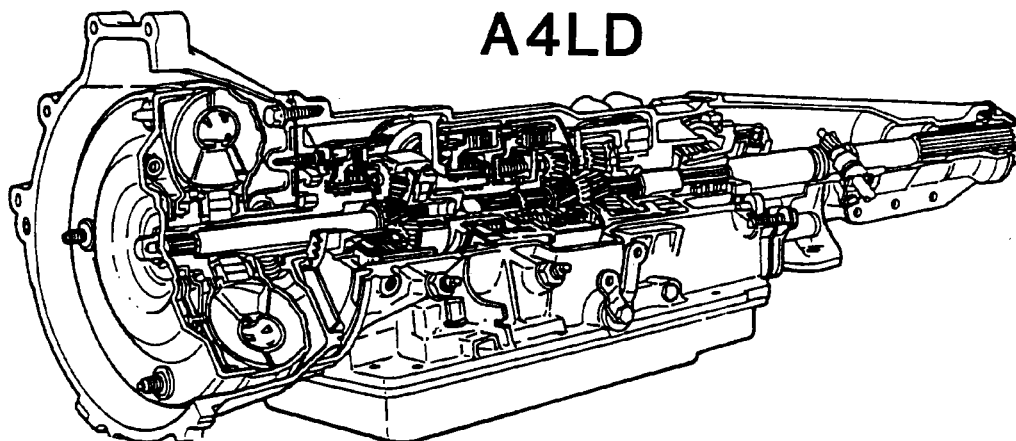




Technical Service Information



A4LD

Transmission Service Identification

All vehicles are equipped with a Safety Standard Certification Label affixed to the left (driver's) side door lock post. Refer to the stamped code in the space marked "Trans." for proper transmission identification.

Plates and instructions for the specific transmission identification coding. The transmission is also identified by a tag on the transmission body.

MFD. BY FORD MOTOR CO. IN U.S.A.

