Chrysler Atsg 42re A500se Technical Manual
Full download: http://manualplace.com/download/chrysler-atsg-42re-a500se-technical-manual/

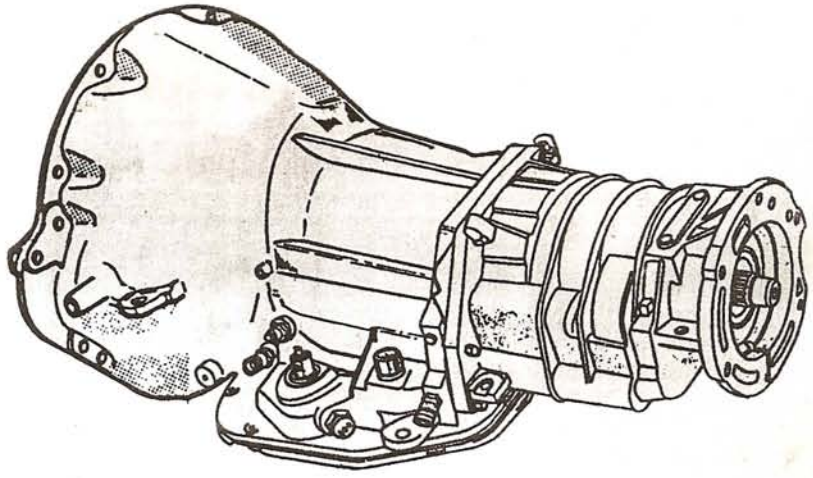
ATSG

CHRYSLER - 42RE

JEEP GRAND CHEROKEE
JEEP GRAND WAGONEER

TECHTRAN™ MANUAL

TRANSTAR™
TRANSTAR INDUSTRIES, INC.
12Y04
TECH MANUAL 42RE-A500SE
B
7350 YOUNG DRIVE, CLEVELAND, OHIO 44146 U.S.A.



AUTOMATIC TRANSMISSION SERVICE GROUP

This is the cut pages sample. Download all 106 page(s) at: ManualPlace.com

INDEX

APPLICATION CHART 4
DIAGNOSTIC FAULT CODES 6
HYDRAULIC AND GOVERNOR PRESSURE TESTS 7
ELECTRONIC GOVERNOR COMPONENTS 8
WIRING SCHEMATIC 12
DIAGNOSTIC CONNECTOR LOCATION 14
TRANSMISSION DIAGNOSIS CHARTS 15
TRANSMISSION DISASSEMBLY 30
TRANSMISSION SUBASSEMBLIES 38
CHECKBALL LOCATIONS 59
TRANSMISSION ASSEMBLY 67
BAND ADJUSTMENTS 73
OVERDRIVE SECTION DISASSEMBLY 75
OVERDRIVE SECTION ASSEMBLY 82
OVERDRIVE SECTION SELECTIVE MEASUREMENTS 92
SPECIFICATIONS 98
OIL FLOW CHARTS 99

