

1999 Mitsubishi Montero Sport ES

1999 AUTOMATIC TRANSMISSIONS Mitsubishi R4A51 & V4A51 Overhaul

1999 AUTOMATIC TRANSMISSIONS

Mitsubishi R4A51 & V4A51 Overhaul

APPLICATION

TRANSMISSION APPLICATIONS

Application	Transmission Model
Montero Sport (2WD)	R4A51
Montero Sport (4WD)	V4A51

IDENTIFICATION

Transmission model can be identified by metal tag attached to center of firewall. See **Fig. 1** . For parts replacement, identification is stamped on transmission case. See **Fig. 2** .

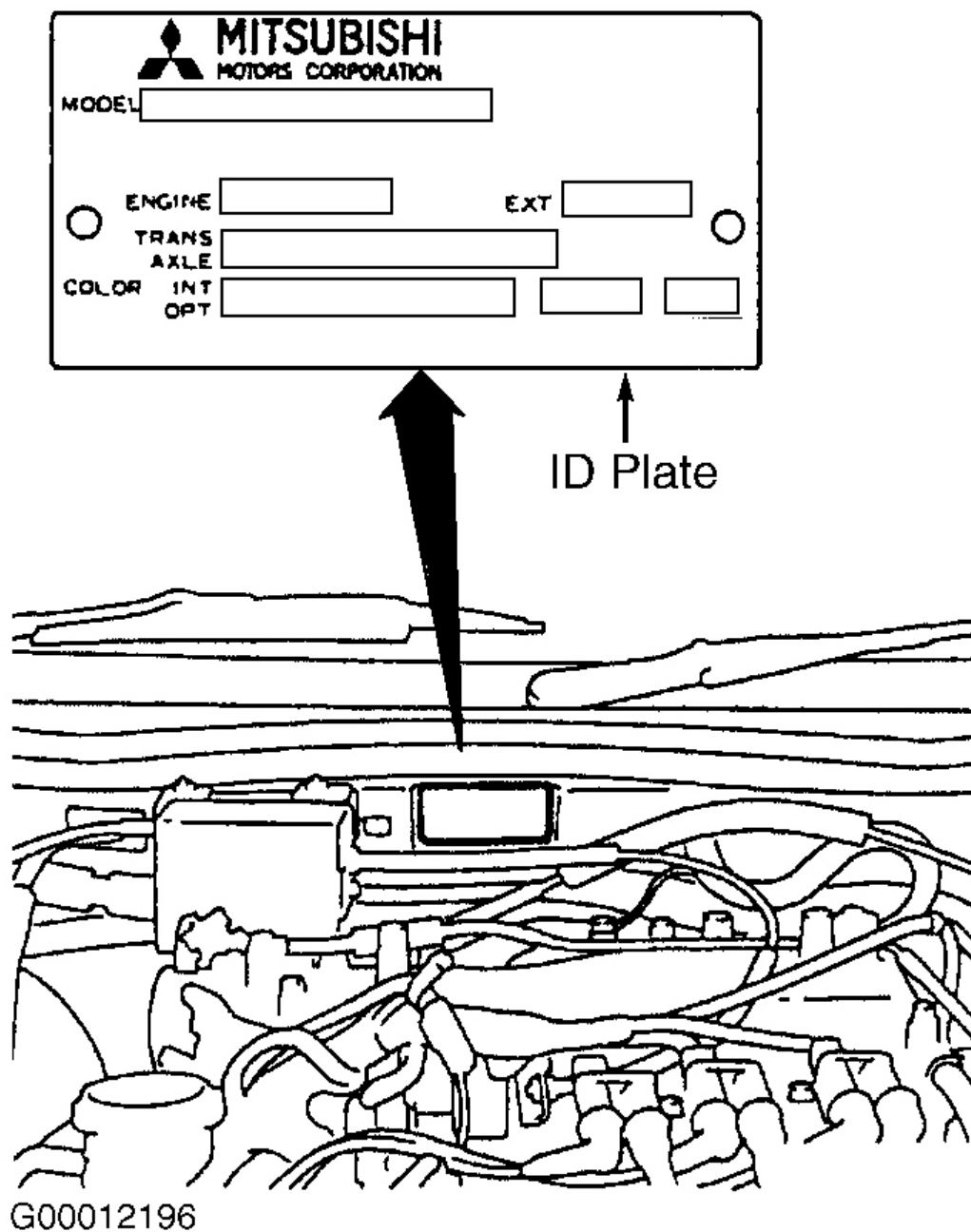
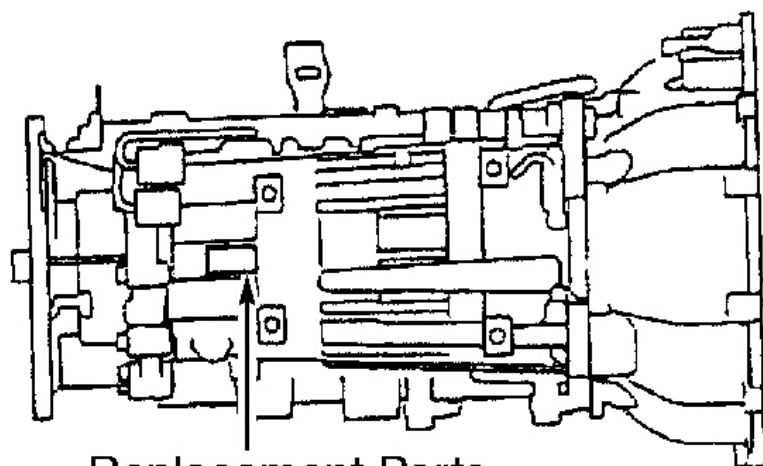
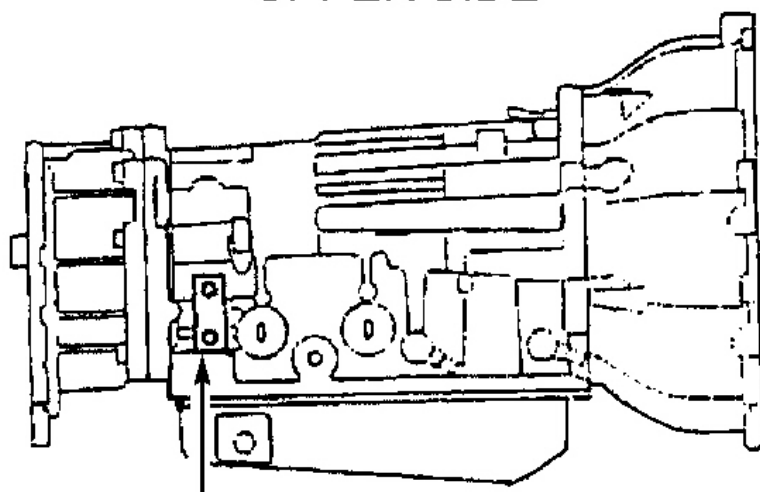


Fig. 1: Locating Transmission Identification Plate
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



Replacement Parts
Identification

UPPER SIDE



Original Equipment
Parts Identification

RIGHT SIDE

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Fig. 2: Locating Transmission Identification Markings
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

GEAR RATIOS

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TRANSMISSION GEAR RATIOS

Gear Range	Gear Ratio
1st	2.842
2nd	1.495
3rd	1.000
4th	0.731
Reverse	2.720

SPEEDOMETER GEAR RATIOS

Application	Gear Ratio (Drive/Driven)
R4A51	
3.0L	
P235/75R14	8/24
P265/70R15	8/25
3.5L	8/23
V4A51	
P235/75R15 (3.0L & 3.5L)	9/26
P265/70R15 (3.0L)	9/28

DESCRIPTION & OPERATION

The R4A51 and V4A51 transmissions are electronically controlled 4-speed automatics. Gear train is made up of 3 sets of multi-plate clutches, 2 sets of multi-plate brakes, a one-way clutch and 2 sets of planetary gears. Planetary gears are made up of sun gears, carriers, pinion gears and annulus gears. See **Fig. 3** or **Fig. 4**.

Gear shifting clutches are incorporated with feedback and learning control to suppress shifting shocks throughout the vehicle. Gear shifting clutches use a hydraulic balancing mechanism to enable gear shifting at extra-high engine speed. If a transmission fault exists a Diagnostic Trouble Code (DTC) may be stored in Powertrain Control Module (PCM) memory. For information on electronic transmission components, see MITSUBISHI R4A51 & V4A51 ELECTRONIC CONTROLS article.

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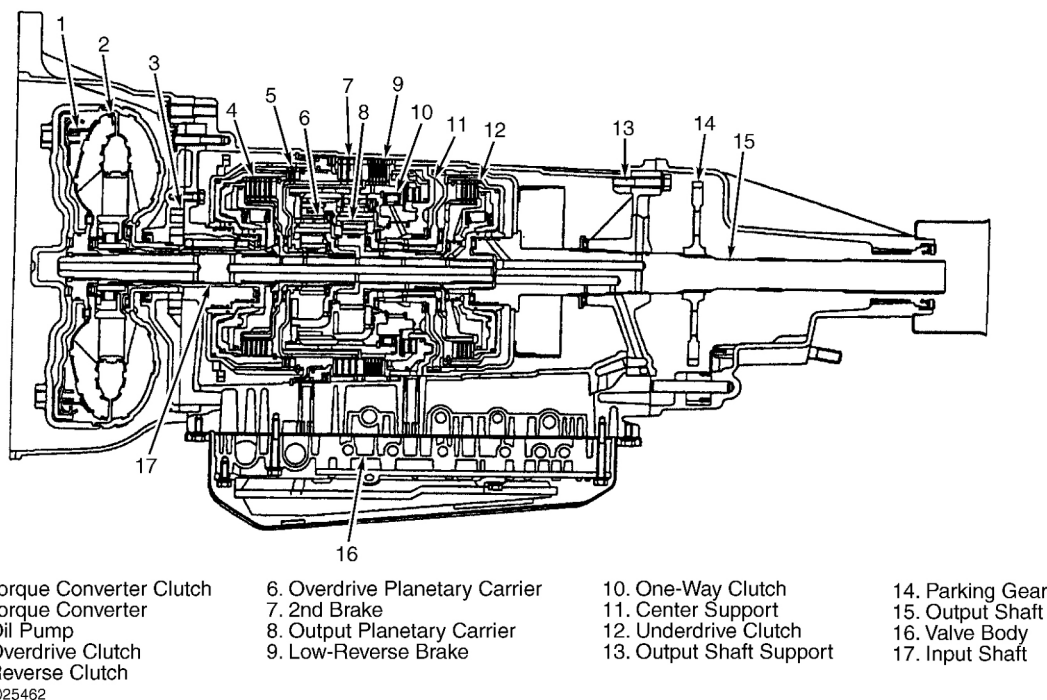


Fig. 3: Identifying Transmission Internal Components (R4A51)
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

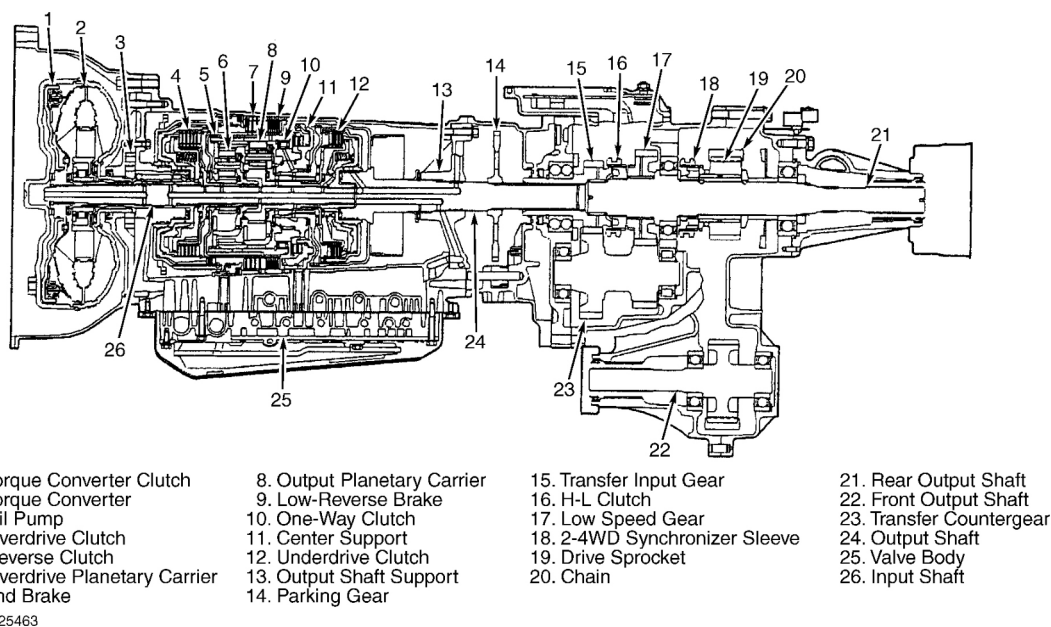


Fig. 4: Identifying Transmission Internal Components (V4A51)
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

LUBRICATION

NOTE: For draining and refilling procedures, see appropriate **AUTOMATIC TRANSMISSION SERVICING** article in **TRANSMISSION SERVICING**.

RECOMMENDED FLUID

Manufacturer recommended transmission fluid is Diamond ATF SP-II M or equivalent. Fill to proper level. See **FLUID CAPACITIES** .

FLUID CAPACITIES

TRANSMISSION FLUID CAPACITIES

Application	Dry Fill - Qts. (L)
R4A51 & V4A51	9.8 (9.3)

ON-VEHICLE SERVICE

The following items may be serviced without transmission removal:

- Control Relay
- Input Shaft Speed Sensor
- Fluid Temperature Sensor
- Output Shaft Speed Sensor
- Valve Body Solenoid Valves
- Valve Body

For removal and installation procedures not covered in this article, see **REMOVAL & INSTALLATION** in **MITSUBISHI R4A51 & V4A51 ELECTRONIC CONTROLS** article.

OIL COOLER FLUSHING

CAUTION: Wear appropriate eye protection and rubber gloves when flushing oil cooler. Keep sparks, flames and other ignition sources away from work area to prevent ignition of combustible liquids and gases. Keep work area well ventilated.

Use approved flushing equipment and transmission flushing solvents. DO NOT use solvents containing acids, water, gasoline or any other corrosive liquids. Disconnect transmission cooler lines. Flush oil cooler and cooler lines following equipment manufacturers recommended procedures. Reconnect transmission cooler lines. Fill transmission with recommended fluid type to appropriate level. See **LUBRICATION** . Check for leaks.

TROUBLE SHOOTING

PRELIMINARY INSPECTION

Transmission malfunctions may be caused by poor engine performance, improper adjustments or failure of hydraulic, mechanical or electronic components. Always begin by checking fluid level and fluid condition. Perform road test to determine if problem has been corrected. See **ROAD TEST** under PERFORMANCE TESTS. If problem still exists, diagnose by symptom. See **SYMPTOM DIAGNOSIS**.

SYMPTOM DIAGNOSIS

SYMPTOM INDEX

Symptom	Perform Symptom Check
Driving Impossible	
Vehicle Does Not Start	<u>A</u>
Vehicle Does Not Move Forward	<u>B</u>
Vehicle Does Not Move In Reverse	<u>C</u>
Vehicle Does Not Move (Forward Or Reverse)	<u>D</u>
Malfunction When Engaging	
Engine Stalls When Transmission Is Shifted From Neutral To Drive Or Reverse	<u>E</u>
Shock Or Lag Time When Shifting From Neutral To Drive	<u>F</u>
Shock Or Lag Time When Shifting From Neutral To Reverse	<u>G</u>
Shock Or Lag Time When Shifting From Neutral To Drive & From Neutral To Reverse	<u>H</u>
Shock During Shifting & Slippage	<u>I</u>
Does Not Shift Properly	
Early Or Late Shift Points (All Gears)	<u>J</u>
Early Or Late Shift Points (Some Gears)	<u>K</u>
Transmission Does Not Shift (No DTCs Set)	(1)
Malfunction While Driving	
Poor Acceleration	<u>L</u>
Vibration	<u>M</u>
Low Range Operation Detection Switch System	(1)
Pattern Select Switch System	(1)
Transmission Won't Downshift Under Load With Auto-Cruise Engaged	(1)
Vehicle Shifts Differently With A/C Engaged	(1)
(1) For test procedure, see SYMPTOM TESTS in MITSUBISHI R4A51 & V4A51 ELECTRONIC CONTROLS article.	

Test A: Vehicle Does Not Start

If engine does not start with gearshift lever in "P" or "N" position, likely cause may be malfunction of park/neutral position switch, faulty engine control system, torque converter or transmission oil pump.

Test B: Vehicle Does Not Move Forward

Check for abnormal line pressure, defective underdrive clutch, defective underdrive solenoid valve or malfunction in valve body.

Test C: Vehicle Does Not Move In Reverse

Check for abnormal low and reverse brake pressure, abnormal reverse clutch pressure, defective low and reverse solenoid valve, defective reverse clutch, defective low and reverse brake or malfunction in valve body.

Test D: Vehicle Does Not Move (Forward Or Reverse)

Check for abnormal line pressure, powertrain malfunction, defective oil pump or malfunction in valve body.

Test E: Engine Stalls When Transmission Is Shifted From Neutral To Drive Or Reverse

Check for defective Torque Converter Clutch Solenoid Valve (TCCSV) on valve body or wiring circuit, improper engine idle speed or performance, defective torque converter or malfunction in valve body.

Test F: Shock Or Lag Time When Shifting From Neutral To Drive

Check for abnormal underdrive clutch pressure, defective underdrive clutch, defective underdrive solenoid valve, defective or improperly adjusted throttle position sensor or malfunction in valve body.

Test G: Shock Or Lag Time When Shifting From Neutral To Reverse

Check for abnormal reverse clutch pressure, abnormal low-reverse brake pressure, defective low-reverse solenoid valve, defective reverse clutch, defective low-reverse brake, defective or improperly adjusted throttle position sensor or malfunction in valve body.

Test H: Shock Or Lag Time When Shifting From Neutral To Drive & From Neutral To Reverse

Check for abnormal line pressure, defective oil pump or malfunction in valve body.

Test I: Shock During Shifting & Slippage

Check for abnormal line pressure, defective solenoid valve, defective brake, defective clutch, defective oil pump or malfunction in valve body.

Test J: Early Or Late Shift Points (All Gears)

Check for abnormal line pressure, defective output shaft speed sensor, defective solenoid valve, defective or improperly adjusted throttle position sensor, defective PCM or malfunction in valve body.

Test K: Early Or Late Shift Points (Some Gears)

Check for malfunction in valve body. If symptom exists only when transmission temperature is less than 84°F (29°C) or more than 257°F (125°C), condition is normal.

Test L: Poor Acceleration

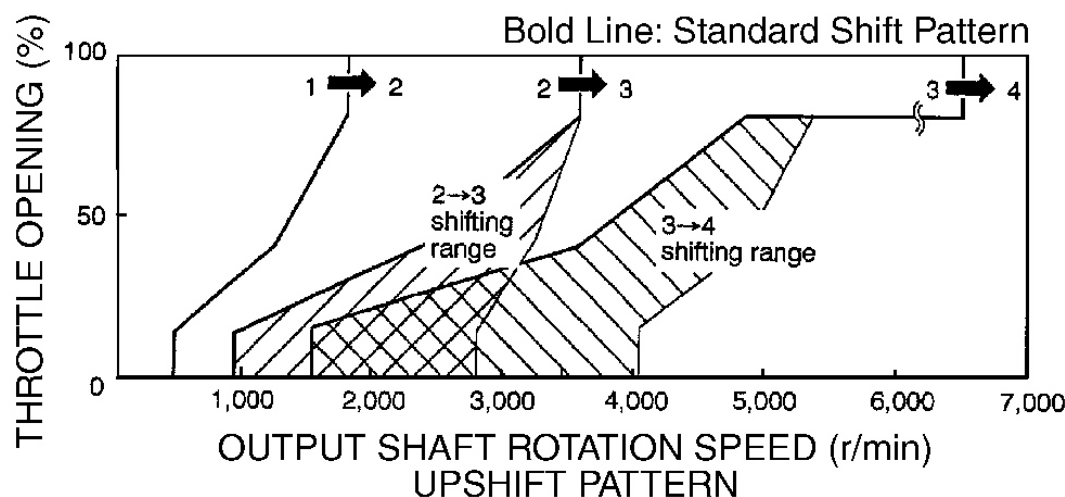
Check for engine system malfunction or defective brake or clutch.

Test M: Vibration

Check for abnormal torque converter clutch pressure, engine system malfunction, defective torque converter clutch solenoid, defective torque converter or malfunction in valve body.

