

Technical BULLETIN

© 2002 YAMAHA MOTOR CORPORATION, U.S.A.

2002 SXV70G/ERG (“SXViper”) Overheat Warning Indicator

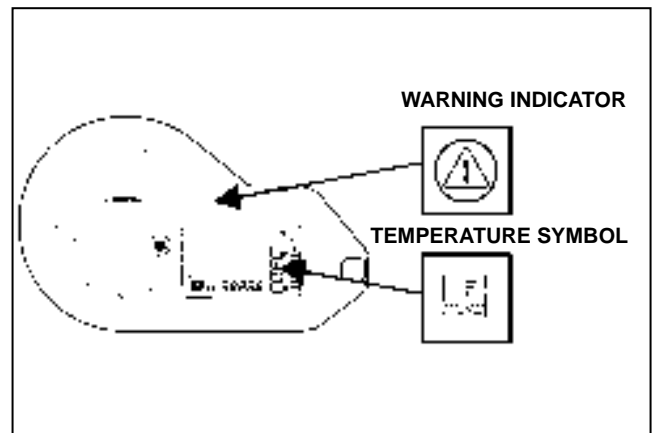


INTRODUCTION

Symptom: Engine overheat warning indicator comes on.

Cause: There are several possible conditions that could cause the warning indicator to come on.

1. Engine is actually overheating (coolant boils over) even when the machine is operated in good snow conditions under normal use. This is generally the result of problem with the cooling system such as air trapped in the system, thermostat failure, etc., or the use of an accessory skid plate that prevents snow from reaching the heat exchangers.
2. Engine overheat warning indicator is on or flashing but there is no sign of actual over heat (coolant does not boil over). This may be the result of electrical system malfunction such as a shorted wire harness, thermosensor failure, etc.
3. Engine is actually overheating (coolant boils over) due to abnormal operation that prevents the standard heat exchangers from getting enough snow splash for optimum cooling efficiency. Examples would be use in marginal (icy/hard-packed surfaces) or poor snow conditions, or operation at extreme low speeds (below 15 mph) for long distance.



- Remedy:**
1. Refer to the flow chart in the service procedure section to diagnose the cooling system problem.
 2. Refer to the flow chart in the service procedure section to diagnose the electrical system problem.
 3. If the unit is primarily operated in marginal conditions or at slow speeds as described above, recommend to the customer that an optional rear heat exchanger be installed to increase cooling efficiency.



DEALER ACTION SUMMARY

Inspect: Determine actual symptom and possible cause.

Repair: Follow the troubleshooting flow chart in the Service Procedures section of this bulletin to identify the source of the problem, then make any repairs needed. If the cause is abnormal operation alone, recommend that the customer purchase the optional Rear Heat Exchanger Kit.

NOTE: The standard SXViper cooling capacity is sufficient if the machine is operated normally in good snow conditions. A rear heat exchanger is needed only if the customer rides in marginal or poor conditions, or rides for extended periods at low speeds.

Parts

Required: Order necessary parts to replace failed parts. If the cause of overheating is abnormal use, you can order and install the optional rear heat exchanger kit at the customer's request.

Warranty: Yes, for any defect-related failure during the warranty period. If it is determined the SXViper Heat Exchanger Kit is required, the customer is responsible for the purchase and installation costs of the kit.