DATE: _____ GVWR: _____

FRONT GAWR: _____ REAR GAWR: _____

WITH TIRES RIMS

WITH TIRES RIMS

AT PSI COLD _____ AT PSI COLD _____

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

VEHICLE IDENTIFICATION NO. _____

TYPE _____ DSO _____

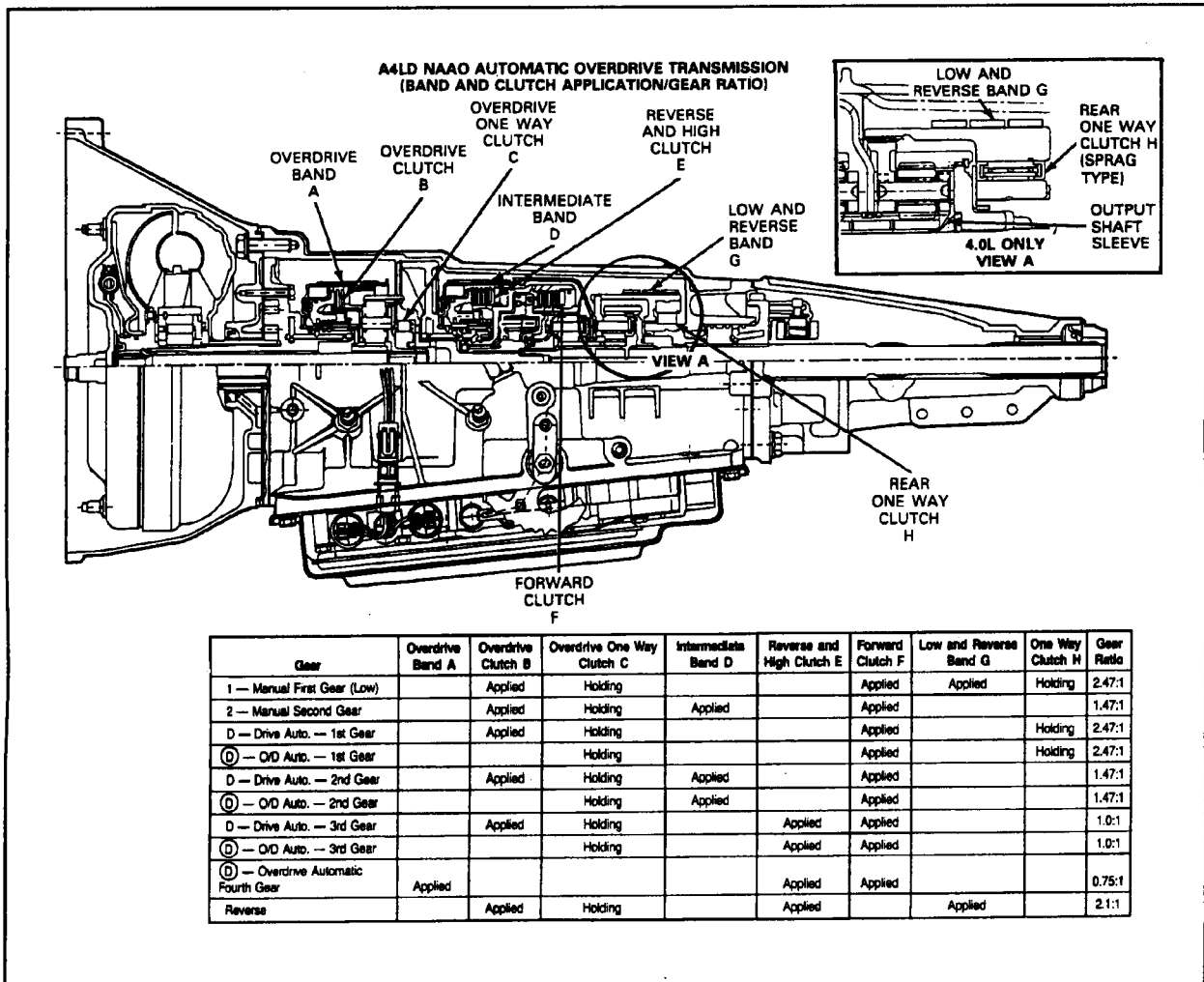
EXTERIOR PAINT COLORS

WB	TYPE	GVW	BODY	TRANS	AXLE	TAPE	SPRINGS		DSO
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TRANSMISSION CODE

AUTOMATIC TRANSMISSION MODEL IDENTIFICATION		
<p>MODELS ARE IDENTIFIED BY A SERVICE IDENTIFICATION TAG AFFIXED TO THE ASSEMBLY. TAGS ARE LOCATED AND CONTAIN INFORMATION AS FOLLOWS:</p>		
A4LD	<p>ATTACHED TO THE LOWER LEFT HAND EXTENSION ATTACHING BOLT.</p>	<p>TRANSMISSION MODEL LINE SHIFT CODE</p> <p style="text-align: center;">BUILD DAY CODE</p>

AUTOMATIC TRANSMISSION SERVICE GROUP



Automatic Transmission Test Linkage Check Accelerator Linkage and Operation

The linkage must be free and must return to idle when released.

Manual Linkage

This is a critical adjustment. Be sure the Ⓞ (Overdrive) detent in the transmission corresponds exactly with the stop in the console or column insert plate. Hydraulic leakage at the manual valve can cause delay in engagements and / or slipping while operating if the linkage is not properly adjusted.

*Can be purchased as a separate item.

Automatic Transmission Fluid Checking and Adding Procedure

Under normal circumstances, you do not need to check the fluid level of the transmission, since your vehicle does not use up transmission fluid. However, if the transmission is not working properly—for instance, the transmission may slip or shift slowly, or you may notice some sign of fluid leakage—the fluid level should be checked.

It is preferable to check the transmission fluid level at normal operating temperature, after approximately 20 miles (32 km) of driving. However, if necessary, you can check the fluid level without having to drive 20 miles to obtain a normal operating temperature if outside temperatures are above 10°C (50°F).

NOTE: If the vehicle has been operated for an extended period at high speeds or in city traffic during hot weather, or pulling a trailer, the vehicle should be turned off for about 30 minutes to allow the fluid to cool before checking.

Checking The Automatic Transmission Fluid

With the vehicle on a level surface, start the engine and move the transmission shift selector through all of the gear ranges allowing sufficient time for each position to engage. Securely latch the transmission shift selector in the park position, fully set the parking brake and leave the engine running.

