

2001 Nissan Altima GXE

2000-02 AUTOMATIC TRANSMISSIONS Nissan RE4F04 Series Overhaul

2000-02 AUTOMATIC TRANSMISSIONS

Nissan RE4F04 Series Overhaul

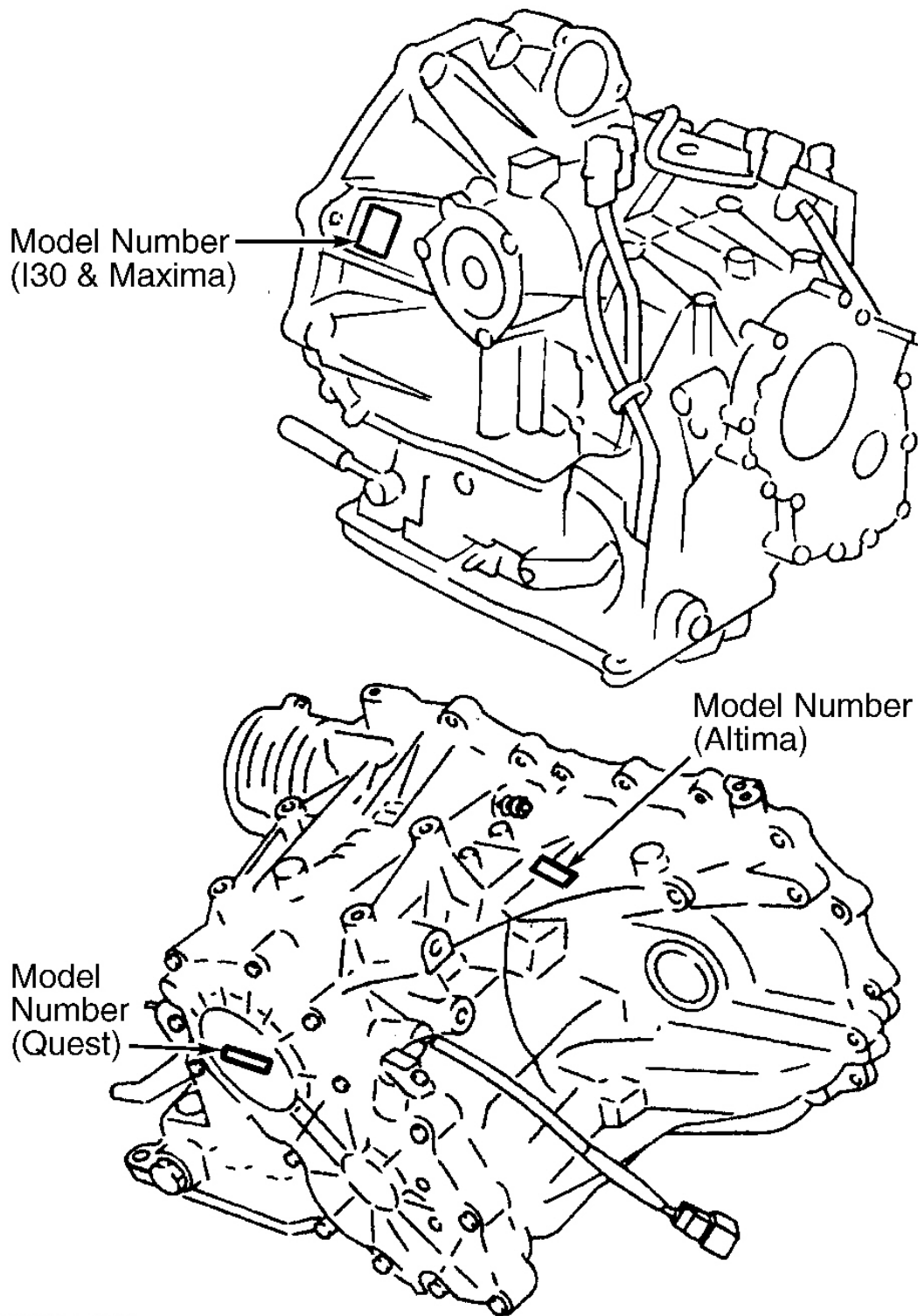
APPLICATIONS

AUTOMATIC TRANSAXLE APPLICATIONS

Application	Transaxle Model
Infiniti I30/I35	RE4F04B/W
Nissan	
Altima	RE4F04A
Maxima	RE4F04B/W
Quest	RE4F04A

IDENTIFICATION

Transaxle model number is located on vehicle identification plate in engine compartment area. On Altima, transaxle serial number is located on transaxle case. On Maxima and I35, transaxle serial number is located on converter housing, and on Quest, transaxle serial number is located on transaxle side cover. See **Fig. 1**.



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Fig. 1: Locating Transaxle Number

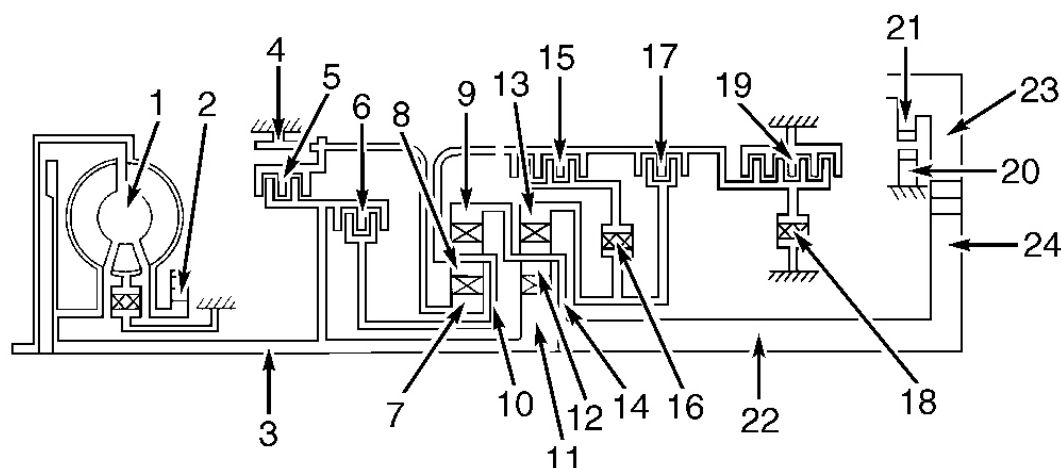
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GEAR RATIOS**TRANSAXLE GEAR RATIOS**

Gear Range	Gear Ratio
1st	2.785:1
2nd	1.545:1
3rd	1.000:1
4th	0.694:1
Reverse	2.272:1
Final Drive	
Altima	4.087:1
I35, Maxima & Quest	3.789:1

DESCRIPTION & OPERATION

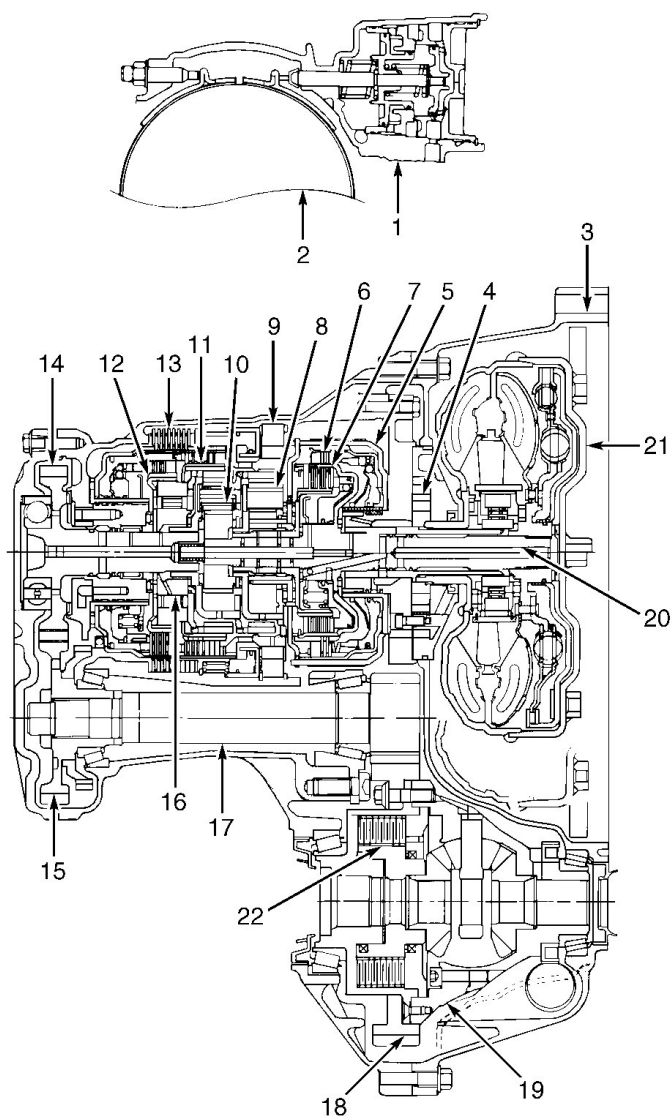
Transaxle consists of 4 main units: automatic transaxle, torque converter, differential assembly and Transaxle Control Module (TCM). TCM electrically controls shifting functions. Automatic transaxle consists of forward clutch, forward one-way clutch, high clutch, low and reverse brake, overrun clutch, reverse clutch, brake band servo, accumulators, valve body assembly, planetary gear assemblies and differential. RE4F04W transaxle incorporates a limited slip differential with viscous coupling. See **Fig. 2** and **Fig. 3**.



- | | |
|-----------------------------|----------------------------|
| 1. Torque Converter | 13. Rear Internal Gear |
| 2. Oil Pump | 14. Rear Planetary Carrier |
| 3. Input Shaft | 15. Forward Clutch |
| 4. Brake Band | 16. Forward One-Way Clutch |
| 5. Reverse Clutch | 17. Overrun Clutch |
| 6. High Clutch | 18. Low One-Way Clutch |
| 7. Front Sun Gear | 19. Low & Reverse Brake |
| 8. Front Pinion Gear | 20. Parking Pawl |
| 9. Front Internal Gear | 21. Parking Gear |
| 10. Front Planetary Carrier | 22. Output Shaft |
| 11. Rear Sun Gear | 23. Idle Gear |
| 12. Rear Pinion Gear | 24. Output Gear |

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Fig. 2: Transaxle Operational Flow Diagram
 Courtesy of NISSAN MOTOR CO., U.S.A.



- | | |
|-------------------------|----------------------------|
| 1. Band Servo Piston | 12. Overrun Clutch |
| 2. Reverse Clutch Drum | 13. Low-Reverse Brake |
| 3. Converter Housing | 14. Output Gear |
| 4. Oil Pump | 15. Idler Gear |
| 5. Brake Band | 16. Forward One-Way Clutch |
| 6. Reverse Clutch | 17. Reduction Gear |
| 7. High Clutch | 18. Ring Gear |
| 8. Front Planetary Gear | 19. Differential Assembly |
| 9. Low One-Way Clutch | 20. Input Shaft |
| 10. Rear Planetary Gear | 21. Torque Converter |
| 11. Forward Clutch | 22. Viscous Coupling |

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Fig. 3: Identifying Transaxle Component Locations (RE4F04W Shown)
 Courtesy of NISSAN MOTOR CO., U.S.A.

LUBRICATION & ADJUSTMENTS

RECOMMENDED FLUID

Use Nissan Matic "D", Dexron-III, Mercon ATF or equivalent. For additional information, see appropriate AUTOMATIC TRANSMISSION SERVICING article in TRANSMISSION SERVICING.

FLUID CAPACITIES

Transaxle fluid capacity with torque converter for all models is 10 Qts. (9.4 L).

TROUBLE SHOOTING

PRELIMINARY INSPECTION

Transaxle malfunctions may be caused by poor engine performance, improper adjustments or failure of hydraulic, mechanical or electronic components. Always begin by checking fluid level, fluid condition and cable adjustments. Perform road test to determine if problem has been corrected. If problem still exists, see PERFORMANCE TESTS.

CLUTCH & BAND APPLICATIONS

CLUTCH & BAND APPLICATIONS

Selector Lever Position	Elements In Use
"D" (Drive) ⁽¹⁾	
1st Gear	Forward Clutch, ⁽²⁾ Forward One-Way Clutch, ⁽³⁾ ⁽⁴⁾ Overrun Clutch & ⁽²⁾ Low One-Way Clutch
2nd Gear	Band Servo (2nd Apply), Forward Clutch, ⁽²⁾ Forward One-Way Clutch & ⁽³⁾ ⁽⁴⁾ Overrun Clutch
3rd Gear	Band Servo ⁽⁵⁾ 2nd Apply & 3rd Release), Forward Clutch, ⁽²⁾ Forward One-Way Clutch, High Clutch & ⁽³⁾ ⁽⁴⁾ Overrun Clutch
4th Gear	Band Servo ⁽⁶⁾ 2nd & 4th Apply, 3rd Release), Forward Clutch, High Clutch & Lock-up
"2" (Intermediate)	
1st Gear	Forward Clutch, ⁽²⁾ Forward One-Way Clutch, ⁽²⁾ Low One-Way Clutch & Overrun Clutch
2nd Gear	Band Servo (2nd Apply), Forward Clutch, ⁽²⁾ Forward One-Way Clutch & Overrun Clutch
"1" (Low)	
1st Gear	Forward Clutch, ⁽²⁾ Forward One-Way Clutch, Low-Reverse Brake, Low One-Way, Overrun Clutch
2nd Gear	Band Servo (2nd Apply), Forward Clutch, ⁽²⁾ Forward One-Way Clutch & Overrun Clutch

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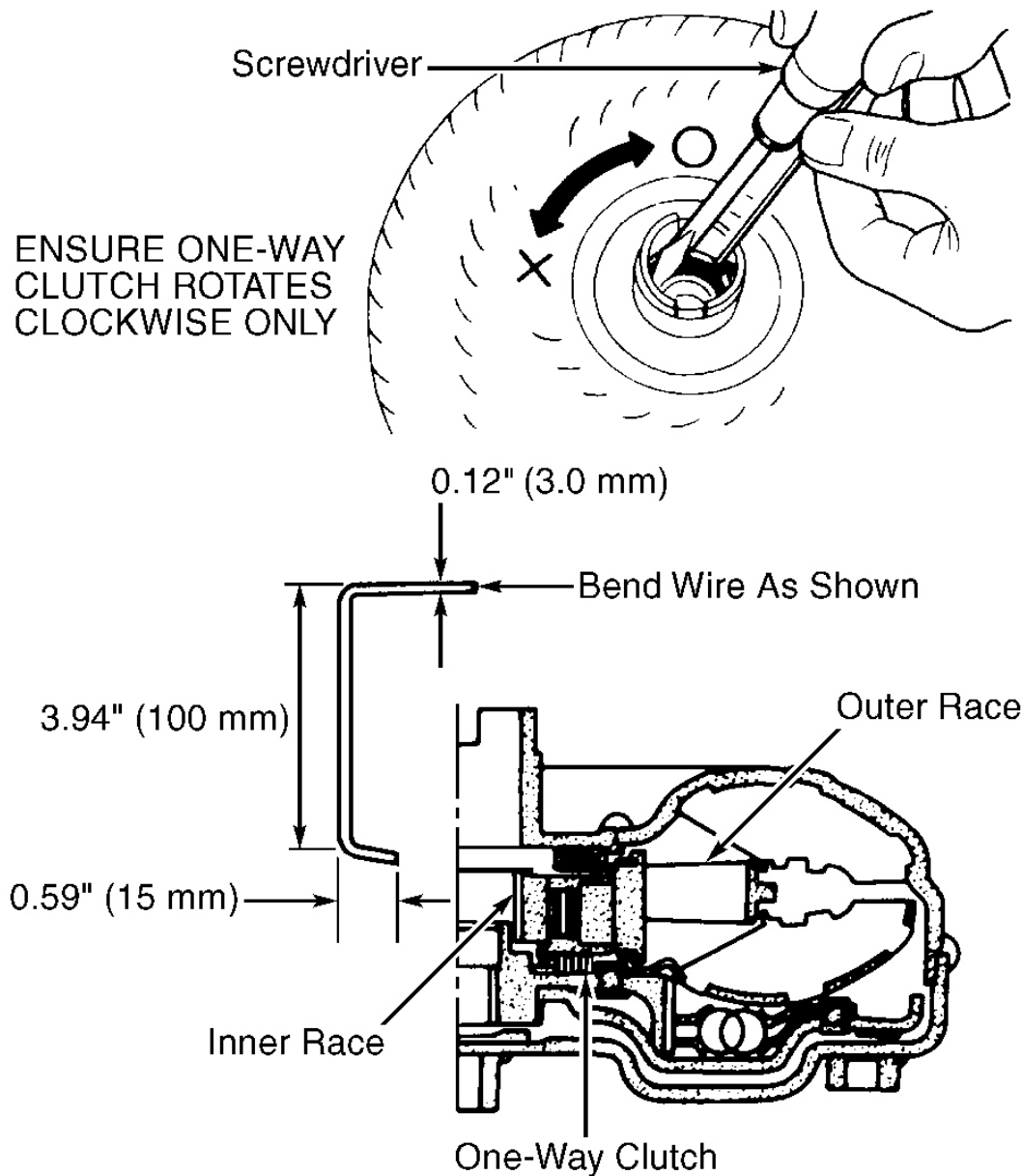
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"R" (Reverse)	Low-Reverse Brake & Reverse Clutch
"N" Or "P" (Neutral Or Park)	All Clutches & Bands, Released Or Ineffective
<p>(1) Transaxle will not shift to 4th gear when overdrive switch is in OFF position.</p> <p>(2) Operates during progressive acceleration.</p> <p>(3) Operates when overdrive switch is in OFF position.</p> <p>(4) Operates when throttle opening is less than 3/16.</p> <p>(5) Oil pressure is applied to both 2nd apply and 3rd release side of band servo piston. Brake band does not contract because oil pressure area on release side is greater than apply side.</p> <p>(6) Oil pressure is applied to 4th apply side in 3rd gear, and brake band contracts.</p>	

COMPONENT TESTS

TORQUE CONVERTER

1. Torque converter is a sealed unit and cannot be disassembled for service. Replace torque converter if damaged. Check converter one-way clutch using flat-blade screwdriver and suitable wire. See **Fig. 4**.
2. Hook wire into groove of bearing support unitized with one-way clutch outer race. While holding bearing support with wire, rotate one-way clutch spline using screwdriver. Ensure inner race rotates clockwise only. If inner race rotates in both directions, replace torque converter.



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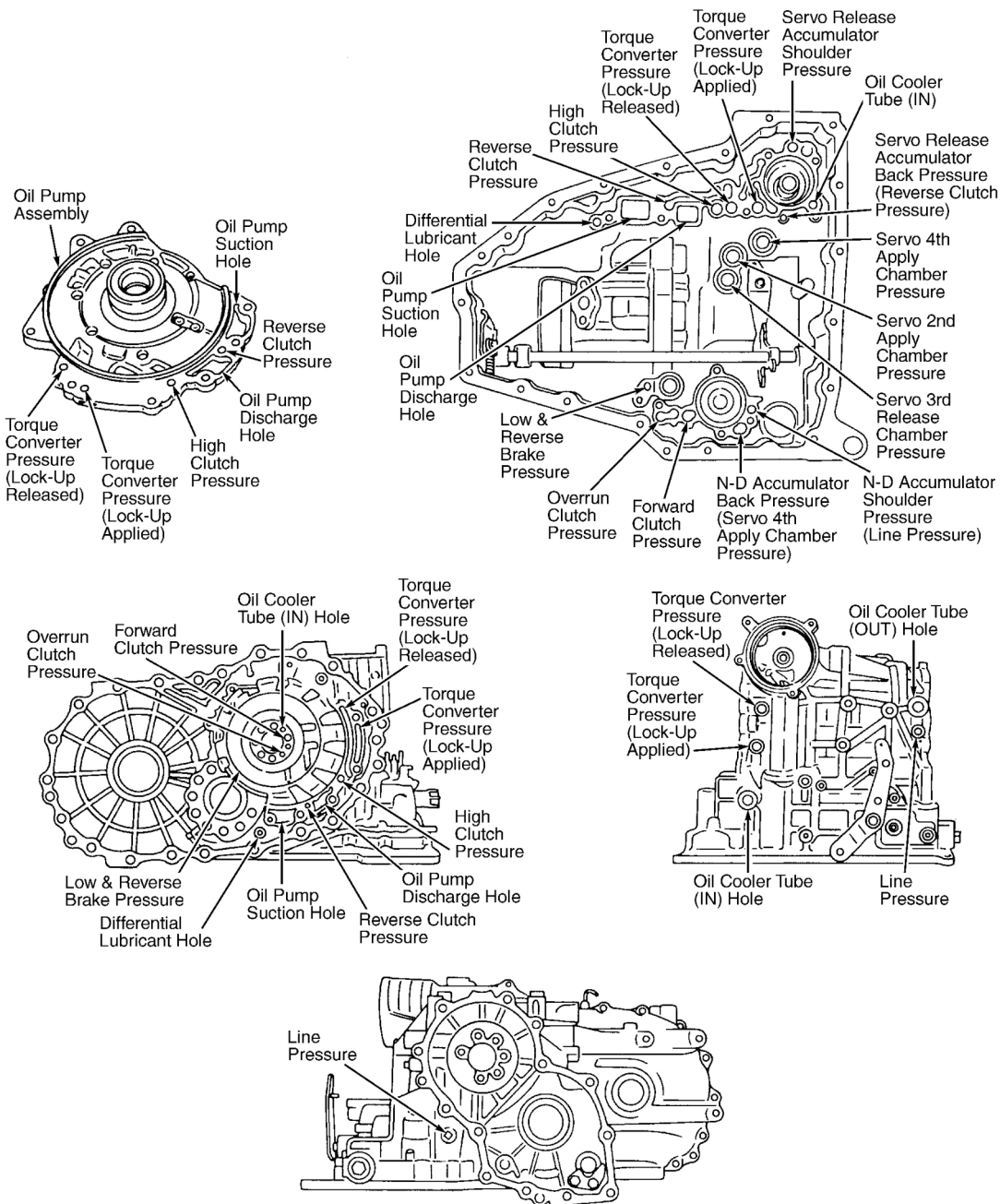
Fig. 4: Checking Torque Converter One-Way Clutch
 Courtesy of NISSAN MOTOR CO., U.S.A.

TRANSAXLE DISASSEMBLY

1. Remove drain plug and drain ATF. Remove torque converter. Check torque converter one-way clutch. See **TORQUE CONVERTER** under COMPONENT TESTS. Remove dipstick and dipstick tube. Remove oil cooler tube. Place manual lever in "P" position. Remove PNP switch. Remove oil pan and

gasket. See **Fig. 8**. DO NOT reuse oil pan bolts.

2. Remove valve body assembly bolts. See **Fig. 6**. Remove clip from wire harness terminal body. Push terminal body into transaxle case and remove wire harness. Remove manual valve from valve body assembly. Remove return spring from servo release accumulator piston. Using compressed air, remove servo release accumulator piston. See **Fig. 5** and **Fig. 7**.



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Fig. 5: Identifying Hydraulic Fluid Passages
Courtesy of NISSAN MOTOR CO., U.S.A.

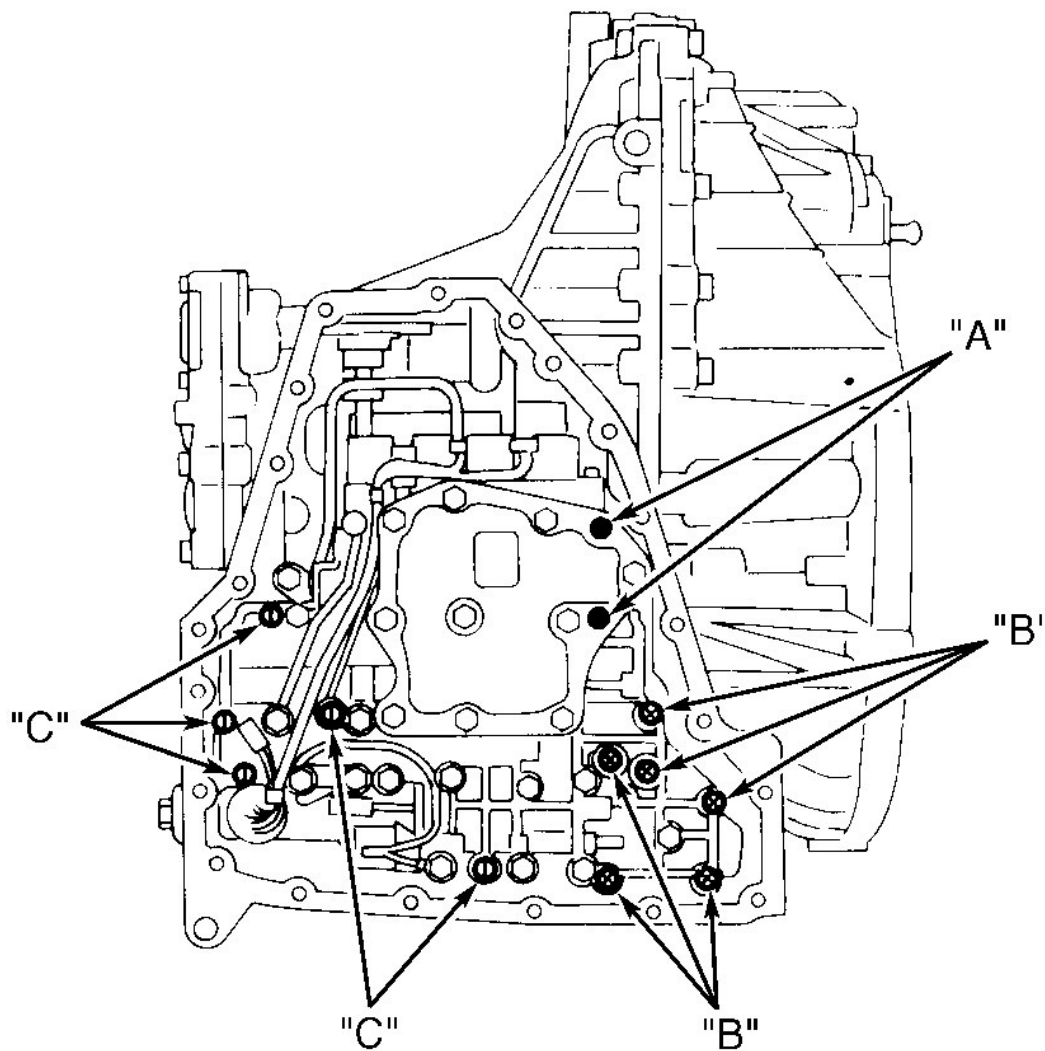


Fig. 6: Removing & Installing Valve Body Assembly
Courtesy of NISSAN MOTOR CO., U.S.A.

3. Remove "O" rings from servo release accumulator piston. Using compressed air, remove N-D accumulator piston and return spring. See **Fig. 5** and **Fig. 7** . Remove "O" rings from N-D accumulator piston. Check accumulator pistons and contact surface of transaxle case for damage. Check accumulator return springs free length and diameter. See **ACCUMULATOR SPRING SPECIFICATIONS** table.

