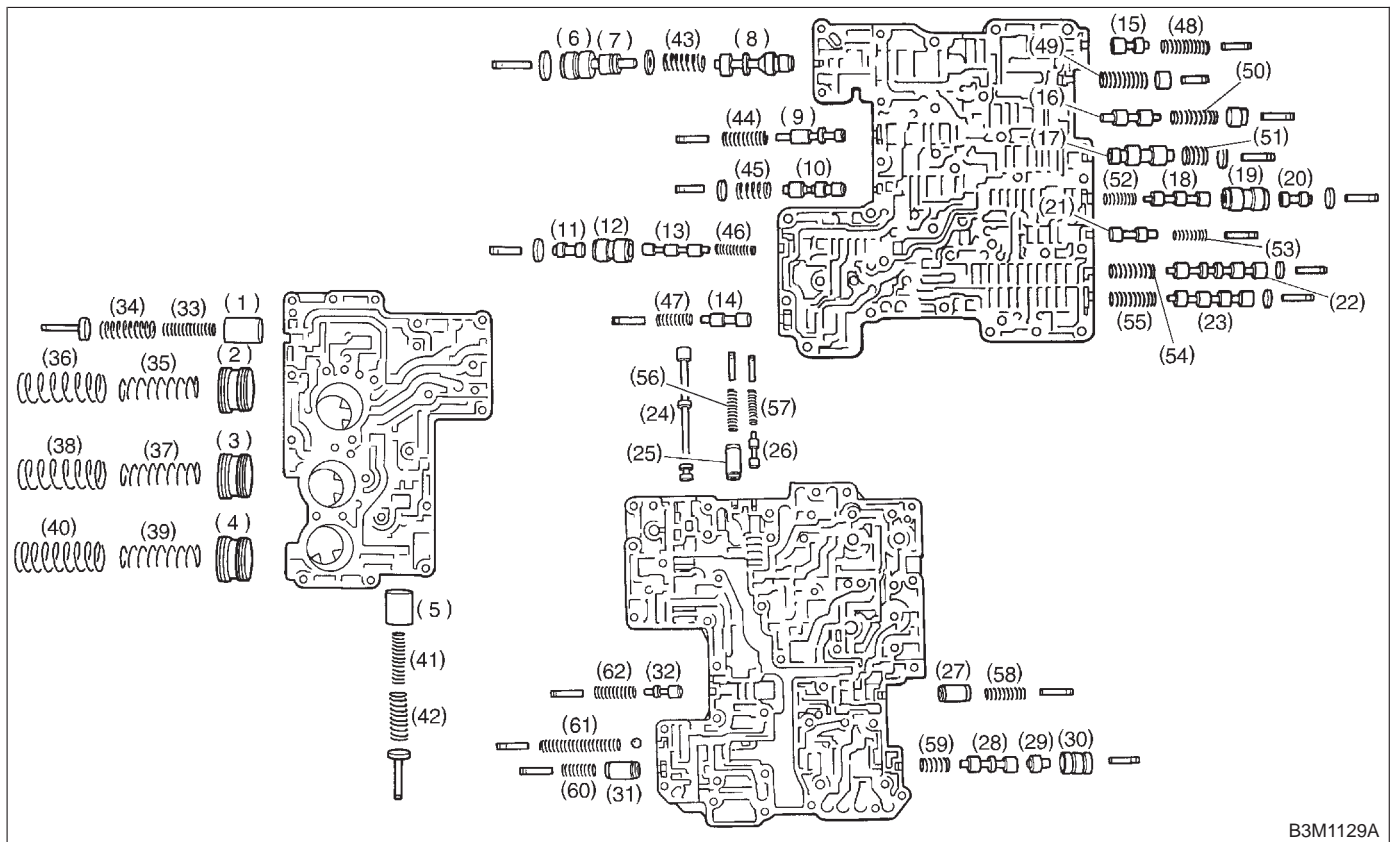


## 15. Control Valve Body

### 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.



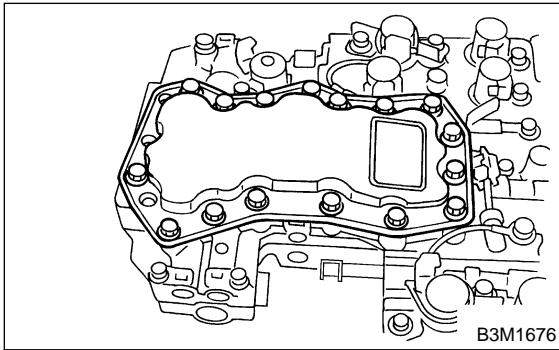
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- |   |                                       |                                    |
|---|---------------------------------------|------------------------------------|
| (1) 2-4 brake clutch accumulator piston B | (11) 2-4 brake timing plug            | (23) Shift valve A                 |
| (2) 2-4 brake clutch accumulator piston A | (12) 2-4 brake timing sleeve          | (24) Manual valve                  |
| (3) Low clutch accumulator piston         | (13) 2-4 brake timing valve A         | (25) Throttle accumulator piston B |
| (4) High clutch accumulator piston A      | (14) 2-4 brake timing valve B         | (26) 1st reducing valve            |
| (5) High clutch accumulator piston B      | (15) Torque converter regulator valve | (27) Throttle accumulator piston A |
| (6) Pressure regulator sleeve             | (16) Pressure modifier valve          | (28) Lock-up control valve         |
| (7) Pressure regulator plug               | (17) Accumulator control valve A      | (29) Lock-up control plug          |
| (8) Pressure regulator valve              | (18) Low clutch timing valve A        | (30) Lock-up control sleeve        |
| (9) Reverse inhibit valve                 | (19) Low clutch timing sleeve         | (31) Modifier accumulator piston   |
| (10) Accumulator control valve B          | (20) Low clutch timing plug           | (32) Pilot valve                   |
|   | (21) Low clutch timing valve B        |                                    |
|   | (22) Shift valve B                    |                                    |

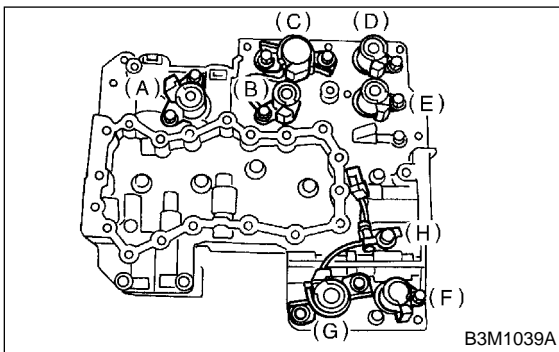
No.	Part name	Wire dia. mm (in)	Average dia. mm (in)	Effective turn	Free length mm (in)
33	2-4 brake accumulator B spring (Inlet)	1.6 (0.063)	9.3 (0.366)	14.6	47.0 (1.850)
34	2-4 brake accumulator B spring (Outlet)	2.3 (0.091)	13.7 (0.539)	8.79	45.0 (1.772)
