FOREWORD

This manual contains service, maintenance, and troubleshooting information for the 2011 Arctic Cat Y-12+ Youth ATV. The manual is designed to aid service personnel in service-oriented applications and may be used as a text-book for service training.

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. A troubleshooting section is also included in this manual.

The service technician should become familiar with the operation and construction of each component or system by carefully studying this 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 photo-graphs 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.

August 2010

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General Information

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

Specifications

CHASSIS		
Length (Overall)		146.8 cm (57.8 in.)
Height (Overall)		96.2 cm (37.9 in.)
Width (Overall)		87.6 cm (34.5 in.)
Suspension Travel	(Front) (Rear)	71.00 mm (2.8 in.) 73.66 mm (2.9 in.)
Tire Size	(Front) (Rear)	AT20 x 7-8 AT19 x 8-8
Tire Inflation Pressure		0.21 kg-cm^2 (3.0 psi)
MISCELLANY		
Dry Weight (Approx)		118 kg (260 lb) - DVX 120.2 kg (265 lb) - Utility
Gas Tank Capacity		5.7 L (1.5 U.S. gal.)
Reserve Capacity		1.3 L (0.34 U.S. gal.)
Transmission Lubricant (Recommended)		SAE 80W-90 Hypoid
Transmission Lubricant Capacity		250 ml (8.4 fl oz)
Engine Oil Capacity		0.8 L (0.84 U.S. qt)
Gasoline (Recommended)		87 Octane Regular Unleaded
Engine Oil (Recommended)		Arctic Cat ACX All Weather (Synthetic)
Brake Type		Front Double Drum/Rear Hydraulic Disc w/Brake Lever Locks
Headlight		12V/35W
Brakelight		12V/5W
Starting System		Electric w/Kick Start (Emergency)

Specifications subject to change without notice.

Torque Specifications

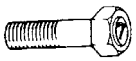
EXHAUST COMPONENTS Part	Part Bolted To	Torque ft-lb
Exhaust Pipe	Cylinder Head	7
Muffler	Frame	32
BRAKE SYSTEM COMPONENTS		
Brake Banjo-Fitting	Caliper	25
Brakeline Hose	Master Cylinder	20
Rear Brake Caliper	Rear Axle Housing	22
ELECTRICAL COMPONENTS		
Stator*	Stator Plate	8
STEERING COMPONENTS		
Wheel	Front/Rear Hub	30
Front Wheel Hub	Spindle Axle	45
Handlebar Cap	Lower Clamp	10
Steering Post Outer Bearing Cap	Inner Bearing Clamp	20
Steering Post	Frame	51
Tie Rod End	Steering Post	20
SUSPENSION COMPONENTS		
Front Shock Absorber	Frame/A-Arm	29
Rear Shock Absorber	Frame/Swing Arm	29
Swing Arm	Frame	50
Swing Arm	Rear Axle Housing	29
A-Arm	Frame	29
Knuckle	A-Arm	29
Tie Rod End	Knuckle	25
ENGINE COMPONENTS		
Oil Drain Plug	Crankcase	18
Spark Plug	Cylinder Head	9
Cylinder Head (Nut)	Cylinder	15
Crankcase Half*	Crankcase Half	8
Flywheel*	Crankshaft	30
Camshaft Holder	Cylinder	15
Stationary Drive Sheave*	Crankshaft	27.5
Centrifugal Clutch Housing*	Driven Pulley/Centrifugal Clutch	40
Oil Pump	Crankcase	7
Oil Pump Gear	Oil Pump	7
Oil Screen/Filter Cap	Crankcase	10
Cam Chain Tensioner	Cylinder	7
Transmission Drain Plug	Transmission	18
Cylinder Head (Cap Screw)	Crankcase	7
Valve Cover	Cylinder Head	7
Spline-Lock	Drive Sprocket	8
Engine Mount	Engine/Frame	32.5
Intake Pipe	Cylinder Head	7
DRIVE TRAIN COMPONENTS		
Rear Hub	Rear Axle Shaft	58
Rear Axle Nut (Inner/Outer)*	Rear Axle	86
V-Belt Cover	Crankcase	7
Transmission Case Cover	Transmission	22
Rear Sprocket	Sprocket Retainer	20

* w/Red Loctite #271

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 month is 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 three hours 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.

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.

After the completion of the break-in period, the engine lubricant should be changed. Other maintenance after break-in should include checking of all prescribed adjustments and tightening of all fasteners.

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 MTBE are acceptable gasolines.

CAUTION

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

RECOMMENDED ENGINE OIL

The recommended oil to use is Arctic Cat ACX All Weather (Synthetic).

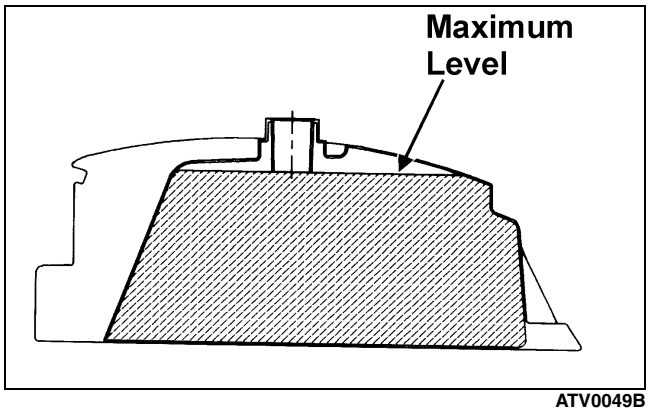
RECOMMENDED TRANSMISSION LUBRICANT

The recommended transmission lubricant to use is SAE 80W-90 hypoid.

FILLING GAS TANK

⚠ WARNING

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



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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.

⚠ WARNING

Do not over-fill or overflow gasoline when filling the gas tank. A fire hazard could materialize. Always allow the engine to cool before filling 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 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 Preserver, rapidly inject the preserver into the air filter opening for a period of 10 to 20 seconds. 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. Drain the carburetor float chamber.
5. Plug the hole in the exhaust system with a clean cloth.
6. Apply light oil to the upper steering post bushing and plungers of the shock absorbers.
7. 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.
8. Disconnect the battery cables (negative cable first); then remove the battery, clean the battery posts and cables, and store in a clean, dry area.

CAUTION

This maintenance-free battery should be charged at the recommended rate every 30 days or permanent damage will result if the battery completely discharges.

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.
3. Remove the cloth from the exhaust system.
4. Check all control wires and cables for signs of wear or fraying. Replace if necessary.
5. Change the transmission lubricant.
6. Charge the battery; then install. Connect the battery cables making sure to connect the positive cable first.
7. Check the entire brake system (cables, shoes, etc.), and all controls. Adjust or replace if necessary.
8. Check the tire pressure. Inflate to recommended pressure as necessary.
9. Tighten all nuts, bolts, cap screws, and screws making sure all calibrated nuts, cap screws, and bolts are tightened to specifications.
10. Make sure the steering moves freely and does not bind.
11. Check the spark plug. Clean or replace as necessary.

Periodic Maintenance/ Tune-Up

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.

Periodic Maintenance Chart

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

Item	Initial Service After Break-In (First Mo)	Every Day	Every Month	Every 3 Months	Every 6 Months	Every Year	As Needed
Battery	I		CH			I	C
Fuse				I			R
Air Filter	I		C*				R
Engine Compression						I	
Spark Plug				I/C			R (4000 Mi or 18 Mo)
Chassis				C*/L*		I	
Gas/Vent Hoses		I					C, R (2 Years)
Gas Tank Valve						I	C
Throttle Cable	I	I			C/L		A, R
Carburetor	I			D*		D*	
Engine RPM (Idle)	I					I	I/A
Engine Oil	R	I		R			
Valve/Tappet Clearance	A					A	
Transmission Lubricant/ Level	R						I
Fuel Filter	I			I			R
Tires/Air Pressure/Wear	I	I					I/R
Steering Components	I	I					R
Drive Chain	I			C*/L*			R
Suspension (Tie Rods, Protective Boots)	I	I					R
Nuts/Bolts/Cap Screws	I		I/T				T
Ignition Timing							I
Brakelight	I	I					R
Switches		I					R
Kick Starter		I					C
Handlebar/Grips		I					R
Frame/Welds			I				
Electrical Connections	I					I	C
Complete Brake Systems	I	I		C*			L, R
Brake Fluid	I		I				R (2 Years)
Shock Absorbers			I				R

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

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

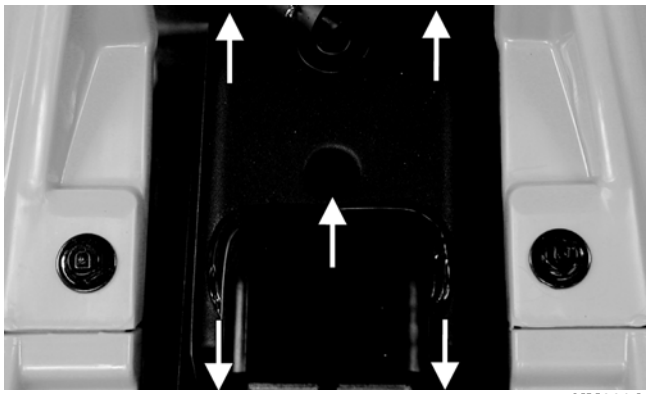
B. Brake Lever Pivot/Cable Ends

C. Brake Cable Ends

D. Idle RPM Adjustment Screw (Carburetor)

Air Filter

1. Remove the seat; then remove five screws securing the air filter housing cover.



KM032A

2. Remove the air filter housing cover; then pull the filter out of the housing.
3. 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 Filter Cleaner and Foam Filter Oil are available from Arctic Cat.

4. Compress the element by pressing it between the palms of both hands to remove excess solvent. Do not twist or wring the element or it will develop cracks.
5. Dry the element.
6. Put the element in a plastic bag; then pour in air filter oil and work the oil into the element.
7. Compress the element to remove excess oil.

CAUTION

A torn air filter 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.

8. Clean any dirt or debris from inside the air cleaner. Make sure no dirt enters the carburetor.
9. Install the air filter. Install air filter housing cover and secure with the five screws.

Valve/Tappet Clearance

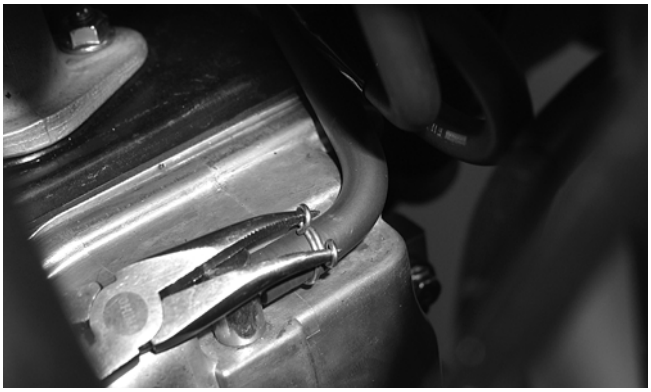
To check and adjust valve/tappet clearance, use the following procedure.

■NOTE: Valve/tappet clearance specifications are for room temperature (approximately 68° F).

1. Remove the two cap screws and the two self-tapping screws securing the fan shroud; then remove the fan shroud.

CD651

2. Remove the breather tube from the valve cover; then remove the four cap screws and remove the valve cover. Account for the O-ring seal and the valve cover.



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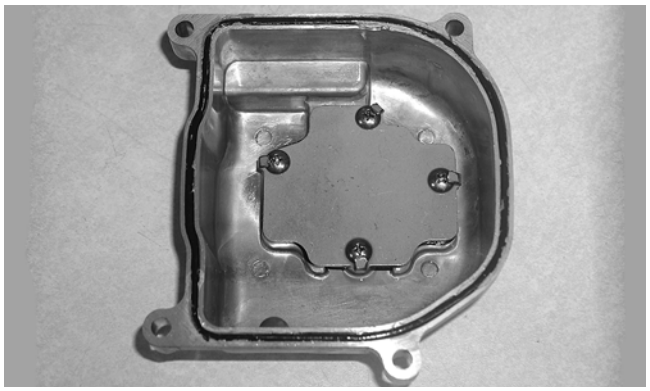
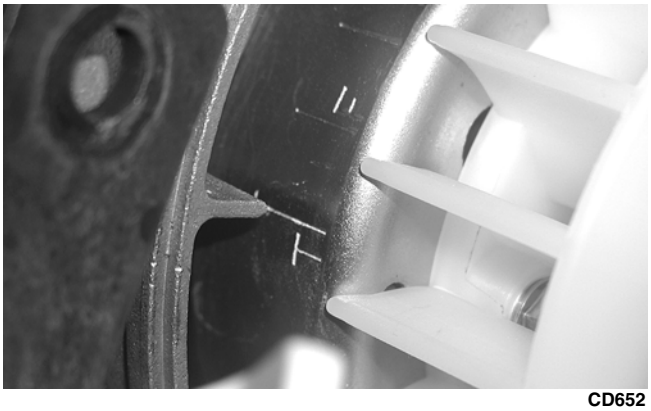


CD655

3. Remove the spark plug wire and the spark plug; then rotate the engine clockwise to the TDC position on the compression stroke.

■NOTE: The "T" mark on the rotor/flywheel is aligned with the timing pointer on the crankcase, and intake and exhaust valve adjuster screws must not have pressure on them. The two punch marks on the camshaft gear are aligned with the valve cover surface, and the hole in the timing gear points away from the engine.



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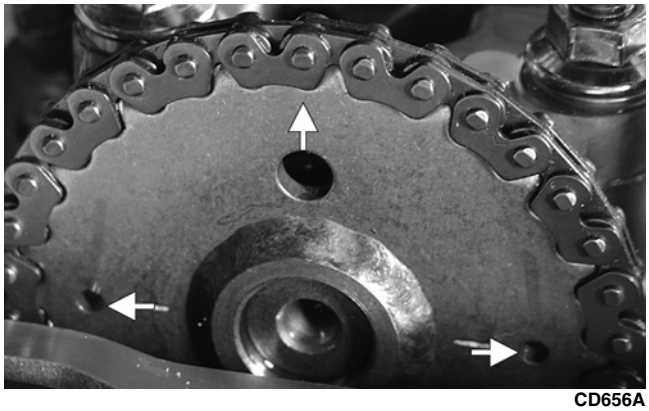
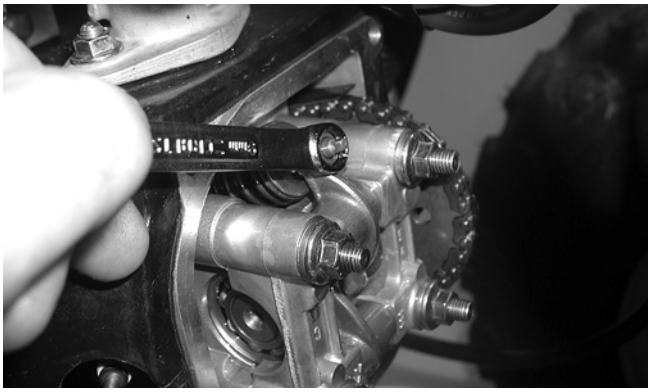


CD656A

4. Using a feeler gauge, check each valve tappet clearance. If the clearance is not within 0.1 mm, 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.



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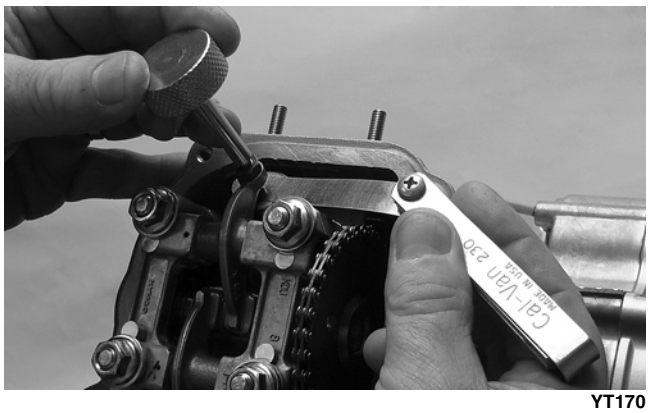

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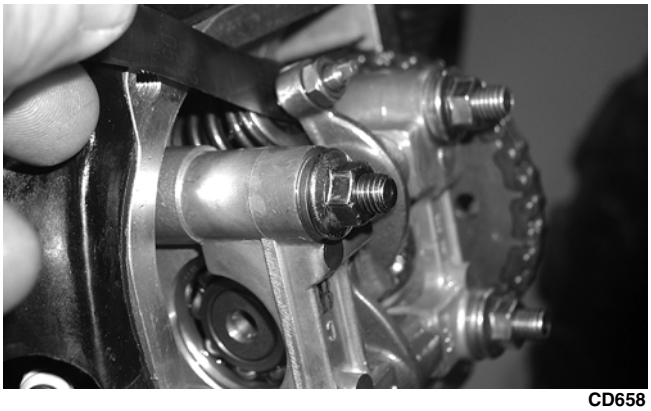
5. Check the valve/tappet clearance after the jam nut has been tightened to ensure the clearance did not change.



CD658

6. Install the valve cover and tighten the four cap screws to 7 ft-lb using a crisscross pattern; then install the breather tube.
7. Install the fan shroud and tighten the two cap screws securely. Tighten the self-tapping screws snug taking care not to strip the plastic cover.
8. Install the spark plug and tighten to 9 ft-lb; then install the spark plug wire.

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 (p/n 0444-213).

■NOTE: The engine must be warm and the battery must be fully charged for this test.

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).

■NOTE: Compression should be within a range of 195-230 psi in the full-open throttle position.

6. If compression is abnormally low, inspect the following items.
   A. Verify starter cranks engine over.
   B. Gauge is functioning properly.
   C. Throttle lever in the full-open position.
7. Pour 29.5 ml (1 fl oz) of oil into the spark plug hole, reattach the gauge, and retest compression.

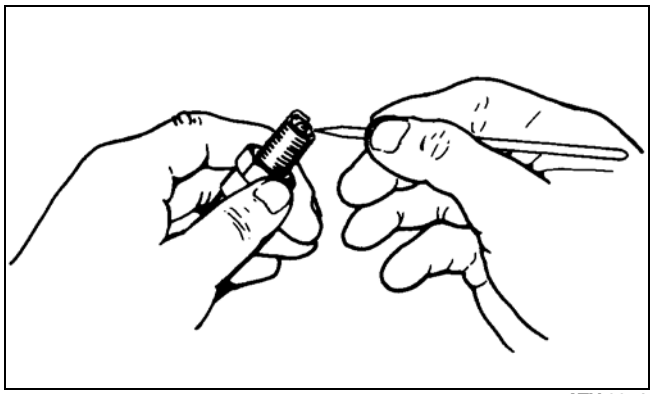
8. If compression is now evident, service the piston rings (see Section 3).

Spark Plug

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

CAUTION

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



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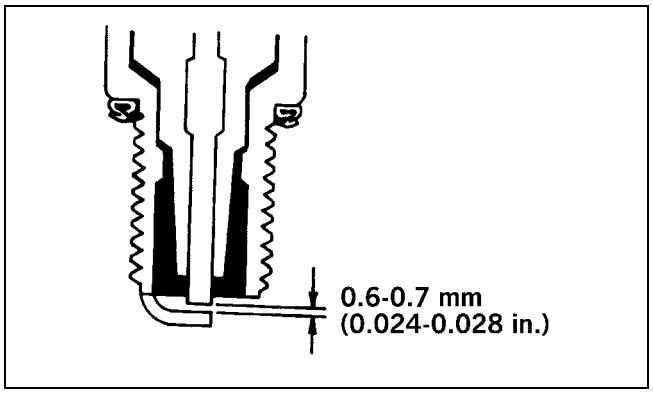
Adjust the gap to 0.6-0.7 mm (0.024-0.028 in.) for proper ignition. Use a feeler gauge to check the gap.



ATV-0052A

When installing the spark plug, be sure to tighten it to specifications. 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.

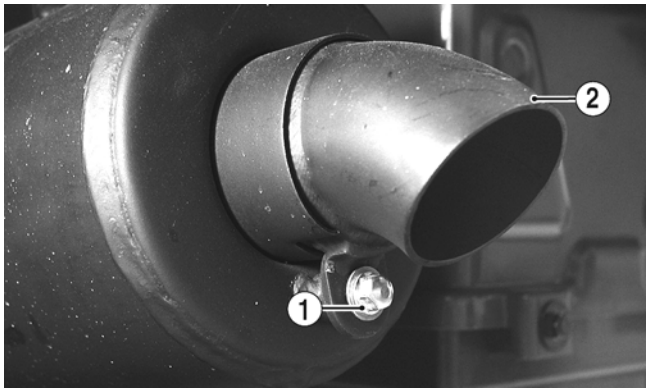
Muffler/Spark Arrester

To clean the arrester, use the following procedure.

⚠ WARNING

Before removing the muffler/spark arrester, wait for it to cool to avoid burns.

1. Remove the cap screw (1) securing the spark arrester assembly (2) to the rear of the muffler. Account for a gasket.



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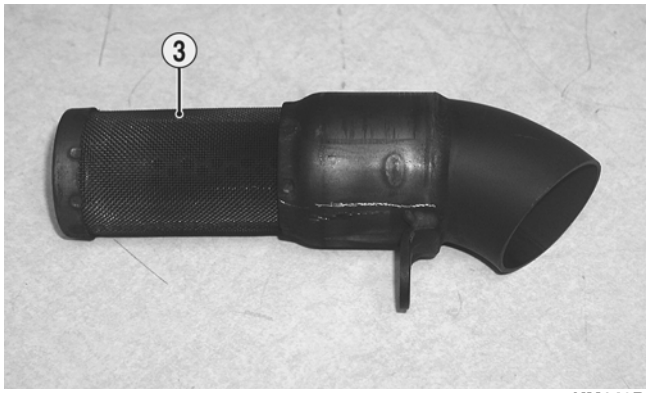
2. Clean the screen (3) with a brush and parts-cleaning solvent. Dry with compressed air. If the screen has any holes or tears, it must be replaced.



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⚠ WARNING

Before installing the spark arrester, wait for the muffler to cool to avoid burns.

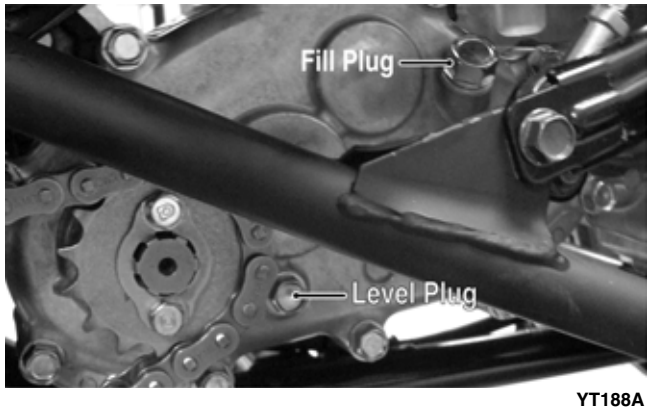
3. Install the spark arrester in the muffler and secure with the cap screw. Tighten securely.

KM139

Transmission Lubricant

1. Park the ATV on level ground.

2. Remove the level plug from the lower-right side of the transmission; then remove the fill plug from the upper-right side of the transmission. Be careful not to allow contaminates to enter the opening.



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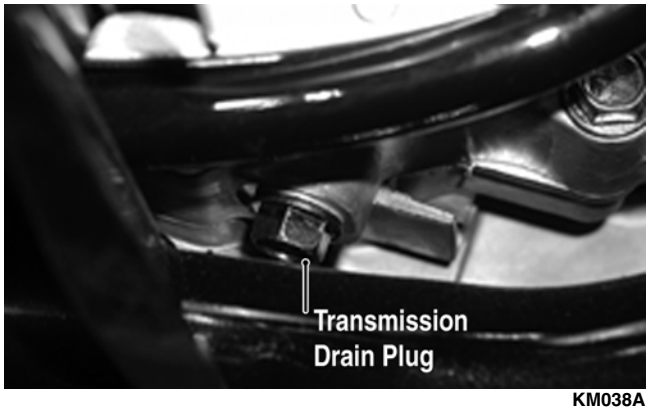
3. Remove the drain plug from the bottom of the transmission and drain the lubricant into a drain pan.



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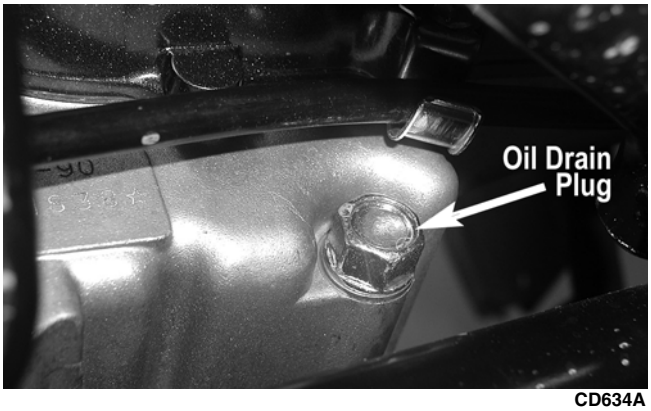
4. Install the drain plug and tighten to 18 ft-lb. Pour the recommended lubricant in the fill hole while observing the oil level hole. Stop pouring if oil is observed at the threads of the oil level hole. Install and tighten the oil level plug.
5. Start the engine (while the ATV is outside on level ground) and drive it a short distance.
6. Turn the engine off and wait approximately one minute. Remove the level and recheck the lubricant level. The level should be visible at the level hole. If lubricant is not visible, add recommended lubricant until the level is visible at the level hole.
7. Inspect the area around the drain plug for leaks.

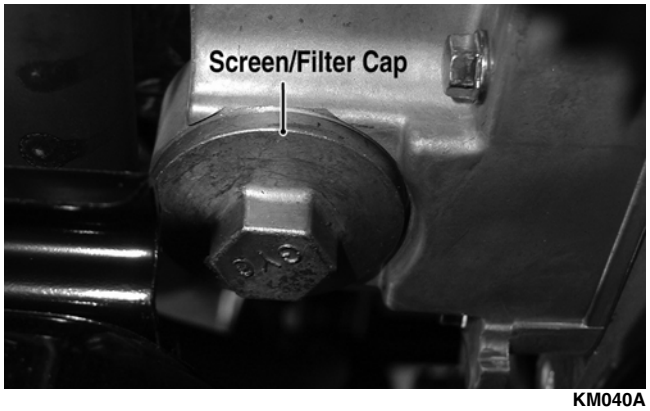
Engine Oil

1. Move the ATV outdoors and start and warm up the engine. Shut the engine off; then place a drain pan under the engine oil drain plug located on the left-side rear of the engine under the kick starter.



CD634A

2. Remove the oil drain plug and drain the engine oil into the pan; then install the oil drain plug and tighten to 18 ft-lb.
3. Move the drain pan to the right-front of the engine and remove the oil screen/filter cap. Account for a screen, spring, and O-ring.



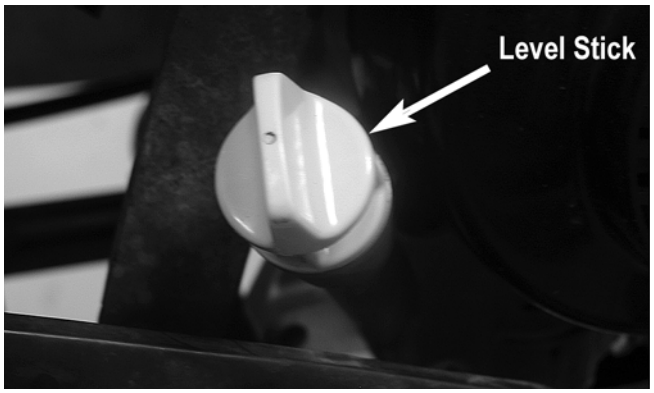
KM040A

CD628

4. Clean the oil screen in parts-cleaning solvent using a brush; then install the screen, spring, and cap making sure the O-ring is seated properly in the cap. Tighten to 10 ft-lb.

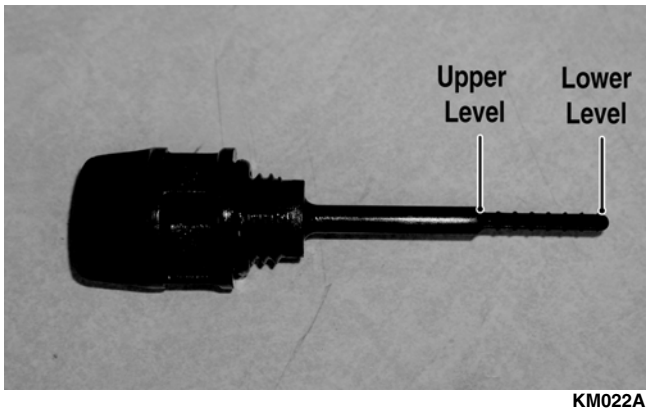
CD626

5. Remove the oil level stick and pour the recommended amount and viscosity oil into the engine; then install the oil level stick.



CD629B

6. Start and warm up the engine.
7. Shut the engine off and allow to stand for 2-3 minutes.
8. Remove the oil level stick and wipe with a clean cloth.
9. Install the oil level completely into the engine.
10. Remove the oil level stick; the engine oil level should be at the appropriate level.



KM022A

11. Inspect the area around the drain plug and oil screen/filter cap for leaks.

Headlights

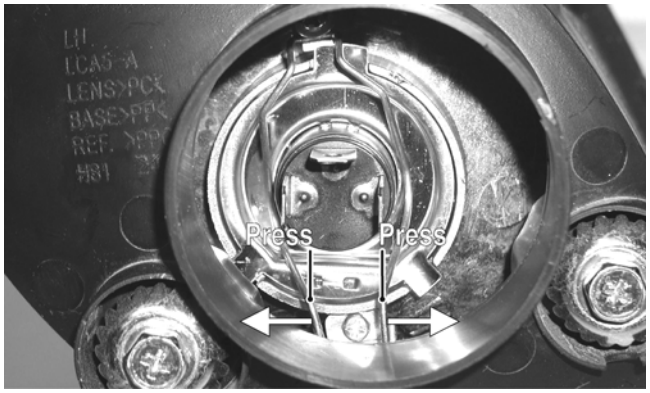
■NOTE: The bulb portion of the headlight is fragile. HANDLE WITH CARE. When replacing the headlight bulb, do not touch the glass portion of the bulb. If the glass is touched, it must be cleaned with a dry cloth before installing. Skin oil residue on the bulb will shorten the life of the bulb.

⚠ WARNING

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

To replace a headlight bulb, use the following procedure.

1. Remove the boot from the back of the headlight housing; then remove the three-wire connector from the bulb.
2. Using care not to bend or deform the spring clip, release the two ends of the spring clip from the housing; then remove the bulb from the headlight housing.



KM192A

3. Install the new bulb into the headlight housing; then secure with the spring clip.
4. Connect the three-wire connector to the bulb; then install the boot.

Brakelight/Taillight

Rotate the ignition switch to the ON position and compress both brake levers. The brakelight should illuminate.

To replace the brakelight bulb, use the following procedure.

1. Remove the two screws and remove the lens cover.
2. Remove the bulb by pushing it in and turning it counterclockwise.
3. Install the new bulb by pushing it in and turning it clockwise.
4. Install the lens cover.

CAUTION

Tighten the lens cover screws only until they are snug.

Brake Systems

⚠ WARNING

After servicing brake-related components, ALWAYS check and adjust brakes as necessary before operating the ATV.

Although the brake systems have been adjusted at the factory, the brakes should be checked for proper operation. The brakes must be maintained to be fully functional.

CHECKING FRONT WHEEL BRAKE

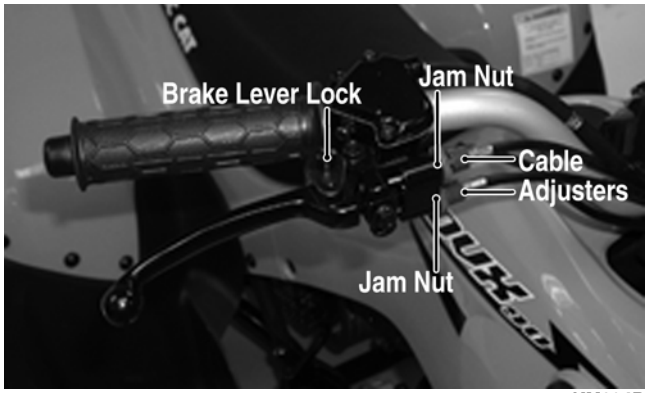
1. With the engine off, compress the right-hand (front) brake lever and attempt to move the ATV.
2. If the front wheels are locked, it is adjusted properly.
3. If the front wheels are not locked or if only one wheel locks, adjustment is necessary.

CHECKING REAR WHEEL BRAKE

1. With the engine off, compress the left-hand (rear) brake lever and set the brake lever lock; then attempt to move the ATV.
2. If the rear wheels are locked, it is serviceable.
3. If the rear wheels are not locked, bleed the brake system or replace the pads as necessary.

ADJUSTING FRONT WHEEL BRAKE

1. Raise the ATV enough to allow the front wheels to spin freely.
2. Loosen both jam nuts on the right-hand (front) brake lever. Turn both cable adjusters counterclockwise until both front wheels do not spin freely.



KM024B

3. Turn both cable adjusters in 1/4 turn increments (clockwise) until the wheels spin with a very slight amount of drag.
4. Lower ATV; then push it forward and compress the brake lever.
5. If the front wheels lock evenly, adjustment is correct.
6. If the front wheels do not lock evenly, additional adjustment is necessary.
7. Once proper adjustment is obtained, tighten the jam nuts.

MEASURING/REPLACING BRAKE SHOES/PADS

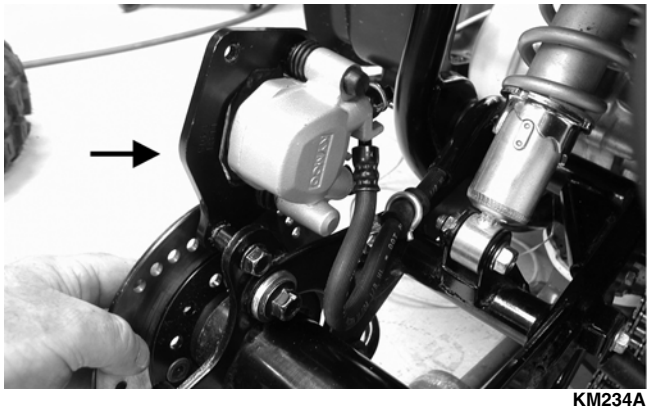
Removing Front Brake Shoes

1. Support the ATV on a support stand.
2. Remove both front wheels and account for the cap screws.
3. Remove the cotter pins, castle nuts, and washers; then remove the brake drums/wheel hubs.
4. Loosen the brake shoe return spring; then remove the brake shoes.

MD2042

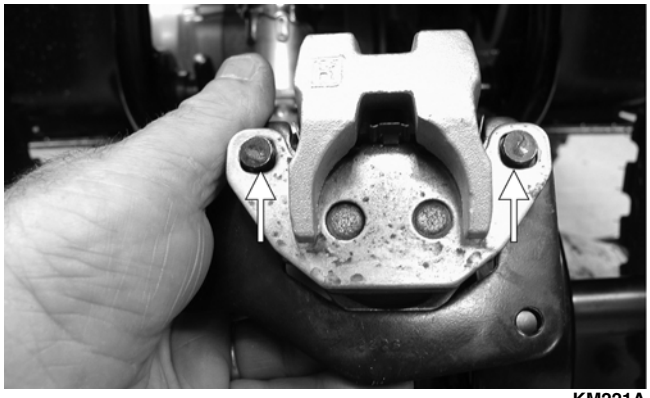
Removing Rear Brake Pads

1. Remove the two cap screws securing the brake caliper to the axle housing; then lift the caliper off the disc.



KM234A

2. Depress the holder pins and disengage and remove the outer pad; then remove the inner pad. Account for the spring clip.



KM221A

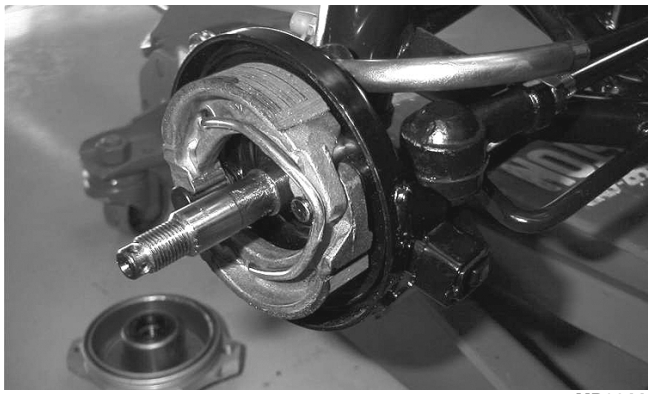
Inspecting and Measuring

1. Inspect the pads for gouges, chips, or wear.
2. Inspect the disc for gouges, grooves, cracks, and warpage.
3. Using a calipers, measure the thickness of each brake pad.
4. If the thickness of any brake pad is less than 1.0 mm (0.039 in.), the brake pads must be replaced.

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

Installing Front Brake Shoes

1. Place the brake shoes onto the backing plate over the stationary pivot pin and rotating cam.
2. Install the brake return spring.

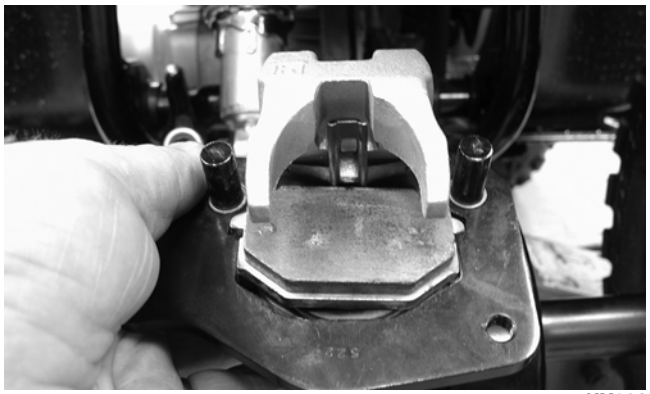


MD2044

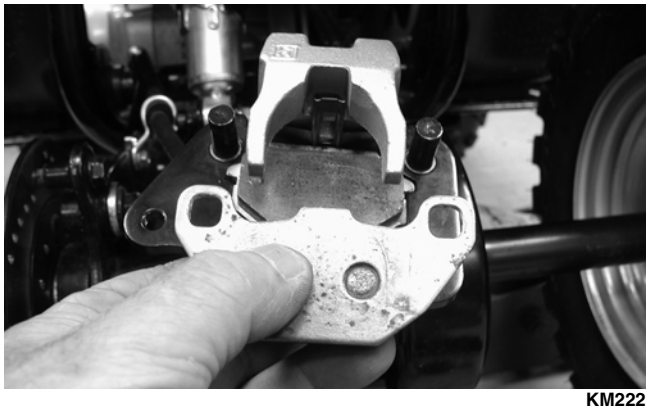
3. Install the wheel hub, washer, and castle nut. Tighten the castle nut to 45 ft-lb; then install a new cotter pin.
4. Install the wheel. Tighten to 30 ft-lb.
5. Repeat this procedure for the other side; then adjust the brake (see Adjusting Front Wheel Brake in this sub-section).
6. Remove the ATV from the support stand.

Installing Rear Brake Pads

1. Place the inner pad spring clip into position and install the inner brake pad; then install the outer pad onto the holder pins.



KM214



KM222

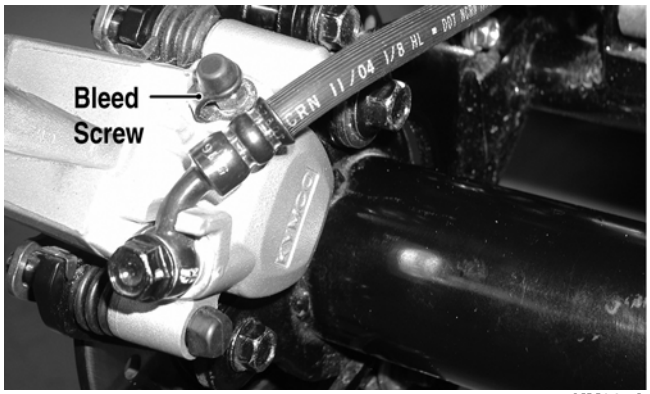
2. Place the assembled caliper into position on the disc; then secure with the two cap screws. Tighten to 22 ft-lb.