NOTE: Vehicles equipped with 4x4 applications must have the 4x4 shift selector in any position other than neutral.

CAUTION: YOUR VEHICLE SHOULD NOT BE DRIVEN IF THE FLUID LEVEL IS BELOW THE BOTTOM HOLE ON THE DIPSTICK AND OUTSIDE TEMPERATURES ARE ABOVE 10°C (50°F).

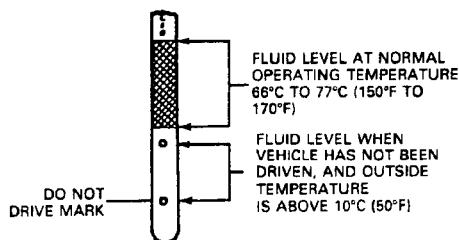
Wipe off the dipstick cap, pull the dipstick out and wipe the indicator end clean. Put the dipstick back into the filler tube and make sure it is fully seated. Pull the dipstick out and read the fluid level.

When checking fluid at normal operating temperature, the fluid level should be within the crosshatched area on the dipstick. When the vehicle has not been driven, and outside temperature is above 10°C (50°F). The fluid level should be between the holes on the dipstick.

Adding Fluid

The fluid type is stamped on the dipstick. Before adding any fluid, be sure that the correct type will be used.

Add fluid in .25L (1/2 pint) increments through the filler tube to bring the level to the correct area on the dipstick. If an overfill occurs, excess fluid should be removed.



Overfill can cause the fluid to foam and spill out through the transmission vent resulting in a transmission malfunction.

Underfill can result in transmission loss of engagement or slipping. This condition is most evident in cold weather or when the vehicle is parked or being driven on a hill.

If the transmission fluid level is checked when the fluid is at room temperature the dipstick could indicate that fluid should be added if the dipstick is misread. If fluid is added at this time, an overfill condition could result when the fluid reaches operating temperatures of 66°C-77°C (150°F-170°F) (dipstick hot to touch).

Transmission Fluid Condition Check

1. Make the normal fluid check according to the above procedure.
2. Observe color and odor of the fluid. It should be dark reddish, not brown or black. A burnt odor can sometimes indicate that there is an overheating condition or clutch disc or band failure.
3. Use an absorbent white paper (facial tissue, etc.) to wipe the dipstick. Examine the stain for evidence of solids (specks of any kind) and for antifreeze signs (gum or varnish on dipstick).

If specks are present in the oil or there is evidence of antifreeze, the transmission oil pan must be removed for further inspection. If antifreeze is found in the transmission fluid, the in-tank transmission cooler must be repaired or replaced. If fluid contamination or transmission failure is confirmed by further evidence of coolant or excessive solids in the oil pan, the transmission must be disassembled and completely cleaned and repaired. This includes cleaning the torque converter and transmission cooling system. It would be a waste of time to perform any further checks before cleaning and servicing the transmission.

During disassembly and assembly, all overhaul checks and adjustments of clearances and end play must be made.



Transmission Fluid Leakage Checks

Check the speedometer cable connection at the transmission. Replace the rubber O-ring if necessary. Leakage at the oil pan gasket often can be stopped by tightening the attaching bolts to the proper torque. If necessary, replace the gasket.

Check the fluid filler tube connection at the transmission case. Check filler tube O-ring seal for damage or omission. If leakage is found, install a new short oil inlet tube and O-ring seal, or clean the area and apply a sealer around the tube. The filler tube bracket should align properly and be attached to the transmission or engine locations.

Check the fluid lines and fittings between the transmission and the cooler in the radiator tank for looseness, wear, or damage. If leakage is found, tighten the fitting (as shown in chart below), or replace the damaged parts.

Transmission	Radiator		Transmission		Fluid Line Nut	
	(ft-lbs)	N-m	(ft-lbs)	N-m	(ft-lbs)	N-m
A4LD	(18-23)	24-31	(18-23)	24-31	(12-18)	16-24

Check the engine coolant in the radiator. If transmission fluid is present in the coolant, the cooler in the radiator is probably leaking.

