VOLVO
Construction Equipment

Service Information

Document Title: **Brake system, checking function, hydraulic**	Function Group: **520**	Information Type: **Service Information**	Date: **2014/3/8 0**
Profile: **SSL, MC110B [GB]**			

Brake system, checking function, hydraulic

MC110B

One side

Op nbr 520-001

11666051 Pressure gauge
14290266 Hose
14290266 Hose
936439 Testing nipple
936439 Testing nipple

4821859 T-coupling

4821861 T-coupling

11043041 Nipple

4881498 Nipple

This operation also includes required tools and times for applicable parts of the following operations:

- 191 Raising and blocking
- 191 Service position 1

1. Raise and block the machine,see 191 Raising and blocking.
2. Put the machine in service position, see 191 Service position 1.
3. **Mechanical check, released brake**
   Preparations:
   - Start the engine
   - Lower the seat bar
   - If the machine is equipped with cab door, keep the cab door switch pressed
4. It should now be possible to slowly rotate the wheels with manual power.
5. **Mechanical check, unreleased brake**
   Preparations:

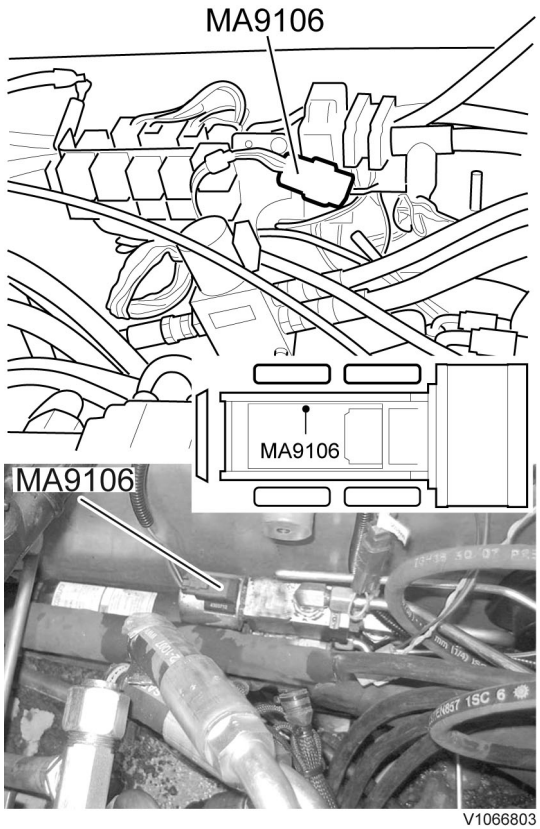

Figure 1
Connector MA9106, located inside compartment, left side (there is two versions of connectors)

- Disconnect the connector from brake solenoid valve MA9106
- Start the engine
- Lower the seat bar
- If the machine is equipped with cab door, keep the hydraulic lock out sensor detent

6. Activate the transmission.
   The brakes should now be able to hold the wheels in a locked position.
   If they do not hold the wheels, go to nest step.

7. **Hydraulic pressure, check, released brake**
   Install the 4821859 T-coupling, 11043041 Nipple, 936439 Testing nipple, 14290266 Hose to the test location A on the brake release line.

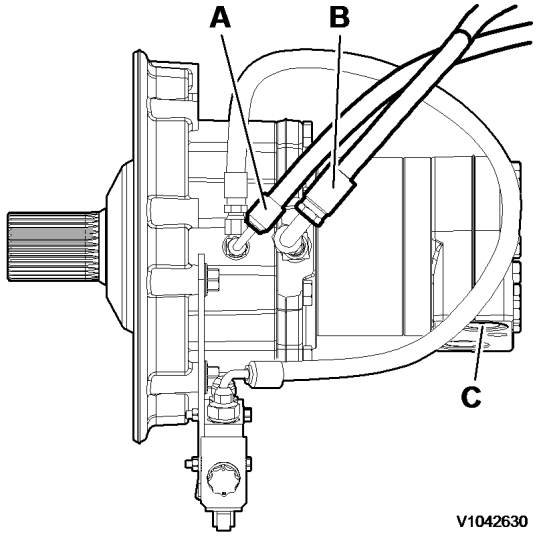

Figure 2

A. Test location (Brake release line)
B. Test location (Brake pressure line)
C. Pressure line connection

8. Install the 4821861 T-coupling, 4881498 Nipple, 936439 Testing nipple, 14290266 Hose to the test location B on the brake press line

9. Connect both hoses to 11666051 Pressure gauge.

10. Preparations:

    - Start the engine
    - Lower the seat bar
    - If the machine is equipped with cab door, keep the hydraulic lock out sensor detente.