ACCUMULATOR SPRING SPECIFICATIONS

Application	In. (mm)
N-D Accumulator Spring	
Free	1.713 (43.50)

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Length	
Outer Diameter	1.102 (28.00)
Servo Release Accumulator Spring	
Free Length	2.067 (52.50)
Outer Diameter	.803 (20.40)

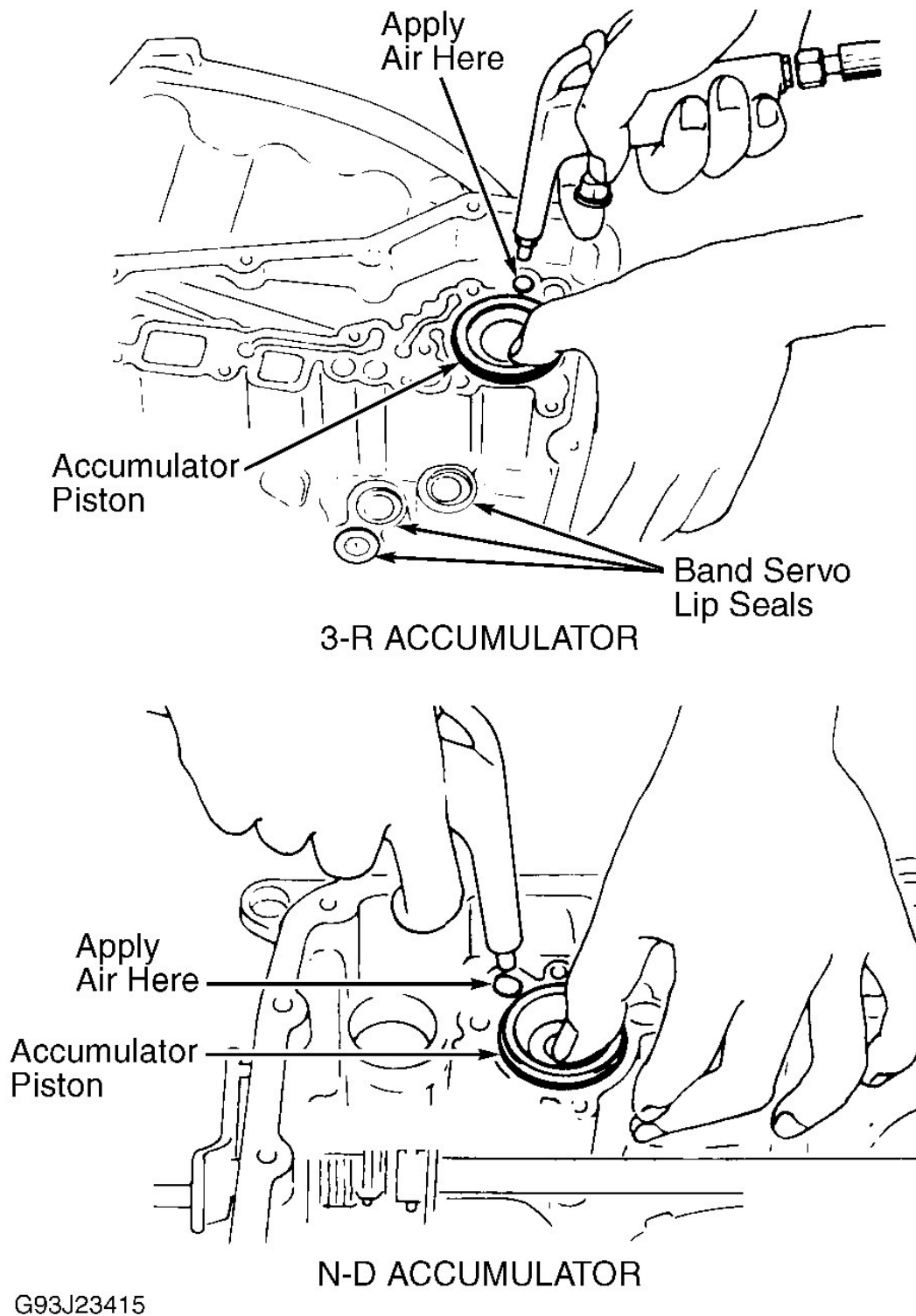


Fig. 7: Removing N-D & Servo Release Accumulator Pistons

Courtesy of NISSAN MOTOR CO., U.S.A.

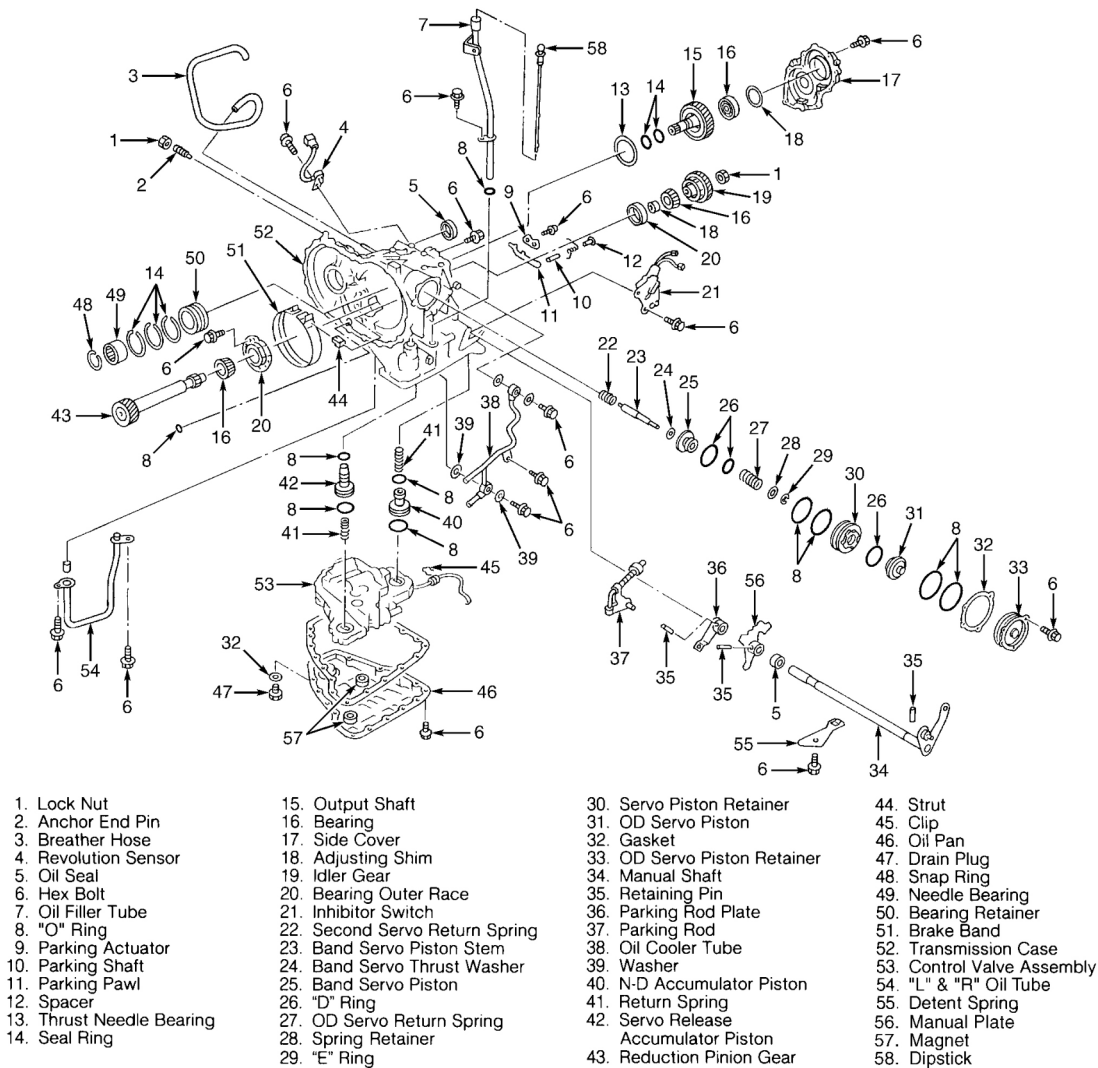


Fig. 8: Exploded View Of Transaxle Case Components
Courtesy of NISSAN MOTOR CO., U.S.A.

4. Remove (4) lip seals from transaxle case. See **Fig. 9**. Remove low and reverse oil tube and sleeve. Remove converter housing bolts. Remove converter housing by tapping housing with soft hammer. Remove "O" ring from differential oil port. See **Fig. 10**.
5. Remove differential assembly from transaxle case. Using appropriate puller, remove differential side bearing outer race from transaxle case and converter housing. Remove differential side bearing adjustment shim from transaxle case.
6. Remove oil seal from converter housing, being careful not to damage converter housing. Remove oil tube from converter housing. Remove "O" ring from input shaft. See **Fig. 11**. Remove oil pump assembly bolts and remove oil pump assembly, baffle and gasket from transaxle case. Remove thrust washer and bearing race from oil pump assembly. Loosen anchor end pin lock nut, then back off anchor end pin.

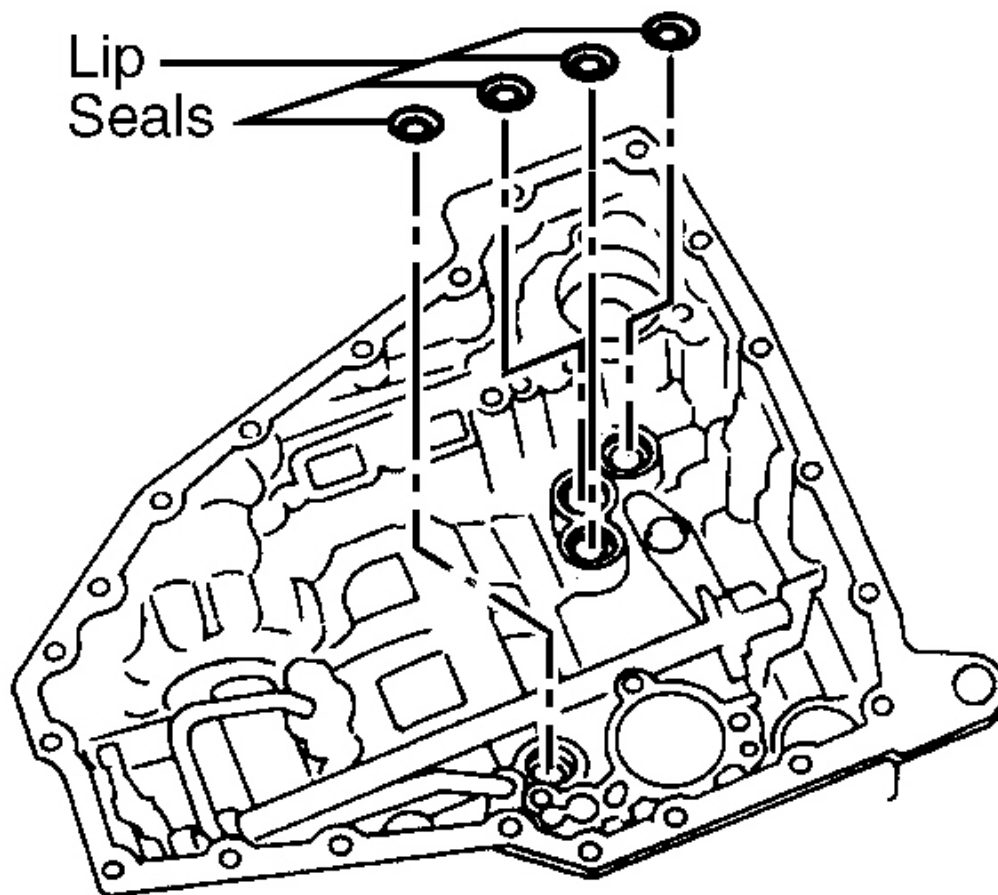
7. Remove brake band and strut from transaxle case. When removing brake band, insert wire clip into brake band ends for support. To prevent brake lining from cracking or peeling, DO NOT stretch brake band. Check brake band facing for damage, cracks, wear or burns. Remove high clutch (with input shaft assembly) and reverse clutch. Remove high clutch from reverse clutch. See **Fig. 15**.
8. Remove needle bearing from high clutch drum. Remove high clutch hub and front sun gear. Remove needle bearing from high clutch hub. Remove front sun gear and needle bearing from high clutch drum. Remove bearing race from front sun gear. Check all components for damage or wear.
9. Remove needle bearing from transaxle case. Apply compressed air to transaxle case to check low and reverse brake operation. See **Fig. 12**. Remove snap ring. Using a bent wire, remove low one-way clutch from transaxle case. See **Fig. 13**. Remove snap ring and front planetary carrier with low-reverse brake piston and spring retainer.
10. Remove low and reverse brake spring retainer. Ensure low one-way clutch rotates counterclockwise only. See **Fig. 14**. Remove needle bearing, low and reverse brake piston and spring retainer from front planetary carrier. See **Fig. 12**. Check all components for damage or wear.
11. Remove rear planetary carrier from transaxle case. Remove rear sun gear from rear planetary carrier. Note direction of rear sun gear prior to removal. Remove needle bearings from rear planetary carrier. Check all components for damage or wear.
12. Using a feeler gauge, check clearance between pinion washer and appropriate planetary carrier. See **Fig. 16**. Clearance between pinion washer and planetary carrier should be .008-.028" (.20-.70 mm), with service limit of .031" (.80 mm). If clearance is not as specified, replace appropriate planetary carrier.

NOTE: Output shaft assembly may remain attached to side cover. DO NOT drop output shaft assembly. DO NOT reuse "A" side cover bolts.

13. Remove rear internal gear and forward clutch hub from transaxle case. Remove overrun clutch hub from transaxle case. Remove needle bearing from overrun clutch hub and check bearing for damage or wear. Remove forward clutch assembly from transaxle case. Remove needle bearing from transaxle case. Remove side cover bolts and side cover. See **Fig. 17**.

NOTE: DO NOT reuse idler gear lock nut.

14. Tap side cover with soft hammer to remove from output shaft (if necessary). Remove adjusting shim. Remove needle bearing. Set manual lever to "P" position to lock idler gear. Using a hammer and pin punch, unlock idler gear lock nut. Remove idler gear lock nut.
15. Using appropriate puller, remove idler gear from transaxle case. Remove reduction pinion gear and adjusting shim from reduction pinion gear. Remove return spring from parking shaft. Remove parking shaft and parking pawl from transaxle case. Check parking shaft and pawl for wear or damage.
16. Note direction of parking actuator support and remove actuator support from transaxle case. Inspect actuator support for wear or damage. Using a hammer and screwdriver, remove side oil seal from transaxle case. Remove manual shaft components from transaxle case. See **MANUAL SHAFT ASSEMBLY** under COMPONENT DISASSEMBLY & REASSEMBLY.



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Fig. 9: Locating Lip Seals

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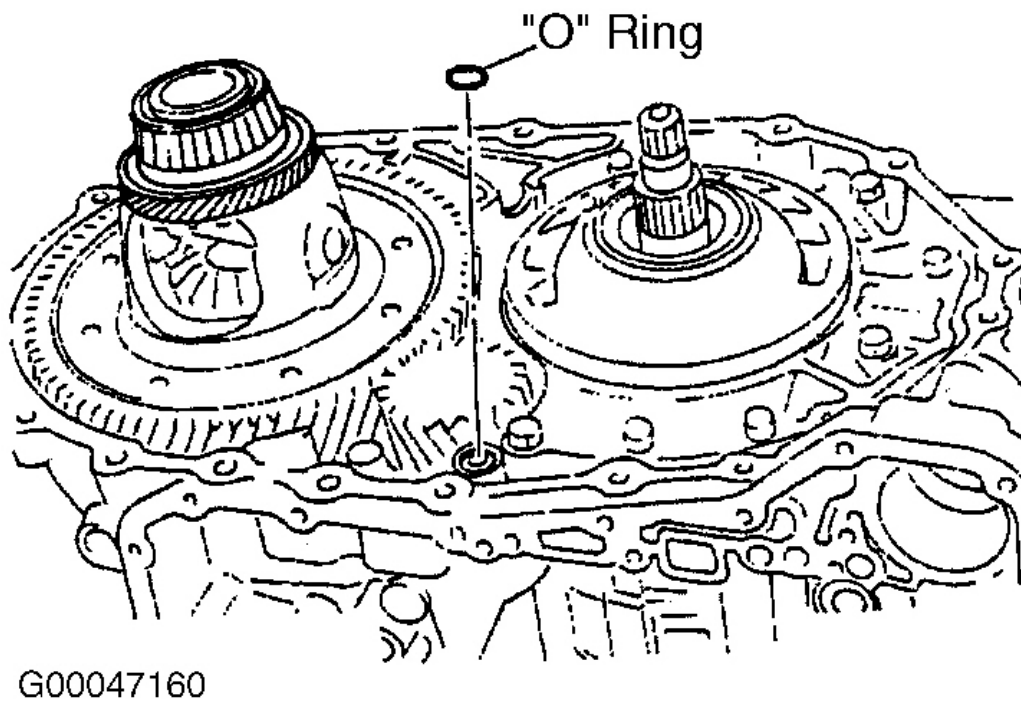


Fig. 10: Locating Differential Oil Port "O" Ring
Courtesy of NISSAN MOTOR CO., U.S.A.

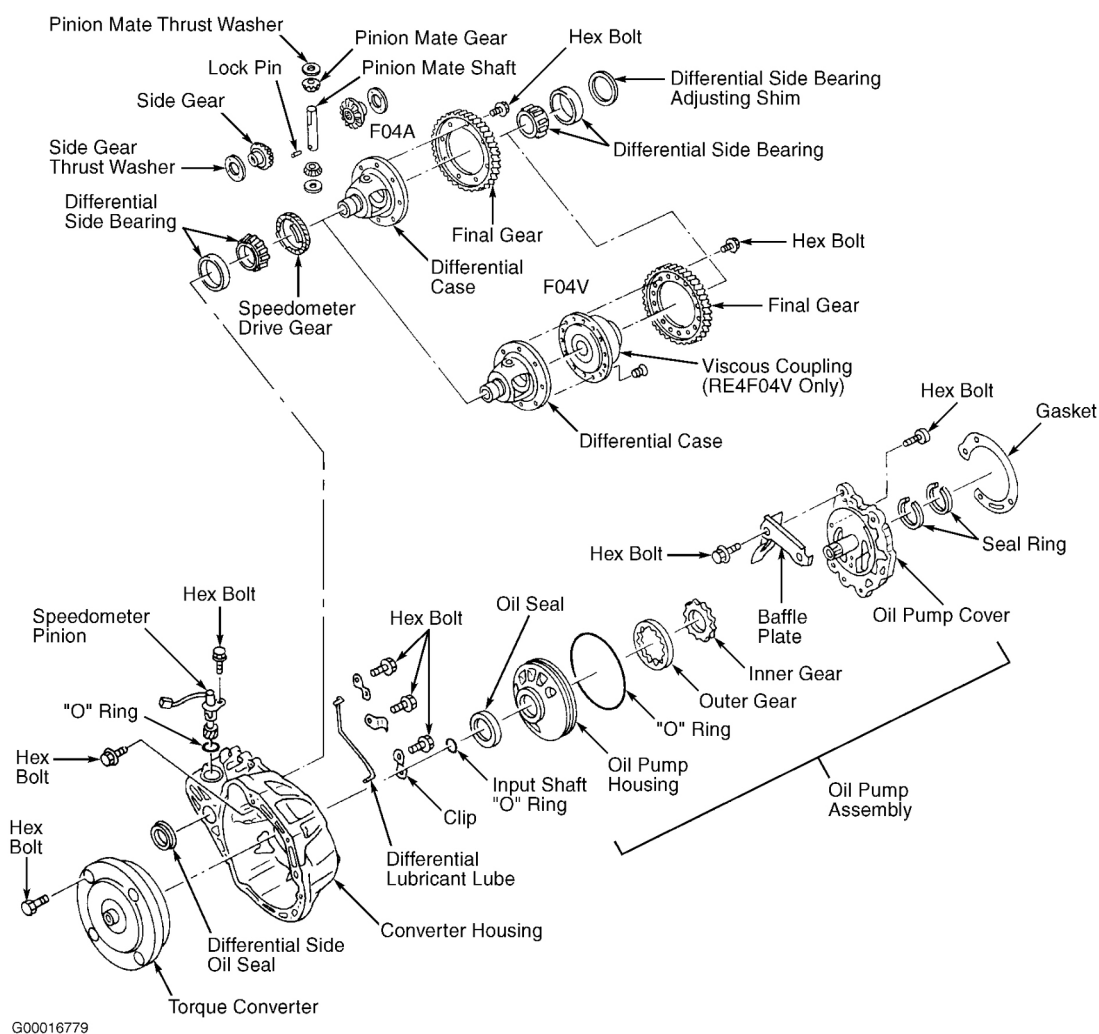


Fig. 11: Exploded View Of Torque Converter Housing & Differential Components
 Courtesy of NISSAN MOTOR CO., U.S.A.

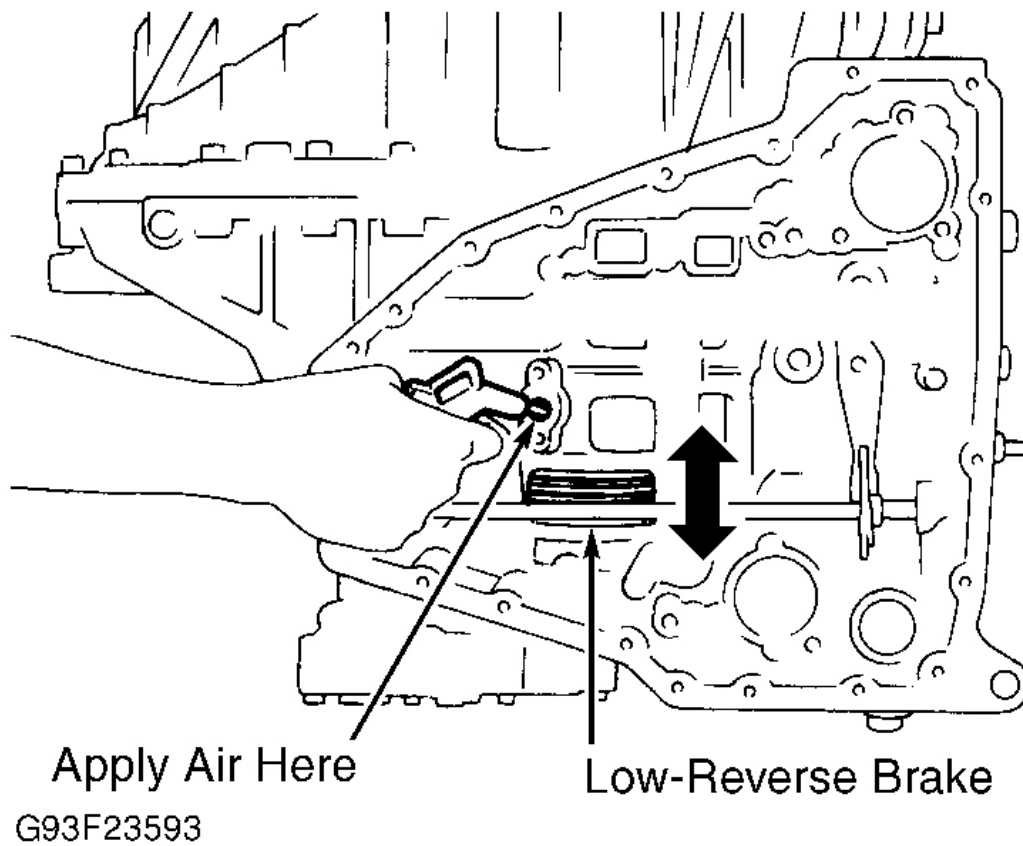
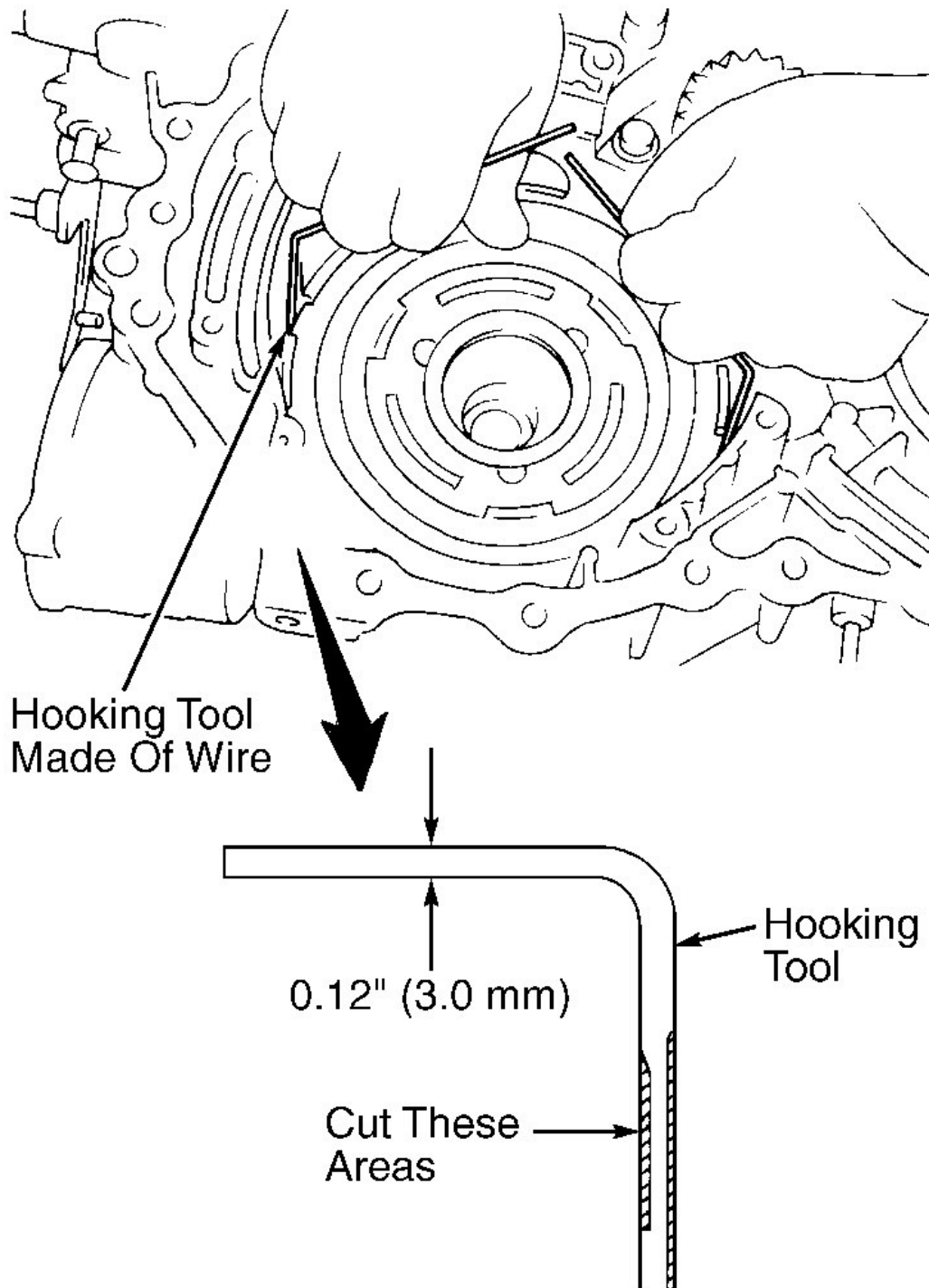


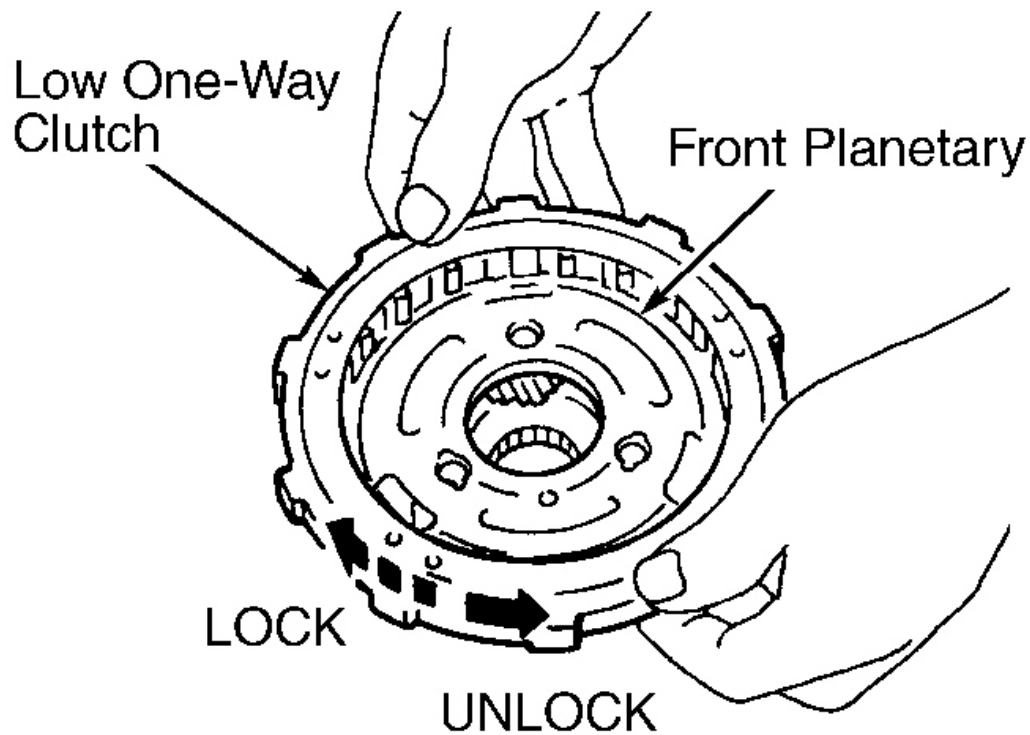
Fig. 12: Checking Low-Reverse Brake Operation
Courtesy of NISSAN MOTOR CO., U.S.A.