The cooler can be further checked for leaks by disconnecting the lines from the cooler fittings and applying 345-517 kPa (50-75 psi) air pressure to the fittings. Remove the radiator cap to relieve the pressure buildup at the exterior of the oil cooler tank. If the cooler is leaking and/or will not hold pressure, the cooler must be replaced.

If leakage is found at the downshift control lever and the manual lever shaft, replace the seal.

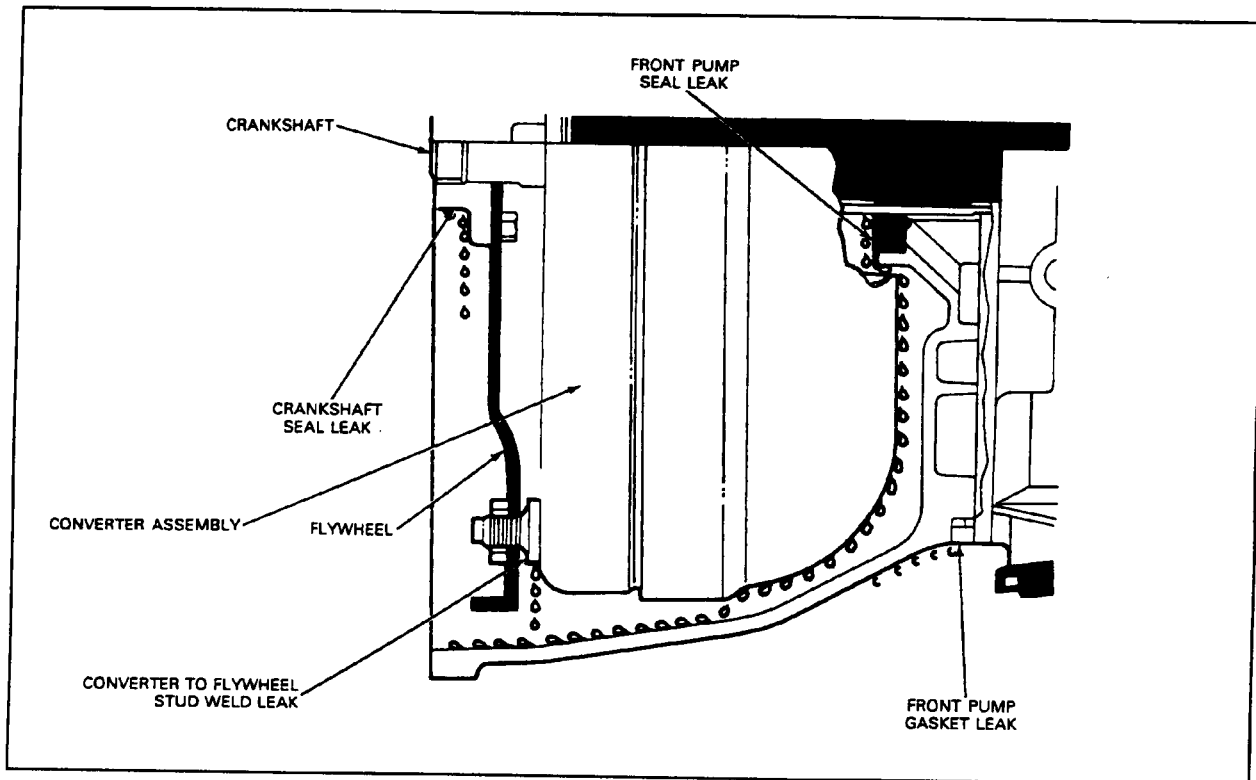
Inspect the pipe plug on the left rear side of the transmission case. If the plug shows leakage, tighten the plug to specifications. If leakage continues, replace the plug.

Fluid leakage from the converter housing may be caused by engine oil leakage past the rear main bearing, or from oil galley plugs, or power steering fluid leakage from steering system. Be sure to determine the exact cause of the leak before starting service procedures.

Oil-soluble aniline or fluorescent dyes premixed at the rate of 1/2 teaspoon of dye powder to 0.23 liter (1/2 pint) of transmission fluid have proved helpful in locating the source of fluid leakage. Such dyes may be used to determine whether an engine oil or transmission fluid leak is present, or if the fluid in the oil cooler leaks into the engine coolant system. A black light must be used with the fluorescent dye solution.