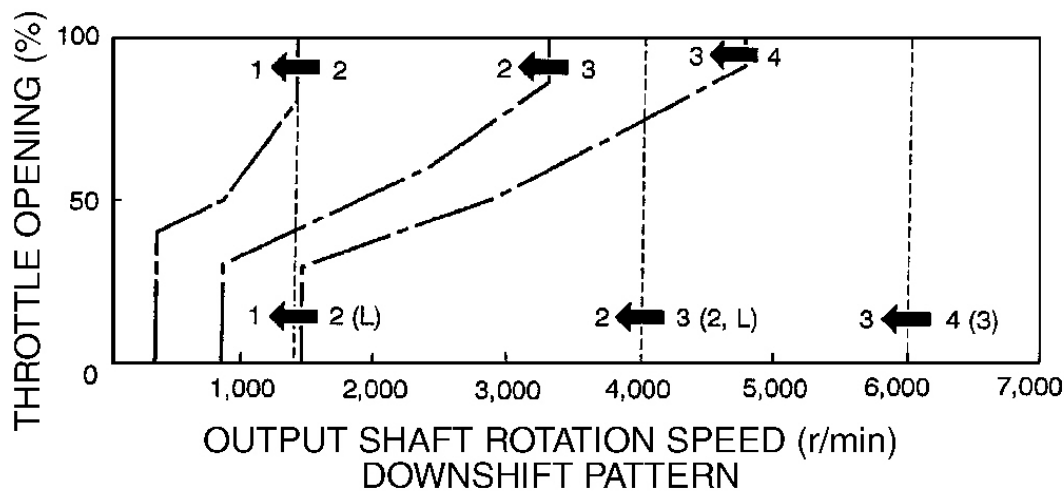
PERFORMANCE TESTS**ROAD TEST**

1. Ensure shift cable is properly adjusted, and fluid level and condition are okay. Add fluid and adjust shift cable if necessary. Road test vehicle, and check if shift points are at specified speeds. On 3.0L, see **Fig. 5** -**Fig. 7** . On 3.5L, see **Fig. 8** -**Fig. 10** .
2. If shift points are not as specified, check for stored DTCs. See MITSUBISHI R4A41 & V4A51 ELECTRONIC CONTROLS article. If slippage occurs, perform hydraulic pressure tests to check transmission internal components. See [HYDRAULIC PRESSURE TESTS](#) .



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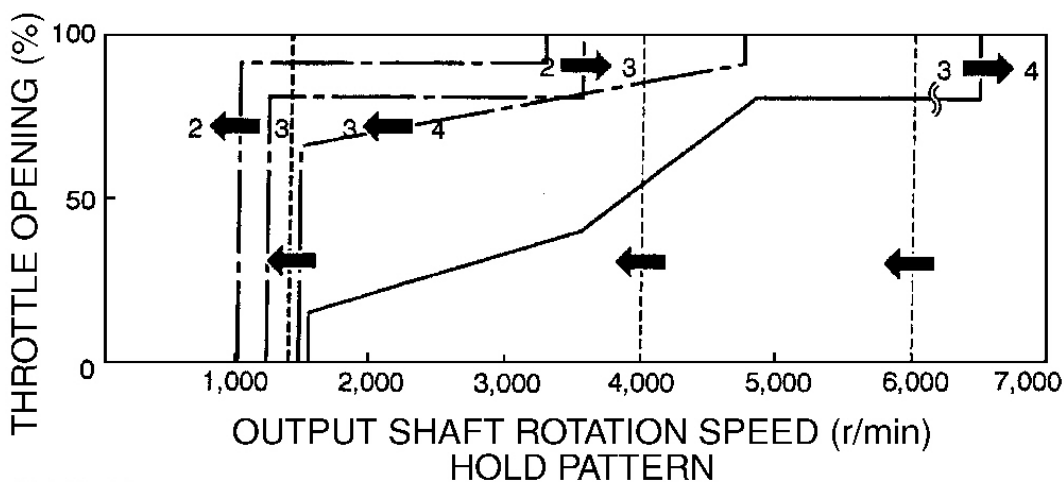
Fig. 5: Identifying Transmission Upshift Points (3.0L)
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



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Fig. 6: Identifying Transmission Downshift Points (3.0L)

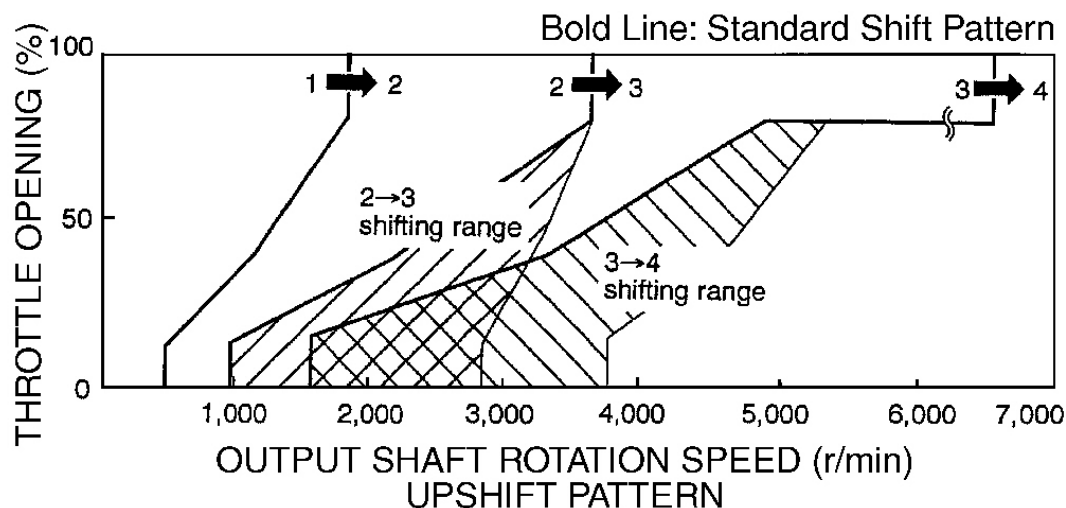
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



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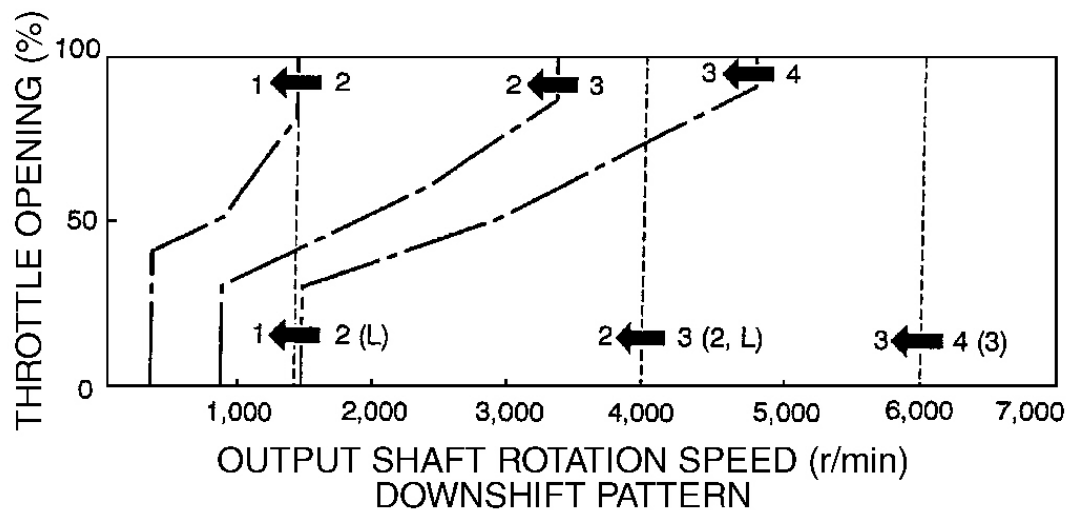
Fig. 7: Identifying Transmission Hold Pattern (3.0L)

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



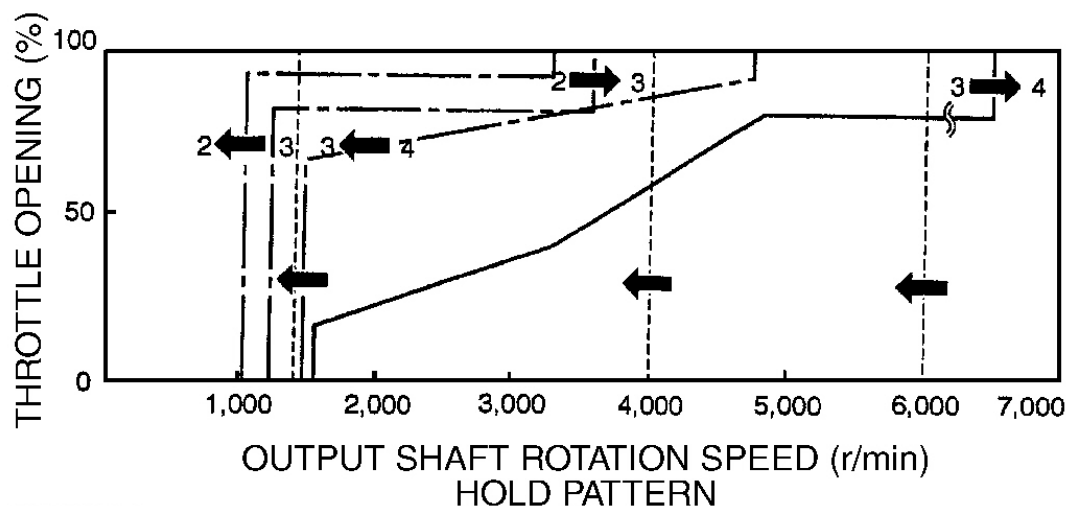
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Fig. 8: Identifying Transmission Upshift Points (3.5L)
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



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Fig. 9: Identifying Transmission Downshift Points (3.5L)
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



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Fig. 10: Identifying Transmission Hold Pattern (3.5L)
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

TORQUE CONVERTER STALL SPEED TEST

CAUTION: Do not open throttle to wide open position for more than 8 seconds, or transmission damage may occur. If performing more than one torque converter stall speed test, operate engine at 1000 RPM in Neutral for at least 2 minutes to cool transmission fluid before performing next stall speed test.

Stall Speed Test Procedure

1. Ensure transmission fluid level is correct. Install tachometer. Start engine, and run until transmission fluid is at normal operating temperature. Ensure engine operating temperature is about 180-210°F (83-100°C).
2. Block rear wheels. Apply parking and service brakes. Place transmission in Drive, and open throttle to wide open position. Note maximum engine RPM. This is torque converter stall speed.
3. Repeat procedure with transmission in Reverse. Once stall speed is obtained, place transmission in Neutral. Operate engine, allowing transmission to cool. Stop engine and place transmission in Park. On 3.0L, stall speed should be 2000-2600 RPM in Drive and Reverse. On 3.5L, stall speed should be 2300-2900 RPM in Drive and Reverse.

Stall Speed Exceeds Specification

NOTE: Use the following symptoms for trouble shooting results of stall speed tests.

If stall speed exceeds specification in Drive only, check for underdrive clutch slippage. If stall speed exceeds specification in Reverse only, check for reverse clutch slippage. If stall speed exceeds specification in Drive and

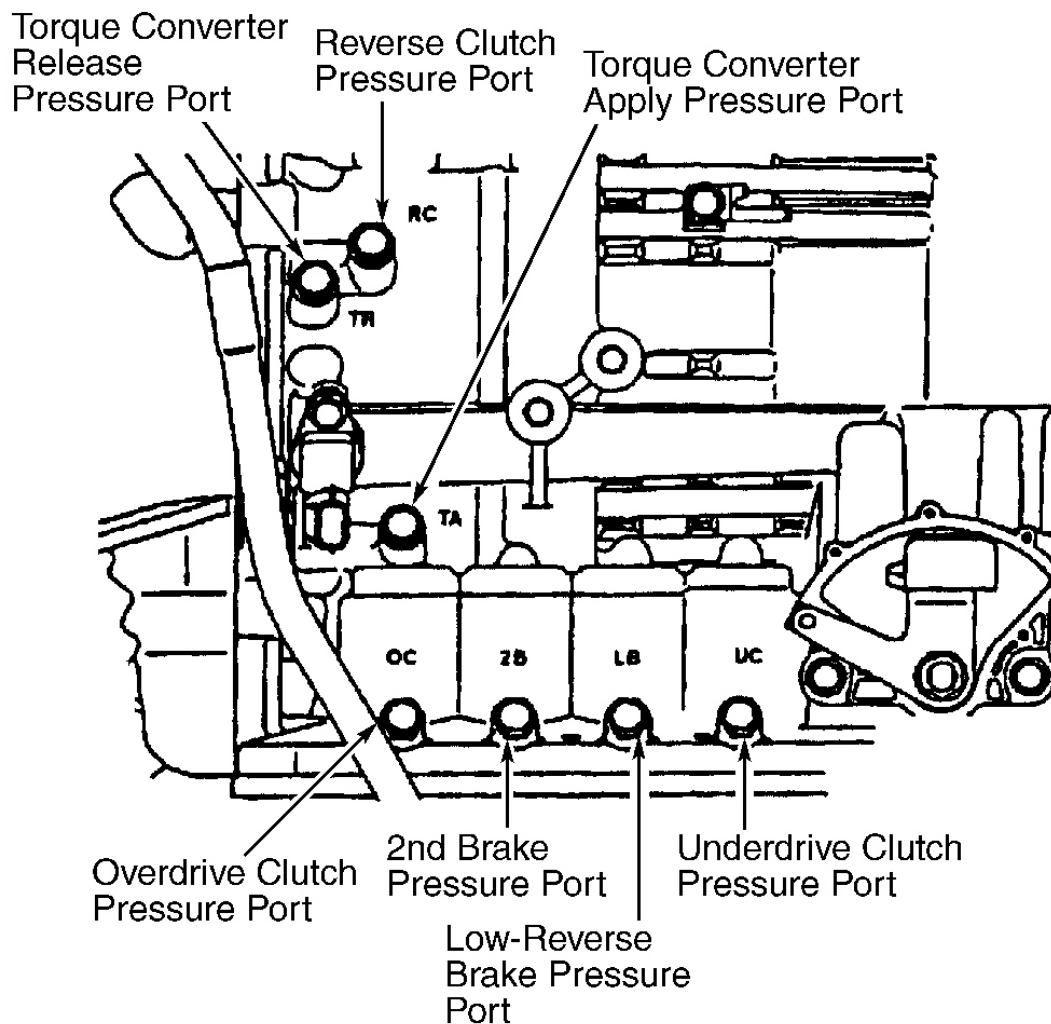
Reverse, check for low line pressure, low-reverse brake slippage or defective one-way clutch. If incorrect line pressure is suspected, adjust line pressure. See **LINE PRESSURE ADJUSTMENT** . If component failure is suspected, check hydraulic pressures. See **HYDRAULIC PRESSURE TESTS** .

Stall Speed Is Less Than Specification In Drive & Reverse

If stall speed is less than specified in Drive and Reverse, check for poor engine performance. If engine operates correctly, check for defective torque converter. For torque converter replacement, see appropriate AUTOMATIC TRANSMISSION REMOVAL article in TRANSMISSION SERVICING.

HYDRAULIC PRESSURE TESTS

1. Ensure transmission is at normal operating temperature and fluid level is correct. Raise and support vehicle so drive wheels rotate freely. Install tachometer, and position it so driver can view it.
2. Note locations of hydraulic pressure taps on side of transmission case and near oil pan. See **Fig. 11** . Remove pressure tap plugs, and install adapter and pressure gauge to each pressure tap.
3. Measure hydraulic pressure at 2500 RPM in appropriate gear. See **Fig. 12** . If pressures are within specification, go to next step. If pressures are not within specification, see **HYDRAULIC PRESSURE DIAGNOSIS** table.
4. Remove pressure gauge. Install and tighten pressure tap plugs to specification. See **TORQUE SPECIFICATIONS** .



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Fig. 11: Locating Transmission Hydraulic Pressure Taps
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

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Measurement condition			Standard Hydraulic Pressure psi					
Selector lever position	Shift position	Engine speed (r/min)	Underdrive clutch pressure	Reverse clutch pressure	Overdrive clutch pressure	Low and reverse brake pressure	Second brake pressure	Torque converter pressure
P	—	2,500	—	—	—	38 – 50	—	32 – 52
R	Reverse	2,500	—	185 – 256	—	185 – 256	—	73 – 101
N	—	2,500	—	—	—	38 – 50	—	32 – 52
D	1st gear	2,500	147 – 152	—	—	147 – 152	—	94 – 123
	2nd gear	2,500	147 – 152	—	—	—	147 – 152	94 – 123
	3rd gear	2,500	113 – 128	—	113 – 128	—	—	94 – 123
	4th gear	2,500	—	—	113 – 128	—	113 – 128	94 – 123

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Fig. 12: Testing Transmission Hydraulic Pressures
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

HYDRAULIC PRESSURE DIAGNOSIS

Symptom	Probable Cause
All Pressures High	Incorrect Control Cable Adjustment, Incorrect Line Pressure Adjustment, Malfunction Of Regulator Valve
All Pressures Low	Incorrect Control Cable Adjustment, Incorrect Line Pressure Adjustment, Oil Pump Malfunction, Clogged Internal Oil Filter, Clogged Oil Cooler, Regulator Valve Malfunction, Relief Valve Malfunction, Incorrect Valve Body Installation
Abnormal Pressure In Reverse Only	Regulator Valve Malfunction, Clogged Orifice, Incorrect Valve Body Installation
Abnormal Pressure In 3rd Or 4th Only	Overdrive Clutch Solenoid Valve Malfunction, Overdrive Pressure Control Valve Malfunction, Regulator Valve Malfunction, Switch Valve Malfunction, Clogged Orifice, Incorrect Valve Body Installation
Abnormal Underdrive Pressure Only	(1) Malfunction Of Oil Seal "K", "L", "M" or "Q", (2) Underdrive Clutch Solenoid Valve Malfunction, Underdrive Pressure Control Valve Malfunction, Check Ball Malfunction, Clogged Orifice, Incorrect Valve Body Installation
Abnormal Reverse Clutch Pressure Only	(1) Malfunction Of Oil Seal "A", "B" Or "C", Clogged Orifice, Check Ball Malfunction, Incorrect Valve Body Installation
Abnormal Overdrive Pressure Only	(1) Malfunction Of Oil Seal "D", "E" Or "F", (2) Overdrive Clutch Solenoid Valve Malfunction, Overdrive Pressure Control Valve Malfunction, Check Ball Malfunction, Clogged Orifice, Incorrect Valve Body Installation
Abnormal Low-Reverse Pressure Only	(1) Malfunction Of Oil Seal "I", "J" or "P", (2) Low-Reverse Brake Solenoid Valve Malfunction, Low-Reverse Pressure Control Valve Malfunction,

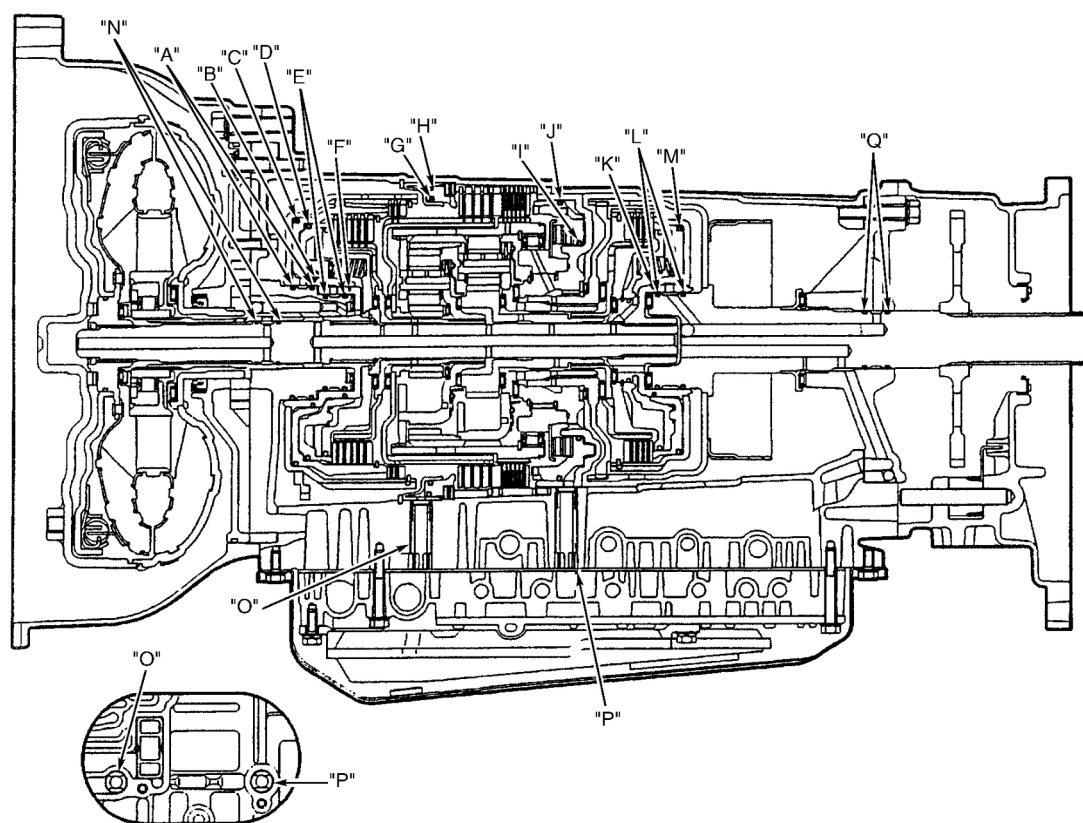
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	Switch Valve Malfunction, Fail Safe Valve "A" Malfunction, Check Ball Malfunction, Clogged Orifice, Incorrect Valve Body Installation
Abnormal 2nd Pressure Only	(1) Malfunction Of Oil Seal "G", "H" Or "O", (2) Second Brake Solenoid Valve Malfunction, Second Pressure Control Valve Malfunction, Fail Safe Valve "B" Malfunction, Clogged Orifice, Incorrect Valve Body Installation
Abnormal Torque Converter Pressure Only	Clogged Oil Cooler, (1) Malfunction Of Oil Seal "N", (2) Torque Converter Clutch Solenoid Valve Malfunction, Torque Converter Clutch Control Solenoid Valve Malfunction, Torque Converter Pressure Control Valve Malfunction, Clogged Orifice, Incorrect Valve Body Installation
Pressure Applied To Element Which Should Not Receive Pressure	Incorrect Transmission Control Cable Adjustment, Manual Valve Malfunction, Check Ball Malfunction, Incorrect Valve Body Installation

(1) Refer to illustration for oil seal locations. See **Fig. 13** .