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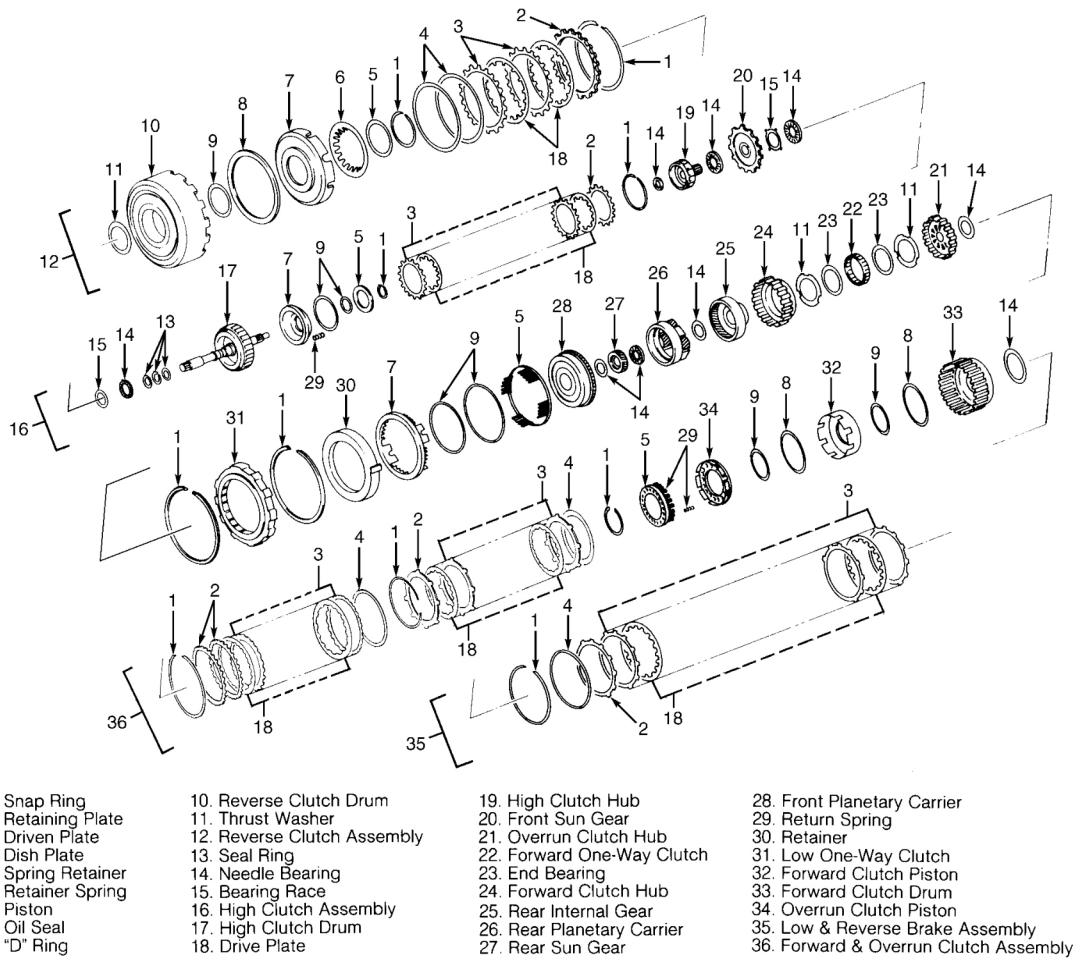
Fig. 13: Removing Low-One Way Clutch

Courtesy of NISSAN MOTOR CO., U.S.A.



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Fig. 14: Checking Low One-Way Clutch Operation
Courtesy of NISSAN MOTOR CO., U.S.A.



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Fig. 15: Exploded View Of Forward Clutch, High Clutch, Low-Reverse Brake, Overrun Clutch & Reverse Clutch Assemblies
 Courtesy of NISSAN MOTOR CO., U.S.A.

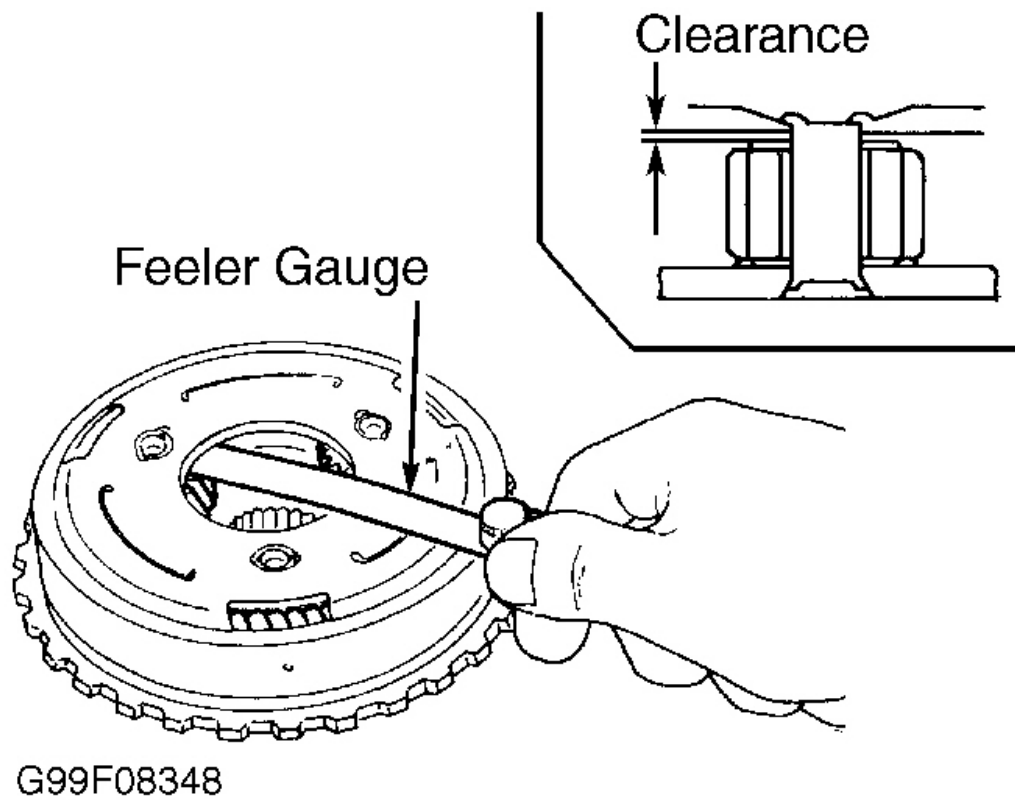


Fig. 16: Measuring Pinion Gear Clearance (Typical)
Courtesy of NISSAN MOTOR CO., U.S.A.

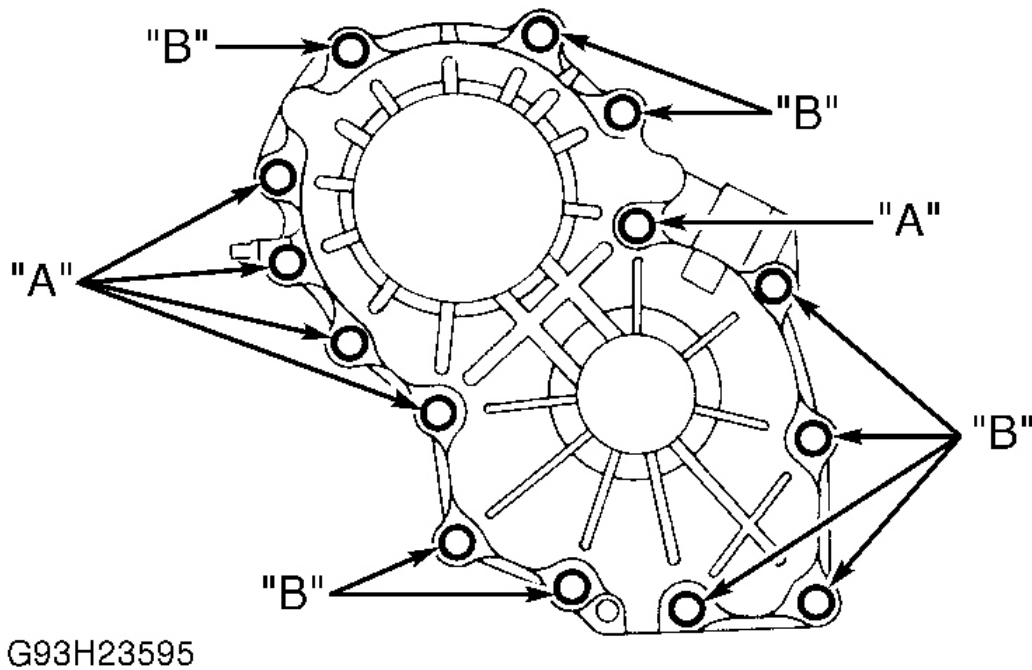


Fig. 17: Identifying Side Cover Bolt Locations
 Courtesy of NISSAN MOTOR CO., U.S.A.

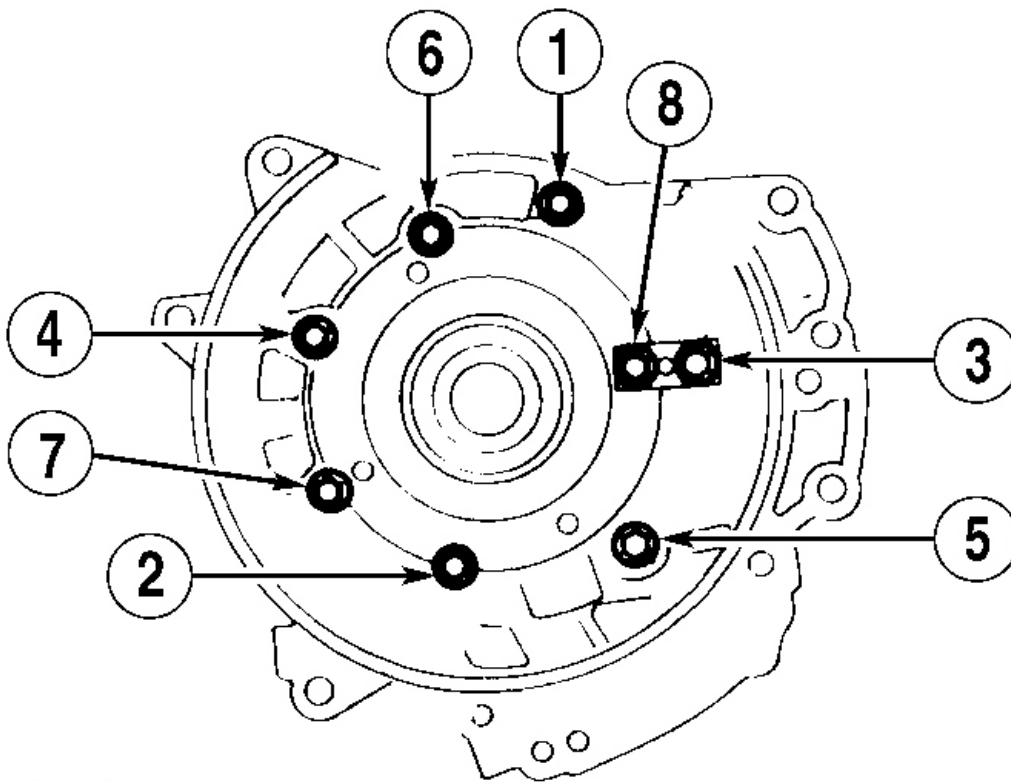
COMPONENT DISASSEMBLY & REASSEMBLY

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 of drum. Check thrust bearings and races for wear or damage. Use petroleum jelly to secure parts in place. Clutch discs should be soaked in ATF for at least 15 minutes before installation.

OIL PUMP

Disassembly

Remove seal rings. Remove oil pump cover bolts in a crisscross pattern and remove oil pump cover. See **Fig. 18**. Note direction of inner gear prior to removal. Remove inner and outer gears from oil pump housing. Remove "O" ring from oil pump housing. See **Fig. 19**. Pry oil seal from oil pump housing.



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Fig. 18: Removing & Installing Oil Pump Cover
 Courtesy of NISSAN MOTOR CO., U.S.A.

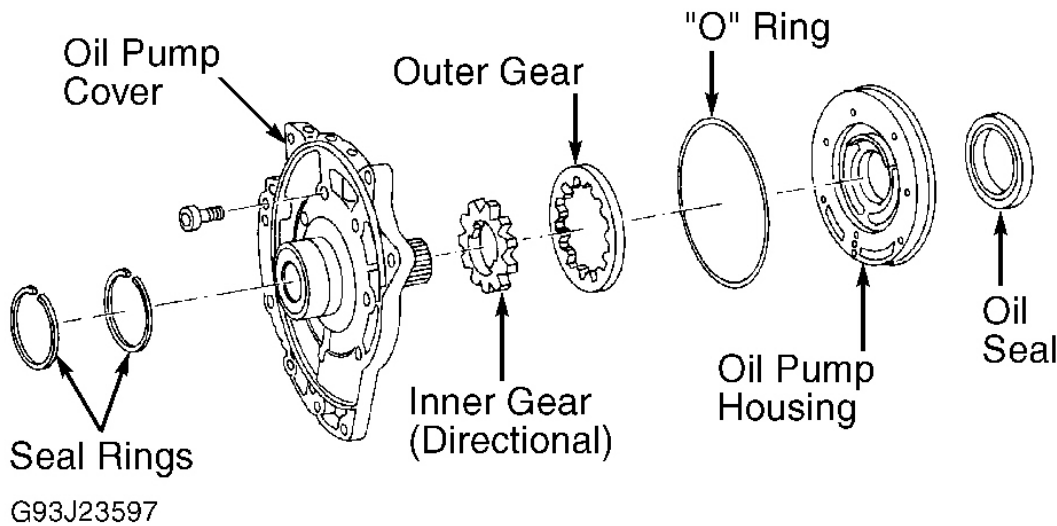


Fig. 19: Exploded View Of Oil Pump Assembly
Courtesy of NISSAN MOTOR CO., U.S.A.

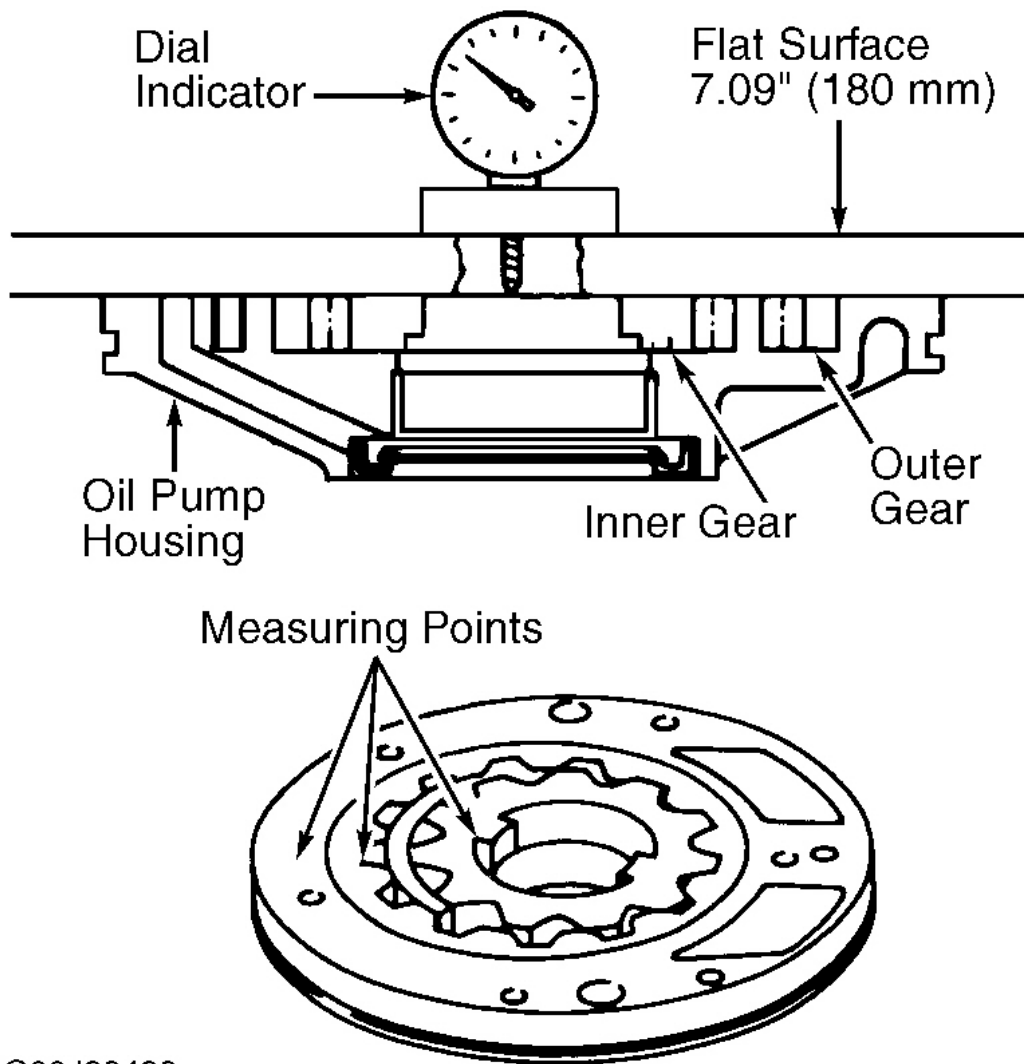
Inspection

1. Inspect oil pump housing, oil pump cover and inner and outer gear for wear or damage. Using a dial indicator, measure side clearance of inner and outer gears in at least 4 places around each outside edge. See **Fig. 20**. Specified clearance should be .001-.002" (.03-.05 mm).
2. If clearance is less than specified, replace inner and outer gears as a set. Ensure clearance is as specified. Gears are available in 3 thicknesses. See **OIL PUMP GEAR THICKNESS** table. If clearance is greater than specified, replace oil pump assembly, except oil pump cover.

OIL PUMP GEAR THICKNESS ⁽¹⁾

Part No.	Thickness - In. (mm)
31346-80X00	.4720-.4724 (11.99-12.00)
31346-80X01	.4717-.4720 (11.98-11.99)
31346-80X02	.4713-.4717 (11.97-11.98)
(1) Inner and outer gear.	

3. Using a feeler gauge, measure clearance between outer gear and oil pump housing. Specified clearance should be .004-.007" (.11-.18 mm). If clearance is not as specified, replace oil pump assembly, except oil pump cover.
4. Install NEW seal rings onto oil pump cover. Measure clearance between seal ring and ring groove. Specified clearance should be .004-.010" (.10-.25 mm). Service limit is .010" (.25 mm). If clearance is not as specified, replace oil pump cover.



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Fig. 20: Measuring Oil Pump Side Clearance
 Courtesy of NISSAN MOTOR CO., U.S.A.

Reassembly

1. Using appropriate adapter, install NEW oil seal into oil pump housing. Apply ATF to NEW "O" ring and install onto oil pump housing. Install inner and outer gears into oil pump housing. Ensure inner gear is installed in same direction as removed.
2. Wrap oil pump splines with masking tape to protect oil seal. Position oil pump cover onto oil pump housing, then remove masking tape. Tighten bolts in a crisscross pattern to specification. See **Fig. 18**. See **TORQUE SPECIFICATIONS**.
3. Pack ring groove with petroleum jelly, then carefully install NEW seal rings. Connect seal ring hooks.

DO NOT spread gap of seal ring excessively when installing. Seal ring may become deformed.

VALVE BODY ASSEMBLY

Disassembly

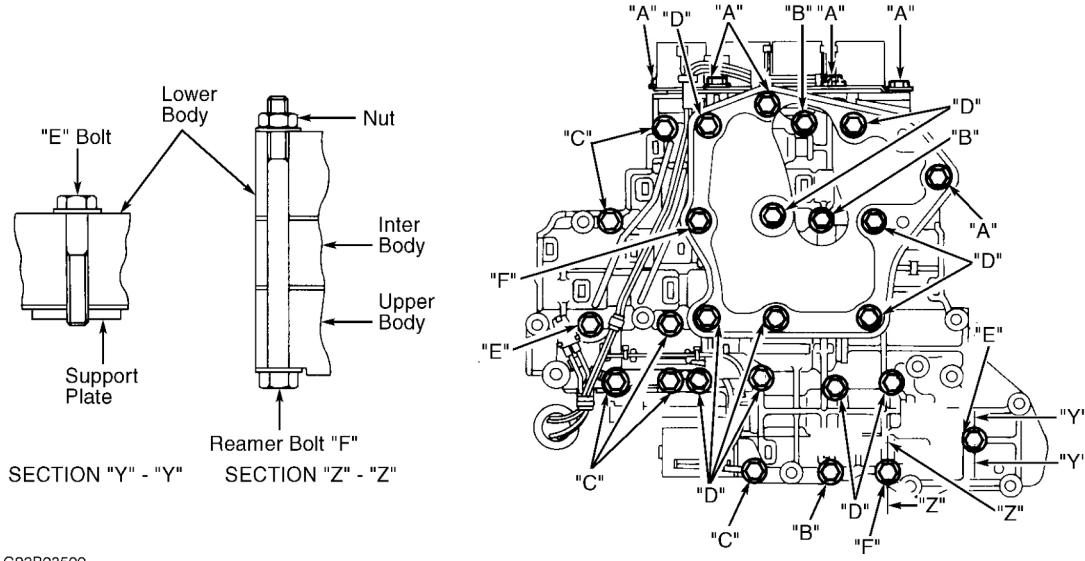
NOTE: Inter valve body may also be known as intermediate valve body.

1. Remove bolts "A", "D" and nut "F". See **VALVE BODY BOLT IDENTIFICATION** table. Remove oil strainer from valve body assembly. Remove solenoid assembly and line pressure solenoid from valve body assembly. See **Fig. 22**. Remove "O" rings from solenoids and harness terminal body. Place upper valve body face down. Remove bolts "B", "C" and "F".
2. Remove inter valve body from lower valve body. Turn lower valve body over and remove accumulator support plate. Remove bolts "E", separating plate and separating gasket from lower valve body. See **Fig. 22**. Remove check balls and relief valve springs from lower valve body. DO NOT lose check balls or relief valve springs.
3. Remove inter valve body with separating plate and separating gasket from upper valve body. Ensure steel balls are properly positioned in upper and inter valve bodies, then remove steel balls from valve bodies. Do not lose steel balls. See **Fig. 24**.

VALVE BODY BOLT IDENTIFICATION ⁽¹⁾

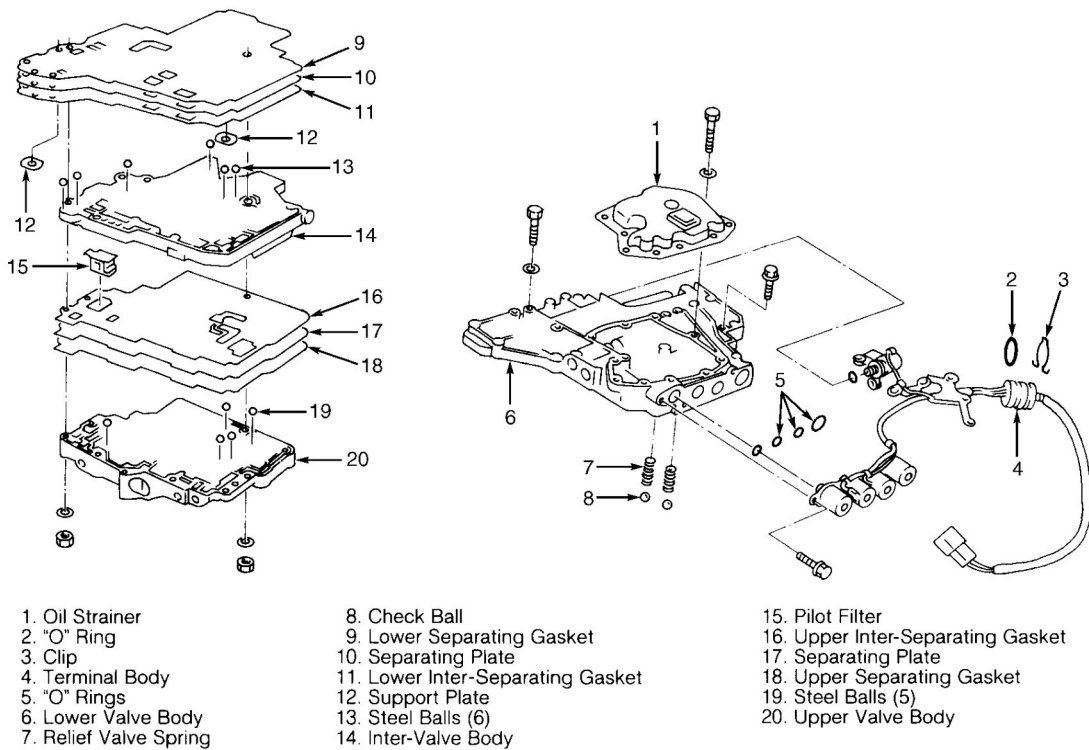
Identification	Length - In. (mm)	No. Of Bolts
A	.531 (13.50)	6
B	2.283 (58.00)	3
C	1.575 (40.00)	6
D	2.598 (66.00)	11
E	1.299 (33.00)	2
F	3.071 (78.00)	2

(1) See **Fig. 21** for bolt location.



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Fig. 21: Identifying Valve Body Assembly Bolt Locations
Courtesy of NISSAN MOTOR CO., U.S.A.

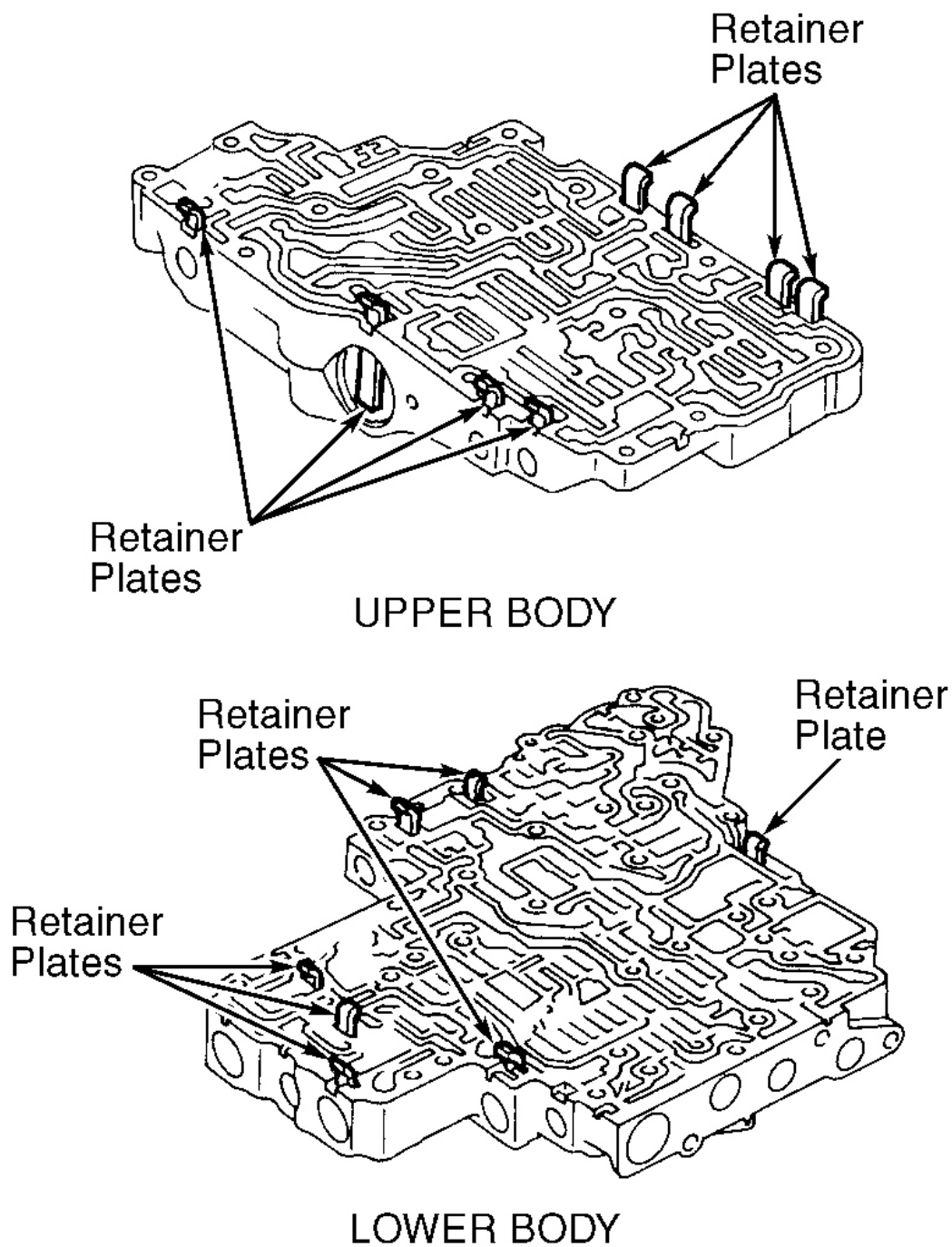


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Fig. 22: Exploded View Of Valve Body Assembly
Courtesy of NISSAN MOTOR CO., U.S.A.