AUTOMATIC TRANSMISSION SERVICE GROUP
9200 S. DADELAND BLVD. STE 720
MIAMI, FLORIDA 33156
(305) 670-4161

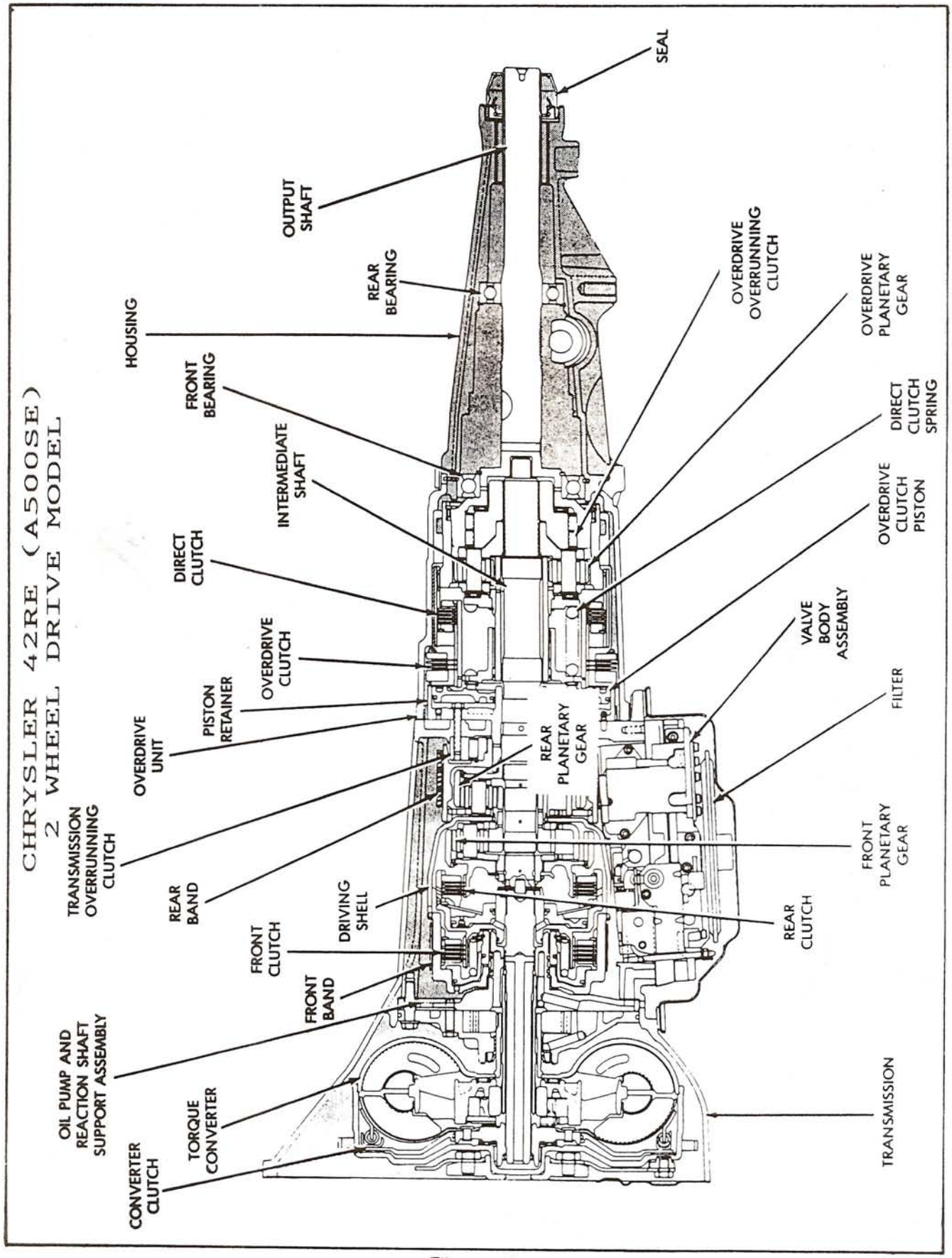

CHRYSLER 42RE (A500SE)
2 WHEEL DRIVE MODEL
SEAL
OUTPUT SHAFT
REAR BEARING
HOUSING
FRONT BEARING
INTERMEDIATE SHAFT
DIRECT CLUTCH
OVERDRIVE CLUTCH
PISTON RETAINER
OVERDRIVE UNIT
TRANSMISSION OVERRUNNING CLUTCH
REAR BAND
FRONT CLUTCH
DRIVING SHELL
FRONT BAND
OIL PUMP AND REACTION SHAFT SUPPORT ASSEMBLY
TORQUE CONVERTER
CONVERTER CLUTCH
OVERDRIVE OVERRUNNING CLUTCH
OVERDRIVE PLANETARY GEAR
DIRECT CLUTCH SPRING
OVERDRIVE CLUTCH PISTON
VALVE BODY ASSEMBLY
FILTER
REAR PLANETARY GEAR
FRONT PLANETARY GEAR
REAR CLUTCH
TRANSMISSION

Figure 1

TORQUE CONVERTER

A three element torque converter is used for all applications in the 42RE. Torque converter elements consist of the turbine, stator and impeller. The converter also contains an overrunning clutch and a converter clutch plate.

The converter clutch is electronically controlled. The converter clutch provides reduced engine RPM and greater fuel economy when it is engaged. Converter clutch engagement also provides much reduced transmission fluid temperatures.

The converter clutch will engage in 4th gear, and in 3rd gear when the overdrive control switch is in the OFF position.

The overrunning clutch is mounted in the stator hub, and prevents the stator from rotating in a direction opposite to the engine rotation. This retains the torque multiplication feature of the converter.

The torque converter should be replaced as an assembly when diagnosis indicates a malfunction has occured.

