Component Procedures: Automatic Transmission/Transaxle

Table of Contents

Component Procedures: Automatic Transmission/Transaxle

Adjustments (itype_5)

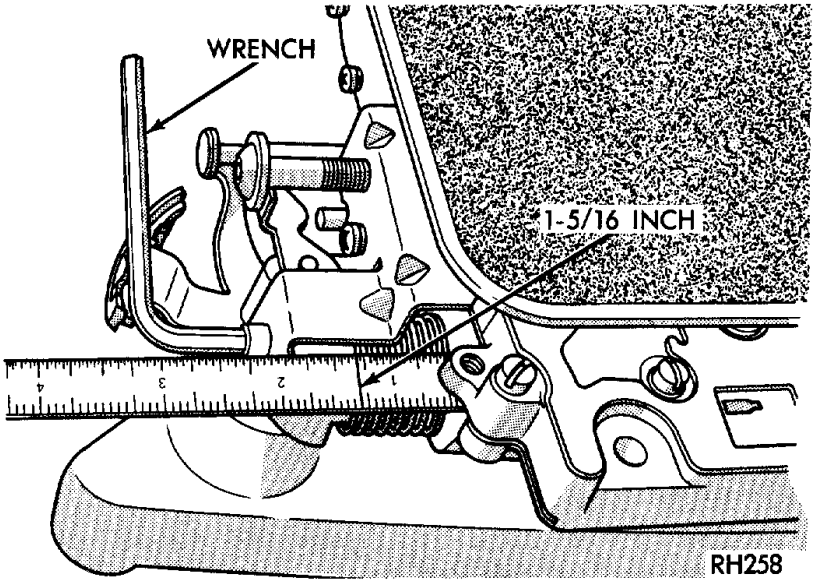


Fig. 182 Line Pressure Adjustment

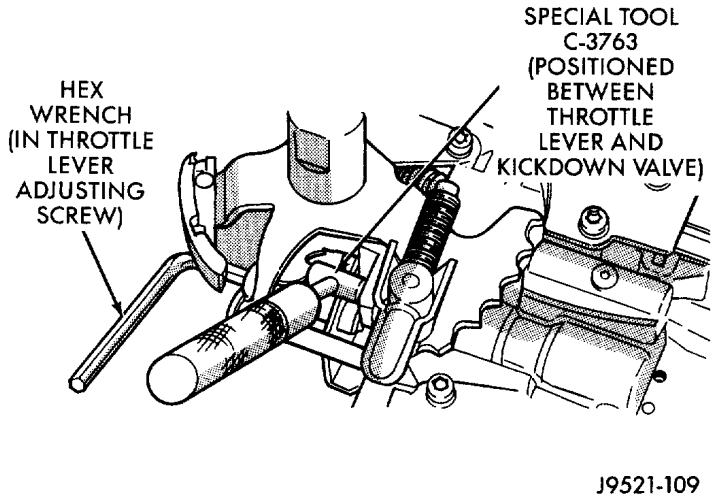


Fig. 183 Throttle Pressure Adjustment

30RH/31RH/32RH (Article 289954)

Non Standards

- Accumulator Piston & Servos (289955)
- Case & Related Parts (289956)
- Clutches (289957)
- Governor (289958)
- Oil Pump & Related Parts (289959)
- Parking Pawl & Related Parts (289960)
- Planetary Gear Train (289961)
- Reverse & Kickdown Bands (289962)
- Valve Body & Related Parts (289963)

Parts and Labor (itype_189)

Parts

Qualifier	Part #	Name	Price	Note
30RH/31RH/32RH > Transmissio?	5013401AB	Transmission Assembly	2415.00	
30RH/31RH/32RH > Transmissio?	4883727AA	Transmission Assembly	1550.00	
Overhaul Gasket Set > 30RH/3?	NO LISTING	Overhaul Gasket Set	0.00	
Overhaul Gasket Set > 30RH/3?	4883957AB	Overhaul Gasket Set	111.00	

Labor

Operation	Qualifier Path	Skill	Std Hrs	Wty Hrs
Diagnose/Test	30RH/31RH/32RH > Transmission, Diagnosis	A	1.8	0.0
Replace	30RH/31RH/32RH > Complete Assembly With Trans?	B	5.2	3.5
Replace	30RH/31RH/32RH > Complete Assembly With Trans?	B	0.6	0.0
Replace	30RH/31RH/32RH > Complete Assembly With Trans?	B	0.2	0.0
Replace	30RH/31RH/32RH > Complete Assembly With Trans?	B	0.2	0.0
Replace	30RH/31RH/32RH > Complete Assembly Without Tr?	B	4.6	3.1
Replace	30RH/31RH/32RH > Complete Assembly Without Tr?	B	0.2	0.0
Replace	30RH/31RH/32RH > Complete Assembly Without Tr?	B	0.2	0.0
Overhaul/Rebuild	30RH/31RH/32RH	A	10.5	7.5
Overhaul/Rebuild	30RH/31RH/32RH > NOTE > To Flush Cooler Lines?	A	0.6	0.0
Overhaul/Rebuild	30RH/31RH/32RH > NOTE > To Overhaul Valve Bod?	A	1.5	0.0
Overhaul/Rebuild	30RH/31RH/32RH > NOTE > To R&R Torque Convert?	A	0.2	0.0

Transmission Identification (Article 2033357)

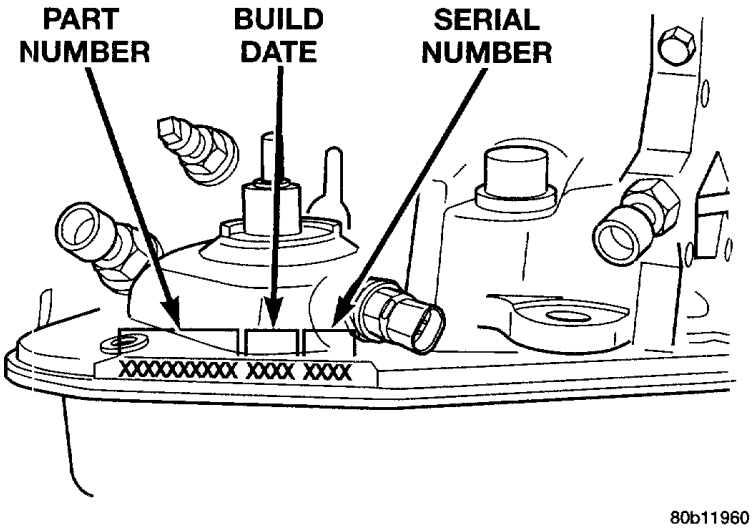


Fig. 2 Transmission Part And Serial Number Location

Causes of Burnt Fluid (Article 2032826)

Burnt, discolored fluid is a result of overheating which has two primary causes.
1. A result of restricted fluid flow through the main and/or auxiliary cooler. This condition is usually the result of a faulty or improperly installed drainback valve, a damaged main cooler, or severe restrictions in the coolers and lines caused by debris or kinked lines.
2. Heavy duty operation with a vehicle not properly equipped for this type of operation. Trailer towing or similar high load operation will overheat the
transmission fluid
if the vehicle is improperly equipped. Such vehicles should have an auxiliary
transmission fluid cooler
, a heavy duty cooling system, and the engine/axle ratio combination needed to handle heavy loads.

Effects of Incorrect Fluid Level (Article 2032827)

A low fluid level allows the pump to take in air along with the fluid. Air in the fluid will cause fluid pressures to be low and develop slower than normal. If the transmission is overfilled, the gears churn the fluid into foam. This aerates the fluid and causing the same conditions occurring with a low level. In either case
, air bubbles cause fluid overheating, oxidation and varnish buildup which interferes with valve, clutch
and servo operation. Foaming also causes fluid expansion which can result in fluid overflow from the transmission vent or fill tube. Fluid overflow can easily be mistaken for a leak if inspection is not careful.

Fluid Contamination (Article 2032828)

Transmission fluid
contamination is generally a result of:
- adding incorrect fluid
- failure to clean dipstick and fill tube when checking level
- engine coolant entering the fluid
- internal failure that generates debris
- overheat that generates sludge (fluid breakdown)
- failure to reverse flush cooler and lines after repair
- failure to replace contaminated converter after repair

The use of non recommended fluids can result in transmission failure. The usual results are erratic shifts, slippage, abnormal wear and eventual failure due to fluid breakdown and sludge formation. Avoid this condition by using recommended fluids only.
The dipstick cap and fill tube should be wiped clean before checking fluid level. Dirt, grease and other foreign material on the cap and tube could fall into the tube if not removed beforehand. Take the time to wipe the cap and tube clean before withdrawing the dipstick.
Engine coolant in the transmission fluid is generally caused by a cooler malfunction. The only remedy is to replace the radiator as the cooler in the radiator is not a serviceable part. If coolant has circulated through the transmission for some time, an overhaul may also be necessary; especially if shift problems had developed.
The
transmission cooler
and lines should be reverse flushed whenever a malfunction generates sludge and/or debris. The
torque converter
should also be replaced at the same time.
Failure to flush the cooler and lines will result in recontamination. Flushing applies to auxiliary coolers as well. The torque converter should also be replaced whenever a failure generates sludge and debris. This is necessary because normal converter flushing procedures will not remove all contaminants.

Gearshift Mechanism (Article 2033016)

The shift mechanism is cable operated and provides six shift positions. The shift indicator is located on the console next to the
gear
shift. The shift positions are:
- Park (P)
- Reverse (R) Neutral (N) Drive (D)
- Manual Second (2)
- Manual Low (1)

Manual low (1) range provides first gear only. Over run braking is also provided in this range. Manual second (2) range provides first and second gear only. Drive range provides first, second, and third gear ranges.

Global Good Trip Counter (Article 2032822)

Note: Some of the following monitors are for gasoline engines.

