

1994 AUTOMATIC TRANSMISSIONS

Mitsubishi V4AW3 Overhaul

APPLICATION

APPLICATION & LABOR TIMES

Vehicle Application	Trans. Model
1994 Montero 3.5L	V4AW3

IDENTIFICATION

Transmission model number is stamped on Vehicle Information Code Plate attached to the firewall in engine compartment. See **Fig. 1**.

CAUTION: Vehicle is equipped with Supplemental Restraint System (SRS). When servicing vehicle, use care to avoid accidental air bag deployment. SRS-related components are located in steering column, center console, instrument panel and lower panel on instrument panel. **DO NOT** use electrical test equipment on these circuits. If necessary, deactivate SRS before servicing components. See **AIR BAG RESTRAINT SYSTEM** article in the **ACCESSORIES/SAFETY EQUIP** section.

DESCRIPTION

Automatic transmission is a 4-speed electronically controlled transmission. Solenoids that control shift changes are located in valve body. Transmission consists of lock-up torque converter, overdrive (OD) clutch, direct clutch, forward clutch, 3 planetary gears, hydraulic control system and electronic control system. See **Fig. 2**.

Shifting solenoids are controlled by the Transmission Control Module (TCM). For electronic diagnosis, Refer to the procedures in the **AUTO TRANS DIAGNOSIS - V4AW3** article. The TCM receives information from various input devices and uses this information to control shift solenoids for transmission shifting and lock-up solenoid for torque converter lock-up.

An Overdrive (OD) switch is mounted on the shift lever. When OD switch is depressed to ON position, transmission will shift into 4th gear when shift lever is in "D" position, and OD OFF light on instrument panel will go off. When OD switch is released to OFF position, transmission will shift into 3rd gear, and OD OFF light on instrument panel will illuminate.

A pattern select switch (if equipped) is located near shift lever on center console. Pattern select switch contains a POWER (PWR) and a HOLD operating position. When pattern select switch is depressed (PWR position), transmission upshifts and downshifts will occur at a higher vehicle speed than with switch released. An indicator light on instrument panel indicates pattern select switch is in PWR (on) position.

Transmission is equipped with a shift lock and key interlock system. Shift lock system prevents shift lever from being moved from Park unless brake pedal is depressed. Key interlock system prevents ignition key from being

moved from ACC to LOCK position on ignition switch unless shift lever is in Park.

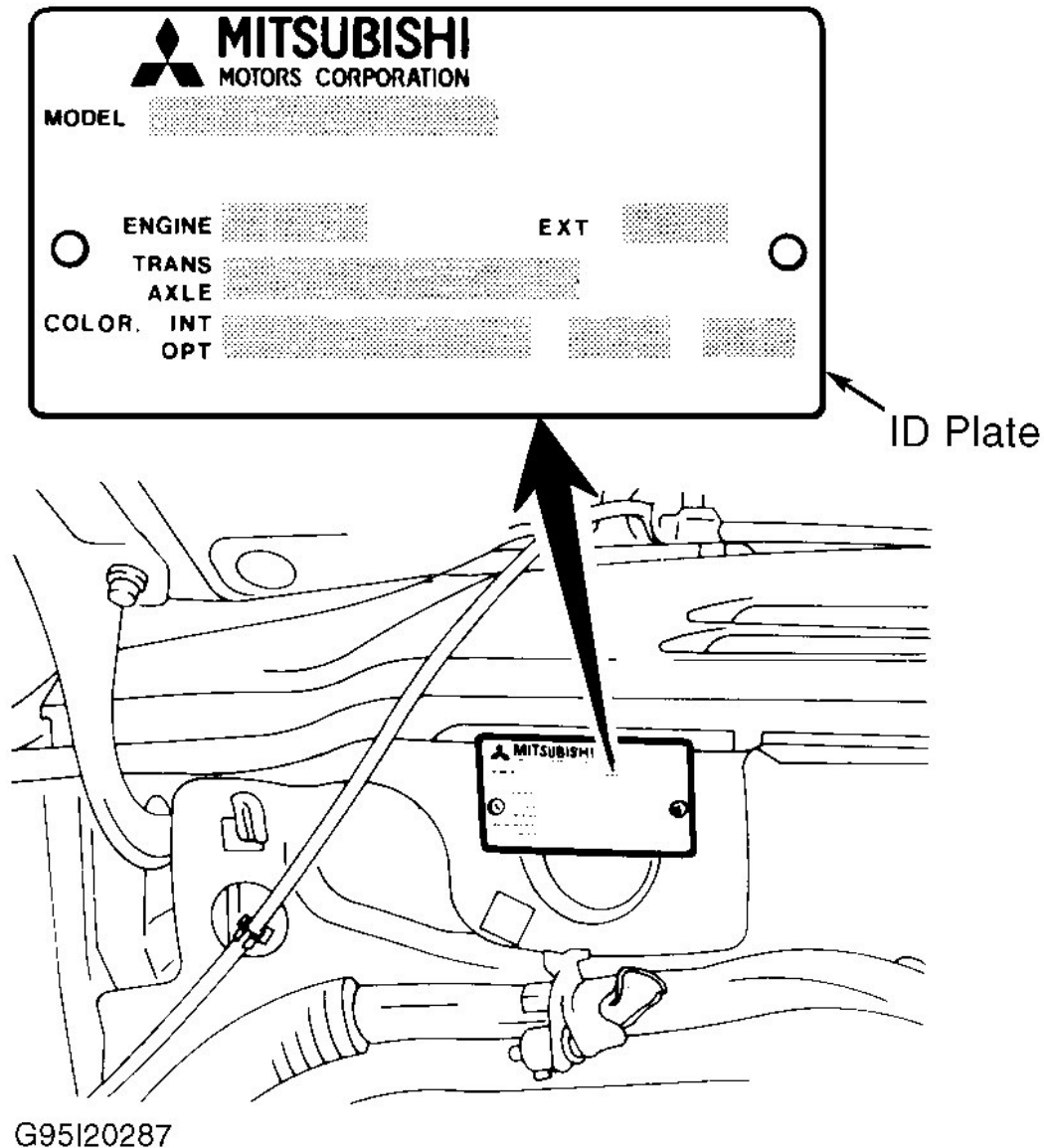
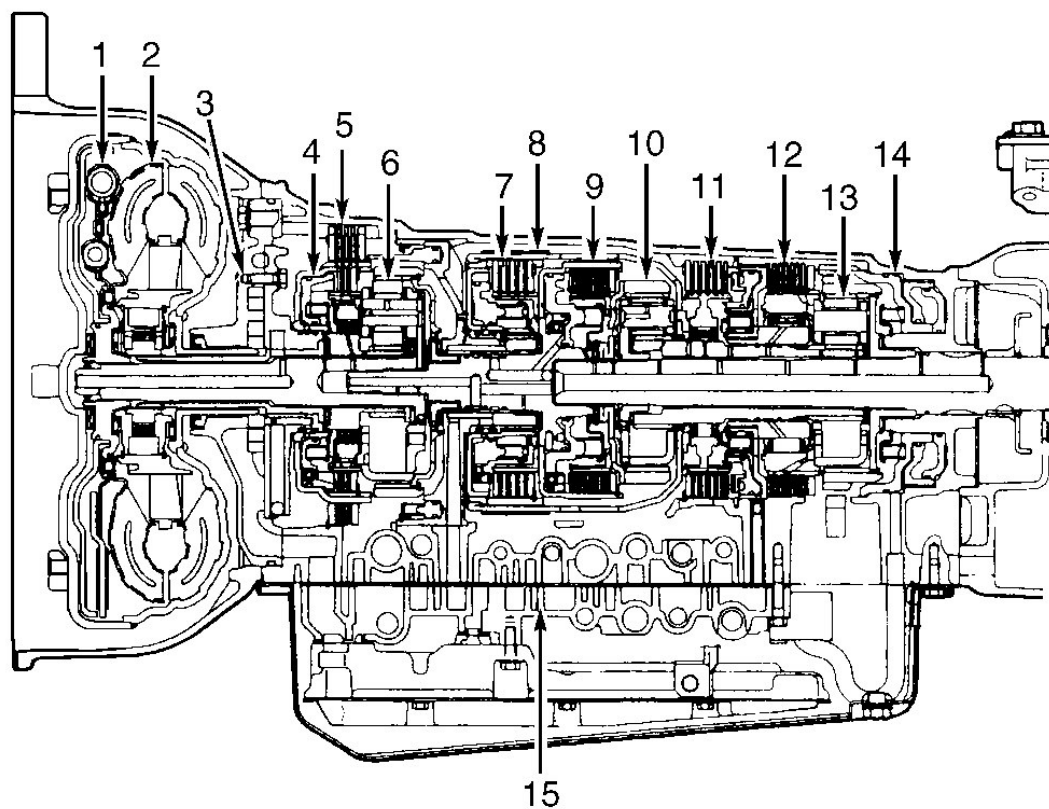


Fig. 1: Locating Vehicle Identification Code Plate
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



- | | |
|----------------------------|--------------------------------|
| 1. Torque Converter Clutch | 9. Forward Clutch |
| 2. Torque Converter | 10. Front Planetary Gear |
| 3. Oil Pump | 11. 2nd Brake |
| 4. OD Clutch | 12. 1st & Reverse Brake |
| 5. OD Brake | 13. Rear Planetary Gear |
| 6. OD Planetary Gear | 14. 1st & Reverse Brake Piston |
| 7. Direct Clutch | 15. Control Valve Assembly |
| 8. 2nd Coast Brake | |

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Fig. 2: Identifying Transmission Component Locations

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

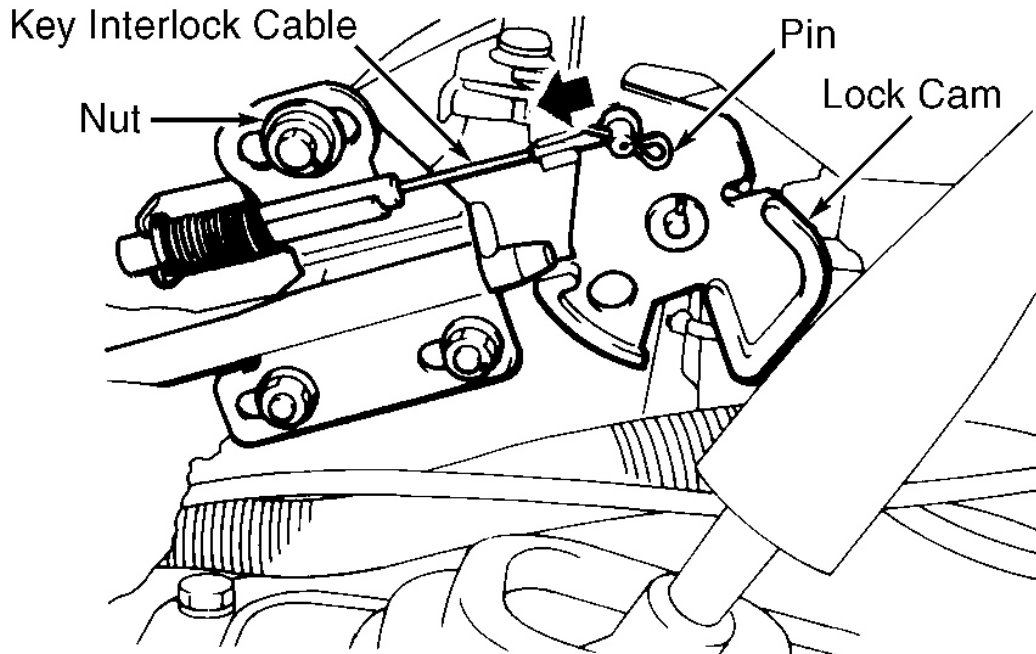
LUBRICATION

See the [TRANSMISSION SERVICING - A/T](#) article in the AUTOMATIC TRANS SERVICING section.

ADJUSTMENTS

KEY INTERLOCK CABLE

Remove front console assembly. Move selector lever to Park. Turn ignition switch to LOCK position. Loosen nut securing key interlock cable. See **Fig. 3** . Gently push lock cam until pin stops in direction of arrow, then tighten nut to 106 INCH lbs. (12 N.m) to secure cable. Install front console assembly.



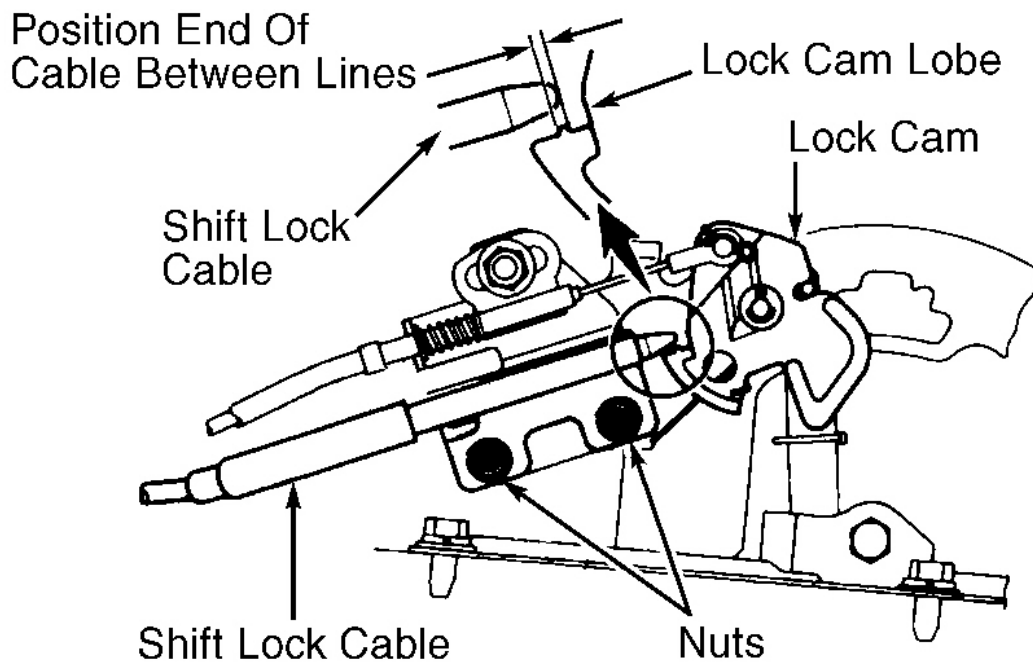
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Fig. 3: Adjusting Key Interlock Cable

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

SHIFT LOCK CABLE

Remove front console assembly. Move selector lever to Park. Loosen nuts securing shift lock cable. See **Fig. 4** . Adjust shift lock cable so end of cable (Red mark) sits between lobe of lock cam, then tighten nut to 44 INCH lbs. (5 N.m) to secure cable. Install front console assembly.



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Fig. 4: Adjusting Shift Lock Cable

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

ON-VEHICLE SERVICE

CONTROL VALVE ASSEMBLY

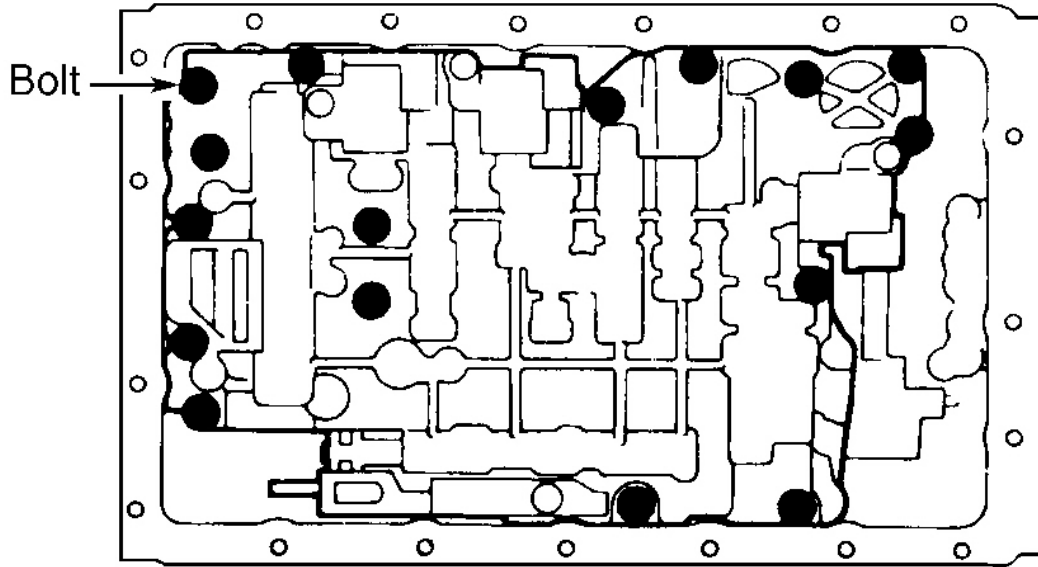
Removal

1. Remove drain plug and drain ATF. Remove oil pan and gasket. Remove oil strainer and gasket. Remove 5 bolts and then remove spacer and oil screen. Remove 2 gaskets. Disconnect 3 solenoid wire connectors.
2. Remove grommet stopper plate from transmission case. Remove wire harness from transmission case. Using screwdrivers, pry at both ends of 1st and reverse brake tube and remove tube. Remove 16 control valve assembly retaining bolts. See **Fig. 5**. Note bolt location and length for installation reference. Slightly lower control valve assembly and disconnect throttle cable from throttle cam. Remove control valve assembly.

Installation

To install, reverse removal procedure. Ensure manual shift lever in transmission case aligns with manual valve of control valve assembly. Connect throttle cable to throttle cam. Tighten control valve assembly bolts to 89 INCH lbs. (10 N.m). Tighten oil pan bolts to 71 INCH lbs. (8 N.m). Fill transmission with ATF to proper fluid

level.



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Fig. 5: Identifying Control Valve Assembly Bolt Locations
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

PARKING LOCK PAWL

Removal & Installation

1. Remove control valve assembly. Remove parking lock pawl bolts and bracket. Remove parking lock rod from manual valve lever. Remove parking pawl torsion spring. Pull out pivot pin and remove parking lock pawl. See **Fig. 6**.
2. To install, reverse removal procedures. Prior to installing parking lock pawl bracket bolts, push lock rod forward. Finger tighten bolts and ensure parking lock pawl operates smoothly. Tighten bracket bolts to 65 INCH lbs. (7.4 N.m).

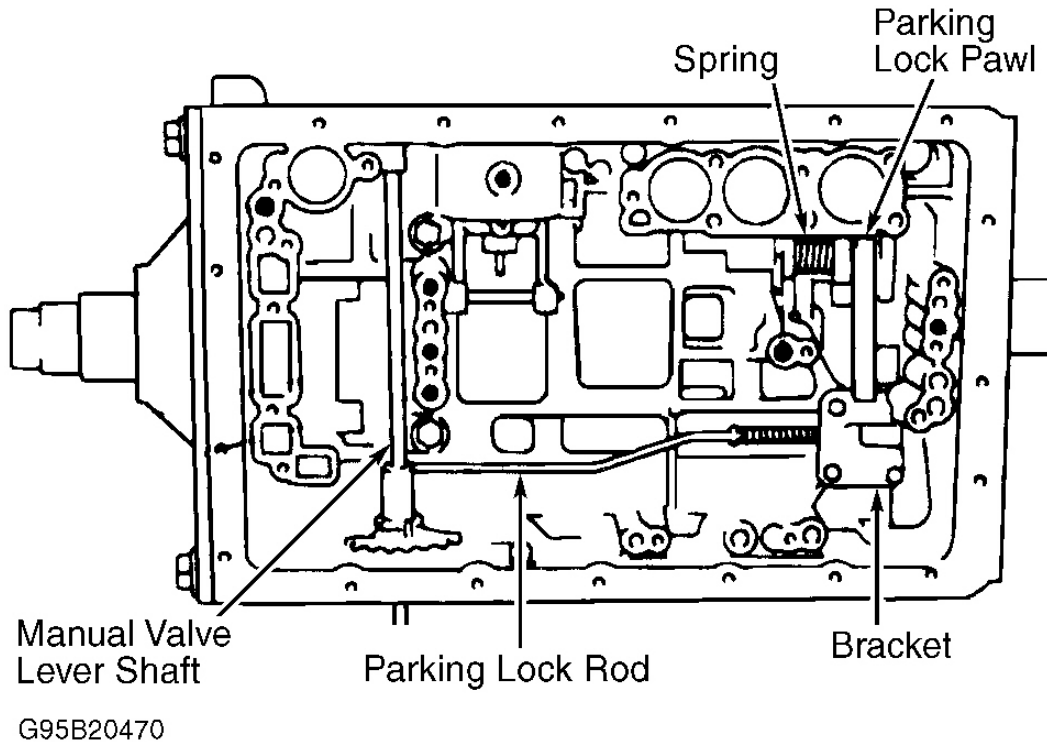


Fig. 6: Removing Parking Lock Pawl Components
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

REAR OIL SEAL

Removal & Installation

1. Raise and support vehicle. Place reference marks on drive shaft and companion flange. Remove drive shaft. Clean seal surrounding areas. Using appropriate seal remover, remove oil seal from extension housing. Note direction of seal installation.
2. Using appropriate seal installer, install seal in extension housing until seal bottoms. To complete installation, reverse removal procedure. Fill transmission to proper level.

NEUTRAL SAFETY SWITCH

For neutral safety switch adjustment procedures, refer to the **TRANSMISSION SERVICING - A/T** article in the AUTOMATIC TRANS SERVICING section.

THROTTLE CABLE

For throttle cable adjustment procedures, refer to the **TRANSMISSION SERVICING - A/T** article in the AUTOMATIC TRANS SERVICING section.

OIL CIRCUIT DIAGRAM

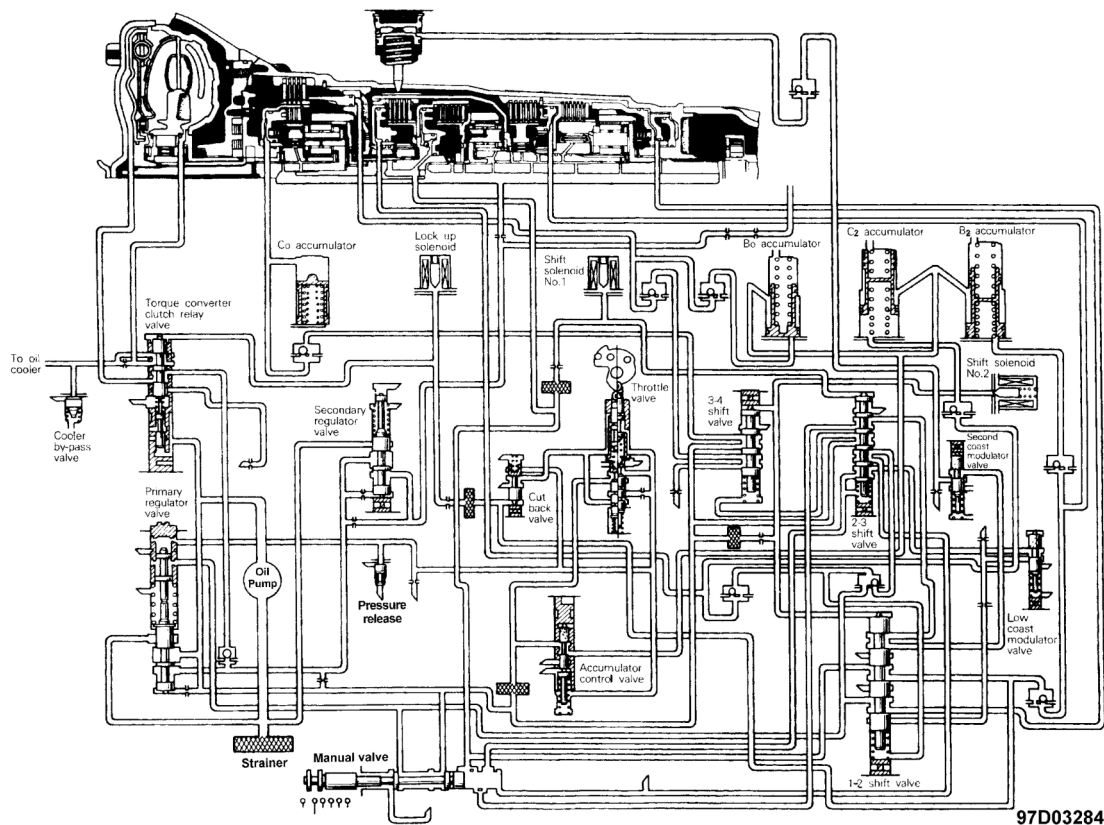


Fig. 7: Oil Circuit Diagram (Mitsubishi V4AW3)

TROUBLE SHOOTING

NOTE: See [AUTO TRANS DIAGNOSIS - V4AW3](#) article for trouble shooting solenoids, sensors and control module. Ensure transmission fluid level is correct before diagnosing transmission.

PRELIMINARY CHECKS

Ensure fluid level is correct. Inspect and adjust throttle cable, shift linkage and neutral safety switch (if necessary). Check idle speed RPM and adjust as necessary.

SYMPTOM DIAGNOSIS

Fluid Discolored Or Smells Burnt

Fluid contaminated. Faulty torque converter or transmission.

No Movement In Any Gear

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Manual linkage out of adjustment. Faulty valve body, primary regulator, parking lock pawl, torque converter, OD one-way clutch, OD brake, OD clutch or OD planetary gear. Defective TCM. Converter drive plate damaged or broken. Oil pump intake screen blocked. Control shaft lever out of adjustment.

Selector Lever Position Incorrect

Manual linkage out of adjustment. Faulty manual valve and lever.

Harsh Engagement Into Any Drive Position

Throttle cable out of adjustment. Faulty valve body, primary regulator, accumulator pistons, OD brake, OD clutch, OD planetary gear, torque converter, 1st and reverse brake, direct clutch or forward clutch.

Delayed 1-2, 2-3 Or 3-OD Upshifts, Or Downshifts From OD-3 Or 3-2, Then Changes Back To OD Or 3rd

Faulty valve body or solenoid valve. Defective TCM.

Slips On Any Upshift Or Slips Or Shudders On Acceleration

Manual linkage or throttle cable out of adjustment. Faulty valve body or solenoid valve.

Drag Or Binding On Upshifts

Manual linkage out of adjustment or faulty valve body.

