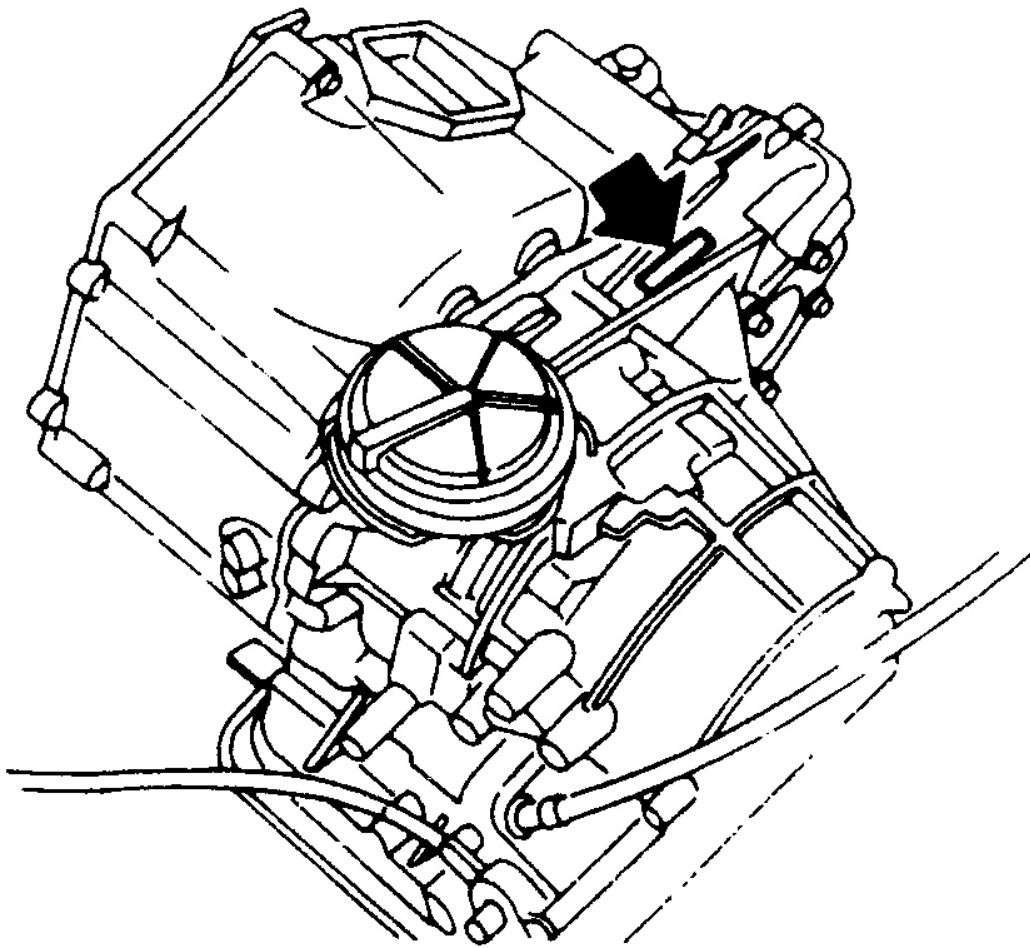


1988-90 AUTOMATIC TRANSMISSIONS**Diagnosis & Overhaul - RL3F01A****APPLICATION****TRANSMISSION APPLICATION**

Application	Transmission Model
1988-90 Pulsar NX (1.6L)	RL3F01A
1988-90 Sentra	RL3F01A

IDENTIFICATION

The identification label is located on right upper face of transmission case. See **Fig. 1** .



G00281674

Fig. 1: Transmission Identification Plate Location

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

DESCRIPTION

Transaxle consists of 3 main units: Automatic transaxle, torque converter, and differential assembly. The automatic transaxle consists of front, rear and one-way clutches, low-reverse brake assembly, oil pump and hydraulic controls (valve body and servo piston assemblies).

LUBRICATION

See appropriate AUTOMATIC TRANSMISSION SERVICING article in IMPORT GENERAL SERVICING section.

TROUBLESHOOTING

TRANSAXLE NOISE IN "N" & "P"

Incorrect fluid level. Incorrect line pressure. Oil pump faulty.

VEHICLE MOVES IN "N"

Control cable out of adjustment. Transmission fluid contaminated. Manual valve or forward clutch faulty.

VEHICLE WILL NOT MOVE IN "R"; OKAY IN "D", "2" & "1"

Incorrect fluid level. Control cable out of adjustment. Incorrect line pressure. Transmission fluid contaminated. Manual valve, high-reverse clutch, high-reverse clutch check ball, low-reverse brake, or forward clutch faulty. Leak in hydraulic circuit. Transaxle air check.

VEHICLE BRAKED WHEN SHIFTED INTO "R"

Transmission fluid contaminated. Band servo, forward clutch, or brake band faulty. Parking mechanism out of adjustment. Transaxle air check.

EXCESSIVE SHIFT SHOCK FROM "N" TO "D"

Incorrect engine idle RPM. Throttle cable out of adjustment. Incorrect line pressure. Manual valve or forward clutch faulty.

VEHICLE WILL NOT MOVE IN "D"; OKAY IN "2", "1" & "R"

Control cable out of adjustment. Incorrect line pressure. Manual valve or one-way clutch faulty.

VEHICLE WILL NOT MOVE IN "D", "2" OR "1"; OKAY IN "R"

Incorrect fluid level. Control cable out of adjustment. Incorrect line pressure. Transmission fluid contaminated. Engine not performing to specifications or brakes improperly adjusted. Manual valve, high-reverse clutch, or forward clutch faulty. Leak in hydraulic circuit.

CLUTCHES OR BRAKES SLIP SLIGHTLY IN STARTING

Incorrect fluid level. Control and throttle cable out of adjustment. Incorrect line pressure. Transmission fluid contaminated. Manual valve or oil pump faulty. Leak in hydraulic circuit. Transaxle air check.

VEHICLE "CREEPS" EXCESSIVELY

Incorrect engine idle RPM.

VEHICLE WILL NOT "CREEP"

Incorrect fluid level. Control cable out of adjustment. Incorrect engine idle RPM. Transmission fluid contaminated. Manual valve, forward clutch, oil pump, or high-reverse clutch faulty. Leak in hydraulic circuit.

FAILS TO SHIFT FROM 1ST TO 2ND

Control cable or throttle cable out of adjustment. Transmission fluid contaminated. Manual valve, detent valve, governor, band servo, or brake band faulty. Leak in hydraulic circuit. Transaxle air check.

FAILS TO SHIFT FROM 2ND TO 3RD

Control cable or throttle cable out of adjustment. Transmission fluid contaminated. Manual valve, detent valve, governor, band servo, high-reverse clutch, or high-reverse check ball faulty. Leak in hydraulic circuit. Transaxle air check.

1ST-2ND & 2ND-3RD UPSHIFT POINTS HIGH

Throttle cable out of adjustment. Incorrect line pressure. Transmission fluid contaminated. Manual valve, detent valve, or governor faulty. Leak in hydraulic circuit.

SHIFTS FROM 1ST TO 3RD; SKIPS 2ND

Transmission fluid contaminated. Manual valve, governor, or brake band faulty. Leak in hydraulic circuit. Transaxle air check.

ENGINE STOPS WHEN SHIFTING INTO "D" RANGE

Engine not performing to specifications or brakes improperly adjusted.

EXCESSIVE SHIFT SHOCK FROM 1ST TO 2ND

Throttle cable out of adjustment. Incorrect engine stall RPM. Transmission fluid contaminated. Manual valve, band servo, or brake band faulty.

EXCESSIVE SHIFT SHOCK FROM 2ND TO 3RD

Throttle cable out of adjustment. Incorrect line pressure. Manual valve, band servo, or high-reverse clutch faulty. Transaxle air check.

NO SHIFT SHOCK FELT FROM 1ST TO 2ND

Incorrect fluid level. Control cable or throttle cable out of adjustment. Incorrect line pressure. Transmission fluid contaminated. Manual valve, band servo, or brake band faulty. Leak in hydraulic circuit. Transaxle air check.

NO SHIFT SHOCK FELT FROM 2ND TO 3RD; ENGINE RACES

Incorrect fluid level. Control cable or throttle cable out of adjustment. Incorrect line pressure. Transmission

fluid contaminated. Manual valve, band servo, high-reverse clutch, or high-reverse clutch check ball faulty. Leak in hydraulic circuit. Transaxle air check.

VEHICLE BRAKED IN 1ST-2ND UPSHIFT

Transmission fluid contaminated. Manual valve, high-reverse clutch, low-reverse brake, or one-way clutch faulty.

VEHICLE BRAKED IN 2ND-3RD UPSHIFT

Transmission fluid contaminated. Manual valve, band servo, or brake band faulty.

MAXIMUM SPEED NOT ATTAINED, POOR ACCELERATION

Incorrect fluid level. Control cable out of adjustment. Transmission fluid contaminated. Incorrect line pressure. Incorrect engine stall RPM. Manual valve, band servo, forward clutch, high-reverse clutch, brake band, low and reverse brake, or oil pump faulty. Engine not performing to specifications or brakes improperly adjusted.

NO DOWNSHIFT FROM 3RD TO 2ND

Throttle cable out of adjustment. Transmission fluid contaminated. Manual valve, governor, band servo, high-reverse clutch, or brake band faulty. Leak in hydraulic circuit. Transaxle air check.

NO DOWNSHIFT FROM 2ND TO 1ST OR 3RD TO 1ST

Throttle cable out of adjustment. Transmission fluid contaminated. Manual valve, governor, band servo, brake band, or one-way clutch faulty. Transaxle air check.

SHIFT SHOCK ON DECELERATION WHEN RELEASING ACCELERATOR PEDAL

Control and throttle cable out of adjustment. Incorrect line pressure. Detent valve, manual valve or governor faulty. Leak in hydraulic circuit.

3RD-2ND & 2ND-1ST DOWNSHIFT POINTS HIGH

Control cable of throttle cable out of adjustment. Incorrect line pressure. Manual valve, detent valve, or governor faulty. Leak in hydraulic circuit.

NO KICKDOWN FROM 3RD WITHIN KICKDOWN SPEED

Throttle cable out of adjustment. Transmission fluid contaminated. Manual valve, detent valve, governor, or brake band faulty. Leak in hydraulic circuit.

KICKDOWN FROM 3RD BEYOND KICKDOWN SPEED

Control cable or throttle cable out of adjustment. Incorrect line pressure. Transmission fluid contaminated. Manual valve, governor, or high-reverse clutch faulty. Leak in hydraulic circuit. Transaxle air check.

ENGINE RACES ON 3RD-2ND KICKDOWN

Throttle cable out of adjustment. Incorrect line pressure. Transmission fluid contaminated. Manual valve, band servo, high-reverse clutch, high-reverse clutch check ball, or brake band faulty. Leak in hydraulic circuit. Transaxle air check.

VEHICLE WILL NOT MOVE

Incorrect fluid level. Control cable out of adjustment. Incorrect line pressure. Transmission fluid contaminated. Manual valve or oil pump faulty. Leak in hydraulic circuit. Parking mechanism out of adjustment. Transaxle air check.

NOISE IN "D", "2", "1" & "R"

Incorrect fluid level. Incorrect line pressure. Oil pump, forward clutch, one-way clutch, or planetary gear faulty.

FAILS TO SHIFT FROM 3RD TO 2ND WHEN SHIFT LEVER IS MOVED TO "2"

Control cable out of adjustment. Incorrect line pressure. Transmission fluid contaminated. Manual valve, band servo, or brake band faulty. Leak in hydraulic circuit.

SHIFTS FROM 2ND TO 3RD WITH SHIFT LEVER IN "2"

Control cable out of adjustment. Incorrect line pressure. Manual valve faulty.

NO SHIFT SHOCK FROM 1ST TO 2ND OR ENGINE RACES EXTREMELY FAST

Incorrect fluid level. Control and throttle cable out of adjustment. Incorrect engine idle and stall RPM. Transmission fluid contaminated. Manual valve, brake band, or oil pump faulty. Transaxle air check.

FAILS TO SHIFT FROM 3RD TO 2ND WHEN SHIFT LEVER IS MOVED TO "1"

Control cable out of adjustment. Incorrect line pressure. Transmission fluid contaminated. Manual valve, governor, band servo, high-reverse clutch, or brake band faulty. Leak in hydraulic circuit. Transaxle air check.

ENGINE BRAKING DOES NOT TAKE PLACE IN "1"

Control cable out of adjustment. Incorrect line pressure. Transmission fluid contaminated. Manual valve or low-reverse brake faulty. Leak in hydraulic circuit.

SHIFTS FROM 1ST TO 2ND OR FROM 2ND TO 3RD IN "1"

Control cable out of adjustment. Manual valve faulty. Leak in hydraulic circuit.

FAILS TO SHIFT FROM 2ND TO 1ST IN "1"

Incorrect fluid level. Control cable out of adjustment. Transmission fluid contaminated. Manual valve,

governor, band servo, or low-reverse brake faulty. Leak in hydraulic circuit. Transaxle air check.

EXCESSIVE SHIFT SHOCK ON 2ND-1ST DOWNSHIFT TO "1"

Throttle cable out of adjustment. Transmission fluid contaminated. Incorrect engine stall RPM. Manual valve or low-reverse brake faulty.

TRANSAXLE OVERHEATS

Incorrect fluid level. Incorrect line pressure. Transmission fluid contaminated. Incorrect engine stall RPM. Torque converter or transaxle components faulty. Leak in hydraulic circuit.

TORQUE CONVERTER DOES NOT LOCK

Incorrect line pressure. Oil pump, input shaft "O" ring, governor, lock-up control valve, speed cut valve, or torque converter faulty.

LOCK-UP PISTON SLIP

Incorrect line pressure. Input shaft "O" ring, oil pump, or torque converter faulty.

LOCK-UP POINT TOO HIGH OR LOW

Governor, speed cut valve, or lock-up control valve faulty.

TORQUE CONVERTER LOCK-UP STALLS ENGINE IN "R", "D", "2" & "1"

Lock-up control valve or input shaft "O" ring faulty.

TORQUE CONVERTER LOCK-UP CAUSES TRANSAXLE TO OVERHEATS

Incorrect line pressure. Input shaft "O" ring, oil pump, or torque converter faulty.

TORQUE CONVERTER LOCK-UP PRESSURE NOT NORMAL

Incorrect line pressure. Input shaft "O" ring, speed cut valve, lock-up control valve, oil pump, or torque converter faulty.

TESTING**ROAD TEST****Preliminary Checks**

1. Ensure transmission fluid level is correct. Examine transmission fluid color, texture, and odor. If fluid is dark Black in color and has a burnt odor, clutch friction plates are worn.
2. If fluid is milky Pink in color, fluid is water contaminated. Water may be entering transaxle through filler

tube or breather. If fluid is Light/Dark Brown in color and tacky, transmission fluid level is incorrect or transaxle is overheating.