Inspection

Ensure retainer plates are properly positioned in lower and upper valve bodies. See **Fig. 23**. Do not lose retainer plates. Check oil strainer for damage. Inspect shift solenoids "A" and "B", line pressure solenoid, lock-up solenoid and overrun clutch solenoid. See appropriate ELECTRONIC CONTROLS article. Check oil cooler relief valve springs for damage or deformation. Measure spring free length and outer diameter. Free length should be .670" (17.02 mm), and diameter should be .315" (8.00 mm). Replace springs if not as specified.

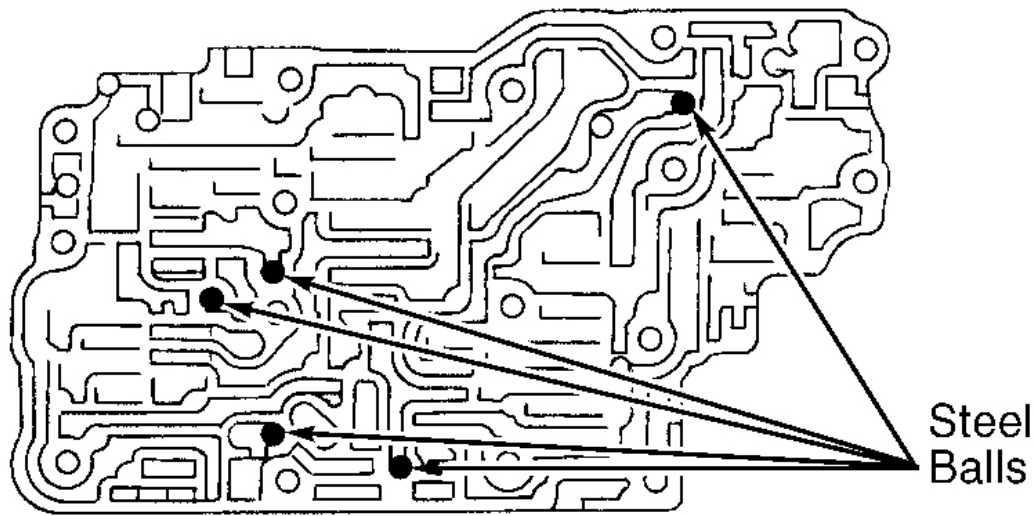


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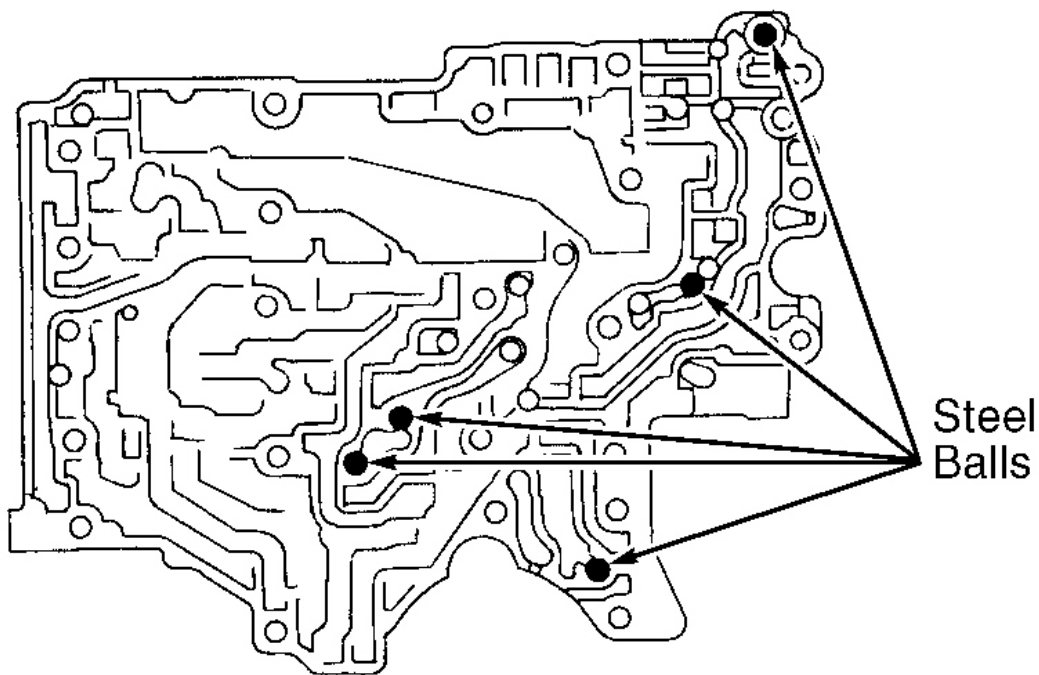
Fig. 23: Identifying Retainer Plate Locations (Number May Vary)
Courtesy of NISSAN MOTOR CO., U.S.A.

Reassembly

1. Place oil circuit of upper valve body face up. Install steel balls in proper locations. See **Fig. 24**. Install upper separating plate gasket, upper inter separating plate gasket and upper separating plate. Install reamer bolts "F" from bottom of upper valve body. See **VALVE BODY BOLT IDENTIFICATION** table. Install separating gaskets and separating plates as a set on upper valve body, using reamer bolts as a guide.
2. Install pilot filter. Place lower valve body with inter valve body side face up. Install steel balls in proper locations. See **Fig. 24**. Install inter valve body on upper valve body, using reamer bolts "F" as a guide. Do not lose steel balls. Install check balls and relief valve springs in proper locations in lower valve body. Install lower separating plate gasket, inter separating plate gasket and lower separating plate. See **Fig. 22**.
3. Install support plate bolts "E" from bottom of lower valve body. Install separating plate gaskets and separating plate as a set on lower valve body using bolts "E" as a guide. Temporarily install support plates on lower valve body. Install lower valve body on inter valve body using reamer bolts "F" as a guide. See **Fig. 21**. Tighten bolts snug.
4. Install "O" rings on solenoids and harness terminal connector. Apply ATF to "O" rings prior to installation. Install and finger tighten bolts "B". Install solenoid assembly and line pressure solenoid to lower valve body. Install oil strainer. Tighten all bolts to specification. See **TORQUE SPECIFICATIONS**.



UPPER BODY



LOWER BODY

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Fig. 24: Identifying Steel Ball Locations
Courtesy of NISSAN MOTOR CO., U.S.A.

UPPER VALVE BODY**Disassembly**

1. Using a screwdriver, pry out retainer plates. Remove retainer plates while holding spring, plugs and sleeves. Remove plug slowly to prevent sudden release of internal parts.
2. Place mating surface of valve body face down and remove internal parts. If valve is difficult to remove, lightly tap valve body with soft hammer. Do not use a magnet to remove valves. Do not drop or damage valves or sleeves.

Inspection

Measure valve spring free length and outer diameter. See **UPPER VALVE BODY SPRING IDENTIFICATION** table. Also check for deformation or damage. Replace valve springs if deformed or fatigued. Check sliding surfaces of valves, sleeves and plugs.

UPPER VALVE BODY SPRING IDENTIFICATION ⁽¹⁾

Spring No.	Length - In. (mm)	Diameter - In. (mm)
1		
Altima & Quest	1.555 (39.50)	.433 (11.00)
I35 & Maxima	2.240 (56.98)	.256 (6.50)
2		
Altima & Quest	.807 (20.50)	.276 (7.00)
I35 & Maxima	.807 (20.50)	.274 (6.95)
3	1.220 (31.00)	.354 (9.00)
4	1.476 (37.50)	.272 (6.90)
5		
Altima & Quest	1.417 (36.00)	.319 (8.10)
I35 & Maxima	1.535 (38.98)	.350 (8.90)
6		
Altima & Quest	1.939 (49.25)	.772 (19.60)
I35 & Maxima	2.176 (55.26)	.772 (19.60)
7	1.063 (27.00)	.276 (7.00)
8	1.201 (30.50)	.260 (6.60)
9	1.157 (29.40)	.236 (6.00)

(1) For spring locations, refer to illustration. See **Fig. 25**.

Reassembly

1. Lay valve body face down when installing valves. Do not stand valve body on edge. Lubricate valves and valve body with ATF prior to installation. Install control valves by sliding valves into appropriate bores. Do not scratch or damage valve body. Wrap shaft of small screwdriver with vinyl tape and insert valves into their bores using screwdriver as necessary.
2. Install 1-2 accumulator valve, then align 1-2 accumulator retainer plate with 1-2 accumulator valve from

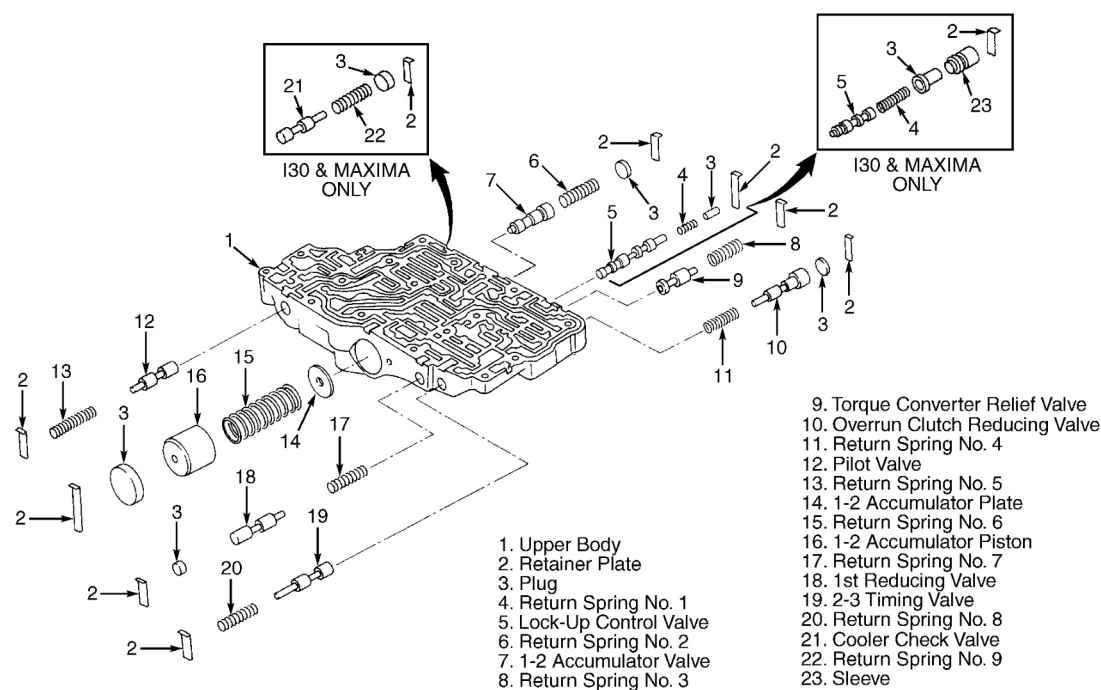
opposite side of valve body. Install return spring, 1-2 accumulator piston and plug. See **Fig. 25**. While pushing plug or return spring, install retainer plates. See **UPPER VALVE BODY RETAINER PLATE IDENTIFICATION** table for retainer plate dimensions.

UPPER VALVE BODY RETAINER PLATE IDENTIFICATION ⁽¹⁾

Application	(2) Length "B" - In. (mm)
Lock-Up Control	1.102 (28.00)
Torque Converter Relief, Pilot, 1st Reducing	.846 (21.50)
1-2 Accumulator & Piston Valves, 1-2 Accumulator Valve	1.516 (38.50)
Overrun Clutch Reducing Valve	.945 (24.00)

(1) For retainer plate locations, refer to illustration. See **Fig. 23**.

(2) Length "A" for all valves is .236" (6.0 mm). All valves use type "A" retainer plate. See **Fig. 26**.



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Fig. 25: Exploded View Of Upper Valve Body
Courtesy of NISSAN MOTOR CO., U.S.A.

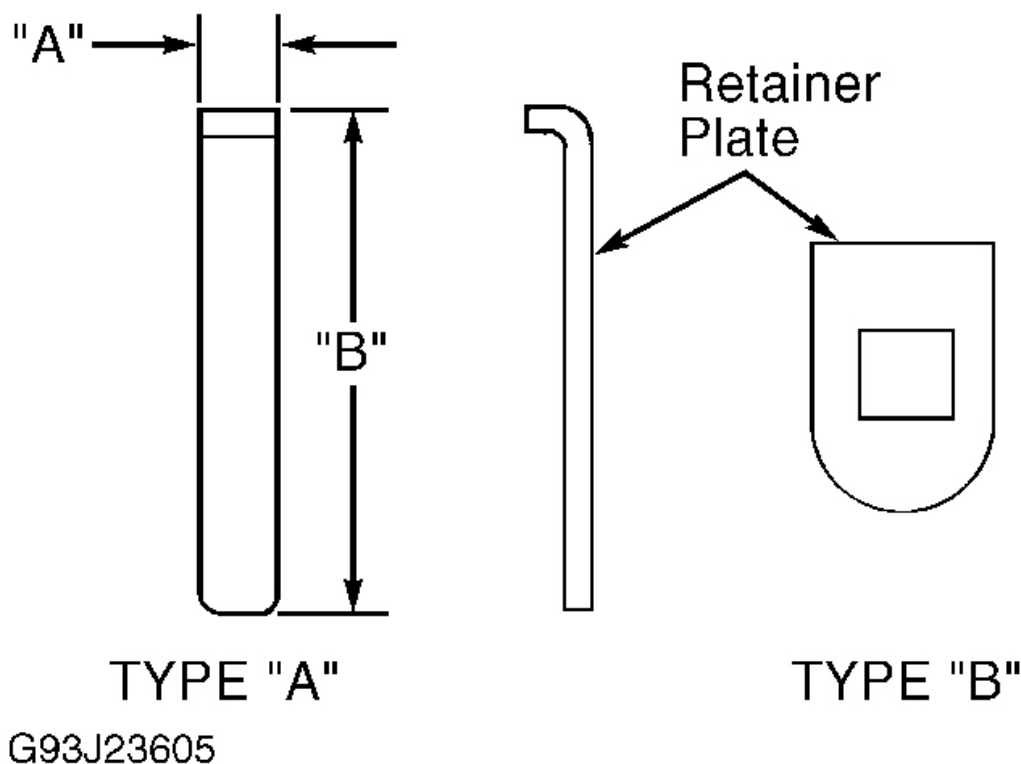


Fig. 26: Measuring Retainer Plate Dimensions
 Courtesy of NISSAN MOTOR CO., U.S.A.

LOWER VALVE BODY

NOTE: Number of retainer plates varies with model. See [Fig. 23](#).

Disassembly

Using a screwdriver, pry out retainer plates. Remove retainer plates while holding spring, plugs and sleeves. See [Fig. 27](#). Remove plug slowly to prevent sudden release of internal parts. Place mating surface of valve body face down and remove internal parts. If valve is hard to remove, lightly tap valve body with soft hammer. DO NOT use a magnet to remove valves. DO NOT drop or damage valves or sleeves.

Inspection

Measure valve spring free length and outer diameter. See [LOWER VALVE BODY SPRING IDENTIFICATION](#) table. Check for deformation or damage. Replace valve springs if deformed or fatigued. Check sliding surfaces of valves, sleeves and plugs.

2001 Nissan Altima GXE

2000-02 AUTOMATIC TRANSMISSIONS Nissan RE4F04 Series Overhaul

LOWER VALVE BODY SPRING IDENTIFICATION ⁽¹⁾

Spring No.	Length - In. (mm)	Diameter - In. (mm)
1	1.201 (30.50)	.386 (9.80)
2	1.260 (32.00)	.272 (6.90)
3	.854 (21.70)	.276 (7.00)
4	.854 (21.70)	.276 (7.00)
5	.866 (22.00)	.256 (6.50)
6	.854 (21.70)	.276 (7.00)
7	1.772 (45.00)	.591 (15.00)
8	2.008 (51.00)	.222 (5.65)

(1) For spring locations, refer to illustration. See **Fig. 27**.

Reassembly

1. Lay valve body face down when installing valves. DO NOT stand valve body on edge. Lubricate valves and valve body with ATF prior to installation. Install control valves by sliding valve into appropriate bore. Do not scratch or damage valve body.
2. Wrap shaft of small screwdriver with vinyl tape and insert valves into their bores using screwdriver as necessary. While pushing plug or return spring, install retainer plates. See **LOWER VALVE BODY RETAINER PLATE IDENTIFICATION** table for retainer plate dimensions.

LOWER VALVE BODY RETAINER PLATE IDENTIFICATION ⁽¹⁾

Application	Length "B" - In. (mm)
All Valves ⁽²⁾	1.102 (28.00)

(1) For retainer plate locations, refer to illustration. See **Fig. 23**.

(2) Shift Valve "B" not applicable. All valves use type "A" retainer plate except shift valve "B" (Type "B"). See **Fig. 26**.

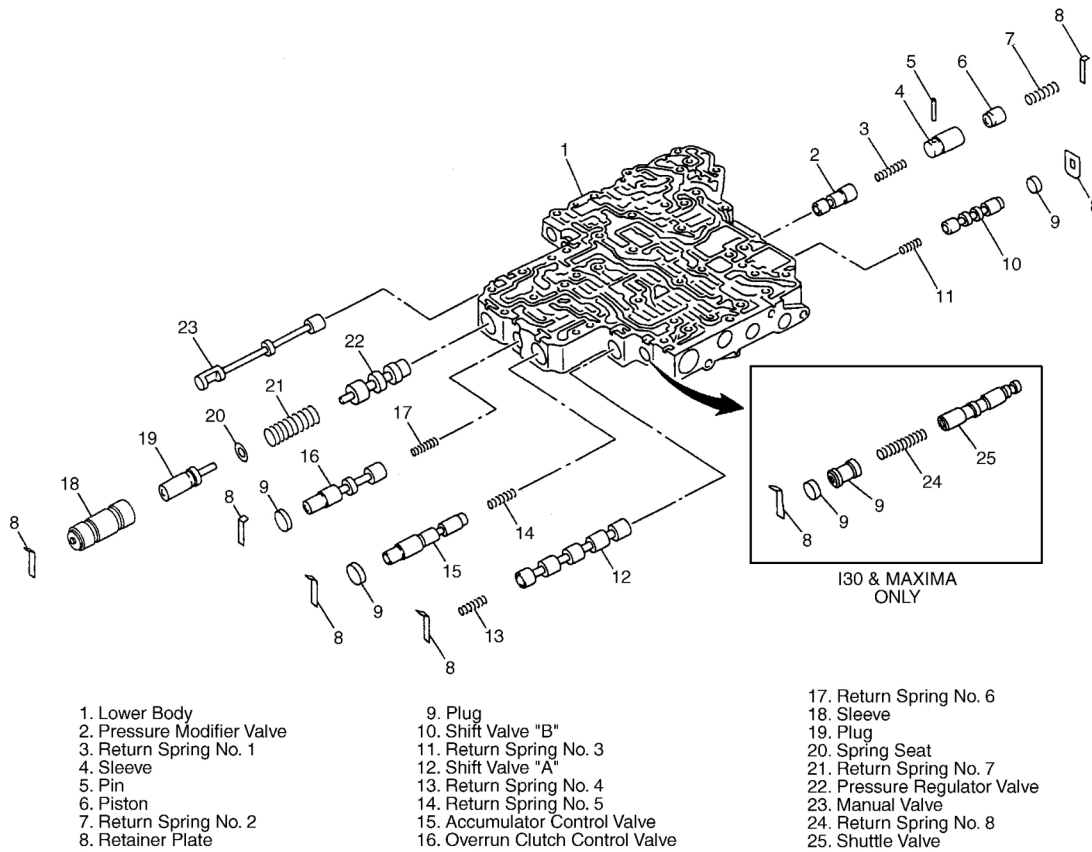


Fig. 27: Exploded View Of lower Valve Body
Courtesy of NISSAN MOTOR CO., U.S.A.

REVERSE CLUTCH

Disassembly

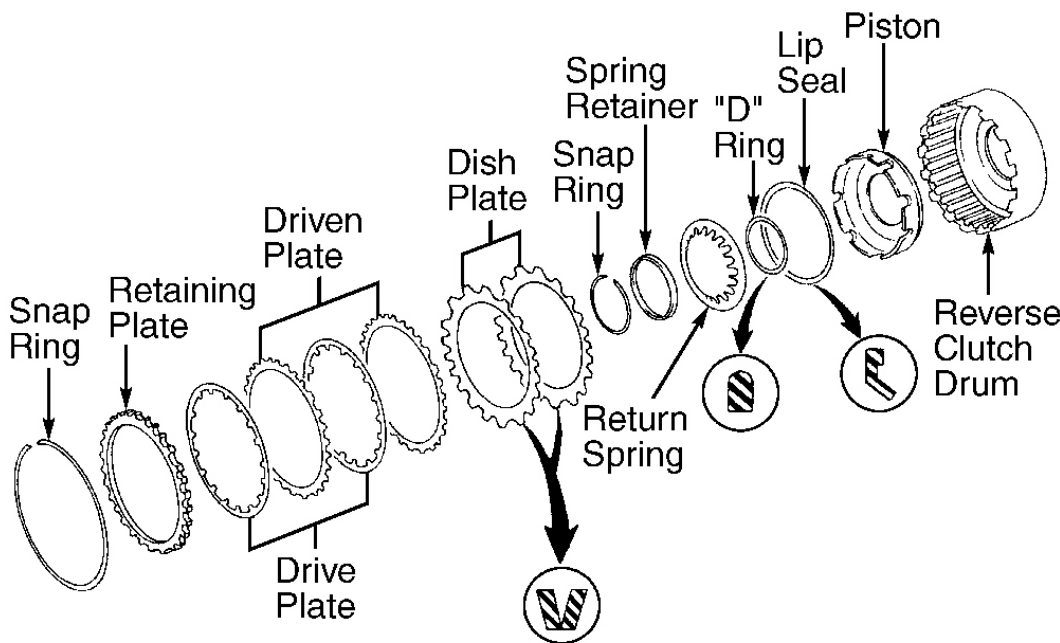
Remove snap ring from reverse clutch assembly. Remove drive plates, driven plates, retaining plate, and dish plates. See **Fig. 28**. Record number of plates for reassembly reference. Remove snap ring from reverse clutch drum while compressing springs. Remove spring retainer and return spring. Remove piston from reverse clutch drum by turning piston clockwise. Remove "D" ring and oil seal from piston.

Inspection

Check dish plate and return springs for deformation, fatigue or damage. Inspect drive plate facing for burns, cracks or damage. Dish plate thickness should be .121" (3.08 mm). See **Fig. 29**. Drive plate thickness should be .063" (1.60 mm), with service limit of .055" (1.40 mm). If drive plate thickness is not as specified, replace drive plate. Using compressed air, ensure check balls in reverse clutch piston are not seized.

Reassembly

1. Prior to installation, apply ATF to "D" ring, oil seal and inner surface of drum. Install "D" ring and oil seal onto piston. Install piston assembly into clutch drum while slowly turning clockwise. Install return spring and spring retainer onto piston. Compress return spring and install snap ring. Install drive plates, driven plates, retaining plate, dish plates and snap ring.
2. Measure clearance between retaining plate and snap ring. See **Fig. 30**. Replace retaining plate if specified clearance is not .020-.031" (.50-.80 mm), with service limit of .047" (1.20 mm). Reverse clutch retaining plates are available in thicknesses ranging from .260" (6.60 mm) to .307" (7.80 mm) in .008" (.20 mm) increments. Install different thickness retaining plate (if necessary) and recheck clearance.
3. Check reverse clutch operation. Install seal ring onto drum support of oil pump cover. Install reverse clutch assembly on oil pump assembly. Apply compressed air to oil hole. See **Fig. 31**. Ensure retaining plate moves toward snap ring. If retaining plate does not move as described, "D" ring or oil seal may be damaged.



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Fig. 28: Exploded View Of Reverse Clutch
 Courtesy of NISSAN MOTOR CO., U.S.A.



Fig. 29: Measuring Thickness Of Dish Plate (Typical)
 Courtesy of NISSAN MOTOR CO., U.S.A.

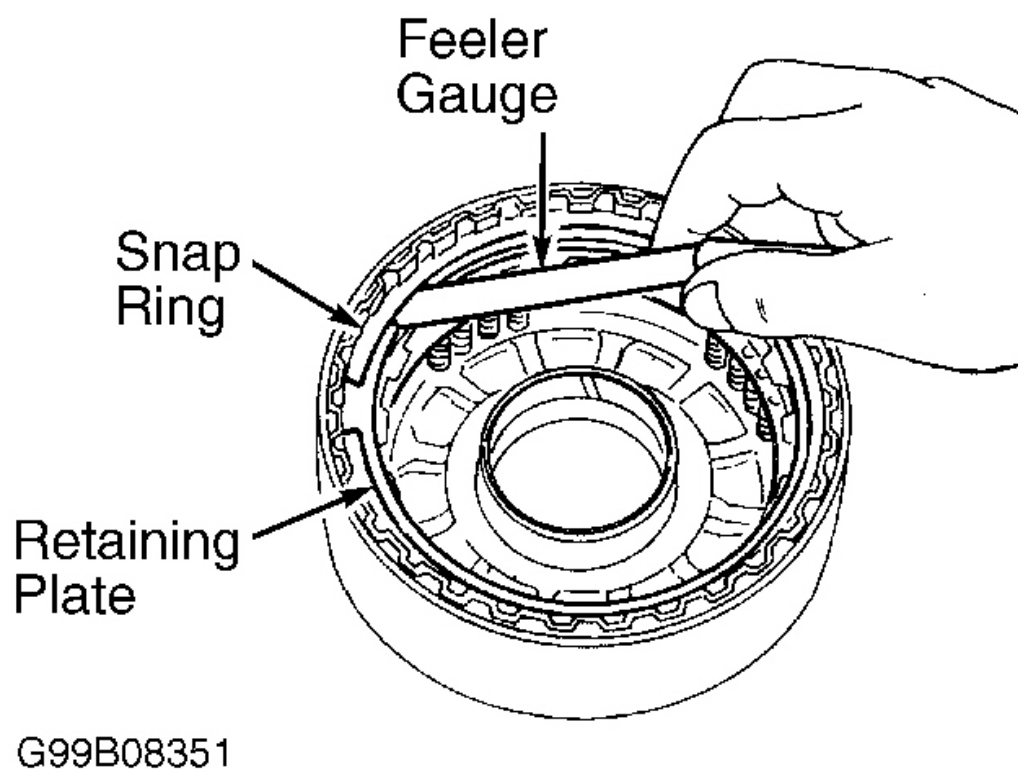


Fig. 30: Measuring Clutch Pack Clearance (Reverse Clutch Shown; Other Clutches Are Similar)
 Courtesy of NISSAN MOTOR CO., U.S.A.

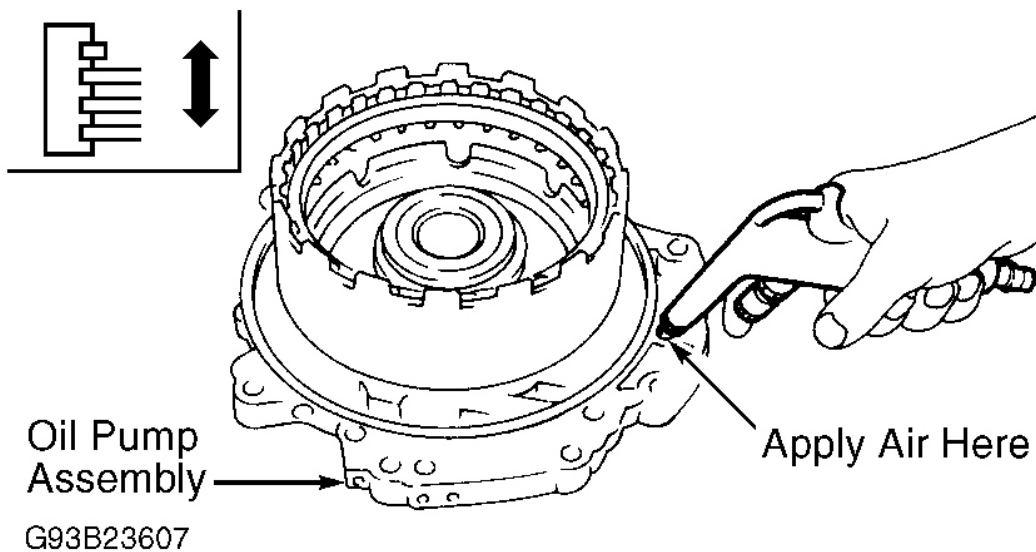


Fig. 31: Checking Reverse Clutch Operation
Courtesy of NISSAN MOTOR CO., U.S.A.