No Lock-Up In 2nd, 3rd Or OD

Faulty valve body or solenoid valve. Defective TCM.

Harsh Downshift

Throttle cable out of adjustment or faulty accumulator pistons or valve body.

No Downshift When Coasting

Faulty valve body, electronic control or solenoid valve.

Downshifts Too Soon Or Late When Coasting

Throttle cable out of adjustment or faulty valve body, electronic control or solenoid valve.

No OD-3, 3-2 Or 2-1 Kickdown

Faulty valve body, electronic control or solenoid valve.

No Engine Braking In "2" Or "L" Position

Faulty valve body, electronic control or solenoid valve.

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Vehicle Does Not Move In "R" Position

Faulty 2nd coast brake, front and rear planetary gear, direct clutch, 1st and reverse brake or OD clutch.

Vehicle Does Not Move In "D", "2" Or "L" Position

Faulty forward clutch, No. 2 one-way clutch, 2nd brake, 1st and reverse brake, 2nd coast brake or direct clutch.

No 1-2, 2-3, 3-OD Upshift

Faulty 2nd brake, No. 1 one-way clutch, direct clutch or OD brake.

No 2-1 Downshift

Faulty 2nd coast brake or 2nd brake.

No Lock-Up

Faulty torque converter or solenoid.

Slip Or Shudder In Any Gear

Faulty torque converter, OD one-way clutch, OD clutch, 1st and reverse brake, direct clutch, forward clutch, No. 2 one-way clutch, 2nd brake, 2nd coast brake, No. 1 one-way clutch or OD brake.

Poor Acceleration

Faulty torque converter, OD clutch, OD planetary gear, OD brake, 2nd coast brake, direct clutch, 2nd brake, 1st and reverse brake or forward clutch.

Engine Stalls When Starting Off Or Stopping

Faulty torque converter.

Vehicle Does Not Hold In "P" Position

Manual linkage faulty or out of adjustment. Defective parking lock pawl assembly.

CLUTCH & BAND APPLICATION CHART

Selector Lever Position	Elements In Use
"D" (Drive)	
1st Gear	Forward Clutch No. 2 One-Way Clutch & OD Clutch
2nd Gear	Forward Clutch No. 1 One-Way Clutch OD Clutch, OD One-Way Clutch &

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	2nd Brake
3rd Gear	Direct Clutch, Forward Clutch, OD Clutch, OD One- Way Clutch & 2nd Brake
OD (4th Gear)	Direct Clutch, Forward Clutch, OD Brake & 2nd Brake
"2" (Intermediate)	
1st Gear	Forward Clutch, No. 2 One-Way Clutch OD Clutch & OD One-Way Clutch
2nd Gear	Forward Clutch, No. 1 One-Way Clutch, OD Clutch, OD One-Way Clutch, 2nd Brake & 2nd Coast Brake
3rd Gear	Direct Clutch, Forward Clutch, OD Clutch, OD One- Way Clutch & 2nd Brake
"L" (Low)	
1st Gear	Forward Clutch, No. 2 One-Way Clutch, OD One- Way Clutch, OD Clutch & 1st & Reverse Brake
2nd Gear ⁽¹⁾	Forward Clutch, No. 1 One-Way Clutch, OD Clutch, OD One-Way Clutch, 2nd Brake & 2nd Coast Brake
"R" (Reverse)	Direct Clutch, OD Clutch, OD One-Way Clutch & 1st & Reverse Brake
"N" (Neutral)	OD Clutch
"P" (Park)	OD Clutch

(1) Downshift only in "L" position and 2nd gear. No upshift.

PERFORMANCE TESTS

ROAD TEST

NOTE: Perform road test to ensure transmission shift points are at specified speeds. See **Fig. 8** . Broken lines in shift point chart indicates downshifts, and solid lines indicate upshifts.

"D" Position Test

1. Engine and transmission must be at normal operating temperature. Shift transmission into "D" position with OD switch in ON position. Ensure transfer case is in 2H (2WD-High) position. Depress accelerator pedal to full throttle. Ensure all upshifts and downshifts occur at specified points. See **Fig. 8** .
2. Ensure lock-up occurs. Lightly depress accelerator pedal. If excessive increase in engine RPM exists, lock-up did not occur.

NOTE: A 3-OD upshift will not occur with a throttle valve opening greater than 86 percent or if coolant temperature is below 122°F (50°C). A OD-3 kickdown is always possible with throttle valve opening of 86 percent or greater. Lock-up does not occur at coolant temperatures below 158°F (70°C).

3. Check for shift shock and slippage during all upshifts. Drive vehicle in "D" and OD. Check for abnormal noise and vibration. While driving in OD, "D" and 2nd gear, ensure kickdown speeds in 2-1, 3-2 and OD-3 are within specification. Check for shock and slippage during kickdown.

"D" Position Test Results

- No 1-2 Upshift: Defective No. 2 solenoid or stuck 1-2 shift valve.
- No 2-3 Upshift: Defective No. 1 solenoid or stuck 2-3 shift valve.
- No 3-OD Upshift With Throttle Opening Less Than 86 Percent: Stuck 3-4 shift valve. If shift point is not within specification, check for misadjusted throttle cable or defective throttle valve, OD switch or solenoid valve.
- Lock-Up Does Not Occur: Stuck lock-up solenoid valve.
- Excessive Shock & Slippage: High line pressure, defective accumulator or check balls. Abnormal noise and vibration may be caused by unbalance in drive shaft, differential, tires or torque converter.

"2" Position Test

Shift transmission to "2" position. With accelerator pedal held at full throttle, check for proper 1-2 upshift at specified throttle positions. See **Fig. 8** . While driving vehicle in 2nd gear, release accelerator and check engine braking effect. If engine braking does not exist, 2nd coast brake is defective.

"L" Position Test

While driving vehicle in "L" position, check for failure to upshift to 2nd gear. Check engine braking effect when accelerator is released. If engine braking does not exist, 1st and reverse brake is defective.

"R" Position Test

Shift vehicle to "R" position. Accelerate vehicle and check for transmission slippage.

"P" Position Test

Stop vehicle on incline of 5 degrees or steeper. Shift vehicle to "P" position and release parking brake. Ensure parking lock pawl prevents vehicle from moving.

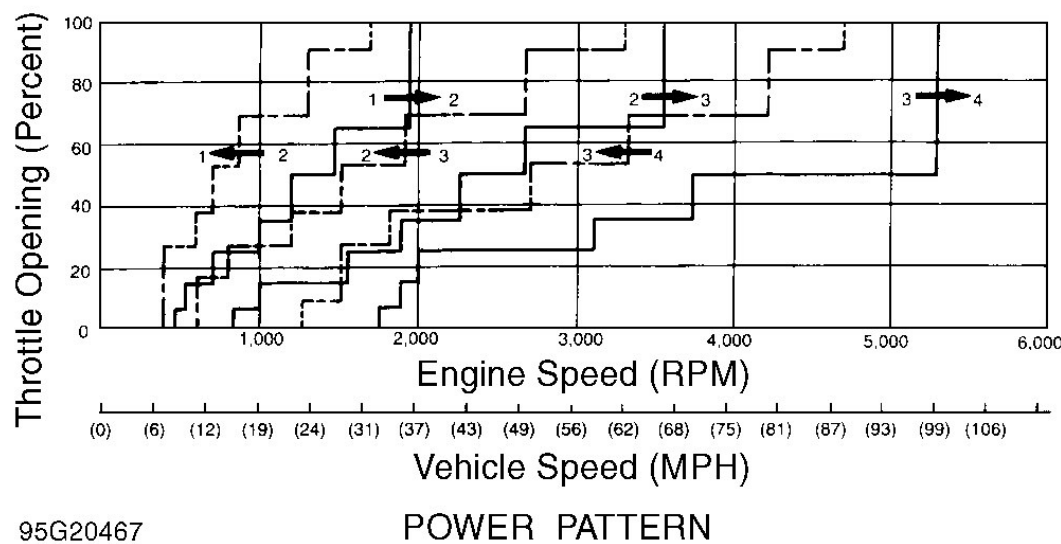
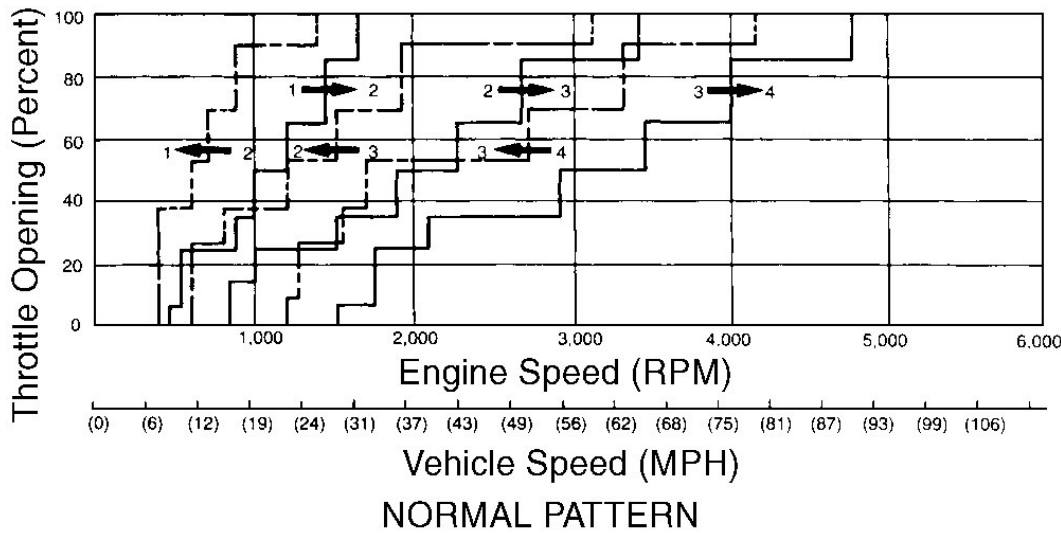


Fig. 8: Identifying Transmission Shift Points

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

STALL SPEED TEST

Procedure

1. Operate engine and transmission at normal operating temperature. Connect tachometer to vehicle and ensure it is visible to driver. Apply parking brake and block front wheels.

CAUTION: DO NOT maintain stall speed RPM for more than 5 seconds. If performing more than one stall speed test, operate engine at about 1000 RPM in Neutral for 2 minutes to cool transmission fluid before performing next test.

2. Start engine, apply brakes and place transmission in "D" position. Depress accelerator to full throttle and note maximum RPM obtained. Repeat test in "R" position. Stall speed should be 2100-2600 RPM.

Speed Test Results

- Stall Speed Is Same In Both Positions, But Less Than Specified: Engine output may be insufficient or defective stator one-way clutch. Throttle valve is not opening fully.

NOTE: If stall speed RPM is greater than 600 RPM lower than specification, torque converter may be faulty.

- Stall Speed High In "D" Position: Low line pressure, slipping forward clutch or defective No. 2 or OD one-way clutch.
- Stall Speed High In "R" Position: Low line pressure, direct clutch slipping, 1st and reverse brake slipping or defective OD one-way clutch.
- Stall Speed High In Both Positions: Low line pressure, improper fluid level or defective OD one-way clutch.

HYDRAULIC PRESSURE TEST

NOTE: Hydraulic pressure test should be performed with transmission fluid at normal operating temperature of 158-176°F (70-80°C).

Line Pressure Test

1. Ensure transmission fluid is at normal operating temperature. Connect pressure gauge to line pressure test port on transmission. See **Fig. 9**.
2. Connect tachometer to vehicle and ensure it is visible to driver. Block all 4 wheels and fully apply parking brake. Start engine and ensure idle speed is adjusted to specification.
3. Apply service brake and shift transmission to "D" position. Check line pressure at idle and record pressure reading. Accelerate vehicle to stall speed and record line pressure reading.

4. Repeat the test procedure in the "R" position. If line pressures are not as specified, check throttle cable adjustment. Adjust throttle cable (if necessary), and repeat test procedure and record pressure readings. Compare all readings to specification. Refer to the **LINE PRESSURE SPECIFICATIONS** table.

LINE PRESSURE SPECIFICATIONS

Engine Speed	"D" Position psi (kPa)	"R" Position psi (kPa)
Idle Speed	62-71 (430-490)	75-90 (520-620)
Stall Speed	165-202 (1140-1390)	203-254 (1400-1750)

Line Pressure Test Results

- Line Pressure High In Both Positions: Defective regulator valve or throttle valve, or throttle cable out of adjustment.
- Line Pressure Low In Both Positions: Defective oil pump, regulator valve, throttle valve or OD clutch, or throttle cable out of adjustment.
- Line Pressure Low In "D" Position Only: Defective forward clutch, OD clutch or fluid leak in "D" position circuit.
- Line Pressure Low In "R" Position Only: Defective direct clutch, OD clutch, 1st and reverse brake or fluid leak in "R" position circuit.

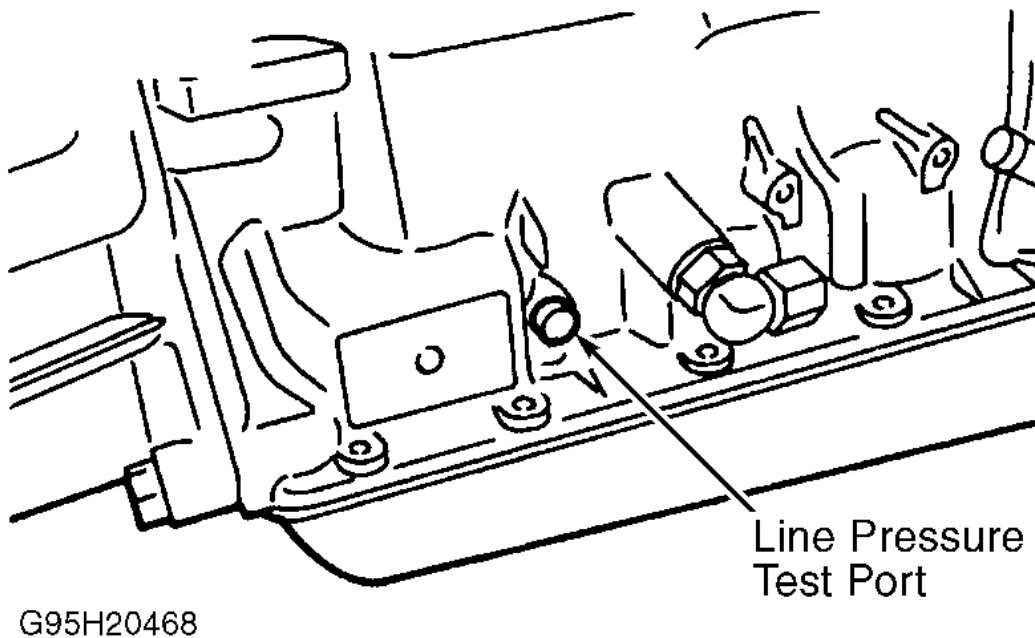


Fig. 9: Identifying Transmission Hydraulic Pressure Test Port
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

ELECTRICAL TESTING

Electrical tests should be performed prior to hydraulic testing to ensure problem is not in electrical circuit. Refer to the [AUTO TRANS DIAGNOSIS - V4AW3](#) article.

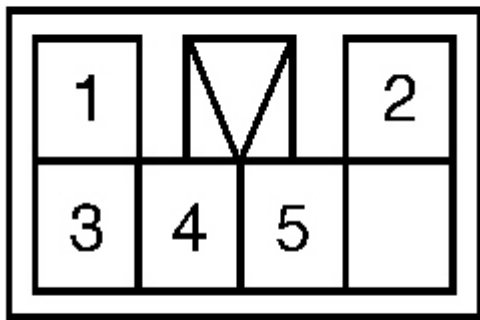
COMPONENT & SYSTEM TESTING

A/T FLUID TEMPERATURE SWITCH

1. Remove fluid temperature switch, located to rear of neutral safety switch. Immerse switch in container of ATF up to top threaded portion of switch. Using a DVOM, check continuity between switch terminals. Continuity should not exist when fluid temperature is 257°F (125°C) or less.
2. When fluid is heated to 289-304°F (143-151°C), continuity should exist. Replace switch if necessary. Apply thread sealant to fluid temperature switch threads and install in transmission.

OVERDRIVE SWITCH

Using a screwdriver, remove overdrive switch from selector lever, located below selector lever button. Using a DVOM, check continuity between overdrive switch terminals No. 3 and 5 with switch in ON position. Continuity should exist. With switch in OFF position, check continuity between terminals No. 3 and 4. Continuity should exist. If continuity is not as specified, replace switch. See [Fig. 10](#).



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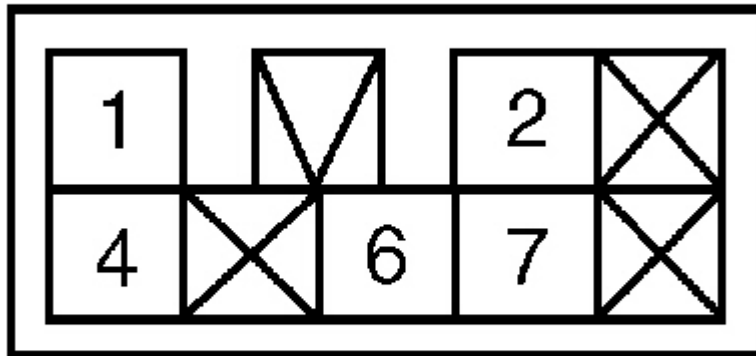
Fig. 10: Identifying Overdrive Switch Terminals

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

PATTERN SELECT SWITCH (1994 MODELS)

Using a screwdriver, remove pattern select switch from console. Switch is located at rear of selector lever, to

right of emergency brake handle. Using a DVOM, check continuity between pattern select switch terminals No. 1 and 2, with switch in HOLD position. Continuity should exist. With switch in POWER position, check continuity between terminals No. 1 and 6. Continuity should exist. If continuity is not as specified, replace switch. See **Fig. 11** .



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Fig. 11: Identifying Pattern Select Switch Terminals
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

KEY INTERLOCK SYSTEM

1. With ignition switch in LOCK position and brake pedal depressed, ensure selector lever cannot be moved from Park to any other position. Ensure selector lever button cannot be pushed. With ignition switch in ACC position, brake pedal depressed and selector lever button pushed, ensure selector lever can be moved from Park position to any other position. Ensure selector lever moves smoothly.
2. Ensure ignition key cannot be turned to LOCK position at all selector lever positions other than Park. Ensure ignition key turns smoothly to LOCK position when selector lever is set to Park and selector lever button is released. If key interlock system is not as specified, adjust key interlock cable. See **KEY INTERLOCK CABLE** under ADJUSTMENT.

SHIFT LOCK SYSTEM

1. With ignition switch in ACC position, brake pedal released and selector lever button pushed, ensure selector lever cannot be moved from Park to any other position. With ignition switch in ACC position, brake pedal depressed and selector lever button pushed, ensure selector lever can be moved from Park position to any other position.
2. With selector lever in Reverse, ignition switch in ACC position, brake pedal released and selector button pushed, ensure selector lever can be moved from Reverse to Park position. If shift lock system is not as

specified, adjust shift lock cable. Refer to **SHIFT LOCK CABLE** under ADJUSTMENTS.

REMOVAL & INSTALLATION

TRANSMISSION ASSEMBLY

See the **TRANSMISSION REMOVAL & INSTALLATION - A/T** article in the AUTOMATIC TRANS SERVICING section.

TRANSFER CASE

For transfer case removal and installation procedures, refer to the **TRANSFER CASE** article in the TRANSFER CASES section.

TORQUE CONVERTER

CAUTION: Torque converter is a welded assembly and is not serviceable. If a 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 **STALL SPEED TEST** under PERFORMANCE TESTS.

TRANSMISSION DISASSEMBLY

1. Ensure transmission case is clean of dirt and grease prior to disassembly. Remove wire harness clamp and throttle cable from converter housing. Remove control shaft lever. Remove dipstick tube and dipstick. Remove neutral safety switch. Remove transfer case. See appropriate article in the DRIVE AXLES section.
2. Remove speed sensors and oil temperature sensor. Remove torque converter, converter housing bolts and converter housing. Remove extension housing and gasket. Remove speed sensor rotor and key from output shaft. Remove oil pan and gasket. Remove oil strainer and gasket. Remove 5 bolts and then remove spacer and oil screen. Remove 2 gaskets. Disconnect 3 solenoid wire connectors.
3. Remove grommet stopper plate from transmission case. Remove wire harness from transmission case. Remove "O" ring from grommet (if necessary). Using screwdrivers, pry at both ends of 1st and reverse brake tube and remove tube. Remove 16 control valve assembly retaining bolts. See **Fig. 5**. Note bolt location and length for installation reference. Slightly lower control valve assembly and disconnect throttle cable from throttle cam. Remove control valve assembly.
4. Place shop cloth over accumulator pistons. Using compressed air, remove accumulator pistons and springs from transmission case. See **Fig. 12** -13. Note location of springs and pistons for reassembly reference.
5. Remove throttle cable from transmission case. Remove parking lock pawl bracket. Disconnect parking rod from manual valve lever. Remove "E" ring from shaft. Carefully remove lock pawl, spring and shaft. Drive out roll pin. Remove manual valve lever shaft through transmission case. Remove manual valve

lever. See **Fig. 6** .

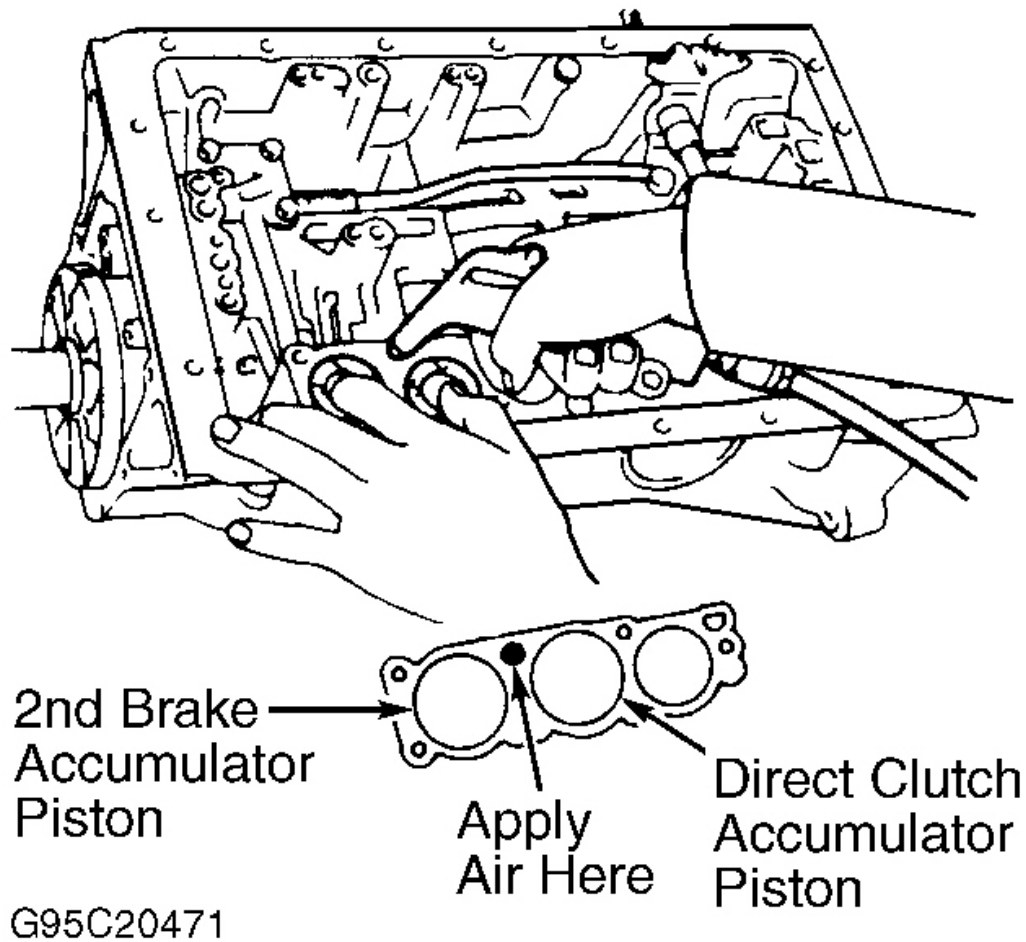


Fig. 12: Removing Direct Clutch (C2) & 2nd Brake (B2) Accumulator Pistons & Springs
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

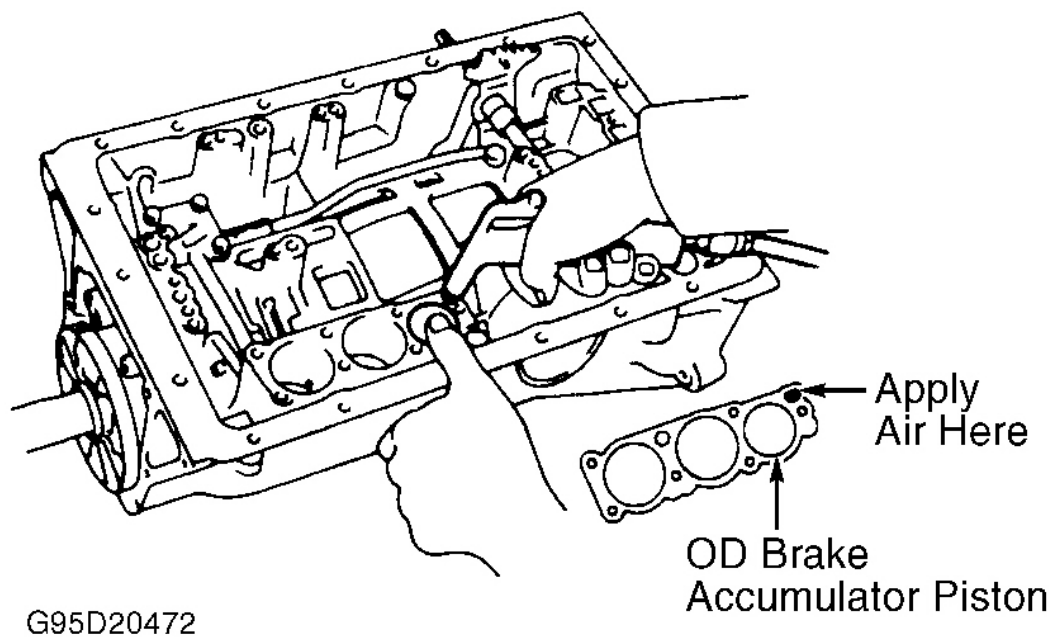


Fig. 13: Removing OD Brake (B0) Accumulator Piston & Springs
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

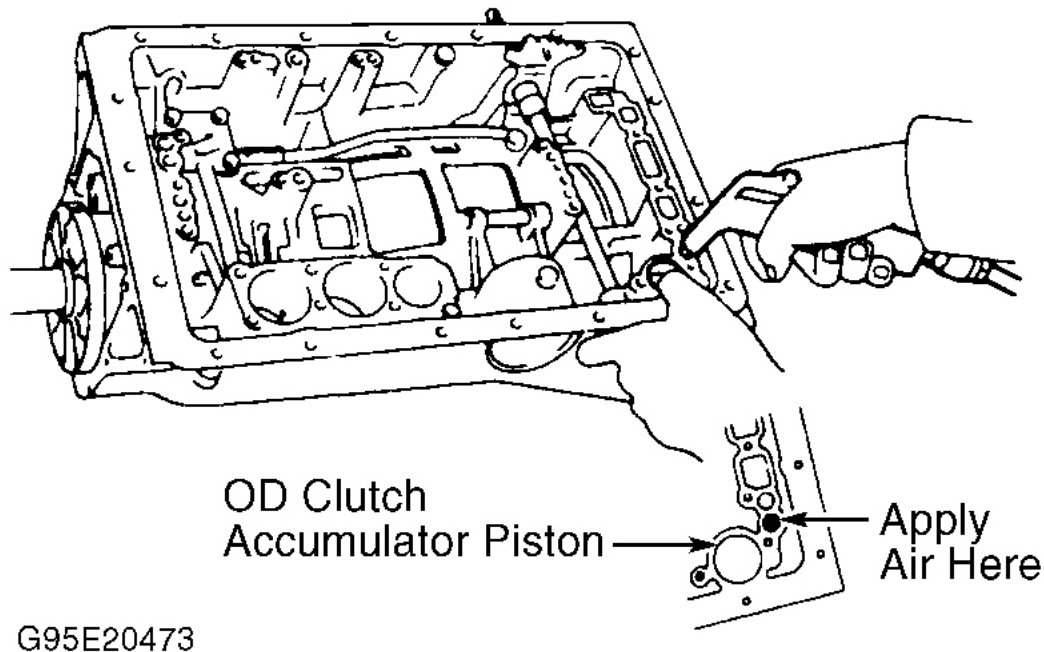


Fig. 14: Removing OD Clutch (C0) Accumulator Piston & Springs
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

6. Remove oil pump from transmission case using appropriate puller. While holding input shaft, remove OD planetary gear with OD clutch from case. Remove bearing and race. Remove OD planetary ring gear. Remove bearing and race.
7. Check OD brake piston stroke. Install dial indicator on OD brake piston. Measure stroke by applying 57-114 psi (4-8 kg/cm²) compressed air to opening in case. See **Fig. 15**. Piston stroke should be .055-.067" (1.40-1.70 mm). If piston stroke is not within specifications, inspect discs.
8. Remove snap ring. Remove OD brake clutch pack flanges, plates and discs. Note number and location of all components. Place reference mark on 2nd coast brake piston rod. Apply 57-114 psi (4.8 kg/cm²) of air at opening of transmission case. Using wire gauge, measure clearance between reference mark and case. See **Fig. 17** -17. Stroke should be .059-.118" (1.49-3.00 mm). If stroke is not within specification, inspect brake band.