Road Test Procedure

1. Place shift lever in "P" and start engine. Turn engine off and repeat procedure in all ranges, including "N" (neutral). In "P", transaxle parking mechanism should be locked and vehicle should not move. Release parking brake to ensure parking mechanism works.
2. Start engine, move shift lever from "P" to "R" and note shift quality. Drive vehicle in reverse long enough to detect slippage or other abnormalities. Stop vehicle and move shift lever into "P".
3. Move shift lever from "P" to "N" and note shift quality. With parking brake released and shift lever in "N", lightly depress accelerator to make sure vehicle does not move.
4. Move shift lever from "N" to "D" and note shift quality. Road test vehicle and note upshift/downshift speeds. Upshift/downshift speeds should be close to speeds shown in SHIFT SPEED SPECIFICATIONS. See **SHIFT SPEED SPECIFICATIONS** table.
5. Shift speeds may vary slightly due to production tolerances or tire size. The important factor is quality of the shifts. All shifts should be smooth, responsive and with no slippage or engine speed runaway. Slippage or engine speed runaway in any gear usually indicates clutch or band problems.
6. A slipping clutch or band in a particular gear can usually be identified by noting transaxle operation in other selector positions and comparing internal units which are applied in these positions. See CLUTCH & BRAKE APPLICATION (ELEMENTS IN USE). See **CLUTCH & BRAKE APPLICATION**.

NOTE: When vehicle is being driven 40-53 MPH ("D₃" position) at half to light throttle position, fully depress accelerator pedal to ensure transaxle downshifts from 3rd to 2nd gear. When vehicle is being driven 16-22 MPH ("D₂" position) at half to light throttle position, fully depress accelerator pedal to ensure transaxle downshifts from 2nd to 1st gear.

7. Road test vehicle with selector lever in "2" position. As vehicle speed is increased, ensure transaxle upshifts from 1st to 2nd gear. Further increase vehicle speed. Ensure transaxle does not upshift to 3rd gear. While driving vehicle 16-22 MPH with throttle at half to light position ("2" position), fully depress accelerator pedal to ensure transaxle downshifts from 2nd to 1st gear. Decelerate vehicle and ensure 2-1 downshift. Select "D" position and drive vehicle at 25-31 MPH. Shift into "2" position. Ensure 3-2 downshift occurs.
8. Road test vehicle with shift lever in "1". Transaxle should not upshift from 1st to 2nd as vehicle speed increases. Accelerate and decelerate vehicle to determine engine braking. Ensure engine compression acts as a brake. Drive vehicle in "2" position at 12-19 MPH. Ensure 2-1 downshift occurs when selector lever is moved to "1" position.

SHIFT SPEED SPECIFICATIONS ⁽¹⁾

Application	MPH
1-2 Upshift	
1988 Pulsar & Sentra	31-36
1989-90 Pulsar	35-40

1990 Nissan Pulsar NX XE

1988-90 AUTOMATIC TRANSMISSIONS Diagnosis & Overhaul - RL3F01A

1989-90 Sentra	33-39
2-3 Upshift	
1988 Pulsar	55-62
1989-90 Pulsar	63-69
1988 Sentra	61-68
1989-90 Sentra	61-67
3-2 Downshift	
1988 Pulsar	54-57
1989-90 Pulsar	59-65
1988 Sentra	56-60
1989-90 Sentra	57-63
2-1 Downshift	
1988 Pulsar	25-29
1989-90 Pulsar	29-34
1988 Sentra	25-30
1989-90 Sentra	27-34
(1) With selector lever in "D" position and at full throttle.	

CLUTCH & BRAKE APPLICATION

Selector Lever Position	Elements In Use
"P" (Park)	All Clutches & Brakes Released and/or Ineffective
"R" (Reverse)	Front Clutch & Low-Reverse Brake
"N" (Neutral)	All Clutches & Brakes Released and/or Ineffective
"D" (Drive)	
First Gear	Rear Clutch & One-Way Clutch
Second Gear	Rear Clutch & Band Servo ON
Third Gear ⁽²⁾	Front & Rear Clutch, Band Servo ON & OFF
"2" (Intermediate)	
First Gear	Rear Clutch & One-Way Clutch
Second Gear	Rear Clutch & Band Servo ON
"1" (Low)	
First Gear	Rear Clutch, Low-Reverse Brake ⁽¹⁾ & One-Way Clutch
(1) Low-reverse brake applied to prevent free wheeling when coasting & to provide engine braking.	
(2) Lock-up converter engaged.	

STALL SPEED TEST

Stall Test Precautions

Stall speed test is used to test clutch and band holding ability, torque converter one-way clutch operation and engine performance. Ensure transaxle fluid level is correct and fluid temperature is 109-135°F (43-57°C). **DO NOT** hold throttle open for more than 5 seconds during test. **DO NOT** test more than 2 gear positions at a time.

Stall Test Procedure

1. Warm transaxle to normal operating temperature. Connect tachometer to engine. Position tachometer so it can be read from driver's seat. Block front and rear wheels, set parking brake and apply service brakes.
2. Start engine and place selector lever in "D" position. Depress accelerator pedal to wide open throttle. Note stall speed and release throttle immediately. Place selector lever in "N" position and allow transaxle to cool.
3. Repeat stall test procedure in "1" and "R" positions, allowing transaxle to cool between each test. Stall speed RPM should be as shown in the STALL SPEED SPECIFICATIONS. See **STALL SPEED SPECIFICATIONS**.

STALL SPEED SPECIFICATIONS

Application	Stall RPM
1988-90 Pulsar	2350-2650
1988-89 Sentra	2150-2450
1990 Sentra	2300-2600

STALL SPEED TEST RESULTS**Low In "D"**

Lock-up clutch is dragging, torque converter one-way clutch is faulty or engine is not performing properly.

Low In "R" ("D" Okay)

Lock-up clutch is dragging, torque converter one-way clutch is faulty or engine is not performing properly.

High In "D"

Forward clutch or one-way clutch slips. Test in "1" position to determine if forward clutch or one-way clutch is faulty. If okay in "1" position, one-way clutch is slipping. If high in "1" position, forward clutch is slipping.

High In "R"

Road test vehicle with selector lever in "1" position. If effective engine braking occurs, high-reverse clutch slips. If engine braking occurs, low-reverse brake is slipping.

NOTE: If torque converter one-way clutch is frozen, vehicle will have poor high speed performance. If torque converter one-way clutch is slipping, vehicle will be sluggish up to 30-40 MPH.

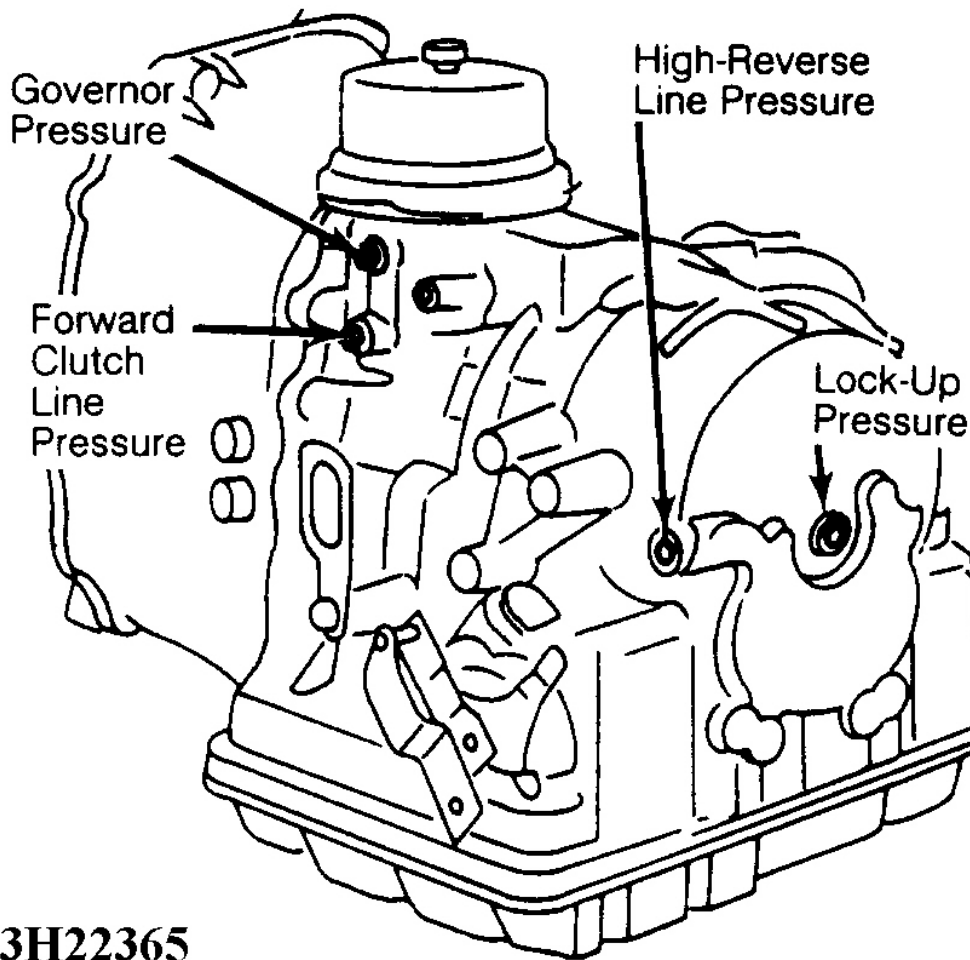
HYDRAULIC PRESSURE TESTS

Line Pressure Test

1. Warm transaxle to normal operating temperature. Connect pressure gauge to forward clutch line pressure port. See **Fig. 2** . Connect tachometer to engine. Position tachometer and gauge so they are visible from driver's seat.
2. Apply parking brake, block front and rear wheels and depress brake pedal. Measure line pressure at idle and at stall speed in "D", "2", "1" and "R" positions.
3. Connect pressure gauge to high-reverse clutch line pressure port. See **Fig. 2** . Measure line pressure at idle and stall speed in "R" position.
4. Connect a pressure gauge to the forward clutch line pressure port. Read pressures at idle and stall speed in "D", "2" and "1" positions. Line pressure readings should be as specified in the **LINE PRESSURE SPECIFICATIONS** .

LINE PRESSURE SPECIFICATIONS

Application	psi (kPa)
At Idle	
In "D", "2" & "1"	36-50 (245-343)
In "R"	91-112 (628-775)
At Stall Speed	
In "D", "2" & "1"	80-101 (549-696)
In "R"	185-213 (1275-1471)



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Fig. 2: Locating Hydraulic Pressure Test Ports
Courtesy of NISSAN MOTOR CO., U.S.A.

Line Pressure Test Results

1. If line pressure with engine idling is low at all positions, problem may be wear on interior of oil pump, oil leakage at or around oil pump, control valve body, transaxle case or governor, sticking pressure regulator or modifier valve.
2. If line pressure, with engine at idle, is low at a particular position, problem may be oil leaks at or around forward clutch or governor, causing line pressure to be low in "D", "2" or "1" position, but normal in "R" position.
3. If oil leaks at or around low and reverse brake circuit, line pressure becomes low in "R" or "P" positions, but is normal in "D", "2" or "1" position. When line pressure is high while engine is idling, pressure regulator valve may be stuck. If line pressure does not rise, ensure throttle cable is connected properly.

GOVERNOR PRESSURE TEST

1. Warm transaxle to normal operating temperature. Connect pressure gauge to governor pressure port. See **Fig. 2** . Position gauge so it is visible from driver's seat.
2. Road test vehicle in "D" position and note pressure readings. Governor pressure increases directly with road speed and should always be less than line pressure.

TORQUE CONVERTER LOCK-UP TEST

1. Warm transaxle to normal operating temperature. Connect pressure gauge to lock-up pressure port. See **Fig. 2** . Position gauge so it is visible from driver's seat. Road test vehicle in "D" and note pressure readings.
2. Readings should be as specified in **LOCK-UP PRESSURE SPECIFICATIONS** table. If lock-up pressure is not within specification, see **TROUBLESHOOTING** .

LOCK-UP PRESSURE SPECIFICATIONS

Application	psi (kPa)
Lock-Up Engaged	Less than 7 (49)
Lock-Up Disengaged	Greater than 28 (196)

REMOVAL & INSTALLATION

See appropriate AUTOMATIC TRANSMISSION REMOVAL article in IMPORT GENERAL SERVICING section.

SERVICE (IN-VEHICLE)

DRIVE AXLE SHAFTS

See appropriate AXLE SHAFTS article in DRIVE AXLES.

VALVE BODY

Removal & Installation

1. Remove drain plug and drain transmission fluid. Remove oil pan guard, oil pan, and gasket. Remove valve body. To install, reverse removal procedure.
2. While installing valve body, set manual shaft in Neutral and then align manual plate with groove in manual valve. Install detent valve with groove facing forward. After installing valve body, ensure shift lever can be moved into all positions.

THROTTLE CABLE

Removal & Installation

Remove valve body. Disconnect throttle cable from carburetor throttle valve/lever. Remove throttle cable from transaxle. To install, reverse removal procedure. After tightening nut, bend lock tab. Adjust throttle cable.

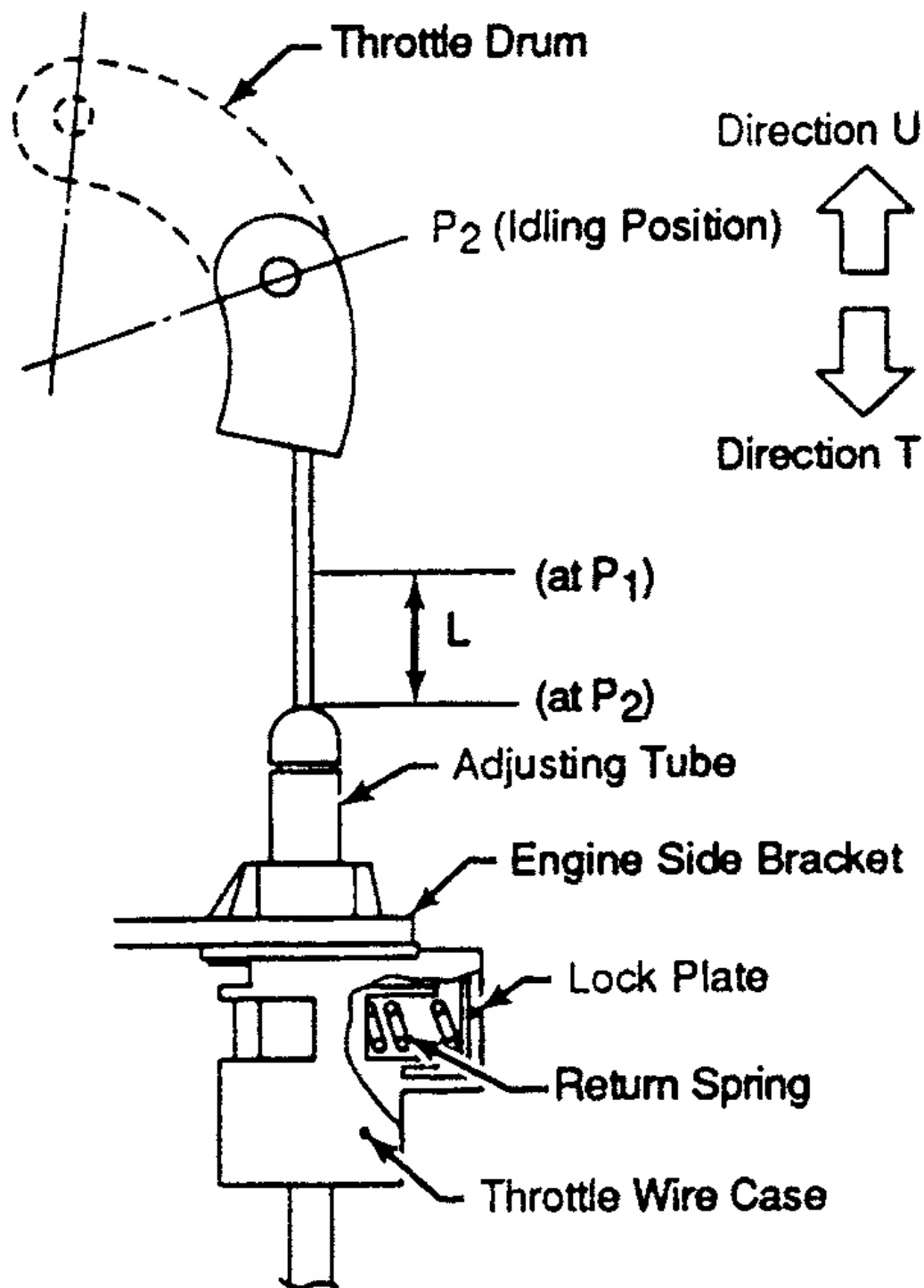
THROTTLE CABLE ADJUSTMENT

On all except 1990 Pulsar, loosen throttle cable adjusting lock nuts at carburetor. Open throttle fully and pull throttle cable housing away from carburetor at 9 lbs. (4 kg). Adjust lock nut farthest from carburetor to touch bracket. Back off lock nut 1-1 1/2 turns. Secure with lock nut closest to carburetor.

