



SNOW TEAM TIPS

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New Service Bulletin S-03-08(A)

Service Bulletin S-03-08(A) has just been released and is on the dealer web site under www.polarisdealers.com.

This bulletin addresses the issue of excessive noise coming from the track area at trail speeds on the 2003 700 Classic Touring and the 2003 800 Classic Touring. The bulletin also states to replace the VES springs on the 800 Classic Touring for enhanced fuel economy. Since this bulletin covers two separate repairs, there are two separate SB claim types.

File all 2003 700 Classic Tourings as Service Bulletin **S-03-08**

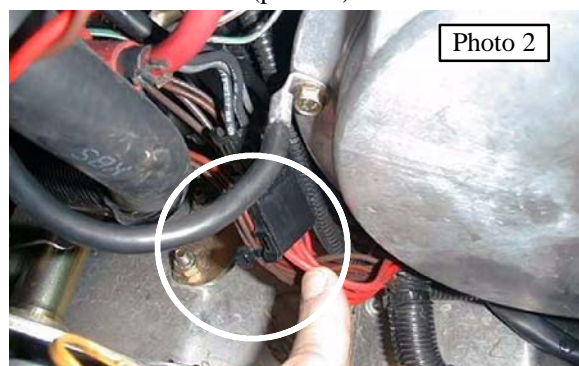
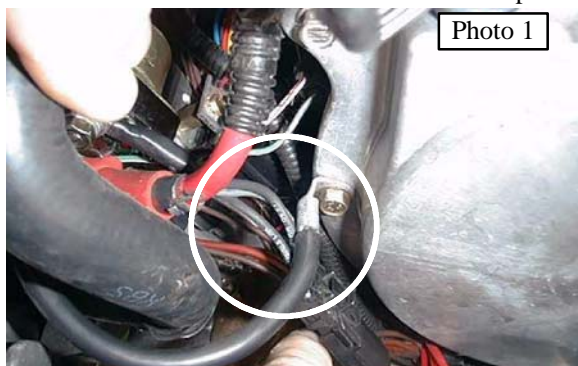
File all 2003 800 Classic Tourings as Service Bulletin **S-03-08A**

Refer to the Service Bulletin for complete information.

2002 & 2003 Frontier Fusible Link

All 2002 and 2003 model year Frontiers need the fusible link secured properly. The fusible link may make contact with the ground strap, causing possible wear through and shorting the wire to ground (photo 1).

Reposition the fusible link connector as shown and panduit to the brown wire harness (photo 2).



Kits Not Available

The list at right are snowmobile kits that will not be available for the 2002-2003 riding season:

- 2874553 - Sonic Blue Trunk Cover = 800 Classic Touring
- 2874554 - Cobalt Green Trunk Cover = 700 Classic Touring
- 2874555 - Champagne Trunk Cover = Frontier Touring
- 2874556 - Base w/hardware = All of the above kits

Service Bulletin Recap

- S-03-01: 2003 600 Classic, 600 XC SP, 700 XC SP Brake Caliper Replacement **SELECT MODELS ONLY** (7/24/02)
- S-03-02: 2003 440 PRO-X Premium Grade 92 Octane Non-Oxygenated Fuel Cylinder Head Kit (10/31/02)
- S-03-03: 2002 & 2003 Frontier Update Kit (11/7/02)
- S-03-04: 2003 700/800 RMK Fuel Pump Relocation (12/17/02)
- S-03-05: 2003 Frontier Classic & Frontier Touring Loose ECU Screws (12/17/02)
- S-03-06: 2003 700 & 800 PRO-X CDI Box Re-programming (12/20/02)
- S-03-07: SAFETY BULLETIN! 2003 800 RMK Vertical Escape Steering Post Replacement**

2003 700 & 800 Classic Touring Rear Torsion Springs

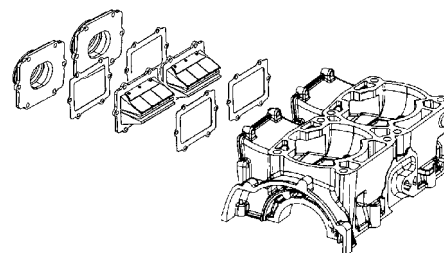
There has been some confusion as to which rear torsion springs should be used on 2003 700 & 800 Classic Touring models. Use the information below when ordering springs for these models.