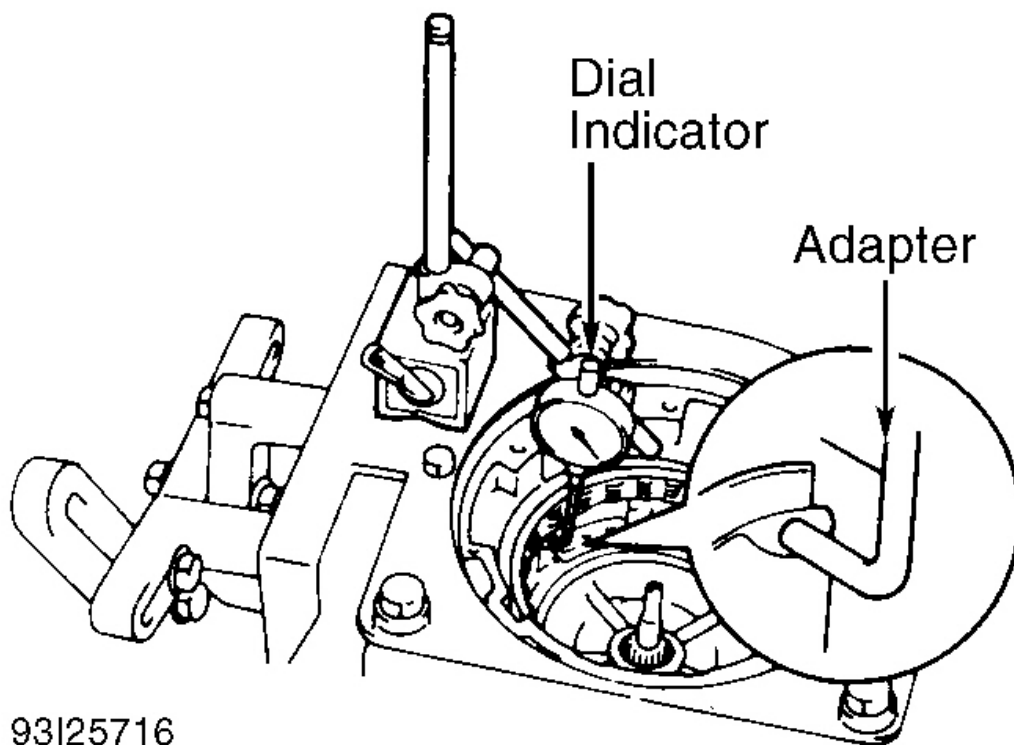


Fig. 15: Measuring OD Brake Piston Stroke (1 Of 2)
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

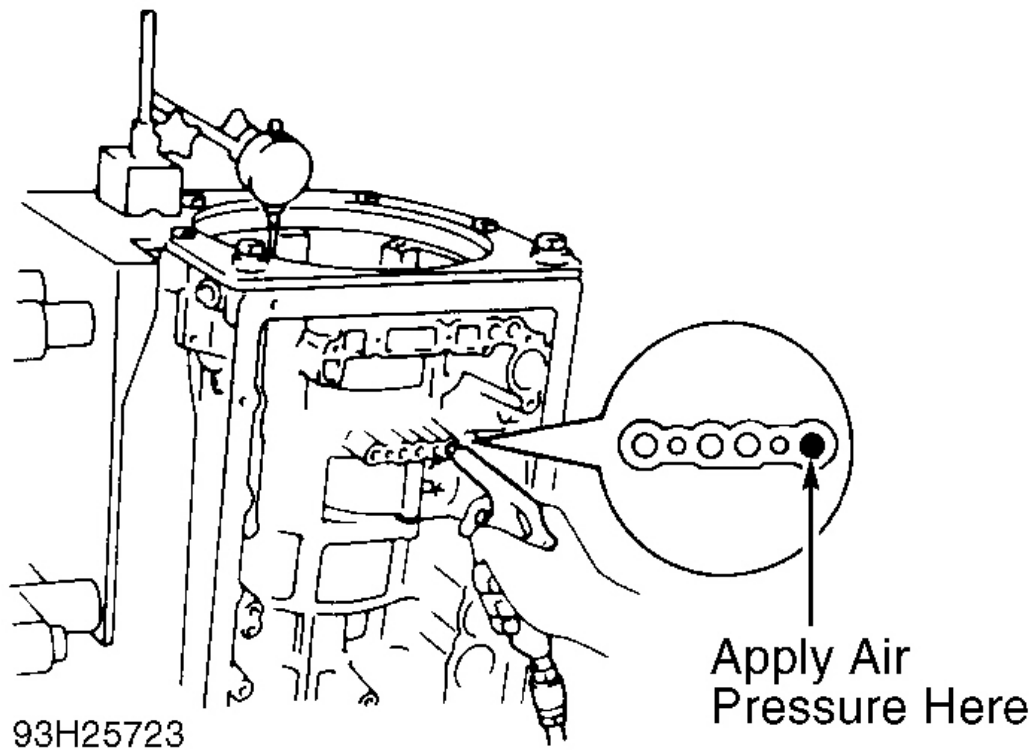


Fig. 16: Measuring OD Brake Piston Stroke (2 Of 2)

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

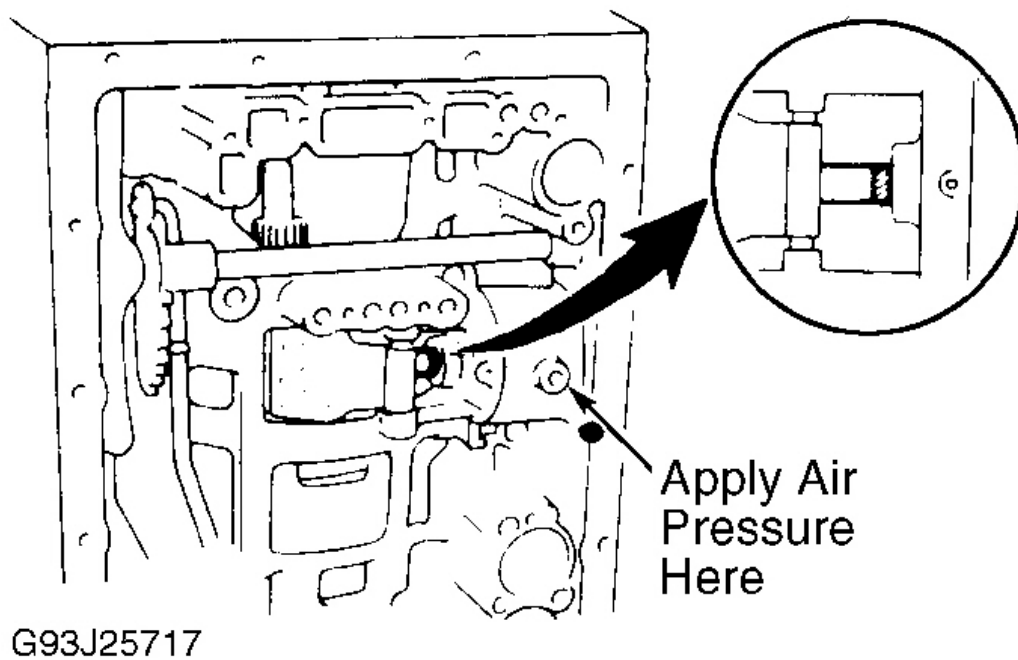


Fig. 17: Measuring 2nd Coast Brake Piston Stroke (Reference Mark)
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

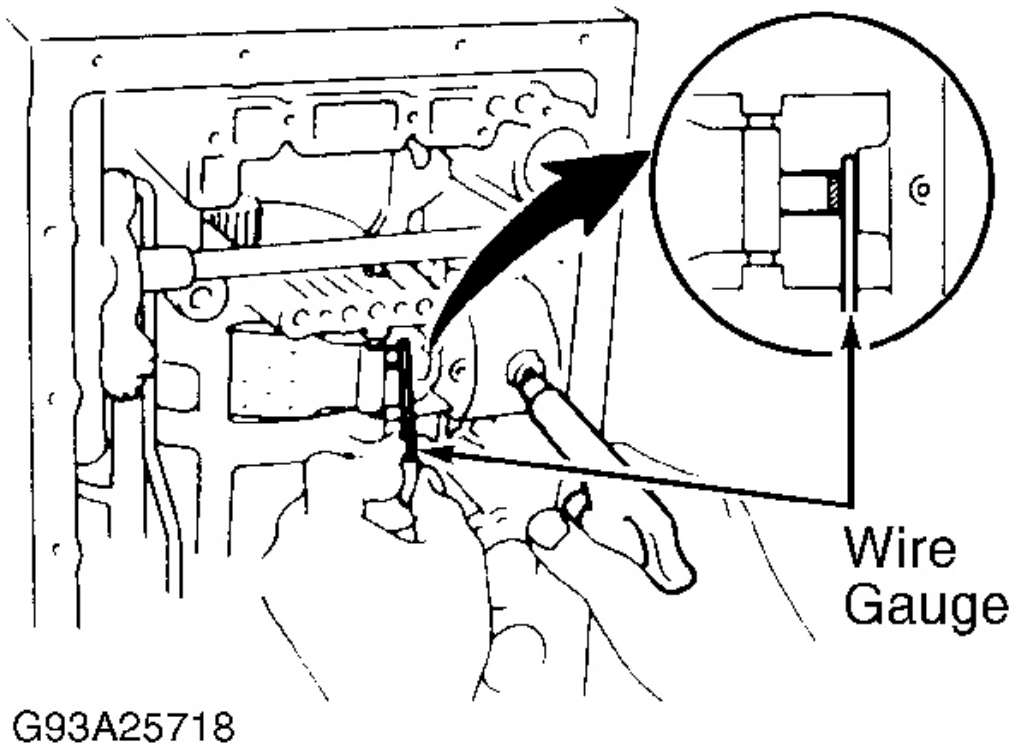
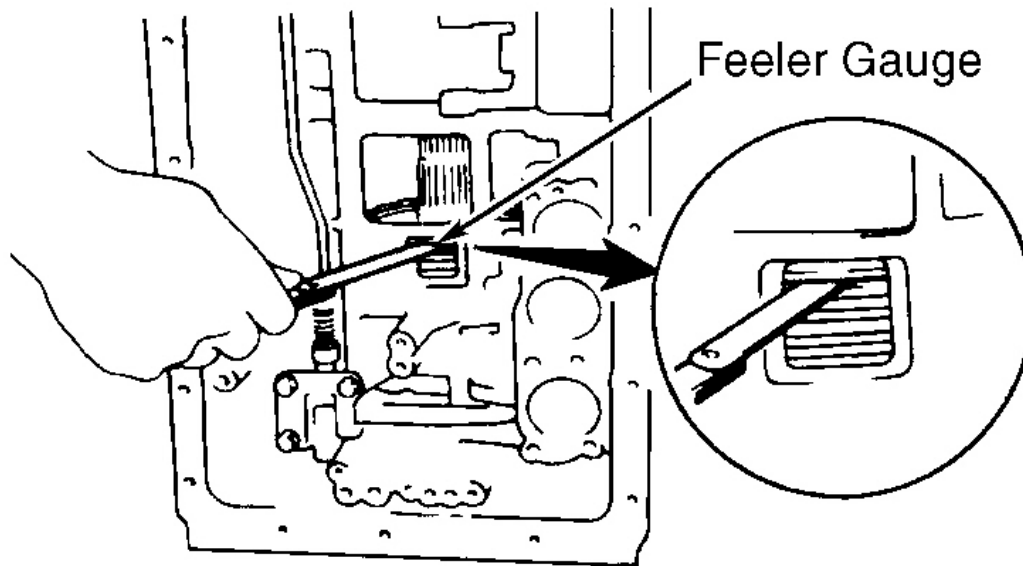


Fig. 18: Measuring 2nd Coast Brake Piston Stroke (Measuring Clearance)
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

9. Remove 2nd coast brake cover snap ring. Carefully apply air pressure to oil hole as in previous step to remove cover, piston and spring. Remove thrust bearing and race from OD support assembly. Remove OD support-to-case bolts. Remove snap ring. Using appropriate puller, remove OD support assembly. Remove race from rear of support assembly. Remove direct clutch with forward clutch from case. Remove bearings and race from forward clutch assembly.
10. Remove "E" ring from 2nd coast brake band pin and remove pin. Remove 2nd coast brake band. Remove race from front planetary ring gear. Remove front planetary ring gear. Remove thrust bearing and race from inside ring gear. Remove race from front planetary gear. Place transmission on end and support output shaft on wooden blocks. Remove snap ring located above front planetary gear. Remove front planetary gear.
11. Remove sun gear drum and one-way clutch. Check clutch pack clearance of second brake. See **Fig. 19** . Clearance should be .024-.078" (.62-1.98 mm). If clearance is not within specifications, inspect condition of clutch discs. Remove flange snap ring. Remove flange, plates and discs. Note number and location of all components.
12. Check clutch pack clearance of 1st and reverse brake. See **Fig. 20** . Clearance should be .028-.048" (.70-1.22 mm). If clearance is not within specifications, inspect condition of discs.

13. Remove 2nd brake piston sleeve. Remove rear planetary gear snap ring. Remove rear planetary gear, 2nd brake drum, 1st and reverse brake pack and output shaft as an assembly. Remove thrust bearing and race from case. Remove 2nd brake drum assembly.
14. Remove 1st and reverse brake cushion plate, flange, plates and discs. Note number and location of all components. Remove leaf spring from case. Remove brake drum gasket from case.
15. Ensure 1st and reverse brake pistons move smoothly when applying compressed air into case. See **Fig. 21** . Disassemble 1st and reverse brake piston. Install appropriate compressor on spring retainer and compress return spring assembly. Remove snap ring. Remove return spring assembly. Using compressed air, remove 1st and reverse brake piston No. 2. See **Fig. 21** .
16. Insert sleeve remover behind reaction sleeve. Remove reaction sleeve from case. Insert piston remover behind brake piston No. 1. Remove brake piston No. 1 from case. Remove manual valve lever spacer from shaft. Remove pin. Pull shaft out through case and remove lever. Remove 2 oil seals.



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Fig. 19: Measuring 2nd Brake Clearance

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

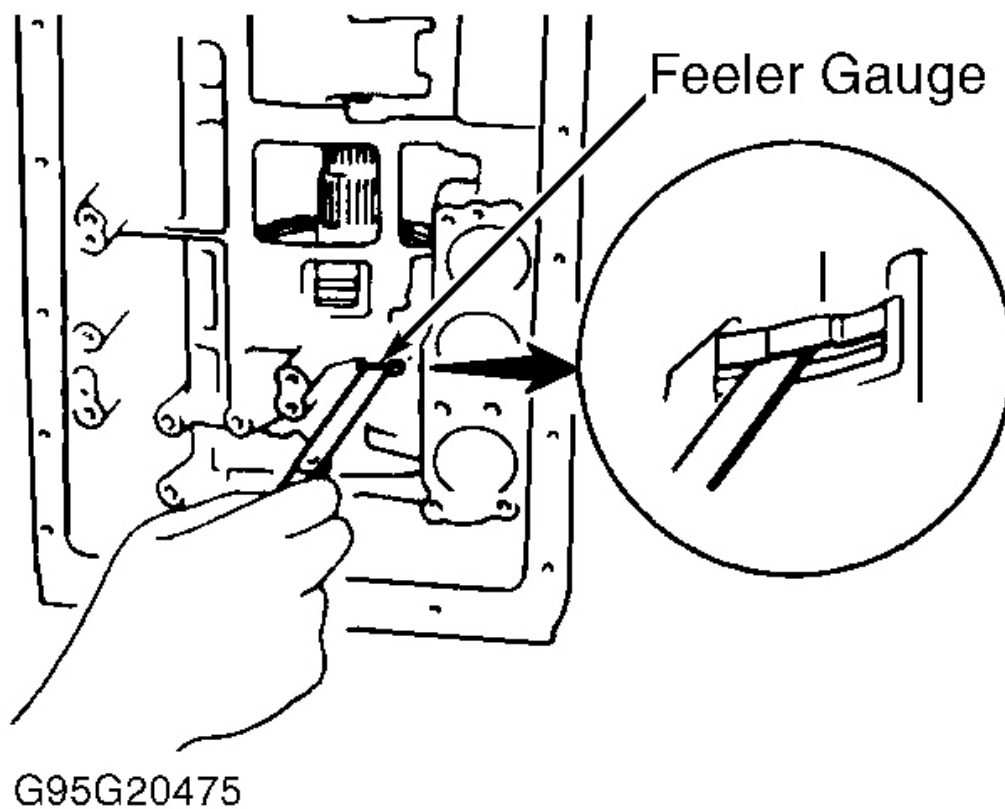
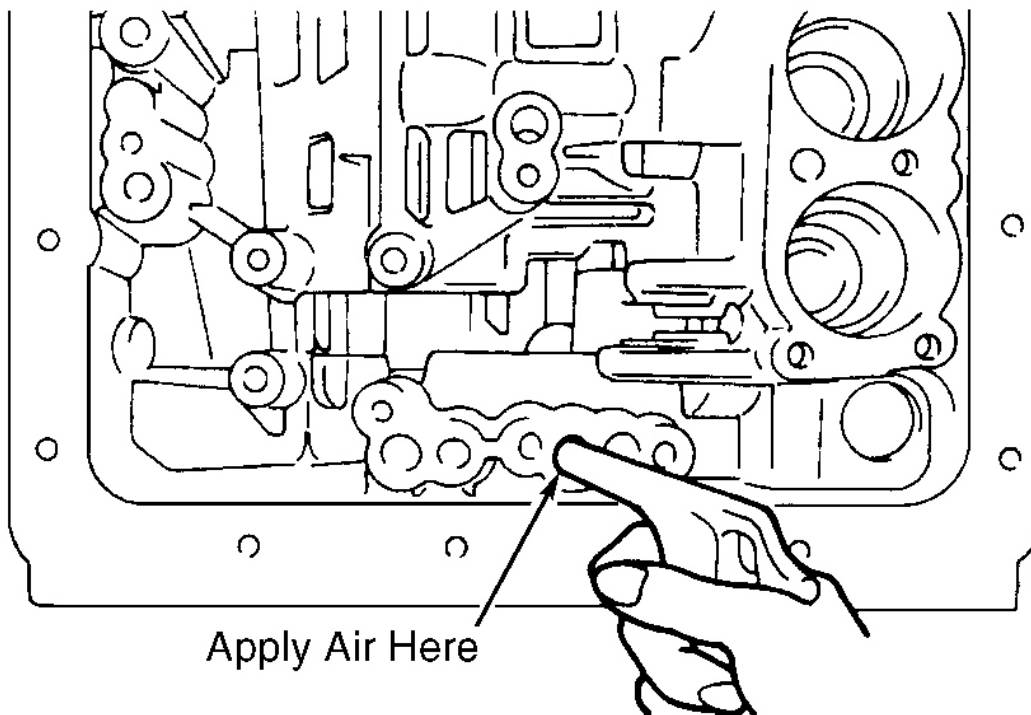


Fig. 20: Measuring 1st & Reverse Brake Clearance
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



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Fig. 21: Checking & Removing 1st & Reverse Brake Pistons
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

COMPONENT DISASSEMBLY & REASSEMBLY

OIL PUMP

Disassembly

1. Remove seal rings from rear of stator shaft. Remove bolts from rear of pump assembly. Remove stator shaft from pump body. See **Fig. 22** .
2. Place reference mark on drive and driven gears for reassembly reference and remove from pump body. If oil seal requires replacement, pry seal from body.

Cleaning & Inspection

1. Clean all components in solvent. Dry with compressed air. Inspect contacting surfaces between body and driven gear for wear. Check gears for wear and body crescent for damage. Check pump gear contacting surface on stator shaft for damage and wear.
2. Measure inside diameter of oil pump body and stator shaft bushings. Measure driven gear-to-housing clearance and gear tip clearance. Using feeler gauge and straightedge, measure gear side clearance

between pump body face and top of gears. See **Fig. 23** -23. See the **OIL PUMP CLEARANCE SPECIFICATIONS** table.

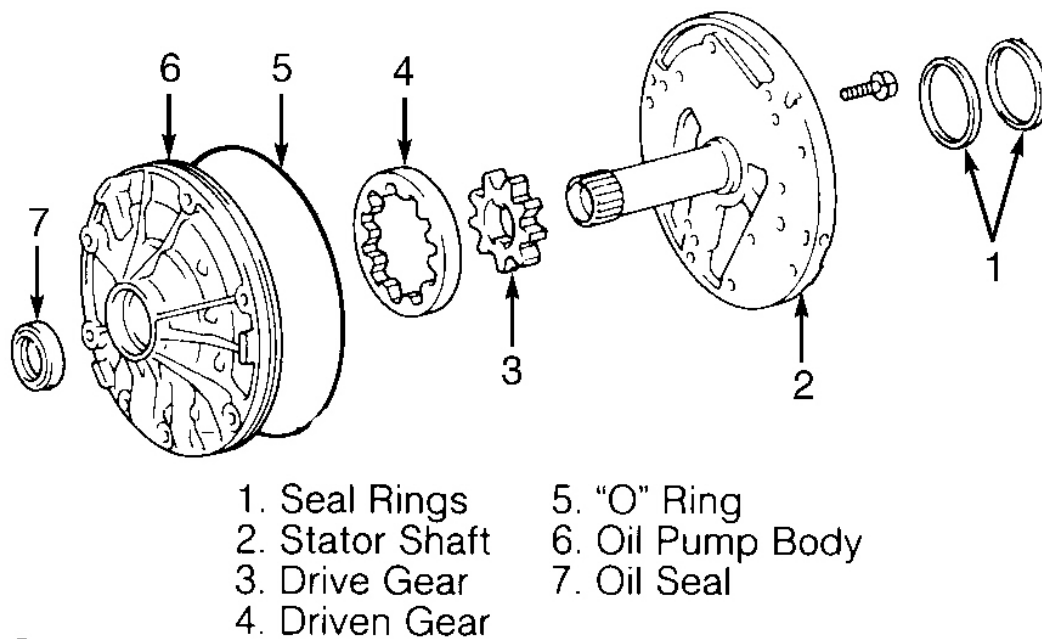
- If clearance(s) are not within specifications, replace worn component(s). Pump gears must be replaced as a matched set. If bushing diameter exceeds specification, oil pump body or stator shaft must be replaced.

