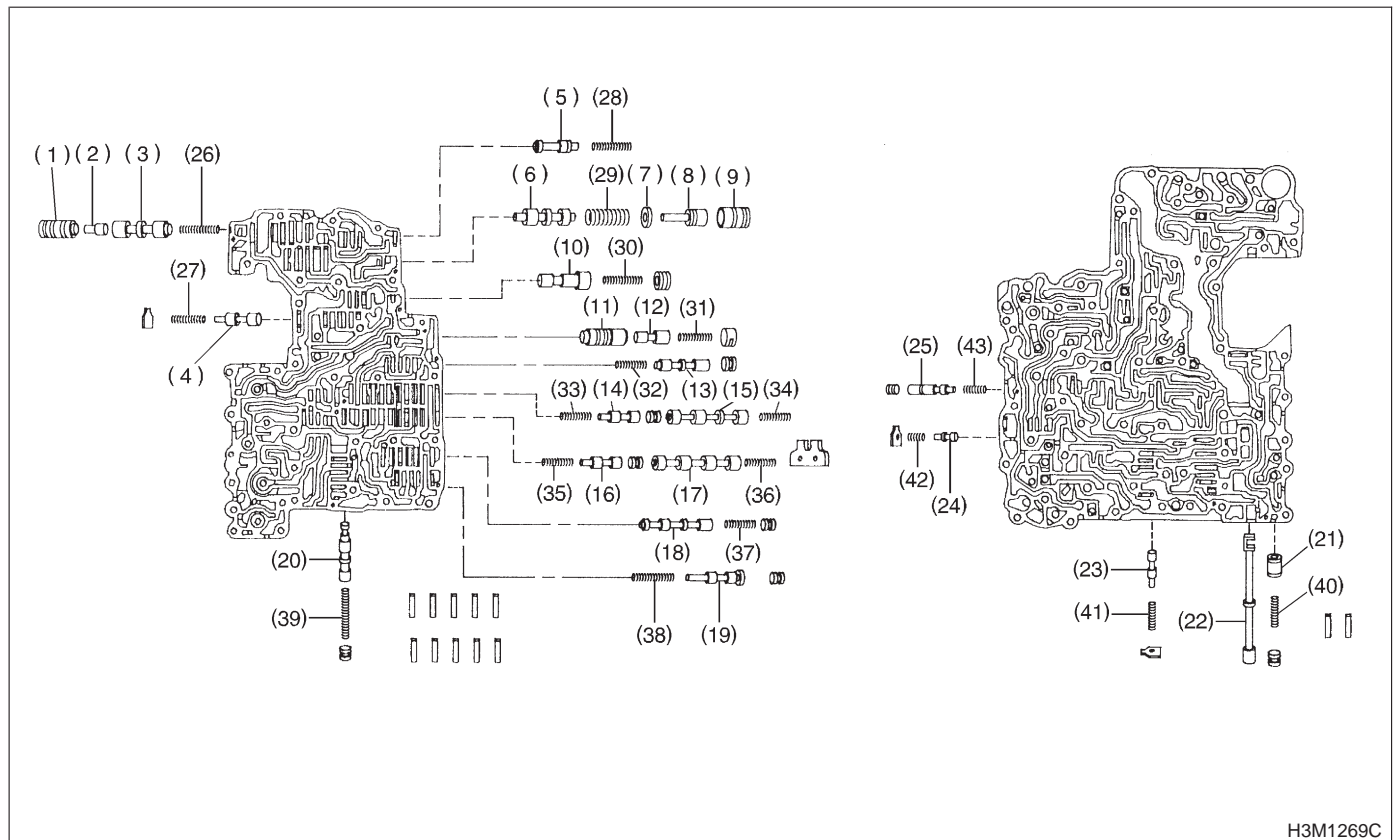


14. Control Valve Body

A: PRECAUTION

The control valve is composed of parts which are accurately machined to a high degree and should be handled carefully during disassembly and assembly. As these parts are similar in shape, they should be arranged in neat order on a table after disassembly so that they can be easily installed to their original positions. Spring loaded parts should

be also handled carefully, as springs may jump out of place when the parts are disassembled or removed. Extreme care should be taken so as not to drop valves on the floor. Before assembling, the parts and valves should be dipped in a container filled with the ATF. Make sure that the valves are clean and free from any foreign material before assembly. Torque specifications should also be observed.