2003 700 & 800 CLASSIC TOURING REAR TORSION SPRINGS

SOFT	STANDARD	FIRM
.359" (Square) Diameter x 77°	.375" (Square) Diameter x 77°	.405" (Square) Diameter x 77°
L.H. 7042242-067	L.H.7042139-067	L.H. 7042240-067
R.H. 7042243-067	R.H.7042140-067	R.H. 7042241-067

2003 PRO-X 440 Reeds

The 2003 440 PRO-X Liquid Parts Book was corrected to call out the **1202541- ASM-REED VALVE** and **2202497 - KIT-V FORCE REED REPLACEMENT**. The decision to go to V-force reed was made after initial October printing of the parts book. The Parts Book CD, which will correct the '03 parts book, will not be sent out to dealers until March. When ordering replacement reeds, make sure you order the correct part numbers.



1202541- ASM-REED VALVE

2202497 - KIT-V FORCE REED REPLACEMENT

2002 Model Year Snowmobile Cooling Issues-Simplified

Due to the lack of snow in some areas, Polaris will extend warranty coverage on cooling issues.

Refer to the following when servicing a 2002 model snowmobile that exhibits cooling issues.

2002 model year 500/600 VES with M-10 suspensions:

1. Complete **SAF-02-03** bleeding procedure.
2. Add new snow flap as outlined in **SAF-02-03**.
3. Replace the coolant bottle.

For the above three steps, file claim type **SB**.

*If also adding a cooler kit to above models, file a separate claim using **ST** or **OW** for the cooler kit and **45 minutes** of labor. You will need to type **SAF-02-04** in the **autho area** of the claim.*

2002 model year 500/600 VES with EDGE suspensions:

1. Complete **SAF-02-03** bleeding procedure.
2. Add new snow flap as outlined in **SAF-02-03**.
3. Replace the coolant bottle.

For the above three steps, file claim type **SB**.

*If also adding a cooler kit to above models, file a separate claim using **ST** or **OW** for the cooler kit and **45 minutes** of labor. You will need to type **SAF-02-04** in the **autho area** of the claim.*

REFER TO SAF-02-03 & SAF-02-04 WHICH ARE LOCATED ON THE DEALER WEBSITE (www.polarisdealers.com) UNDER SERVICE & WARRANTY, SERVICE BULLETINS.

Hood Warranty Claims

When submitting a hood for warranty, there are a few items to keep in mind. These steps must be taken when submitting a warranty claim for any type of hood damage.

1. Circle the area that caused the submission of the warranty claim.

The Polaris warranty inspector sometimes cannot determine what the original damage was due to return shipping damage.

2. Always pack the pieces of the hood carefully so they do not incur damage during shipping.

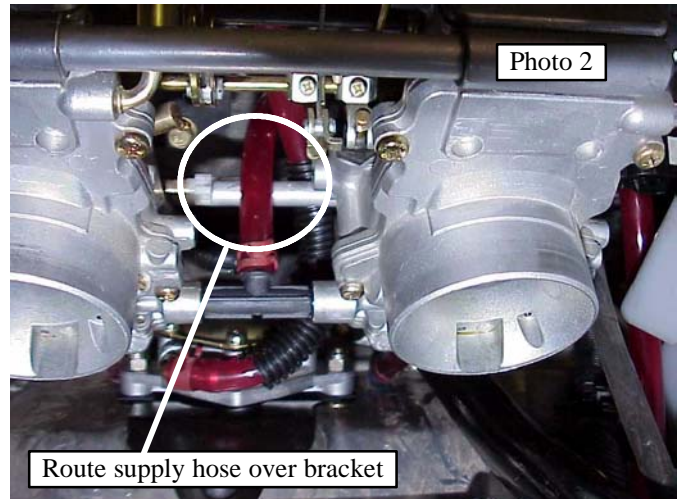
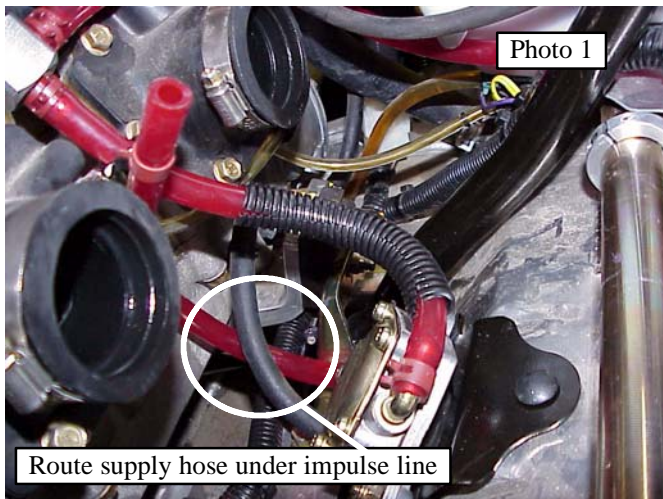
Wrap the section of the hood you are sending back with bubble wrap or similar protective sheathing to ensure the original damage area is obvious to the warranty inspector.

