1990 AUTOMATIC TRANSMISSIONS

JF-403E Overhaul

APPLICATION

TRANSMISSION APPLICATION

Application	Transmission Model
Isuzu Impulse (J1)	JF-403E
Geo Storm	JF-403E

IDENTIFICATION

Transmission VIN plate is located on left side on torque converter housing flange. Stamping location for service parts is located on left side. See **Fig. 1** .

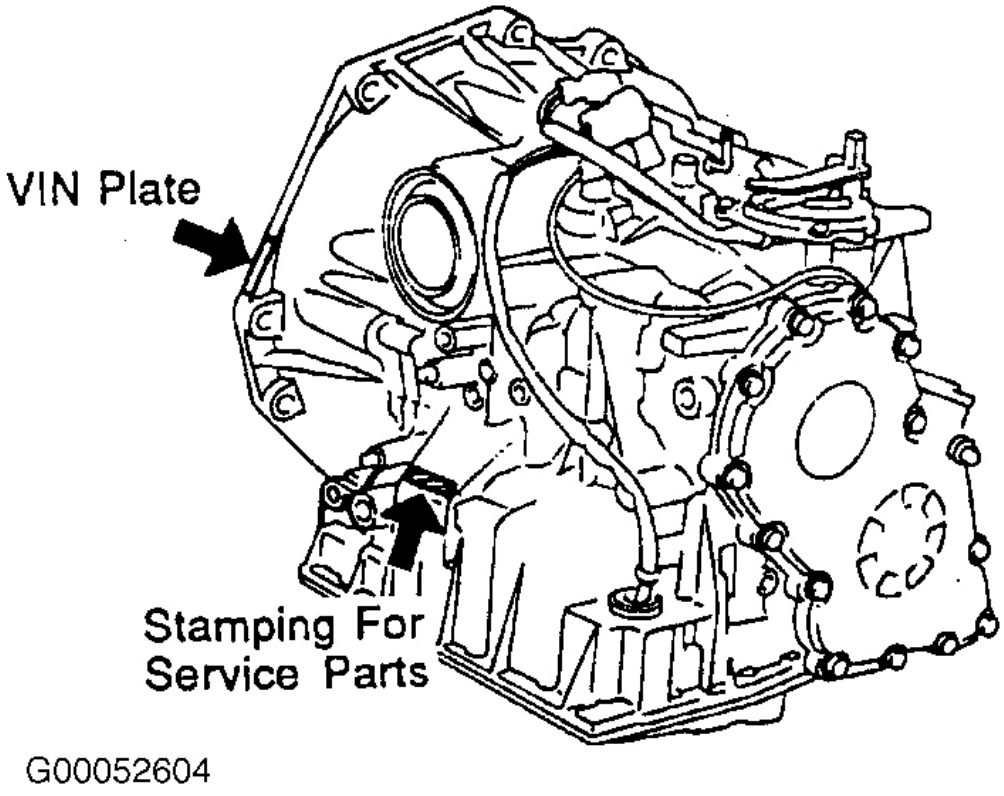


Fig. 1: Locating VIN Plate
Courtesy of ISUZU MOTOR CO.

DESCRIPTION

JF-403E is a 4-speed fully automatic transaxle. It utilizes a micro-computer as a control unit. A built-in shift program selects functions of 3 shift modes according to drivers preference. Major features of JF-403E are 2 sets of planetary gears, 2 one-way clutches, one band, one brake and 3 clutch assemblies. Also included is a final drive gear and differential gear in a transaxle case.

LUBRICATION

NOTE: See appropriate SERVICING article.

TROUBLE SHOOTING

NOTE: For trouble shooting, see JF-403E DIAGNOSIS article.

TESTING

NOTE: For testing, see JF-403E DIAGNOSIS article.

REMOVAL & INSTALLATION

INHIBITOR SWITCH

Removal

Remove inhibitor switch by disconnecting negative battery cable, removing air duct and air cleaner element. Disconnect inhibitor switch connectors on transaxle. Remove snap pin and clip from shift control cable at support bracket. Set shift lever in "1" position. Disconnect shift control cable at selector lever. Remove inhibitor switch.

Installation

To install inhibitor switch, reverse removal procedure. Adjust inhibitor by installing a .157" (4.00 mm) pin in adjustment holes of inhibitor switch lever and inhibitor switch. Hold pin vertical and tighten attaching bolts.

SPEEDOMETER DRIVEN GEAR

Removal

To remove speedometer driven gear, disconnect battery, remove air duct and air cleaner element. Remove speedometer cable and speedometer driven gear.

Installation

Installation of speedometer driven gear is reversal of removal procedures. Use a new "O" ring seal and adjust

ATF level as required.

VALVE BODY

Removal

To remove valve body, disconnect negative battery cable. Drain ATF, remove under cover, clip, oil pan protector and oil pan. Remove valve body attaching bolts, valve body and terminal assembly.

Installation

To install valve body, reverse removal procedures. Adjust ATF level.

VEHICLE SPEED SENSOR NO. 1

Removal

To remove vehicle speed sensor No. 1, disconnect negative battery cable. Remove air duct and air cleaner element. Disconnect connector for vehicle speed sensor No. 1. Remove vehicle speed sensor No. 1.

Installation

To install vehicle speed sensor No. 1, reverse removal procedures. Install new "O" ring on vehicle speed sensor No. 1.

TORQUE CONVERTER

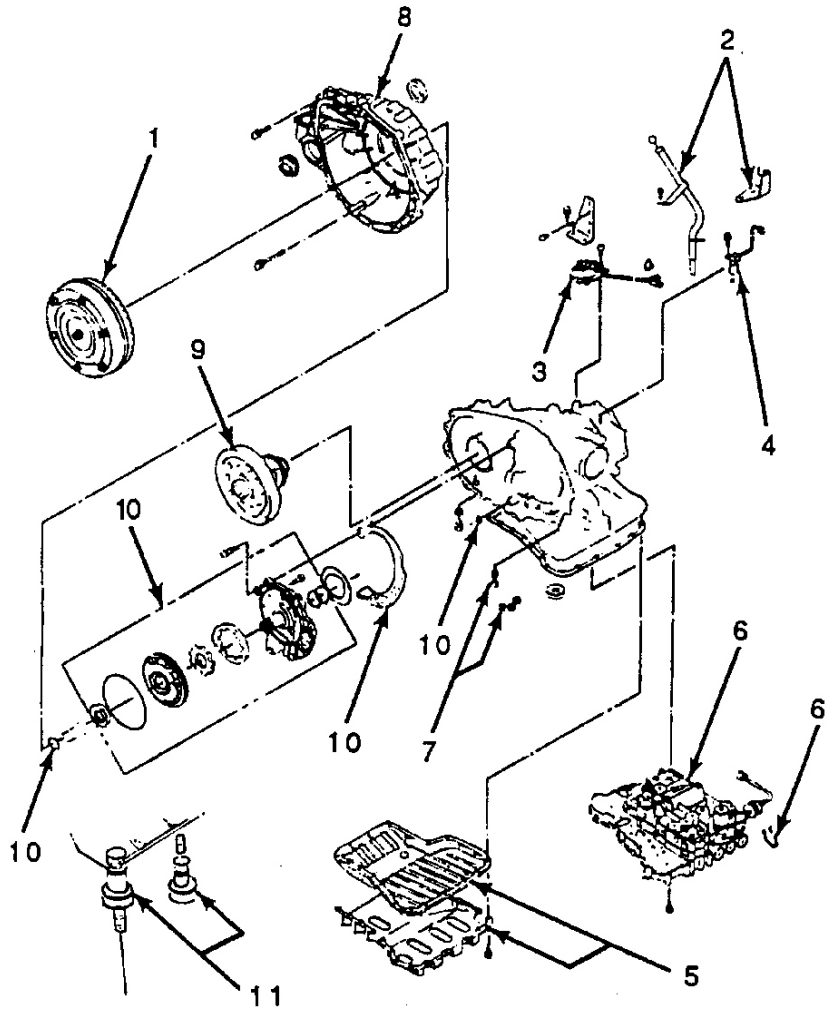
Torque converter is a sealed unit and cannot be serviced. Check for damage or cracks and replace if any defect is found. If oil is contaminated, drain all ATF. Flush torque converter with cleaning solvent. Drain all cleaning solvent. Add one quart of ATF, shake torque converter and remove ATF.

TRANSAXLE DISASSEMBLY

1. Remove torque converter and mount transaxle assembly to a holding fixture or place on work bench, with oil pan in down position. Remove oil level gauge, tube and bracket. Remove inhibitor switch, vehicle speed sensor, oil pan protector and oil pan. See **Fig. 2** .
2. Turn transaxle so valve body faces up. Remove terminal clip of solenoid wires. Remove bolts (15) attaching valve body assembly to transaxle case. Remove valve body assembly with terminal assembly and remove manual valve. See **Fig. 2** .
3. Remove 4 lip seals, low and reverse brake sleeve and 2-3 accumulator return spring from transaxle case. See **Fig. 3** .
4. Turn transaxle so converter housing faces up. Remove converter housing-to-transaxle case bolts and remove converter housing. Remove differential. Remove "O" ring from input shaft. Remove oil pump-to-transaxle case bolts and remove oil pump assembly. Remove "O" ring from oil hole for differential gear lubrication oil. See **Fig. 2** .
5. Loosen anchor end bolt lock nut and remove anchor end bolt. Remove brake band and use wire to secure

brake band in closed position. Remove input shaft, reverse clutch, high clutch, high clutch hub and front sun gear as an assembly. Remove thrust bearing and bearing race. See **Fig. 4** .

6. Using Servo Piston Compressor (J-25024) or suitable tool, compress servo retainer and remove snap ring. Remove servo retainer, servo piston and return spring. See **Fig. 4** . Remove side cover and output gear.
7. Using Low and Reverse Brake Spring Compressor (J-38298) and Bridges (J-35279-1 and J-35279-9) or suitable tool, compress front planetary carrier and remove snap ring. Remove front planetary carrier, low and reverse brake piston and retainer. Remove 2 thrust bearings from front planetary carrier. See **Fig. 7** .
8. Remove rear sun gear and rear planetary carrier. Remove thrust bearing from rear planetary carrier. Remove rear internal gear and forward clutch hub. Remove overrun clutch hub. Remove thrust washer and bearing race from overrun clutch hub. Remove forward clutch assembly. Remove thrust bearing from forward clutch assembly. Remove low and reverse brake snap ring, dished plate, 2 spacer plates and drive and driven plates. See **Fig. 5** .
9. Use punch to remove crimp of idler gear lock nut. Set selector lever in piston to lock idler gear and remove idler gear lock nut. Using Idler Gear Puller (J-38297) or suitable tool, pull idler gear from reduction gear shaft. Remove reduction gear from transaxle case. Remove 5 bolts attaching reduction gear bearing outer race and remove outer race. See **Fig. 6** .
10. Remove thrust bearing from drum support and remove drum support. Apply air pressure to 2-3 and N-D accumulator oil passages to remove 2-3 and N-D accumulator pistons. Remove "O" ring from each piston and remove N-D accumulator piston return spring. See **Fig. 7** .
11. Remove parking lever, parking rod, return spring, parking shaft, parking pawl and parking actuator support. Drive out spring pin from manual plate and remove manual plate. Remove manual shaft locating bolt and remove manual shaft. See **Fig. 6** . Remove manual shaft "O" ring. Remove detent spring and support plate.
12. Using Puller Bridge (J-33367), Puller (J-35280) and Bridges (J-35279-1 and J-35279-3) or suitable puller, remove idler gear bearing outer race from transaxle case. Using puller, remove differential bearing outer race and shim from transaxle case and differential bearing outer race from converter housing. Using puller bridge and Remover (J-26941) or suitable tool, remove axle shaft seals from transaxle case and converter housing. See **Fig. 6** .



1. Torque Converter
2. Oil Level Gauge, Tube & Bracket
3. Inhibitor Switch
4. Vehicle Speed Sensor
5. Oil Pan & Protector
6. Valve Body Assembly
7. Lip Seal, Sleeve & 2-3 Accumulator Return Spring
8. Converter Housing
9. Differential Assembly
10. "O" Ring & Oil Pump

G00052608

Fig. 2: Exploded View Of Transaxle
Courtesy of ISUZU MOTOR CO.

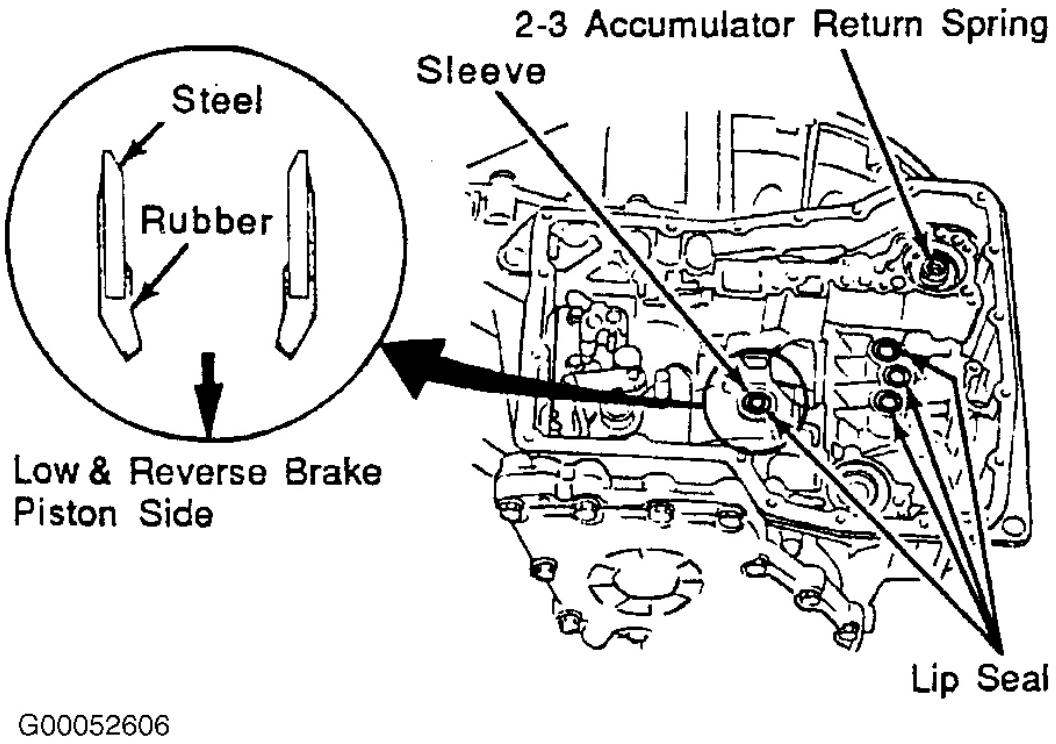
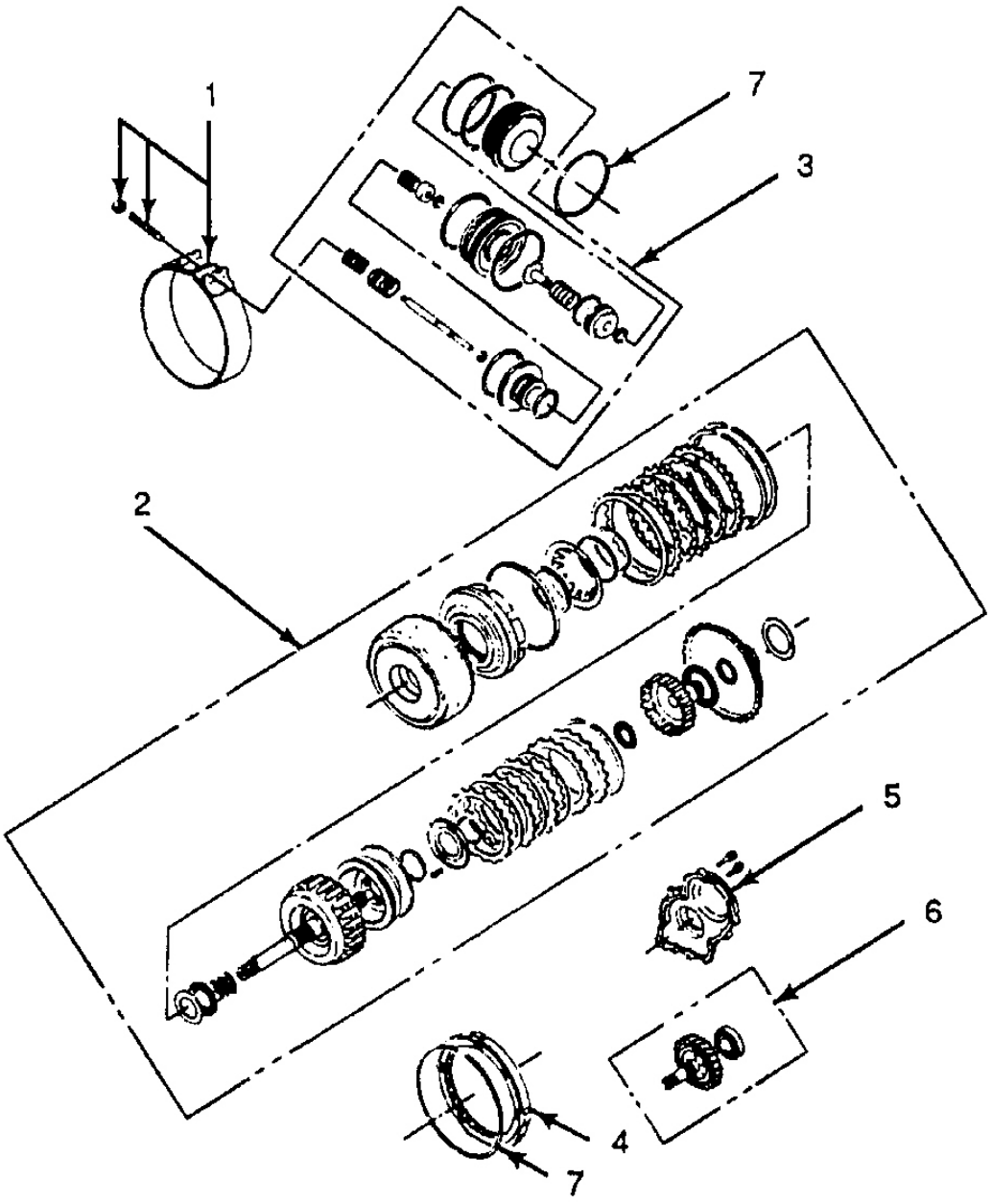