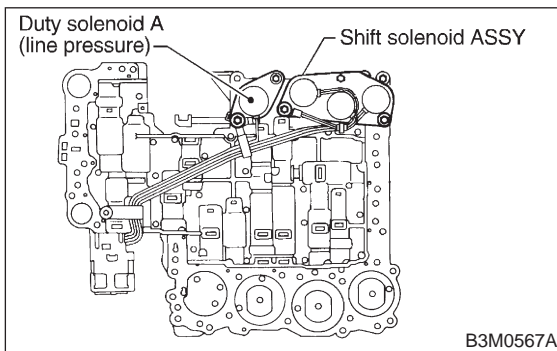
H3M1269C

- | | | |
|---------------------------------------|--|---|
| (1) Lock-up control sleeve | (16) 4-2 relay valve | (31) Accumulator control spring |
| (2) Lock-up control plug | (17) Shift valve A | (32) Shuttle shift spring |
| (3) Lock-up control valve | (18) Overrunning clutch control valve | (33) 4-2 sequence spring |
| (4) Pilot valve | (19) Overrunning clutch reducing valve | (34) Shift B spring |
| (5) Torque converter regulation valve | (20) Shuttle shift valve | (35) 4-2 relay spring |
| (6) Pressure regulator valve | (21) Accumulator modifier piston | (36) Shift A spring |
| (7) Washer | (22) Manual valve | (37) Overrunning clutch control spring |
| (8) Pressure regulator plug | (23) 1st reducing valve | (38) Overrunning clutch reducing spring |
| (9) Pressure regulator sleeve | (24) 3-2 timing valve | (39) Shuttle duty shift spring |
| (10) Pressure modifier valve | (25) Servo charger valve | (40) Modifier accumulator spring |
| (11) Accumulator control sleeve valve | (26) Lock-up control spring | (41) 1st reducing spring |
| (12) Accumulator control plug valve | (27) Pilot spring | (42) 3-2 timing spring |
| (13) Shuttle duty shift valve | (28) Torque converter regulator spring | (43) Servo charger spring |
| (14) 4-2 sequence valve | (29) Pressure regulator spring | |
| (15) Shift valve B | (30) Pressure modifier spring | |

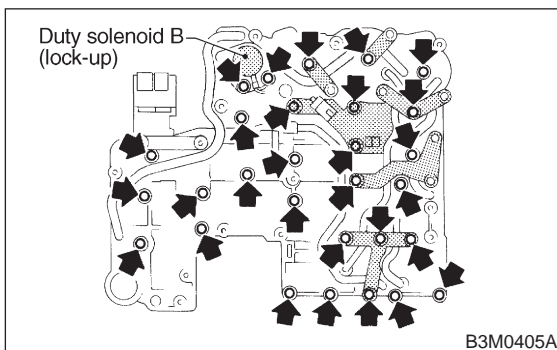
| No. | Part name | Wire dia. mm (in) | Outer dia. mm (in) | Effective turn mm (in) | Free length mm (in) |
|-----|------------------------------------|----------------------|-----------------------|---------------------------|------------------------|
| 26 | Pressure regulator spring | 1.6 (0.063) | 14.0 (0.551) | 5.6 | 31.5 (1.240) |
| 27 | Pressure modifier spring | 0.8 (0.031) | 6.8 (0.268) | 10.0 | 31.95 (1.2579) |
| 28 | Modifier accumulator spring | 1.3 (0.051) | 9.8 (0.386) | 8.8 | 30.5 (1.201) |
| 29 | Pilot spring | 1.1 (0.043) | 9.1 (0.358) | 8.3 | 25.7 (1.012) |
| 30 | Accumulator control spring | 0.4 (0.016) | 6.6 (0.260) | 11.0 | 27.5 (1.083) |
| 31 | Shift B spring | 0.65 (0.0256) | 7.0 (0.276) | 9.5 | 25.0 (0.984) |
| 32 | Shift A spring | 0.5 (0.020) | 7.0 (0.276) | 9.5 | 25.0 (0.984) |
| 33 | Shuttle shift spring | 0.65 (0.0256) | 5.65 (0.2224) | 27.6 | 51.0 (2.008) |
| 34 | Overrunning clutch control spring | 0.7 (0.028) | 6.0 (0.236) | 12.0 | 26.5 (1.043) |
| 35 | 4-2 sequence spring | 0.55 (0.0217) | 6.95 (0.2736) | 11.0 | 29.1 (1.146) |
| 36 | 4-2 relay spring | 0.55 (0.0217) | 6.95 (0.2736) | 11.0 | 29.1 (1.146) |
| 37 | Servo charger spring | 0.7 (0.028) | 6.7 (0.264) | 9.0 | 23.0 (0.906) |
| 38 | 3-2 timing spring | 0.75 (0.0295) | 6.75 (0.2657) | 7.5 | 20.55 (0.8091) |
| 39 | 1st reducing spring | 0.75 (0.0295) | 6.75 (0.2657) | 12.5 | 25.4 (1.000) |
| 40 | Overrunning clutch reducing spring | 1.05 (0.0413) | 7.05 (0.2776) | 15.21 | 34.7 (1.366) |
| 41 | Torque converter regulator spring | 1.3 (0.051) | 9.0 (0.354) | 11.7 | 38.0 (1.496) |
| 42 | Lock-up control spring | 0.75 (0.0295) | 13.0 (0.512) | 3.5 | 18.5 (0.728) |
| 43 | Shuttle duty shift spring | 0.75 (0.0295) | 5.65 (0.2224) | 27.6 | 51.0 (2.008) |