Fluid Leakage in Converter Area

In diagnosing and correcting fluid leaks in the front pump and converter area, use the following procedures to locate the exact cause of the leakage. Leakage at the front of the transmission, evidenced by fluid around the converter housing, may have several sources. By careful observation, it is possible in many instances, to pinpoint the source of the leak before removing the transmission from the vehicle. The paths which the fluid takes to reach the bottom of the converter housing are shown.



1. Fluid leaking by the front pump seal lip will tend to move along the impeller hub and onto the back of the impeller housing. Except in the case of a total seal failure, fluid leakage by the lip of the seal will be deposited on the inside of the converter housing only, near the outside diameter of the housing.
2. Fluid leakage by the outside diameter of the seal and front pump body will follow the same path which the leaks by the front pump seal follow.
3. Fluid that leaks by a front pump-to-case bolt will be deposited on the inside of the converter housing only. Fluid will not be deposited on the back of the converter.
4. Leakage by the front pump-to-case gasket may cause fluid to seep down between the front of the case and converter housing.
5. Fluid leakage from the converter-to-flywheel stud weld will appear at the outside diameter of the converter on the back face of the flywheel, and in the converter housing only near the flywheel.

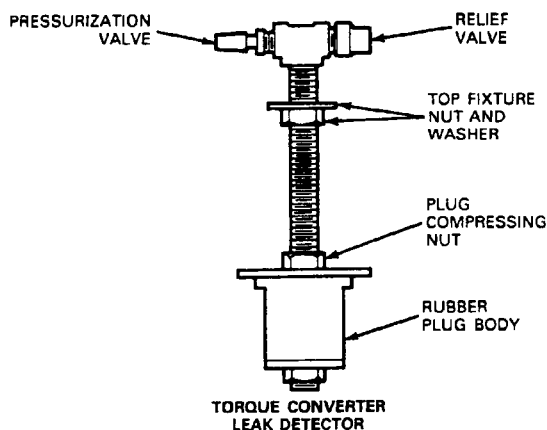
Engine oil leaks are sometimes improperly diagnosed as transmission front pump seal leaks. The following areas of possible leakage should also be checked to determine if engine oil leakage is causing the problem:

- a. Leakage at the rocker arm cover (valley cover) may allow oil to flow over the converter housing or seep down between the converter housing and cylinder block, causing oil to be present in or at the bottom of the converter housing.
 - b. Oil galley plug leaks will allow oil to flow down the rear face of the block to the bottom of the converter housing.
 - c. Leakage by the crankshaft seal will work back to the flywheel, and then into the converter housing.
6. Fluid leakage from other areas, such as the power steering system forward of the transmission, could cause fluid to be present around the converter housing due to blow-back or road draft. The following procedures should be used to determine the cause of the leakage before any repairs are made.

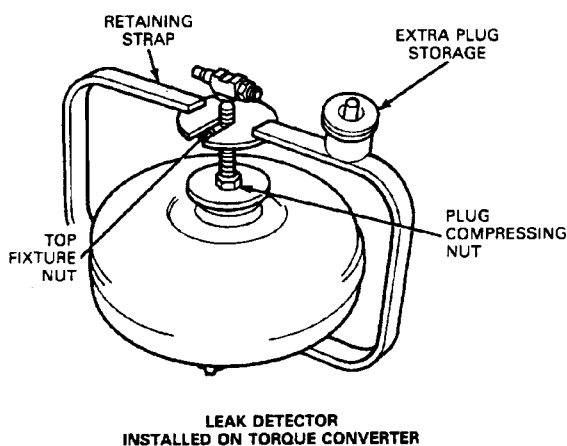
- a. Remove the transmission dipstick and note the color of the fluid. Original factory-fill fluid is dyed red, to aid in determining if leakage is from the engine or transmission. Unless a considerable amount of makeup fluid has been added, or the fluid has been changed, the color should assist in pinpointing the leak. Since road draft may cause leaking power steering fluid to be present on the transmission, this leakage, if present, should be eliminated before checking the transmission for fluid leakage.
- b. Remove the converter housing cover. Clean off any fluid from the top and bottom of the converter housing, front of the transmission case, and rear face of the engine and engine oil pan. Clean the converter area by washing with a suitable nonflammable solvent, and blow dry with compressed air.
- c. Wash out the converter housing and the front of the flywheel. The converter housing may be washed out using cleaning solvent and a squirt-type oil can. Blow all washed areas dry with compressed air.
- d. Start and run the engine until the transmission reaches its normal operating temperature. Observe the back of the block and top of the converter housing for evidence of fluid leakage. Raise the vehicle on a hoist and run the engine at fast idle, then at engine idle, occasionally shifting to the drive and reverse ranges to increase pressure within the transmission. Observe the front of the flywheel, back of the block (in as far as possible), and inside the converter housing and front of the transmission case. Run the engine until fluid leakage is evident and the probable source of leakage can be determined.