HIGH CLUTCH

Disassembly

Remove seal rings from input shaft. Service procedures for high clutch are the same as for reverse clutch. See **Fig. 32**.

Inspection

Check high clutch return springs for deformation or damage. Always replace spring retainer and return springs as a set (if necessary). Inspect drive plate facing for burns, cracks or damage. Drive plate thickness for high clutch should be .063" (1.60 mm), with service limit of .055" (1.40 mm). Using compressed air, ensure check balls in high clutch piston is not seized.

Reassembly

1. Install NEW seal rings on input shaft. Measure clearance between seal ring and ring groove. Specified clearance is .003-.009" (.08-.23 mm) with service limit of .009". (.23 mm). If clearance is not as specified, replace input shaft.
2. Lubricate "D" rings and with ATF, and install on high clutch piston. Ensure "D" rings are installed in correct direction. See **Fig. 32**. Install piston assembly in clutch drum while slowly turning clockwise. Install return spring and spring retainer on piston. Do not align snap ring gap with spring retainer stopper. Compress springs and install snap ring. Install drive plates, driven plates, retaining plate and snap ring.
3. Measure clearance between retaining plate and snap ring. See **Fig. 30**. Replace retaining plate if specified

clearance is not .071-.087" (1.80-2.20 mm), with service limit of .118" (3.00 mm). High clutch retaining plates are available in thicknesses ranging from .126" (3.20 mm) to .157" (4.00 mm) in .008" (.20 mm) increments. Install different thickness retaining plate (if necessary) and recheck clearance.

4. Check high clutch operation. Apply compressed air to oil hole. See **Fig. 33**. Ensure retaining plate moves toward snap ring. If retaining plate does not move as described, "D" ring may be damaged.

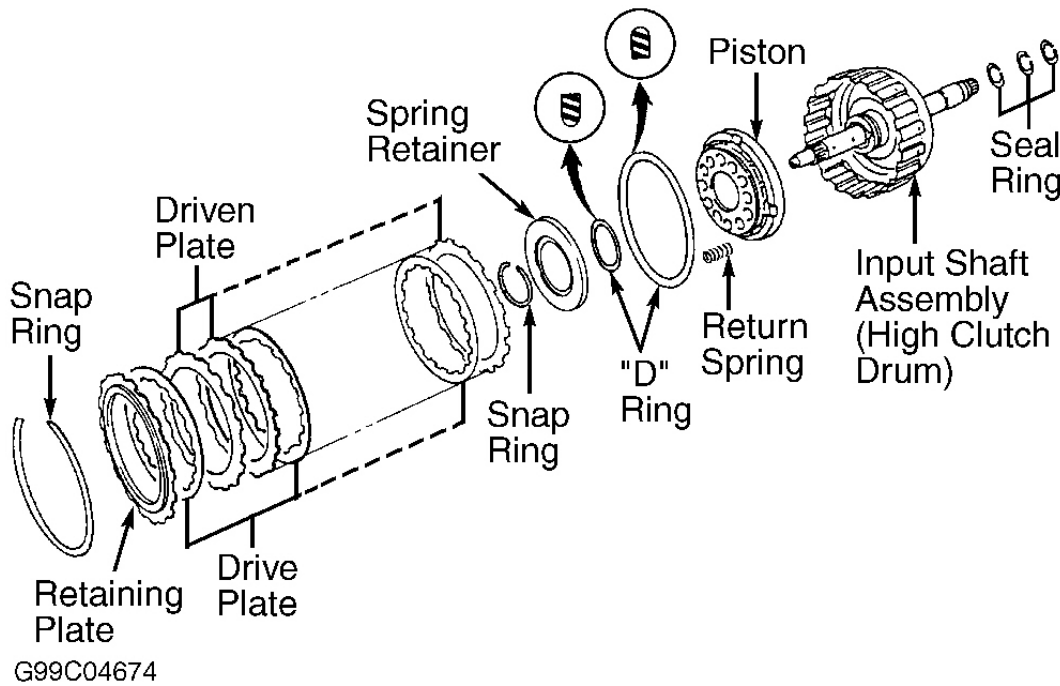


Fig. 32: Exploded View Of High Clutch
 Courtesy of NISSAN MOTOR CO., U.S.A.

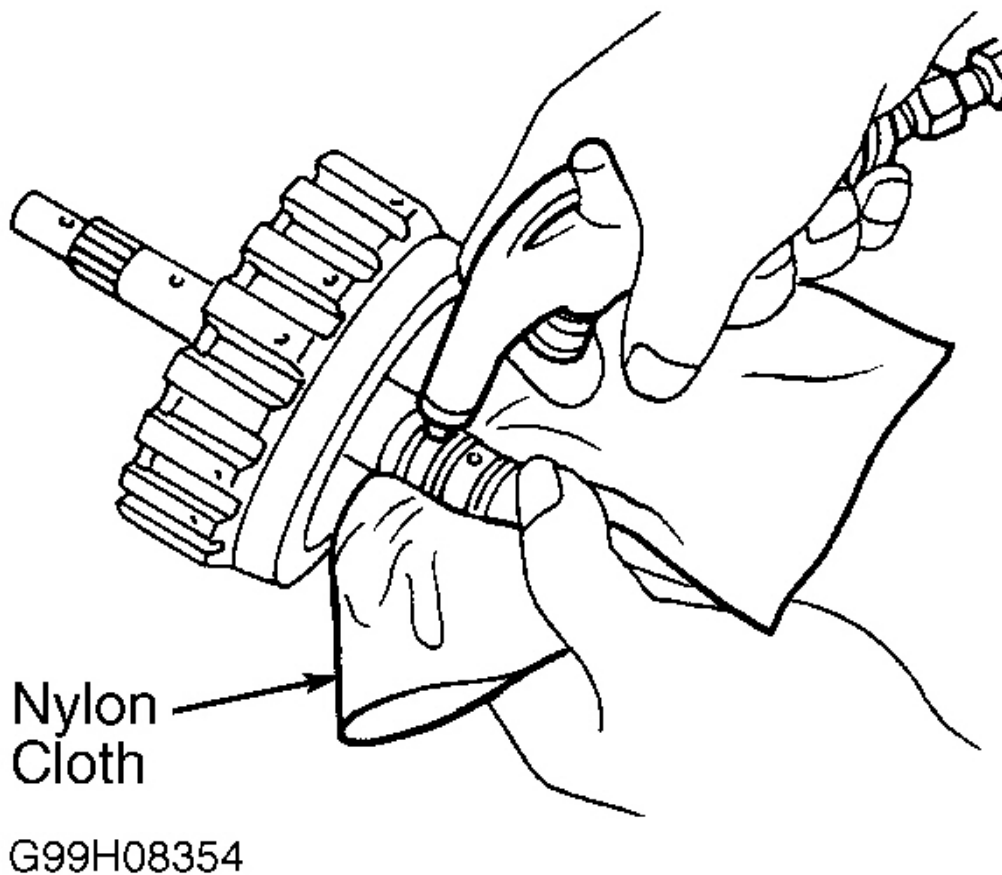


Fig. 33: Checking High Clutch Operation
Courtesy of NISSAN MOTOR CO., U.S.A.

FORWARD & OVERRUN CLUTCHES

Disassembly

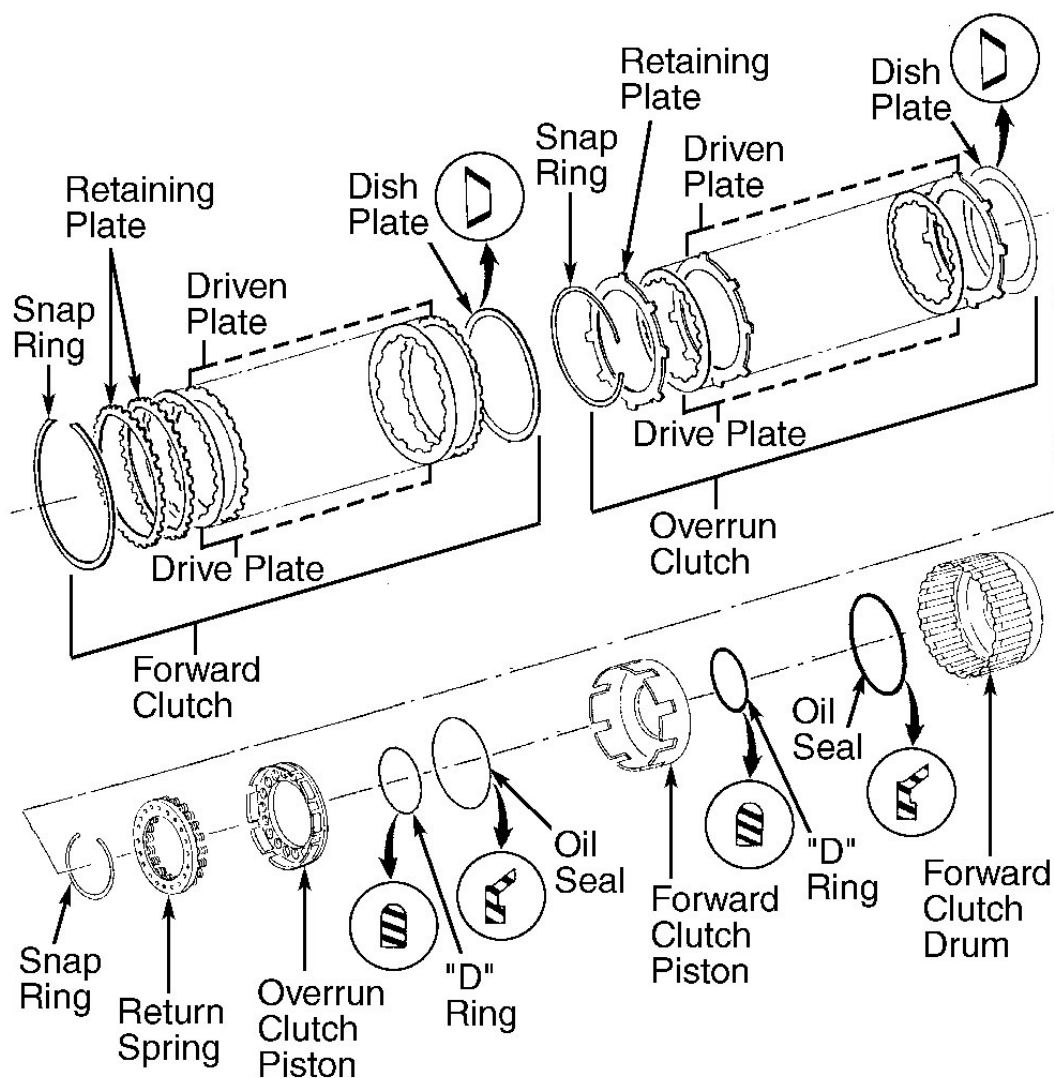
Service procedures for forward clutch and overrun clutch are the same as for reverse clutch. See **Fig. 34**.

Inspection

Check forward clutch and overrun clutch return springs for deformation or damage. Always replace spring retainer and return springs as a set (if necessary). Inspect drive plate facing for burns, cracks or damage. Drive plate thickness for forward and overrun clutch should be .106" (2.70 mm). See **Fig. 29**. Drive plate thickness for forward and overrun clutch should be .063" (1.60 mm), with service limit of .055" (1.40 mm). Using compressed air, ensure check balls in forward clutch and overrun clutch pistons are not seized.

Reassembly

1. Lubricate "D" rings and oil seals with ATF, and install on forward and overrun clutch pistons. Ensure "D" rings and oil seals are installed in correct direction. See **Fig. 34**. Align triangle mark on spring retainer with check ball in overrun clutch piston. See **Fig. 35**. Do not align snap ring gap with spring retainer stopper.
2. Install overrun clutch drive plates, driven plates, retaining plate, dish plate and snap ring. Measure clearance between retaining plate and snap ring. See **Fig. 30**. Specified clearance for overrun clutch is .028-.043" (.70-1.10 mm), with service limit of .067" (1.70 mm). Overrun clutch retaining plates are available in thicknesses ranging from .118" (3.00 mm) to .150" (3.80 mm) in .008" (.20 mm) increments.
3. Install forward clutch drive plates, driven plates, retaining plate, dish plate and snap ring. Measure clearance between retaining plate and snap ring. See **Fig. 30**. Specified clearance for forward clutch is .018-.033" (.45-.85 mm), with service limit of .073" (1.85 mm). Forward clutch retaining plates are available in thicknesses ranging from .126" (3.20 mm) to .150" (3.80 mm) in .008" (.20 mm) increments.
4. Check forward and overrun clutch operation. Install bearing retainer on forward clutch drum. Apply compressed air to appropriate oil hole of forward clutch drum. See **Fig. 36**. Ensure retaining plate moves toward snap ring. If retaining plate does not move as described, "D" ring or oil seal may be damaged.



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Fig. 34: Exploded View Of Forward & Overrun Clutch
 Courtesy of NISSAN MOTOR CO., U.S.A.

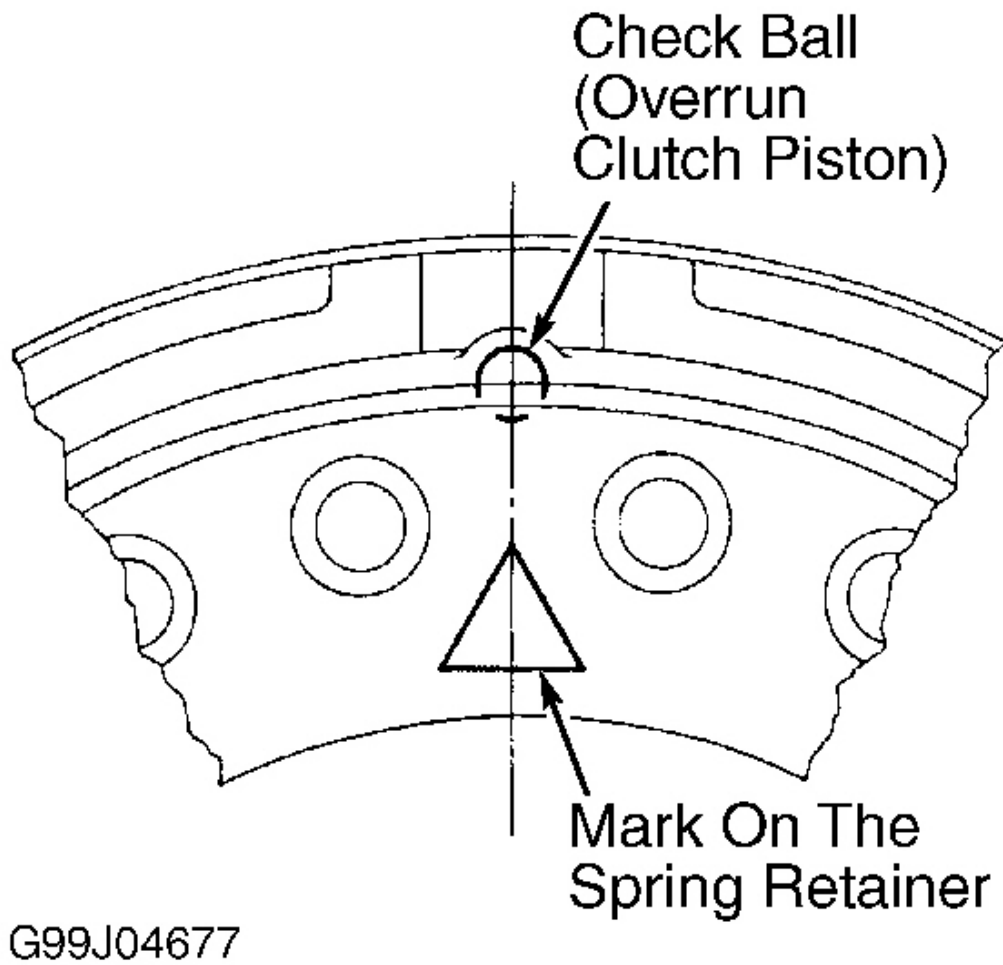


Fig. 35: Checking Spring Retainer Installation
Courtesy of NISSAN MOTOR CO., U.S.A.

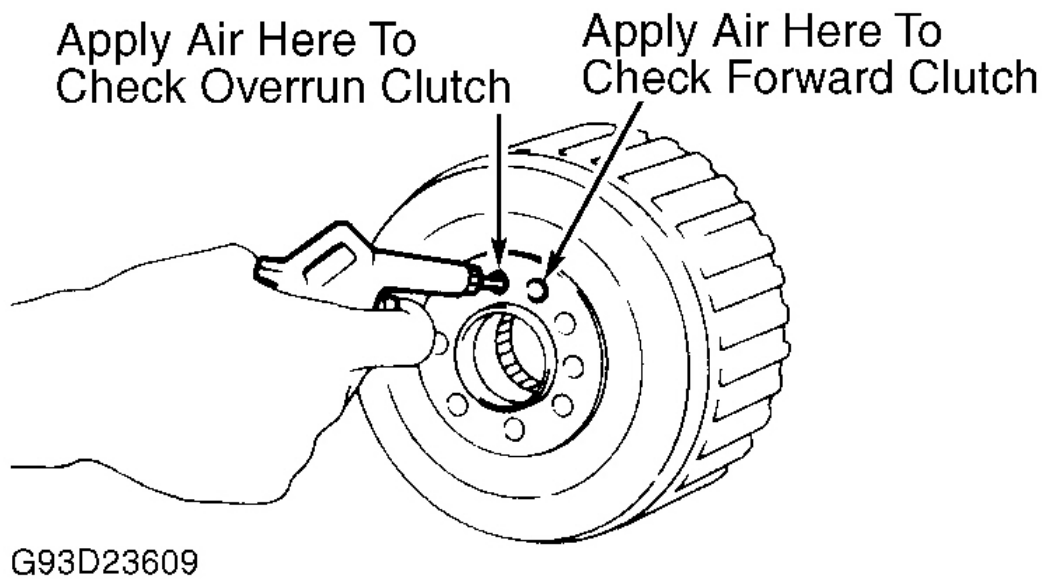


Fig. 36: Checking Forward & Overrun Clutch Operation
 Courtesy of NISSAN MOTOR CO., U.S.A.

LOW-REVERSE BRAKE

NOTE: Low-reverse brake piston is removed from transaxle with front planetary carrier during transaxle disassembly and is installed during transaxle reassembly.

Disassembly

Position transaxle case to obtain access to low-reverse brake snap ring. Remove snap ring. Remove retaining plate, dish plate, drive plates and driven plates from transaxle case. See **Fig. 38**. Record number of plates for reassembly reference. Apply compressed air to oil hole of piston retainer to remove piston. See **Fig. 37**. Remove "D" rings from piston.

Inspection

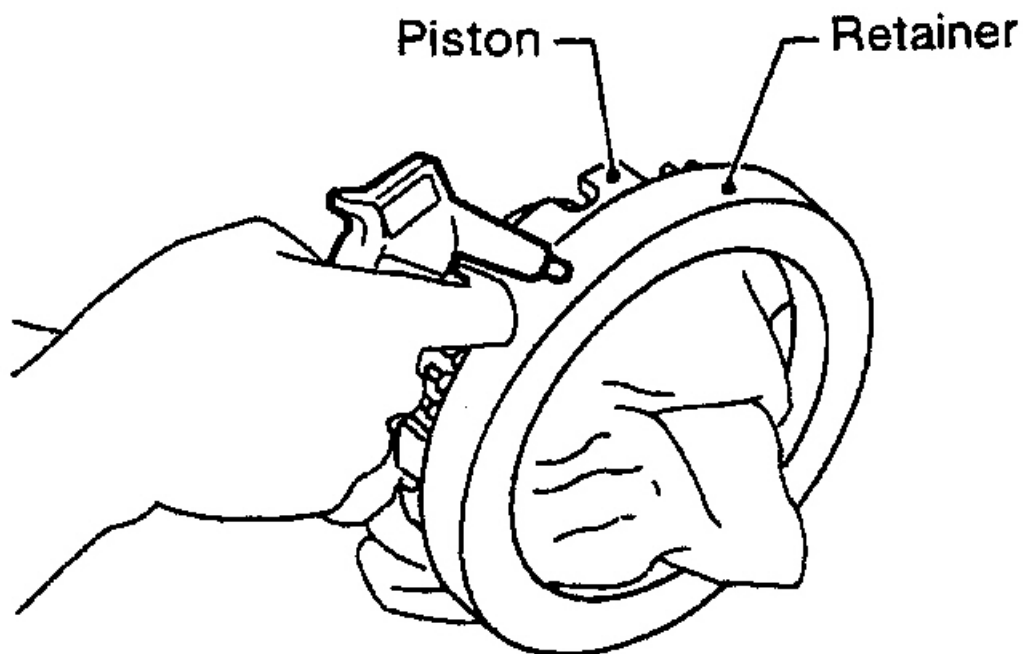
Check low-reverse brake snap ring, springs and retainer for deformation or damage. Replace spring retainer and return springs as a set (if necessary). Check low-reverse drive plates for burns, cracks or damage. Drive plate thickness should be .071" (1.80 mm), with allowable wear limit to .063" (1.60 mm).

Reassembly

1. Install driven plates, drive plates, dish plate and retaining plate into transaxle case. Install snap ring. Measure clearance between snap ring and retaining plate. See **Fig. 39**. Replace retaining plate if clearance is not .067-.083" (1.70-2.10 mm), with allowable minimum limit of .130" (3.30 mm). Retaining plates are

available in thicknesses ranging from .079" (2.00 mm) to .134" (3.40 mm) in increments of .008" (.20 mm).

2. Lubricate "D" rings with ATF, and install on low-reverse brake piston. Ensure "D" rings are installed in correct direction. See **Fig. 38**. Ensure piston bracket is aligned with retainer bracket. See **Fig. 40**.



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Fig. 37: Removing Low-Reverse Brake Piston
Courtesy of NISSAN MOTOR CO., U.S.A.

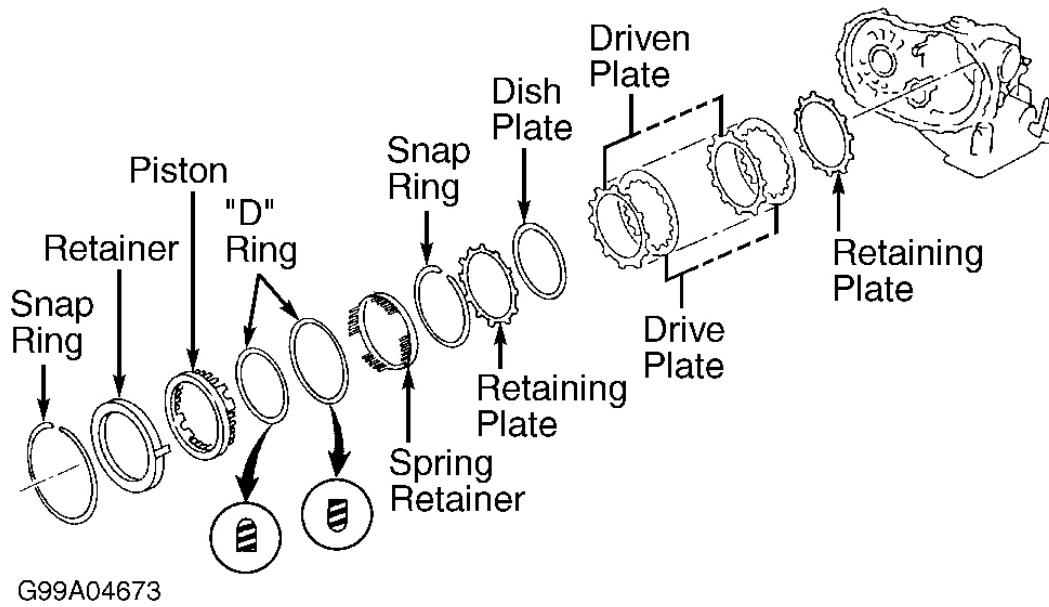


Fig. 38: Exploded View Of Low-Reverse Brake
 Courtesy of NISSAN MOTOR CO., U.S.A.

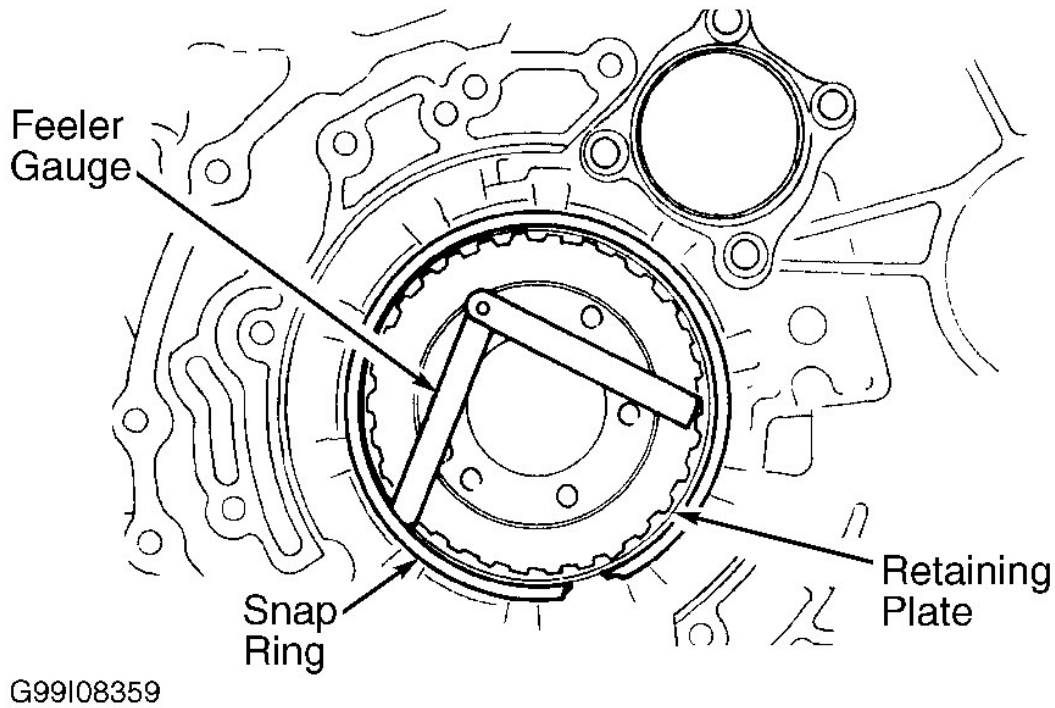


Fig. 39: Measuring Low-Reverse Brake Clutch Clearance
Courtesy of NISSAN MOTOR CO., U.S.A.

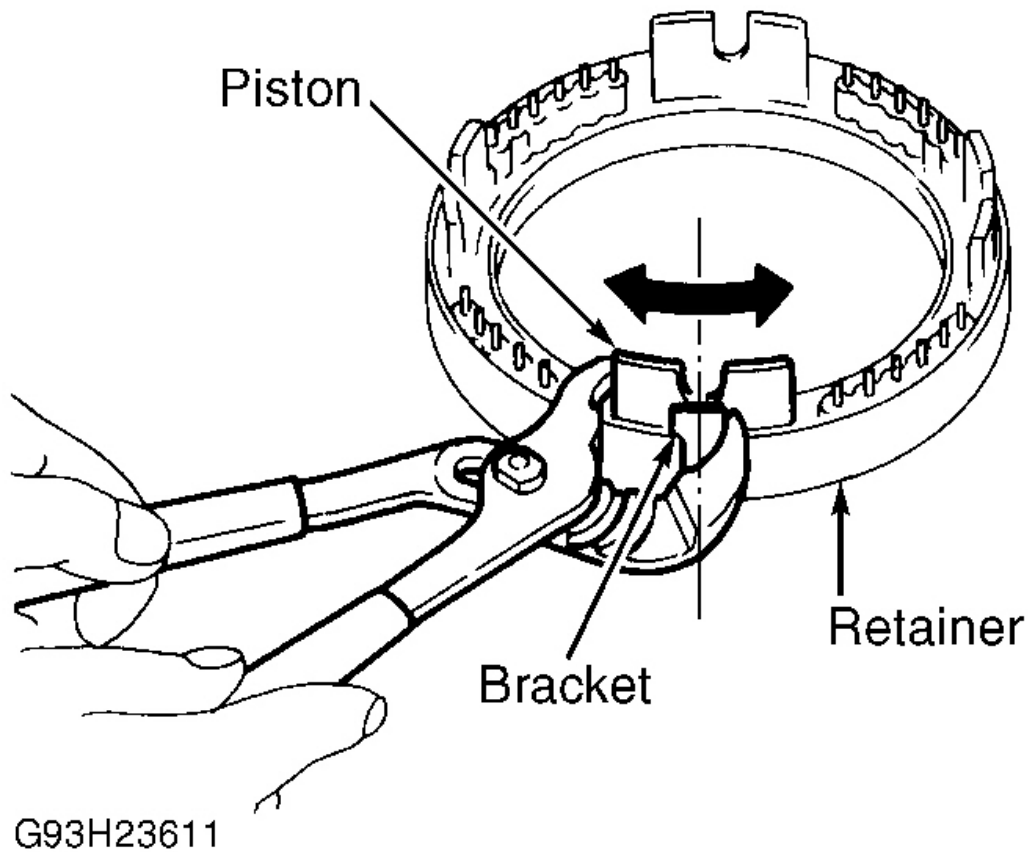


Fig. 40: Aligning Low-Reverse Brake Piston With Spring Retainer
Courtesy of NISSAN MOTOR CO., U.S.A.