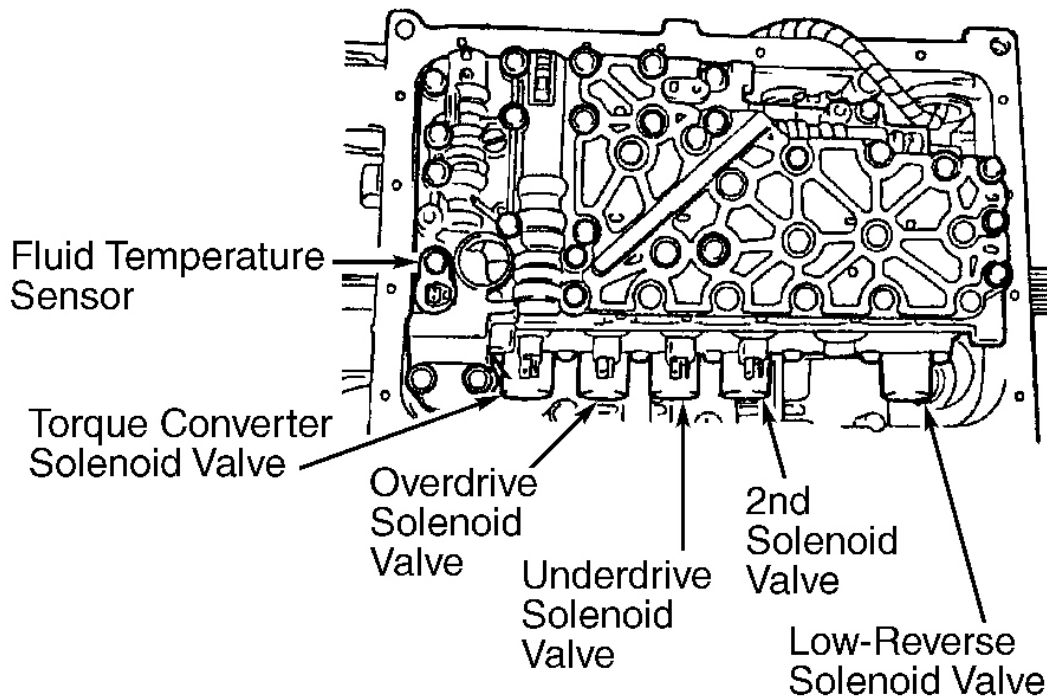
(2) Refer to illustration for valve body solenoid locations. See **Fig. 14** .



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Fig. 13: Identifying Oil Seal Locations

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



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Fig. 14: Identifying Valve Body Solenoid Valves
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

LINE PRESSURE ADJUSTMENT

CAUTION: Check line pressure before attempting line pressure adjustment.

1. Drain transmission fluid. Remove oil pan retaining bolts. Using Oil Pan Remover (MD998727), remove oil pan. Note location of line pressure adjusting screw. See **Fig. 15** . Rotate line pressure adjusting screw clockwise to decrease line pressure and counterclockwise to increase line pressure.
2. Rotating line pressure adjusting screw one revolution will change line pressure about 5.1 psi (35 kPa). Line pressure specification is 147-152 psi (1014-1048 kPa). Reinstall oil pan. Install oil pan retaining bolts and tighten to specification. See **TORQUE SPECIFICATIONS** . Fill transmission with appropriate ATF to proper level. See **LUBRICATION** . Recheck line pressure.

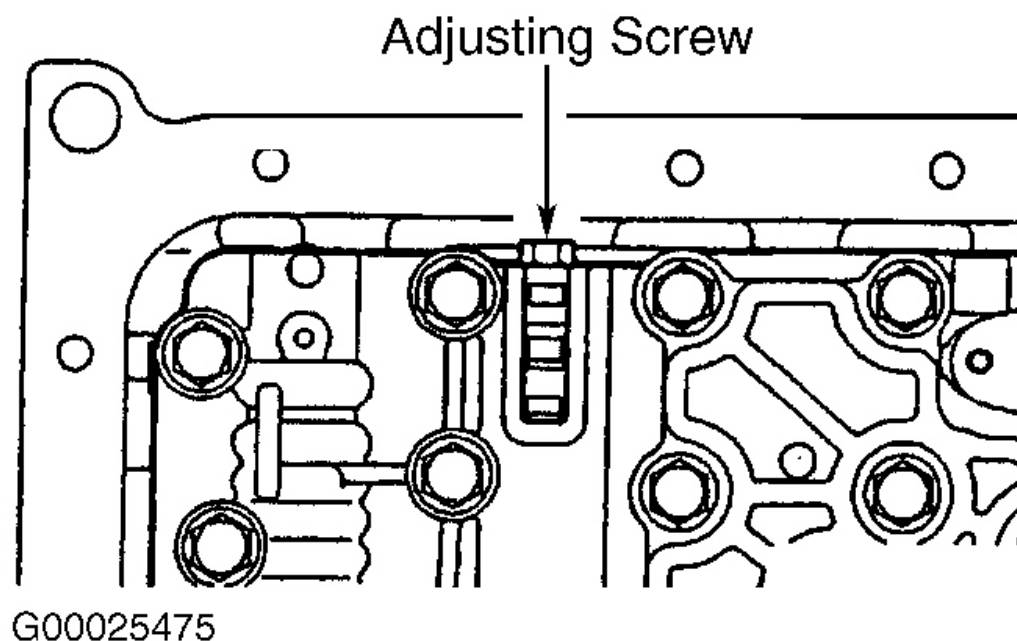


Fig. 15: Locating Line Pressure Adjusting Screw

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

COMPONENT TESTS

TORQUE CONVERTER

CAUTION: Torque converter is a welded assembly and is not serviceable. If malfunction occurs or torque converter becomes contaminated with foreign material, it must be replaced. Torque converter cannot be flushed or repaired.

NOTE: For torque converter stall speed test, see TORQUE CONVERTER STALL SPEED TEST under PERFORMANCE TESTS.

REMOVAL & INSTALLATION

FLUID TEMPERATURE SENSOR

Removal & Installation

Raise and support vehicle. Drain transmission fluid. Remove oil pan retaining bolts. Using Oil Pan Remover

(MD998727), remove oil pan. Disconnect fluid temperature sensor connector. Remove fluid temperature sensor retaining bolt. Remove fluid temperature sensor. To install, reverse removal procedure. Tighten fluid temperature sensor retaining bolt to specification. See **TORQUE SPECIFICATIONS** . Refill transmission with appropriate ATF to proper level. See **LUBRICATION** .

INPUT SHAFT SPEED SENSOR

Removal & Installation

Raise and support vehicle. Disconnect input shaft speed sensor. Remove input shaft speed sensor retaining bolt. Remove input shaft speed sensor. To install, reverse removal procedure. Tighten input shaft speed sensor retaining bolt to specification. See **TORQUE SPECIFICATIONS** .

OUTPUT SHAFT SPEED SENSOR

Removal & Installation

Raise and support vehicle. Disconnect output shaft speed sensor. Remove output shaft speed sensor retaining bolt. Remove output shaft speed sensor. To install, reverse removal procedure. Tighten output shaft speed sensor retaining bolt to specification. See **TORQUE SPECIFICATIONS** .

TRANSMISSION ASSEMBLY

NOTE: See appropriate **AUTOMATIC TRANSMISSION REMOVAL** article in **TRANSMISSION SERVICING**.

VALVE BODY

NOTE: When removing valve body, valve body "O" ring may either come off with valve body or stick to transmission case.

Removal

1. Remove manual control lever. Remove park/neutral position switch. Remove oil pan retaining bolts. Using Oil Pan Remover (MD998727), remove oil pan. Remove oil filter and oil filter "O" ring. Remove detent spring. Disconnect valve body solenoid valve harness at valve body. Remove 20 valve body bolts. Note bolt length and location for reassembly reference. Remove valve body. Remove valve body "O" ring. See **Fig. 18** .
2. Remove snap ring and disconnect solenoid valve harness. See **Fig. 19** . Remove oil strainer and 2 oil seals. See **Fig. 20** . Mark each accumulator piston for reassembly reference. Remove each accumulator piston, seal ring and spring. See **Fig. 21** .

Installation

1. Install NEW seal rings onto all accumulator pistons. Install each accumulator piston. See **Fig. 21** . Install oil strainer. Install 2 NEW oil seals with notched section oriented as shown. See **Fig. 20** . Install valve body solenoid valve harness and secure snap ring to connector groove. See **Fig. 19** . Install NEW valve

body "O" ring onto transmission case. See **Fig. 18** .

2. Install valve body while inserting manual valve pin into detent lever groove. See **Fig. 45** . Install fluid temperature sensor. See **Fig. 14** . Install 20 valve body mounting bolts as shown and tighten to specification. See **TORQUE SPECIFICATIONS** . See **Fig. 49** . Connect electrical connectors to valve body components. See **Fig. 17** .
3. Install detent spring. Install oil filter and NEW "O" ring. Apply Mitsubishi Sealant (MR166584) to mating surface of oil pan. Install oil pan. Tighten oil pan bolts to specification. See **TORQUE SPECIFICATIONS** . Install park/neutral position switch and manual control lever. Refill transmission with appropriate ATF to proper level. See **LUBRICATION** .

VALVE BODY SOLENOID VALVES

Removal & Installation

Raise and support vehicle. Drain transmission fluid. Remove oil pan retaining bolts. Using Oil Pan Remover (MD998727), remove oil pan. Disconnect valve body solenoid valve harness connectors. Remove support for valve body solenoid valves. Remove appropriate valve body solenoid valve. To install, reverse removal procedure. Tighten fasteners to specification. See **TORQUE SPECIFICATIONS** . Refill transmission with appropriate ATF to proper level. See **LUBRICATION** .

TRANSMISSION DISASSEMBLY

VALVE BODY & INTERNAL COMPONENTS

CAUTION: Note locations of all thrust bearings, thrust races and thrust washers for reassembly reference. See **Fig. 16** .

1. Remove torque converter. Remove input and output shaft speed sensors. See **Fig. 17** . Remove manual control lever. Remove park/neutral position switch.
2. On models equipped with R4A51 transmission, remove tailshaft housing mounting bolts. Remove tailshaft housing.
3. On models equipped with V4A51 transmission, remove transfer case adapter retaining bolts. Remove transfer case adapter.

NOTE: When removing valve body, valve body "O" ring may either come off with valve body or stick to transmission case.

4. On all models, remove snap ring and parking gear. Remove 20 oil pan retaining bolts. Using Oil Pan Remover (MD998727), remove oil pan. Remove oil filter and oil filter "O" ring. Remove detent spring. Disconnect valve body solenoid valve harness at valve body. Remove 20 valve body bolts. Note bolt length and location for reassembly reference. Remove valve body. Remove valve body "O" ring. See **Fig. 18** .
5. Remove snap ring and disconnect solenoid valve harness. See **Fig. 19** . Remove oil strainer and 2 oil seals. See **Fig. 20** . Mark each accumulator piston for reassembly reference. Remove each accumulator piston, seal ring and spring. See **Fig. 21** .

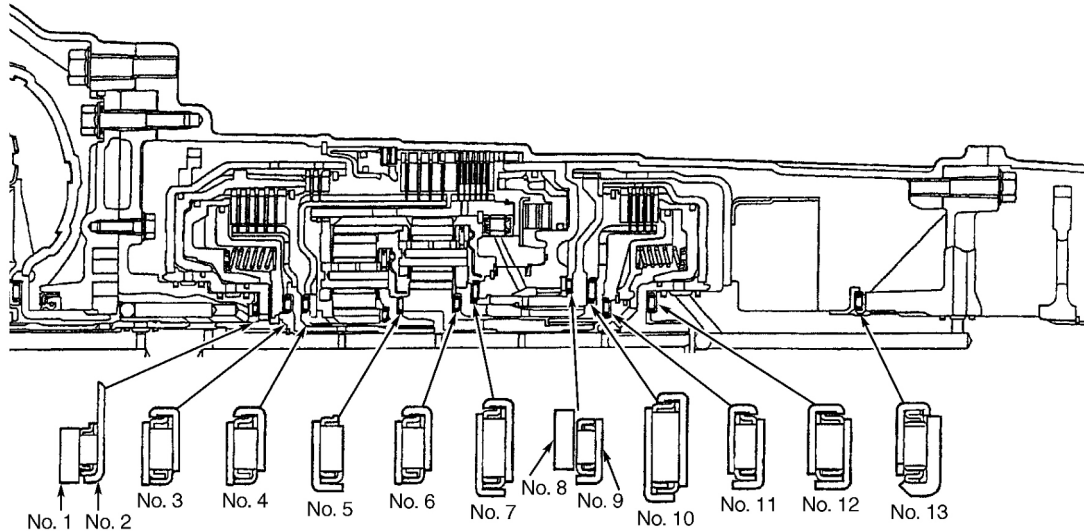
6. Remove detent lever spring pin. See **Fig. 22** . Remove manual control shaft retaining pin. Remove manual control shaft. Remove 2 "O" rings. Remove detent lever. Remove parking roller rod. Remove 8 torque converter housing mounting bolts. See **Fig. 23** . Remove torque converter housing. Remove 10 oil pump mounting bolts. Using Oil Pump Remover (MD998333), remove oil pump. Remove oil pump gasket.
7. Remove thrust race No. 1. Remove thrust bearing No. 2. Remove reverse and overdrive clutch. Remove thrust bearing No. 3. Remove overdrive clutch hub. Remove thrust bearing No. 4. Remove reverse sun gear. Remove snap ring, second brake and return spring.

NOTE: **Low-reverse brake on models equipped with 3.0L has one pressure plate, 5 brake discs and 4 brake plates. Low-reverse brake on models equipped with 3.5L has one pressure plate, 6 brake discs and 5 brake plates.**

8. Remove pressure plate, brake discs and brake plates. See **Fig. 24** . Remove low-reverse annulus gear. Remove thrust bearing No. 7. Remove snap ring and reaction plate. Remove snap ring and brake plates and brake discs. Remove pressure plate and wave spring.
9. Remove snap ring. See **Fig. 25** . Remove center support. Remove thrust race No. 8 and thrust bearing No. 9. Remove output flange. Remove thrust bearing No. 10. Remove underdrive clutch hub. Remove thrust bearing No. 11. Remove underdrive clutch. Remove thrust bearing No. 12. Remove output shaft. Remove 2 large and 2 small seal rings from output shaft. Remove thrust bearing No. 13 and bearing retainer. Remove 8 output shaft support mounting bolts. Remove output shaft support and gasket from transmission case.

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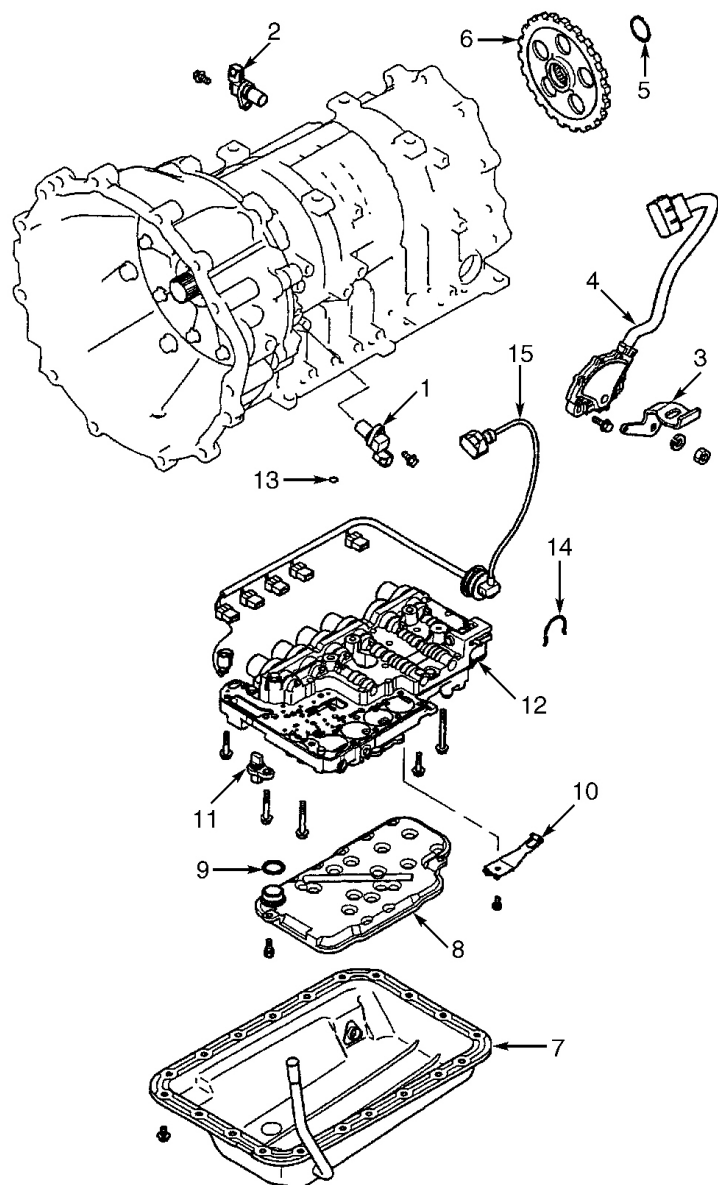
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SYMBOL	O.D. mm (in.)	I.D. mm (in.)	THICKNESS mm (in.)	PART NUMBER
NO.1	48.9 (1.93)	37 (1.46)	1.4 (0.055)	MD723063
			1.6 (0.063)	MD707267
			1.8 (0.071)	MD723064
			2.0 (0.079)	MD707268
			2.2 (0.087)	MD723064
			2.4 (0.094)	MD724358
			2.6 (0.102)	MD754798
NO.2	59 (2.32)	37 (1.46)	2.8 (0.110)	MR305718
NO.3	57 (2.24)	38.5 (1.52)	4.12 (0.162)	MD758556
NO.4	57 (2.24)	38.5 (1.52)	4.12 (0.162)	MD758556
NO.5	54.4 (2.14)	38.5 (1.52)	3.3 (0.130)	MD761683
NO.6	57 (2.24)	38.5 (1.52)	4.12 (0.162)	MD758556
NO.7	67 (2.64)	48.8 (1.92)	4.0 (0.157)	MR222902
NO.8	73 (2.87)	60 (2.36)	1.6 (0.063)	MR276705
			1.8 (0.071)	MR276706
			2.0 (0.079)	MR276707
			2.2 (0.087)	MR276708
			2.4 (0.094)	MR276709
NO.9	73 (2.87)	57 (2.24)	2.78 (0.109)	MR276587
NO.10	71.9 (2.83)	47 (1.85)	4.6 (0.181)	MR263281
NO.11	56.1 (2.21)	34 (1.34)	3.83 (0.151)	MR276588
NO.12	58.4 (2.30)	38.5 (1.52)	4.62 (0.182)	MR222936
NO.13	56.2 (2.21)	41.2 (1.62)	4.8 (0.189)	MD758555

G00025476

Fig. 16: Identifying Thrust Bearings, Races & Washers
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



- | | |
|---------------------------------|------------------------------|
| 1. Input Shaft Speed Sensor | 9. "O" Ring |
| 2. Output Shaft Speed Sensor | 10. Detent Spring |
| 3. Manual Control Lever | 11. Fluid Temperature Sensor |
| 4. Park/Neutral Position Switch | 12. Valve Body |
| 5. Snap Ring | 13. "O" Ring |
| 6. Parking Gear | 14. Snap Ring |
| 7. Oil Pan | 15. Solenoid Valve Harness |
| 8. Oil Filter | |

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Fig. 17: Locating Speed Sensors & Valve Body Components
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