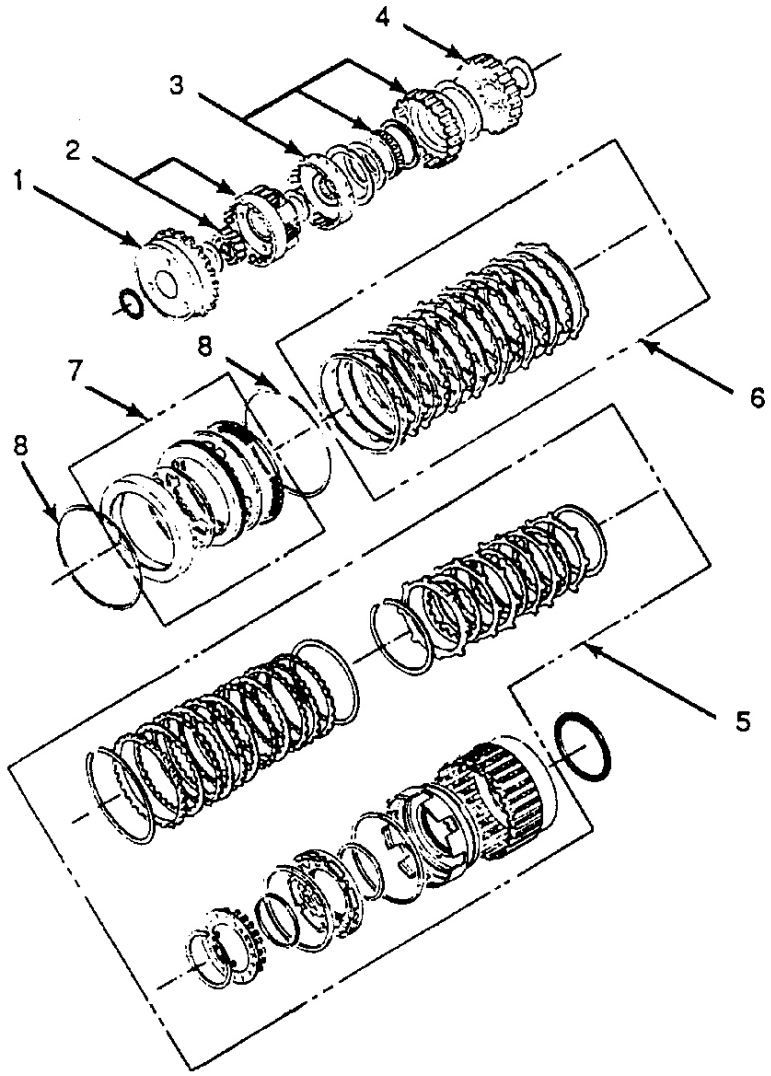
Fig. 3: Removing Seals & Springs
Courtesy of ISUZU MOTOR CO.



1. Anchor End Bolt & Brake Band
2. Input Shaft Assembly
3. Band-Servo
4. Low One-Way Clutch
5. Side Cover
6. Output Gear
7. Snap Ring

G00052605

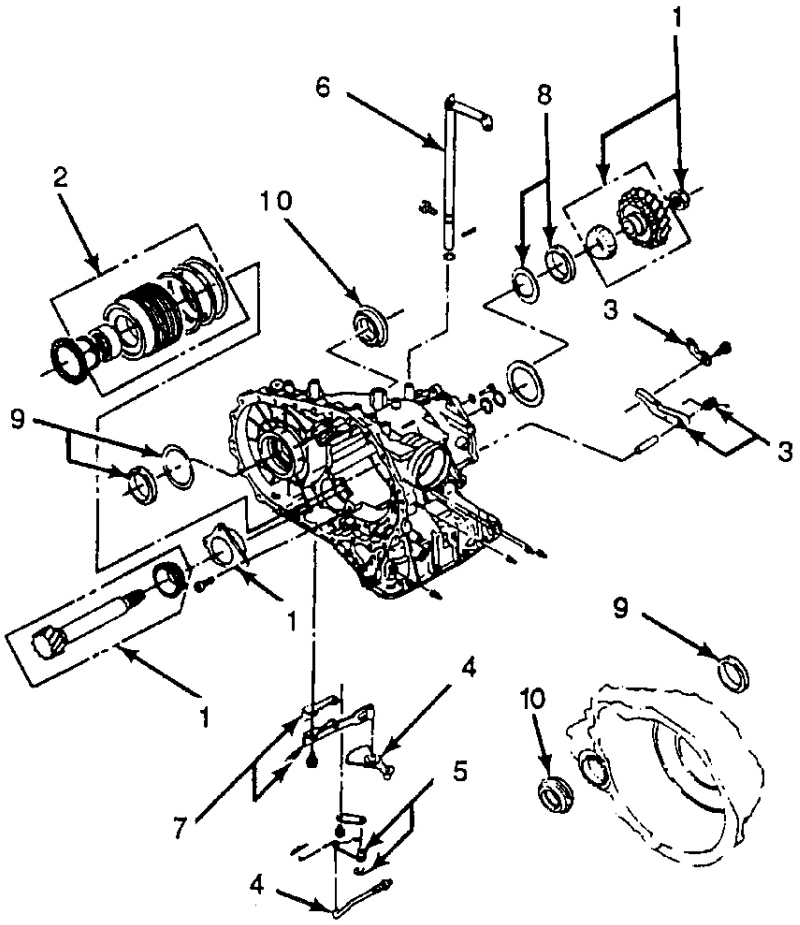
Fig. 4: Identifying Input Shaft Assembly
Courtesy of ISUZU MOTOR CO.



1. Front Planetary Carrier
2. Rear Sun Gear & Rear Planetary Carrier
3. Rear Internal Gear & Forward Clutch Hub
4. Overrun Clutch Hub
5. Forward Clutch Assembly
6. Snap Ring & Low & Reverse Brake
7. Low & Reverse Brake Piston
8. Snap Ring

G00052607

Fig. 5: Removing Brake & Clutches
Courtesy of ISUZU MOTOR CO.



1. Idler Gear, Reduction Gear & Reduction Gear Bearing Outer Race
2. Drum Support
3. Accumulator Piston
4. Parking Lever & Parking Rod
5. Return Spring, Parking Shaft, Parking Pawl & Parking Actuator Support
6. Manual Plate
7. Manual Shaft
8. Detent Spring & Support Plate
9. Idle Gear Bearing Outer Race & Shim
10. Differential Bearing Outer Race & Shim

G00052609

Fig. 6: Removing Idler Gear & Center Support
Courtesy of ISUZU MOTOR CO.

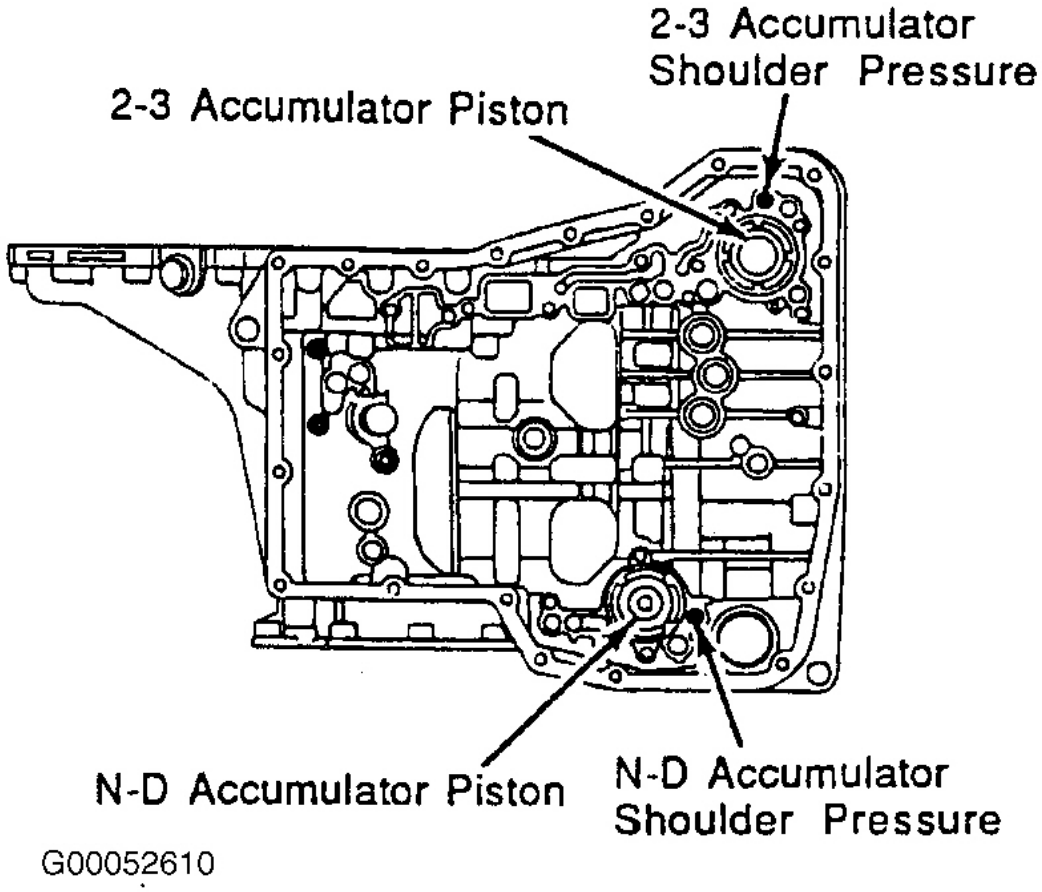


Fig. 7: Removing Accumulator Pistons
Courtesy of ISUZU MOTOR CO.

COMPONENT DISASSEMBLY & REASSEMBLY

OIL PUMP

Disassembly

Remove bolts (8) securing oil pump cover to oil pump housing. Remove cover from housing. Remove outer rotor, inner rotor, "O" ring, seal rings and oil seal. See **Fig. 8** .

Inspection

Inspect inner and outer rotor surfaces and bushings for wear or damage. Replace any defective part. Measure oil pump clearances. Using straight edge and feeler gauge, measure inner rotor-to-oil pump housing and outer rotor-to-oil pump housing. Measure with feeler gauge between inner rotor lobe and outer rotor lobe. See **OIL**

PUMP SPECIFICATIONS table. Replace any part not within specifications.

OIL PUMP SPECIFICATIONS

Application	Clearance In. (mm)
Inner Rotor-To-Oil Pump Housing	.0008-.0020 (.020-.050)
Outer Rotor-To-Oil Pump Housing	.0008-.0020 (.020-.050)
Inner Rotor-To-Outer Rotor	.0008-.0059 (.020-.150)

Reassembly

To reassemble, follow disassembly steps in reverse order. Install new "O" ring and seal rings. Lubricate all parts with ATF.

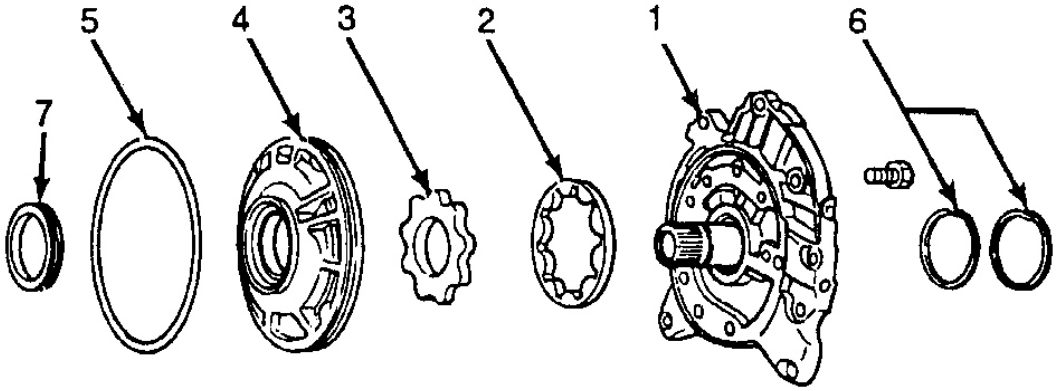


Fig. 8: Exploded View Of Oil Pump
Courtesy of ISUZU MOTOR CO.

VALVE BODY

Valve body is a precision part and should be handled with care. Disassembled parts should be kept in order for reassembly. If clutches or brake bands have been burnt, be sure to disassemble, clean and inspect valve body. Replace defective parts. Lubricate all parts with ATF before reassembly.

Disassembly

Remove terminal assembly (solenoids and ATF temperature sensors). Remove oil strainer bolts, support plate

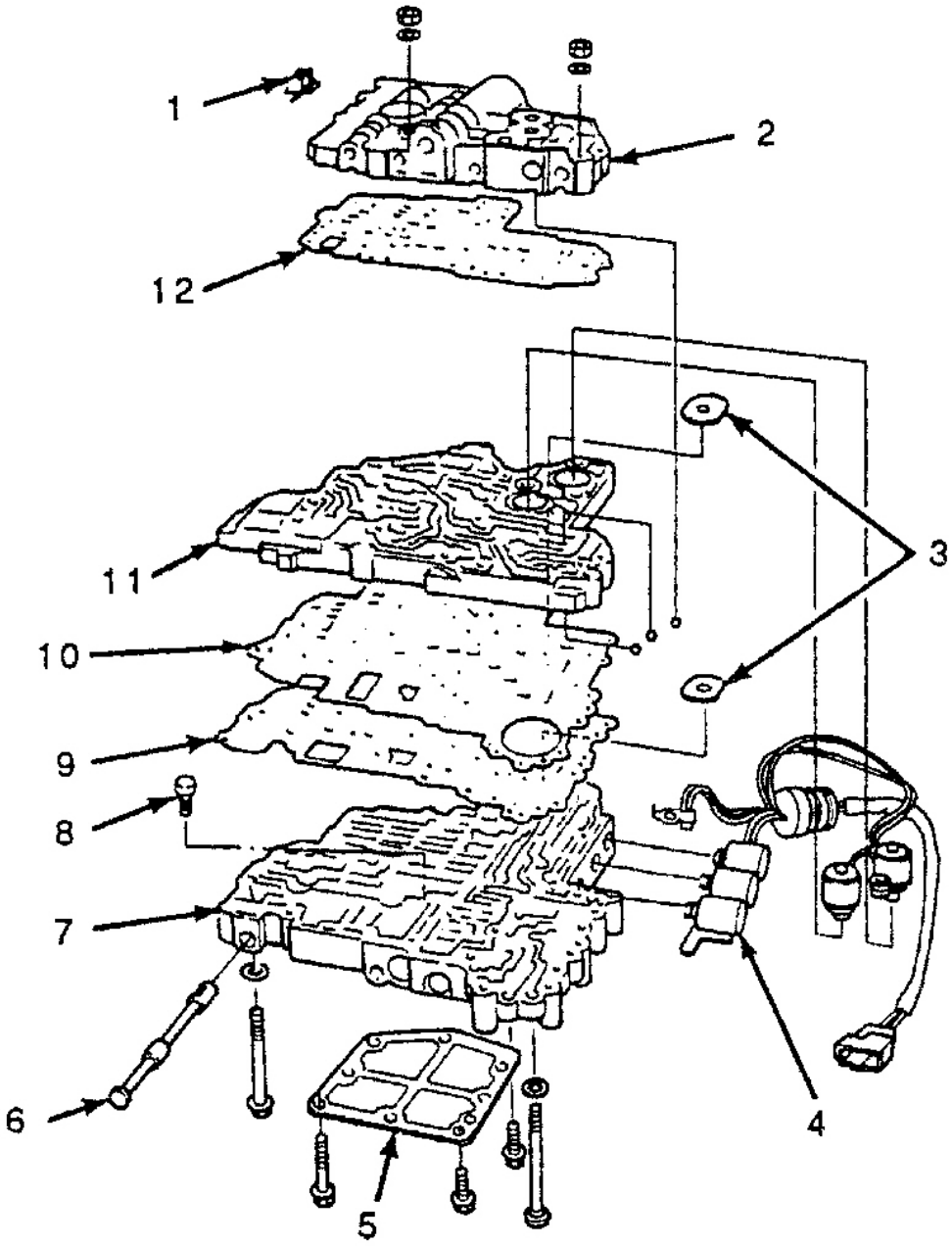
and oil strainer. See **Fig. 9** . Remove through bolts, upper valve body and separator plate "A". Remove inter body, lower gasket and separator plate "B". Remove steel balls, one-way cup, spring and pilot filter. See **Fig. 9** - **Fig. 11** . Remove manual valve, spring, plug and key. See **Fig. 9** -**Fig. 11** . For disassembly of upper and lower valve bodies, remove respective key, spring, plug and valve. Retain in proper order for reassembly. See **Fig. 12** and **Fig. 13** .

