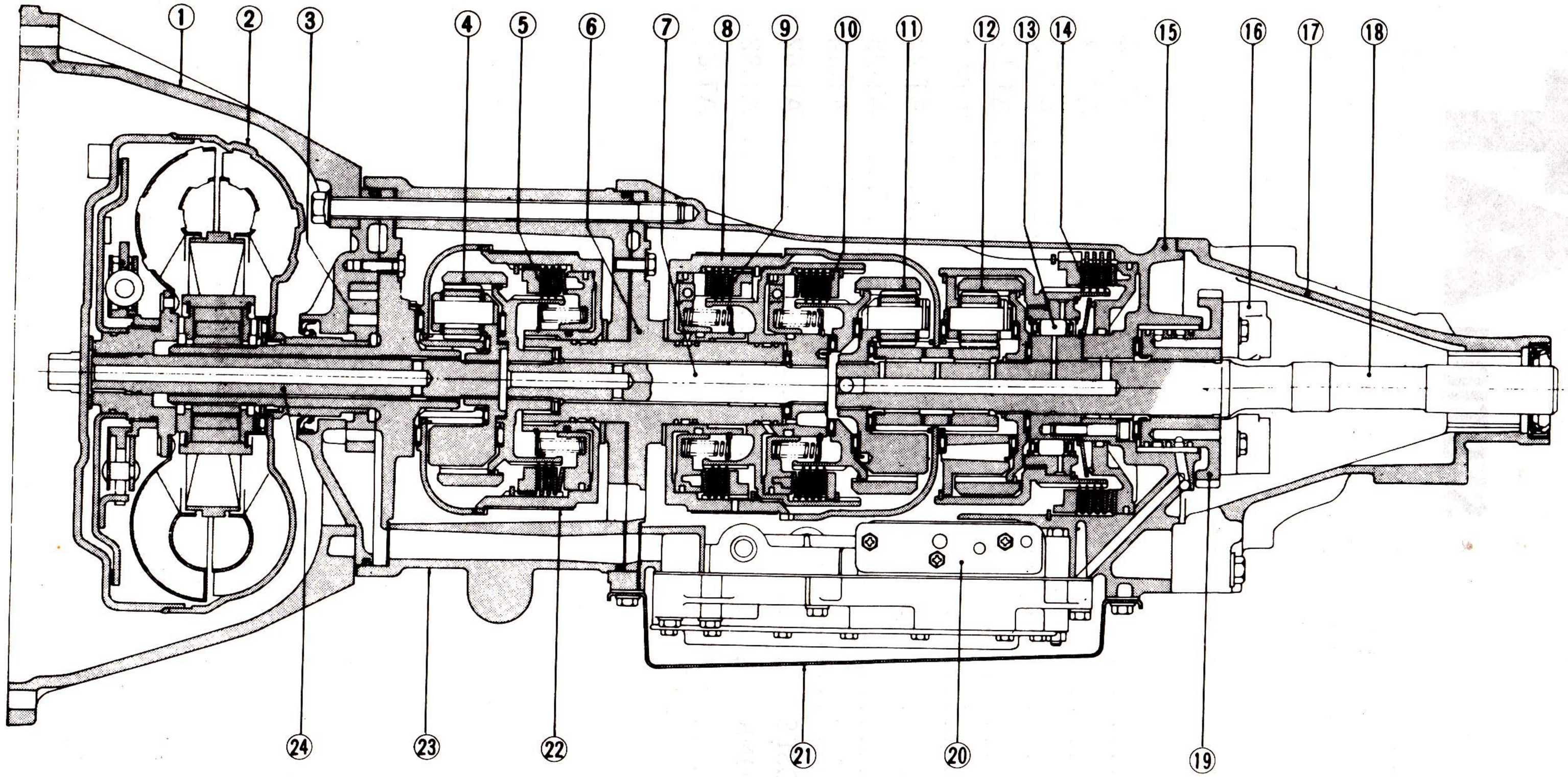



1 Converter housing
2 Torque converter
3 Oil pump assembly
4 O.D. planetary gear
5 Direct clutch
6 Drum support
7 Intermediate shaft
8 2nd band brake
9 High-reverse clutch (Front)
10 Forward clutch (Rear)
11 Front planetary gear
12 Rear planetary gear
13 One-way clutch
14 Low & reverse clutch
15 Transmission case
16 Governor valve assembly
17 Rear extension
18 Output shaft
19 Oil distributor
20 Control valve assembly
21 Oil pan
22 O.D. band brake
23 O.D. case
24 Input shaft

# GENERAL SERVICE NOTICE

## Repair Notes

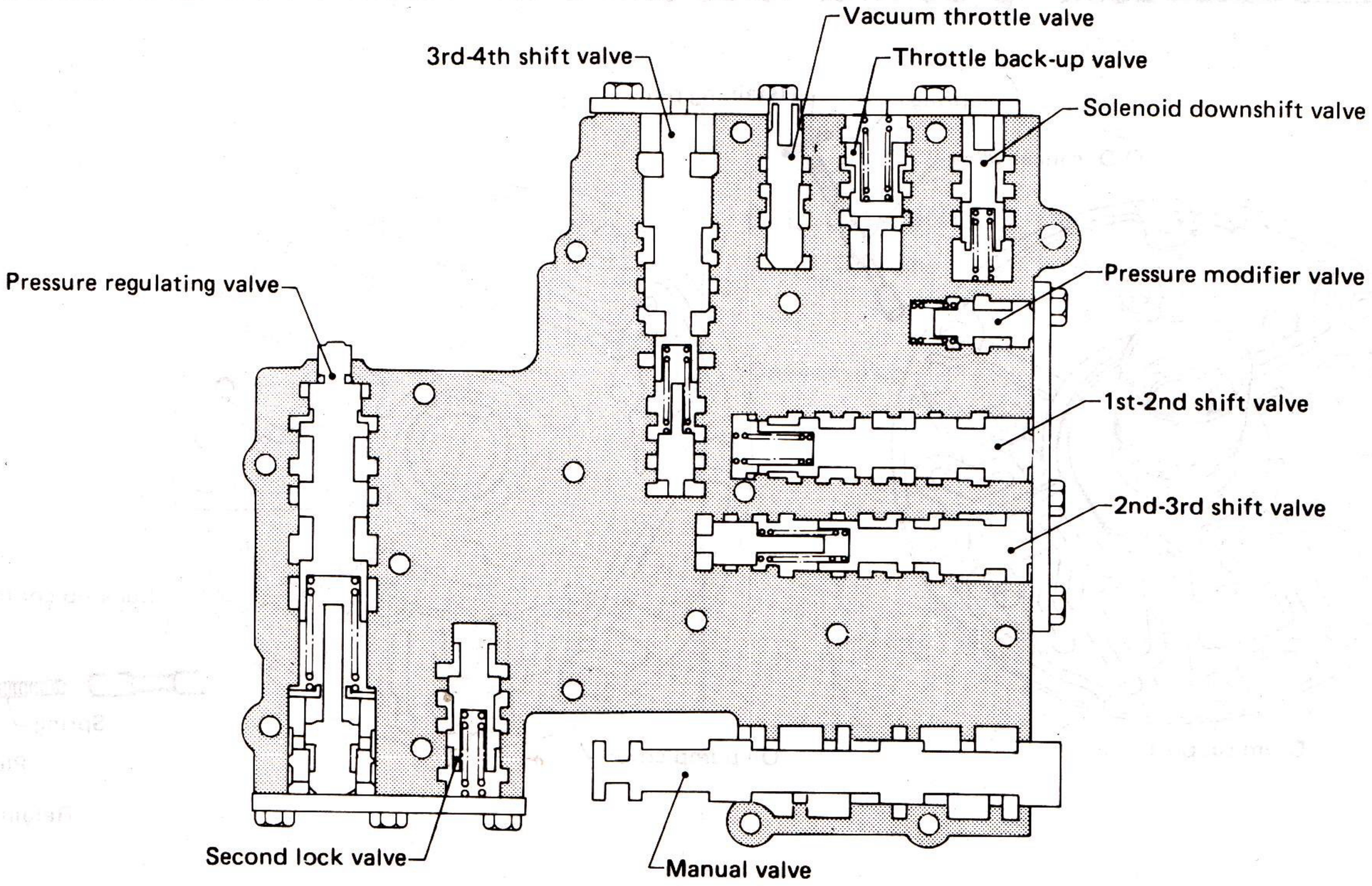
- Before proceeding with disassembly, thoroughly clean the outside of the transmission. It is important to prevent the internal parts of the transmission from becoming contaminated by dirt or other foreign matter.
- Disassembly should be done in a clean work area.
- Use a nylon cloth or paper towel for wiping parts clean. Common shop rags can leave lint that might interfere with the transmission's operation.
- When disassembling parts, be sure to place them in order in parts rack so they can be put back in the unit in their proper positions.
- All parts should be carefully cleaned with a general purpose, non-flammable solvent before inspection or reassembly.
- Gaskets, seals, and O-rings should be replaced. It is also very important to perform functional tests whenever it is designated.
- The valve body contains many precision parts and requires extreme care when parts are removed and serviced. Place removed parts on a parts rack so they can be put back in the valve body in the same positions and sequences. Care will also prevent springs and small parts from becoming scattered or lost.
- Before assembly, apply a coat of recommended A.T.F. to all parts. Vaseline may be applied to O-rings and seals. Do not use any grease.
- Care should be taken to avoid damaging O-rings, seals and gaskets when assembling.

Abbreviations used throughout this section stand for the following:

- A.T.F. ..... Automatic transmission fluid
- $D_1$ ..... Drive range 1st gear
- $D_2$ ..... Drive range 2nd gear
- $D_3$ ..... Drive range 3rd gear
- $D_4$ ..... Drive range 4th gear
- O.D. ..... Overdrive
- $1_2$ ..... 1 range 2nd gear
- $1_1$ ..... 1 range 1st gear

## Control Valve

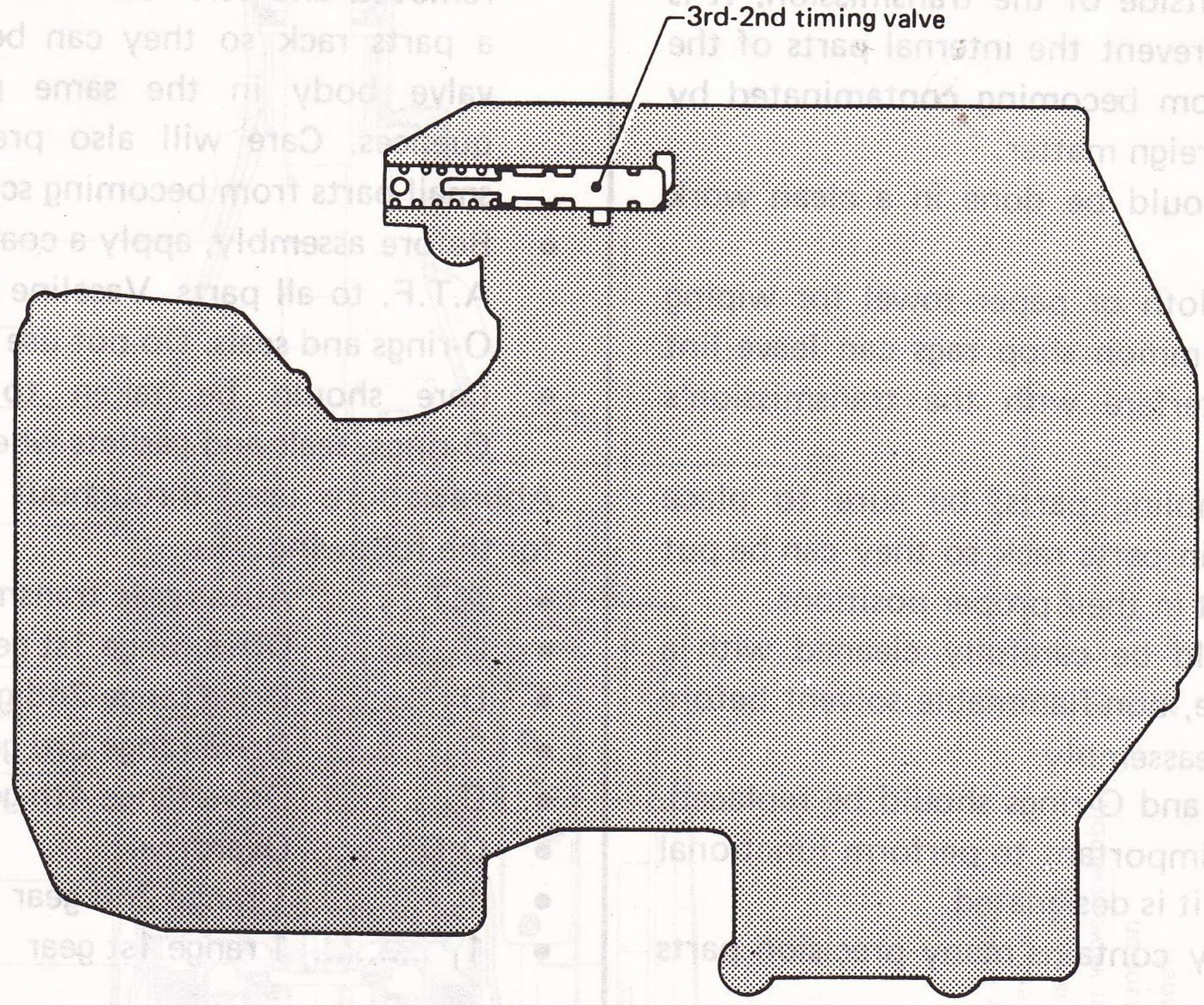
### CONTROL VALVE UPPER BODY




SAT742

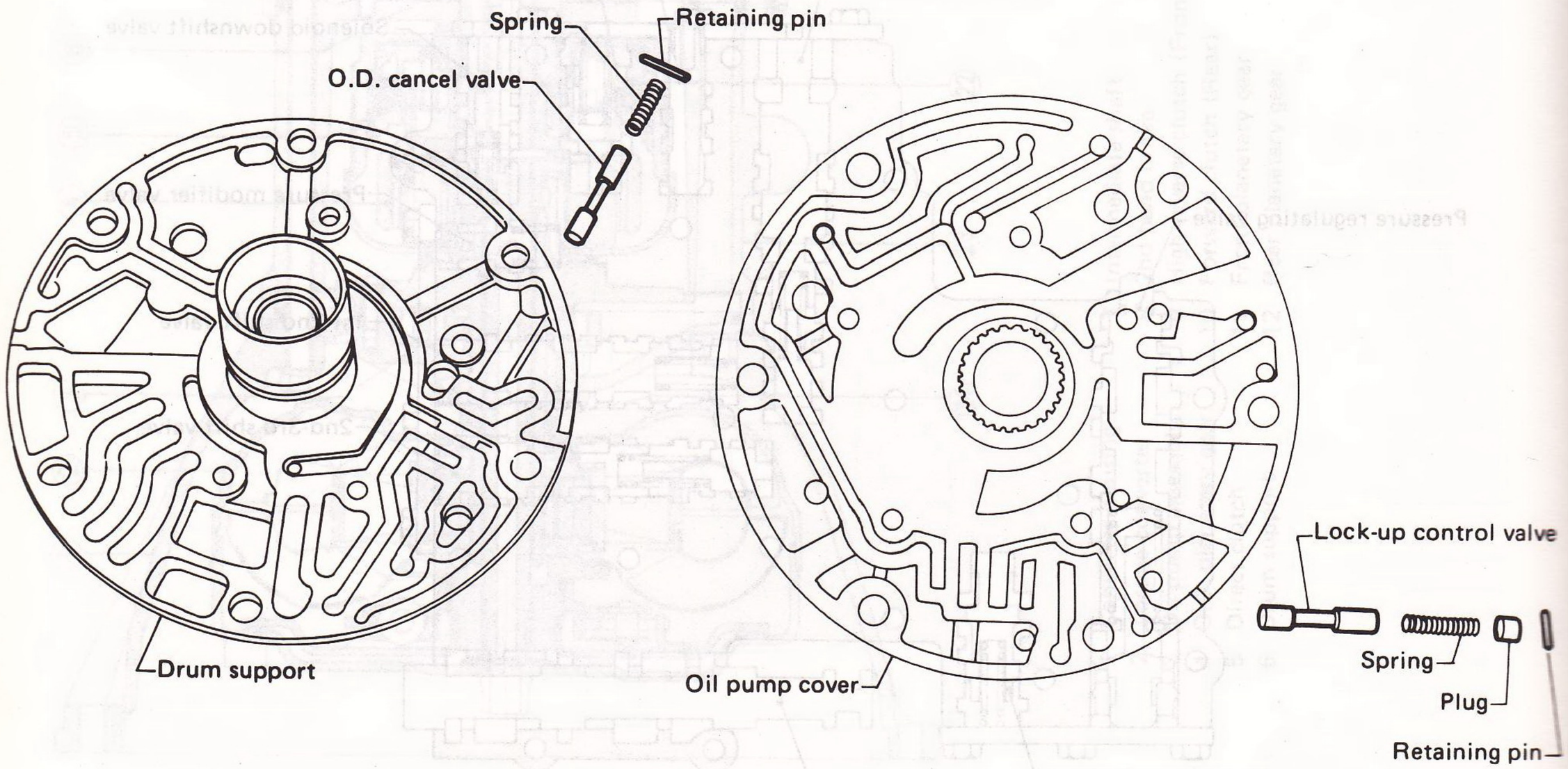
## Control Valve (Cont'd)

### CONTROL VALVE LOWER BODY




SAT7

### Lock-up Control Valve and O.D. Cancel Valve




SAT498

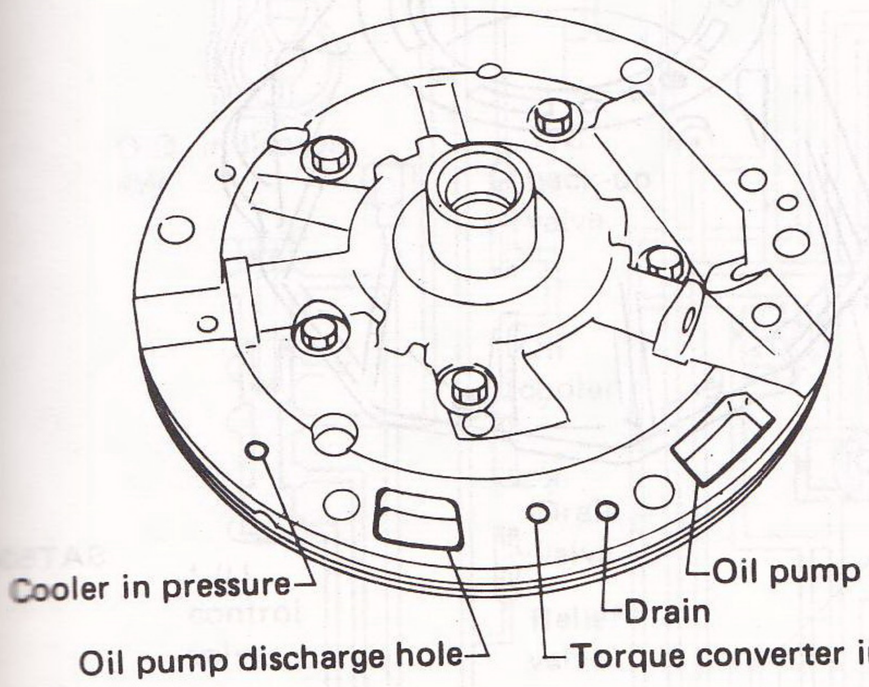
# GENERAL SERVICE NOTICE

## Oil Channel

Oil channels which connect components are located in the areas shown below.

