



FOREWORD

This Arctic Cat Service Manual contains service, maintenance, and troubleshooting information for the 2011 Arctic Cat 400 TRV. The complete manual is designed to aid service personnel in service-oriented applications.

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

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

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

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

All materials and specifications are subject to change without notice.

Keep this manual accessible in the shop area for reference.

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

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General Specifications

| CHASSIS | |
|-----------------------------------|--|
| Brake Type | Hydraulic w/Brake Lever Lock and Auxiliary Brake |
| Tire Size | Front - 25 x 8-12 Rear - 25 x 11-12 |
| Tire Inflation Pressure | 0.35 kg/cm ² (5 psi) |
| MISCELLANY | |
| Gas Tank Capacity | 20.0 L (5.3 U.S. gal.) |
| Rear Drive Capacity | 250 ml (8.5 fl oz)* |
| Front Differential Capacity | 275 ml (9.3 fl oz)** |
| Engine Oil Capacity | 3.3 L (3.5 U.S. qt) - Overhaul 2.8 L (3.0 U.S. qt) - Change |
| Gasoline (recommended) | 87 Octane Regular Unleaded |
| Engine Oil (recommended) | Arctic Cat ACX All Weather (Synthetic) |
| Differential/Rear Drive Lubricant | SAE Approved 80W-90 Hypoid |
| Drive Belt Width (minimum) | 28.5 mm (1.12 in.) |
| Brake Fluid | DOT 4 |
| Taillight/Brakelight | 12V/8W/27W |
| Headlight | 12V/37W (2) |

Specifications subject to change without notice.

* One inch below plug threads.

** At the plug threads.

Torque Specifications

| EXHAUST COMPONENTS | | | |
|-------------------------------|--------------------------|--------------|-----|
| Part | Part Bolted To | Torque | |
| | | ft-lb | N-m |
| Exhaust Pipe | Engine | 20 | 27 |
| Spark Arrester | Muffler | 48 in.-lb | 5.5 |
| ELECTRICAL COMPONENTS | | | |
| Coil* | Frame | 12 | 16 |
| STEERING COMPONENTS | | | |
| Steering Post Bearing Housing | Frame | 20 | 27 |
| Steering Post Bearing Flange | Frame | 20 | 27 |
| Tie Rod End | Knuckle/Steering Post | 30 | 41 |
| CHASSIS COMPONENTS | | | |
| Footrest | Frame (8 mm) | 20 | 27 |
| Footrest | Frame (10 mm) | 40 | 54 |
| BRAKE COMPONENTS | | | |
| Brake Disc* | Hub | 15 | 20 |
| Brake Hose | Caliper | 20 | 27 |
| Brake Hose | Master Cylinder | 20 | 27 |
| Brake Hose | Auxiliary Brake Cylinder | 20 | 27 |
| Master Cylinder (Rear) | Frame | 12 | 16 |
| Hydraulic Caliper**** | Knuckle | 20 | 27 |
| Master Cylinder Clamp | Master Cylinder | 6 | 8 |
| Brake Pedal | Brake Pedal Axle | 25 | 34 |
| SUSPENSION COMPONENTS (Front) | | | |
| A-Arm | Frame | 50 | 68 |
| Knuckle | Ball Joint | 35 | 47 |
| Shock Absorber | Frame/Upper A-Arm | 50 | 68 |
| Knuckle | A-Arm | 50 | 68 |