Converter Leakage Check

If welds on the torque converter indicate leakage, remove the converter and make the following check.



Assemble Rotunda 021-00047 or 021-00054 Torque Converter Leak Tester or equivalent to the converter as shown. Test the converter for leaks following the directions supplied with the detector kit.



Control Pressure Test

There are two methods of performing the control pressure test. One is to perform the test using the engine vacuum. The second method is to use a remote vacuum source such as the one provided by a distributor tester or a hand operated vacuum pump.

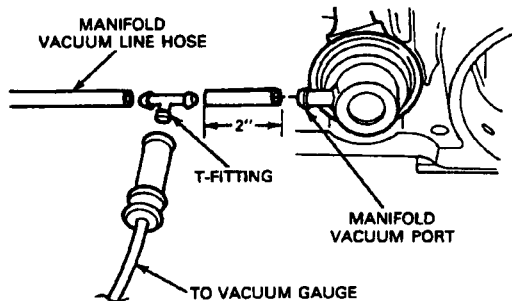
Engine Vacuum Pressure

When the vacuum diaphragm unit is operating properly and the manual and downshift linkage is adjusted properly, all the transmission shifts (automatic and kickdown) should occur within the road speed limits listed in the Technical Service Bulletin—Special Specifications Issue.

If the shifts do not occur within limits, or the transmission slips during the shift point test, use the following procedure to determine whether the engine, transmission, linkage, vacuum diaphragm unit, or valve body is causing the condition.

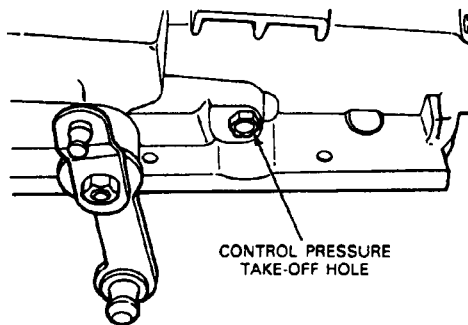
Engine Vacuum Procedure

1. Attach a tachometer to the engine and a Vacuum Gauge, Rotunda Number 059-00008, or equivalent to the transmission vacuum line at the manifold vacuum port.

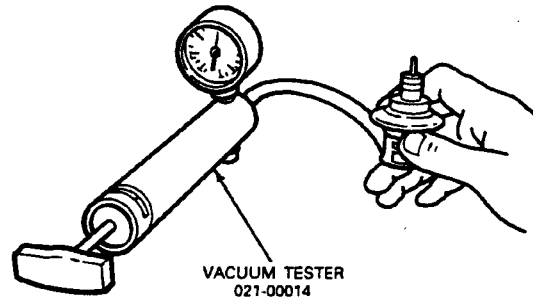


DIAPHRAGM CONNECTION

2. Attach a pressure gauge to the control pressure outlet at the transmission.



3. Firmly apply the parking brake and start the engine.
4. Check the throttle and downshift linkage for a binding condition. If linkage is satisfactory, check for vacuum leaks in the transmission diaphragm unit and its connecting tubes and hoses. Check all other vacuum-operated units (such as the power brake) for vacuum leaks.



Refer to the two control pressure diagnostic guides to show what components are inoperative when the control pressure test is not within specifications. Do not proceed with the main diagnosis guide until you have made any repairs, as required, and the control pressure is within specifications as listed in the Performance Specifications Book or Special Specifications Issue of the Technical Service Bulletin.