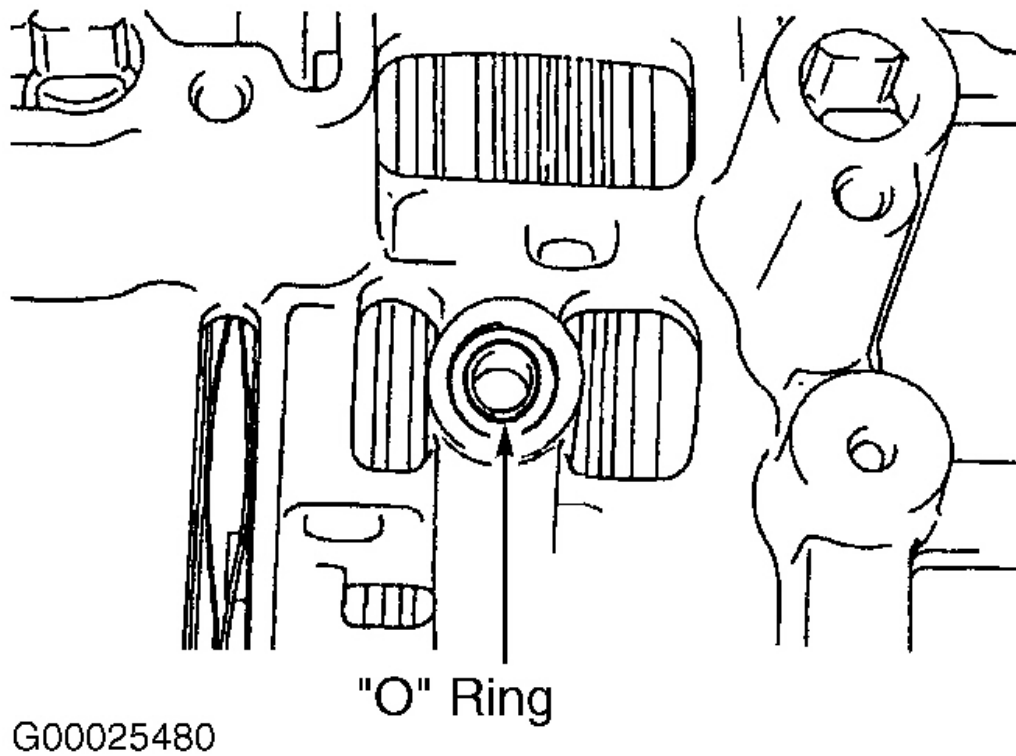
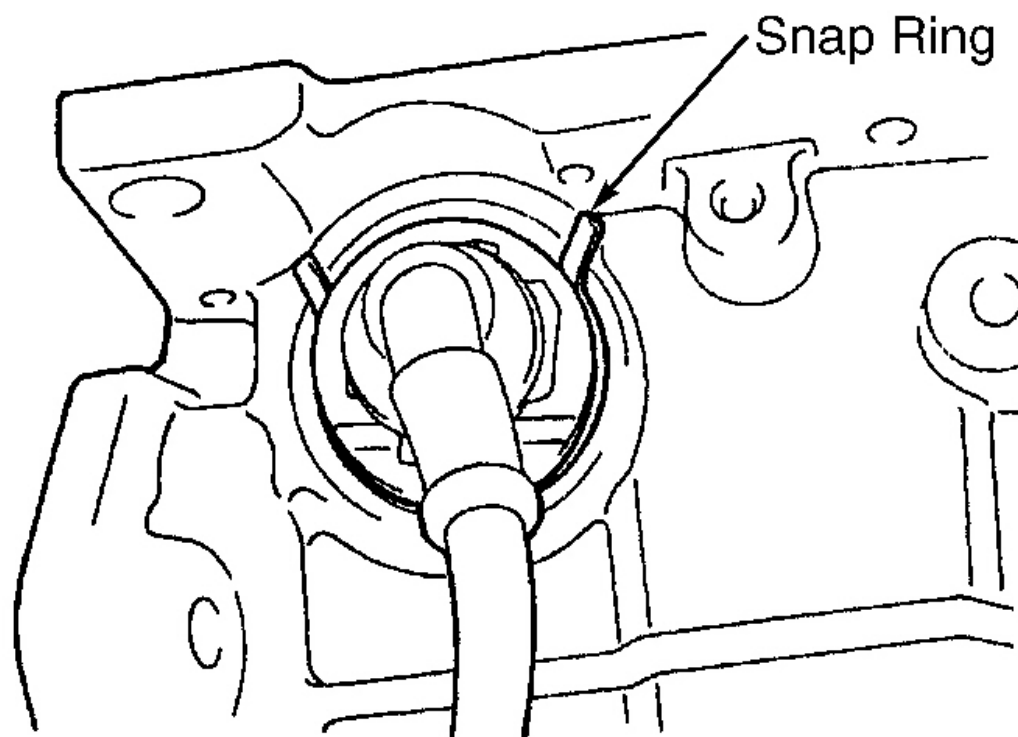


Fig. 18: Locating Valve Body "O" Ring

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



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Fig. 19: Locating Solenoid Valve Harness Snap Ring
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

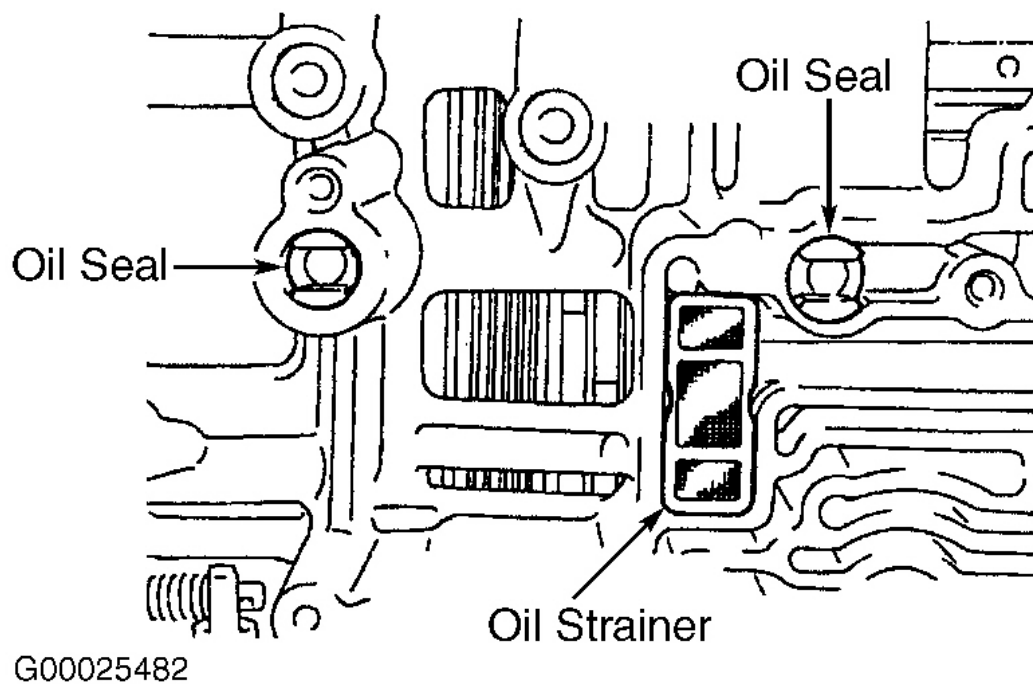


Fig. 20: Locating Oil Strainer & Oil Seals

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

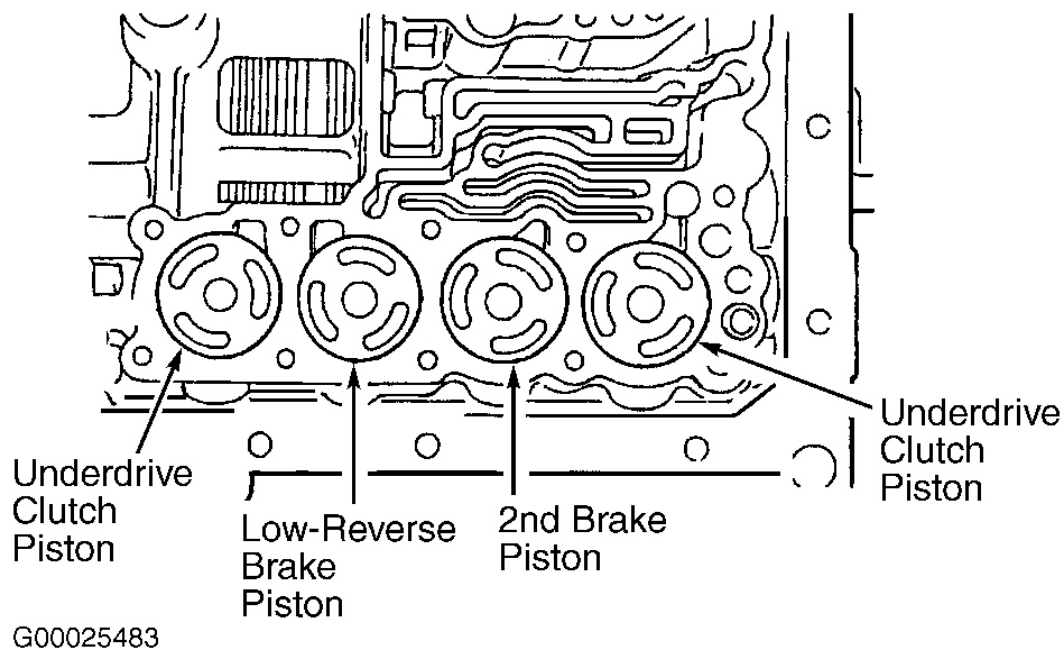


Fig. 21: Identifying Accumulator Pistons
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

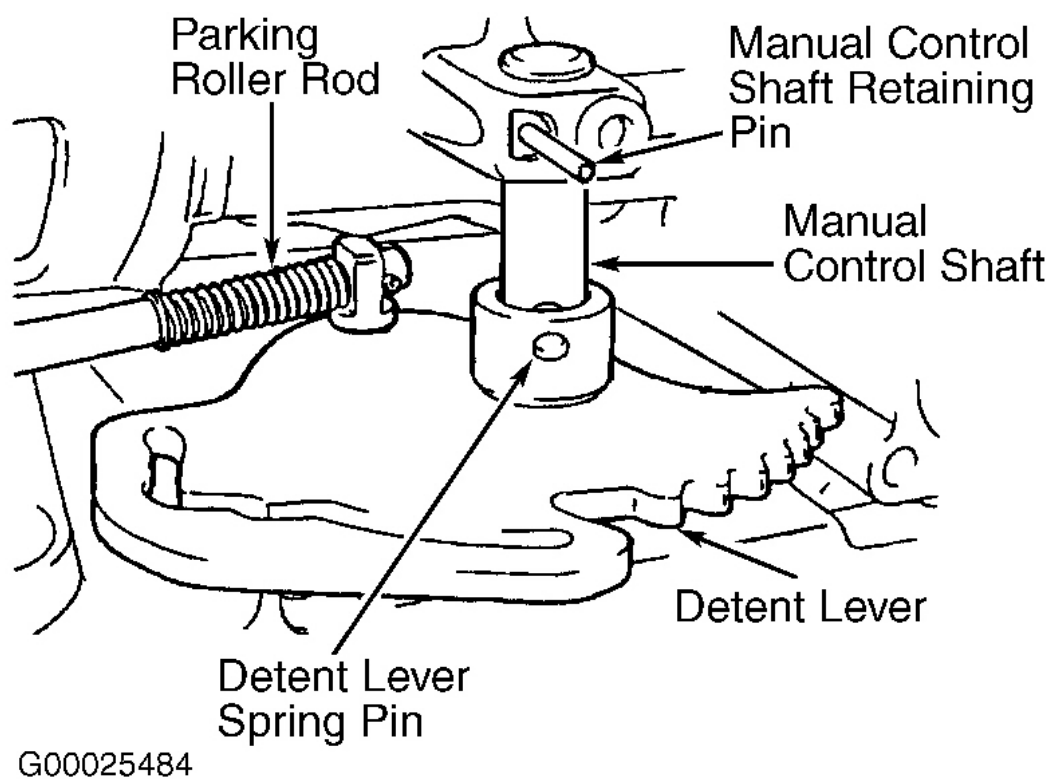
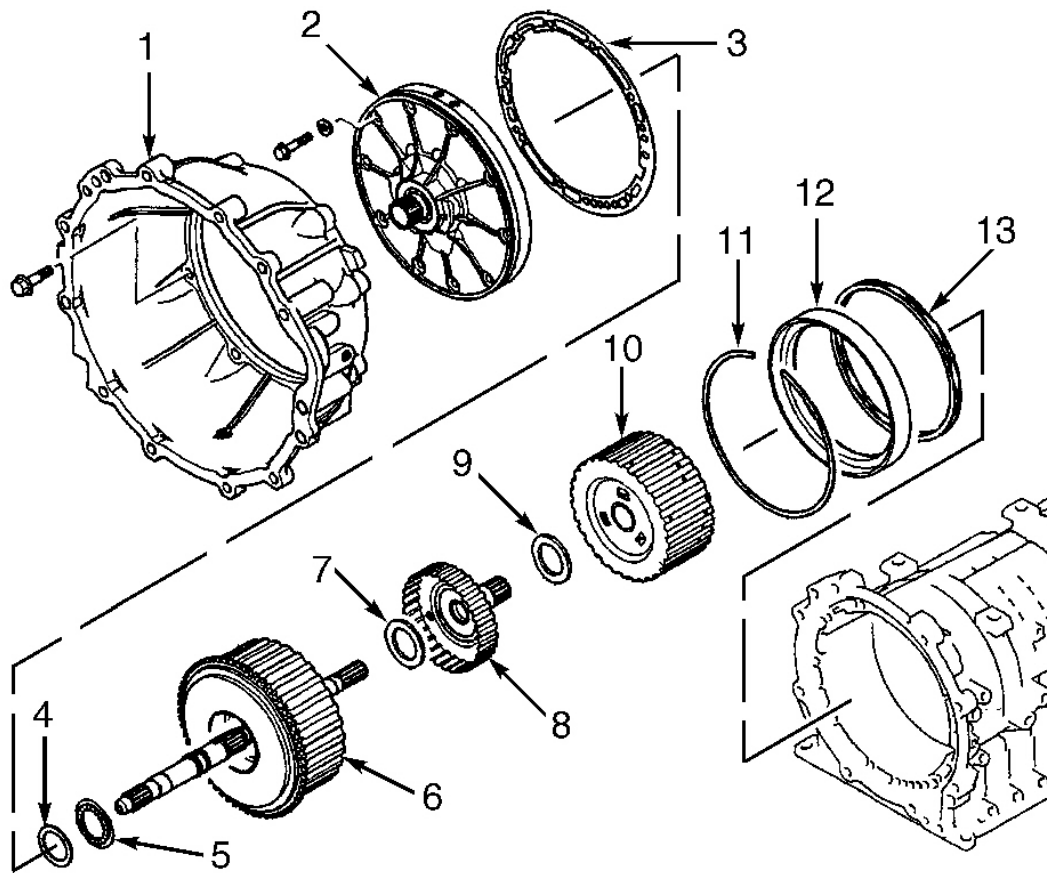


Fig. 22: Identifying Parking Detent Components
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



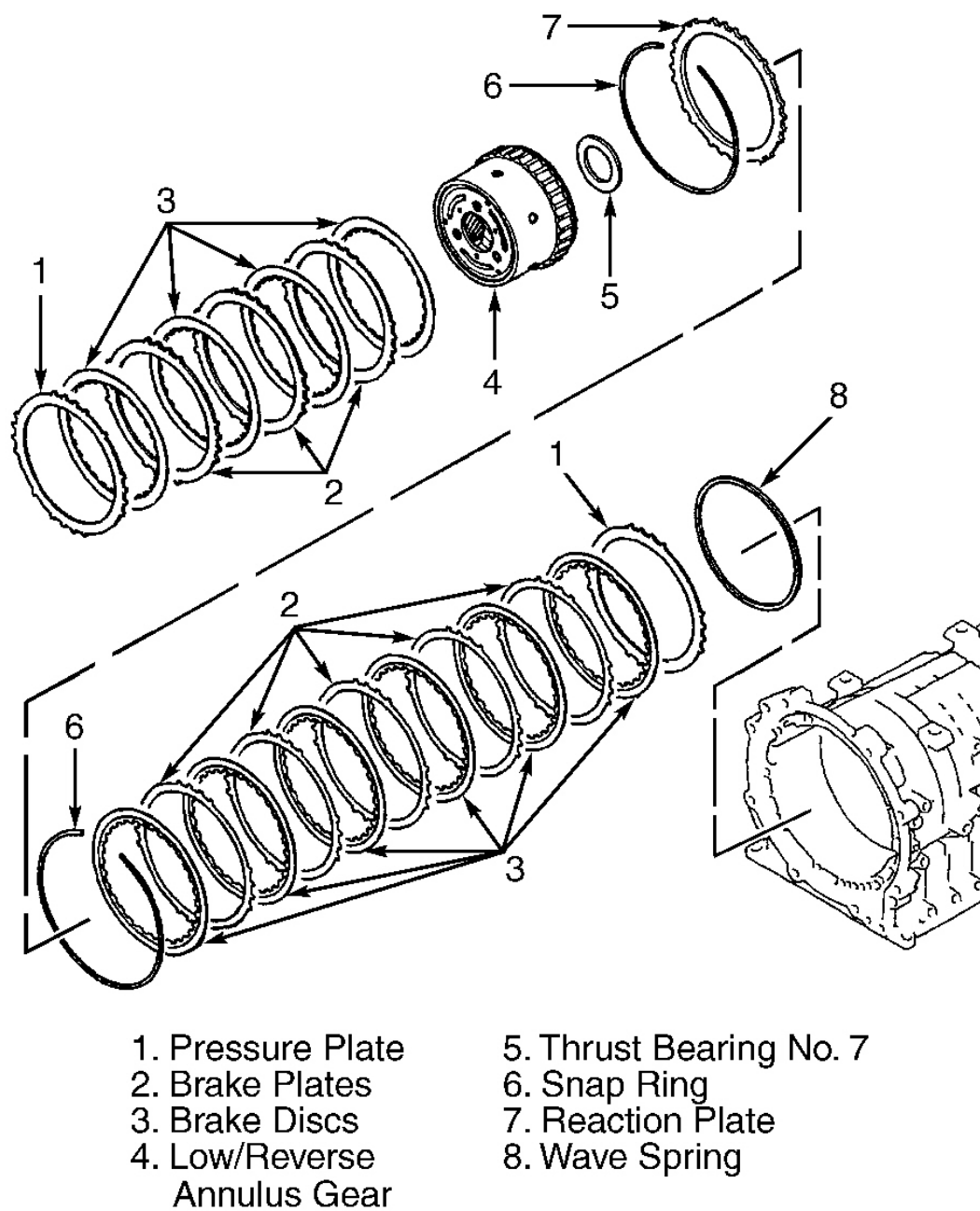
1. Torque Converter Housing
2. Oil Pump
3. Oil Pump Gasket
4. Thrust Race No. 1
5. Thrust Bearing No. 2
6. Reverse & Overdrive Clutch
7. Thrust Bearing No. 3

8. Overdrive Clutch Hub
9. Thrust Bearing No. 4
10. Reverse Sun Gear
11. Snap Ring
12. 2nd Brake
13. Return Spring

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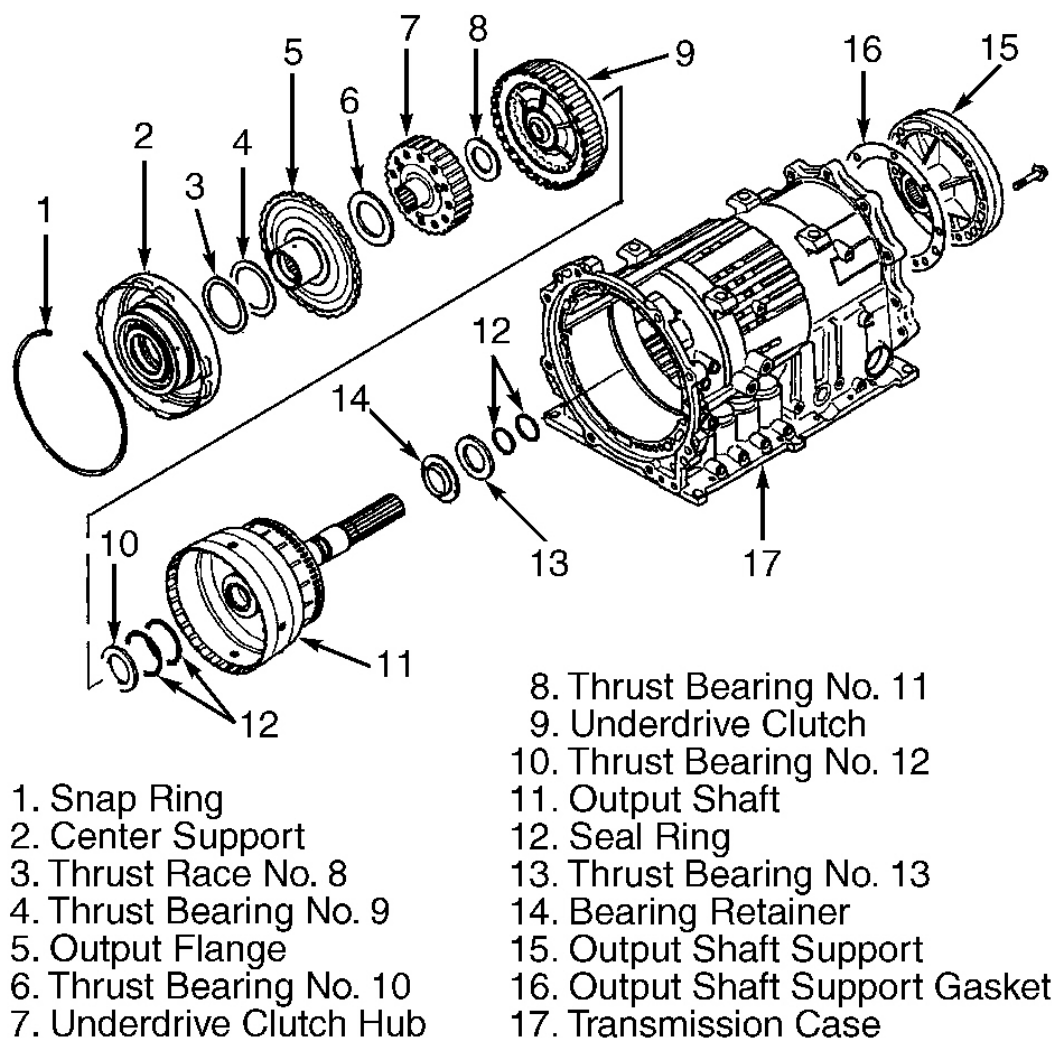
Fig. 23: Identifying Input Shaft & Related Components

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



G00025486

Fig. 24: Exploded View Of Low-Reverse Brake Components
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



G00025487

Fig. 25: Identifying Output Shaft & Related Components
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

COMPONENT DISASSEMBLY & REASSEMBLY

NOTE: Manufacturer specifies Diamond ATF SP-II M for use these transmissions. This fluid should also be used during reassembly. For additional information on draining and refilling procedures, see appropriate AUTOMATIC TRANSMISSION SERVICING article in TRANSMISSION SERVICING.