Inspection

Inspect for damage or wear to each valve and valve body. Check for damage in oil passages. Inspect valve operation. Inspect springs for free length. See **UPPER VALVE BODY SPRING SPECIFICATION** and **LOWER VALVE BODY SPRING SPECIFICATION** .

Reassembly

To reassemble, reverse disassembly procedures. Assemble each valve, spring, plug and key. See **Fig. 12** and **Fig. 13** . DO NOT push in with excessive force. Install pilot filter to separator plate "A". See **Fig. 9** . Install one-way cup and spring into lower valve body. Install separator plate "B", gasket and inter body to lower valve body. Install steel balls into each valve body and inter body. Install separator plate and stack valve body. Install valve body bolts. Tighten through bolts first then remaining bolts. Install solenoids and ATF temperature sensor. See **Fig. 9** -**Fig. 11** .



1. Pilot Filter
2. Upper Body
3. Support Plate
4. Terminal Assembly
5. Oil Strainer
6. Manual Valve
7. Lower Body
8. One-Way Cup
9. Separator Plate "B"
10. Gasket
11. Inter Body
12. Separator Plate "A"

G00052612

Fig. 9: Exploded View Of Valve Body
Courtesy of ISUZU MOTOR CO.

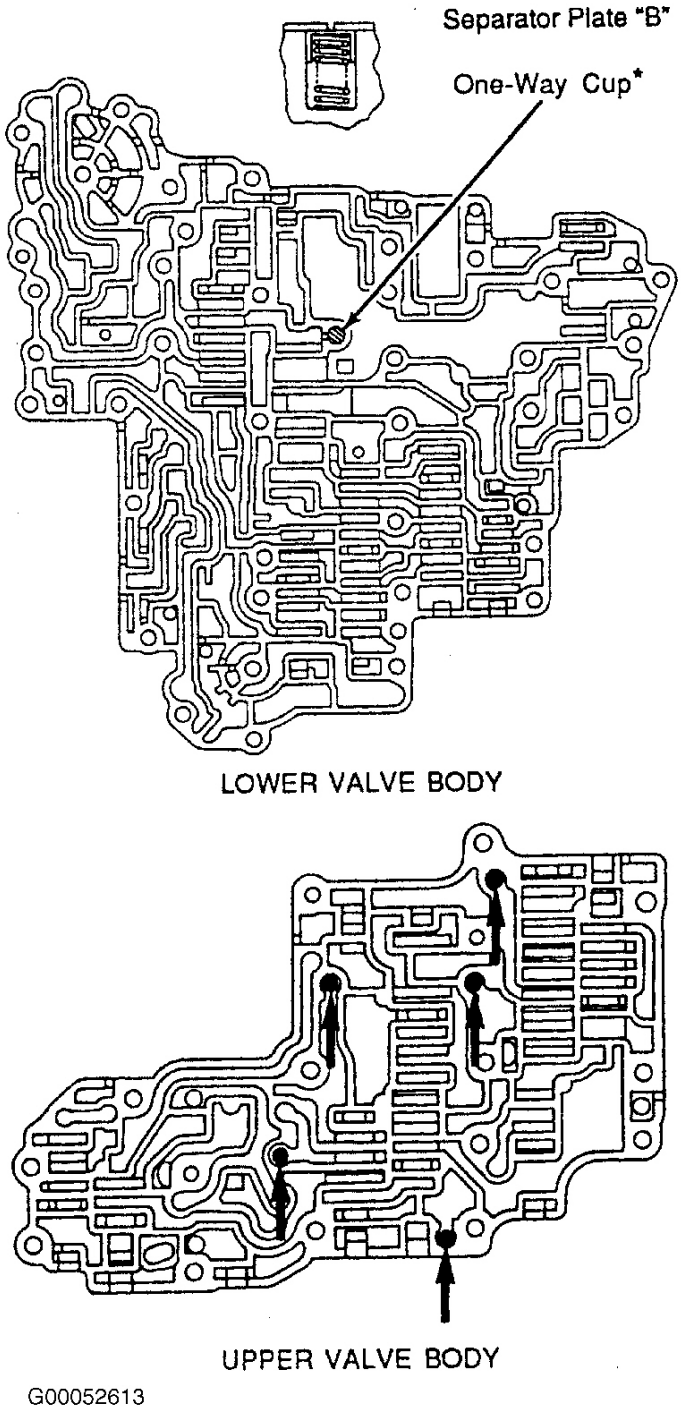
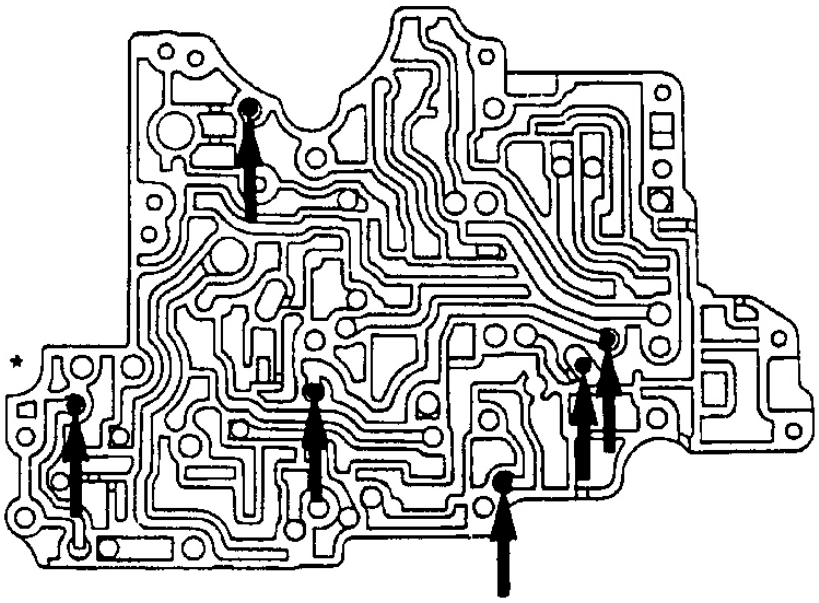
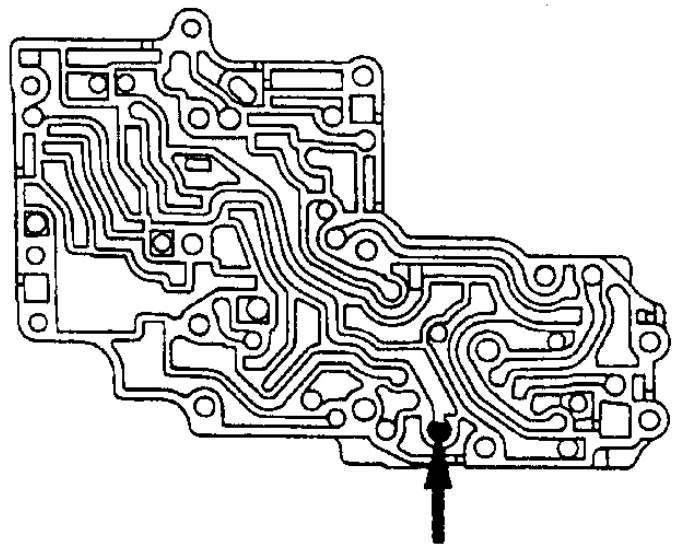


Fig. 10: Locating One-Way Cup & Check Balls
Courtesy of ISUZU MOTOR CO.



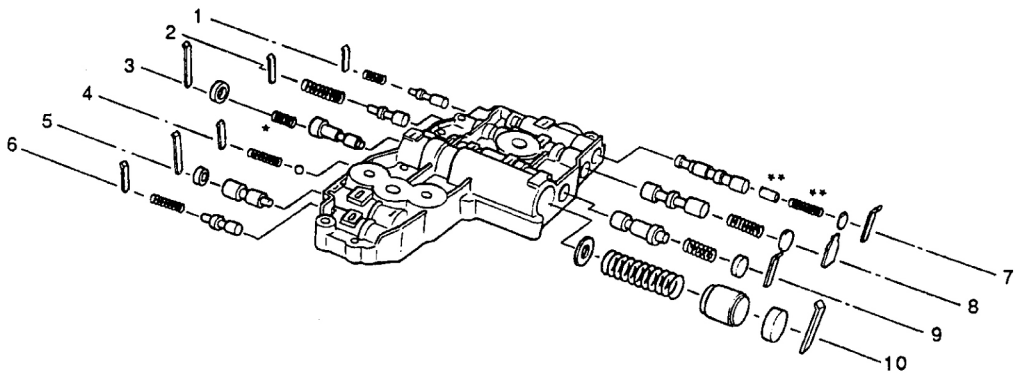
INTERBODY; LOWER SIDE



INTERBODY; UPPER SIDE

*Not used in Geo
G00052614

Fig. 11: Locating Check Balls
Courtesy of ISUZU MOTOR CO.

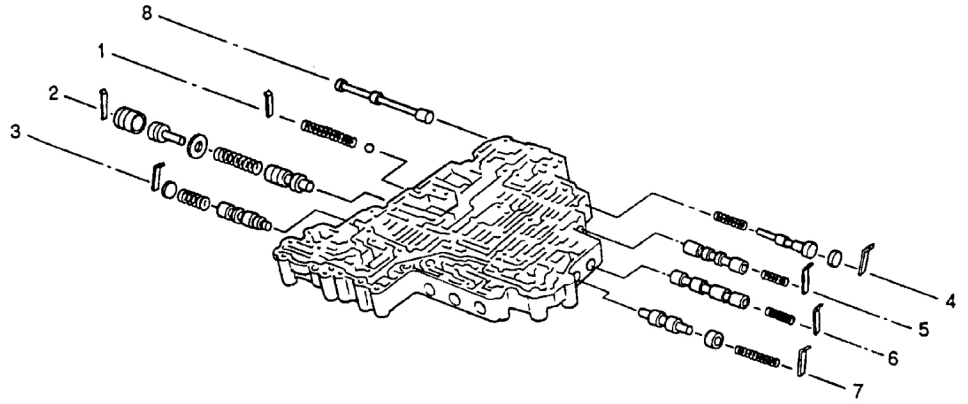


1. 3-2 Timing Valve (Spring, Key)
2. Pilot Valve (Spring, Key)
3. 1-2 Accumulator Valve (Spring, Plug, Key)
4. Torque Converter Relief Valve (Spring, Key)
5. Accumulator Control Valve (Plug, Key)
6. 1st Reducing Valve (Spring, Key)
7. Shuttle Shift Valve (Plug, Spring, Plug, Key)
8. Overrun Clutch Control Valve (Spring, Plug, Key)
9. Pressure Modifier Valve (Spring, Plug, Key)
10. 1-2 Accumulator (Retainer, Spring, Plug, Key)

* Not Used in Isuzu.
** Not Used in Geo.

G00052615

Fig. 12: Exploded View Of Upper Valve Body
Courtesy of ISUZU MOTOR CO.



1. Line Pressure Relief Valve (Spring, Key)
2. Pressure Regulator Valve (Spring, Spring Seat, Plug, Sleeve, Key)
3. Lock-Up Control Valve (Spring, Plug, Key)
4. Overrun Clutch Reducing Valve (Spring, Plug, Key)
5. Shift Valve "B" (Spring, Key)
6. Shift Valve "A" (Spring, Key)
7. 4-2 Sequence Valve (Sleeve, Spring, Key)
8. Manual Valve

G00052616

Fig. 13: Exploded View Of Lower Valve Body
Courtesy of ISUZU MOTOR CO.

UPPER VALVE BODY SPRING SPECIFICATION

Application	Spring Free Length In. (mm)	Spring Diameter In. (mm)
Accumulator Control Valve	(1)	(1)
Overrun Clutch Valve		

Geo	.984 (25.00)	.787 (20.00)
Isuzu	.984 (25.00)	.276 (7.00)
Pilot Valve		
Geo	1.318 (33.47)	.354 (9.00)
Isuzu	1.319 (33.50)	.354 (9.00)
Pressure Modifier Valve		
Geo	.787 (20.00)	.402 (10.20)
Isuzu	.783 (19.90)	.402 (10.20)
Shuttle Valve		
Isuzu	1.024 (26.00)	.224 (5.70)
Torque Converter Relief Valve		
Geo	.984 (25.00)	.276 (7.00)
Isuzu	1.087 (27.60)	.272 (6.90)
1st Reducing Valve		
Geo	1.008 (25.60)	.276 (7.00)
Isuzu	1.004 (25.50)	.276 (7.00)
1-2 Accumulator	(1)	(1)
1-2 Accumulator Valve		
Geo	.886 (22.50)	.329 (8.35)
3-2 Timing Valve		
Geo	.632 (16.06)	.276 (7.00)
Isuzu	.634 (16.10)	.276 (7.00)
(1) Information is not available from manufacturer.		

LOWER VALVE BODY SPRING SPECIFICATION

Application	Spring Free Length In. (mm)	Spring Diameter In. (mm)
Line Pressure Relief Valve	2.728 (69.30)	.378 (9.60)
Lock-Up Control Valve	1.161 (29.50)	.512 (13.00)
Overrun Clutch Reducing Valve	1.280 (32.50)	.276 (7.00)
Pressure Regulator Valve	2.169 (55.10)	.591 (15.00)
Shift Valve A	.984 (25.00)	.276 (7.00)
Shift Valve B	.984 (25.00)	.276 (7.00)
4-2 Sequence Valve	.866 (22.00)	.205 (5.20)

REVERSE CLUTCH

Disassembly

Remove snap ring(s), retaining plate, drive and driven plates and dished plate. Install Clutch Spring Compressors (J-23327A and J-38301-2) and compress piston return springs just enough to remove snap ring. Release spring compressor to remove spring retainer and return spring. See **Fig. 14** . Install reverse clutch drum over oil pump to remove piston while applying small amount of compressed air into oil passage. See **Fig. 15** .

Remove "D" ring and lip seal from piston.

Inspection

1. Inspect drive plate facing for thickness. Isuzu models specifications are .055-.063" (1.40-1.60 mm). Geo does not give specifications. Replace drive plates if any damage or cracks are found in facing. If any damage, deformation or local wear is found in a snap ring, return spring or spring retainer, replace it.
2. Inspect check ball operation in clutch piston by applying air pressure to check ball hole on side opposite return spring. Air should not pass check ball. Apply air pressure to piston check ball from return spring side. Air should pass through.

Reassembly

1. Install "D" ring and lip seal on piston. Coat "D" ring and lip seal with ATF. Install piston into clutch drum with a rotating motion. Install return spring and spring retainer. Compress return spring with Spring Compressor (J-23327A, J-38301-2) just enough to install snap ring. Install dished plate with dish toward piston. Install drive and driven plates, retaining plate and snap ring(s). See **Fig. 14** .
2. Install reverse clutch on oil pump. Apply air pressure to oil passage to check for proper operation of piston. See **Fig. 15** .
3. Measure clearance with a feeler gauge between snap ring and retainer plate. Standard limit is .020-.031" (.50-.80 mm) and maximum limit is .047" (1.20 mm). If not within specifications, 5 selective size retainer plates are available in a range of .189-.220" (4.80-5.60 mm) in .008" (.20 mm) increments.