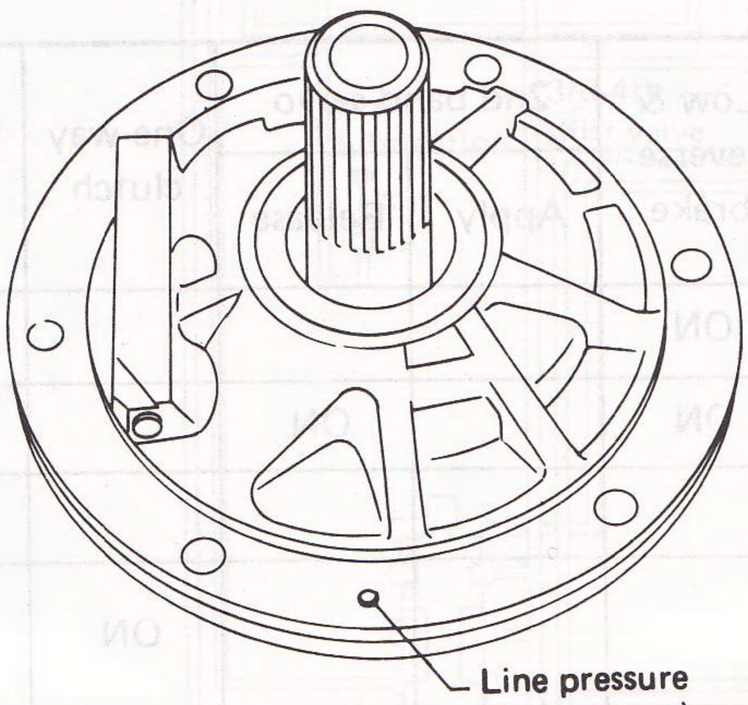
### OIL CHANNELS IN OIL PUMP

**Oil pump cover side**




SAT499

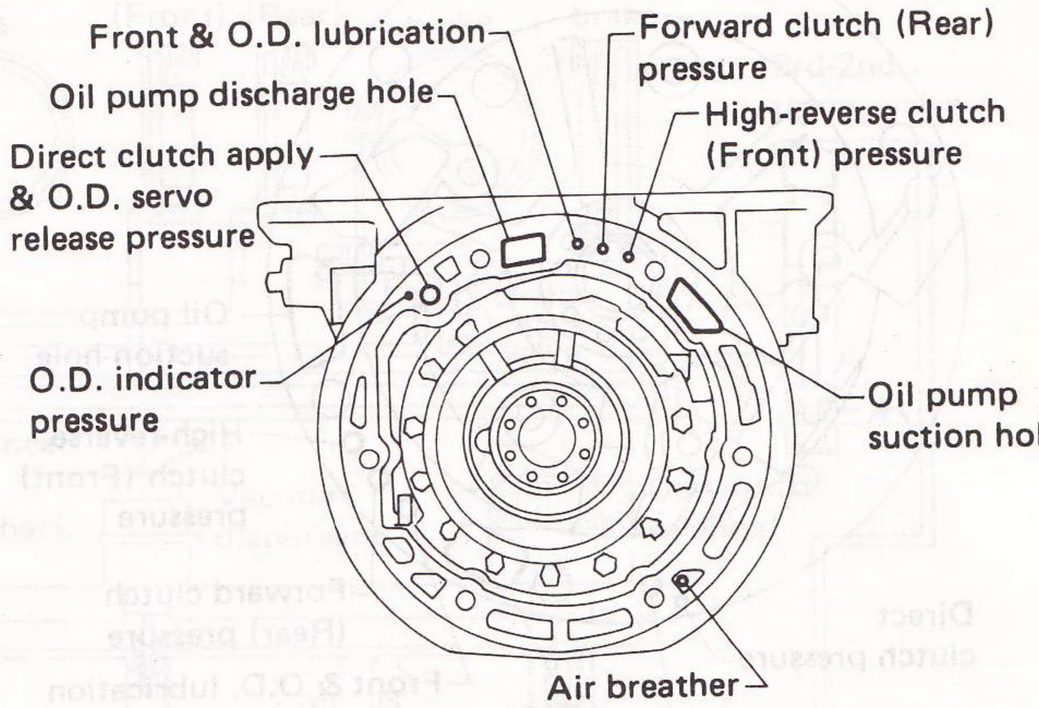
**Oil pump housing side**




SAT500

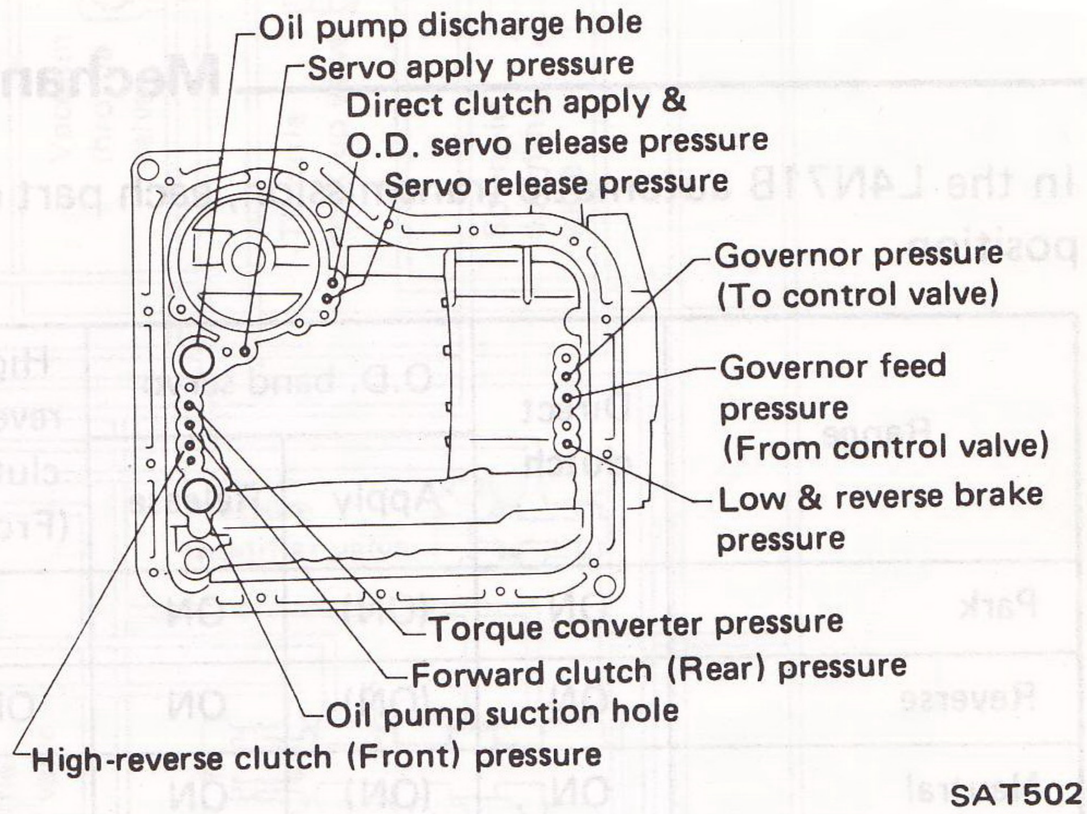
### OIL CHANNELS IN TRANSMISSION CASE

**Front face side**



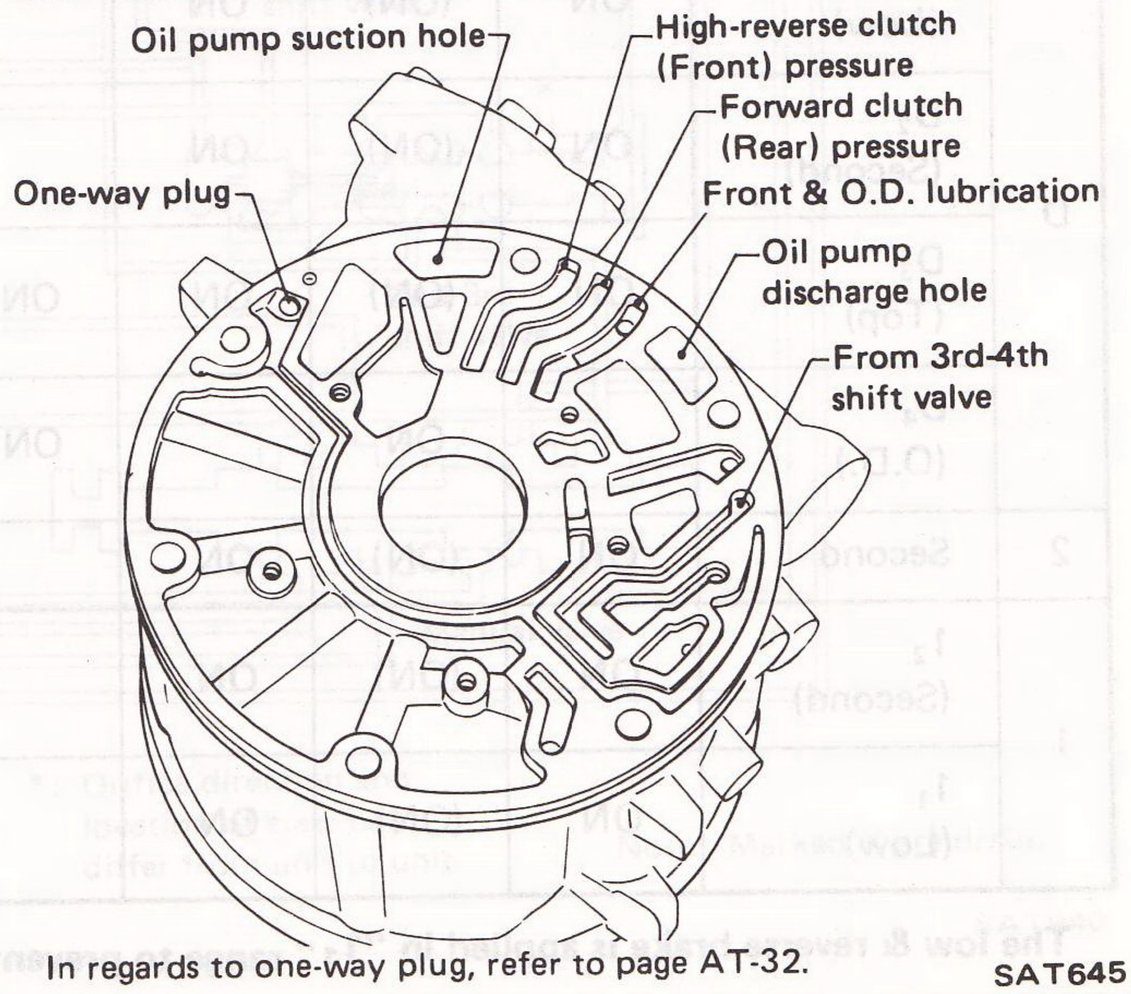

SAT501

**Lower face side**




SAT502

### OIL CHANNELS IN O.D. CASE

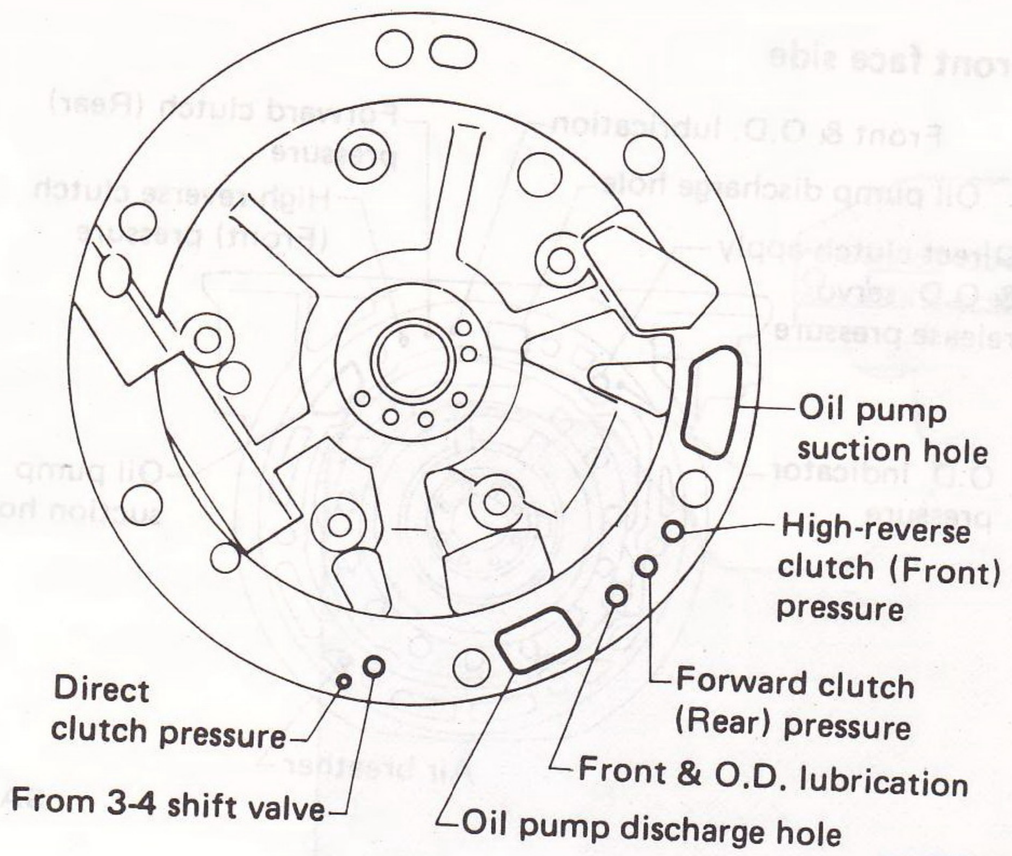



In regards to one-way plug, refer to page AT-32.

SAT645

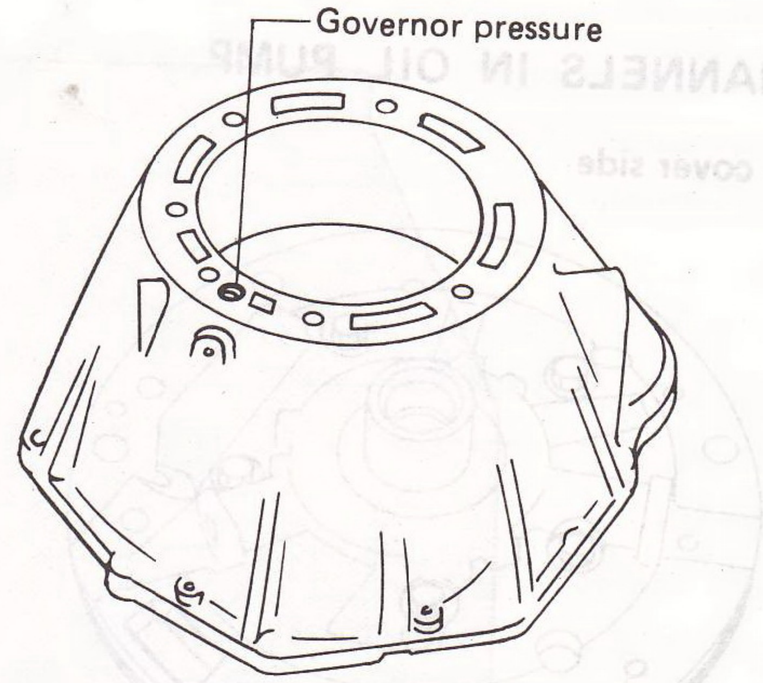
## Oil Channel (Cont'd)

### OIL CHANNELS IN DRUM SUPPORT




SAT503

### OIL CHANNELS IN CONVERTER HOUSING




SAT504

## Mechanical Operation

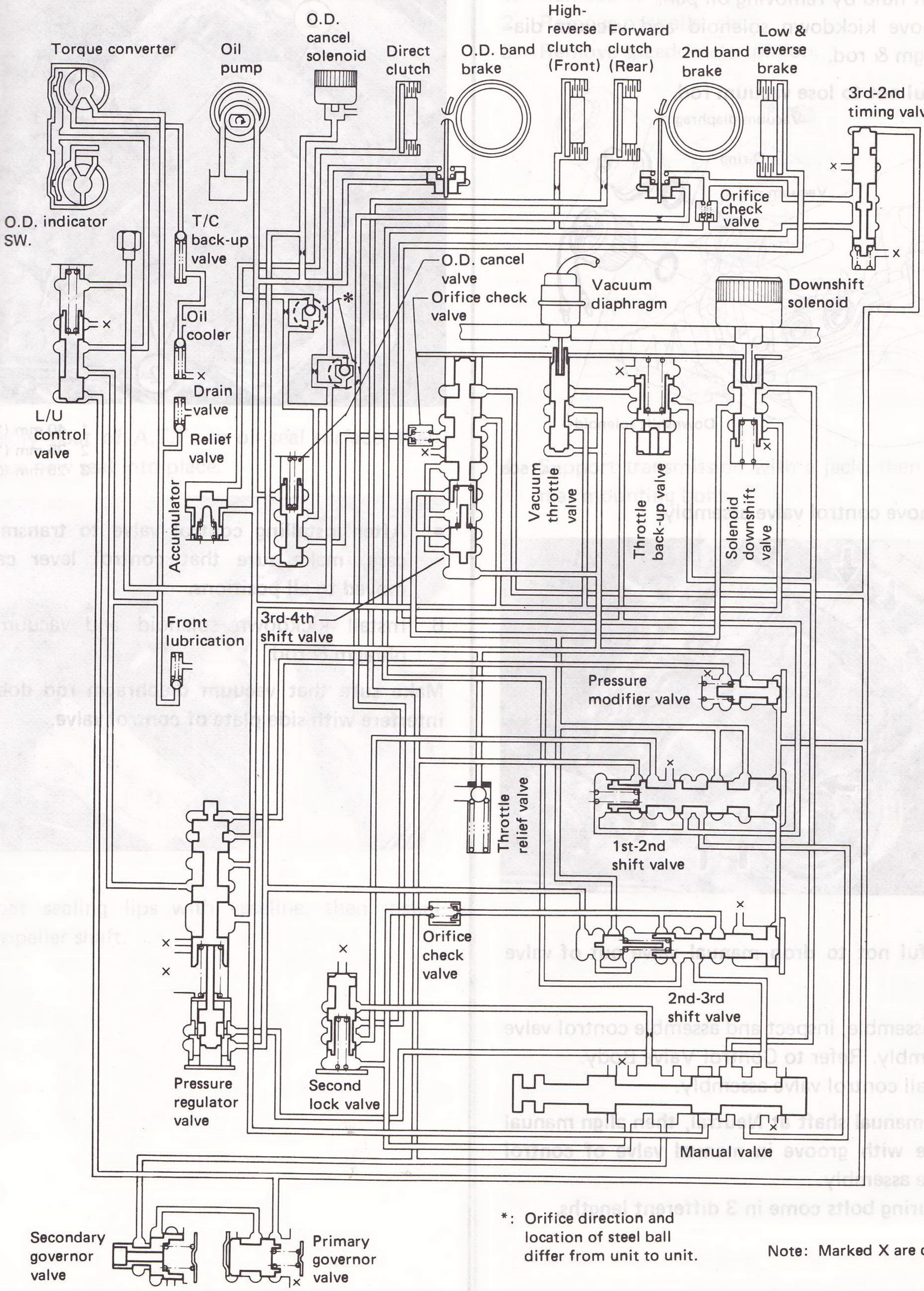
In the L4N71B automatic transmission, each part operates as shown in the following table at each gear select position.

| Range | | Direct clutch | O.D. band servo | | High-reverse clutch (Front) | Forward clutch (Rear) | Low & reverse brake | 2nd band servo | | One-way clutch | Parking pawl |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Apply | Release | | | | Apply | Release | | |
| Park | | ON | (ON) | ON | | | ON | | | | ON |
| Reverse | | ON | (ON) | ON | ON | | ON | | ON | | |
| Neutral | | ON | (ON) | ON | | | | | | | |
| D | $D_1$ (Low) | ON | (ON) | ON | | ON | | | | ON | |
| | $D_2$ (Second) | ON | (ON) | ON | | ON | | ON | | | |
| | $D_3$ (Top) | ON | (ON) | ON | ON | ON | | (ON) | ON | | |
| | $D_4$ (O.D.) | | ON | | ON | ON | | (ON) | ON | | |
| 2 | Second | ON | (ON) | ON | | ON | | ON | | | |
| 1 | $1_2$ (Second) | ON | (ON) | ON | | ON | | ON | | | |
| | $1_1$ (Low) | ON | (ON) | ON | | ON | ON | | | ON | |

**The low & reverse brake is applied in "$1_1$" range to prevent free wheeling when coasting and allows engine braking.**

# GENERAL SERVICE NOTICE

## Hydraulic Control Circuits




*: Orifice direction and location of steel ball differ from unit to unit.

