1984 - 1992 Corvette: Service Bulletin: Intermittent Transmission Downshift / Slip Diagnosis

Subject: INTERMITTENT TRANSMISSION DOWNSHIFT, SLIP OR BUSY/CYCLING TCC
Model and Year: 1983-92 ALL PASSENGER CARS AND TRUCKS WITH AUTOMATIC TRANSMISSION
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Some owners may comment that their vehicle is experiencing one or more of the following transmission conditions:

- Intermittent slipping. - Intermittent downshift followed by an upshift, both with no apparent reason. - Busyness or cycling of the TCC at steady throttle conditions and level roadway.

The cooling fan operates when the thermostat on the fan clutch reaches a preset temperature. When this temperature is reached, the fan engages to draw additional air through the radiator and lower the engine temperature. When the cooling fan engages, noise increases and may sound very similar to an increase in engine RPM due to transmission downshift, slipping or TCC cycling. When engine temperature lowers to a preset point the fan clutch will disengage. When the cooling fan disengages, noise levels will decrease and may sound very similar to a decrease in engine RPM.

The type of concern described above requires further definition and the customer should be asked several questions:

- Is the situation more pronounced at higher vehicle loads or pulling a trailer? - Do warmer ambient temperatures make the situation more pronounced as

well?

If the customer's responses indicate that both of these conditions apply, and your observation of the vehicle confirms a properly operating vehicle, provide the customer the vehicle operating description included in this bulletin. Further action may not be necessary.

A service procedure follows if further definition is required.

SERVICE PROCEDURE:

When attempting to diagnosis an intermittent transmission downshift, slip or busy/cycling TCC:

1. Check fluid level and condition as outlined in section 7A of the appropriate service manual.

2. Test drive the vehicle under the conditions described by the customer (ambient temperature, engine coolant temperature, trailering, etc.). It may be necessary to partially restrict airflow to the radiator to raise engine coolant temperature to match customer conditions.

3. Monitor engine RPM and engine coolant temperature using a scan tool.

4. Listen for an apparent increase in engine RPM.

If engine RPM sounds like it increases, check the scan tool RPM and coolant temperature readings. If the noise increase is due to engagement of the fan the engine RPM will not increase and engine coolant temperature will begin to decrease after the fan engages. As the fan runs the engine coolant temperature will drop and the fan will disengage reducing noise levels, engine RPM will not decrease. This cycle will repeat as engine coolant temperature again rises.

If the above procedure shows the condition to be cooling fan related, no

further action is necessary. The vehicle should be returned to the customer and the condition explained.

If the above procedure shows the condition to be other than cooling fan related, refer to section 7A of the appropriate service manual for transmission diagnosis information.

Intermittent Transmission Downshift

All light duty trucks are equipped with a thermostatic engine cooling fan. This fan is designed to provide greater fuel efficiency and quieter operation than a standard fan. These benefits are possible through the addition of a thermostatic clutch to the fan drive.

When the engine is cool the clutch allows the fan to "slip" or turn at a speed slower than the engine. By turning at a slower speed the fan uses less horsepower, which saves fuel, and is quieter. When the engine temperature reaches a preset temperature, the fan "engages" and turns at the same speed as the engine.

"Engagement" of the fan provides increased airflow through the radiator to cool the engine. As the airflow increases, fan operation becomes clearly audible. This increase in noise can easily be mistaken for an increase in engine RPM and may be incorrectly blamed on the automatic transmission.

When operating an unloaded vehicle in cooler ambient temperatures, the thermostatic clutch usually won’t engage. However, if the vehicle is pulling a trailer, heavily loaded or operated at high ambient temperatures the thermostatic clutch may cycle on and off as the engine temperature rises and falls.

The sound of fan operation under the conditions described above is a sign that the cooling system on your vehicle is working correctly. Replacement or modification of cooling system or transmission parts will not change or reduce

the noise level. Attempts to reduce this noise will only give you, the customer, a false sense of vehicle unreliability and the inconvenience of having your vehicle out of service.

General Motors bulletins are intended for use by professional technicians, not a "do-it-yourselfer". They are written to inform those technicians of conditions that may occur on some vehicles, or to provide information that could assist in the proper service of a vehicle. Properly trained technicians have the equipment, tools, safety instructions and know-how to do a job properly and safely. If a condition is described, do not assume that the bulletin applies to your vehicle, or that your vehicle will have that condition. See a General Motors dealer servicing your brand of General Motors vehicle for information on whether your vehicle may benefit from the information.

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