11. Measure and note the pressure both at low idle and high idle.
    Δ P must exceed the minimum brake release pressure, see 520 Brake system, specifications
    If the pressure is not correct, continue the test.

12. Disconnect and plug both hose connection and drive motor connection on the pressure line (B).

13. Repeat step 10 and 11.
    If the pressure is still to low, the transmission pump charge relief valve is showing considerable wear and has to be replaced, se 440 Charge system pressure relief valve, replacement.
    If the pressure is correct, the hydraulic brake is showing considerable ware and it may be necessary to replace the brake piston seals, see 550 Parking brake, disassembly.
    NOTE!
    When the check is completed the cab door switch has to be restored

Document Title: **Accumulator, check**	Function Group: **527**	Information Type: **Service Information**	Date: **2014/3/8 0**
Profile: **SSL, MC110B [GB]**			

Accumulator, check

Op nbr 527-009

11666051 Pressure gauge
11666013 Pump
14290266 Hose

Adapter

Removed

WARNING

A discarded accumulator which is not punctured may still contain high pressure and must always be handled with great care.

1. Insert a screw driver into the oil side of the accumulator and press the piston.
   If it is possible to move the piston with manual power, the charge pressure is to low and the accumulator has to be recharged or replaced.
   If it is not possible to move the piston continue the check by following the next steps.

2. Connect an adapter, 14290266 Hose, 11666051 Pressure gauge and 11666013 Pump to the oil side of the accumulator.

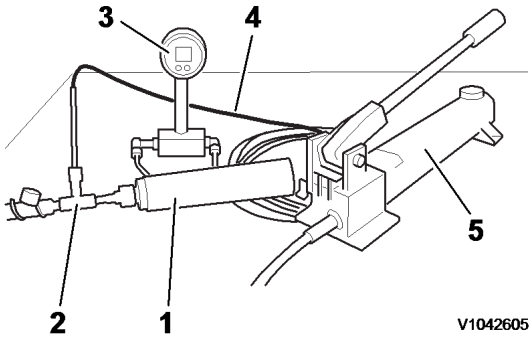

Figure 1

1. Accumulator
2. Adapter
3. 11666051 Pressure gauge
4. 14290266 Hose
5. 11666013 Pump

3. Pump oil into the accumulator, and at the same time, note how the pressure is built up into the accumulator.
   If the pressure is raising quickly up to the set accumulator charge pressure, and slowly there after the accumulator is showing good condition.
   If the pressure is raising slowly up to the set accumulator charge pressure, and quickly there after, the accumulator is showing considerable wear and has to be replaced.
   For correct pressure values, see 527 Accumulator, specification

Document Title:	Function Group:	Information Type:	Date:
Wet brake, description	**550**	**Service Information**	**2014/3/8 0**
Profile: **SSL, MC110B [GB]**			

Wet brake, description

MC110B

Model MC110B is equipped with wet multiple disc brakes which are engaged by a cup spring and unloaded with hydraulic pressure from the charge loop. The brakes are operated by the seat bar switch which activates solenoid valve MA9106. The brakes engages when the seat bar is raised, and releases when it is lowered.
An accumulator and check valve mounted before the park brake valve MA9106, helps to stabilize and keep pressure to the brakes.

Brakes engaged.

There is no voltage to MA9106.
Port R on the drive motor is connected to tank. Port D is connected to the pressure side. The flow from the charge circuit enters (engine running) the spring side. The orifice O restricts the connection to tank and pressure is built up. This way the brake spring is reinforced with charge pressure and the brake function secured.

Brakes released

When the seat bar is lowered, the switch SE9201 closes and voltage is going to MA9106.
The flow from the charge circuit enters port R and goes into the brake housing. The orifice after the brake house restricts the connection to tank and pressure builds up. The flow in the brake housing also cools down and cleans the brakes