Note: Marked X are drain.

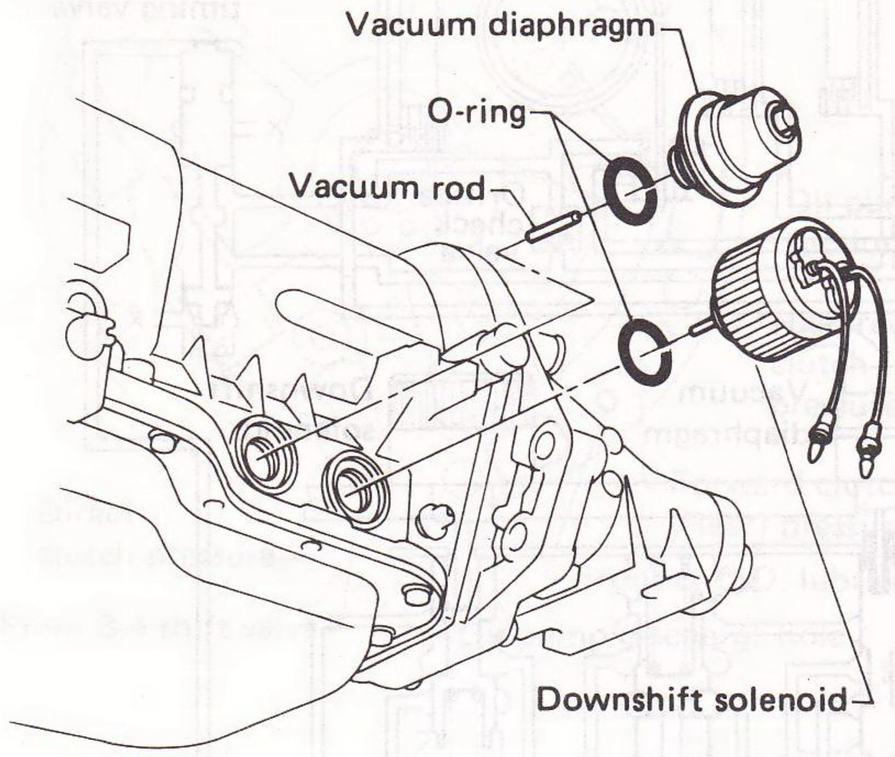
SAT940

# ON-VEHICLE SERVICE

## Control Valve

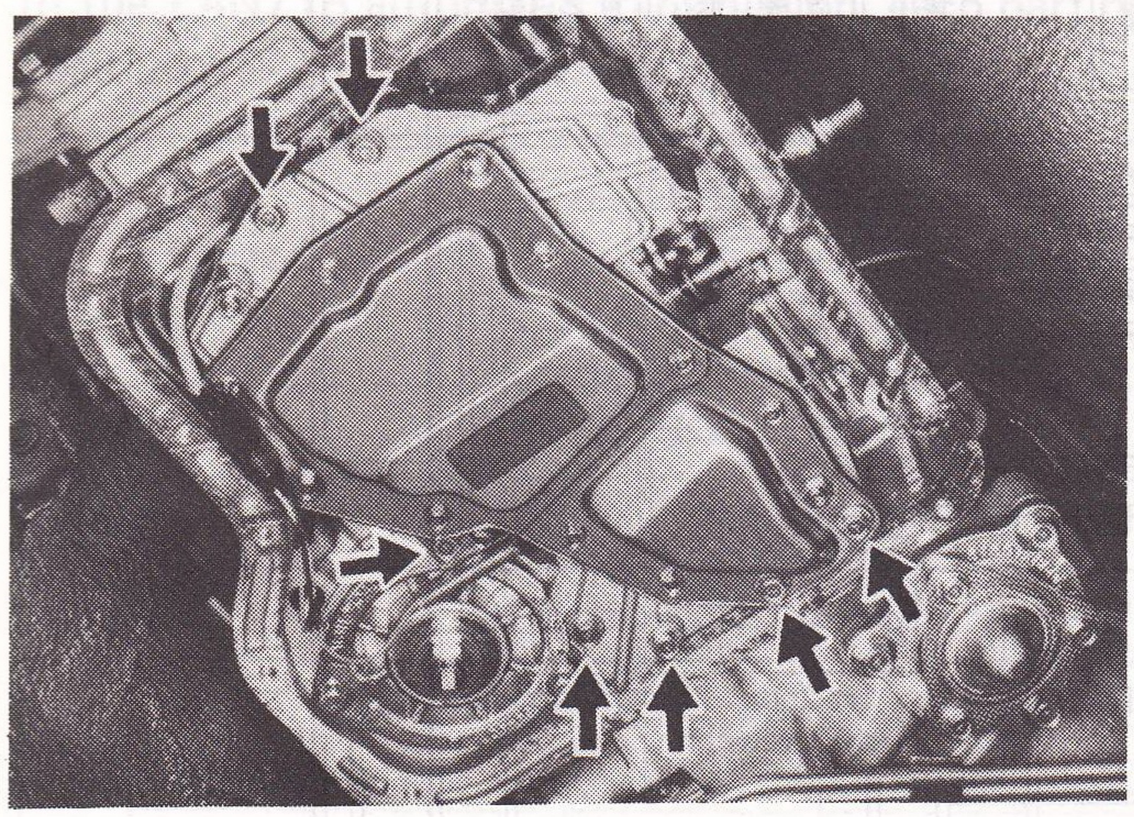
1. Drain fluid by removing oil pan.
2. Remove kickdown solenoid and vacuum diaphragm & rod.

**Be careful not to lose vacuum rod.**




SAT506

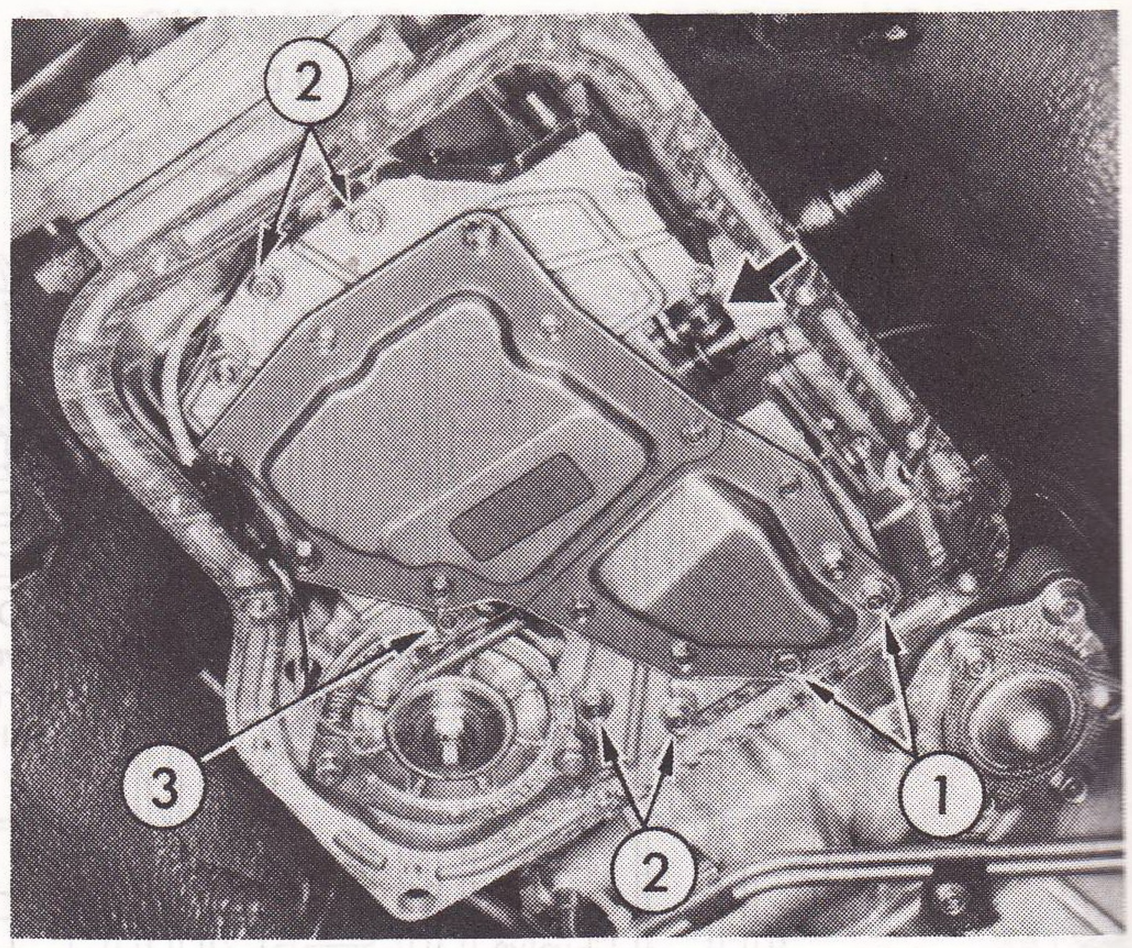
3. Remove control valve assembly.



**Be careful not to drop manual valve out of valve body.**

4. Disassemble, inspect and assemble control valve assembly. Refer to Control Valve Body.
5. Install control valve assembly.

- **Set manual shaft at Neutral, then align manual plate with groove in manual valve of control valve assembly.**
- **Securing bolts come in 3 different lengths.**




1 40 mm (1.57 in)
2 35 mm (1.38 in)
3 25 mm (0.98 in)

- **After installing control valve to transmission case, make sure that control lever can be moved to all positions.**

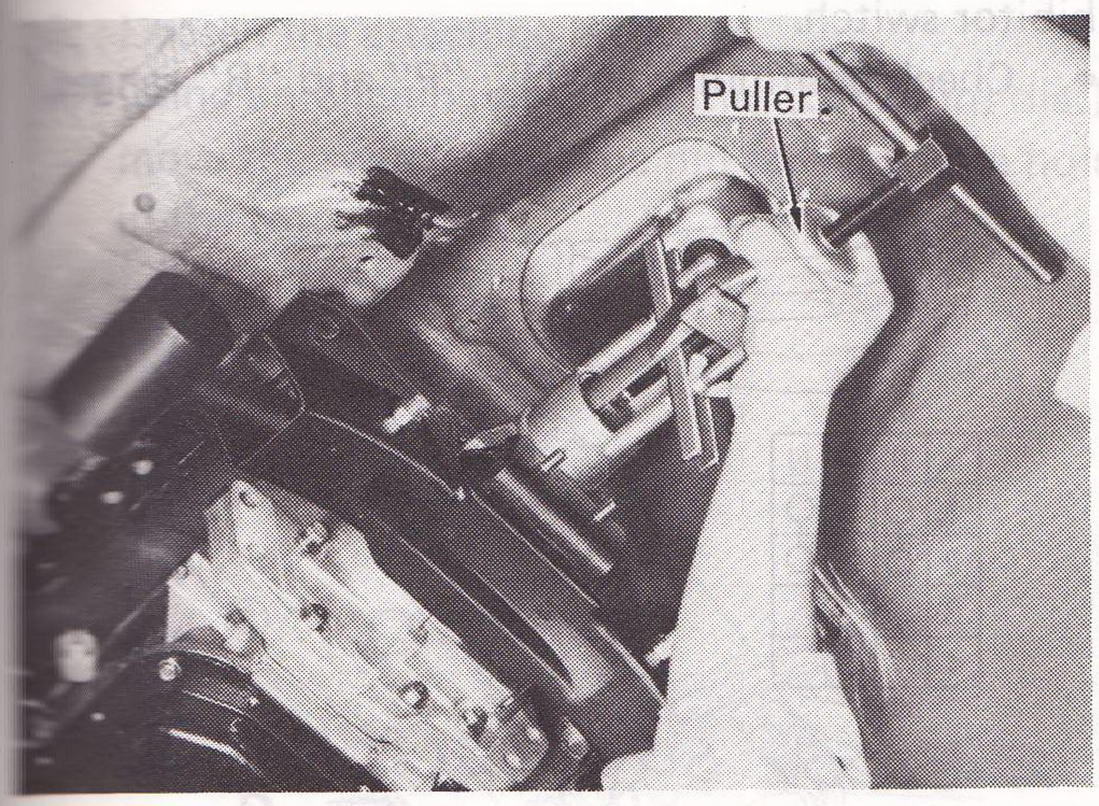
6. Install kickdown solenoid and vacuum diaphragm & rod.