For 1990 Pulsar, press lock plate and move adjusting tube in direction "T". See **Fig. 3** . Release lock plate. Move throttle drum from "P₂ " to "P₁ " quickly.

On all models, measure cable travel "L" when moving throttle drum from "P₂ " to "P₁ ". See **Fig. 3** . Ensure throttle cable between carburetor and throttle cable housing moves 1.079-1.236 in. (27.4-31.4) when throttle is moved from idle to full throttle. Ensure throttle cable is as straight as possible after adjustment.

P_1 (Full Throttle Position)



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Fig. 3: Adjusting Throttle Cable**Courtesy of MAZDA MOTORS CORP.****SHIFT SHOCK (TS 89-042)****RL3F01A Transaxle On 1988 Sentra (B12) & 1988 Pulsar NX-XE (N13)**

Some vehicles may experience shift shock between 1-2 and 2-3 shifts during light to medium acceleration. If this occurs, adjust throttle cable by loosening throttle cable lock nuts at carburetor. Open throttle fully and pull throttle cable housing away from carburetor, removing all slack in cable. Adjust lock nut farthest from carburetor to touch bracket and back off lock nut 2 1/2 turns. Secure with lock nut closest to carburetor. Road test vehicle to ensure shift quality is smooth, especially between 2-3 gear change. If slippage occurs, carefully adjust throttle cable tighter until slippage does not occur.

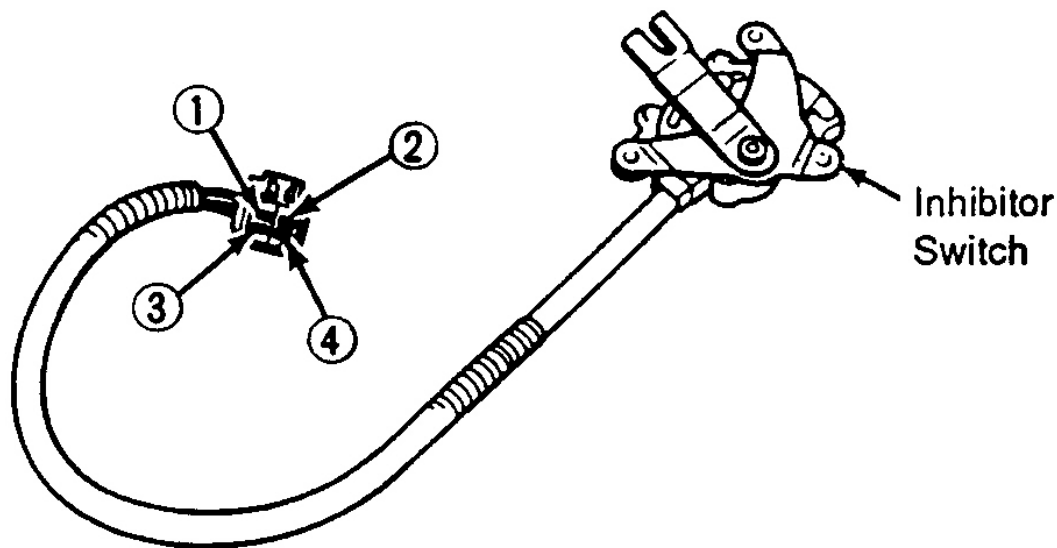
CONTROL CABLE ADJUSTMENT

Place selector lever in "P". Loosen lock nuts. Turn rear lock nut until it touches select rod while holding select rod horizontal and tighten front lock nut. Check for proper operation.

INHIBITOR SWITCH ADJUSTMENT

Loosen attaching screws and set select lever to "N". Insert a .098 in. (2.5 mm) pin into adjustment holes in inhibitor switch and switch lever as near vertical as possible. Tighten attaching screws. Check for continuity. See [Fig. 4](#) . If faulty, replace switch.

CONNECTOR RANGE	CONNECTOR			
	1	2	3	4
N,P	○—○			
R			○—○	



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Fig. 4: Checking Inhibitor Switch Continuity
 Courtesy of NISSAN MOTOR CO., U.S.A.

GOVERNOR SHAFT ASSEMBLY

Removal & Installation

Remove distributor cap. Remove snap ring, governor cap, breather hose, and "O" ring. Remove governor shaft bolt. Bolt is located directly below governor. Remove governor shaft assembly. To install, reverse removal procedure. Ensure governor cap cut-out fits into protrusion in transaxle case.

TRANSAXLE COMPONENT DISASSEMBLY

TORQUE CONVERTER

Torque converter is a sealed unit and cannot be disassembled for service. Replace if defective.

TRANSAXLE

1. Drain transmission fluid and remove torque converter (if necessary). Remove oil pump shaft and input shaft. Remove snap ring, governor cap and "O" ring. See **Fig. 5**.
2. Remove oil pan, oil pan gasket and oil pan guard. Remove valve body. Remove manual valve from valve body. Remove selector shaft inside and outside retaining nuts. Pull out retaining pin.
3. Remove throttle lever, selector plate, selector shaft, selector range lever and parking rod assembly. Disconnect and remove throttle cable from throttle lever.
4. Remove parking actuator support from case. Loosen brake band piston stem lock nut and back off piston stem. Apply compressed air to oil passage to remove accumulator piston. See **Fig. 6**.
5. Remove converter housing bolts. Tap converter housing with plastic mallet to separate housing from transaxle case. DO NOT drop final drive assembly. Remove final drive assembly and set aside.
6. Straighten tang on idler gear bolt lock washer. Remove idler gear bolt and lock washer. Turn transaxle over. Remove front cover retaining bolts. Hold front cover and tap output shaft with plastic mallet to loosen.
7. Remove output shaft and front cover as an assembly. DO NOT lose adjustment shim located on output shaft. Remove front cover gasket. Tap out idler gear, idler gear shaft and bearings with drift and hammer.
8. Remove seal bushing from case. Remove governor shaft assembly retaining bolt. Pull out governor shaft assembly. Remove rear internal gear, bearing race and thrust washer. Remove snap ring. Remove one-way clutch assembly, rear carrier, thrust washer and bearing race. See **Fig. 7**.
9. Remove snap ring for low-reverse retainer plate. Remove retainer plate, drive and driven plates, retainer plate(s) and dished plate. Remove snap ring from sun gear and remove connecting shell, snap ring, thrust needle bearing, bearing race, sun gear, front carrier assembly, bearing race and thrust needle bearing. Remove front internal gear thrust washer, forward clutch assembly, bearing race, thrust needle bearing and high-reverse clutch assembly.

CAUTION: If high-reverse clutch seal rings have expanded, clutch assembly will be difficult to remove. DO NOT force out clutch assembly as seal ring damage may occur.

10. Before removing brake band, secure band with a clip placed into ends of band. Leave clip in position after removing brake band to prevent brake linings from cracking or peeling. DO NOT stretch brake band excessively.
11. Pull out parking pawl shaft. Remove parking pawl and return spring. Remove low-reverse brake retainer. Apply compressed air to oil passage to remove low-reverse brake piston. Hold piston to prevent it from jumping out. See **Fig. 8**.
12. Carefully remove oil pump assembly, thrust washer and needle bearing. Carefully pull pump straight out. Remove inhibitor switch. Remove band servo piston and return spring. Remove brake band servo. Remove retainer and return spring by applying air pressure to servo oil passage. See **Fig. 6**.



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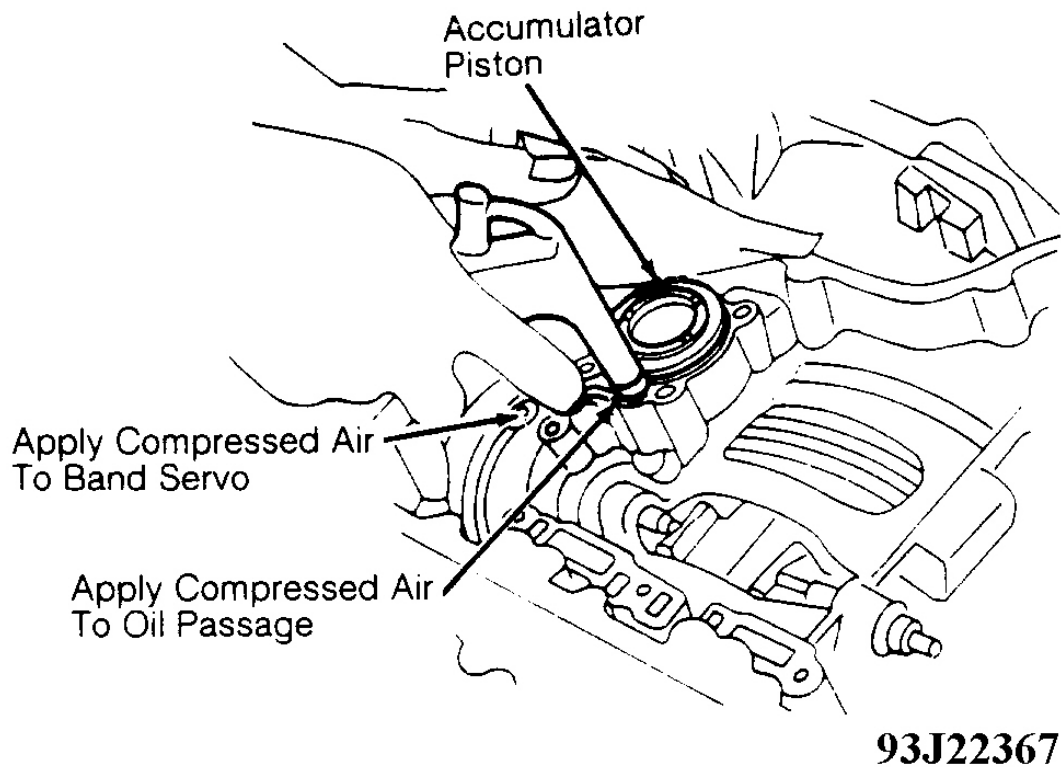
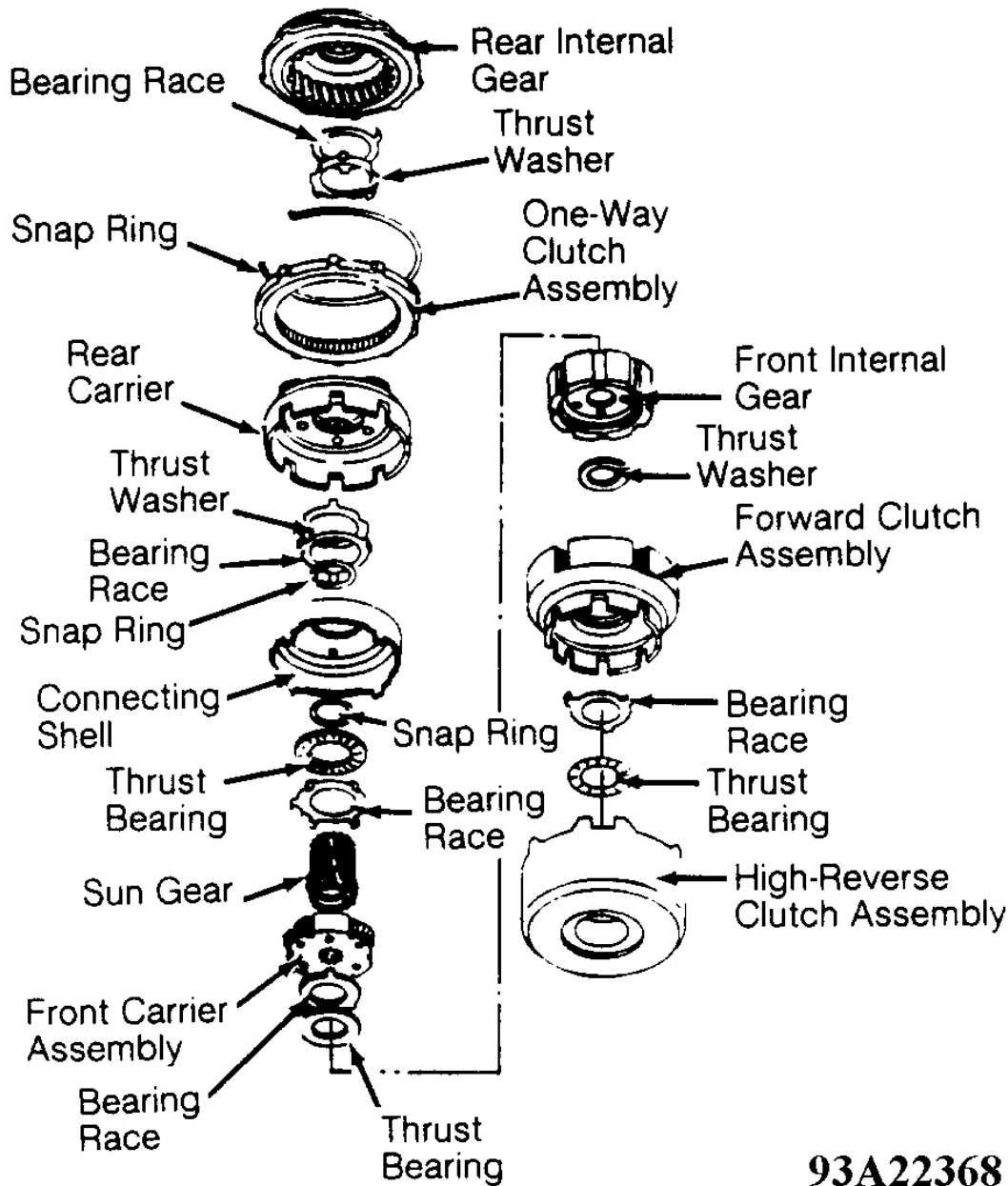


Fig. 6: Removing Accumulator Piston
Courtesy of NISSAN MOTOR CO., U.S.A.



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Fig. 7: Exploded View Of Clutch Drum & Planetary Gear Set Assembly
 Courtesy of NISSAN MOTOR CO., U.S.A.