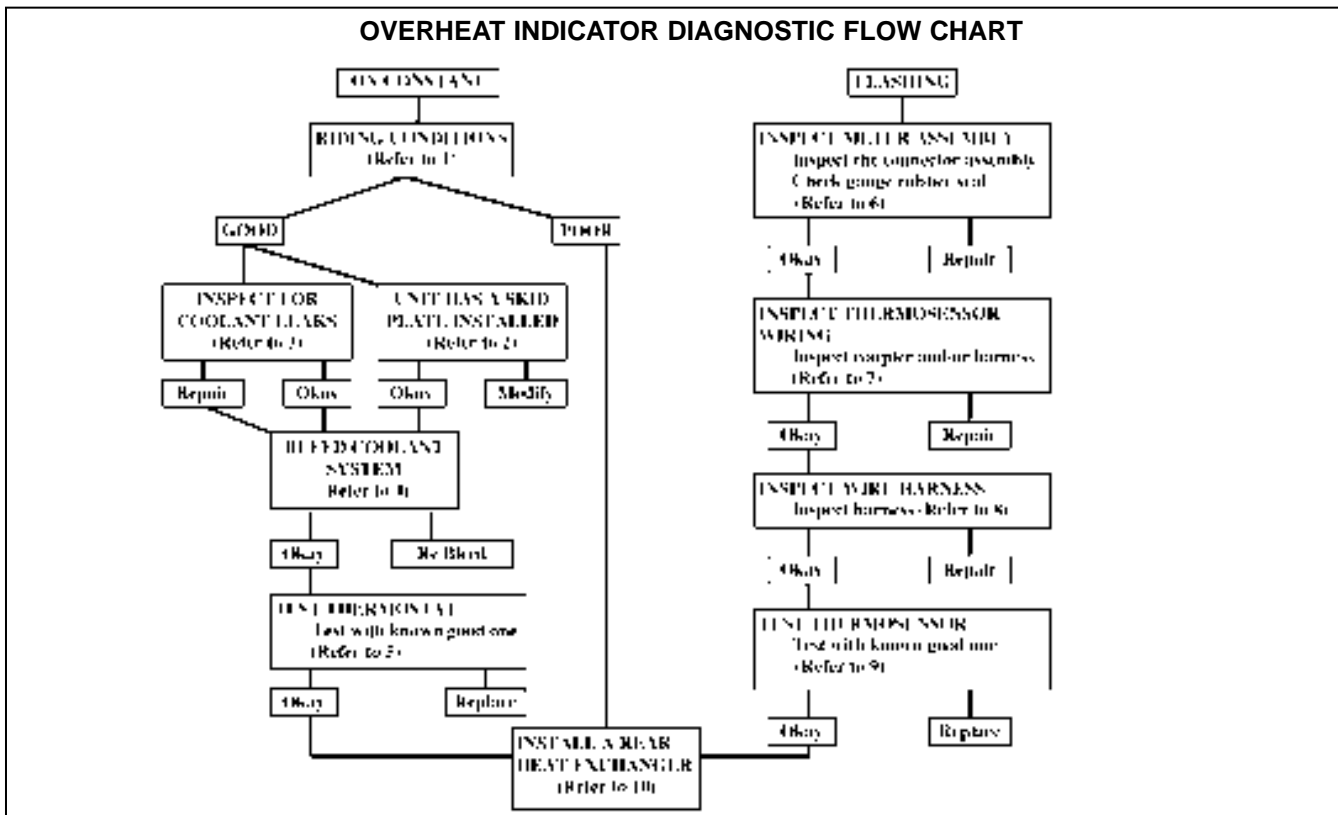
AFFECTED RANGE

Any 2002 SXViper with the overheat warning indicator activated.



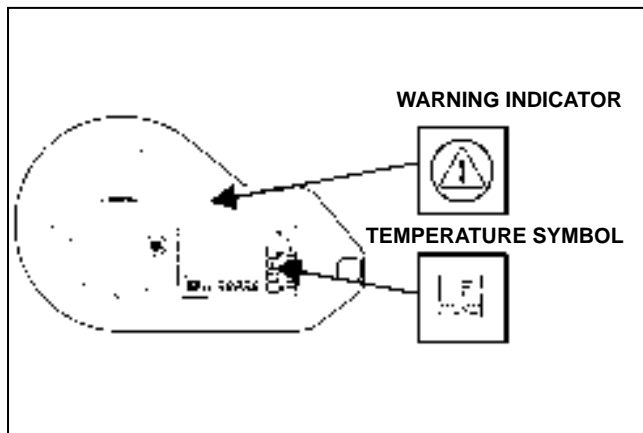
SERVICE PROCEDURES

Use the following diagnostic flow chart and the accompanying steps it references to find and correct the problem.



To diagnose and repair the problem properly, you need to know:

- What were the riding conditions when the overheat warning indicators came on?
- Was there sign of actual overheating (coolant boiling over) or just the warning indicator?
- Were the overheat warning indicators on constantly or flashing? Indicators on constantly usually indicate overheating; indicators which are flashing usually indicate an electrical system problem. For example, a pattern of eight short flashes points to a short or open in the thermosensor circuit.



Overheat Warning Diagnostic Steps

The following are areas to be inspected or tested to resolve listed cooling system problems. Refer to the SXV70G/ERG Service Manual (LIT-12618-02-22) for proper testing procedures.

1. Riding Conditions

GOOD: Snow-covered trail or lake conditions. Medium driving speeds or higher.

POOR: Ice-covered conditions. Marginal or no snow coverage. Very slow driving speeds with high engine rpm.

2. Accessory Skid Plate Installed

- Confirm the skid plate does not extend past the front heat exchanger. If the heat exchanger is covered, an ice dam could cover the heat exchanger causing an overheat condition.
- To correct, trim the skid plate to expose the heat exchanger to provide the necessary clearance.

3. Inspect for Coolant Leaks

Inspect the engine area for any signs of coolant leakage. Correct any problems if found.

