames or with the engine running. DO NOT SMOKE while filling the gas tank.

Since gasoline expands as its temperature rises, the gas tank must be filled to its rated capacity only. Expansion room must be maintained in the tank particularly if the tank is filled with cold gasoline and then moved to a warm area.



ATV0049B

WARNING

Do not overflow gasoline when filling the gas tank. A fire hazard could materialize. Always allow the engine to cool before filling the gas tank.

WARNING

Do not over-fill the gas tank.

Tighten the gas tank cap securely after filling the tank.

Genuine Parts

When replacement of parts is necessary, use only genuine Arctic Cat ATV parts. They are precision-made to ensure high quality and correct fit. Refer to the appropriate Illustrated Parts Manual for the correct part number, quantity, and description.

Preparation For Storage

CAUTION

Prior to storing the ATV, it must be properly serviced to prevent rusting and component deterioration.

Arctic Cat recommends the following procedure to prepare the ATV for storage.

1. Clean the seat cushion (cover and base) with a damp cloth and allow it to dry.
2. Clean the ATV thoroughly by washing dirt, oil, grass, and other foreign matter from the entire ATV. Allow the ATV to dry thoroughly. DO NOT get water into any part of the engine or air intake.
3. Either drain the gas tank or add Fuel Stabilizer to the gas in the gas tank. Remove the air filter housing cover and air filter. Start the engine and allow it to idle; then using Arctic Cat Engine Storage Preserver, rapidly inject the preserver into the air filter opening for a period of 10 to 20 seconds; then stop the engine. Install the air filter and housing cover.

CAUTION

If the interior of the air filter housing is dirty, clean the area before starting the engine.

4. Plug the exhaust hole in the exhaust system with a clean cloth.
5. Apply light oil to the upper steering post bushing and plungers of the shock absorbers.
6. Tighten all nuts, bolts, cap screws, and screws. Make sure rivets holding components together are tight. Replace all loose rivets. Care must be taken that all calibrated nuts, cap screws, and bolts are tightened to specifications.
7. Fill the cooling system to the bottom of the stand pipe in the radiator neck with properly mixed coolant.
8. Disconnect the battery cables; then remove the battery, clean the battery posts and cables, and store in a clean, dry area.
9. Store the ATV indoors in a level position.

CAUTION

Avoid storing outside in direct sunlight and avoid using a plastic cover as moisture will collect on the ATV causing rusting.

Preparation After Storage

Taking the ATV out of storage and correctly preparing it will assure many miles and hours of trouble-free riding. Arctic Cat recommends the following procedure to prepare the ATV.

1. Clean the ATV thoroughly.
2. Clean the engine. Remove the cloth from the exhaust system.

3. Check all control wires and cables for signs of wear or fraying. Replace if necessary.
4. Change the engine/transmission oil and filter.
5. Check the coolant level and add properly mixed coolant as necessary.
6. Charge the battery; then install. Connect the battery cables.

CAUTION

The ignition switch must be in the OFF position prior to installing the battery or damage may occur to the ignition system.

CAUTION

Connect the positive battery cable first; then the negative.

7. Check the entire brake systems (fluid level, pads, etc.), all controls, headlights, taillight, brakelight, and headlight aim; adjust or replace as necessary.
8. Tighten all nuts, bolts, cap screws, and screws making sure all calibrated nuts, cap screws, and bolts are tightened to specifications.
9. Check tire pressure. Inflate to recommended pressure as necessary.
10. Make sure the steering moves freely and does not bind.
11. Check the spark plug. Clean or replace as necessary.

1

SECTION 2 - PERIODIC MAINTENANCE

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Periodic Maintenance Chart

A = Adjust I = Inspect
 C = Clean L = Lubricate
 D = Drain R = Replace
 T = Tighten

Item	Initial Service After Break-In (First Mo or 100 Mi)	Every Day	Every Month or Every 100 Miles	Every 3 Months or Every 300 Miles	Every 6 Months or Every 500 Miles	Every Year or Every 1500 Miles	As Needed
Battery	I		I				C
Fuses				I			R
Air Filter/Drain Tube	I	I	C*				R
Valve/Tappet Clearance	I				I		A
Engine Compression						I	
Spark Plug	I			I			R (4000 Mi or 18 Mo)
Muffler/Spark Arrester					C		R
Gas/Vent Hoses	I	I					R (2 Yrs)
Throttle Cable	I	I			C-L		A-R
Engine-Transmission Oil Level		I					A
Engine-Transmission Oil/Filter	R			R*/R**/R***			R
Oil Strainer	I				I		C
Front Differential/Rear Drive Lubricant	I		I				R (4 Yrs)
Tires/Air Pressure	I	I					R
Steering Components	I	I		I			R
V-Belt	I				I		R
Suspension (Ball joint boots, drive axle boots front and rear, tie rods, differential and rear drive bellows)	I	I					R
Nuts/Cap Screws/Screws	I		I				T
Ignition Timing						I	
Headlight/Taillight-Brakelight	I	I					R
Switches	I	I					R
Shift Lever					I		A-L
Handlebar Grips		I					R
Handlebar	I	I					R
Gauges/Indicators	I	I					R
Frame/Welds/Racks	I				I		
Electrical Connections	I				I		C
Complete Brake System (Hydraulic & Auxiliary)	I	I		C			L-R
Brake Pads	I			I*			R
Brake Fluid	I			I			R (2 Yrs)
Brake Hoses	I			I			R (4 Yrs)
Coolant/Cooling System	I		I				R (2 Yrs)

* Service/Inspect more frequently when operating in adverse conditions.

** When using an API certified SM 5W-50 oil.

*** When using Arctic Cat ACX All Weather synthetic oil, oil change interval and strainer inspection can be increased to every 1,000 miles or every year.

Periodic Maintenance

This section has been organized into sub-sections which show common maintenance procedures for the Arctic Cat ATV.

■NOTE: Arctic Cat recommends the use of new gaskets, lock nuts, and seals and lubricating all internal components when servicing the engine/transmission.

■NOTE: Some photographs and illustrations used in this section are used for clarity purposes only and are not designed to depict actual conditions.

■NOTE: Critical torque specifications are located in Section 1.

SPECIAL TOOLS

A number of special tools must be available to the technician when performing service procedures in this section.

Description	p/n
Compression Tester Kit	0444-213
Oil Filter Wrench	0644-389
Tachometer	0644-275
Timing Light	0644-296
Valve Clearance Adjuster	0444-255

■NOTE: Special tools are available from the Arctic Cat Service Parts Department.

Lubrication Points

It is advisable to lubricate certain components periodically to ensure free movement. Apply light oil to the components using the following list as reference.

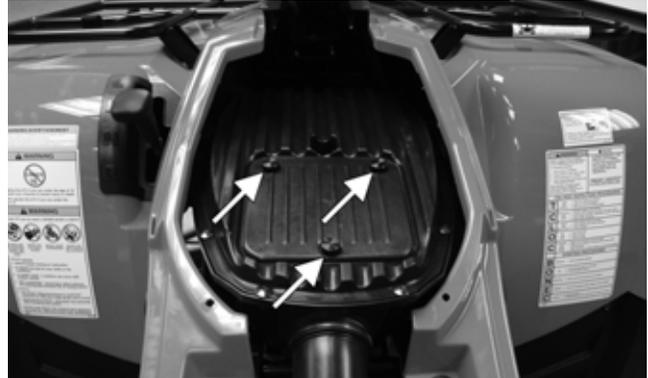
- A. Throttle Lever Pivot/Cable Ends
- B. Brake Lever Pivot/Cable Ends
- C. Auxiliary Brake Cable Ends
- D. Shift Lever Cable End

Air Filter

Use the following procedure to remove the filter and inspect and/or clean it.

CLEANING AND INSPECTING FILTER

1. Remove the seat; then remove the cap screws securing the storage compartment.
2. Raise the storage compartment cover; then slide the cover forward and off the compartment. Remove the storage compartment.
3. Remove three machine screws; then remove the air filter cover.



FI513A

4. Remove the air filter element/spring assembly and separate the element from the screen.



FI515

5. Fill a wash pan larger than the element with a non-flammable cleaning solvent; then dip the element in the solvent and wash it.

■NOTE: Foam Air Filter Cleaner and Foam Air Filter Oil are available from Arctic Cat.

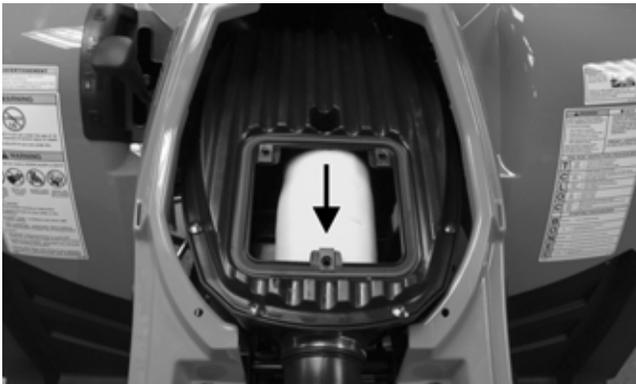
6. Dry the element.
7. Put the element in a plastic bag; then pour in air filter oil and work the oil into the element. Attach the element to the filter screen.

■NOTE: Carefully squeeze excessive oil from the filter element. Do not twist foam to remove oil.

CAUTION

A torn air filter element can cause damage to the ATV engine. Dirt and dust may get inside the engine if the element is torn. Carefully examine the element for tears before and after cleaning it. Replace the element with a new one if it is torn.

- Clean any dirt or debris from inside the air cleaner.
- Place the filter assembly in the air filter housing making sure it is properly positioned and properly seated.



FI514A

- Install the air filter housing cover and secure with the three machine screws.
- Install the storage compartment; then secure with the reinstallable rivets.

CHECKING AND CLEANING DRAINS

- Inspect the drains beneath the front of the main housing for debris and for proper sealing.
- Wipe any accumulation of oil or gas from the filter housing and drains.

Valve/Tappet Clearance (Feeler Gauge Procedure)

To check and adjust valve/tappet clearance, use the following procedure.

- Remove the timing inspection plug; then remove the tappet covers and spark plug (for more detailed information, see Section 3 - Servicing Top-Side Components).

■NOTE: Remove the crankshaft end cap and use a socket and ratchet to rotate the engine.

- Rotate the crankshaft to the TDC position on the compression stroke.

■NOTE: At this point, the rocker arms and adjuster screws must not have pressure on them.