**Make sure that vacuum diaphragm rod does not interfere with side plate of control valve.**

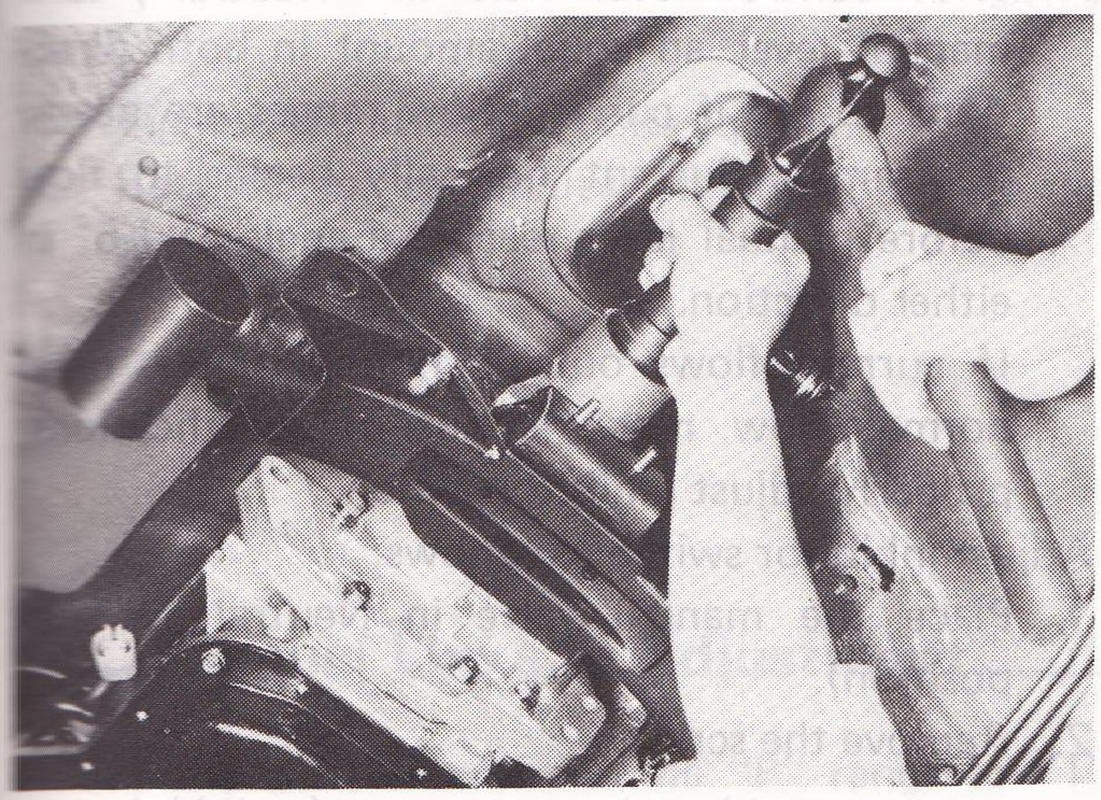
# ON-VEHICLE SERVICE

## Extension Oil Seal Replacement

1. Remove oil seal.



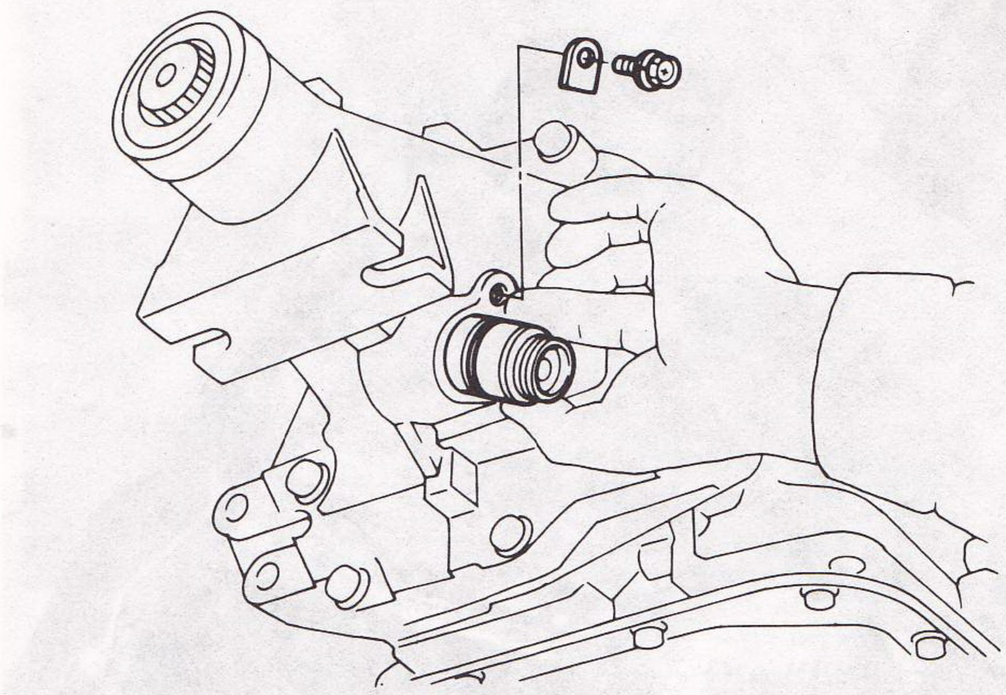

2. Apply coat of A.T.F. to oil seal surface, then drive new seal into place.



3. Coat sealing lips with vaseline, then install propeller shaft.

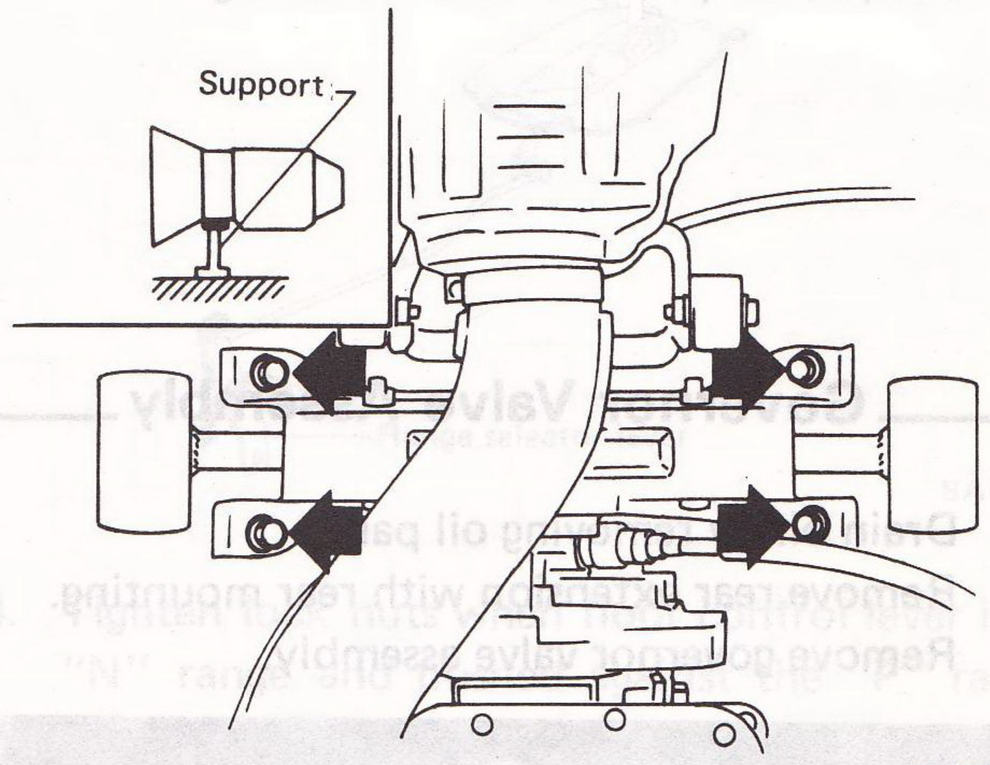
## Parking Component

1. Remove oil pan.
2. Remove propeller shaft.
3. Remove speedometer pinion.



SAT511

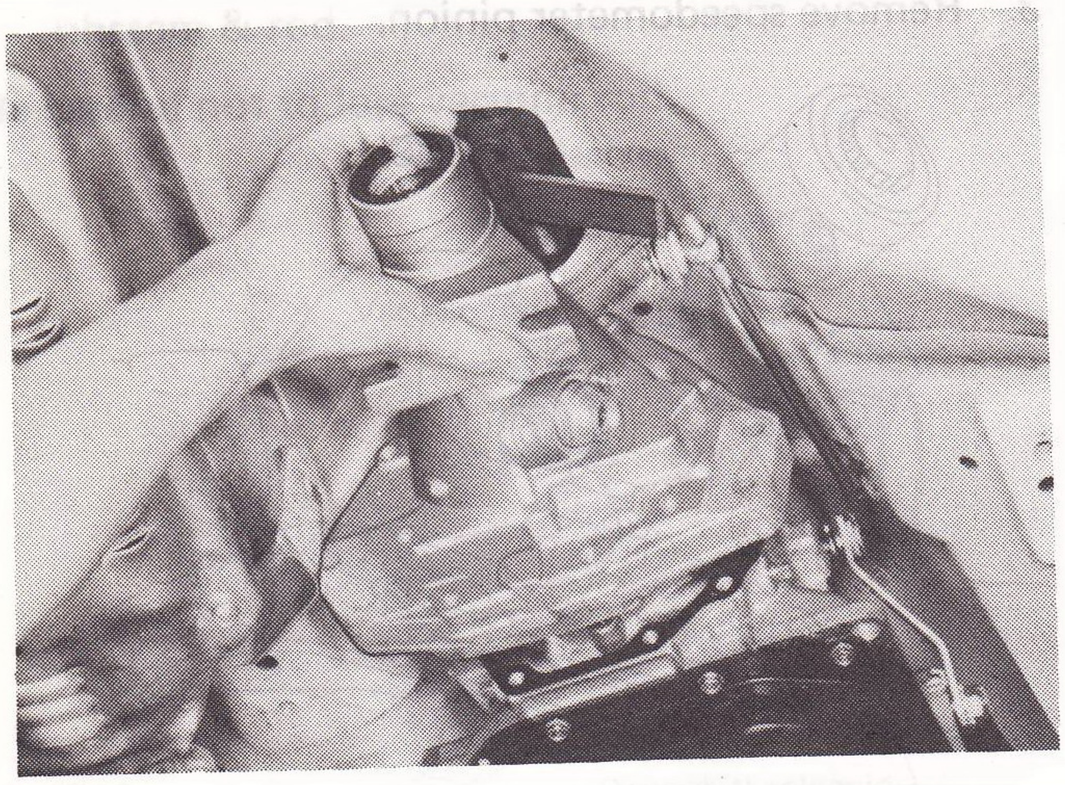
4. Support transmission with a jack, then remove rear mounting bolts.




SAT709

## Parking Component (Cont'd)

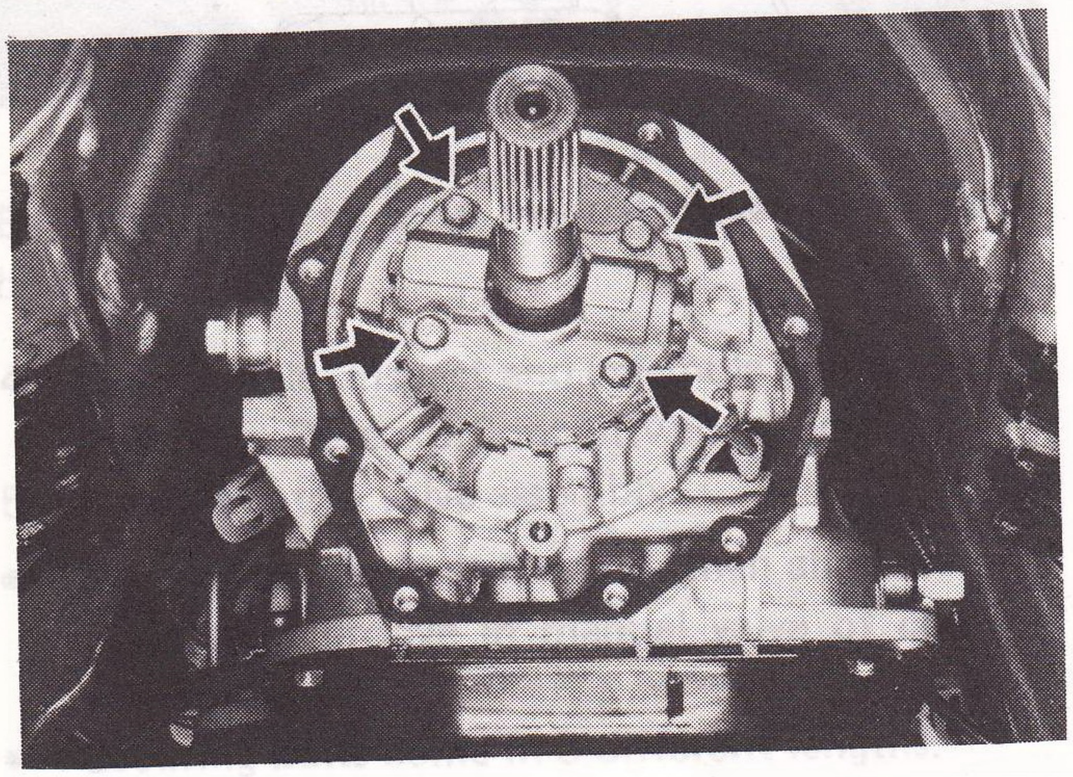
5. Remove rear extension bolts, then draw out rear extension with rear mounting.



6. Remove control valve assembly.
7. Inspect and repair parking components. Check component parts for wear or damage.

## Governor Valve Assembly

1. Drain oil by removing oil pan.
2. Remove rear extension with rear mounting.
3. Remove governor valve assembly.

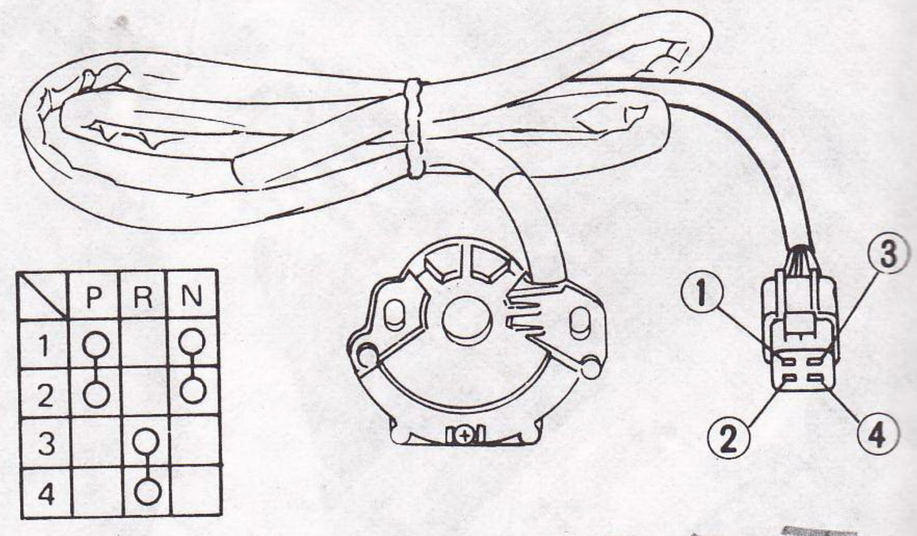


4. Inspect and repair governor valve assembly. Refer to Governor for inspection.

## Inhibitor Switch Adjustment

Disconnect harness at connector, then remove inhibitor switch.

- Check continuity at "N", "P" and "R" ranges.




ZIE ook SUPPLEMENT II AT-2

SAT959

- With control lever held in "Neutral", turn manual lever an equal amount in both directions to see if current flow ranges are nearly the same. (Current normally begins to flow before manual lever reaches a angle of 1.5° in either direction.)
  If current flows outside normal range, or if normal flow range is out of specifications, properly adjust inhibitor switch.

Adjust inhibitor switch as follows:

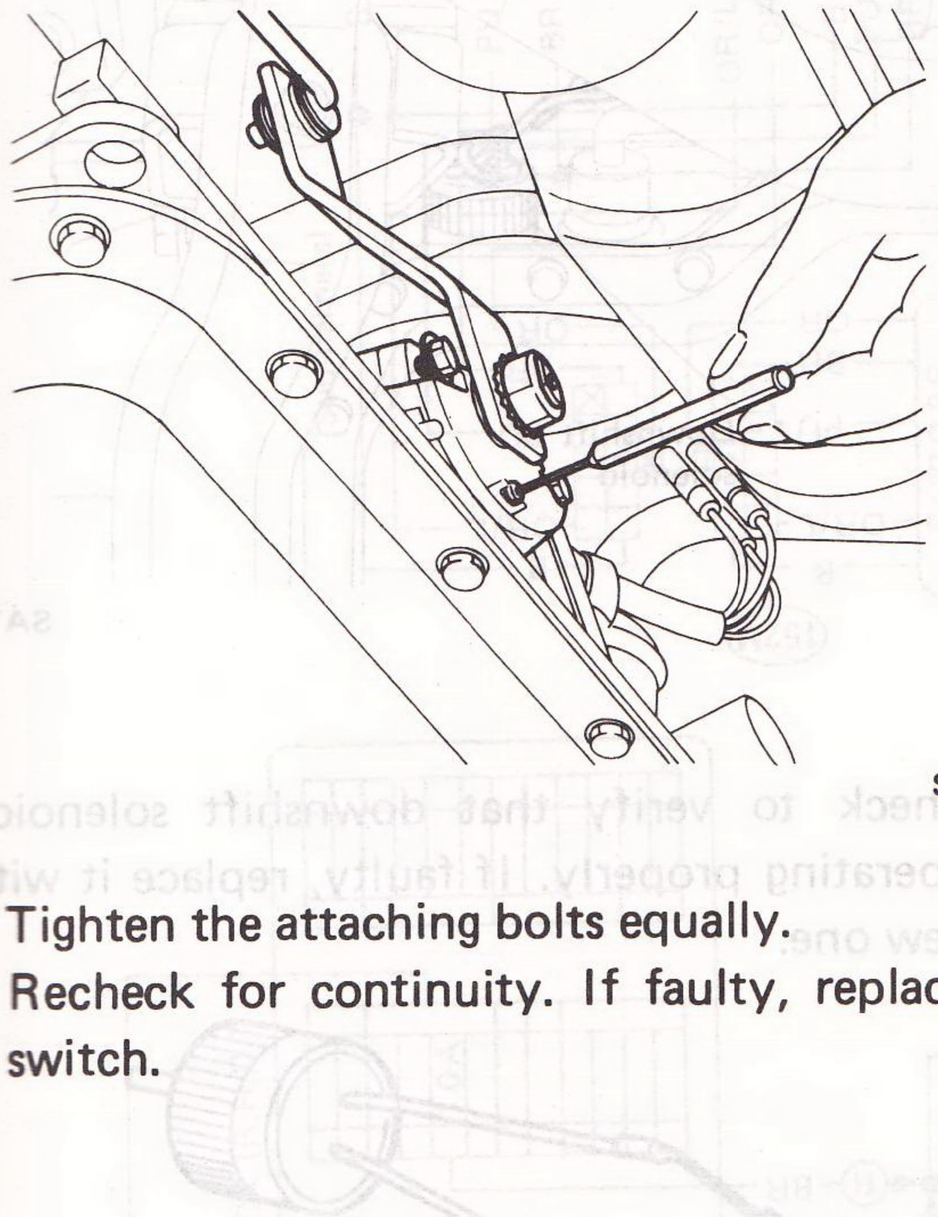
1. Place the manual valve in Neutral (vertical position).
2. Remove the screw.



SAT097

## Inhibitor Switch Adjustment (Cont'd)

Loosen the attaching bolts.
Using an aligning pin, [2.0 mm (0.079 in) dia.] move the switch until the pin falls into the hole in the rotor.



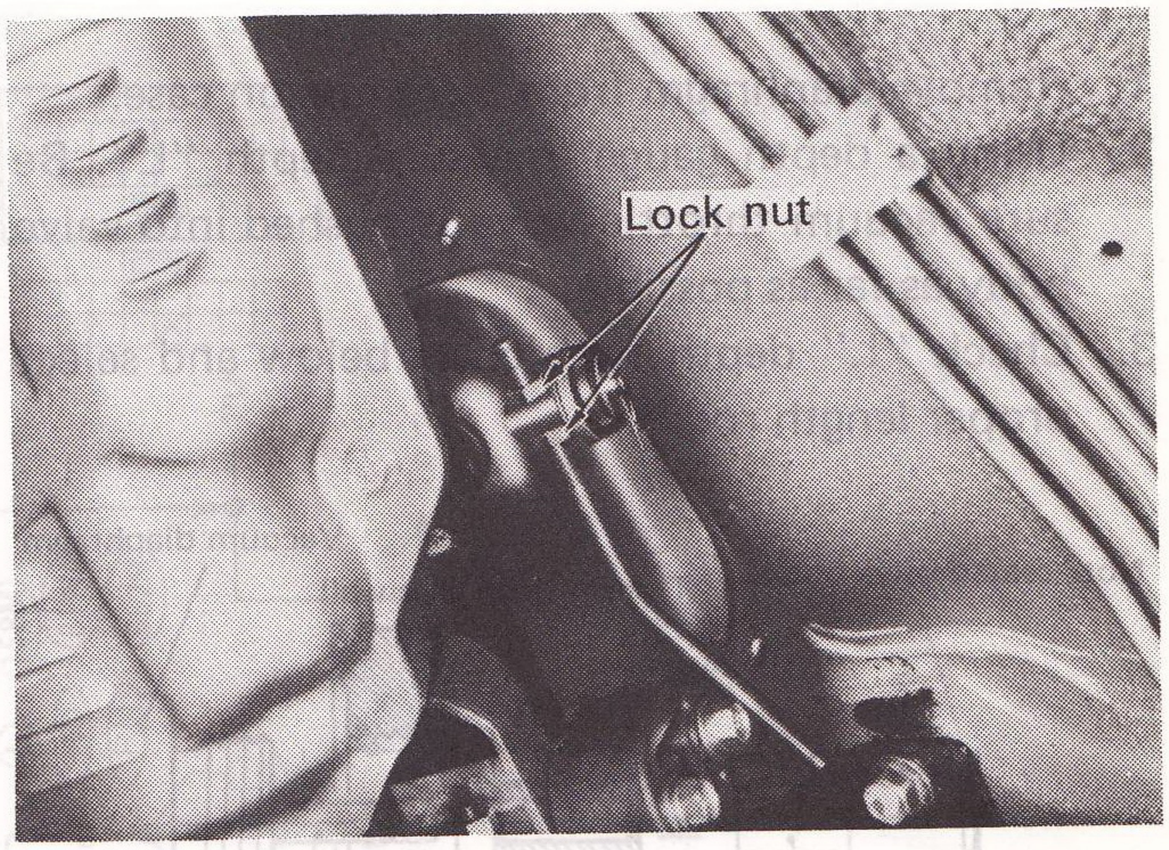
SAT098

Tighten the attaching bolts equally.
Recheck for continuity. If faulty, replace the switch.

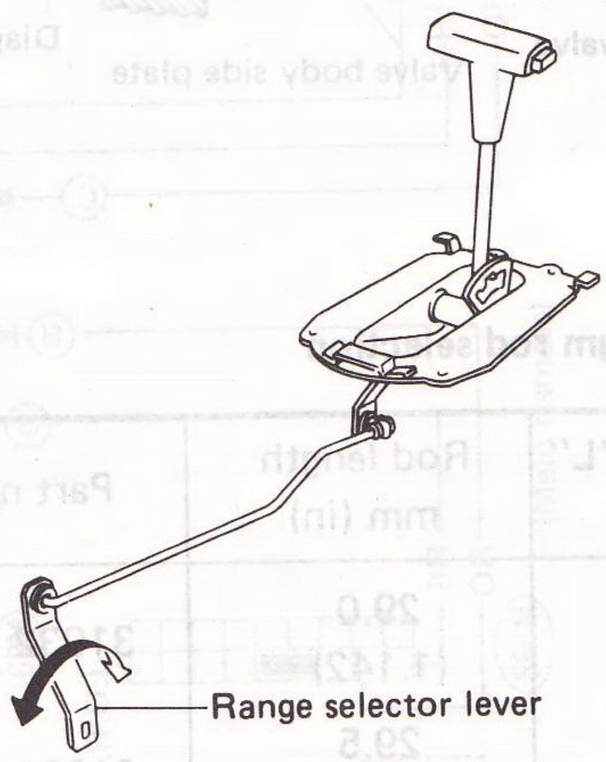
## Manual Linkage Adjustment

Move the shift lever from the "P" range to "1" range. You should be able to feel the detents in each range.
If the detents cannot be felt or the pointer indicating the range is improperly aligned, the linkage needs adjustment.