NOTE: Soak brake and clutch discs in Diamond ATF SP-II M for 2 hours before assembly.

CENTER SUPPORT

Disassembly

Install Spring Compressor (MB991630) and Spring Compressor Retainer (MD998924) onto center support and press against one-way clutch inner race. See **Fig. 26** . Tighten nut on spring compressor retainer until pressure is relieved on snap ring. Remove snap ring. Remove spring compressor and spring compressor retainer. Remove plate and one-way clutch inner race. See **Fig. 27** . Remove "O" ring and spring retainer. Remove return spring. Remove low-reverse brake piston and 2 "D" rings.

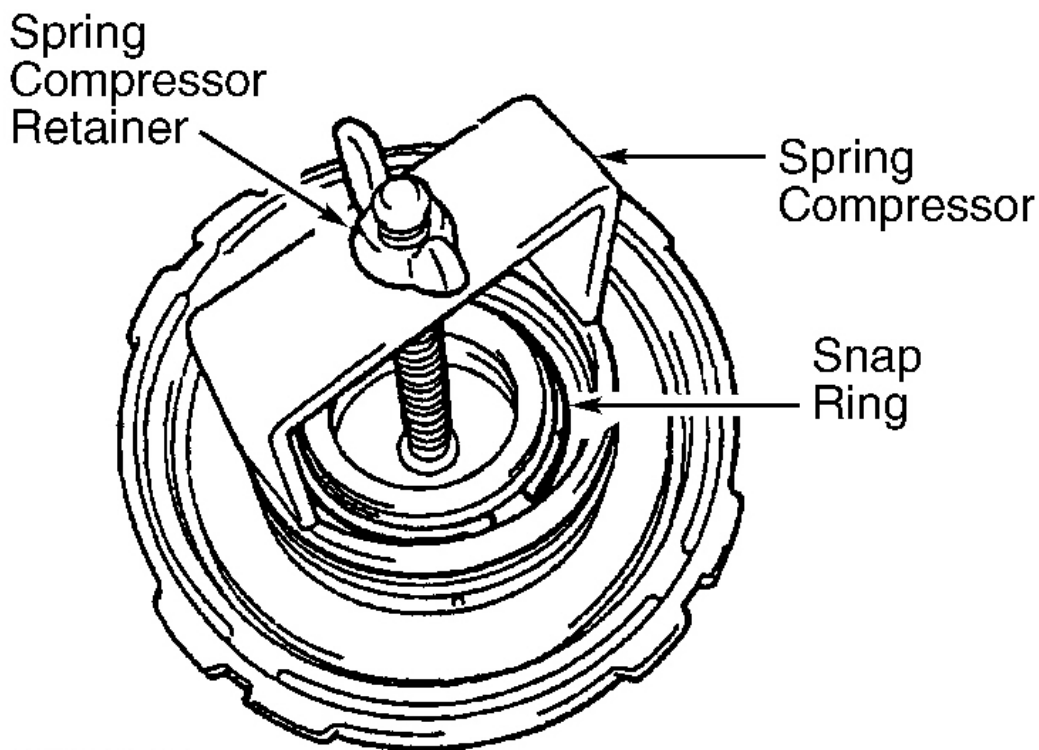
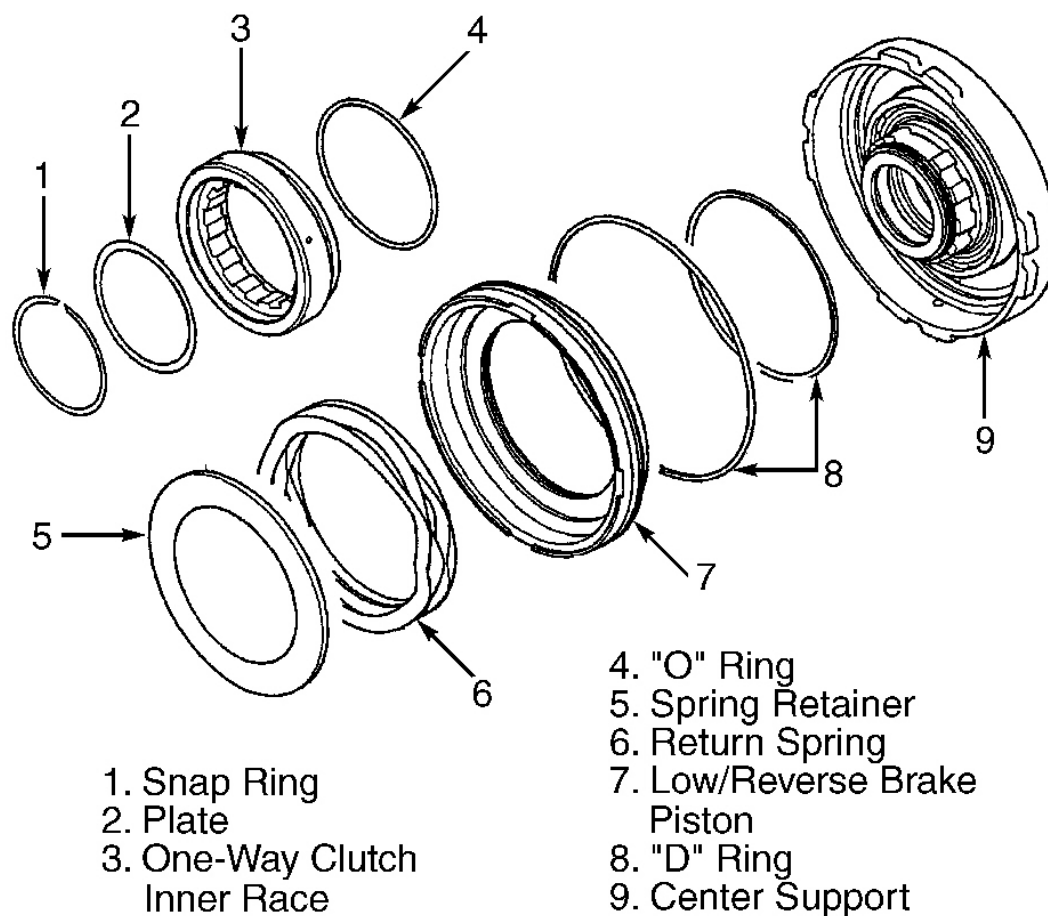


Fig. 26: Removing & Installing Center Support Snap Ring
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



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Fig. 27: Exploded View Of Center Support

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

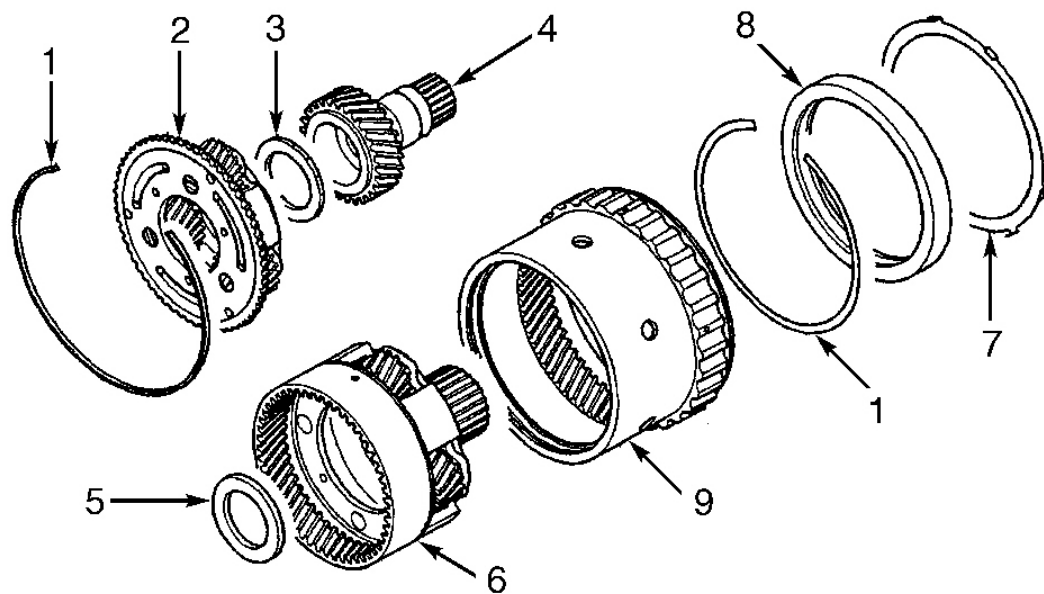
Reassembly

Lubricate all internal parts with ATF during reassembly. Install "D" rings onto low-reverse brake piston. Install return spring with flat side towards low-reverse brake piston. Install spring retainer. Install "O" ring onto center support. Install one-way clutch and plate. Install spring compressor and spring compressor retainer onto center support and press against one-way clutch inner race. Install snap ring. Remove spring compressor and spring compressor retainer.

PLANETARY CARRIER ASSEMBLY**Disassembly**

Remove snap ring. See **Fig. 28** . Remove overdrive planetary carrier. Remove thrust bearing No. 5. Remove underdrive sun gear. Remove thrust bearing No. 6. Remove output planetary carrier. Remove stopper plate, one-

way clutch and snap ring from low/reverse annulus gear.



- 1. Snap Ring
- 2. Overdrive Planetary Carrier
- 3. Thrust Bearing No. 5
- 4. Underdrive Sun Gear

- 5. Thrust Bearing No. 6
- 6. Output Planetary Carrier
- 7. Stopper Plate
- 8. One-Way Clutch
- 9. Low/Reverse Annulus Gear

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Fig. 28: Exploded View Of Planetary Carrier Assembly
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

Reassembly

Lubricate all internal parts with ATF during reassembly. Install snap ring and one-way clutch into low-reverse annulus gear. Ensure arrow on one-way clutch is oriented as shown. See **Fig. 29** . Install stopper plate, ensuring claw of stopper plate is securely engaged into groove of low-reverse annulus gear. Install output planetary carrier into low-reverse annulus gear. Install thrust bearing No. 6. See **Fig. 30** . Install underdrive sun gear. Install thrust bearing No. 5. See **Fig. 31** . Install overdrive planetary carrier and snap ring.

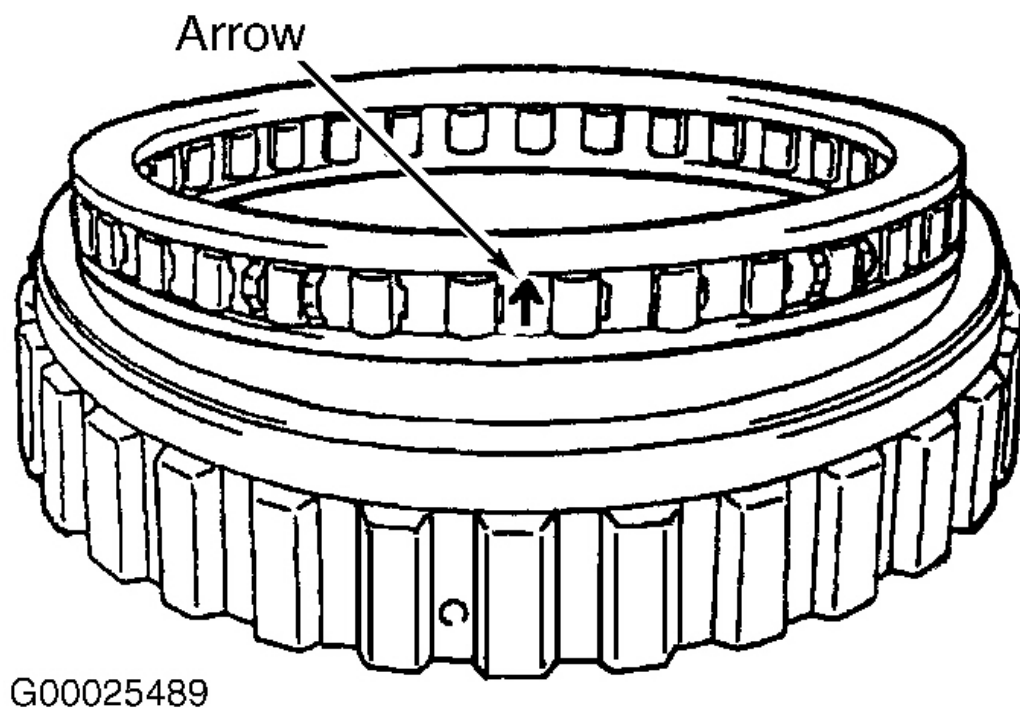


Fig. 29: Installing One-Way Clutch

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



OUTPUT
PLANETARY
CARRIER SIDE



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Fig. 30: Installing Thrust Bearing No. 6

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

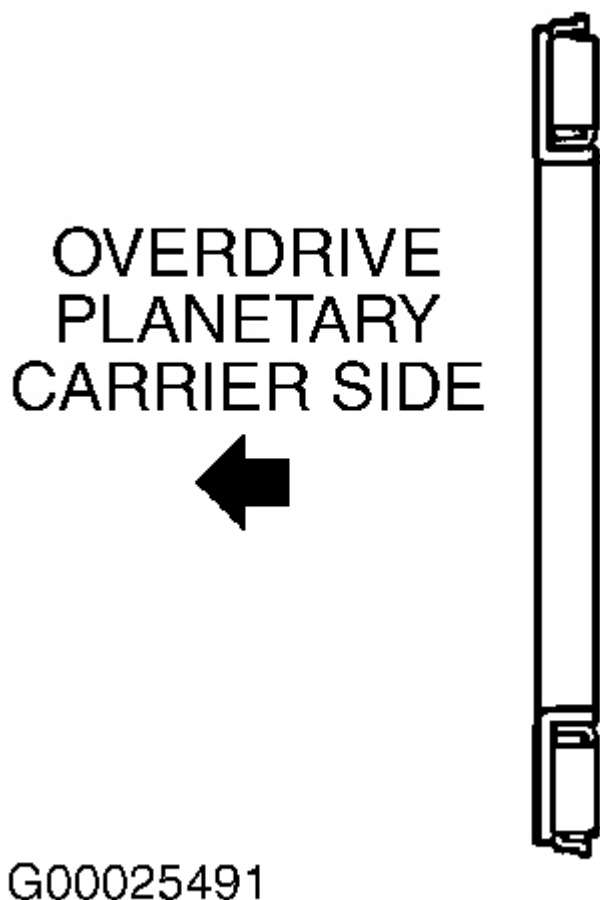


Fig. 31: Installing Thrust Bearing No. 5

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

REVERSE & OVERDRIVE CLUTCH

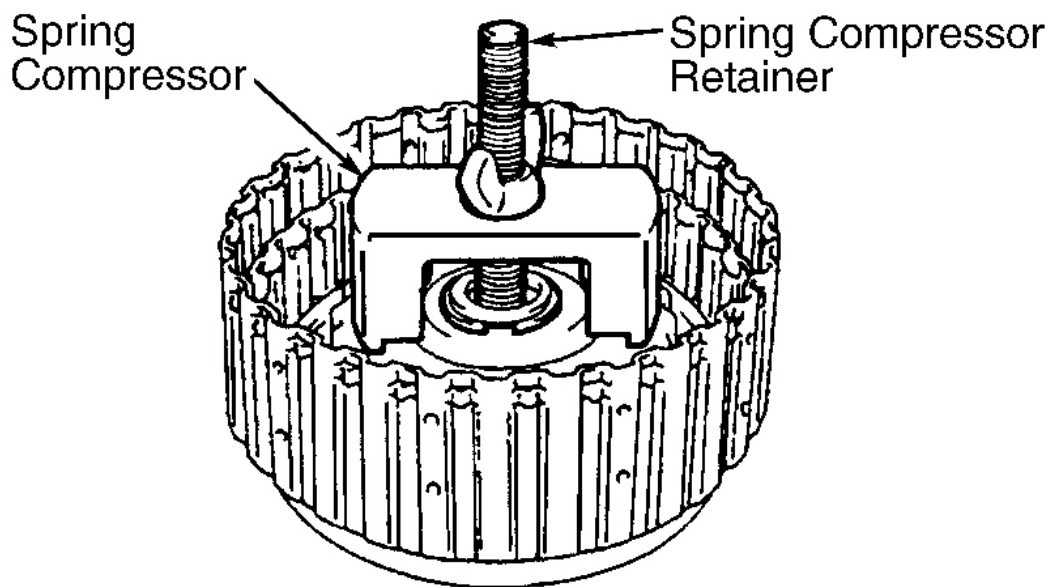
Disassembly

1. Remove 2 seal rings from input shaft. See **Fig. 32** . Remove small snap ring at rear of input shaft and remove input shaft. Remove large snap ring, reaction plate, clutch discs and clutch plates. Remove second large snap ring, reaction plate, clutch discs and clutch plates.
2. Using Spring Compressor (MB999590) and Spring Compressor Retainer (MD998924), compress return spring and remove snap ring. See **Fig. 33** . Remove spring retainer. Remove "D" ring, return spring and overdrive clutch piston. Remove "D" ring and reverse clutch piston. Remove remaining 3 "D" rings from reverse clutch retainer.

1999 AUTOMATIC TRANSMISSIONS Mitsubishi R4A51 & V4A51 Overhaul



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Fig. 33: Removing & Installing Clutch Snap Ring
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

Reassembly

NOTE: Apply ATF to all moving parts before installation. Immerse clutch discs in ATF before installation. Apply ATF or petroleum jelly to all "D" rings before installation.

1. Install 3 "D" rings into reverse clutch retainer. Install reverse clutch piston into reverse clutch retainer while aligning outer circumference holes. See **Fig. 34** . Install "D" ring and overdrive clutch piston. Install return spring while aligning 2 return spring holes with 2 projections on overdrive clutch piston. See **Fig. 35** . Install spring retainer and "D" ring.
2. Using Spring Compressor (MD999590) and Spring Compressor Retainer (MD998924), install snap ring. See **Fig. 33** . Measure clearance between snap ring and spring retainer. Clearance should be 0-.004" (0-.09 mm). If clearance is not as specified, replace snap ring to adjust. See **REVERSE & OVERDRIVE CLUTCH SPRING RETAINER SNAP RING SPECIFICATIONS** table.
3. Install clutch discs, clutch plates and reaction plate, ensuring discs and plates are positioned correctly. See **Fig. 36** or **Fig. 37** . Install snap ring into groove of reverse clutch piston. Using Spring Compressor (MB991629) and Spring Compressor Retainer (MD998924), compress clutch element. See **Fig. 38** .
4. Measure clearance between snap ring and reaction plate. Overdrive clutch end play should be .079-.087" (2.00-2.20 mm). If clearance is not as specified, replace snap ring to adjust. See **UNDERDRIVE & OVERDRIVE CLUTCH END PLAY SNAP RING SPECIFICATIONS** table.
5. Install clutch discs, clutch plates and reaction plate into reverse clutch retainer, ensuring discs and plates

are positioned correctly. See **Fig. 39** . Install snap ring into reverse clutch retainer groove. Apply pressure (about 11 lbs.) evenly to reaction plate. Measure clearance between snap ring and reaction plate. Clearance should be .047-.055" (1.20-1.40 mm). If clearance is not as specified, replace snap ring to adjust. See **REVERSE CLUTCH END PLAY SNAP RING SPECIFICATIONS** table. Install input shaft and small snap ring. Install 2 seal rings on input shaft.