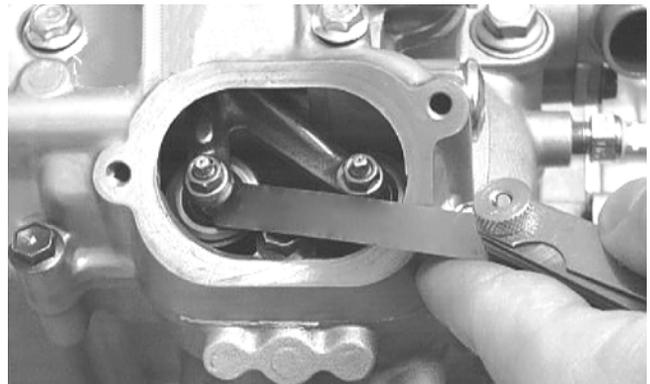
- Using a feeler gauge, check each valve/tappet clearance. If clearance is not within specifications, loosen the jam nut and rotate the tappet adjuster screw until the clearance is within specifications. Tighten each jam nut securely after completing the adjustment.

CAUTION

The feeler gauge must be positioned at the same angle as the valve and valve adjuster for an accurate measurement of clearance. Failure to measure the valve clearance accurately could cause valve component damage.

VALVE/TAPPET CLEARANCE

Intake	0.1 mm (0.0039 in.)
Exhaust	0.17 mm (0.0067 in.)



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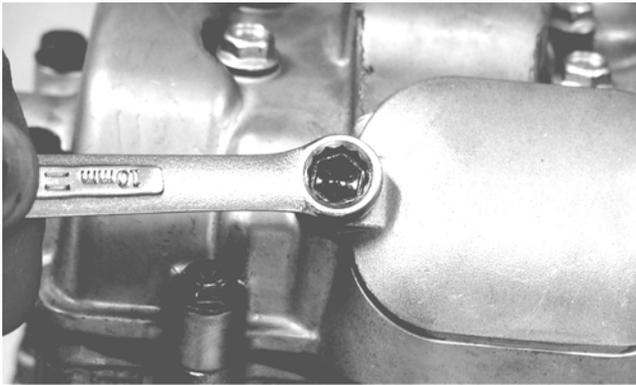
- Install the timing inspection plug; then install the crankcase end cap.
- Place the two tappet covers into position making sure the proper cap screws are with the proper cover. Tighten the cap screws securely.
- Install the spark plug.

Valve/Tappet Clearance (Valve Adjuster Procedure)

To check and adjust valve/tappet clearance, use the following procedure.

■NOTE: The seat, storage compartment cover assembly, compartment box, air filter/filter housing, and left-side/right-side splash panels must be removed for this procedure.

- Remove the timing inspection plug; then remove the tappet covers and spark plug (for more detailed information, see Section 3 - Servicing Top-Side Components).



CF005

2. Rotate the crankshaft to the TDC position on the compression stroke.

■NOTE: At this point, the rocker arms and adjuster screws must not have pressure on them.

■NOTE: Use Valve Clearance Adjuster for this procedure.

3. Place the valve adjuster onto the jam nut securing the tappet adjuster screw; then rotate the valve adjuster dial clockwise until the end is seated in the tappet adjuster screw.
4. While holding the valve adjuster dial in place, use the valve adjuster handle and loosen the jam nut; then rotate the tappet adjuster screw clockwise until friction is felt.
5. Align the valve adjuster handle with one of the marks on the valve adjuster dial.
6. While holding the valve adjuster handle in place, rotate the valve adjuster dial counterclockwise until proper valve/tappet clearance is attained.

■NOTE: Refer to the appropriate specifications in Feeler Gauge Procedure sub-section for the proper valve/tappet clearance.

■NOTE: Rotating the valve adjuster dial counterclockwise will open the valve/tappet clearance by 0.05 mm (0.002 in.) per mark.

7. While holding the adjuster dial at the proper clearance setting, tighten the jam nut securely with the valve adjuster handle.
8. Place the two tappet covers with O-rings into position; then tighten the covers securely.
9. Install the spark plug; then install the timing inspection plug.

Testing Engine Compression

To test engine compression, use the following procedure.

1. Remove the high tension lead from the spark plug.
2. Using compressed air, blow any debris from around the spark plug.

WARNING

Always wear safety glasses when using compressed air.

3. Remove the spark plug; then attach the high tension lead to the plug and ground the plug on the cylinder head well away from the spark plug hole.
4. Attach the Compression Tester Kit.

■NOTE: The engine should be warm (operating temperature) and the battery full charged for an accurate compression test. Throttle must be in the wide-open throttle (WOT) position.

5. While holding the throttle lever in the full-open position, crank the engine over with the electric starter until the gauge shows a peak reading (five to 10 compression strokes). Compression should be 95-115 psi.
6. If compression is abnormally low, inspect the following items.
 - A. Verify starter cranks engine over at normal speed (approximately 400 RPM).
 - B. Gauge functioning properly.
 - C. Throttle lever in the full-open position.
 - D. Valve/tappet clearance correct.
 - E. Valve not bent or burned.
 - F. Valve seat not burned.

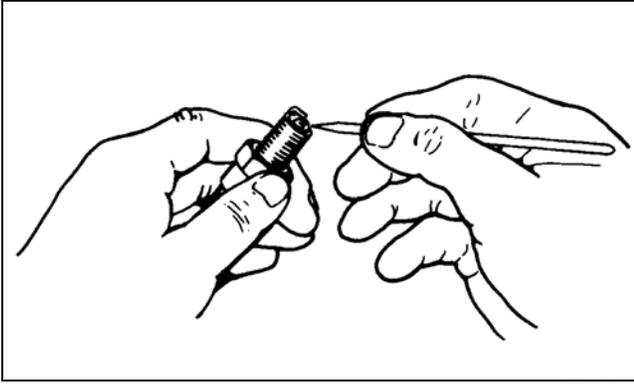
■NOTE: To service valves, see Section 3.

7. Pour 29.5 ml (1 fl oz) of oil into the spark plug hole, reattach the gauge, and retest compression.
8. If compression is now evident, service the piston rings (see Section 3).

2

Spark Plug

A light brown insulator indicates that a plug is correct. A white or dark insulator indicates that the engine may need to be serviced. To maintain a hot, strong spark, keep the plug free of carbon.

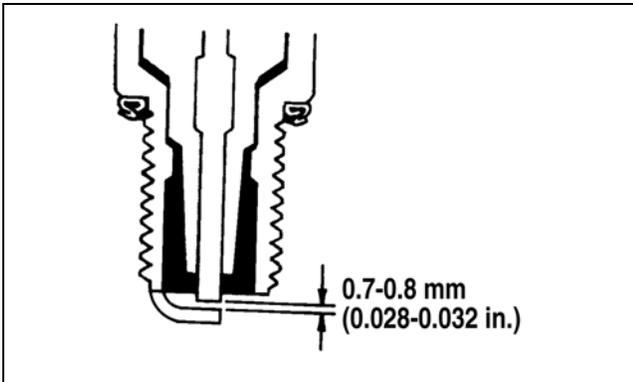


ATV-0051

CAUTION

Before removing a spark plug, be sure to clean the area around the spark plug. Dirt could enter engine when removing or installing the spark plug.

Adjust the gap to 0.7-0.8 mm (0.028-0.032 in.) for proper ignition. Use a feeler gauge to check the gap.



ATV0052C

When installing the spark plug, be sure to tighten it securely. A new spark plug should be tightened 1/2 turn once the washer contacts the cylinder head. A used spark plug should be tightened 1/8 - 1/4 turn once the washer contacts the cylinder head.

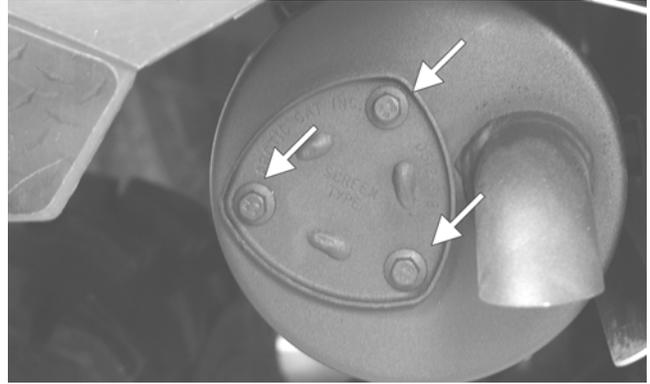
Muffler/Spark Arrester

At the intervals shown in the Periodic Maintenance Chart, clean the spark arrester using the following procedure.

WARNING

Wait until the muffler cools to avoid burns.

1. Remove the three cap screws securing the spark arrester assembly to the muffler; then loosen and remove the arrester.

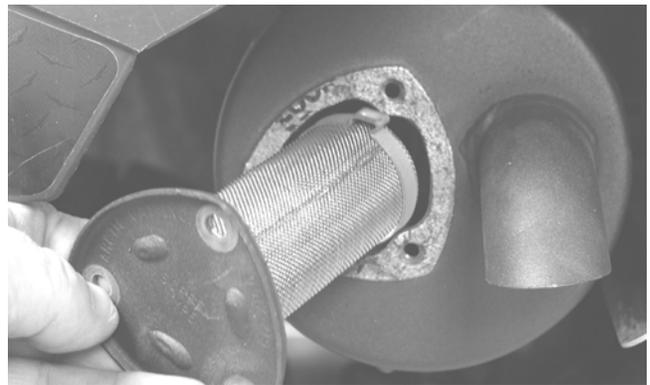


CF105A

2. Using a suitable brush, clean the carbon deposits from the screen taking care not to damage the screen.

NOTE: If the screen or gasket is damaged in any way, it must be replaced.

3. Install the spark arrester assembly with gasket; then secure with the three cap screws. Tighten to 48 in.-lb.



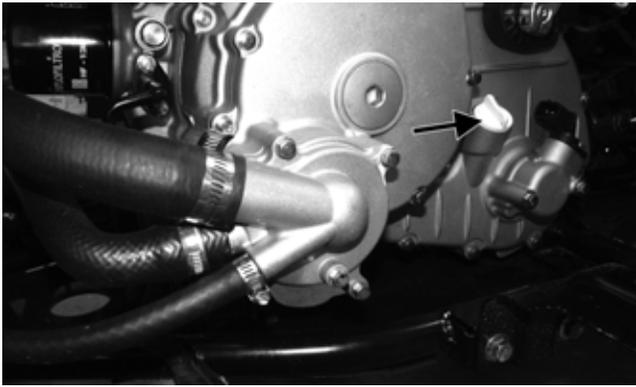
CF104

Engine/Transmission Oil - Filter - Strainer

OIL - FILTER

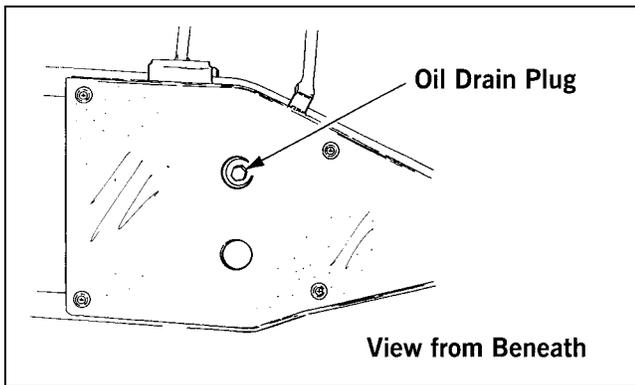
The engine should always be warm when the oil is changed so the oil will drain easily and completely.