Comprehensive Components Monitor	Major Monitors Non Fuel Control & Non Misfire	Major Monitors Fuel Control & Misfire
Run constantly	Run Once Per Trip	Run Constantly
Includes All Engine Hardware - Sensors, Switches, Solenoids, etc.	Monitors Entire Emission System	Monitors Entire System
One Trip Faults - Turns On The MIL and Sets DTC After One Failure	Two Trip Faults - Turns On The MIL and Sets DTC After Two Consecutive Failures	Two Trip Faults - Turns On The MIL and Sets DTC After Two Consecutive Failures
Priority 3	**Priority 1 or 3**	**Priority 2 or 4**
All Checked For Continuity Open Short To Ground Short To Voltage Inputs Checked For Rationality Outputs Checked For Functionality	Done Stop Testing = Yes Oxygen Sensor Heater Oxygen Sensor Response Catalytic Converter Efficiency Except EWMA - up to 6 tests per trip and a one trip fault EGR System Evaporative Emission System (Purge and Leak) Non-LDP or LDP	**Fuel Control Monitor** Monitors Fuel Control System For: Fuel System Lean Fuel System Rich Requires 3 Consecutive *Fuel System Good Trips* To Extinguish The MIL **Misfire Monitor** Monitors For Engine Misfire at: 1000 RPM Counter (Type B) **200 RPM Counter (Type A) Requires 3 Consecutive *Misfire Good Trips* To Extinguish the MIL **Type A misfire is a one trip failure. The MIL will illuminate and blink at the first failure.
Requires 3 Consecutive *Global/Alternate Good Trips* to Extinguish the MIL*	Requires 3 Consecutive *Global Good Trips* to Extinguish the MIL*	

***40 Warm Up Cycles** are required to erase DTC's *after* the MIL has been extinguished.

Hydraulic Control System (Article 2032823)

The transmission
hydraulic control system
performs four basic functions.
^pressure supply
^pressure regulation
^flow control and lubrication
^
clutch
/
band
application
PRESSURE SUPPLY
The oil pump develops fluid pressure for clutch/ band application and for lubrication. The pump is driven by the
torque converter
. The converter is driven by a
driveplate
attached to the engine crankshaft.
Pressure Regulation
The pressure regulator valve maintains line (operating) pressure. The amount of pressure developed is controlled by throttle pressure which is dependent on the degree of throttle opening. The regulator valve is located in the
valve body
.
The throttle valve determines throttle pressure and shift speed.
Governor
pressure increases in proportion to vehicle speed. The throttle valve controls upshift and downshift speeds by regulating pressure according to throttle position.
Flow Control And Lubrication
The manual valve is operated by the
gearshift linkage
and provides the operating range selected by the driver.
The switch valve controls line pressure to the converter clutch. The valve also directs oil to the cooling and lubrication circuits. The switch valve regulates oil pressure to the torque converter by limiting maximum oil pressure to 130 psi.
The 1-2 shift valve provide 1-2 and 2-1 shifts and the 2-3 shift valve provide 2-3 and 3-2 shifts.
The 1-2 shift control valve transmits 1-2 shift pressure to the

accumulator
piston. This controls kickdown band capacity on 1-2 upshifts and 3-2 downshifts.
The 2-3 valve throttle pressure plug provides 3-2 downshifts at varying throttle openings depending on vehicle speed.
The kickdown valve provides forced downshifts depending on vehicle speed. Downshifts occur when the throttle is opened beyond downshift; detent position. Detent is reached just before wide open throttle position.
The limit valve determines maximum speed at which a 3-2 part throttle kickdown can be made. Some transmissions do not have the limit valve and maximum speed for a 3-2 kickdown is at the detent position.
The shuttle valve has two functions. First is fast front band release and smooth engagement during "lift foot" 2-3 upshifts. Second is to regulate front clutch release and band application during 3-2 downshifts.
The fail safe valve restricts feed to the converter clutch if front clutch pressure drops. It permits clutch engagement only in direct (third)
gear
and provides fast clutch release during kickdown.
Clutch/Band Application
The front/rear clutch pistons and
servo piston
s are actuated by line pressure. When line pressure is removed, the pistons are released by spring tension.
On 2-3 upshifts, the
front servo
piston is released by spring tension and hydraulic pressure. The accumulator controls hydraulic pressure on the apply side of the front servo during 1-2 upshifts and at all throttle openings.

Overview (Article 2032882)

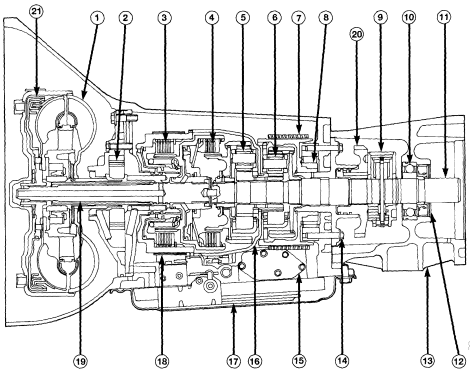


Fig. 1 30/32 RH Automatic Transmission

Recommended Fluid (Article 2033017)

See TSB 21-010-06 4/14/2006
Mopar
ATF
+4, Type 9602
automatic transmission fluid
is the recommended fluid for Chrysler
automatic transmission
s.

Torque Converter - Electronic Clutch (Article 2033224)

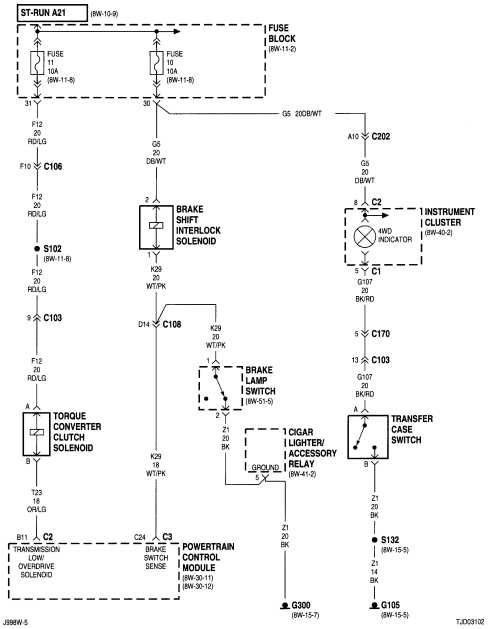
The
torque converter

is a hydraulic device that couples the engine crankshaft to the transmission. The torque converter consists of an outer shell with an internal turbine, a stator, an overrunning
clutch
, an impeller and an electronically applied converter clutch. Torque multiplication is created when the stator directs the hydraulic flow from the turbine to rotate the impeller in the direction the engine crankshaft is turning. The turbine transfers power to the
planetary gear
sets in the transmission. The
transfer
of power into the impeller assists torque multiplication. At low vehicle speed, the overrunning clutch holds the stator (during torque multiplication) and allows the stator to free wheel at high vehicle speed. The converter clutch provides reduced engine speed and greater fuel economy when engaged. Clutch engagement also provides reduced transmission fluid temperatures. The converter clutch engages in third
gear
. The torque converter
hub
drives the
transmission oil
(fluid) pump.
The torque converter is a sealed, welded unit that is not repairable and is serviced as an assembly.
CAUTION:
The torque converter must be replaced if a transmission failure resulted in large amounts of metal or fiber contamination in the fluid. If the fluid is contaminated, flush the fluid cooler and lines.

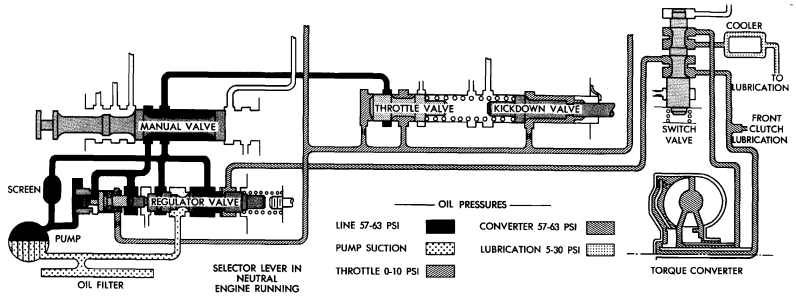
Transmission Gear Ratios (Article 2033018)

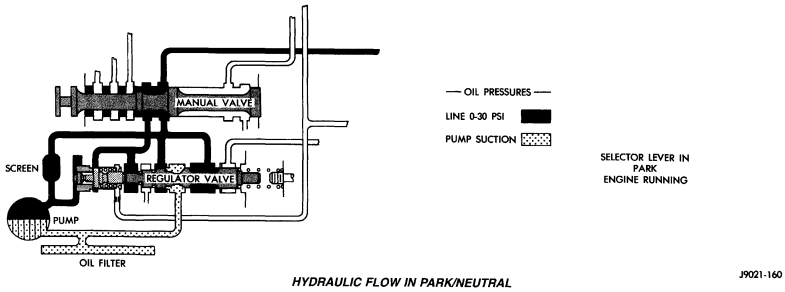
Forward
gear
ratios are:
- 2.74:1 (first gear)
- 1.54:1 (second gear)
- 1.00:1 (third gear)

Electrical (OE) (itype_21)



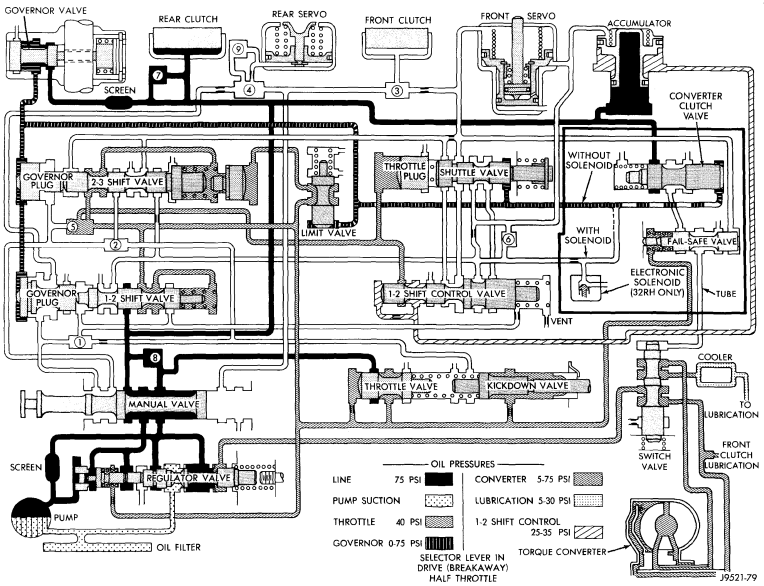
Fluid (itype_23)