1. Place shift lever in "N" range.
2. Loosen locknuts.




3. Move range selector lever to the "N" range.



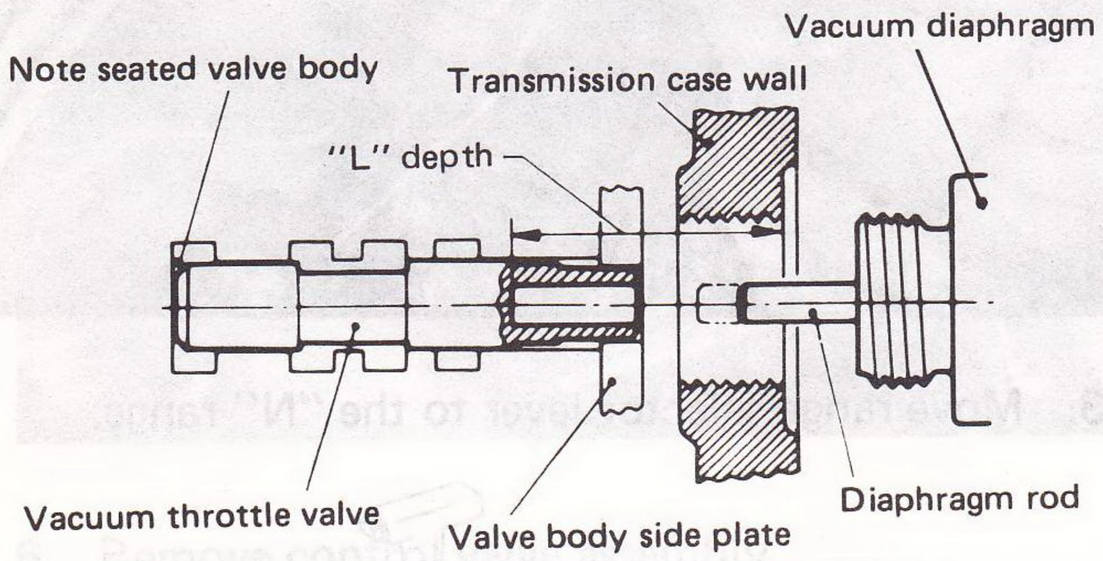

SAT741

4. Tighten lock nuts when floor control lever is in "N" range and pushed against the "P" range side.
5. Move control lever from "P" range to "1" range. Make sure that control lever can move smoothly and without any sliding noise.

2ie ook SUPPLEMENT II
AT-2

## Vacuum Diaphragm Rod Adjustment

1. Remove diaphragm from transmission case.
2. Using a depth gauge, measure depth "L". Be sure vacuum throttle valve is pushed into valve body as far as possible.
3. Check "L" depth with chart below and select proper length rod.




SAT078

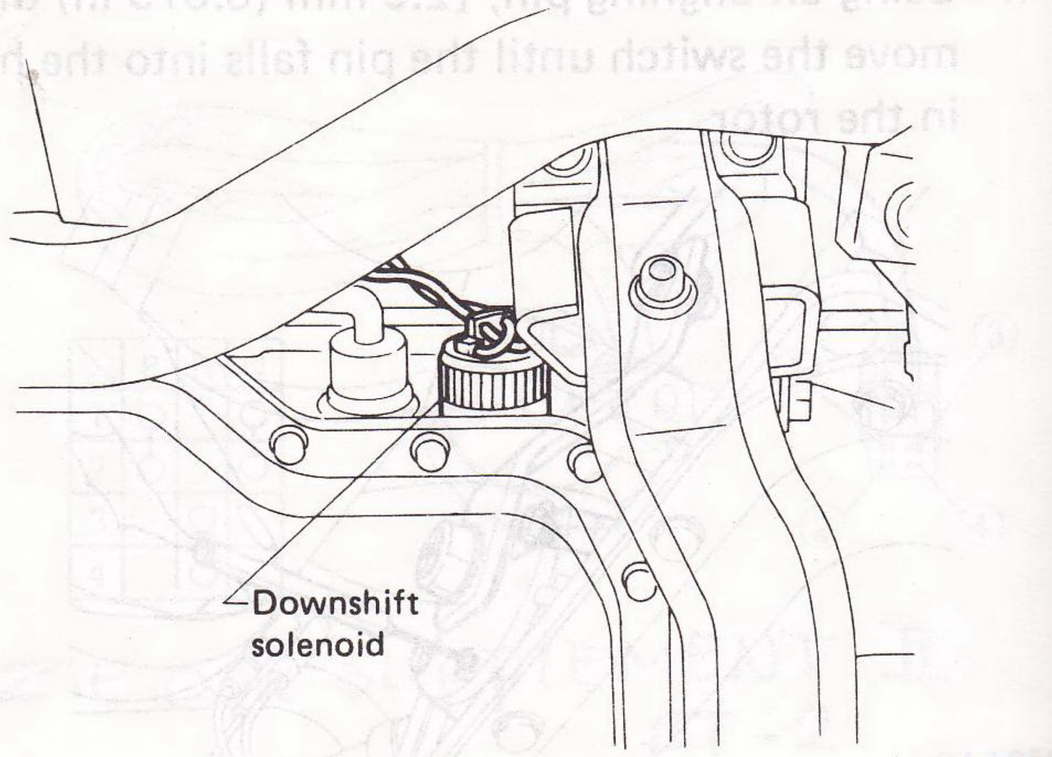
**Vacuum diaphragm rod selection**

| Measured depth "L" mm (in) | Rod length mm (in) | Part number |
|---|---|---|
| Under 25.55 (1.0059) | 29.0 (1.142) | 31932 - X0103 |
| 25.65 - 26.05 (1.0098 - 1.0256) | 29.5 (1.161) | 31932 - X0104 |
| 26.15 - 26.55 (1.0295 - 1.0453) | 30.0 (1.181) | 31932 - X0100 |
| 26.65 - 27.05 (1.0492 - 1.0650) | 30.5 (1.201) | 31932 - X0102 |
| Over 27.15 (1.0689) | 31.0 (1.220) | 31932 - X0101 |

## Downshift Solenoid

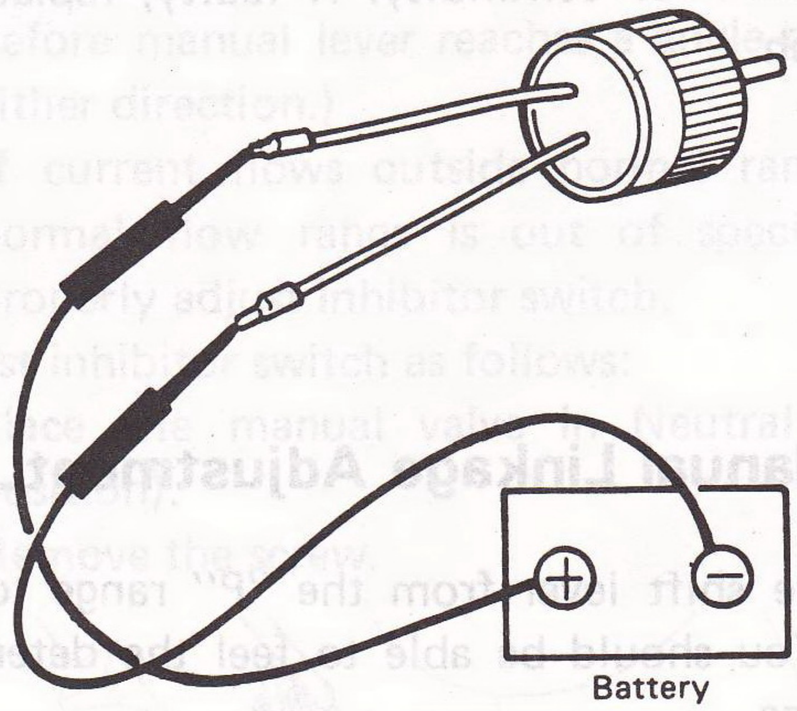
1. Remove downshift solenoid and O-ring.

**Catch oil dropping out of the hole.**




SAT516

2. Check to verify that downshift solenoid is operating properly. If faulty, replace it with a new one.

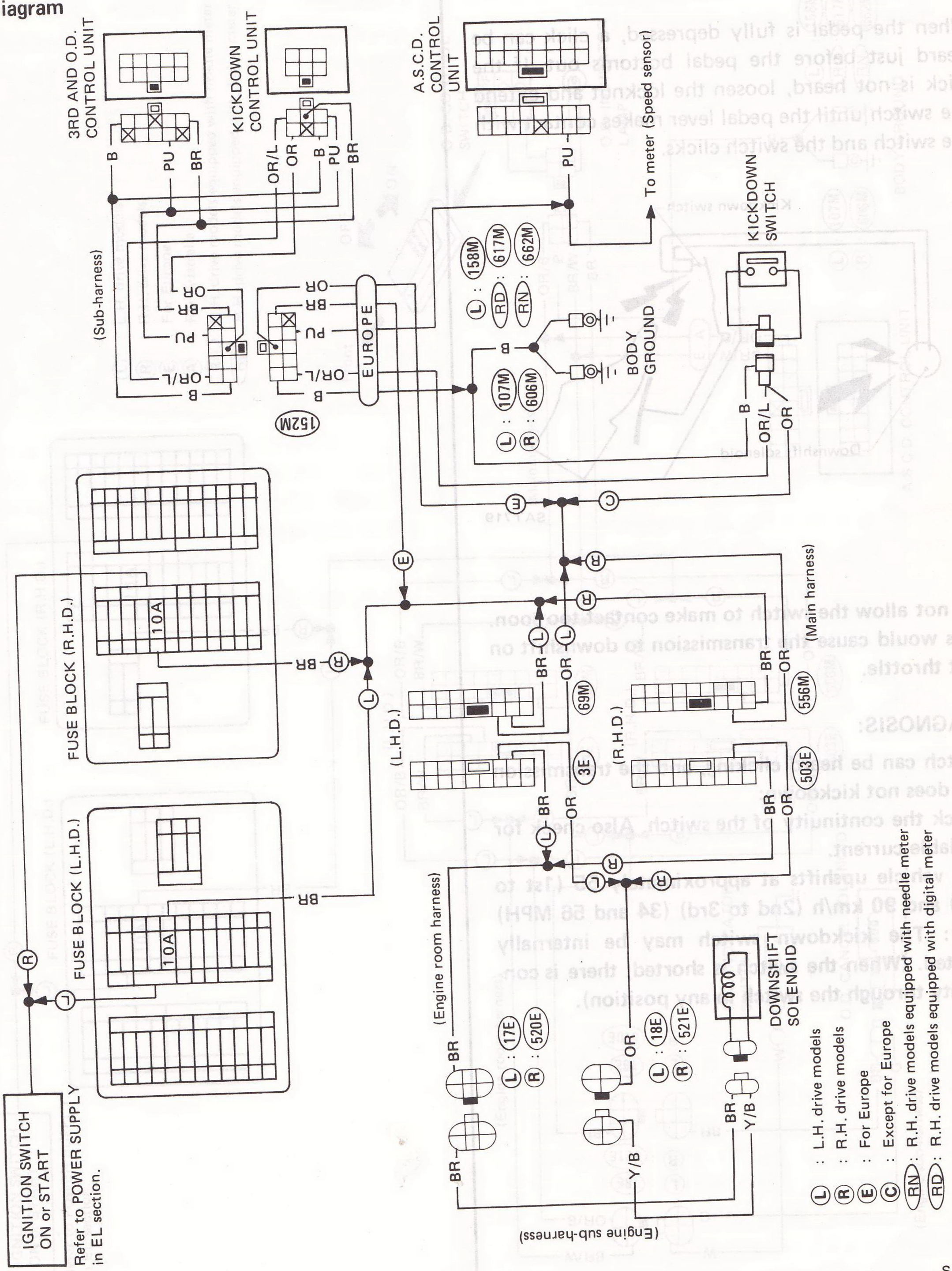



SAT517

# ON-VEHICLE SERVICE

## Kitckdown Switch Adjustment

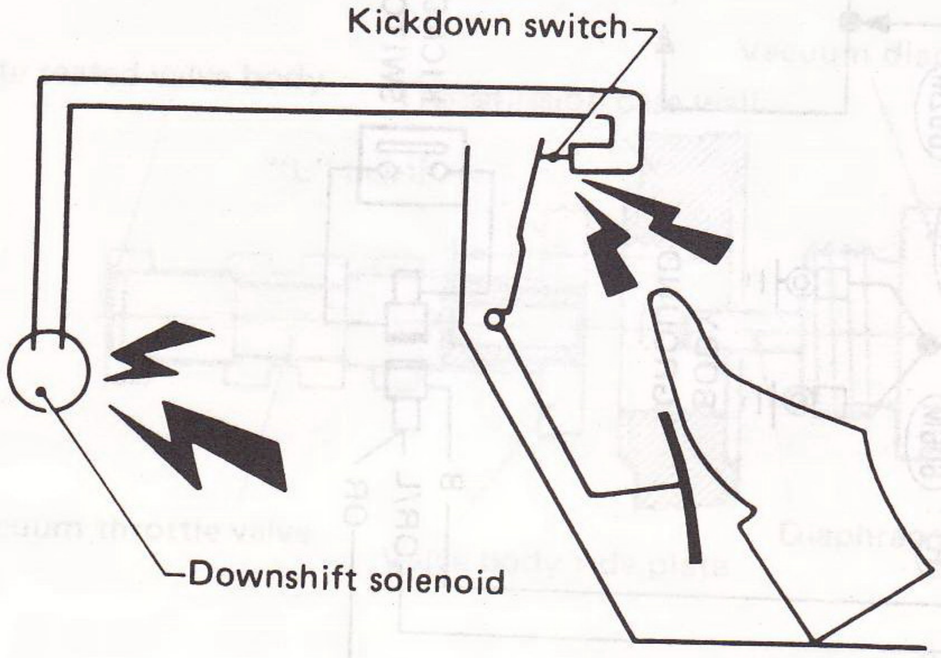
### Wiring Diagram




SAT960

## Kickdown Switch Adjustment (Cont'd)

When the pedal is fully depressed, a click can be heard just before the pedal bottoms out. If the click is not heard, loosen the locknut and extend the switch until the pedal lever makes contact with the switch and the switch clicks.



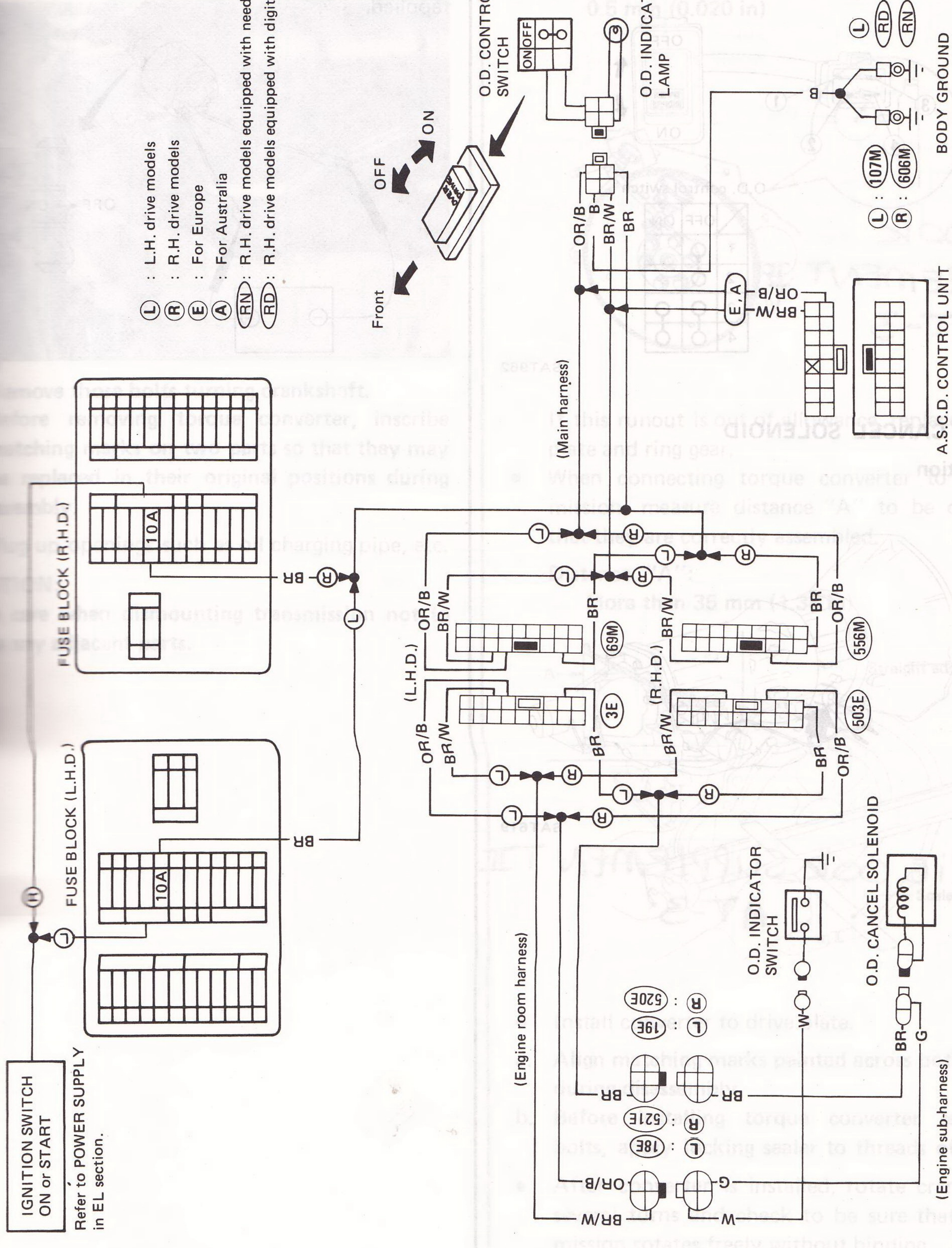

SAT719

**Do not allow the switch to make contact too soon. This would cause the transmission to downshift on part throttle.**

DIAGNOSIS:

**Switch can be heard clicking, and the transmission still does not kickdown:**
**Check the continuity of the switch. Also check for available current.**
**The vehicle upshifts at approximately 55 (1st to 2nd) and 90 km/h (2nd to 3rd) (34 and 56 MPH) only: The kickdown switch may be internally shorted. (When the switch is shorted, there is continuity through the switch in any position).**

## Overdrive Control System

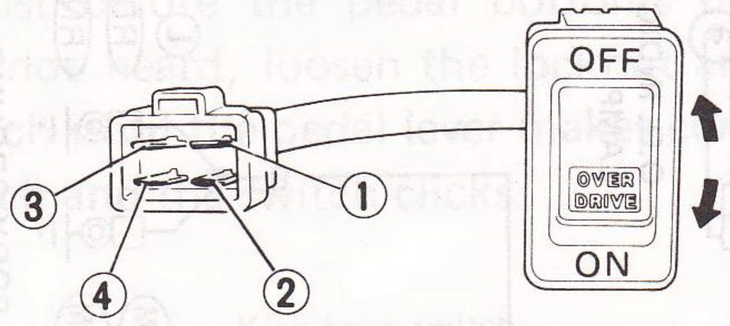



SAT961

## Overdrive Control System (Cont'd)

### O.D. CONTROL SWITCH

**Inspection**




O.D. control switch

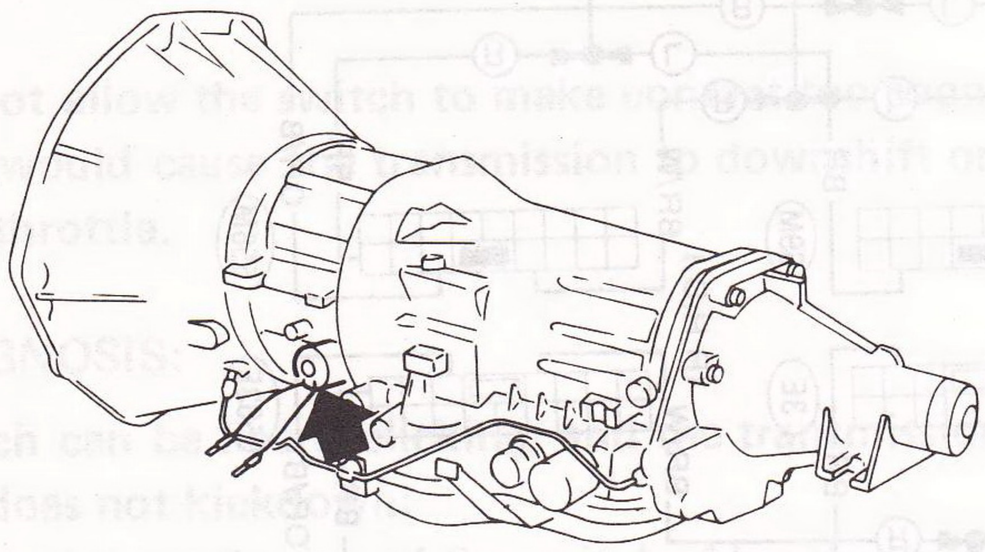
| | OFF | ON |
|---|---|---|
| 1 | ○ | |
| 2 | ○ | |
| 3 | ○ | ○ |
| 4 | ○ | ○ |