REAR INTERNAL GEAR, FORWARD CLUTCH HUB & OVERRUN CLUTCH HUB

Disassembly

Remove overrun clutch hub and thrust washer from forward clutch hub. See **Fig. 41**. Remove forward clutch hub from rear internal gear. Remove end bearing from rear internal gear. Remove thrust washer from rear internal gear. Remove end bearing from forward one-way clutch. Remove forward one-way clutch from forward clutch hub.

Inspection

Check rear internal gear, forward clutch hub and overrun clutch hub frictional surfaces for wear or damage. Check forward one-way clutch and end bearings for wear or damage.

Reassembly

1. Install forward one-way clutch into forward clutch hub. See **Fig. 42**. Apply petroleum jelly to end bearings and thrust washers. Install end bearing on forward one-way clutch with smooth side up.
2. Install thrust washer on rear internal gear. Install end bearing on rear internal gear with smooth side down. Install forward clutch hub on rear internal gear. Ensure forward clutch hub rotates in correct direction. Holding rear internal gear, forward clutch hub should turn clockwise and lock counterclockwise. See **Fig. 43**.
3. Install thrust washer on overrun clutch hub. Align pawls of thrust washer with holes in overrun clutch hub. Install overrun clutch hub on rear internal gear. Align projections of rear internal gear with holes in overrun clutch hub.

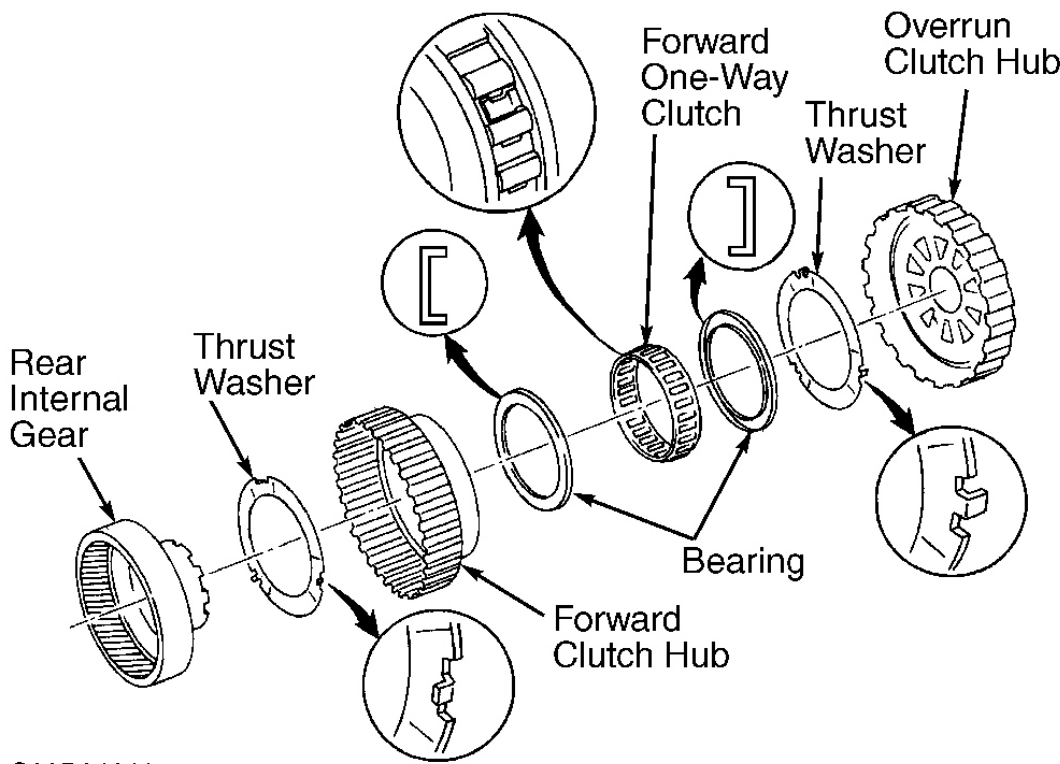
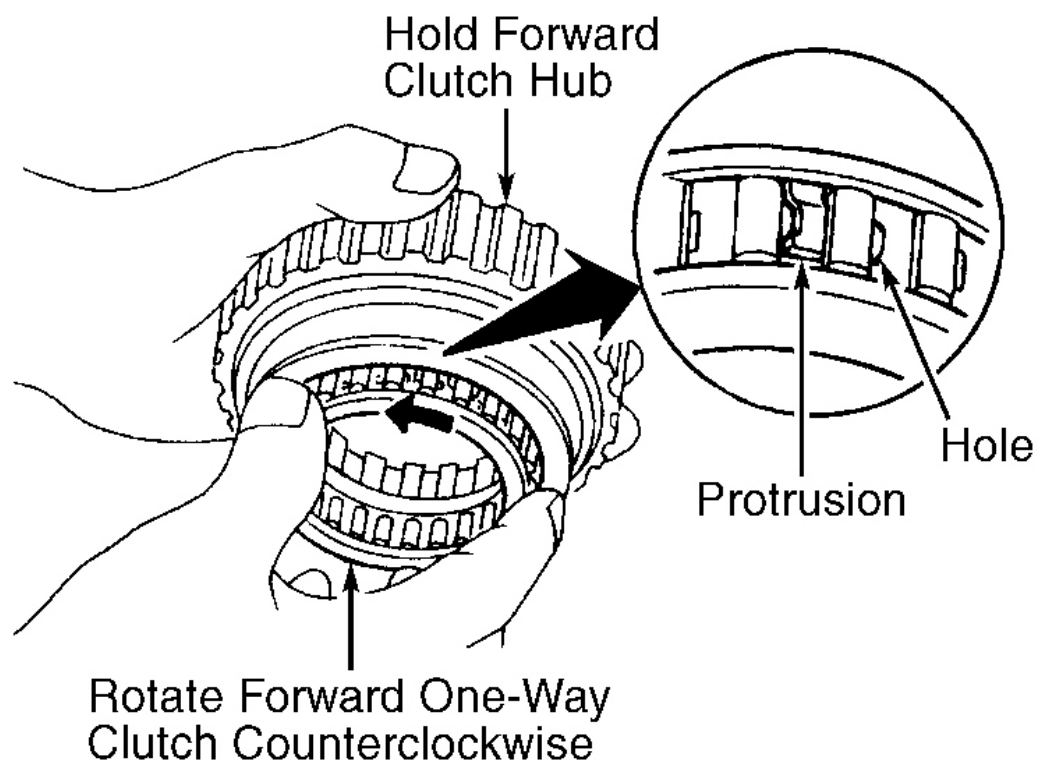
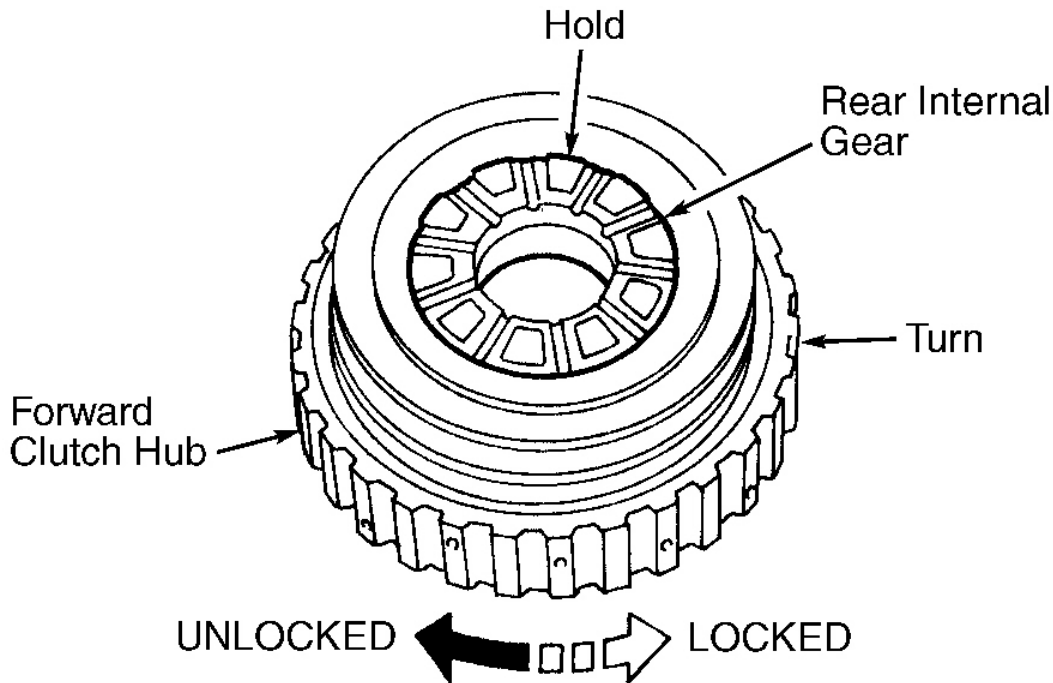


Fig. 41: Exploded View Of Rear Internal Gear, Forward Clutch Hub & Overrun Clutch Hub Assembly
Courtesy of NISSAN MOTOR CO., U.S.A.



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Fig. 42: Installing Forward One-Way Clutch
Courtesy of NISSAN MOTOR CO., U.S.A.



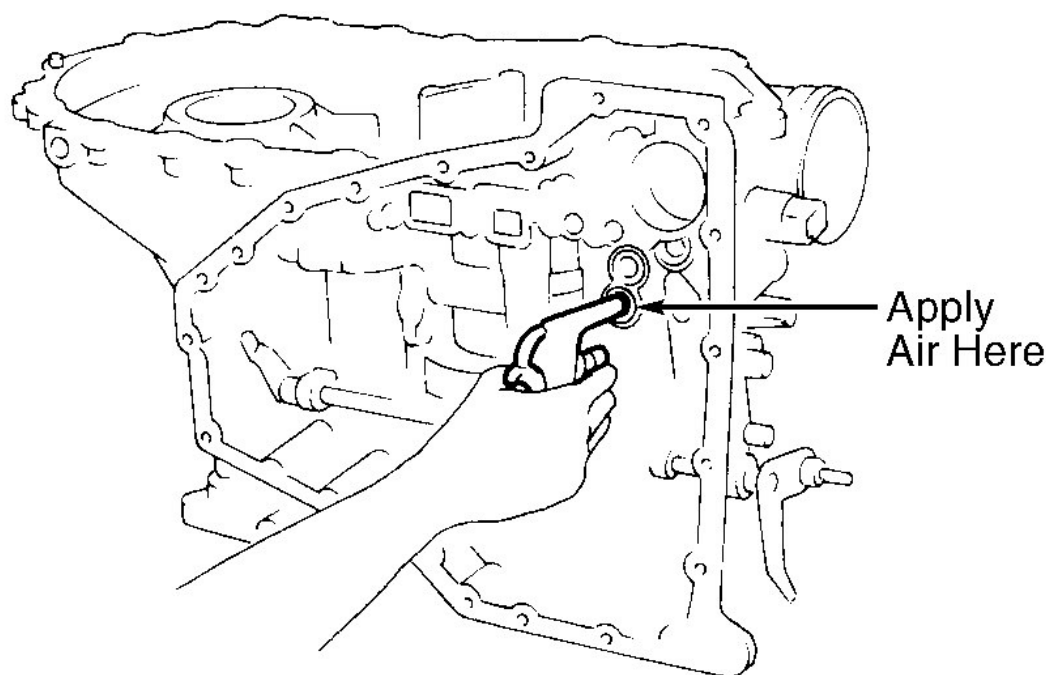
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Fig. 43: Checking Forward One-Way Clutch Rotation
 Courtesy of NISSAN MOTOR CO., U.S.A.

BAND SERVO PISTON ASSEMBLY

Disassembly

1. Use appropriate puller to compress servo piston (if necessary). Remove band servo piston retainer bolts. Apply compressed air to oil hole in transaxle case to remove OD servo piston retainer and band servo piston assembly. See **Fig. 44**.
2. Apply compressed air to oil hole in servo piston retainer to remove OD servo piston from retainer. Hold OD servo piston while applying compressed air. Remove "D" ring from OD servo piston. Remove "E" ring, cushion servo return spring and spring retainer from OD servo piston. Remove "O" rings from OD servo piston retainer. See **Fig. 8**.
3. Remove band servo piston assembly from servo piston retainer by pushing forward. Place piston stem end on wood block. While pushing servo piston spring retainer down, remove "E" ring. Remove OD servo return spring, band servo thrust washer and band servo piston stem from band servo piston. Remove "O" rings from servo piston retainer. Remove "D" rings from band servo piston.



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Fig. 44: Removing OD Servo Piston Retainer & Band Servo Piston Assembly
Courtesy of NISSAN MOTOR CO., U.S.A.

Inspection

Check friction surfaces for abnormal wear or damage. Check return springs for deformation or damage. Check spring free length and outer diameter. Free length of 2nd servo return spring should be 1.280" (32.50 mm). Diameter should be 1.020" (25.90 mm). Free length of OD servo return spring should be 1.220" (31.00 mm). Diameter should be 0.854" (21.70 mm). Replace spring(s) if not as specified.

Reassembly

1. Apply ATF to all "D" rings and "O" rings prior to installation. See **Fig. 8**. Install "D" rings on servo piston retainer. Install band servo piston stem, band servo thrust washer, OD servo return spring and spring retainer on band servo piston. Place piston stem on wooden block. While pushing servo piston spring retainer down, install "E" ring.
2. Install "O" rings on servo piston retainer. Install band servo piston assembly into servo piston retainer. Install "D" ring on OD servo piston. Install "O" rings on OD servo piston retainer.
3. Install OD servo piston into OD servo piston retainer. Install band servo piston assembly and 2nd servo return spring in transaxle case. Install OD servo piston assembly into transaxle case. Install OD servo piston retainer and bolts into transaxle case and tighten to specification. See **TORQUE SPECIFICATIONS**.

OUTPUT SHAFT, IDLER GEAR, REDUCTION GEAR & BEARING RETAINER

Disassembly

1. Remove seal rings from output shaft and bearing retainer. See **Fig. 8**. Pry off output shaft bearing from output shaft using 2 flat-blade screwdrivers. If bearing is removed, always install NEW bearing. Remove snap ring from bearing retainer. Using a hammer and suitable drift, remove needle bearing from bearing retainer.
2. Using appropriate puller and drift, remove idler gear bearing from idler gear. Using Puller (KV381054S0), remove idler gear bearing race from transaxle case. Using appropriate puller and press, press reduction gear bearing from reduction gear. Remove bearing race bolts and remove reduction gear bearing race from transaxle case. See **Fig. 8**.

Inspection

1. Inspect output shaft for cracks, wear or damage. Check all gears for wear, chips and cracks. Ensure bearings roll freely and are free from noise, cracks, pitting or wear. Always replace bearings as a set.
2. Install NEW seal rings to output shaft and bearing retainer. Measure clearance between seal ring and ring grooves of output shaft. Specified clearance is .004-.010" (.10-.25 mm). If clearance is not as specified, replace output shaft.
3. Measure clearance between seal ring and ring grooves of bearing retainer. Specified clearance is .004-.012" (.10-.30 mm). If clearance is not as specified, replace bearing retainer.

Reassembly

To reassemble, reverse disassembly procedure. Tighten reduction gear bearing race bolts to specification. See **TORQUE SPECIFICATIONS**. Apply petroleum jelly to NEW seal rings installed on output shaft and bearing retainer. Tape thick paper around seal rings to prevent rings from spreading.

MANUAL SHAFT ASSEMBLY

Disassembly & Reassembly

1. Remove detent spring from transaxle case. Drive out manual plate retaining pin. Drive and pull out parking rod plate retaining pin. Remove parking rod plate from manual shaft. See **Fig. 8**. Remove parking rod from transaxle case.
2. Pull out manual shaft retaining pin. Remove manual shaft and manual plate from transaxle case. Remove manual shaft oil seal. Inspect all components for wear or damage. To reassemble, reverse disassembly procedure. Apply ATF to outer surface of oil seal prior to installation. Both ends of manual plate and parking rod plate retaining pins should protrude evenly, .12" (3.0 mm) outside of shaft. Tighten detent spring bolt to specification. See **TORQUE SPECIFICATIONS**.

DIFFERENTIAL ASSEMBLY

Disassembly

Remove ring gear. Using appropriate puller, adapter and drift, remove differential side bearings. Remove

viscous coupling (RE4F04W). Make alignment marks on differential cases. Remove bolts from differential cases. Remove speedometer drive gear. Drive out pinion shaft retaining pin. Remove pinion mate shaft from differential case. Remove pinion mate gears, side gears and washers. See **Fig. 11**.

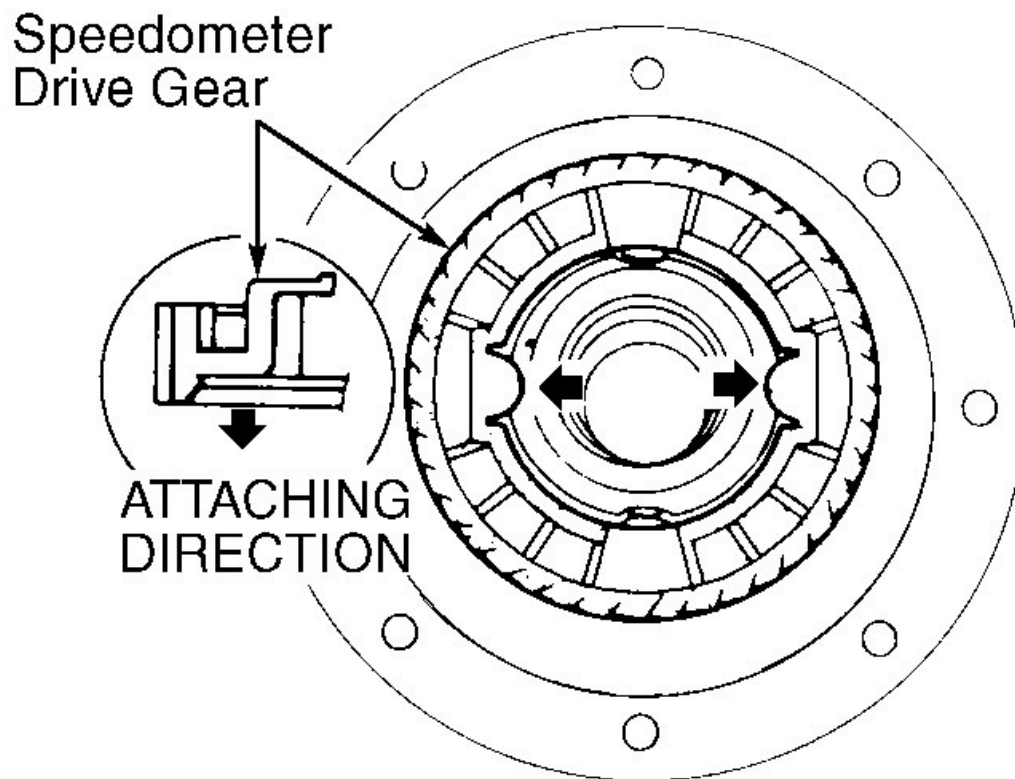
Inspection

Check mating surfaces of differential case, side gears and pinion gears for wear, scoring or damage. Check washers for wear or damage. Ensure bearings roll freely and are free from cracks, pitting or wear. Inspect viscous coupling case for cracks or silicone oil leakage.

Reassembly (RE4F04B)

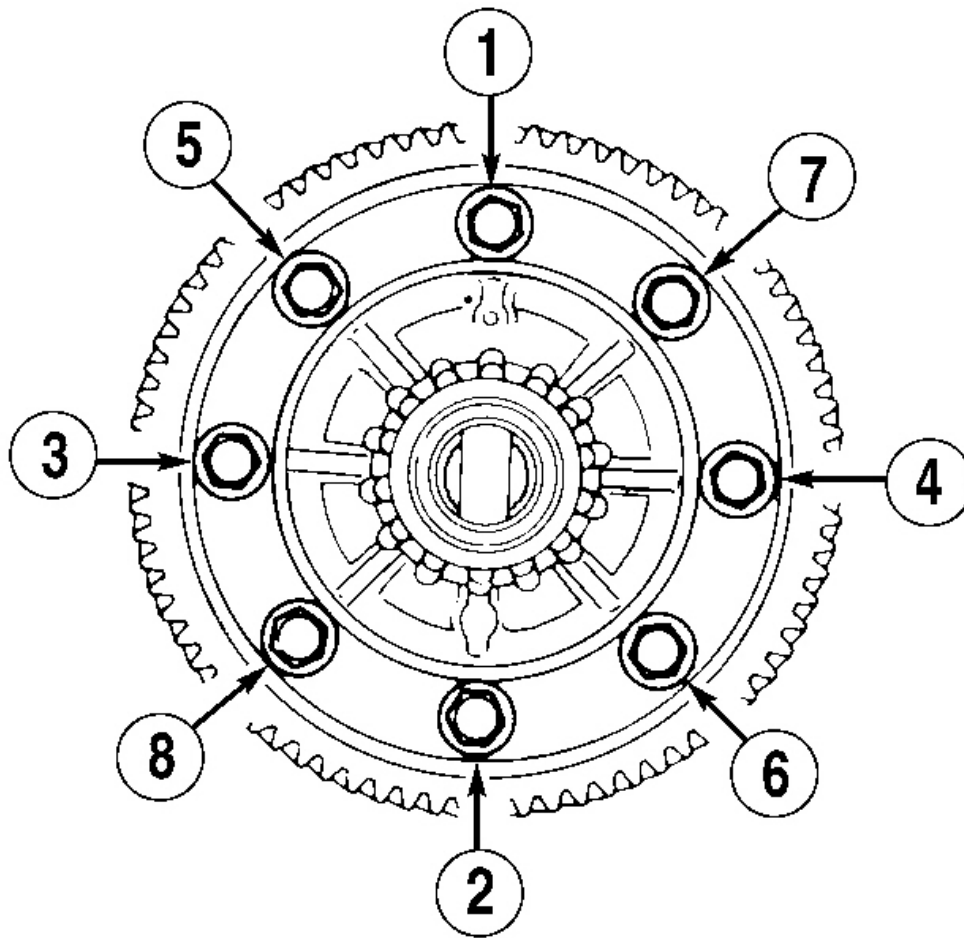
NOTE: **Apply ATF to all components.**

1. Install side gears and thrust washers in differential case. Install pinion mate gears and thrust washers in case by rotating gears. Install pinion mate shaft. Measure side gear-to-differential clearance and adjust (if necessary). See **DIFFERENTIAL SIDE GEAR ADJUSTMENT (RE4F04B)**.
2. Install retaining pin. Ensure retaining pin is flush with case. Install speedometer drive gear in differential case. Align projections of speedometer drive gear with groove in differential case. See **Fig. 45**.
3. Press differential side bearings on differential case. Install ring gear and tighten bolts in numerical order. See **Fig. 46**. Tighten bolts to specification. See **TORQUE SPECIFICATIONS**.



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Fig. 45: Installing Speedometer Drive Gear
Courtesy of NISSAN MOTOR CO., U.S.A.



TIGHTEN BOLTS IN NUMERICAL ORDER

G93D23443

Fig. 46: Ring Gear Bolt Tightening Sequence
Courtesy of NISSAN MOTOR CO., U.S.A.

Reassembly (RE4F04W)

NOTE: Apply ATF to all components.

1. Install side gears and thrust washers into differential case. Install pinion mate gears and thrust washers into case by rotating gears. Install pinion mate shaft. Measure side gear-to-differential clearance and adjust (if necessary). See **DIFFERENTIAL SIDE GEAR ADJUSTMENT (RE4F04W)**.

2. Install retaining pin. Ensure retaining pin is flush with case. Install side gear and thrust washer (viscous coupling side). Install viscous coupling and bolts, and tighten to specification. See **TORQUE SPECIFICATIONS**. Install speedometer drive gear onto differential case. Align projections of speedometer drive gear with groove in differential case. See **Fig. 45**.
3. Press differential side bearings onto differential case. Install ring gear and tighten bolts in numerical order. See **Fig. 46**. Tighten bolts to specification. See **TORQUE SPECIFICATIONS**.

Differential Side Gear Adjustment (RE4F04B)

1. Using a dial indicator and Adapter (J39713), measure clearance on differential case side, between side gear thrust washer and differential case. Move side gear up and down to measure deflection. Always measure deflection of both side gears. See **Fig. 47**.
2. Specified clearance is .004-.008" (.10-.20 mm). If clearance is not as specified, adjust clearance by changing thickness of side gear thrust washers. Side gear thrust washers for RE4F04B transaxle are available in thicknesses ranging from .0295" (.750 mm) to .0374" (.950 mm) in increments of .002" (.05 mm).

Differential Side Gear Adjustment (RE4F04W)

1. Using a dial indicator and Adapter (J39883), measure clearance on differential case side, between side gear thrust washer and differential case. Move side gear up and down to measure deflection. See **Fig. 47**.
2. Specified clearance is .004-.008" (.10-.20 mm). If clearance is not as specified, adjust clearance by changing thickness of side gear thrust washers. Side gear thrust washers for differential case side are available in thicknesses ranging from .0295-.0315" (.750-.800 mm) to .0354-.0374" (.900-.950 mm) in increments of .002" (.05 mm).
3. Turn differential case over. Place side gear and thrust washer on pinion mate gears on viscous coupling side of differential. Using a height gauge, measure dimension "X" of differential case and dimension "Y" of viscous coupling in at least 2 places. See **Fig. 48**.
4. Clearance between side gear and viscous coupling is determined by adding dimension "X" to dimension "Y", and then subtracting dimension "A". Specified clearance is .004-.008" (.10-.20 mm). If clearance is not as specified, adjust clearance by changing thickness of side gear thrust washers. Thrust washers on viscous coupling side are available in thicknesses ranging from .0169-.0177" (.430-.450 mm) to .0311-.0319" (.790-.810 mm) in increments of .002" (.05 mm).

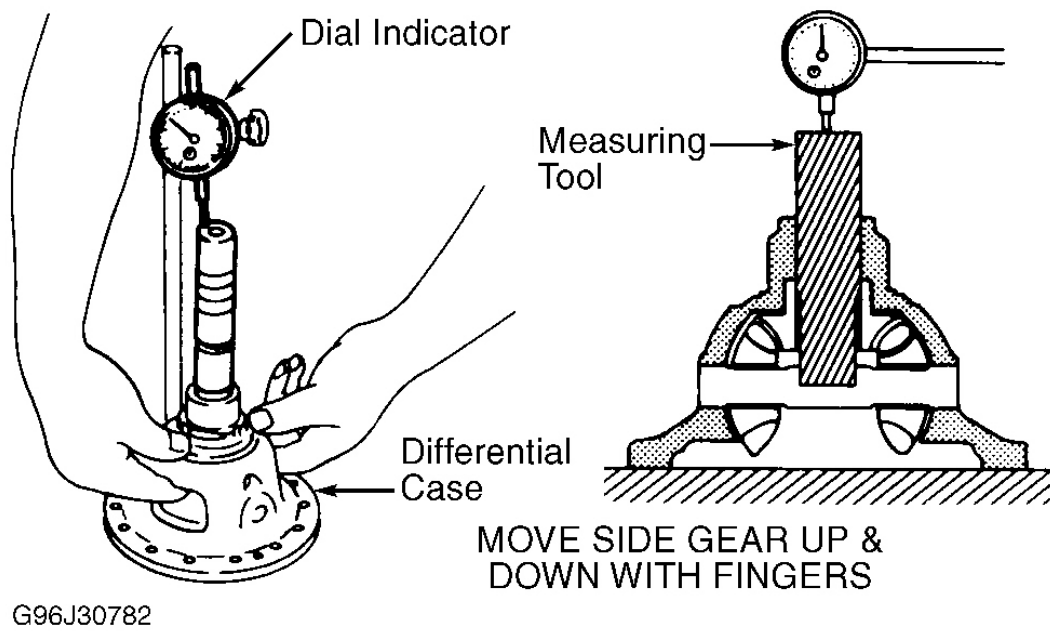


Fig. 47: Measuring Side Gear-To-Differential Case Clearance
 Courtesy of NISSAN MOTOR CO., U.S.A.