■**NOTE: Always compress the hydraulic brake lever several times to check that the brakes are firm. If the brakes are not firm, bleeding the system will be necessary (see BLEEDING in this sub-section).**

BLEEDING

To bleed the brake system, use the following procedure.

1. Remove the brake fluid reservoir cover and fill the reservoir with DOT 4 brake fluid.
2. Install and secure the cover.
3. Remove the protective cap from the bleed screw and connect one end of a clear hose to the bleed screw and direct the other end into a suitable container.



KM207A

AF637D

4. Slowly compress the brake lever several times; then while holding slight pressure on the brake lever, open the bleed screw and watch for air bubbles in the hose. Close the bleed screw before releasing the brake lever. Repeat this procedure until no air bubbles are present.

■NOTE: During the bleeding procedure, watch the reservoir sight glass to make sure there is always a sufficient amount of brake fluid in the reservoir. Failure to maintain sufficient amount of fluid in the reservoir will result in air being in the system.

5. Repeat step 4 until the brake lever is firm.

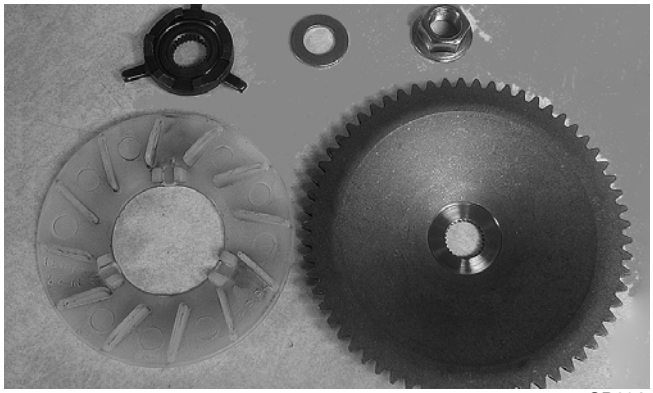
Replacing Drive Belt

REMOVING

1. Remove the eight Phillips-head cap screws and four cap screws securing the footrest cover to the footrest and front and rear fenders; then remove footrest cover.
2. Remove the cooling duct.
3. Remove the eight cap screws securing the drive clutch cover; then remove the cover. Account for a gasket and two alignment pins.

■NOTE: The gasket does not need to be removed unless it is being replaced or unless additional servicing is being done requiring its removal.

4. Remove the nut securing the stationary drive sheave to the crankshaft; then remove the stationary drive sheave. Account for a washer, kick starter ratchet, and cooling fan.



CD621

5. Open the movable sheave on the driven clutch assembly with a suitable pry bar or wedge; then remove the drive belt.

CD624

INSTALLING

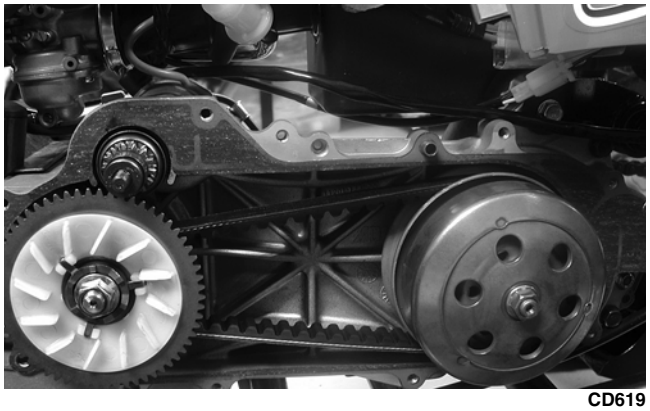
1. If removed, place the gasket and two alignment pins into position on the crankcase.
2. Spread the faces of the driven clutch with a suitable pry bar or wedge; then when the faces are separated, insert the drive belt.

CD624

■NOTE: If the drive belt has an arrow stamped on the outer face, it should point forward (direction of rotation).

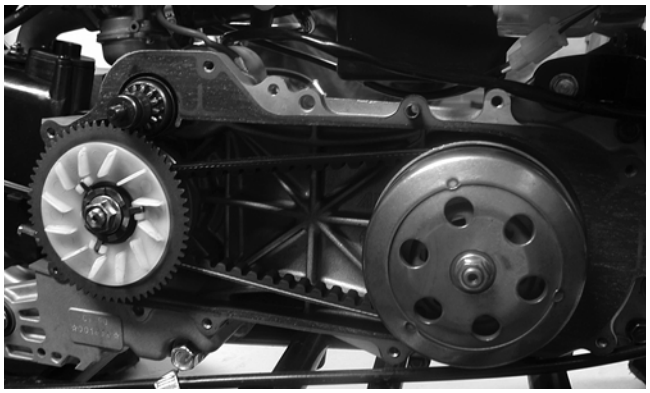
3. Pinch the drive belt together near its center and slide the stationary drive sheave over the crankshaft. Install the washer, kick starter ratchet, and cooling fan. Secure the stationary drive sheave with a nut (threads coated with red Loctite #271). Tighten the nut to 27.5 ft-lb.

CD623



CD619

4. Rotate the drive belt and sheaves until the drive belt is flush with the top of the driven clutch.



CD620

5. Place the V-belt cover and one rear brake cable tab into position; then secure with the eight cap screws.

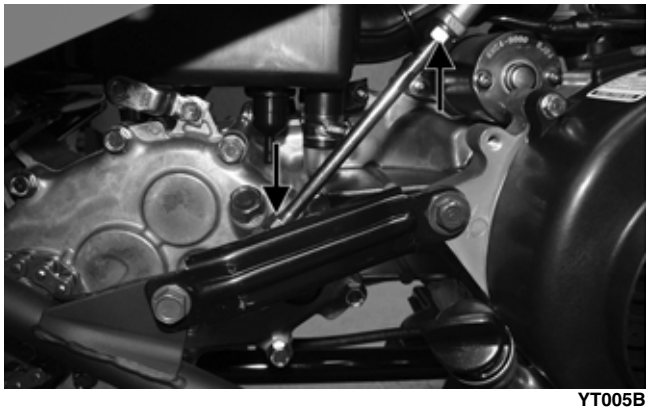
CD617

6. Tighten the cover cap screws to 7 ft-lb.
7. Install the cooling duct.
8. Place the footrest cover into position and secure it to the footrest with the Phillips-head cap screws. Tighten securely.
9. Secure the footrest cover to the front and rear fenders with the Phillips-head cap screws and four cap screws. Tighten securely.

Adjusting Shift Linkage

If the ATV jumps out of gear, is difficult to get in gear, or the neutral and reverse indicator lights do not illuminate, shift linkage adjustment may be necessary.

1. Shift the transmission into reverse; then remove the cap screw securing the linkage to the transmission shift arm.
2. Verify the transmission is in reverse, the ignition switch is in the ON position, the reverse indicator light is illuminated, and the shift lever is fully in the reverse position; then loosen the upper and lower jam-nuts on the shift linkage and adjust the linkage to align with the shift arm.



YT005B

3. Install the cap screw securing the linkage to the lower shift arm. Do not tighten at this time.
4. Shift the transmission into neutral and verify the neutral indicator illuminates; then tighten the jam-nuts and the linkage cap screw securely.

Troubleshooting Brake System

Problem: Braking poor	
Condition	**Remedy**
1. **Brake shoe(s) - pad(s)** worn 2. **Lever free-play** excessive 3. **Brake drum(s)** worn	1. Replace brake shoe(s) - pad(s) 2. Adjust free-play 3. Replace brake drum(s)
Problem: Brakes drag	
Condition	**Remedy**
1. **Lever free-play** less than minimum 2. **Brake shoe return spring(s)** loose - sprung	1. Adjust free-play 2. Connect - replace return spring(s)

Engine/Transmission

This section has been organized into sub-sections which show a progression for the complete servicing of the Arctic Cat Y-12+ engine/transmission.

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

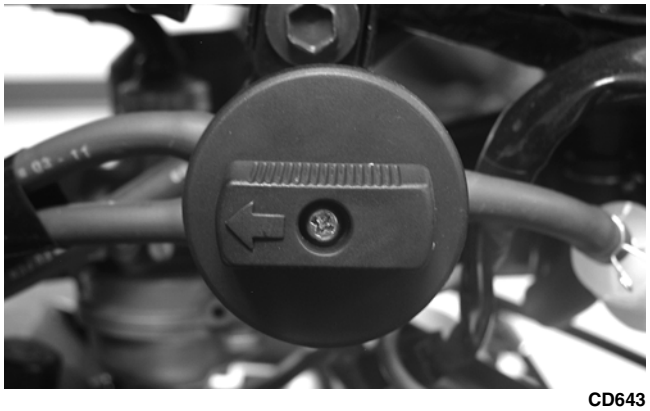
Specifications

Piston Ring End Gap (Installed)	(top) (2nd) (oil)	0.15-0.30 mm 0.30-0.45 mm 0.20-0.70 mm
Piston Pin Outside Diameter (Min)		12.96 mm
Piston Pin Bore (Max)		13.03 mm
Piston Skirt/Cylinder Clearance (Max)		0.10 mm
Cylinder Head Distortion (Max)		0.05 mm
Cylinder Bore Trueness		50.00-50.05 mm
Connecting Rod (Small End Inside Diameter) (Max)		13.06 mm
Connecting Rod (Small End Deflection) (Max)		0.40 mm
Connecting Rod/Crankshaft Clearance (Side to Side) (Max)		0.05 mm
Crankshaft (Runout) (Max)		0.10 mm
Camshaft Lobe Height (Intake) (Min)		26.33 mm
Camshaft Lobe Height (Exhaust) (Min)		25.65 mm
Rocker Arm to Shaft Clearance (Max)		0.10 mm
Intake Valve Stem to Guide Clearance (Max)		0.06 mm
Exhaust Valve Stem to Guide Clearance (Max)		0.08 mm
Valve Stem Runout		0.02 mm
Valve Face/Seat Width		0.63 mm
Valve Face Radial Runout		0.025 mm
Crankshaft Web-to-Web Distance		45.15-45.20 mm
Oil Pump Outer Rotor to Body Clearance (Max)		0.25 mm
Oil Pump Outer to Inner Rotor Clearance (Max)		0.20 mm
Oil Pump Rotor End Clearance (Max)		0.12 mm
V-Belt Width (Min)		16.5 mm
Centrifugal Clutch Housing (Max)		107.5 mm
Centrifugal Clutch Lining Thickness (Min)		1.0 mm
Driven Pulley Spring Free Length (Min)		154.6 mm
Roller Guide Diameter (Min)		15.4 mm
Movable Drive Face Collar (Max)		24.06 mm

Specifications subject to change without notice.

Removing Engine/ Transmission

1. Turn the gas tank valve to the OFF position; then remove the seat and disconnect the negative battery cable securing it away from the battery.



CD643

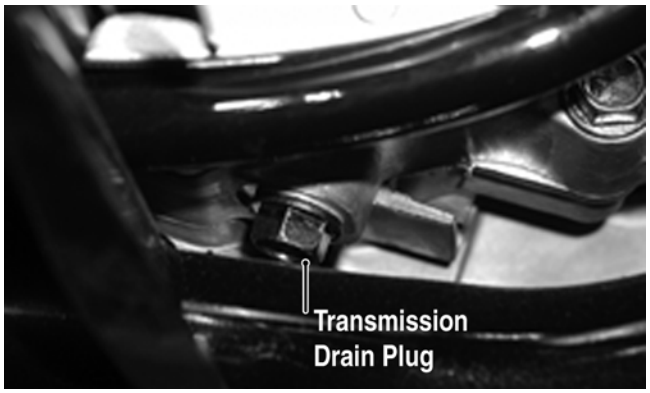
⚠ WARNING

Battery acid is harmful if it contacts eyes, skin, or clothing. Care must be taken whenever handling a battery.

KM853A

2. Drain the transmission lubricant.

■NOTE: The drain plug is located on the bottom of the transmission.



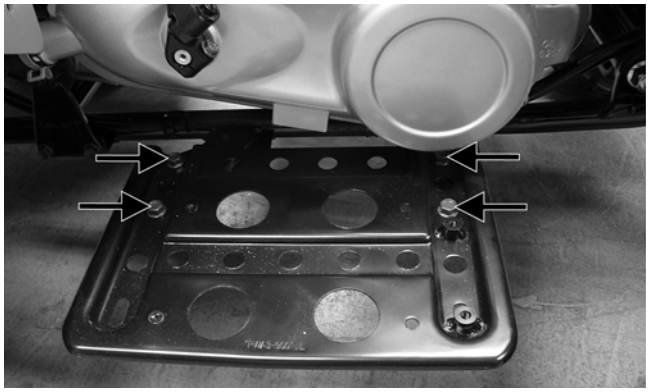
KM038A

3. Drain the engine oil.

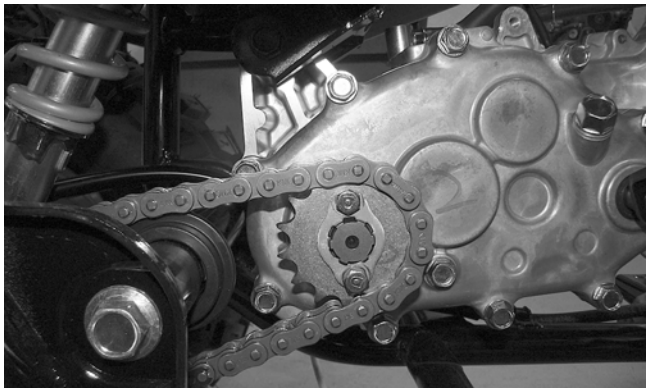
■NOTE: The drain plug is located at the left-rear of the engine.

KM041A

4. Remove the left and right footwells and the left-side footwell mounting plate; then remove the drive sprocket and chain from the transmission output shaft.



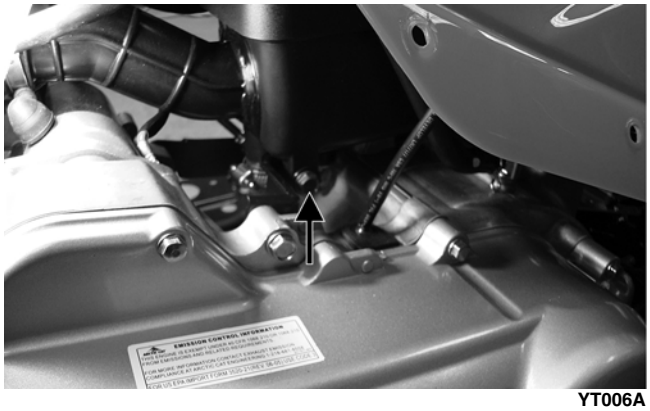
YT002A



YT009

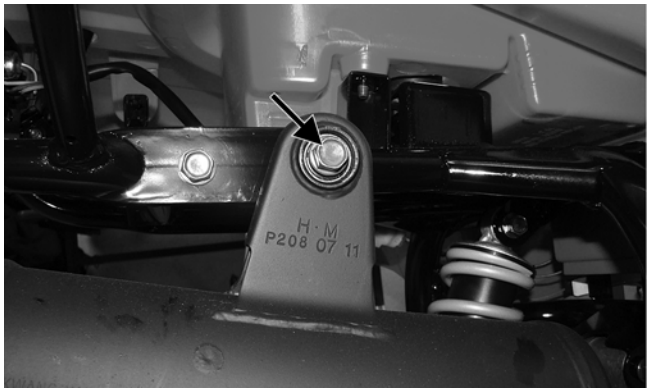
5. Remove the air filter housing cover and air filter element.

6. Remove the intake boot from the carburetor; then remove the cap screws securing the air filter housing to the crankcase and remove the air filter housing and intake boot.

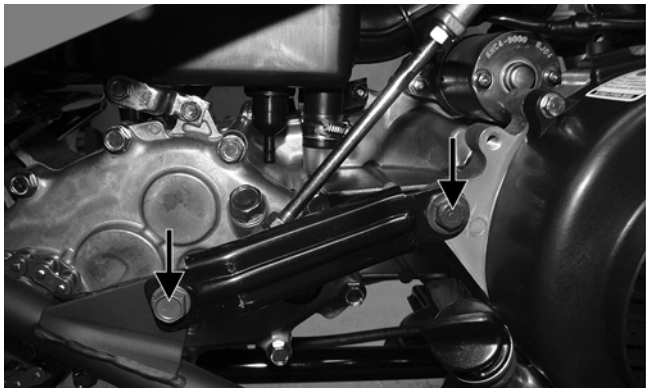


YT006A

7. Remove the exhaust pipe/muffler assembly and related mounting hardware; then remove the shift linkage. Account for a grafoil seal on the exhaust pipe.

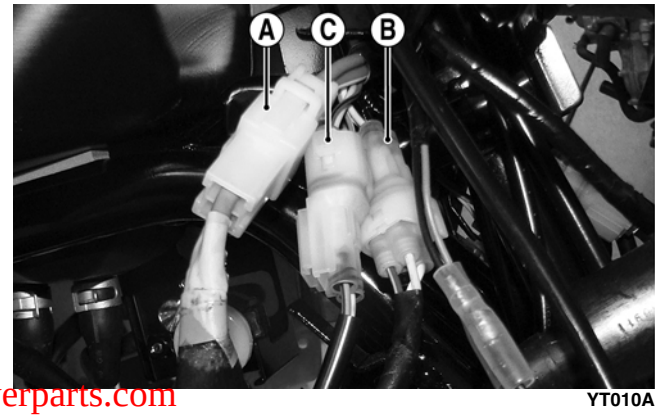


YT008A



YT005A

8. Disconnect the electric choke connector (C), stator coil connector (B), and starter harness connector (A); then remove the spark plug cap.



YT010A

9. Remove the gasline hose from the carburetor.
10. Remove the nuts from the one rear and two front through bolts. Do not remove the bolts at this time.
11. Remove the cooling duct from the front of the V-belt housing; then disconnect the gear shift position switch connectors.
12. Remove the cap screws securing the front engine mounting brackets to the frame; then remove the through bolts and brackets.
13. Slide the engine/transmission forward sufficiently to clear the rear mounting brackets; then swing the rear of the assembly out the left side and remove the engine/transmission from the frame.

YT014

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

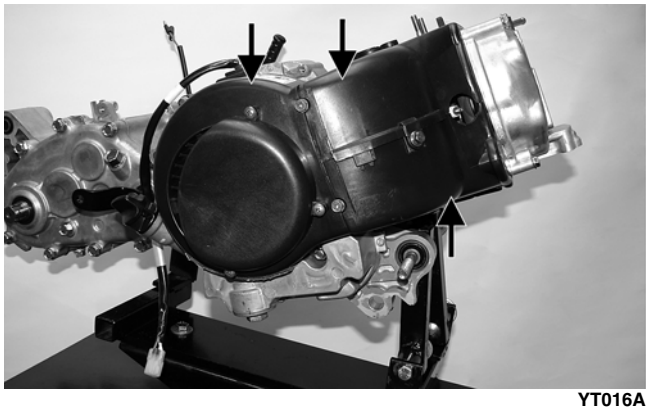
■NOTE: The engine/transmission does not have to removed from the frame for this procedure.

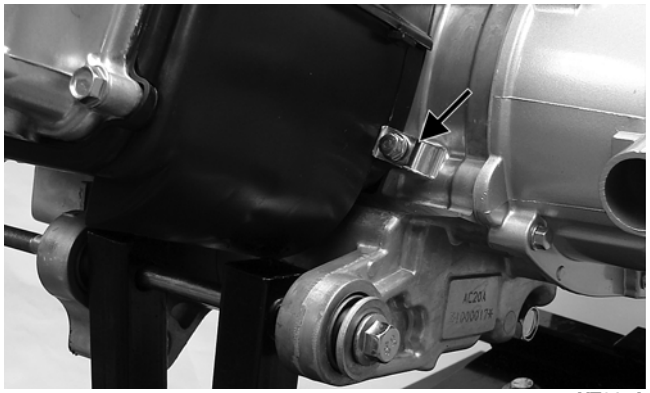
Removing Top-Side Components

A. CAMSHAFT HOLDER/ROCKER ARMS
B. CYLINDER HEAD/CAMSHAFT

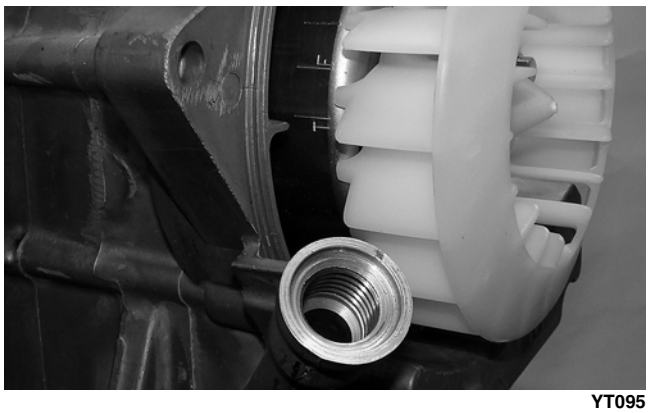
■NOTE: Arctic Cat recommends the use of new gaskets, lock nuts, and seals and lubricating all internal components when servicing the engine/transmission.

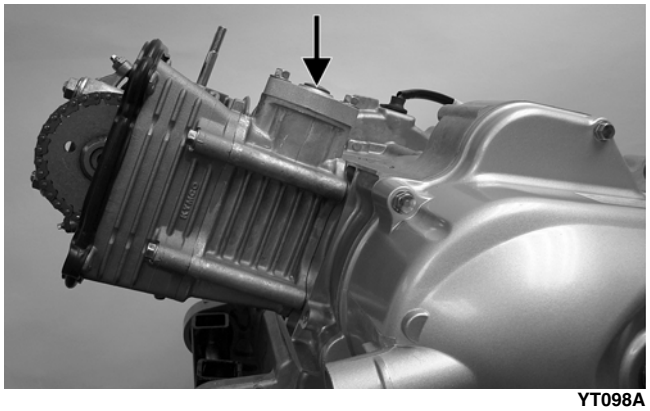
1. Remove the intake pipe/carburetor assembly. Account for an O-ring between the intake pipe and cylinder head.
2. Remove the fan shroud; then remove the cylinder/cylinder head shroud. Note the location of the carburetor float bowl drain hose clip.


YT016A


YT017A

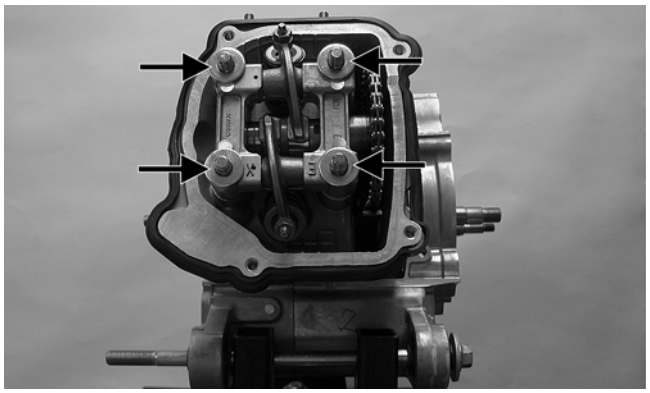
3. Remove the cylinder head cover. Account for the gasket.
4. Rotate the engine to top-dead-center (TDC) on the compression stroke; then remove the cam chain tensioner assembly.


YT095



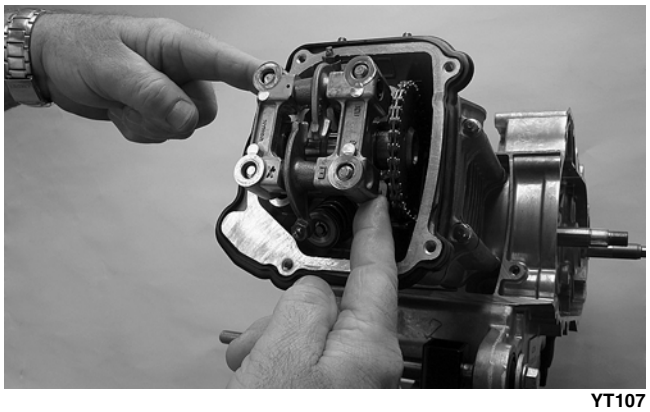
YT098A

5. Remove the cylinder head nuts on top of the cam shaft holder. Account for four flat washers.



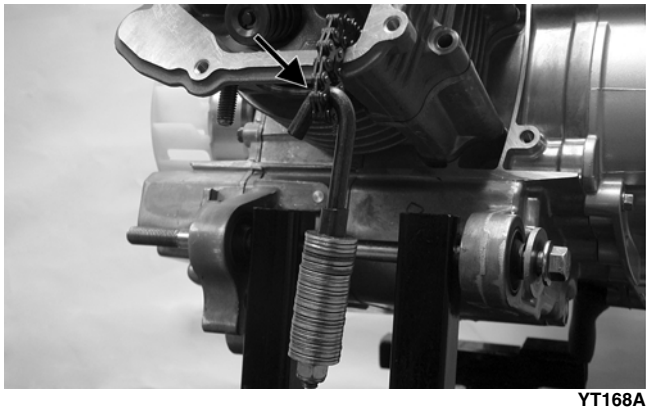
YT106A

6. Remove the camshaft holder noting the location of the two alignment pins. Do not allow the alignment pins to fall into the engine.



YT107

7. Remove the camshaft from the cylinder head and secure the cam chain to prevent it falling into the crankcase.



YT168A

CAUTION

Do not rotate the crankshaft without keeping tension on the cam chain or engine damage could occur.

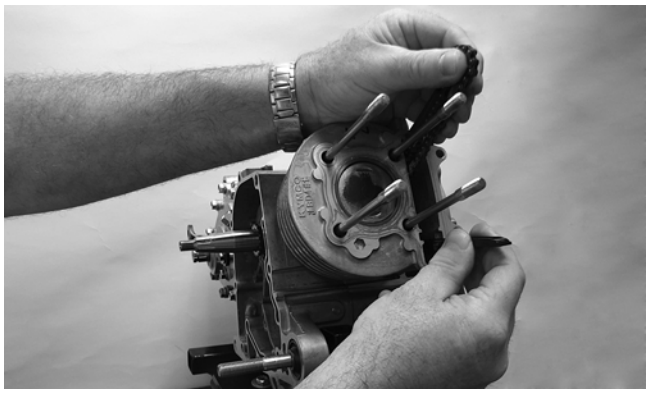
☞AT THIS POINT

To service valves and cylinder head, see Servicing Top-Side Components sub-section.

8. Remove the cam chain guide.

☞AT THIS POINT

To inspect cam chain guide, see Servicing Top-Side Components sub-section.

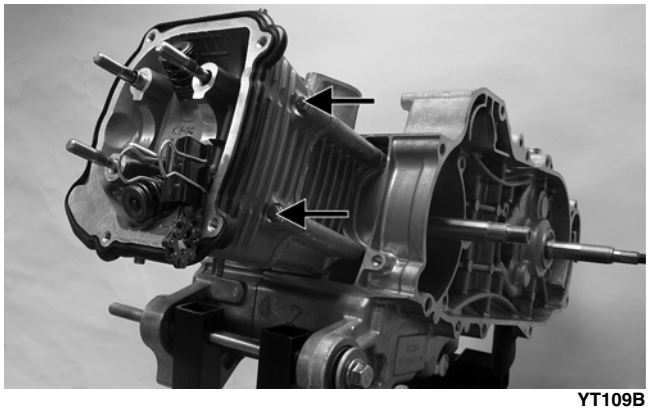


YT112

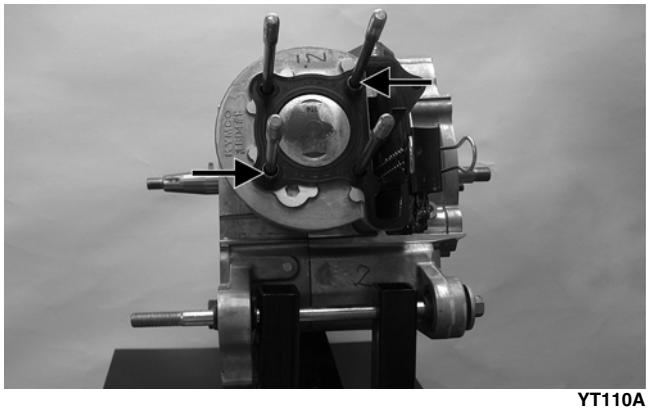
C. CYLINDER
D. PISTON

■NOTE: Steps 1-8 in the preceding sub-section must precede this procedure.

9. Remove the two cap screws from the left side of the cylinder head; then remove the cylinder head. Account for two alignment pins and remove and discard the cylinder head gasket.



YT109B



YT110A

10. Lift the cylinder off the crankcase taking care not to allow the piston to drop against the crankcase. Account for the gasket and two alignment pins.

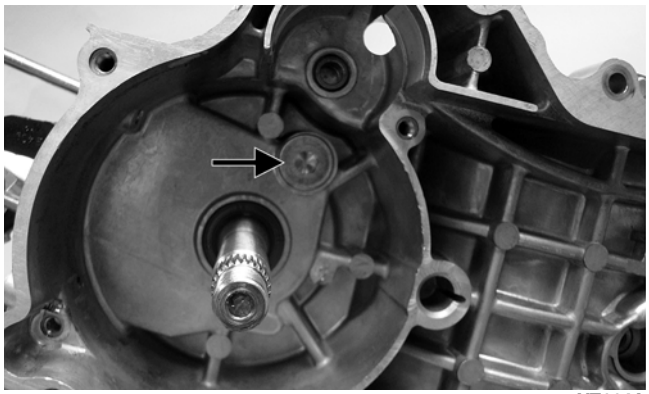
☞ AT THIS POINT

To service cylinder, see Servicing Top-Side Components sub-section.

CAUTION

When removing the cylinder, be sure to support the piston to prevent damage to the crankcase and piston.

11. Remove the cam chain tensioner pivot bolt; then remove the chain tensioner.



YT114A

12. Using a needle-nose pliers, remove the circlip securing the piston pin in the piston; then remove the piston pin and piston. Take care not to drop the circlip into the crankcase.

YT115

■NOTE: Support the connecting rod with rubber bands or install a connecting rod holder to avoid damaging the rod.

CAUTION

Do not allow the connecting rod to go down inside the crankcase. If the rod is down inside the crankcase and the crankshaft is rotated, severe damage will result.

■NOTE: If the existing rings will not be replaced with new rings, note the location of each ring for proper installation. When replacing with new rings, replace as a complete set only. If the piston rings must be removed, remove them in this sequence.

☞ AT THIS POINT

To service piston, see Servicing Top-Side Components sub-section.

☞ AT THIS POINT

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

Servicing Top-Side Components

■NOTE: Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

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.

Cleaning/Inspecting Cylinder Head Assembly

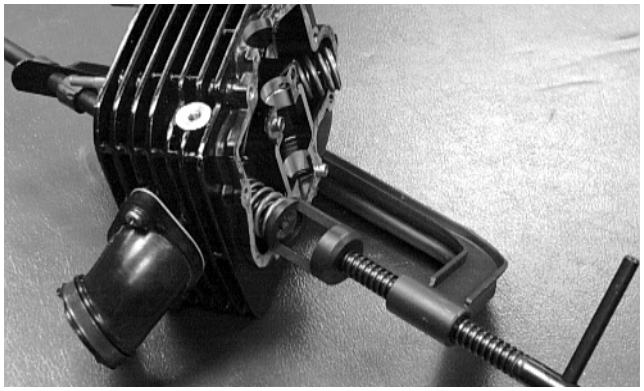
Inspect the combustion area of the cylinder head for cracks, burned valves or carbon build-up.

■NOTE: If valves are discolored, they must be replaced. Arctic Cat recommends taking heads to a qualified machine shop for valve replacement or valve seat grinding.

REMOVING VALVES

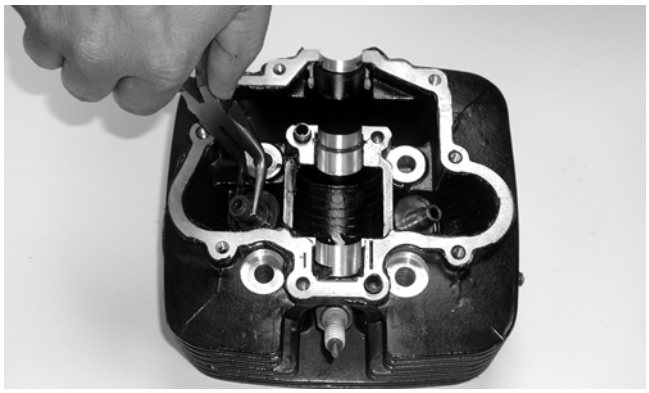
■NOTE: Keep all valves and valve components as a set. Note the original location of each valve set for use during installation. Return each valve set to its original location during installation.

1. Using a valve spring compressor, compress the valve springs and remove the valve cotters. Account for an upper spring retainer.

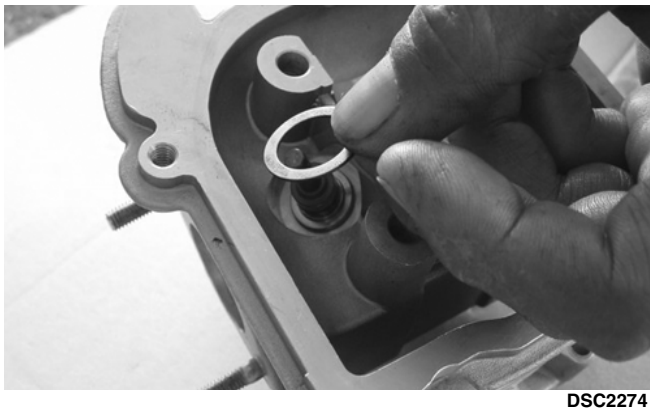


CC391D

2. Remove the valve seal and the lower remaining spring seat. Discard the valve seal.



CC928



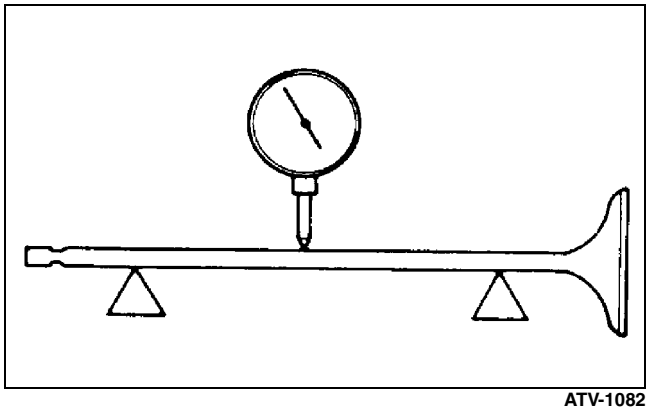
DSC2274

■NOTE: The valve seals must be replaced.

3. Remove the valve springs; then invert the cylinder head and remove the valves.

Measuring Valve Stem Runout

1. Support each valve stem end with the V blocks; then check the valve stem runout using a dial indicator.

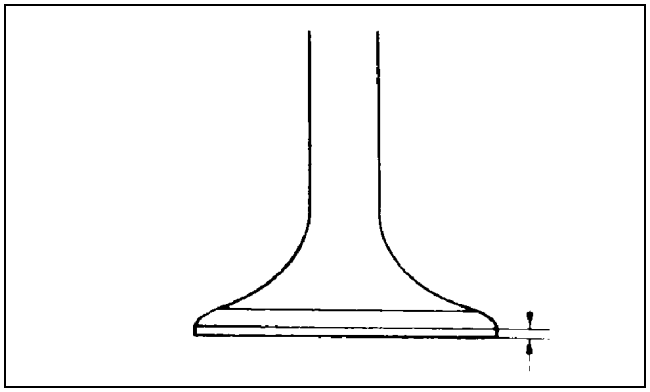


ATV-1082

2. Maximum runout must not exceed specifications.

Measuring Valve Face/Seat Width

1. Using a micrometer, measure the width of the valve face.

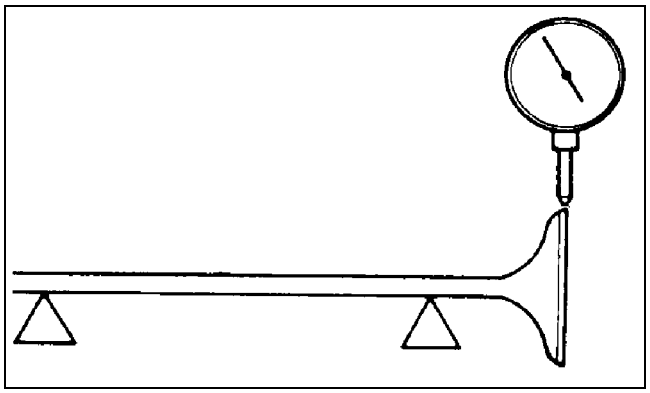


ATV-1004

2. Acceptable width must be at or above specifications.

Measuring Valve Face Radial Runout

1. Mount a dial indicator on the surface plate; then place the valve stem on a set of V blocks.
2. Position the dial indicator contact point on the outside edge of the valve face; then zero the indicator.



ATV1082A

3. Rotate the valve in the V blocks.
4. Maximum runout must not exceed specifications.

Measuring Valve Stem to Guide Clearance

1. Insert a snap gauge 1/2 way down into each valve guide bore; then remove the gauge and measure it with a micrometer.
2. Using a micrometer, measure the valve stem outside diameter. Valve stem to guide clearance must not exceed specifications.
3. If valve stem to guide clearance exceeds specifications, the cylinder head assembly must be replaced.

Servicing Valves/Valve Guides/ Valve Seats

If valves, valve guides, or valve seats require servicing or replacement, Arctic Cat recommends the components be taken to a qualified machine shop for servicing.

CAUTION

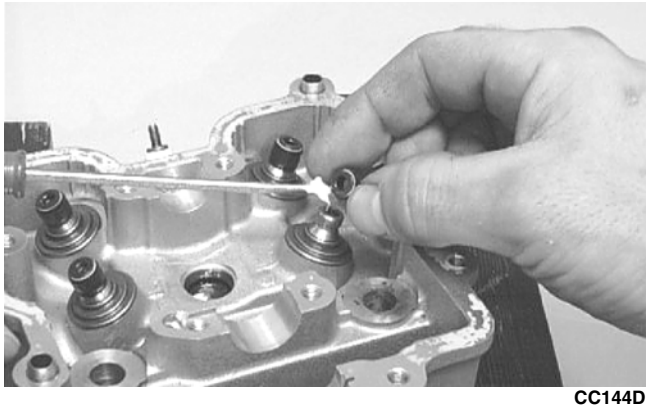
If valves are discolored or pitted or if the seating surface is worn, the valve must be replaced. Do not attempt to grind the valves or severe engine damage may occur.

Measuring Rocker Arm to Shaft Clearance

1. Using a dial calipers, measure the inside diameter of the rocker arm.
2. Using a micrometer, measure the outside diameter of the rocker arm shaft.
3. Subtract the shaft diameter from the rocker arm diameter.
4. Acceptable clearance must be within specifications.