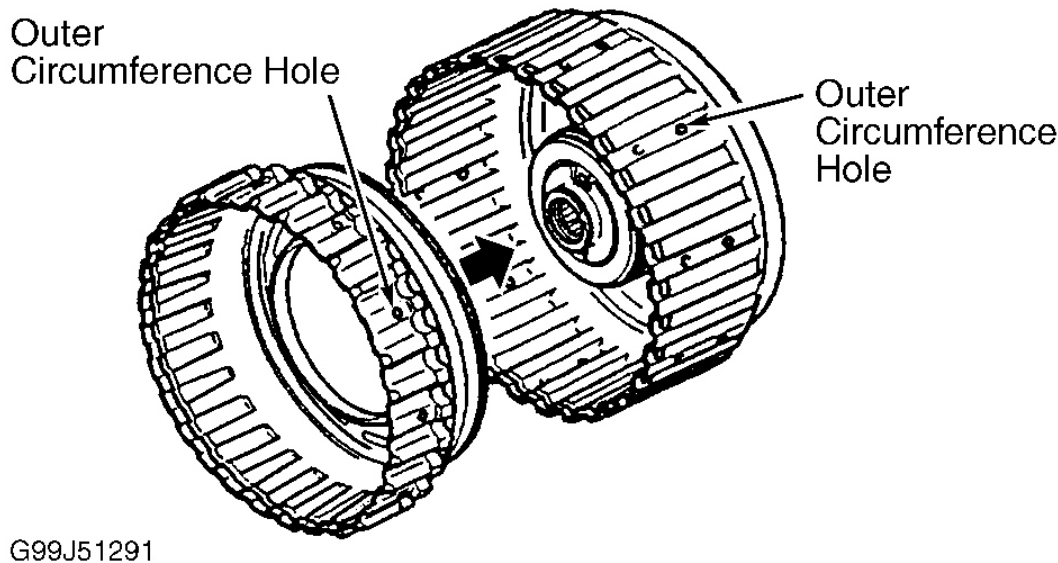
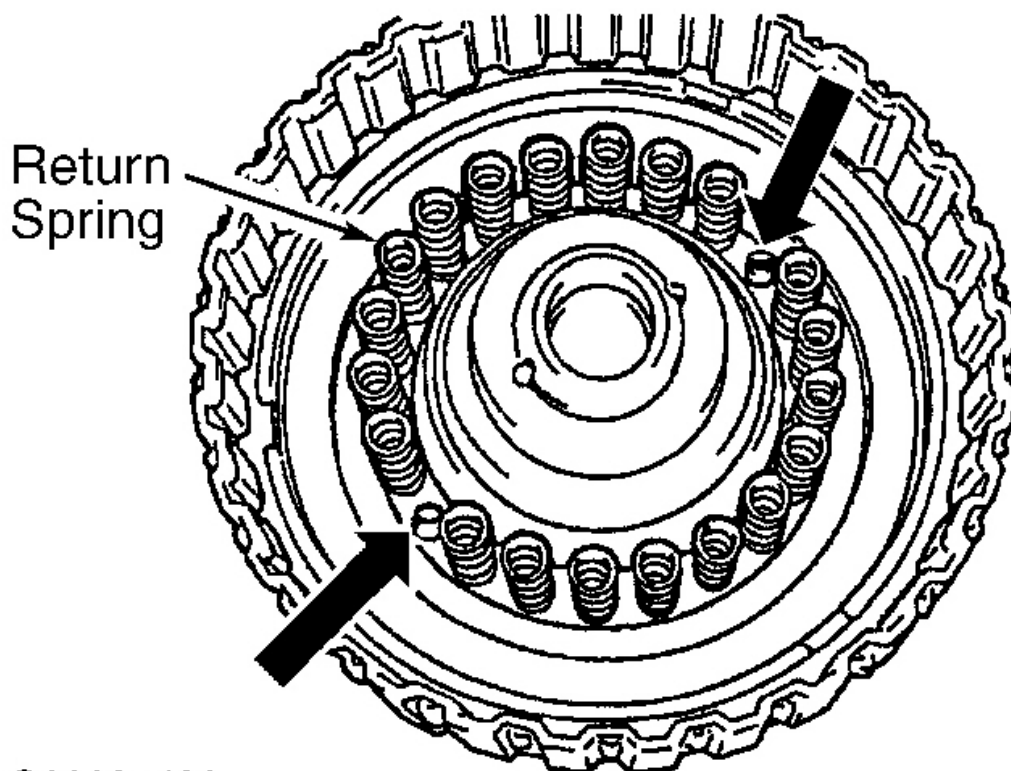


Fig. 34: Aligning Reverse Clutch Piston & Retainer Outer Circumference Holes
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

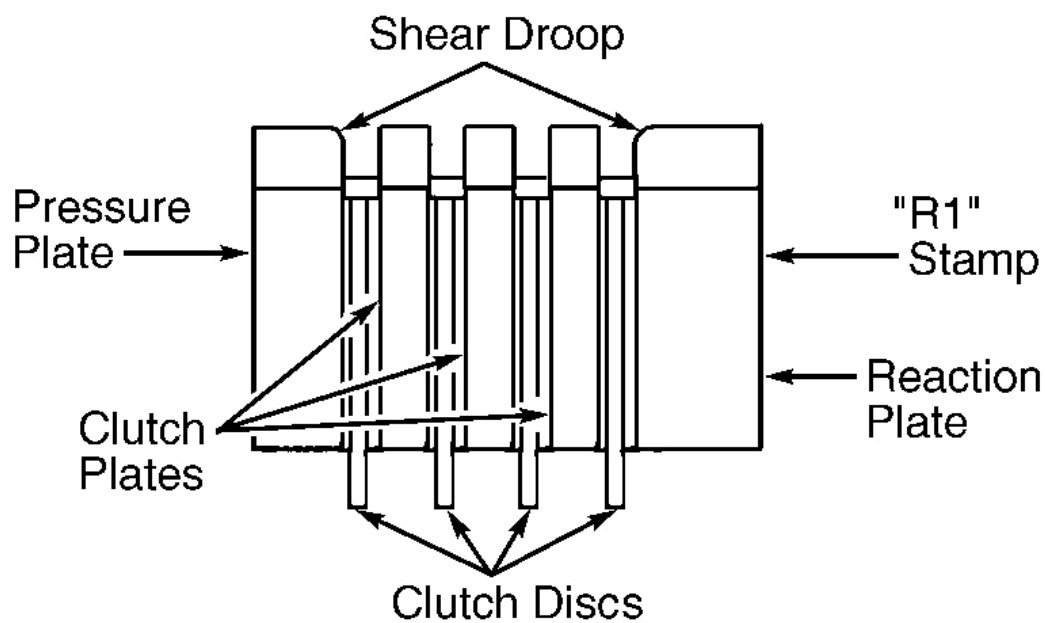


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Fig. 35: Aligning Return Spring With Clutch Piston
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

REVERSE & OVERDRIVE CLUTCH SPRING RETAINER SNAP RING SPECIFICATIONS

Thickness In. (mm)	Identification	Part Number
.0583 (1.48)	Brown	MR336158
.0602 (1.53)	Black	MR336159
.0622 (1.58)	None	MR336160
.0642 (1.63)	Brown	MR336161



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Fig. 36: Positioning Reverse & Overdrive Clutch Discs & Plates (3.0L)
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

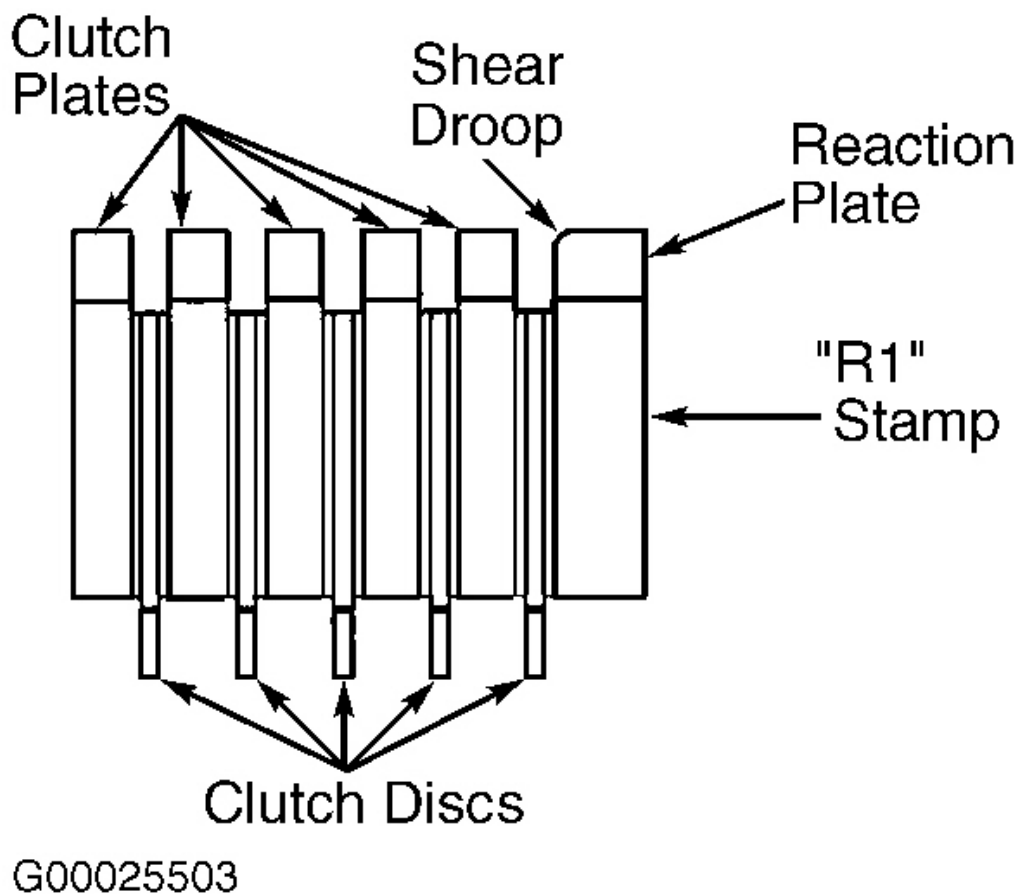
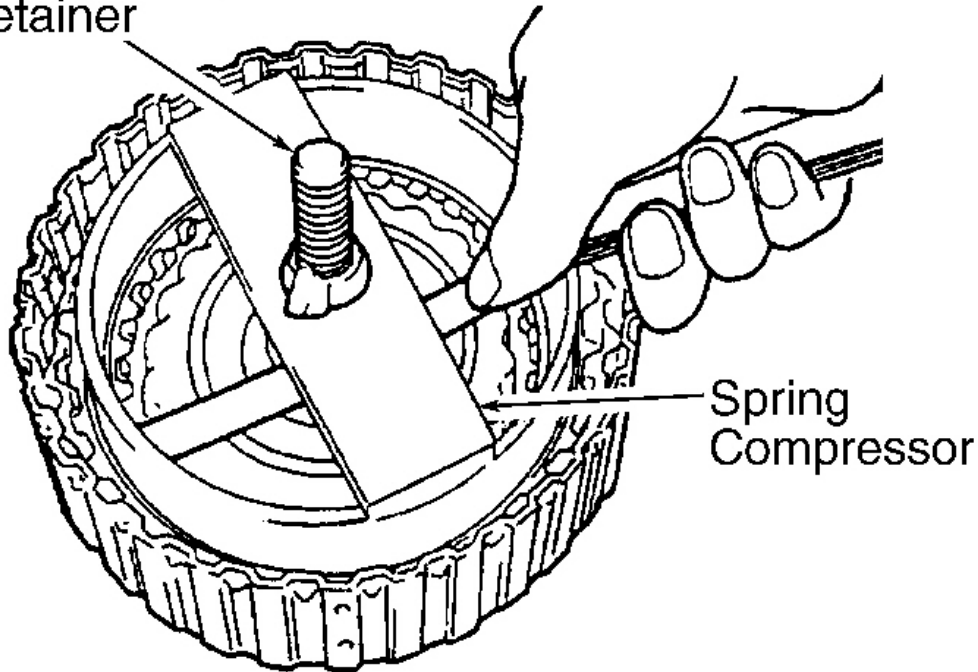


Fig. 37: Positioning Reverse & Overdrive Clutch Discs & Plates (3.5L)
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

Spring Compressor
Retainer



G99A51292

Fig. 38: Measuring Underdrive & Overdrive Clutch End Play
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

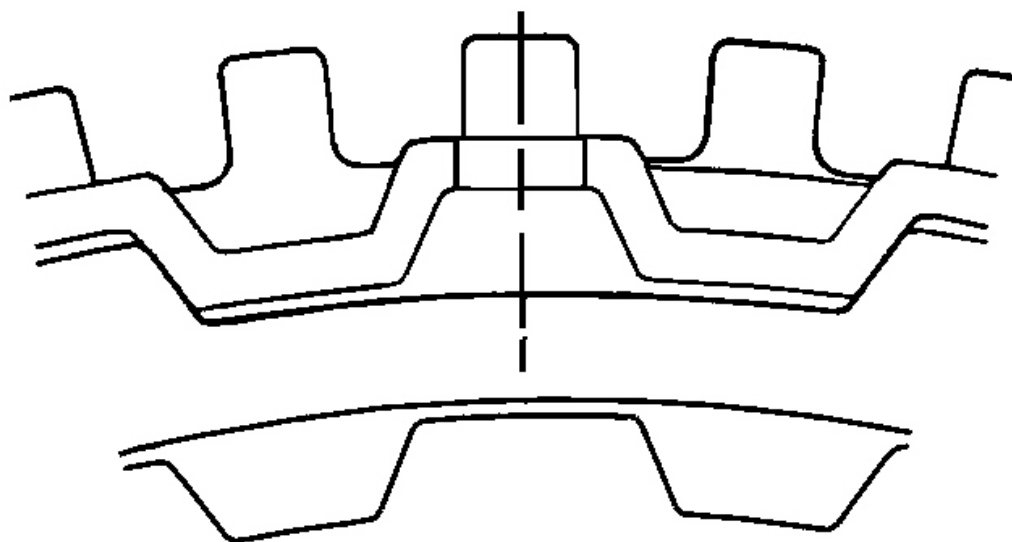
UNDERDRIVE & OVERDRIVE CLUTCH END PLAY SNAP RING SPECIFICATIONS

Thickness In. (mm)	Identification	Part Number
.063 (1.6)	Brown	MD759960
.067 (1.7)	None	MD759961
.071 (1.8)	Blue	MD759962
.075 (1.9)	Brown	MD758892
.079 (2.0)	None	MD750841
.083 (2.1)	Blue	MD750842
.087 (2.2)	Brown	MD750843
.091 (2.3)	None	MD750844
.094 (2.4)	Blue	MD750845
.098 (2.5)	Brown	MD750846
.102 (2.6)	None	MD750847
.106 (2.7)	Blue	MD750848
.110 (2.8)	Brown	MD750849

1999 Mitsubishi Montero Sport ES

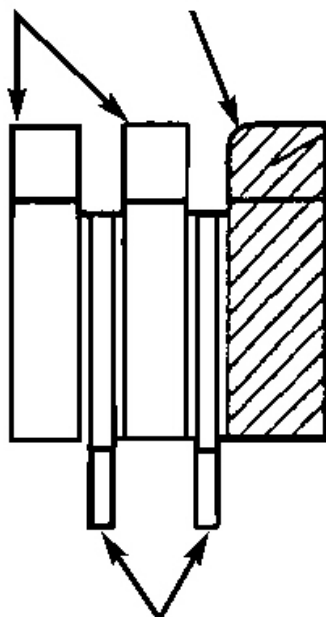
1999 AUTOMATIC TRANSMISSIONS Mitsubishi R4A51 & V4A51 Overhaul

.114 (2.9)	None	MD750850
.118 (3.0)	Blue	MD750851



Clutch Plates

Shear Droop



Reaction
Plate

"R"
Stamp

Clutch Discs

G00025504

Fig. 39: Positioning Clutch Discs & Clutch Plates Into Reverse Clutch Retainer
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

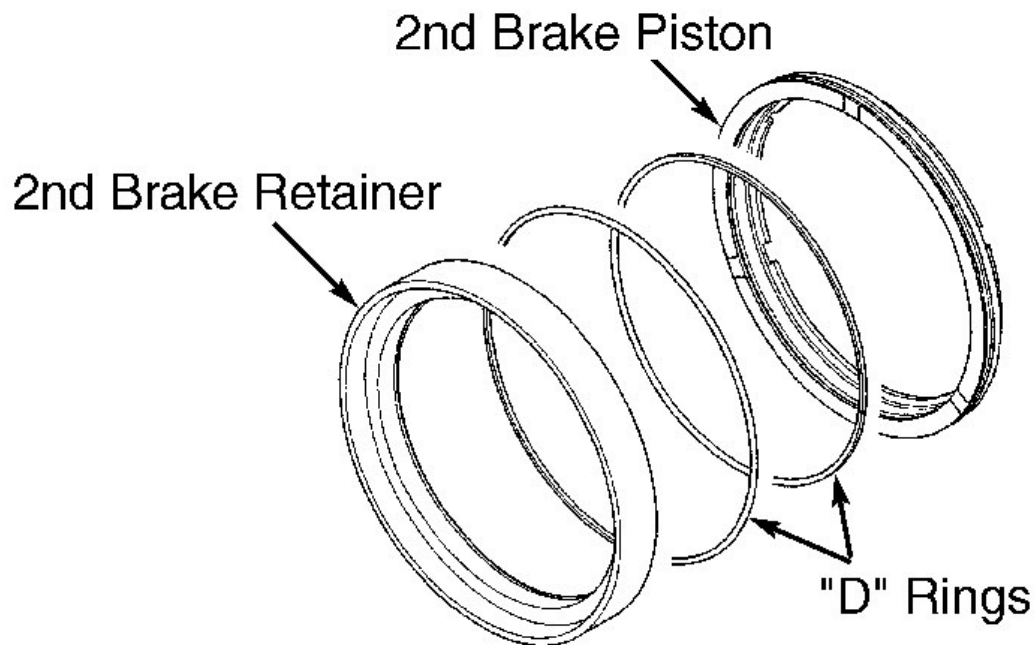
REVERSE CLUTCH END PLAY SNAP RING SPECIFICATIONS

Thickness In. (mm)	Identification	Part Number
.063 (1.6)	None	MD761088
.067 (1.7)	Blue	MD761089
.071 (1.8)	Brown	MD761090
.075 (1.9)	None	MD758947
.079 (2.0)	Blue	MD756690
.083 (2.1)	Brown	MD756691
.087 (2.2)	None	MD756692
.091 (2.3)	Blue	MD756693
.094 (2.4)	Brown	MD756694
.098 (2.5)	None	MD756695
.102 (2.6)	Blue	MD756696
.106 (2.7)	Brown	MD756697
.110 (2.8)	None	MD756698

SECOND BRAKE

Disassembly & Reassembly

Separate second brake retainer, "D" ring, second brake piston and remaining "D" ring. See **Fig. 40** . Apply ATF or petroleum jelly to "D" rings before reassembly. Apply ATF to second brake retainer. To reassemble, reverse disassembly procedure.



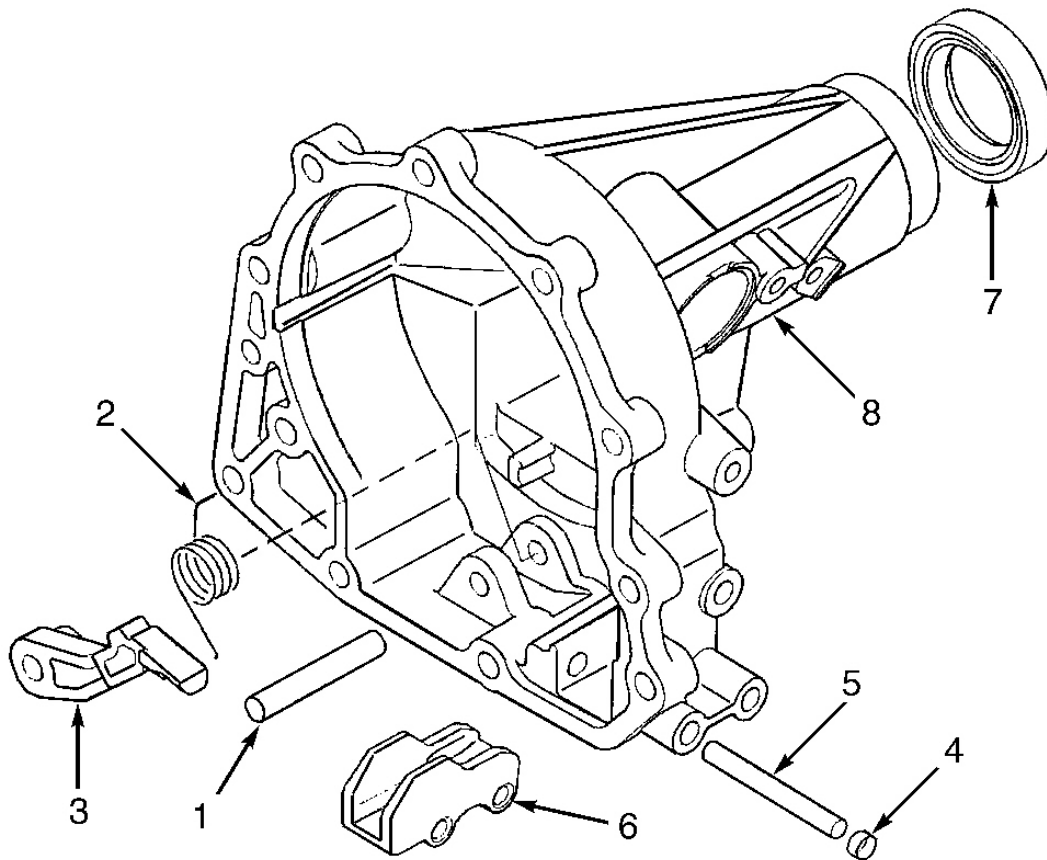
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Fig. 40: Exploded View Of Second Brake
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

TAILSHAFT HOUSING (R4A51)

Disassembly & Reassembly

Remove parking sprag shaft, parking sprag spring and parking sprag from tailshaft housing. See **Fig. 41** . Remove parking roller support shaft sealing cap. Remove parking roller support shaft. Remove parking roller support. Remove tailshaft housing oil seal. To reassemble, reverse removal procedure. Tighten fasteners to specification. See **TORQUE SPECIFICATIONS** .