1. Park the ATV on level ground.
2. Remove the oil level stick/filler plug.



FI530C

3. Remove the drain plug from the bottom of the engine and drain the oil into a drain pan.



733-441A

4. Remove the oil filter plug from the filter mounting boss (located on the front side of the transmission case) and allow the filter to drain completely. Install the plug and tighten securely.

5. Using the adjustable Oil Filter Wrench and a suitable wrench, remove the old oil filter.

NOTE: Clean up any excess oil after removing the filter.

6. Apply oil to a new filter O-ring and check to make sure it is positioned correctly; then install the new oil filter. Tighten securely.

NOTE: Install a new O-ring each time the filter is replaced.

7. Install the engine drain plug and tighten to 16 ft-lb. Pour the specified amount of the recommended oil in the filler hole. Install the oil level stick/filler plug.

CAUTION

Any oil used in place of the recommended oil could cause serious engine damage. Do not use oils which contain graphite or molybdenum additives. These oils can adversely affect clutch operation. Also, not recommended are racing, vegetable, non-detergent, and castor-based oils.

8. Start the engine (while the ATV is outside on level ground) and allow it to idle for a few minutes.

9. Turn the engine off and wait approximately one minute.
10. Remove the oil level stick and wipe it with a clean cloth.
11. Install the oil level stick and thread into the engine case.
12. Remove the oil level stick; the oil level must be within the operating range but not exceeding the upper mark.



GZ461A

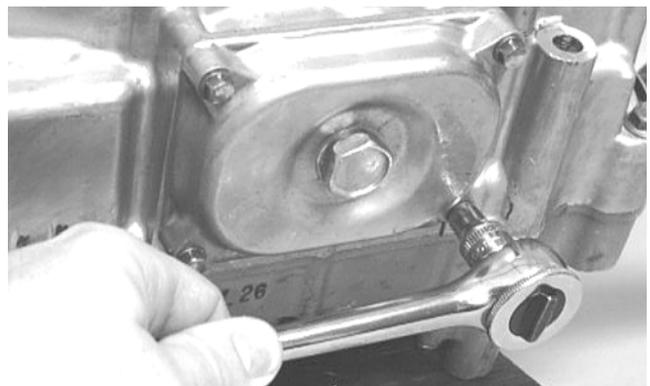
CAUTION

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

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

STRAINER

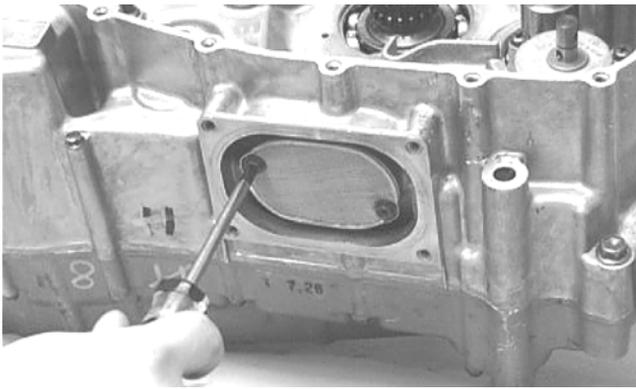
1. Remove the belly panel.
2. Remove the cap screws securing the oil strainer cap; then remove the cap.



CC091D

3. Remove the two cap screws securing the strainer; then remove the strainer.

NOTE: Thoroughly clean any sealant from the oil strainer cap.

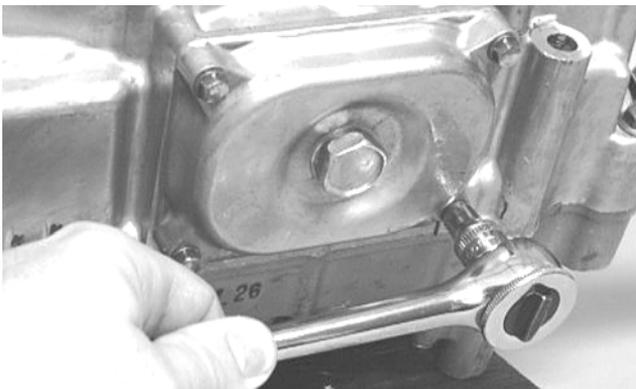


CC163D

AT THIS POINT

To check/service oil strainer, see Section 3.

4. Place the oil strainer into position beneath the crankcase and secure with the cap screws. Tighten securely.
5. Place the strainer cap into position on the strainer making sure silicone sealant is applied; then secure with the cap screws. Tighten securely.



CC091D

6. Install the belly panel.

Front Differential/Rear Drive Lubricant

CAUTION

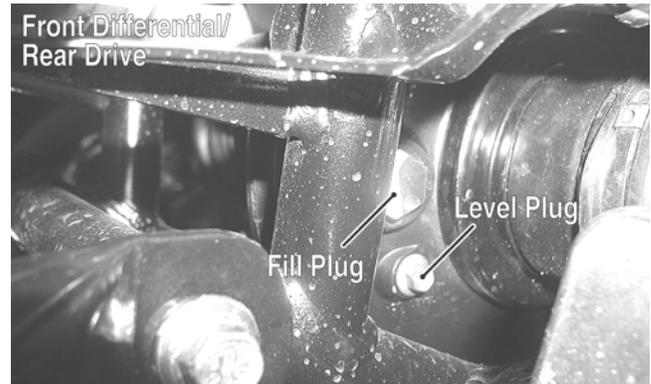
Any lubricant used in place of the recommended gear case lubricant could result in premature failure of the shock limiter. Do not use any lubricant containing graphite or molybdenum additives or other friction-modified lubricants as these may cause severe damage to shock limiter components.

When changing the lubricant, use approved SAE 80W-90 hypoid gear lube.

To check lubricant, remove the fill plug; the lubricant level should be 1 in. below the threads of the plug. If low, add SAE approved 80W-90 hypoid gear lubricant as necessary.

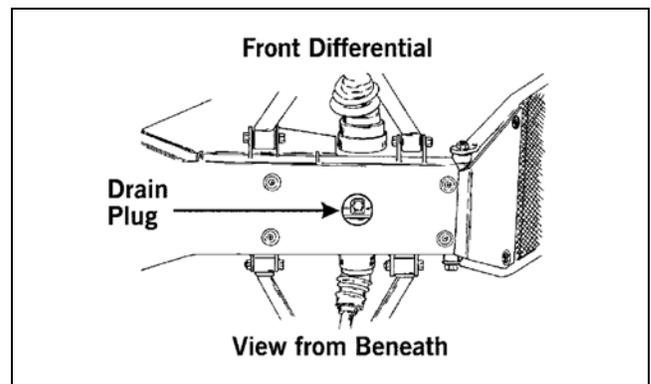
To change the lubricant, use the following procedure.

1. Place the ATV on level ground.
2. Remove each fill plug.

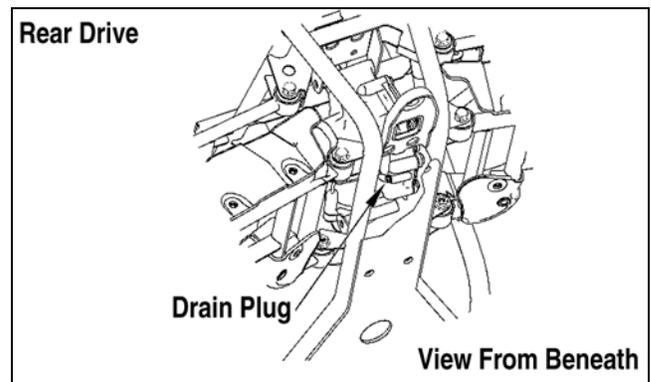


AL677C

3. Drain the lubricant into a drain pan by removing in turn the drain plug from each.



ATV0082A



737-651B

4. After all the lubricant has been drained, install the drain plugs and tighten to 45 in.-lb.
5. Pour the appropriate amount of approved SAE 80W-90 hypoid gear lubricant into the filler hole.
6. Install the fill plugs. Tighten to 16 ft.-lb.

■NOTE: If the differential/rear drive lubricant is contaminated with water, inspect the drain plug, fill plug, and/or bladder.

CAUTION

Water entering the outer end of the axle will not be able to enter the rear drive unless the seals are damaged.

Driveshaft/Coupling

The following drive system components should be inspected periodically to ensure proper operation.

- A. Spline lateral movement (slop).
- B. Coupling cracked, damaged, or worn.

Nuts/Bolts/Cap Screws

Tighten all nuts, bolts, and cap screws. Make sure rivets holding components together are tight. Replace all loose rivets. Care must be taken that all calibrated nuts, bolts, and cap screws are tightened to specifications (see Section 1).

Headlights/Taillight-Brakelight

HEADLIGHTS

■NOTE: The bulb portion of a headlight is fragile. HANDLE WITH CARE. When replacing a headlight bulb, do not touch the glass portion of the bulb. If the glass is touched, it must be cleaned with a dry cloth before installing. Skin oil residue on the bulb will shorten the life of the bulb.

WARNING

Do not attempt to remove a bulb when it is hot. Severe burns may result.

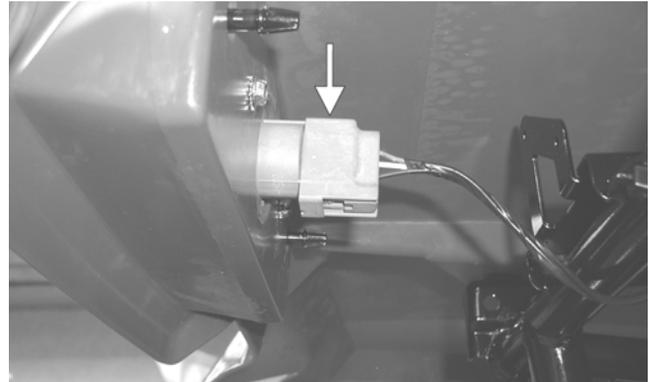
To replace a headlight bulb, use the following procedure.

1. Rotate the bulb assembly counterclockwise and remove from the headlight housing; then disconnect from the wiring harness.
2. Connect the new bulb assembly to the wiring harness connector; then insert into the headlight housing and rotate fully clockwise.