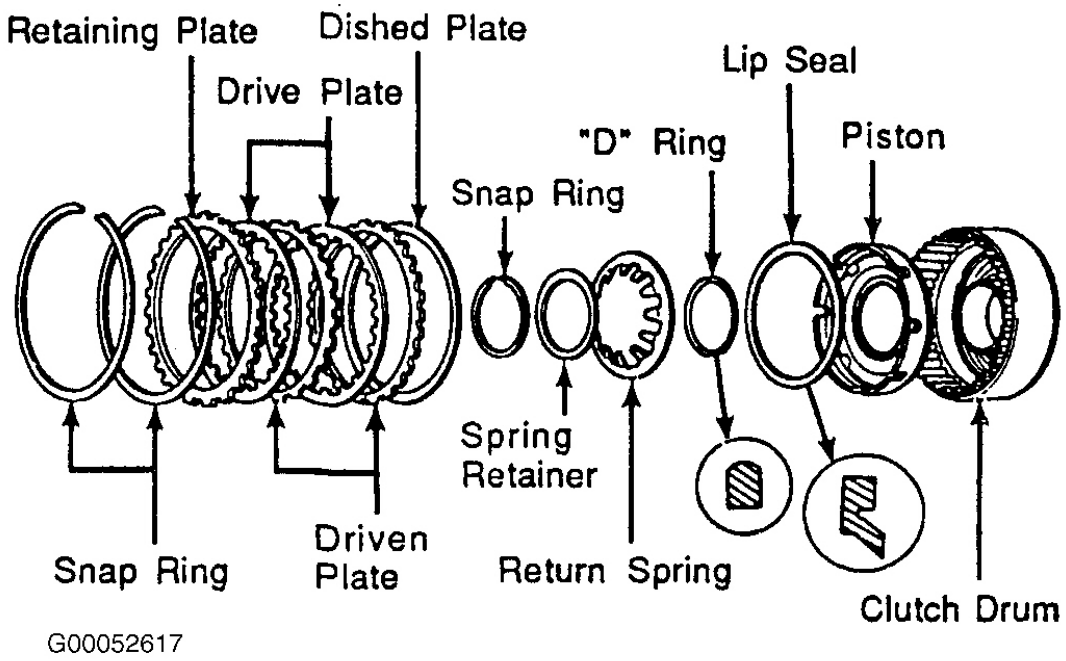


Fig. 14: Exploded View Of Reverse Clutch

Courtesy of ISUZU MOTOR CO.

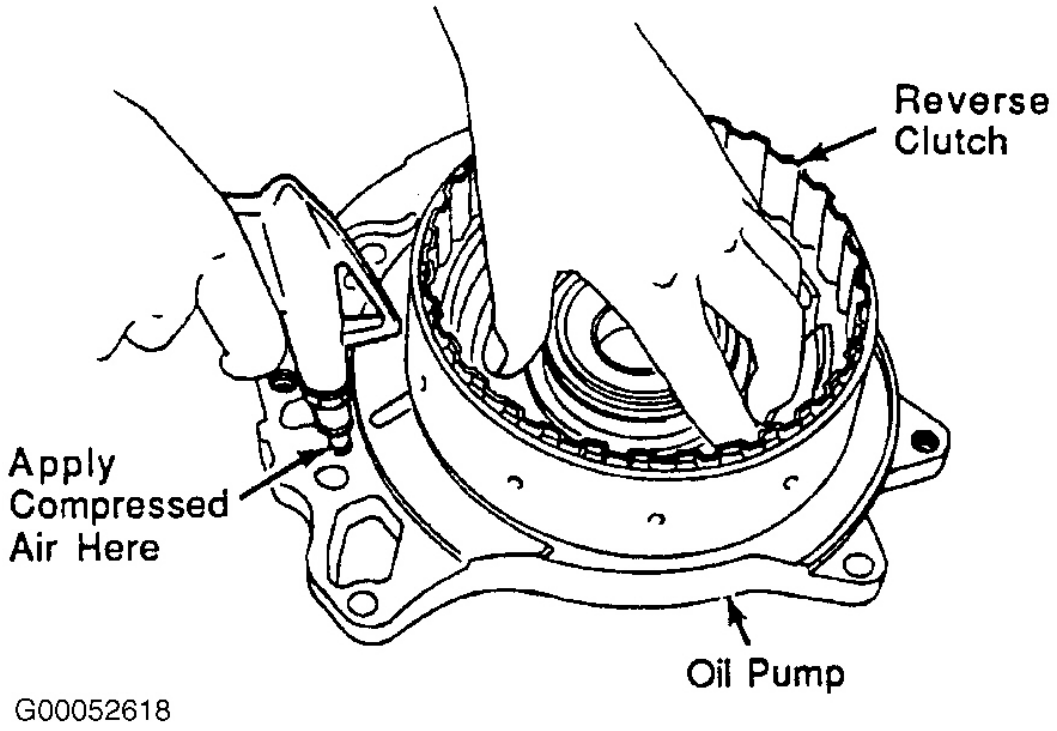


Fig. 15: Removing Or Checking Reverse Clutch Piston
Courtesy of ISUZU MOTOR CO.

BRAKE BAND & BAND SERVO

Disassembly and Reassembly

Disassemble by removing 2nd inner and outer return springs. Remove "E" ring from piston stem, piston stem, thrust washer, spring retainer, 4th return spring, 2nd piston and "D" rings. Remove "O" rings from 2nd retainer. Remove "E" ring from spring retainer, spring retainer, 4th cushion spring, 4th piston, 4th piston "D" ring and 4th retainer "O" rings. See **Fig. 16** . Inspect components for damage or wear on brake band, pistons and springs. Measure spring free length. See **BRAKE BAND SERVO SPRING SPECIFICATIONS** table. Reassembly is reversal of disassembly.

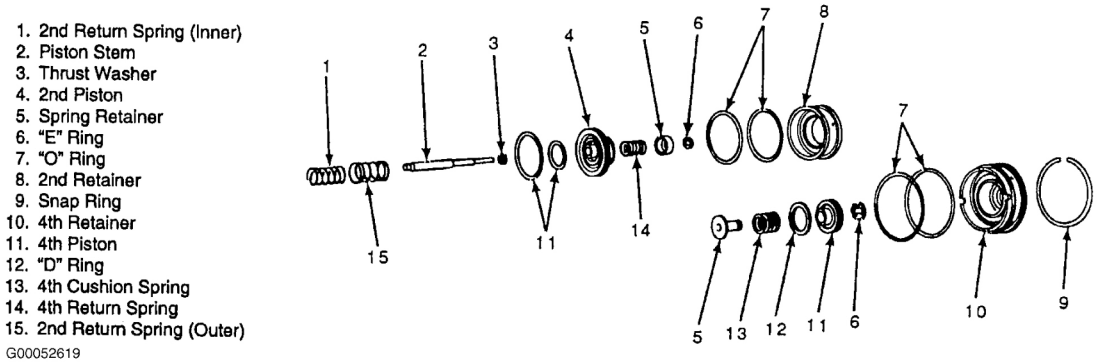


Fig. 16: Exploded View Of Brake Band Servo
Courtesy of ISUZU MOTOR CO.

BRAKE BAND SERVO SPRING SPECIFICATIONS

Application	Free Length In. (mm)	Outer Diameter In. (mm)
Inner 2nd Return Spring	1.506 (38.25)	.866 (22.00)
Outer 2nd Return Spring	1.506 (38.25)	1.043 (26.50)
4th Return Spring	1.096 (27.83)	.748 (19.00)
4th Cushion Spring	.866 (22.00)	.996 (25.30)

ACCUMULATOR PISTON

Disassembly & Reassembly

Disassembly is performed in **TRANSAXLE DISASSEMBLY** . Reassembly is performed in **TRANSAXLE REASSEMBLY** . Note lay out of components. See **Fig. 7** .

Inspection

Inspect each piston sliding surface for damage. Replace any defective part. N-D accumulator piston small end measures 1.14" (29.0 mm) and large diameter measures 1.77" (45.0 mm). 2-3 accumulator piston small diameter measures 1.26" (32.0 mm) and large diameter measures 1.97" (50.0 mm). Measure N-D accumulator spring free length. N-D accumulator spring free length is 1.791" (45.50 mm) with outside diameter measurement of .661" (16.80 mm).

HIGH CLUTCH

Disassembly & Reassembly

Disassemble high clutch by removing snap ring, retainer plate, spacer (Geo) and drive and driven plates. See **Fig. 17** . Using Spring Compressor (J-25024, J-38301-1), compress return springs and remove snap ring. Remove spring compressor, spring retainer and return springs. Apply compressed air to oil passage between seal ring grooves to remove high clutch piston. See **Fig. 18** .

Inspection

Inspect drive plate facing for thickness. Replace drive plate if thickness is .055" (1.40 mm) or less. Replace drive plate if damaged or cracked. Inspect for deformation or local wear of snap ring, return spring and spring retainer. Inspect check ball for proper operation by applying compressed air to check ball hole opposite to spring seat side, air should not pass through. Apply air to check ball from spring seat side and air should pass through.

Reassembly

Reassembly is reverse of disassembly. See **Fig. 17** . Install new "D" rings on piston. After installing retainer plate snap ring, apply compressed air to oil passage to check for smooth operation of high clutch piston. See **Fig. 18** . Using feeler gauge, measure clearance between retaining plate and snap ring. Standard clearance is .071-.087" (1.80-2.20 mm). Maximum allowable limit is .110" (2.80 mm). If not within specifications replace retaining plate. Selective size retaining plates are available in a range of .142-.173" (3.60-4.40 mm) in approximately .008" (.20 mm) increments.

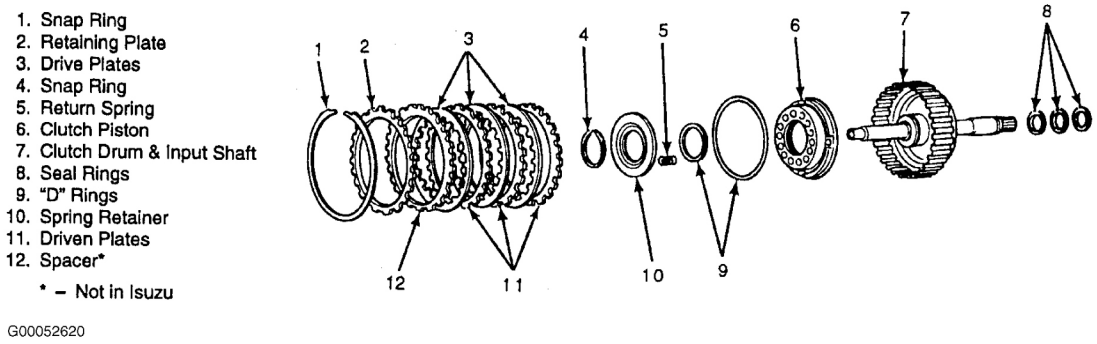


Fig. 17: Exploded View Of High Clutch
Courtesy of ISUZU MOTOR CO.

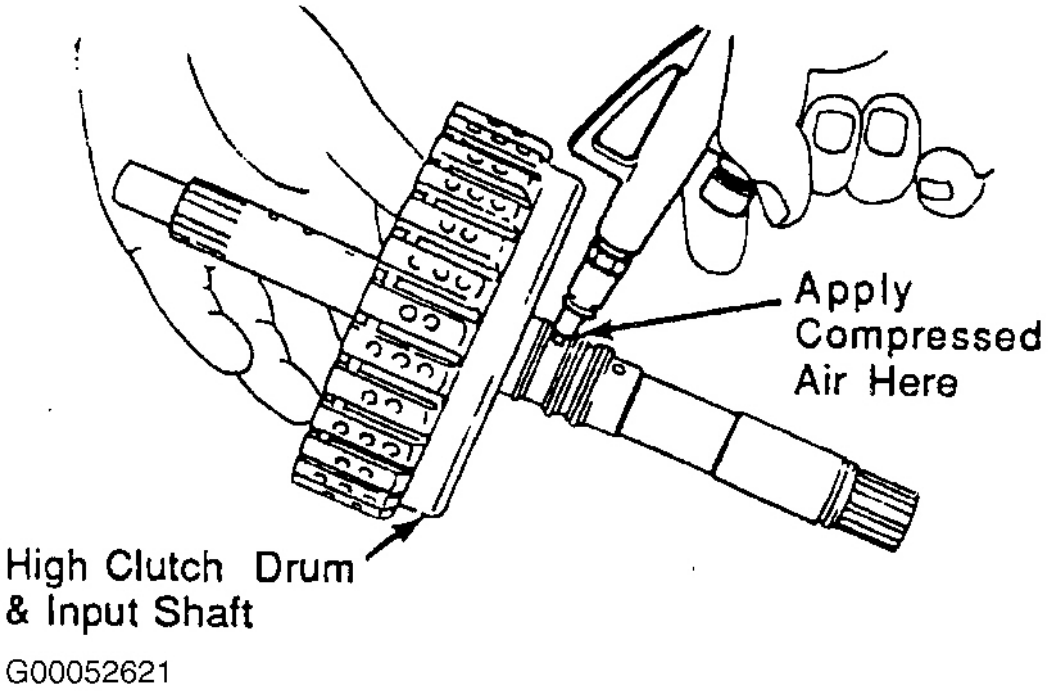


Fig. 18: Removing & Checking High Clutch Piston
Courtesy of ISUZU MOTOR CO.

FORWARD CLUTCH & OVERRUN CLUTCH

Disassembly & Reassembly

1. Disassemble by removing forward clutch retainer plate snap ring, retainer plate, drive and driven plates and dished plate. Remove overrun clutch retainer plate snap ring, retainer plate, drive and driven plates and dished plate. See **Fig. 19** .
2. Using Spring Compressor (J-23327) compress clutch piston return spring and remove snap ring. Remove spring compressor and spring retainer assembly.
3. Install forward clutch drum on drum support in transaxle case. Apply compressed air to oil passage to remove forward clutch piston. See **Fig. 20** . Remove overrun clutch piston from forward clutch piston. Remove "D" ring and lip seal from both pistons.

Inspection

Inspect drive plates, return springs, spring retainer and snap ring for cracks, distortions and excessive wear. Replace as necessary. Inspect check ball by applying compressed air to check ball hole from spring retainer side of both clutches; air should pass through. Apply compressed air to opposite side of return spring of both clutch pistons; air should not pass through. Measure drive plate thickness. If forward clutch drive plates are .055" (1.40

mm) or less for Geo or .071" (1.80 mm) or less for Isuzu, replace drive plates. If overrun clutch drive plates are .055" (1.40 mm) or less, replace drive plates.

Reassembly

1. Reassembly is reverse of disassembly. Install new "D" rings and lip seals on pistons. Install pistons with a rotating motion, ensure forward clutch piston notches are aligned with grooves in forward clutch drum. Ensure spring retainer assembly spring spacing aligns with spring seat spacing of overrun clutch piston. Install dished plates with dish toward pistons. Ensure 5 driven plates and 3 drive plates are installed after dished plate on forward clutch assembly. See **Fig. 19** .
2. After forward and overrun clutches are assembled, install forward clutch on drum support. Inspect overrun clutch operation while applying compressed air to oil passages. See **Fig. 31** . If forward clutch does not operate or if piston stroke is too short, remove piston for reinspection.
3. Use a feeler gauge to measure, clearance between retaining plate and snap ring of overrun clutch. If clearance exceeds .079" (2.00 mm) replace retainer plate with selective size retainer plate. Plates are available in a range of .118-.150" (3.00-3.80 mm) in .008" (.20 mm) increments.
4. Use a feeler gauge to measure, clearance between retainer plate and snap ring of forward clutch. If clearance exceeds .089" (2.25 mm) replace retainer plate. Retainer plates are available in a range of .142-.173" (3.60-4.40 mm) in approximately .008" (.20 mm) increments.

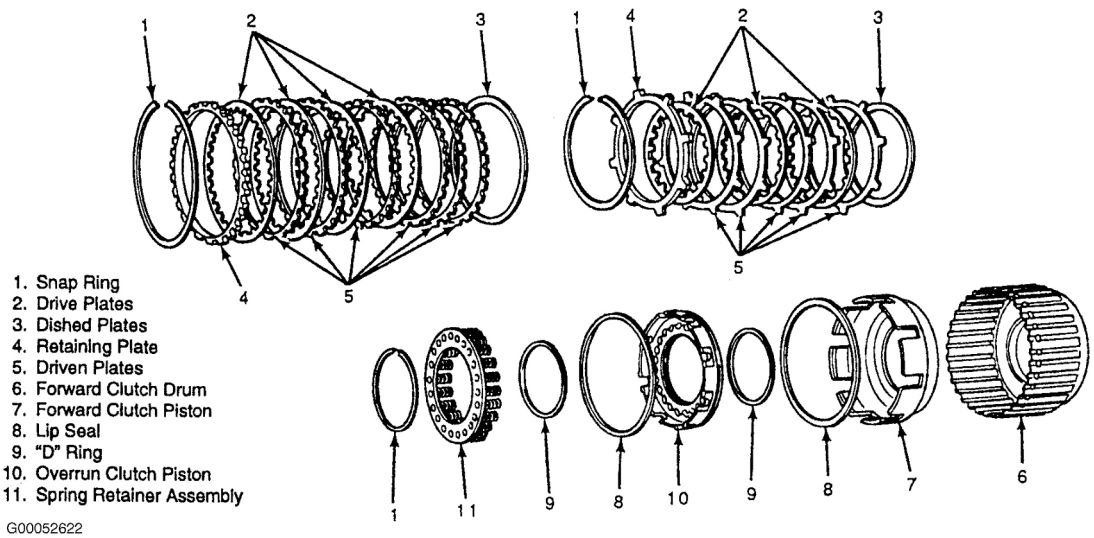


Fig. 19: Forward Clutch & Overrun Clutch Components
Courtesy of ISUZU MOTOR CO.