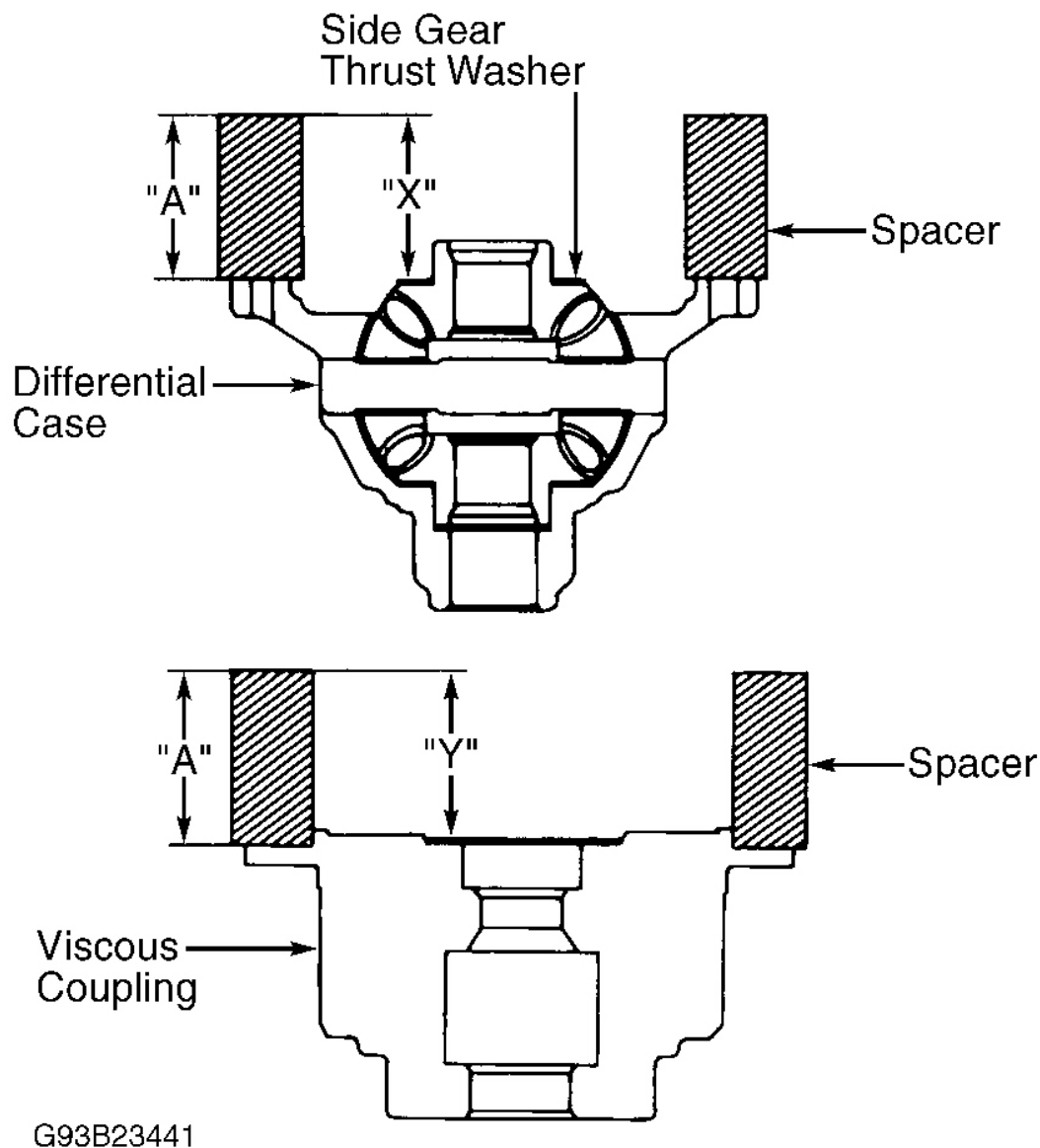


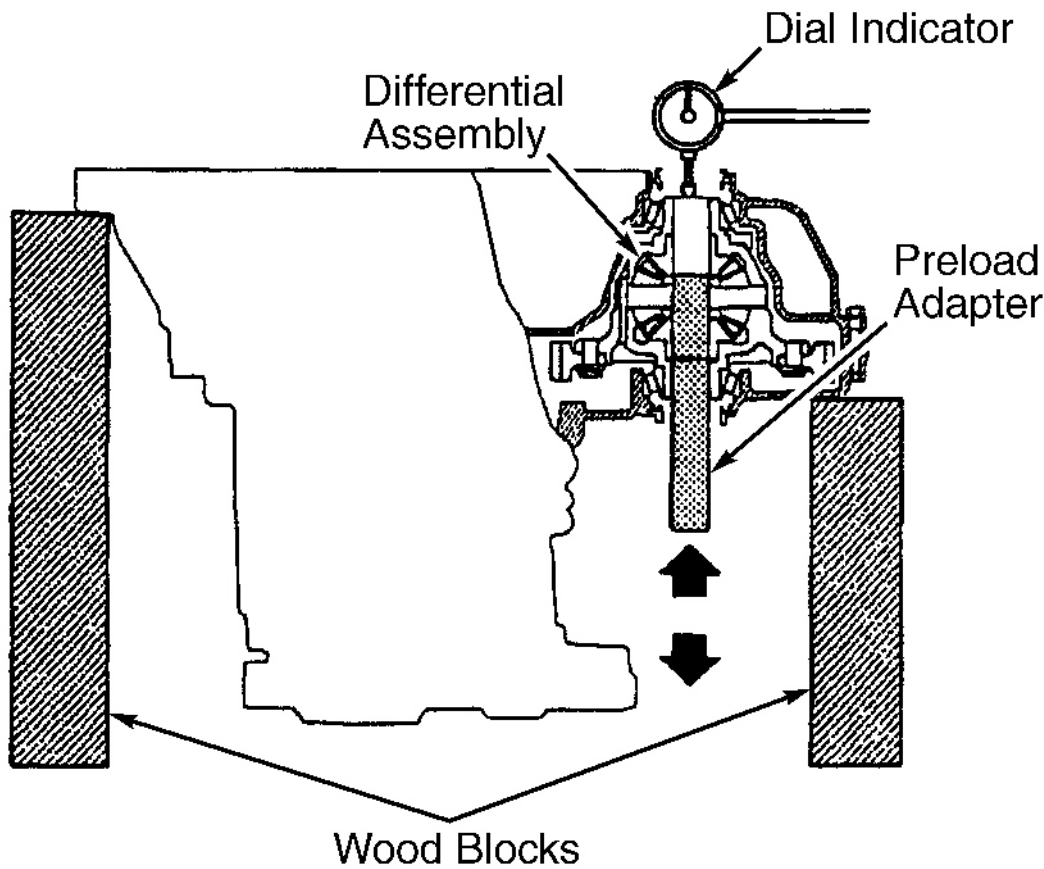
Fig. 48: Measuring Side Gear-To-Viscous Coupling Clearance
 Courtesy of NISSAN MOTOR CO., U.S.A.

TRANSAXLE ADJUSTMENTS

NOTE: Transaxle adjustments are performed as part of transaxle assembly procedure.
 See TRANSAXLE REASSEMBLY.

DIFFERENTIAL SIDE BEARING PRELOAD

1. Preload is adjusted by adjusting shim thickness. Install differential side bearing race in transaxle case. DO NOT install adjusting shim in transaxle case. Install differential side bearing race in converter housing. Place differential assembly into transaxle case. Install converter housing on transaxle case and tighten case bolts to 30-35 ft. lbs. (43-47 N.m).
2. Attach dial indicator to differential case on converter housing side. See **Fig. 49**. Insert Preload Adapter (J39713) into differential side gear from transaxle case side. Move preload adapter up and down to measure deflection.
3. Determine shim thickness by adding .002-.003" (.05-.09 mm) to dial indicator reading. Select proper thickness of differential side bearing adjusting shim. Differential side bearing shims for RE4F04B are available in thicknesses ranging from .0189" (.48 mm) to .0362" (.92 mm) in increments of .002" (.04 mm), and differential side bearing shims for RE4F04W are available in thicknesses ranging from .0047" (.12 mm) to .0362" (.92 mm) in increments of .002" (.04 mm).
4. Remove converter housing from transaxle case. Remove differential assembly from transaxle case. Using Puller (KV381054S0), remove differential side bearing race from transaxle case. Install selected shim and differential side bearing race in transaxle case. Install converter housing on transaxle case and tighten case bolts to 30-35 ft. lbs. (43-47 N.m).
5. Insert preload adapter into differential assembly. Using a torque wrench, measure turning torque of differential assembly. Turn differential assembly in both directions several times to seat bearings. Turning torque should be 6.9-12.2 INCH lbs. (.78-1.37 N.m). If using original bearings, turning torque will be slightly less than specified. Ensure turning torque is within specified range.



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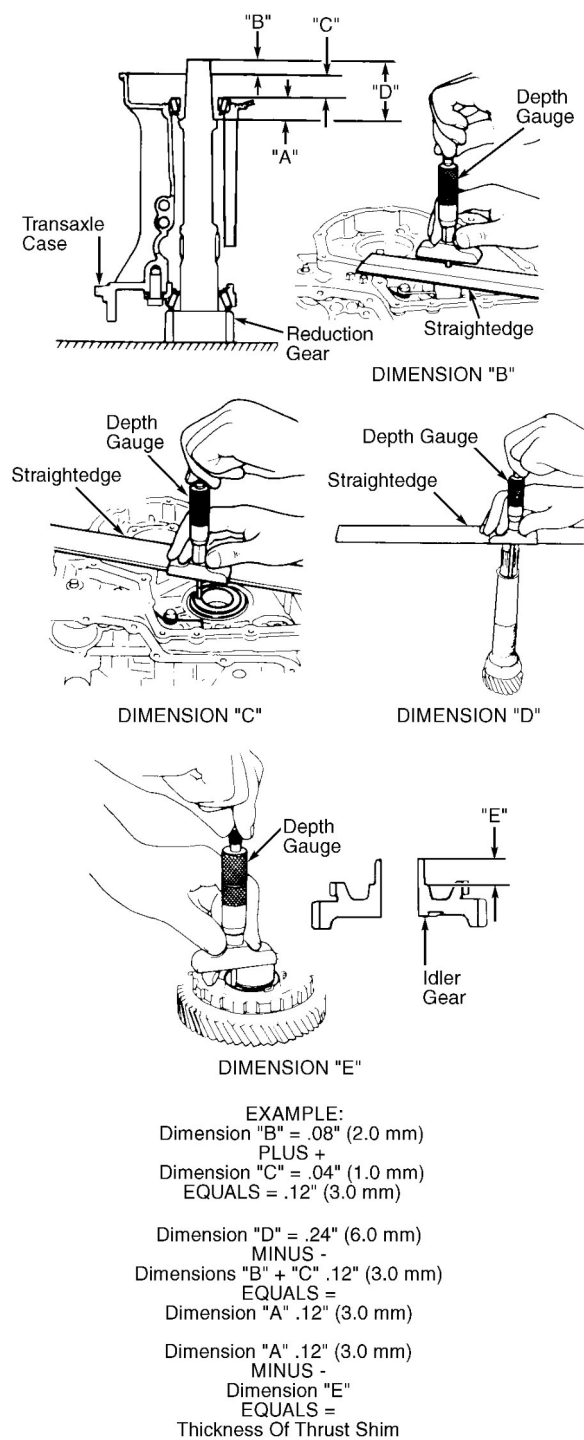
Fig. 49: Measuring Differential Side Bearing Preload
 Courtesy of NISSAN MOTOR CO., U.S.A.

REDUCTION GEAR BEARING PRELOAD

1. Preload is adjusted by adjusting shim thickness between adjusting gear and bearing. Remove converter housing and differential assembly from transaxle case (if necessary). Install reduction gear in transaxle case. Using a depth gauge and straightedge, measure and record distance between end of reduction gear and surface of transaxle case in at least 2 places (dimension "B"). See **Fig. 50**. Measure and record distance between surface of idler gear bearing inner race and surface of transaxle case in at least 2 places (dimension "C").
2. Measure and record distance between end of reduction pinion gear and adjusting shim mating surface of reduction pinion gear in at least 2 places (dimension "D"). To determine dimension "A", add dimensions "B" and "C". Subtract the total of dimension "B" and "C" from dimension "D". See **Fig. 50**.
3. Measure and record distance between end of idler gear and idler gear bearing mating surface in at least 2 places (dimension "E"). See **Fig. 50**.
4. Select proper thickness of reduction gear bearing adjusting shim by subtracting dimension "E" from

dimension "A", and then subtract .002" (.05 mm) from total. Reduction gear shims range in thickness from .197" (5.00 mm) to .235" (5.96 mm) in increments of .0008" (.02 mm).

5. Install reduction gear and selected adjusting shim. Press idler gear bearing on idler gear. Press idler gear on reduction gear, ensuring idler gear fully contacts adjusting shim. Lock idler gear with parking pawl and tighten idler gear lock nut to 217-239 ft. lbs. (294-324 N.m).
6. Turn reduction gear in both directions several times to seat bearings. Using a torque wrench and appropriate socket, measure reduction gear turning torque. Turning torque should be .44-3.45 INCH lbs. (.05-.39 N.m). After adjusting turning torque, stake lock nut to ensure nut will not loosen.

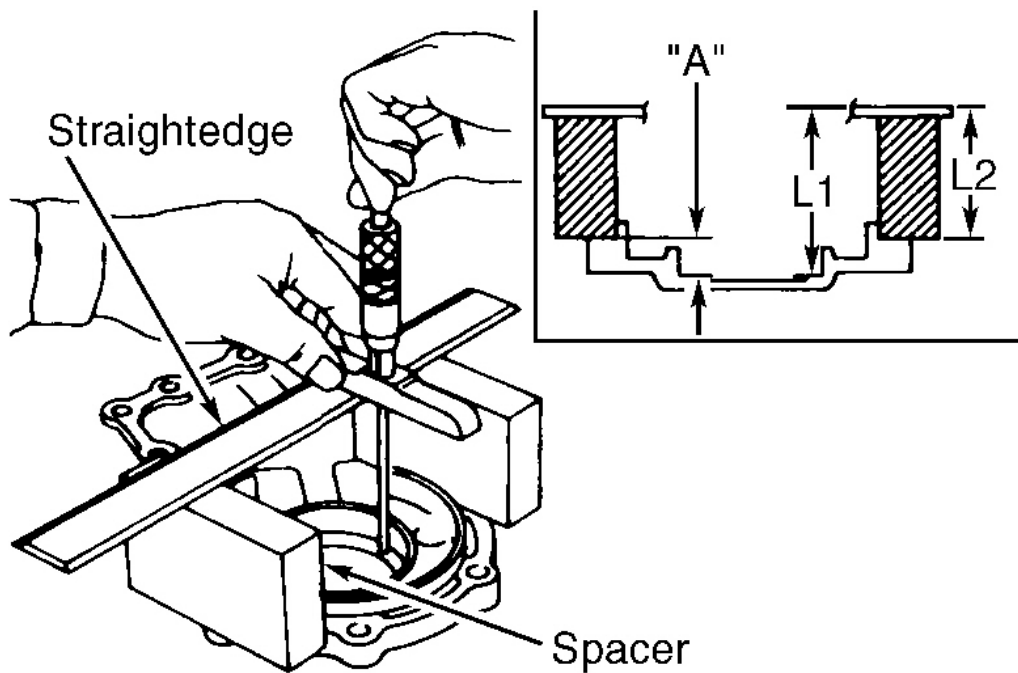


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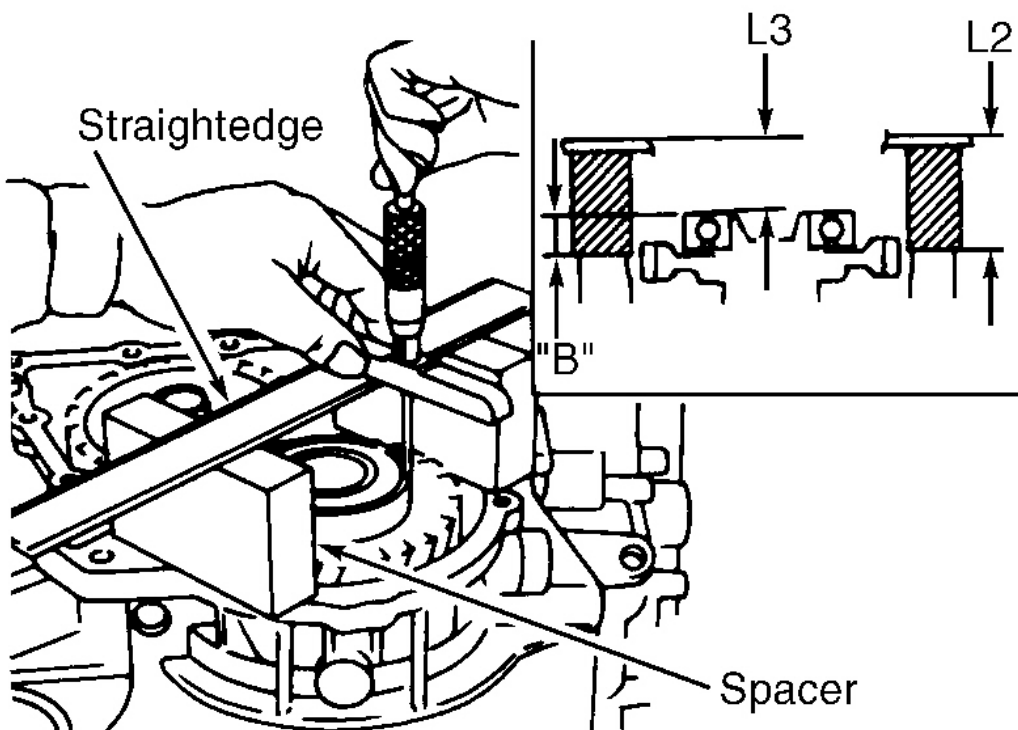
Fig. 50: Measuring Reduction Gear Bearing Preload
 Courtesy of NISSAN MOTOR CO., U. S. A.

OUTPUT SHAFT END PLAY

1. Output shaft end play is adjusted by changing output shaft shim thickness. Install output shaft bearing retainer. Install output shaft thrust needle bearing on bearing retainer with race side down. See **Fig. 58**.
2. Install output shaft in transaxle case. Using a depth gauge and straightedge, measure dimensions "L1" and "L2" at side cover in at least 2 places. See **Fig. 51**. Determine dimension "A" by subtracting dimension "L2" from dimension "L1". Dimension "L2" equals height of gauge.
3. Measure dimensions "L2" and "L3" in at least 2 places. Determine dimension "B" by subtracting dimension "L3" from dimension "L2". "L2" equals height of gauge.
4. To determine output shaft end play, subtract dimension "B" from dimension "A". Specified output shaft end play should be 0-.006" (0-.15 mm). Select proper thickness of adjusting shim to ensure output shaft end play is within specification. Output shaft adjusting shims are available in thicknesses ranging from .0315" (.80 mm) to .0472" (1.20 mm) in increments of .002" (.05 mm).
5. Install selected adjusting shim on output shaft bearing. Apply a bead of liquid gasket .059" (1.50 mm) in diameter on inside edge of side cover surface of transaxle case. Install side cover on transaxle case and tighten bolts to specification. See **TORQUE SPECIFICATIONS**. See **Fig. 17**. Replace bolts "A". Bolts are self-sealing.



DIMENSION "A"



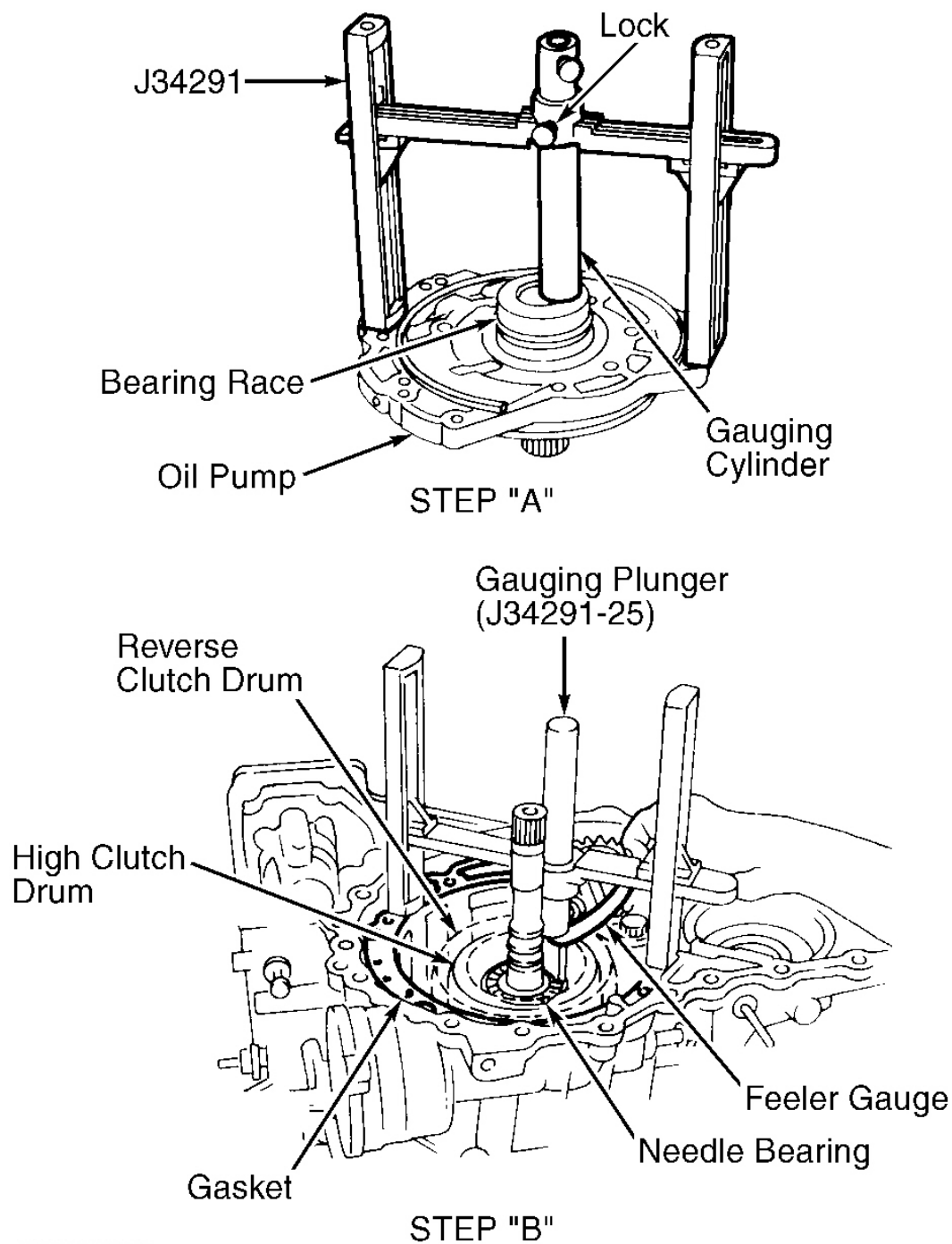
DIMENSION "B"

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Fig. 51: Measuring Output Shaft End Play
Courtesy of NISSAN MOTOR CO., U. S. A.

TOTAL END PLAY

1. Total end play is adjusted by changing bearing race thickness. Place Gauge Set (J34291) onto oil pump with original bearing race installed on oil pump. Long ends of gauge set legs should be placed firmly on machined surface of oil pump assembly, and gauging cylinder should rest on top of bearing race. Lock gauging cylinder in place (STEP "A"). See **Fig. 52**. Remove gauging cylinder. Install Gauging Plunger (J34291-25) into gauging cylinder.
2. With needle bearing installed on high clutch drum, place gauge set legs on machined surface of transaxle case (with gasket), and allow plunger to rest on needle bearing (STEP "B"). See **Fig. 52**. Using a feeler gauge, measure gap between gauging cylinder and gauging plunger. Measurement should give exact total end play. Total end play should be .010-.022" (.25-.55 mm). Select proper thickness of bearing race to ensure total end play is as specified. Bearing races are available in thicknesses ranging from .031" (.80 mm) to .075" (1.90 mm) in increments of .008" (.20 mm).

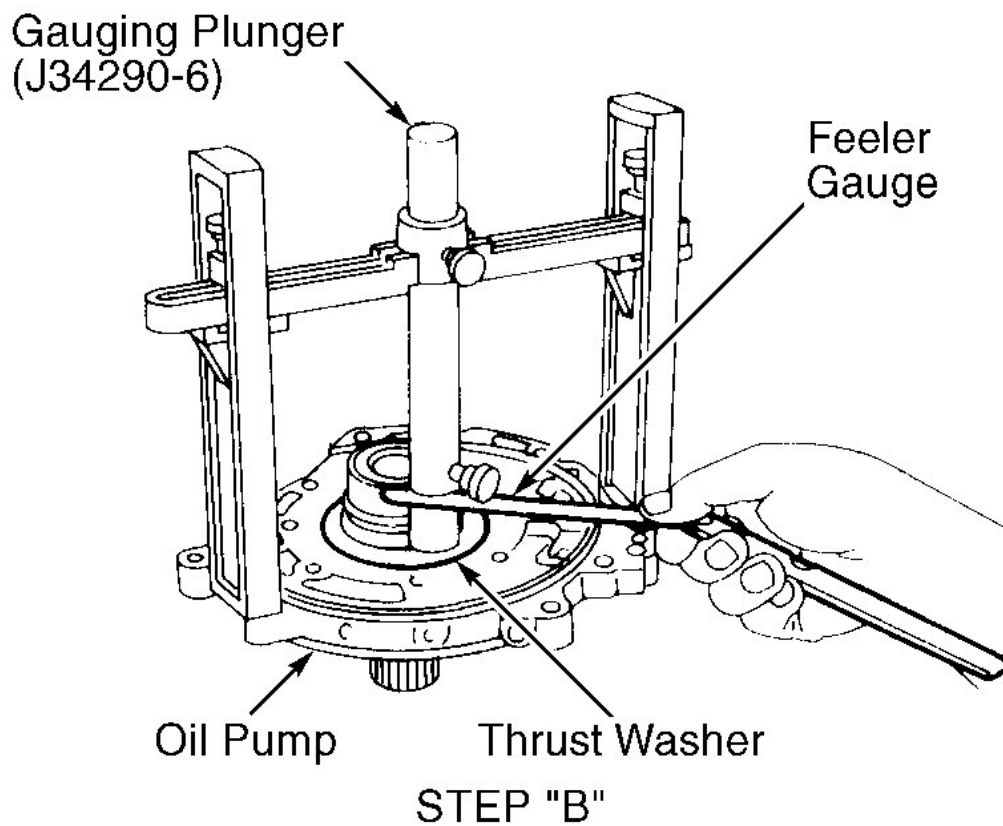
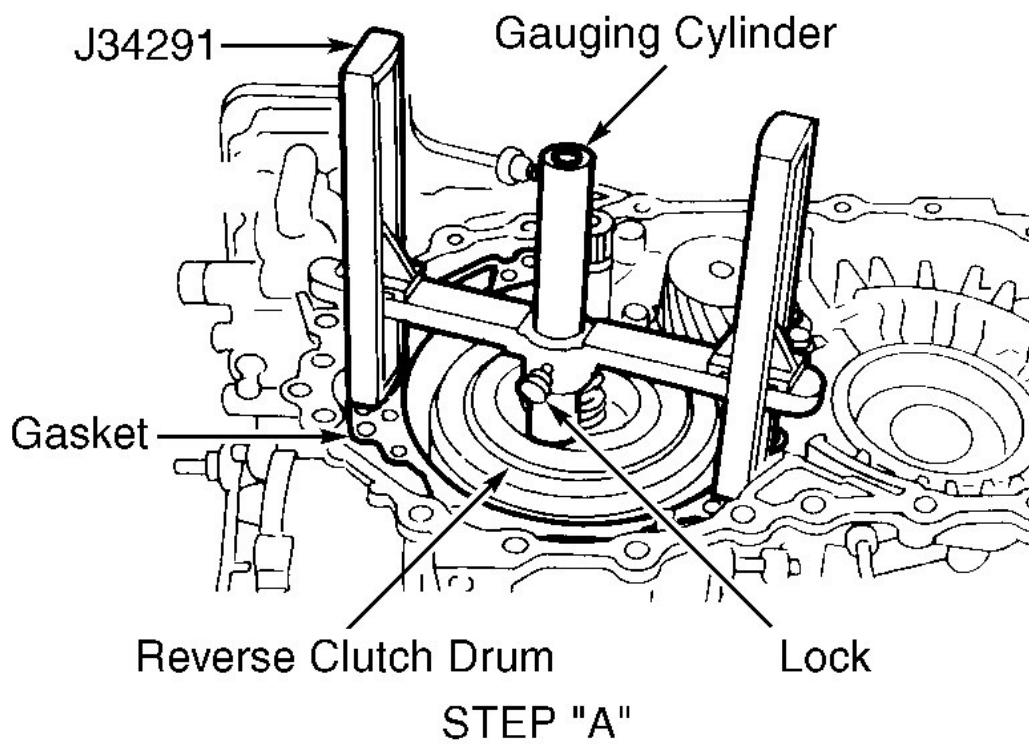


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Fig. 52: Measuring Total End Play
Courtesy of NISSAN MOTOR CO., U. S. A.