TAILLIGHT-BRAKELIGHT

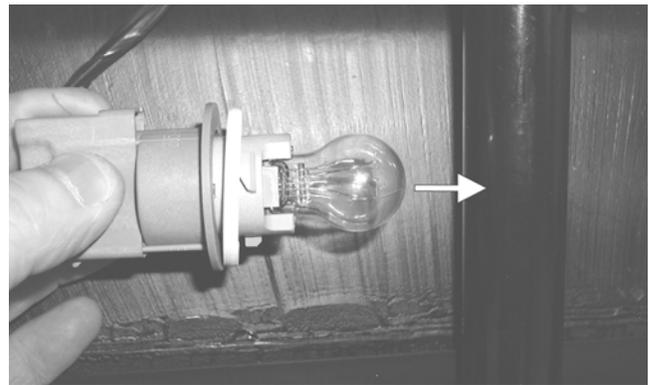
To replace the taillight-brakelight bulb, use the following procedure.

1. Turn the bulb socket assembly counterclockwise and remove from the housing.



CF135A

2. Pull the bulb straight out of the socket; then insert a new bulb.



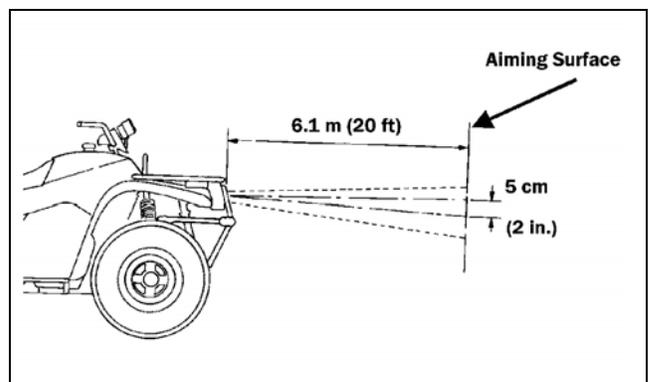
CF132A

3. Insert the bulb socket assembly into the housing and turn it clockwise to secure.

CHECKING/ADJUSTING HEADLIGHT AIM

The headlights can be adjusted vertically and horizontally. The geometric center of the HIGH beam light zone is to be used for vertical and horizontal aiming.

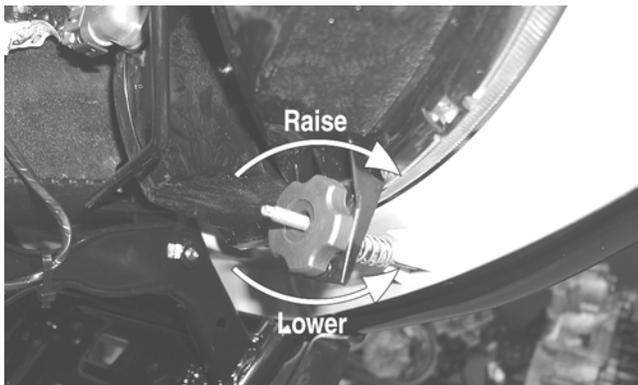
1. Position the ATV on a level floor so the headlights are approximately 6.1 m (20 ft) from an aiming surface (wall or similar aiming surface).



ATV-0070C

■NOTE: There should be an average operating load on the ATV when adjusting the headlight aim.

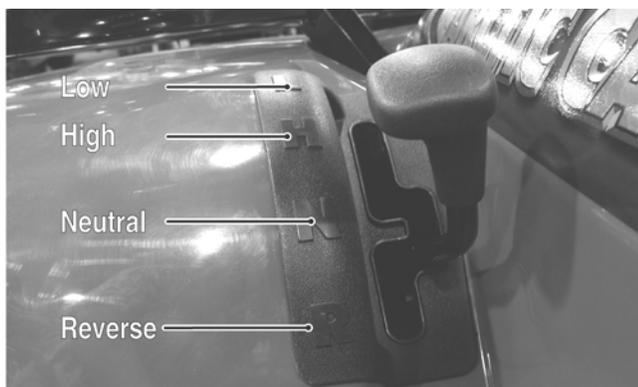
2. Measure the distance from the floor to the mid-point of each headlight.
3. Using the measurements obtained in step 2, make horizontal marks on the aiming surface.
4. Make vertical marks which intersect the horizontal marks on the aiming surface directly in front of the headlights.
5. Switch on the lights. Make sure the HIGH beam is on. DO NOT USE LOW BEAM.
6. Observe each headlight beam aim. Proper aim is when the most intense beam is centered on the vertical mark 5 cm (2 in.) below the horizontal mark on the aiming surface.
7. Adjust each headlight by turning the adjuster knob clockwise to raise the beam or counterclockwise to lower the beam.



CD714A

Shift Lever

CHECKING ADJUSTMENT



CF130B

Stop the ATV completely and shift the transmission into the R position. The reverse gear indicator light should be illuminated.

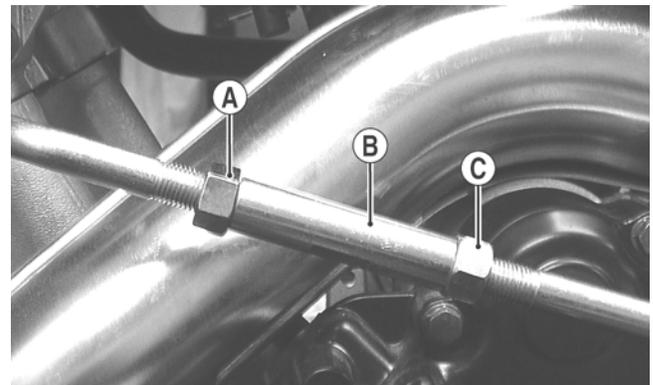
WARNING

Never shift the ATV into reverse gear when the ATV is moving as it could cause the ATV to stop suddenly throwing the operator from the ATV.

If the reverse light does not illuminate when shifted to the reverse position, the switch may be faulty, the fuse may be blown, the bulb may be faulty, a connection may be loose or corroded, or the lever may need adjusting. To adjust, proceed to Adjusting Shift Lever.

ADJUSTING SHIFT LEVER

1. Remove the seat; then remove the left-side engine cover.
2. With the ignition switch in the ON position, loosen jam nut (A) (left-hand threads); then loosen jam nut (C) and with the shift lever in the reverse position, adjust the coupler (B) until the transmission is in reverse and the (R) icon appears on the LCD.



CF258A

3. Tighten the jam nuts securely; then shift the transmission to each position and verify correct adjustment.
4. Install the left-side engine cover and seat making sure the seat locks securely in place.

■NOTE: An E (Error) in the gear position icon indicates no signal or a poor ground wire connection in the circuit. Troubleshoot the harness connectors, gear shift position switch connector, gear shift position switch, and LCD connector.

Frame/Welds/Racks

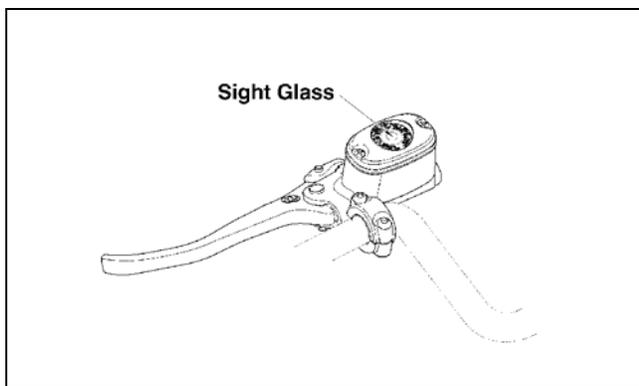
The frame, welds, and racks should be checked periodically for damage, bends, cracks, deterioration, broken components, and missing components. If replacement or repair constitutes removal, see Section 8.

Hydraulic Brake Systems

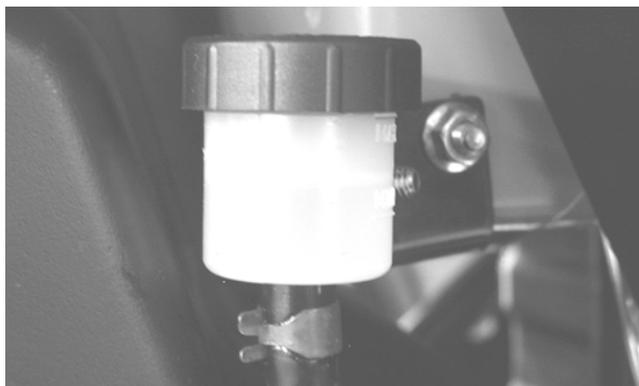
CHECKING/BLEEDING

The hydraulic brake systems have been filled and bled at the factory. To check and/or bleed a hydraulic brake system, use the following procedure.

1. With the master cylinder in a level position, check the fluid level in the reservoir. On the hand brake if the level in the reservoir is adequate, the sight glass will appear dark. If the level is low, the sight glass will appear clear. On the auxiliary brake, the level must be between the MIN and MAX lines on the reservoir.



738-420A



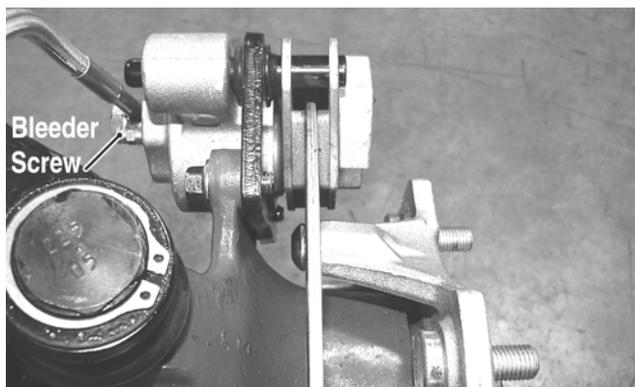
AL681

2. Compress the brake lever/pedal several times to check for a firm brake. If the brake is not firm, the system must be bled.
3. To bleed the main brake system, use the following procedure.
 - A. Remove the cover and fill the reservoir with DOT 4 Brake Fluid.
 - B. Install and secure the cover; then slowly compress the brake lever several times.

- C. Remove the protective cap, install one end of a clear hose onto one FRONT bleeder screw, and direct the other end into a container; then while holding slight pressure on the brake lever, open the bleeder screw and watch for air bubbles. Close the bleeder screw before releasing the brake lever. Repeat this procedure until no air bubbles are present.