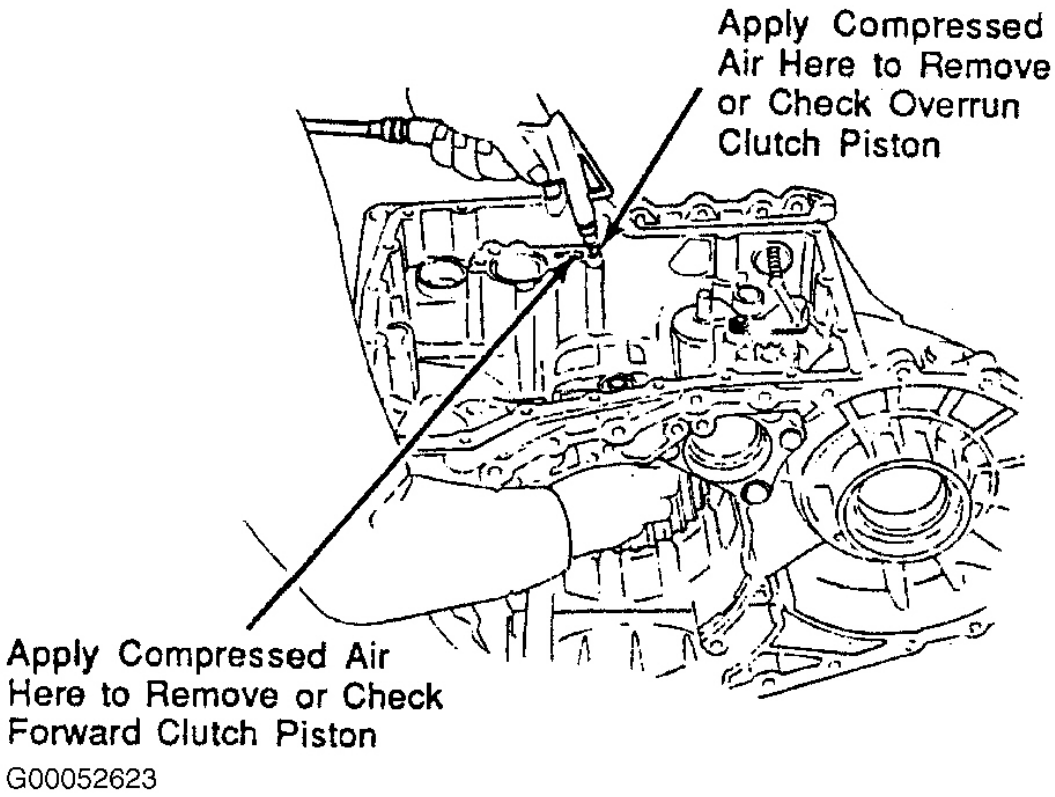


Fig. 20: Removing & Checking Forward Clutch & Overrun Clutch Pistons
Courtesy of ISUZU MOTOR CO.

LOW & REVERSE BRAKE

Disassembly & Reassembly

NOTE: Disassembly is performed in TRANSAXLE DISASSEMBLY . Reassembly is performed in TRANSAXLE REASSEMBLY . Note lay out of components. See Fig. 21 .

Inspection

Inspect drive plates, return springs, spring retainer and snap rings for cracks, distortion and excessive wear. Replace as necessary. Measure drive plate thickness. If thickness is .055" (1.40 mm) or less, replace drive plates.

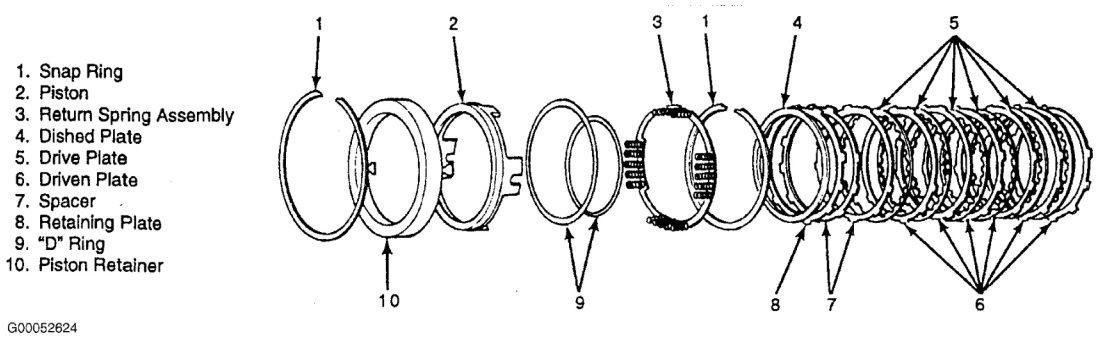


Fig. 21: Low & Reverse Brake Components
Courtesy of ISUZU MOTOR CO.

FORWARD ONE-WAY CLUTCH & REAR INTERNAL GEAR

Disassembly

Disassemble by removing rear internal gear, thrust washer (4), forward one-way clutch and side races. See **Fig. 22** .

Inspection

Inspect gear for wear or damage on gear face, replace as necessary. Inspect each part for wear or damage on sliding surface. Replace parts as necessary.

Reassembly

To reassemble, follow disassembly steps in reverse order. Install one-way clutch in forward clutch hub with lip to outside of forward clutch hub. See **Fig. 22** . Ensure rear internal gear rotates clockwise when holding forward clutch hub.

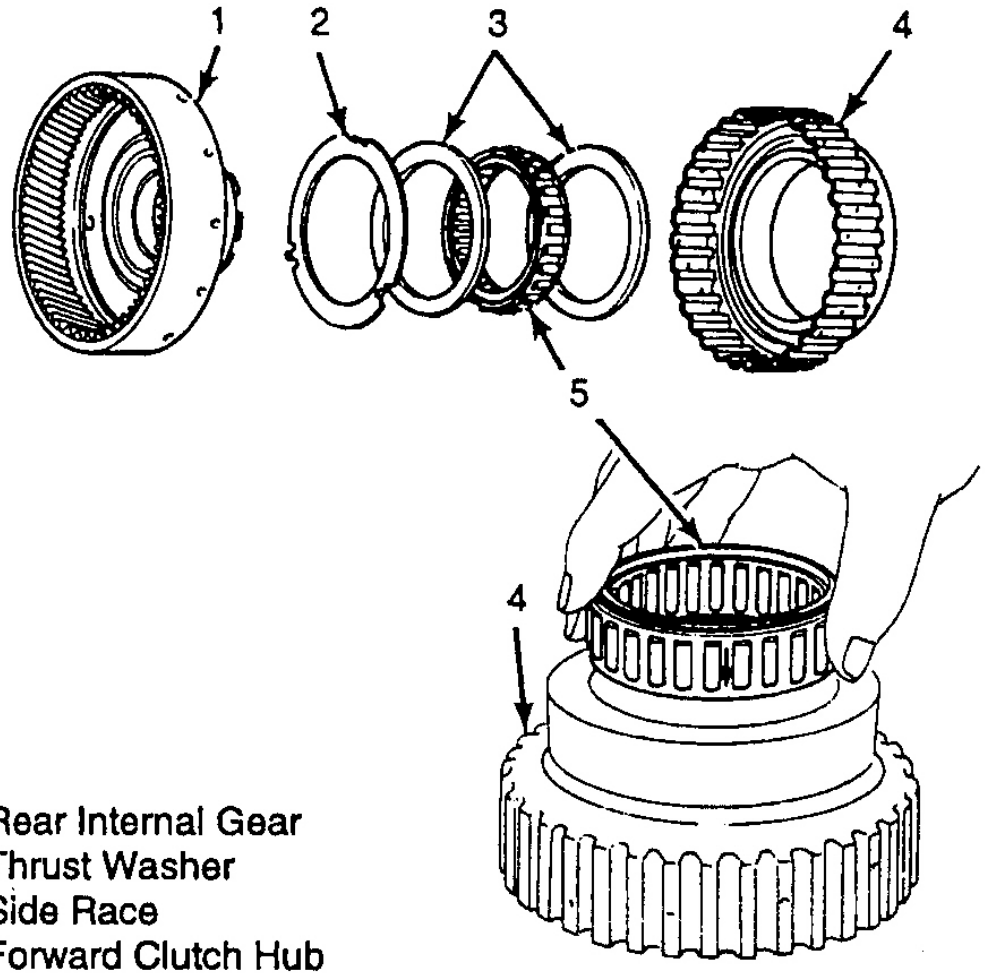


Fig. 22: Forward Clutch Hub & Rear Internal Gear Components
Courtesy of ISUZU MOTOR CO.

OUTPUT GEAR

Disassembly

Remove output gear bearing from gear using Bearing Remover (J-38288) and Remover Pilot (J-38289).

Inspection

Inspect gear and bearing for damage or wear. Replace as necessary.

Reassembly

Install output gear bearing on gear using a press.

REDUCTION GEAR

Disassembly

Remove reduction gear bearing from gear using Remover (J-38296) and a press.

Inspection

Inspect gear and bearing for damage or wear. Replace parts as necessary.

Reassembly

Install bearing on reduction gear using Installer (J-6133-01) with a press.

IDLER GEAR

Disassembly

Remove bearing from idler gear using Puller (J-22888), Puller Legs (J-22888-50) and Pilot (J-8107-2) or suitable bearing puller.

Inspection

Inspect gear and bearing for damage or wear. Replace parts as necessary.

Reassembly

Install idler gear bearing on idler gear using Installer (J-38328) and Driver Handle (J-8092) or suitable pipe and drive on bearing with a hammer.

DRUM SUPPORT

Disassembly

Remove thrust bearing, seal rings and needle bearings.

Inspection

Inspect for damage or wear on drum support and bearings. Inspect for broken or worn snap rings.

Reassembly

Follow disassembly steps in reverse order. Apply petroleum jelly to new seal rings and thrust bearings, install on drum support.

DIFFERENTIAL CASE

Disassembly

1. Remove side bearing from differential case using Puller (J-22888), Puller Legs (J-22888-50) and Pilot (J-35288). Remove speedometer drive gear if worn or damaged by cutting flukes of speedometer drive gear.
2. Remove ring gear bolts and discard, for they are not reusable. Remove lock pin, pinion pin, pinion gears, pinion gear thrust washers, side gears and side gear thrust washers. See **Fig. 23** .

Inspection

1. Inspect differential case, pinion gears, side gears and ring gear for cracks, scratches or excessive wear. Replace parts as necessary.
2. For Isuzu, measure clearance between pinion gear and pinion pin. Replace parts if clearance is greater than .008" (.20 mm). Measure clearance between differential case and side gear. Replace parts if clearance is .006" (.15 mm) or greater. Measure diameter in differential case of drive axle shaft area. If greater than 1.077" (27.35 mm), replace parts as necessary. Geo does not specify above measurements.
3. Using dial indicator, measure backlash of side gear to pinion gear. If backlash is beyond .012" (.30 mm), install thrust washers. See **Fig. 23** .

Reassembly

1. Install side gear thrust washers and side gears into differential case. Install pinion gears, thrust washer, pinion pin and lock pin. Stake edge of lock pin hole on case with a punch and hammer. Install speedometer drive gear (if removed) by heating gear to 203° F (95°C) with a heat gun before installing gear. DO NOT use water to heat gear.
2. Install differential side bearings with Installer (J-38328), Handle (J-8092) and Pilot (J-35288). Drive on bearings with a hammer. Install ring gear with new bolts and tighten in sequence. See **Fig. 23** .

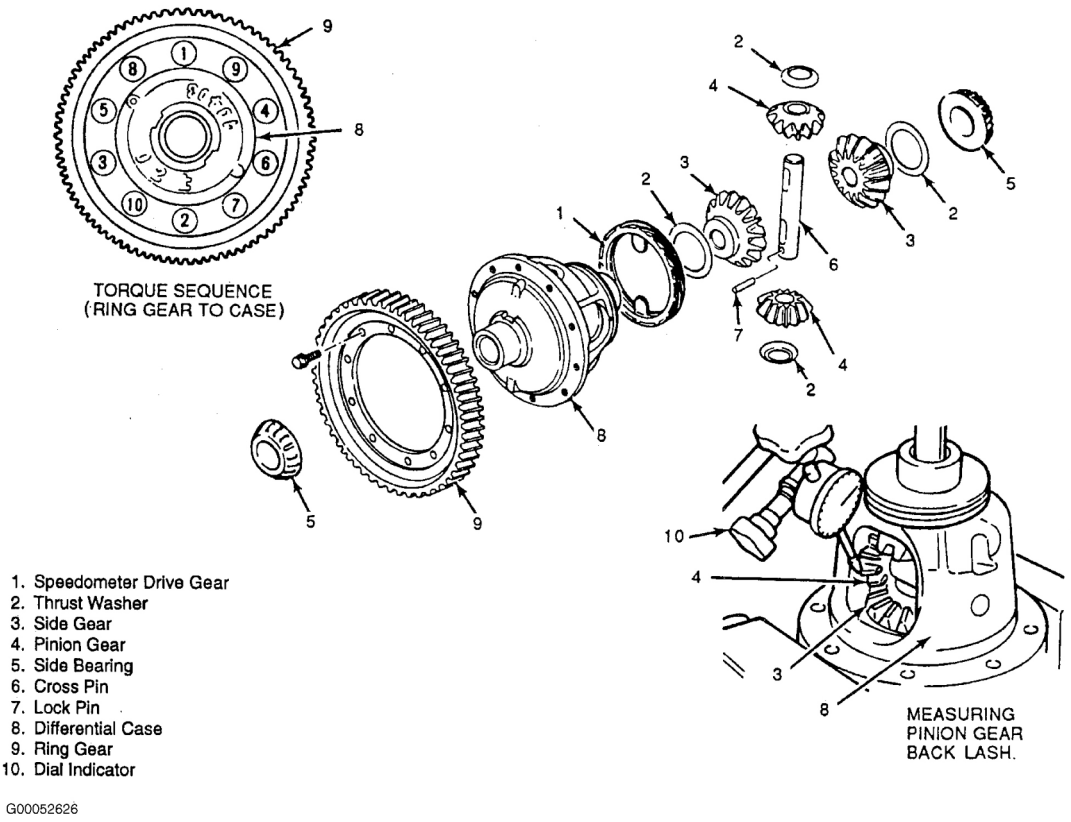


Fig. 23: Exploded View Of Differential Measuring Backlash & Torque Sequence
Courtesy of ISUZU MOTOR CO.

TRANSAXLE REASSEMBLY

NOTE: When installing component parts and thrust bearings, note location. See Fig. 24 .

BEARING PRELOAD

Differential Bearing Preload

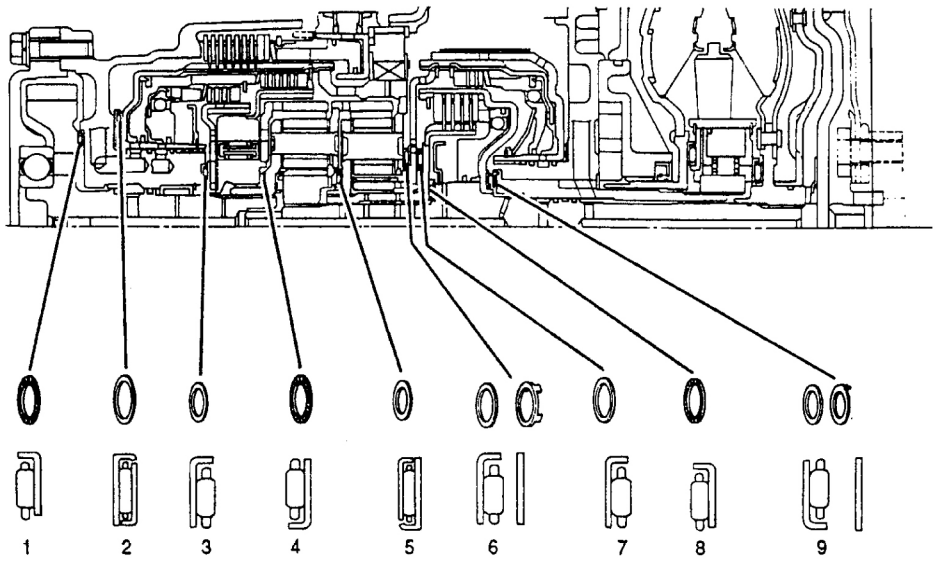
1. Install differential side bearing outer race in converter housing with Adaptor (J-38412), Driver Handle (J-8092) and hammer.
2. Place Bridge and Leg Assembly (J35284-1), Bridge Extension (J-35284-19), Gauge Cylinder (J-35284-4) and Gauge Pin (J-35284-24) on transaxle case over differential side bearing race seat. Loosen thumb screw, allowing gauge cylinder to rest on side bearing race seat. Tighten thumb screw and remove tool from case. See **Fig. 25** .
3. Install differential case assembly in converter housing. Install differential side bearing race on exposed side bearing. Set gauge assembly on converter housing over differential case. Loosen thumb screw allowing gauge pin to rest on bearing race and lock gauge pin with thumb screw. Measure with a feeler gauge, gap between gauge cylinder and gauge pin or measure gap with available shims. See **Fig. 26** .