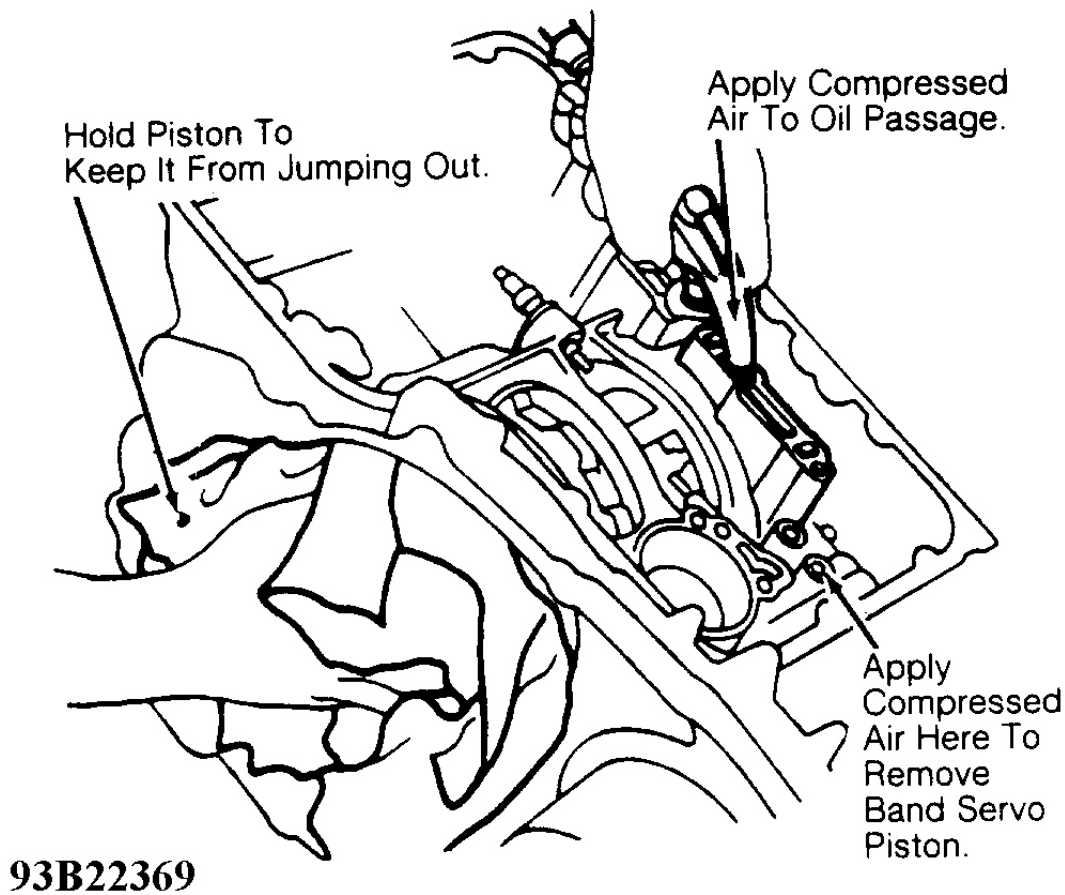


Fig. 8: Removing Low-Reverse Brake Piston & Band Servo Piston
Courtesy of NISSAN MOTOR CO., U.S.A.

OIL PUMP

Disassembly

Remove oil pump plate. Perform oil pump inspection. If pump passes inspection, mark drive and driven gears for reassembly reference. Remove gear hub and gears from pump housing. Remove steel ball and pressure relief spring from its bore. See **Fig. 9** . Remove seal rings.

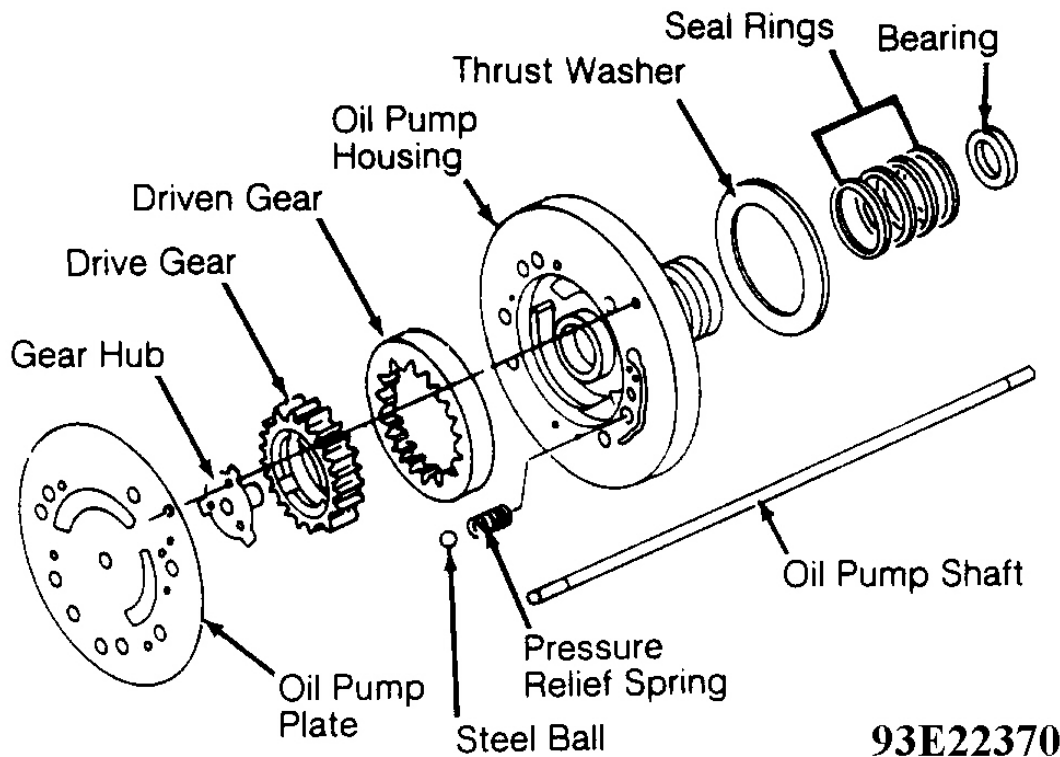


Fig. 9: Exploded View Of Oil Pump Assembly
 Courtesy of NISSAN MOTOR CO., U.S.A.

Inspection

1. Check oil pump shaft, and ring groove areas of pump housing for wear. Inspect parts for visible signs of wear or damage. Using straightedge and a feeler gauge, check pump housing face-to-gear face clearance. See **Fig. 10**.
2. Using a feeler gauge, check clearance between driven gear and pump housing and measure clearance between driven gear and crescent. See **OIL PUMP SPECIFICATIONS**. If oil pump clearances exceed wear limits, replace oil pump assembly. Inspect oil pump plate for scratches or bending.

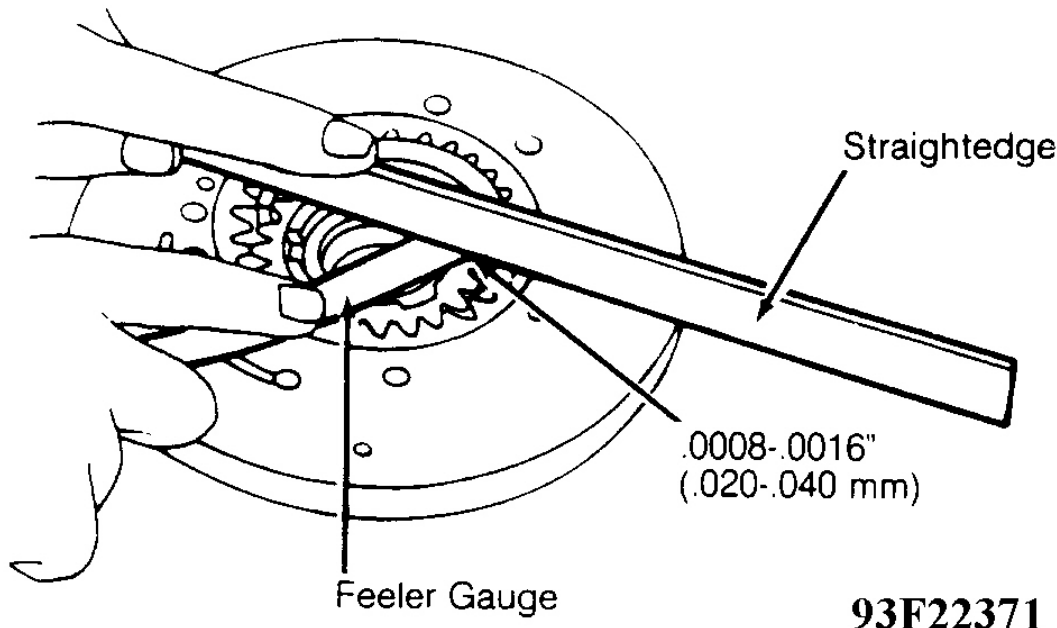


Fig. 10: Measuring Oil Pump Housing-To-Gear Face Clearance
 Courtesy of NISSAN MOTOR CO., U.S.A.

Reassembly

1. Lubricate all parts with ATF. Install drive and driven gear into housing, aligning marks made at disassembly. Install gear hub, pressure relief spring, and steel ball. Center oil pump plate on pump housing. Outer edge of plate must not extend beyond outer edge of housing. Install and tighten screws.
2. Install seal rings. Seal rings with smaller diameter are installed in grooves furthest away from pump housing. Rings with larger diameter are installed in grooves nearest pump housing.
3. Measure clearance between seal rings and seal ring grooves. See **OIL PUMP SPECIFICATIONS**. If clearance exceeds specifications, replace seal rings.

OIL PUMP SPECIFICATIONS

Clearance	In. (mm)
Driven Gear-To-Crescent	
Standard	.008-.012 (.20-.30)
Wear Limit	.014 (.35)
Driven Gear-To-Pump Housing	
Standard	.008-.012 (.20-.30)
Wear Limit	.014 (.35)
Pump Housing Face-To-Gear Face	
Standard	.0008-.0016 (.02-.04)

Wear Limit	.003 (.08)
Seal Ring-To-Ring Groove	
Standard	.004-.010 (.10-.25)
Wear Limit	.010 (.25)

HIGH-REVERSE CLUTCH

Disassembly

1. Using screwdriver, remove large snap ring and retainer plate. See **Fig. 11** . Remove clutch plate assembly, noting number and arrangement of drive and driven plates.
2. Using Spring Compressor (ST25420001), compress clutch springs. Remove snap ring from spring retainer. Remove spring retainer and lift out springs. Mount clutch drum on oil pump housing. Apply compressed air to oil passage (in oil pump housing) to remove clutch piston. See **Fig. 12** . Remove and discard piston seal.

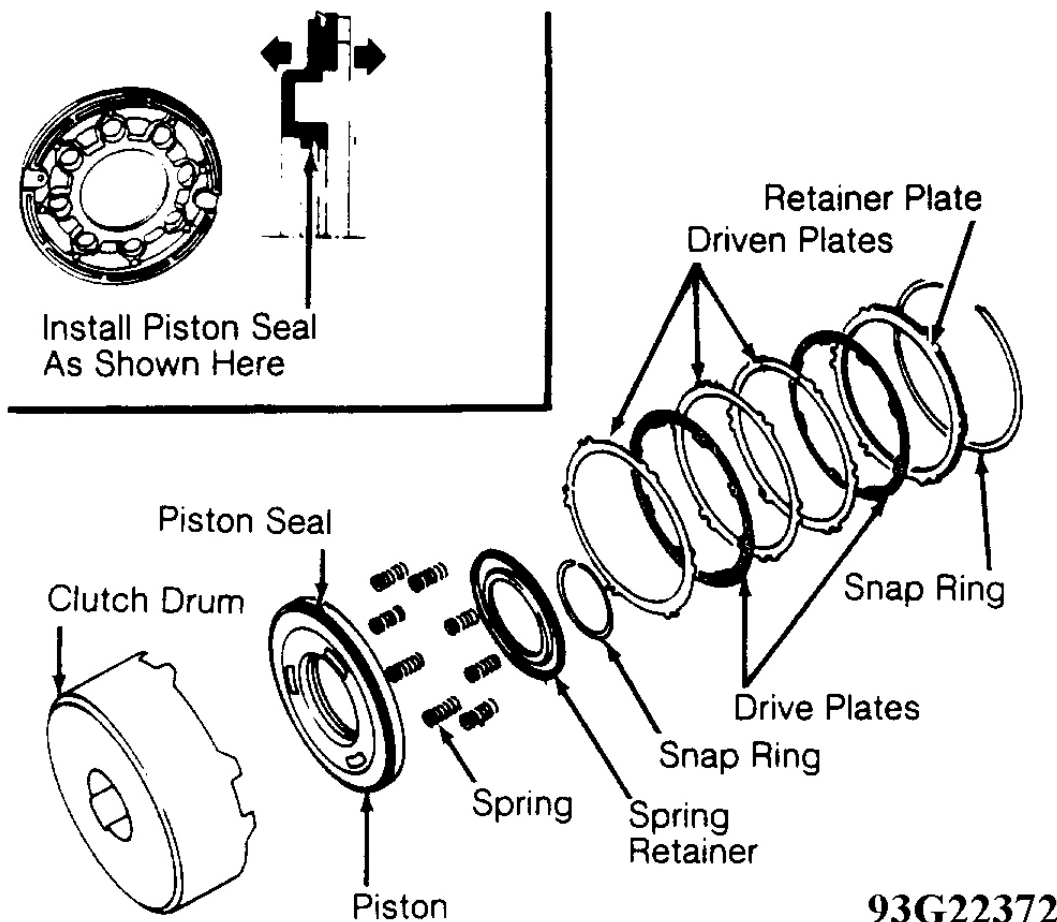


Fig. 11: Exploded View Of High-Reverse Clutch Assembly

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

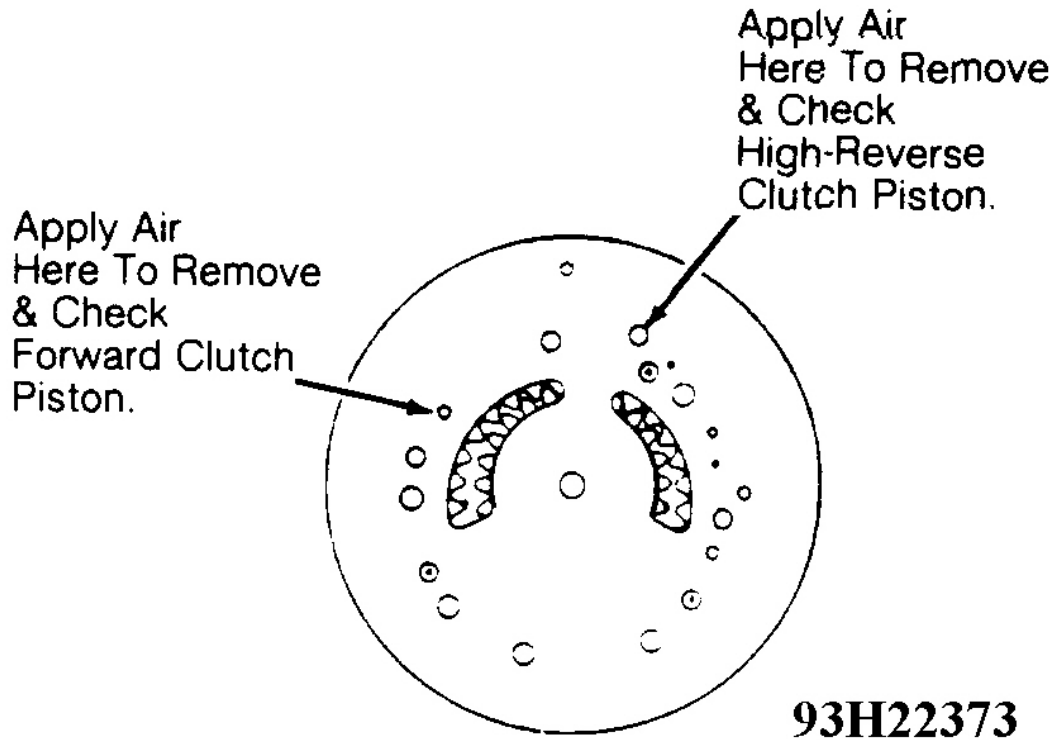


Fig. 12: Locating Oil Passages

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

Inspection

1. Check drive plate thickness. See **HIGH-REVERSE CLUTCH SPECIFICATIONS**.
2. Check snap ring for wear, springs for weakness or broken coils, and spring retainer for warpage. Replace defective components as required.

