DIAGNOSIS

Before diagnosis of any transmission complaint is attempted, there must be understanding of fluid checking procedure and what appearance the fluid should have. Many times a transmission malfunction can be traced to low fluid level or improper reading of oil level gauge. Due to the transmission fluid that is now being used it may appear to be darker and have a stronger odor.

This is normal, and not a positive sign of required maintenance or transmission failure.

Also when the oil level gauge is removed, it should be noted whether the fluid is devoid of air bubbles or not. Fluid with air bubbles gives an indication of an air leak in the suction lines, which can cause erratic operation and slippage. Water in the fluid imparts a milky, pink cast to the fluid and can cause spewing. Water in the fluid can also cause swelling of nylon parts.

PRELIMINARY CHECKING PROCEDURE

1. Check and correct fluid level (see fluid level and capacity in page 7B-16).
2. Road test vehicle to verify transmission problem using all selective ranges, noting discrepancies in operation.
3. If engine performance indicates an engine tune-up is required, this should be performed before road testing is completed or transmission correction attempted. Poor engine performance can result in transmission problems.
4. Check kick-down cable adjustment.
5. Check and correct vacuum lines and fittings.
6. Check and correct select cable.
7. Install oil pressure gauge and compare with pressure readings in page 7B-4.
8. Isolate the unit or circuit involved in the malfunction.

	Condition	Possible cause	Correction
CONCERNS TRANSMISSION FLUID	Low fluid level.	• Fluid coming out of oil filler tube. • External fluid leak. • Failed vacuum modulator.	Adjust fluid level. Repair leak. Replace modulator.
	Fluid coming out of oil filler tube.	• Fluid level too high. • Coolant in transmission fluid. • Breather hose pinched. • Leak in oil pump suction circuit.	Adjust level. Replace radiator. Correct piping. Overhaul.
	External fluid leaks in the area of torque converter housing.	• Leaking torque converter. • Converter housing oil seal. • Converter housing to case seal. • Loose fastening bolts.	Replace torque converter. Replace oil seal. Replace seal. Tighten bolts.
	External fluid leaks in the area of transmission case and transfer adapter case.	• Manual select shaft seal. • Adapter case seal. • Oil pan gasket. • Adapter case gasket. • Vacuum modulator O ring. • Cooler line fittings. • Oil filler tube O ring. • Kick-down cable O ring. • Line pressure gauge connection. • Electrical connector O ring.	Replace oil seal. Replace oil seal. Replace gasket. Replace gasket. Replace O ring. Tighten fastenings. Replace O ring. Replace cable. Tighten plug. Replace O ring.
	Low fluid pressure.	• Low fluid level. • Clogged oil pump screen. • Leak in oil pump suction circuit. • Leak in oil pressure circuit. • Pressure regulator valve malfunction. • Sealing ball (plug) in valve body dropped out.	Adjust fluid level. Wash screen. Overhaul. Overhaul. Overhaul oil pump. Replace valve body.
	High fluid pressure.	• Modulator vacuum line leaky or interrupted. • Failed vacuum modulator. • Leak in any part of engine or accessory vacuum system. • Pressure regulator valve malfunction.	Repair line. Replace modulator. Repair leak. Overhaul oil pump.
	Excessive smoke coming from exhaust.	Failed vacuum modulator.	Replace modulator.