35	2-4 brake accumulator A spring (Inlet)	1.8 (0.071)	21.3 (0.839)	8.0	69.1 (2.720)
36	2-4 brake accumulator A spring (Outlet)	1.7 (0.067)	25.3 (0.996)	6.3	69.1 (2.720)
37	Low clutch accumulator spring (Inlet)	1.8 (0.071)	21.3 (0.839)	8.0	69.1 (2.720)
38	Low clutch accumulator spring (Outlet)	1.7 (0.067)	25.3 (0.996)	6.3	69.1 (2.720)
39	High clutch accumulator A spring (Inlet)	1.8 (0.071)	21.3 (0.839)	8.0	69.1 (2.720)
40	High clutch accumulator A spring (Outlet)	1.7 (0.067)	25.3 (0.996)	6.3	69.1 (2.720)
41	High clutch accumulator B spring (Inlet)	1.6 (0.063)	9.3 (0.366)	14.6	47.0 (1.850)
42	High clutch accumulator B spring (Outlet)	2.3 (0.091)	13.7 (0.539)	8.79	45.0 (1.772)
43	Pressure regulator valve spring	1.0 (0.039)	13.5 (0.531)	6.5	35.0 (1.378)
44	Reverse inhibit valve spring	0.65 (0.0256)	8.4 (0.331)	7.7	26.5 (1.043)
45	Accumulator control valve B spring	0.5 (0.020)	10.5 (0.413)	4.5	21.5 (0.846)
46	2-4 brake timing valve A spring	0.5 (0.020)	6.5 (0.256)	7.78	19.3 (0.760)
47	2-4 brake timing valve B spring	0.60 (0.0236)	5.8 (0.228)	7.7	20.0 (0.787)
48	Torque converter regulator valve spring	1.40 (0.0551)	7.6 (0.299)	12.1	34.7 (1.366)
49	Plug hold spring	0.8 (0.031)	9.7 (0.382)	11.5	40.0 (1.575)
50	Pressure modifier valve spring	0.7 (0.028)	8.3 (0.327)	8.2	26.9 (1.059)
51	Accumulator control valve A	0.7 (0.028)	10.3 (0.406)	3.6	15.1 (0.594)
52	Low clutch timing valve A spring	0.5 (0.020)	6.5 (0.256)	7.78	19.3 (0.760)
53	Low clutch timing valve B spring	0.60 (0.0236)	5.8 (0.228)	7.7	20.0 (0.787)
54	Shift valve B spring	0.80 (0.0315)	8.2 (0.323)	7.9	25.2 (0.992)
55	Shift valve A spring	0.80 (0.0315)	8.2 (0.323)	7.9	25.2 (0.992)
56	Throttle accumulator B spring	1.6 (0.063)	8.4 (0.331)	9.77	36.0 (1.417)
57	1st reducing valve spring	0.75 (0.0295)	6.0 (0.236)	12.5	25.4 (1.000)
58	Throttle accumulator A spring	1.7 (0.067)	8.0 (0.315)	9.61	36.0 (1.417)
59	Lock-up control valve spring	0.9 (0.035)	11.2 (0.441)	4.0	19.7 (0.776)
60	Modifier accumulator spring	1.7 (0.067)	8.0 (0.315)	9.61	36.0 (1.417)
61	Line pressure relief valve spring	1.6 (0.063)	8.0 (0.315)	22.5	69.3 (2.728)
62	Pilot valve spring	1.1 (0.043)	7.9 (0.311)	10.76	30.6 (1.205)