RECOMMENDED FLUID

The only fluid recommended for the 42RE transmission is Mopar ATF Plus type 7176. Do not use Dexron II except in emergency or if ATF Plus type 7176 is not available.

TRANSMISSION IDENTIFICATION

The transmission identification numbers and codes are stamped on the left side of the case just above the pan gasket area, (See Figure 3). The first number group is the assembly part number. The next number group, the transmission build date. The last number group is the serial number. Refer to this information when ordering replacement parts (See Figure 3).

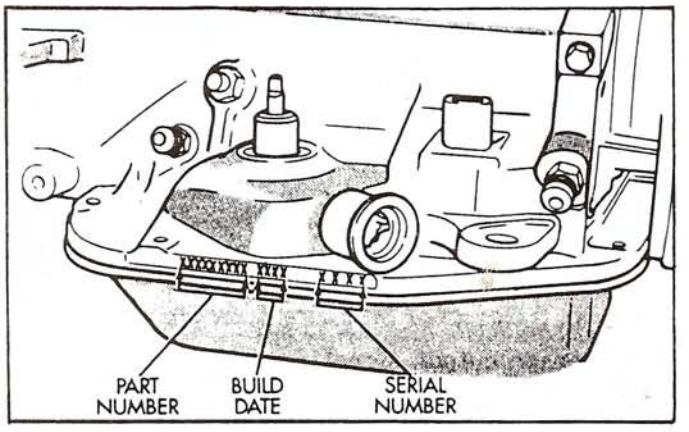


Figure 3

ELECTRONIC GOVERNOR COMPONENTS

Governor pressure is developed and controlled electronically in the 42RE. The components used for the development and control of governor pressure include:

- Governor Body
- Valve Body Transfer Plate
- Governor Pressure Solenoid
- Governor Pressure Sensor
- Fluid Temperature Thermister
- Transmission Speed Sensor
- Throttle Position Sensor
- Transmission Control Module (TCM)

GOVERNOR PRESSURE CURVES

There are four governor pressure curves programed into the TCM. The four different allow the TCM to adjust governor pressure for varying conditions.

Curve 1 is used for operation when fluid temperature is at, or below 30°F.

Curve 2 is used for operation when fluid temperature is at, or above 31°F, during normal city, or highway driving.

Curve 3 is used during wide open throttle operation.

Curve 4 is used when driving with transfer case in 4WD Low range.

TRANSMISSION SHIFTING

Shift valve operation in 42RE transmission with the electronic governor mechanism is basically unchanged. The 1-2 and 2-3 upshift sequence occurs exactly the same as in hydraulic governor transmissions. The valve body shift valves are still moved by a combination of throttle pressure and the governor pressure.

The only real difference is that governor pressure is generated by electrical components instead of a mechanical valve and weight assembly.

The conditions under which a shift to 4th will not occur, also remain the same. They are;

- Shift to 3rd not yet completed.
- Overdrive switch is in OFF position.
- Throttle at 3/4 to wide open position.
- MPH too low for 3-4 shift to occur.
- Fluid temperature is below 30°F, or above 250°F.

CONVERTER CLUTCH ENGAGEMENT

The Torque Converter Clutch (TCC) is engaged by the TCC Solenoid on the valve body. The TCC can be engaged in 3rd and 4th gear, depending on the overdrive control switch position.

If the overdrive control switch is in the normal (ON) position, the TCC will engage after the shift to 4th gear, and above approximately 45 MPH.

If the overdrive control switch is in the OFF position, the TCC will engage after the shift to 3rd gear, and above approximately 35 MPH at light throttle.

OVERDRIVE OFF SWITCH

The Overdrive OFF Switch is located in the instrument panel. The O/D OFF switch is a momentary contact device that signals the TCM to toggle current status of the overdrive function. At Key-On, overdrive operation is allowed.

Pressing the switch once causes the O/D OFF mode to be entered, and the overdrive OFF switch lamp to be illuminated. If you press the switch a 2nd time, this causes normal overdrive operation to be restored and the overdrive lamp to turned off.

The normal position for the overdrive control switch is the ON position. The switch must be in this position to energize the OD solenoid and allow a 4th gear upshift to occur.

The control switch has an indicator lamp. The lamp illuminates when the overdrive switch is turned to the OFF position, or when illuminated by the TCM.

The overdrive switch indicator light is also used to flash fault codes for diagnostic purposes.