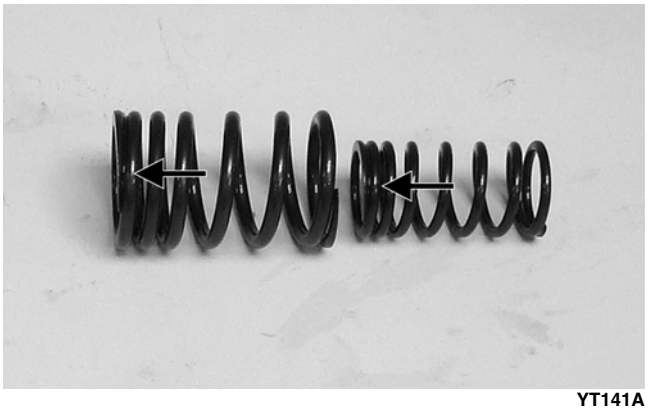
Installing Valves

1. Apply grease to the inside surface of the valve seals; then place a valve guide seal over each valve guide.



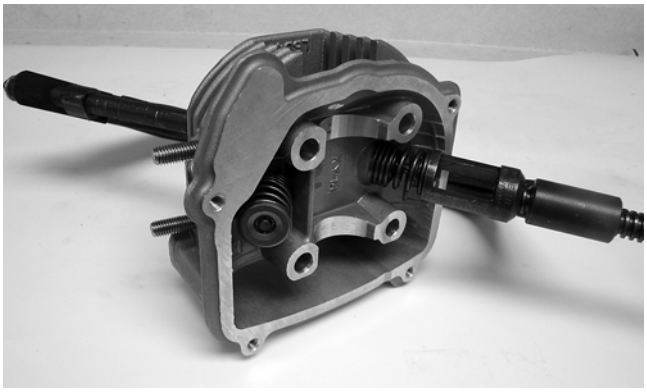
CC144D

2. Insert each valve into its original valve location.
3. Install the valve springs and seats with the closest wound end of the spring directed toward the cylinder head.



YT141A

4. Place a spring retainer over the valve springs; then using the valve spring compressor, compress the valve springs and install the valve keepers.



YT138

PISTON ASSEMBLY

■NOTE: Whenever a piston, rings, or pin are out of tolerance, they must be replaced.

Cleaning/Inspecting Piston

1. Using a non-metallic carbon removal tool, remove any carbon buildup from the top of the piston.
2. Inspect the piston for cracks in the piston pin, boss, top, and skirt areas.
3. Inspect the piston for seizure marks or scuffing. If piston is scored or galled, replace it with a new one.
4. Inspect the perimeter of each piston for signs of “blowby” indicated by dark discoloration. “Blowby” is caused by worn piston rings, excessive carbon in ring grooves, or an out-of-round cylinder.

Removing Piston Rings

1. Starting with the top ring, slide one end of the ring out of the ring-groove.

CC400D

2. Remove and discard each ring by working it toward the top of the piston while rotating it out of the groove.

■NOTE: New rings must be installed as a complete set only.

Cleaning/Inspecting Piston Ring Grooves

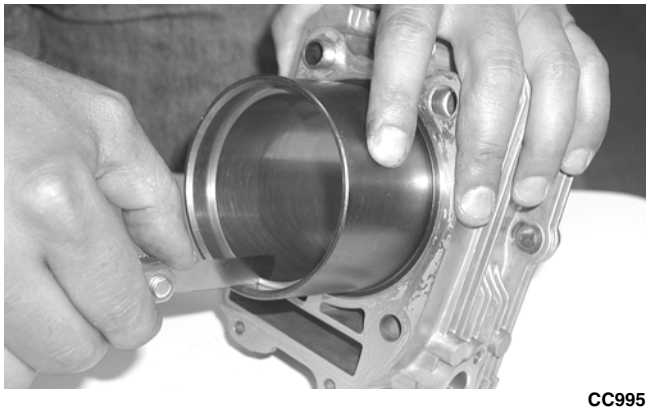
1. Take an old piston ring and snap it into two pieces; then grind the end of the old ring to a 45° angle and to a sharp edge.
2. Using the sharpened ring as a tool, clean carbon from the ring grooves.

CAUTION

Improper cleaning of the ring grooves by the use of the wrong type of ring groove cleaner will result in severe damage to the piston.

Measuring Piston-Ring End Gap (Installed)

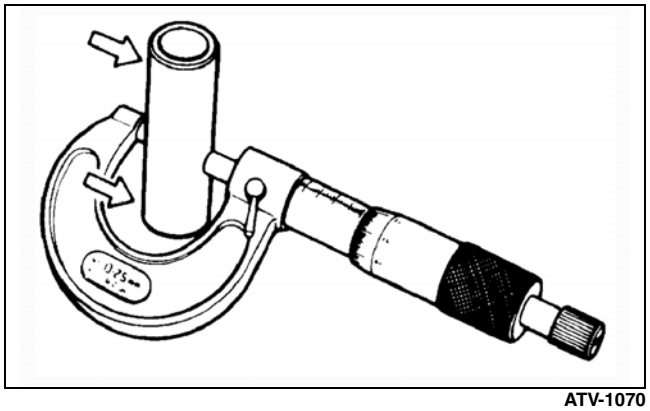
1. Place each piston ring in the wear portion of the cylinder. Use the piston to position each ring squarely in the cylinder.
2. Using a feeler gauge, measure each piston-ring end gap. Acceptable ring end gap must be within specifications.



CC995

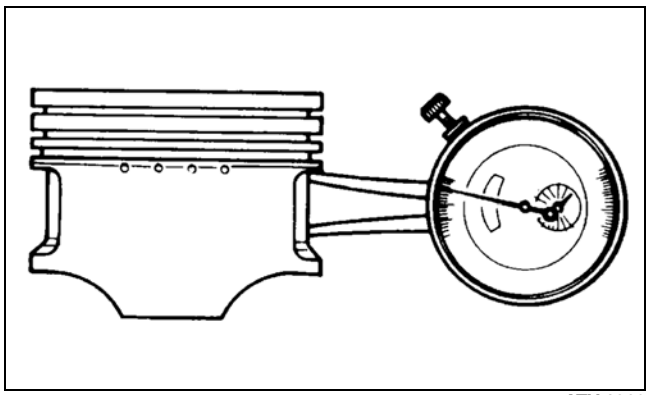
Measuring Piston Pin, Connecting Rod Small End, and Piston-Pin Bore

1. Measure the piston pin outside diameter at each end and in the center. If measurement exceeds specifications, the piston pin must be replaced.



ATV-1070

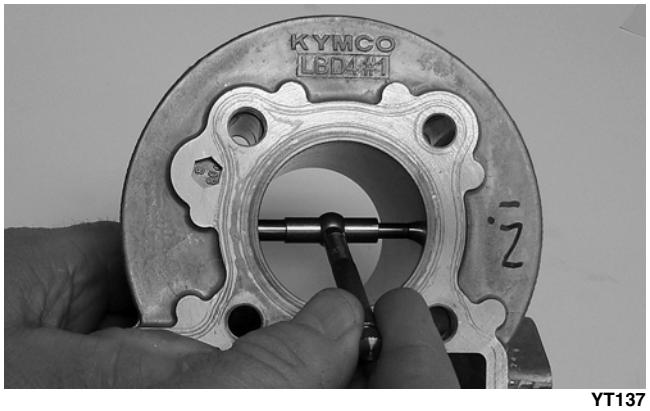
2. Inspect and measure the connecting rod small end inside diameter. If the measurement exceeds specifications, the connecting rod must be replaced (see Center Crankcase Components in this section).
3. Insert an inside dial indicator into the piston-pin bore. Take two measurements to ensure accuracy. The diameter must not exceed specifications. If the diameter exceeds specifications, the piston must be replaced.



ATV-1069

Measuring Piston Skirt/Cylinder Clearance

1. Measure the cylinder front to back in six places.



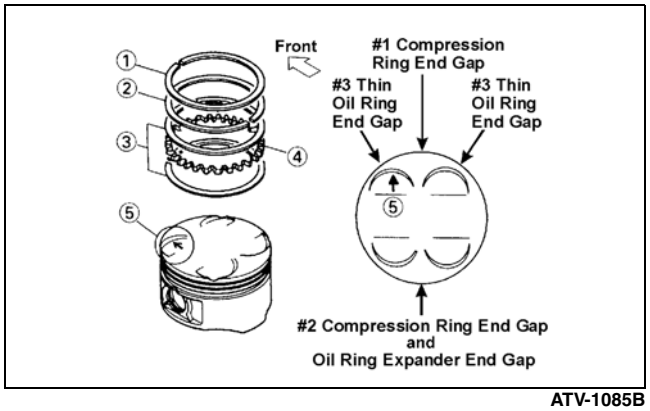
YT137

2. Measure the corresponding piston diameter at a point 15 mm above the piston skirt at a right angle to the piston-pin bore. Subtract this measurement from the measurement in step 1. The difference (clearance) must be within specifications.

Installing Piston Rings

1. Install ring expander (4) in the bottom groove of the piston; then install the thin oil rings (3) over the expander making sure the expander ends do not overlap. Stagger the end gaps of the upper and lower thin oil rings according to the illustration.

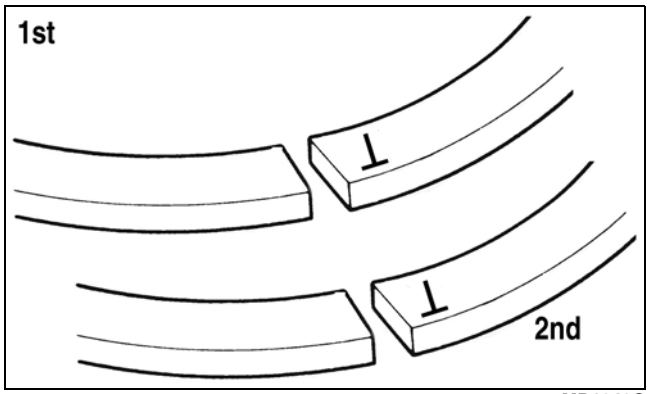
■NOTE: Note the direction of the exhaust side of the piston (5) for correct ring end gap orientation.



ATV-1085B

2. Install the compression rings (1 and 2) so the letter "T" on the top surface of each ring faces the dome of the piston. Rotate the rings until the ring end gaps are on directly opposite sides of the piston according to the illustration.

■NOTE: The chrome (silver) ring should be installed in the top position.



MD1343C

CAUTION

Incorrect installation of the piston rings will result in engine damage.

CYLINDER/CYLINDER HEAD ASSEMBLY

■NOTE: If the cylinder/cylinder head assembly cannot be trued, they must be replaced.

Cleaning/Inspecting Cylinder Head

1. Using a non-metallic carbon removal tool, remove any carbon buildup from the combustion chamber being careful not to nick, scrape, or damage the combustion chamber or the sealing surface.
2. Inspect the spark plug hole for any damaged threads. Repair damaged threads using a "heli-coil" insert.
3. Place the cylinder head on the surface plate covered with #400 grit wet-or-dry sandpaper. Using light pressure, move the cylinder head 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 cylinder head in a figure eight motion until a uniform bright metallic finish is attained.

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.

Measuring Cylinder Head Distortion

1. Remove any carbon buildup in the combustion chamber.
2. Lay a straightedge across the cylinder head; then using a feeler gauge, check the distortion between the head and the straightedge.
3. Maximum distortion must not exceed specifications.

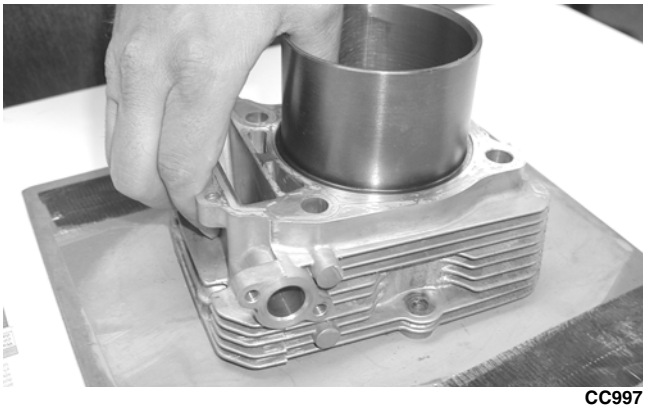
YT123

Cleaning/Inspecting Cylinder

1. Wash the cylinder in parts-cleaning solvent.
2. Inspect the cylinder for pitting, scoring, scuffing, warping, and corrosion. If marks are found, repair the surface using a cylinder hone (see Honing Cylinder in this sub-section).
3. Place the cylinder on the surface plate covered with #400 grit wet-or-dry sandpaper. Using light pressure, move the cylinder 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 cylinder in a figure eight motion until a uniform bright metallic finish is attained.

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.



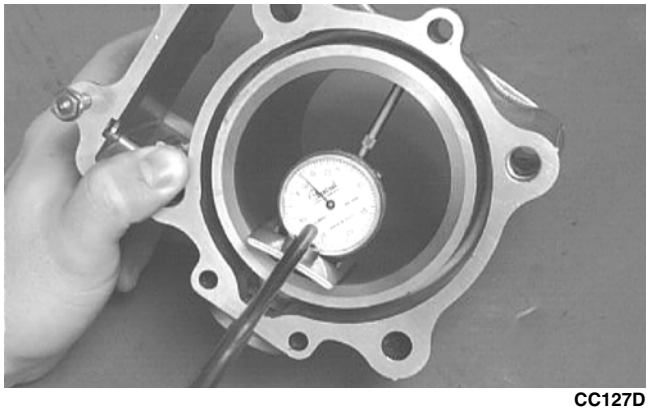
CC997

Inspecting Cam Chain Guide

1. Inspect cam chain guide for cuts, tears, breaks, or chips.
2. If the chain guide is damaged, it must be replaced.

Honing Cylinder

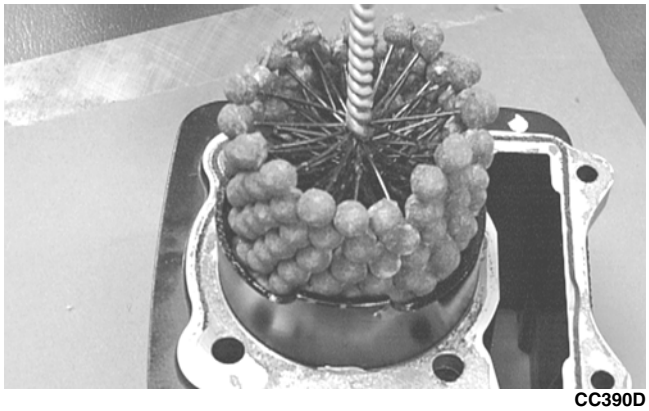
1. Using a slide gauge and a dial indicator or a snap gauge, measure the cylinder bore diameter in three locations from top to bottom and again from top to bottom at 90° from the first measurements for a total of six measurements. The trueness (out-of-roundness) is the difference between the highest and lowest reading. Maximum trueness (out-of-roundness) must not exceed specifications.



CC127D

2. Wash the cylinder in parts-cleaning solvent.
3. Inspect the cylinder for pitting, scoring, scuffing, and corrosion. If marks are found, repair the surface using a #320 grit ball hone.

■NOTE: To produce the proper 60° cross-hatch pattern, use a low RPM drill (600 RPM) at the rate of 30 strokes per minute. If honing oil is not available, use a lightweight petroleum-based oil. Thoroughly clean cylinder after honing using soap and hot water. Dry with compressed air; then immediately apply oil to the cylinder bore. If the bore is severely damaged or gouged, replace the cylinder.



CC390D

4. At this point, repeat step 1 and if any measurement exceeds the limit, the cylinder must be replaced.

Measuring Camshaft Lobe Height

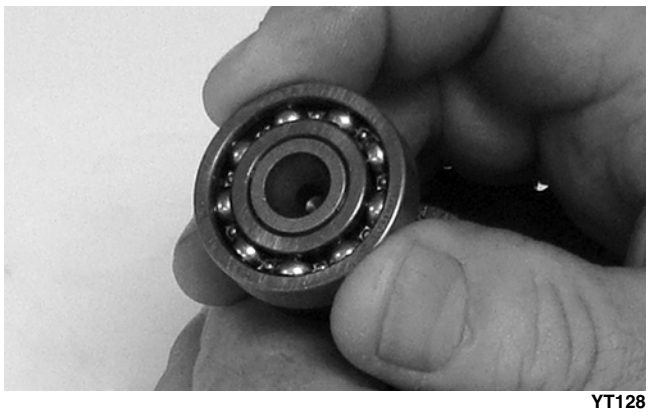
1. Using a micrometer, measure each cam lobe height.

YT129

2. The lobe heights must exceed minimum specifications.

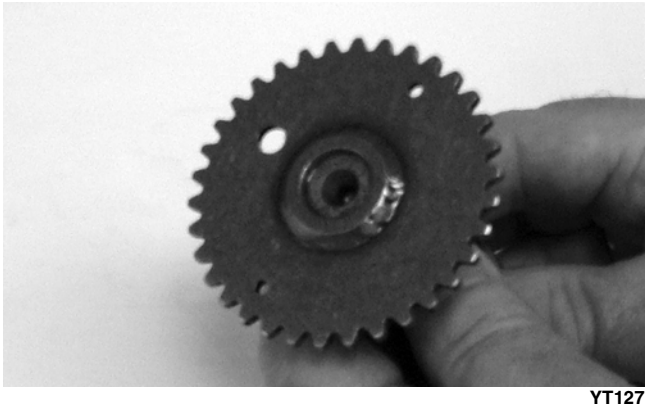
Inspecting Camshaft Bearing/ Sprocket

1. Inspect the camshaft bearings for roughness during rotation or signs of discoloration.



YT128

2. Inspect the timing sprocket for excessive wear.



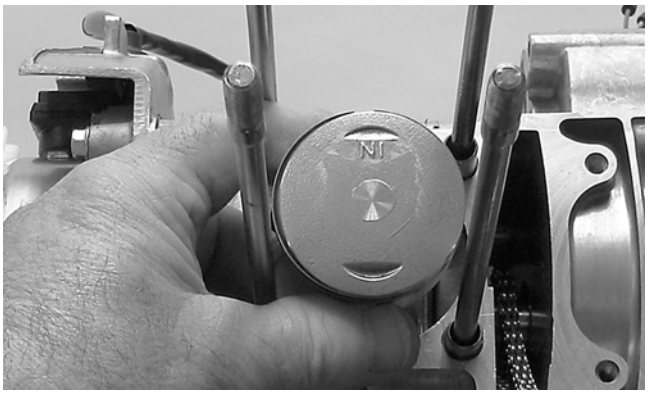
YT127

Installing Top-Side Components

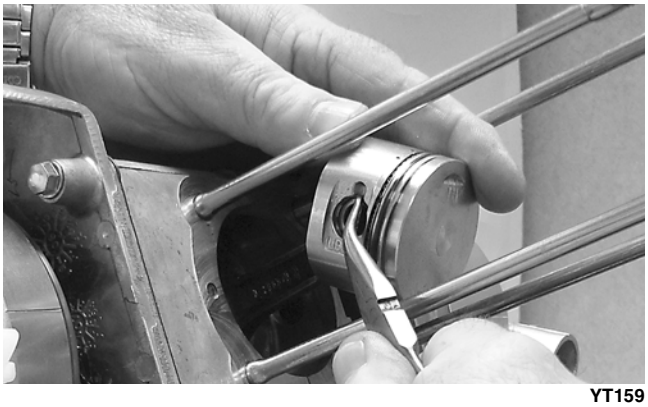
A. PISTON
B. CYLINDER

1. Lubricate the piston pin, connecting rod, and piston pin bore with motor oil; then install the piston on the connecting rod making sure there is a circlip on each side and the open end of the circlip is directed upwards or downwards.

■NOTE: The piston should be installed so the word "IN" points upward.

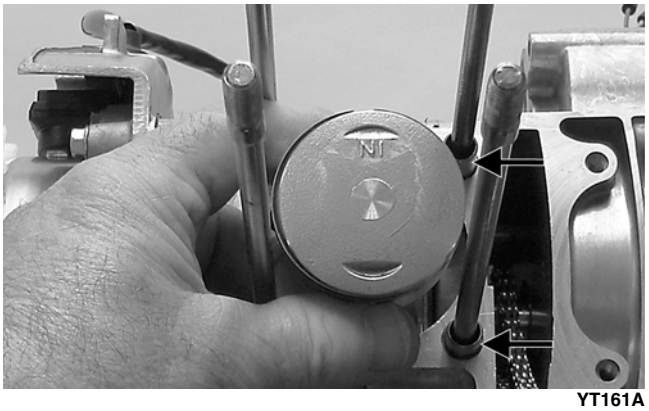


YT161



YT159

2. Place the two alignment pins into position. Place a new cylinder gasket into position; then place a piston holder (or suitable substitute) beneath the piston skirt and square the piston in respect to the crankcase.

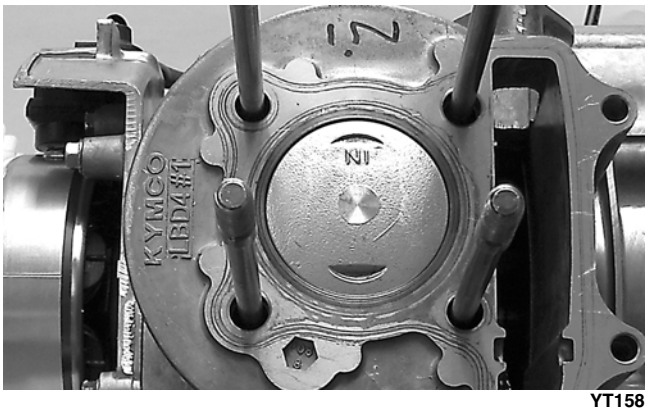


YT161A

3. Lubricate the inside wall of the cylinder; then using a ring compressor or the fingers, compress the rings and slide the cylinder over the piston. Route the cam chain up through the cylinder cam chain housing; then remove the piston holder and seat the cylinder firmly on the crankcase.

CAUTION

The cylinder should slide on easily. Do not force the cylinder or damage to the piston, rings, cylinder, or crankshaft assembly may occur.



YT158

C. CYLINDER HEAD/CAMSHAFT
D. CAMSHAFT HOLDER/ROCKER ARMS

■NOTE: Steps 1-3 in the preceding sub-section must precede this procedure.

4. While keeping tension on the cam chain, place the front cam chain guide into the cylinder.

CAUTION

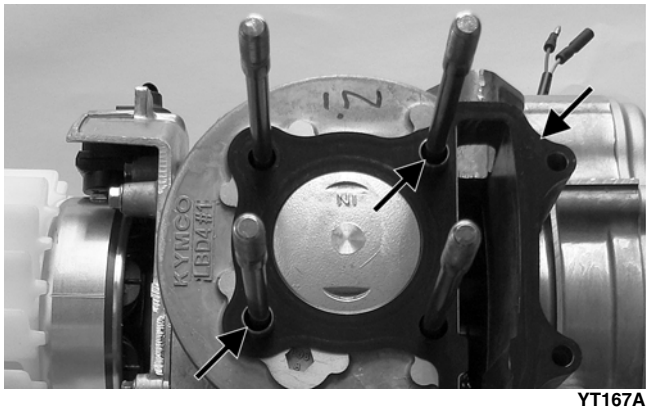
Care should be taken that the bottom of the chain guide is secured in the crankcase boss.

YT112

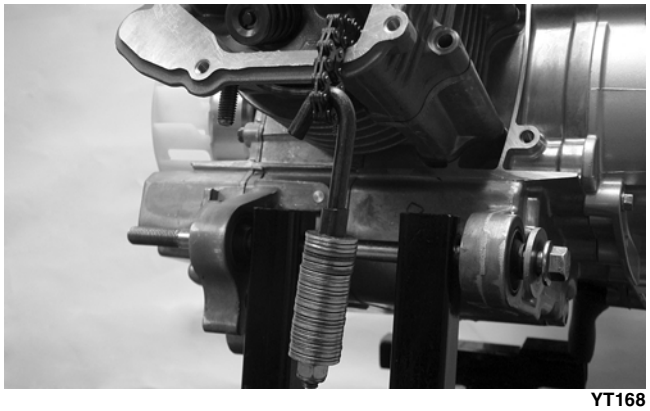
5. Place a new gasket into position on the cylinder. Place the alignment pins into position; then place the head assembly into position on the cylinder making sure the cam chain is routed through the chain cavity.

CAUTION

Keep tension on the cam chain to avoid damaging the crankcase boss.

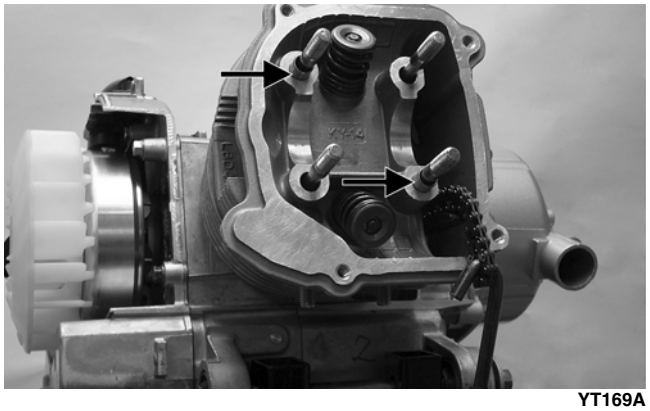


YT167A



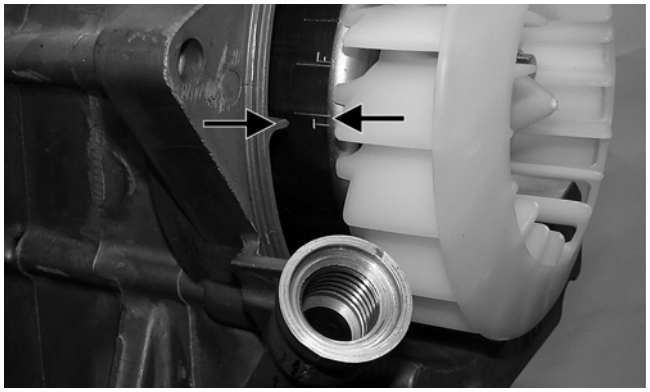
YT168

6. Install two alignment pins into the top of the cylinder head as illustrated.

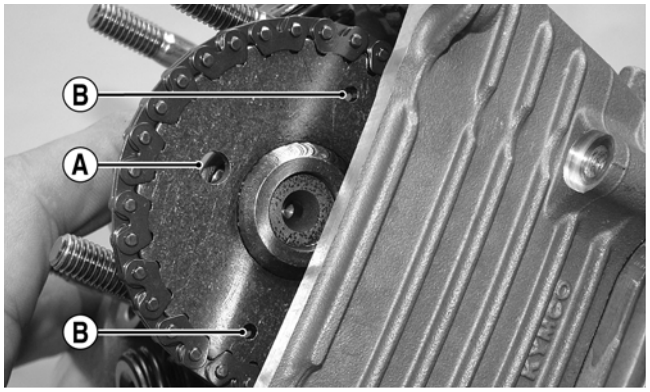


YT169A

7. Make sure the crankshaft is positioned at TDC; then install the camshaft with the single large reference hole (A) directed up and the two small timing holes (B) parallel to the top of the cylinder head.

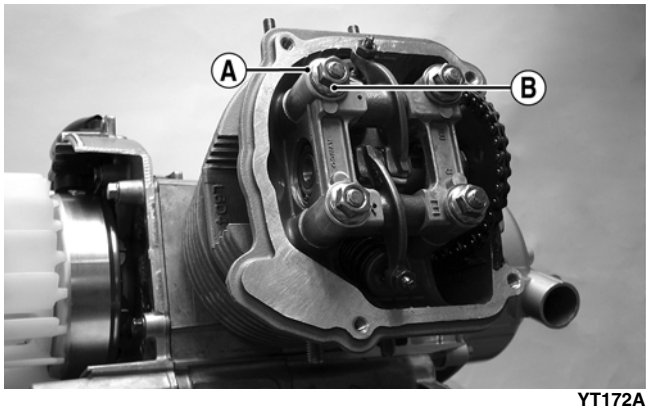


YT095A



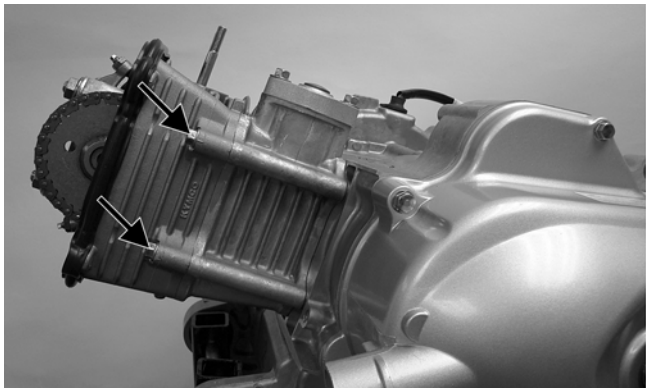
YT173A

8. Place the camshaft holder into position on the cylinder head making sure the camshaft bearings are seated correctly; then install four flat washers (A) and four nuts (B). Tighten in a crisscross pattern to 15 ft-lb.

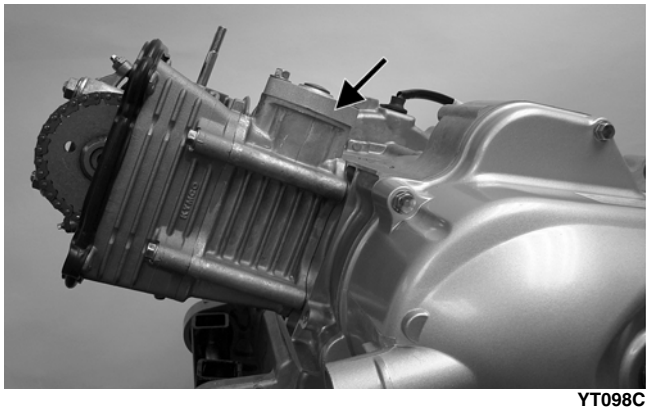


YT172A

9. Install the two cap screws securing the left side of the cylinder head and cylinder to the crankcase and tighten to 7 ft-lb.

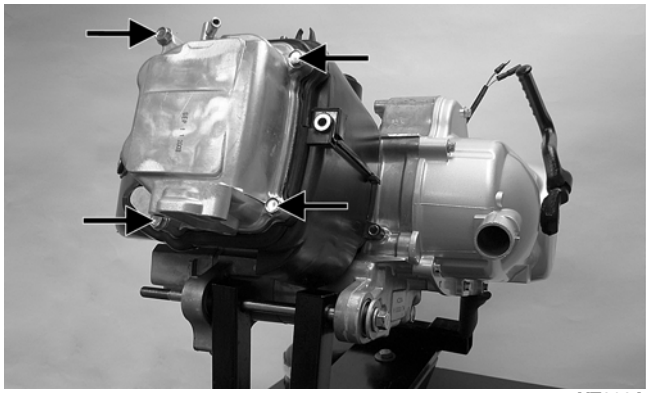

YT098B

10. Install the cam chain tensioner assembly into the cylinder using a new gasket; then secure with two cap screws and tighten to 7 ft-lb.


YT098C

11. Using a small flat screwdriver, release the cam chain tension spring by rotating clockwise; then install the plug bolt and tighten securely.
12. Adjust the valve/tappet clearance (see Section 2); then install the valve cover with new gasket. Tighten the cap screws to 7 ft-lb.


YT170


YT090A

13. Install the intake pipe/carburetor assembly onto the cylinder head using a new O-ring. Tighten the flange nuts to 7 ft-lb.

Left-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.

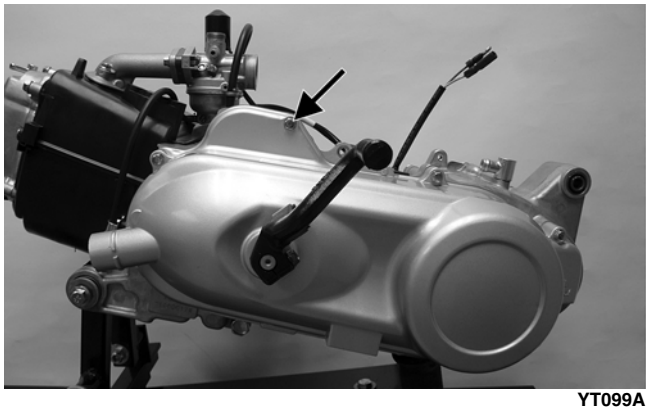
☞ AT THIS POINT
To service any one specific component, only limited disassembly of components may be necessary. Note the AT THIS POINT information in each sub-section.

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

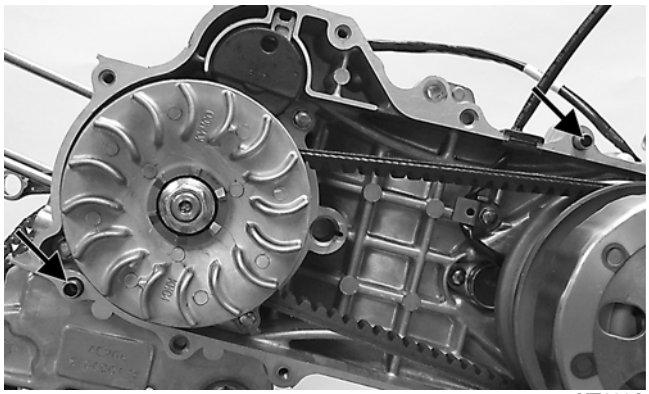
Removing Left-Side Components

A. V-BELT COVER
B. V-BELT/DRIVE CLUTCH/DRIVEN PULLEY
C. CENTRIFUGAL CLUTCH
D. GEAR SHIFT POSITION SWITCH
E. STARTER ONE-WAY CLUTCH

1. Remove the V-belt cover noting the location of the different-lengthed cap screw and the location of the alignment pins. Account for a gasket.

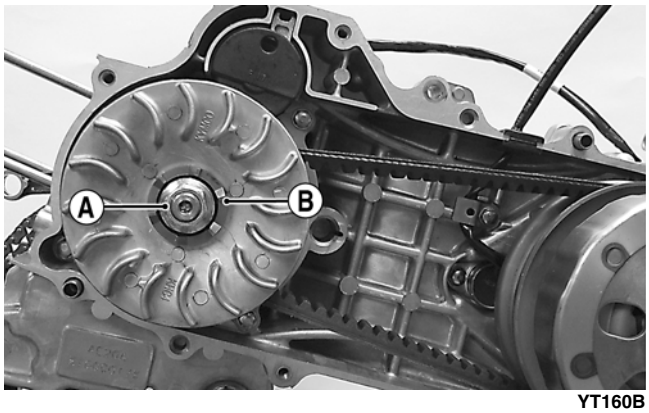


YT099A



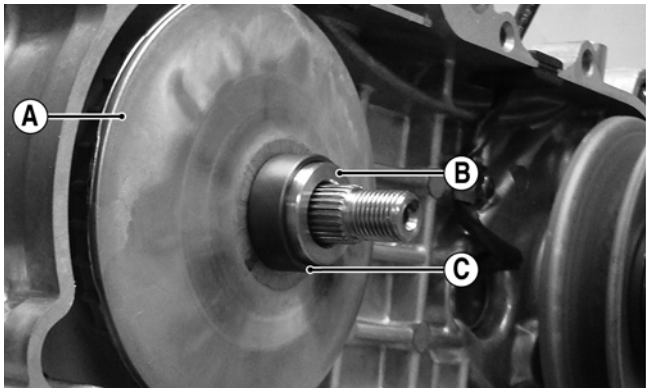
YT160A

2. Remove the flange nut (A) securing the fixed drive face to the crankshaft. Account for the kick-start ratchet (B).



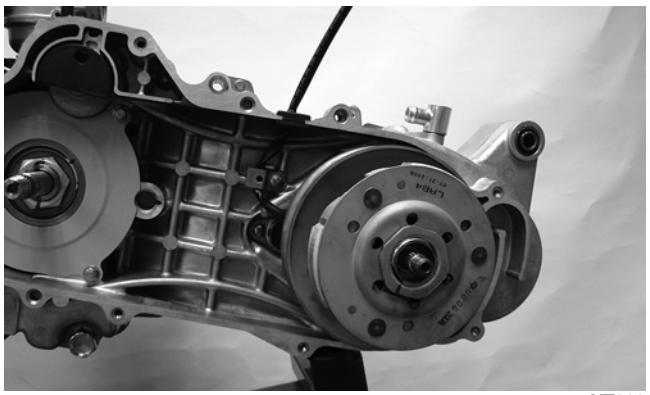
YT160B

3. Remove the V-belt; then remove the movable drive face (A). Account for a bushing (B) and speed limiter spacer (C).



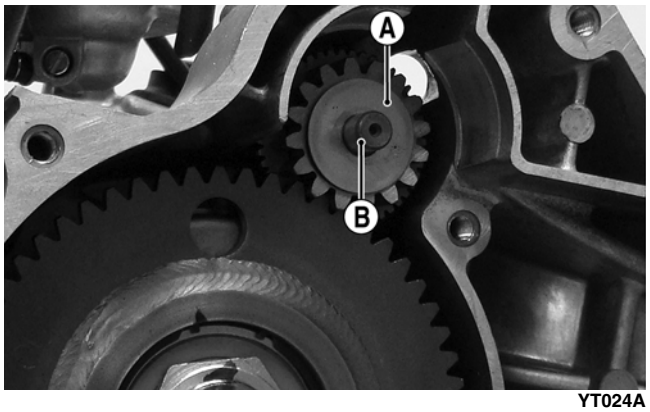
YT021A

4. Remove the centrifugal clutch housing; then remove the centrifugal clutch shoe/driven pulley assembly.



YT022

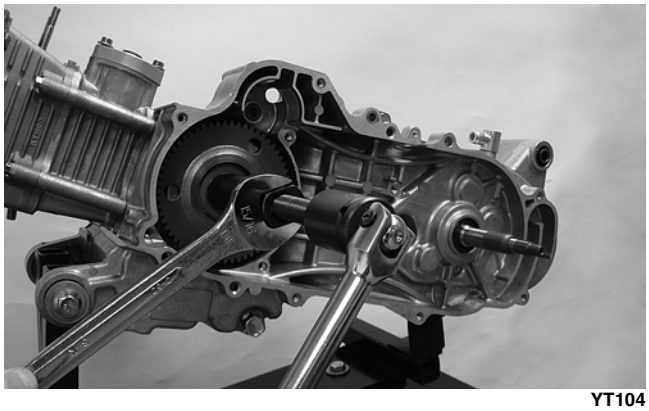
5. Remove the starter reduction gear shield; then remove the starter countershaft housing. Account for a thrust washer (A) and countershaft (B).



YT024A

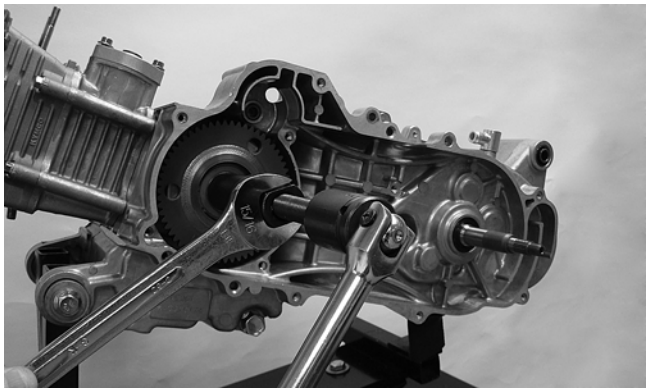
■NOTE: The thrust washer and countershaft may come out with the countershaft housing.

6. Remove the starter one-way nut using Starter One-Way Clutch Nut Wrench (p/n 0444-191); then install Starter One-Way Clutch Puller (p/n 0444-188) to the one-way housing.



YT104

7. Install the push-bolt into the puller; then using two wrenches as illustrated, tighten the push-bolt until the one-way clutch is free of the crankshaft.



YT104

■NOTE: It may be necessary to strike the head of the bolt sharply with a hammer after tightening to free the one-way housing from the crankshaft.

8. Make sure the transmission is in neutral; then remove the gear shift position switch noting the orientation of the drive pin. Account for an O-ring.

YT028

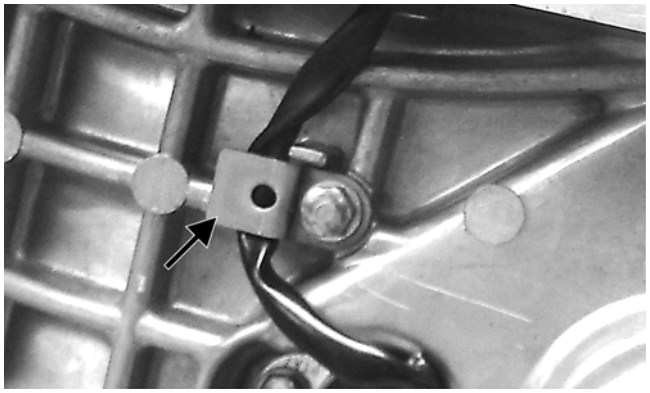
Installing Left-Side Components

A. GEAR SHIFT POSITION SWITCH
B. STARTER ONE-WAY CLUTCH
C. ROTOR/FLYWHEEL
D. CENTRIFUGAL CLUTCH
E. V-BELT/DRIVE CLUTCH/DRIVEN PULLEY

1. With the transmission in neutral, install a new O-ring on the gear shift position switch; then orient the pin as shown and install the switch into the gear case. Secure with a cap screw and tighten securely.