OIL PUMP CLEARANCE SPECIFICATIONS

Application	Standard In. (mm)	Maximum In. (mm)
Gear-To-Body	.003-.006 (.07-.15)	.012 (.30)
Gear Tip Clearance	.004-.006 (.11-.14)	.012 (.30)
Gear Side Clearance	.0008-.0020 (.020-.050)	.004 (.10)
Housing Bushing		1.504 (38.19)
Stator Shaft Bushing		
Front		.850 (21.58)
Rear		1.066 (27.08)

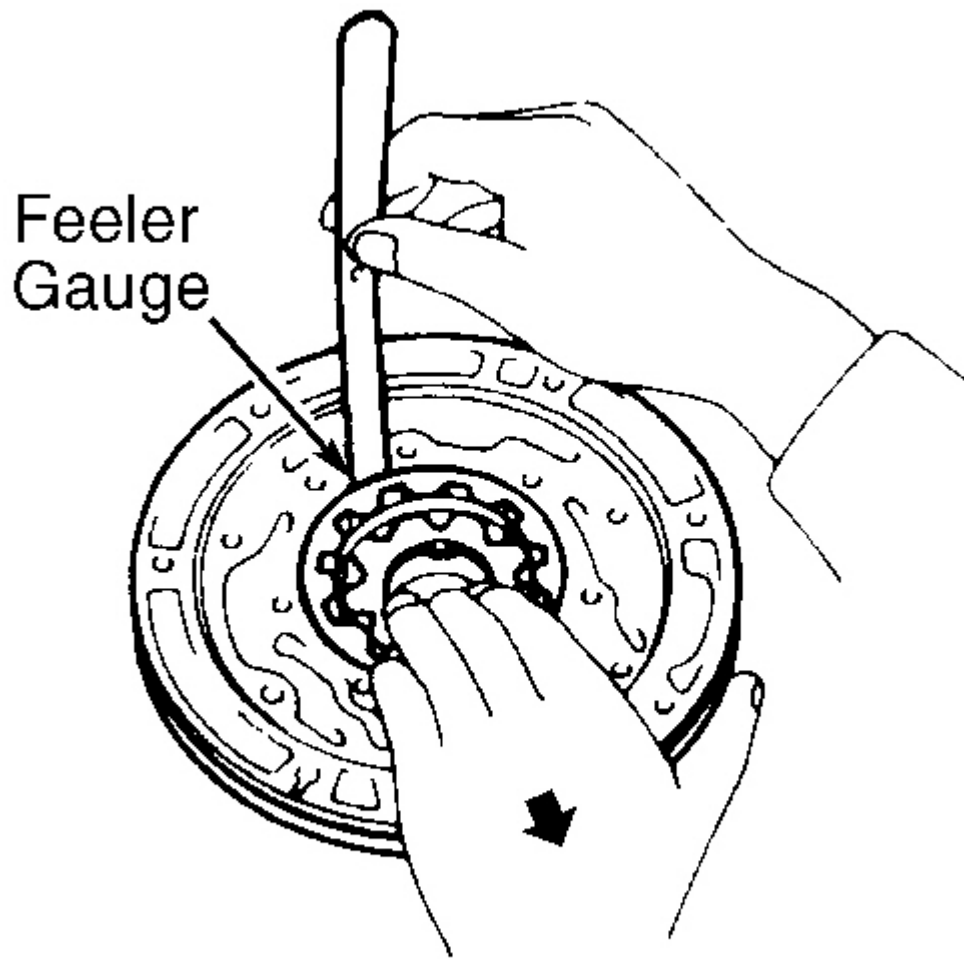
Reassembly

- Install seal until seal is even with outer edge of pump body. Place stator shaft in torque converter while working on pump. Coat all components with ATF.
- Align reference marks on gears during installation. To complete reassembly, reverse disassembly procedure. Tighten bolts to specification. **DO NOT** over expand seal rings during installation. Ensure seal rings move smoothly after installation. Ensure drive gear rotates smoothly with oil pump installed on torque converter.



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Fig. 22: Exploded View Of Oil Pump Assembly
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



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Fig. 23: Measuring Oil Pump Gear-To-Body Clearance
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

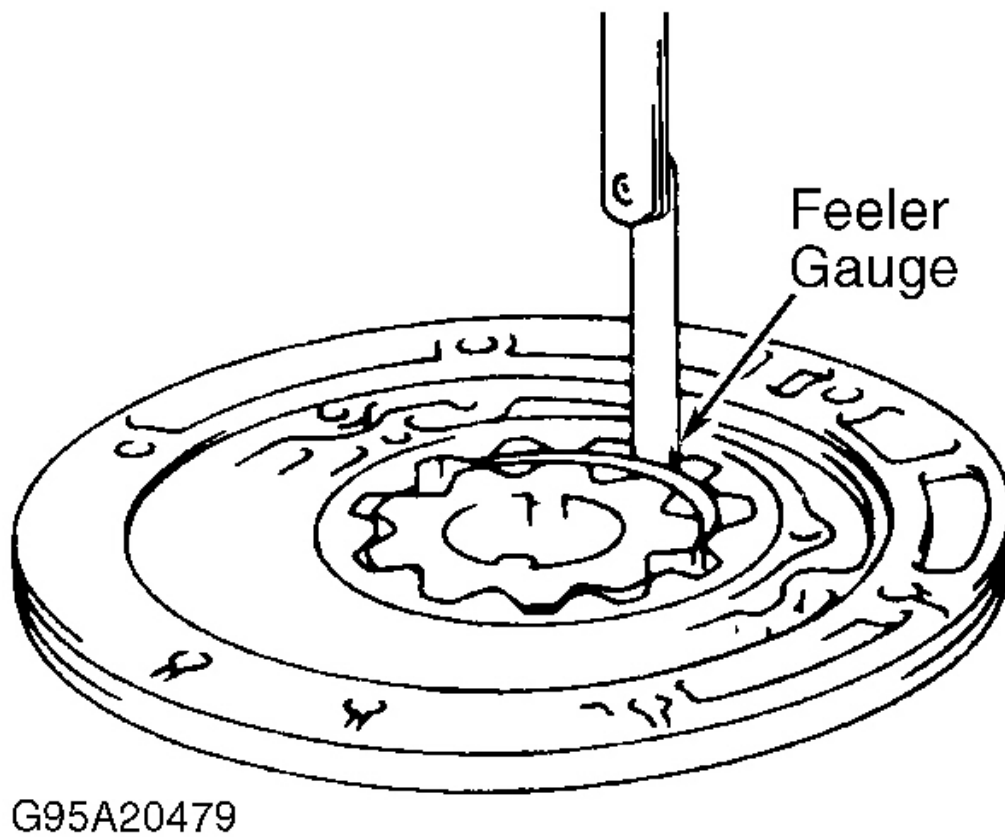


Fig. 24: Measuring Oil Pump Gear Tip Clearance
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

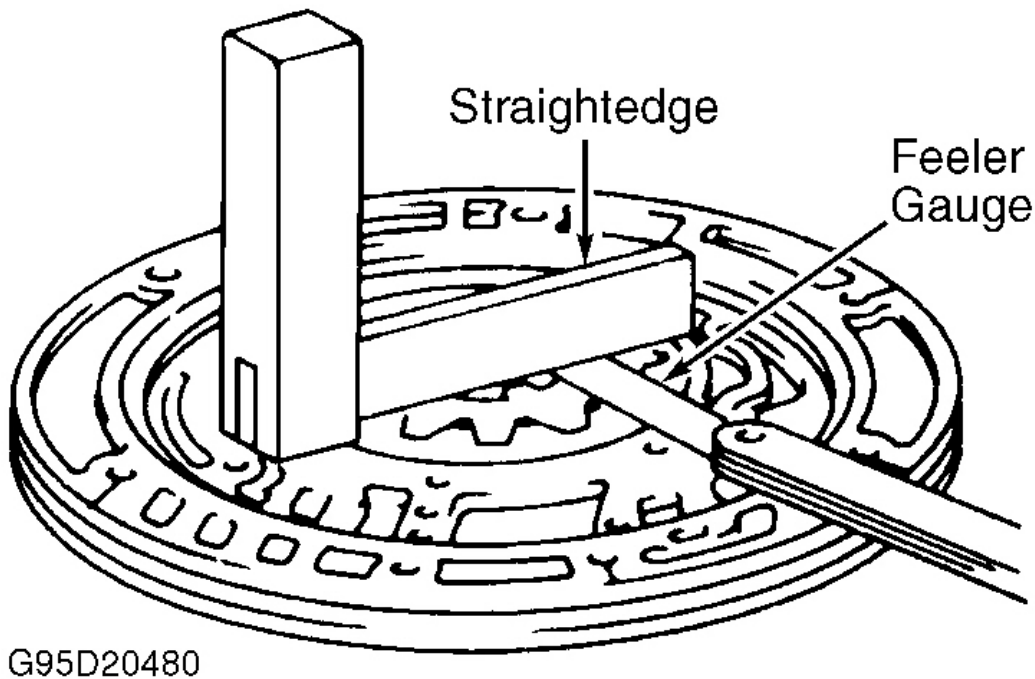


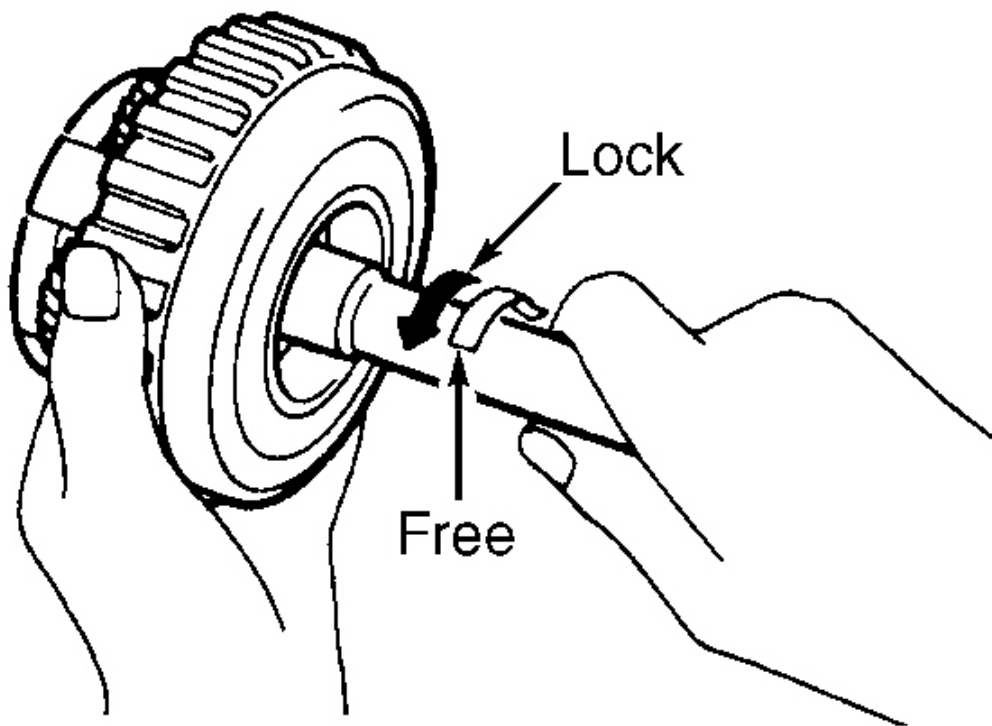
Fig. 25: Measuring Oil Pump Gear Side Clearance

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

OD PLANETARY GEAR, OD CLUTCH & OD ONE-WAY CLUTCH

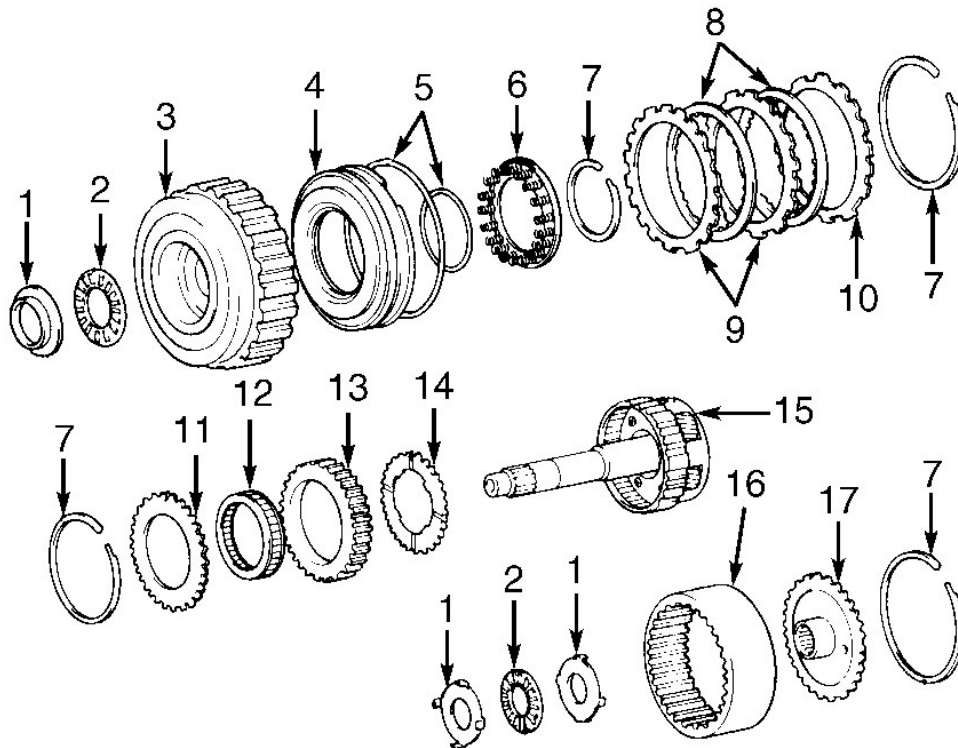
Disassembly

1. One-way clutch operation should be checked prior to disassembly. Hold clutch drum and rotate input shaft clockwise. See **Fig. 26** . Input shaft should rotate freely clockwise and lock counterclockwise.
2. Remove clutch drum from planetary gear. Remove thrust bearing and race from clutch drum. Remove snap ring, flange, discs and plates from clutch drum. Note number and location of components. See **Fig. 27** .



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Fig. 26: Checking OD One-Way Clutch Operation
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



- | | |
|---------------------------|--------------------------------|
| 1. Thrust Race | 10. Flange |
| 2. Thrust Bearing | 11. Retaining Plate |
| 3. OD Clutch Drum | 12. OD One-Way Clutch Assembly |
| 4. OD Clutch Piston | 13. One-Way Clutch Outer Race |
| 5. "O" Ring | 14. Thrust Washer |
| 6. Return Spring Assembly | 15. OD Planetary Gear |
| 7. Snap Ring | 16. OD Planetary Ring Gear |
| 8. Discs | 17. Ring Gear Flange |
| 9. Plates | |

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Fig. 27: Exploded View Of OD Planetary Gear & OD Clutch Assembly
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

- Using appropriate compressor, compress return spring assembly and remove snap ring. Release compressor and remove return spring assembly. Place oil pump on torque converter. Place clutch drum on oil pump. Hold clutch piston and carefully apply air pressure to oil pump port. See **Fig. 28** . Remove OD clutch piston.
- Remove snap ring and ring gear flange from planetary ring gear. Remove bearing races and thrust bearing from rear of planetary gear. Remove snap ring, retaining plate, one-way clutch assembly and thrust washer from planetary gear. Remove one-way clutch from outer race.

Inspection

1. Clean all components (except discs) with solvent. Dry with compressed air. Inspect plates and discs for flaking or burnt areas. Ensure check ball does not allow air to bleed through piston.
2. Measure inside diameter of clutch drum bushing and planetary gear bushing. Maximum diameter for OD clutch drum bushing is 1.067" (27.11 mm). Maximum diameter for OD planetary gear bushing is .444" (11.27 mm). Replace components if damaged or not within specifications.
3. Measure planetary pinion gear thrust clearance. Standard clearance should be .008-.024" (.20-.60 mm). Maximum clearance is .039" (1.00 mm). If clearance is not within specifications, replace planetary gear assembly. Check OD clutch return spring free length. Include spring seat in measurement. Standard free length is .622" (15.80 mm).

Reassembly

CAUTION: Clutch discs should be soaked in ATF for 2 hours prior to installation. Coat all parts with ATF prior to installation. Coat thrust bearings and races with petroleum jelly prior to installation.

1. Position planetary gear with input shaft pointing upward. Install thrust washer in planetary gear with grooved side facing upward. Install one-way clutch into outer race with flanged side facing upward. See **Fig. 29** -29.
2. Install one-way clutch assembly on planetary gear. Install retaining plate and snap ring. Install race on back of planetary gear. Race tabs must be engaged in planetary gear.
3. Install ring gear flange and snap ring . Install thrust bearing and race in planetary ring gear. Race tabs must be engaged in ring gear. Coat "O" rings with ATF and install on clutch piston. Carefully install clutch piston in clutch drum. Install return spring assembly. Using appropriate compressor, compress return spring assembly and install snap ring. Ensure ring is fully seated.

CAUTION: Ensure ends of snap ring do not align with claw area on spring retainer of return spring assembly.

4. With clutch drum open area facing upward, install plates and discs, starting with plate. Install flange with flat end facing toward disc. Install snap ring. Place oil pump on torque converter. Place clutch drum on oil pump. Measure piston stroke while applying 57-114 psi (4-8 kg/cm²) to oil pump port. See **Fig. 28** . Piston stroke should be .073-.085" (1.85-2.15 mm). If piston stroke is not within specifications, check for incorrectly assembled components. Recheck piston stroke.
5. If piston stroke exceeds specification, install different thickness flange. Flanges are available in thicknesses of .122" (3.09 mm) to .142" (3.60 mm) in .004" (.10 mm) increments.
6. Remove clutch assembly from oil pump. Install thrust bearing and race in clutch drum. Align tabs of clutch discs. Install clutch drum on planetary gear. Hold clutch drum and rotate input shaft clockwise. Input shaft should rotate freely clockwise and lock counterclockwise.

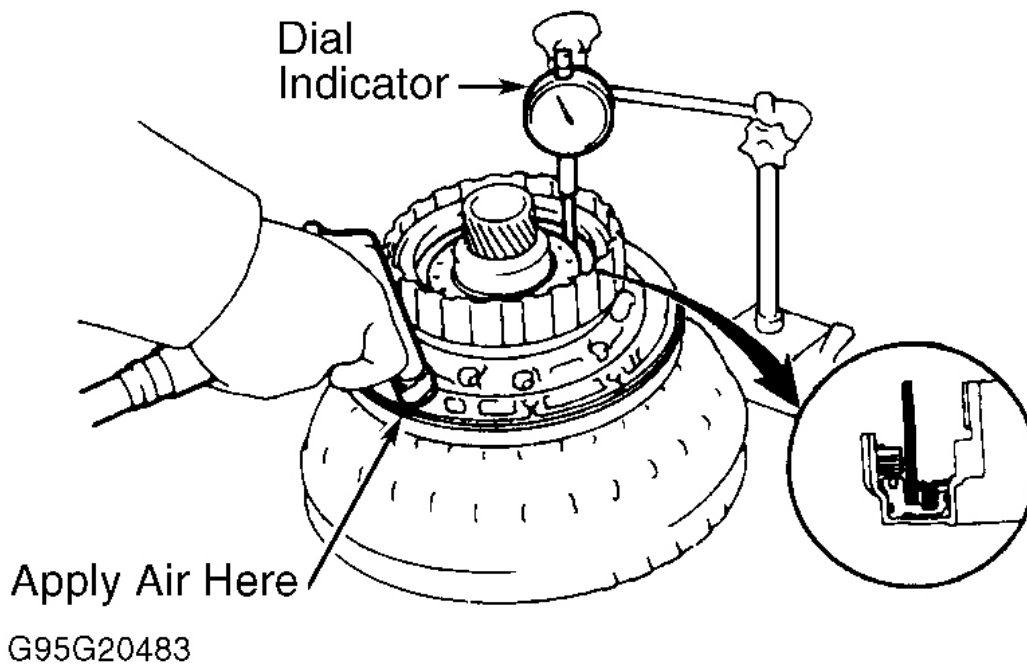


Fig. 28: Removing OD Clutch Piston & Measuring Stroke
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

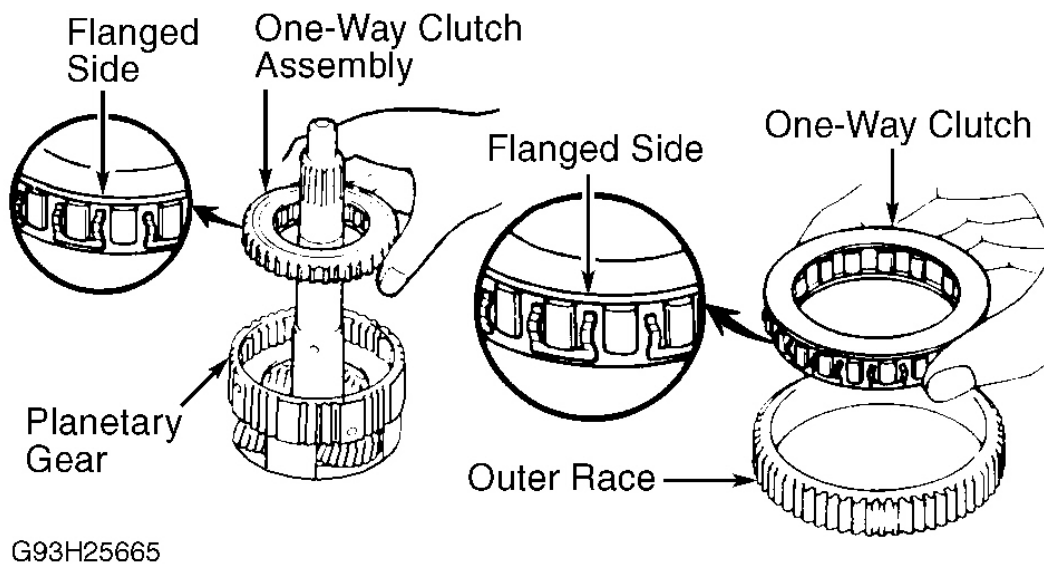


Fig. 29: Installing Overdrive One-Way Clutch

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

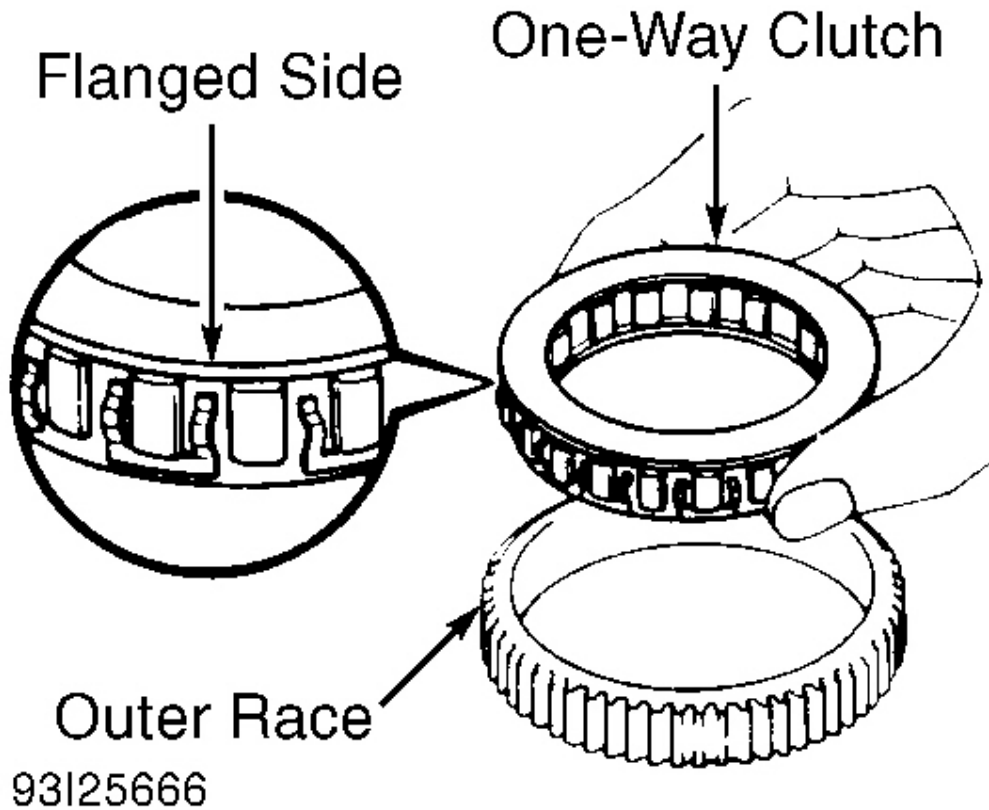


Fig. 30: Installing Overdrive One-Way Clutch

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

OD SUPPORT & BRAKE ASSEMBLY

Disassembly

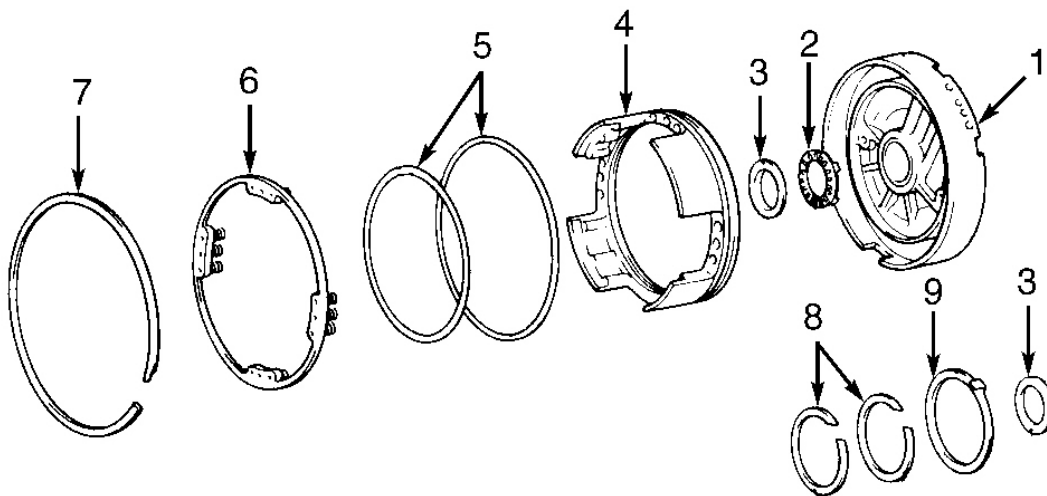
Remove thrust bearing, thrust washer and bearing races from OD support. Using appropriate compressor, compress return spring assembly and remove snap ring. Place support on OD clutch assembly. Hold brake piston in a level position. Carefully apply air pressure to piston supply port and remove piston. Remove oil seal rings from rear of support. See **Fig. 31**.