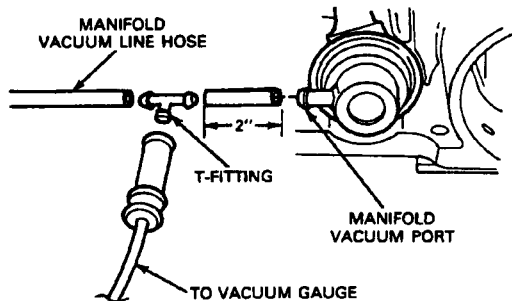
Vacuum Pump Method

Install an adjustable vacuum source. Disconnect and temporarily plug the vacuum line at the vacuum diaphragm unit. Apply both the parking and service brakes. Start the engine and vacuum pump. Set the vacuum at 15 inches, read and record the control pressure in all selector positions. Run the engine up to 1000 rpm, and reduce the vacuum to 10 inches. Read and record the control pressure in \odot , D-2 and 1. Keep the engine at 1000 rpm and reduce the vacuum to 1 inch. Read and record the control pressure in \odot , D-1, 2 and R.

Refer to the two control pressure diagnosis charts to show what components are inoperative when the control pressure test is not within specification. Do not proceed with the main diagnosis chart until serviced as required, and the control pressure is within specification as listed in the Performance Specifications Book or Special Specifications Issue of the Technical Service Bulletin.

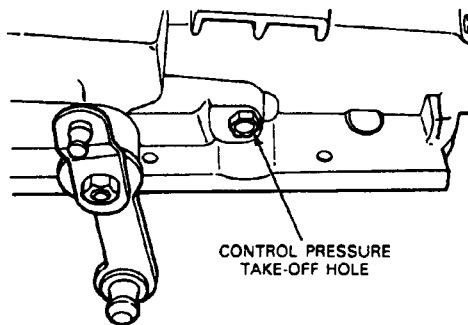
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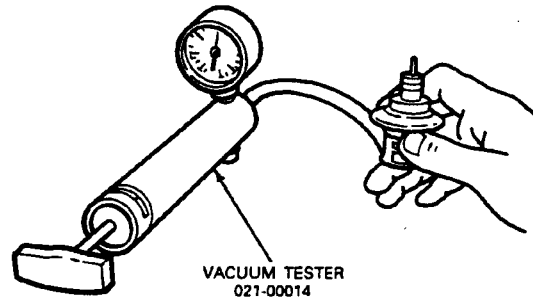