| SUSPENSION COMPONENTS (Rear) | | | |
|-------------------------------|-------------------------------|--------------|------|
| Part | Part Bolted To | Torque | |
| | | ft-lb | N-m |
| Shock Absorber (Upper) | Frame | 35 | 47 |
| Shock Absorber (Lower) | Lower A-Arm | 20 | 27 |
| A-Arm | Frame | 35 | 47 |
| Knuckle | A-Arm | 35 | 47 |
| DRIVE TRAIN COMPONENTS | | | |
| Front Differential | Frame/Differential Bracket | 38 | 52 |
| Pinion Housing | Differential Housing | 23 | 31 |
| Differential Housing Cover*** | Differential Housing | 23 | 31 |
| Lock Collar | Differential Housing | 125 | 169 |
| Hub Nut | Shaft/Axle (max) | 200 | 272 |
| Drain Plug | Front Differential/Rear Drive | 45 in.-lb | 5 |
| Fill Plug | Front Differential/Rear Drive | 16 | 22 |
| Input Shaft Assembly | Differential Housing | 23 | 31 |
| Wheel | Hub | 40 | 54 |
| Rear Gear Case | Frame | 38 | 52 |
| Thrust Button** | Rear Gear Case | 8 | 11 |
| ENGINE/TRANSMISSION | | | |
| Engine Mounting Through-Bolt | Frame | 38 | 52 |
| Output Flange** | Drive Coupler | 20 | 27 |
| Drive Bevel Gear Nut** | Shaft | 59 | 80 |
| Driven Bevel Gear Nut** | Driven Shaft | 59 | 80 |
| Clutch Shoe** | Crankshaft | 147 | 199 |
| Clutch Cover Housing | Crankcase | 8 | 11 |
| Left-Side Cover | Crankcase | 8 | 11 |
| Crankcase Half (6 mm) | Crankcase Half | 10 | 13.5 |
| Crankcase Half (8 mm) | Crankcase Half | 21 | 28 |
| Cylinder Head (Cap Screw) | Crankcase | 28 | 38 |
| Cylinder Head (6 mm) | Crankcase | 8 | 11 |
| Cylinder Head (8 mm) | Cylinder | 20 | 27 |
| Cylinder Head Cover | Cylinder Head | 8 | 11 |
| Oil Pump Drive Gear** | Crankshaft | 63 | 86 |
| Driven Pulley Nut** | Driveshaft | 147 | 199 |
| Ground/Starter Cable | Engine | 8 | 11 |
| Output Shaft Flange Nut | Output Shaft | 59 | 80 |
| Magneto Rotor Nut | Crankshaft | 107 | 146 |
| Cam Sprocket** | Camshaft | 11 | 15 |
| Starter Motor | Crankcase | 8 | 11 |
| V-Belt Cover | Clutch Cover | 8 | 11 |
| Oil Fitting | Crankcase | 8 | 11 |
| Oil Pump* | Crankcase | 8 | 11 |
| Drain Plug | Engine | 20 | 27 |
| Movable Drive Face Nut** | Driveshaft | 147 | 199 |
| Tappet Cover | Crankcase | 8 | 11 |

* w/Blue Loctite #243

** w/Red Loctite #271

*** w/Green Loctite #609

**** w/“Patch Lock”

Torque Conversions (ft-lb/N-m)

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

Break-In Procedure

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

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

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

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

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

Gasoline - Oil - Lubricant

RECOMMENDED GASOLINE

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

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

CAUTION

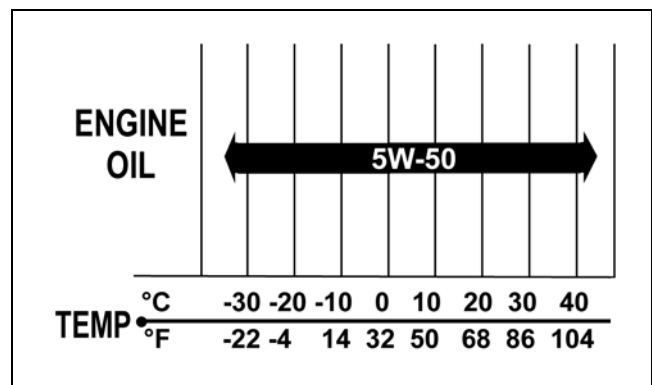
Do not use white gas. Only Arctic Cat approved gasoline additives should be used.