AF637D



PR377C

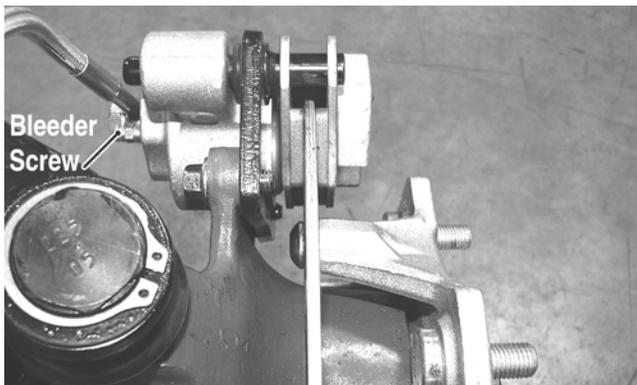
■ **NOTE:** During the bleeding procedure, watch the reservoir/sight glass very closely to make sure there is always a sufficient amount of brake fluid. If low, refill the reservoir before the bleeding procedure is continued. Failure to maintain a sufficient amount of fluid in the reservoir will result in air in the system.

- D. At this point, perform step B and C on the other FRONT bleeder screw; then move to the REAR bleeder screw and follow the same procedure.
 - E. Repeat step D until the brake lever is firm.
4. To bleed the auxiliary brake system, use the following procedure.
 - A. Remove the cover and fill the reservoir with DOT 4 Brake Fluid.
 - B. Install and secure the cover; then slowly compress the brake pedal several times.

- C. Remove the protective cap, install one end of a clear hose onto the rear bleeder screw, and direct the other end into a container; then while holding slight pressure on the brake pedal, open the bleeder screw and watch for air bubbles. Close the bleeder screw before releasing the brake pedal. Repeat this procedure until no air bubbles are present.



AF637D



PR377C

■NOTE: During the bleeding procedure, watch the reservoir/sight glass very closely to make sure there is always a sufficient amount of brake fluid. If low, refill the reservoir before the bleeding procedure is continued. Failure to maintain a sufficient amount of fluid in the reservoir will result in air in the system.

D. Repeat step C until the brake pedal is firm.

5. Carefully check the entire hydraulic brake system that all hose connections are tight, the bleed screws are tight, the protective caps are installed, and no leakage is present.

CAUTION

This hydraulic brake system is designed to use DOT 4 brake fluid only. If brake fluid must be added, care must be taken as brake fluid is very corrosive to painted surfaces.

INSPECTING HOSES

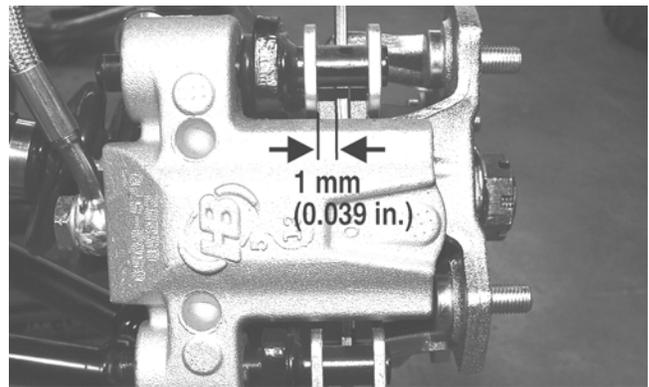
Carefully inspect the hydraulic brake hoses for cracks or other damage. If found, the brake hoses must be replaced.

CHECKING/REPLACING PADS

The clearance between the brake pads and brake discs is adjusted automatically as the brake pads wear. The only maintenance that is required is replacement of the brake pads when they show excessive wear. Check the thickness of each of the brake pads as follows.

■NOTE: As brake pads wear, it may be necessary to “top-off” the brake fluid in the reservoir.

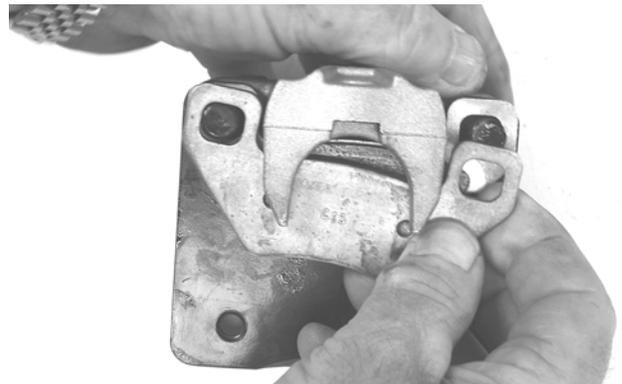
1. Remove a front wheel.
2. Measure the thickness of each brake pad.
3. If thickness of either brake pad is less than 1.0 mm (0.039 in.), the brake pads must be replaced.



PR376B

■NOTE: The brake pads should be replaced as a set.

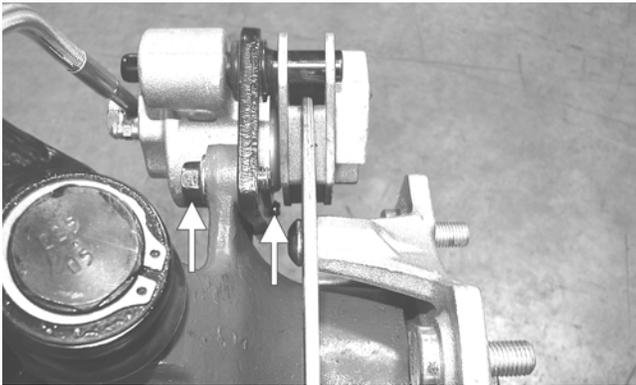
4. To replace the brake pads, use the following procedure.
 - A. Remove the wheel.
 - B. Remove the cap screws securing the caliper holder to the knuckle; then remove the pads.



PR237

C. Install the new brake pads.

- D. Secure the caliper to the knuckle and/or axle housing with new “patch-lock” cap screws. Tighten to 20 ft-lb.



PR377B

E. Install the wheel. Tighten to 40 ft-lb.

5. Burnish the brake pads (see Burnishing Brake Pads in this section).

Burnishing Brake Pads

Brake pads (both hydraulic and auxiliary) must be burnished to achieve full braking effectiveness. Braking distance will be extended until brake pads are properly burnished. To properly burnish the brake pads, use the following procedure.

WARNING

Failure to properly burnish the brake pads could lead to premature brake pad wear or brake loss. Brake loss can result in severe injury.

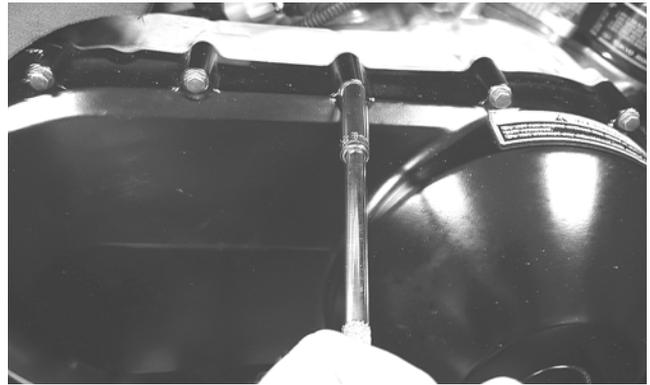
1. Choose an area large enough to safely accelerate the ATV to 30 mph and to brake to a stop.
2. Accelerate to 30 mph; then compress brake lever or apply the auxiliary brake to decelerate to 0-5 mph.
3. Repeat procedure on each brake system five times.
4. Adjust the auxiliary brake (if necessary).
5. Verify that the brakelight illuminates when the hand lever is compressed or the brake pedal is depressed.

Checking/Replacing V-Belt

REMOVING

1. Remove the right-side footrest (see Section 8).

2. Remove the cap screws securing the V-belt cover noting the location of the different-lengthed cap screws for installing purposes; then using a rubber mallet, gently tap on the cover tabs to loosen the cover. Remove the cover.

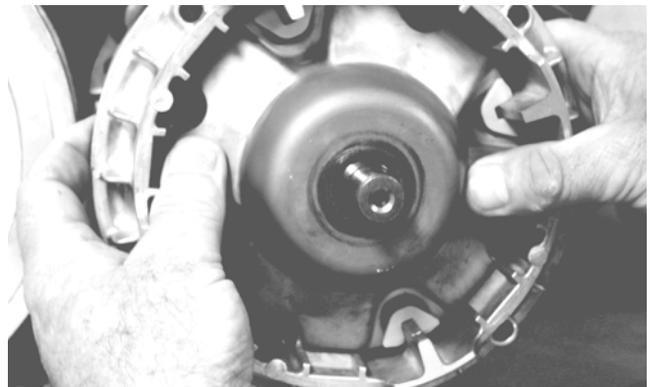


CD078

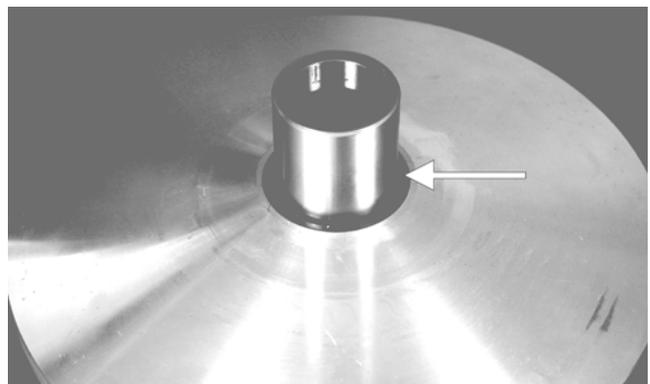
NOTE: Note the location of the main engine ground wire for installing purposes.

3. Remove the nut securing the movable drive face; then remove the face. Account for the flat washer and spacer.

NOTE: Keep the drive face plate in contact with the drive face when removing or installing the drive face to prevent the rollers from falling out.



CD963

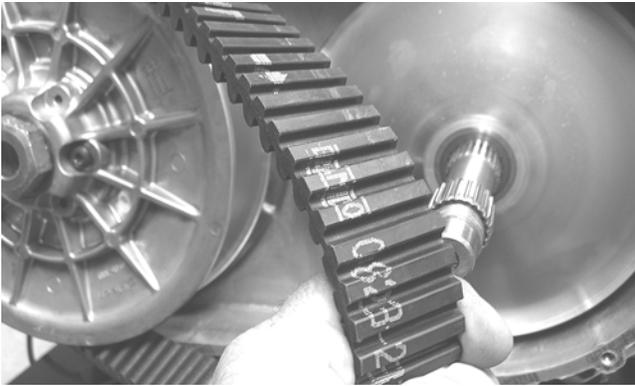


CD966A

4. Install one of the CVT cover cap screws into the driven pulley fixed face; then turn the cap screw clockwise to spread the pulley faces. Remove the V-belt.