Condition	Possible cause	Correction
No torque converter clutch applied.	• 12 volts not being supplied to transmission. • Ground inside of transmission. • Defective connector, wiring harness, or TCC solenoid valve. • Defective pressure switch. • Sticking converter clutch control valve. • TCC solenoid valve O ring cut or leaking. • Oil pump wear plate to gasket mispositioned or damaged. • High or uneven bolt torque on converter housing to oil pump bolts. • Cut O ring on turbine shaft.	Refer to p. 7B-14. Tighten bolt. Repair or replace. Replace switch. Overhaul oil pump. Replace solenoid valve. Repair or replace. Adjust torque. Replace converter.
No torque converter clutch release or shudder.	• Sticking torque converter clutch control valve. • Restricted torque converter clutch apply passage. • Low fluid or pressure. • Engine not tuned properly. • Cut O ring on turbine shaft.	Overhaul oil pump. Overhaul. Refer to p. 7B-9. Refer to p. 6E-80. Replace converter.
No starting in any drive range.	• Low fluid level. • Clogged oil pump screen. • Manual valve link or manual select shaft inner lever disconnected. • Input shaft broken. • Pressure regulator valve stuck in open position. • Failed oil pump.	Refer to p. 7B-9. Wash screen. Repair linkage. Replace shaft. Overhaul oil pump. Replace oil pump.
No starting in any drive range for a time. Driving possible only after repeatedly moving select lever to and fro.	Manual valve position does not coincide with valve body channels: • Manual select shaft spring pin dropped out. • Manual valve link bent. • Manual select shaft nut loose.	Install spring pin. Replace link. Tighten nut.
No starting after select Lever from P to D, 2 or L (inadequate engine acceleration).	• Parking pawl does not disengage.	Repair or replace.
Sudden starting only after increase of engine r/min.	• Servo piston jamming. • Low fluid level. • Oil pump defective. • Oil pump screen missing. • Sealing ball (plug) in valve body dropped out.	Repair or replace. Refer to p. 7B-9. Replace oil pump. Replace screen ass'y. Replace valve body.

	Condition	Possible cause	Correction
STARTING	Heavy jerking when starting.	• Low fluid pressure. • Wrong modulator valve. • Pressure regulator valve stuck. • Sealing ball (plug) in valve body dropped out.	Refer to p. 7B-9. Overhaul. Overhaul oil pump. Replace valve body.
	No starting in D or 2 range, but in L and R range.	• Input sprag installed backwards. • Input sprag failure.	Correct direction. Replace sprag.
	No starting in D or 2 and L (proper driving in R).	• Low band worn, does not grip • Servo piston jamming. • Excessive leak in servo piston. • Parking pawl does not disengage.	Replace band. Repair or replace. Replace ring. Repair or replace.
	No starting in R range (Proper driving in all other ranges).	• Reverse clutch failure.	Replace damaged parts.
	Drive in select lever position N.	• Inadequate select cable. • Planetary gear carrier broken. • Improper adjustment of low band.	Adjust cable. Replace planetary gear. Adjust servo piston.
GEAR CHANGE	No 1 – 2 upshift in D and 2 (transmission remains in 1st gear at all speeds).	• Governor valves stuck. • 1 – 2 shift valve stuck in 1st gear position. • Seal rings (oil pump hub) leaky. • Large leak in governor pressure circuit. • Governor oil screen clogged.	Overhaul governor. Overhaul valve body. Replace seal rings. Overhaul governor. Wash screen.
	No 2 – 3 upshift in D (transmission remains in 2nd gear at all speeds).	• 2 – 3 shift valve stuck. • Large leak in governor pressure circuit.	Overhaul valve body. Overhaul governor.
	Upshifts in D and 2 only at full throttle.	• Failed vacuum modulator. • Modulator vacuum line leaky or interrupted. • Leak in any part of engine or accessory vacuum system. • Kick-down valve or cable stuck.	Replace modulator. Repair line. Repair leak. Replace cable or overhaul.
	Upshifts in D and 2 only at part throttle.	• Kick-down pressure regulator valve stuck. • Kick-down cable broken or misadjusted.	Overhaul. Adjust or replace cable.
	Driving only in 1st gear of D and 2 range (transmission blocks in 2nd gear and R).	• 1st and R control valve stuck in 1st or R position.	Overhaul valve body.