RECOMMENDED ENGINE/ TRANSMISSION OIL

CAUTION

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

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



OILCHART1

RECOMMENDED FRONT DIFFERENTIAL/REAR DRIVE LUBRICANT

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

CAUTION

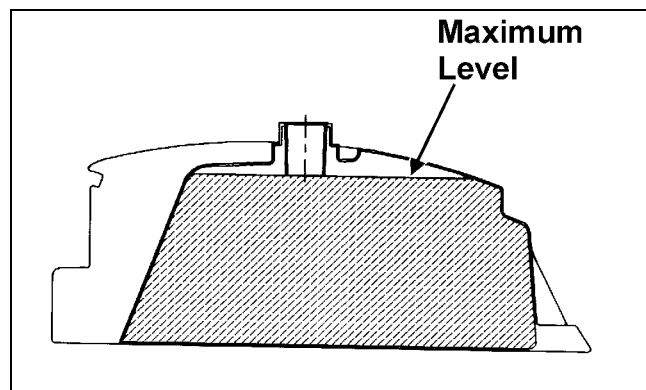
Any lubricant used in place of the recommended lubricant could cause serious front differential/rear drive damage.

FILLING GAS TANK

⚠ WARNING

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

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



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⚠ WARNING

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

⚠ WARNING

Do not over-fill the gas tank.

Tighten the gas tank cap securely after filling the tank.

Genuine Parts

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

www.mymowerparts.com

Preparation For Storage

CAUTION

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

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

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

CAUTION

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

4. Drain the carburetor float chamber.
5. Plug the exhaust 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; then remove the battery, clean the battery posts and cables, and store in a clean, dry area.
9. Store the ATV indoors in a level position.

CAUTION

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

Preparation After Storage

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

1. Clean the ATV thoroughly.
2. Clean the engine. Remove the cloth from the exhaust system.
3. Check all control wires and cables for signs of wear or fraying. Replace if necessary.
4. Change the engine/transmission oil and filter.
5. Charge the battery; then install. Connect the battery cables.

CAUTION

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

CAUTION

Connect the positive battery cable first; then the negative.

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

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SECTION 2 - PERIODIC MAINTENANCE

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Periodic Maintenance Chart

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

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

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

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

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

Periodic Maintenance

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

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

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

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

SPECIAL TOOLS

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

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

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

Lubrication Points

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

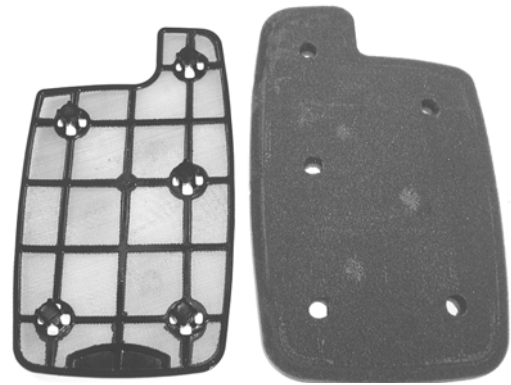
- A. Throttle Lever Pivot/Cable Ends
- B. Brake Lever Pivot/Cable Ends
- C. Auxiliary Brake Cable Ends
- D. Shift Lever Cable End
- E. Idle RPM Screw

Air Filter

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

1. Remove the fasteners securing the storage compartment and remove the storage compartment.
2. Remove the air filter housing cover and the air filter/frame assembly.

3. Remove the foam element from the frame making sure not to tear the element.



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

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

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

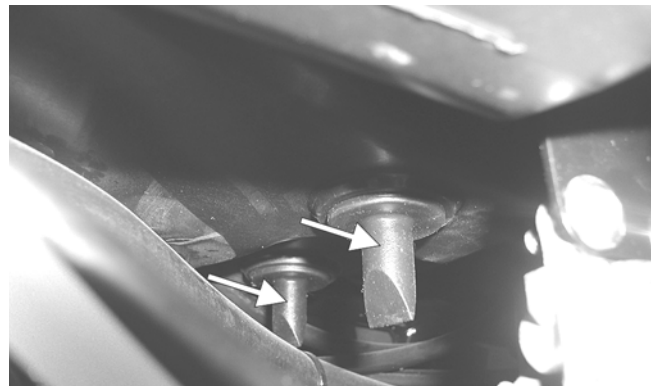
CAUTION

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.

9. Clean any dirt or debris from inside the air cleaner.
10. Install the air filter/frame assembly and cover.
11. Install the storage compartment and cover.

CHECKING AND CLEANING DRAINS

1. Inspect the drains beneath the main housing for debris and for proper sealing.



KX045A