**B: DISASSEMBLY**

1) Remove oil strainer from lower control valve body.

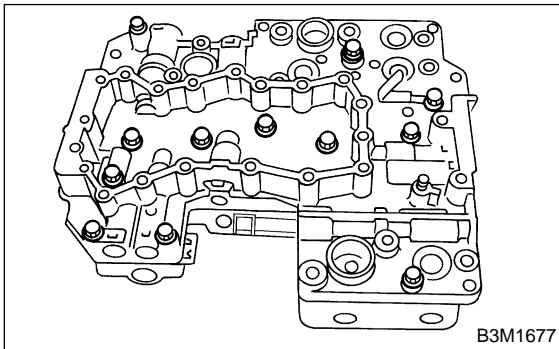


2) Remove the duty solenoids, solenoids and sensor from the lower valve body.



- (A) Lock-up duty solenoid (Blue)
- (B) Low clutch timing solenoid (Gray)
- (C) Line pressure duty solenoid (Red)
- (D) Shift solenoid 1 (Yellow)
- (E) Shift solenoid 2 (Green)
- (F) 2-4 brake timing solenoid (Black)
- (G) 2-4 brake duty solenoid (Red)
- (H) ATF temperature sensor

3) Remove the upper-lower valve body tightening bolts.



4) Separate the control valve body.

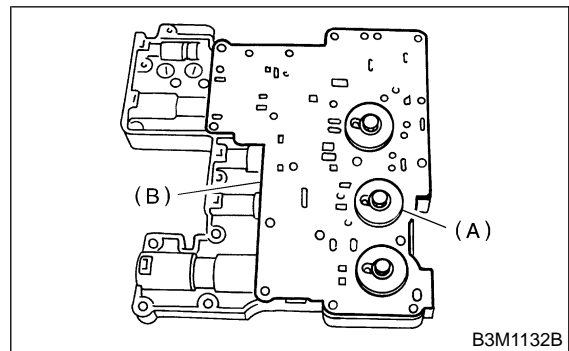
**CAUTION:**

- Do not lose the ten steel balls contained in the upper valve body and middle valve body.
- Do not lose strainers contained in the lower valve body.