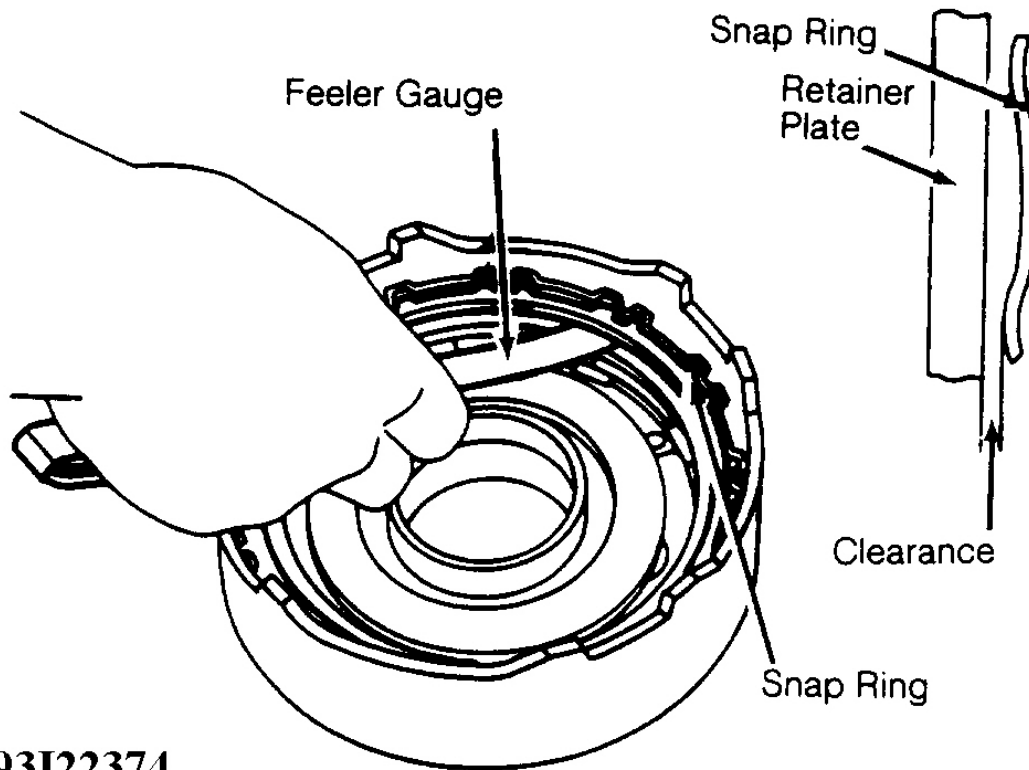
Reassembly

1. Lubricate components with ATF. Install piston seal being careful not to damage seal during installation. Ensure piston seal is installed in proper direction. See **Fig. 11**.
2. Install piston in clutch drum without damaging or pinching seal. After installation, check piston for binding by rotating it by hand. Place springs on top of piston.
3. Install spring retainer. Compress spring retainer and install snap ring. Ensure snap ring is seated. Install drive and driven plates in alternating sequence. Install retainer plate and large snap ring.
4. Using a feeler gauge, measure clearance between retainer plate and snap ring. See **Fig. 13**. See **HIGH-REVERSE CLUTCH SPECIFICATIONS**.

5. If clearance is incorrect, replace retainer plate. See **HIGH-REVERSE CLUTCH SPECIFICATIONS** .
If clearance is correct, mount clutch in oil pump housing. Apply compressed air to oil passage (in oil pump housing) to test clutch operation. See **Fig. 12** .

HIGH-REVERSE CLUTCH SPECIFICATIONS

Application	Measurement In. (mm)
Drive Plate Thickness	
Except 1988 Pulsar	.059-.065 (1.50-1.65) Minimum .055 (1.40)
1988 Pulsar	.067-.073 (1.70-1.85) Minimum .055 (1.40)
Retainer Plate-To-Snap Ring Standard Clearance	
All Models	.039-.055 (1.00-1.40)
Retainer Plate-To-Snap Ring Maximum Clearance	
1988 Sentra	.102 (2.60)
1988 Pulsar	.087 (2.20)
1989-90 Pulsar & Sentra	.079 (2.00)
Retainer Plate Thickness Available	
Except 1988 Sentra	.134 (3.40), .142 (3.60), .150 (3.80), .157 (4.00), .165 (4.20), .173 (4.40)
1988 Sentra	.142 (3.60), .150 (3.80), .157 (4.00), .165 (4.20), .173 (4.40), .181 (4.60)



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Fig. 13: Measuring Retainer Plate-To-Snap Ring Clearance
 Courtesy of NISSAN MOTOR CO., U.S.A.

FORWARD CLUTCH

Disassembly

1. Using screwdriver, remove large snap ring and retainer plate. See **Fig. 14** . Remove clutch plate assembly, noting number and arrangement of drive and driven plates.
2. Using Spring Compressor (ST25420001), compress clutch springs. Remove snap ring from spring retainer. Remove spring retainer and lift out springs. Mount clutch drum on oil pump housing. Apply compressed air to oil passage (in oil pump housing) to remove clutch piston. **Fig. 12** Remove and discard piston seals.

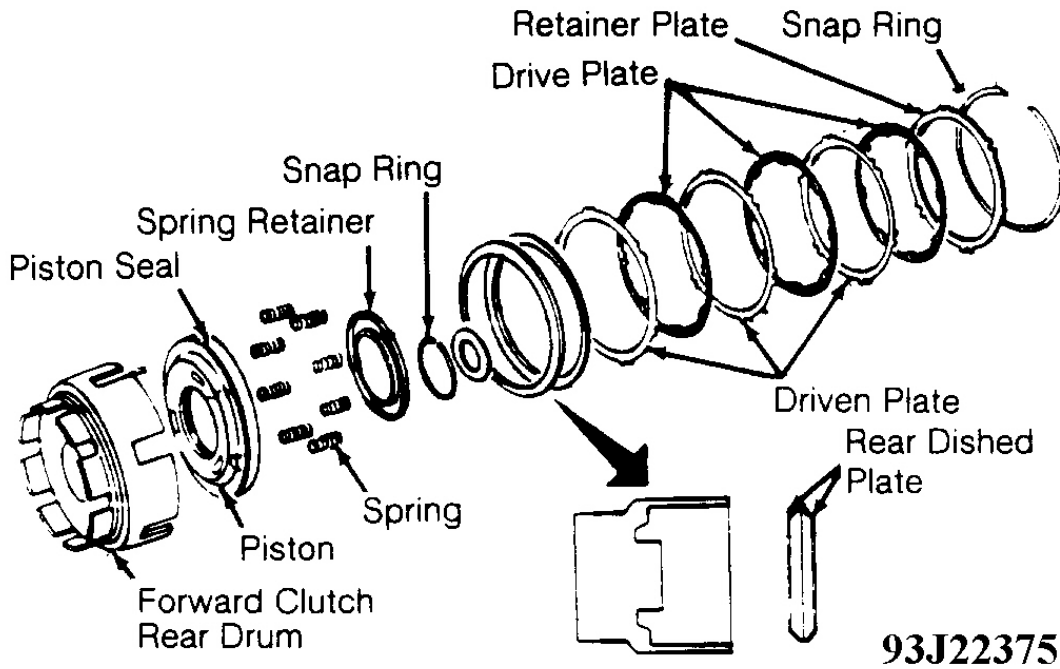


Fig. 14: Exploded View Of Forward Clutch Assembly
 Courtesy of NISSAN MOTOR CO., U.S.A.

Inspection

Check drive plate thickness. Check snap ring for wear, springs for weakness or broken coils, and spring retainer for warpage. Replace defective components as required.

Reassembly

1. Lubricate components with ATF. Install piston seal being careful not to damage seal during installation. Install piston in clutch drum without damaging or pinching seal. After installation, check piston for binding by rotating it by hand.
2. Place springs on top of piston. Install spring retainer. Compress spring retainer and install snap ring. Install drive and driven plates in alternating sequence. Install retainer plate and large snap ring.
3. Using a feeler gauge, measure clearance between end retainer plate and snap ring. See **Fig. 13** . See **FORWARD CLUTCH SPECIFICATIONS** .
4. If clearance is incorrect, replace retainer plate. See **FORWARD CLUTCH SPECIFICATIONS** . Mount clutch in oil pump housing. Apply compressed air to oil passage (in oil pump housing) to test clutch operation. See **Fig. 12** .

FORWARD CLUTCH SPECIFICATIONS

Application	Measurement In. (mm)
Drive Plate Thickness	

1990 Nissan Pulsar NX XE

1988-90 AUTOMATIC TRANSMISSIONS Diagnosis & Overhaul - RL3F01A

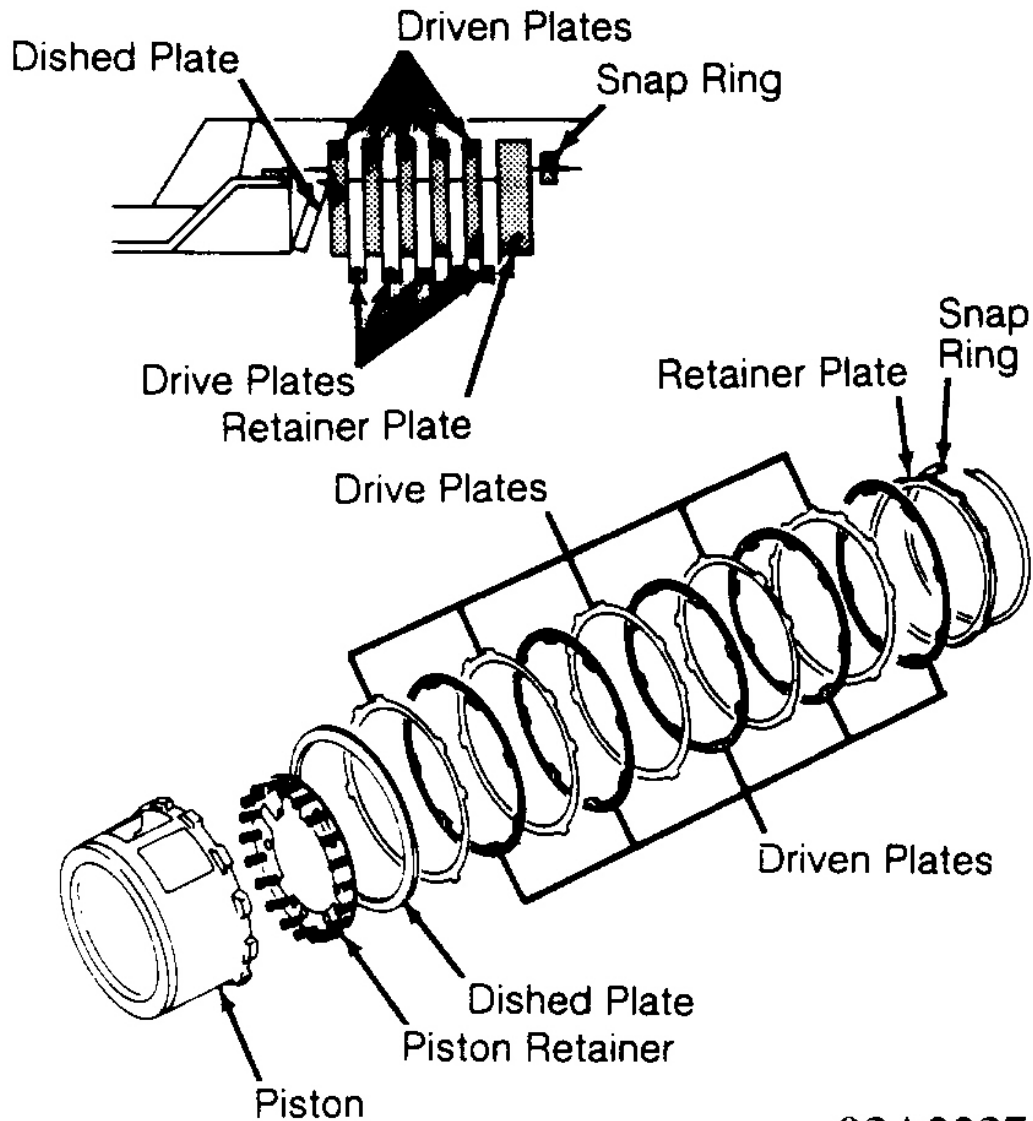
All Models	.067-.073 (1.70-1.85) Minimum .055 (1.40)
Retainer Plate-To-Snap Ring Standard Clearance	
All Models	.020-.031 (.50-.80)
Retainer Plate-To-Snap Ring Maximum Clearance	
1988 Pulsar	.061 (1.55)
1988 Sentra	.094 (2.40)
All Other Models	.063 (1.60)
Retainer Plate Thickness Available	
Except 1988 Sentra	.134 (3.40), .142 (3.60), .150 (3.80), .157 (4.00), .165 (4.20), .173 (4.40)
1988 Sentra	.142 (3.60), .150 (3.80), .157 (4.00), .165 (4.20), .173 (4.40), .181 (4.60)

LOW-REVERSE BRAKE**Disassembly**

Low-Reverse brake disassembly is performed in TRANSAXLE DISASSEMBLY. See **TRANSAXLE** .

Inspection

1. Check drive plate thickness. Plate thickness should be .075-.081 in. (1.90-2.05 mm). Replace drive plate (s) if thickness is less than .071 in. (1.80 mm).
2. Check snap ring for wear, springs for weakness or broken coils, and spring retainer for warpage. Replace defective components as required. Note layout, especially of retainer rings. See **Fig. 15** .



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Fig. 15: Exploded View Of Low-Reverse Brake Assembly

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

Reassembly

Reassembly of Low-Reverse brake is performed in TRANSAXLE REASSEMBLY. See **TRANSAXLE REASSEMBLY** .

BRAKE BAND & BAND SERVO**Disassembly**

Remove lock nut and washer from anchor pin. Remove anchor pin. Separate servo piston retainer from piston. Disassemble piston assembly and discard "O" rings. See **Fig. 16** .