B: DISASSEMBLY

1) Remove the duty solenoid A and shift solenoid assembly from the upper valve body.



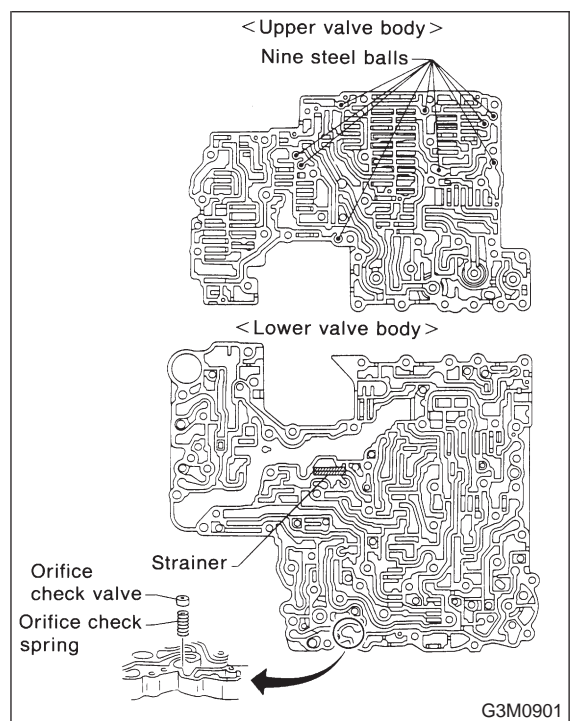
2) Remove the duty solenoid B and brackets from the lower valve body. Remove the upper-lower valve body tightening bolts.



3) Separate the upper valve body and lower valve body.

CAUTION:

- Do not lose the nine (9) steel balls contained in the upper valve body.
- Do not lose an orifice and a strainer contained in the lower valve body.



NOTE:

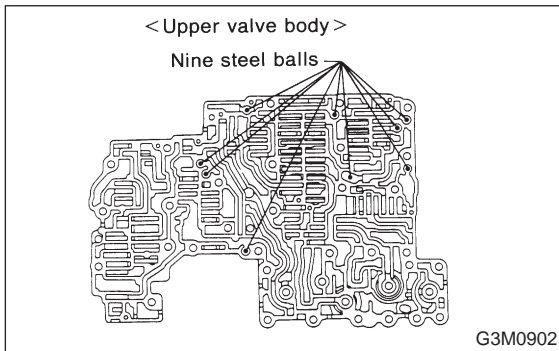
During ordinary servicing, clean the control valve bodies in this condition, without further disassembly. In the event of a seized clutch or other problem, disassemble the control valve bodies further, and clean the component parts.