3. Just send pieces, not the entire hood, to the warranty inspector.

Again, circle the damaged area and cut that area out of the hood with a saw. If there are multiple damage areas on the same hood, send back all damaged areas to the warranty inspector.

Impulse Line Kinking on 700/800 RMK

We have had some reports of the impulse line kinking after performing Service Bulletin S-03-04 (2003 700/800 RMK Fuel Pump Relocation). The possible cause of these kinks is fuel line routing. The fuel line must be routed underneath the impulse line as shown in photo 1. Make sure the "bend" in the impulse line follows its natural curvature.* Then route the line over the carb bracket as shown. Performing these steps should ensure the impulse line does not kink and starve the engine of fuel.

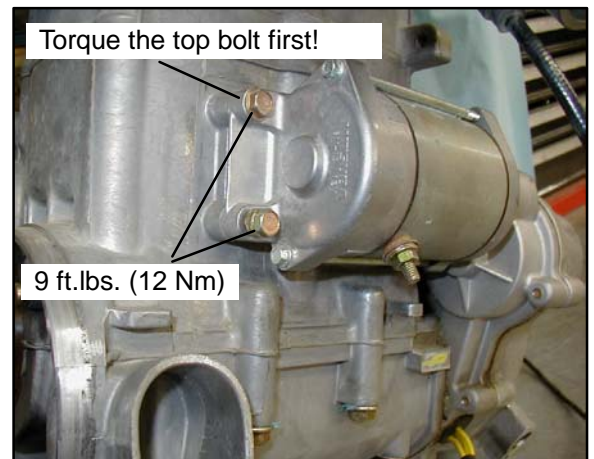


* Remove convolute tubing from impulse line if necessary to prevent kinking.

Frontier - Starter Installation

Install the starter onto the engine case. Hand tighten each of the starter bolts. **Torque the top bolt first to 9 ft.lbs. (12 NM).** Then torque the bottom bolt to the same specification.

NOTE: It is important to tighten the top starter bolt first, the top hole acts as a pilot hole and this helps to properly align the starter drive (bendix) with the flywheel. This helps to prevent binding and starter damage.



M-10 Ace Information

Basic Function

- 1) The switch is pushed to adjust the suspension. If the WHT/RED wire is connected to GROUND, the command means firm. If the WHT/BLK wire is connected to GROUND, the command means soft.
- 2) The controller reads the signal from the switch. If the command is firm, the controller supplies a 12 volt signal for the motor to move clockwise. If the command is soft, the controller supplies a 12 volt signal for the motor to move counterclockwise.
- 3) As the motor moves the shock it also turns the potentiometer. The resistance between the BLACK and WHITE leads of the pot increases (from around 120 ohms at full soft) and the resistance between the ORANGE and WHITE leads decreases (from around 880 ohms at full soft). These two resistances should always add to 1000 ohms. The resistance between the ORANGE and BLACK should always be 1000 ohms. The resistance of the potentiometer reports the ABSOLUTE position of the shock module for the controller.
- 4) The controller reads the position of the potentiometer and supplies a proportionate voltage to the gauge. Full soft is 0 volts, full firm is around 5.5 volts. The entire system will function without a gauge, but if the gauge is operational, most likely the potentiometer is also good.