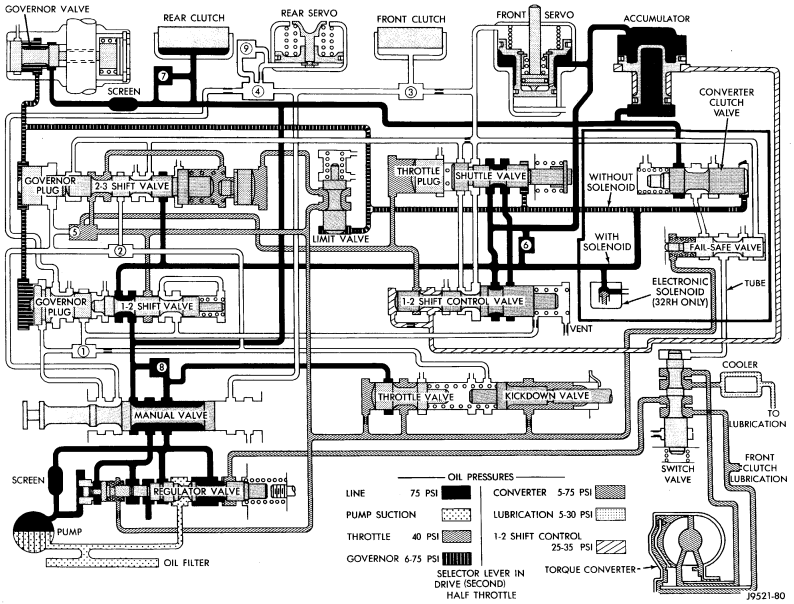
J9021-160

HYDRAULIC FLOW IN PARK/NEUTRAL

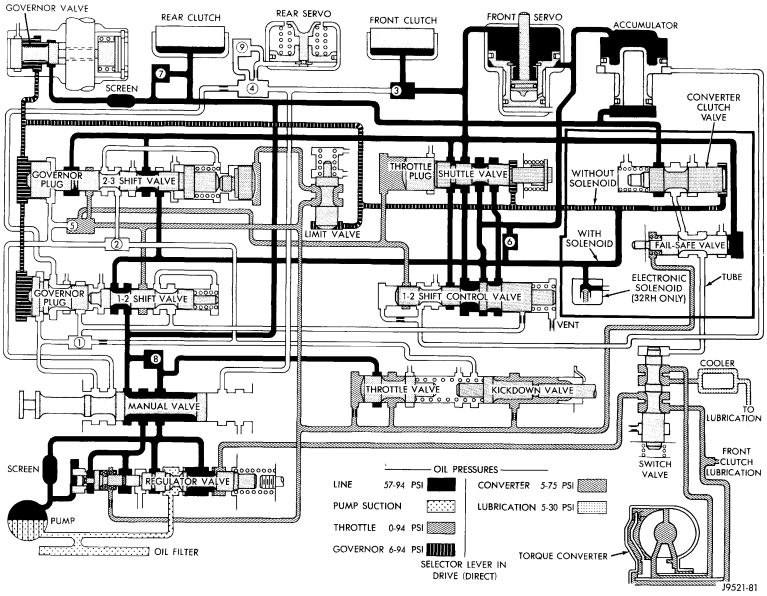


J9521-79

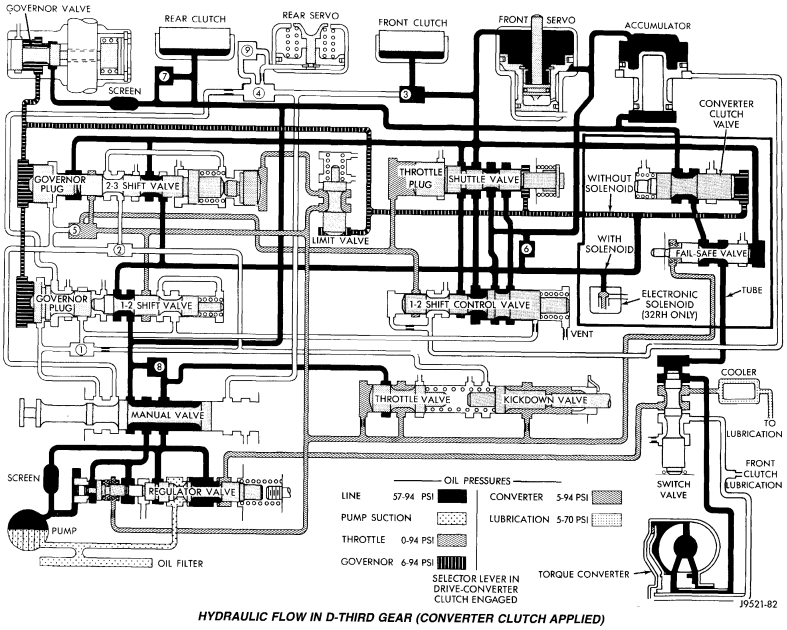
HYDRAULIC FLOW IN D-FIRST GEAR



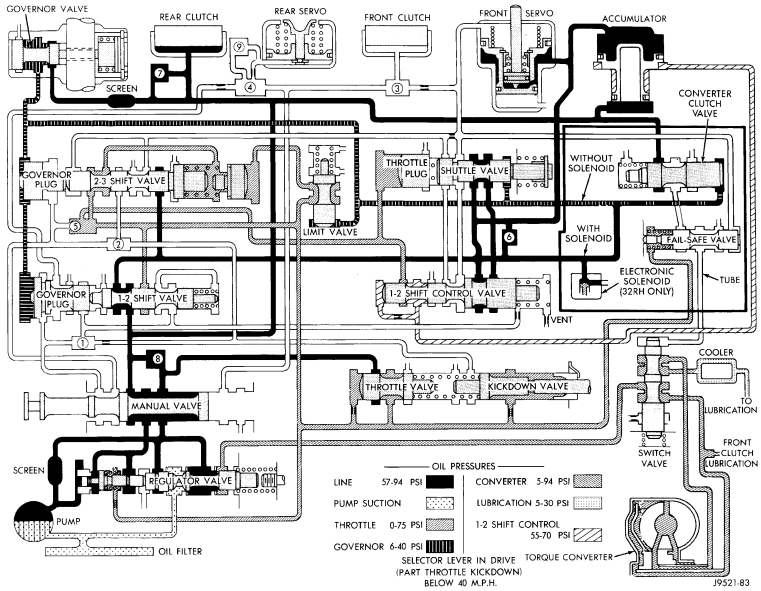
HYDRAULIC FLOW IN D-SECOND GEAR



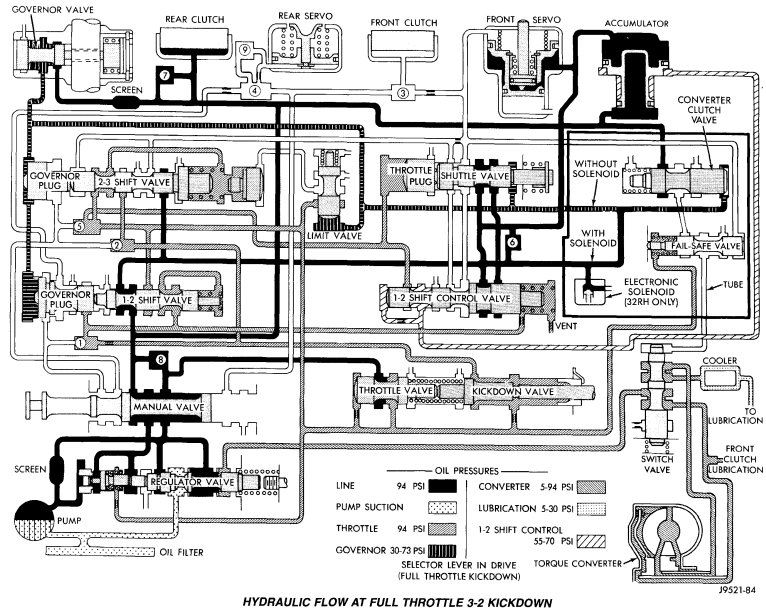
HYDRAULIC FLOW IN D-THIRD GEAR



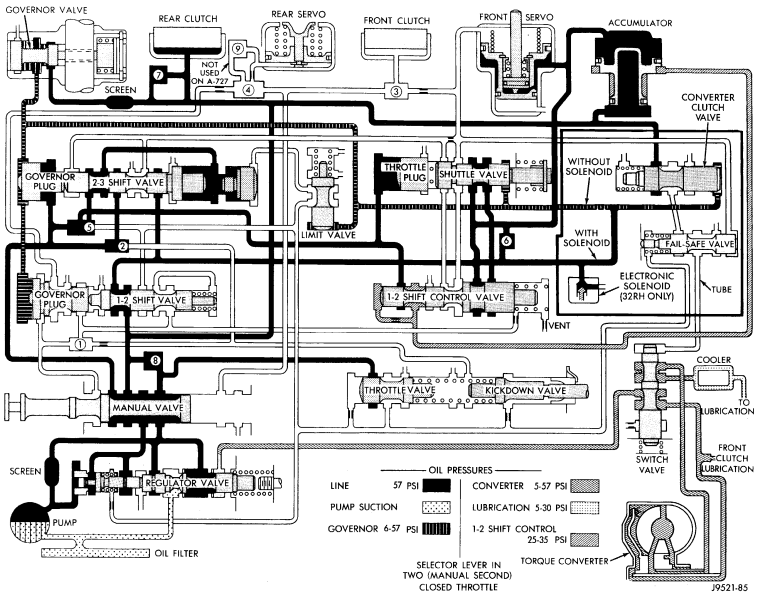
HYDRAULIC FLOW IN D-THIRD GEAR (CONVERTER CLUTCH APPLIED)