DIAGNOSTIC FAULT CODES

The lamp in the overdrive off switch is used to signal (Flash) the various fault codes. The fault codes and type of fault indicated are in the Fault Code Chart and shown in Figure 4.

~~TO DISPLAY FAULT CODES,~~ PROCEED AS FOLLOWS:

1. Turn ignition key ON and OFF, 3 times quickly, and remain in ON position.
2. Immediately begin counting the number of flashes displayed by O/D OFF switch indicator lamp.

~~code indicated.~~

FAULT CODE	FAULT DESCRIPTION
11	Engine RPM input
12	Output shaft sensor input
13	Vehicle speed input
14	Governor pressure sensor input
15	Throttle position sensor input
16	Transmission fluid temperature input
17	Overdrive override (control) switch input
18	System voltage
19	Internal fault in module
21	Governor pressure solenoid output
22	Overdrive solenoid output
23	Converter clutch solenoid output
24	Overdrive override (control switch) lamp output
25	Internal fault in module
26	Governor pressure sensor offset drift
55	End of code transmission

Figure 4

ROAD TESTING

Before road testing, be sure the fluid level is correct and all cable adjustments have been checked, and adjusted if needed. Observe engine performance during the road test. A poorly tuned engine will not allow an accurate analysis of the transmission operation.

Operate the transmission in all gears. Be sure to check for shift variations and engine flare, which indicates slippage.

Slippage indicated by engine flare usually means clutch, band or overrunning clutch problems. If the condition is advanced, an overhaul may be necessary to restore normal operation.

A slipping clutch or band can usually be determined by comparing which internal components are applied in the various gears. The Application Chart in Figure 2 provides a basis for analyzing road test results.

CONVERTER CLUTCH ENGAGEMENT

The Torque Converter Clutch (TCC) is engaged by the TCC Solenoid on the valve body. The TCC can be engaged in 3rd and 4th gear, depending on the overdrive control switch position.

If the overdrive control switch is in the normal (ON) position, the TCC will engage after the shift to 4th gear, and above approximately 45 MPH.

If the overdrive control switch is in the OFF position, the TCC will engage after the shift to 3rd gear, and above approximately 35 MPH at light throttle.

OVERDRIVE OFF SWITCH

The Overdrive OFF Switch is located in the instrument panel. The O/D OFF switch is a momentary contact device that signals the TCM to toggle current status of the overdrive function. At Key-On, overdrive operation is allowed.

Pressing the switch once causes the O/D OFF mode to be entered, and the overdrive OFF switch lamp to be illuminated. If you press the switch a 2nd time, this causes normal overdrive operation to be restored and the overdrive lamp to turned off.

The normal position for the overdrive control switch is the ON position. The switch must be in this position to energize the OD solenoid and allow a 4th gear upshift to occur.

The control switch has an indicator lamp. The lamp illuminates when the overdrive switch is turned to the OFF position, or when illuminated by the TCM.

The overdrive switch indicator light is also used to flash fault codes for diagnostic purposes.

DIAGNOSTIC FAULT CODES

The lamp in the overdrive off switch is used to signal (Flash) the various fault codes. The fault codes and type of fault indicated are in the Fault Code Chart and shown in Figure 4.

TO VIEW FAULT CODES, PROCEED AS FOLLOWS:

1. Turn ignition key ON and OFF, 3 times quickly, and remain in ON position.
2. Immediately begin counting the number of flashes displayed by O/D OFF switch indicator lamp.
3. Refer to the chart in Figure 4 for the fault code indicated.

FAULT CODE	FAULT DESCRIPTION
11	Engine RPM input
12	Output shaft sensor input
13	Vehicle speed input
14	Governor pressure sensor input
15	Throttle position sensor input
16	Transmission fluid temperature input
17	Overdrive override (control) switch input
18	System voltage
19	Internal fault in module
21	Governor pressure solenoid output
22	Overdrive solenoid output
23	Converter clutch solenoid output
24	Overdrive override (control switch) lamp output
25	Internal fault in module
26	Governor pressure sensor offset drift
55	End of code transmission

Figure 4

ROAD TESTING

Before road testing, be sure the fluid level is correct and all cable adjustments have been checked, and adjusted if needed. Observe engine performance during the road test. A poorly tuned engine will not allow an accurate analysis of the transmission operation.

Operate the transmission in all gears. Be sure to check for shift variations and engine flare, which indicates slippage.