SAT962

ZIE OOK SUPPLEMENT II AT-3

### O.D. CANCEL SOLENOID

**Location**

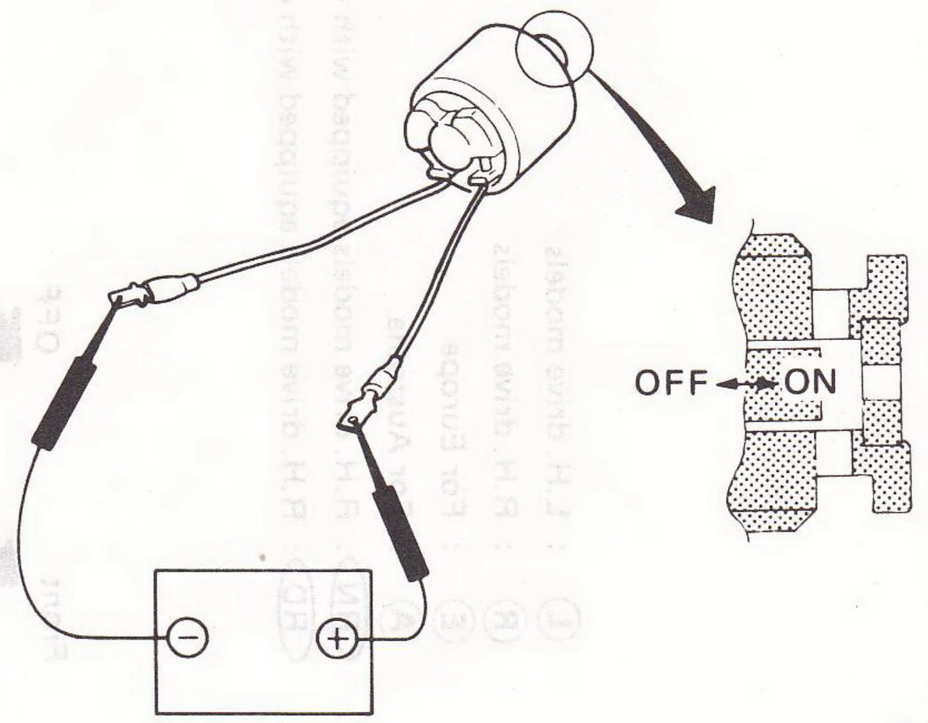


SAT619

ZIE OOK SUPPLEMENT II AT-3

**Inspection**

Confirm that clicking sound is heard when power is applied.

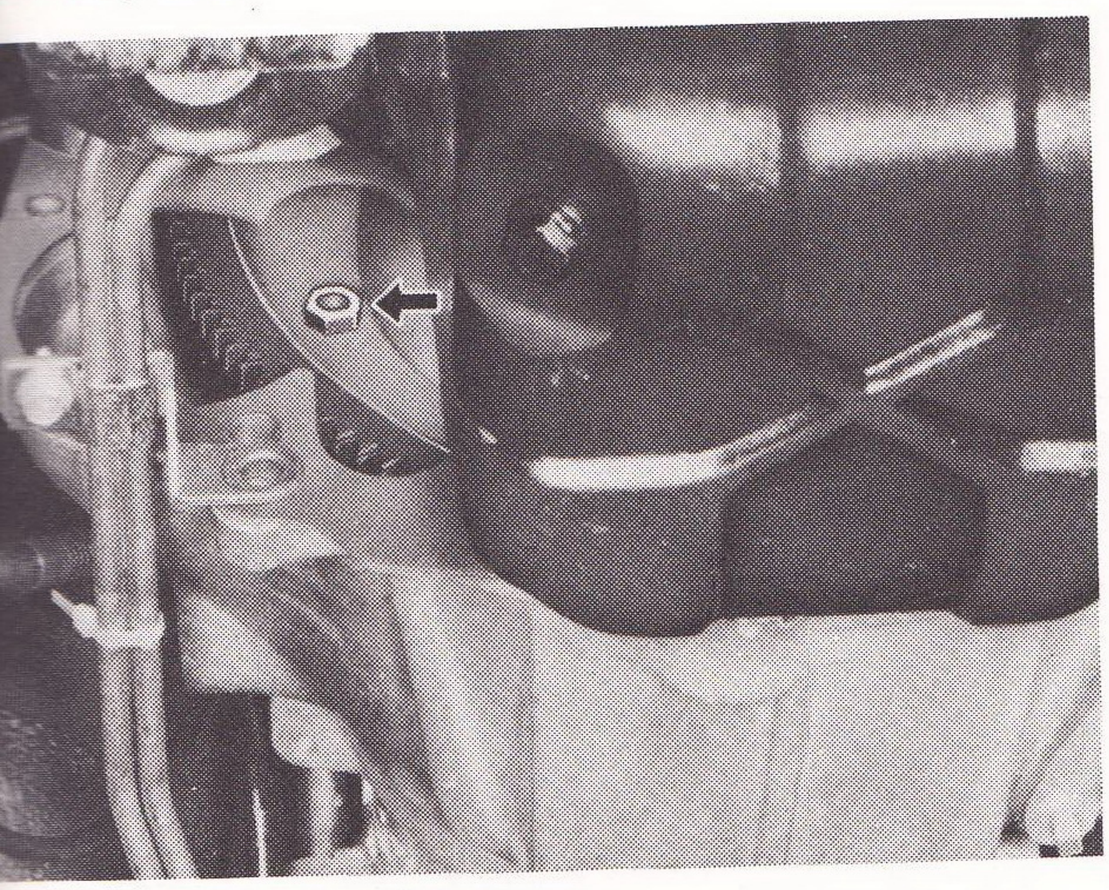



SAT620

# REMOVAL AND INSTALLATION

## Removal

Remove bolts securing torque converter to drive plate.



**Remove those bolts turning crankshaft.**
**Before removing torque converter, inscribe matching marks on two parts so that they may be replaced in their original positions during assembly.**

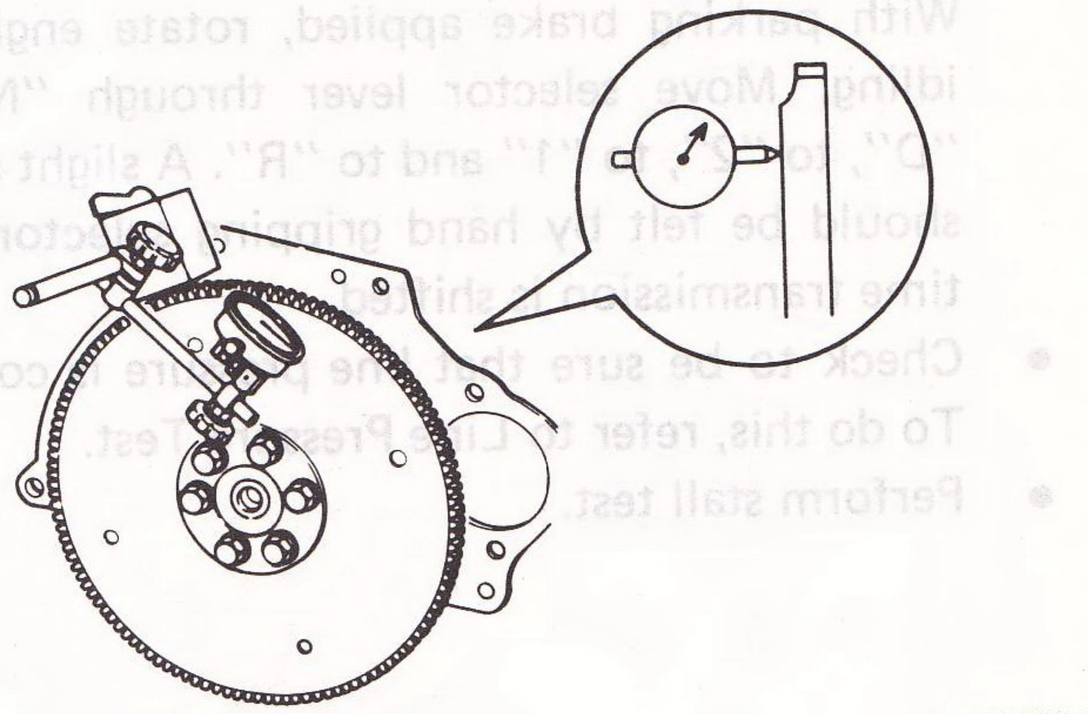
Plug up openings such as oil charging pipe, etc.

**\UTION:**
**ke care when dismounting transmission not to ike any adjacent parts.**

## Installation

- Drive plate runout

  **Maximum allowable runout:**
  **0.5 mm (0.020 in)**

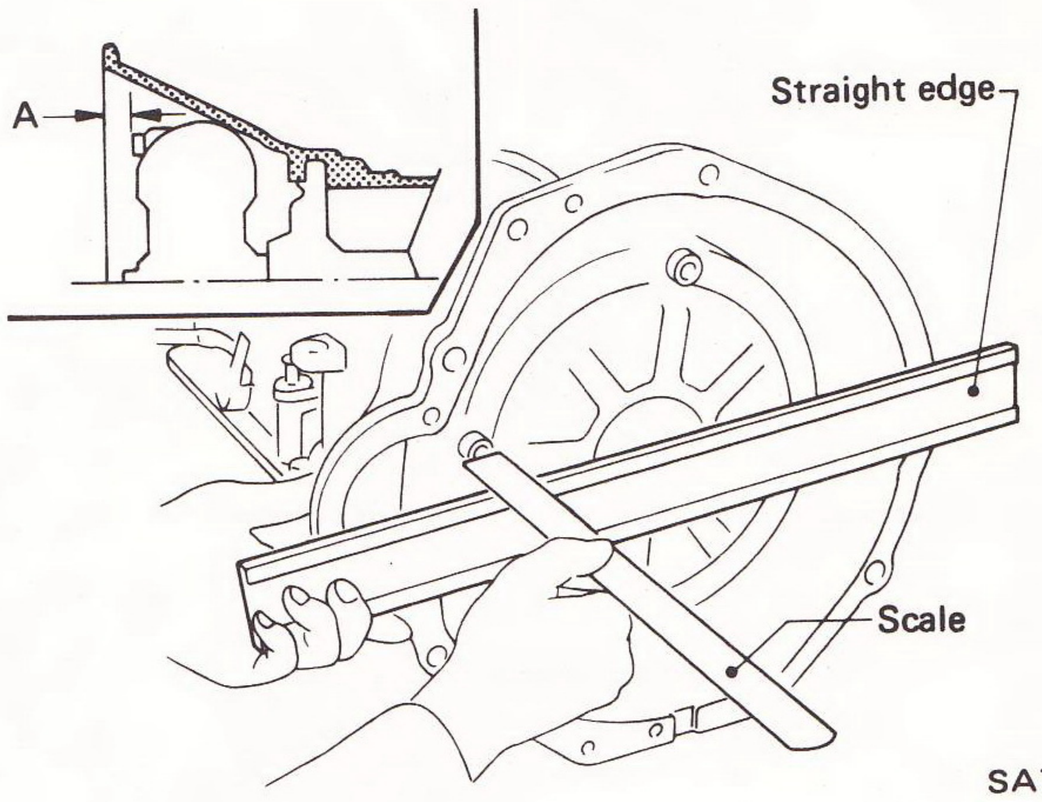


SAT718

If this runout is out of allowance, replace drive plate and ring gear.

- When connecting torque converter to transmission, measure distance "A" to be certain that they are correctly assembled.

  **Distance "A":**
  **More than 35 mm (1.38 in)**




SAT615

- Install converter to drive plate.

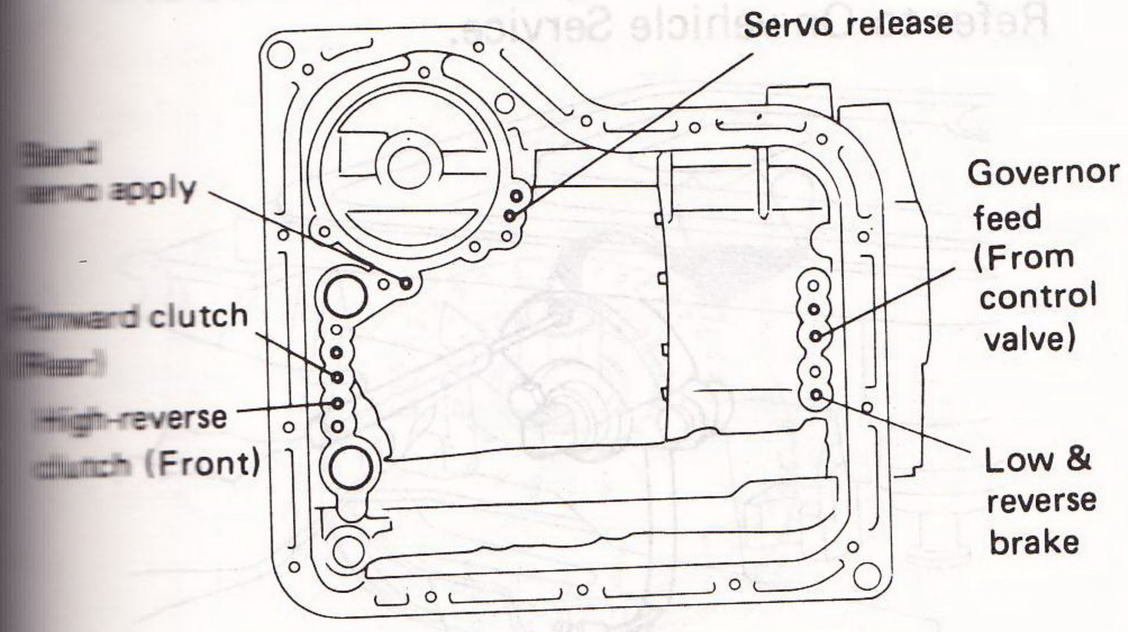
a. **Align matching marks painted across both parts during disassembly.**
b. **Before installing torque converter securing bolts, apply locking sealer to threads of bolts.**

- After converter is installed, rotate crankshaft several turns and check to be sure that transmission rotates freely without binding.

## Installation (Cont'd)

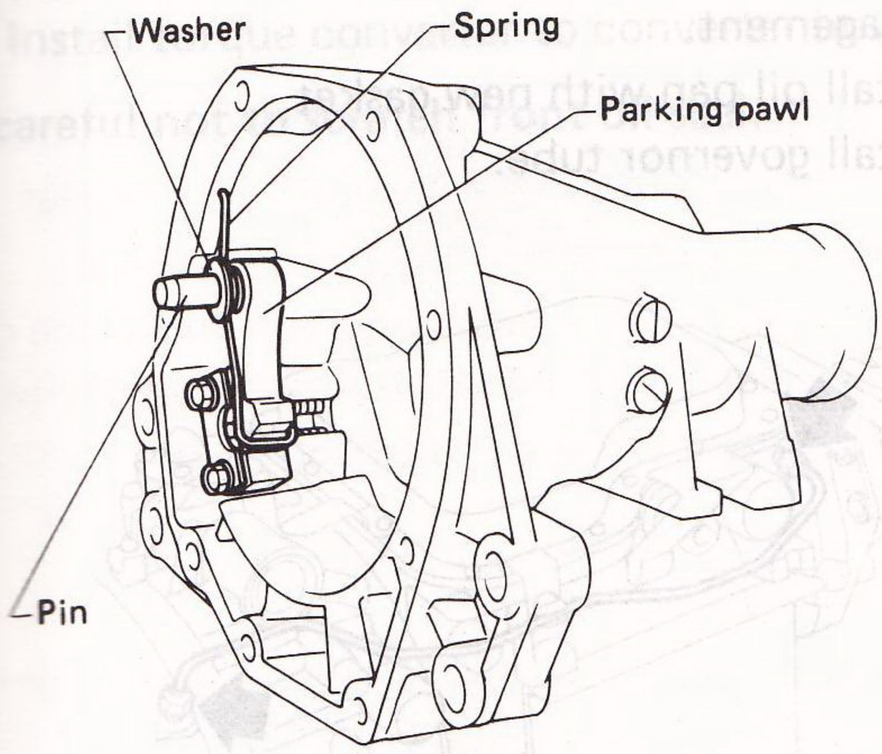
- Check inhibitor switch for operation.
- Check fluid level in transmission.
- Move selector lever through all positions to be sure that transmission operates correctly.
  With parking brake applied, rotate engine at idling. Move selector lever through "N" to "D", to "2", to "1" and to "R". A slight shock should be felt by hand gripping selector each time transmission is shifted.
- Check to be sure that line pressure is correct.
  To do this, refer to Line Pressure Test.
- Perform stall test.

Air check point




SAT586

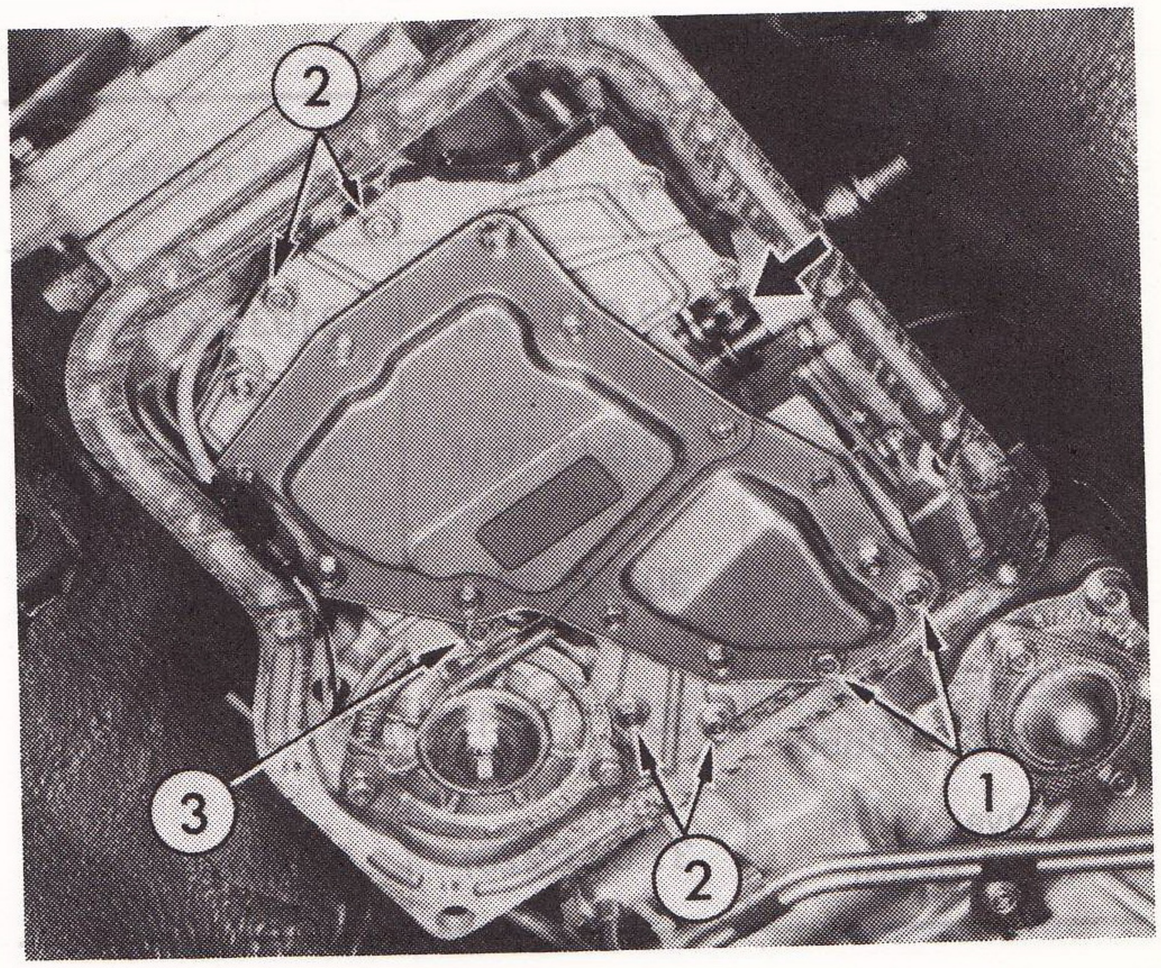
37. Check that parking pawl, pin, spring and washer are assembled correctly.