Inspection

Clean all components with solvent. Dry with compressed air. Inspect components for damage. Replace as necessary. Measure free length of return spring assembly. Length should be .732" (18.60 mm).

Reassembly

1. To reassemble components, reverse disassembly procedure. Coat seal rings with ATF prior to installation. **DO NOT** over expand seal rings during piston installation. Ensure seal rings move smoothly after installation.
2. Install NEW "O" rings on OD brake piston. Use care not to damage "O" rings during piston installation. Install snap ring in support and ensure end of snap ring is not aligned with cutout portion of support.
3. Ensure tabs on all races are aligned with areas on support. Coat races and thrust bearing with petroleum jelly prior to installation. Place support on OD clutch assembly and apply air pressure to piston supply port. Ensure piston operates smoothly in support.



1. OD Support Assembly
2. Thrust Bearing
3. Thrust Race
4. OD Brake Piston
5. "O" Ring

6. Return Spring Assembly
7. Snap Ring
8. Seal Ring
9. Thrust Washer

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Fig. 31: Exploded View Of OD Support & Brake Assembly
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

DIRECT CLUTCH

Disassembly

1. Remove direct clutch drum from forward clutch assembly. Remove snap ring from clutch drum. Remove flange, discs and plates. Note number and location of components. Note location of all clutch pack components. See **Fig. 32**.
2. Using appropriate compressor, compress return spring assembly and remove snap ring. Place clutch drum

on OD support and apply air pressure to piston supply port and remove clutch piston. See **Fig. 33** .

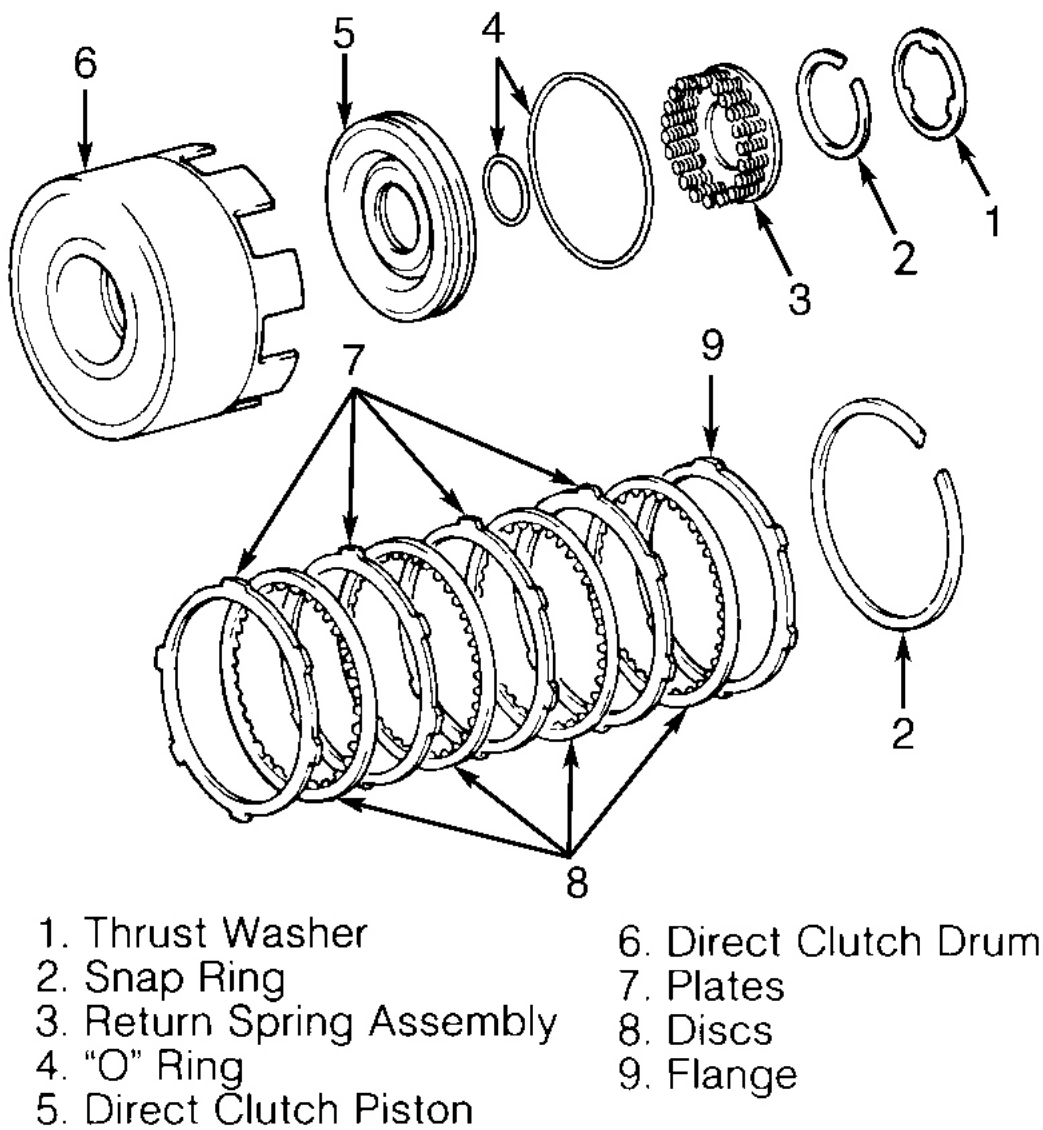
Inspection

1. Clean all components (except discs) with solvent. Dry with compressed air. Inspect plates and discs for flaking or burnt areas.
2. Ensure check ball is free in clutch piston. Apply air pressure to the check ball area. Ensure that check ball does not allow air to bleed through the piston. Measure free length of return spring assembly. Length should be .780" (19.80 mm).
3. Measure the inside diameter of the clutch drum bushing. Inside bushing diameter should be 2.124" (53.97 mm). Replace clutch drum if bushing diameter exceeds specification.

CAUTION: Clutch discs should be soaked in ATF for 2 hours prior to installation.

Reassembly

1. Coat "O" rings with ATF. To reassembly components, reverse disassembly procedure. Ensure return spring assembly snap ring is fully seated and ring ends do not align with claw area on spring retainer of return spring assembly.
2. With clutch drum open area facing upward, install plates and discs, starting with a plate and then alternating with a disc. Install appropriate amount of plates and discs.
3. Install flange with flat end facing toward disc. Place clutch drum on OD support. Measure piston stroke with a dial indicator while applying 57-114 psi (4-8 kg/cm²) to the piston supply port. See **Fig. 33** .
4. Piston stroke should be .054-.066" (1.37-1.67 mm). If piston stroke is not within specifications, check for incorrectly assembled components. Recheck piston stroke measurement.
5. If piston stroke is not within specifications, install different thickness flange. Flanges are available in thicknesses of .118" (2.99 mm) to .146" (3.70 mm) in .004" (.10 mm) increments.



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Fig. 32: Exploded View Of Direct Clutch Assembly
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

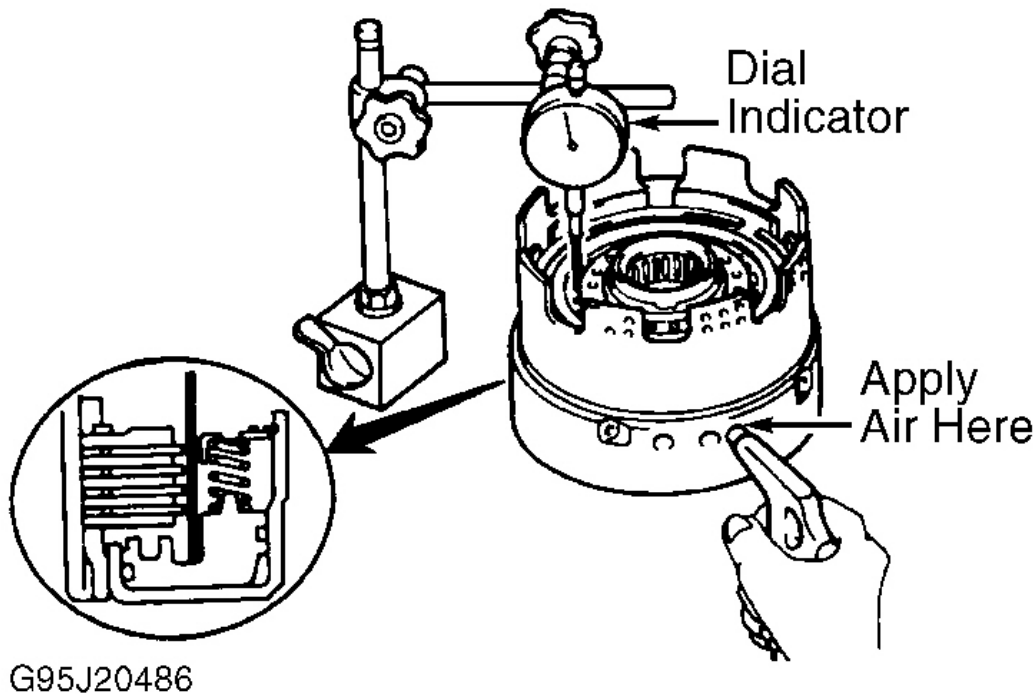


Fig. 33: Removing Direct Clutch Piston & Measuring Stroke
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

FORWARD CLUTCH

Disassembly

1. Separate forward clutch assembly from direct clutch. Remove thrust bearings and race from forward clutch drum. Remove snap ring from clutch drum. Remove flange, discs, plates and cushion plate. See **Fig. 34** . Note number and location of components.
2. Using appropriate compressor, compress return spring assembly and remove snap ring. Place OD support on wooden blocks and install forward clutch in OD support. Apply air pressure to piston supply port and remove clutch piston. See **Fig. 35** . Remove "O" rings from clutch piston. Remove oil seal rings.

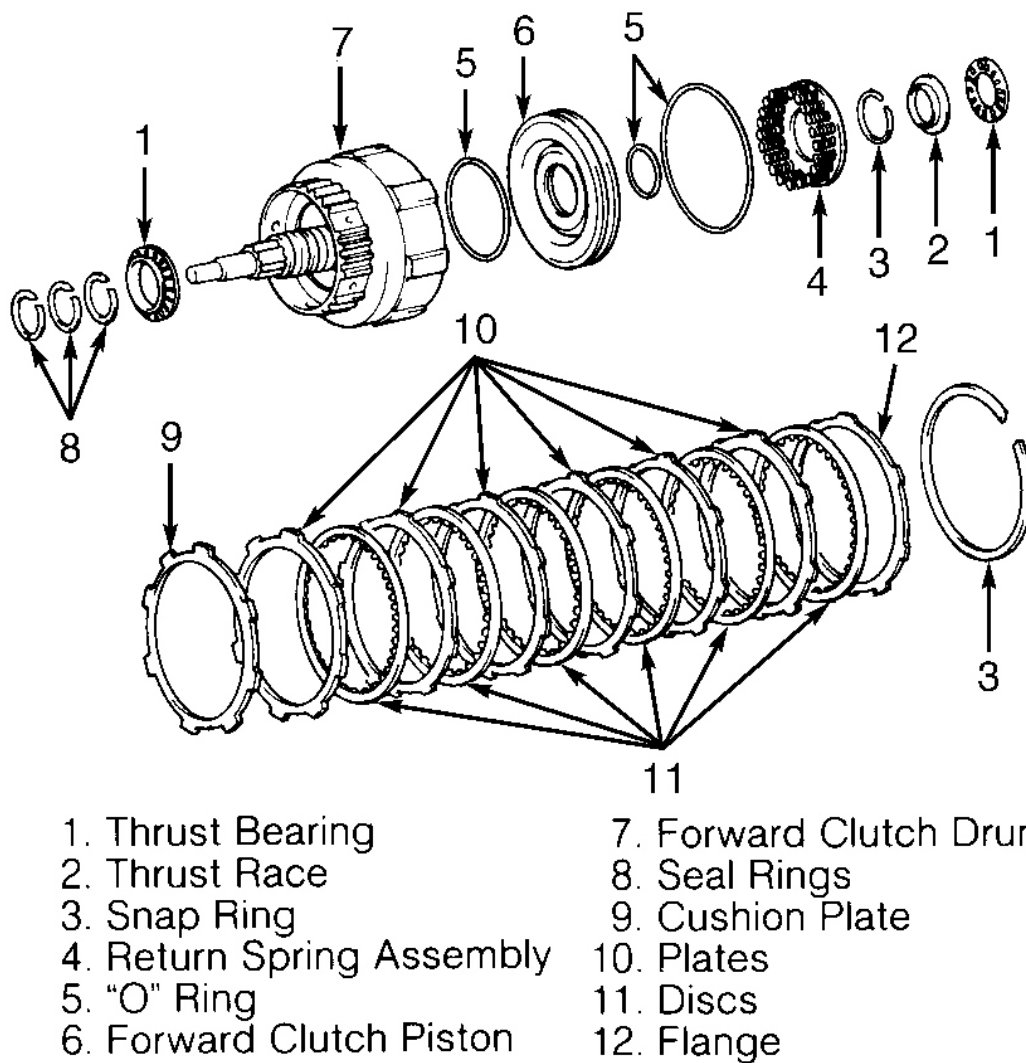
Inspection

Clean all components (except discs) with solvent. Dry with compressed air. Inspect plates and discs for flaking or burnt areas. Ensure check ball is free in clutch piston. Apply air pressure to check ball area. Ensure check ball does not allow air to bleed through piston. Measure inside diameter of clutch drum bushing. Replace clutch drum if bushing diameter exceeds .948" (24.08 mm). Measure free length of return spring assembly. Length should be .455" (11.55 mm).

CAUTION: Clutch disc should be soaked in ATF for 2 hours prior to installation.

Reassembly

1. Coat "O" rings with ATF. To reassemble components, reverse disassembly procedure. Ensure return spring assembly snap ring is fully seated and ends do not align with claw area on spring retainer of return spring assembly.
2. Install cushion plate with rounded end toward inside of clutch drum. Install plates and discs, starting with a plate. Install appropriate amount of plates and discs. See **Fig. 34**.
3. Install flange with rounded edge toward disc. Install snap ring. Ensure end gap of snap ring is not aligned with forward clutch drum cut out portion. Place clutch drum on overdrive support. Measure piston stroke while applying 57-114 psi (4-8 kg/cm²) to piston supply port. See **Fig. 35**.
4. Piston stroke should be .114-.169" (2.90-4.29 mm). If piston stroke is not within specifications, install different thickness flange. Install thrust bearing and race. Align tabs of clutch discs.



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Fig. 34: Exploded View Of Forward Clutch
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

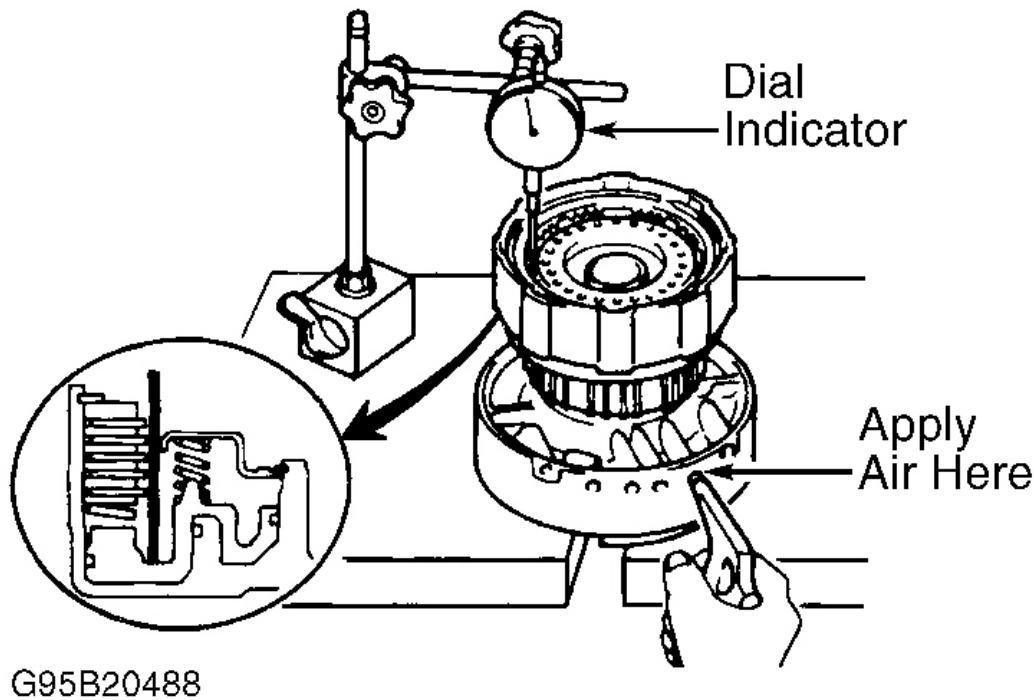


Fig. 35: Removing Forward Clutch Piston & Measuring Stroke
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

FRONT PLANETARY GEAR

Disassembly & Inspection

Remove thrust bearings and races from planetary gear and front planetary ring gear. See **Fig. 36**. Note direction of race installation. Measure front planetary ring gear bushing inside diameter. Replace planetary ring gear if bushing diameter exceeds .948" (24.08 mm). Measure planetary pinion gear thrust clearance. Clearance should be .008-.024" (.20-.60 mm). Maximum clearance is .039" (1.00 mm). If clearance is not within specifications, replace planetary gear assembly.

Reassembly

Coat thrust bearings and races with petroleum jelly. Install thrust bearings and races, ensuring tabs on race align with planetary gear. Install races in planetary ring gear and planetary gear with the flat side against the gear surface. See **Fig. 36**.

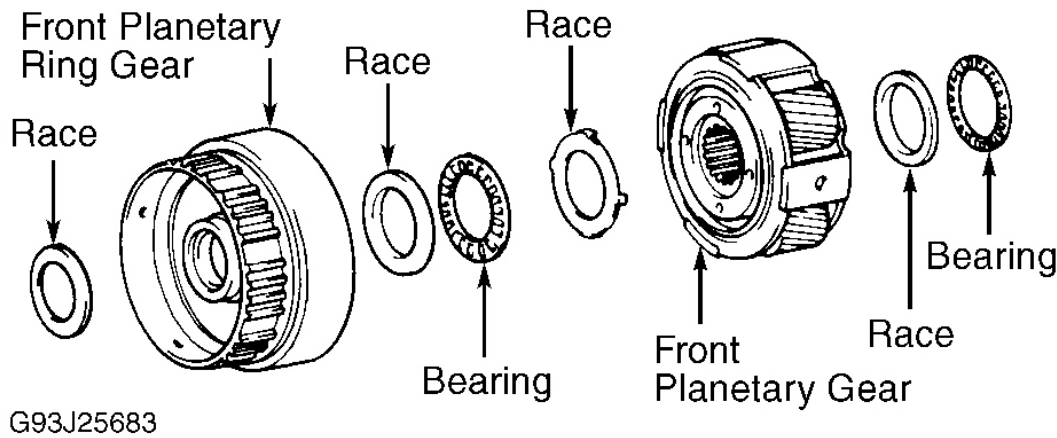


Fig. 36: Exploded View Of Front Planetary Gear
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

PLANETARY SUN GEAR & NO. 1 ONE-WAY CLUTCH

Disassembly

1. Hold sun gear drum and check rotation of one-way clutch. Clutch should turn freely clockwise and lock counterclockwise. See **Fig. 37** -37. Remove one-way clutch assembly. Note direction of clutch installation.
2. Remove thrust washer and oil seal rings from sun gear drum and sun gear. Support sun gear drum on wooden block and remove snap ring from sun gear. Separate sun gear from sun gear drum. See **Fig. 39** .

Inspection

Clean components in solvent. Dry with compressed air. Measure inside diameter of sun gear bushing. Replace sun gear if diameter exceeds .948 (24.08 mm).

Reassembly

To reassemble components, reverse disassembly procedure. See **Fig. 39** . Ensure ends of oil seal rings are properly locked together and seal rings move smoothly. Install one-way clutch assembly in proper direction. Check one-way clutch operation. See **Fig. 37** -37.

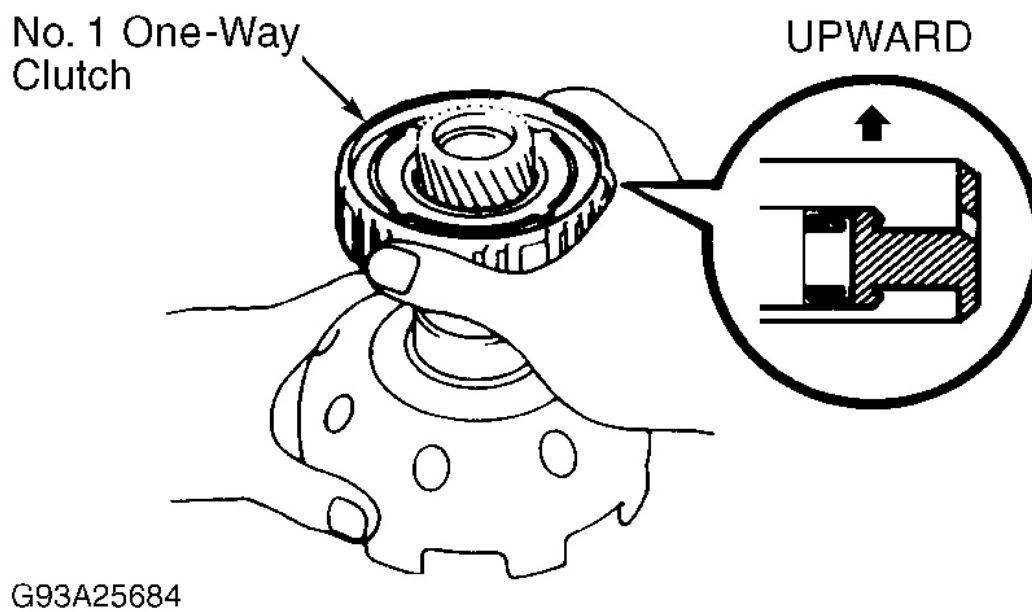


Fig. 37: Installing & Checking No. 1 One-Way Clutch
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

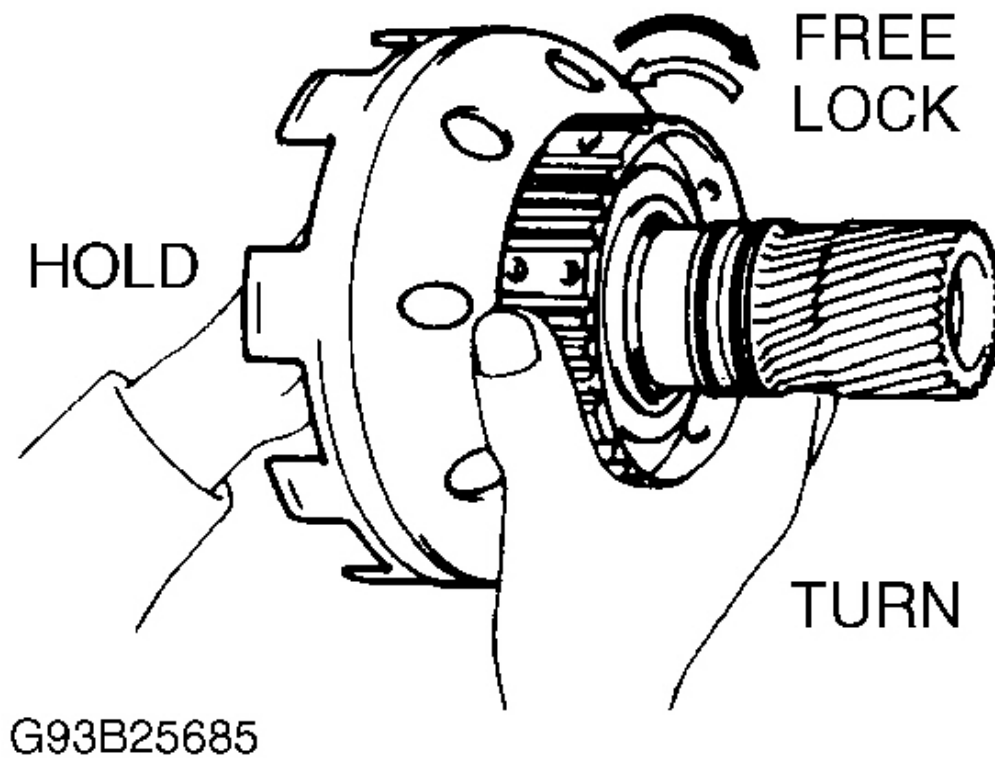
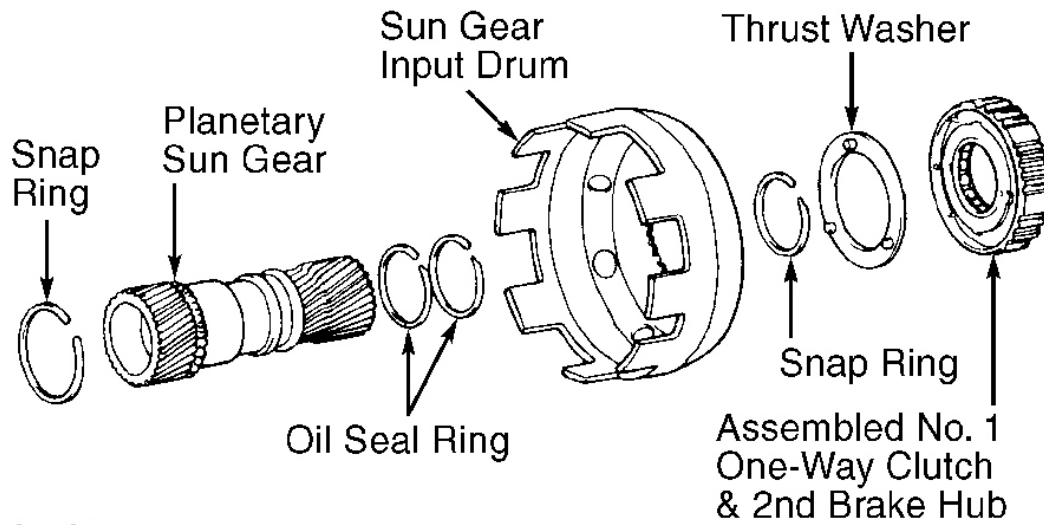


Fig. 38: Installing & Checking No. 1 One-Way Clutch
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



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Fig. 39: Exploded View Of Planetary Sun Gear & No. 1 One-Way Clutch
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

2ND COAST BRAKE PISTON

Disassembly

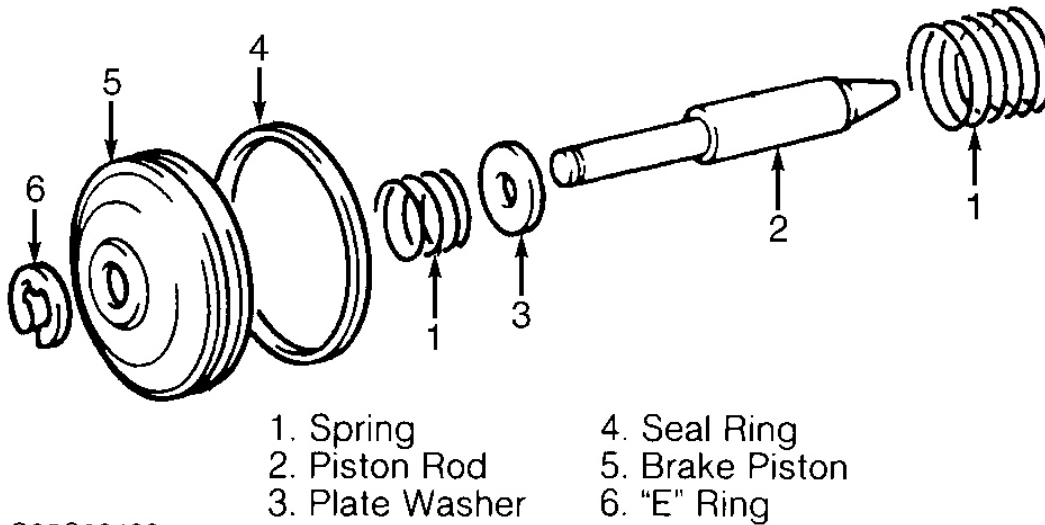
Remove "E" ring from piston rod. Remove 2nd coast brake piston, spring and retainer from piston rod. Remove oil seal ring. See **Fig. 40**.