**NOTE:**

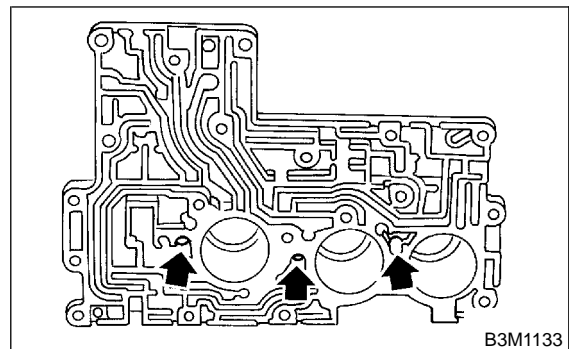
During ordinary servicing, clean the control valve bodies in this condition, without further disassembly. In the event of a seized clutch or other problem, disassemble the control valve bodies further, and clean the component parts.

5) Remove upper separator plate from middle valve body.



- (A) Side plate
- (B) Upper separator plate

6) Remove valve springs from upper valve body.  
 7) Using air compressor, remove accumulator piston from upper valve body.



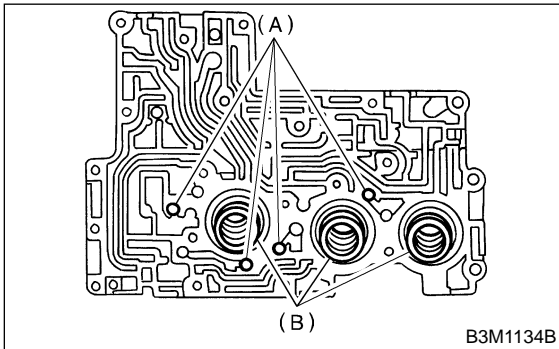
**C: INSPECTION**

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

**D: ASSEMBLY**

1) Install accumulator pistons, valve springs and steel balls to upper valve body.

**CAUTION:**  
Insert steel balls in their proper positions.

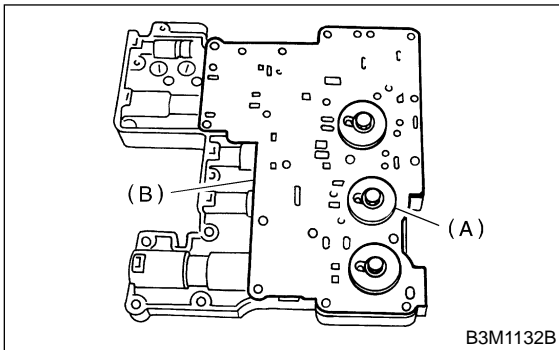


- (A) Steel ball
- (B) Valve spring

2) Install support plate and upper separate plate to middle valve body.

**CAUTION:**  
Align the hole in support plate with the hole in separate plate.

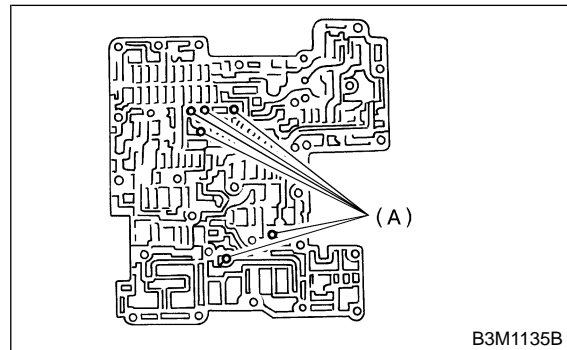
**Tightening torque:**  
 $8 \pm 1 \text{ N}\cdot\text{m}$  ( $0.8 \pm 0.1 \text{ kg}\cdot\text{m}$ ,  $5.8 \pm 0.7 \text{ ft}\cdot\text{lb}$ )



- (A) Side plate
- (B) Upper separator plate

3) Install the steel balls to middle valve body.

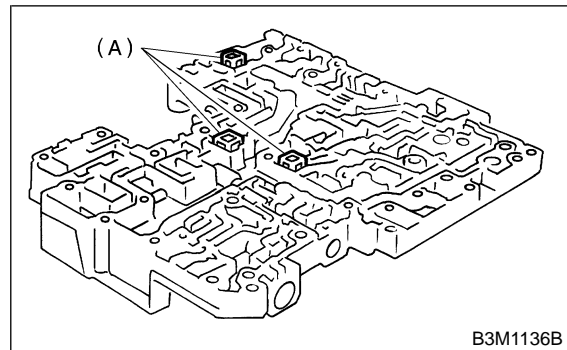
**CAUTION:**  
Insert steel balls in their proper positions.