SAT739

38. Install rear extension.
39. Install control valve assembly. Be sure manual valve is in alignment with selector pin. Tighten control valve body attaching bolts.

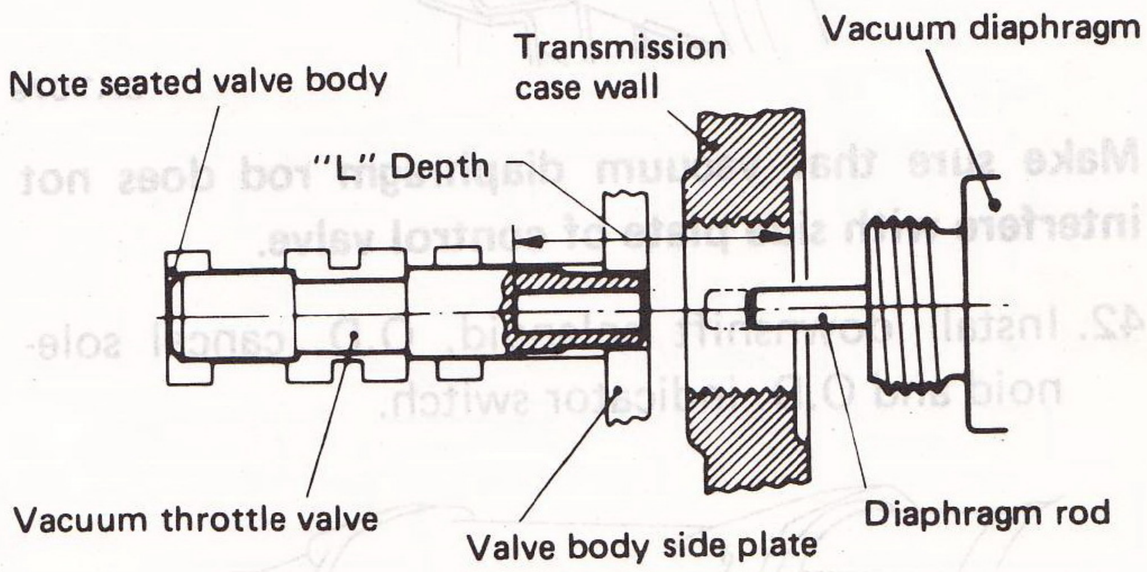
**Securing bolt comes in three different lengths.**




1 40 mm (1.57 in)
2 35 mm (1.38 in)
3 25 mm (0.98 in)

**After installing control valve to transmission case, make sure that control lever can be moved to all positions.**

40. Before installing vacuum diaphragm valve, measure depth of hole in which it is inserted. This measurement determines correct rod length to ensure proper performance.

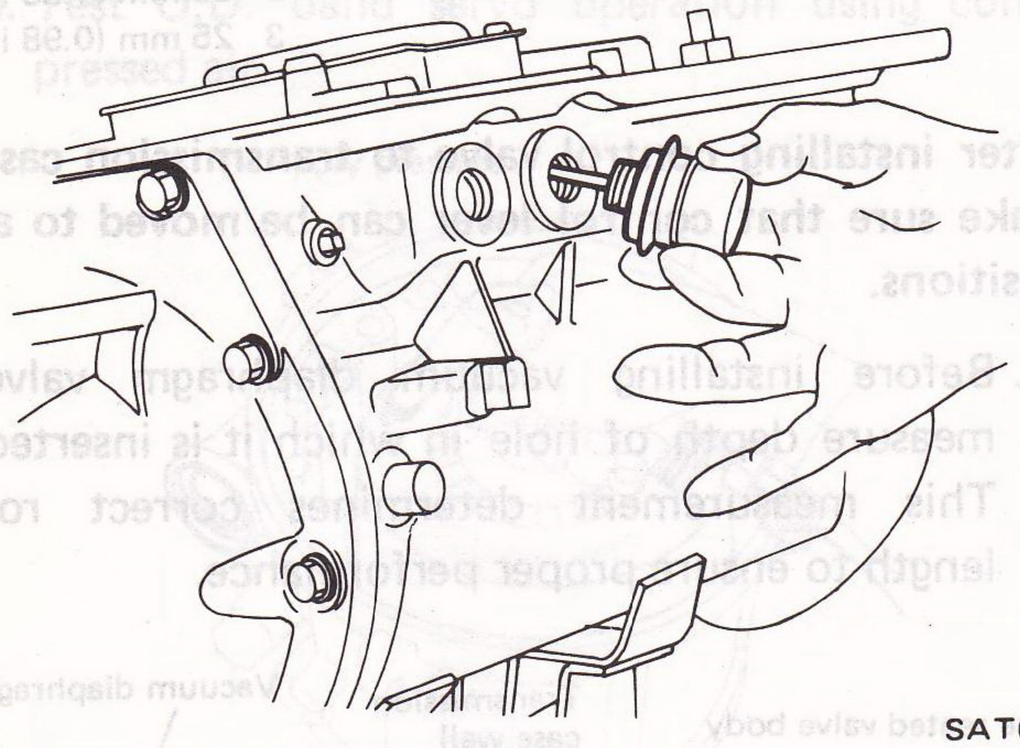



SAT078

**Vacuum diaphragm rod selection**

| Measured depth "L" mm (in) | Rod length mm (in) | Part number |
|---|---|---|
| Under 25.55 (1.0059) | 29.0 (1.142) | 31932-X0103 |
| 25.65 - 26.05 (1.0098 - 1.0256) | 29.5 (1.161) | 31932-X0104 |
| 26.15 - 26.55 (1.0295 - 1.0453) | 30.0 (1.181) | 31932-X0100 |
| 26.65 - 27.05 (1.0492 - 1.0650) | 30.5 (1.201) | 31932-X0102 |
| Over 27.15 (1.0689) | 31.0 (1.220) | 31932-X0101 |

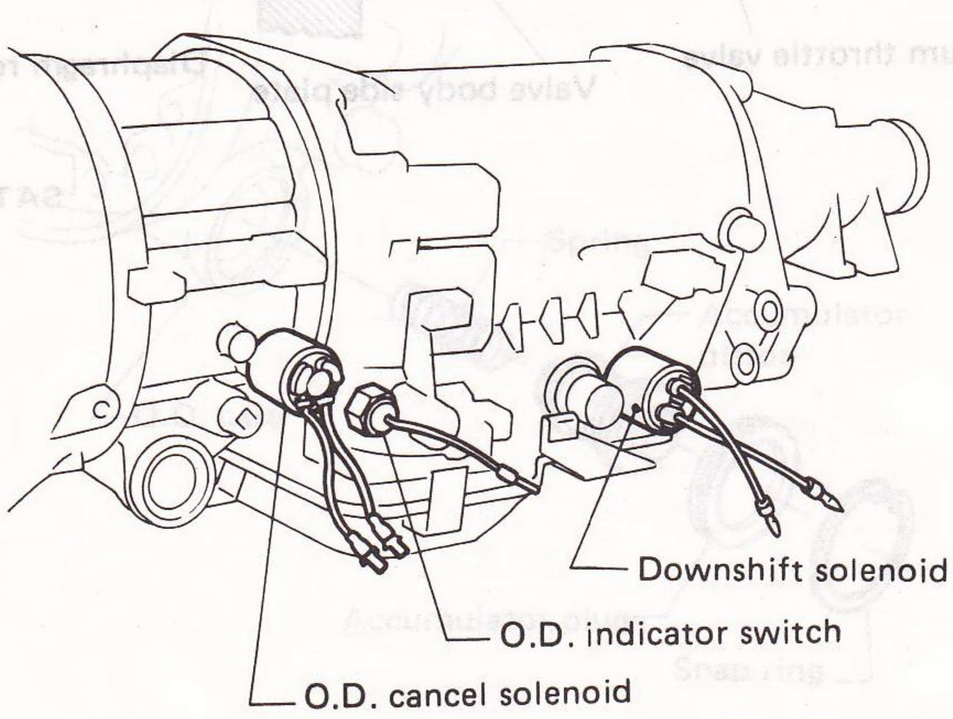
41. Install vacuum diaphragm.



SAT079

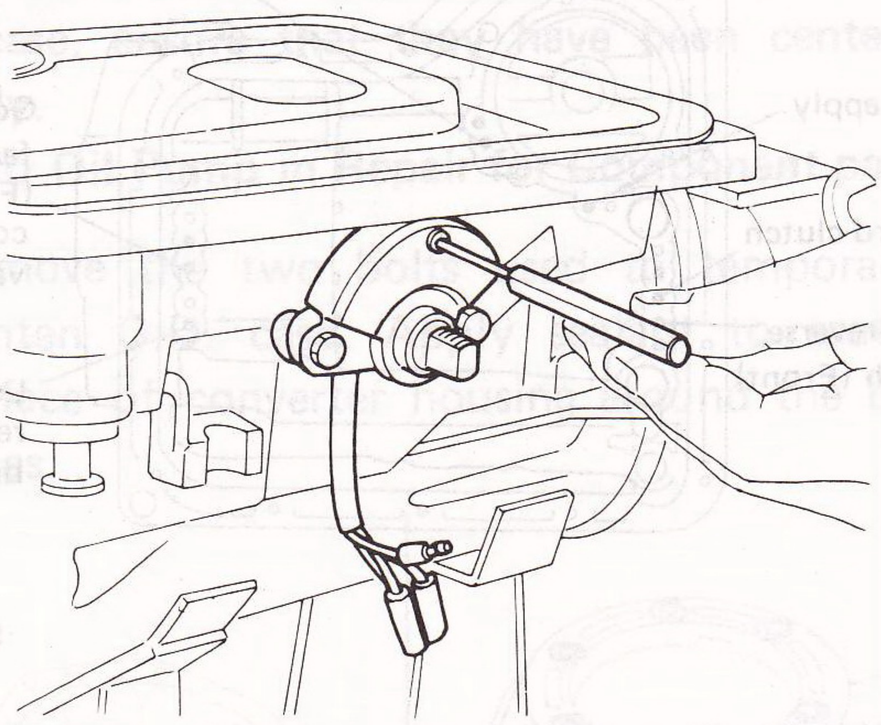
**Make sure that vacuum diaphragm rod does not interfere with side plate of control valve.**

42. Install downshift solenoid, O.D. cancel solenoid and O.D. indicator switch.



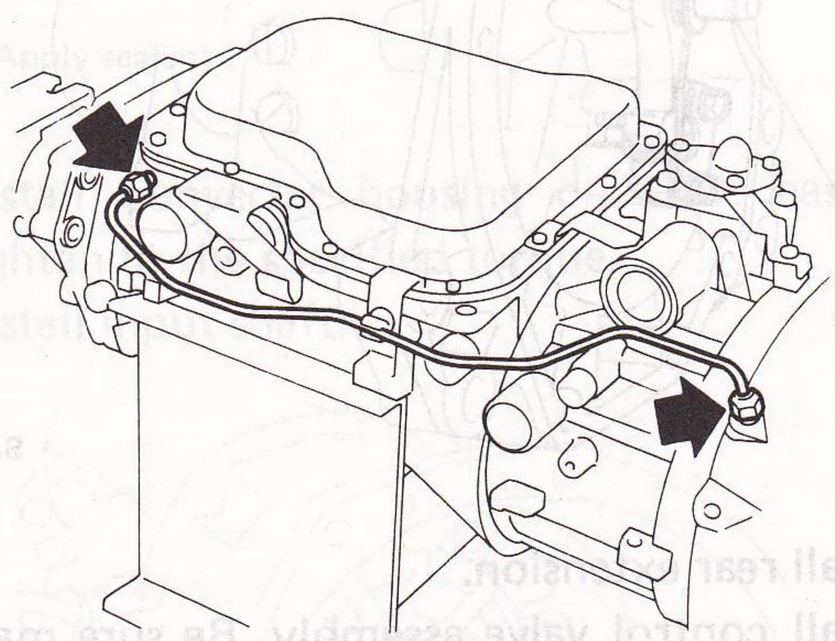

SAT587

43. Install inhibitor switch. Check for proper operation in each range using a circuit tester. Refer to On-vehicle Service.



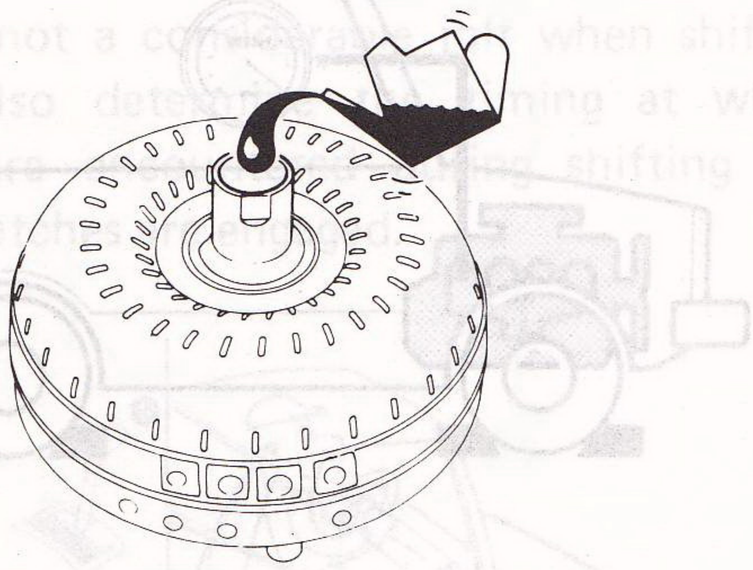
SAT082

44. Before installing oil pan, check parking pawl engagement.
45. Install oil pan with new gasket.
46. Install governor tube.



SAT521

Pour approx. 2-liters (1-3/4 Imp qt) of A.T.F. into converter housing.