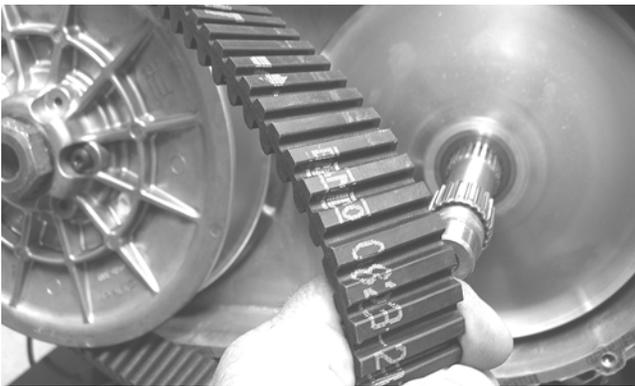
GZ076



GZ085

INSTALLING

1. Place the V-belt into position on the driven pulley and over the front shaft.



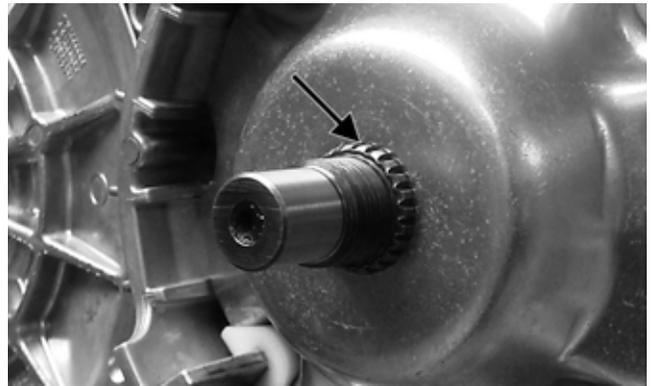
GZ085

■NOTE: The arrows on the V-belt should point in direction of engine rotation (forward).

2. Pinch the V-belt together near its center and slide the spacer and movable drive face onto the drive-shaft. Secure the drive face with a washer and nut (coated with red Loctite #271). Tighten the nut to 147 ft-lb.

CAUTION

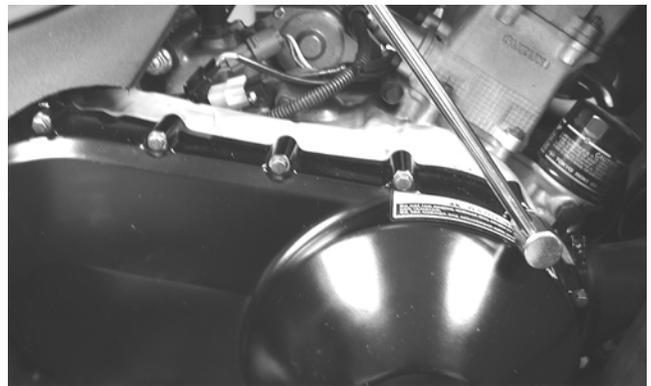
Make sure the movable drive face plate is fully engaged onto the splines of the clutch shaft before torquing the nut or false torque readings may occur. This will cause the assembly to loosen damaging the shaft and clutch face plate.



GZ485A

■NOTE: At this point, the push-bolt can be removed.

3. Rotate the V-belt and clutches until the V-belt is flush with the top of the driven clutch.
4. Place the V-belt cover gasket into position; then install the cover and secure with the cap screws making sure the different-lengthed cap screws are in their proper location. Tighten the cap screws to 8 ft-lb.



CD083

■NOTE: Make sure the main engine ground wire is installed and secured in the proper location.

5. Install the right-side footrest (see Section 8).
6. Secure the front fender to the footrest with the two cap screws. Tighten securely.

SECTION 3 - ENGINE/TRANSMISSION

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Engine/Transmission

This section has been organized into sub-sections which show a progression for the complete servicing of the Arctic Cat ATV engine/transmission.

To service the center crankcase halves, the engine/transmission must be removed from the frame.

To service top-side, left-side, and right-side components, the engine/transmission does not have to be removed from the frame.

■NOTE: Arctic Cat recommends the use of new gaskets, lock nuts, and seals and lubricating all internal components when servicing the engine/transmission.

■NOTE: Some photographs and illustrations used in this section are used for clarity purposes only and are not designed to depict actual conditions.

■NOTE: Critical torque specifications are located in Section 1.

SPECIAL TOOLS

A number of special tools must be available to the technician when performing service procedures in this section. Refer to the current Special Tools Catalog for the appropriate tool description.

Description	p/n
Clutch Sleeve Hub Holder	0444-007
Connecting Rod Holder	0444-006
Crankcase Separator/Crankshaft Remover	0444-152
Driven Pulley Compressor	0444-121
Driven Pulley Compressor	0444-140
Magneto Rotor Remover Set	0444-254
Oil Filter Wrench	0644-389
Piston Pin Puller	0644-328
Spanner Wrench	0444-153
Surface Plate	0644-016
Valve Clearance Adjuster	0444-255
V Blocks	0644-022

■NOTE: Special tools are available from the Arctic Cat Service Parts Department.

Specifications*

VALVES AND GUIDES		
Valve Face Diameter	(intake) (exhaust)	35.0 mm 30.5 mm
Valve/Tappet Clearance (cold engine)	(intake) (exhaust)	0.10 mm 0.17 mm
Valve Guide/Stem Clearance (max)	(intake) (exhaust)	0.1 mm 0.3 mm
Valve Guide Inside Diameter		5.000-5.012 mm
Valve Stem Outside Diameter	(intake) (exhaust)	4.975-4.990 mm 4.955-4.970 mm
Valve Stem Runout	(max)	0.10 mm
Valve Margin (min.)	(intake)	1.1 mm
Valve Face/Seat Width (min)	(intake)	0.99 mm
Valve Seat Angle	(intake/exhaust)	45°-75°
Valve Face Radial Runout	(max)	0.15 mm
Valve Spring Free Length	(min)	44.73 mm
Valve Spring Tension @ 32.5 mm	(outer)	17.23 kg (37.98 lb)
CAMSHAFT AND CYLINDER HEAD		
Cam Lobe Height (min)	(intake) (exhaust)	34.71 mm 34.48 mm
Camshaft Journal/Cylinder Head Clearance (max)		0.074 mm
Camshaft Journal Holder Inside Diameter	(right & center) (left)	22.01-22.04 mm 17.51-17.54 mm
Camshaft Journal Outside Diameter	(center) (left) (right)	21.959-21.980 mm 17.466-17.480 mm 21.966- 21.980 mm
Camshaft Runout	(max)	0.03 mm
Rocker Arm Inside Diameter		10.00-10.15 mm
Rocker Arm Shaft Outside Diameter		9.972-9.987 mm
Cylinder Head/Cover Distortion	(max)	0.05 mm
CYLINDER, PISTON, AND RINGS		
Piston Skirt/Cylinder Clearance		0.025-0.055 mm
Piston Diameter 8 mm from Skirt End		88.96-89.01 mm
Cylinder Bore		89.005-89.015 mm
Piston Ring Free End Gap (min)	(1st) (2nd)	8.0 mm 8.3 mm
Bore x Stroke		89.0 x 71.12 mm
Cylinder Trueness	(max)	0.01 mm
Piston Ring End Gap - Installed (min)	(1st) (2nd)	0.15 mm 0.30 mm
Piston Ring to Groove Clearance (max)	(1st/2nd)	0.06 mm
Piston Ring Groove Width	(1st) (2nd) (oil)	1.01-1.03 mm 1.21-1.23 mm 2.01-2.03 mm
Piston Ring Thickness	(1st) (2nd)	0.97-0.99 mm 1.17-1.19 mm
Piston Pin Bore	(max)	20.008 mm
Piston Pin	(min)	19.994 mm
CRANKSHAFT		
Connecting Rod (small end)	(max)	20.021 mm
Connecting Rod (big end side-to-side)		0.7 mm
Connecting Rod (small end deflection)	(max)	3.0 mm
Crankshaft (web-to-web)		60.8-60.9 mm
Crankshaft Runout	(max)	0.03 mm

* Specifications subject to change without notice.

Troubleshooting

Problem: Engine will not start or is hard to start (Compression too low)	
Condition	Remedy
<ol style="list-style-type: none"> 1. Valve clearance out of adjustment 2. Valve guides worn 3. Valves mistimed 4. Piston rings worn excessively 5. Cylinder bore worn 6. Starter motor cranks too slowly - does not turn 	<ol style="list-style-type: none"> 1. Adjust clearance 2. Repair - replace guides 3. Retime engine 4. Replace rings 5. Replace - rebore cylinder 6. See Section 5 - Troubleshooting
Problem: Engine will not start or is hard to start (No spark)	
Condition	Remedy
<ol style="list-style-type: none"> 1. Spark plug fouled 2. Spark plug wet 3. Magneto defective 4. ECU defective 5. Ignition coil defective 6. High-tension lead open - shorted 	<ol style="list-style-type: none"> 1. Clean - replace plug 2. Clean - dry plug 3. Replace magneto 4. Replace ECU 5. Replace ignition coil 6. Replace high tension lead
Problem: Engine will not start or is hard to start (No fuel reaching the fuel injector)	
Condition	Remedy
<ol style="list-style-type: none"> 1. Gas tank vent hose obstructed 2. Fuel hose obstructed 3. Fuel screens obstructed 4. Fuel pump defective 	<ol style="list-style-type: none"> 1. Clean vent hose 2. Clean - replace hose 3. Clean - replace inlet screen - valve screen 4. Replace fuel pump
Problem: Engine stalls easily	
Condition	Remedy
<ol style="list-style-type: none"> 1. Spark plug fouled 2. Magneto defective 3. ECU defective 4. Fuel injector obstructed 5. Valve clearance out of adjustment 	<ol style="list-style-type: none"> 1. Clean plug 2. Replace magneto 3. Replace ECU 4. Replace fuel injector 5. Adjust clearance
Problem: Engine noisy (Excessive valve chatter)	
Condition	Remedy
<ol style="list-style-type: none"> 1. Valve clearance too large 2. Valve spring(s) weak - broken 3. Rocker arm - rocker arm shaft worn 4. Camshaft worn 5. Valve tappets worn 	<ol style="list-style-type: none"> 1. Adjust clearance 2. Replace spring(s) 3. Replace arm - shaft 4. Replace camshaft 5. Replace tappets
Problem: Engine noisy (Noise seems to come from piston)	
Condition	Remedy
<ol style="list-style-type: none"> 1. Piston - cylinder worn 2. Combustion chamber carbon buildup 3. Piston pin - piston pin bore worn 4. Piston rings - ring groove(s) worn 	<ol style="list-style-type: none"> 1. Replace - service piston - cylinder 2. Clean cylinder head and piston 3. Replace - service pin - bore 4. Replace rings - piston
Problem: Engine noisy (Noise seems to come from timing chain)	
Condition	Remedy
<ol style="list-style-type: none"> 1. Chain stretched 2. Sprockets worn 3. Tension adjuster malfunctioning 	<ol style="list-style-type: none"> 1. Replace chain 2. Replace sprockets 3. Repair - replace adjuster