Slippage indicated by engine flare usually means clutch, band or overrunning clutch problems. If the condition is advanced, an overhaul may be necessary to restore normal operation.

A slipping clutch or band can usually be determined by comparing which internal components are applied in the various gears.

The Application Chart in Figure 2 provides a basis for analyzing road test results.

HYDRAULIC PRESSURE TEST

There are pressure test ports at the accumulator, front servo and rear servo. Also governor and overdrive clutch pressure can be checked with gauges.

Line pressure is checked at the accumulator test port, but must be in the drive position, as it is rear clutch oil that is being measured. Front clutch oil (3rd&Rev) is available at the front servo pressure port. All pressure port locations are seen in Figure 5.

Use the chart in Figure 6 to determine correct oil pressures. Use a 100 PSI gauge for testing line pressure and governor pressure. A 300 PSI gauge will be required for testing reverse.

Compare results of pressure tests with the analysis chart in Figure 7.

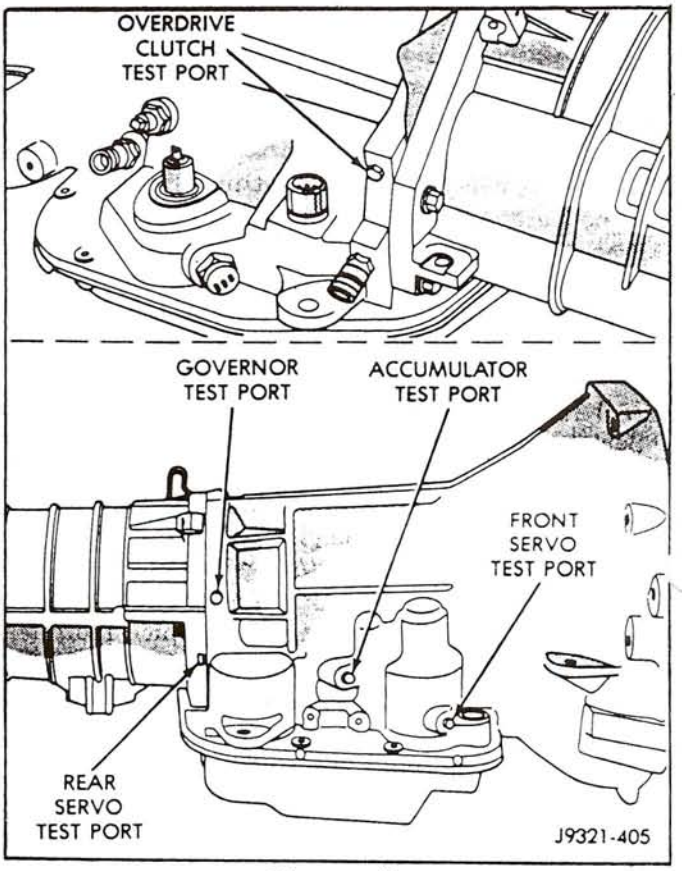


Figure 5

GOVERNOR PRESSURE TEST

This test checks governor operation by measuring governor oressure response to changes in vehicle speed. This test should be performed on a hoist that will allow the rear wheels to rotate freely.

1. Connect 100 PSI gauge to the governor pressure port (See Figure 5).
2. Start engine and place selector lever in the Drive position. At idle with the vehicle stopped, pressure should be 0 to 1-1/2 PSI maximum. If pressure does exceed this figure, a fault exists in the governor pressure control system.
3. Slowly increase engine speed, observe speedometer and pressure gauge. The governor pressure should increase in porportion to vehicle speed, or approximately 1 PSI for every 1 MPH.
4. Pressure should drop back to 0 to 1-1/2 PSI when wheels stop rotating.
5. Compare results of pressure test with the analysis chart in Figure 7.