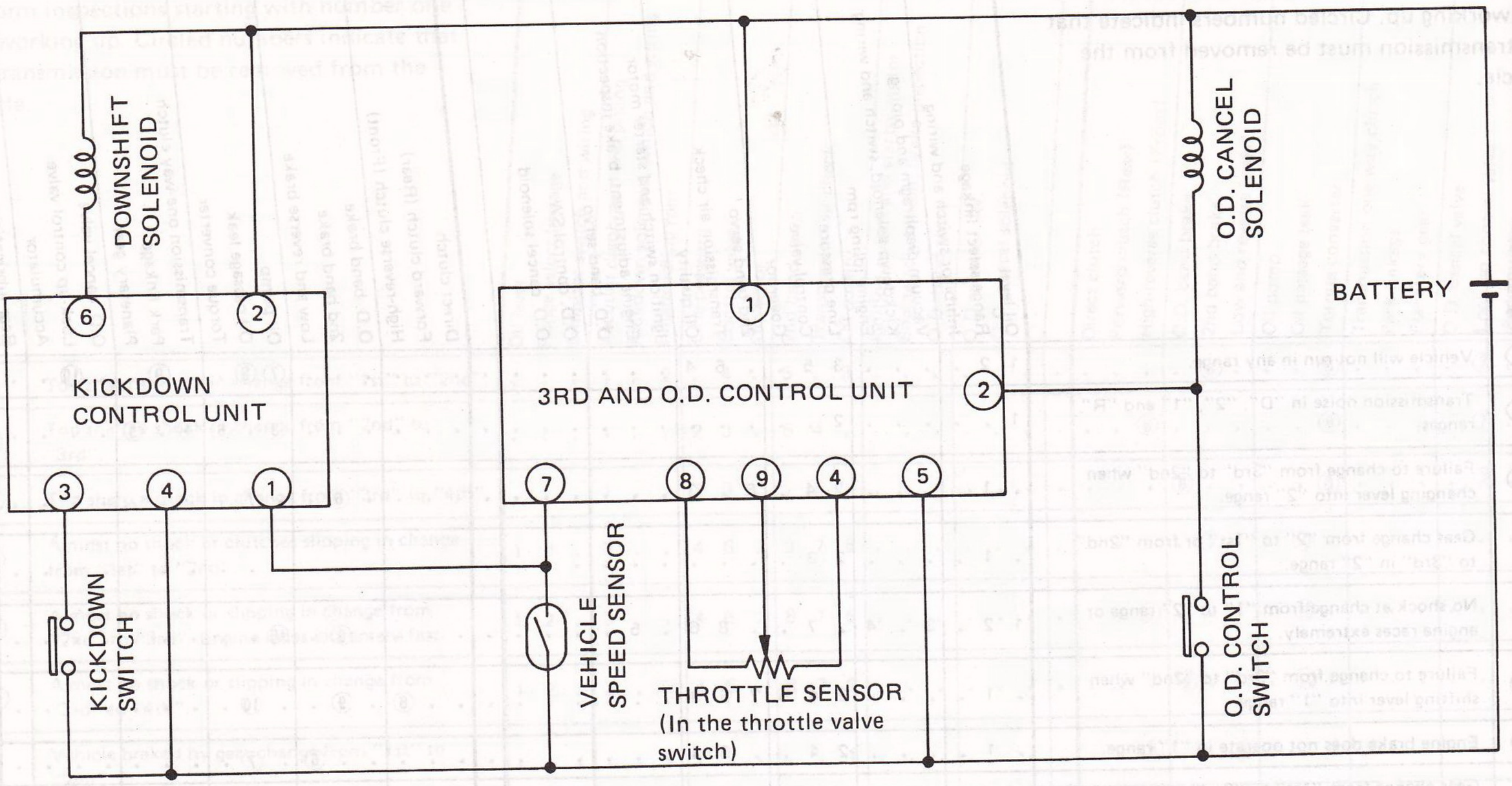


SAT518

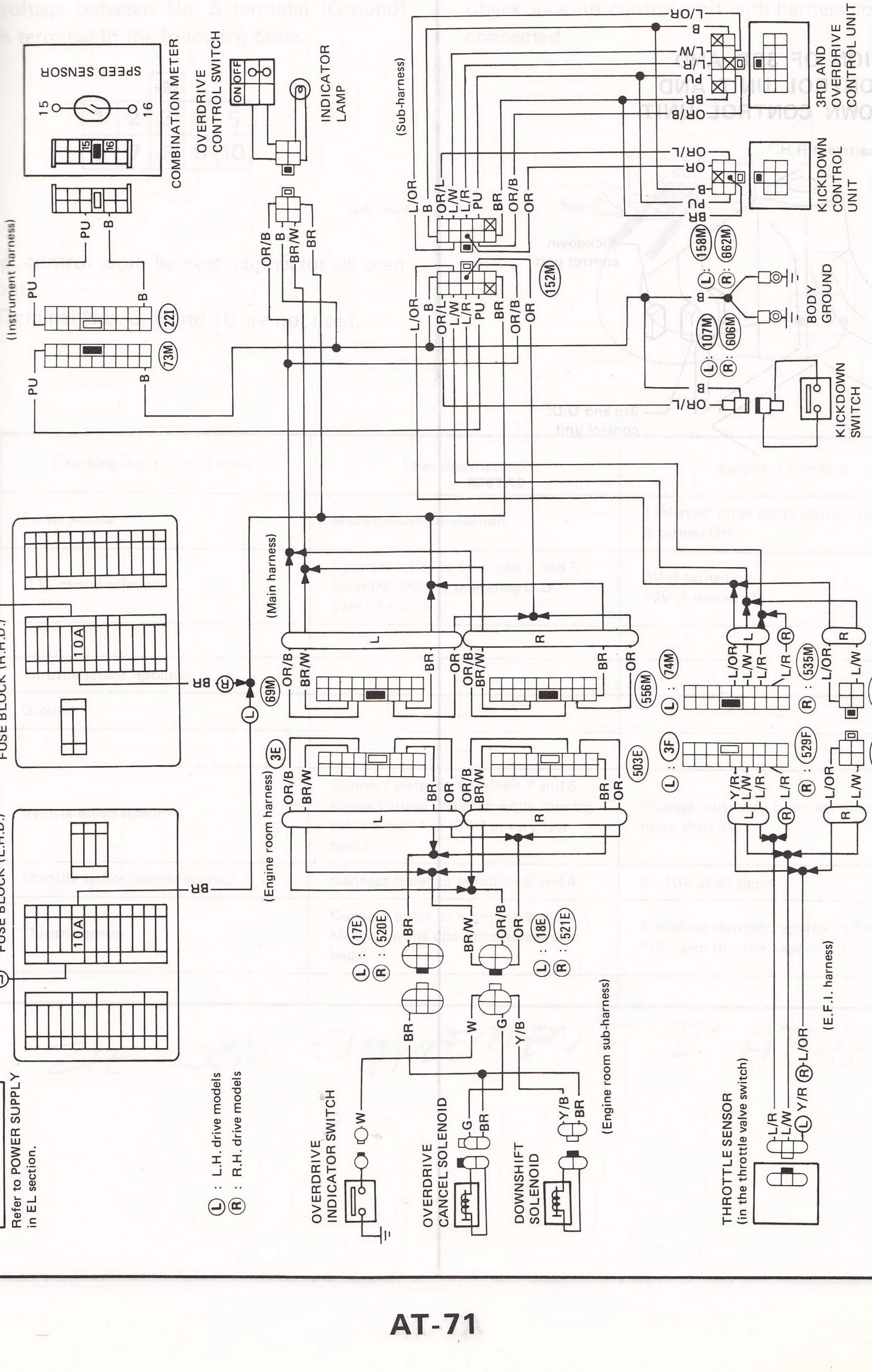
Install torque converter to converter housing.

**Be careful not to scratch front oil seal.**

## L4N71B Electrical System/Schematic (For Europe)



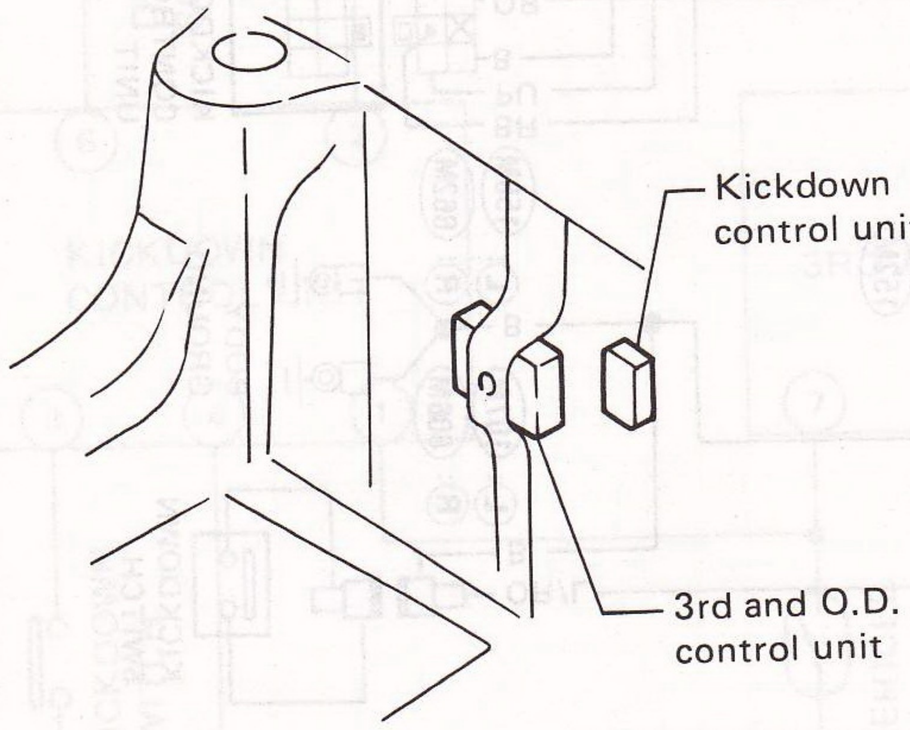
## L4N71B Electrical System/Wiring Diagram (For Europe)



## L4N71B Electrical System/ Wiring Diagram (For Europe) (Cont'd)

### LOCATION OF 3RD AND O.D. CONTROL UNIT AND KICKDOWN CONTROL UNIT

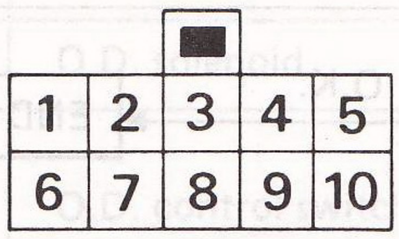
Rear compartment R.H.




SAT968

## Inspection of 3rd and O.D. Control Unit (For Europe)

Check voltage between No. 5 terminal (Ground) and each terminal in the following table.

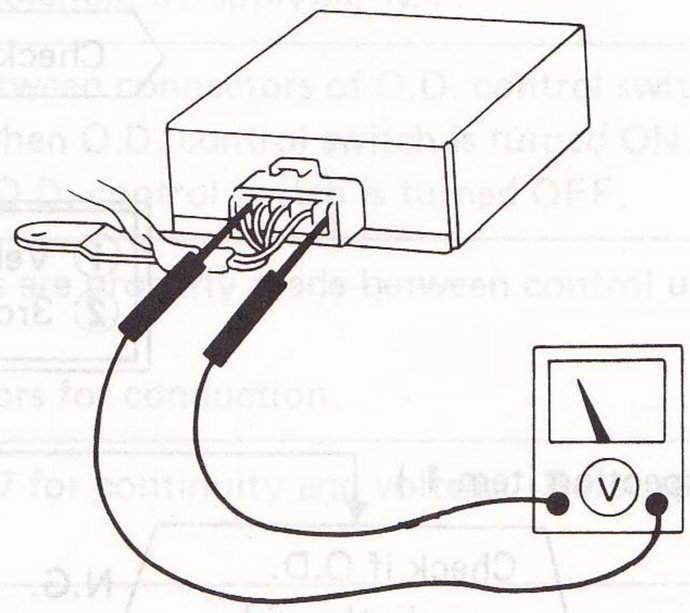



SAT923

(Lock-up control unit harness connector as seen from front)

Note: Terminal Nos. 3, 6 and 10 are not used.

Check lock-up control unit with harness connector connected.




SAT905

| Terminal No. | Checking input/output signal | Checking method | Judgment standard |
|---|---|---|---|
| 1 | Power source | Make ground connection. | 12V at all times while ignition switch is turned ON. |
| 2 | O.D. cancel solenoid | Connect tester to terminals 2 and 5. Measure while to operating O.D. control switch. | 0V if turned on.<br>12V if turned off. |
| 3 | – | – | – |
| 4 | Throttle sensor (ground) | – | – |
| 5 | Ground | – | – |
| 6 | – | – | – |
| 7 | Vehicle speed sensor | Connect tester to terminals 7 and 5. Check voltage variation while running vehicle over 1 m (3 ft) at very low speed. | Voltage must vary from less than 1V to more than 5V. |
| 8 | Throttle sensor (power source) | Connect tester to terminals 8 and 4. | 8 - 10V at all times. |
| 9 | Throttle sensor | Connect tester to terminals 9 and 4. Measure while operating accelerator pedal. | Full-close throttle: approx. 0.7V<br>Full-open throttle: approx. 7V |
| 10 | – | – | – |

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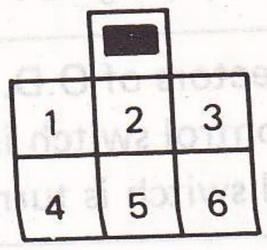
## Inspection of Kickdown Control Unit (For Europe)

Check voltage between No. 4 terminal (Ground) and each terminal in the table below while ignition switch is ON.

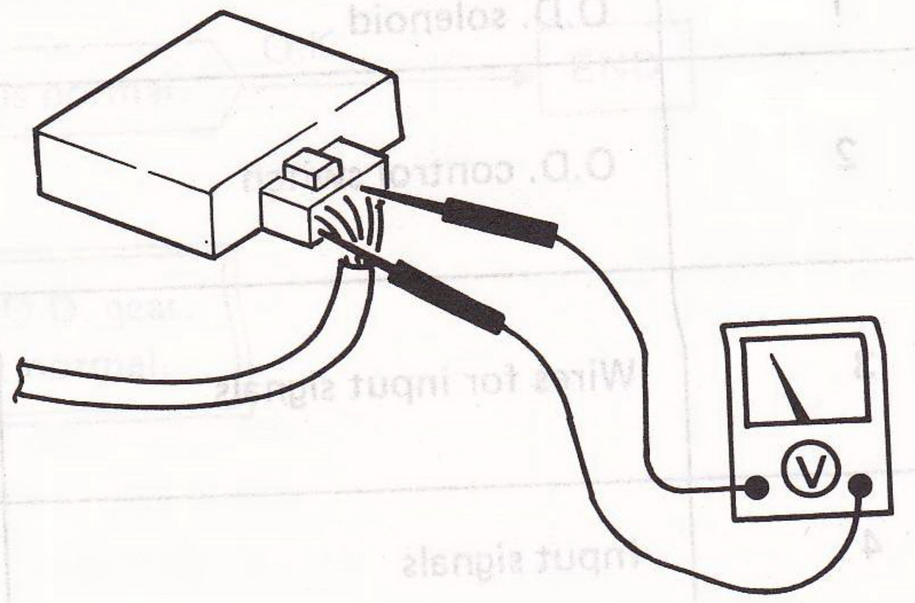



SAT969

(Kickdown control unit harness connector as seen from front)

**Note: No. 5 terminal is not used.**

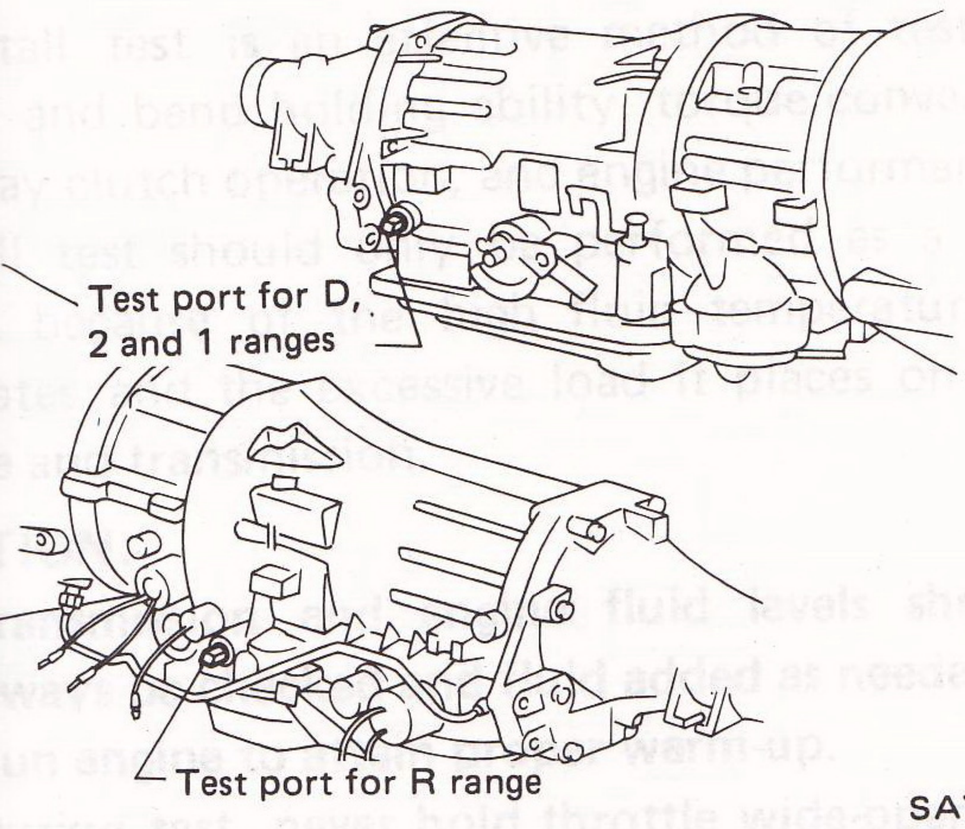
Check kickdown control unit with harness connector connected.




SAT97

| Terminal No. | Checking input/output signal | Checking method | Judgment standard |
|---|---|---|---|
| 1 | Vehicle speed sensor | Connect tester to terminals 1 and 4. Check voltage variation while running vehicle over 1 m (3 ft) at very low speed. | Voltage must vary from less than 1.0V to more than 5.0V. |
| 2 | Power source | Connect tester to terminals 2 and 4. | 12V at all times. |
| 3 | Kickdown switch | Connect tester to terminals 3 and 4. Measure while operating accelerator pedal. | Fully open accelerator: Less than 1.0V<br>Less than fully open: More than 5.0V |
| 4 | Ground | – | – |
| 5 | – | – | – |
| 6 | Downshift solenoid | Connect tester to terminals 6 and 4. Measure while operating accelerator pedal. | Fully open accelerator: Less than 1.0<br>Less than fully open: 12V |

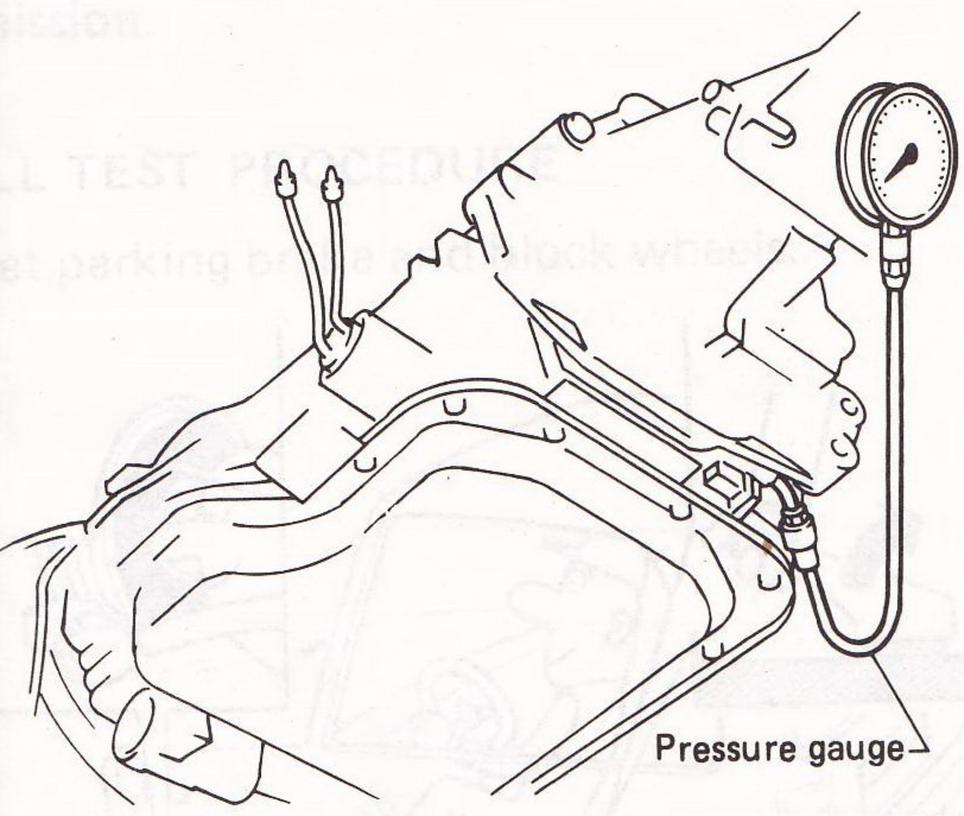
## Pressure Testing




SAT594

### PRESSURE

stall pressure gauge to line pressure port.




SAT765

/arm up engine until engine oil and A.T.F. each operating temperatures.

**.T.F. temperature:**

**50 - 80°C (122 - 176°F)**

et parking brake and block wheels.

Measure line pressure at idle and at stall point while depressing brake pedal fully.

**At idling**

| Range | Line pressure kPa (bar, kg/cm$^2$, psi) |
|---|---|
| R | 549 - 686 (5.49 - 6.86, 5.6 - 7.0, 80 - 100) |
| D | 314 - 373 (3.14 - 3.73, 3.2 - 3.8, 46 - 54) |
| 2 | 373 - 932 (3.73 - 9.32, 3.8 - 9.5, 54 - 135) |
| 1 | 314 - 373 (3.14 - 3.73, 3.2 - 3.8, 46 - 54) |

**At stall test**

1. Start engine and place select lever in "D" range.
2. Apply foot brake and accelerate to wide-open throttle.
3. Quickly note the line pressure and immediately release throttle.
4. Shift select lever to "N".
5. Cool off A.T.F.
6. Perform line pressure testing in the same manner as in steps 2 through 6 with select lever in "2", "1" and "R", respectively.

- Do not perform tests for more than five seconds at any shift range.
- Do not proceed to next "range" test immediately after one "range" test is done. Wait until oil temperature decreases.

| Range | Line pressure kPa (bar, kg/cm$^2$, psi) |
|---|---|
| R | 2,187 - 2,373<br>(21.87 - 23.73, 22.3 - 24.2, 317 - 344) |
| D | 1,157 - 1,275<br>(11.57 - 12.75, 11.8 - 13.0, 168 - 185) |
| 2 | 1,157 - 1,275<br>(11.57 - 12.75, 11.8 - 13.0, 168 - 185) |
| 1 | 1,157 - 1,275<br>(11.57 - 12.75, 11.8 - 13.0, 168 - 185) |

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## Pressure Testing (Cont'd)

**Judgment by measuring line pressure**

**If line pressure does not rise, first check to make sure that vacuum hose is connected properly.**

1) When line pressure is low at all positions, the problem may be due to:
- Wear on interior of oil pump
- Oil leakage at or around oil pump, control valve body, transmission case or governor
- Sticking pressure regulator valve
- Sticking pressure modifier valve

2) When line pressure is low at a particular position, the problem may be due to the following:
- If oil leaks at or around forward clutch (rear) or governor, line pressure is low in "D", "2" or "1" range but is normal in "R" range.
- If oil leaks at or around low and reverse brake circuit, line pressure becomes low in "R" or "P" range but is normal in "D", "2" or "1" range.

3) When line pressure is high, pressure regulator valve may have stuck.