Inspection

Replace brake band if lining is peeled off or discolored or printed numbers are defaced. Before assembling NEW band, soak band in ATF for at least 2 hours. If brake band is serviceable but piston rod stroke is not within specification, select replacement piston rod.

Reassembly

Install oil seal ring on piston. Install retainer, spring and piston to piston rod. Install "E" ring. See **Fig. 40**.



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Fig. 40: Exploded View Of 2nd Coast Brake Piston
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

2ND BRAKE

Disassembly

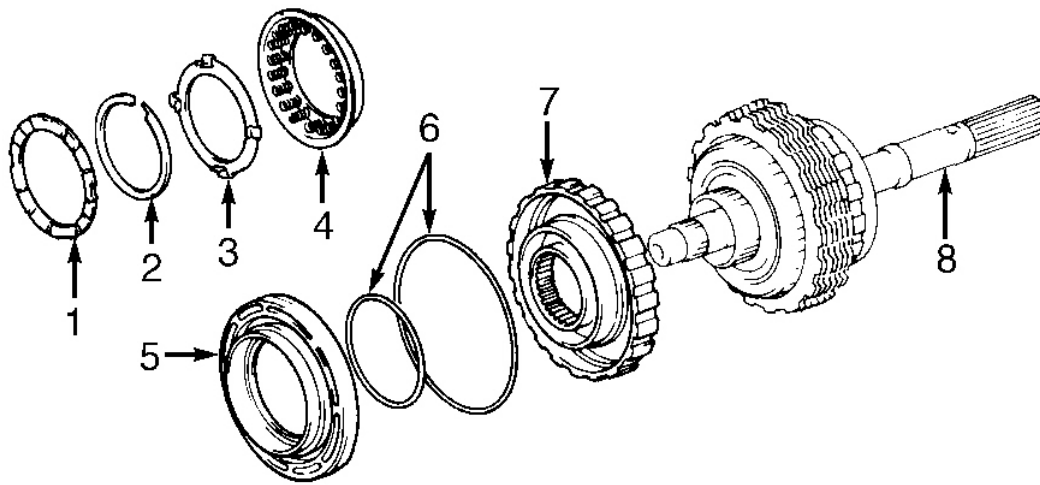
Remove thrust washer. Using appropriate compressor, compress return spring assembly. Remove snap ring. Remove spring seat and return spring assembly. See **Fig. 41** . Hold 2nd brake piston, apply compressed air to 2nd brake drum to remove piston.

Inspection

Check all parts for wear and damage. Soak NEW discs in ATF for 2 hours before installation. Measure free length of return spring assembly. Free length should be .593" (15.05 mm).

Reassembly

Coat NEW "O" rings with ATF and install. Carefully press 2nd brake piston into 2nd brake drum. Install return spring assembly and spring seat. See **Fig. 41** . Compress return spring assembly and install snap ring. Apply compressed air to 2nd brake drum. Ensure 2nd brake piston moves smoothly. Install thrust washer. Ensure cutout portions of thrust washer match teeth of spring retainer.



- | | |
|---------------------------|------------------------|
| 1. Thrust Washer | 5. Second Brake Piston |
| 2. Snap Ring | 6. "O" Ring |
| 3. Return Spring Seat | 7. Second Brake Drum |
| 4. Return Spring Assembly | 8. Output Shaft |

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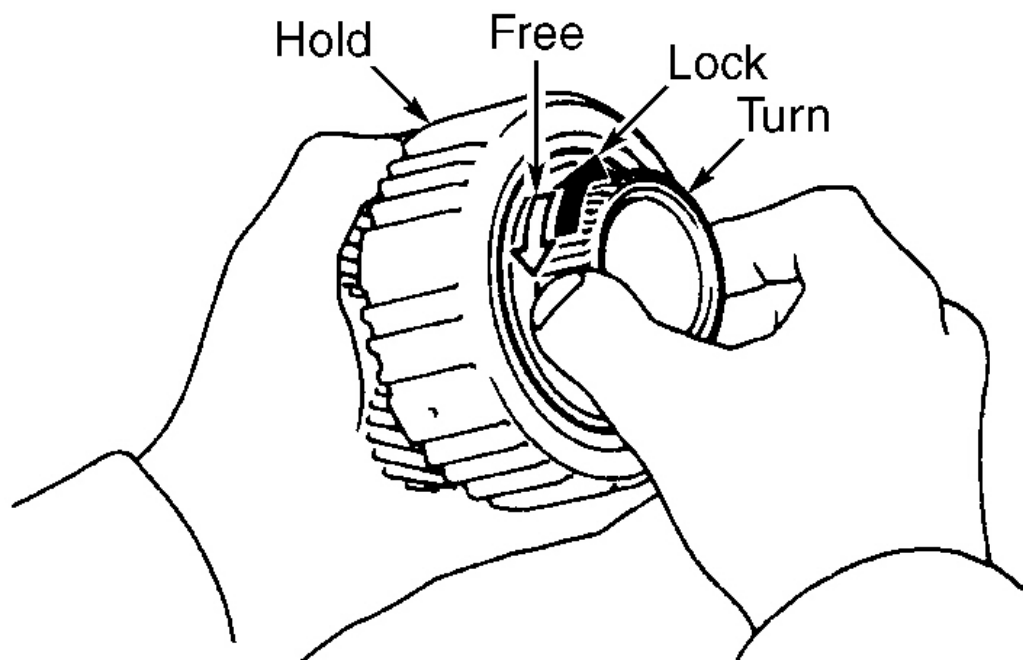
Fig. 41: Exploded View Of 2nd Brake Assembly

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

REAR PLANETARY GEAR, NO. 2 ONE-WAY CLUTCH & 1ST & REVERSE BRAKE

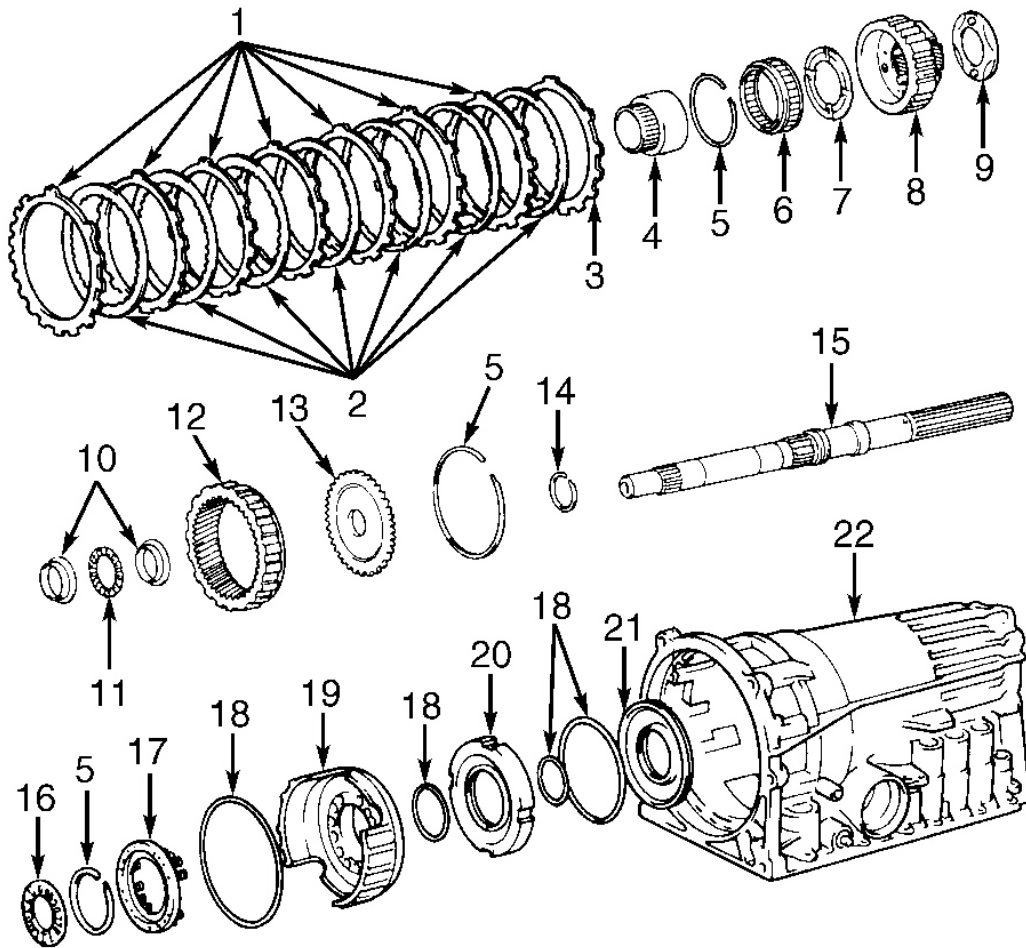
Disassembly

1. Remove output shaft from rear planetary gear. Remove rear planetary gear from rear planetary ring gear. Hold planetary gear and check operation of No. 2 one-way clutch. Clutch should turn freely counterclockwise and lock clockwise. See **Fig. 42** . Remove No. 2 one-way clutch inner race from rear planetary gear.
2. Remove snap ring and No. 2 one-way clutch from planetary gear. Note direction of one-way clutch in rear planetary gear. Remove No. 1 and 2 thrust washers from rear planetary gear. Remove bearing and races. Remove snap ring and ring gear flange from ring gear. See **Fig. 43** .
3. Remove 1st and reverse brake flange, plates and discs. Note number and location of all components. Ensure 1st and reverse brake pistons move smoothly when applying compressed air into case. See **Fig. 21** . Disassemble 1st and reverse brake piston.
4. Install appropriate compressor on spring retainer, and compress return spring assembly. Remove snap ring. Remove return spring assembly. Using compressed air, remove 1st and reverse brake piston No. 2. See **Fig. 21** . Insert appropriate sleeve remover behind reaction sleeve. Remove reaction sleeve from case. Using compressed air, remove brake piston No. 1 from case.



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Fig. 42: Checking No. 2 One-Way Clutch Operation
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



- | | |
|------------------------------|------------------------------|
| 1. Plates | 12. Rear Planetary Ring Gear |
| 2. Discs | 13. Ring Gear Flange |
| 3. Flange | 14. Seal Ring |
| 4. One-Way Clutch Inner Race | 15. Output Shaft |
| 5. Snap Ring | 16. Thrust Bearing With Race |
| 6. No. 2 One-Way Clutch | 17. Return Spring Assembly |
| 7. Thrust Washer No. 2 | 18. "O" Ring |
| 8. Rear Planetary Gear | 19. Brake Piston No. 2 |
| 9. Thrust Washer No. 1 | 20. Brake Reaction Sleeve |
| 10. Thrust Race | 21. Brake Piston No. 1 |
| 11. Thrust Bearing | 22. Transmission Case |

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Fig. 43: Exploded View Of Rear Planetary Gear & 1st & Reverse Brake Components
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

Inspection

Clean all components with solvent. Dry with compressed air. Inspect all components for damage. Replace if necessary. Measure planetary pinion gear thrust clearance. Standard clearance should be .008-.024" (.20-.60 mm). Maximum clearance is .039" (1.00 mm). If clearance is not within specifications, replace planetary gear assembly. Measure free length of return spring assembly. Include spring seat in measurement. Free length should be .515" (13.09 mm).

Reassembly

1. To reassemble, reverse disassembly procedure. Coat all thrust bearings and races with petroleum jelly. When installing thrust bearings and races in ring gear, flat side of race must be placed against ring gear.
2. Install 1st and reverse brake piston No. 1 to reaction sleeve. Install piston No. 1 with reaction sleeve on piston No. 2. Align piston No. 2 teeth into proper grooves. Carefully press brake pistons No. 1 and No. 2 into case. Position return spring assembly on piston No. 2. Using appropriate spring compressor, compress return spring assembly.
3. Install snap ring. Ensure snap ring end-gap is not aligned with spring retainer claw. Ensure 1st and reverse brake pistons move smoothly by applying compressed air to case. See **Fig. 21**.
4. Ensure No. 1 and 2 thrust washer tangs align with cutout area of planetary gear. Install No. 2 one-way clutch with the open ends facing upward.
5. Rotate one-way clutch inner race counterclockwise during installation into rear planetary gear. Ensure No. 2 one-way clutch turns freely counterclockwise and locks clockwise. See **Fig. 42**.
6. Install rear planetary gear on rear planetary ring gear. Install oil seal ring. **DO NOT** spread oil seal ring too much. After installing oil seal ring, ensure seal ring rotates smoothly. Install output shaft into rear planetary gear assembly.

CONTROL VALVE ASSEMBLY

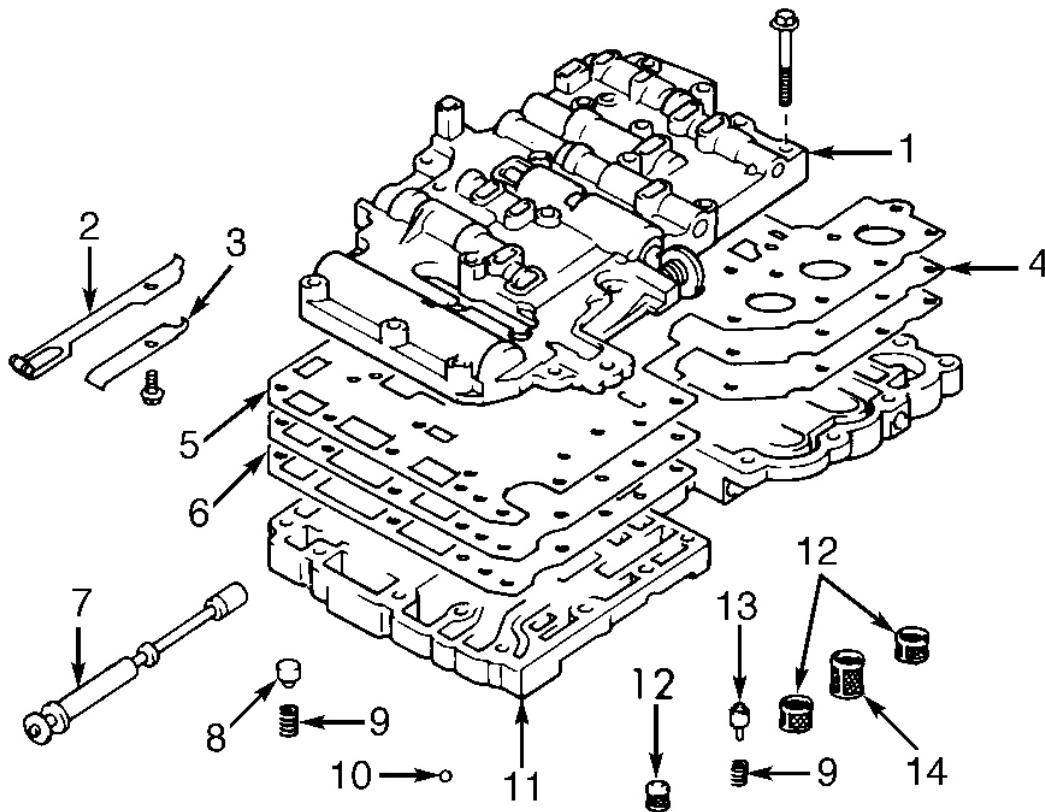
CAUTION: All valve body components must be installed in original location. Lay all components in sequence during removal for reassembly reference. Note diameter and ball location. Throttle pressure is changed according to number of adjusting rings. When assembling valve body, install same number of adjusting rings as removed.

Disassembly & Reassembly

1. Remove detent spring cover, detent spring and manual valve from control valve assembly. See **Fig. 44**. Remove 25 lower valve body-to upper valve body bolts. See **Fig. 45**. Note bolt length and location for reassembly reference.
2. Separate upper valve body and valve body plate from lower valve body. Remove gaskets. See **Fig. 44**. To reassemble valve assembly, reverse disassembly procedure.
3. Ensure proper bolt length is used in correct location. Length of bolt "A" is 1.50" (38.0 mm). Length of bolt "B" is .79" (20.0 mm). Length of bolt "C" is 1.10" (28.0 mm). See **Fig. 45**. Tighten bolts to 57 INCH lbs. (6.4 N.m).

CAUTION: DO NOT allow valve body plate to separate from upper valve body during

removal or check balls and strainers may fall out.



- | | |
|----------------------------|---------------------------|
| 1. Upper Valve Body | 8. Check Valve |
| 2. Detent Spring | 9. Spring |
| 3. Detent Spring Cover | 10. Check Ball |
| 4. Valve Body Plate | 11. Lower Valve Body |
| 5. Valve Body Gasket No. 1 | 12. Solenoid Oil Strainer |
| 6. Valve Body Gasket No. 2 | 13. Pressure Relief Valve |
| 7. Manual Valve | 14. Throttle Oil Strainer |

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Fig. 44: Exploded View Of Control Valve Assembly
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

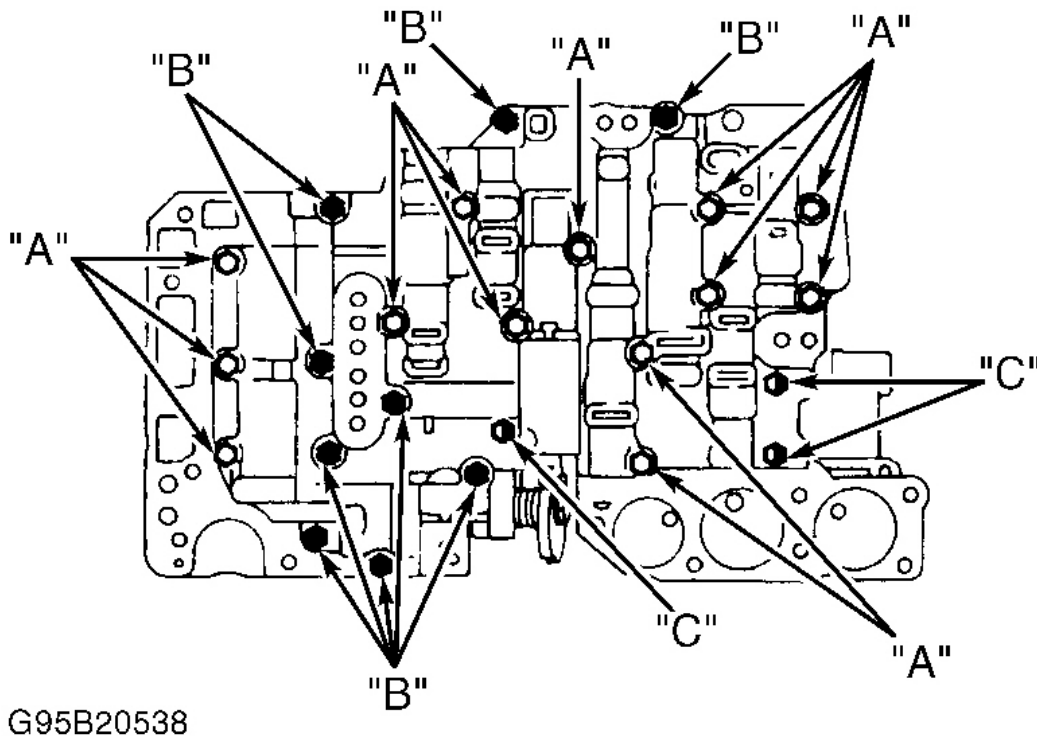


Fig. 45: Identifying Control Valve Assembly Bolt Length
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

UPPER VALVE BODY

CAUTION: All valve body components must be installed in original location. Lay all components in sequence during removal for reassembly reference. Note diameter and check ball location.

NOTE: Valves may be held in with keys, seats, plugs or pins. Remove components and note locations. Arrange parts in order for reassembly reference.

Disassembly

1. Remove upper valve body from lower valve body. See **DISASSEMBLY & REASSEMBLY** under **CONTROL VALVE ASSEMBLY**. Remove 2 valve body gaskets and plate from upper valve body.
2. Note location and diameter of check balls for reassembly reference. Remove check balls and strainer from upper valve body. Note location of keys, seats, pin and stopper in upper valve body. Remove springs and valves, noting location. See **Fig. 46** -46.

Inspection

1. Clean all parts in solvent. Dry with compressed air. Ensure all valve body passages are clear. Ensure strainer is not damaged or clogged. Inspect valves for scoring or roughness.
2. Ensure valves slide freely in bores. Inspect valve springs for damage, squareness and collapsed coils. Measure spring free length. Replace spring if not within specification. See UPPER VALVE BODY SPRING SPECIFICATIONS table. Ensure valve body springs correspond with appropriate valve. Ensure keys, seats, plugs, pins and strainer are installed in appropriate locations.

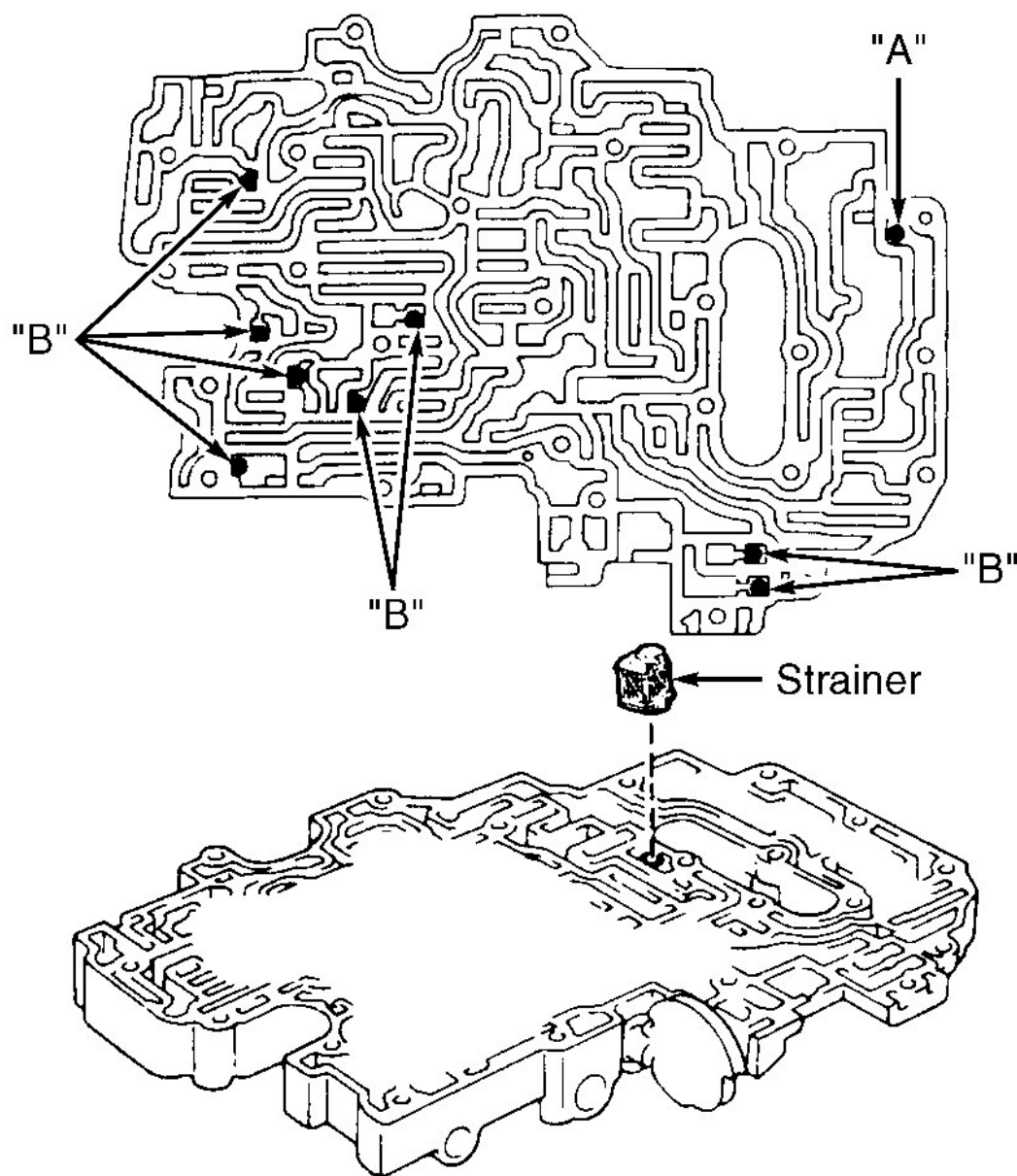
UPPER VALVE BODY SPRING SPECIFICATIONS

Valve Spring ⁽¹⁾	Free Length In. (mm)	Diameter In. (mm)
Cutback	.858 (21.80)	.236 (6.00)
Downshift	1.075 (27.30)	.343 (8.70)
Lock-Up Relay	.843 (21.40)	.217 (5.50)
Low Coast Modulator	1.197 (30.40)	.327 (8.30)
Secondary Coast Modulator	1.217 (30.90)	.339 (8.60)
Secondary Regulator	1.217 (30.90)	.441 (11.20)
Throttle	.811 (20.60)	.362 (9.20)
2-3 Shift	1.213 (30.80)	.382 (9.70)
3-4 Shift	1.213 (30.80)	.382 (9.70)

(1) For valve spring locations, see **Fig. 48**.