Selective size shims are available. See **DIFFERENTIAL SHIM SIZE** table.

DIFFERENTIAL SHIM SIZE

In.	mm
.0047	.120
.0063	.160
.0079	.200
.0094	.240
.0110	.280
.0126	.320
.0142	.360
.0157	.400
.0173	.440
.0189	.480
.0205	.520
.0220	.560
.0236	.600
.0252	.640
.0268	.680
.0283	.720
.0299	.760
.0315	.800
.0331	.840
.0346	.880
.0362	.920

4. Install selected shim into side bearing race bore of transaxle case. Install bearing race with Installer (J-38412), driver handle and hammer.
5. Install transaxle case to torque converter housing with 4 bolts. Install Adaptor (J-35259-2A) into differential from torque converter side. Install INCH lb. torque wrench to adaptor. Measure rotational torque. Torque specification is 7-10 INCH lbs. (.78-1.18 N.m). If torque value is less than specified, select next thicker size shim. If rotational torque is within specification, remove transaxle case from differential case assembly.



Thrust Bearing Dimensions

Outer Diameter	In. (mm)	3.425 (87.00)	4.252 (108.00)	2.224 (56.50)	1.969 (50.00)	2.008 (51.00)	2.756 (70.00)	2.756 (70.00)	1.654 (42.00)	1.992 (50.60)
Inner Diameter	In. (mm)	2.760 (70.10)	3.352 (85.15)	1.575 (40.00)	1.382 (35.10)	1.303 (33.10)	1.972 (50.10)	1.972 (50.10)	.906 (23.00)	1.366 (34.70)

G00052627

Fig. 24: Locating Thrust Bearings
Courtesy of ISUZU MOTOR CO.

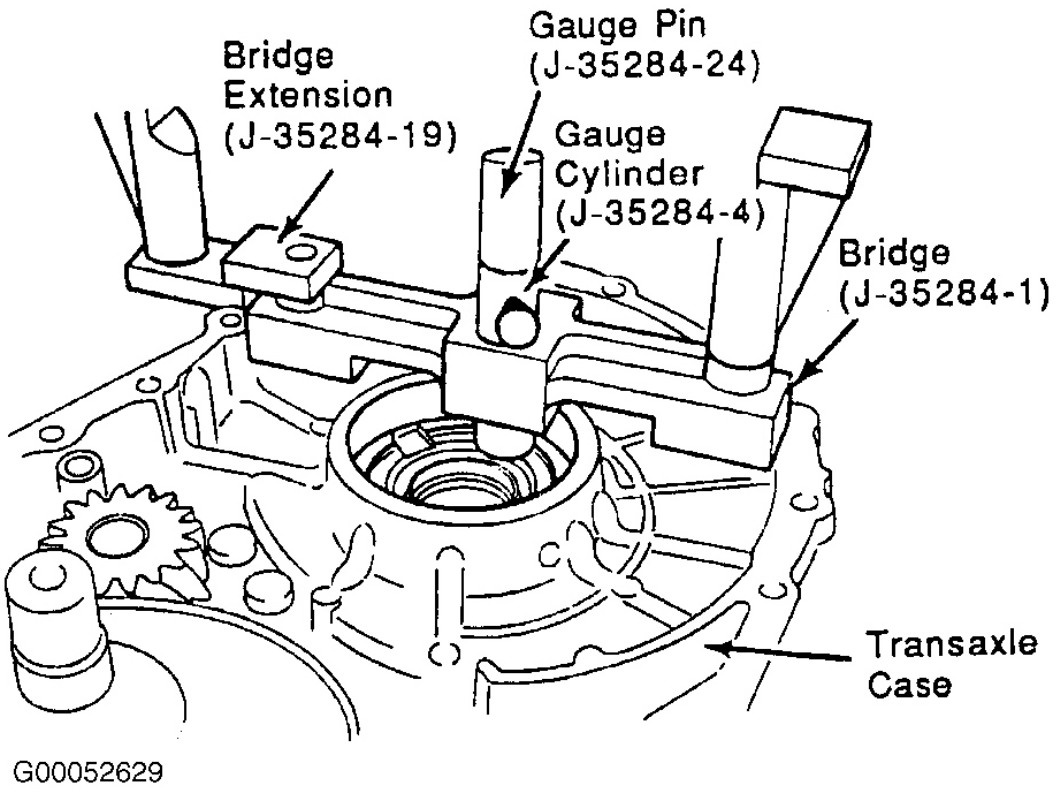


Fig. 25: Measuring Differential Bearing Race Seat Depth
Courtesy of ISUZU MOTOR CO.

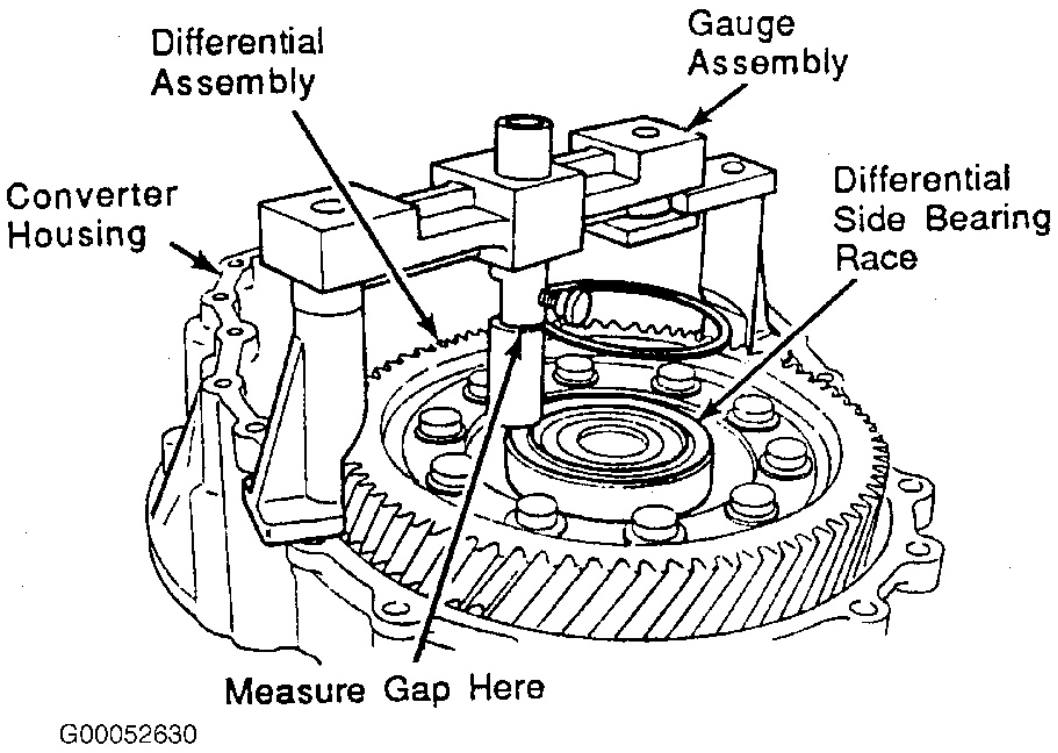


Fig. 26: Measuring Differential Bearing Race Height
Courtesy of ISUZU MOTOR CO.

Idler Gear Bearing Preload

1. Install reduction gear bearing outer race in transaxle case. Tighten 5 bolts to specifications. Install reduction gear in transaxle case.
2. Place Bridge and Leg Assembly (J-35284-1), Gauge Cylinder (J-35284-4), Gauge Pin (J-35284-26) and dial indicator on transaxle case over reduction gear shaft. See **Fig. 28** . Measure distance of idler gear bearing seat, this is dimension "A". Measure distance to shoulder on reduction gear shaft, this is dimension "B". Subtract dimension "B" from dimension "A", this is dimension "C". See **Fig. 28** .
3. Place bearing outer race onto bearing on idler gear. Using bridge and leg assembly, gauge cylinder and dial indicator, measure dimensions "X" and "Y". Subtract "X" from "Y". This equals "Z". See **Fig. 29** . Using dimension "C" above, and "Z", select appropriate shim. See **IDLER GEAR BEARING SHIM SIZE** table. See **Fig. 27** .

IDLER GEAR BEARING SHIM SIZE

In.	mm
.0047	.120
.0055	.140
.0063	.160

.0079	.200
.0094	.240
.0110	.280
.0126	.320
.0142	.360
.0157	.400
.0173	.440
.0189	.480
.0205	.520
.0220	.560
.0236	.600
.0252	.640
.0268	.680
.0283	.720
.0299	.760
.0315	.800
.0331	.840
.0346	.880
.0362	.920
.0386	.980
.0567	1.440
.0717	1.820
.0772	1.960

IDLER GEAR BEARING SELECTIVE SHIM SPECIFICATIONS In (mm)

C \ Z	.0033-.0037 (.085-.094)	.0037-.0040 (.095-.104)	.0041-.0044 (.105-.114)	.0045-.0048 (.115-.124)	.0049-.0052 (.125-.134)	.0053-.0056 (.135-.144)	.0057-.0060 (.145-.154)	.0061-.0064 (.155-.164)	.0065-.0068 (.165-.174)	.0068-.0072 (.175-.184)	.0072-.0076 (.185-.194)	.0076-.0080 (.195-.204)	.0080-.0084 (.205-.214)	.0084-.0088 (.215-.224)
.0486-.0489 (1.235-1.244)	.043 (1.10)	.042 (1.08)	.042 (1.08)	.041 (1.06)	.041 (1.06)	.040 (1.04)	.040 (1.04)	.040 (1.02)	.040 (1.02)	.039 (1.00)	.039 (1.00)	.038 (.98)	.038 (.98)	.037 (.96)
.0490-.0493 (1.245-1.254)	.043 (1.10)	.043 (1.10)	.042 (1.08)	.042 (1.08)	.041 (1.06)	.041 (1.06)	.040 (1.04)	.040 (1.04)	.040 (1.02)	.040 (1.02)	.039 (1.00)	.039 (1.00)	.038 (.98)	.038 (.98)
.0494-.0497 (1.255-1.264)	.044 (1.12)	.043 (1.10)	.043 (1.10)	.042 (1.08)	.042 (1.08)	.041 (1.06)	.041 (1.06)	.040 (1.04)	.040 (1.04)	.040 (1.02)	.040 (1.02)	.039 (1.00)	.039 (1.00)	.038 (.98)
.0498-.0501 (1.265-1.274)	.044 (1.12)	.044 (1.12)	.043 (1.10)	.043 (1.10)	.042 (1.08)	.042 (1.08)	.041 (1.06)	.041 (1.06)	.040 (1.04)	.040 (1.04)	.040 (1.02)	.040 (1.02)	.039 (1.00)	.039 (1.00)
.0502-.0505 (1.275-1.284)	.044 (1.14)	.044 (1.12)	.044 (1.12)	.043 (1.10)	.043 (1.10)	.042 (1.08)	.042 (1.08)	.041 (1.06)	.041 (1.06)	.040 (1.04)	.040 (1.04)	.040 (1.02)	.040 (1.02)	.039 (1.00)
.0506-.0509 (1.285-1.294)	.044 (1.14)	.044 (1.14)	.044 (1.12)	.044 (1.12)	.043 (1.10)	.043 (1.10)	.042 (1.08)	.042 (1.08)	.041 (1.06)	.041 (1.06)	.040 (1.04)	.040 (1.04)	.040 (1.02)	.040 (1.02)
.0510-.0513 (1.295-1.304)	.045 (1.16)	.044 (1.14)	.044 (1.14)	.044 (1.12)	.044 (1.12)	.043 (1.10)	.043 (1.10)	.042 (1.08)	.042 (1.08)	.041 (1.06)	.041 (1.06)	.040 (1.04)	.040 (1.04)	.040 (1.02)
.0514-.0517 (1.305-1.314)	.045 (1.16)	.045 (1.16)	.044 (1.14)	.044 (1.14)	.044 (1.12)	.044 (1.12)	.043 (1.10)	.043 (1.10)	.042 (1.08)	.042 (1.08)	.041 (1.06)	.041 (1.06)	.040 (1.04)	.040 (1.04)
.0518-.0521 (1.315-1.324)	.046 (1.18)	.045 (1.16)	.045 (1.16)	.044 (1.14)	.044 (1.14)	.044 (1.12)	.044 (1.12)	.043 (1.10)	.043 (1.10)	.042 (1.08)	.042 (1.08)	.041 (1.06)	.041 (1.06)	.040 (1.04)
.0522-.0525 (1.325-1.334)	.046 (1.18)	.046 (1.18)	.045 (1.16)	.045 (1.16)	.044 (1.14)	.044 (1.14)	.044 (1.12)	.044 (1.12)	.043 (1.10)	.043 (1.10)	.042 (1.08)	.042 (1.08)	.041 (1.06)	.041 (1.06)
.0526-.0529 (1.335-1.344)	.047 (1.20)	.046 (1.18)	.046 (1.18)	.045 (1.16)	.045 (1.16)	.044 (1.14)	.044 (1.14)	.044 (1.12)	.044 (1.12)	.043 (1.10)	.043 (1.10)	.042 (1.08)	.042 (1.08)	.041 (1.06)
.0530-.0533 (1.345-1.354)	.047 (1.20)	.047 (1.20)	.046 (1.18)	.046 (1.18)	.045 (1.16)	.045 (1.16)	.044 (1.14)	.044 (1.14)	.044 (1.12)	.044 (1.12)	.043 (1.10)	.043 (1.10)	.042 (1.08)	.042 (1.08)
.0534-.0537 (1.355-1.364)	.048 (1.22)	.047 (1.20)	.047 (1.20)	.046 (1.18)	.046 (1.18)	.045 (1.16)	.045 (1.16)	.044 (1.14)	.044 (1.14)	.044 (1.12)	.044 (1.12)	.043 (1.10)	.043 (1.10)	.042 (1.08)
.0538-.0541 (1.365-1.374)	.048 (1.22)	.048 (1.22)	.047 (1.20)	.047 (1.20)	.046 (1.18)	.046 (1.18)	.045 (1.16)	.045 (1.16)	.044 (1.14)	.044 (1.14)	.044 (1.12)	.044 (1.12)	.043 (1.10)	.043 (1.10)
.0542-.0544 (1.375-1.384)	.048 (1.24)	.048 (1.22)	.048 (1.22)	.047 (1.20)	.047 (1.20)	.046 (1.18)	.046 (1.18)	.045 (1.16)	.045 (1.16)	.044 (1.14)	.044 (1.14)	.044 (1.12)	.044 (1.12)	.043 (1.10)
.0545-.0548 (1.385-1.394)	.048 (1.24)	.048 (1.24)	.048 (1.22)	.048 (1.22)	.047 (1.20)	.047 (1.20)	.046 (1.18)	.046 (1.18)	.045 (1.16)	.045 (1.16)	.044 (1.14)	.044 (1.14)	.044 (1.12)	.044 (1.12)
.0549-.0552 (1.395-1.404)	.049 (1.26)	.048 (1.24)	.048 (1.24)	.048 (1.22)	.048 (1.22)	.047 (1.20)	.047 (1.20)	.046 (1.18)	.046 (1.18)	.045 (1.16)	.045 (1.16)	.044 (1.14)	.044 (1.14)	.044 (1.12)
.0553-.0556 (1.405-1.414)	.049 (1.26)	.049 (1.26)	.048 (1.24)	.048 (1.24)	.048 (1.22)	.048 (1.22)	.047 (1.20)	.047 (1.20)	.046 (1.18)	.046 (1.18)	.045 (1.16)	.045 (1.16)	.044 (1.14)	.044 (1.14)
.0557-.0560 (1.415-1.424)	.050 (1.28)	.049 (1.26)	.049 (1.26)	.048 (1.24)	.048 (1.24)	.048 (1.22)	.048 (1.22)	.047 (1.20)	.047 (1.20)	.046 (1.18)	.046 (1.18)	.045 (1.16)	.045 (1.16)	.044 (1.14)
.0561-.0564 (1.425-1.434)	.050 (1.28)	.050 (1.28)	.049 (1.26)	.049 (1.26)	.048 (1.24)	.048 (1.24)	.048 (1.22)	.048 (1.22)	.047 (1.20)	.047 (1.20)	.046 (1.18)	.046 (1.18)	.045 (1.16)	.045 (1.16)
.0565-.0568 (1.435-1.444)	.051 (1.30)	.050 (1.28)	.050 (1.28)	.049 (1.26)	.049 (1.26)	.048 (1.24)	.048 (1.24)	.048 (1.22)	.048 (1.22)	.047 (1.20)	.047 (1.20)	.046 (1.18)	.046 (1.18)	.045 (1.16)
.0569-.0572 (1.445-1.454)	.051 (1.30)	.051 (1.30)	.050 (1.28)	.050 (1.28)	.049 (1.26)	.049 (1.26)	.048 (1.24)	.048 (1.24)	.048 (1.22)	.048 (1.22)	.047 (1.20)	.047 (1.20)	.046 (1.18)	.046 (1.18)

G00052628

Fig. 27: Idler Gear Bearing Selective Shim Specifications
Courtesy of ISUZU MOTOR CO.