Condition	Possible cause	Correction
No part throttle 3 – 2 downshift at low vehicle speeds.	• 3 – 2 downshift control valve stuck.	Overhaul valve body.
No forced downshift.	• Kick-down cable broken or improperly adjusted. • Kick-down pressure regulator valve stuck.	Adjust or replace cable. Overhaul.
After full throttle upshifting, transmission shifts immediately into lower gear upon easing off accelerator pedal.	• Kick-down valve stuck in open position. • Kick-down cable stuck. • Modulator vacuum line interrupted.	Overhaul. Replace cable. Repair line.
At higher speeds, transmission shifts into lower gear.	• Manual select shaft spring pin dropped out. • Loose connection of manual valve link. • Pressure loss at governor.	Install spring pin. Repair connection. Repair governor.
Hard disengagement of select lever from P position.	• Steel guide bushing of parking lock actuator missing. • Manual select shaft stuck.	Replace adapter case. Overhaul.
Slipping 1 – 2 upshifts (engine flares).	• Low fluid pressure. • Sealing ball(plug) in valve body dropped out. • Second clutch piston seals leaking. • Second clutch piston check ball stuck open. • Second clutch piston cranked or broken. • Second clutch plates worn. • Seal rings of oil pump hub leaky.	Refer to p. 7B-9. Replace valve body. Replace seals. Wash or replace piston. Replace piston. Replace plates. Replace seal rings.
Slipping 2 – 3 upshifts (engine flares).	• Low fluid pressure. • Low band adjustment loose. • Third clutch piston seals leaking. • Third clutch piston check ball stuck open. • Third clutch piston cracked or broken. • Wear of input shaft bushing. • Sealing ball (plug) in valve body dropped out.	Refer to p. 7B-9. Adjust servo piston. Replace seals. Wash or replace piston. Replace piston. Replace oil pump. Replace valve body.
Abrupt 1 – 2 upshift.	• High fluid pressure. • 1 – 2 accumulator valve stuck. • Spring cushion of second clutch broken.	Refer to p. 7B-9. Overhaul valve body. Replace cushion plate.

	Condition	Possible cause	Correction
SHIFTS	Abrupt 2 – 3 upshift.	• High fluid pressure. • Incorrect low band adjustment.	Refer to p. 7B-9. Adjust servo piston.
	Abrupt 3 – 2 detent downshift at high speed.	• High speed downshift valve stuck open. • Low band adjustment.	Overhaul valve body. Adjust servo piston.
	Abrupt 3 – 2 coast downshift.	• Low speed downshift timing valve stuck open.	Overhaul valve body.
	Flare on high speed forced downshift.	• Low fluid pressure. • Low band adjustment loose.	Refer to p. 7B-9. Adjust servo piston.
	Flare on low speed forced downshift.	• Low fluid pressure. • Low band adjustment loose. • High speed downshift timing valve stuck in closed position. • One-way clutch does not lock on 3 – 1 down shifting.	Refer to p. 7B-9. Adjust servo piston. Overhaul valve body. Replace sprag.
ENGINE BRAKING	No engine braking in L range.	• Select cable improperly adjusted. • Manual low control valve stuck.	Adjust cable. Overhaul valve body.
	No engine braking in 2 range.	• Select cable improperly adjusted.	Adjust cable.
	No park.	• Select cable improperly adjusted. • Parking lock actuator spring, parking pawl or governor hub malfunctioning.	Adjust cable. Repair or replace.
NOISES	Excessive noises in all drive ranges.	• Too much backlash between sun gear and planetary gears. • Lock plate on planetary carrier loose. • Thrust bearing defective. • Bearing bushings worn and excessive transmission axial play. • Converter housing bolt loose and contacting converter.	Replace gears. Replace planetary gear. Replace bearing. Replace transmission case. Tighten bolts.
	Screeching noise when starting.	• Torque converter failure.	Replace converter.
	Short vibrating, hissing noise shortly before 1 – 2 upshift.	• Spring cushion of reverse clutch wearing into transmission case.	Replace transmission case.
	Buzzing noise.	• Clogged oil pump screen.	Wash screen.
ABRASIVE	Excessive amount of iron dust (can be picked up by magnet) in oil pan.	• Oil pump, governor hub or second clutch hub.	Wash or replace.
	Excessive amount of aluminum dust (cannot be picked up by magnet) in oil pan.	• Thrust face in case, rear bore of case or torque converter inside.	Wash or replace.