Problem: Engine noisy (Noise seems to come from crankshaft)	
Condition	Remedy
<ol style="list-style-type: none"> 1. Main bearing worn - burned 2. Lower rod-end bearing worn - burned 3. Connecting rod side clearance too large 	<ol style="list-style-type: none"> 1. Replace bearing 2. Replace crankshaft assembly 3. Replace crankshaft assembly
Problem: Engine noisy (Noise seems to come from transmission)	
Condition	Remedy
<ol style="list-style-type: none"> 1. Gears worn - rubbing 2. Splines worn 3. Primary gears worn - rubbing 4. Bearings worn 5. Bushing worn 	<ol style="list-style-type: none"> 1. Replace gears 2. Replace shaft(s) 3. Replace gears 4. Replace bearings 5. Replace bushing
Problem: Engine noisy (Noise seems to come from secondary bevel gear and final driven shaft)	
Condition	Remedy
<ol style="list-style-type: none"> 1. Drive - driven bevel gears damaged - worn 2. Backlash excessive 3. Tooth contact improper 4. Bearing damaged 5. Gears worn - rubbing 6. Splines worn 7. Final driven shaft thrust clearance too large 	<ol style="list-style-type: none"> 1. Replace gears 2. Adjust backlash 3. Adjust contact 4. Replace bearing 5. Replace gears 6. Replace shaft(s) 7. Replace thrust washer(s)
Problem: Engine idles poorly	
Condition	Remedy
<ol style="list-style-type: none"> 1. Valve clearance out of adjustment 2. Valve seating poor 3. Valve guides defective 4. Rocker arms - arm shaft worn 5. Magneto defective 6. ECU defective 7. Spark plug fouled - gap too wide 8. Ignition coil defective 9. Fuel injector obstructed 	<ol style="list-style-type: none"> 1. Adjust clearance 2. Replace - service seats - valves 3. Replace guides 4. Replace arms - shafts 5. Replace magneto 6. Replace ECU 7. Adjust gap - replace plug 8. Replace ignition coil 9. Replace fuel injector
Problem: Engine runs poorly at high speed	
Condition	Remedy
<ol style="list-style-type: none"> 1. High RPM "cut out" against RPM limiter 2. Valve springs weak 3. Valve timing out of adjustment 4. Cams - rocker arms - tappets worn 5. Spark plug gap too narrow 6. Ignition coil defective 7. Air cleaner element obstructed 8. Fuel hose obstructed 9. Fuel pump defective 	<ol style="list-style-type: none"> 1. Shift into higher gear - decrease speed 2. Replace springs 3. Adjust timing 4. Replace cams - arms - tappets 5. Adjust gap 6. Replace ignition coil 7. Clean element 8. Clean or replace hose 9. Replace fuel pump
Problem: Exhaust smoke dirty or heavy	
Condition	Remedy
<ol style="list-style-type: none"> 1. Engine oil overfilled - contaminated 2. Piston rings - cylinder worn 3. Valve guides worn 4. Cylinder wall scored - scuffed 5. Valve stems worn 6. Stem seals defective 	<ol style="list-style-type: none"> 1. Drain excess oil - replace oil 2. Replace - service rings - cylinder 3. Replace guides 4. Replace - service cylinder 5. Replace valves 6. Replace seals

Problem: Engine lacks power

Condition	Remedy
1. Valve clearance incorrect	1. Adjust clearance
2. Valve springs weak	2. Replace springs
3. Valve timing incorrect	3. Re-time valve gear
4. Piston ring(s) - cylinder worn	4. Replace - service rings - cylinder
5. Valve seating poor	5. Repair seats
6. Spark plug fouled	6. Clean - replace plug
7. Rocker arms - shafts worn	7. Replace arms - shafts
8. Spark plug gap incorrect	8. Adjust gap - replace plug
9. Fuel injector obstructed	9. Replace injector
10. Air cleaner element obstructed	10. Clean element
11. Engine oil overfilled - contaminated	11. Drain excess oil - change oil
12. Intake manifold leaking air	12. Tighten - replace manifold
13. Cam chain worn	13. Replace cam chain

Problem: Engine overheats

Condition	Remedy
1. Carbon deposit (piston crown) excessive	1. Clean piston
2. Oil low	2. Add oil
3. Octane low - gasoline poor	3. Drain - replace gasoline
4. Oil pump defective	4. Replace pump
5. Oil circuit obstructed	5. Clean circuit
6. Intake manifold leaking air	6. Tighten - replace manifold
7. Coolant level low	7. Fill - examine system for leaks
8. Fan malfunctioning	8. Check fan fuse - replace fan
9. Fan switch malfunctioning	9. Replace fan switch
10. Thermostat stuck - closed	10. Replace thermostat
11. Radiator hoses - cap damaged - obstructed	11. Clear obstruction - replace hoses

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Removing Engine/ Transmission

Many service procedures can be performed without removing the engine/transmission from the frame. Closely observe the note introducing each sub-section for this important information.

👉 AT THIS POINT

If the technician's objective is to service Top-Side Components, Left-Side Components, or Right-Side Components, the engine/transmission does not have to be removed from the frame.

👉 AT THIS POINT

If the technician's objective is to service/replace magneto cover oil seals or the oil strainer (from beneath the engine/transmission), the engine/transmission does not have to be removed from the frame.

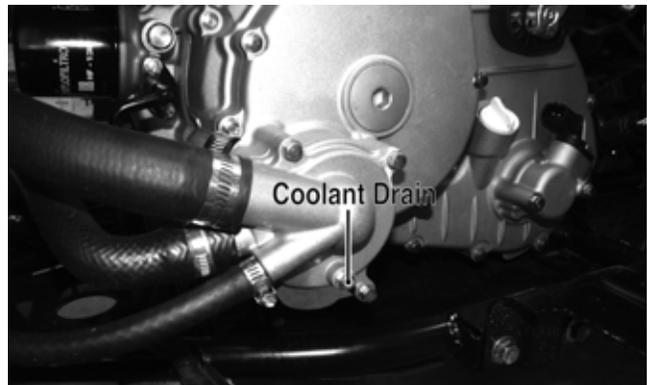
Secure the ATV on a support stand to elevate the wheels.

⚠️ WARNING

Make sure the ATV is solidly supported on the support stand to avoid injury.

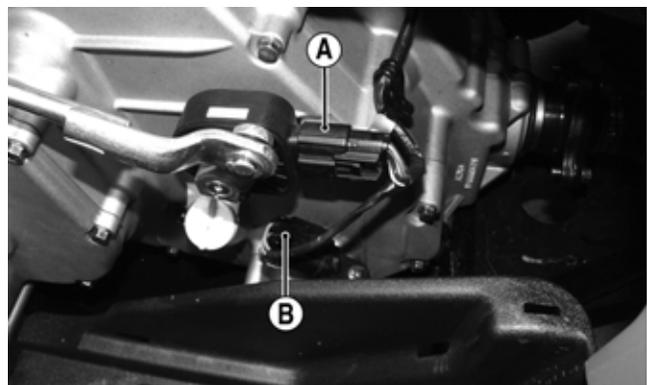
1. Remove the seat and tool tray; then disconnect the negative battery cable.

2. Remove the left footwell, footrest, and footwell support assembly; then drain the coolant into a suitable container.



FI530A

3. From the left side, remove the gear position switch connector (A) and the speed sensor connector (B).



FI525A

4. Drain the engine oil into a suitable container.
5. Remove the storage compartment; then remove the air inlet tube from air filter housing and throttle body.

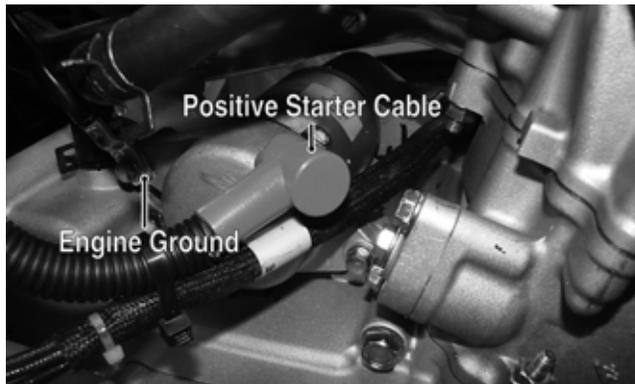


FI516A

6. Remove the air inlet and outlet ducts from the CVT housing.
7. Loosen the clamp securing the air filter housing to the front air inlet duct; then disconnect the coil connector and remove the spark plug cap from the spark plug.

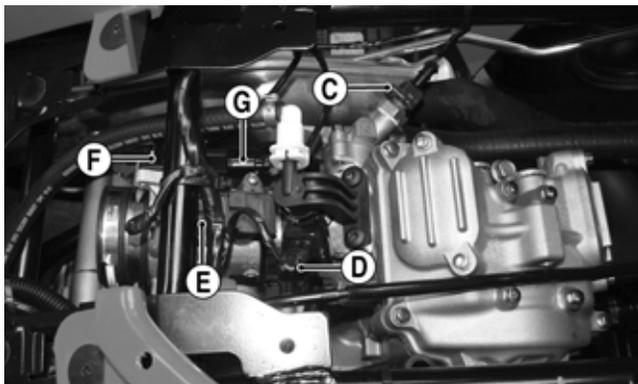


FI519A

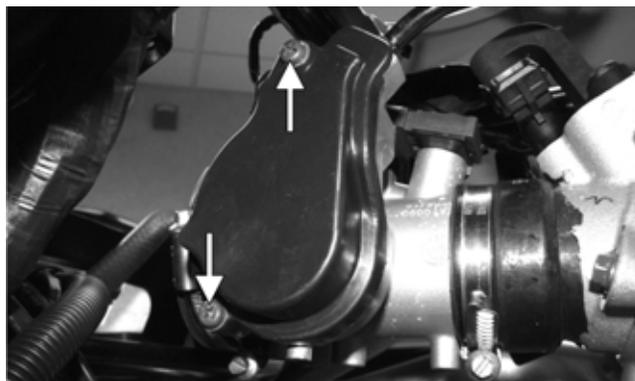


FI533A

8. Disconnect the crankcase breather hose from the air filter housing and remove the air filter assembly.
9. From the top side, remove the engine coolant temperature (ECT) sensor connector (C), fuel injector connector (D), manifold absolute pressure (MAP) sensor connector (E), idle step control (ISC) connector (F), and throttle position sensor (TPS) connector (G).