Troubleshooting

- 1) Nothing happens when the switch is pushed, but the gauge displays position (note that the gauge light is a separate circuit and just because the light is on the gauge may not be displaying position).
 - a. Engine RPM is not high enough for the controller to respond. Engine RPM must be higher than 3500.
 - b. Faulty switch.
 - c. Faulty motor.
 - d. Faulty controller or rectifier.
 - e. Shorted or damaged wires.
- 2) Same as #1 but the gauge does not display position.
 - a. Engine RPM is not high enough for the controller to respond. Engine RPM must be higher than 3500.
 - b. Faulty switch.
 - c. Faulty motor.
 - d. Faulty controller or rectifier.
 - e. Shorted or damaged wires.
 - f. Faulty gauge.
 - g. Faulty potentiometer
 - h. Basically, at this point anything in the system could be faulty!
- 3) Suspension moves in and out, but the gauge does not work.
 - a. Gauge is mounted too tight in the hood. Loosen holding nuts.
 - b. Faulty gauge.
 - c. Shorted or damaged wires.
- 4) Gauge “wiggles” when the switch is pushed.
 - a. Faulty motor.
 - b. Shorted or damaged wires.
- 5) The system works using the jumper harness to power up from a battery charger, but it does not work using the engine electrical power.
 - a. Faulty rectifier
 - b. Short in main machine wire harness.
- 6) The motor turns on for a short period when the switch is depressed, but stops very soon.
 - a. Faulty potentiometer
 - b. Damaged or loose bevel gears
 - c. Damaged or loose potentiometer gears
 - d. Shorted or damaged wires.

M-10 Ace Information, continued

How to check components

When checking the function of all ACE components, use the supplied service tool part number PA-46355. The power supply must be able to supply at least 13.1 volts and 5 amps (such as most battery chargers – most normal batteries WILL NOT WORK). To use this harness, disconnect the rectifier (just below the controller) from the main harness and connect the harness. This will allow FULL ACE functionality without the snowmobile engine running. The additional little jumpers allow the charger to be connected directly to the module motor.

- 1) Suspension Module
 - a. Motor - First check that the motor is operational. Disconnect the BLUE and GREEN wires from the controller and apply 12 volts across these wires. The motor should move either in or out. Change the polarity and the direction should change. If the motor does not move, check wire continuity to the motor. If continuity is good, replace motor.
 - b. Potentiometer – check basic resistances: 1000 ohms between BLACK and ORANGE. 120-880 ohms between BLACK and WHITE. This should increase from 120 ohms as the unit moves toward firm. 120-880 between ORANGE and WHITE. This should decrease from 880 ohms as the unit moves toward firm. Jog the motor to make the potentiometer change resistances. If these resistances are not to spec and/or they do not change as the motor moves, replace the potentiometer.
- 2) Left Hand Switch
 - a. Continuity between ground and the WHITE/RED should only exist when the switch is depressed in the firm direction. The same is true for the WHITE/BLACK when depressed in the soft direction. Replace the switch if otherwise.
- 3) Gauge
 - a. Apply 2.5-3 volts (small batteries work) to the WHITE and ORANGE wires AT THE GAUGE. The needle should move close to the middle position. If not, replace the gauge. (ENSURE THE GAUGE IS NOT OVERTIGHTENED).
- 4) Controller – this is the hardest component to diagnose. All the following must be true or the controller must be replaced.
 - a. With the system powered up using the jumper, measure the voltage across the BLUE and GREEN wires (motor wires). A voltage of -13 to 13 volts should be present when the switch is depressed.
 - b. A voltage of 0-6 volts should be measured between the ORANGE and BROWN gauge wires when the system is powered. This voltage should change accordingly when the system is adjusted (near 6 volts at firm, near 0 volts at soft).
 - c. 5 volts +/- 1 should be measured between the ORANGE and BLACK module leads when the system is powered.
- 5) Rectifier
 - a. With the system powered by the snowmobile engine, measure the voltage between the RED and BROWN rectifier leads. Acceptable voltage is 9-14 volts at idle, and above 13 volts above 3500 rpm. Replace rectifier if voltage is too low or too high.

M-10 Ace Information, continued

Important Notes

- 1) Special Tools – a modified battery post puller is required to pull the gear on the potentiometer. If any axial play is observed in the potentiometer shaft after removing the gear, the potentiometer must be replaced.
- 2) Loctite 480 is required when replacing either of the plastic gears. Ensure no Loctite gets on the gear teeth.
- 3) **Timing** – ANYTIME the module is serviced, the potentiometer must be timed with the main clevis.
 - a. Turn the large bevel gear clockwise until the screw shaft is fully seated in the clevis (fully soft position). Ensure the clevis is oriented in it's normal position (not tilted to one side or the other).
 - b. Assemble the motor to the housing at this time to keep the gear and clevis from moving. If the motor is already installed, jog the motor with 12 volts until fully soft.
 - c. Turn the potentiometer until the resistance between the WHITE and BLACK wires is 107 +/- 5 ohms.
 - d. Install the small plastic gear and allow time for the Loctite to dry before operating.