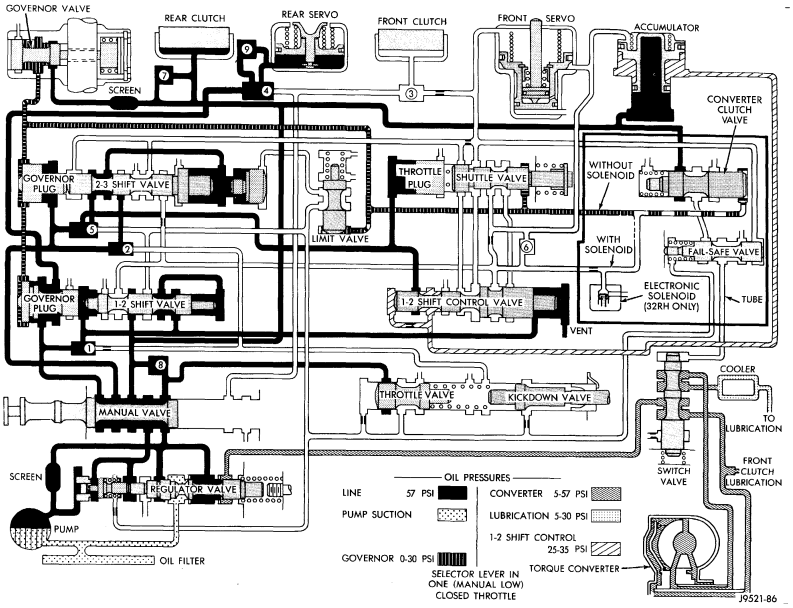
HYDRAULIC FLOW AT PART THROTTLE 3-2 KICKDOWN



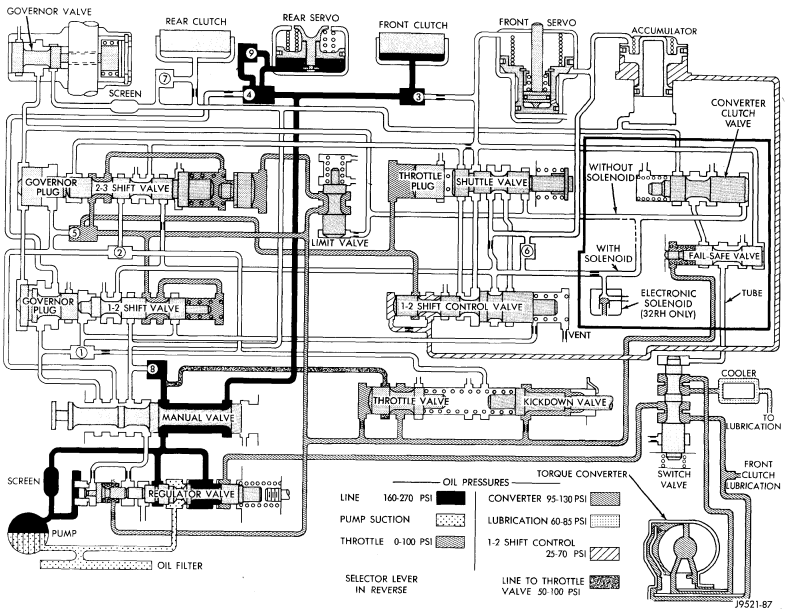
HYDRAULIC FLOW AT FULL THROTTLE 3-2 KICKDOWN



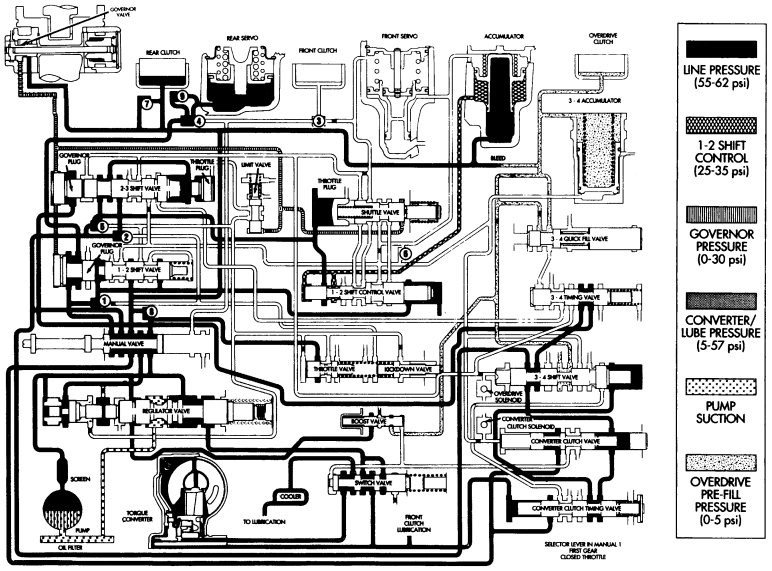
HYDRAULIC FLOW IN MANUAL SECOND



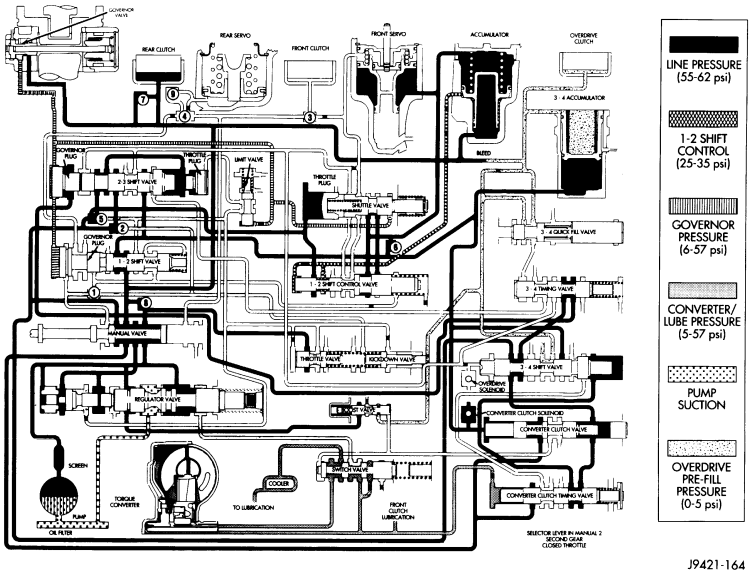
HYDRAULIC FLOW IN MANUAL LOW



HYDRAULIC FLOW IN REVERSE



HYDRAULIC FLOW IN MANUAL FIRST GEAR (1)



HYDRAULIC FLOW IN MANUAL SECOND GEAR (2)

Cleaning and Inspection (Article 2031742)

Non Standards
- Transmission Case (2031748)

Disassembly and Assembly (Article 2031750)

Non Standards
- Front Clutch (2031893)
- Front Servo Piston (2031894)
- Governor and Park Gear (2031944)
- Oil Pump and Reaction Shaft Support (2031895)
- Overrunning Clutch/Low-Reverse Drum (2031945)
- Planetary Geartrain/Output Shaft (2031900)
- Rear Clutch (2031901)
- Rear Servo Piston (2031902)
- Transmission (2031771)
- Valve Body (2031756)

Aluminum Thread Repair (Article 2032641)

ALUMINUM THREAD REPAIR
Damaged or worn threads in the aluminum transaxle
case
and
valve body
can be repaired by the use of Heli-Coils, or equivalent. This repair consists of drilling out the worn-out damaged threads. Then tap the hole with a special Heli-Coil tap, or equivalent, and installing a Heli-Coil insert, or equivalent, into the hole. This brings the hole back to its original thread size.
Heli-Coil, or equivalent, tools and inserts are readily available from most automotive parts suppliers.

Converter Drainback Check Valve Service (Article 2032642)

For information regarding the Service and Repair of this component and the system that it is a part of, please refer to
Torque Converter Check Valve
; Service and Repair.

Fluid and Filter Change (Article 2032360)

For information regarding the Service and Repair of this component and the system that it is a part of, please refer to
Automatic Transmission Fluid
; Service and Repair.

Fluid Fill Procedure (Article 2032644)

To avoid overfilling transmission after a fluid change or overhaul, perform the following procedure:
1. Remove dipstick and insert clean funnel in transmission fill tube.
2.
Add
following initial quantity of MOPAR
ATF
+4 to transmission:
a. If only fluid and filter were changed, add
3 pints (1-1/2 quarts)
of ATF+4 to transmission.
b. If transmission was completely overhauled
torque converter
was replaced or drained, and cooler was flushed, add
12 pints (6 quarts)
3. Apply parking brakes.
4. Start and run engine at normal curb idle speed.
5. Apply service brakes, shift transmission through all
gear
ranges then back to NEUTRAL, set parking brake, and leave engine running at curb idle speed.
6. Remove funnel, insert dipstick and check fluid level. If level is low, add fluid to bring level to MIN mark on dipstick. Check to see if the oil level is equal on both sides of the dipstick. If one side is noticeably higher than the other, the dipstick has picked up some oil from the dipstick tube. Allow the oil to drain down the dipstick tube and re-check.
7. Drive vehicle until
transmission fluid
is at normal operating temperature.
8. With the engine running at curb idle speed, the gear selector in NEUTRAL, and the parking brake applied, check the transmission fluid level.
CAUTION:
Do not overfill transmission, fluid foaming and shifting problems can result.
9. Add fluid to bring level up to MAX arrow mark.
When fluid level is correct, shut engine off, release park brake, remove funnel, and install dipstick in fill tube.

Flushing Coolers and Tubes (Article 2032659)

For information regarding the Service and Repair of this component and the system that it is a part of, please refer to Oil Cooler, Transmission; Service and Repair.

Removal and Replacement (itype_401)

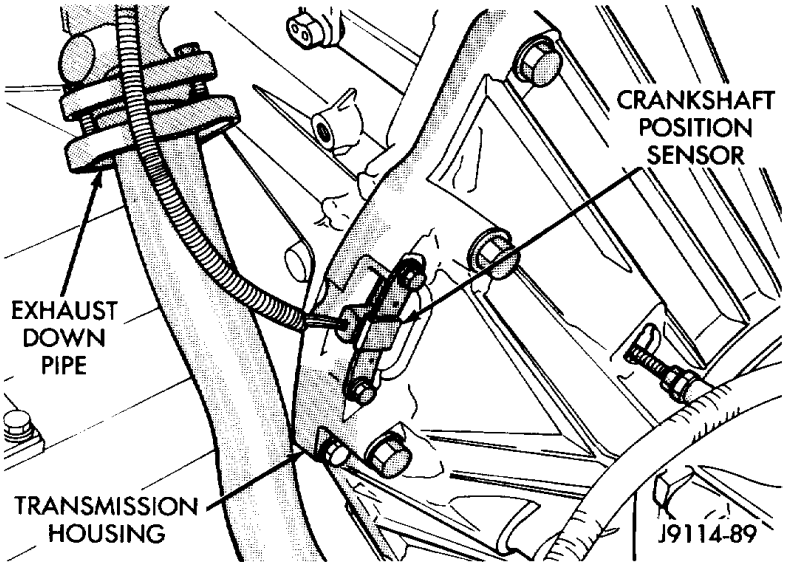


Fig. 16 Crankshaft Position Sensor—2.5L Engine

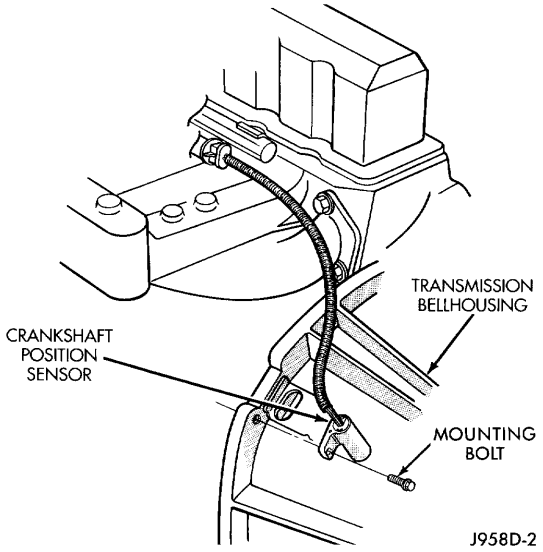


Fig. 17 Crankshaft Position Sensor—4.0L Engine

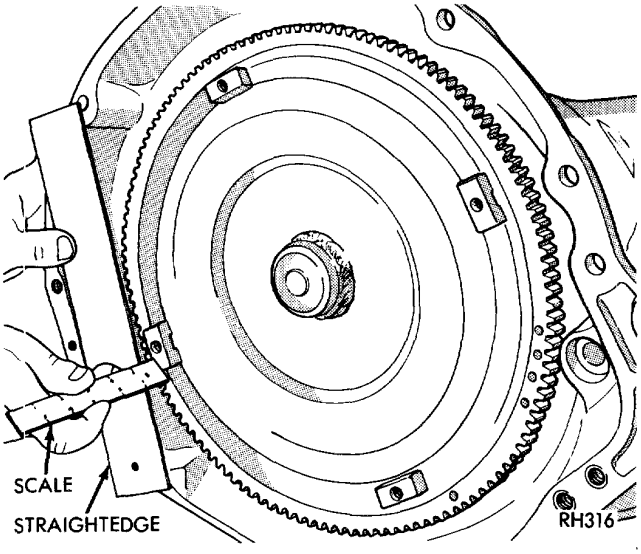


Fig. 18 Typical Method Of Checking Converter Seating

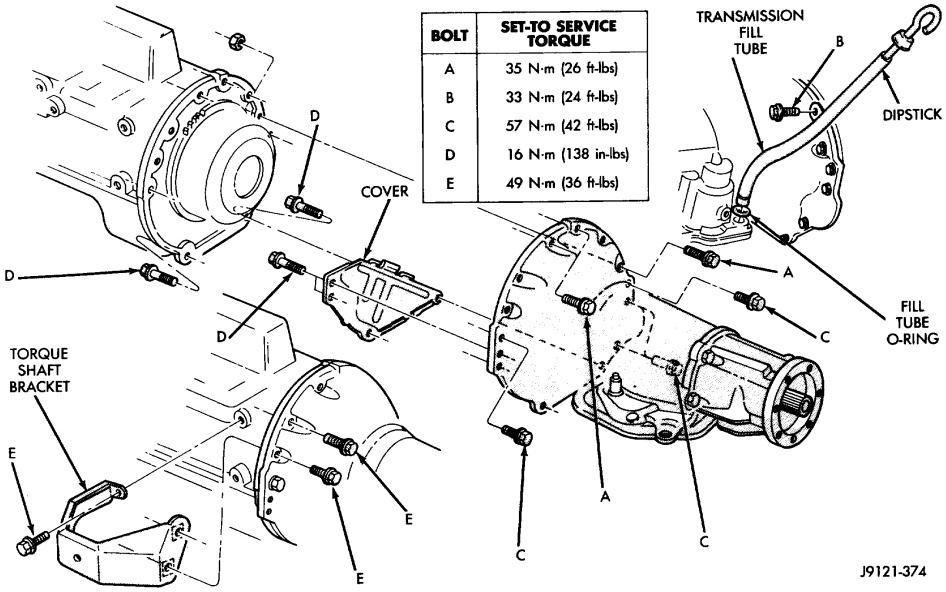


Fig. 19 Transmission Attachment

Capacities (itype_30)

TRANSMISSION FLUID
CAPACITY
NOTE: Capacities may vary. Check fluid level on dipstick according to applicable procedures.
32RH ..... 8.1 L (17.1 pts.)
30RH ..... 6.6 L (14.0 pts.)