NOTE:

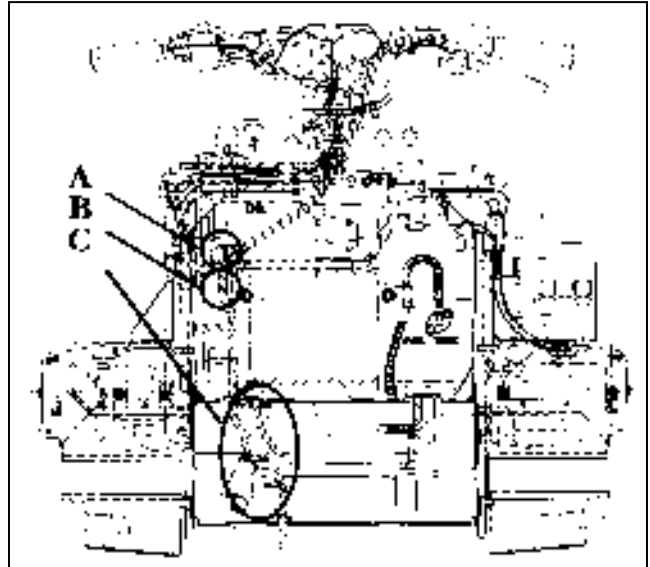
- If coolant comes out of the overflow tube, check for an overfilled coolant recovery tank. If the tank is filled past the “Cold” level mark, excess coolant can spill out.
- If you find coolant under the crankcases below the water pump, inspect for spline wear on the water pump impeller and impeller shaft. If splines are worn, replace both impeller and shaft. Before reassembly, clean off the impeller and shaft splines, then apply Loctite® 684 to the **splines**. Do not apply Loctite to the mounting bolt threads. Use a new sealing washer during reassembly. Allow the Loctite® to cure at room temperature for 24 hours before adding coolant or using the engine.

4. Bleed Cooling System

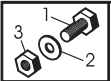
- Remove the seat and rear bumper cover. Fill the recovery tank with coolant to full “Cold” mark.
- Raise the rear of the snowmobile so the rear air bleed bolt is higher than the recovery tank.
- Loosen the rear bleed bolt, and bleed coolant until no air bubbles appear. Retighten the bolt.
- Recheck the level in the recovery tank.
- Turn the carburetor heater valve to the “ON” position.
- Check the coolant level and install the coolant filler cap.
- Apply and lock the parking brake. Run the engine at approximately 2,500 ~ 3000 rpm until the coolant circulates (about 3~5 minutes). The side heat exchangers should be warm to the touch.
- Carefully remove the coolant filler cap.
- Bleed the cooling system again as described above.
- Add coolant to the recovery tank to the “Cold” level.
- Reinstall the rear bumper cover and seat.

5. Inspect Thermostat
If the side heat exchangers do not heat up, (no problems found after bleeding the cooling system), then inspect and test the thermostat as explained in the Service Manual or test with a known good thermostat.
6. Inspect Meter Assembly
 - Inspect the wire harness connector at the back of the meter for bent or damaged pins.
 - Make sure the harness rubber-sealing boot is contacting the back of the housing.
7. Inspect Thermosensor Coupler/Harness
 - Inspect the coupler for broken wires or poor connection.
 - Inspect the wire lead from the main harness to the thermosensor for a loose fit. If this wire lead is too tight, it will cause a wire failure at the thermosensor.

NOTE: The thermosensor harness coupler will soon be available as a repair kit.
8. Inspect Wire Harness
The following areas of the wire harness should be inspected for any rub or cut damage:
 - A** Coolant hose clamp on the thermostat housing.
 - B** Pinched harness between the chaincase mounting bolt and coolant hose.
 - C** Under the engine.



9. Inspect Thermosensor
If you suspect a faulty thermosensor, test the thermosensor as outlined in the Service Manual or use a known good part.
10. Install a Rear Heat Exchanger Kit (8EK-RHECR-KT)
Under certain conditions, a rear heat exchanger kit may be required. Parts and labor costs for installation of the rear heat exchanger kit are not covered by warranty. See installation instructions provided in the kit.



PARTS INFORMATION

Part Number	Description	Qty.	Dealer Cost	MSRP
8EK-RHECR-KT-00	Rear Heat Exchanger Kit containing necessary rivets.	1	\$43.00	\$50.00



WARRANTY INFORMATION

Modifications to the skid plate, cooling system maintenance, and the installation of the rear heat exchanger kits are **not** covered by warranty.

Should a problem be found with the electrical components or wiring harness, these are to be handled as per normal warranty procedures.