REVERSE CLUTCH END PLAY

1. Reverse clutch end play is adjusted by adjusting thrust washer thickness. Place Gauge Set (J34291) on machined surface of transaxle case (with gasket), and allow gauging cylinder to rest on reverse clutch drum. Lock cylinder in place. Remove gauging cylinder. Install Gauging Plunger (J344290-6) into gauging cylinder. See **Fig. 53**.
2. Place gauge set legs onto machined surface of oil pump assembly with original thrust washer installed on oil pump. Allow plunger to rest on thrust washer. Using a feeler gauge, measure gap between gauging cylinder and gauging plunger. Measurement should give exact reverse clutch end play.
3. Reverse clutch end play should be .022-.035" (.55-.90 mm). Select proper thickness of thrust washer to ensure total end play is as specified. Reverse clutch thrust washers are available in thicknesses ranging from .0315" (.80 mm) to .0728" (1.85 mm) in increments of .006" (.15 mm).



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Fig. 53: Measuring Reverse Clutch End Play
Courtesy of NISSAN MOTOR CO., U. S. A.

TRANSAXLE 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 of drum. Check thrust bearings and races for wear or damage. Use petroleum jelly to secure parts in place. Clutch discs should be soaked in ATF for at least 15 minutes before installation.

NOTE: For needle bearing, snap ring and thrust washer locations, see **Fig. 58**.

1. Install differential side oil seals in converter housing and transaxle case. Install parking actuator support to transaxle case with beveled edge inward. Install parking pawl on transaxle case and secure with parking shaft. Install return spring. See **Fig. 5** and **Fig. 7**.
2. Perform **DIFFERENTIAL SIDE BEARING PRELOAD**, **REDUCTION GEAR BEARING PRELOAD** and **OUTPUT SHAFT END PLAY** adjustment procedures under TRANSAXLE ADJUSTMENTS.
3. Remove paper from output shaft bearing retainer. Apply petroleum jelly to thrust bearing. Install thrust bearing onto output shaft bearing retainer. Ensure output shaft bearing retainer seal rings are not spread. Align teeth of low and reverse brake drive plates. Install forward clutch assembly. Forward clutch is installed correctly if bearing retainer and edge of forward clutch drum are at approximately same level.
4. Apply petroleum jelly to thrust needle bearing. Install thrust needle bearing on bearing retainer. Align teeth of overrun clutch drive plates. Install overrun clutch hub. Apply petroleum jelly to thrust washer and install thrust washer on overrun clutch hub.
5. Hold forward clutch hub and turn rear internal gear. Ensure overrun clutch hub (rear internal gear facing upward) rotates clockwise and does not rotate counterclockwise. If overrun clutch hub does not operate as described, check installed direction of forward one-way clutch. See **REAR INTERNAL GEAR, FORWARD CLUTCH HUB & OVERRUN CLUTCH HUB** under COMPONENT DISASSEMBLY & REASSEMBLY. Align forward clutch hub drive plate teeth and install forward clutch hub and rear internal gear assembly. Ensure thrust washer hooks are aligned on forward clutch hub.
6. Apply petroleum jelly to needle bearings. Install one needle bearing in rear planetary carrier with Black side down. See **Fig. 58**. Install other needle bearing on opposite side of rear planetary carrier with flat side of bearing toward planetary carrier.
7. Install rear sun gear on rear planetary carrier with grooved side facing up. Install rear planetary carrier in transaxle case. Apply petroleum jelly to thrust needle bearing and install bearing on front planetary carrier with Black side up.
8. Align return springs to transaxle case gutters. See **Fig. 54**. Align brake piston with spring retainer. Install piston and retainer assembly in transaxle case. Align bracket with gutter and band servo piston stem. See **Fig. 55**.

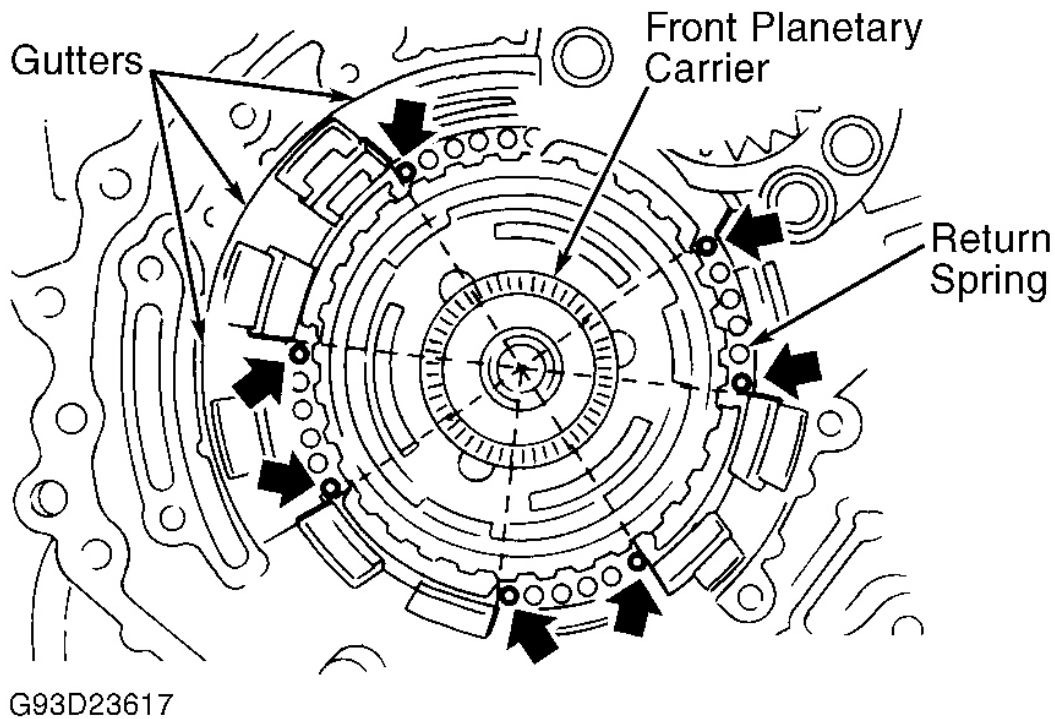
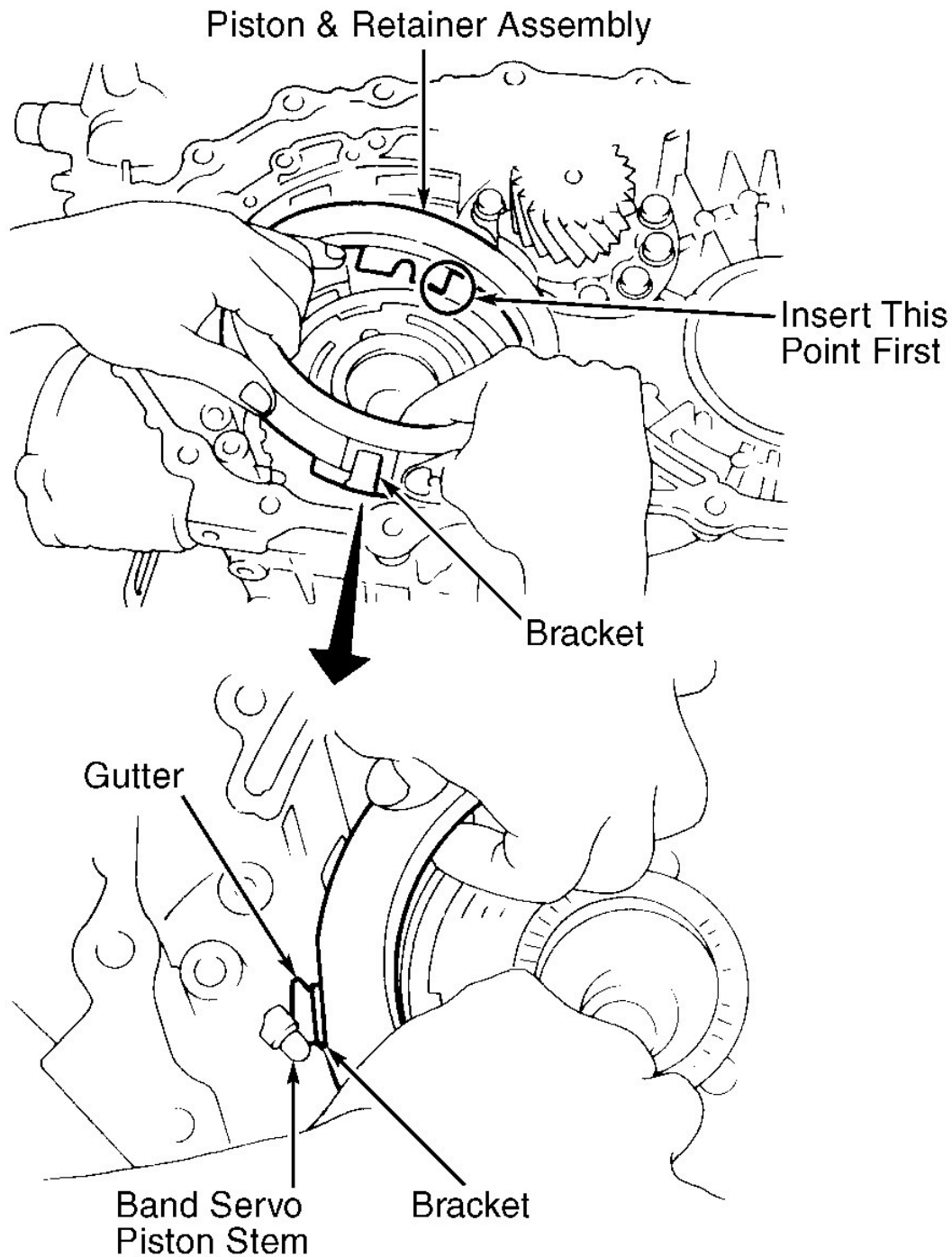


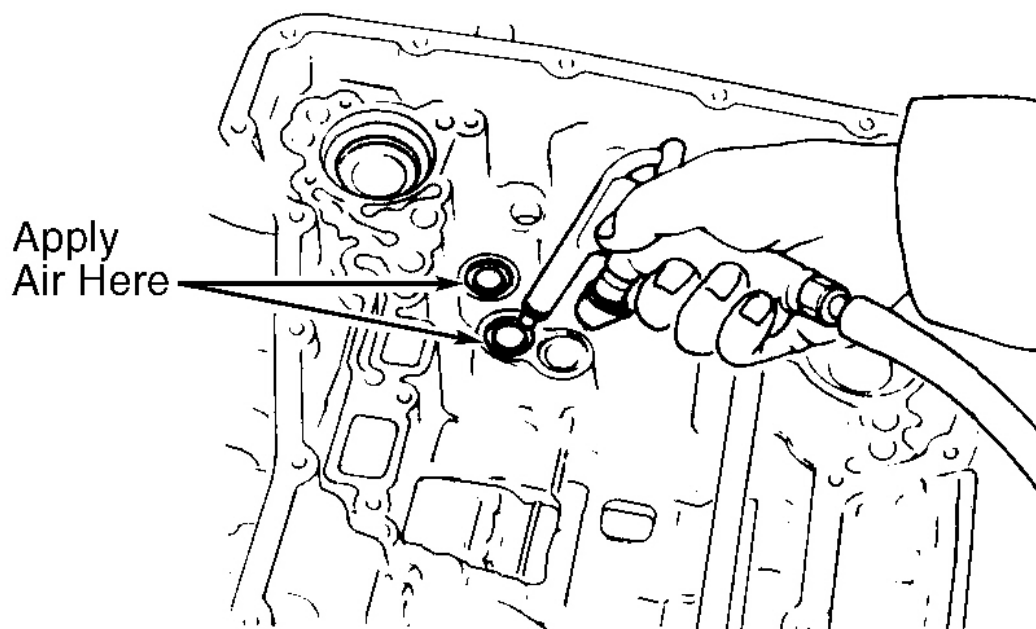
Fig. 54: Aligning Return Springs-To-Case Gutters
Courtesy of NISSAN MOTOR CO., U. S. A.



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Fig. 55: Aligning Bracket-To-Case Gutter
Courtesy of NISSAN MOTOR CO., U. S. A.

9. Ensure each protrusion of piston is correctly set to corresponding return spring. Push piston and retainer assembly evenly and confirm smooth operation. If smooth operation does not occur, remove piston and retainer assembly and align return springs. See **Fig. 54**.
10. Using Tool (KV31102400), compress piston and retainer assembly and install snap ring. Install low one-way clutch to front planetary carrier by rotating carrier clockwise. Ensure low one-way clutch does not rotate in clockwise direction. See **Fig. 14**. Install snap ring.
11. Apply petroleum jelly to needle bearings and bearing race. Install needle bearing on front planetary carrier. See **Fig. 58**. Install bearing race on front sun gear. Install needle bearing on high clutch hub with flat side facing front sun gear.
12. Install high clutch hub on front sun gear. Install needle bearing on high clutch drum side of high clutch hub. Install high clutch drum on high clutch hub. Install needle bearing on high clutch drum with flat side down.
13. Remove paper from input shaft. Align teeth of reverse clutch drive plates and install input shaft assembly into reverse clutch. Align teeth of high clutch drive plates and install reverse clutch assembly into transaxle case.
14. Install anchor end pin, washer and lock nut in transaxle case. Place brake band and strut on reverse clutch drum. Tighten anchor end pin until brake band is on reverse drum evenly.
15. Apply petroleum jelly on bearing race selected in TOTAL END PLAY adjustment procedure. See **TRANSAXLE ADJUSTMENTS**. Install bearing race on oil pump cover. Apply petroleum jelly on thrust washer selected in REVERSE CLUTCH END PLAY adjustment procedure. See **TRANSAXLE ADJUSTMENTS**. Install thrust washer on reverse clutch drum.
16. Install oil pump assembly, baffle plate and NEW gasket on transaxle case. Tighten oil pump bolts to specification. See **TORQUE SPECIFICATIONS**. Apply ATF to input shaft "O" ring and install "O" ring on input shaft. Adjust brake band. Tighten anchor end pin to 35-53 INCH lbs. (4-6 N.m). Back off anchor end pin 2 1/2 turns. While holding anchor end pin, tighten lock nut. Apply compressed air to oil holes in transaxle case to ensure correct brake band operation. See **Fig. 56**.



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Fig. 56: Checking Brake Band Operation
 Courtesy of NISSAN MOTOR CO., U. S. A.

17. Install differential assembly into transaxle case. Install oil tube on converter housing and tighten bolts to specification. See **TORQUE SPECIFICATIONS**. Install "O" ring in differential oil port of transaxle case. See **Fig. 10**. Apply a .059" (1.50 mm) bead of locking sealant (Loctite No. 518) on inside edge of converter housing mating surface. Install converter housing on transaxle case. Tighten bolts to specification.
18. Check contact surface of accumulator piston for damage. Apply ATF to "O" rings and install on accumulator pistons. Install accumulator pistons and return springs into transaxle case. Apply petroleum jelly to lip seals for band servo oil holes and install in transaxle case. See **Fig. 9**. Install low and reverse oil tube and sleeve.
19. Apply ATF to manual valve and insert valve into valve body assembly. Set manual shaft in Neutral position. Install valve body assembly onto transaxle case while aligning manual valve with manual plate.

NOTE: Always replace oil pan bolts. Bolts are self-sealing.

20. Put solenoid harness into transaxle case and push terminal body through transaxle case. Install clip to terminal body. Install and tighten valve body assembly bolts to specification. See **Fig. 6**. Attach magnet to oil pan. Install NEW oil pan gasket and install oil pan. Tighten NEW pan bolts in a crisscross pattern to specification. Install drain plug (if necessary) and tighten to specification. See **TORQUE SPECIFICATIONS**.
21. Install PNP switch and adjust if necessary. Apply ATF to NEW "O" ring and install on dipstick tube.

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Install dipstick tube and oil cooler tubes to transaxle. Tighten dipstick tube bolt to specification. Tighten oil cooler tube bolts to specification.

22. Pour 1.1 qt. (1.0L) of ATF into torque converter and install torque converter. Measure distance "A" to ensure torque converter is installed correctly. See **Fig. 57**. Distance "A" should be .55" (14 mm) on I35, Maxima and Quest. For Altima, distance "A" should be .75" (19 mm).

NEEDLE BEARING, SNAP RING, THRUST WASHER & SHIM IDENTIFICATION ⁽¹⁾

Application & No.	Outer Diameter - In. (mm)
Snap Rings	
1	4.69 (119.1)
2	5.91 (150.0)
3	7.20 (182.8)
4	5.70 (144.8)
5	6.84 (173.8)
6	5.27 (133.9)
Needle Bearings	
7	1.96 (49.8)
8	1.65 (41.8)
9	2.76 (70.0)
10	3.43 (87.0)
11	2.00 (50.9)
12	1.99 (50.6)
13	2.22 (56.5)
14	1.96 (49.8)
15	2.01 (50.9)
Thrust Washers (Selective)	
16	2.99 (76.0)
17	3.15 (80.0)
Race & Shims (Selective)	
18	2.01 (51.0)
19	1.50 (72.0)
20	2.95 (75.0)
(1) For component locations, refer to illustration. See Fig. 58.	

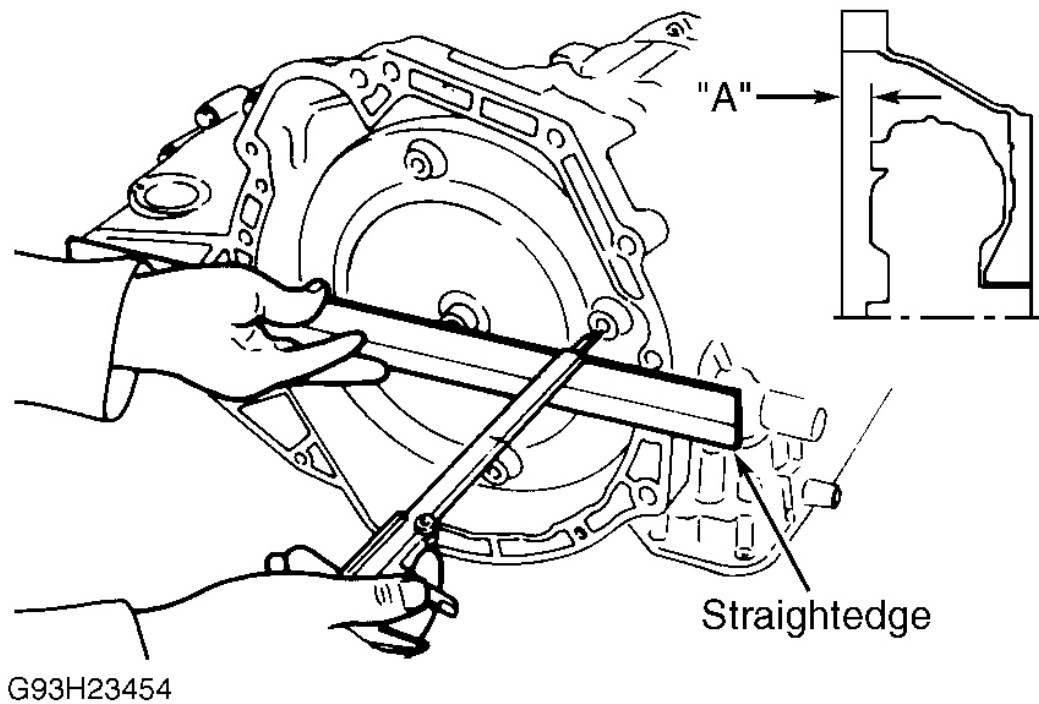
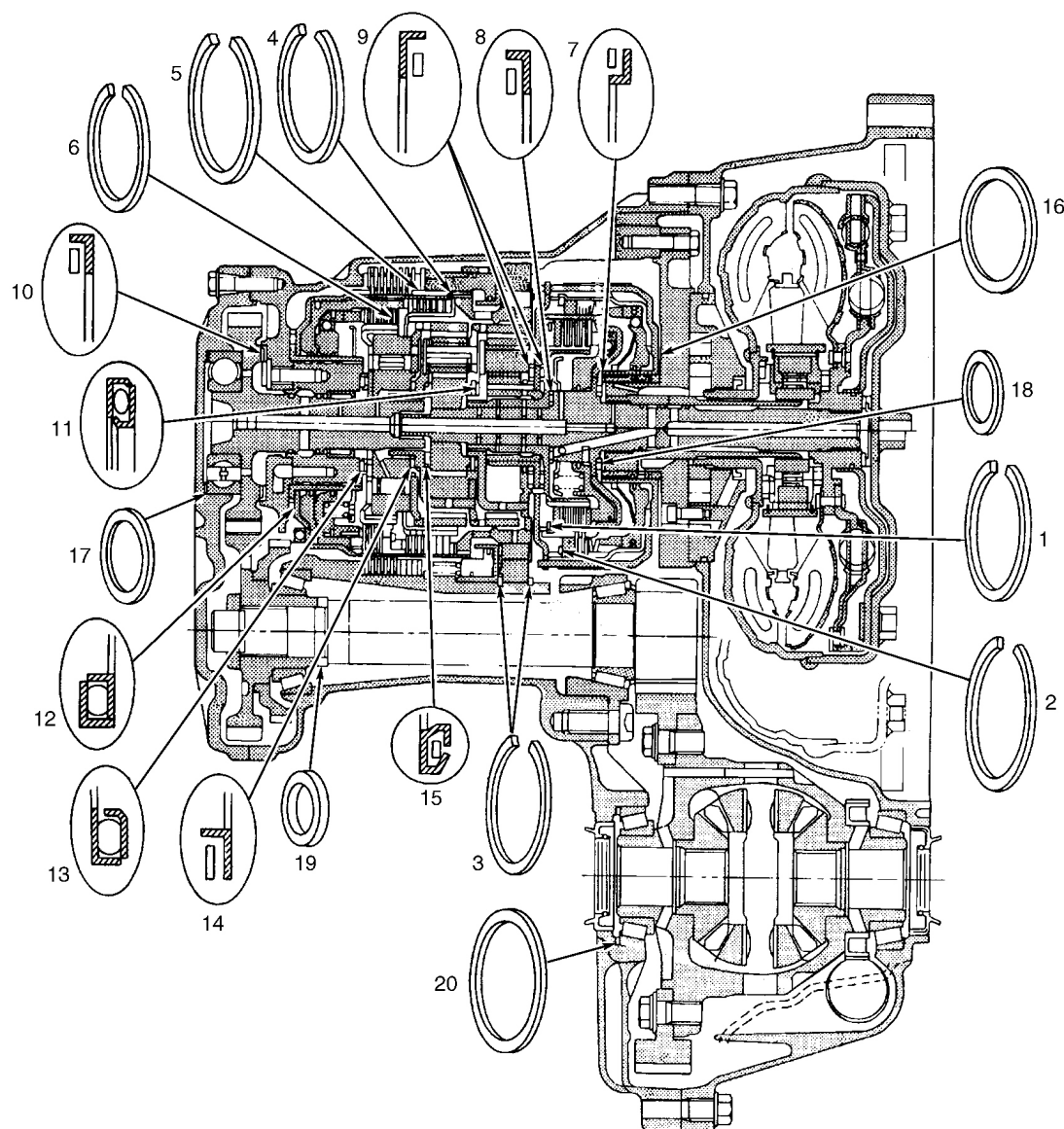


Fig. 57: Measuring Converter Installed Depth
Courtesy of NISSAN MOTOR CO., U. S. A.



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Fig. 58: Identifying Needle Bearing, Snap Ring, Thrust Washer & Selective Shim Locations
 Courtesy of NISSAN MOTOR CO., U. S. A.

TORQUE SPECIFICATIONS

RE4F04 SERIES

TORQUE SPECIFICATIONS (RE4F04 SERIES)

Application	Ft. Lbs. (N.m)
Anchor End Pin Lock Nut	23-27 (31-36)
Converter Housing Bolt	32-35 (43-47)

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Differential Case Bolt	27-30 (36-40)
Idler Gear Lock Nut	217-239 (294-324)
OD Band Servo Piston Retainer Bolt	15-18 (20-24)
Oil Cooler Tube Bolt	30-43 (40-58)
Oil Pan Drain Plug	21-29 (29-39)
Oil Pump-To-Transaxle Case Bolt	13-15 (18-20)
Parking Actuator Support Bolt	15-18 (20-24)
Reduction Gear Bearing Race Bolt	80-91 (109-123)
Ring Gear Bolt	
With Viscous Coupling	65-76 (88-103)
Without Viscous Coupling	83-94 (113-127)
Side Cover Bolt	20-22 (27-30)
Torque Converter Bolt	33-43 (44-59)
INCH Lbs. (N.m)	
Control Valve Assembly Bolt	62-80 (7-9)
Control Valve Body "E" Bolt	27-35 (3-4)
Detent Spring Bolt	53-71 (6-8)
Dipstick Tube Bolt	35-53 (4-6)
PNP Switch Bolt	27-35 (3-4)
Oil Pan Bolt	62-80 (7-9)
Oil Pump Cover-To-Housing Bolt	62-97 (7-11)
Oil Tube Bolt	44-62 (5-7)
Revolution Sensor Bolt	44-62 (5-7)
Solenoid Assembly Bolt	62-80 (7-9)
Speedometer Pinion Bolt	44-62 (5-7)
Viscous Coupling-To-Differential Case Bolt	35-53 (4-6)

TRANSAXLE SPECIFICATIONS

TRANSAXLE SPECIFICATIONS

Application	In. (mm)
Differential Assembly	
Side Gear-To-Case Clearance	.004-.008 (.10-.20)
Differential Side Bearing Preload	.002-.0035 (.05-.09)
Forward & Overrun Clutches	
Dish Plate Thickness	.106 (2.70)
Drive Plate Thickness	.063 (1.60)
Service Limit	.055 (1.40)
Retaining Plate-To-Snap Ring	
Specified Clearance (Forward Clutch)	.018-.033 (.45-.85)
Specified Clearance (Overrun Clutch)	.028-.043 (.70-1.10)

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2000-02 AUTOMATIC TRANSMISSIONS Nissan RE4F04 Series Overhaul

Service Limit (Forward Clutch)	.073 (1.85)
Service Limit (Overrun Clutch)	.067 (1.70)
High Clutch	
Drive Plate Thickness	.063 (1.60)
Service Limit	.055 (1.40)
Retaining Plate-To-Snap Ring	
Specified Clearance	.071-.087 (1.80-2.20)
Service Limit	.118 (3.00)
Input Shaft Seal Ring-To-Ring Groove	
Specified Clearance	.003-.009 (.08-.23)
Service Limit	.009 (.23)
Low & Reverse Brake	
Drive Plate Thickness	.071 (1.80)
Service Limit	.063 (1.60)
Retaining Plate-To-Snap Ring	
Specified Clearance	.067-.083 (1.70-2.10)
Service Limit	.130 (3.30)
Oil Pump Seal Ring-To-Ring Groove	
Specified Clearance	.004-.010 (.10-.25)
Service Limit	.010 (.25)
Oil Pump Side Clearance	.001-.002 (.03-.05)
Oil Pump Outer Gear-To-Housing Clearance	.004-.007 (.11-.18)
Output Shaft End Play	0-.0059 (0-.15)
Output Shaft Seal Ring-To-Ring Groove	
Specified Clearance	.004-.010 (.10-.25)
Service Limit	.010 (.25)
Pinion Washer-To-Planetary Gear	
Specified Clearance	.008-.028 (.20-.70)
Service Limit	.031 (.80)
Reverse Clutch	
Dish Plate Thickness	.121 (3.08)
Drive Plate Thickness	.063 (1.60)
Service Limit	.055 (1.40)
Retaining Plate-To-Snap Ring	
Specified Clearance	.020-.031 (.50-.80)
Service Limit	.047 (1.20)
Reverse Clutch End Play	.022-.035 (.55-.90)
Total End Play	.010-.022 (.25-.55)