C: INSPECTION

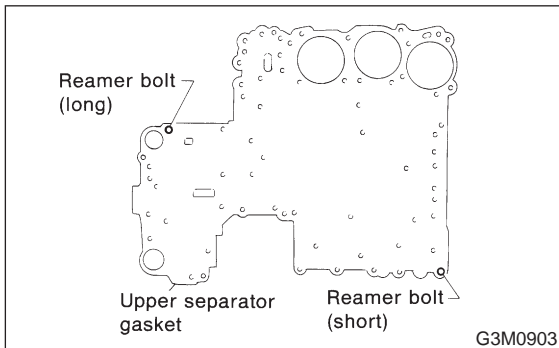
Make sure that each component is free of harmful gouges, cuts, or dust.

D: ASSEMBLY

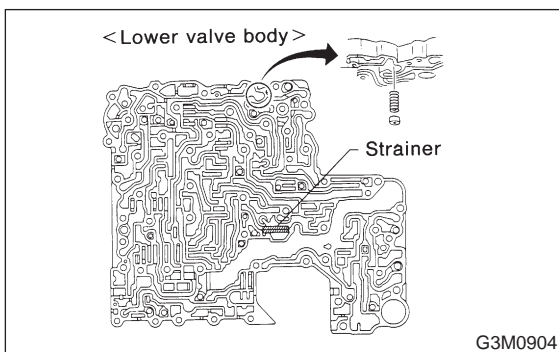
1) Install the nine steel balls to the upper valve body.



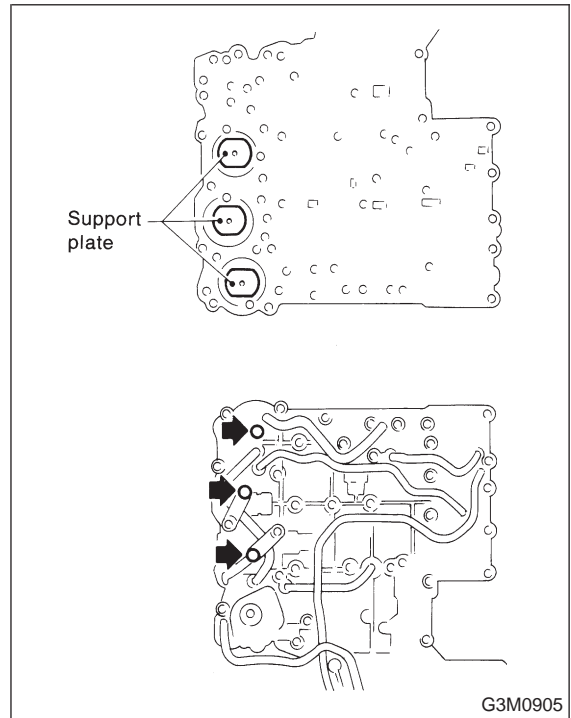
2) From under upper valve body, install two bolts using washers and position upper separator gasket.



3) Install the orifice check valve, orifice check spring and filter to the lower valve body.

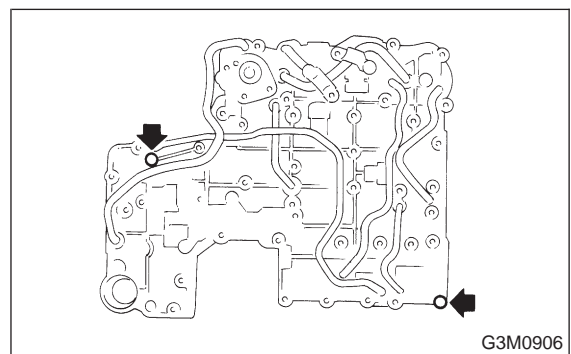


4) Install lower separate gasket and separate plate on lower body in that order, then temporarily tighten three support plates and two brackets.



5) Temporarily assemble lower valve body to upper valve body.

CAUTION:
Be careful not to drop the upper body interior steel ball, or the lower body interior filter, orifice check spring, or orifice check valve.