Fluid Types (itype_31)

TRANSMISSION FLUID
TYPE
30/32RH ..... MOPAR
ATF
+4, Type 9602

Fluid Types and Capacities (itype_436)

Fluid Types
Capacities

Flex Plate (Article 2028319)

TORQUE SPECIFICATIONS
Flywheel
-to-Crankshaft Bolts
- 2.5L ..... Tighten to 68 Nm (50 ft. lbs.), then turn an additional 60°.
NOTE: New bolts MUST be used when installing the flywheel or converter plate.
- 4.0 L ..... 143 Nm (105 ft. lbs.)

Fluid Pan (Article 2028320)

TORQUE SPECIFICATIONS
Bolt,
Fluid Pan
30/32RH ..... 17 Nm (13 ft. lbs.)

Thrust Plate, Thrust Washer, Reaction Plate, Snap Ring, Shim (Article 2028321)

COMPONENT	METRIC	INCH
Front clutch thrust washer (reaction shaft support hub)	1.55 mm	0.061 in.
Rear clutch thrust washer (clutch retainer)	1.55 mm	0.061 in.
Output shaft thrust plate (output shaft pilot hub)	1.5-1.6mm	0.060-0.063 in.
Output shaft thrust washer (rear clutch hub)	1.3-1.4 mm	0.052-0.054 in.
	1.7-1.8 mm	0.068-0.070 in.
	2.1-2.2 mm	0.083-0.086 in.
Rear clutch pack snap ring	1.5-1.6 mm	0.06-0.062 in.
	1.7-1.8 mm	0.068-0.070 in.
	1.9-2.0 mm	0.076-0.078 in.
Planetary geartrain snap ring (at front of output shaft)	1.0-1.1 mm	0.040-0.044 in.
	1.6-1.7 mm	0.062-0.066 in.
	2.1-2.2 mm	0.082-0.086 in.

All Technical Service Bulletins (itype_100)

Tsbs
- A/T - ATF+4 Fluid Usage/Applications (21-010-06, 2006/04/14)
- A/T - Buzz/Whining in Reverse When Cold (21-08-99, 1999/04/30)
- TCM - MIL ON/DTC P1763 Set (21-04-00, 2000/06/30)
- A/T - Repair/Replacement Guidelines (21-021-08, 2008/09/17)
- A/T - ATF + 4 Fluid Usage (21-014-07, 2007/10/16)

Customer Interest Bulletins (itype_109)

Tsbs
- A/T - Buzz/Whining in Reverse When Cold (21-08-99, 1999/04/30)
- TCM - MIL ON/DTC P1763 Set (21-04-00, 2000/06/30)

Repair Tips (itype_110)

Tsbs
- A/T - ATF+4 Fluid Usage/Applications (21-010-06, 2006/04/14)
- A/T - Repair/Replacement Guidelines (21-021-08, 2008/09/17)
- A/T - ATF + 4 Fluid Usage (21-014-07, 2007/10/16)

Air Pressure Tests (Article 2033452)

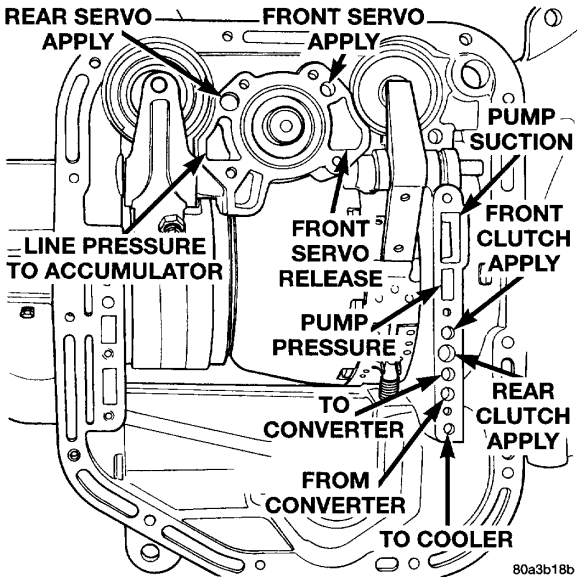


Fig. 10 Air Pressure Test Passages

Analyzing Road Test (Article 2033651)

DRIVE ELEMENTS	Gearshift Lever Position								
	P	R	N	D			2		1
				1	2	3	1	2	
FRONT CLUTCH		•				•			
FRONT BAND (KICKDOWN)					•			•	
REAR CLUTCH				•	•	•	•	•	•
REAR BAND (LOW-REV.)		•							•
OVER-RUNNING CLUTCH				•			•		•

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Fig. 5 Clutch And Band Application

Converter Housing Fluid Leak Diagnosis (Article 2033454)

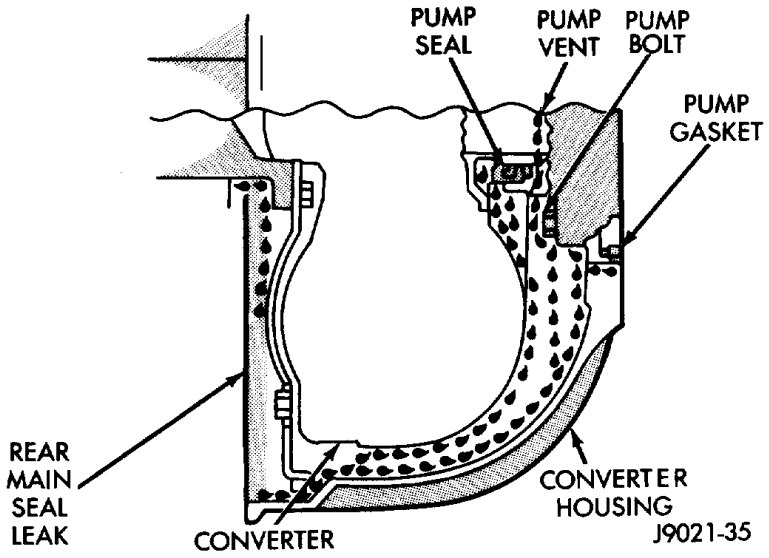


Fig. 11 Converter Housing Leak Paths

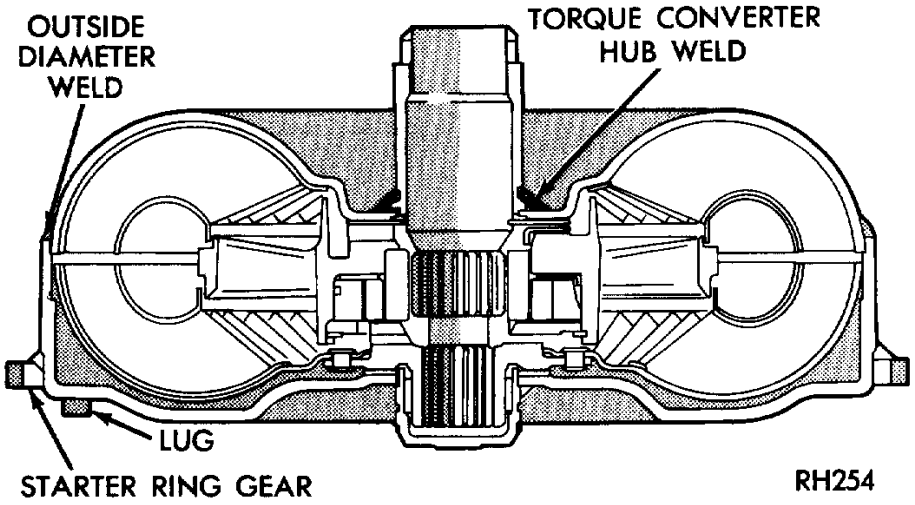


Fig. 12 Converter Leak Points—Typical

Converter Stall Test (Article 2033589)

Stall testing involves determining maximum engine speed obtainable at full throttle with the rear wheels locked and the transmission in D range. This test checks the holding ability of the converter overrunning and transmission clutches.

WARNING: NEVER ALLOW ANYONE TO STAND DIRECTLY IN LINE WITH THE VEHICLE FRONT OR REAR DURING A STALL TEST. ALWAYS BLOCK THE WHEELS AND FULLY APPLY THE SERVICE A14D PARKING BRAKES DURING THE TEST.

STALL TEST PROCEDURE

1. Connect tachometer to engine. Position tachometer so it can be viewed from driver's seat.
2. Drive vehicle to bring transmission fluid up to normal operating temperature. Vehicle can be driven on road or on chassis dynamometer, if available.
3. Check transmission fluid level. Add fluid if necessary.
4. Block front wheels.
5. Fully apply service and parking brakes.
6. Open throttle completely and record maximum engine speed registered on tachometer. It takes 4-10 seconds to

reach max. rpm. Once max. rpm has been achieved, do not hold wide open throttle for more than 4-5 seconds.
CAUTION:
Stalling the converter causes a rapid increase in fluid temperature. To avoid fluid overheating, hold the engine at maximum rpm for no more than 5 seconds. If engine exceeds 2500 rpm during the test, release the accelerator pedal immediately; transmission
clutch
slippage is occurring.
7. If a second stall test is required, cool down fluid before proceeding. Shift into NEUTRAL and run engine at 1000 rpm for 20-30 seconds to cool fluid.

Gearshift Cable (Article 2033652)

1. The floor shifter lever and gate positions should be in alignment with all transmission PARK, NEUTRAL, and gear
detent positions.
2. Engine starts must be possible with floor
shift lever
in PARK or NEUTRAL gate positions only. Engine starts must not be possible in any other gear position.
3. With floor shift lever handle push-button not depressed and lever in:
a. PARK position-Apply forward force on center of handle and remove pressure. Engine starts must be possible.
b. PARK position-Apply rearward force on center of handle and remove pressure. Engine starts must be possible.
c. NEUTRAL position-Normal position. Engine starts must be possible.
d. NEUTRAL position-Engine running and brakes applied, apply forward force on center of shift handle. Transmission shall not be able to shift from neutral to reverse.