SHIFT LEVER POSITION	MINIMUM TV PRESSURE	MAXIMUM TV PRESSURE	TEST PORT	GAGE
DRIVE	55-65 PSI	90-96 PSI	ACCUMULATOR	100 PSI
MAN-2	55-65 PSI	90-96 PSI	ACCUMULATOR	100 PSI
MAN-1	55-65 PSI	90-96 PSI	ACCUMULATOR	100 PSI
REVERSE	145-175 PSI	230-280 PSI	REAR SERVO	300 PSI
D-4TH GEAR	68-72 PSI	90-120 PSI	OVERDRIVE	300 PSI

Figure 6

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)
Pressure Low in D Fourth Gear Range	Overdrive clutch piston seal, or check ball problem
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 low in 2	Leakage in servo; broken servo ring or cracked servo piston
Pressure low in all positions	Clogged filter, stuck regulator valve, worn or faulty pump, plugged fluid cooler
Governor pressure too high at idle speed	Governor pressure solenoid valve faulty
Governor pressure low at all mph figures	Faulty governor pressure solenoid, transmission control module, or governor pressure sensor
Lubrication/line pressure low at all throttle positions	Clogged fluid cooler or lines, seal rings leaking, output shaft plugged with debris, worn bushings in pump or clutch retainer

Figure 7

ELECTRONIC GOVERNOR COMPONENTS

Governor pressure is developed and controlled electronically in the 42RE. Refer to Figure 9 for component locations. The components used for the developement and control of governor pressure include:

- GOVERNOR BODY.
- VALVE BODY TRANSFER PLATE.
- GOVERNOR PRESSURE SOLENOID.
- GOVERNOR PRESSURE SENSOR.
- FLUID TEMPERATURE THERMISTER.
- TRANSMISSION SPEED SENSOR.
- THROTTLE POSITION SENSOR.
- TRANSMISSION CONTROL MODULE (TCM).

Refer to Figure 9 for component locations.

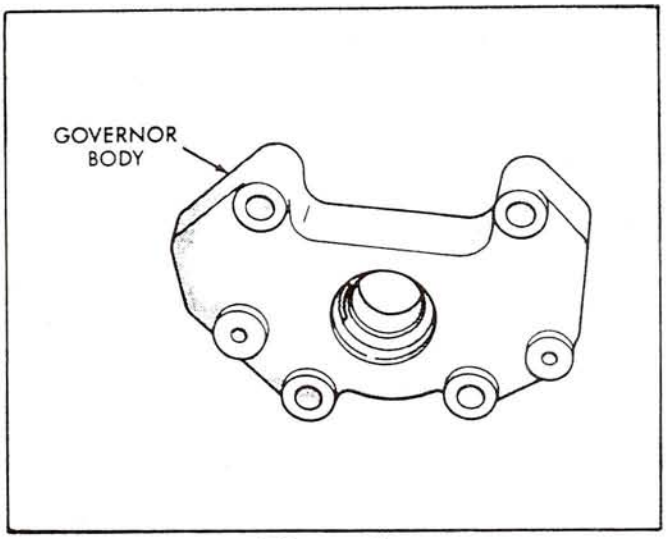


Figure 8

GOVERNOR BODY AND NEW TRANSFER PLATE

A new Transfer Plate is used with the 42RE valve body. The transfer plate is designed to supply line pressure to the governor pressure solenoid, and to return governor pressure to the valve body.

The governor pressure solenoid is mounted in the governor body, and the body is bolted to the lower side of the new transfer plate (See Figure 9).

TRANSMISSION SPEED SENSOR

The Transmission Speed Sensor is located in the overdrive gear case (See Figure 10). The sensor is positioned over the park gear and moniters transmission output shaft rotating speed. The sensor used with the 42RE transmission is the same as is used in the 41TE (A604) and 42LE (A606).

Speed sensor signals are triggered by the park gear lugs as they rotate past sensor pickup face. Input signals are sent to the transmission control module (TCM) for processing.

The vehicle speed sensor (VSS) also serves as a backup for the Transmission Speed Sensor. Signals from this sensor are shared with the powertrain control module (PCM).

THROTTLE POSITION SENSOR (TPS)

The TPS provides throttle position signals to both the TCM and PCM. This input signal is used to determine 3-4 and TCC shift schedule, and to select the proper governor curve, provided by the TCM.

Chrysler Atsg 42re A500se Technical Manual
Full download: http://manualplace.com/download/chrysler-atsg-42re-a500se-technical-manual/