- 1. Parking Sprag Shaft
- 2. Parking Sprag Spring
- 3. Parking Sprag
- 4. Sealing Cap

- 5. Parking Roller Support Shaft
- 6. Parking Roller Support
- 7. Oil Seal
- 8. Tailshaft Housing

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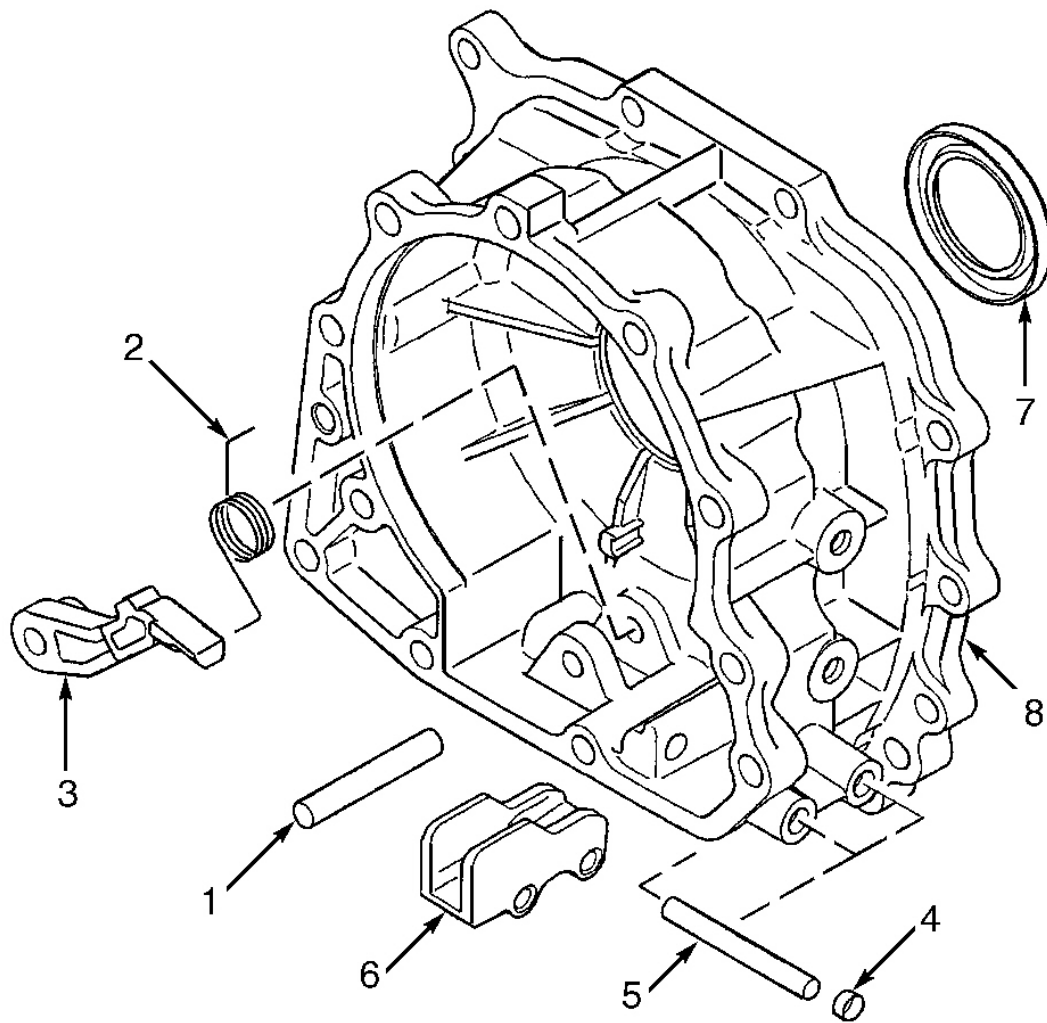
Fig. 41: Exploded View Of Tailshaft Housing (R4A51)

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

TRANSFER CASE ADAPTER (V4A51)

Disassembly & Reassembly

Remove parking sprag shaft, parking sprag spring and parking sprag from transfer case adapter. See **Fig. 42** . Remove parking roller support shaft sealing cap. Remove parking roller support shaft. Remove parking roller support. Remove transfer case adapter oil seal. To reassemble, reverse removal procedure. Tighten fasteners to specification. See **TORQUE SPECIFICATIONS** .



- 1. Parking Sprag Shaft
- 2. Parking Sprag Spring
- 3. Parking Sprag
- 4. Sealing Cap

- 5. Parking Roller Support Shaft
- 6. Parking Roller Support
- 7. Oil Seal
- 8. Transfer Case Adapter

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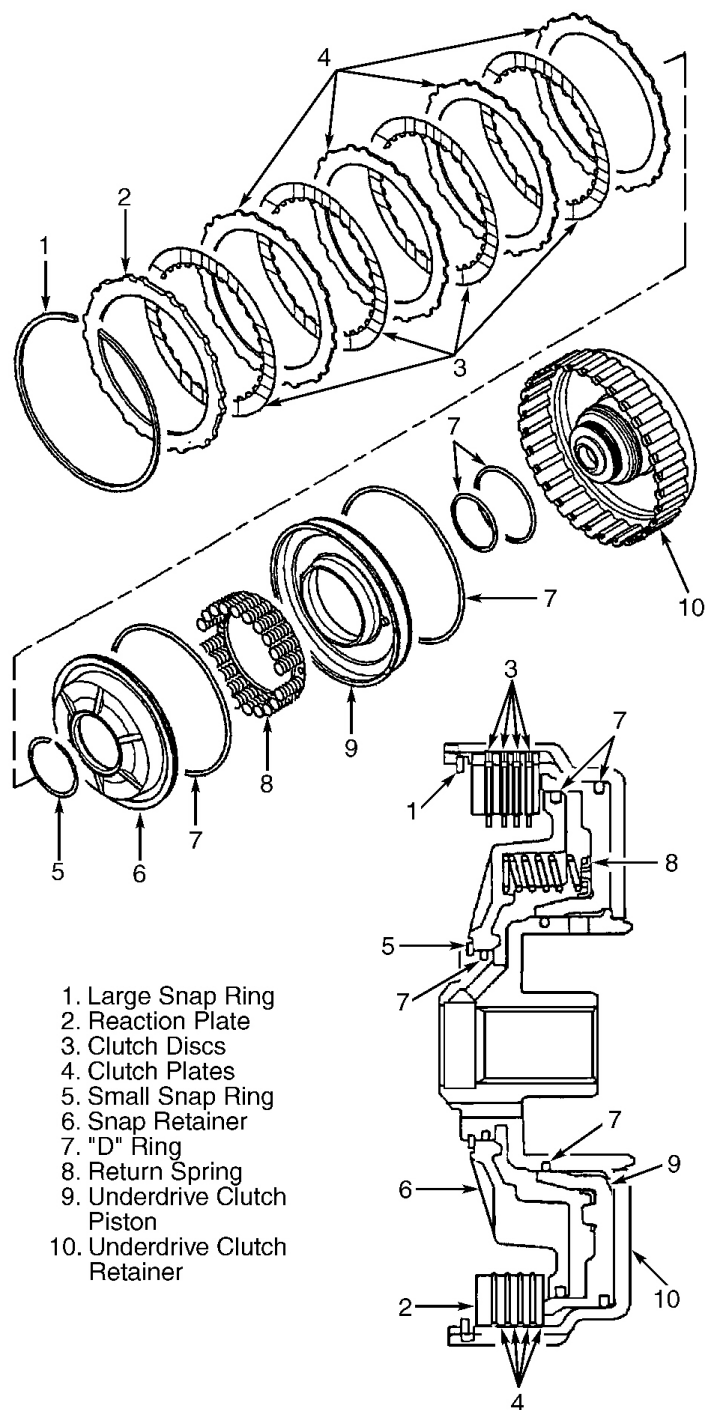
Fig. 42: Exploded View Of Transfer Case Adapter (V4A51)
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

UNDERDRIVE CLUTCH

Disassembly

Remove snap ring, reaction plate, clutch discs and clutch plates. See **Fig. 43** . Using Spring Compressor

(MD998907) and Spring Compressor Retainer (MD998924), remove underdrive clutch snap ring. See **Fig. 33** . Remove snap retainer, "D" ring and return spring. Remove underdrive clutch piston. Remove 3 "D" rings from underdrive clutch retainer.



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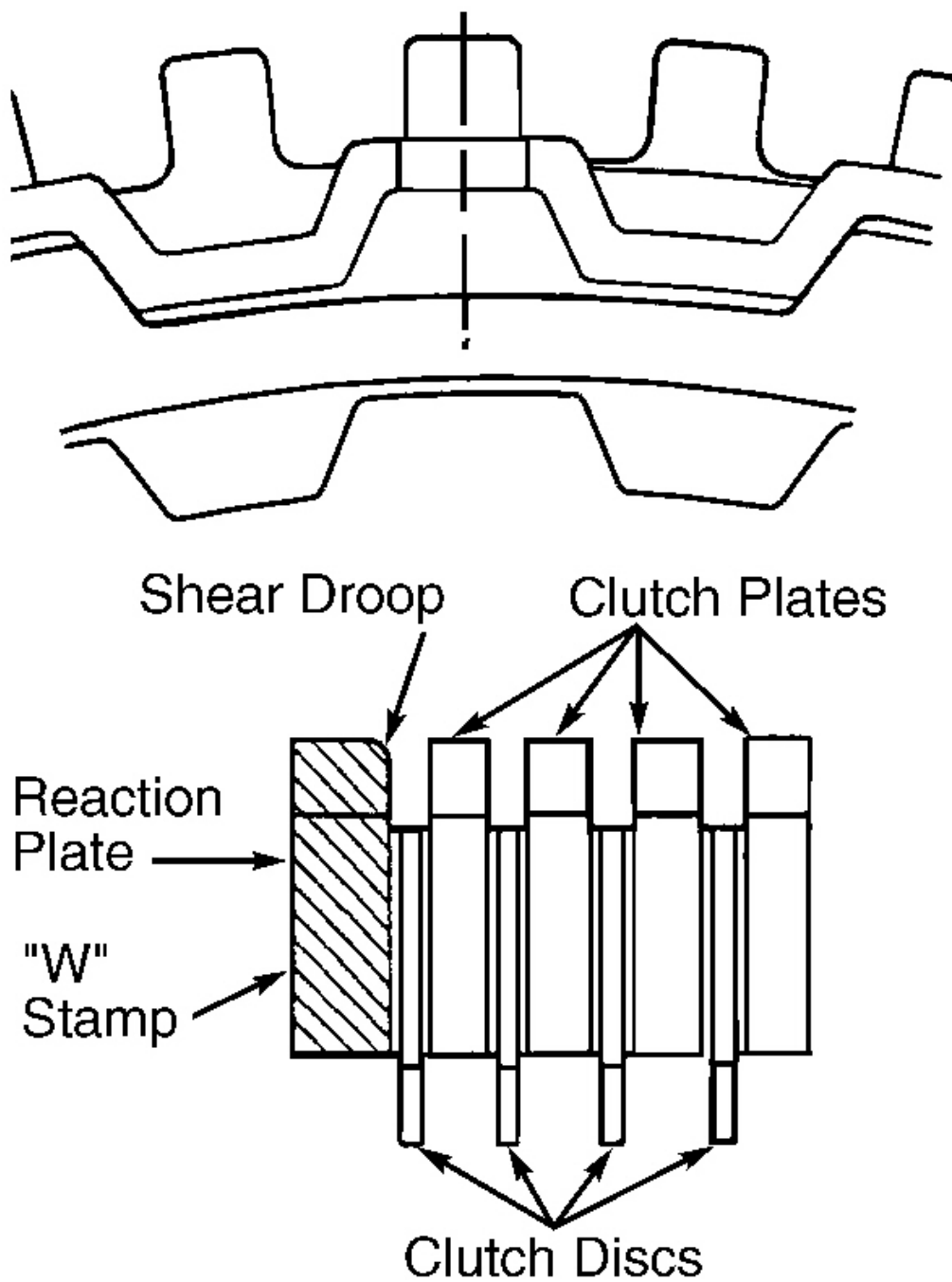
Fig. 43: Exploded View Of Underdrive Clutch

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

Reassembly

NOTE: **Apply ATF to all moving parts before installation. Immerse clutch discs in ATF before installation. Apply ATF or petroleum jelly to all "D" rings before installation.**

1. Assemble 3 "D" rings, underdrive clutch piston and underdrive clutch retainer. Install return spring while aligning 2 return spring holes with 2 projections on underdrive clutch piston. See **Fig. 35** . Install snap retainer and "D" ring. Using spring compressor and spring compressor retainer, install underdrive clutch snap ring.
2. Install 4 clutch plates, 4 clutch discs and reaction plate into underdrive clutch retainer, ensuring discs and plates are positioned correctly. See **Fig. 44** . Install snap ring into groove of underdrive clutch retainer. Using Spring Compressor (MB991629) and Spring Compressor Retainer (MD998924), install underdrive clutch snap ring. See **Fig. 38** .
3. Measure clearance between snap ring and reaction plate. Underdrive clutch end play should be .063-.071" (1.60-1.80 mm). If clearance is not as specified, replace snap ring to adjust. See **UNDERDRIVE & OVERDRIVE CLUTCH END PLAY SNAP RING SPECIFICATIONS** table.



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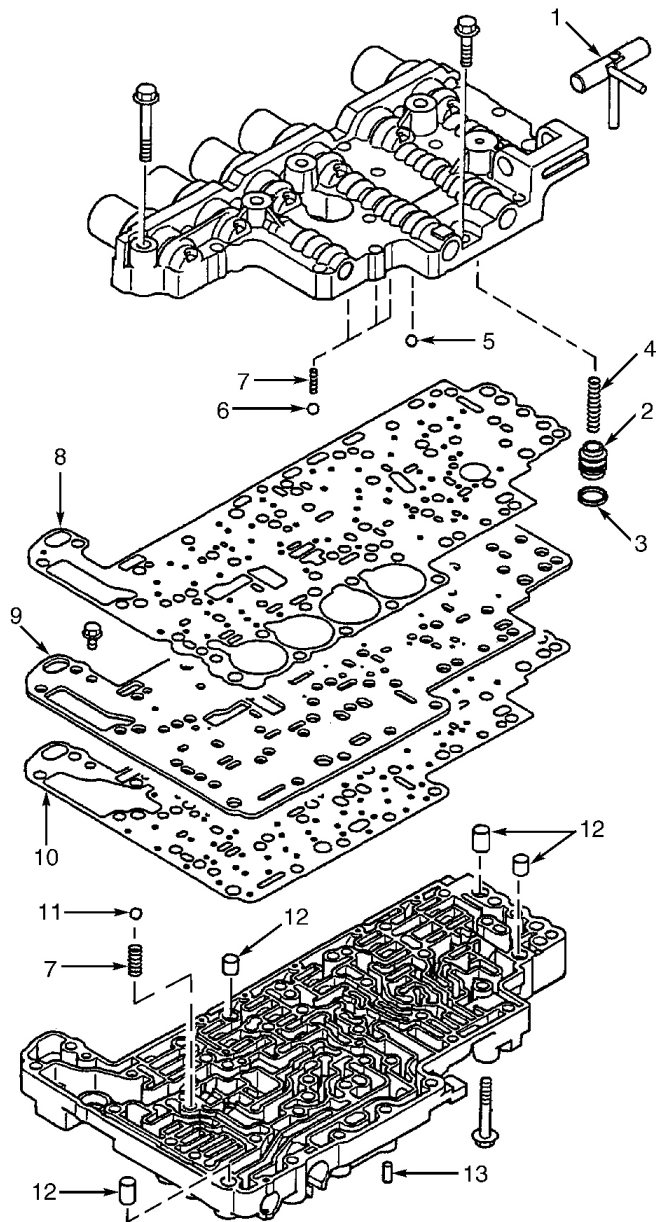
Fig. 44: Positioning Underdrive Clutch Discs & Plates
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

VALVE BODY

Disassembly

NOTE: **Ensure valve body component locations are referenced for correct installation.**

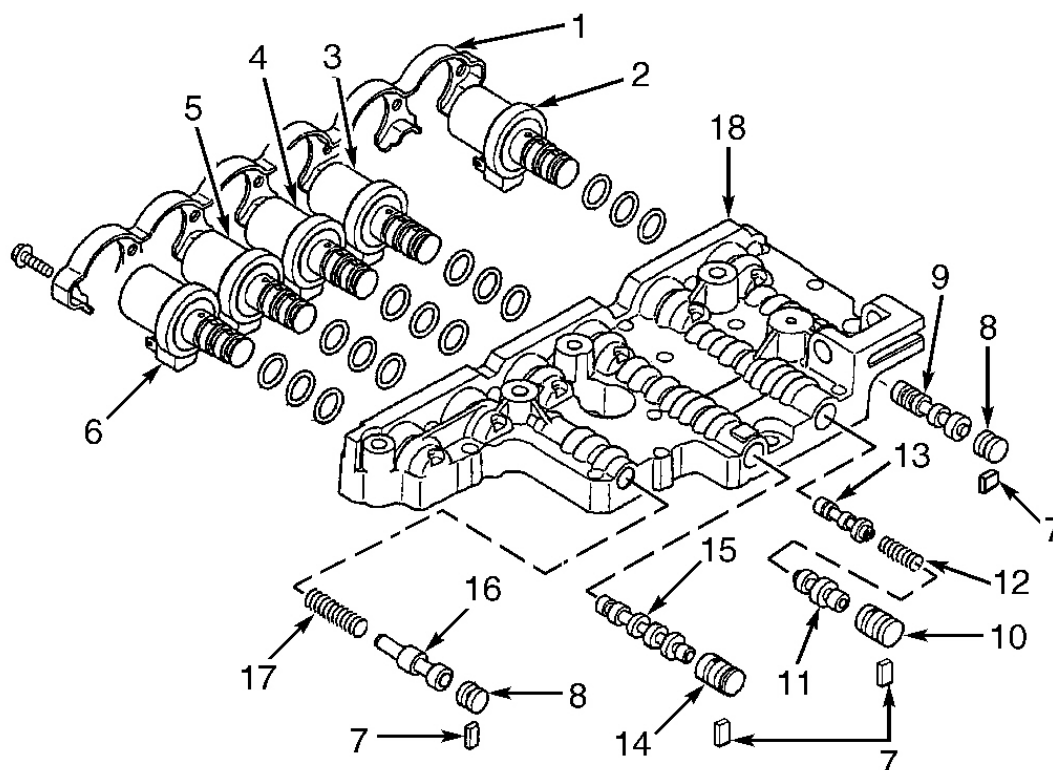
1. Remove upper valve body from lower valve body. See **Fig. 45** . Separate valve body gaskets and spacer plate from upper and lower valve bodies. Remove manual valve pin. Remove damping valve, seal ring and damping valve spring. Remove 2 orifice check balls and one spring. Remove spring and steel ball (line relief) from lower valve body. Remove 2 knock bushings and dowel pin from lower valve body.
2. Remove solenoid valve support from outer valve body. See **Fig. 46** . Remove all solenoid valves and solenoid valve "O" rings from upper valve body. Remove one stopper plate, stopper plug and switching valve.
3. Remove one stopper plate, fail-safe valve "A" sleeve, fail-safe valve "A2", fail-safe valve "A" spring and fail-safe valve "A1". Remove one stopper plate, fail-safe valve "B" sleeve and fail-safe valve "B". Remove one stopper plate, stopper plug, torque converter pressure control valve and torque converter pressure control valve spring.
4. Remove manual valve from lower valve body. See **Fig. 47** . Remove roll pin, underdrive clutch pressure control valve sleeve. Remove underdrive clutch pressure control valve. Remove underdrive clutch pressure control valve spring. Remove roll pin, low-reverse brake pressure control valve sleeve, low-reverse brake pressure control valve and low-reverse brake pressure control valve spring.
5. Remove roll pin, second brake pressure control valve sleeve, second brake pressure control valve and second brake pressure control valve spring. Remove roll pin, overdrive clutch pressure control valve sleeve, overdrive clutch pressure control valve and overdrive clutch pressure control valve spring.
6. Remove stopper plate, regulator valve adjusting screw, regulator valve sleeve, regulator valve spring and regulator valve. Remove roll pin, torque converter clutch control valve sleeve, torque converter clutch control valve and torque converter clutch control valve spring. Remove lower valve body cover gasket and cover.