YT028

2. Secure the gear shift position switch wire as shown; then tighten the cap screw on the hold-down clip securely.

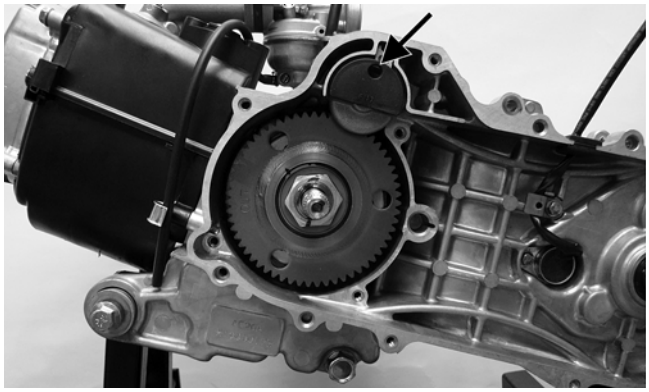


YT165A

3. Install the starter one-way clutch/gear assembly on the crankshaft; then with a thrust washer on each side of the starter countershaft gear, install the starter countershaft gear/countershaft into the crankcase.

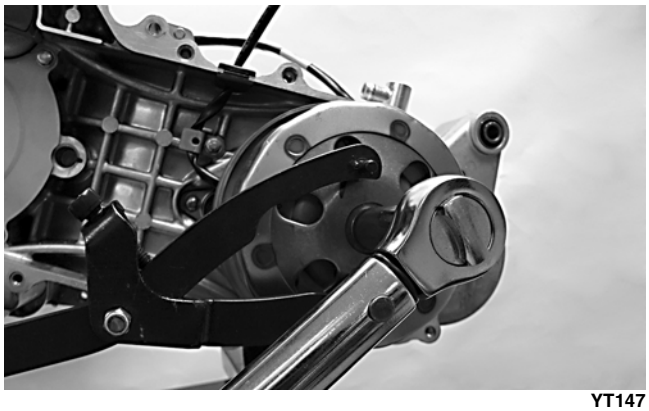
YT024B

4. Install the starter countershaft housing; then install the starter one-way clutch cover. Tighten the cap screws securely.



YT023A

5. Install the driven pulley/centrifugal clutch assembly onto the transmission input shaft; then install the centrifugal clutch housing and secure with a flange nut (coated with red Loctite #271). Tighten to 40 ft-lb.

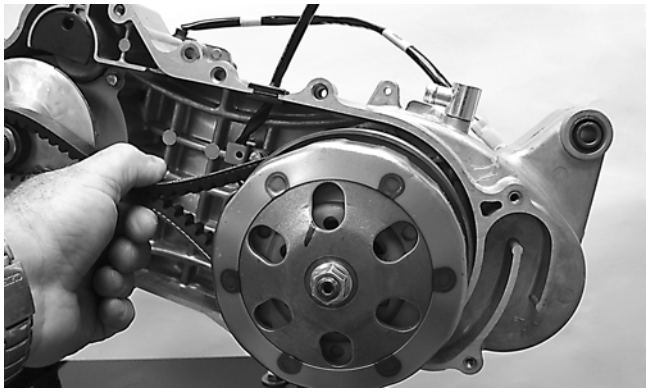


YT147

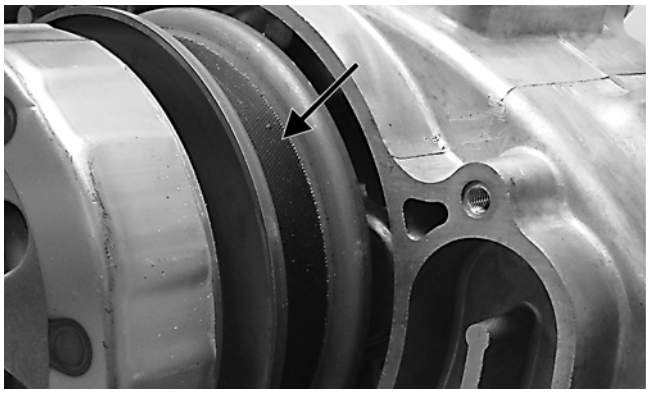
6. Install the movable drive face, bushing, and speed limiter spacer.

YT164

7. Place the V-belt over the driven pulley; then over the bushing/spacer. Pinch the belt in the middle to draw it down into the driven pulley approximately 1 inch.

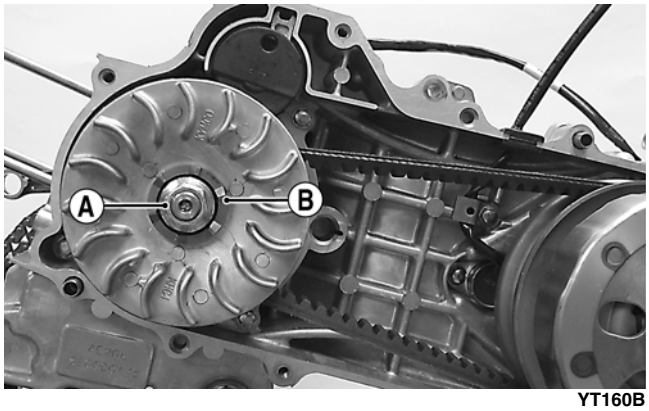


YT157



YT163A

8. Install the fixed drive face onto the crankshaft and make sure sufficient splines are protruding to allow the kick-start ratchet to slide onto the splines; then install the ratchet (B) and secure with the flange nut (A) coated with red Loctite #271. Tighten to 27.5 ft-lb.

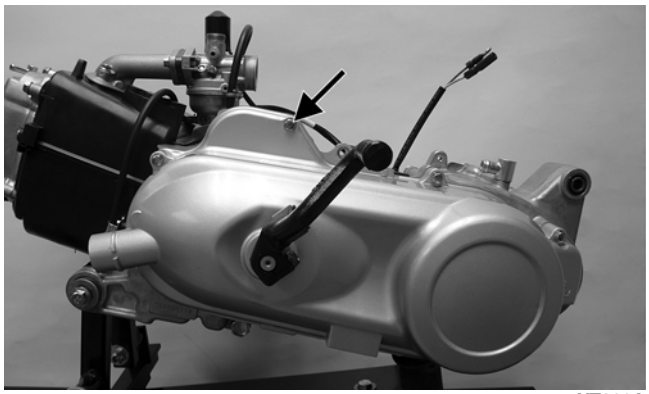


YT160B

CAUTION

Failure to fully engage the splines with the kick-start ratchet could cause false torque reading and crankshaft damage.

9. Install two alignment pins and the gasket; then secure the V-belt cover to the crankcase and tighten the cap screws in a crisscross pattern to 7 ft-lb. Make sure the different-lengthed cap screw is located as illustrated.


YT099A

Right-Side Components

☞AT THIS POINT

To service center crankcase components only, proceed to Removing Right-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

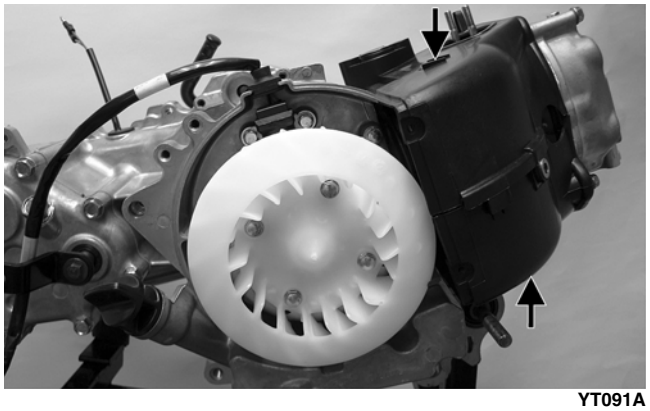
To service any one specific component, only limited disassembly of components may be necessary. Note the AT THIS POINT information in each sub-section.

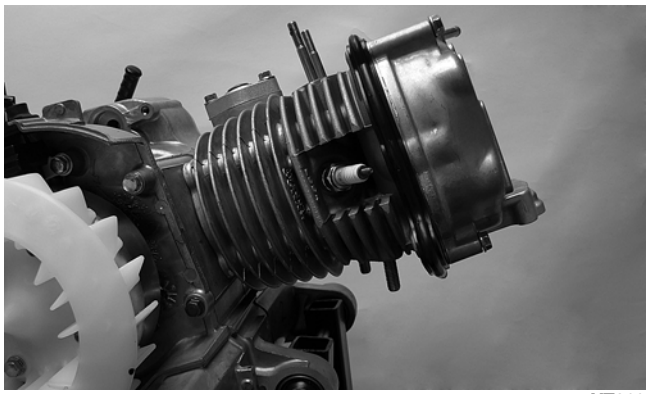
■NOTE: The engine/transmission does not have to be removed from the frame for this procedure.

Removing Right-Side Components

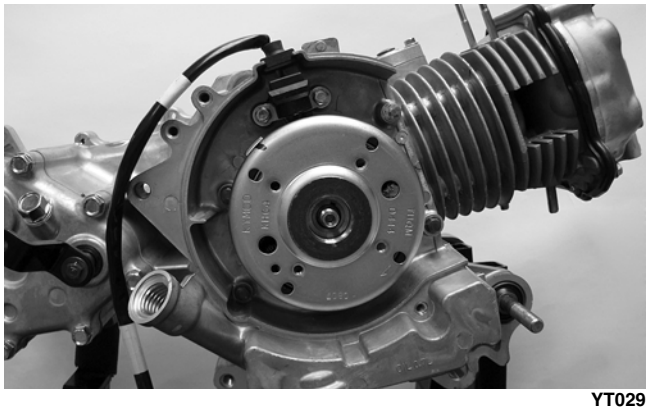
A. COOLING FAN
B. ROTOR/FLYWHEEL
C. STATOR COIL
D. OIL PUMP

1. Remove the intake pipe/carburetor. Account for an O-ring in the intake pipe.
2. Remove the cooling fan shroud; then remove the cooling shroud from the cylinder and cylinder head.

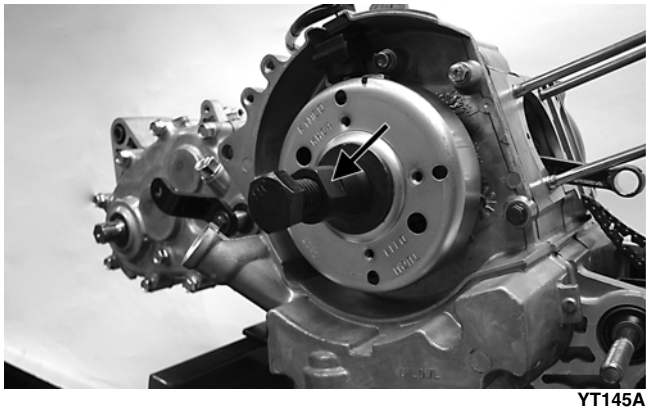

YT091A


YT092

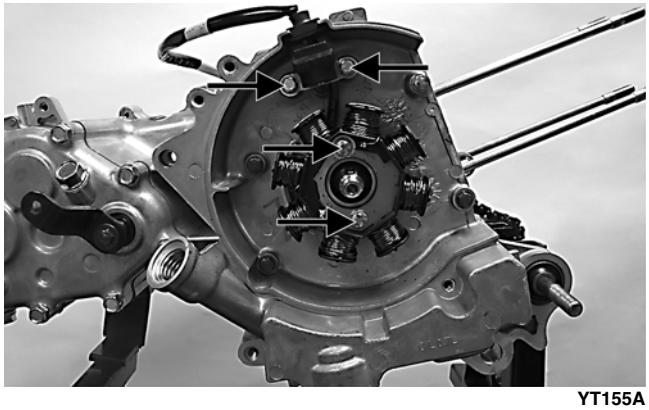
3. Remove the cooling fan; then remove the nut securing the rotor/flywheel.


YT029

4. Remove the rotor/flywheel using the rotor/flywheel puller. Account for a key.

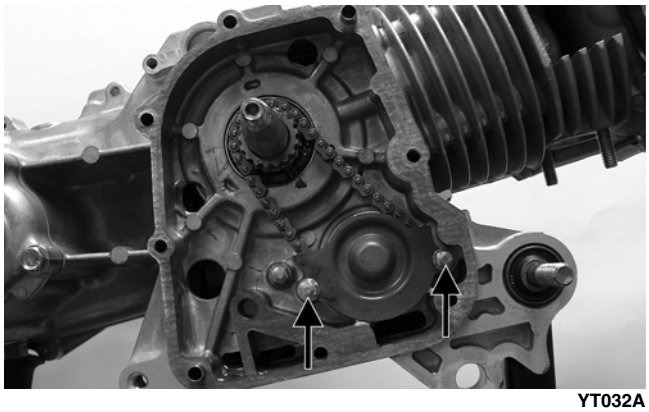

YT145A

5. Remove the stator coil/trigger coil assembly.

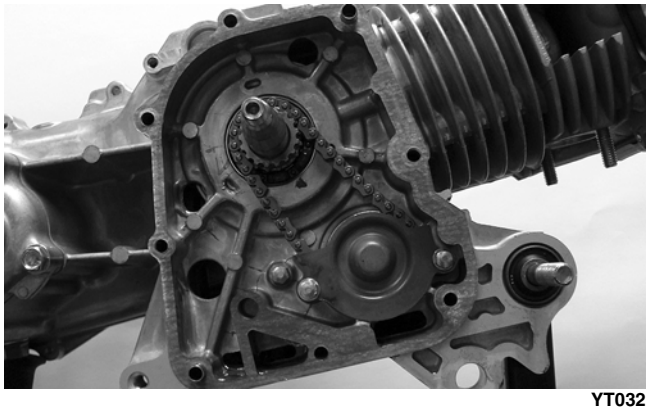

YT155A

6. Remove the five internal and three external cap screws securing the inner magneto housing to the crankcase; then remove the housing. Account for two alignment pins and a gasket.

■NOTE: Some engine oil will spill when the cap screws are loosened.


YT032A

7. Remove the oil pump baffle; then remove the nut from the oil pump shaft and remove the driven gear and drive chain.


YT032

8. Remove the oil pump assembly being careful not to drop the oil pump driveshaft.


YT033

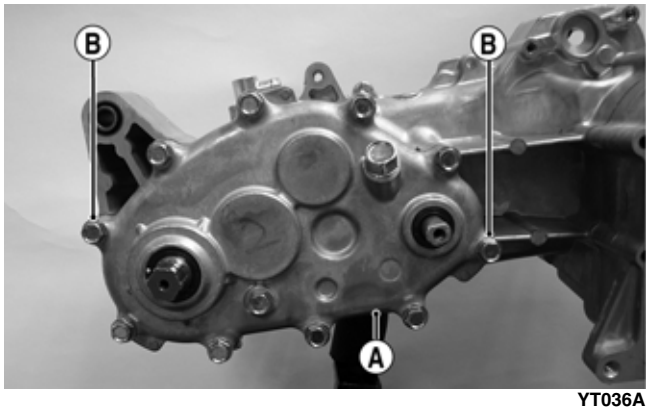
E. TRANSMISSION

Removing

1. Note the orientation of the shift arm for assembly; then remove the shift arm from the shift shaft.

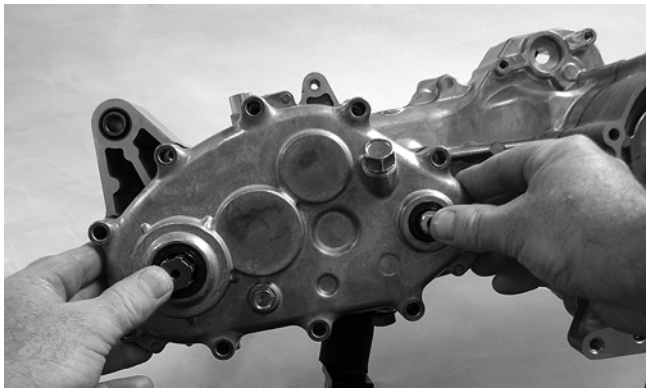

YT035

2. Loosen the shift detent plug (A) approximately eight turns; then remove the cap screws securing the transmission case cover. Note the location of two longer cap screws (B).



YT036A

3. Carefully remove the transmission case cover while pressing in on the output driveshaft and shift shaft to leave components in the transmission case. Account for two alignment pins and gasket.


YT038

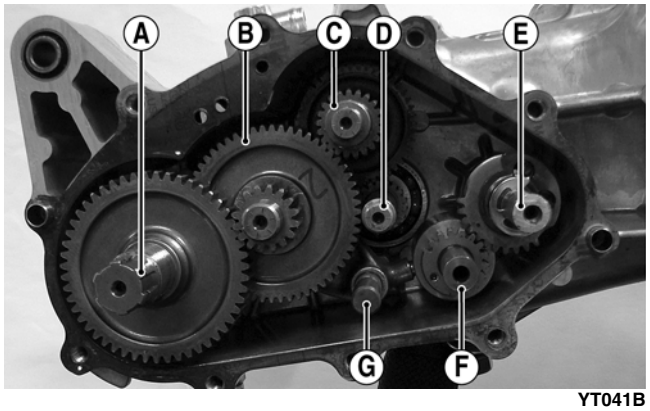

YT041A

■NOTE: The driveshaft thrust washer may be stuck to the cover. Make sure to install it on the driveshaft and keep together for assembly.

Disassembling

■NOTE: For steps 4-8 refer to illustration YT041B.

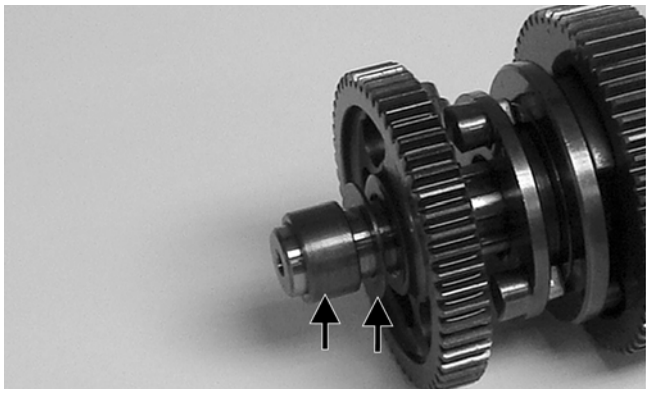
4. Remove the output driveshaft (A); then remove the shift fork shaft (G).



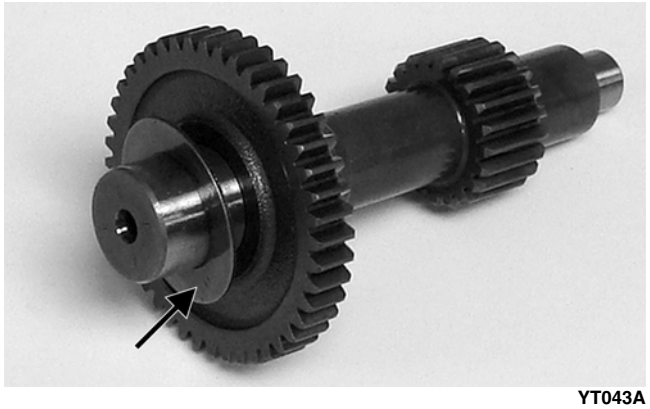
YT041B

5. Remove the main shaft (B) and shift fork together. Account for the shift fork, a spacer, and a thrust washer.


YT051


YT042A

6. Remove the countershaft (C). Account for one thrust washer.


YT043A

7. Remove the shift shaft (E); then remove the shift cam/detent assembly (F).
8. Using a plastic mallet, drive the input driveshaft (D) and bearing from the transmission case.

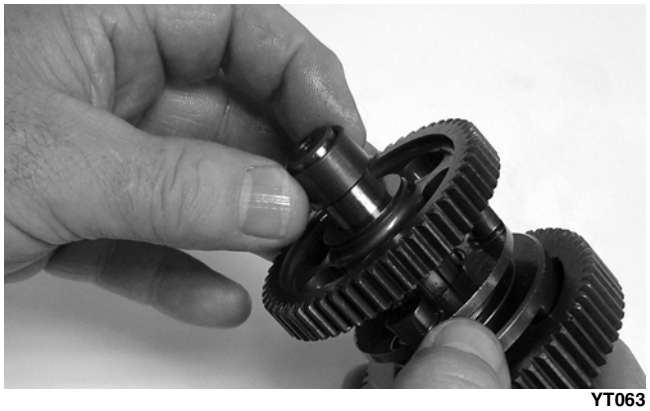
YT037

F. MAIN SHAFT

■NOTE: If not absolutely necessary to replace components, do not disassemble the main shaft.

To disassemble the main shaft components, use the following procedure.

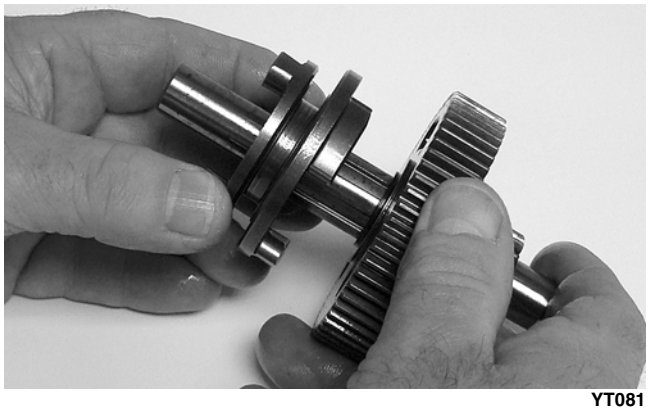
1. Remove the forward gear spacer and thrust washer; then remove the forward gear. Account for the forward gear bushing and washer.



YT063

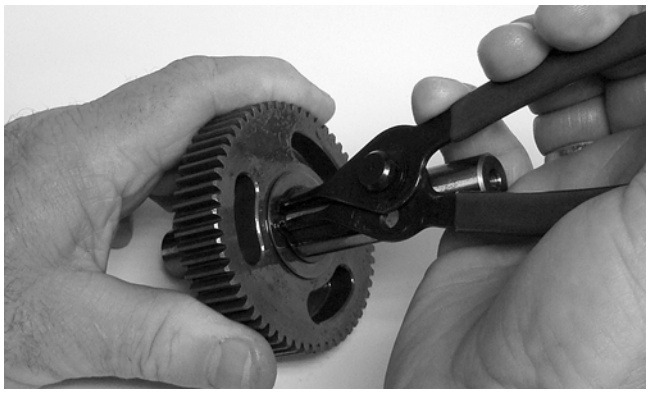
YT085

2. Remove the forward/reverse shift dog.



YT081

3. Remove the reverse gear snap ring and splined washer; then remove the reverse gear and thrust washer.



YT080

YT053

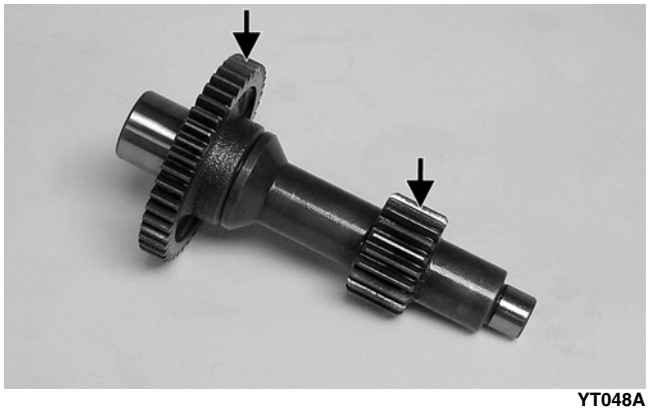
☞AT THIS POINT

The main shaft is now completely disassembled for inspection.

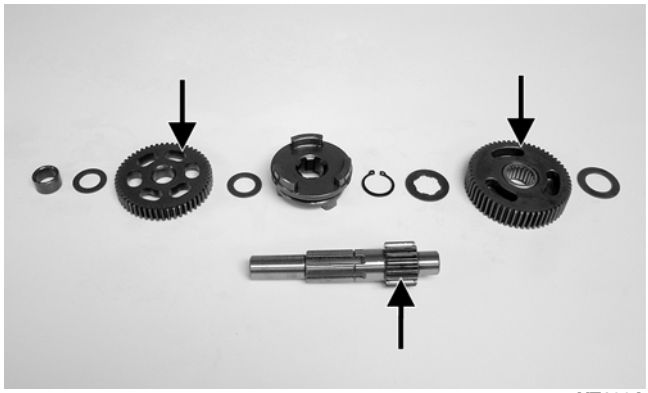
Servicing Right-Side Components

TRANSMISSION COMPONENTS

1. Inspect all gears for chipping, excessive wear, flaking, or discoloration.

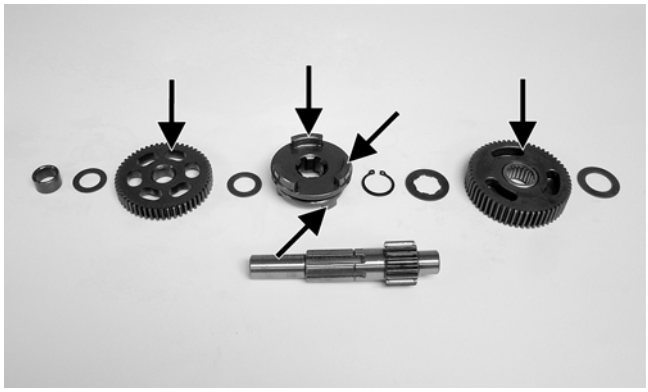


YT048A



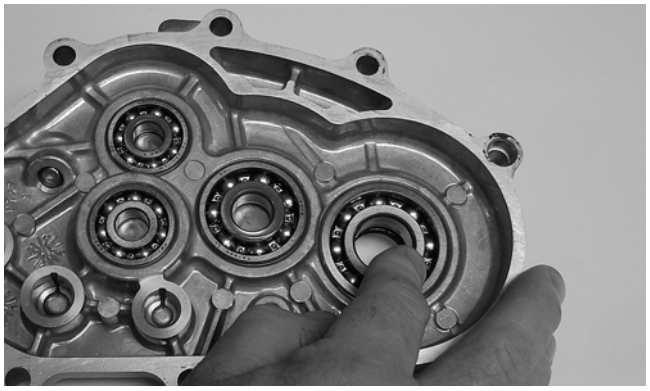
YT100A

2. Inspect the shift dog and mating gears for chipping, flaking, discoloration, or signs of excessive wear.



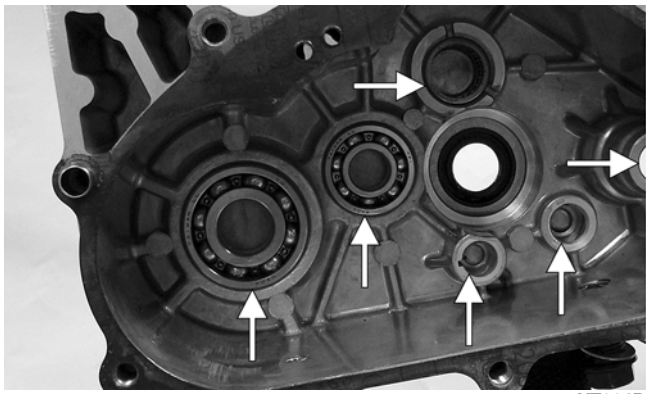
YT100B

3. Inspect all splined shafts for excessive spline wear, twisting, or discoloration.
4. Inspect the shift fork and shift dog mating surfaces for galling, discoloration, or excessive wear.
5. Inspect the shift shaft and shift cam/detent assembly for wear, chipping, or broken spring.
6. Rotate all bearings to check for roughness, discoloration, or looseness in the transmission case or cover.



YT065

7. Inspect the detent spring and ball. Replace any worn or broken component.
8. Examine the transmission case and cover for cracks, discoloration, or chipped bearing bosses.



YT064B

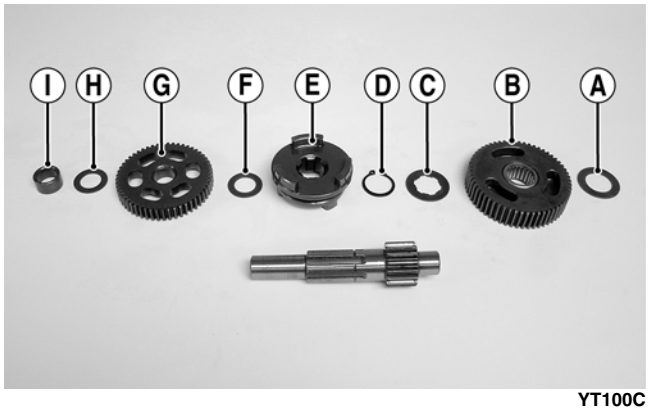
OIL PUMP

1. Inspect the pump for damage.
2. If the oil pump is damaged, it must be replaced.

■NOTE: The oil pump is a non-serviceable component and must be replaced as a complete assembly.

Installing Right-Side Components

■NOTE: For steps 1-3, refer to illustration YT100C.



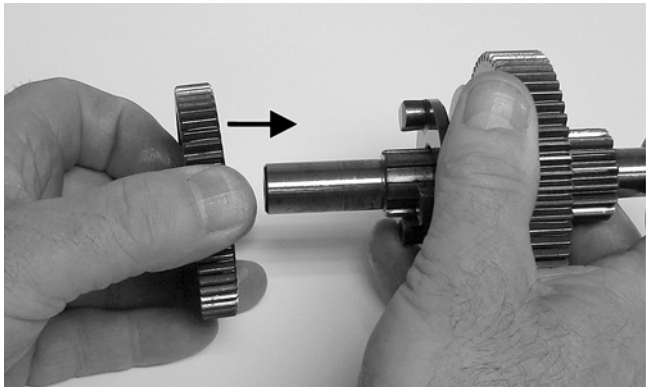
YT100C

A. MAIN SHAFT

1. Install the non-splined reverse thrust washer (A) on the main shaft; then install the reverse gear (B) and splined thrust washer (C). Secure with the snap ring (D) pressing firmly toward the reverse gear to seat in the groove.

YT080

2. Install the forward/reverse shift dog (E), forward gear thrust washer (F), and forward gear bushing (G); then install the forward gear with the flat side toward the shift dog.



YT084A

3. Install the forward gear thrust washer (H) and the spacer (I).

☞ AT THIS POINT
The main shaft is now ready for installation into the transmission.

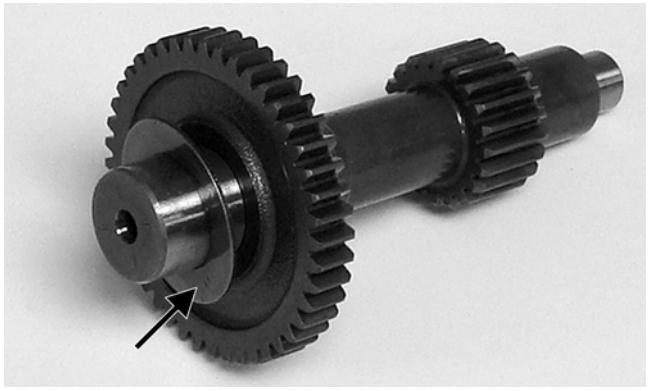
B. TRANSMISSION

Assembling

1. Install new oil seals in the transmission case and cover; then coat the inner surfaces of the seals with multi-purpose grease.
2. Making sure the bearing is properly aligned in the transmission case, drive the input driveshaft and bearing into place with a plastic mallet.

YT047

3. Install the countershaft with thrust washer into the transmission case.



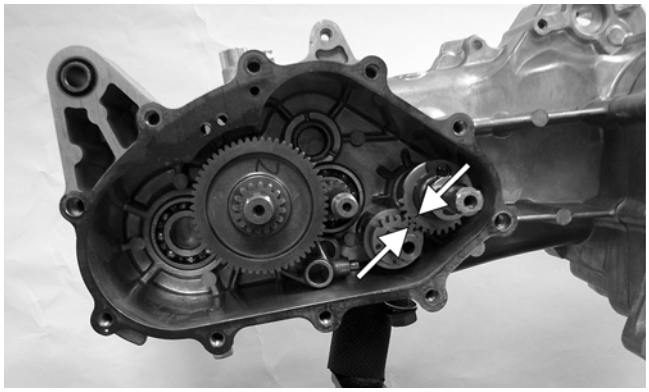
YT043A

4. Place the shift fork into position on the shift dog; then install the main shaft assembly into the transmission case with the shift fork oriented as shown. Make sure the spacer and thrust washer do not fall off the shaft.

YT072

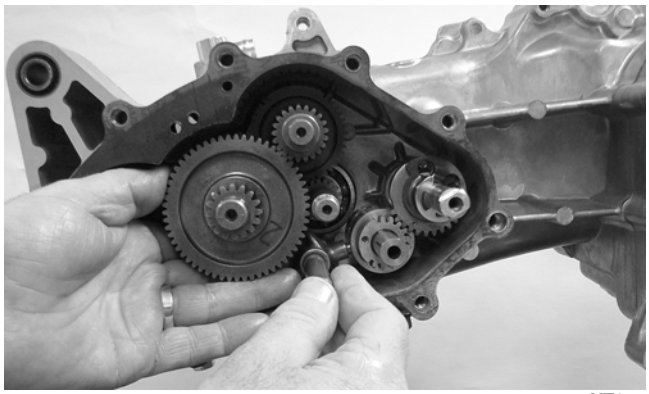
YT083

5. Install the shift cam/detent assembly; then install the shift shaft aligning the timing index marks.



YT069A

6. Engage the shift fork into the shift cam/detent assembly; then secure with the shift fork shaft.



YT075

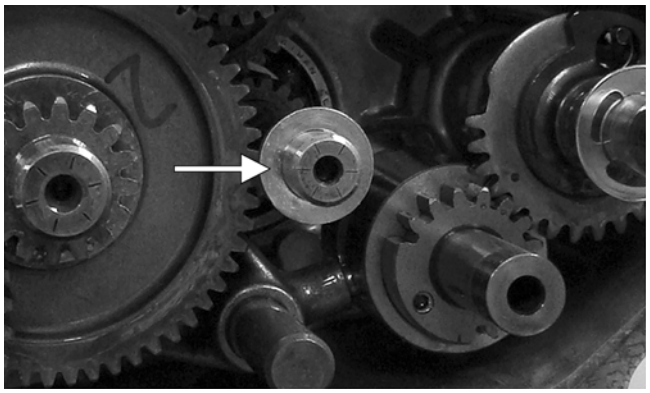
7. Install the output driveshaft; then install the thrust washer on the input driveshaft.

YT077

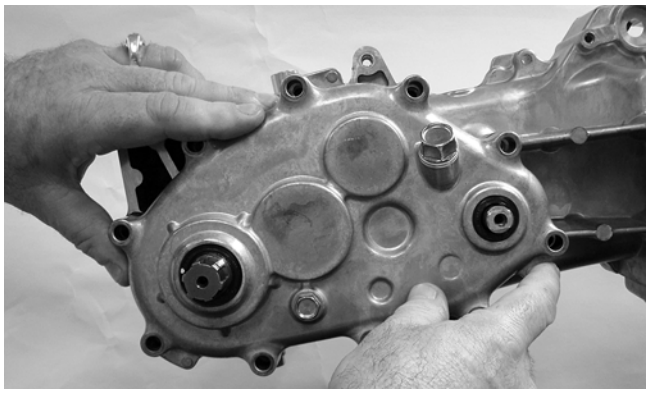
8. Place the alignment pins in the correct locations; then install a new gasket on the transmission case.

YT041A

9. Making sure the input driveshaft thrust washer is installed, carefully install the transmission case cover.



YT039A

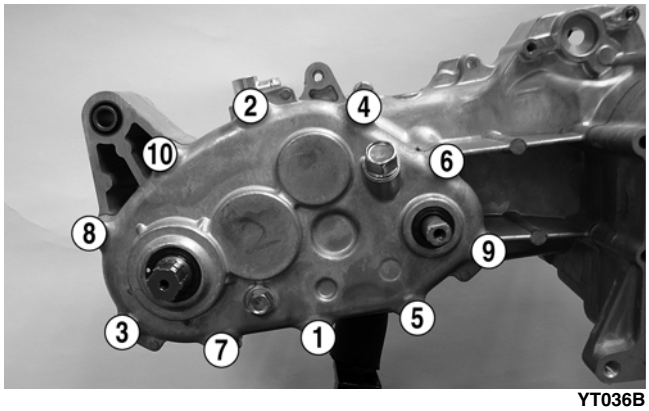


YT078

CAUTION

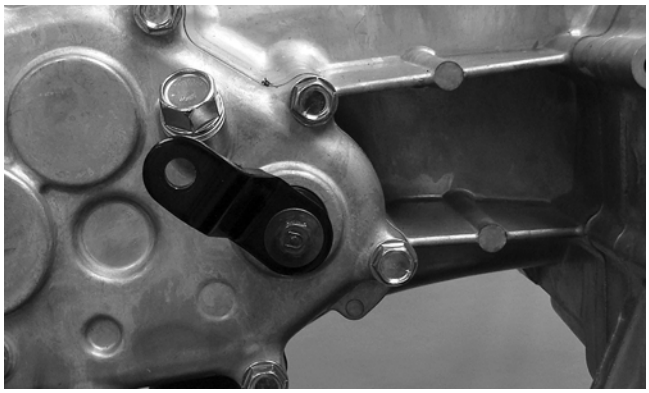
Care must be taken to protect the lips of the shift shaft seal when installing the cover or seal damage may occur.

10. Secure the cover with the cap screws and tighten using the pattern shown to 22 ft-lb; then install the shift detent ball, spring, and plug and tighten securely.



YT036B

11. Install the shift arm on the shift shaft and secure with the cap screw. Tighten securely.


YT035

Center Crankcase Components

■NOTE: This procedure cannot be done with the engine/transmission in the frame. Complete Removing procedures for Top-Side, Left-Side, and Right-Side must precede this procedure.

■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.

Disassembling Crankcase Halves

1. Remove one remaining cap screw from the right-side crankcase half; then tap the right-side crankcase half from the left side leaving the crankshaft in the left side. Account for a gasket and two alignment pins.


YT118A


YT119

2. Carefully remove the crankshaft from the left-side crankcase half while holding the timing chain clear of the timing sprocket; then remove the timing chain.


YT121

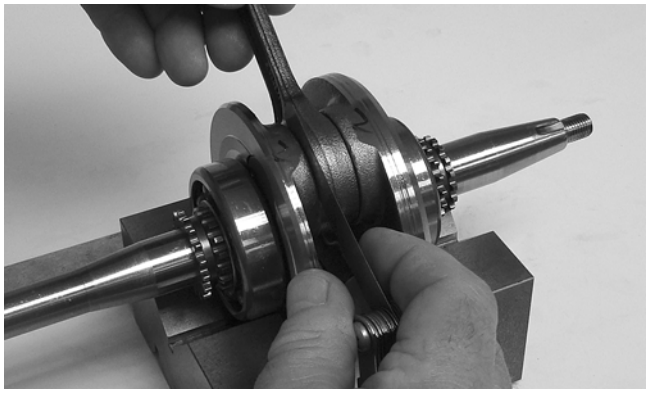

YT122

☞AT THIS POINT

The center components are now disassembled for inspection.

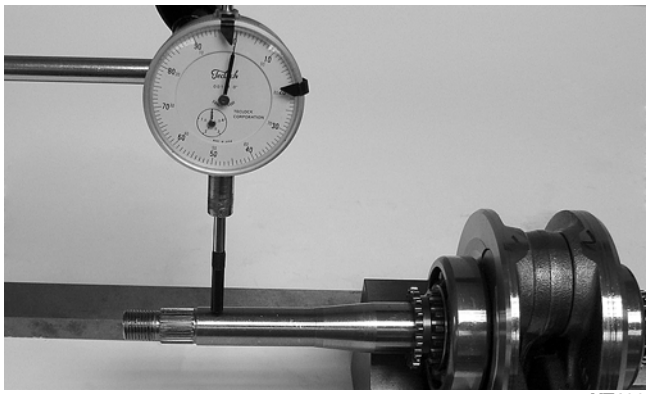
Servicing Crankcase Components

1. Inspect the crankshaft, crankshaft bearings, and connecting rod for excessive wear, damage, or discoloration.
2. Using a thickness gauge, check for the side-to-side clearance between the connecting rod and crankshaft. Clearance must not be greater than specified.