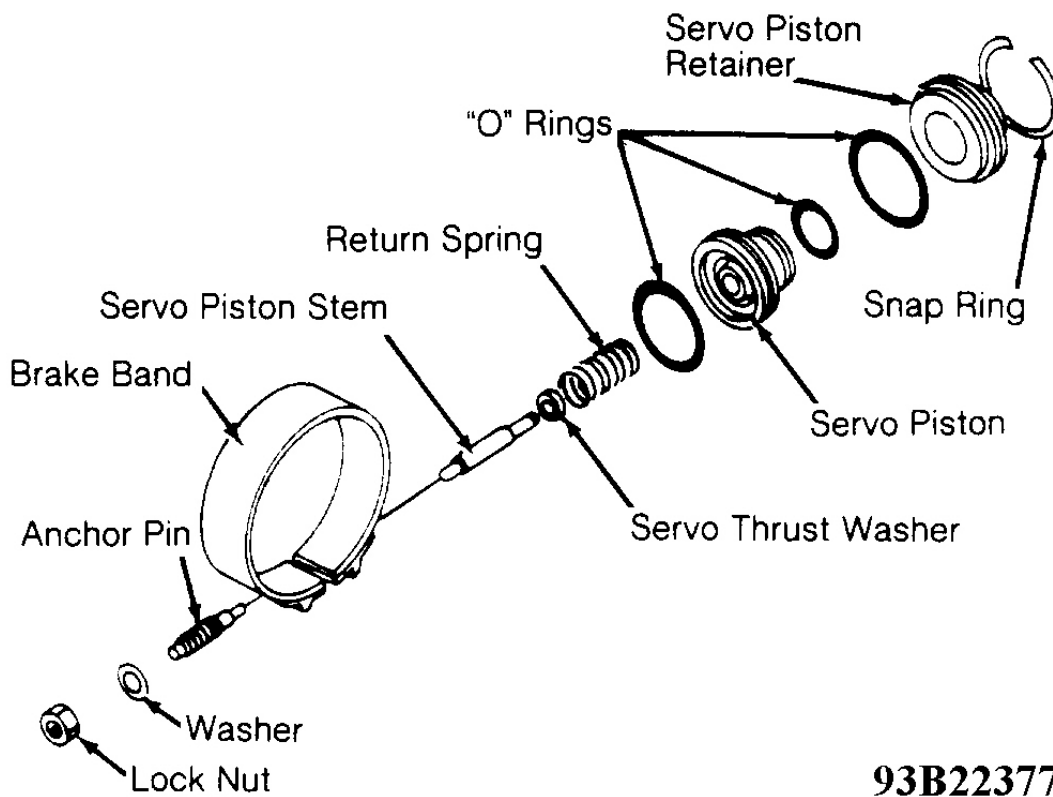


Fig. 16: Exploded View Of Brake Band & Band Servo Assembly
Courtesy of NISSAN MOTOR CO., U.S.A.

Inspection

Check brake band friction material for wear. Replace band if cracked, chipped, or burnt. Check band servo components for wear or damage and replace as necessary.

Reassembly

To assemble, reverse disassembly procedure. Install new "O" rings and ensure snap ring is properly seated.

PLANETARY CARRIER

Inspection

Measure clearance between planetary carrier and pinion washer. Clearance should be .008-.028 in. (.20-.70 mm). If clearance exceeds .032 in. (.80 mm) or if gears are worn or damaged, replace planetary carrier.

GOVERNOR SHAFT ASSEMBLY

Disassembly

1. Remove governor valve body bolts. Mount governor shaft assembly in a soft-jawed vise and drive out gear retaining pin. Remove drive gear.
2. Disassemble governor valve body, arranging components in order of disassembly. DO NOT interchange primary and secondary governor components. See **Fig. 17**.

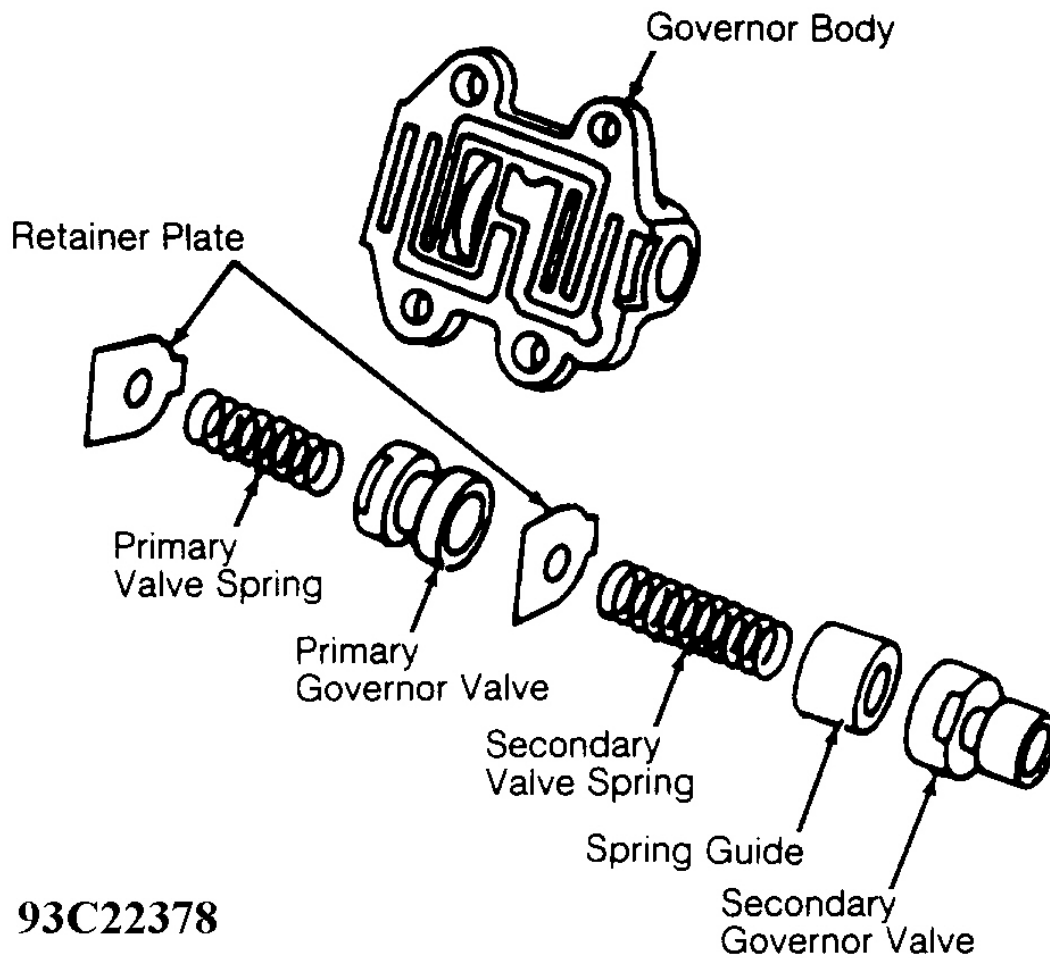


Fig. 17: Exploded View Of Governor Assembly
Courtesy of NISSAN MOTOR CO., U.S.A.

Inspection

Check governor valves for burns or scratches. Inspect springs for weakness or burning. Check spring free length. See **GOVERNOR VALVE SPRING**.

Reassembly

To assemble, reverse disassembly procedure. Make sure primary and secondary governor springs are properly installed.

GOVERNOR VALVE SPRING

Spring	Length In. (mm)
Primary Governor	
All Models	1.248 (31.7)
Secondary Governor	
Except 1988-89 Sentra	1.504 (38.2)
1988-89 Sentra	1.024 (26.0)

VALVE BODY**Disassembly**

1. Remove oil strainer and magnet (if still attached). Remove lower valve body and separator plate from upper valve body. DO NOT lose 6 steel check balls from upper valve body. See **Fig. 18** . Using wire, push out retaining pins from 2-3 shift valve side of lower valve body.
2. Remove valve body plugs. Remove 3-2 downshift valve, spring, and 2-3 shift valve and spring. Remove 1-2 shift valve, spring, 1-2 control valve, and spring. Place valves and, springs in order of disassembly for reassembly reference.
3. Using wire, push out retaining pins from 3-2 timing valve side of lower valve body. See **Fig. 19** . Remove valve body plugs. Remove fail-safe valve, detent valve, throttle valve, throttle modulator valve, and spring guide.
4. Remove pressure modifier, 1st reducing valve, and top reducing valve. Remove 3-2 timing valve and springs. Using a small screwdriver, depress spring under back-up valve retaining plate. Remove retaining plate, spring, and back-up valve.
5. Remove retaining pin, plug, spring, and pressure regulator valve. Disassemble lock-up valve body. Remove speed cut valve retainer, spring, and valve. Remove lock-up control valve retainer, spring, and valve. Remove lock-up release solenoid (if, equipped).

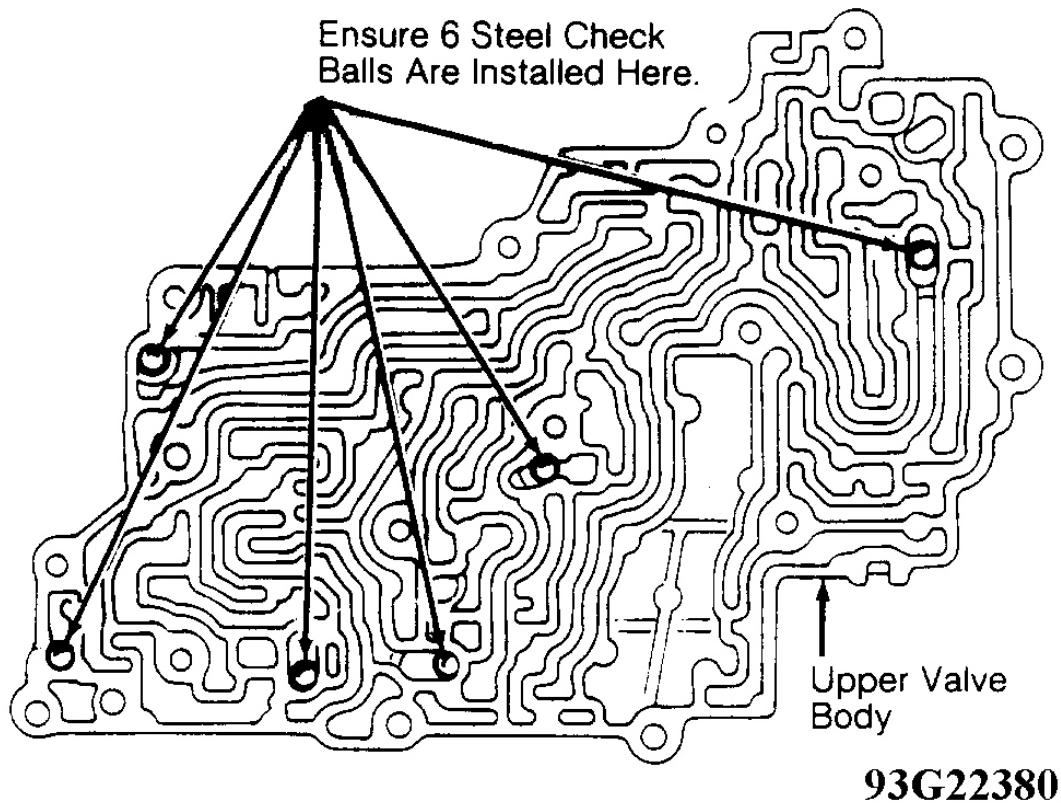


Fig. 18: Locating Upper Valve Body Check Balls
Courtesy of NISSAN MOTOR CO., U.S.A.

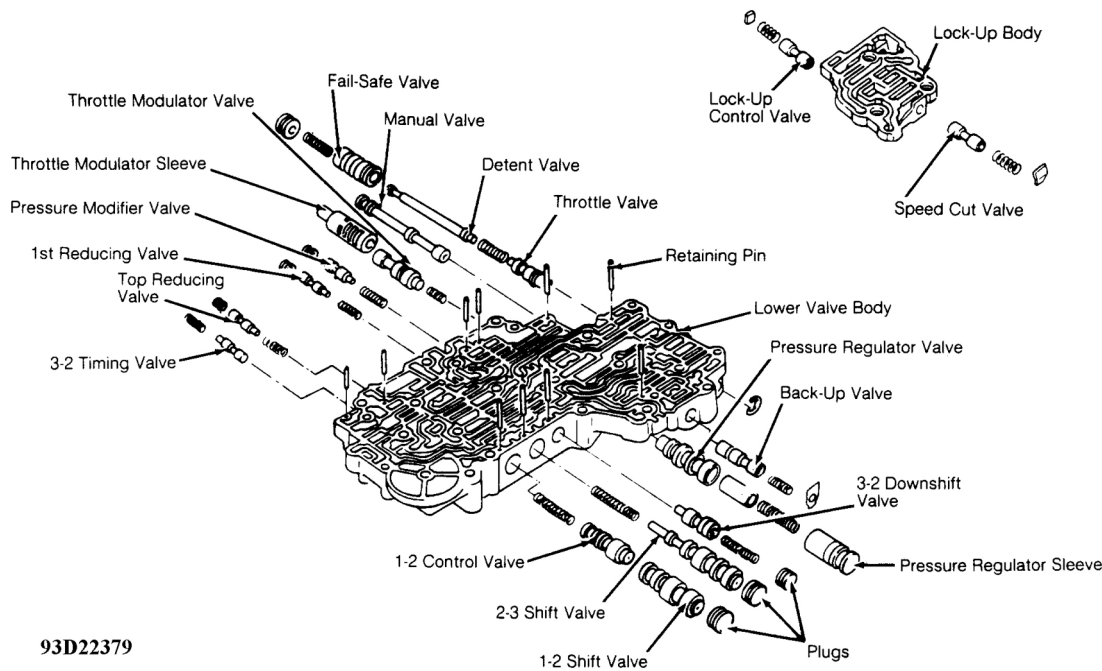


Fig. 19: Exploded View Of Lower Control Valve Body Assembly
 Courtesy of NISSAN MOTOR CO., U.S.A.

Inspection

1. Clean all valves in alcohol or lacquer thinner. Dip valve body in carburetor cleaner or lacquer thinner. DO NOT leave valve body in cleaner longer than 5 minutes. Rinse parts thoroughly and blow dry. Test valve springs for weakness.
2. Use only crocus cloth to remove burns or heavy varnish deposits. DO NOT use emery cloth as it is too coarse and can scratch valves and valve bores. Replace valves if deposits cannot be removed.
3. Check valves for rounded edges. If edges are not sharp, replace valve(s). Check oil strainer for general condition. Check separator plate for scratches or damage. Separator plate must not be scratched or damaged. Replace components as needed.
4. Inspect upper and lower valve body oil passages for varnish deposits, scratches, or other damage. Check valve body and bolts for stripped threads. Repair any damaged thread holes. Check valve spring free length. See **VALVE BODY SPRING** . Replace defective components as required.

NOTE: If clearance between valves and valve bores exceeds .001 in. (.03 mm), replace entire valve body assembly.