Hydraulic Pressure Tests (Article 2024442)

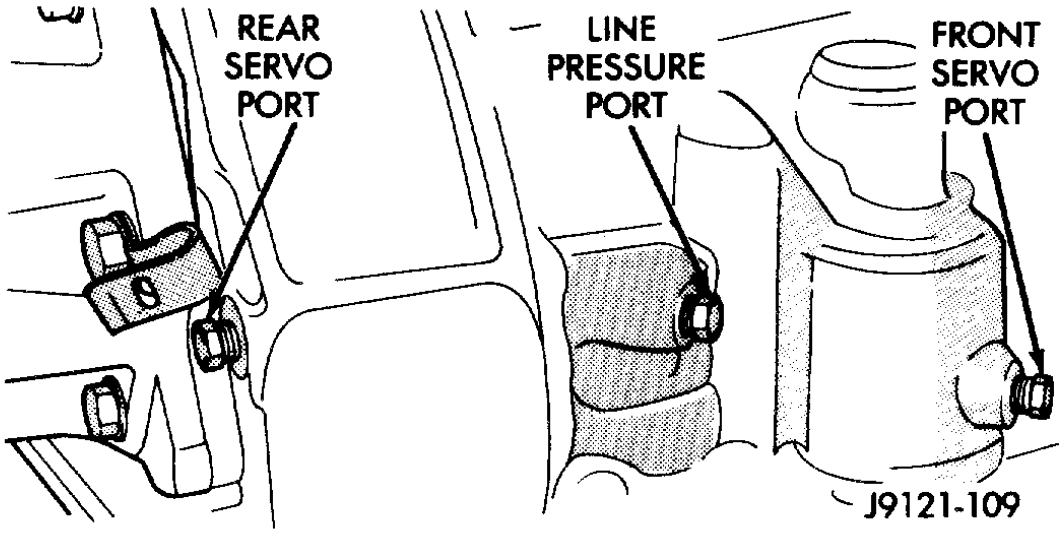


Fig. 6 Pressure Test Ports At Side Of Case

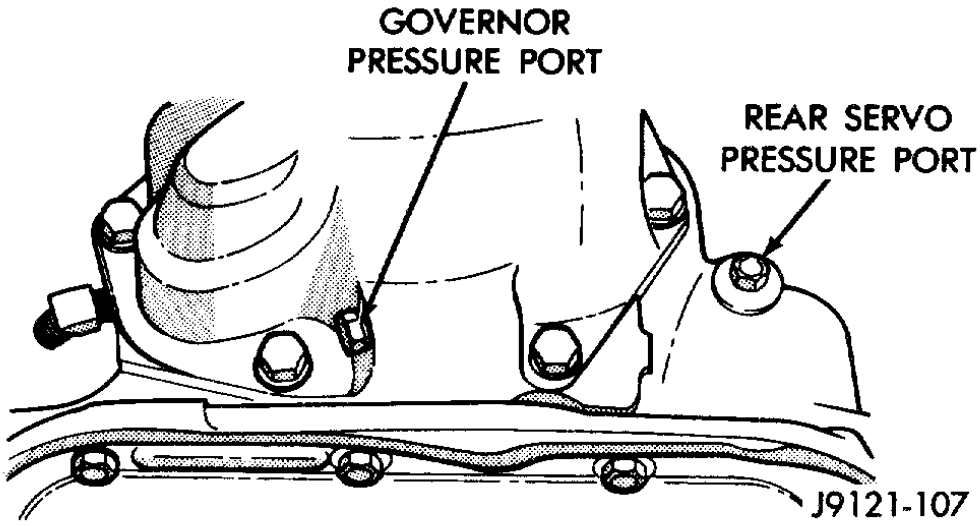


Fig. 7 Pressure Test Ports At Rear Of Case—2WD

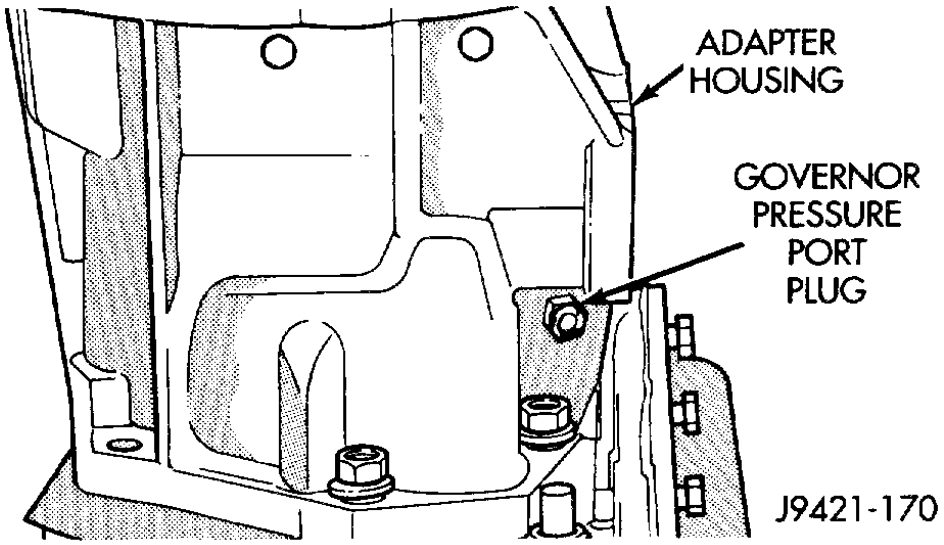


Fig. 8 Pressure Test Ports At Rear Of Case—4WD

TEST CONDITION	INDICATION
Line pressure OK during any one test	Pump and regulator valve OK
Line pressure OK in R but low in D, 2, 1	Leakage in rear clutch area (servo, clutch seals, governor support seal rings on park gear)
Pressure OK in 1, 2 but low in D3 and R	Leakage in front clutch area (servo, clutch seals, retainer bore, pump seal rings)
Pressure OK in 2 but low in R and 1	Leakage in rear servo
Front servo pressure in 2	Leakage in servo (broken servo ring or cracked servo piston)
Pressure low in all positions	Clogged filter, stuck pressure regulator valve, worn or defective pump
Governor pressure too high at idle speed	Governor valve sticking open
Governor pressure low at all mph figures	Governor valve sticking closed
Lubrication pressure low at all throttle positions	Clogged drainback valve, oil cooler or lines, seal rings leaking, output shaft plugged with debris, worn bushings in pump or clutch retainer
	J9521-129

Fig. 9 Pressure Test Analysis

Park/Neutral Position Switch (Article 2033530)

The center terminal of the park/
neutral position switch
is the starter-circuit terminal. It provides the ground for the starter solenoid circuit through the selector lever in PARK and NEUTRAL positions only. The outer terminals on the switch are for the backup lamp circuit.
SWITCH TEST
To test the switch, remove the wiring connector. Test for continuity between the center terminal and the transmission
case
. Continuity should exist only when the transmission is in PARK or NEUTRAL.
Shift the transmission into REVERSE and test continuity at the switch outer terminals. Continuity should exist only when the transmission is in REVERSE. Continuity should not exist between the outer terminals and the case.
Check
gearshift linkage
adjustment before replacing a switch that tests faulty.

Preliminary Diagnosis (Article 2033531)

Two basic procedures are required. One procedure for vehicles that are drivable and an alternate procedure for disabled vehicles (will not back up or move forward).
VEHICLE IS DRIVABLE
1. Check for transmission fault codes using DRB scan tool.
2. Check fluid level and condition.
3. Adjust throttle and
gearshift linkage
if complaint was based on delayed, erratic, or harsh shifts.
4. Road test and note how transmission upshifts, downshifts, and engages.
5. Perform stall test if complaint is based on sluggish acceleration. Or, if abnormal throttle opening is needed to maintain normal speeds with a properly tuned engine.
6. Perform hydraulic pressure test if shift problems were noted during road test.
7. Perform air-pressure test to check
clutch
-
band
operation.
VEHICLE IS DISABLED
1. Check fluid level and condition.
2. Check for broken or disconnected gearshift or throttle linkage.

3. Check for cracked, leaking cooler lines, or loose or missing pressure-port plugs.
4. Raise and support vehicle on safety stands, start engine, shift transmission into
gear
, and note following:
a. If
propeller shaft
turns but wheels do not, problem is with
differential
or
axle shaft
s.
b. If propeller shaft does not turn and transmission is noisy, stop engine. Remove
oil pan
, and check for debris. If pan is clear, remove transmission and check for damaged
drive plate
, converter, oil pump, or
input shaft
.
c. If propeller shaft does not turn and transmission is not noisy, perform hydraulic-pressure test to determine if problem is hydraulic or mechanical.

Road Testing (Article 2024441)

Before road testing, be sure the fluid level and
control cable
adjustments have been checked and adjusted if necessary. Verify that diagnostic trouble codes have been resolved.
Observe engine performance during the road test. A poorly tuned engine will not allow accurate analysis of transmission operation.
Operate the transmission in all
gear
ranges. Check for shift variations and engine flare which indicates slippage. Note if shifts are harsh, spongy, delayed, early, or if part throttle downshifts are sensitive.
Slippage indicated by engine flare, usually means
clutch
,
band
or overrunning clutch problems. If the condition is advanced, an overhaul will be necessary to restore normal operation.
A slipping clutch or band can often be determined by comparing which internal units are applied in the various gear ranges. The Clutch and Band Application chart provides a basis for analyzing road test results.

Stall Test Analysis (Article 2033853)

Stall Speed Too High
If the stall speed exceeds 2500 rpm, transmission
clutch
slippage is indicated.
Stall Speed Low
Low stall speed with a properly tuned engine indicate a
torque converter
overrunning clutch problem. The condition should be confirmed by road testing. A stall speed 250-350 rpm below normal indicates the converter overrunning clutch is slipping. The vehicle also exhibits poor acceleration but operates normally once highway cruise speeds are reached. Torque converter replacement will be necessary.
Stall Speed Normal But Acceleration Poor
If stall speeds are normal
(1800 - 2300 rpm)
but abnormal throttle opening is required for acceleration, or to maintain cruise speed, the converter overrunning clutch is seized. The torque converter will have to be replaced.
Converter Noise During Test
A whining noise caused by fluid flow is normal during a stall test. However, loud metallic noises indicate a

damaged converter. To confirm that the noise is originating from the converter, operate the vehicle at light throttle in DRIVE and NEUTRAL on a hoist and listen for noise coming from the converter housing.

Throttle Valve Cable (Article 2033534)

Transmission throttle valve cable adjustment is extremely important to proper operation. This adjustment positions the throttle valve, which controls shift speed, quality, and part-throttle downshift sensitivity. If cable setting is too loose, early shifts and slippage between shifts may occur. If the setting is too tight, shifts may be delayed and part throttle downshifts may be very sensitive. Refer to the Adjustments for the proper adjustment procedure.

Transmission Testing (Article 2028550)

Automatic transmission
problems can be a result of poor engine performance, incorrect fluid level, incorrect linkage or cable adjustment,
band
or hydraulic control pressure adjustments, hydraulic system malfunctions or electrical/mechanical component malfunctions. Begin diagnosis by checking the easily accessible items such as: fluid level and condition, linkage adjustments and electrical connections. A road test will determine if further diagnosis is necessary.

Monitors, Trips and/or Drive Cycle (Global Good Trip Counter) (Article 2033971)

Note: Some of the following monitors are for gasoline engines.

Comprehensive Components Monitor	**Major Monitors Non Fuel Control & Non Misfire**	**Major Monitors Fuel Control & Misfire**
Run constantly	Run Once Per Trip	Run Constantly
Includes All Engine Hardware - Sensors, Switches, Solenoids, etc.	Monitors Entire Emission System	Monitors Entire System
One Trip Faults - Turns On The MIL and Sets DTC After One Failure	Two Trip Faults - Turns On The MIL and Sets DTC After Two Consecutive Failures	Two Trip Faults - Turns On The MIL and Sets DTC After Two Consecutive Failures
Priority 3	**Priority 1 or 3**	**Priority 2 or 4**
All Checked For Continuity Open Short To Ground Short To Voltage	Done Stop Testing = Yes Oxygen Sensor Heater Oxygen Sensor Response	**Fuel Control Monitor** Monitors Fuel Control System For: Fuel System Lean Fuel System Rich
Inputs Checked For Rationality	Catalytic Converter Efficiency Except EWMA - up to 6 tests per trip and a one trip fault	Requires 3 Consecutive *Fuel System Good Trips* To Extinguish The MIL
Outputs Checked For Functionality	EGR System	**Misfire Monitor** Monitors For Engine Misfire at: 1000 RPM Counter (Type B) **200 RPM Counter (Type A)
	Evaporative Emission System (Purge and Leak) Non-LDP or LDP	
Requires 3 Consecutive *Global/Alternate Good Trips* to Extinguish the MIL*	Requires 3 Consecutive *Global Good Trips* to Extinguish the MIL*	Requires 3 Consecutive *Misfire Good Trips* To Extinguish the MIL
*__40 Warm Up Cycles__ are required to erase DTC's *after* the MIL has been extinguished.		**Type A misfire is a one trip failure. The MIL will illuminate and blink at the first failure.