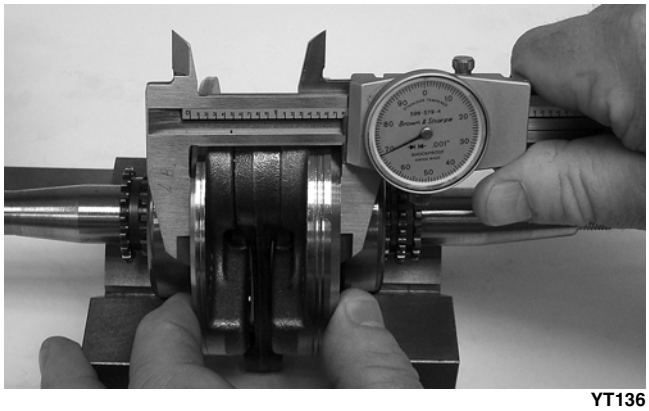
YT134

3. Place the crankshaft assembly on a set of V blocks; then using a dial indicator, measure crankshaft runout. Runout must not exceed specifications.



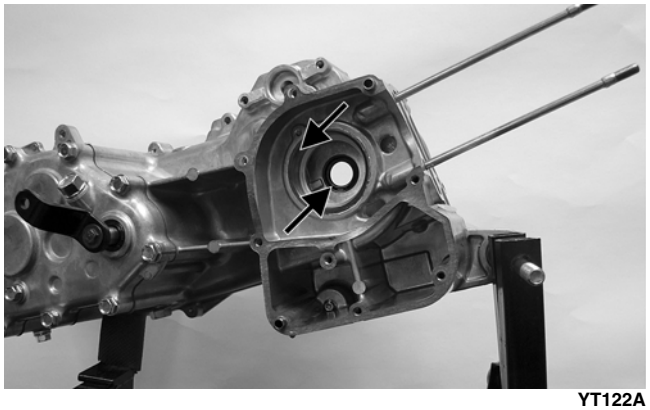
YT133

4. Using an appropriate caliper, measure crankshaft web-to-web distance. Measurement must not exceed specifications.



YT136

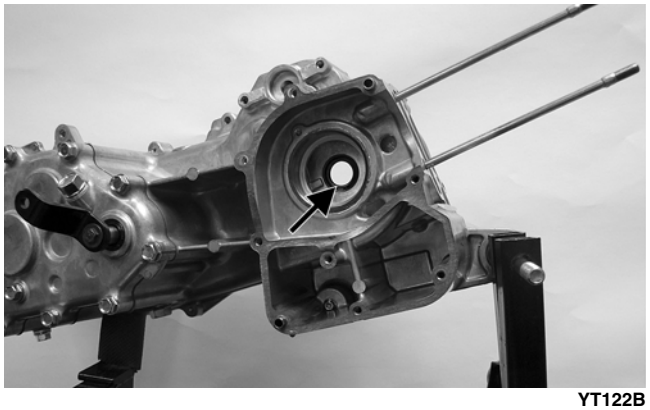
5. Examine crankcase halves for discoloration in bearing bosses, cracks, or signs of warping



YT122A

6. Replace all oil seals with new seals and coat wear surfaces with clean, fresh grease.

YT153A



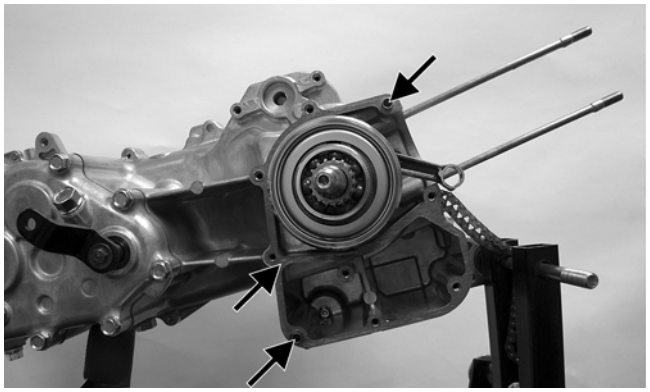
YT122B

Assembling Crankcase Half

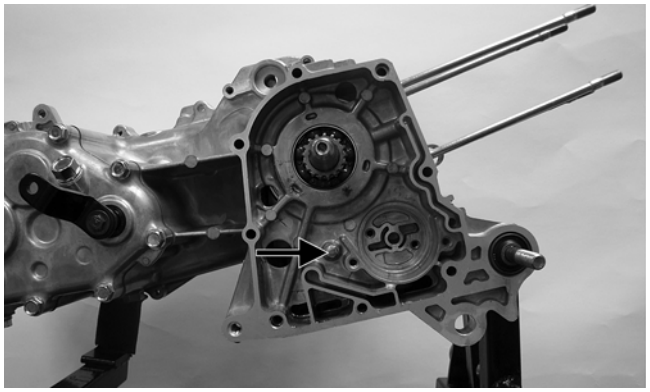
1. Place the timing chain into the crankcase; then install the crankshaft assembly into the crankcase half.

YT120

2. Install two alignment pins and a gasket; then install the right-side crankcase half. Secure with a cap screw (threads coated with red Loctite #271) and tighten to 8 ft-lb.

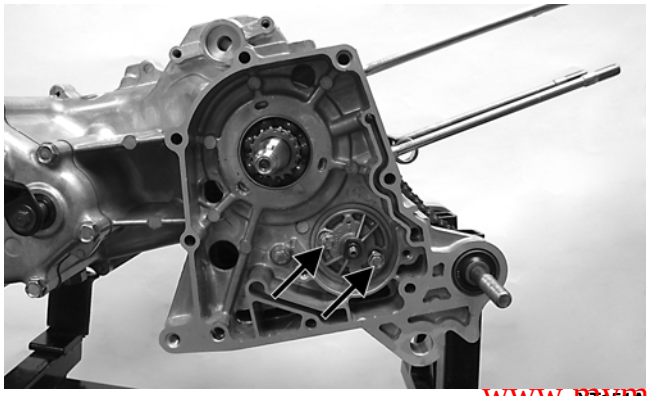


YT119A



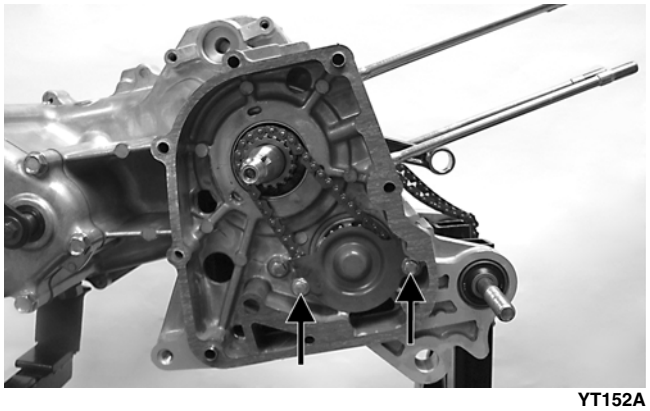
YT118A

3. Install the oil pump into the crankcase with the arrow and dot directed upward; then secure with two cap screws and tighten to 7 ft-lb.



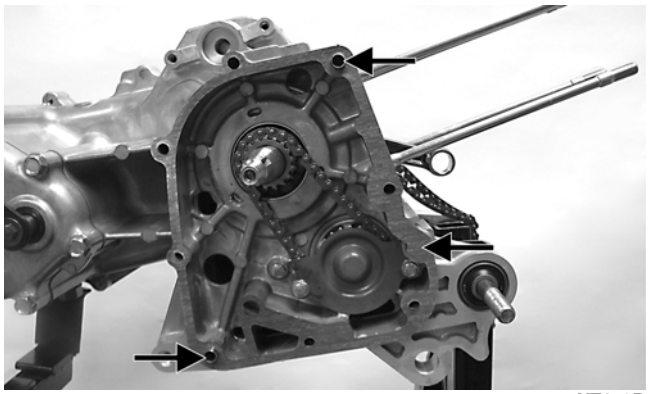
YT151A

4. Install the oil pump drive chain and driven gear and secure the gear to the pump shaft with the nut tightened to 7 ft-lb; then install the oil pump baffle and secure with the cap screws. Tighten securely.



YT152A

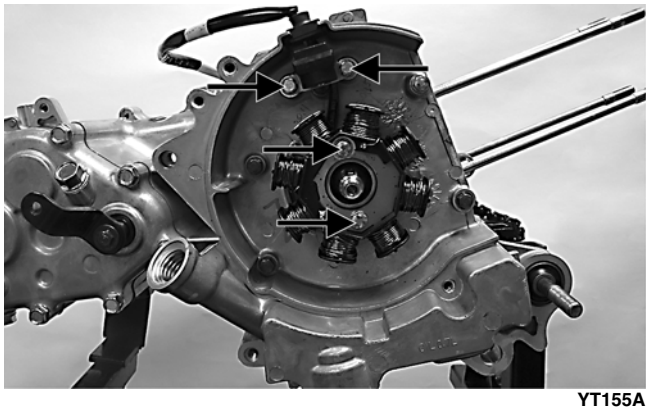
5. Install the inner magneto housing using a new gasket making sure the alignment pins are correctly located; then secure with the five internal and three external cap screws.



YT152B

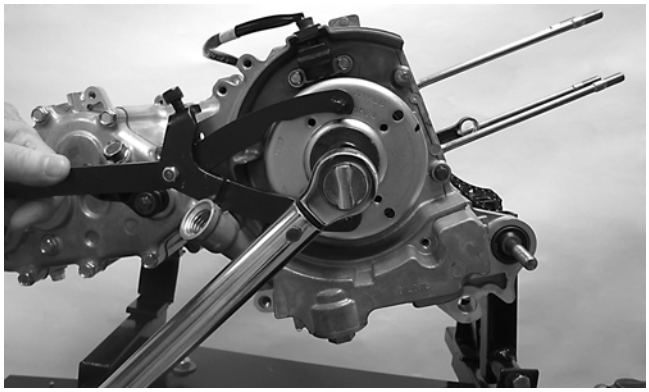
YT031A

6. Install the stator/trigger coil assembly and secure with four cap screws. Tighten securely.



YT155A

7. Install the rotor flywheel making sure the crankshaft and flywheel bore are clean and free of any oil; then with the key in place, secure with the flywheel nut coated with red Loctite #271. Tighten to 30 ft-lb.



YT143

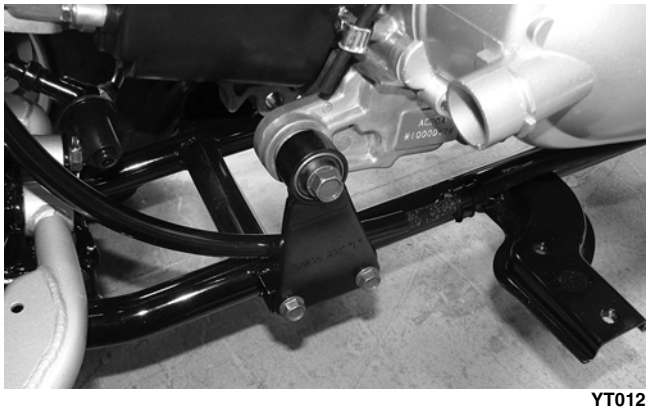
8. Install the cooling fan and secure with four cap screws; then install the fan shroud.

Installing Engine/ Transmission

1. From the left side, place the engine/transmission into the frame tilting the top-side forward to clear the frame member.

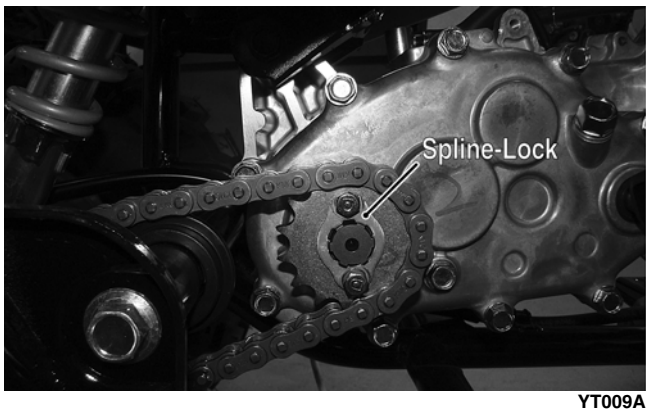
YT014

2. Install the two front engine mounting brackets on the frame and tighten the cap screws securely; then install the two front through-bolts. Do not tighten at this time.



YT012

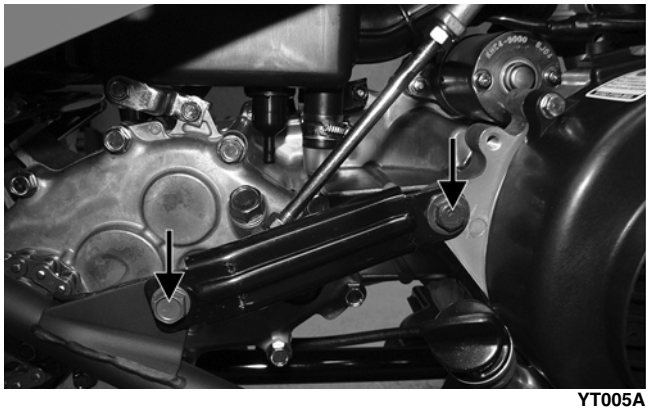
3. Install the rear engine mounting through-bolt and nut; then tighten the front and rear nuts to 32.5 ft-lb.
4. Install the drive sprocket and chain and secure with the spline-lock; then install the cap screws and tighten to 8 ft-lb.



YT009A

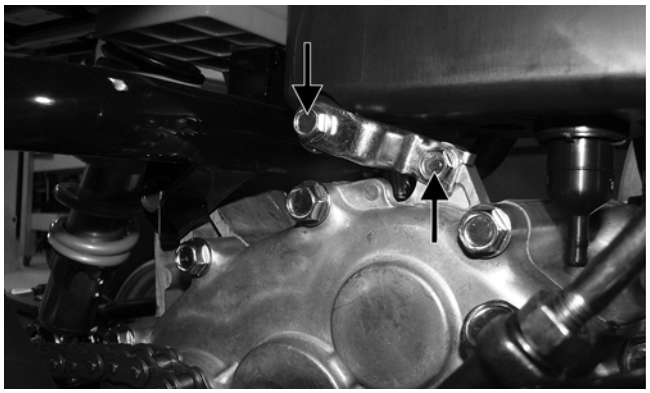
5. Install the V-belt housing cooling duct and secure with the clamp; then install the exhaust pipe/muffler assembly using a new grafoil seal in the cylinder head. Tighten the exhaust pipe to cylinder head nuts to 7 ft-lb and the muffler mounting cap screws to 32 ft-lb.

YT008A

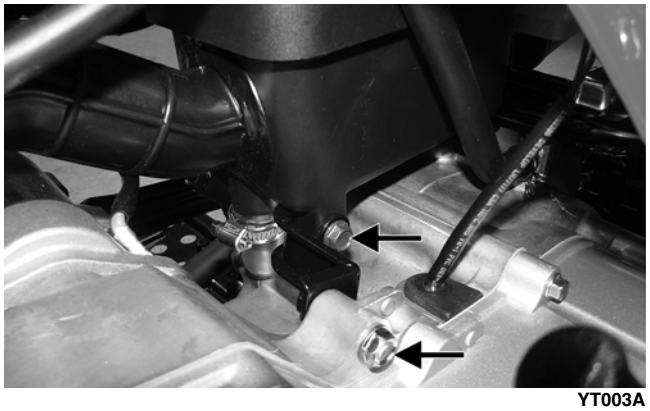


YT005A

6. Connect the shift linkage; then install the air filter housing and air filter. Tighten all hardware securely.

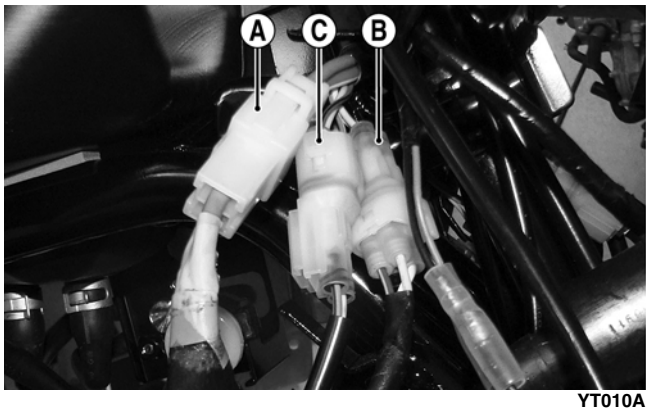


YT007A



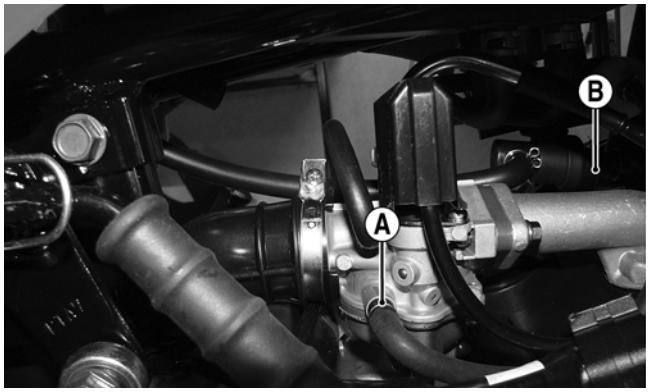
YT003A

7. Connect the starter harness connector (A), stator coil connector (B), and electric choke connector (C); then install the spark plug cap.



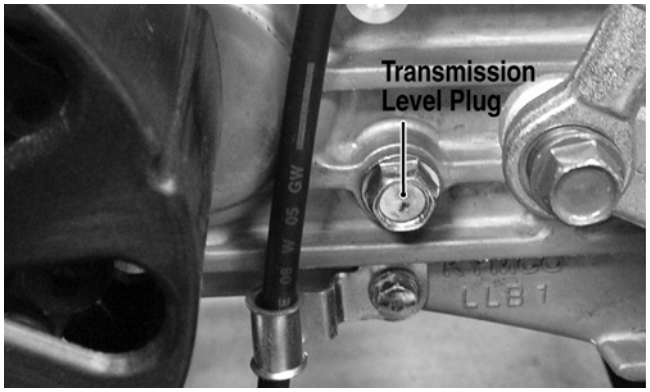
YT010A

8. Connect the gasline hose (A) to the carburetor; then connect the crankcase breather hose (B) to the air filter housing.



YT004A

9. Connect the gear shift position switch connectors to the main harness and secure to the frame with a nylon tie.
10. Install the left-side footwell mounting plate to the frame; then install the left and right footwells and secure to the mountings and fenders. Tighten all hardware securely.
11. Pour the recommended quantity of engine oil into the crankcase; then install the level stick and fill the transmission with the recommended amount of gear lubricant. Install the level plug and fill plug.



TR028A

12. Start the engine and check for any fluid leaks. After a short “test-ride,” shut off the engine and check the fluid levels. Add fluids as required.

Troubleshooting

Problem: Engine will not start or is hard to start (Compression too low)	
Condition	**Remedy**
1. **Piston rings** worn excessively 2. **Cylinder bore** worn 3. **Spark plug** seating poorly 4. **Starter motor** cranks too slowly - does not turn 5. **Valves** burned - **tappets** adjusted too tight	1. Replace rings 2. Replace - rebore cylinder 3. Tighten plug 4. See Section 5 5. Replace valves - adjust tappets
Problem: Engine will not start or is hard to start (No spark)	
Condition	**Remedy**
1. **Spark plug** fouled 2. **Spark plug** wet 3. **Magneto** defective 4. **CDI unit** defective 5. **Ignition coil** defective 6. **High-tension lead** open - shorted	1. Clean - replace plug 2. Clean - dry plug 3. Replace magneto 4. Replace CDI unit 5. Replace ignition coil 6. Replace high tension lead
Problem: Engine will not start or is hard to start (No fuel reaching the carburetor)	
Condition	**Remedy**
1. **Gas tank vent hose** obstructed 2. **Carburetor inlet needle** defective 3. **Fuel hose** obstructed 4. **Fuel screens** obstructed	1. Clean vent hose 2. Replace needle 3. Clean - replace hose 4. Clean - replace inlet screen - valve screen
Problem: Engine stalls easily	
Condition	**Remedy**
1. **Spark plug** fouled 2. **Magneto** defective 3. **CDI unit** defective 4. **Carburetor jets** obstructed	1. Clean plug 2. Replace magneto 3. Replace CDI unit 4. Clean jets
Problem: Engine noisy (Noise seems to come from piston)	
Condition	**Remedy**
1. **Piston - cylinder** worn 2. **Combustion chamber** carbon buildup 3. **Piston pin - piston pin bore** worn 4. **Piston rings - ring groove(s)** worn	1. Replace - service piston - cylinder 2. Clean chamber 3. Replace - service pin - bore 4. Replace rings - piston
Problem: Engine noisy (Noise seems to come from clutch)	
Condition	**Remedy**
1. **Clutch shoe(s)** worn 2. **Driven clutch hub** warped - worn	1. Replace clutch shoe(s) 2. Replace clutch
Problem: Engine noisy (Noise seems to come from crankshaft)	
Condition	**Remedy**
1. **Bearing** worn - burned 2. **Lower rod-end bearing** worn - burned 3. **Connecting rod side clearance** too large 4. **Engine oil** low - incorrect grade	1. Replace bearing 2. Replace bearing 3. Replace thrust washer(s) 4. Fill crankcase with recommended engine oil
Problem: Engine idles poorly	
Condition	**Remedy**
1. **Magneto** defective 2. **CDI unit** defective 3. **Spark plug** fouled - **gap** too wide 4. **Ignition coil** defective 5. **Float level** out of adjustment 6. **Carburetor jets** obstructed 7. **Pilot screw setting** improper	1. Replace magneto 2. Replace CDI unit 3. Adjust gap - replace plug 4. Replace ignition coil 5. Adjust float height 6. Clean jets 7. Adjust pilot screw

Problem: Engine runs poorly at high speed	
Condition	**Remedy**
1. **Spark plug gap** too narrow	1. Adjust gap
2. **Ignition coil** defective	2. Replace ignition oil
3. **Float level** too low	3. Adjust float arm height
4. **Air cleaner element** obstructed	4. Clean element
5. **Fuel hose** obstructed	5. Clean - prime hose
6. **Carburetor jets** obstructed	6. Clean jets
7. **Air filter inlet pipe** obstructed	7. Remove obstruction
Problem: Exhaust smoke dirty or heavy	
Condition	**Remedy**
1. **Piston rings - cylinder** worn	1. Replace - service rings - cylinder
2. **Cylinder wall** scored - scuffed	2. Replace - service cylinder
3. **Crankcase** over-full of oil	3. Drain excess oil from crankcase - recheck oil level
4. **Air filter** too much air filter element oil	4. Use recommended type and quantity air filter element oil
5. **Carburetor jets** incorrect size (too big)	5. Use recommended carburetor jets
Problem: Engine lacks power	
Condition	**Remedy**
1. **Piston ring(s) - cylinder** worn	1. Replace - service rings - cylinder
2. **Spark plug** fouled	2. Clean - replace plug
3. **Spark plug gap** incorrect	3. Adjust gap - replace plug
4. **Carburetor jets** obstructed	4. Clean jets
5. **Float level** out of adjustment	5. Adjust float arm height
6. **Air filter element** obstructed	6. Clean element
7. **Intake manifold** leaking air	7. Tighten - replace manifold
8. **Brake(s)** dragging	8. Adjust brake(s)
9. **Drive axle** bent - worn bearings	9. Straighten - replace axle
10. **Drive chain - sprockets** stretched - worn	10. Replace sprocket - chain
Problem: Engine overheats	
Condition	**Remedy**
1. **Carbon deposit (piston crown)** excessive	1. Clean piston
2. **Engine oil** low	2. Add engine oil
3. **Octane** low - **gasoline** poor	3. Drain - replace gasoline
4. **Oil pump** defective	4. Replace pump
5. **Oil filter/screen** obstructed	5. Clean filter/screen
6. **Float level** low	6. Adjust float arm height
7. **Intake manifold** leaking air	7. Tighten - replace manifold
8. **Air filter element** obstructed	8. Clean element

Fuel/Lubrication

This section has been organized for servicing the fuel system. The technician should use discretion and sound judgment when removing/disassembling and assembling/installing components.

⚠ WARNING

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

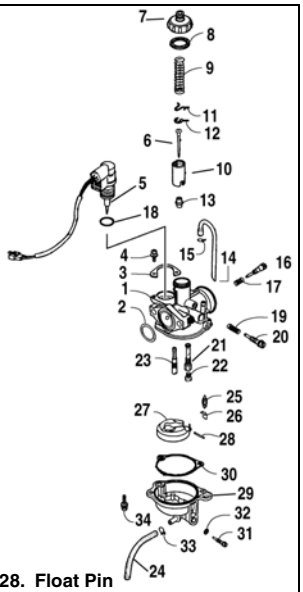
Carburetor Specifications

ITEM	
Type	Keihin PTE
Main Jet	80
Slow Jet	40
Pilot Screw Setting (turns)	1 3/8
Needle Jet	3.4/2.5
Jet Needle	NGRA-3
Idle RPM	1700
Needle Valve/Seat	1.6
Float Arm Height	10.2 mm (0.40 in.)
Throttle Cable Free-Play (at lever)	6.0 mm (0.25 in.)

Carburetor Schematic

KEY

1. Carburetor Body
2. O-Ring
3. Set Plate
4. Screw w/Washer
5. Choke Assembly
6. Jet Needle
7. Carburetor Cap
8. Gasket
9. Throttle Valve Spring
10. Throttle Valve
11. Needle Clip Plate
12. Needle Clip
13. Needle Jet
14. Vent Hose
15. Clip
16. Idle Adjustment Screw
17. Spring
18. O-Ring
19. Spring
20. Pilot Screw
21. Jet Holder
22. Main Jet
23. Slow Jet
24. Float Chamber Drain Hose
25. Needle Valve
26. Clip
27. Float Assembly
28. Float Pin
29. Float Chamber
30. Gasket
31. Drain Screw
32. O-Ring
33. Clip
34. Screw w/Washer



741-045A

Carburetor

REMOVING

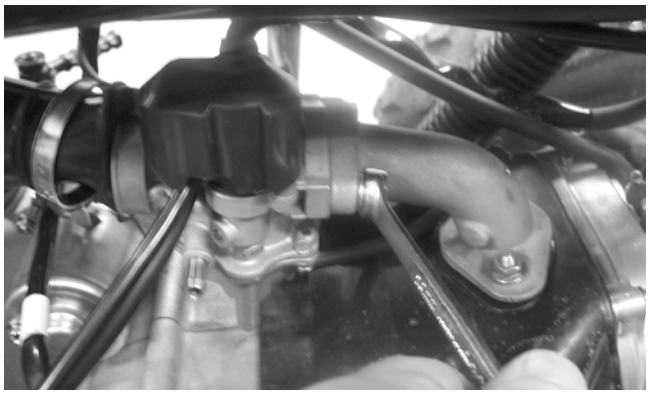
1. Turn the gas tank valve to the OFF position; then disconnect the gas hose from the carburetor.

CD590

2. Disconnect the float chamber drain hose and the vent hose from the carburetor.
3. Remove the air intake boot.

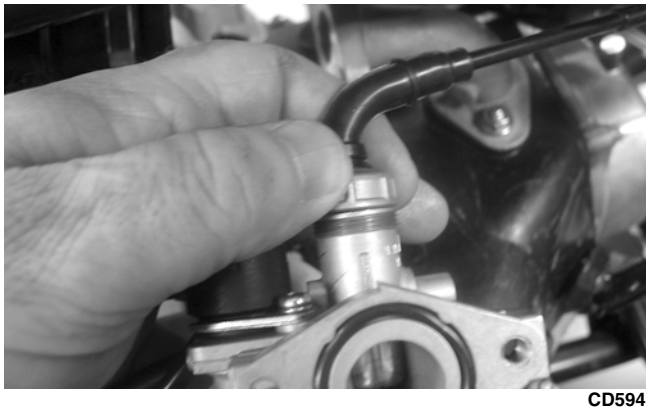
CD589

4. Remove the cap screws securing the carburetor to the intake manifold; then remove the carburetor.



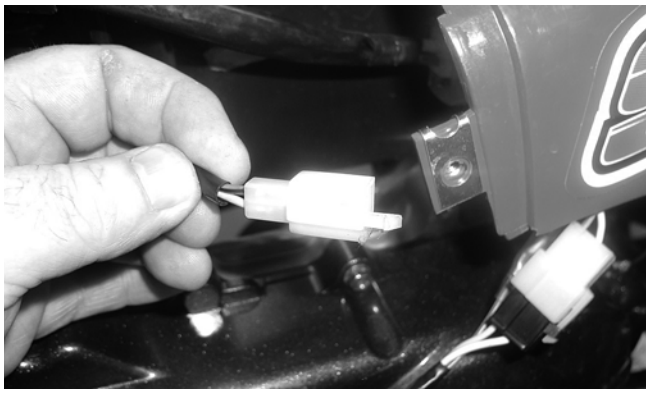
CD592

5. Unscrew the carburetor cap; then lift the cap removing the throttle valve, spring, and jet needle. Account for a gasket, a needle clip plate, and a needle clip.



CD594

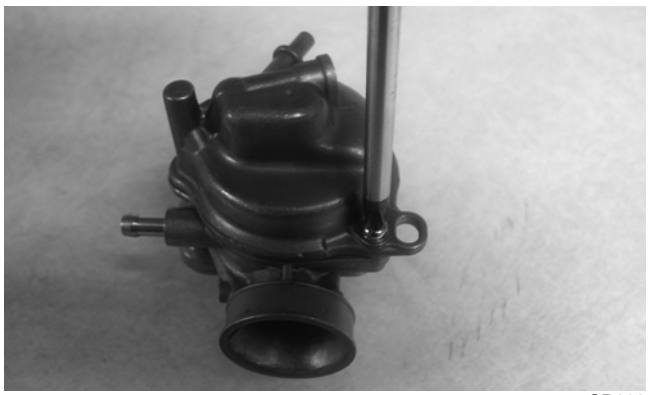
6. Disconnect the choke assembly connector; then remove the carburetor.



CD591

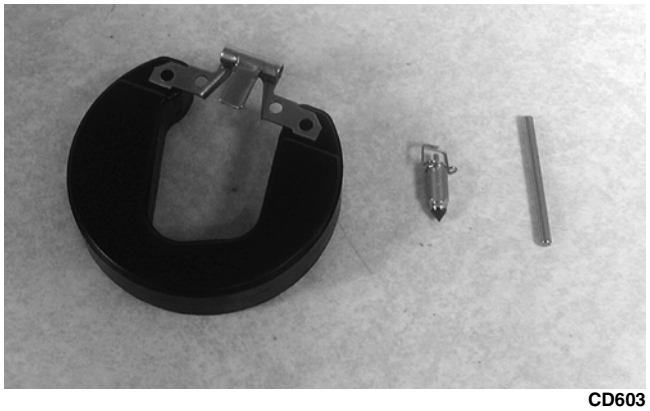
DISASSEMBLING

1. Remove the two Phillips-head screws securing the choke assembly; then remove the assembly. Account for the washers and the O-ring.
2. Remove the Phillips-head screws securing the float chamber; then remove the chamber. Account for the seal and the washers.



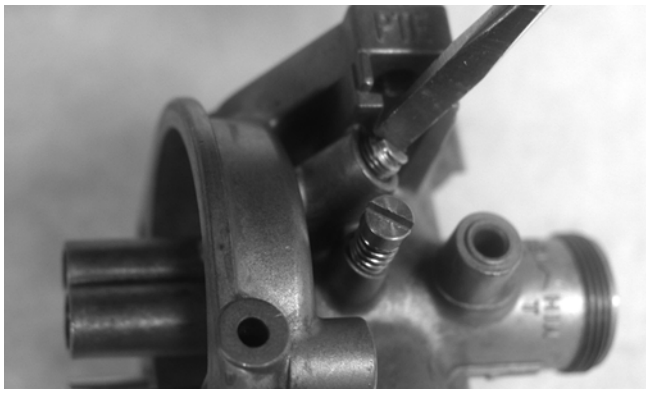
CD600

3. Remove the float pin; then lift the float with needle valve from the carburetor body.



CD603

4. Remove the pilot screw assembly. Account for a spring and O-ring.

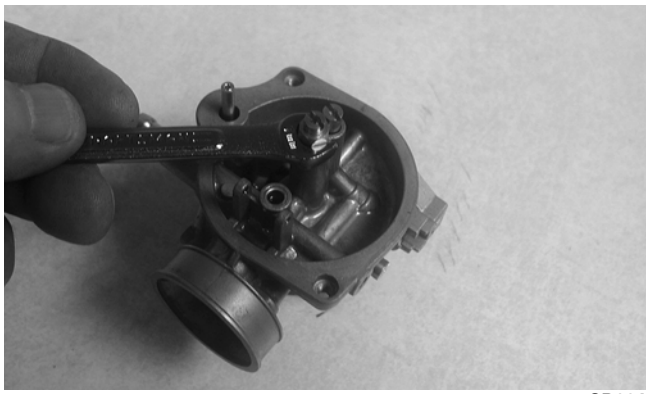


CD608

5. Remove the idle adjustment screw assembly. Account for a spring.

CD610

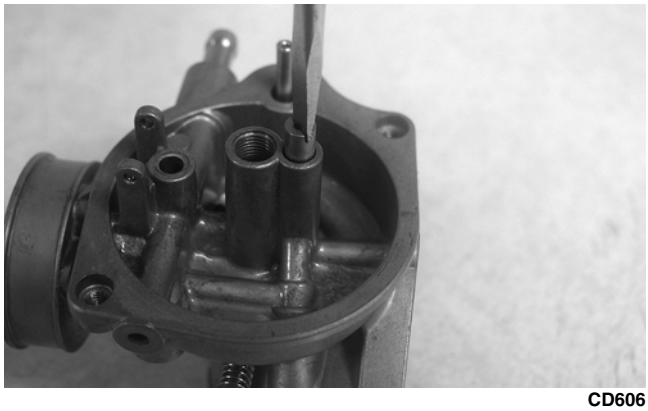
6. Remove the jet holder; then remove the main jet from the jet holder.



CD604

CD605

7. Remove the slow jet.



CD606

CLEANING AND INSPECTING

■NOTE: Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

⚠ WARNING

When drying components with compressed air, always wear safety glasses.

CAUTION

DO NOT place any non-metallic components in parts-cleaning solvent because damage or deterioration will result.

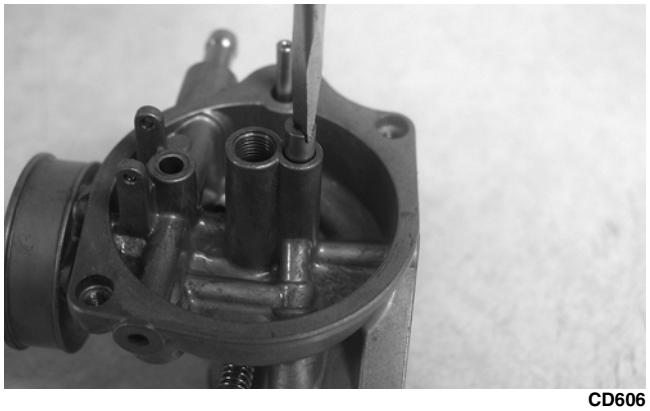
1. Place all metallic components in a wire basket and submerge in carburetor cleaner.
2. Soak for 30 minutes; then rinse with fresh parts-cleaning solvent.
3. Wash all non-metallic components with soap and water. Rinse thoroughly.
4. Dry all components with compressed air only making sure all holes, orifices, and channels are unobstructed.
5. Inspect the carburetor body for cracks, nicks, stripped threads, and any other imperfections in the casting.
6. Inspect float for damage.
7. Inspect gasket, seal, and O-rings for distortion, tears, or noticeable damage.
8. Inspect tips of the jet needle, pilot screw, and the needle valve for wear, damage, or distortion.
9. Inspect the slow jet and main jet for obstructions or damage.

■NOTE: If the slow jet is obstructed, the mixture will be extremely lean at idle and part-throttle operation.

10. Inspect the choke assembly for wear or damage.

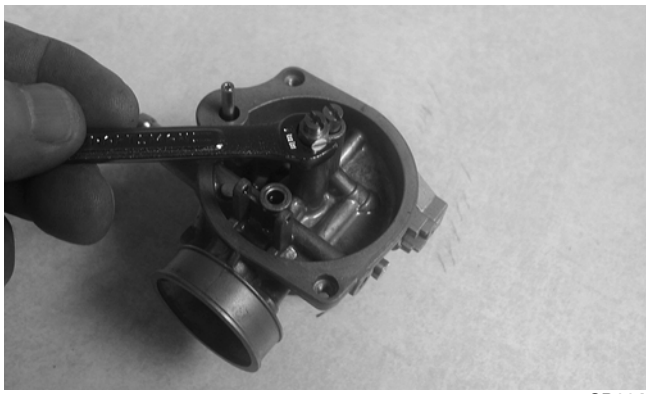
ASSEMBLING

1. Install the slow jet.



CD606

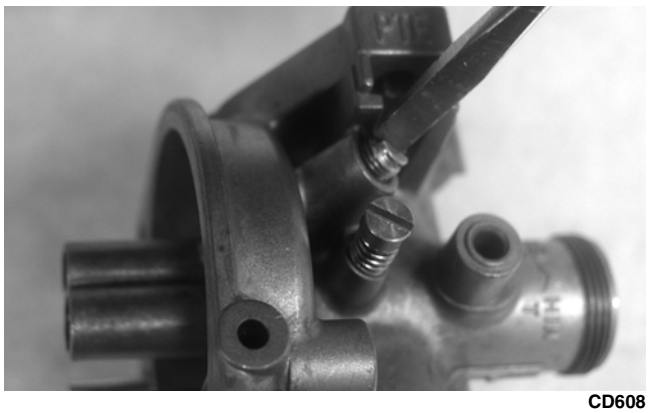
2. Install the main jet by threading it into the jet holder; then install the jet holder into the carburetor. Tighten both components securely.



CD604

3. Install the pilot screw with spring and O-ring.

■NOTE: A thin application of lightweight oil will help to seat the O-ring properly.



CD608

Manual
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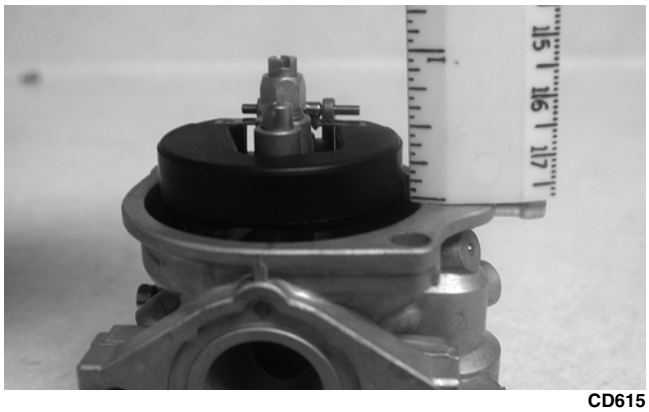
■NOTE: Turn the pilot screw clockwise until it is lightly seated; then turn it counterclockwise the recommended number of turns as an initial setting.

4. Install the idle adjustment screw with the spring.
5. Install the float and needle valve assembly into the carburetor; then install the float pin.

CD763

■NOTE: Check float arm height by inverting the carburetor freeing the float arm; then measure with a ruler the height when the float arm is in contact with the needle valve. Float arm height should be 10.2 mm (0.40 in.). To adjust, bend the actuator arm tab.