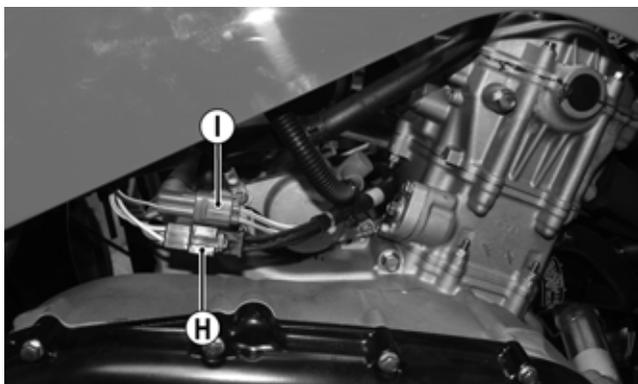


FI522A



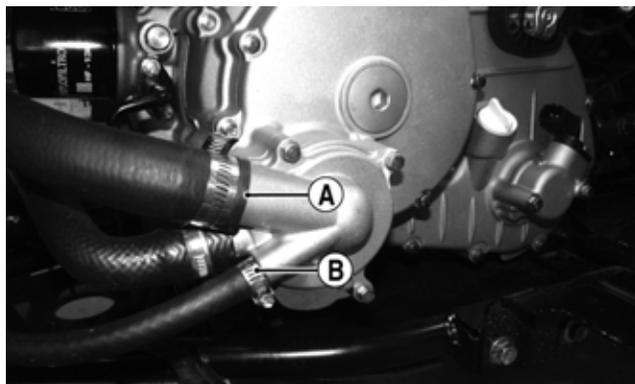
FI536A

10. From the right side, disconnect the stator connector (H) and crankshaft position sensor connector (I) from the main harness; then disconnect the positive cable from the starter motor and the engine ground cable from the starter mounting flange.

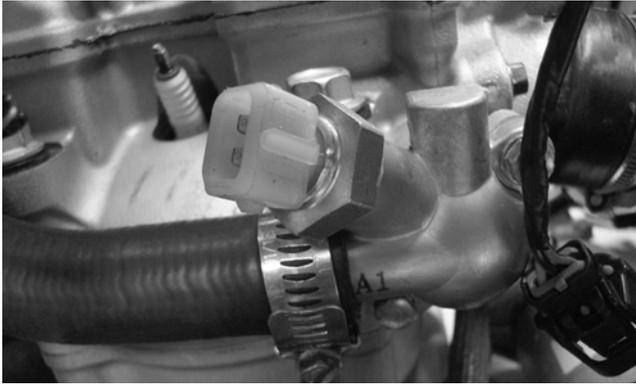


FI523A

11. Remove the screens securing throttle arm cover to the throttle body; then loosen the throttle cable jam-nut and remove the throttle cable.
12. Remove the cap screws securing the exhaust pipe to the cylinder head; then remove the springs securing the muffler to the exhaust pipe.
13. Remove the muffler and exhaust pipe. Account for a grafoil seal on each end of the exhaust pipe.
14. Remove coolant hoses (A) and (B) from the water pump; then remove the upper coolant hose from the thermostat housing.



FI530B



F1537

15. Remove the four cap screws securing the rear driveline to the output drive flange.
16. Support the engine and remove the two through bolts securing the engine assembly to the frame; then move the engine rearward sufficiently to disengage the front driveline and remove the engine from the left side.

Top-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
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<p>To service any one specific component, only limited disassembly of components may be necessary. Note the AT THIS POINT information in each sub-section.</p>
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■NOTE: The engine/transmission does not have to be removed from the frame for this procedure.

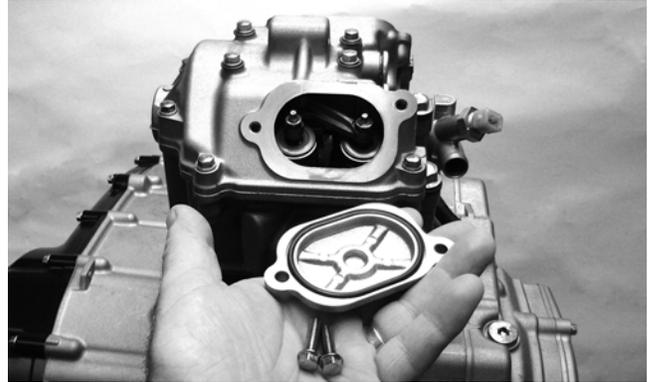
Removing Top-Side Components

- A. Cylinder Head Cover/
Rocker Arms
- B. Cylinder Head/Camshaft

■NOTE: Remove the spark plug, timing inspection plug, and outer magneto cover; then using an appropriate wrench, rotate the crankshaft to top-dead-center of the compression stroke.

■NOTE: Arctic Cat recommends the use of new gaskets, lock nuts, and seals and lubricating all internal components when servicing the engine/transmission.

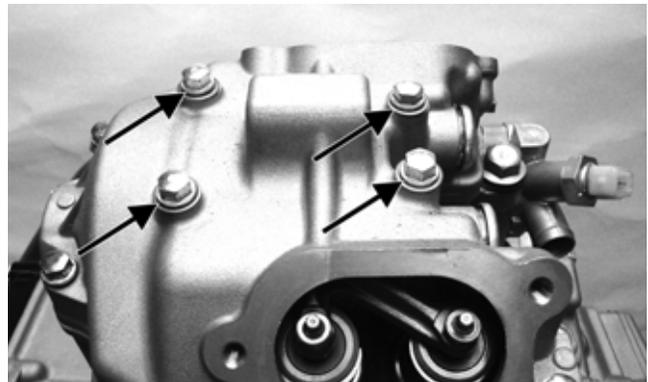
1. Remove the cap screws securing the two tappet covers. Remove the two tappet covers. Account for the O-rings.



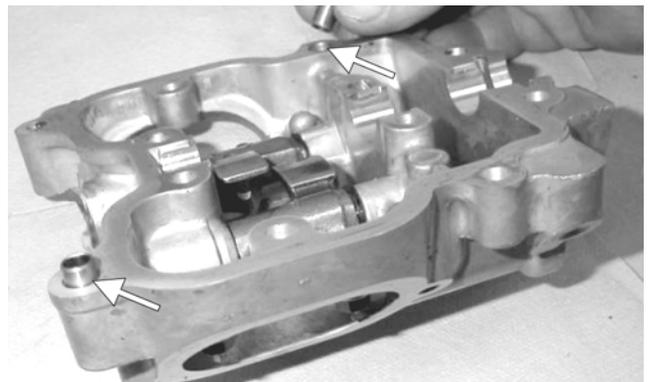
F1603

■NOTE: Keep the mounting hardware with the covers for assembly purposes.

2. Remove the cylinder head cover cap screws. Note the rubber washers on the four top-side cap screws; remove the cylinder head cover. Note the orientation of the cylinder head plug and remove it. Note the location of the two alignment pins.



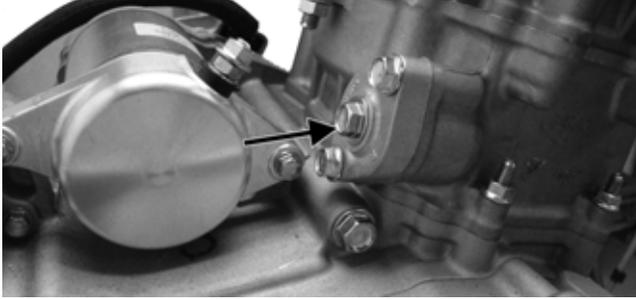
F1606A



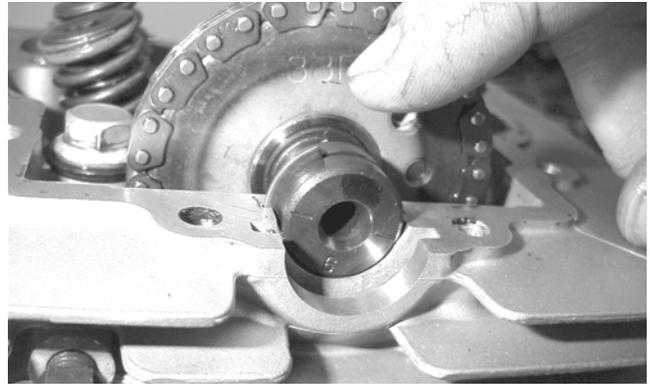
MD1354A

3. Remove the cap screw from the tension adjuster; then using a common screwdriver, relax the cam chain tension by rotating the adjuster screw clockwise until it locks.

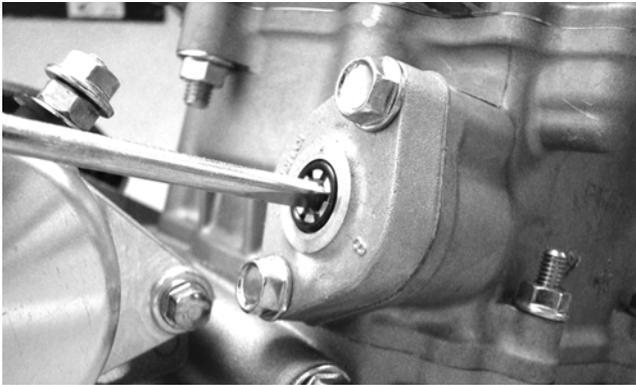
NOTE: Care should be taken not to drop the C-ring down into the crankcase.



F1607A



MD1131



F1608

4. Bend the washer tabs and remove the two cap screws securing the sprocket to the camshaft.

6. Noting the timing marks for installing purposes, drop the sprocket off the camshaft. While holding the cam chain, slide the sprocket and camshaft out of the cylinder head. Account for an alignment pin.

NOTE: Loop the chain over the cylinder and secure it to keep it from falling into the crankcase.

3



F1612

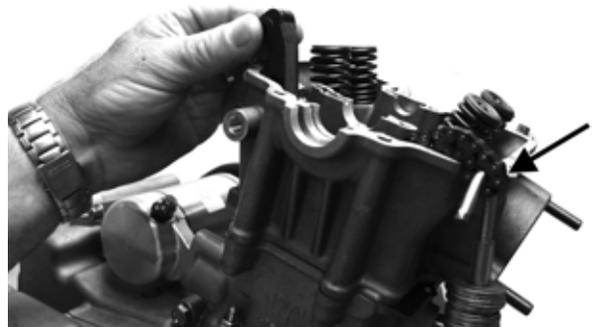
5. Using an awl, rotate the C-ring in its groove until it is out of the cylinder head; then remove the C-ring.



F1620



F1613



F1617A

7. Remove the cam chain tensioner pivot bolt and remove the chain tensioner; then remove the two nuts securing the cylinder head to the cylinder.