Transmission Diagnosis by Symptom (Article 2033973)

CONDITION	POSSIBLE CAUSES	CORRECTION
HARSH ENGAGEMENT FROM NEUTRAL TO DRIVE OR REVERSE	1. Fluid Level Low.	1. Add Fluid.
	2. Throttle Linkage Misadjusted.	2. Adjust linkage - setting may be too long.
	3. Mount and Driveline Bolts Loose.	3. Check engine mount, transmission mount, propeller shaft, rear spring to body bolts, rear control arms, crossmember and axle bolt torque. Tighten loose bolts and replace missing bolts.
	4. U-Joint Worn/Broken.	4. Remove propeller shaft and replace U-Joint.
	5. Axle Backlash Incorrect.	5. Check and correct as needed.
	6. Hydraulic Pressure Incorrect.	6. Check pressure. Remove, overhaul or adjust valve body as needed.
	7. Band Misadjusted.	7. Adjust rear band.
	8. Valve Body Check Balls Missing.	8. Inspect valve body for proper check ball installation.
	9. Axle Pinion Flange Loose.	9. Replace nut and check pinion threads before installing new nut. Replace pinion gear if threads are damaged.
	10. Clutch, band or planetary component Damaged.	10. Remove, disassemble and repair transmission as necessary.
	11. Converter Clutch (if equipped) Faulty.	11. Replace converter and flush cooler and line before installing new converter.

CONDITION	POSSIBLE CAUSES	CORRECTION
DELAYED ENGAGEMENT FROM NEUTRAL TO DRIVE OR REVERSE	1. Fluid Level Low.	1. Correct level and check for leaks.
	2. Filter Clogged.	2. Change filter.
	3. Gearshift Linkage Misadjusted.	3. Adjust linkage and repair linkage if worn or damaged.
	4. Rear Band Misadjusted.	4. Adjust band.
	5. Valve Body Filter Plugged.	5. Replace fluid and filter. If oil pan and old fluid were full of clutch disc material and/or metal particles, overhaul will be necessary.
	6. Oil Pump Gears Worn/Damaged.	6. Remove transmission and replace oil pump.
	7. Hydraulic Pressure Incorrect.	7. Perform pressure test, remove transmission and repair as needed.
	8. Reaction Shaft Seal Rings Worn/Broken.	8. Remove transmission, remove oil pump and replace seal rings.
	9. Rear Clutch/Input Shaft, Rear Clutch Seal Rings Damaged.	9. Remove and disassemble transmission and repair as necessary.
	10. Governor Valve Stuck.	10. Remove and inspect governor components. Replace worn or damaged parts.
	11. Regulator Valve Stuck.	11. Clean.
	12. Cooler Plugged.	12. Flush transmission cooler and inspect convertor drainback valve.
NO DRIVE RANGE (REVERSE OK)	1. Fluid Level Low.	1. Add fluid and check for leaks if drive is restored.
	2. Gearshift Linkage/Cable Loose/Misadjusted.	2. Repair or replace linkage components.
	3. Rear Clutch Burnt.	3. Remove and disassemble transmission and rear clutch and seals. Repair/replace worn or damaged parts as needed.
	4. Valve Body Malfunction.	4. Remove and disassemble valve body. Replace assembly if any valves or bores are damaged.
	5. Transmission Overrunning Clutch Broken.	5. Remove and disassemble transmission. Replace overrunning clutch.
	6. Input Shaft Seal Rings Worn/ Damaged.	6. Remove and disassemble transmission. Replace seal rings and any other worn or damaged parts.
	7. Front Planetary Failed Broken.	7. Remove and repair.

CONDITION	POSSIBLE CAUSES	CORRECTION
NO DRIVE OR REVERSE (VEHICLE WILL NOT MOVE)	1. Fluid Level Low.	1. Add fluid and check for leaks if drive is restored.
	2. Gearshift Linkage/Cable Loose/Misadjusted.	2. Inspect, adjust and reassemble linkage as needed. Replace worn/damaged parts.
	3. U-Joint/Axle/Transfer Case Broken.	3. Perform preliminary inspection procedure for vehicle that will not move.
	4. Filter Plugged.	4. Remove and disassemble transmission. Repair or replace failed components as needed. Replace filter. If filter and fluid contained clutch material or metal particles, an overhaul may be necessary. Perform lube flow test. Flush oil. Replace cooler as necessary.
	5. Oil Pump Damaged.	5. Perform pressure test to confirm low pressure. Replace pump body assembly if necessary.
	6. Valve Body Malfunctioned.	6. Check press and inspect valve body. Replace valve body (as assembly) if any valve or bore is damaged. Clean and reassemble correctly if all parts are in good condition.
	7. Transmission Internal Component Damaged.	7. Remove and disassemble transmission. Repair or replace failed components as needed. Remove and disassemble transmission. Repair or replace failed components as needed.
	8. Park Sprag not Releasing.	8. Remove, disassemble, repair.
	9. Torque Converter Damage.	9. Check Stall Speed, Worn/Damaged/ Stuck. Inspect and replace as required.

CONDITION	POSSIBLE CAUSES	CORRECTION
SHIFTS DELAYED OR ERRATIC (SHIFTS ALSO HARSH AT TIMES)	1. Fluid Level Low/High.	1. Correct fluid level and check for leaks if low.
	2. Throttle Linkage Misadjusted.	2. Adjust linkage.
	3. Throttle Linkage Binding.	3. Check cable for binding. Check for return to closed throttle at transmission.
	4. Gearshift Linkage/Cable Misadjusted.	4. Adjust linkage/cable.
	5. Fluid Filter Clogged.	5. Replace filter. If filter and fluid contained clutch material or metal particles, an overhaul may be necessary. Perform lube flow test.
	6. Governor Valve Sticking.	6. Inspect, clean or repair.
	7. Governor Seal Rings Worn/ Damaged.	7. Inspect/replace.
	8. Clutch or Servo Failure.	8. Remove valve body and air test clutch, and band servo operation. Disassemble and repair transmission as needed.
	9. Front Band Misadjusted.	9. Adjust band.
	10. Pump Suction Passage Leak.	10. Check for excessive foam on dipstick after normal driving. Check for loose pump bolts, defective gasket. Replace pump assembly if needed.
NO REVERSE (D RANGES OK)	1. Gearshift Linkage/Cable Misadjusted/Damaged.	1. Repair or replace linkage parts as needed.
	2. Park Sprag Sticking.	2. Inspect and replace as necessary.
	3. Rear Band Misadjusted/Worn.	3. Adjust band; replace.
	4. Valve Body Malfunction.	4. Remove and service valve body. Replace valve body if any valves or valve bores are worn or damaged.
	5. Rear Servo Malfunction.	5. Remove and disassemble transmission. Replace worn/damaged servo parts as necessary.
	6. Front Clutch Burnt.	6. Remove and disassemble transmission. Replace worn, damaged clutch parts as required.
HAS FIRST/REVERSE ONLY (NO 1-2 OR 2-3 UPSHIFT)	1. Governor Valve, Shaft, Weights or Body Damaged/Stuck.	1. Remove governor assembly and clean or repair as necessary.
	2. Valve Body Malfunction.	2. Stuck 1-2 shift valve or governor plug.
	3. Front Servo/Kickdown Band Damaged/Burned.	3. Repair/replace.
MOVES IN 2ND OR 3RD GEAR, ABRUPTLY DOWNSHIFTS TO LOW	1. Valve Body Malfunction.	1. Remove, clean and inspect. Look for stuck 1-2 valve or governor plug.
	2. Governor Valve Sticking.	2. Remove, clean and inspect. Replace faulty parts.

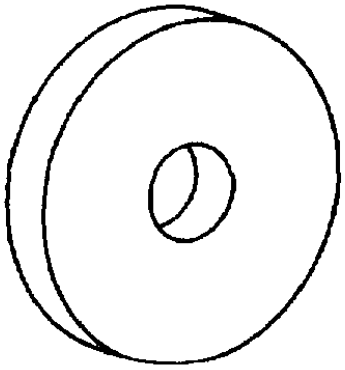
CONDITION	POSSIBLE CAUSES	CORRECTION
NO LOW GEAR (MOVES IN 2ND OR 3RD GEAR ONLY)	1. Governor Valve Sticking.	1. Remove governor, clean, inspect and repair as required.
	2. Valve Body Malfunction.	2. Remove, clean and inspect. Look for sticking 1-2 shift valve, 2-3 shift valve, governor plug or broken springs.
	3. Front Servo Piston Cocked in Bore.	3. Inspect servo and repair as required.
	4. Front Band Linkage Malfunction.	4. Inspect linkage and look for bind in linkage.
NO KICKDOWN OR NORMAL DOWNSHIFT	1. Throttle Linkage Misadjusted.	1. Adjust linkage.
	2. Accelerator Pedal Travel Restricted.	2. Floor mat under pedal, accelerator cable worn or brackets bent.
	3. Governor/Valve Body Hydraulic Pressures Too High or Too Low Due to Sticking Governor, Valve Body Malfunction or Incorrect Hydraulic Control Pressure Adjustments.	3. Perform hydraulic pressure tests to determine cause and repair as required. Correct valve body pressure adjustments as required.
	4. Valve Body Malfunction.	4. Perform hydraulic pressure tests to determine cause and repair as required. Correct valve body pressure adjustments as required.
	5. Valve Body Malfunction.	5. Sticking 1-2, 2-3 shift valves, or governor plugs.
STUCK IN LOW GEAR (WILL NOT UPSHIFT)	1. Throttle Linkage Misadjusted/ Stuck.	1. Adjust linkage and repair linkage if worn or damaged. Check for binding cable or missing return spring.
	2. Gearshift Linkage Misadjusted.	2. Adjust linkage and repair linkage if worn or damaged.
	3. Governor/Valve Body, Governor Valve Stuck Closed; Loose Output Shaft Support or Governor Housing Bolts, Leaking Seal Rings or Valve Body Problem (i.e., Stuck 1- 2 Shift Valve/Gov. Plug).	3. Check line and governor pressures to determine cause. Correct as required.
	4. Front Band Out of Adjustment.	4. Adjust Band.
	5. Clutch or Servo Malfunction.	5. Air pressure check operation of clutches and bands. Repair faulty component.
CREEPS IN NEUTRAL	1. Gearshift Linkage Misadjusted.	1. Adjust linkage.
	2. Rear Clutch Dragging/Warped Welded.	2. Disassemble and repair.
	3. Valve Body Malfunction.	3. Perform hydraulic pressure test to determine cause and repair as required.