CD615

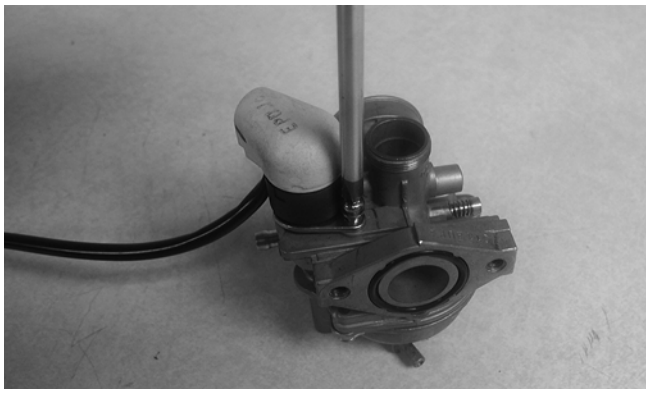
6. Install the float chamber seal.

CD601

7. Place the float chamber into position making sure the seal is properly seated; then secure with the Phillips-head screws and washers.

CD600

8. Install the choke assembly. Tighten the two Phillips-head screws (with washers) securely.



CD598

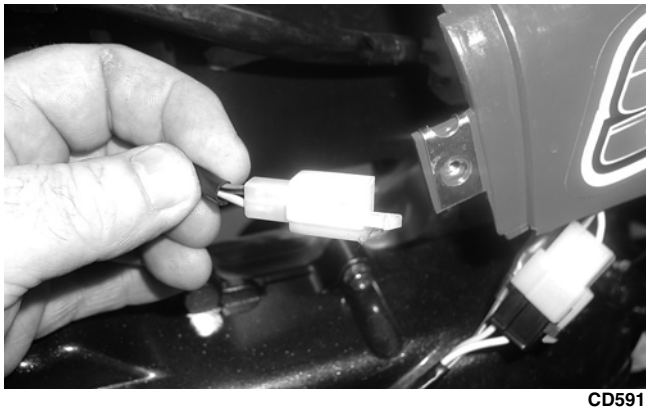
9. Insert the throttle cable into the top of the cap assembly and through the spring.
10. Compress the spring to expose the end of the throttle cable; then hook the end of the cable into the throttle valve. Release tension on the spring to hold the throttle cable.

INSTALLING

1. Install the throttle valve into the carburetor with the machined groove engaging the guide pin; then install the jet needle, needle clip, needle clip plate, and gasket.
2. Thread the carburetor cap onto the carburetor; then tighten securely.

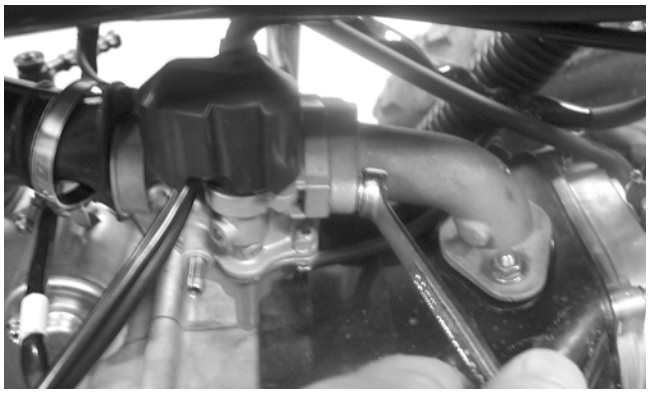
CD594

3. Connect the choke assembly connector.

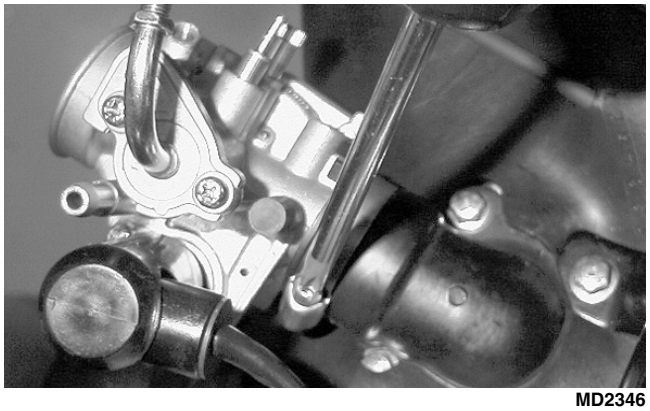


CD591

4. Install the carburetor onto the intake manifold; then tighten the cap screws securely.



CD592



MD2346

5. Install the air intake boot between the air filter and the carburetor. Secure with the clamp.

CD589

6. Install the float chamber drain hose and the vent hose to the carburetor.
7. Install the gas hose onto the carburetor.

CD588

Throttle Cable Free-Play

To adjust the throttle cable free-play, use the following procedure.

1. Pull back rubber boot to access cable adjustment nut.

KM071A

2. Loosen jam nut to allow cable adjustment nut to be adjusted.
3. Turn cable adjustment nut clockwise to increase free-play in the cable. Turn the adjustment nut counter-clockwise to decrease free-play in the cable.
4. There should be approximately 6 mm (0.25 in.) free-play in the cable.
5. Tighten the jam nut to secure the adjustment; then slide the rubber boot back into position.

Engine RPM (Idle)

To properly adjust the idle RPM, a tachometer is necessary. To adjust idle RPM, use the following procedure.

1. Set the brake lever locks. Start the engine and warm it up to normal operating temperature.

CAUTION
Make sure the engine is fully warm before adjusting the idle RPM.

2. Turn the idle adjustment screw in or out until the engine idles at 1700 RPM.

YT015B

⚠ WARNING

Adjust the idle to the correct RPM. Make sure the engine is at normal operating temperature before adjusting the idle RPM.

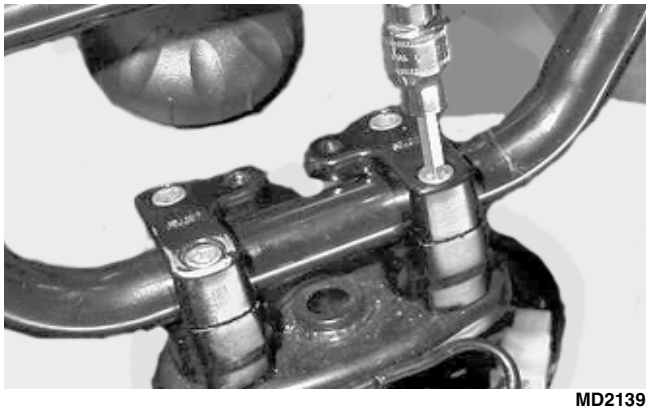
Gas Tank

⚠ 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.

REMOVING

1. Turn the gas tank valve to the OFF position.
2. Remove the gas hose from the carburetor by removing the spring clamp; then funnel the gas hose into an appropriate container of sufficient size to catch all the gas from the gas tank.
3. Turn the gas tank valve to the RES position and drain the gas from the gas tank.
4. Remove the seat.
5. Remove the top handlebar caps.

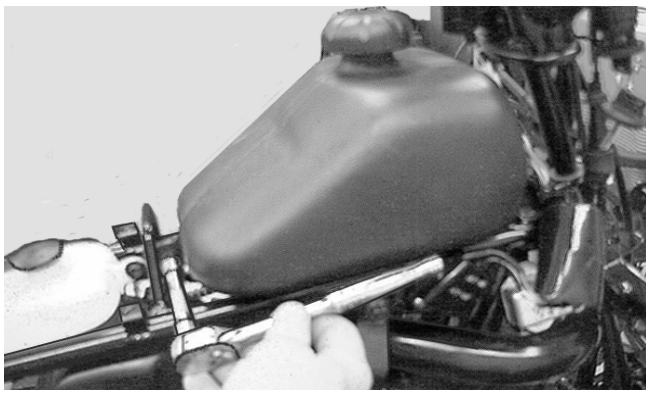


MD2139

6. Carefully lay the handlebar assembly forward on the front fender panel.

■NOTE: To access the gas tank, it is necessary to move the front fender panel, which requires removing the handlebar from its clamp. However, the levers, controls, cables, and wires do not need to be disconnected. The front fender panel and handlebar assembly can be tilted forward far enough to gain access to the gas tank.

7. Remove the four Phillips-head cap screws and six nuts securing the front fender panel. Account for eight washers.
8. Remove the gas tank cap; then tilt the front fender panel and handlebar forward.
9. Remove the two cap screws securing the gas tank; then lift the gas tank and secure it out of the way.

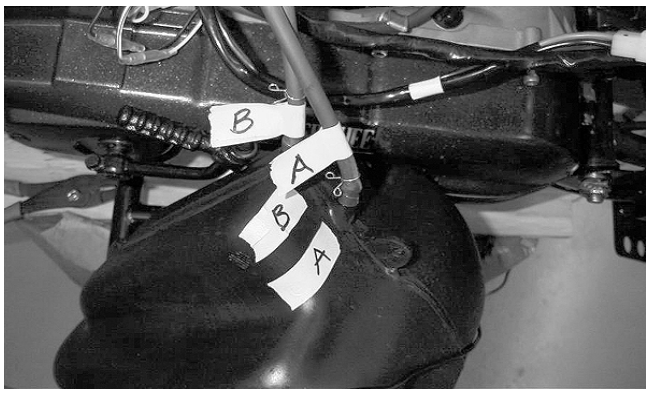


MD2393

10. Remove the gas hoses from the gas tank valve noting where each one is attached.

MD1865

■NOTE: Mark the gas hoses for assembling purposes.



MD1848

CLEANING AND INSPECTING

■NOTE: Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Clean all gas tank components with parts-cleaning solvent.
2. Inspect all hoses for cracks or leaks.
3. Inspect gas tank cap and tank for leaks, holes, and damaged threads.

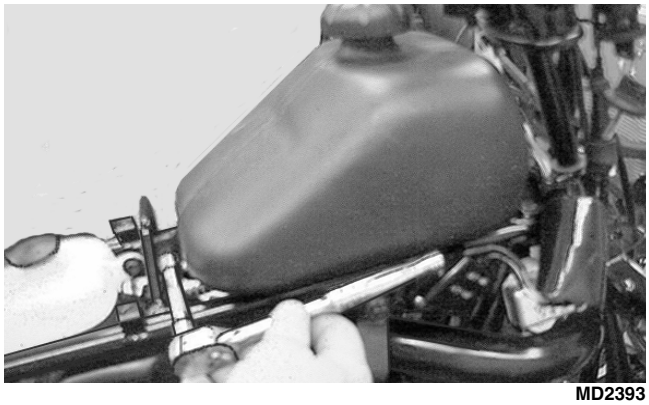
INSTALLING

1. Place the gas tank into position on the frame; then install the gas hoses to the gas tank valve on the frame according to the tags made during removing.

MD2394

2. Install and tighten the gas tank cap screws securely.

■NOTE: Do not over-tighten the cap screws securing the gas tank.

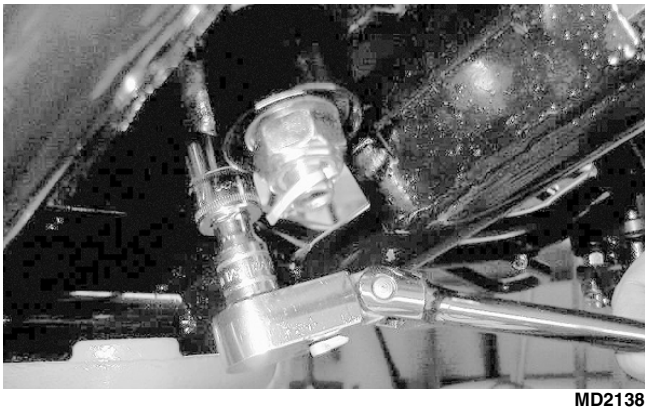


MD2393

3. Install the front fender panel with the eight washers, four Phillips-head cap screws, and six nuts and tighten securely.

■NOTE: Do not over-tighten the cap screws and nuts securing the front fender panel.

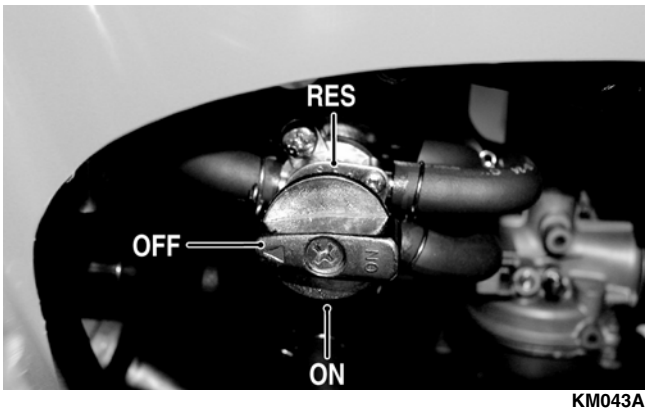
4. Install the gas tank cap.
5. Install the handlebar aligning the pins in the lower clamps with the locating holes in the bottom of the handlebar. Place the top caps into position; then tighten the cap screws to 10 ft-lb.



MD2138

Gas Tank Valve

This ATV has a valve mounted on the side of the frame separate from the gas tank. There are three positions: ON, RES, and OFF.



KM043A

In the OFF position, the valve will not allow gasoline to flow to the carburetor. In the ON position (the normal operating position), gasoline will flow from the tank to the carburetor. In this position, 1.3 L (0.34 U.S. gal.) of gasoline will remain in the tank as a reserve quantity. Moving the valve to the RES position will allow the operator to use the remaining gasoline in the tank. When turning the valve to any of the three positions, be sure the indicator is pointed directly at the position desired.

REMOVING/INSPECTING

⚠ WARNING

Drain the gas tank prior to this procedure.

1. Remove the cap screw securing the valve to the frame; then pull the valve out far enough to gain access to the three gas hoses (two to the gas tank, one to the carburetor).
2. Remove the gas hoses from the valve by releasing the spring clamps.
3. Inspect for and remove any obstructions in the valve.

INSTALLING

1. Install the gas hoses onto the valve with the spring clamps.

2. Place the valve into position on the frame and secure with the cap screw. Tighten securely.

Gas/Vent Hoses

Replace the gas hoses every two years. Damage from aging may not always be visible. Do not bend or obstruct the routing of the carburetor vent hose. Make certain the vent hose is securely connected to the carburetor and the opposite end is always open.

Oil Pump Assembly

For complete servicing of the oil pump, see Right-Side Components in Section 3.

Oil Screen/Filter

For complete servicing of the oil screen/filter, see Section 2 - Engine Oil.

Troubleshooting

Problem: Starting impaired	
Condition	**Remedy**
1. **Carburetor** leaking air 2. **Choke** not operating properly	1. Tighten - adjust carburetor - replace gasket 2. Check choke assembly
Problem: Idling or low speed impaired	
Condition	**Remedy**
1. **Slow jet** obstructed - loose 2. **Needle jet** obstructed 3. **Pilot screw setting** incorrect 4. **Float level** incorrect	1. Clean - tighten jet 2. Clean jet 3. Adjust pilot screw 4. Adjust float arm height
Problem: Medium or high speed impaired	
Condition	**Remedy**
1. **Main jet** obstructed 2. **Needle jet** obstructed 3. **Throttle valve** not operating properly 4. **Filter** obstructed 5. **Float level** incorrect	1. Clean main jet 2. Clean needle jet 3. Check throttle valve operation 4. Clean filter 5. Adjust float arm height
Problem: Overflow and fuel level fluctuations	
Condition	**Remedy**
1. **Needle valve** worn - damaged - dirty 2. **Float** not working properly 3. **Float level** too high - too low	1. Clean - replace needle valve 2. Adjust float arm height - replace float 3. Adjust float arm height

Electrical System

The electrical connections should be checked periodically for proper function. In case of an electrical failure, check fuse, connections (for tightness, corrosion, damage), and/or bulb.

Each time the ATV is used, switches should be checked for proper operation. Use the following list for reference.

A. Ignition switch — engine will start (with brake lever compressed).

B. Emergency stop switch — engine will stop.

C. Brakelight switch — brakelight will illuminate with brake lever(s) compressed.

Specifications

IGNITION		
Ignition Timing		28° BTDC (“F” Mark) @ 4000 RPM
Ignition Type		CDI
Spark Plug Type		CR7HSA
Spark Plug Gap		0.6-0.7 mm (0.024-0.028 in.)
Spark Plug Cap		4725-5775 ohms
Ignition Coil Resistance	(primary) (secondary)	Less than 1 ohm (terminal to terminal) 2830-3170 ohms (high tension - plug cap removed - to ground)
MAGNETO		
Timing Sensor	(peak voltage) (resistance)	1.8-3.8 DC volts (blue/yellow to ground) 80-160 ohms (blue/yellow to ground)
Regulator/Rectifier		12.1-15.2 DC volts@ 3000 RPM (white to black)
CDI/Ignition Coil	(peak voltage)	190-282 DC volts (black/yellow to green)
Stator Coil	(no load)	13.5-16.5 AC volts @3000 RPM (yellow to white)
Stator Coil Resistance		Less than 1 ohm (yellow to white)
Choke Circuit	(voltage)	3.5-4.5 AC volts (yellow to green/black)

Battery

The battery is located under the seat.

After being in service, batteries require regular cleaning and recharging in order to deliver peak performance and maximum service life. The following procedure is recommended for cleaning and maintaining a sealed battery. Always read and follow instructions provided with battery chargers and battery products.

⚠ WARNING

Any time service is performed on a battery, the following must be observed: keep sparks, open flame, cigarettes, or any other flame away. Always wear safety glasses. Protect skin and clothing when handling a battery. When servicing battery in enclosed space, keep the area well-ventilated.

1. Remove the battery hold-down; then disconnect the battery cables (negative cable first).
2. Remove the battery from the battery compartment; then thoroughly wash the battery and battery compartment with soap and water.

■NOTE: If battery posts, cable ends, or the battery case has a build-up of white/green powder residue, apply water and baking soda to neutralize acid; then flush off with warm soapy water.

3. Using a wire brush, clean the battery posts and cable ends removing all corrosive buildup. Replace damaged cables or cable ends.

CAUTION

Do not remove seal strip.

⚠ WARNING

Battery acid is harmful if it contacts eyes, skin, or clothing. Care must be taken whenever handling a battery.

4. Using a multimeter, test the battery voltage. The meter must read at least 12.5 DC Volts for a fully charged battery.

■NOTE: At this point if the meter reads as specified, the battery may be returned to service (see step 8).

5. If the meter reads less than specified voltage, charge the battery using the following guidelines.

A. When using an automatic battery charger, always follow the charger manufacturer’s instructions.

B. When using a constant-current battery charger, use the following Battery Charging Chart.

CAUTION

Never exceed the standard charging rate.

⚠ WARNING

An overheated battery could explode causing severe injury or death. Always monitor charging times and charge rates carefully. Stop charging if the battery becomes very warm to the touch. Allow it to cool before resuming charging.

Battery Charging Chart (Constant-Current Charger)		
Battery Voltage (DC)	Charge State	Charge Time Required (at 1.5-2.0 Amps)
12.5 or more	100%	None
12.2-12.4	75%-99%	3-6 hours
12.0-12.2	50%-74%	5-11 hours
11.0-11.9	25%-49%	13 hours (minimum)
11.5 or less	0-24%	20 hours (minimum)

■NOTE: If the battery voltage is 11.5 DC Volts or less, some chargers may “cut off” and fail to charge. If this occurs, connect a fully charged booster battery in parallel (positive to positive and negative to negative) for a short period of time with the charger connected. After 10-15 minutes, disconnect the booster battery leaving the charger connected and the charger should continue to charge. If the charger “cuts off,” replace the battery.

6. After charging the battery for the specified time, remove the battery charger and allow the battery to sit for 1-2 hours.
7. Connect the multimeter and test the battery voltage. The meter should read at least 12.5 DC Volts. If the voltage is as specified, the battery is ready for service.

■NOTE: If voltage in step 7 is below specifications, charge the battery an additional 1-5 hours; then retest.

8. Place the battery in the battery compartment; then coat the battery posts and cable ends with a light coat of multi-purpose grease.

CAUTION
Before installing the battery, make sure the ignition switch is in the OFF position.

9. Connect the battery cables (positive cable first); then install the battery hold-down.

CAUTION
Connecting cables in reverse (positive to negative and negative to positive) can cause serious damage to the electrical system.

Testing Electrical Components

All of the electrical tests should be made using the Fluke Model 77 Multimeter (p/n 0644-559). If any other type of meter is used, readings may vary due to internal circuitry. When troubleshooting a specific component, always verify first the fuse is good, the bulb is good, the connections are clean and tight, the battery is fully charged, and all appropriate switches are activated.

■NOTE: For absolute accuracy, all tests should be made at room temperature (approximately 68° F).

Timing Sensor

Disconnect the three-wire connector next to the steering post.

PEAK VOLTAGE

■NOTE: All of the peak voltage tests should be made using the Fluke Model 77 Multimeter (p/n 0644-559) with Peak Voltage Reading Adapter (p/n 0644-307). If any other type of tester is used, readings may vary due to internal circuitry.

■NOTE: The battery must be at full charge for this test.

1. Set the meter selector to the DC Voltage position.
2. Connect the red tester lead to the blue/yellow wire; then connect the black tester lead to a suitable ground.
3. Crank the engine over using the electric starter. The meter must read 1.8-3.8 DC volts.

RESISTANCE

1. Set the meter selector to the OHMS position.
2. Connect the red tester lead to the blue/yellow wire; then connect the black tester lead to a suitable ground.
3. The meter must read 80-160 ohms.

CDI/Ignition Coil

Disconnect the wires at the coil.

PEAK VOLTAGE

■NOTE: All of the peak voltage tests should be made using the Fluke Model 77 Multimeter (p/n 0644-559) with Peak Voltage Reading Adapter (p/n 0644-307). If any other type of tester is used, readings may vary due to internal circuitry.

■NOTE: The battery must be at full charge for this test.

1. Set the meter selector to the DC Voltage position.
2. Connect the red tester lead to the black/yellow wire; then connect the black tester lead to the green wire.
3. Crank the engine over using the electric starter. The meter must read 190-282 DC volts.

Stator Coil

Disconnect the three-wire connector in front of the steering post; then insert a jumper wire to connect the timing sensor to the harness (blue/yellow wire).

VOLTAGE (No Load)

1. Set the meter selector to the AC Voltage position.
2. Connect the red tester lead to the yellow wire; then connect the black tester lead to the white wire.
3. With the rear axle supported and the wheels off the floor, start the engine and run at 3000 RPM or to the RPM limiter. The meter must read 13.5-16.5 AC volts.

RESISTANCE

1. Set the meter selector to the OHMS position.
2. Connect the red tester lead to the yellow wire; then connect the black tester lead to the white wire.
3. The meter must read less than 1 ohm.

Choke Circuit

Disconnect the white two-pin connector adjacent to the steering post.

CHOKE VOLTAGE

■NOTE: The battery must be at full charge for this test.

1. Set the meter selector to the AC Voltage position.
2. Connect the red tester lead to the yellow wire; then connect the black tester lead to the green/black wire.
3. Crank the engine over using the electric starter. The meter must read 3.5-4.5 AC volts.

Brakelight Switch

The switch connector is the two individual single connectors located beneath the left-front fender.

■NOTE: The ignition switch must be in the ON position.

VOLTAGE (Wiring Harness Connector)

1. Set the meter selector to the DC Voltage position; then turn the ignition switch to the ON position.
2. Connect the red tester lead to the green/yellow wire; then connect the black tester lead to a suitable ground.
3. The meter must read battery voltage.

■NOTE: If the meter reads no battery voltage, troubleshoot the battery, fuse, switch, or the main wiring harness.

■NOTE: If the meter reads battery voltage, the main wiring harness is good; test the switch/component, the connector, and the switch wiring harness for resistance.

RESISTANCE (Brakelight Switch Connector)

CAUTION

Always disconnect the battery when performing resistance tests to avoid damaging the multimeter.

■NOTE: The brake lever must be compressed for this test. Also, the ignition switch must be in the OFF position.

1. Set the meter selector to the OHMS position.
2. Connect the red tester lead to the black wire; then connect the black tester lead to the green/yellow wire.
3. When the lever is compressed, the meter must read less than 1 ohm.

■NOTE: If the meter reads more than 1 ohm of resistance, troubleshoot or replace the switch/component, the connector, or the switch wiring harness.

Fuse

The main (7 amp) fuse is located on the frame near the battery under the seat.

■NOTE: To remove the fuse, compress the locking tabs on either side of the fuse case and lift out.

If there is any type of electrical system failure, always check the fuse first.

CAUTION

Always replace a blown fuse with a fuse of the same type and rating.

CAUTION

Always disconnect the battery when performing resistance tests to avoid damaging the multimeter.

1. Set the meter selector to the OHMS position.
2. Connect the red tester lead to one spade end of the fuse; then connect the black tester lead to the other spade end.
3. The meter must read less than 1 ohm resistance. If the meter reads open, replace the fuse.

■NOTE: Make sure the fuse is returned to its proper position according to amperage.

Ignition Coil

The ignition coil is attached to the upper frame behind the left-side of the front fender panel. The coil can be accessed inside the front-left fender well.

CAUTION

Always disconnect the battery when performing resistance tests to avoid damaging the multimeter.

■NOTE: For these tests, the meter selector should be set to the OHMS position.

PRIMARY WINDING RESISTANCE

1. Disconnect the black/yellow and green wires from the coil.
2. Connect the red tester lead to one terminal; then connect the black tester lead to the other terminal.
3. The meter must read less than 1 ohm.

■NOTE: If the meter does not read as specified, replace ignition coil.

SECONDARY WINDING RESISTANCE

1. Connect the red tester lead to the high tension lead (plug cap removed); then connect the black tester lead to a suitable ground.
2. The meter must read 2830-3170 ohms.

■NOTE: If the meter does not read as specified, replace the ignition coil.

SPARK PLUG CAP RESISTANCE

1. Connect the red tester lead to one end of the cap; then connect the black tester lead to the other end of the cap.

2. The meter must read 4725-5775 ohms.

■NOTE: If the meter does not read as specified, replace the spark plug cap.

Ignition Switch

The connector is accessible below the front fender panel in front of the steering post.

VOLTAGE

■NOTE: Perform this test on the harness side of the connector.

1. Set the meter selector to the DC Voltage position.
2. Connect the red meter lead to the red wire; then connect the black meter lead to a suitable ground.
3. Meter must read battery voltage.

■NOTE: If the meter reads no battery voltage, troubleshoot the battery, fuse, or the main wiring harness.

RESISTANCE

CAUTION

Always disconnect the battery when performing resistance tests to avoid damaging the multimeter.

■NOTE: Perform this test on the switch side of the connector.

1. Turn the ignition switch to the ON position.
2. Set the meter selector to the OHMS position.
3. Connect the red tester lead to the red wire; then connect the black tester lead to the green/yellow wire.
4. The meter must read less than 1 ohm.
5. Connect the red tester lead to the red wire; then connect the black tester lead to the green wire.
6. The meter must read less than 1 ohm.
7. With the switch in the OFF position, connect the red tester lead to the red wire and the black tester lead to each of the remaining wires. The meter must read an open circuit on both wires.

■NOTE: If the meter reads more than 1 ohm of resistance, troubleshoot or replace the switch/ component, the connector, or the switch wiring harness.

Handlebar Control Switches

The connector is in front of the steering post. The connector is accessible beneath the front fender.

■NOTE: These tests should be made on the switch side of the connector.

CAUTION

Always disconnect the battery when performing resistance tests to avoid damaging the multimeter.

RESISTANCE (Starter Button)

1. Set the meter selector to the OHMS position.
2. Connect the red tester lead to the yellow/white wire; then connect the black tester lead to the green wire.
3. With the starter button depressed, the meter must read less than 1 ohm.
4. With the starter button released, the meter must read an open circuit.

■NOTE: If the meter does not read as specified, replace the switch/component, connector, or switch harness.

RESISTANCE (Emergency Stop)

1. Set the meter selector to the OHMS position.
2. Connect the red tester lead to the blue/yellow wire; then connect the black tester lead to the green wire.
3. With the switch in the OFF position, the meter must read an open circuit.
4. With the switch in the RUN position, the meter must read less than 1 ohm.

■NOTE: If the meter reads more than 1 ohm of resistance, troubleshoot or replace the switch/component, the connector, or the switch wiring harness.

Magneto Assembly

REMOVING

1. Disconnect the battery.

CAUTION

Always disconnect the negative battery cable from the battery first; then disconnect the positive cable.

2. Remove the flywheel from the engine (see Section 3).
3. Remove the stator and timing sensor from the stator plate.

INSPECTING

1. Check stator for signs of overheating, broken wires, or other damage.
2. Check the timing sensor for broken wires or signs of damage.

INSTALLING

1. Install the timing sensor and stator onto the stator plate. Secure with cap screws lightly coated with red Loctite #271. Tighten to 8 ft-lb.
2. Install the flywheel (see Section 3).

Starter Motor

■NOTE: The starter motor is not a serviceable component. If the motor is defective, it must be replaced.

REMOVING

1. Disconnect the battery.

CAUTION

Always disconnect the negative battery cable from the battery first; then disconnect the positive cable.

2. Remove the starter motor from the engine (see Section 3).
3. Remove the nut securing the positive cable to the starter; then remove the cable from the starter. Account for an O-ring.

INSTALLING

Install the starter motor (see Section 3).

Regulator/Rectifier

The regulator/rectifier is located near the battery.

VOLTAGE

1. Set the meter selector to the DC Voltage position.
2. Test between the black and white wires (with the regulator/rectifier plugged in).
3. With the engine running at a constant 3000 RPM, the meter must read 12.1-15.2 DC volts.

Ignition Timing

The ignition timing cannot be adjusted; however, verifying ignition timing can aid in troubleshooting other components. To verify ignition timing, use the following procedure.

1. Attach the Timing Light (p/n 0644-296) to the spark plug high tension lead; then remove the timing inspection plug from the right-side crankcase cover.
2. Using the Tachometer (p/n 0644-275), start the engine and run at 4000 RPM; ignition timing should be 28° BTDC (“F” mark).
3. Install the timing inspection plug.

If ignition timing cannot be verified, the rotor may be damaged, the key may be sheared, the trigger coil bracket may be bent or damaged, or the CDI unit may be faulty.

Headlights

The connectors are the two-pronged white ones under the front fender assembly.

BULB VERIFICATION

Visually inspect the bulb for broken filaments, blackening, or loose bulb base.

VOLTAGE

■NOTE: Perform this test on the main harness side of the connectors. The engine must be running for this test.

1. Set the meter to the AC Voltage position.
2. Connect the black tester lead to one side of the connector and the red tester lead to the other side.
3. With the engine running, the meter must show 9.0-13.5 AC volts.

■NOTE: If the meter shows no voltage, inspect wiring harness or connectors. If normal, perform a stator coil test (see Stator Coil in this section).

Troubleshooting

Problem: Spark absent or weak	
Condition	**Remedy**
1. **Ignition coil** defective 2. **Spark plug** defective 3. **Magneto** defective 4. **CDI unit** defective	1. Replace ignition coil 2. Replace plug 3. Replace magneto 4. Replace CDI unit

Problem: Spark plug fouled with carbon	
Condition	**Remedy**
1. **Idle RPM** too high 2. **Gasoline** incorrect 3. **Air filter elemen**t dirty 4. **Spark plug** incorrect (too cold)	1. Adjust carburetor 2. Change to correct gasoline 3. Clean element 4. Replace plug with proper heat range
Problem: Spark plug electrodes overheat or burn	
Condition	**Remedy**
1. **Spark plug** incorrect (too hot) 2. **Engine** overheats 3. **Spark plug** loose	1. Replace plug 2. Check cooling fan air intake blockage - damage to fan - cooling shroud 3. Tighten plug
Problem: Magneto does not charge	
Condition	**Remedy**
1. **Lead wires - connections** shorted - loose - open 2. **Magneto coils** shorted - grounded - open 3. **Regulator/rectifier** shorted - punctured	1. Repair - replace - tighten lead wires 2. Replace magneto coils 3. Replace regulator/rectifier
Problem: Magneto charges, but charging rate is below the specification	
Condition	**Remedy**
1. **Lead wires** shorted - open - loose (at terminals) 2. **Stator coils (magneto)** grounded - open 3. **Regulator/rectifier** defective 4. **Cell plates (battery)** defective	1. Repair - tighten lead wires 2. Replace stator coils 3. Replace regulator/rectifier 4. Replace battery
Problem: Magneto overcharges	
Condition	**Remedy**
1. **Internal battery** short circuited 2. **Regulator/rectifier resistor** damaged - defective 3. **Regulator/rectifier** poorly grounded	1. Replace battery 2. Replace resistor 3. Clean - tighten ground connection
Problem: Charging unstable	
Condition	**Remedy**
1. **Lead wire** intermittently shorting 2. **Magneto** internally shorted 3. **Regulator/rectifier** defective	1. Replace lead wire 2. Replace magneto 3. Replace regulator/rectifier
Problem: Starter button not effective	
Condition	**Remedy**
1. **Battery charge** low 2. **Switch contacts** defective 3. **Starter motor brushes** not seating 4. **Starter relay** defective 5. **Emergency stop - ignition switch** off 6. **Wiring connections** loose - disconnected	1. Charge - replace battery 2. Replace switch 3. Repair - replace brushes 4. Replace relay 5. Turn on switches 6. Connect - tighten - repair connections
Problem: Battery "sulfation" (Acidic white powdery substance or spots on surfaces of cell plates)	
Condition	**Remedy**
1. **Charging rate** too low - too high 2. **Specific gravity** too high - too low 3. **Battery** run down - damaged 4. **Electrolyte** contaminated	1. Replace battery 2. Charge battery 3. Replace battery 4. Replace battery
Problem: Battery discharges too rapidly	
Condition	**Remedy**
1. **Electrolyte** contaminated 2. **Specific gravity** too high 3. **Charging system** (**charging operation**) not set properly 4. **Cell plates** overcharged - damaged 5. **Battery** short circuited 6. **Specific gravity** too low 7. **Electrolyte** contaminated	1. Replace battery 2. Charge battery 3. Check magneto - regulator/rectifier - circuit connections - adjust for specified charging operation 4. Replace battery - correct charging system 5. Replace battery 6. Charge battery 7. Replace battery
Problem: Battery polarity reversed	
Condition	**Remedy**
1. **Battery** incorrectly connected	1. Reverse connections - replace battery

Drive System

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

Drive Chain/Sprockets

CHECKING DRIVE CHAIN AND SPROCKETS

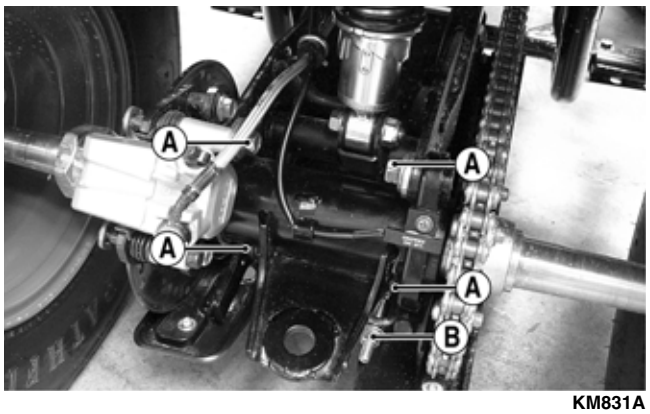
The following drive system components should be inspected periodically to ensure proper operation.

A. Chain (excessive stretch or slack).

B. Sprockets (excessive wear/hooking, missing or broken teeth).

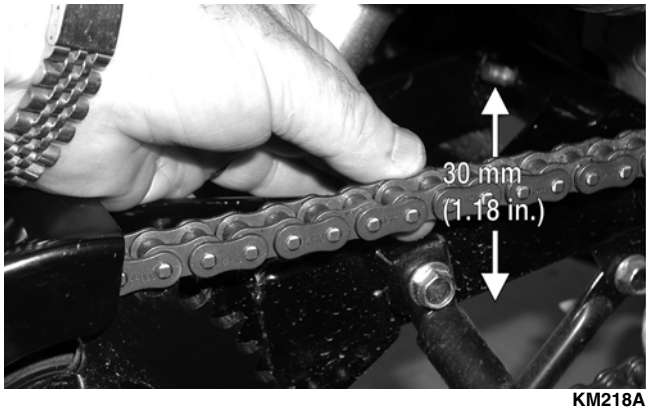
ADJUSTING DRIVE CHAIN

1. Loosen the four cap screws (A) securing the rear axle housing to the rear swing arm.



KM831A

2. Tighten the adjuster nut (B) on the adjusting bolt until approximately 30 mm (1.18 in.) of slack is present at mid-span of the chain.

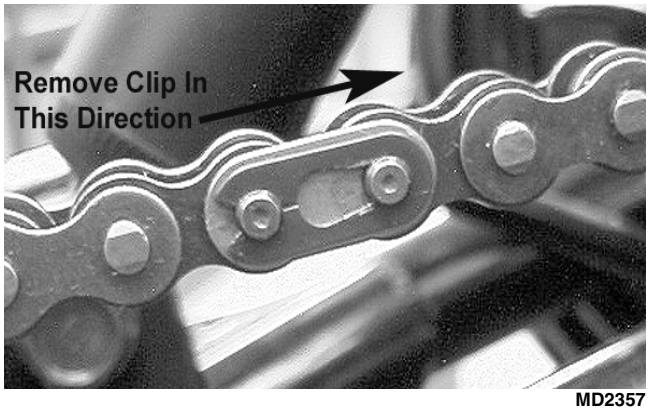


KM218A

3. Tighten the four cap screws.

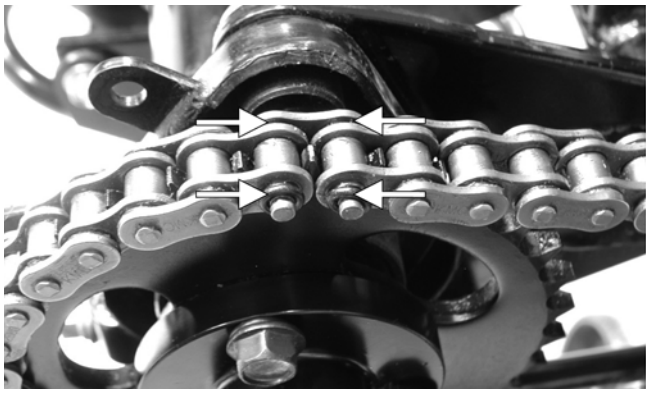
REMOVING DRIVE CHAIN

1. Remove the drive chain master link clip.



MD2357

2. Remove the link plate and link noting the position of the O-rings; then remove the chain.



KM238A

INSTALLING DRIVE CHAIN

1. Place the drive chain into position on the sprockets.
2. Making sure to place the O-rings into position, install the master link, link plate, and link clip.

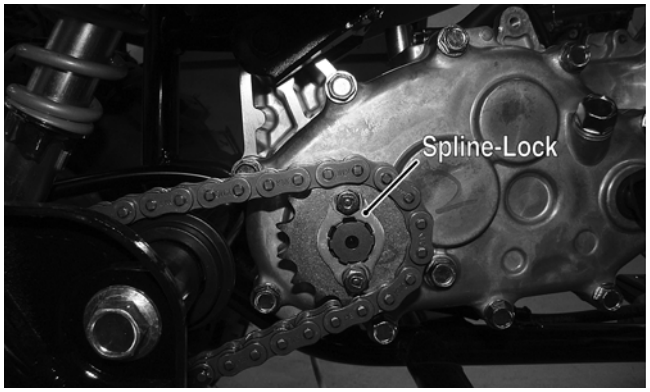
KM238A

■**NOTE: Make sure the closed end of the master link clip faces the direction of the rotation of the chain.**


MD1854

REMOVING FRONT DRIVE SPROCKET

1. With the chain installed and with the rear brake applied, remove the two cap screws securing the spline-lock to the drive sprocket.



YT009A

2. Loosen the drive chain (see Adjusting Drive Chain in this sub-section).
3. Remove the drive sprocket and chain; then remove the sprocket from the chain.

INSTALLING FRONT DRIVE SPROCKET

1. Place the drive sprocket into the drive chain; then slide onto the driveshaft.
2. Install the spline-lock and two cap screws.
3. Adjust the drive chain (see Adjusting Drive Chain in this sub-section).
4. With the rear brake lever lock applied, tighten the cap screws to 8 ft-lb.