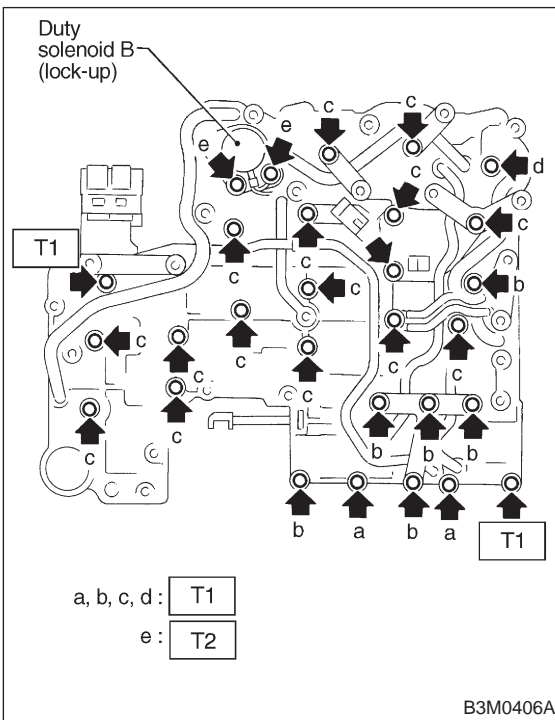


- 6) Install the duty solenoid B and the four brackets.
- 7) Tighten twenty seven bolts & washers and two reamer bolts.

Tightening torque:

T1: 8 ± 1 N-m (0.8 ± 0.1 kg-m, 5.8 ± 0.7 ft-lb)
T2: 11.3 ± 1.5 N-m (1.15 ± 0.15 kg-m, 8.3 ± 1.1 ft-lb)

| | a | b | c | d | e |
|-------------------|--------------|--------------|--------------|--------------|--------------|
| Length mm (in) | 70 (2.76) | 50 (1.97) | 33 (1.30) | 27 (1.06) | 28 (1.10) |
| Num- bers | 2 | 6 | 16 | 1 | 2 |



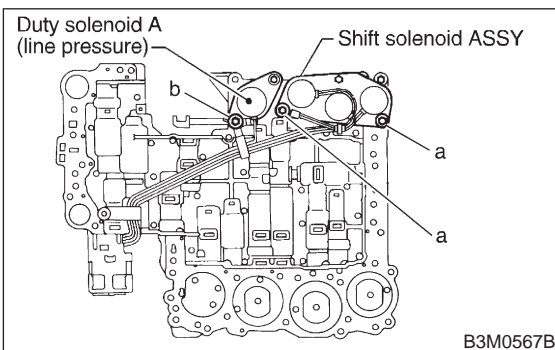
- 8) Install the shift solenoid assembly and duty solenoid A.

a length: 16 mm (0.63 in)

b length: 27 mm (1.06 in)

Tightening torque:

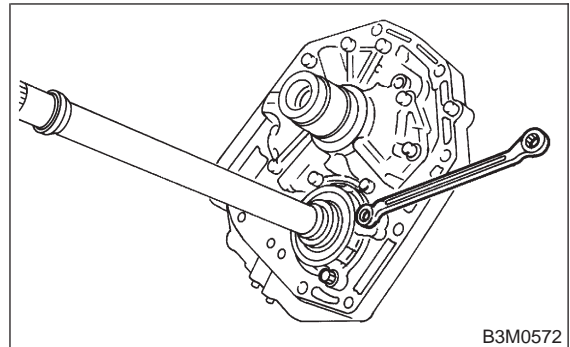
8 ± 1 N-m (0.8 ± 0.1 kg-m, 5.8 ± 0.7 ft-lb)



15. Oil Pump Assembly

A: DISASSEMBLY

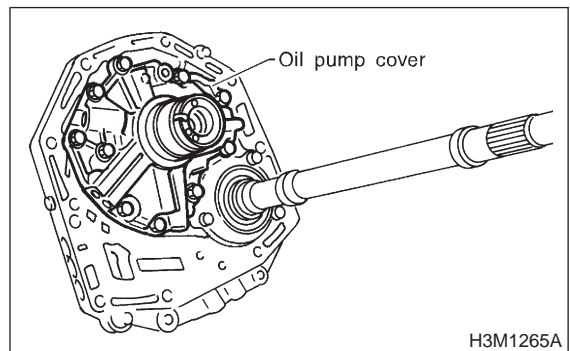
- 1) Remove the oil seal retainer.
Also remove the O-ring and oil seal (air breather).



- 2) Remove the oil pump cover.

NOTE:

Lightly tap the end of the stator shaft to remove the cover.



- 3) Remove the retainer and return spring. Then remove the rotor, two vane rings and nine vanes.