Reassembly

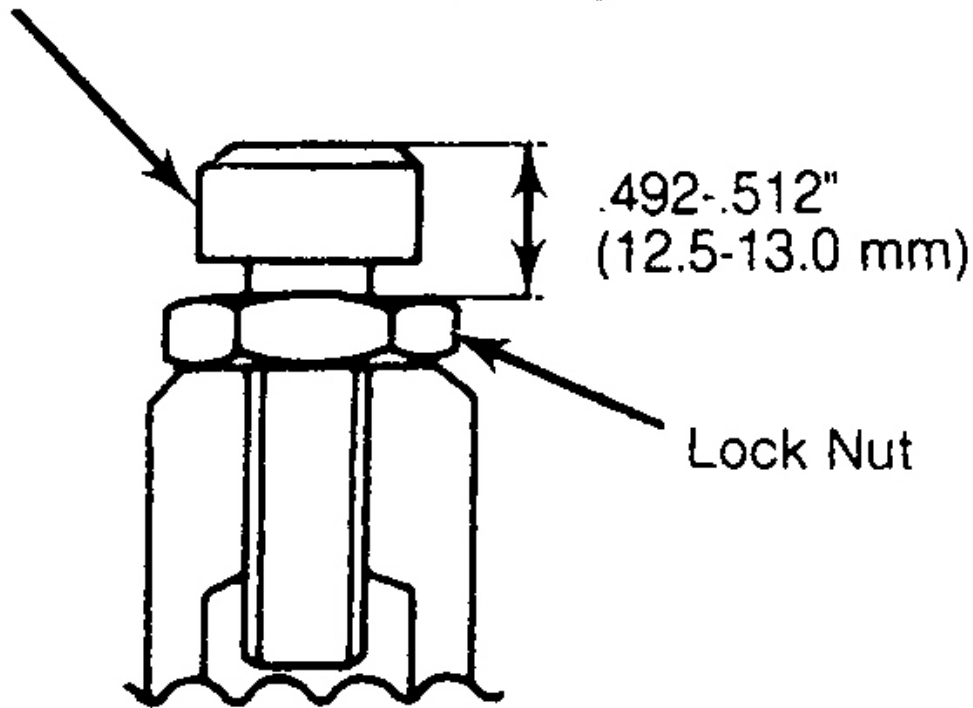
1. To assemble, reverse disassembly procedure. Install 6 steel check balls in upper valve body. See **Fig. 18** . Assemble separator plate and valve bodies. Install reamer bolts first and then install and tighten remaining bolts.
2. Install oil strainer and magnet. Loosen lock nut on shift point fine adjustment screw and turn screw to

specification. See **Fig. 20** .

VALVE BODY SPRING

Valve Spring	Free Length In. (mm)
Back-Up Valve	.740 (18.8)
Fail-Safe Valve	.909 (23.1)
Lock-Up Control Valve	.811 (20.6)
Pressure Modifier Valve	.996 (25.3)
Pressure Regulator Valve	1.827 (46.4)
Speed Cut Valve	
1988-90 Pulsar	.776 (19.7)
1988-89 Sentra	.906 (23.0)
1990 Sentra	.878 (22.3)
Throttle Modulator Valve	
1988-90 Pulsar & 1990 Sentra	1.102 (28.0)
1988-89 Sentra	.886 (22.5)
Throttle Valve	
1988-90 Pulsar	1.315 (33.4)
1988-89 Sentra	1.358 (34.5)
1990 Sentra	1.327 (33.7)
Top Reducing Valve	
1990 Sentra	.858 (21.8)
All Other Models	.886 (22.5)
1st Reducing Valve	
1988-90 Pulsar	.878 (22.3)
1988-90 Sentra	.843 (21.4)
1-2 Shift Valve	1.531 (38.9)
2-3 Shift Valve	
1988-90 Pulsar & 1990 Sentra	1.594 (40.5)
1988-89 Sentra	1.799 (45.7)
3-2 Downshift Valve	
1988-90 Pulsar & 1990 Sentra	1.472 (37.4)
1988 Sentra	1.555 (39.5)
1989 Sentra	1.799 (45.7)
3-2 Timing Valve	.811 (20.6)

Shift Point Fine Adjusting Screw



G00279797

Fig. 20: Checking Shift Point Fine Adjusting Screw Position
Courtesy of NISSAN MOTOR CO., U.S.A.

OUTPUT SHAFT & IDLER ARM

Disassembly

Remove inner races from output shaft. Remove outer races from idler gear. Check all gears for wear or damage. Check for bent shaft or splines for damage. Replace defective parts as necessary.

Reassembly

To assemble, reverse disassembly procedure.

TRANSAXLE CASE

Disassembly

Remove bearing housing from side of transaxle case. Remove tapered roller bearing inner race. Remove oil seal and "O" ring.

Reassembly

To assemble, reverse disassembly procedure. Apply gear oil to oil seal and "O" ring. Press oil seal and "O" ring into place. Install tapered roller bearing and bearing housing.

DIFFERENTIAL ASSEMBLY

Disassembly

Remove ring gear. Drive out pinion shaft lock pin. Remove pinion shaft, pinion gears, pinion thrust washers, side gears and side gear thrust washer. Remove side bearings, speedometer drive gear stopper and speedometer drive gear. See **Fig. 21**

Inspection

Check mating surfaces of differential case, side gears and pinion gears. Replace as required.

Reassembly

Reassembly is reverse of disassembly. Place Tool (KV3810590) onto side gear. Mount dial indicator on tool. Move side gear up and down for measurement. See **Fig. 22**. Clearance between side gears and differential case is .012 in. (.30 mm) or less. Check both side gears. Side pinion thrust washers are available in 4 sizes of .028-.032 in. (.70-.81 mm), .032-.034 in. (.81-.86 mm), .034-.036 in. (.86-.91 mm) and .036-.038 in. (.91-.96 mm).

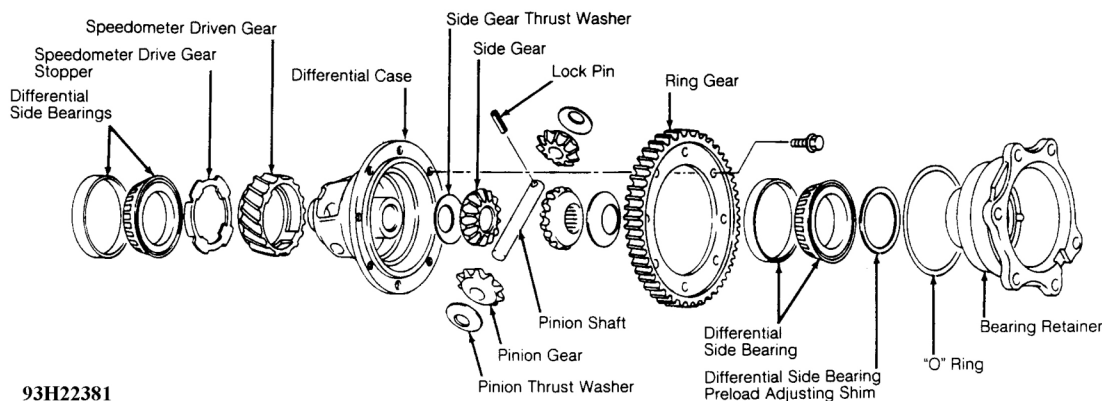


Fig. 21: Exploded View Of Differential Assembly
Courtesy of NISSAN MOTOR CO., U.S.A.

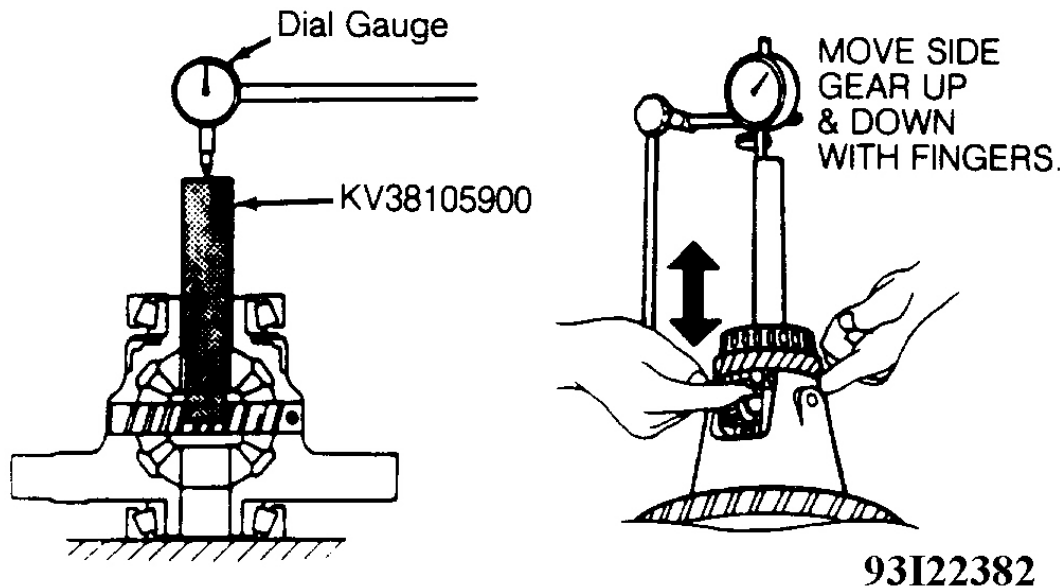


Fig. 22: Checking Pinion Clearance
 Courtesy of NISSAN MOTOR CO., U.S.A.

TRANSAXLE ADJUSTMENTS

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

OUTPUT SHAFT BEARING PRELOAD

1. Apply ATF to bearing outer race. Press bearing outer race into transaxle case. Install 2-3 shims in front cover and press bearing outer race into front cover.
2. Install gasket and front cover on torque converter housing. Tighten front cover bolts to 10-13 ft. lbs. (14-18 N.m). Using Adapter (ST3127S000), turn output shaft 10 times to seat bearings. Ensure output shaft turns freely.
3. Using Adapter (ST3127S000) and an INCH lbs. torque wrench, measure output shaft bearing preload. Turning torque should be 3-4 INCH lbs. (.35-.47 N.m). If output shaft bearing preload is incorrect, replace shims in front cover. See OUTPUT SHAFT SHIM SPECIFICATIONS.

OUTPUT SHAFT SHIM SPECIFICATIONS

Thickness In. (mm)
.004 (.11)
.005 (.13)
.006 (.15)
.007 (.17)

.008 (.19)

.012 (.30)

.016 (.40)

.024 (.60)

.028 (.70)

.032 (.80)

.035 (.90)

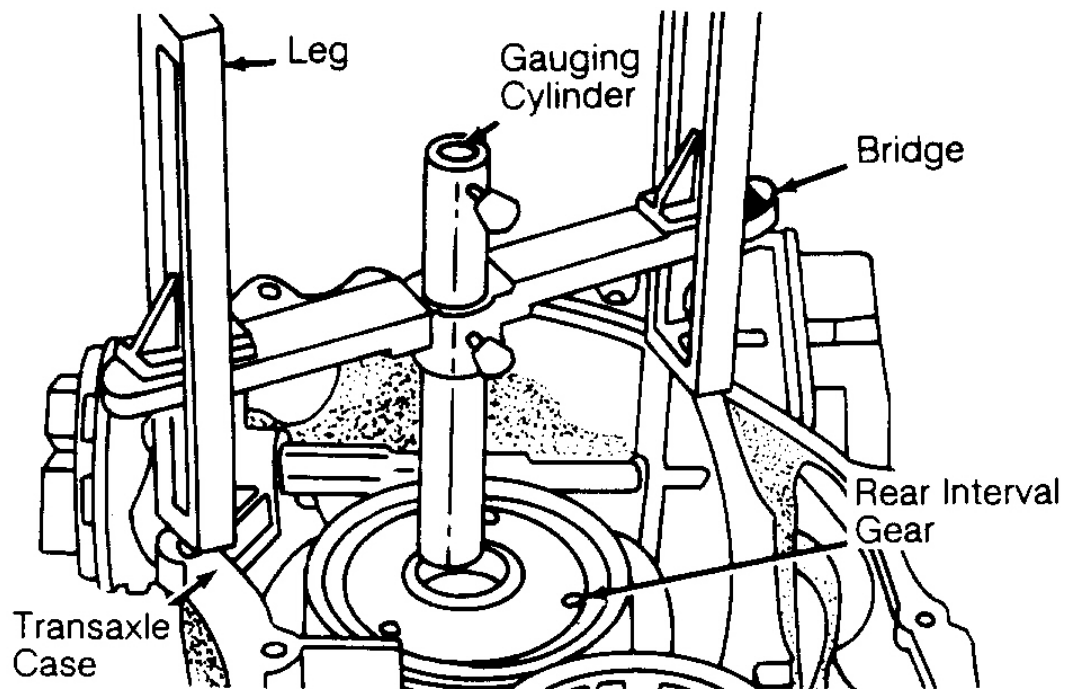
.039 (1.0)

IDLER GEAR PRELOAD

1. Press bearing outer races onto idler gear. Install bearing inner races and idler shaft on idler gear. Install idler gear assembly and output shaft assembly in torque converter housing.
2. Clean threads of torque converter housing bolts with solvent. Install gasket and front cover on torque converter housing. Apply locking compound to bolt threads. Install and tighten bolts to 10-13 ft. lbs. (14-18 N.m).
3. Install lock washer and idler gear bolt. Temporarily tighten idler gear bolt to 19-27 ft. lbs. (26-37 N.m). Ensure lock washer is aligned with groove in torque converter housing.
4. Turn output shaft 5 complete revolutions. Loosen idler gear bolt and then tighten to 26-35 INCH lbs. (3-4 N.m). Bend lock washer toward idler gear bolt. Turn output shaft to ensure shaft operates freely.

OUTPUT SHAFT END PLAY

1. Assemble Bridge (J-34291-1) Legs (J-34291-2) and Gauging Cylinder (J-34291-5). Place gauge assembly with short leg down on transmission case. See **Fig. 23**. Release thumb screws to allow gauging cylinder to rest on center machined surface of rear internal gear and tighten thumb screws.
2. Insert output shaft end play Gauging Plunger (J-34291-6) into gauging cylinder. Tighten plunger set screw. Remove output shaft end play adjusting shim at end of output shaft. Place bridge, gauging cylinder and gauging plunger onto machined surface of converter housing. Loosen plunger thumb screw to allow plunger to set on inner bearing race of output shaft and tighten thumb screw. See **Fig. 24**. Use feeler gauge to measure gap between gauging cylinder and shoulder of gauging plunger. End play should be .010-.022 in. (.25-.55 mm)). If not correct, 8 shims are available in sizes of .012-.067 in. (.30-1.70 mm) in .008 (.20 mm) increments.



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Fig. 23: Measuring Rear Internal Gear Depth
Courtesy of NISSAN MOTOR CO., U.S.A.

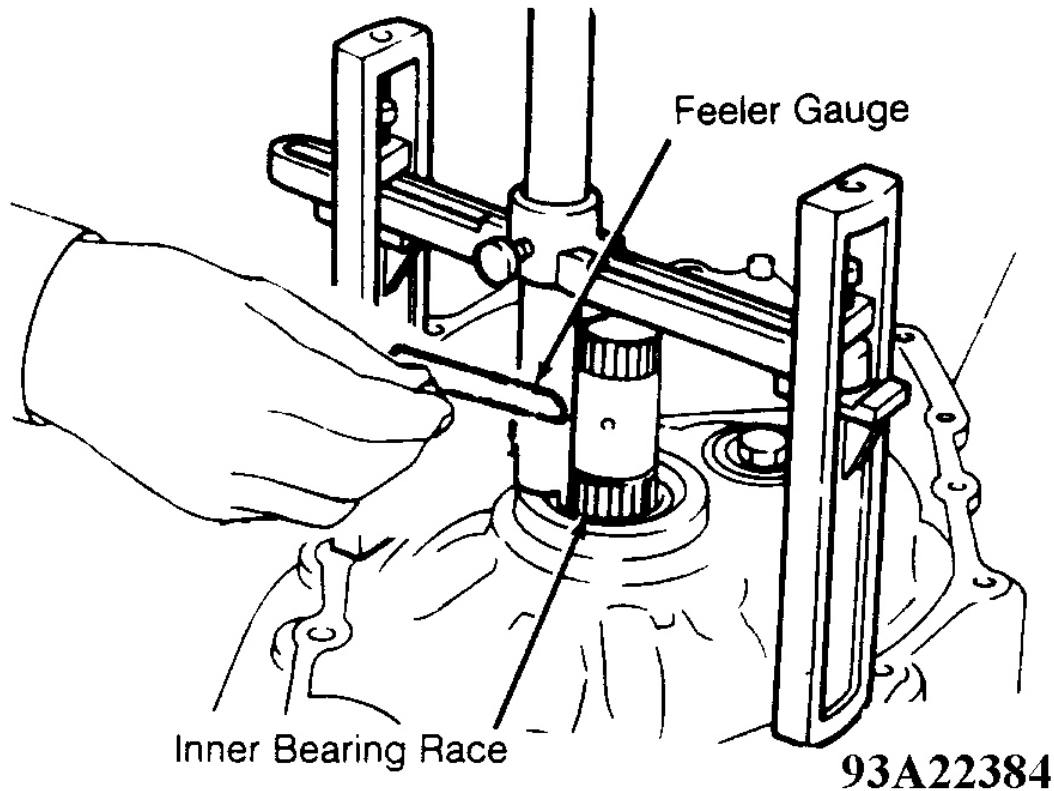


Fig. 24: Measuring Inner Bearing Race Height
 Courtesy of NISSAN MOTOR CO., U.S.A.