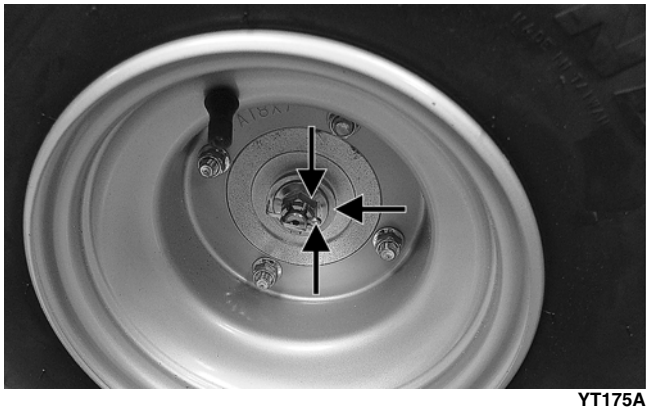
REMOVING REAR SPROCKET

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

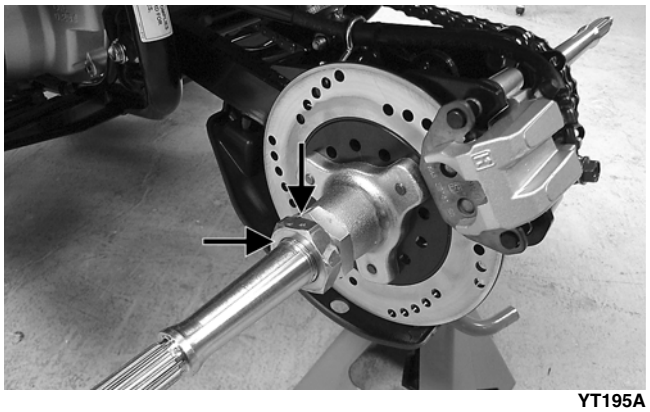
⚠ WARNING

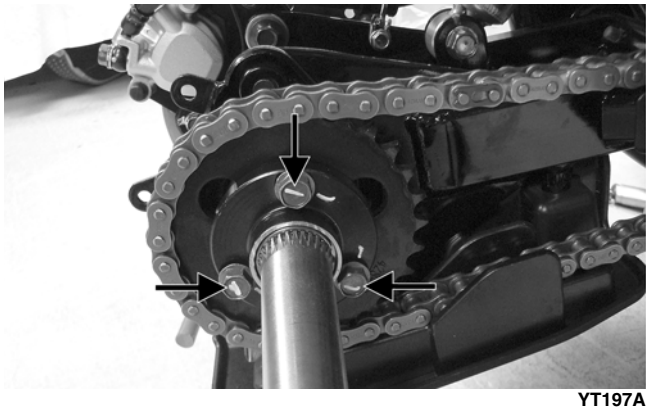
Make sure the ATV is solidly supported on the support stand to avoid injury.

2. Remove the cotter pins from the axle shaft and discard; then apply the rear brake and remove the castle nuts from the axle. Account for the flat washer.


YT175A

3. Remove the left and right rear wheels.
4. Remove the two axle nuts securing the brake hub to the axle; then remove three cap screws securing the rear sprocket to the sprocket retainer.


YT195A


YT197A

■NOTE: It is not necessary to remove the drive chain in order to remove the rear sprocket.

5. Slide the axle shaft out of the housing from left to right leaving the brake disc and hub and rear sprocket in place; then lift the rear sprocket out of the chain.

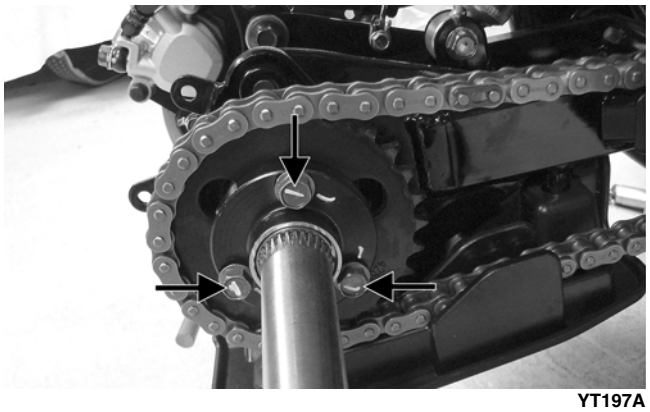
YT198

■**NOTE: It is not necessary to remove the chain guard to remove the rear sprocket.**

INSTALLING REAR SPROCKET

■**NOTE: Grease all splines with multi-purpose grease and inspect all O-rings in the brake hub and sprocket retainer. O-rings should be replaced whenever disassembled.**

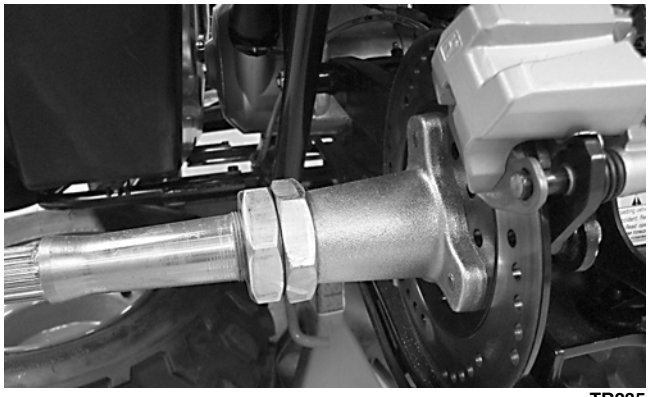
1. Position the sprocket into the chain; then slide the axle with sprocket retainer into the housing from the right side.
2. Secure the rear sprocket to the sprocket retainer with three cap screws and blue Loctite #242 and tighten to 20 ft-lb.



YT197A

3. Coat the axle threads with red Loctite #271 and install one axle nut; then using an appropriate rear axle nut wrench, tighten the inner axle nut to 86 ft-lb.

■**NOTE: Compress the left hand brake and engage the brake lever lock to prevent the rear axle from turning.**



TR235

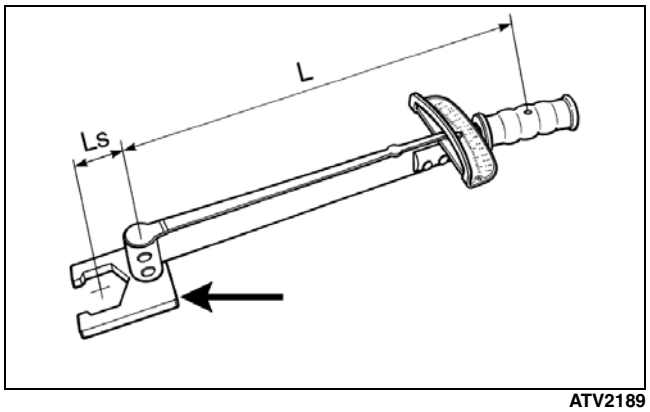
$$\frac{L \times Ts}{L + Ls} = T$$

T: Torque wrench reading to be calculated

Ts: Specified torque value (86 ft-lb)

Ls: Tool offset length (center to center)

L: Length of torque wrench (handle pivot to headcenter)



ATV2189

4. Install the outer axle nut and tighten to 86 ft-lb.
5. Adjust the chain (See Adjusting Drive Chain this sub-section).
6. Install the rear wheels/hubs and secure with two flat washers and castle nuts. Tighten to 58 ft-lb; then install new cotter pins.

■**NOTE: If cotter pin hole and notch in castle nut do not align, tighten the nut until the first notch will align with the cotter pin hole.**

7. Install the rubber hub nut covers and remove the ATV from the support stand.

Rear Hub/Drive Axle

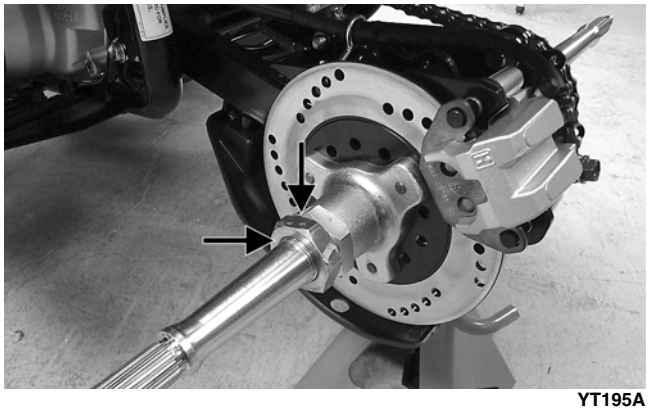
REMOVING REAR HUB/DRIVE AXLE

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

⚠ WARNING

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

2. Remove the cotter pins from the castle nuts on the rear wheel hubs.
3. Remove the rear wheel hub castle nuts; then slide the rear wheels and hubs off together. Account for the washers.
4. Remove the two axle nuts securing the brake hub to the axle.



YT195A

5. Remove the drive chain (see Removing Drive Chain sub-section).
6. Remove the rear sprocket (see steps 4-5 of Removing Rear Sprocket sub-section).
7. Remove the drive axle by sliding it out the right side of the axle housing.

☞ AT THIS POINT

If the technician's objective is to service/replace the drive axle, the axle housing does not have to be removed from the swing arm. The axle can be pulled out the right side of the axle housing. Axle bearings can also be replaced without removing the axle housing from the swing arm, but the rear axle housing cover and brake hub will need to be removed. The axle housing should only be removed if it needs to be serviced or replaced.

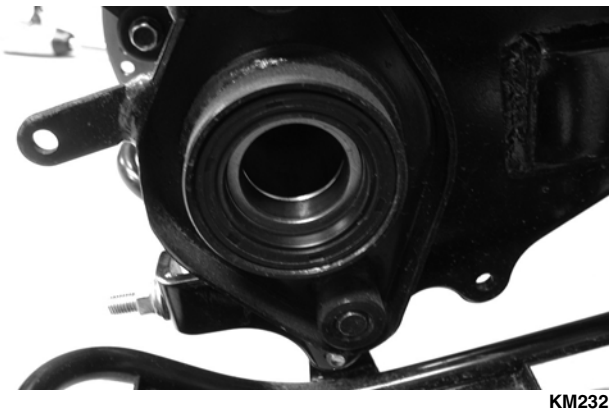
REMOVING BEARINGS AND SEALS

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

⚠ WARNING

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

2. Remove the wheels and hubs (see Removing Rear Hub/Drive Axle in this sub-section).
3. Using an appropriate prying tool, carefully pry out the seals from each side of the axle housing.



KM232

4. Drive out the bearings from the axle housing. Account for center axle housing spacer.

REMOVING AXLE HOUSING

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

⚠ WARNING

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

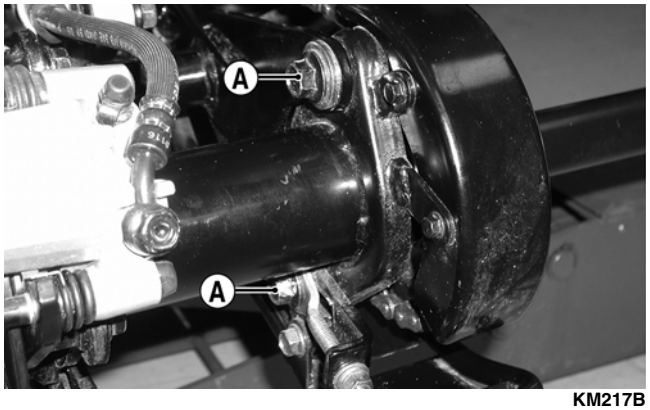
2. Remove two cap screws securing the brake caliper to the axle housing; then lift the caliper off the disc.

KM207

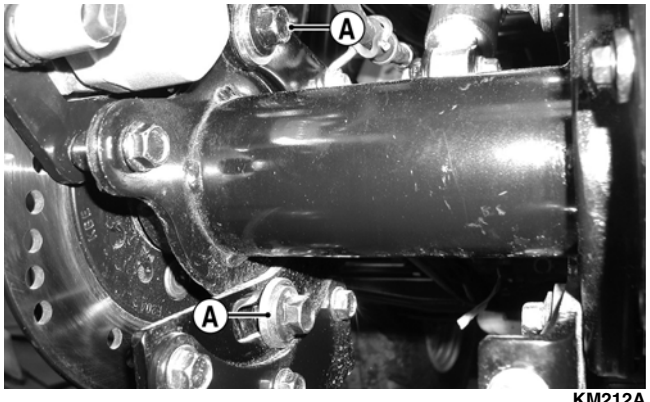
3. Remove drive chain, wheels, hubs, and axle as necessary (see Removing Rear Hub/ Drive Axle in this sub-section).

■NOTE: Do not remove more components than necessary to perform the intended service. The axle housing will separate from the swing arm with all components attached if necessary.

4. Remove the four cap screws (A) securing the axle housing to the swing arm; then remove the axle housing.



KM217B



KM212A

CLEANING AND INSPECTING

■NOTE: Always clean and inspect the drive axle components to determine if any service or replacement is necessary. Replace all components showing signs of wear or damage.

1. Using a clean towel, wipe away any oil or grease.
2. Inspect bearings for smooth operation.
3. Inspect seals for tears, cracks, or deterioration.
4. Inspect splines on axle for damage or wear.
5. Inspect threads on end of axle for damage or stripped threads.
6. Inspect axle for straightness by rolling it on a flat surface and checking for wobble.
7. Inspect axle housing for dents or warpage that might interfere with bearing bore or alignment.

INSTALLING BEARINGS AND SEALS

1. Using a plastic mallet and bearing driver or appropriate size socket, carefully install the first bearing into the axle housing.

KM226

2. Place the center axle housing spacer in the axle housing; then using a plastic mallet, install the second bearing.

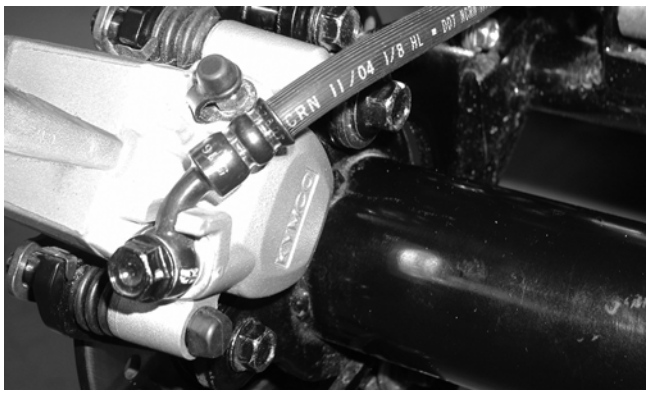
■NOTE: It may be helpful to insert the axle through the previously installed bearing and into the axle housing to align the center axle housing spacer with the bearing bore. Axle installation may be difficult if the spacer is offset from the bearing bore.

3. Apply a light coat of axle bearing grease to the inside (mating surface) of the seals; then using a plastic mallet, install the seals.

KM223

INSTALLING AXLE HOUSING

1. Position axle housing in swing arm; then install and finger-tighten the four cap screws securing the axle housing to the swing arm.
2. Install the brake caliper to the axle housing.



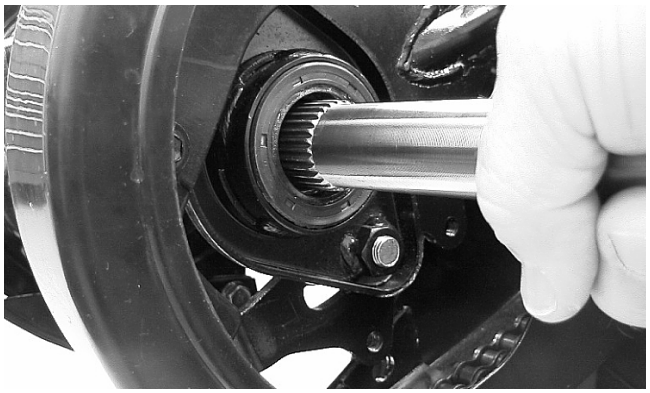
KM207

3. Install the drive chain (see Installing Drive Chain sub-section).
4. Adjust the drive chain slack (see Adjusting Drive Chain sub-section); then tighten the four cap screws (from step 1) to 29 ft-lb.

INSTALLING DRIVE AXLE/REAR HUB

1. Slowly slide the axle into the axle housing.

■NOTE: The axle may have to be turned from side-to-side slightly during installing to get the axle through the center axle housing spacer.

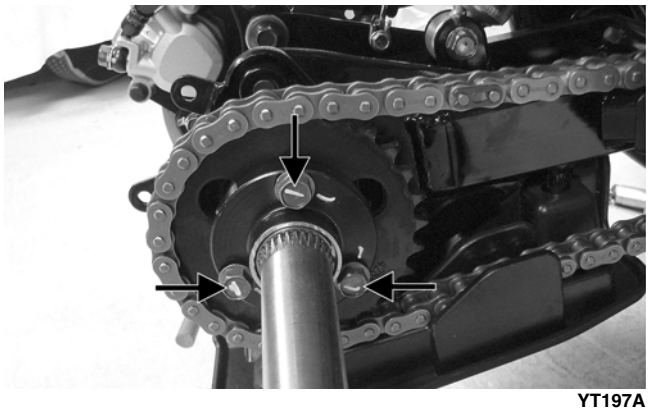


MD2374

2. Slide the axle through the brake disc.

KM234

3. Secure the rear sprocket to the sprocket retainer. Tighten the three cap screws (threads coated with blue Loctite #242) to 20 ft-lb.



YT197A

4. Install the axle nuts securing the brake hub to the axle (see Drive Train/Sprockets - Installing Rear Sprockets in this section).
5. Install the drive chain (see Installing Drive Chain sub-section).
6. Install the rear wheel/hub assemblies. Tighten the castle nuts to 58 ft-lb; then install new cotter pins.

Front Hub

REMOVING HUB

1. Secure the ATV on a support stand to elevate the front wheels; then remove the wheels.

⚠ WARNING

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

2. Remove the cotter pin from the castle nut.

■NOTE: During installing, a new cotter pin should be installed.

3. Remove the castle nut securing the hub. Account for a washer.

MD2133

4. Remove the hub assembly. Account for outer hub spacer.
5. Repeat procedure for other hub.

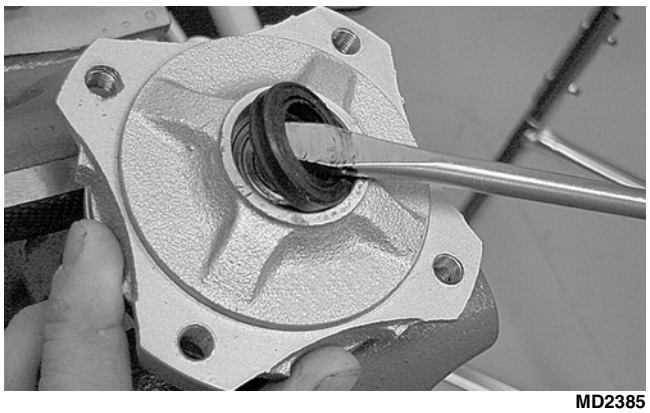
CLEANING AND INSPECTING

■NOTE: Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Clean all hub components.
2. Inspect all threads for stripping or damage.
3. Inspect the brake shoes for excessive wear or gouges.
4. Inspect the sealing area of the hub for pits.
5. Inspect the hub splines for signs of wear.
6. Inspect the hub for cracks.
7. Verify the bearings turn freely.

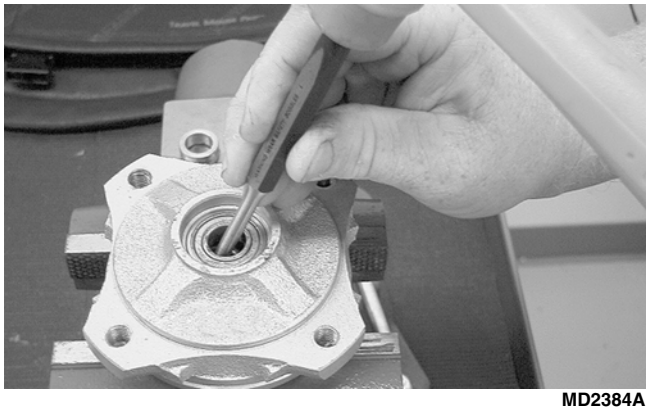
REMOVING HUB BEARINGS AND SEALS

1. Carefully pry out inner and outer seals.



MD2385

2. Drive out the inner and outer bearings. Account for a spacer.



MD2384A

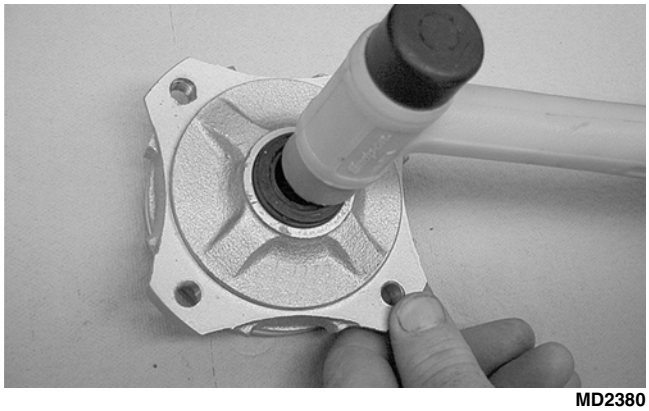
3. Repeat procedure for the other hub.

INSTALLING HUB BEARINGS AND SEALS

1. Lightly lubricate the bearings with bearing grease; then using a plastic mallet and a bearing driver or appropriate size socket, install the inner bearing into the hub.

MD2382

2. Install the inner hub spacer; then install the outer bearing.
3. Using a plastic mallet, install the inner and outer seals into the hub.

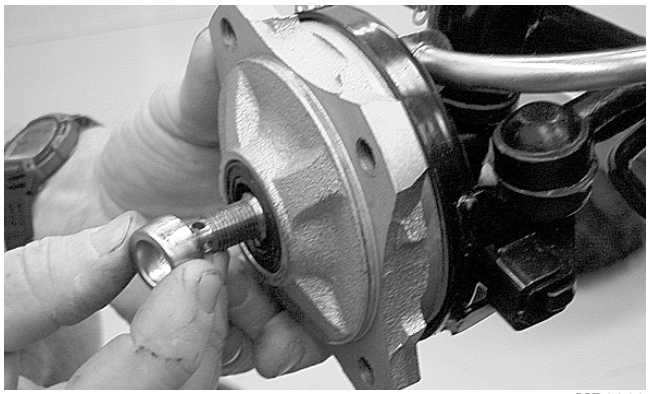


MD2380

4. Repeat procedure for the other hub.

INSTALLING HUB

1. Lightly lubricate the seals with bearing grease; then install the hub assembly.
2. Install the outer spacer, washer, and castle nut. Tighten the castle nut to 45 ft-lb; then install a new cotter pin.



MD2388

MD2354

3. Install wheel. Tighten the four cap screws to 30 ft-lb.
4. Repeat procedure for other hub assembly.

Brake Systems

For information regarding the brake systems, see Section 2.

Troubleshooting

Problem: Power not transmitted from engine to wheels	
Condition	**Remedy**
1. **Drive chain** worn - broken 2. **Countershaft sprocket** worn - broken 3. **Rear sprocket** worn - broken 4. **Chain** slipped off sprockets 5. **Master link** worn - broken - missing	1. Replace chain 2. Replace countershaft sprocket 3. Replace rear sprocket 4. Replace - adjust drive chain 5. Replace master link
Problem: Clutch slipping	
Condition	**Remedy**
1. **Clutch shoes** worn - damaged	1. Replace clutch shoes
Problem: Clutch dragging	
Condition	**Remedy**
1. **Clutch return springs** weak 2. **Clutch** worn - damaged	1. Replace return springs 2. Replace clutch

Suspension

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

A. Shock absorber rods bent, pitted, or damaged.

B. Rubber damper cracked, broken, or missing.

C. Shock absorber body damaged, punctured, or leaking.

D. Shock absorber eyelets broken, bent, or cracked.

E. Shock absorber eyelet bushings worn, deteriorated, cracked, or missing.

F. Shock absorber spring broken or sagging.

Shock Absorbers

REMOVING FRONT SHOCK ABSORBERS

1. Secure the ATV on a support stand to elevate the wheels and to release the load on the suspension.

⚠ WARNING

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

2. Remove the cap screw and self-locking nut securing each front shock absorber to the frame.

MD2131

3. Remove the cap screw and self-locking nut securing each front shock to the A-arms.

MD2132

4. Remove the front shock absorbers.

REMOVING REAR SHOCK ABSORBER

1. Secure the ATV on a support stand to elevate the wheels and to release the load on the suspension.

⚠ WARNING

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

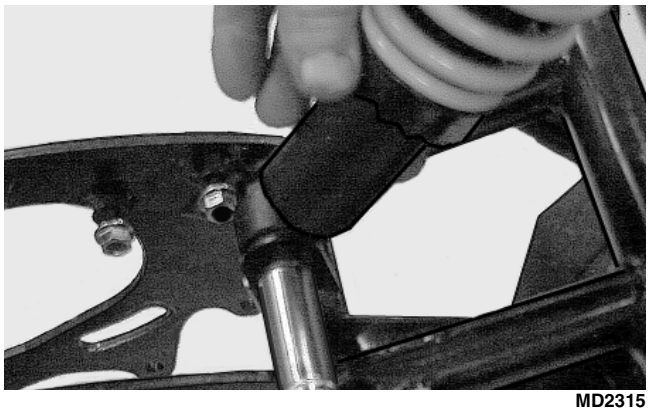
CAUTION

Additional support stands are necessary to support the rear axle when the shock absorbers are removed or damage may occur.

2. Remove the cap screw securing the rear shock absorber to the frame.

MD2314

3. Remove the cap screw securing the rear shock absorber to the swing arm; then remove the rear shock absorber.



MD2315

4. Compress the shock absorber spring and remove the spring retainer. Remove the spring and spring preload adjuster.

CLEANING AND INSPECTING

■NOTE: Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Clean all shock absorber components.

2. Inspect each shock rod for nicks, pits, rust, bends, and oily residue.

3. Inspect all springs, spring retainers, shock rods, dampers, bushings, shock bodies, and eyelets for cracks, leaks, and bends.

INSTALLING FRONT SHOCK ABSORBERS

1. Place a shock absorber into position on the frame and A-arm and install the two cap screws and self-locking nuts. Tighten the nuts to 29 ft-lb.

MD2131

MD2132

2. Repeat the procedure for the other front shock absorber.

CAUTION

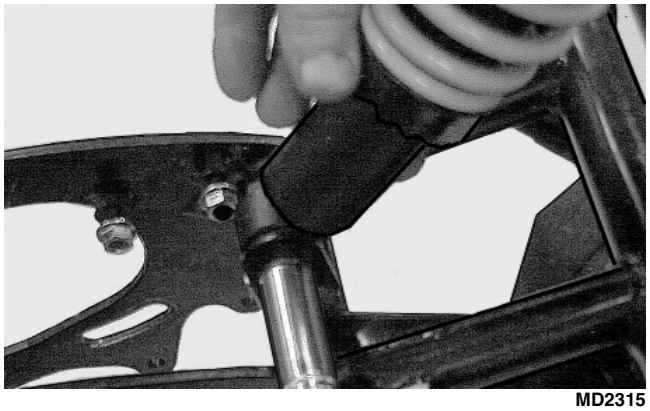
Do not tighten the nuts beyond the 29 ft-lb specification or the shock eyelet or mount WILL be damaged.

3. Remove the ATV from the support stand.

INSTALLING REAR SHOCK ABSORBER

1. Place the spring preload adjuster and spring over the shock absorber. Compress the spring and install the retainer.
2. Place the shock absorber into position on the frame and swing arm and install the two cap screws. Tighten the cap screws to 29 ft-lb.

MD2314



MD2315

CAUTION

Do not tighten the cap screws beyond the 29 ft-lb specification or the shock eyelet or mount WILL be damaged.

3. Remove the ATV from the support stand.

A-Arm

REMOVING

1. Secure the ATV on a support stand to elevate the front wheel; then remove the wheel.

⚠ WARNING

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

2. Remove the cotter pin, castle nut, and washer; then remove the hub assembly.

MD2133

3. Slide brake backing plate assembly off the spindle shaft and secure it out of the way.
4. Remove the cotter pin from the outer tie rod end; then while holding the flat on the tie rod end, remove the castle nut.

MD2428

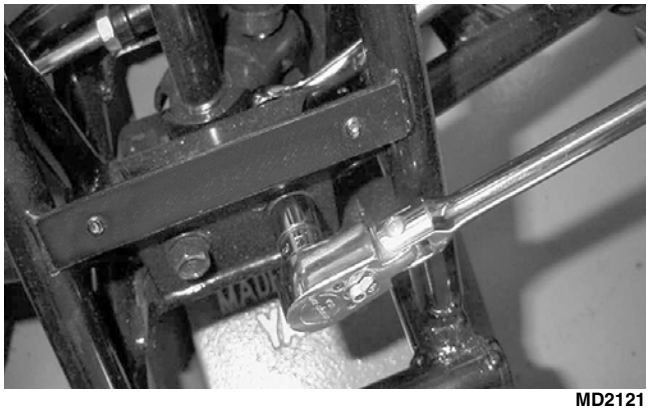
5. Remove the tie rod end from the steering knuckle.
6. Remove the rubber spindle pin boot; then remove the cotter pin and flanged castle nut from the spindle pin. Lower the steering knuckle assembly from the A-arm.

MD2113

7. Remove the cap screw and self-locking nut securing the shock absorber to the A-arm.

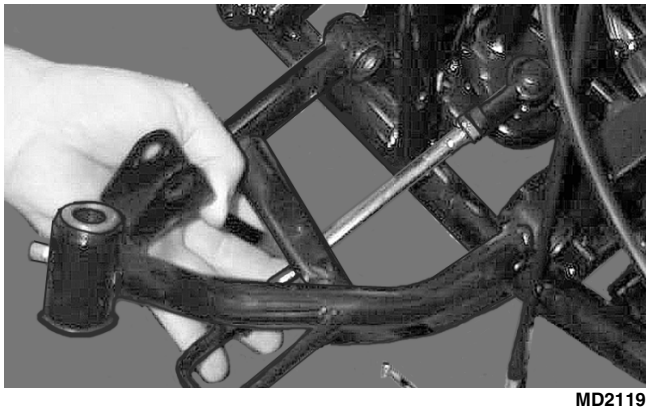
MD2132

8. Remove the cap screws and self-locking nuts securing the A-arm to the frame.



MD2121

9. Remove the A-arm.



MD2119

CLEANING AND INSPECTING

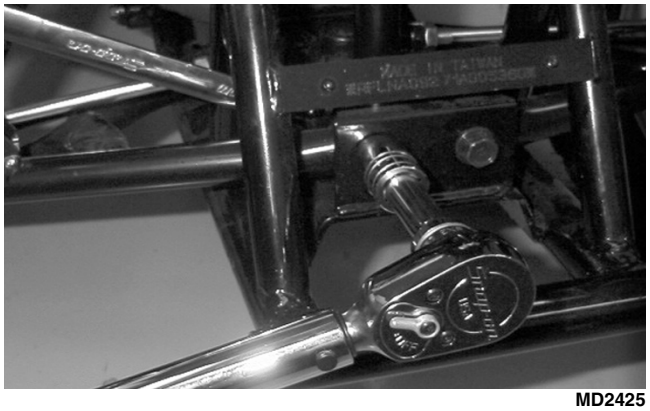
■NOTE: Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Clean all A-arm components in parts-cleaning solvent.
2. Clean the tie rod mounting hole of all residual Loctite, grease, oil, or dirt for installing purposes.
3. Inspect the A-arm for bends, cracks, and worn bushings.
4. Inspect the tie rod mounting holes for cracks or damage.
5. Inspect the frame mounts for signs of damage or wear.

INSTALLING

■NOTE: During installing, new cotter pins should be installed.

1. Lubricate the A-arm bushings with grease; then install the A-arm into the frame. Install the cap screws and self-locking nuts. Tighten the nuts to 29 ft-lb.

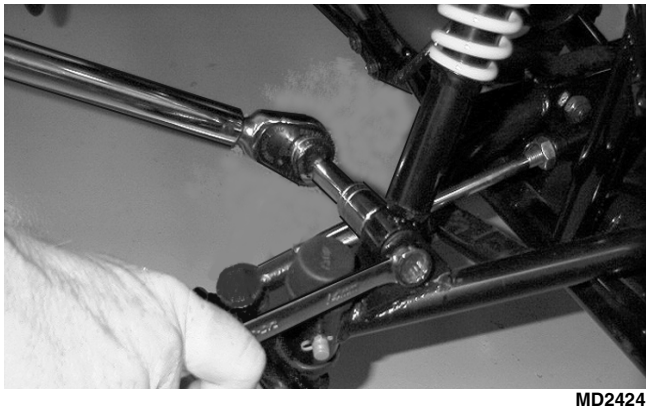


MD2425

2. Secure the shock absorber to the A-arm with the cap screw and self-locking nut. Tighten the nut to 29 ft-lb.

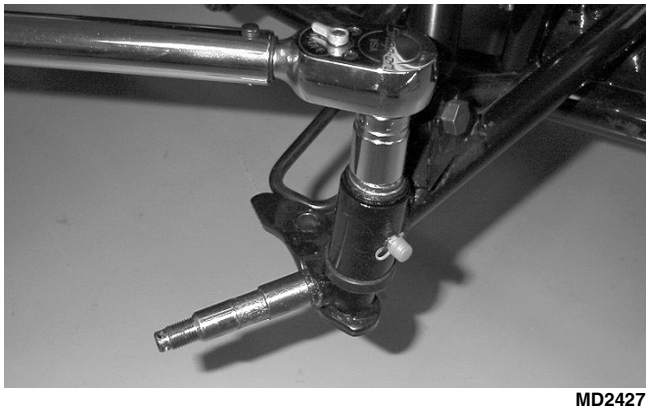
CAUTION

Do not tighten the nut beyond the 29 ft-lb specification or the shock eyelet or mount WILL be damaged.



MD2424

3. Lubricate the steering knuckle assembly with grease; then install it into the A-arm and secure with the flanged castle nut. Tighten the nut to 29 ft-lb; then install a new cotter pin and the rubber spindle pin boot.



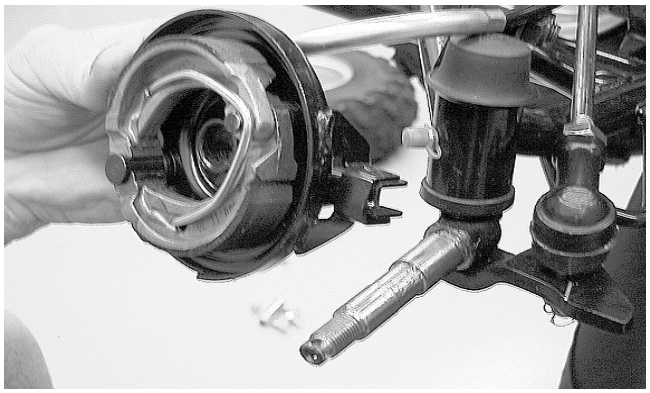
MD2427

4. Install the tie rod end into the steering knuckle and secure it with the self-locking nut. Tighten the nut to 25 ft-lb; then install a new cotter pin.

MD2426

5. Apply a light coat of grease to spindle shaft; then install the brake backing plate assembly onto the shaft.

■NOTE: When installing the brake backing plate assembly, be sure to align the notch in the backing plate with the tab on the steering knuckle.



MD2381

6. Place the hub assembly onto the spindle; then install the washer and castle nut. Tighten the castle nut to 45 ft-lb; then install a new cotter pin. Install the wheel and tighten the cap screws to 30 ft-lb.

7. Remove the ATV from the support stand.

⚠ WARNING

After removing and installing brake-related components, ALWAYS check and adjust brakes as necessary before operating the ATV.

Swing Arm

REMOVING

1. Secure the ATV on a support stand to elevate the rear wheels; then remove the wheels.

⚠ WARNING

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

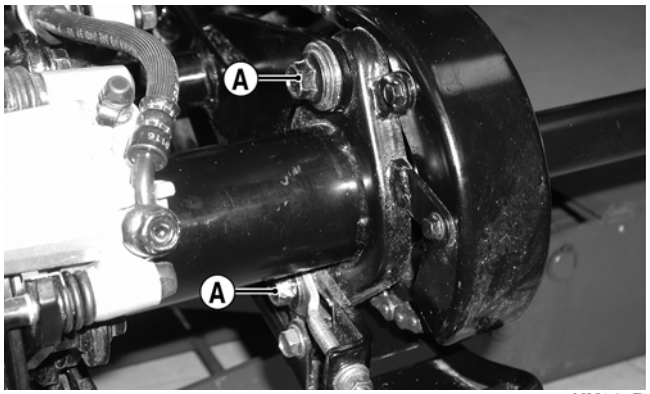
2. Remove two cap screws securing the brake caliper to the axle housing.

KM207

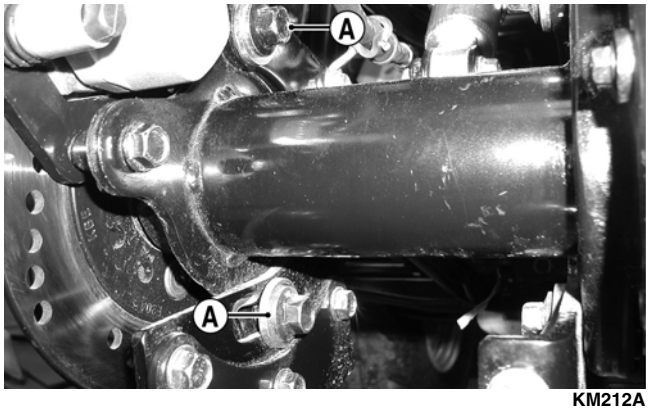
3. Remove drive chain, hubs, spacers, and axle as necessary (see Rear Hub/Drive Axle in Section 6).

■NOTE: Do not remove more components than necessary to perform the intended service. The axle housing will separate from the swing arm with all components attached if necessary.

4. Remove the four cap screws (A) securing the axle housing to the swing arm; then remove the axle housing.

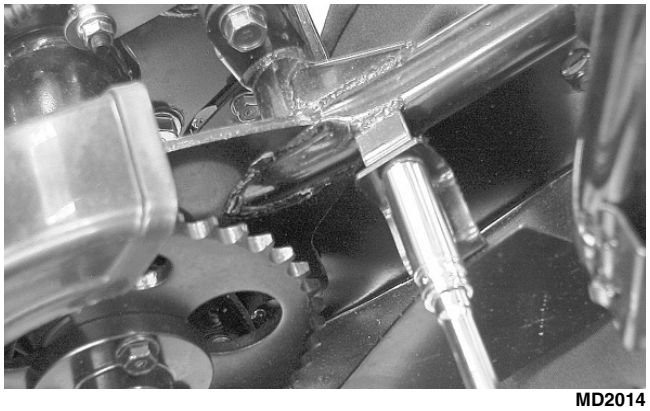


KM217B



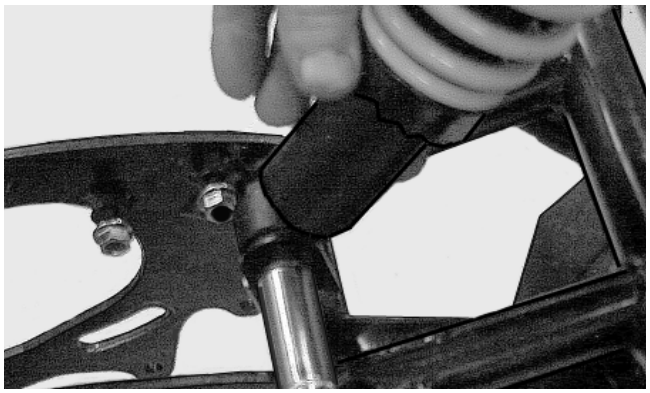
KM212A

5. Remove the cap screws securing the skid plate and rear chain guard; then remove the skid plate and rear chain guard.



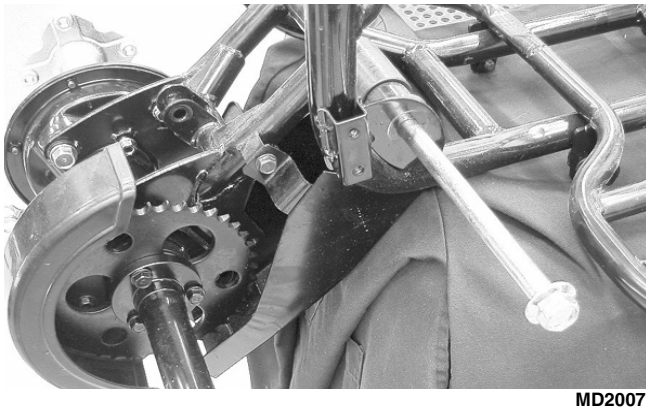
MD2014

6. Remove the cap screw securing the shock absorber to the swing arm.

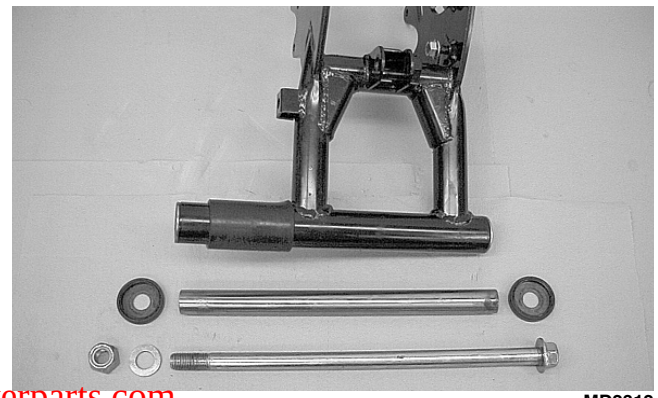


MD2315

7. Remove the long cap screw and self-locking nut securing the front of the swing arm to the frame brackets; then remove the swing arm from the frame. Account for two seals, a spacer, a rubber swing arm guard, and a washer.