4. Install selected shim into transaxle case. Using Bearing Race Installer (J-35290), Handle (J-8092) and hammer, install bearing race into transaxle case.
5. Install new "O" ring on manual shaft. Install manual shaft and new locate bolt. Start spring pin into

manual plate. Install manual plate on manual shaft and drive in spring pin. Install parking actuator support in transaxle case. Install parking pawl, parking shaft and return spring. Install parking rod, parking lever and secure with "E" ring. See **Fig. 6** .

6. Install new "O" rings on accumulator pistons. Install N-D accumulator piston return spring. Install accumulator pistons into transaxle case. See **Fig. 7** .
7. Using Installer (J-33411) and hammer, install idler gear on reduction gear shaft. Wipe all oil off lock nut seat on idler gear. Engage parking pawl to parking gear and torque lock nut to 167 ft. lbs. (226 N.m). Ensure idler gear turns smoothly with a torque of 14 INCH lbs. (1.58 N.m). If rotation is rough, install appropriate shims. Stake lock nut to idler gear shaft with a punch.
8. Align oil holes in drum support with oil holes in transaxle case and secure with 6 bolts. See **Fig. 30** . Install low and reverse brake drive and driven plate and snap ring. See **Fig. 21** . Apply petroleum jelly to forward clutch-to-transaxle case thrust bearing (2). Install bearing on forward clutch. Install forward clutch assembly into case. Ensure end face of drum support and inner side of forward clutch drum are flush with each other. See **Fig. 31** .
9. Apply petroleum jelly to thrust washer and bearing race (3) and install on overrun clutch hub. Install overrun clutch hub into case until it contacts thrust bearing on drum support. Install forward clutch hub and rear internal gear. Apply petroleum jelly to thrust bearing (4) and place over rear planetary carrier hub. Install rear planetary carrier into rear internal gear. Install rear sun gear. See **Fig. 5** .
10. Install low and reverse brake return springs to low and reverse brake piston. Apply petroleum jelly to thrust bearing (5) and install on rear of front planetary carrier. Apply petroleum jelly to thrust bearing (6) and install on front of front planetary carrier. Assemble low and reverse piston to low and reverse brake piston retainer. Install low and reverse brake piston, piston retainer and front planetary carrier into case. Both oil passages in low and reverse brake piston retainer and transaxle case must be aligned after assembly. Using Compressor (J-38298) and Bridges (J-35279-1 and J-35279-5) compress low reverse piston retainer and install snap ring. See **Fig. 21** .
11. Install low one-way clutch on front planetary carrier with retainer tongue positioned to front. Install front sun gear to engage front pinion gear. Engage parking pawl with parking gear, insert output gear and engage it with rear carrier. Install one-way clutch into correct position while rotating front sun gear clockwise. Remove output gear and front sun gear. Ensure one-way clutch is flush with front planetary carrier and install snap ring. See **Fig. 5** and **Fig. 32** .
12. Install servo return spring, servo piston, servo piston retainer and snap ring. Apply petroleum jelly to thrust bearing (9) and install in reverse clutch. Install high clutch in reverse clutch. Install thrust bearing (8) into high clutch and install high clutch hub. Install thrust bearing (7) to high clutch hub. Install front sun gear and bearing race (6). Install reverse and high clutch assembly into transaxle case. Install brake band and tighten new anchor end bolt lightly. See **Fig. 4** .

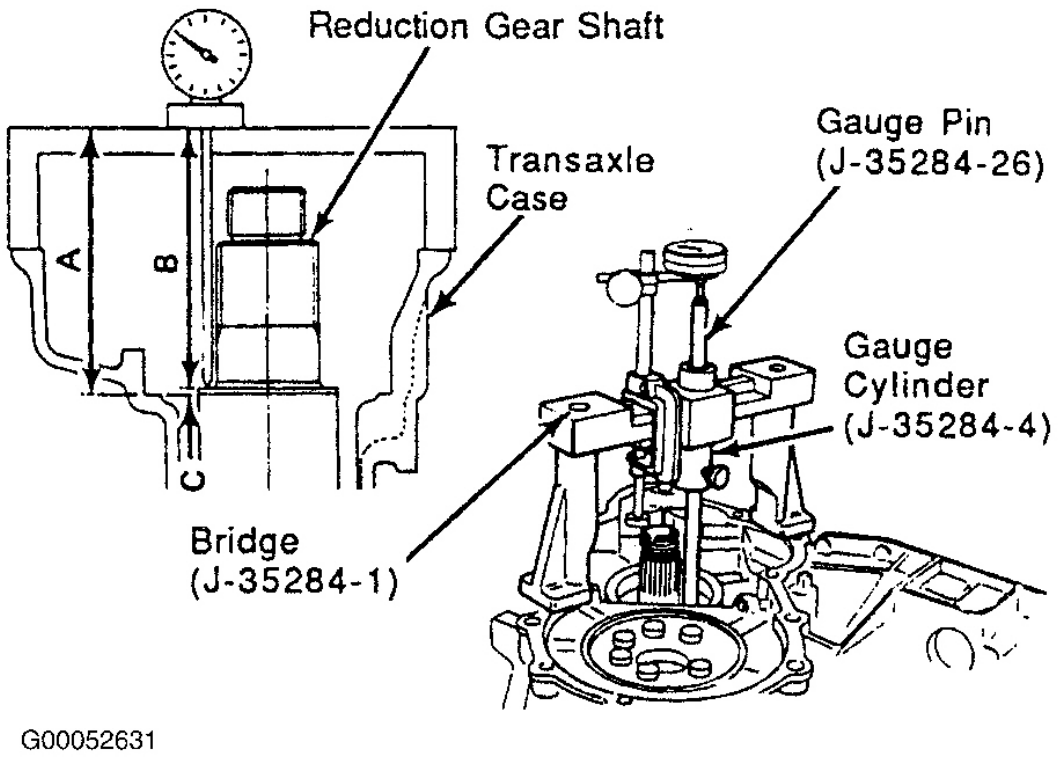


Fig. 28: Measuring Idler Gear "C" Dimension
Courtesy of ISUZU MOTOR CO.

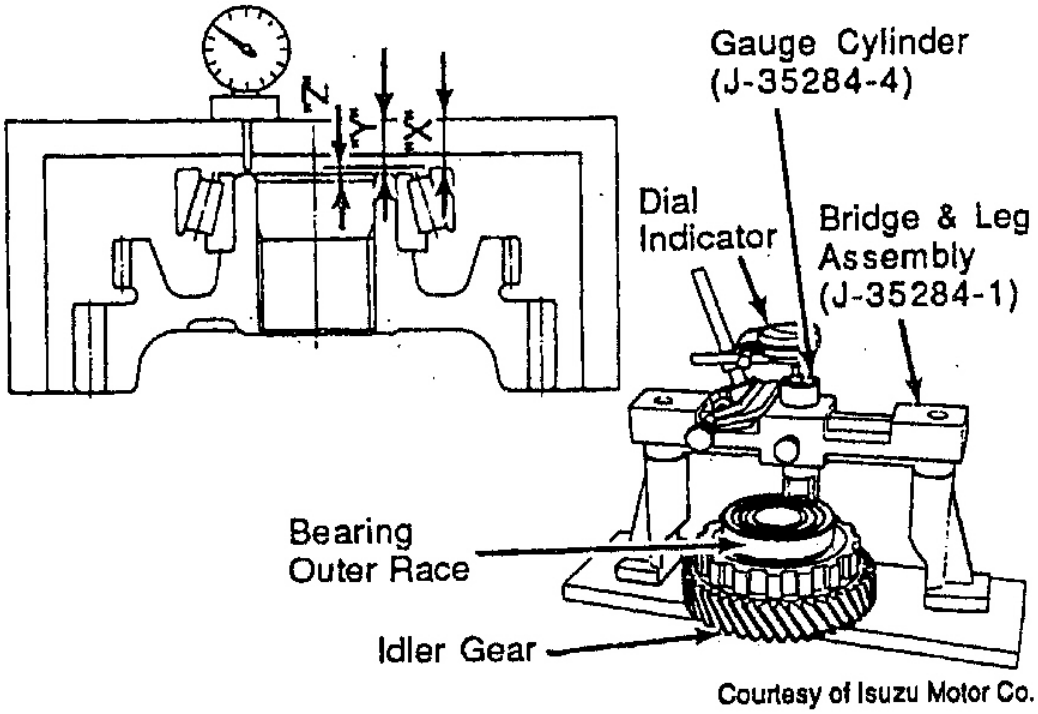


Fig. 29: Measuring Idler Gear "Z" Dimension
Courtesy of ISUZU MOTOR CO.

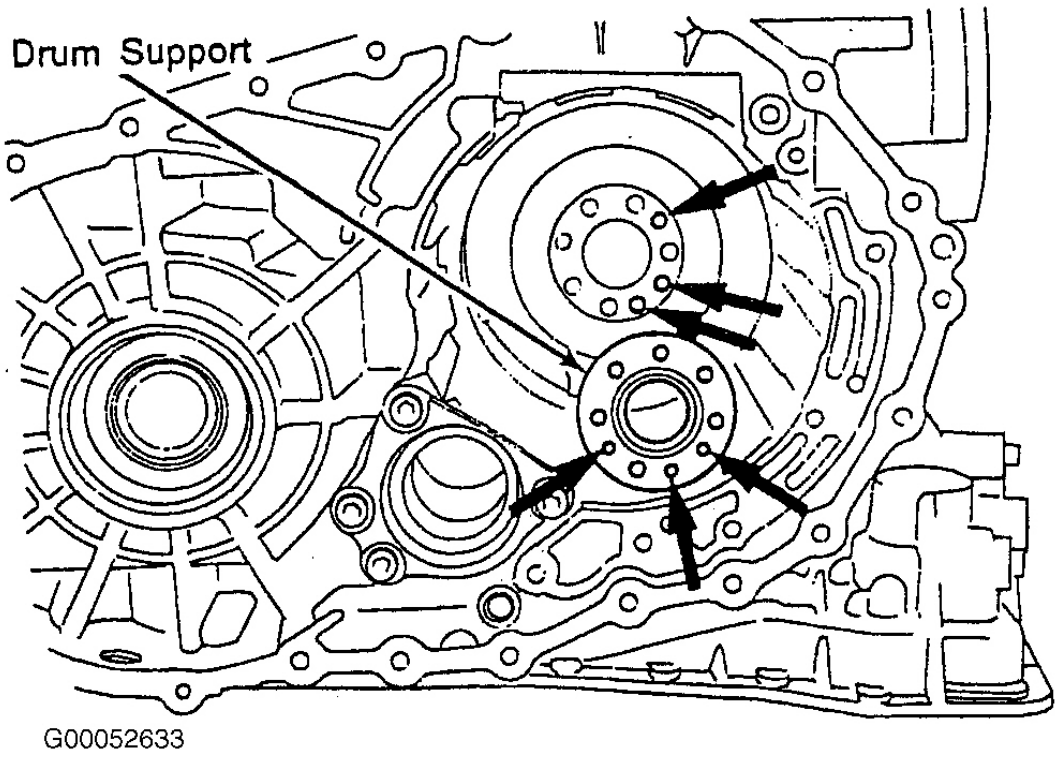


Fig. 30: Locating Oil Passages Of Drum Support Case
Courtesy of ISUZU MOTOR CO.

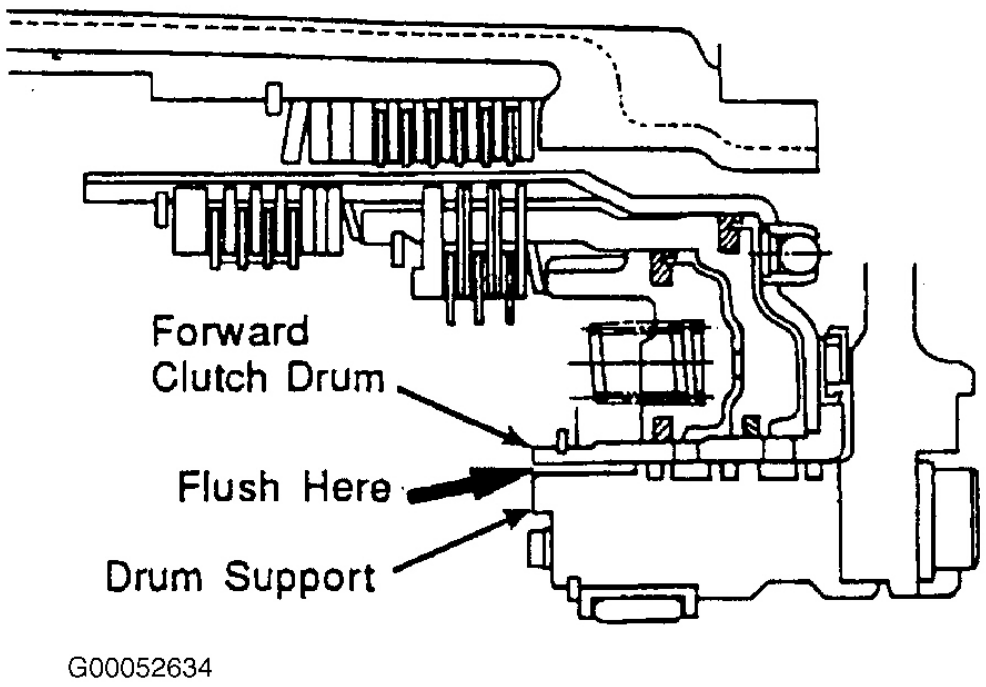


Fig. 31: Installing Forward Clutch Assembly
Courtesy of ISUZU MOTOR CO.

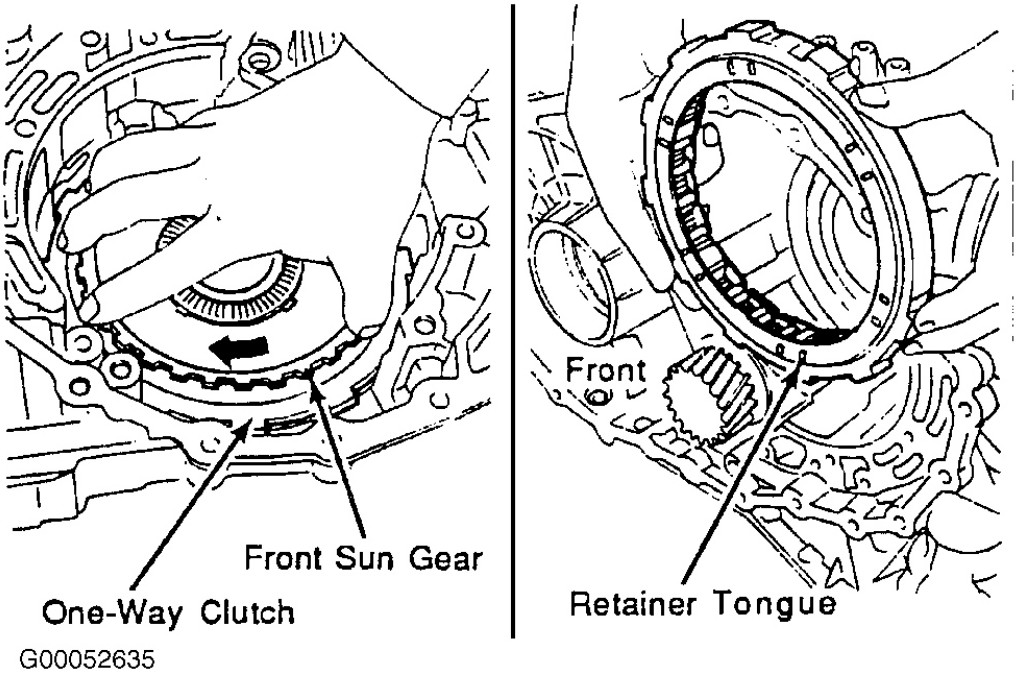


Fig. 32: Installing Low One-Way Clutch
Courtesy of ISUZU MOTOR CO.