Reassembly

1. Coat all components with ATF. To reassemble, reverse disassembly procedure. Ensure check balls are installed correctly. Dimension of check ball "A" is .250" (6.35 mm). Dimension of check balls "B" is .219" (5.56 mm). See **Fig. 46**.
2. Position NEW No. 1 gasket, plate and NEW No. 2 gasket on upper valve body. Place lower valve body on upper valve body with plate and gaskets. **DO NOT** let components separate. Align each bolt hole in valve bodies with gaskets and plate. Install and finger tighten control valve assembly bolts.
3. Ensure proper bolt length is used in correct location. Length of bolt "A" is 1.50" (38.0 mm). Length of bolt "B" is .79" (20.0 mm). Length of bolt "C" is 1.10" (28.0 mm). See **Fig. 45**. Tighten bolts to 57 INCH lbs. (6.4 N.m).



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Fig. 46: Identifying Upper Valve Body Check Ball & Strainer Locations
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

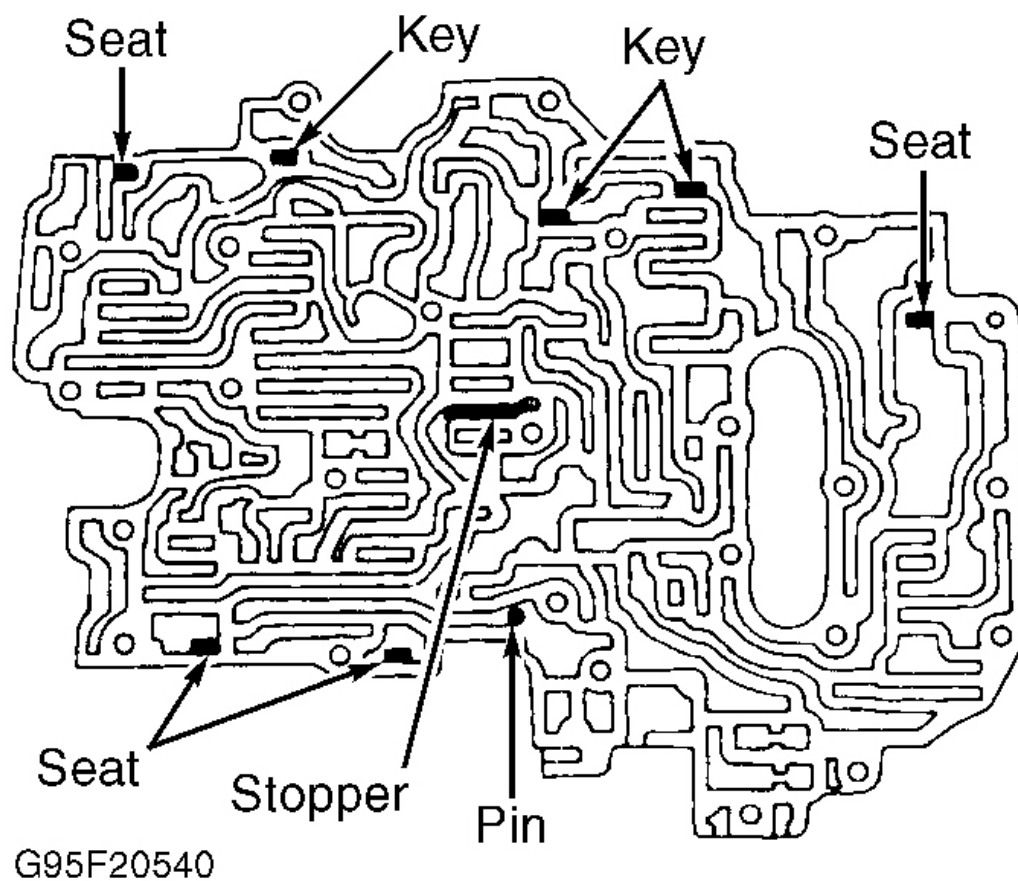
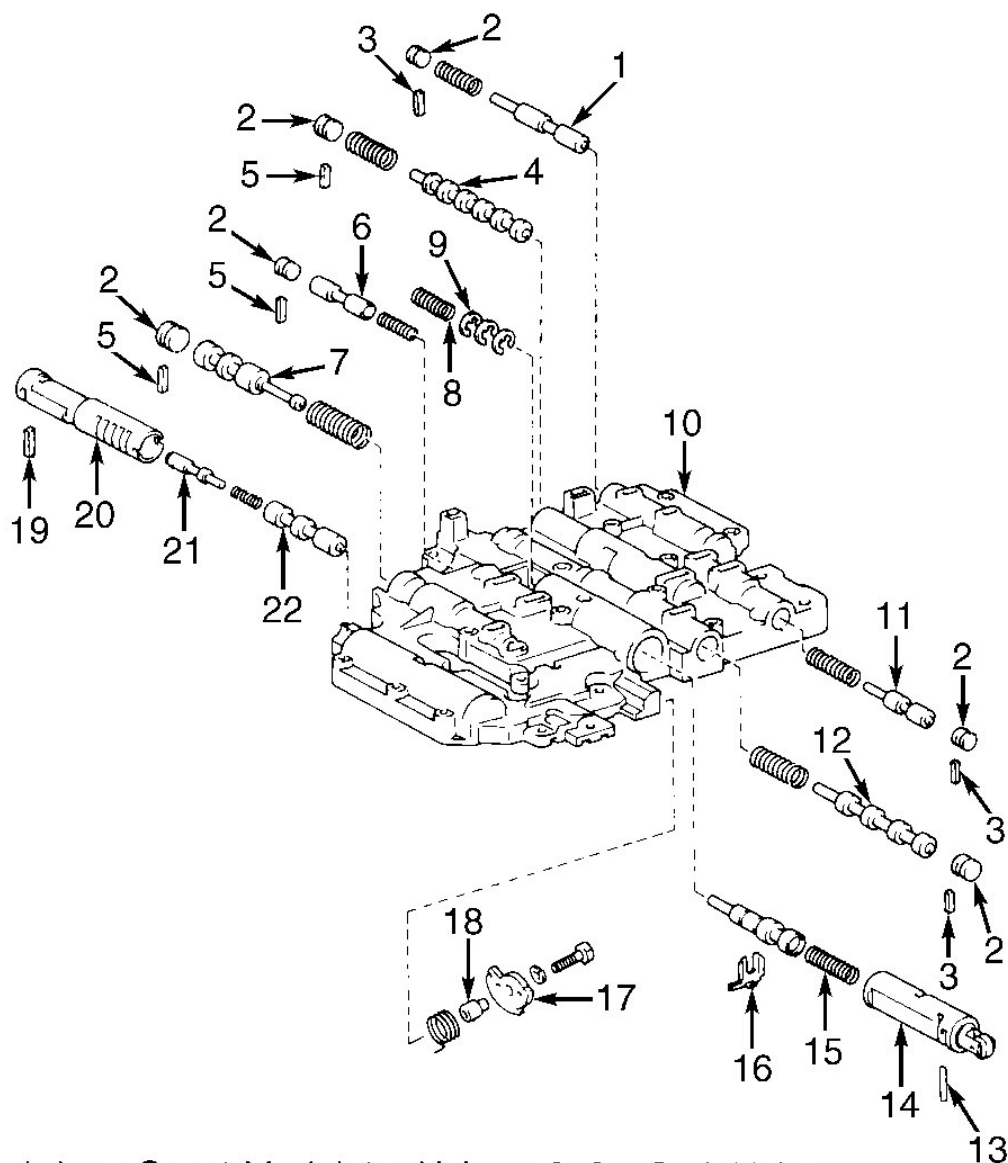


Fig. 47: Identifying Upper Valve Body Keys, Seats, Pin & Stopper Locations
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



- | | |
|----------------------------------|---------------------------------|
| 1. Low Coast Modulator Valve | 12. 3-4 Shift Valve |
| 2. Plug | 13. Straight Pin |
| 3. Plug Seat | 14. Downshift Plug |
| 4. 2-3 Shift Valve | 15. Throttle Valve |
| 5. Straight Key | 16. Valve Vibrating Stopper |
| 6. Cut Back Valve | 17. Throttle Valve Cam |
| 7. Secondary Regulator Valve | 18. Throttle Valve Pin |
| 8. Throttle Valve Spring | 19. Lock-Up Relay Valve Seat |
| 9. "E" Ring | 20. Lock-Up Relay Valve Sleeve |
| 10. Upper Valve Body | 21. Lock-Up Relay Valve Plunger |
| 11. Second Coast Modulator Valve | 22. Lock-Up Relay Valve |

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Fig. 48: Exploded View Of Upper Valve Body

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

LOWER VALVE BODY

CAUTION: All valve body components must be installed in original location. Lay all components in sequence during removal for reassembly reference. Note diameter and check ball location.

NOTE: Valves may be held in with pins, seats or plugs. Remove components and note locations. Arrange parts in order for reassembly reference.

Disassembly

Remove upper valve body from lower valve body. See DISASSEMBLY & REASSEMBLY under **CONTROL VALVE ASSEMBLY**. Remove No. 1, No. 2 and lock-up solenoids. Remove check valve, pressure relief valve and springs. Remove 3 oil strainers from lower valve body. Note location of seats, clip and pin in lower valve body. Remove springs and valves, noting location. See **Fig. 49** -49.

Inspection

1. Clean all parts in solvent. Dry with compressed air. Ensure all valve body passages are clear. Ensure strainers are not damaged or clogged. Inspect valves for scoring or roughness.
2. Ensure valves slide freely in bores. Inspect valve springs for damage, squareness and collapsed coils. Measure spring free length. Replace the spring if not within specification. Refer to the **LOWER VALVE BODY SPRING SPECIFICATIONS** table. Ensure valve body springs correspond with appropriate valve. Ensure seats, clip and pin are installed in appropriate locations.

LOWER VALVE BODY SPRING SPECIFICATIONS

Valve Spring ⁽¹⁾	Free Length In. (mm)	Diameter In. (mm)
Accumulator Control	1.335 (33.90)	.346 (8.80)
Check	.795 (20.20)	.476 (12.10)
Primary Regulator	2.453 (62.30)	.732 (18.60)
Pressure Relief	.441 (11.20)	.252 (6.40)
1-2 Shift	1.213 (30.80)	.382 (9.70)

(1) For valve spring locations, see **Fig. 50** and **Fig. 51**.

Reassembly

1. Coat all components with ATF. To reassemble, reverse disassembly procedure. Place lower valve body on upper valve body with plate and gaskets. **DO NOT** let components separate. Align each bolt hole in valve bodies with gaskets and plate. Install and finger tighten control valve assembly bolts.
2. Ensure proper bolt length is used in correct location. Length of bolt "A" is 1.50" (38.0 mm). Length of bolt "B" is .79" (20.0 mm). Length of bolt "C" is 1.10" (28.0 mm). See **Fig. 45**. Tighten bolts to 57 INCH lbs. (6.4 N.m).

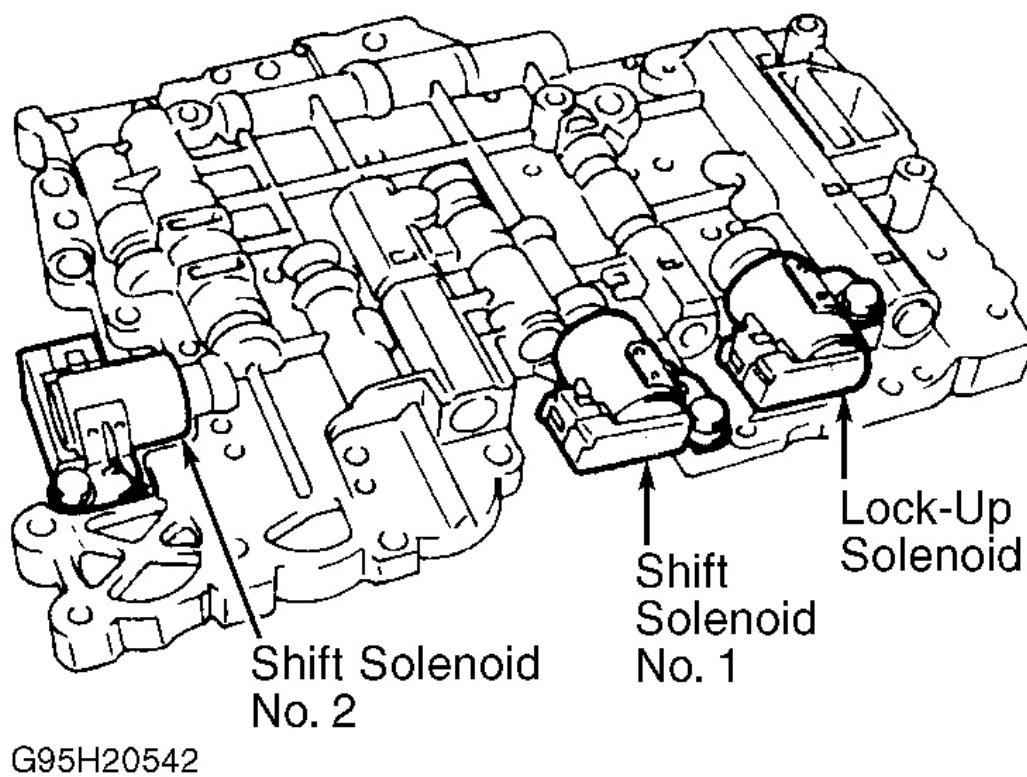
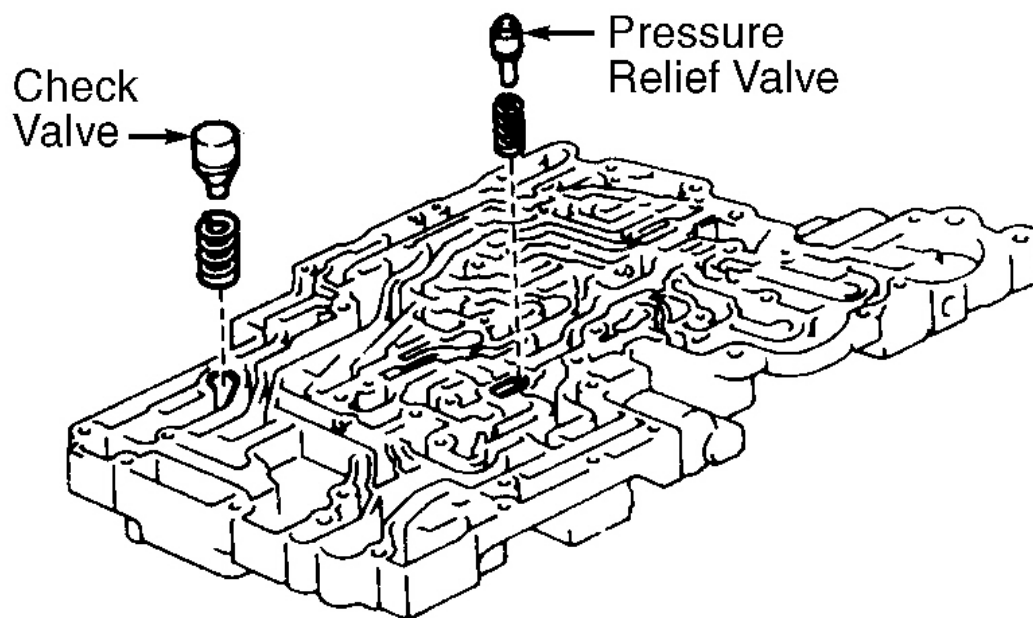


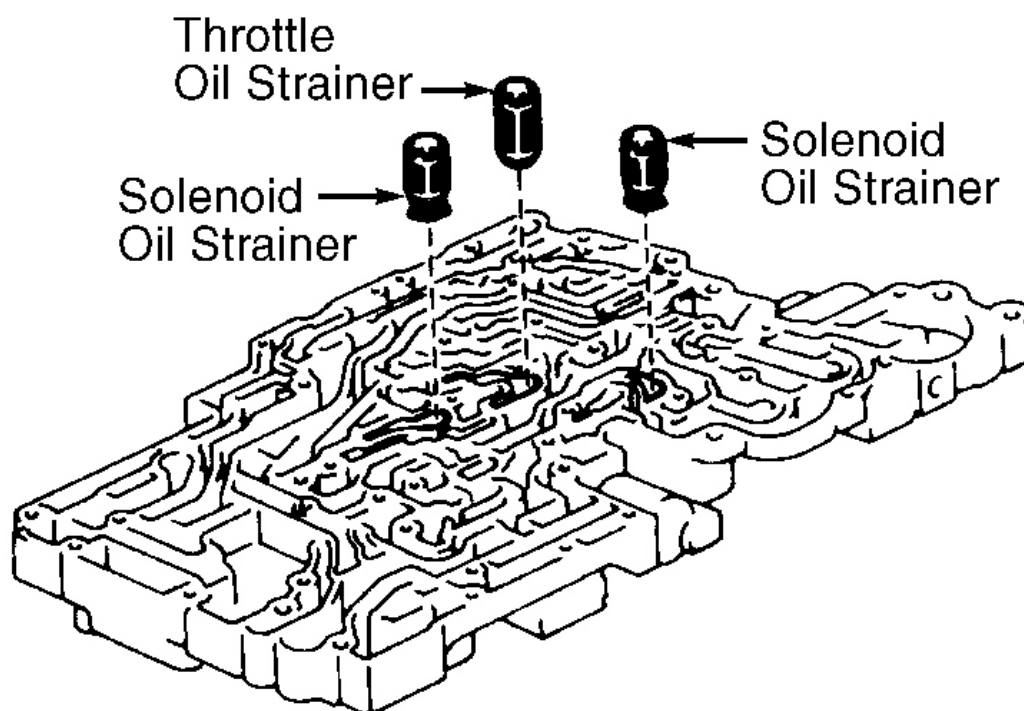
Fig. 49: Identifying Solenoid Locations

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



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Fig. 50: Identifying Check Valve, Pressure Relief Valve & Spring Locations
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



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Fig. 51: Identifying Oil Strainer Locations

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

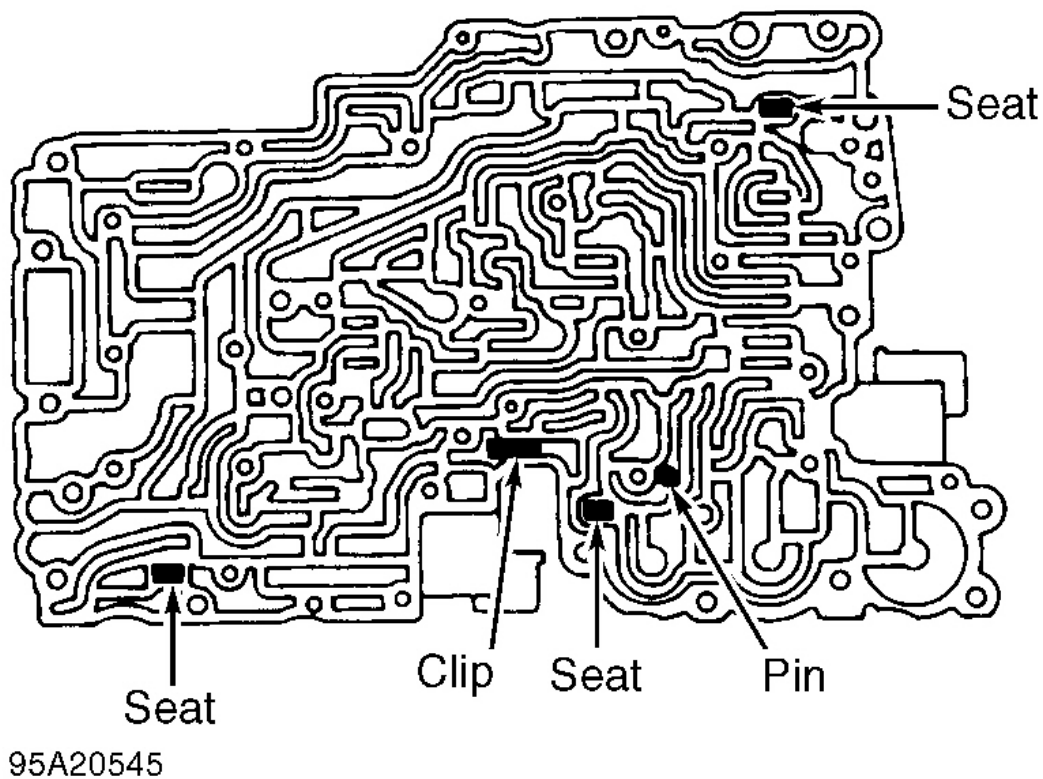
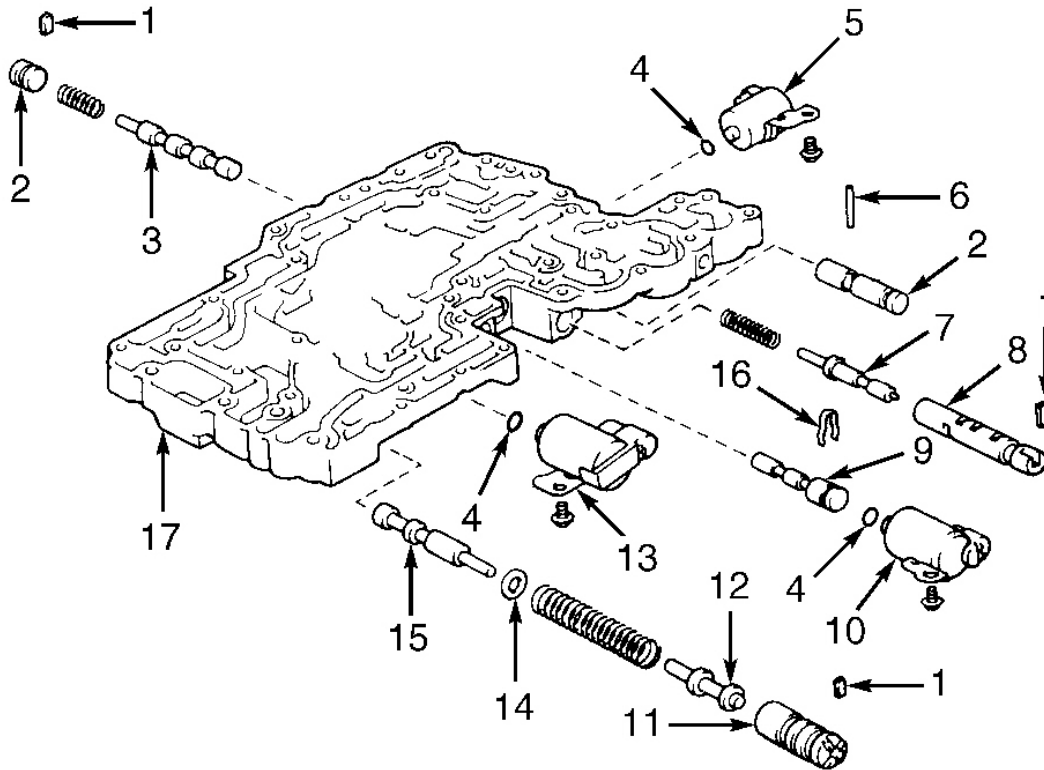


Fig. 52: Identifying Lower Valve Body Seats, Clip & Pin Locations
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



- | | |
|------------------------------|-----------------------------|
| 1. Plug Seat | 10. Shift Solenoid No. 1 |
| 2. Plug | 11. Sleeve |
| 3. 1-2 Shift Valve | 12. Plunger |
| 4. "O" Ring | 13. Lock-Up Solenoid |
| 5. Shift Solenoid No. 2 | 14. Washer |
| 6. Pin | 15. Primary Regulator Valve |
| 7. Accumulator Control Valve | 16. Clip |
| 8. Sleeve | 17. Lower Valve Body |
| 9. Pressure Reducing Plug | |

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Fig. 53: Exploded View Of Lower Valve Body

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

TRANSMISSION REASSEMBLY

NOTE: Coat all oil seal rings, clutch discs, clutch plates, rotating parts, and sliding surfaces with ATF prior to reassembly. All gaskets and rubber "O" rings should be replaced. Ensure ends of snap rings are not aligned with cut-outs and are installed correctly in groove. If a worn bushing is to be replaced, replacement

must be made with subassembly containing that bushing. Check thrust bearings and races for wear or damage. Use petroleum jelly to hold parts in place. Replace parts as necessary. Clutch discs should be soaked in ATF for 2 hours before installation.

1. Before transmission reassembly, inspect case bushing and extension housing bushing (if equipped). Maximum transmission case bushing inside diameter is 1.504" (38.19 mm). Maximum extension housing bushing inside diameter is 1.578" (40.09 mm). If bushings are not within specifications, manufacturer recommends replacing transmission case and/or extension housing.

NOTE: For thrust bearing installation position, see Fig. 59 .