MD2007



MD2312

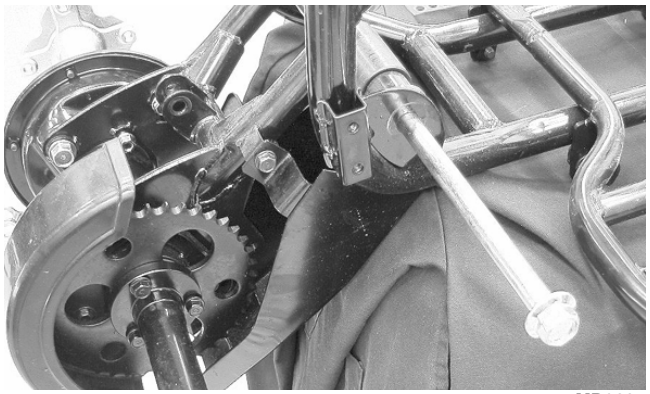
CLEANING AND INSPECTING

■NOTE: Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Clean all swing arm components in parts-cleaning solvent.
2. Inspect all swing arm welds for cracks or unusual bends.
3. Inspect all tubing for cracks or unusual bends.
4. Inspect the pressed-in bushings for damage.
5. Inspect the rubber swing arm guard for damage.
6. Inspect the seals for damage.

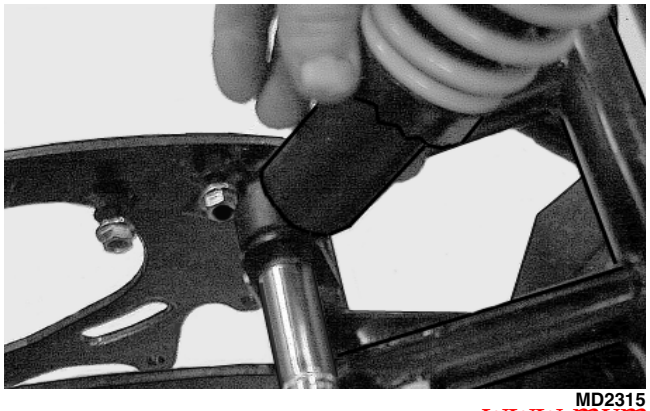
INSTALLING

1. Lubricate the pressed-in swing arm bushings with a light coat of grease; then install the spacer into the swing arm.
2. If removed, install the rubber swing arm guard.
3. Lubricate the two seals with a light coat of grease; then install them on the ends of the swing arm.
4. Position the swing arm in the frame and slide the long cap screw through the brackets and swing arm.



MD2007

5. Install the washer and self-locking nut. Tighten the nut to 50 ft-lb.
6. Install the axle, spacers, hubs, and drive chain (see Rear Hub/Drive Axle in Section 6).
7. Secure the shock absorber to the swing arm with the cap screw. Tighten the cap screw to 29 ft-lb.

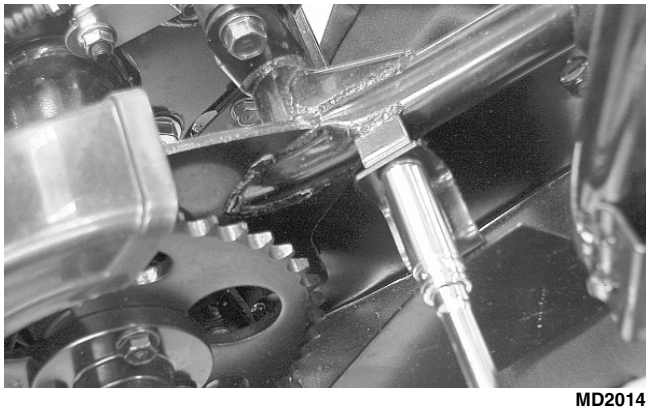


MD2315

CAUTION

Do not tighten the cap screw beyond the 29 ft-lb specification or the shock eyelet or mount WILL be damaged.

8. Place the rear chain guard and skid plate into position and install the cap screws; then tighten the cap screws securely.



MD2014

9. Place the axle housing into position on the swing arm; then install and tighten four cap screws to 29 ft-lb.
10. Install the brake caliper on the axle housing with the two cap screws. Tighten securely.

KM229

11. Install the wheels and tighten the cap screws to 30 ft-lb; then remove the ATV from the support stand.

⚠ WARNING

After removing and installing of brake-related components, ALWAYS check and adjust brakes as necessary before operating the ATV.

Wheels and Tires

TIRE SIZE

⚠ WARNING

Use only Arctic Cat approved tires when replacing tires. Failure to do so could result in unstable ATV operation.

The ATV is equipped with low-pressure tubeless tires of the size and type listed (see Section 1). Do not under any circumstances substitute tires of a different type or size.

⚠ WARNING

Do not mix tire tread patterns. Use the same pattern type on front and rear. Failure to heed warning could cause poor handling qualities of the ATV and could cause excessive drive train damage not covered by warranty.

TIRE INFLATION PRESSURE

Front and rear tire inflation pressure should be 0.21 kg-cm^2 (3.0 psi).

⚠ WARNING

Always maintain proper tire inflation pressure.

REMOVING

1. 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.

2. Remove the four cap screws securing each wheel; then remove the wheels.

■NOTE: Keep left-side and right-side wheels separated for installing them on their proper sides.

CLEANING AND INSPECTING

■NOTE: Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Clean the wheels and hubs with parts-cleaning solvent.
2. Clean the tires with soap and water.
3. Inspect each wheel for cracks, dents, or bends.
4. Inspect each tire for cuts, wear, missing lugs, and leaks.

INSTALLING

1. Install each wheel on its hub.

■NOTE: Make sure each wheel is installed on its proper hub as noted in removing (the "rotation arrow" must indicate forward direction of rotation).

2. Tighten cap screws to 30 ft-lb.

CHECKING/INFLATING

1. Using an air pressure gauge, measure the air pressure in each tire. Adjust the air pressure as necessary to meet the specified inflation pressure.
2. Inspect the tires for damage, wear, or punctures.

⚠ WARNING

Do not operate the ATV if tire damage exists.

■NOTE: If repair is needed, follow the instructions found on the tire repair kit or remove the wheel and have it repaired professionally.

■NOTE: Be sure all tires are the specified size and have identical tread pattern.

3. Test drive the ATV on a dry, level surface and note any pulling to the left or right during acceleration, deceleration, and braking.

■NOTE: If pulling is noted, measure the circumference of the front and rear tires on the pulling side. Compare the measurements with the tires on the opposite side. If pulling is noted during braking only, check and adjust the brakes as necessary and recheck operation (see Section 2).

4. Increase the air pressure in the tires with the smallest circumference measurement until all tires are equal in circumference.
5. Repeat steps 3-4 as necessary to ensure proper handling.

Troubleshooting

Problem: Suspension too soft	
Condition	**Remedy**
1. **Spring(s)** weak 2. **Shock absorber** damaged	1. Replace spring(s) 2. Replace shock absorber
Problem: Suspension too stiff	
Condition	**Remedy**
1. **A-arm bushings** worn 2. **Shock absorber** improperly adjusted (rear)	1. Replace bushing 2. Adjust shock spring preload
Problem: Suspension noisy	
Condition	**Remedy**
1. **Cap screws (suspension system)** loose 2. **A-arm bushings** worn	1. Tighten cap screws 2. Replace bushings
Problem: Rear wheel oscillation	
Condition	**Remedy**
1. **Rear wheel hub bearings** worn - loose 2. **Tires** defective - incorrect 3. **Wheel rim** distorted 4. **Wheel hub cap screws** loose 5. **Axle shaft nut** loose 6. **Rear brake** adjusted incorrectly 7. **Rear suspension arm-related bushing** worn 8. **Rear shock absorber** damaged 9. **Rear suspension arm nut** loose	1. Replace bearings 2. Replace tires 3. Replace wheel 4. Tighten cap screws 5. Tighten nut 6. Adjust brake 7. Replace bushing 8. Replace shock absorber 9. Tighten nut

Steering/Frame

The following steering components should be inspected periodically to ensure safe and proper operation.

A. Handlebar grips worn, broken, or loose.

B. Handlebar bent, cracked, and an equal and complete full-left and full-right turn capability.

C. Steering post bearing assembly/bearing housing broken, worn, or binding.

D. Ball joints worn, cracked, or damaged.

E. Tie rods bent or cracked.

F. Knuckles worn, cracked, or damaged.

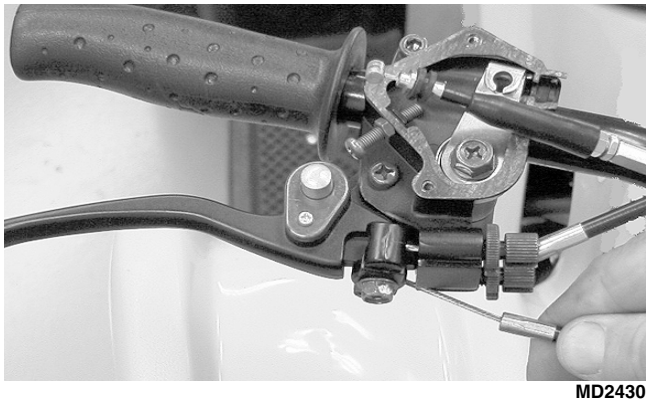
G. Cotter pins damaged or missing.

The frame and welds should be checked periodically for damage, bends, cracks, deterioration, broken components, and missing components.

Steering Post/Handlebar/ Tie Rods

REMOVING

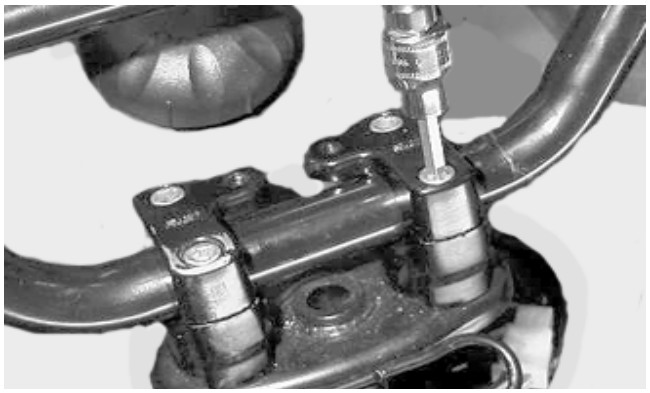
1. Remove the seat.
2. Remove the control cables from the handlebar; then route them through the metal loop on the steering post and out of the way.



MD2430

MD2431

3. Remove the handlebar.



MD2139

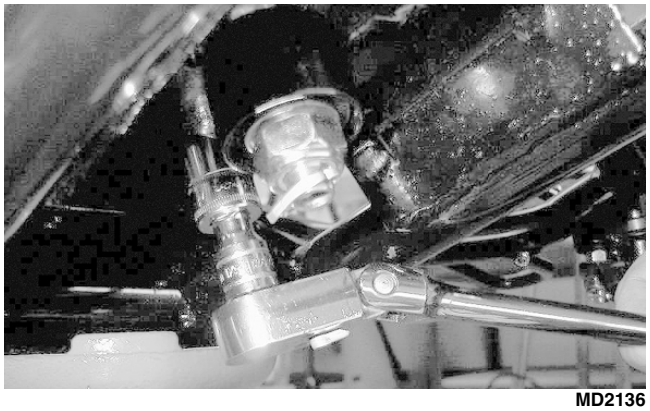
4. Disconnect the handlebar switch assembly and brake switch connectors; then route them through the metal loop on the steering post and out of the way.

MD2416

5. Remove the cap screws securing the body panel. On the Utility, remove the front and rear racks.
6. Remove the gas tank cap and lift off the panel.

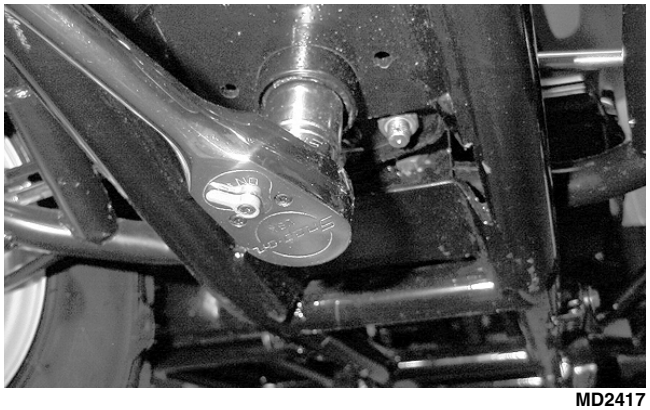
MD2405

7. Remove the cotter pins; then remove the two inner tie rod ends from the steering post.



MD2136

8. Remove the cotter pin; then remove the steering post nut.



MD2417

9. Remove the steering post outer bearing cap and remove the steering post assembly. Account for the two nuts, the outer bearing cap, and the two-piece plastic bearing.

■NOTE: The inner bearing cap and the two spacers do not need to be removed.

MD2142

CLEANING AND INSPECTING

■NOTE: Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Wash the tie rod ends in parts-cleaning solvent. Dry with compressed air. Inspect the pivot area for wear. Apply a low-temperature grease to the ends.

⚠ WARNING

Always wear safety glasses when using compressed air.

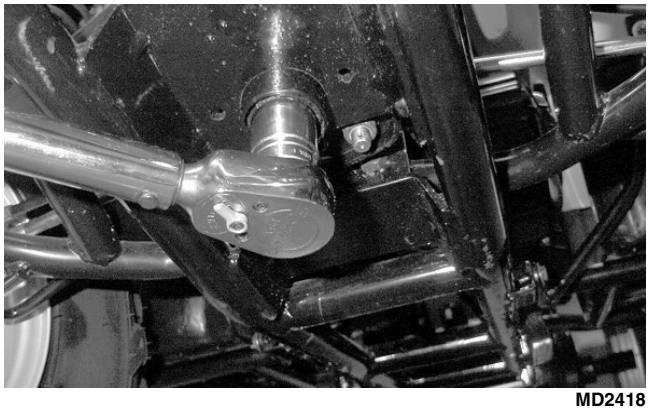
2. Inspect the tie rods for damaged threads or wear.
3. Inspect the tie rods for cracks or unusual bends.
4. Inspect all welded areas for cracks or deterioration.
5. Inspect the steering post and brackets for cracks, bends, or wear.
6. Inspect the plastic bearing halves and bearing caps for cracks or wear.
7. Inspect the handlebar tube for cracks, wear, or unusual bends.

INSTALLING

1. Place the steering post into position. Tighten the two nuts on the outer bearing cap making sure the two-piece plastic bearing is in place. Tighten the nuts to 20 ft-lb.

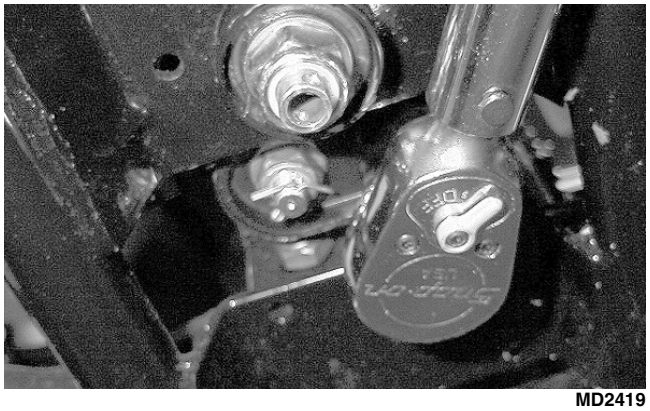
MD2432

2. Install the steering post nut and tighten to 51 ft-lb. Install a new cotter pin.



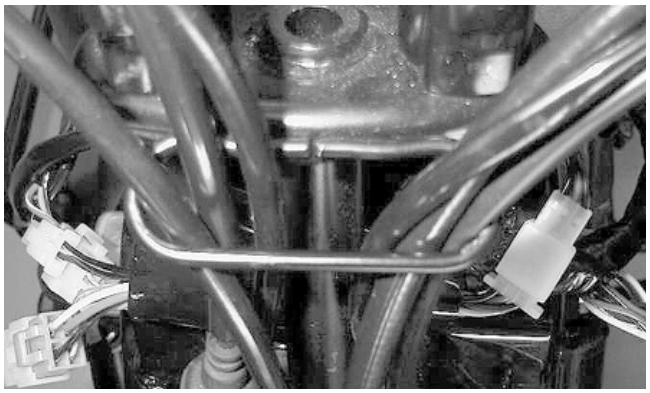
MD2418

3. Install the inner tie rod ends. Tighten the nuts to 20 ft-lb and install new cotter pins.



MD2419

4. Route the control cables and wiring through the metal loop on the steering post.

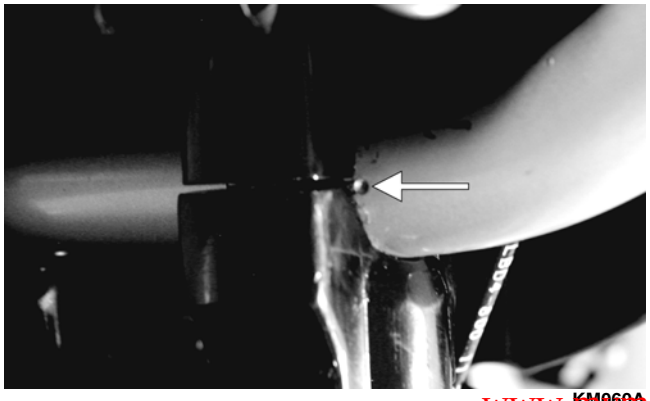


MD2135

5. Install the body panel and gas tank cap.

MD2405

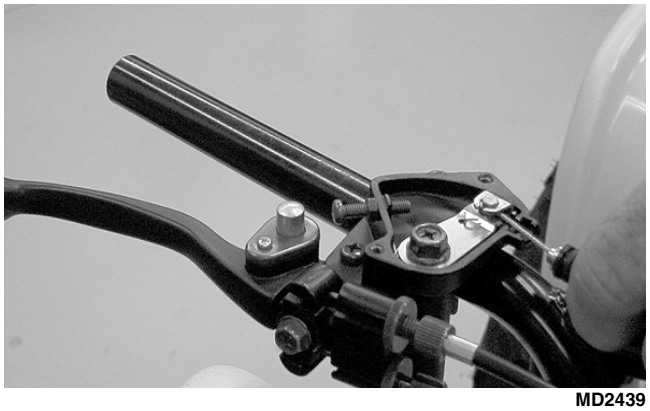
6. Install handlebar with marks aligned with the handlebar mounting clamps. Install the caps; then tighten the cap screws to 10 ft-lb.



KM060A

MD2429

7. Install the control cables onto the handlebar.

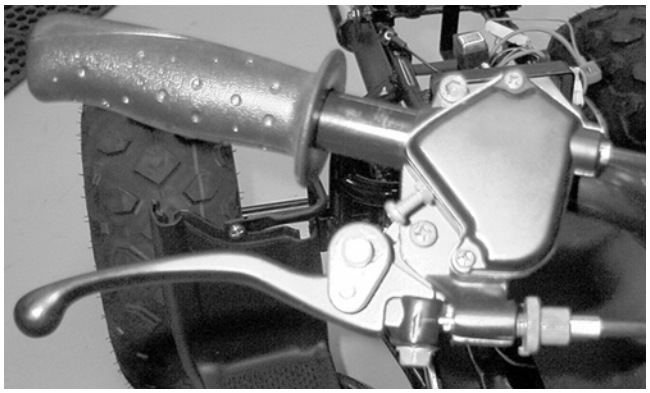


MD2439

8. Make sure the cables (brake and throttle) are routed down and away so there is no sticking or binding.

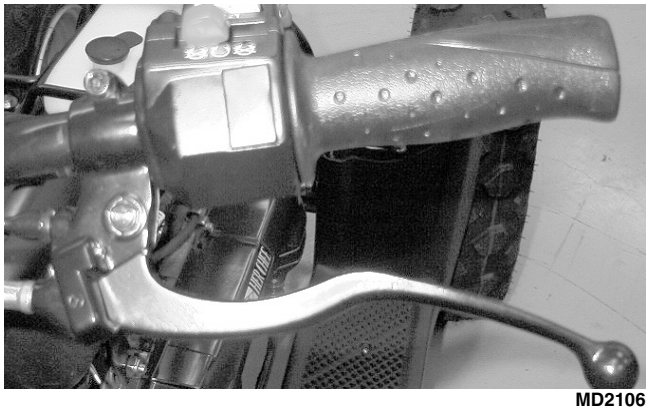
⚠ WARNING

Make sure there is maximum right/left steering capability and the brake and throttle cables are not affected.



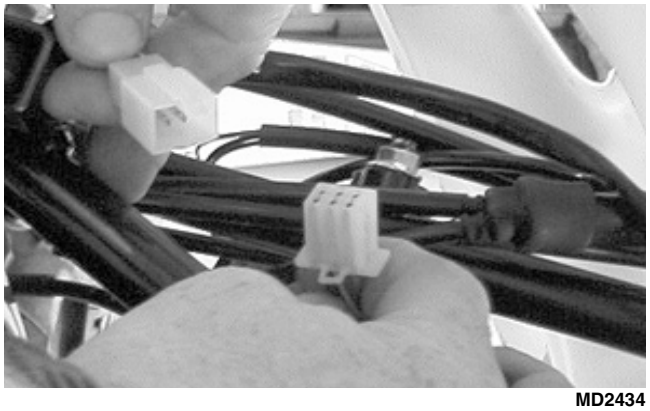
MD2105

MD2441

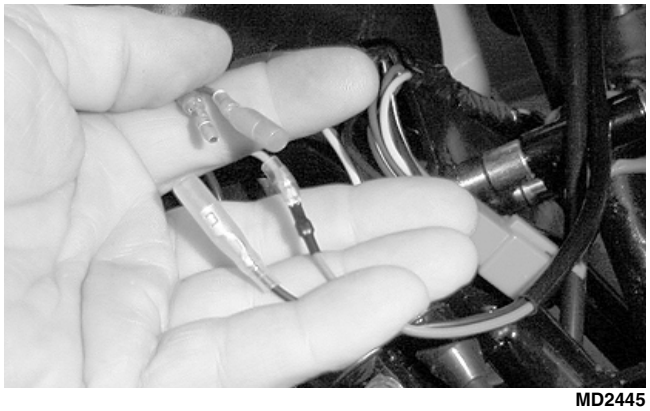


MD2106

9. Connect the handlebar switch assembly and brake switch connectors.



MD2434



MD2445

10. Install the seat.
11. On the Utility, install the front and rear racks.

Handlebar Grip

REMOVING

1. Using a compressed air nozzle and low pressure, peel up the inner corner of the grip.
2. Apply air pressure while twisting the grip back and forth until it slides off the handlebar.

MD2448

INSPECTING

■NOTE: Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Inspect the grip for wear, cuts, or cracks.
2. Inspect the grip for deterioration.

INSTALLING

■NOTE: Before installing a handlebar grip, use contact spray or alcohol to clean the inside of the grip and the handlebar of glue residue, oil, or any other contaminant.

1. Apply a liberal amount of Handlebar Grip Adhesive to the inside of the grip.
2. Slide the grip onto the handlebar until it is fully seated.
3. Wipe off any excess adhesive.

Troubleshooting

Problem: Handling too heavy or stiff	
Condition	**Remedy**
1. **Front wheel alignment** incorrect 2. **Lubrication** inadequate 3. **Tire inflation pressure** incorrect 4. **Tie rod ends** seizing 5. **Linkage connections** seizing	1. Adjust alignment 2. Lubricate appropriate components 3. Adjust pressure 4. Replace tie rod ends 5. Repair - replace connections
Problem: Steering oscillation	
Condition	**Remedy**
1. **Tires** inflated unequally 2. **Wheel(s)** wobbly 3. **Wheel hub cap screw(s)** loose - missing 4. **Wheel hub bearing** worn - damaged 5. **Tie rod ends** worn - loose 6. **Tires** defective - incorrect 7. **A-arm bushings** damaged 8. **Bolts - nuts (frame)** loose	1. Adjust pressure 2. Replace wheel(s) 3. Tighten - replace cap screws 4. Replace bearing 5. Replace - tighten tie rod ends 6. Replace tires 7. Replace bushings 8. Tighten bolts - nuts
Problem: Steering pulling to one side	
Condition	**Remedy**
1. **Tires** inflated unequally 2. **Front wheel alignment** incorrect 3. **Wheel hub bearings** worn - broken 4. **Frame** distorted 5. **Shock absorber** defective	1. Adjust pressure 2. Adjust alignment 3. Replace bearings 4. Repair - replace frame 5. Replace shock absorber
Problem: Steering impaired	
Condition	**Remedy**
1. **Tire pressure** too high 2. **Steering linkage connections** worn 3. **Cap screws (suspension system)** loose	1. Adjust pressure 2. Replace connections 3. Tighten cap screws
Problem: Tire wear rapid or uneven	
Condition	**Remedy**
1. **Wheel hub bearings** worn - loose 2. **Front wheel alignment** incorrect	1. Replace bearings 2. Adjust alignment
Problem: Steering noise	
Condition	**Remedy**
1. **Caps screws - nuts** loose 2. **Wheel hub bearings** broken - damaged 3. **Lubrication** inadequate	1. Tighten cap screws - nuts 2. Replace bearings 3. Lubricate appropriate components

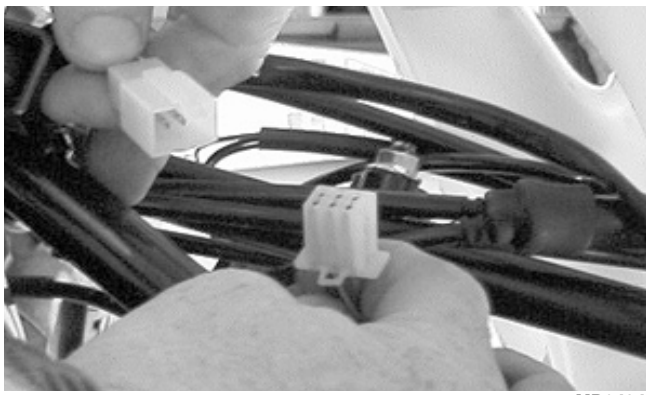
Handlebar Controls

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

Handlebar Switch

REMOVING

1. Disconnect the handlebar switch assembly wiring connector.



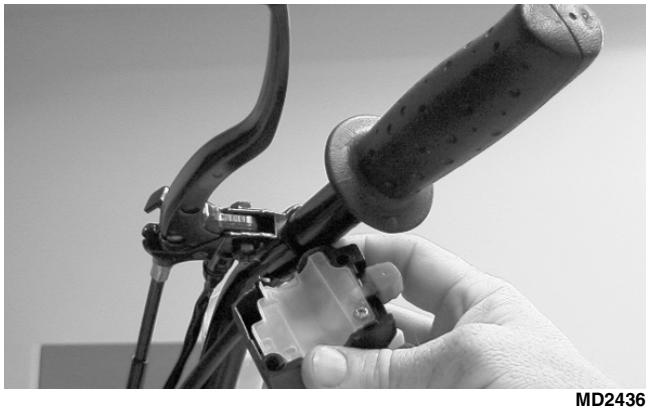
MD2434

2. Disconnect the brake switch wiring connectors.

MD2438

3. Remove the handlebar switch assembly from the handlebar.

KM544



MD2436

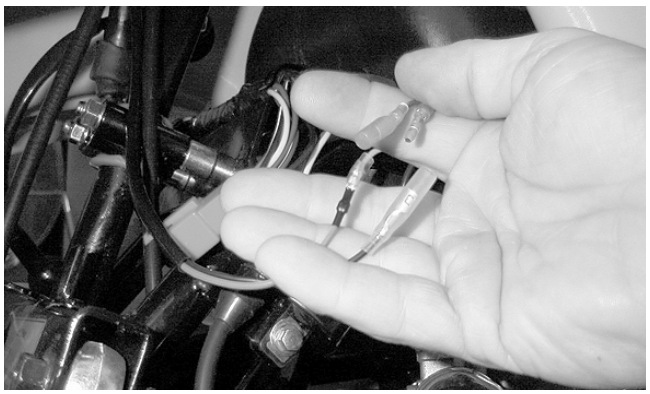
INSTALLING

1. Place the handlebar switch assembly onto the handlebar. Tighten the screw securely.

MD2436

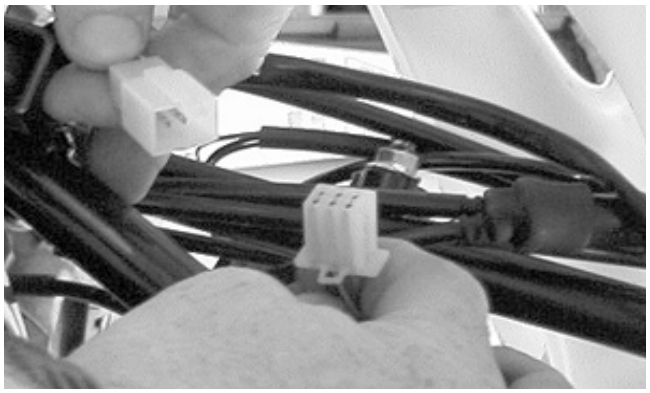
KM544

2. Connect the brake switch wiring connectors.



MD2438

3. Connect the handlebar switch assembly wiring connector.



MD2434

Hand Brake Lever Assemblies

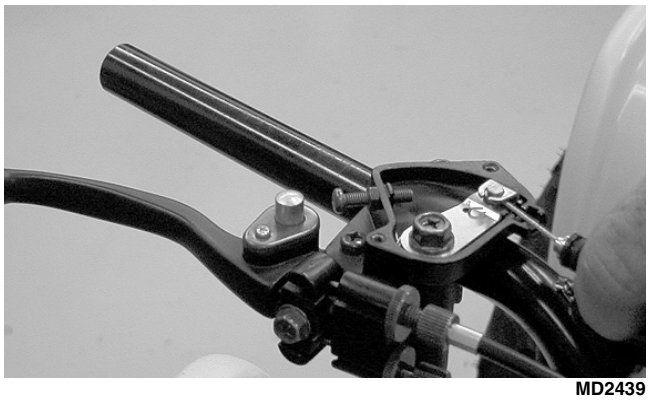
⚠ WARNING

After removing and installing brake-related components, ALWAYS check and adjust brakes as necessary before operating the ATV.

REMOVING

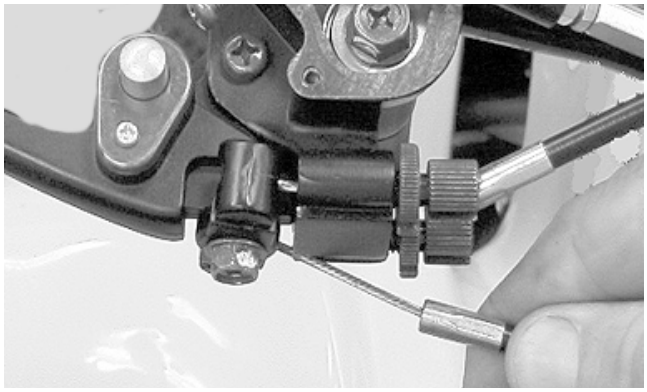
1. Remove the right handlebar grip (see Section 8).
2. Remove the cover from the throttle control housing exposing the throttle cable; then remove the cable.

MD2440



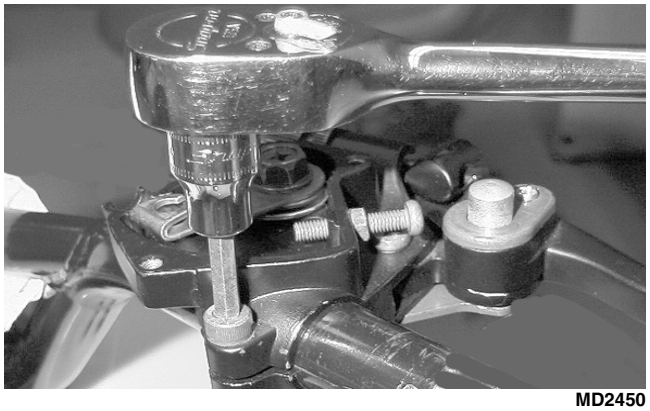
MD2439

3. Remove the front brake cables from their adjusters by screwing the adjusters inward to loosen the cables; then pulling them free.



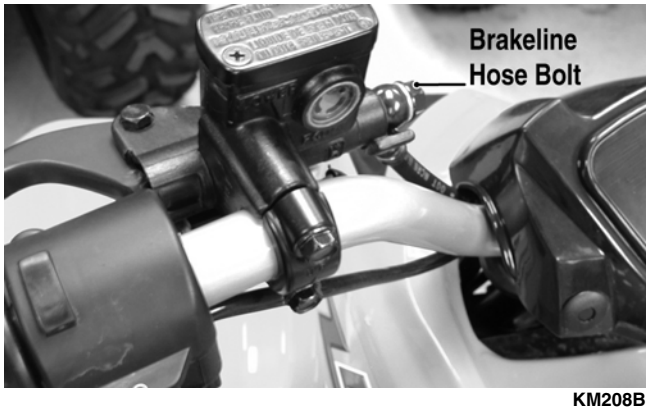
MD2449

4. Loosen the 6 mm Allen-head screw securing the front brake lever assembly and slide the assembly off the handlebar.



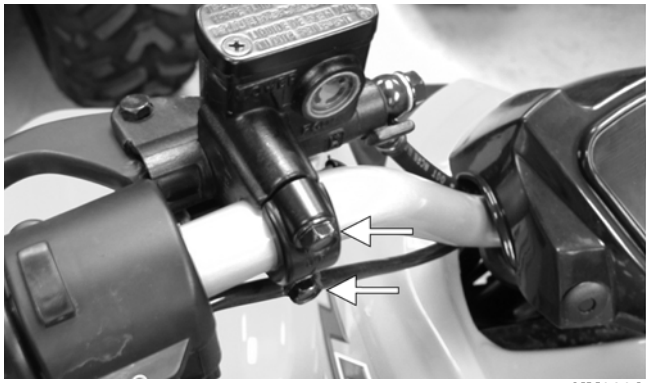
MD2450

5. Place a suitable container beneath the left-hand brake master cylinder.
6. Remove the brakeline hose bolt; then drain brake fluid into the container. Account for two copper washers.



KM208B

7. Remove the cap screws securing the hand brake lever assembly to the handlebar and remove the hand brake/master cylinder assembly.


KM208A


MD2442

INSTALLING

1. Slide the right brake lever assembly onto the handlebar; do not tighten the Allen-head screw completely at this time.

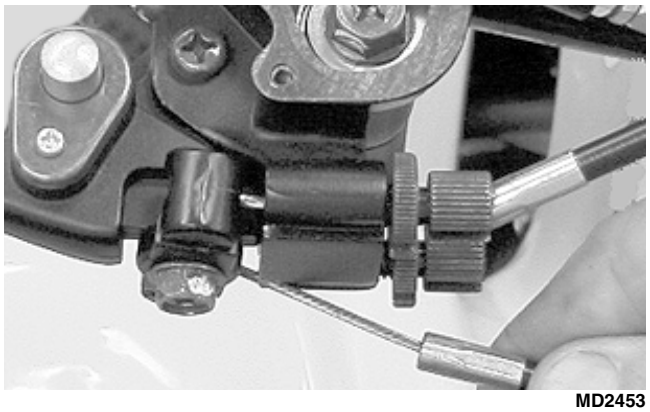

MD2452

2. Install the throttle cable into the throttle control housing; then install the cover and secure with the screws.

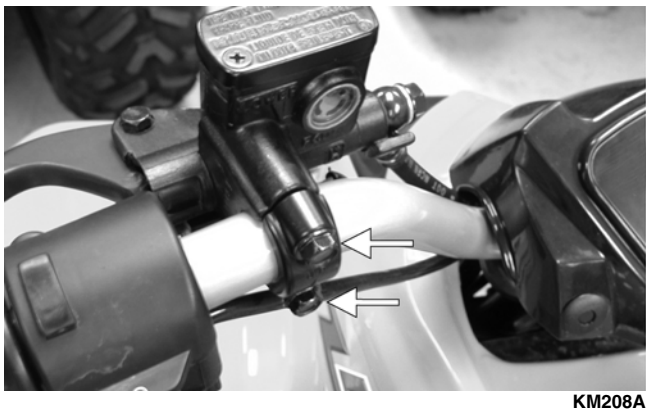

MD2454


KM548A

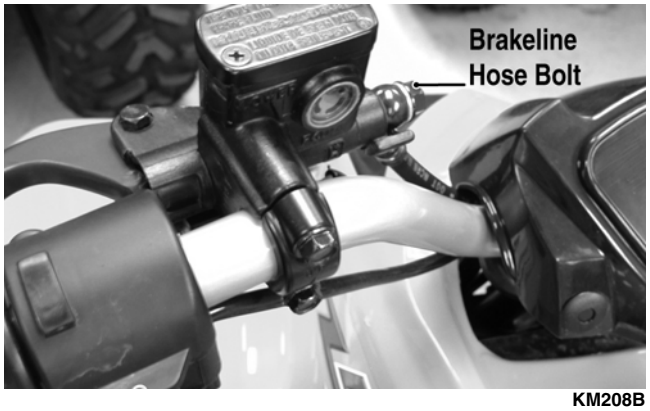
3. Install the brake cable to the lever assembly.


MD2453

4. Position the left brake lever assembly onto the handlebar and secure with the clamp and two cap screws. Tighten securely.


KM208A

5. Install the brakeline hose on the master cylinder with the brakeline hose bolt and two washers. Do not tighten the bolt at this time.



KM208B

6. Remove the cover from the master cylinder and fill with DOT 4 brake fluid; then install the cover.
7. Place a suitable container under the master cylinder and compress the lever slowly. Brake fluid should flow from the loose connection.
8. Tighten the brakeline hose bolt to 20 ft-lb (from step 5); then check the rear brake operation. The brake lever should be firm and the rear brake should stop the wheels.

■NOTE: If the brake is not firm, the system must be bled (see Brake Systems - BLEEDING in Section 2).

■NOTE: Before installing a handlebar grip, use contact spray or alcohol to clean the inside of the grip and the handlebar of adhesive residue, oil, or any other contaminant.

9. Apply a liberal amount of Handlebar Grip Adhesive to the inside of the grip; then slide the right grip onto the handlebar. Wipe off any excess adhesive.
10. Tighten the right brake lever assembly Allen-head screw (from step 1) securely.

MD2461

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