CONDITION	POSSIBLE CAUSES	CORRECTION
BUZZING NOISE	1. Fluid Level Low.	1. Add fluid and check for leaks.
	2. Shift Cable Misassembled.	2. Route cable away from engine and bell housing.
	3. Valve Body Misassembled.	3. Remove, disassemble, inspect valve body. Reassemble correctly if necessary. Replace assembly if valves or springs are damaged. Check for loose bolts or screws.
	4. Pump Passages Leaking.	4. Check pump for porous casting, scores on mating surfaces and excess rotor clearance. Repair as required. Loose pump bolts.
	5. Cooling System Cooler Plugged.	5. Flow check cooler circuit. Repair as needed.
	6.Overrunning Clutch Damaged.	6. Replace clutch.
SLIPS IN REVERSE ONLY	1. Fluid Level Low.	1. Add fluid and check for leaks.
	2. Gearshift Linkage Misadjusted.	2. Adjust linkage.
	3. Rear Band Misadjusted.	3. Adjust band.
	4. Rear Band Worn.	4. Replace as required.
	5. Hydraulic Pressure Too Low.	5. Perform hydraulic pressure tests to determine cause.
	6. Rear Servo Leaking.	6. Air pressure check clutch-servo operation and repair as required.
	7. Band Linkage Binding.	7. Inspect and repair as required.
SLIPS IN FORWARD DRIVE RANGES	1. Fluid Level Low.	1. Add fluid and check for leaks.
	2. Fluid Foaming.	2. Check for high oil level, bad pump gasket or seals, dirt between pump halves and loose pump bolts. Replace pump if necessary.
	3. Throttle Linkage Misadjusted.	3. Adjust linkage.
	4. Gearshift Linkage Misadjusted.	4. Adjust linkage.
	5. Rear Clutch Worn.	5. Inspect and replace as needed.
	6. Low Hydraulic Pressure Due to Worn Pump, Incorrect Control Pressure Adjustments, Valve Body Warpage or Malfunction, Sticking Governor, Leaking Seal Rings, Clutch Seals Leaking, Servo Leaks, Clogged Filter or Cooler Lines.	6. Perform hydraulic and air pressure tests to determine cause.
	7. Rear Clutch Malfunction, Leaking Seals or Worn Plates.	7. Air pressure check clutch-servo operation and repair as required.
	8. Overrunning Clutch Worn, Not Holding (Slips in 1 Only).	8. Replace Clutch.
SLIPS IN LOW GEAR "D" ONLY, BUT NOT IN 1 POSITION	Overrunning Clutch Faulty.	Replace overrunning clutch.

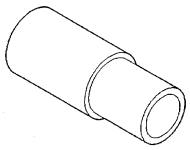
CONDITION	POSSIBLE CAUSES	CORRECTION
GROWLING, GRATING OR SCRAPING NOISES	1. Drive Plate Broken.	1. Replace.
	2. Torque Converter Bolts Hitting Dust Shield.	2. Dust shield bent. Replace or repair.
	3. Planetary Gear Set Broken/ Seized.	3. Check for debris in oil pan and repair as required.
	4. Overrunning Clutch Worn/Broken.	4. Inspect and check for debris in oil pan. Repair as required.
	5. Oil Pump Components Scored/ Binding.	5. Remove, inspect and repair as required.
	6. Output Shaft Bearing or Bushing Damaged.	6. Remove, inspect and repair as required.
	7. Clutch Operation Faulty.	7. Perform air pressure check and repair as required.
	8. Front and Rear Bands Misadjusted.	8. Adjust bands.
DRAGS OR LOCKS UP	1. Fluid Level Low.	1. Check and adjust level.
	2. Clutch Dragging/Failed.	2. Air pressure check clutch operation and repair as required.
	3. Front or Rear Band Misadjusted.	3. Adjust bands.
	4. Case Leaks Internally.	4. Check for leakage between passages in case.
	5. Servo Band or Linkage Malfunction.	5. Air pressure check servo operation and repair as required.
	6. Overrunning Clutch Worn.	6. Remove and inspect clutch. Repair as required.
	7. Planetary Gears Broken.	7. Remove, inspect and repair as required (look for debris in oil pan).
	8. Converter Clutch Dragging.	8. Check for plugged cooler. Perform flow check. Inspect pump for excessive side clearance. Replace pump as required.
WHINE/NOISE RELATED TO ENGINE SPEED	1. Fluid Level Low.	1. Add fluid and check for leaks.
	2. Shift Cable Incorrect Routing.	2. Check shift cable for correct routing. Should not touch engine or bell housing.
TORQUE CONVERTER LOCKS UP IN SECOND AND/OR THIRD GEAR	Lockup Solenoid, Relay or Wiring Shorted/Open.	Test solenoid, relay and wiring for continuity, shorts or grounds. Replace solenoid and relay if faulty. Repair wiring and connectors as necessary.
HARSH 1-2 OR 2-3 SHIFTS	Lockup Solenoid Malfunction.	Remove valve body and replace solenoid assembly.

CONDITION	POSSIBLE CAUSES	CORRECTION
NO START IN PARK OR NEUTRAL	1. Gearshift Linkage/Cable Misadjusted.	1. Adjust linkage/cable.
	2. Neutral Switch Wire Open/Cut.	2. Check continuity with test lamp. Repair as required.
	3. Neutral Switch Faulty.	3. Inspect and replace if damaged.
	4. Neutral Switch Connect Faulty.	4. Connectors spread open. Repair.
	5. Valve Body Manual Lever Assembly Bent/Worn/Broken.	5. Inspect lever assembly and replace if damaged.
NO REVERSE (OR SLIPS IN REVERSE)	1. Direct Clutch Pack (front clutch) Worn.	1. Disassemble unit and rebuild clutch pack.
	2. Rear Band Misadjusted.	2. Adjust band.
	3. Front Clutch Malfunctioned/Burnt.	3. Air pressure test clutch operation. Remove and rebuild if necessary.
OIL LEAKS (ITEMS LISTED REPRESENT POSSIBLE LEAK POINTS AND SHOULD ALL BE CHECKED.	1. Speedometer Adapter Leaks.	1. Replace both adapter seals.
	2. Fluid Lines and Fittings Loose/ Leaks/Damaged.	2. Tighten fittings. If leaks persist, replace fittings and lines if necessary.
	3. Filler Tube (where tube enters case) Leaks/Damaged.	3. Replace O-ring seal. Inspect tube for cracks in tube.
	4. Pressure Port Plug Loose Loose/Damaged.	4. Tighten to correct torque. Replace plug or reseal if leak persists.
	5. Pan Gasket Leaks.	5. Tighten pan screws to 150 inch pounds. If leaks persist, replace gasket. Do no over tighten screws.
	6. Valve Body Manual Lever Shaft Seal Leaks/Worn.	6. Replace shaft seal.
	7. Rear Bearing Access Plate Leaks.	7. Replace gasket. Tighten screws.
	8. Gasket Damaged or Bolts are Loose.	8. Replace bolts or gasket or tighten both.
	9. Adapter/Extension Gasket Damaged Leaks/Damaged.	9. Replace gasket.
	10. Neutral Switch Leaks/Damaged.	10. Replace switch and gasket.
	11. Converter Housing Area Leaks.	11. Check for leaks at seal caused by worn seal or burr on converter hub (cutting seal), worn bushing, missing oil return, oil in front pump housing or hole plugged. Check for leaks past O-ring seal on pump or past pump-to-case bolts; pump housing porous, oil coming out vent due to overfill or leak past front band shaft access plug.
	12. Pump Seal Leaks/Worn/ Damaged.	12. Replace seal.
	13. Torque Converter Weld Leak/Cracked Hub.	13. Replace converter.
	14. Case Porosity Leaks.	14. Replace case.

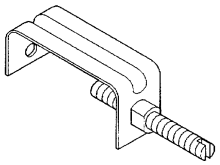
Electrical / Mechanical Repair (itype_413)



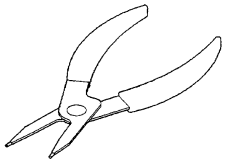
Remover—6957



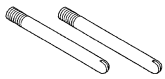
Installer—6951



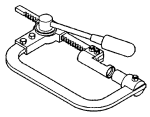
Retainer, Detent Ball and Spring—6583



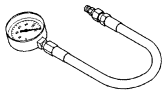
Snap-ring Plier—6823



Pilot Stud—C-3288-B

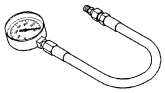


Spring Compressor—C-3422-B

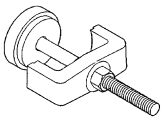


Pressure Gauge—C-3292

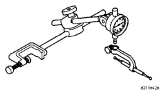
Fixture, Engine Support—C-3487-A



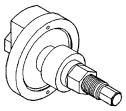
Pressure Gauge—C-3293SP



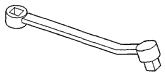
Spring Compressor—C-3575-A



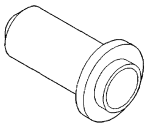
Dial Indicator—C-3339



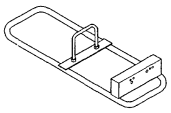
Spring Compressor—C-3863-A



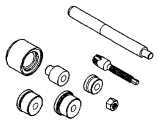
Adapter, Band Adjuster—C-3705



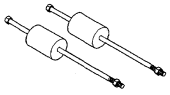
Seal Installer—C-3860-A



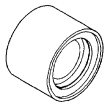
Transmission Repair Stand—C-3750-B



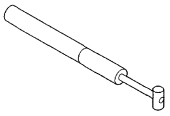
Bushing Remover/Installer—C-3887-J



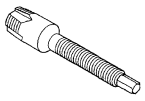
Puller, Slide Hammer—C-3752



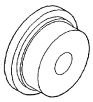
Cup, Remover—SP-3633



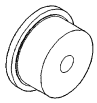
Gauge, Throttle Setting—C-3763



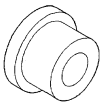
Remover, Bushing—SP-5301



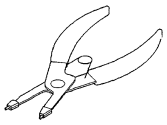
Installer, Bushing—SP-5118



Installer, Bushing—SP-5511



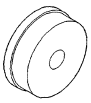
Installer, Bushing—SP-5302



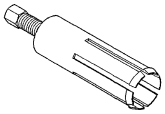
Snap-ring Plier—C-3915

Remover, Bushing—SP-3550

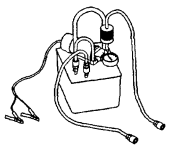
Seal Remover—C-3985-B



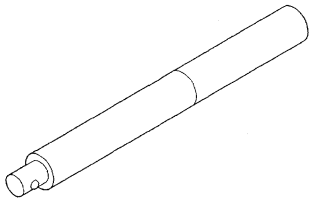
Remover, Bushing—SP-3629



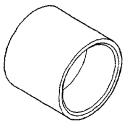
Bushing, Remover—6957



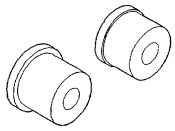
Flusher, Oil Cooler—6906



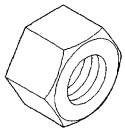
Universal Handle—C-4171



Installer—C-3995-A



Remover/Installer—C-4470



Nut, Bushing Remover—SP-1191

No shift/Incorrect gear engagement (itype_154)

Tsbs

- TCM - MIL ON/DTC P1763 Set (21-04-00, 2000/06/30)

Noise (itype_156)

Tsbs

- A/T - Buzz/Whining in Reverse When Cold (21-08-99, 1999/04/30)

New / Updated Parts (itype_117)

Tsbs

- A/T - Buzz/Whining in Reverse When Cold (21-08-99, 1999/04/30)