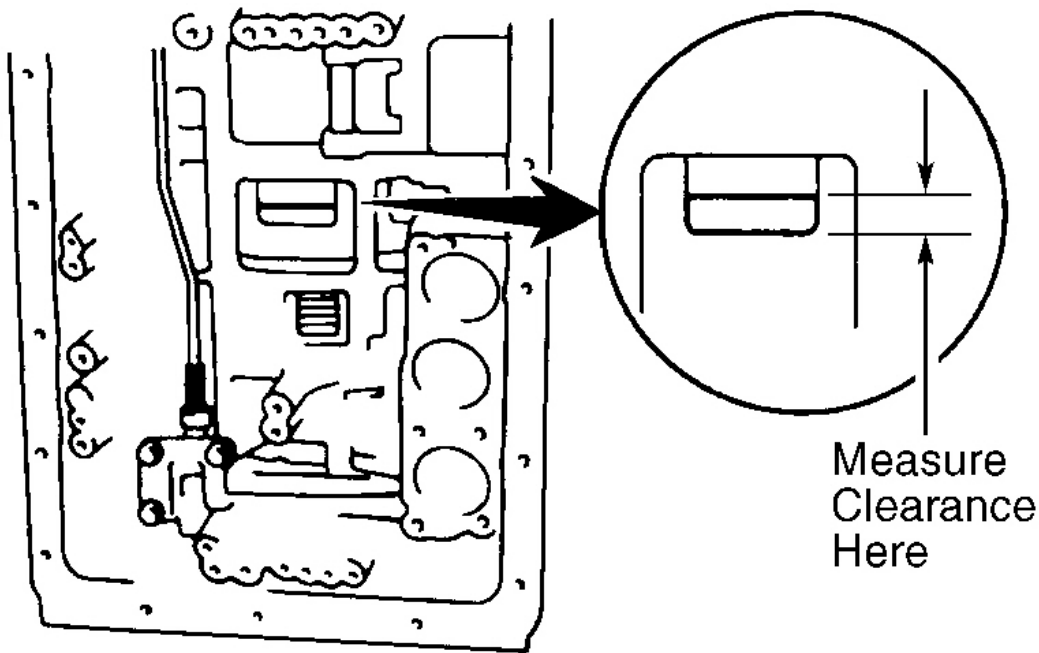
2. Install 1st and reverse brake piston No. 1 to reaction sleeve. Install piston No. 1 with reaction sleeve on piston No. 2. Align piston No. 2 teeth into proper grooves. Carefully press brake pistons No. 1 and No. 2 into case. Position return spring assembly on piston No. 2. Using spring compressor, compress return spring assembly.
3. Install snap ring. Ensure snap ring end-gap is not aligned with spring retainer claw. Ensure 1st and reverse brake pistons move smoothly by applying compressed air to case. See Fig. 21 .
4. Install leaf spring (if equipped). Install rear planetary gear with 1st and reverse brake pack and output shaft. Install flange with rounded edge toward planetary ring gear. Install plate first, then flange. Install plates and discs, starting with disc. Install proper amount of plates and discs.
5. Install 2nd brake drum assembly. Install thrust bearing in case. Align teeth of 2nd brake drum, flange, discs and plates. Align splines of transmission case, and assembled rear planetary gear, 2nd brake drum, 1st and reverse brake pack and output shaft into case.
6. Support output shaft on wooden blocks. Install snap ring in case with chamfered edge toward front of transmission. Ensure ends of snap ring are not aligned with cutout area of case. Measure 1st and reverse brake clearance between 2nd brake drum and plate. See Fig. 20 . Clearance should be .028-.048" (.70-1.22 mm)
7. If clearance is not within specification, select a different thickness flange. Install 2nd brake piston sleeve. Install NEW brake gasket in case. Install No. 1 one-way clutch assembly. Install .071" (1.8 mm) flange plate with rounded edge side of plate facing disc. Install plates and discs. Install end flange with rounded edge facing disc. Install snap ring.
8. Measure 2nd brake clearance between snap ring and flange. See Fig. 19 . Clearance should be .024-.078 (.62-1.98). If clearance is not within specification, check for incorrect assembly.
9. Install planetary sun gear. Turn planetary sun gear clockwise into No. 1 one-way clutch. Ensure all thrust washers are correctly installed. Install front planetary gear bearing and race. Install front planetary gear into sun gear. Install snap ring. Remove wooden block from under output shaft. Install race on front of planetary gear so race tabs align with planetary gear holes.
10. Install 2nd coast brake band and pin. Pin must be installed so "E" ring is toward front of transmission. Install "E" ring. Coat thrust bearing and race with petroleum jelly and install on forward clutch. Raised portion of race must be toward front.

NOTE: For thrust bearing installation position, see Fig. 59 .

11. Install race on front planetary ring gear. Smooth flat surface must be toward front. Align disc tabs of

forward clutch. Install front planetary ring gear in forward clutch. Ensure gear is aligned with all clutch discs.

12. Install bearing race and thrust bearing on ring gear. Raised portion of race must be toward rear. Install forward and direct clutch assembly and front planetary ring gear in transmission case. Measure distance between sun gear input drum and direct clutch drum. See **Fig. 54**. Clearance should be .210-.029" (5.30-7.30 mm). If clearance is not within specifications, check for incorrect installation.



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Fig. 54: Measuring Input Drum & Direct Clutch Drum Clearance
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

13. Install thrust bearing and race on forward clutch assembly with flat side toward the clutch assembly. Install NEW "O" ring on 2nd coast brake cover. Install spring, 2nd coast brake piston assembly and cover to case. Install snap ring.
14. Place reference mark on 2nd coast brake piston rod. Apply 57-114 psi (4.8 kg/cm²) of air at opening of transmission case. Using wire gauge, measure clearance between reference mark and case. Clearance should be .059-.118" (1.49-3.00 mm). See **Fig. 17**.
15. If stroke is not within specification, install replacement piston rod. Rods are available in lengths of 2.78" (70.7 mm), 2.81" (71.4 mm), 2.84" (72.2 mm) and 2.870" (72.9 mm). If stroke is not within specification, install NEW brake band. Install race on OD support. Align bolt and oil holes of OD support toward valve body side and bolt hole of case and install support.
16. Ensure support is properly aligned. Install support snap ring with chamfered edge toward front of

transmission. End of snap ring must be positioned to valve body side of case within .94" (23.9 mm) from center line of valve body as viewed from front of transmission.

17. Using dial indicator, check output shaft end play. See **Fig. 55** . End play should be .011-.034" (.27-.86 mm). If end play is not within specifications, check for incorrect assembly. Ensure output shaft rotates smoothly.

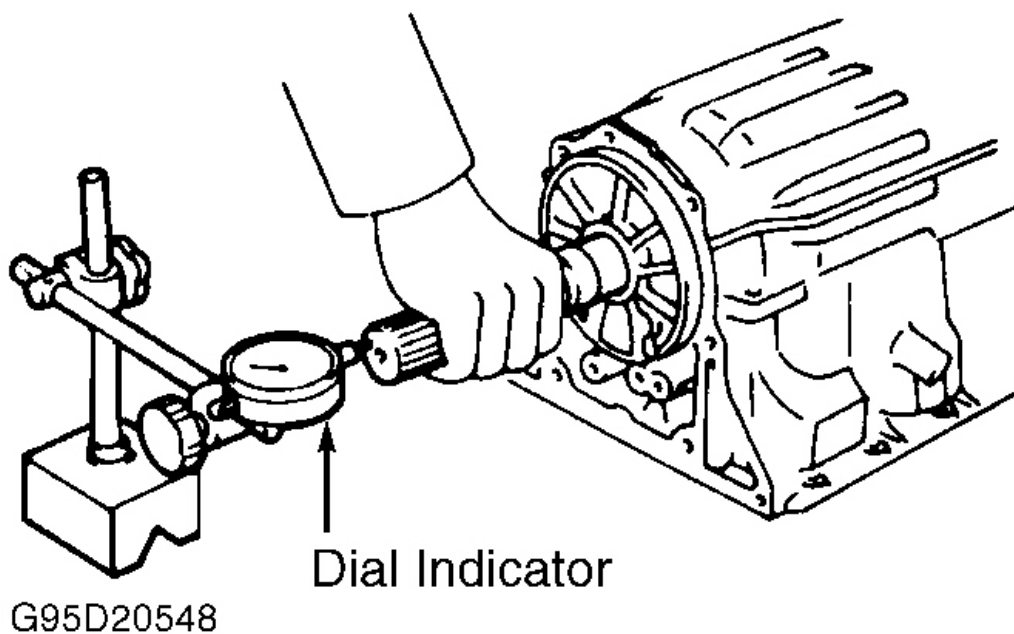


Fig. 55: Measuring Output Shaft End Play

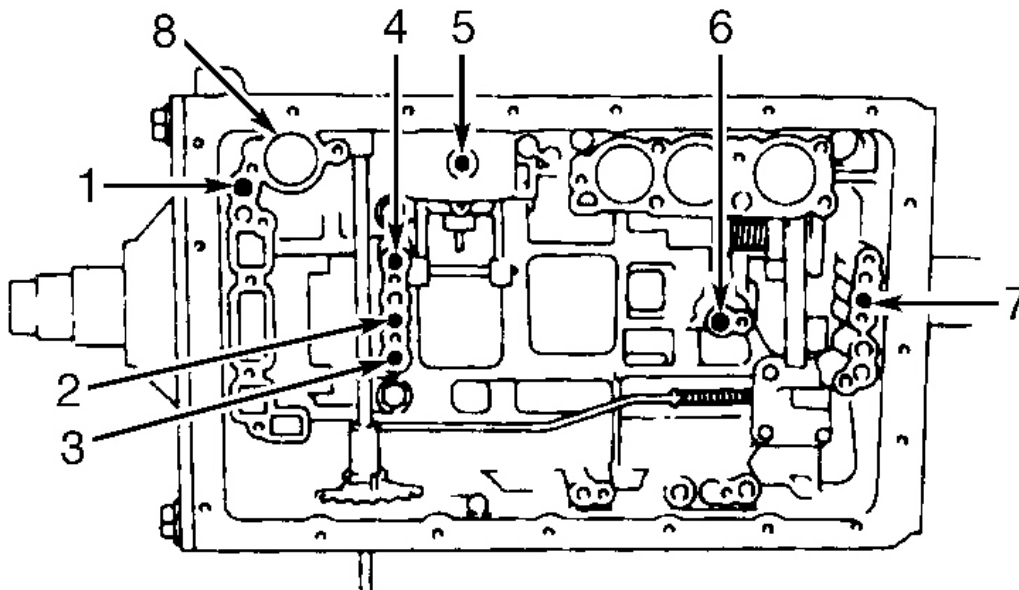
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

18. Install a .157" (4.00 mm) thick flange with rounded edge facing disc. Install correct amount of discs and plates, beginning with plate. Install end flange (stepped ring) with flat side toward disc. Install snap ring. Ensure ends of snap ring are not located at cutout areas of case.
19. Install dial indicator on case and measure piston stroke. Apply 57-114 psi (4-8 kg/cm²) at opening of transmission case and note piston stroke. See **Fig. 15** . Piston stroke should be .055-.067 (1.40-1.70).
20. If piston stroke is not within specifications, check for incorrect installation. Recheck piston stroke. If piston stroke is not within specifications, install different thickness flange. Flanges are available in thicknesses of .130" (3.3 mm) to .157" (4.0 mm) in .008" (.20 mm) increments.
21. Install thrust bearing and races on OD support. Ensure race tabs align with hole support. Install OD planetary ring gear. Install thrust bearing and race in ring gear. Install race on rear of OD planetary gear, aligning race tabs with holes of gear. Install OD planetary gear with OD clutch and one-way clutch. Install thrust bearing and race onto OD clutch with race flat side toward OD clutch.
22. Install race on rear of oil pump with raised side toward oil pump. Install NEW "O" ring on outer diameter

of oil pump. Ensure seal rings are installed on rear of oil pump. Align holes of oil pump and case. Install oil pump while holding input shaft and lightly pressing on oil pump.

CAUTION: DO NOT apply excessive pressure on oil pump during installation or seal rings will stick to the direct clutch drum.

23. Install oil pump bolts. Ensure input shaft rotates smoothly. Install throttle cable. Apply air pressure to specified oil passage to check operating components. See **Fig. 56**. When air checking the OD clutch, OD accumulator piston hole must be plugged.



- | | |
|--------------------|------------------------|
| 1. OD Clutch | 6. 2nd Brake |
| 2. Direct Clutch | 7. 1st & Reverse Brake |
| 3. Forward Clutch | 8. OD Clutch |
| 4. OD Brake | Accumulator Piston |
| 5. 2nd Coast Brake | |

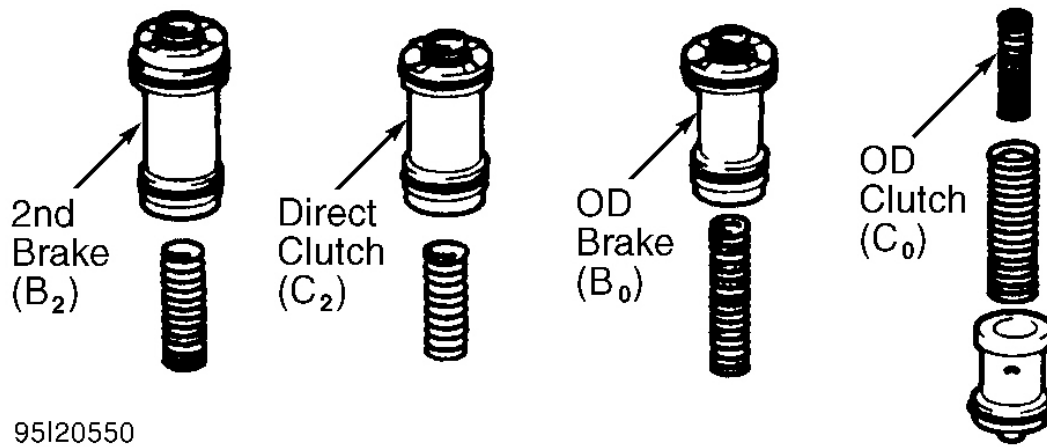
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Fig. 56: Air Testing Transmission Components

Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

24. Assemble NEW spacer-to-manual valve lever. Install manual lever shaft to case through manual valve lever. Install pin to shaft. Align spacer hole with lever hole and stake spacer to lever. Ensure manual valve lever shaft turns smoothly.

25. Install speed sensor rotor and key on output shaft. Install "E" ring, parking lock pawl, shaft and spring. Connect parking lock rod to manual valve lever. Position parking lock pawl, shaft and spring. Connect parking lock rod to manual valve lever. Position parking lock pawl bracket on case and install. See **Fig. 6**.
26. Install accumulator pistons with NEW "O" rings. Install accumulator springs. See **Fig. 57**. Accumulator pistons and springs must be proper diameter and height. Accumulator pistons are stamped with identification codes. For accumulator piston locations, see **Fig. 12** -14. Determine proper spring free length. See the **ACCUMULATOR SPRING SPECIFICATIONS** table.



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Fig. 57: Identifying Accumulator Piston Assemblies

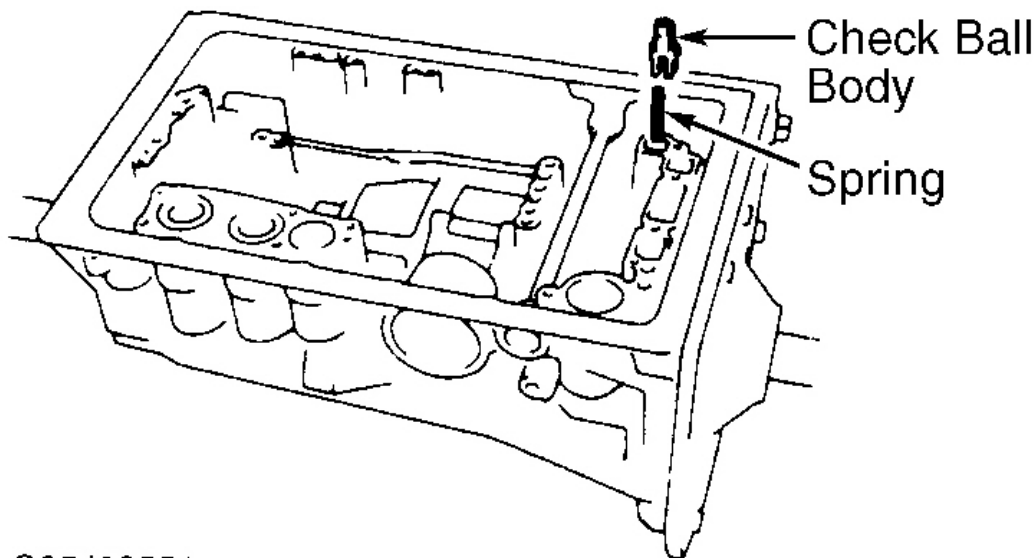
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

ACCUMULATOR SPRING SPECIFICATIONS

Piston Spring (ID Code)	Free Length In. (mm)	Diameter In. (mm)
2nd Brake (B ₂)		
Inner	2.858 (72.60)	.626 (15.90)
Outer	.866 (22.00)	.551 (14.00)
Direct Clutch (C ₂)		
Inner	2.764 (70.20)	.795 (20.20)
Outer	.787 (20.00)	.476 (12.10)
OD Brake (B ₀)		
Inner	2.441 (62.00)	.630 (16.00)
Outer	.571 (14.50)	.512 (13.00)
OD Clutch (C ₀)		
Inner	1.811 (46.00)	.551 (14.00)

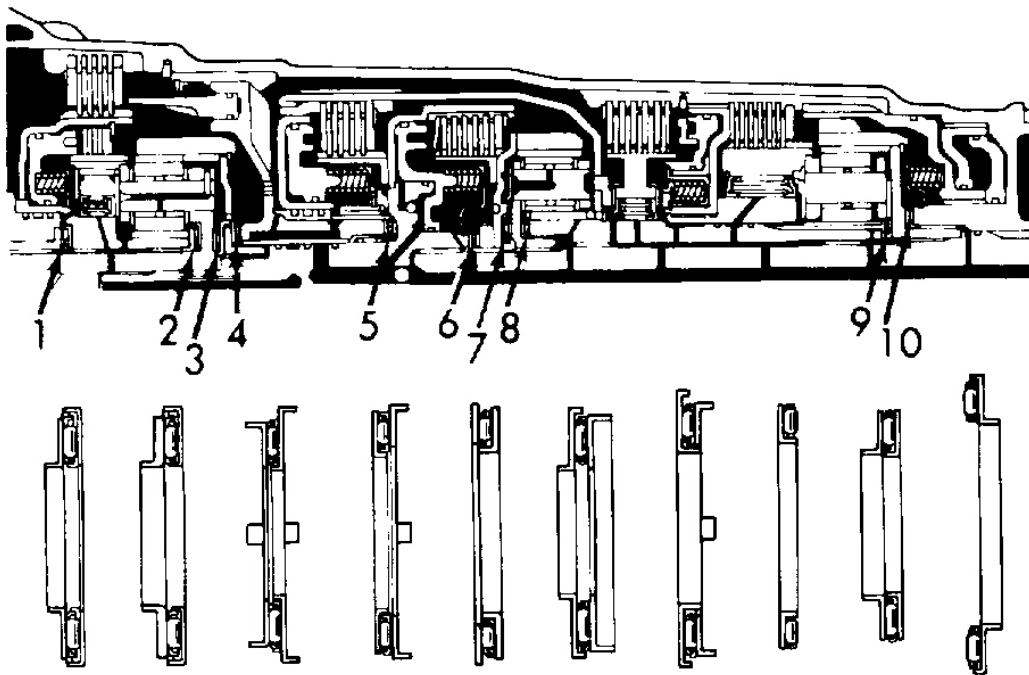
Outer	2.937 (74.60)	.823 (20.90)
-------	---------------	--------------

27. Install check ball body and spring. See **Fig. 58** . Install valve body. See **CONTROL VALVE ASSEMBLY** under ON-VEHICLE SERVICE Install speedometer drive gear and lock ball and snap ring on output shaft. Install extension housing and NEW gasket. Shorter mounting bolts go to bottom of extension housing.
28. Install transmission housing. Install speed sensor and speedometer driven gear. Install front and rear cooler line unions. Install transmission oil temperature sensor. Install neutral safety switch. Tighten nut to 35 INCH lbs. (4 N.m). Align neutral basic line and switch groove. Bend at least 2 lock washer tabs.
29. Install control shaft lever. If throttle cable is new, stake stopper on inner cable. Install wire harness and throttle cable clamp. Install torque converter. Using straightedge and depth gauge, measure distance from front of torque converter to front mounting surface of transmission housing. Distance should be 1.22" (31.1 mm). See **Fig. 60** .



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Fig. 58: Installing Check Ball Body & Spring
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



No. 1 No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 8 No. 9 No. 10

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Fig. 59: Identifying Thrust Bearings & Installation Position
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

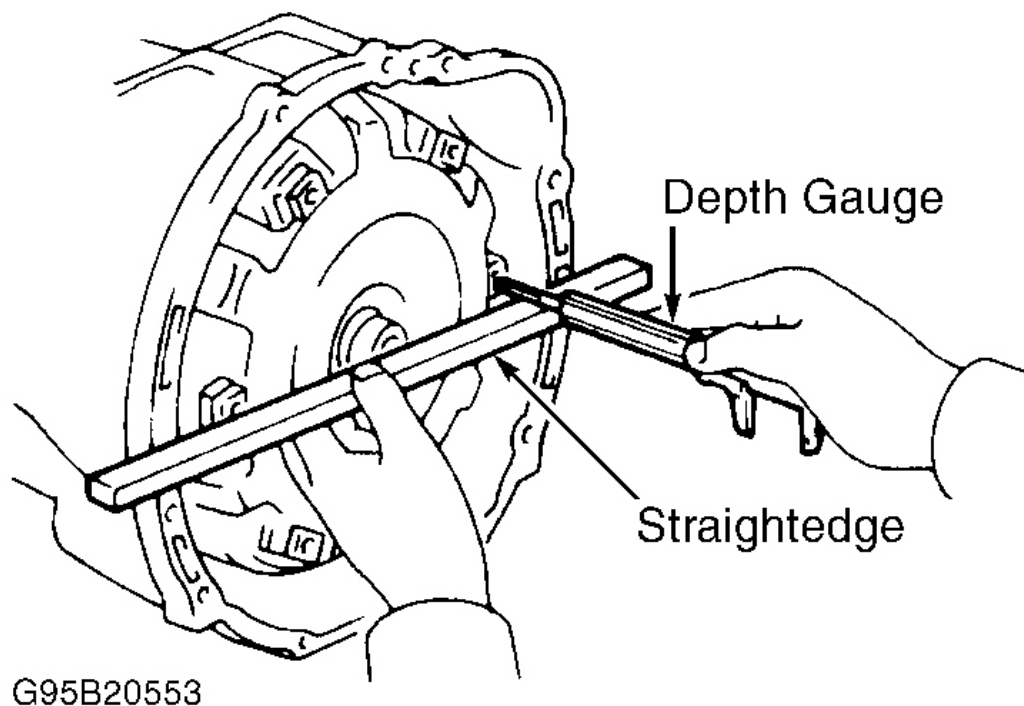


Fig. 60: Measuring Torque Converter Depth
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Cooler Union	21 (29)
Extension Housing Bolt	27 (36)
Oil Temperature Sensor	11 (15)
Oil Cooler Pipe Union Nut	25 (34)
Oil Pump-To-Case Bolt	16 (22)
Overdrive-To-Case Bolt	18 (25)
Rear Mounting-To-Extension Housing Bolt	18 (25)
Shift Lever Nut	12 (16)
Speed Sensor Bolt	12 (16)
Speedometer Driven Gear Bolt	12 (16)
Torque Converter-To-Drive Plate Bolt	30 (41)
Transmission Housing Bolt	
10 mm	25 (34)

1994 Mitsubishi Montero SR

1994 AUTOMATIC TRANSMISSIONS Mitsubishi V4AW3 Overhaul

12 mm	42 (57)
	INCH Lbs. (N.m)
Detent Spring Bolt	89 (10)
Neutral Safety Switch	
Adjusting Bolt	115 (13)
Retaining Nut	35 (4)
Oil Pan Bolt	71 (8)
Oil Pump-To-Stator Shaft Bolt	71 (8)
Oil Strainer Bolt	89 (10)
Parking Lock Pawl Bracket Bolt	65 (7.3)
Solenoid-To-Valve Body Bolt	89 (10)
Throttle Cable-To-Transmission Case Bolt	89 (10)
Upper Valve Body-To-Lower Valve Body Bolt	62 (7)
Valve Body-To-Case Bolt	89 (10)

TRANSMISSION SPECIFICATIONS**TRANSMISSION SPECIFICATIONS**

Application	In. (mm)
Bushing Diameter (Maximum)	
Direct Clutch Drum	2.126 (53.97)
Extension Housing	1.578 (40.09)
Forward Clutch Drum	.948 (24.08)
Front Planetary Ring Gear	.948 (24.08)
OD Clutch Drum	1.067 (27.11)
OD Planetary Gear	.444 (11.27)
Oil Pump Body	1.504 (38.19)
Oil Pump Stator Shaft	
Front	.850 (38.19)
Rear	1.066 (27.08)
Sun Gear Bushing	.948 (24.8)
Transmission Case	1.504 (38.19)
Clutch Pack Clearance	
1st & Reverse Brake Pack	.028-.048 (.70-1.22)
2nd Brake Clutch	.024-.078 (.62-1.98)
Oil Pump Clearance	
Gear Tip	
Standard	.004-.006 (.11-.14)
Maximum	.012 (.30)

1994 Mitsubishi Montero SR

1994 AUTOMATIC TRANSMISSIONS Mitsubishi V4AW3 Overhaul

Gear-To-Body	
Standard	.003-.006 (.07-.15)
Maximum	.012 (.30)
Side Gear	
Standard	.0008-.0020 (.020-.050)
Maximum	.004 (.10)
Output Shaft End Play	.011-.034 (.27-.86)
Piston Stroke	
Direct Clutch	.054-.066 (1.37-1.67)
Forward Clutch	.114-.169 (2.90-4.29)
OD Brake	.055-.067 (1.40-1.70)
OD Clutch	.073-.085 (1.85-2.15)
2nd Brake	.024-.078 (.62-1.98)
2nd Coast Brake	.059-.118 (1.49-3.00)
Planetary Pinion Gear Clearance	.008-.024 (.20-.60)
Torque Converter Depth	1.22 (31.1)