DIAPHRAGM CONNECTION

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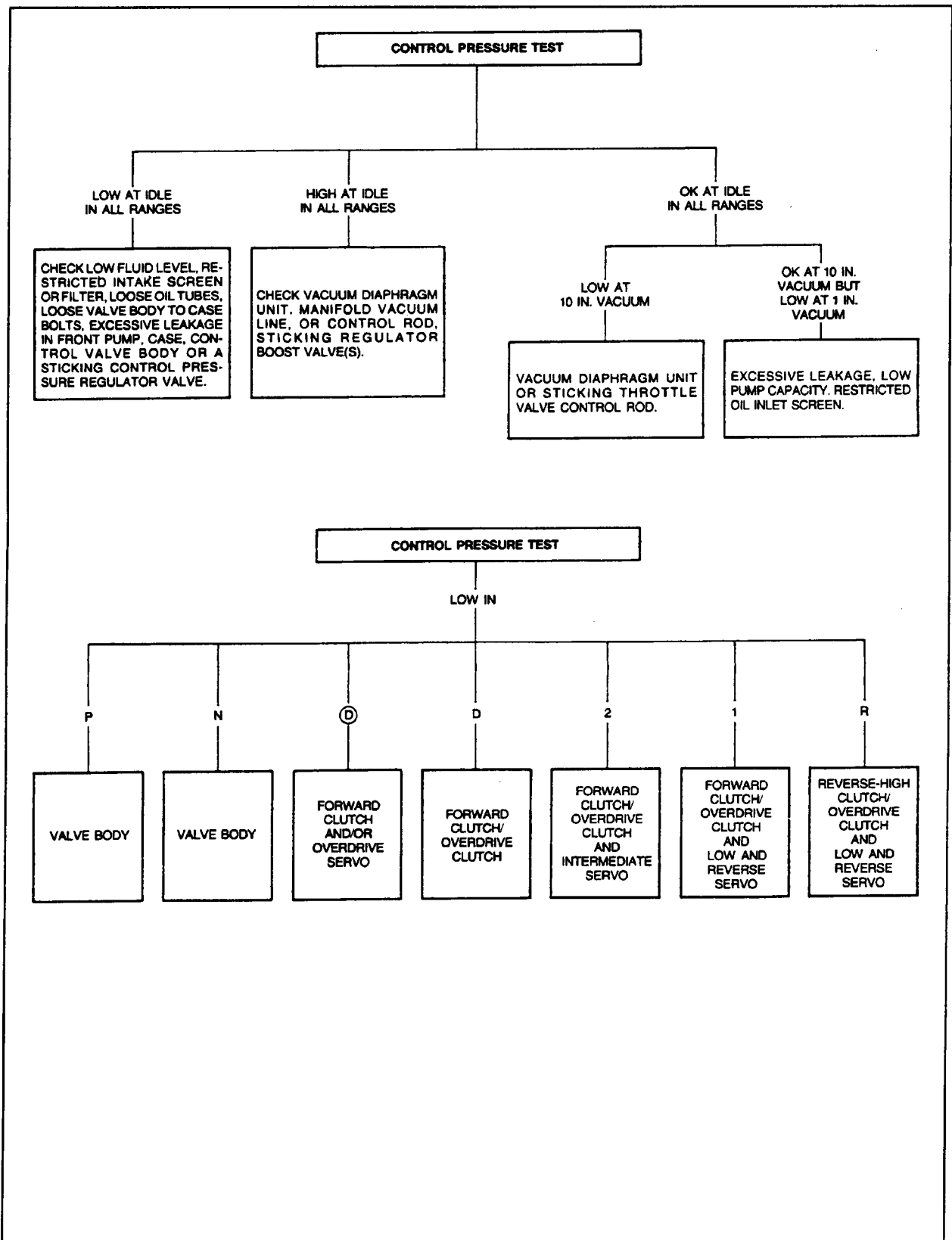


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Technical Service Information

Vacuum Supply Test

The vacuum supply to the vacuum diaphragm unit and the diaphragm itself must be checked. To check the supply, disconnect the vacuum line at the diaphragm unit and connect it to a vacuum gauge. With the engine idling, the gauge must have a steady acceptable vacuum reading for the altitude at which the test is being performed. If the vacuum reading is low, check for a vacuum leak or poor engine vacuum. If the vacuum reading is OK, rapidly accelerate the engine momentarily. The vacuum reading must drop rapidly at acceleration and return immediately upon release of the accelerator. If the vacuum reading does not change or changes slowly, the transmission vacuum line is plugged, restricted or connected to a reservoir supply. Correct as required.

Vacuum Diaphragm Test—On Vehicle

To check the vacuum diaphragm unit, start the vacuum pump and set the regulator knob so that the vacuum gauge reads 18 inches with the end of the vacuum hose blocked off. Then connect the vacuum hose to the diaphragm unit. If the gauge still reads 18 inches, the vacuum diaphragm unit is not leaking. If the reading does not remain at 18 inches, but drops, the vacuum diaphragm unit is leaking. Replace the vacuum diaphragm unit. Also, if automatic transmission fluid is present in the vacuum side of the diaphragm or in the vacuum hose, the diaphragm is leaking and must be replaced.

Vacuum Diaphragm Test—Off Vehicle

To check the vacuum unit for diaphragm leakage, remove the unit from the transmission. Use a Vacuum Tester, Rotunda Number 021-00014, or equivalent. Adjust the tester until the vacuum gauge reads 18 inches with the end of the vacuum hose blocked off.

Connect the vacuum hose to the manifold vacuum port as shown. If the gauge still reads 18 inches, the vacuum unit diaphragm is not leaking. A second leakage check can be made as the hose is removed from the transmission vacuum unit. Hold a finger over the end of the control rod. When the hose is removed the internal spring of the vacuum unit should push the control rod outward. If the vacuum diaphragm needs replacing, install a new unit that has been released for service. Vacuum diaphragm assembly identification is given at end of this section.