- (A) Steel ball

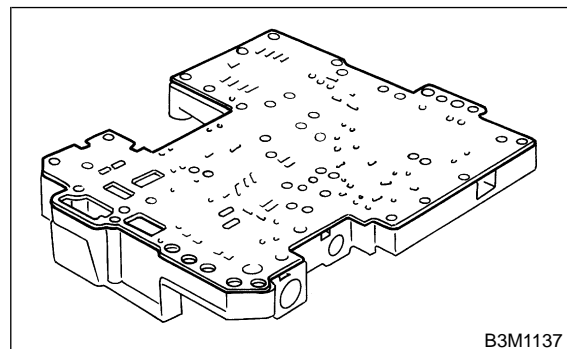
4) Install three filters to lower valve body.

**CAUTION:**  
Pay attention to the location of filters.



- (A) Strainer

5) Install lower separate plate to lower valve body.

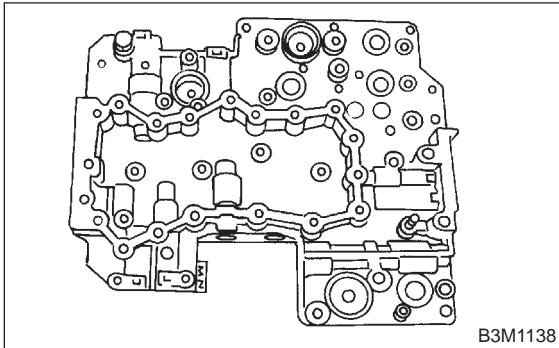


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6) Temporarily assemble valve body.

**CAUTION:**

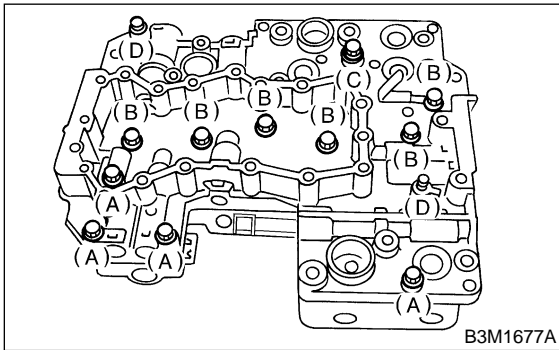
Be careful not to drop the middle valve body and upper body interior steel ball, or the lower body filter.



7) Tighten bolts.

**Tightening torque:**

**$8 \pm 1 \text{ N}\cdot\text{m}$  ( $0.8 \pm 0.1 \text{ kg}\cdot\text{m}$ ,  $5.8 \pm 0.7 \text{ ft}\cdot\text{lb}$ )**

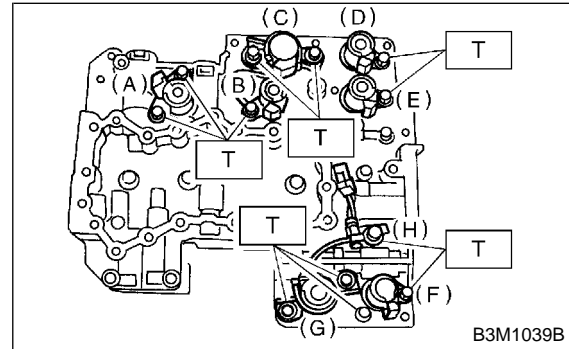


- (A) Short bolts
- (B) Middle bolts
- (C) Long bolt
- (D) Reamer bolts

8) Install the sensor, solenoids and duty solenoids.

**Tightening torque:**

**$T: 8 \pm 1 \text{ N}\cdot\text{m}$  ( $0.8 \pm 0.1 \text{ kg}\cdot\text{m}$ ,  $5.8 \pm 0.7 \text{ ft}\cdot\text{lb}$ )**



- (A) Lock-up duty solenoid (Blue)
- (B) Low clutch timing solenoid (Gray)
- (C) Line pressure duty solenoid (Red)
- (D) Shift solenoid 1 (Yellow)
- (E) Shift solenoid 2 (Green)
- (F) 2-4 brake timing solenoid (Black)
- (G) 2-4 brake duty solenoid (Red)
- (H) ATF temperature sensor

9) Install oil strainer to lower valve body.

**Tightening torque:**

**$8 \pm 1 \text{ N}\cdot\text{m}$  ( $0.8 \pm 0.1 \text{ kg}\cdot\text{m}$ ,  $5.8 \pm 0.7 \text{ ft}\cdot\text{lb}$ )**