ELECTRONIC GOVERNOR COMPONENT LOCATION

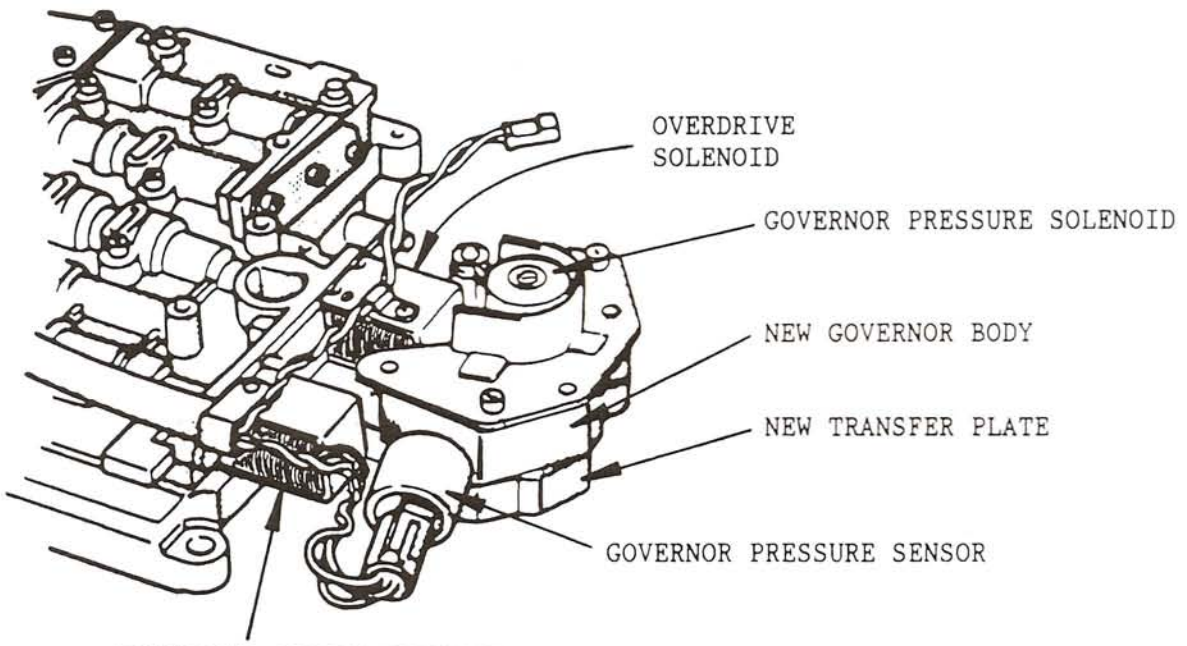


Figure 9

GOVERNOR PRESSURE CURVES

There are four governor pressure curves programed into the TCM. The four different governor curves allow the TCM to adjust governor pressure for varying conditions.

CURVE 1, is used for operation when fluid temperature is at, or below 30°F.

CURVE 2, is used for operation when fluid temperature is at, or above 31°F, during normal city, or highway driving.

CURVE 3, is used during wide open throttle operation.

CURVE 4 is used when driving with transfer case in 4WD Low range.

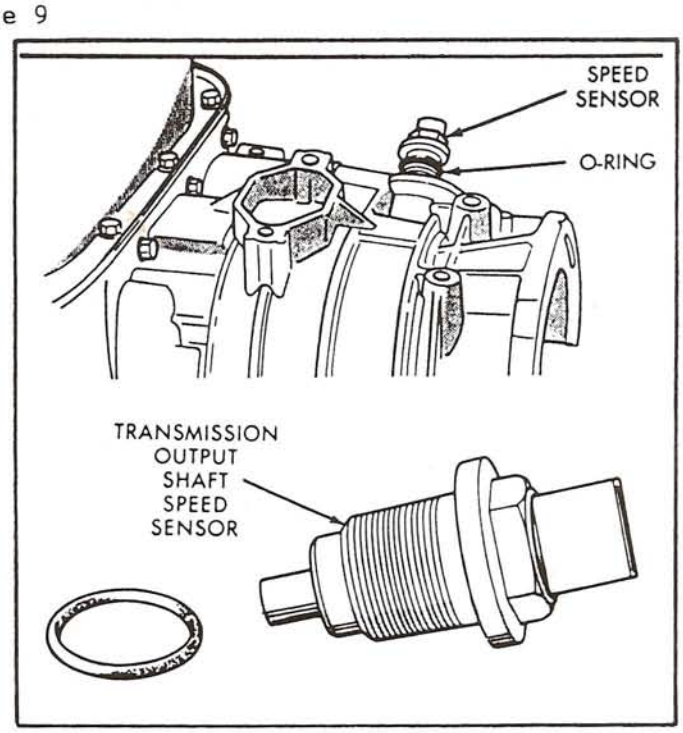


Figure 10

This is the cut pages sample. Download all 106 page(s) at: ManualPlace.com