Total End Play Shim Adjustment

Set Bridge and Leg Assembly (J-35284-1), Bridge Extension (J35284-19), Gauge Cylinder (J-35284-4) and Gauge Pin (J-35284-32) on oil pump gasket surface with gasket removed. See **Fig. 33** . Loosen thumb screw to allow gauge cylinder to rest on pump hub and tighten thumb screw. Install bridge assembly on transaxle, loosen thumb screw to allow gauge pin to rest on high clutch hub thrust bearing and tighten thumb screw. See **Fig. 33** . Loosen thumb screw and remove gauge cylinder and gauge pin. Measure gap between gauge cylinder and gauge pin. This measurement will determine size of selective bearing race. Selective bearing races are available in .031-.079" (.80-2.00 mm) in .008" (.20 mm) increments.

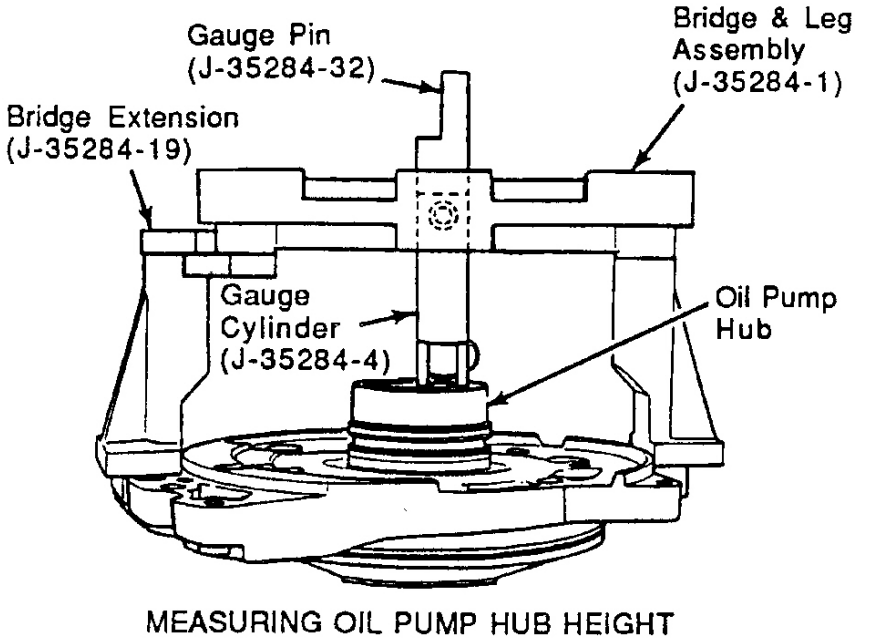
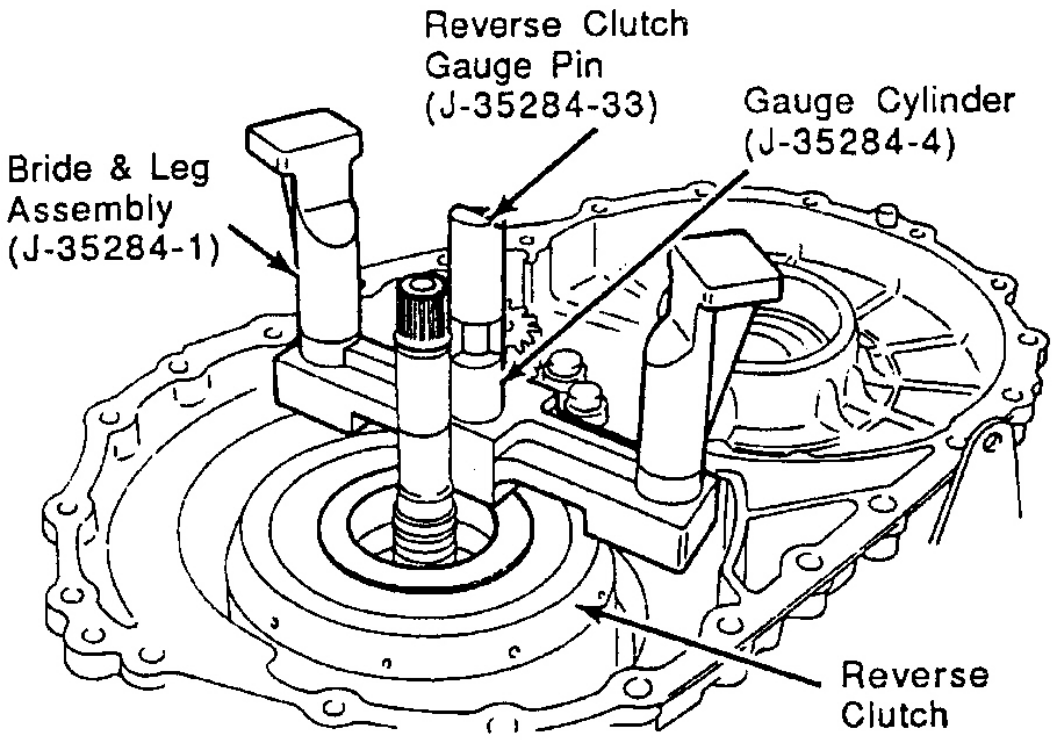


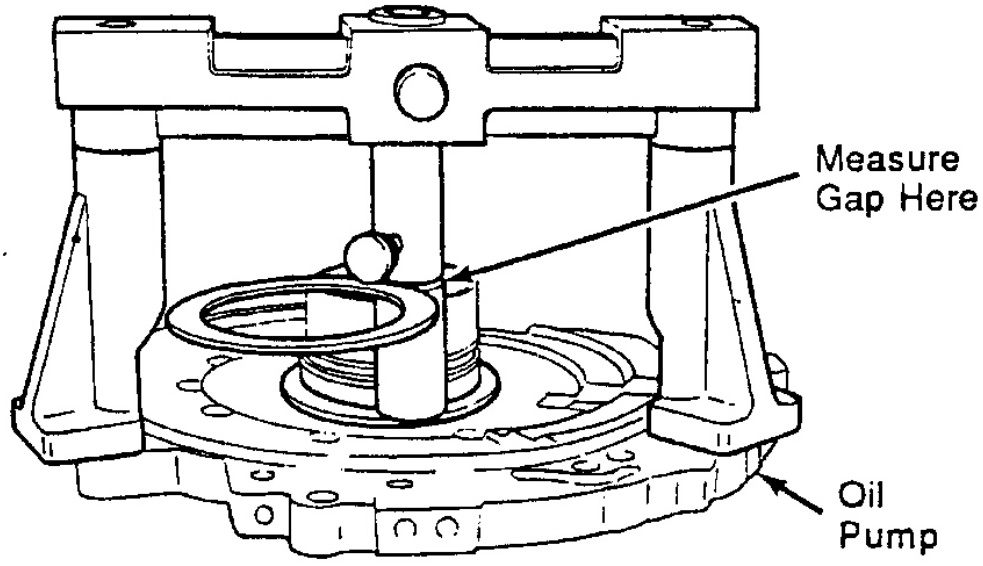
Fig. 33: Measuring Total End Play Shim Adjustment
Courtesy of ISUZU MOTOR CO.

End Play Shim Adjustment

1. Set Bridge and Leg Assembly (J-35284-1), Gauge Cylinder (J-35284-4) and Reverse Clutch Gauge Pin (J-35284-33) on transaxle case. See **Fig. 34** . Loosen thumb screw to allow gauge cylinder to rest on reverse clutch hub and tighten thumb screw. Place gauge assembly on oil pump gasket surface. Loosen thumb screw so gauge pin rests on oil pump thrust washer surface and tighten thumb screw. Measure gap between gauge cylinder and gauge pin. See **Fig. 34** . This will determine size of selective thrust washer. Thrust washers are available from .031-.071" (.80-1.80 mm) in .008" (.20 mm) increments.
2. Apply petroleum jelly to selected bearing race and thrust washer and install on oil pump. Apply petroleum jelly to selected thrust bearing and install on high clutch hub. Install oil pump gasket and oil pump. Install 8 oil pump bolts and torque to 19 ft. lbs (26 N.m). Install new "O" ring on input shaft. Install new "O" ring into oil hole for differential gear lubrication in transaxle case. See **Fig. 35** . Tighten anchor end bolt to 44 INCH lbs. (5 N.m). Loosen anchor end bolt 2.5 turns and tighten lock nut.
3. Install differential assembly. Clean mating surfaces of converter housing and transaxle case. Apply Loctite (No. 518) or equivalent to mating surfaces. Install converter housing and 23 attaching bolts. Torque bolts to 21 ft. lbs. (28 N.m). Install 4 lip seals, low and reverse brake sleeve and 2-3 accumulator return spring in transaxle case. See **Fig. 3** . Align notch in manual valve with boss of manual plate, install valve body and 15 attaching bolts. Torque bolts to 71 INCH lbs. (8 N.m). Install electrical terminal into case and lock with a clip. Install a new oil pan gasket, oil pan and oil pan protector on transaxle case. Install 21 oil pan attaching bolts. Torque bolts to 71 INCH lbs. (8 N.m). Ensure oil pan is secure by performing torque procedure 2 times.
4. Using Installer (J-29130), Drive Handle (J-8092) and hammer, install new axle shaft oil seals. Install inhibitor switch loosely with 3 attaching bolts. Torque bolts to 62 INCH lbs. (7 N.m). Install bracket. Set selector lever to neutral, insert .16" (4.0 mm) pin as straight as possible and tighten inhibitor switch attaching bolts. Torque bolts to 27 INCH lbs. (3 N.m).
5. Apply petroleum jelly to thrust bearing and install in case for output gear. Apply petroleum jelly to seal ring and install output gear in transaxle case. Clean mating surface of side cover and case. Apply Loctite (No. 518) or equivalent to mating surface. Install side cover with 14 attaching bolts. Torque bolts to 11 ft. lbs. (15 N.m).
6. Install new "O" ring on vehicle speed sensor. Install vehicle speed sensor into side cover and secure with bolts. Remove transaxle holding fixture (if used) from transaxle. Install oil level gauge and shift control cable bracket. Add ATF to torque converter and install torque converter. Ensure torque converter installation clearance is more than .46" (11.7 mm) measured from torque converter housing to torque converter. See **Fig. 36** .



MEASURING DISTANCE TO
REVERSE CLUTCH



MEASURING DISTANCE TO OIL PUMP
THRUST WASHER SURFACE

G00052637

Fig. 34: Measuring End Play Shim Adjustment
Courtesy of ISUZU MOTOR CO.

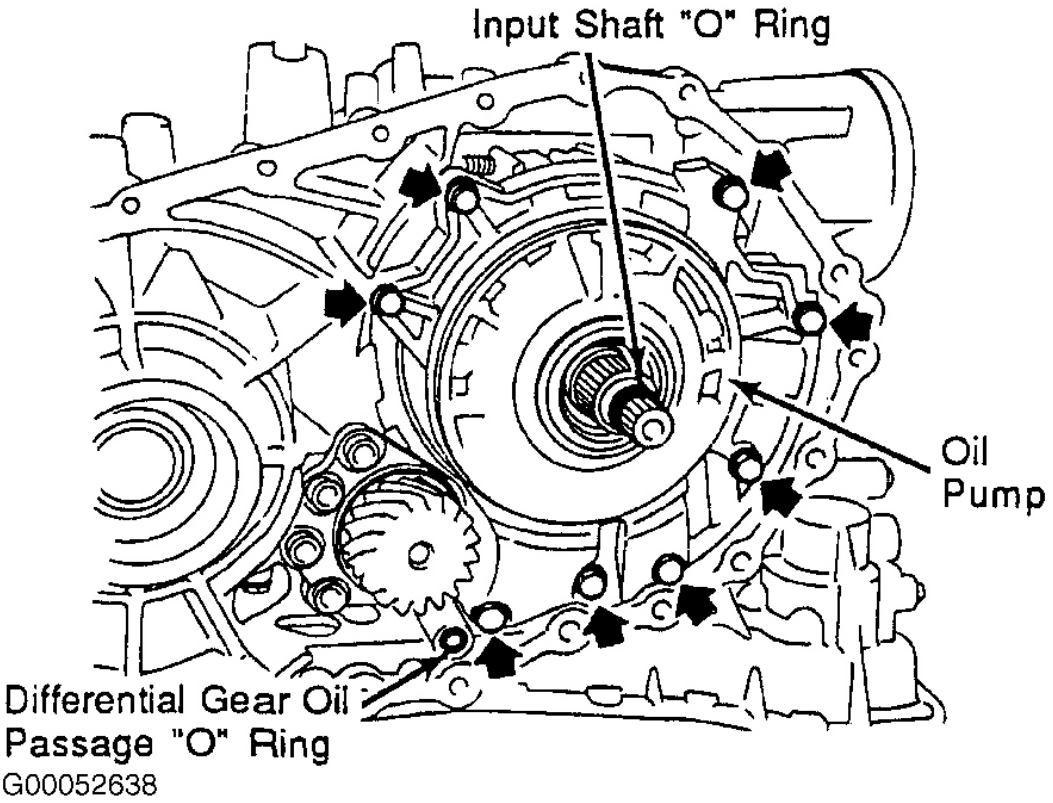


Fig. 35: Locating Oil Pump Bolts & "O" Ring
Courtesy of ISUZU MOTOR CO.

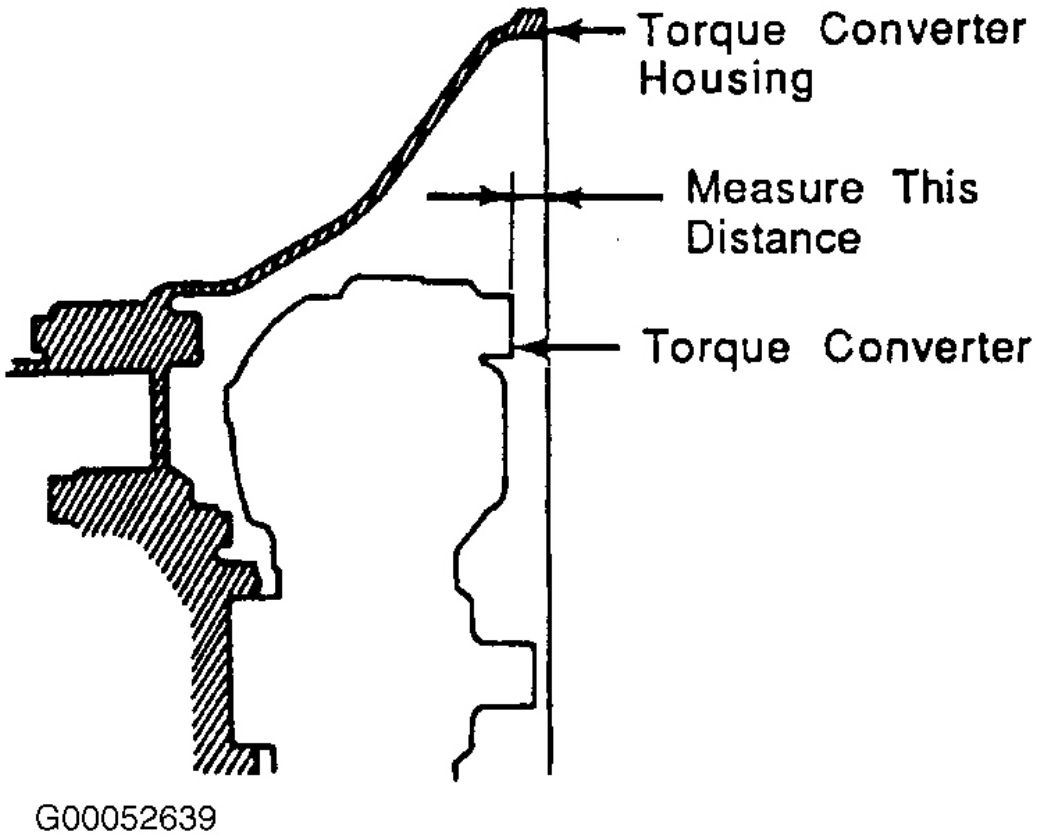


Fig. 36: Measuring Torque Converter Clearance
Courtesy of ISUZU MOTOR CO.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Anchor End Bolt Lock Nut	27 (36)
Drum Support Bolts	13 (18)
Idler Gear Lock Nut	167 (226)
Oil Pump-To-Case Bolts	19 (26)
Parking Actuator Support Bolt	24 (33)
Reduction Gear Bearing Outer Race Bolt	37 (50)
Side Cover Bolt	11 (15)
Torque Converter Housing-To-Transaxle Case Bolts	21 (28)
	INCH Lbs. (N.m)
Front & Rear Upper Valve Body-To-Lower Valve Body Bolts	71 (8)

Inhibitor Switch Bracket Bolt	62 (7)
Inhibitor Switch Bolts	27 (3)
Oil Pan Bolts	71 (8)
Oil Pump Cover-To-Oil Pump Bolts	97 (11)
Speed Sensor Bolts	53 (6)
Support Plate Bolts	44 (5)
Valve Body-To-Case Bolts	71 (8)