- | | |
|-------------------------------|------------------------------|
| 1. Manual Valve Pin | 8. Upper Valve Body Gasket |
| 2. Damping Valve | 9. Spacer Plate |
| 3. Seal Ring | 10. Lower Valve Body Gasket |
| 4. Damping Valve Spring | 11. Steel Ball (Line Relief) |
| 5. Orifice Check Ball | 12. Knock Bushing |
| 6. Orifice Check Ball (Steel) | 13. Dowel Pin |
| 7. Spring | |

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Fig. 45: Identifying Upper & Lower Valve Body
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



- | | |
|-------------------------------------|--|
| 1. Solenoid Support | 9. Switching Valve |
| 2. Low/Reverse Brake Solenoid Valve | 10. Fail-Safe Valve "A" Sleeve |
| 3. 2nd Brake Solenoid Valve | 11. Fail-Safe Valve A2 |
| 4. Underdrive Clutch Solenoid Valve | 12. Fail-Safe Valve "A" Spring |
| 5. Overdrive Clutch Solenoid Valve | 13. Fail-Safe Valve A1 |
| 6. Torque Converter Solenoid Valve | 14. Fail-Safe Valve "B" Sleeve |
| 7. Stopper Plate | 15. Fail-Safe Valve "B" |
| 8. Stopper Plug | 16. Torque Converter Pressure Control Valve |
| | 17. Torque Converter Pressure Control Valve Spring |
| | 18. Upper Valve Body |

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Fig. 46: Exploded View Of Upper Valve Body
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

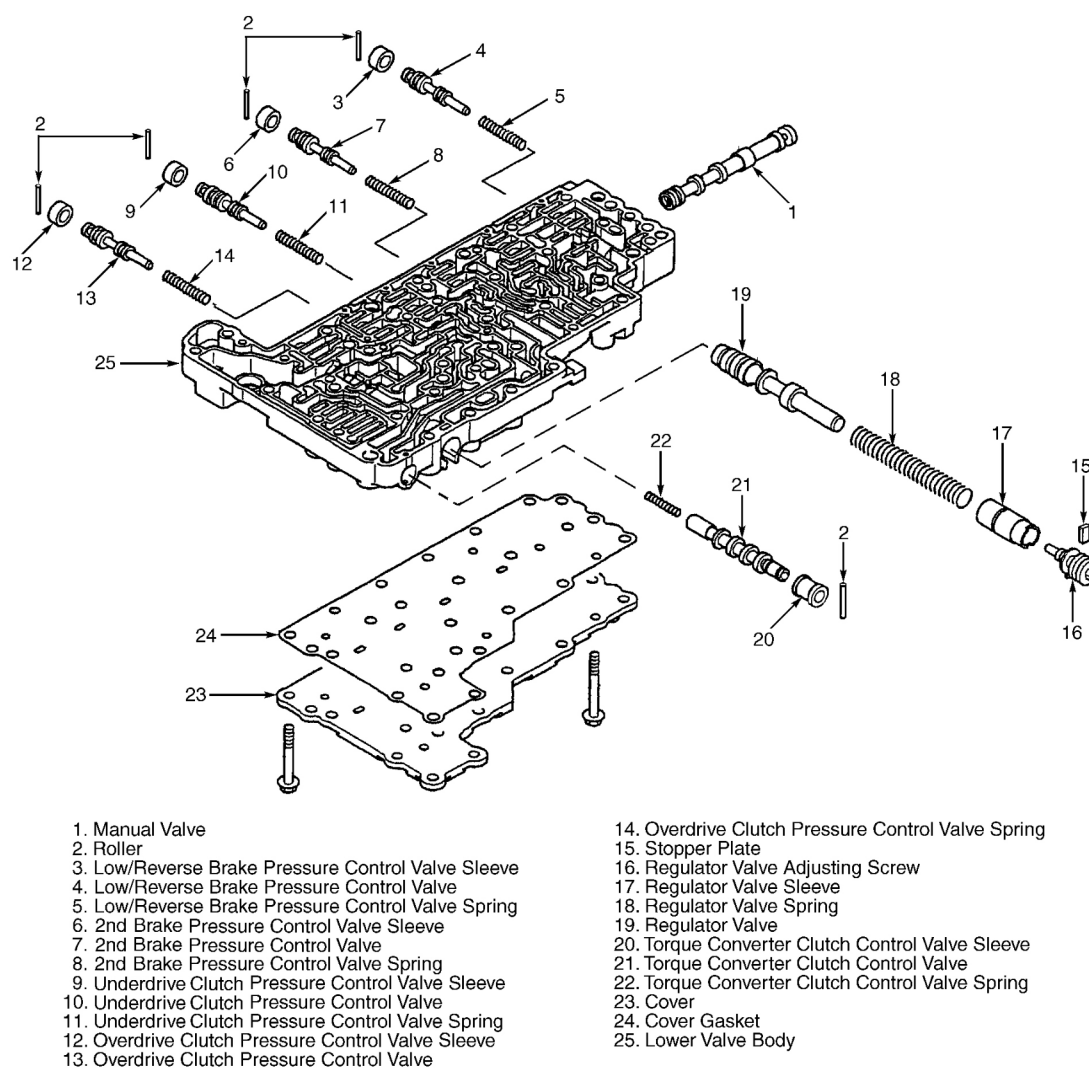


Fig. 47: Exploded View Of Lower Valve Body
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

Reassembly

NOTE: Apply ATF to all moving parts during reassembly.

To reassemble, reverse disassembly procedure. Ensure check balls, springs and solenoid valves are installed in correct locations.

TRANSMISSION REASSEMBLY

VALVE BODY & INTERNAL COMPONENTS

NOTE: Apply Diamond ATF SP-II M to all internal parts during reassembly.

NOTE: Never reuse gaskets, "O" rings or seals. Use petroleum jelly to hold thrust bearings, thrust races and thrust washers in position. Soak brake and clutch discs in Diamond ATF SP-II M for 2 hours before assembly. Ensure thrust bearings, thrust races and thrust washers are installed in original location and proper direction. See **Fig. 16** .

1. Using NEW output shaft support gasket, install output shaft support into transmission case. See **Fig. 25** . Install 8 output shaft support mounting bolts. Tighten 8 output shaft support mounting bolts to specification. See **TORQUE SPECIFICATIONS** . Install bearing retainer and thrust bearing No. 13 onto output shaft. Install 2 NEW large seal rings and 2 NEW small seal rings onto output shaft. Install output shaft into output shaft support.
2. Install thrust bearing No. 12 onto front of output shaft. Install underdrive clutch. Install thrust bearing No. 11. Install underdrive clutch hub. Install thrust bearing No. 10 onto underdrive clutch hub. Install output flange. Install thrust bearing No. 9 onto output flange. Measure and record thickness of thrust race No. 8. Install thrust race No. 8 onto rear side of center support. Install center support with oil holes facing bottom of transmission case. Ensure thrust race No. 8 does not fall off of center support during installation.
3. Remove 2 bottom left output shaft support mounting bolts. Install Bearing Installer Stopper (MB991603) onto rear of transmission at output shaft support. Mount dial gauge onto bearing installer stopper. Using Oil Seal Installer (MD998304), press in on output flange. Alternately press in on output shaft and measure output shaft end play. Output shaft end play should be .010-.022" (.25-.55 mm). If output shaft end play is as specified, go to next step. If output shaft end play is not as specified, replace thrust race No. 8 as necessary to obtain proper end play. See **Fig. 16** .
4. Install center support snap ring. Alternately press in on output shaft and center support and measure center support end play. Center support end play should be .0-.006" (0-0.16 mm). If center support end play is as specified, go to next step. If center support end play is not as specified, replace snap ring as necessary to obtain proper end play. See **CENTER SUPPORT & REACTION PLATE END PLAY SNAP RING SPECIFICATIONS** table.
5. Install wave spring onto low-reverse brake piston. See **Fig. 24** . Substitute Clearance Dummy Plate (MD991632) for low-reverse brake pressure plate. See **Fig. 48** . Install clearance dummy plate, brake discs, brake plates, and snap ring. Install reaction plate and snap ring. Move clearance dummy plate and measure low-reverse brake end play using dial gauge. On 3.0L, end play should be .053-.071" (1.35-1.81 mm). On 3.5L, end play should be .065-.083" (1.65-2.11 mm). On all models, if end play is as specified, go to next step. If end play is not as specified, replace pressure plate to adjust. See **LOW-REVERSE BRAKE PRESSURE PLATE THICKNESS** table.
6. Substitute clearance dummy plate for second brake pressure plate. Install clearance dummy plate, brake discs and brake plates. Install return spring, second brake and snap ring. See **Fig. 23** . Move clearance dummy plate and measure second brake end play using dial gauge. End play specification is .059-.077" (1.49-1.95 mm). Select a pressure plate with a corresponding thickness to obtain proper end play. See **SECOND BRAKE PRESSURE PLATE THICKNESS** table.
7. Remove snap ring, second brake, return spring brake discs, brake plates and clearance dummy plate. Install thrust bearing No. 7 onto rear side of low-reverse annulus gear. Install low-reverse annulus gear, ensuring thrust bearing No. 7 does not fall off. Install brake discs and brake plates. Install selected pressure plate. Install return spring, second brake and snap ring. Install reverse sun gear. Install thrust

- bearing No. 4. Install thrust bearing No. 3 onto front of overdrive clutch hub. Install overdrive clutch hub.
8. Install reverse and overdrive clutch. Install thrust bearing No. 2. Install thrust race No. 1 onto oil pump. Using Oil Pump Guide (MD998412), install oil pump and oil pump gasket. Install 10 oil pump mounting bolts and tighten to specification. See **TORQUE SPECIFICATIONS** . Using a dial gauge, measure input shaft end play. Input shaft end play specification is .010-.032" (0.25-0.81 mm). Select a thrust race No. 1 with a corresponding thickness to obtain proper end play. See **THRUST RACE NO. 1 SPECIFICATIONS** table. Remove oil pump and oil pump gasket. Remove thrust race No. 1 and install selected thrust race No. 1 to obtain proper end play. Using oil pump guide, install oil pump and NEW oil pump gasket. Install 10 oil pump mounting bolts and tighten to specification. See **TORQUE SPECIFICATIONS** .
 9. Install torque converter housing. Install 8 torque converter housing bolts and tighten to specification. Install parking roller rod to detent lever. See **Fig. 22** . Install 2 NEW "O" rings onto manual control shaft. Assemble manual control shaft, detent lever and parking roller rod into transmission case. Install manual control shaft detent pin. Install detent lever spring pin.
 10. Install NEW seal rings onto all accumulator pistons. Install each accumulator piston with appropriate spring. See **ACCUMULATOR PISTON SPRING IDENTIFICATION** table. See **Fig. 21** . Install oil strainer. Install 2 NEW oil seals with notched section oriented as shown. See **Fig. 20** . Install valve body solenoid valve harness and secure snap ring to connector groove. See **Fig. 19** . Install NEW valve body "O" ring onto transmission case. See **Fig. 18** .
 11. Install valve body while inserting manual valve pin into detent lever groove. See **Fig. 45** . Install fluid temperature sensor. See **Fig. 14** . Install 20 valve body mounting bolts as shown and tighten to specification. See **TORQUE SPECIFICATIONS** . See **Fig. 49** . Connect electrical connectors to valve body components. See **Fig. 17** . Install detent spring. Install oil filter and NEW "O" ring.
 12. Apply Mitsubishi Sealant (MR166584) to mating surface of oil pan. Install oil pan. Tighten 20 oil pan bolts to specification. See **TORQUE SPECIFICATIONS** . Install parking gear onto output shaft with side without spline cut facing toward transmission. Install parking gear snap ring. Install park/neutral position switch and manual control lever. Install input and output shaft speed sensors.

CENTER SUPPORT & REACTION PLATE END PLAY SNAP RING SPECIFICATIONS

Thickness In. (mm)	Identification	Part Number
.087 (2.2)	None	MD756784
.091 (2.3)	Blue	MD756785
.094 (2.4)	Brown	MD758552
.098 (2.5)	None	MD758553

SECOND BRAKE PRESSURE PLATE THICKNESS

Thickness In. (mm)	Identification	Part Number
.063 (1.60)	F	MR336390
.071 (1.80)	E	MR336391
.079 (2.00)	D	MR336392
.087 (2.20)	C	MR336393
.094 (2.40)	B	MR336394
.102 (2.60)	A	MR336395
.110 (2.80)	O	MR336396

.118 (3.00)

1

MR336397

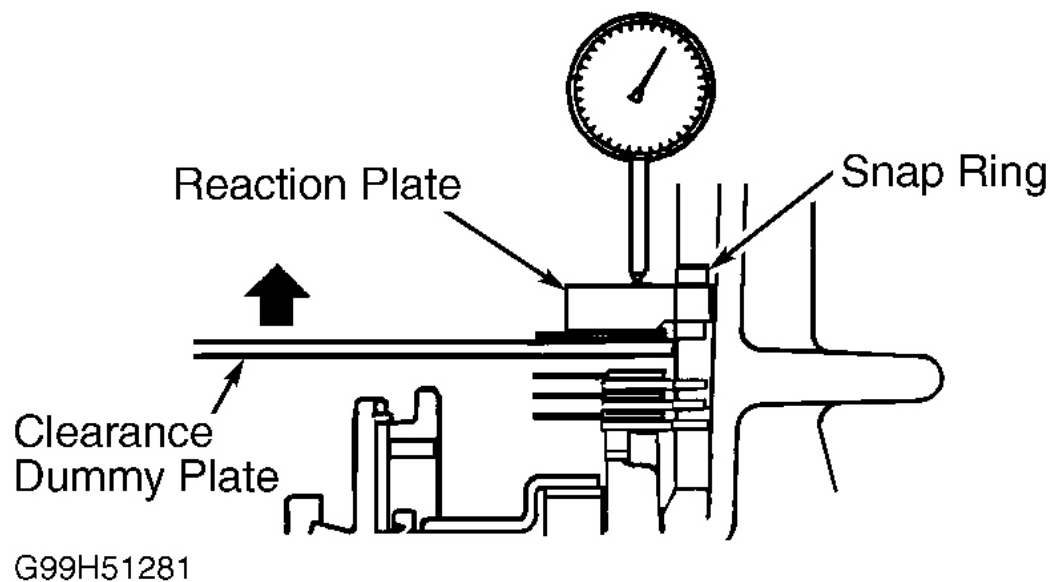
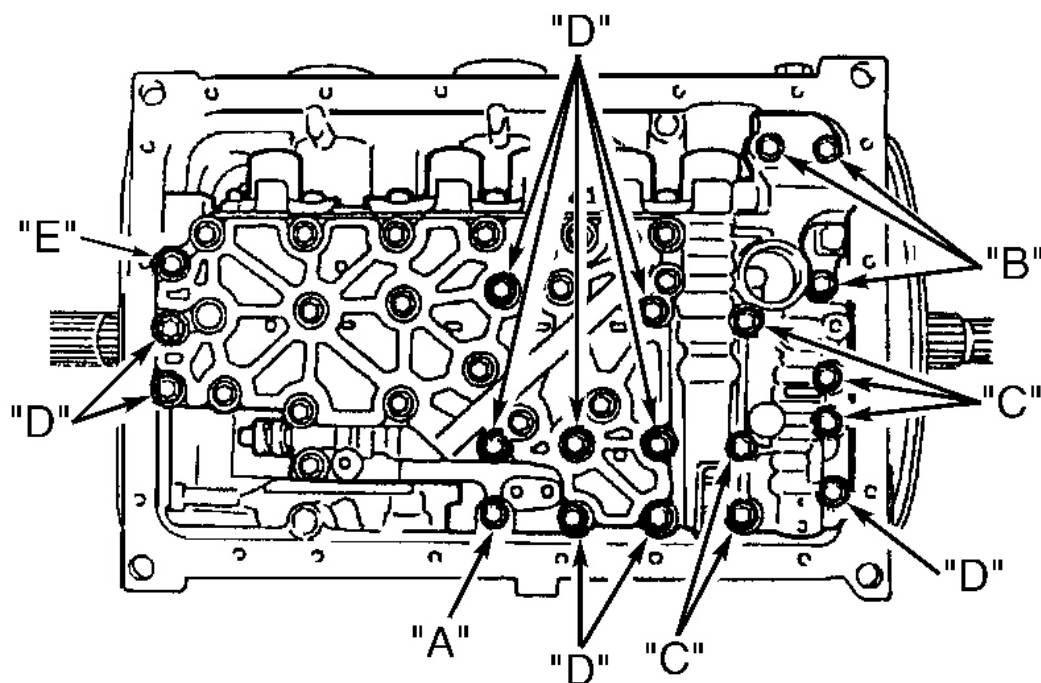


Fig. 48: Measuring Low-Reverse Brake End Play
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



BOLT	LENGTH in. (mm)
A	1.0 (25)
B	1.2 (30)
C	1.6 (40)
D	1.8 (45)
E	2.2 (55)

G00025505

Fig. 49: Identifying Valve Body Bolt Lengths

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

LOW-REVERSE BRAKE PRESSURE PLATE THICKNESS

1999 Mitsubishi Montero Sport ES

1999 AUTOMATIC TRANSMISSIONS Mitsubishi R4A51 & V4A51 Overhaul

Thickness In. (mm)	Identification	Part Number
.071 (1.80)	E	MD759425
.079 (2.00)	D	MD759426
.087 (2.20)	C	MD759427
.094 (2.40)	B	MD759428
.102 (2.60)	A	MD759429
.110 (2.80)	O	MD759430
.118 (3.00)	1	MD759431

THRUST RACE NO. 1 SPECIFICATIONS

Thickness In. (mm)	Part Number
.063 (1.6)	MD707267
.071 (1.8)	MD723064
.079 (2.0)	MD707268
.087 (2.2)	MD723065
.094 (2.4)	MD724358
.102 (2.6)	MD754798

ACCUMULATOR PISTON SPRING IDENTIFICATION

Application	Paint Identification
Low-Reverse Brake	
Inner Spring	Half Of Surface, Including Both Ends
Outer Spring	Entire Surface Of One Side
Overdrive Clutch ⁽¹⁾	None
Second Brake	
Inner Spring	All Surfaces, Including Both Ends
Outer Spring	Half Of Surface, Including Both Ends
Underdrive Clutch	
Inner Spring	Half Of Surface, Including Both Ends
Outer Spring	Half Of Surface, Including Both Ends
(1) Inner spring is not used.	

TORQUE SPECIFICATIONS**TORQUE SPECIFICATIONS**

Application	Ft. Lbs. (N.m)

1999 Mitsubishi Montero Sport ES

1999 AUTOMATIC TRANSMISSIONS Mitsubishi R4A51 & V4A51 Overhaul

Control Cable Adjusting Nut	9 (13)
Control Cable Bracket Bolt	35 (47)
Flex Plate-To-Torque Converter Bolts	33-38 (45-52)
Manual Control Lever Nut	16 (22)
Oil Cooler Flare Nut	29-32 (39-44)
Oil Pump Bolts	17 (23)
Output Shaft Support Mounting Bolt	17 (23)
Speedometer Sleeve Clamp Mounting Bolt (V4A51)	13 (18)
Starter Mounting Bolts	23 (31)
Transfer To Transfer Case Adapter Bolts (V4A51)	35 (47)
Transfer Case Adapter To Transmission Case Bolts (V4A51)	35 (47)
INCH Lbs. (N.m)	
Detent Spring Mounting Bolt	52 (5.9)
Fluid Temperature Sensor Retaining Bolt	97 (11)
Input Shaft Speed Sensor Retaining Bolt	97 (11)
Lower Valve Body Cover Bolts	97 (11)
Lower Valve Body Cover Mounting Bolt	97 (11)
Manual Control Shaft Detent Bolt	53 (6)
Oil Cooler Feed Tube	89 (10)
Oil Filter	52 (5.9)
Oil Pan Bolts	97 (11)
Output Shaft Speed Sensor Retaining Bolt	97 (11)
Park/Neutral Position (PNP) Switch Bolt	97 (11)
Separating Plate Mounting Bolt	52 (5.9)
Solenoid Support Mounting Bolt	52 (5.9)
Speedometer Gear Bolt	44 (5)
Upper Valve Body Mounting Bolts	97 (11)
Valve Body Mounting Bolts	97 (11)

TRANSMISSION SPECIFICATIONS**TRANSMISSION SPECIFICATIONS**

Application	In. (mm)
Brake Reaction Plate End Play	0-.006 (0-0.16)
Center Support End Play	0-0.006 (0-0.16)
Input Shaft End Play	.010-.032 (0.25-0.81)
Low-Reverse Brake End Play	
3.0L	0.053-0.071 (1.35-1.81)
3.5L	0.065-0.083 (1.65-2.11)

1999 Mitsubishi Montero Sport ES

1999 AUTOMATIC TRANSMISSIONS Mitsubishi R4A51 & V4A51 Overhaul

Output Shaft End Play	0.010-0.022 (0.25-0.55)
Overdrive Clutch End Play	0.079-0.087 (2.00-2.20)
Reverse Clutch End Play	0.047-0.055 (1.20-1.40)
Overdrive Clutch Return Spring Retainer End Play	0-0.004 (0-0.09)
Second Brake End Play	0.059-0.077 (1.49-1.95)
Underdrive Clutch End Play	0.063-0.071 (1.60-1.80)