FINAL DRIVE ASSEMBLY BEARING PRELOAD

1. Remove left side bearing inner race and shim(s) from bearing retainer. Place Adapter (J-33200-83), left side bearing inner race, and final drive assembly (differential) on transaxle case.
2. Install gasket on transaxle case. Position 4 Spacers (J-33200) evenly around transaxle case. See **Fig. 25**. Install torque converter housing and tighten bolts to 10 ft. lbs. (14 N.m).
3. Rotate final drive assembly a few times to ensure proper seating. Using a feeler gauge, measure gap between adapter. Feeler gauge reading equals thickness of shim(s) to be installed. Shims are available in thicknesses of .017-.036 in. (.44-.92 mm) in .002 in. (.04) mm increments.

NOTE: If shims are available, find the largest shim that can be placed into adapter gap. The largest shim that fits gap will be the correct shim size to use.

4. With shim size selected remove torque converter housing, final drive assembly, bearing race, and adapter. Install selected shim(s) and left side bearing inner race in bearing retainer. Complete transaxle reassembly.
5. Insert Preload Adapter (J-33201) on torque converter side of final drive assembly. Turn final drive

assembly 10 times. Using adapter and an INCH lbs. torque wrench, measure final drive assembly bearing preload.

6. Final drive assembly turning torque should be 53-65 INCH lbs. (6- 7.4 N.m). Variation in turning torque should be within 9 INCH lbs. (1 N.m) of specification. If turning torque is incorrect, disassemble transaxle and readjust final drive assembly bearing preload.

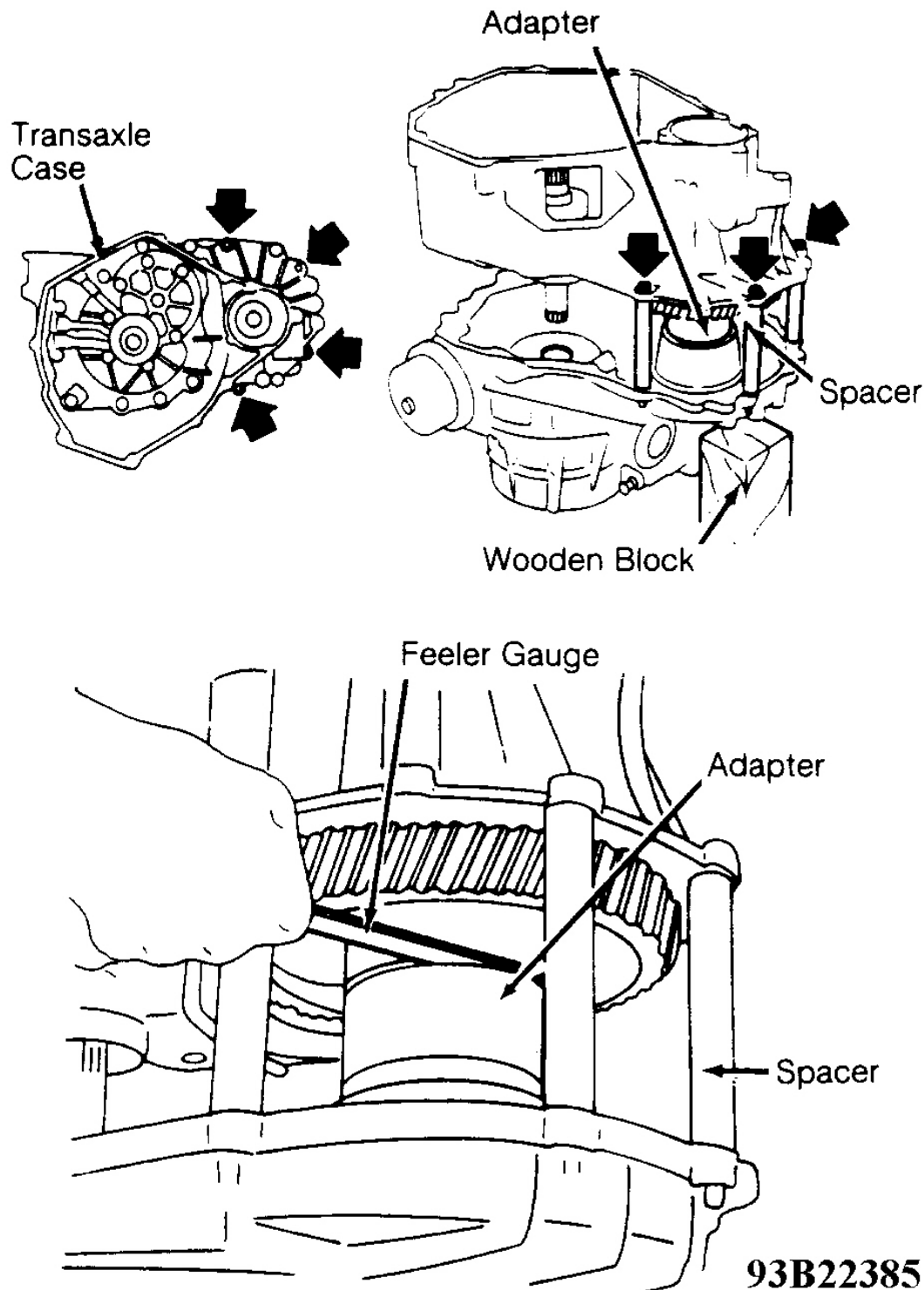


Fig. 25: Measuring Final Drive Assembly Bearing Preload
Courtesy of NISSAN MOTOR CO., U.S.A.

TRANSAXLE REASSEMBLY

1. Apply ATF or petroleum jelly to outer diameter of oil pump assembly. Install oil pump assembly, nylon washer, and thrust bearing. Ensure bolt holes (5) on oil pump and transaxle case are aligned.
2. Apply ATF to low-reverse brake piston seal. Install low-reverse piston by gradually tapping piston into place, being careful, not to damage piston seal. Install low-reverse brake piston retainer. Check piston for leakage and operation by applying air pressure to low-reverse brake oil passage. See **Fig. 8**.
3. Install brake band. Apply ATF fluid to servo piston "O" ring. Using a small "C" clamp, install servo piston, return spring, and snap ring. Apply ATF to center seals of oil pump housing and plastic thrust washer. Install high-reverse clutch.
4. Install parking pawl, return spring and parking pawl shaft. Tighten piston retainer bolts to 62-80 INCH lbs. (7-9 N.m). Apply compressed air to oil passage to test operation of brake band. See **Fig. 6**.
5. Apply ATF to bearing race and thrust bearing. Install forward clutch, thrust washer, front internal gear, thrust bearing, bearing race, front carrier, bearing race, thrust bearing and sun gear as an assembly.
6. Install low-reverse brake dished plate, retainer plate(s), drive and driven plates, retainer plate, and snap ring. After low-reverse brake has been completely assembled, measure clearance between snap ring and retainer plate.
7. Clearance should be .075-.087 in. (1.90-2.20 mm). Maximum allowable limit is .15 in. (3.8 mm) for 1988 Sentra. For all other models, clearance is .071-.087 in. (1.80-2.20 mm) and maximum of .126 in. (3.20 mm). If clearance is incorrect, replace retainer plate. Retainer plate is available in thicknesses of .142-.173 in. (3.60-4.40 mm) in .0008 in. (.20 mm) increments.
8. Install bearing race on connecting shell. Install one-way clutch assembly to rear carrier. Apply petroleum jelly to thrust washer and install thrust washer on rear carrier.
9. Install one-way clutch and rear carrier into transaxle case by turning one-way clutch assembly clockwise. Ensure projection on clutch assembly faces upward. See **Fig. 26**.
10. Install one-way clutch assembly snap ring. Ensure bent end of snap ring DOES NOT interfere with parking pawl. Apply petroleum jelly to bearing race and attach bearing race to rear internal gear.
11. Install rear internal gear, governor shaft assembly, parking pawl, return spring, and parking pawl shaft. Install and tighten governor shaft assembly lock bolt to 30-62 INCH lbs. (3-4-7 N.m).
12. Install seal bushing. Always install seal bushing to prevent sun gear and output shaft from jamming. Adjust output shaft bearing and idler gear preload. See **TRANSAXLE ADJUSTMENTS**.
13. Adjust output shaft end play. Adjust final drive assembly (differential) bearing preload. See **TRANSAXLE ADJUSTMENTS**. After adjustments, install final drive assembly on transaxle case.
14. Apply petroleum jelly to selected output shaft shim and attach shim to output shaft. Place gasket on transaxle case, and install torque converter housing on transaxle case.
15. Turn rear internal gear (parking gear) clockwise with screwdriver while supporting torque converter housing assembly by hand, until output shaft splines, front carrier, and rear internal gear are engaged properly.
16. Apply thread sealant to lower torque converter housing bolts. Install and tighten torque converter housing bolts. Apply petroleum jelly to accumulator piston oil seals. Install return spring and accumulator piston in transaxle case.
17. Adjust brake band by first loosening brake band anchor pin lock nut. Tighten anchor pin to 35-53 INCH lbs. (4-6 N.m). Back off anchor pin $2 \frac{1}{2}$ turns. Tighten anchor pin lock nut to 12-16 ft. lbs. (16-22 N.m)

while holding anchor pin stationary. See **Fig. 16**.

18. Install parking actuator support and throttle cable to transaxle case. Tighten throttle cable nut and bend lock tab. Apply petroleum jelly to manual shaft.
19. Install throttle lever, manual plate, manual shaft, selector range lever, and parking rod assembly in transaxle case. Secure components with retaining pin and tighten manual shaft nuts.

NOTE: **Ensure retaining pin cut-out faces transaxle case. Retaining pin must also protrude .118 in. (3.0 mm) above transaxle case surface.**

20. Insert manual valve in valve body and install valve body in transaxle case. Install particle magnet in oil pan. Ensure manual plate engages cut-out in manual valve and that throttle lever engages cut-out in detent valve.
21. Check alignment and operation of manual lever and parking pawl engagement. Ensure all valve body bolts are installed. Install oil pan gasket, oil pan, and oil pan guard.
22. Install oil seal, governor cap, and secure with snap ring. Ensure governor cap cut-out engages protrusion on transaxle case. Install "O" ring on input shaft and install with "O" ring end towards torque converter. Install oil pump shaft. Ensure that concave portion of oil pump shaft faces inward.
23. Carefully inspect torque converter for wear or damage. Check torque converter hub for grooves caused by hardened seals. Lubricate oil pump, oil seal and converter neck. Fill torque converter with 2.1 qts. (2.0L) of automatic transmission fluid.
24. Install torque converter, being careful not to damage front cover oil seal. Apply thread sealant to plug and install. Install inhibitor switch on side of transaxle case and adjust. See **INHIBITOR SWITCH ADJUSTMENT**. Ensure manual lever operates smoothly.

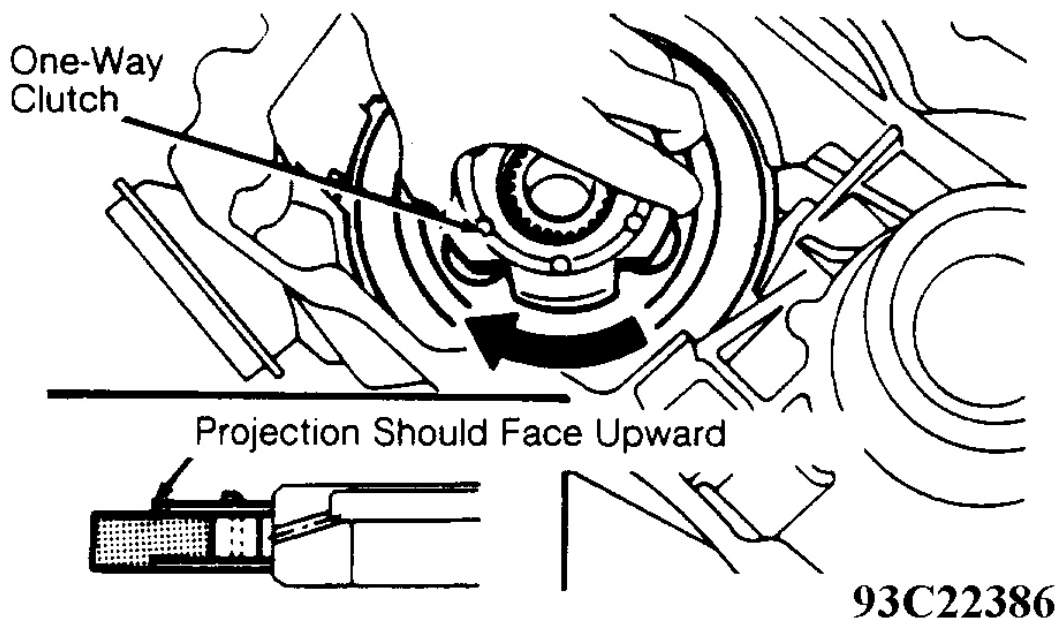


Fig. 26: Installing One-Way Clutch Assembly
 Courtesy of NISSAN MOTOR CO., U.S.A.

SPECIFICATIONS

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Anchor Pin Lock Nut	12-16 (16-22)
Bearing Retainer Bolts	14-18 (19-24)
Front Cover Bolts	10-13 (14-18)
Idler Gear Lock Nut	19-27 (26-36)
Manual Shaft Nuts	23-31 (31-42)
Ring Gear-To-Differential Case	55-65 (74-88)
Torque Converter Housing Bolts	12-16 (16-22)
INCH Lbs. (N.m)	
Control Cable Nut	71-97 (8.0-11.0)
Governor Shaft Retainer Bolt	30-62 (3.4-7.0)
Governor Valve Body Bolts	44-62 (5.0-7.0)
Inhibitor Switch	18-22 (2.0-2.5)
Low-Reverse Brake Piston Retainer Bolts	62-80 (7.0-9.0)
Oil Pan Bolts	44-62 (5.0-7.0)
Oil Strainer Bolts	89-106 (10.0-12.0)
Test Plugs	44-89 (5.0-10.0)
Throttle Cable Nut	44-62 (5.0-7.0)
Valve Body Bolts	62-80 (7.0-9.0)
Upper-To-Lower Valve Body	62-80 (7.0-9.0)