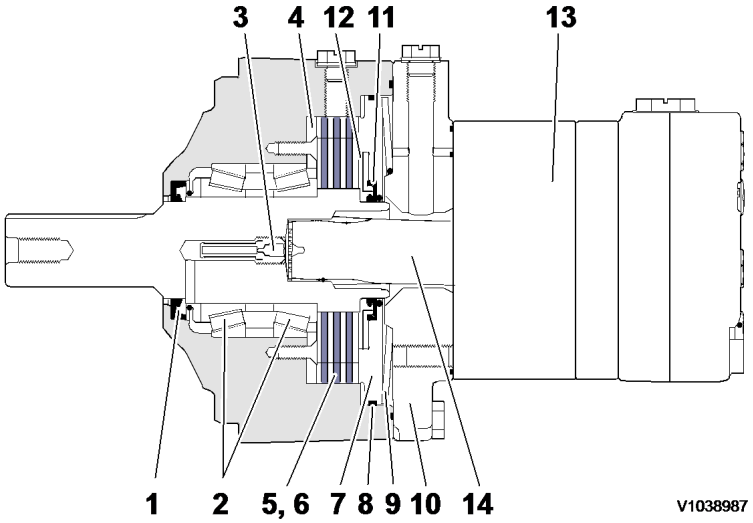

Figure 1

1	Shaft seal	8	O–ring
2	Bearing	9	Disc spring
3	Brake orifice, filter	10	Motor flange
4	Retaining ring	11	Piston seal
5	Outer disc	12	Retaining ring
6	Inner disc	13	Drive motor
7	Piston	14	Drive shaft

NOTE!

It is impossible to release the brakes without hydraulic pressure and flow.

Document Title: **Parking Brake - Disassembly**	Function Group: **550**	Information Type: **Service Information**	Date: **2014/3/8 0**
Profile: **SSL, MC110B [GB]**			

Parking Brake - Disassembly

Op nbr 550-019

11667001 Handle
11667080 Drift plate

MC110B

Removed, one side

1. **Disassembly**
   To ease the disassembly of the drive motor, make a “Service bench” that can be mounted with clamps on a work bench.
   Mark up where to drill the holes by using the drive motor seal as template.

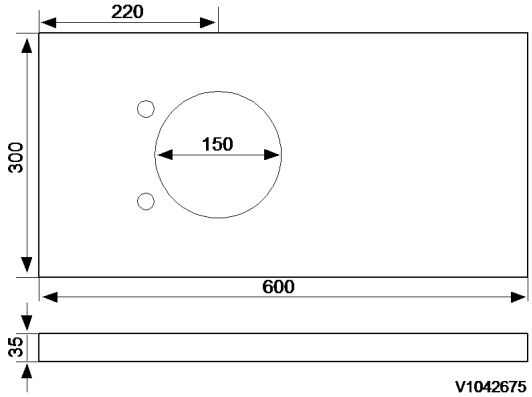

Figure 1

NOTICE
Maintain greatest possible cleanliness.

2. Put a container under the bench to collect any oil spillage.
3. Place the drive motor with the splined shaft into the hole in the wooden block. Secure the motor by tighten two screws through the wooden block into the motor.
4. Loosen the screws holding the motor flange. Loosen in equally stages on opposite sides around the flange.
5. Remove the drive motor assembly from the brake assembly.
6. Remove the disc. spring.

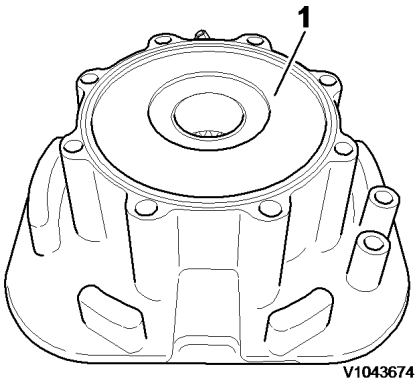

Figure 2

1. Disc. spring

7. Open the hydraulic connection.

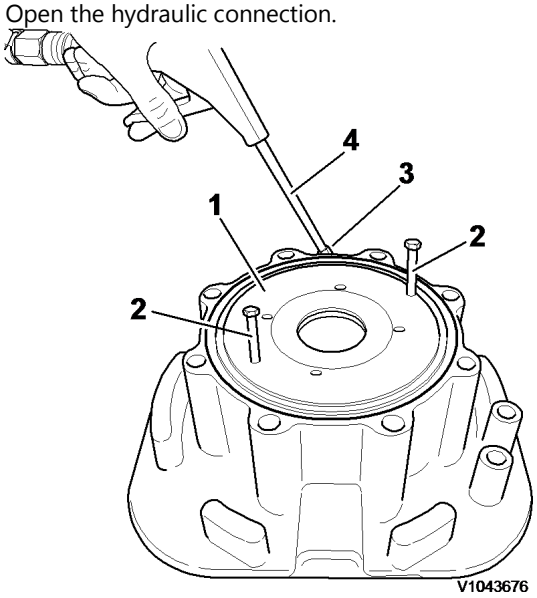

Figure 3

1. Brake piston
2. Screw
3. Hydraulic connection
4. Compressed air

8. With two screws, remove the brake piston. If the brake piston is stuck, air can be blown into the housing via the hydraulic connection.

9. Remove the brake discs. (outer disc. 7 pcs., inner disc. 6 pcs.)

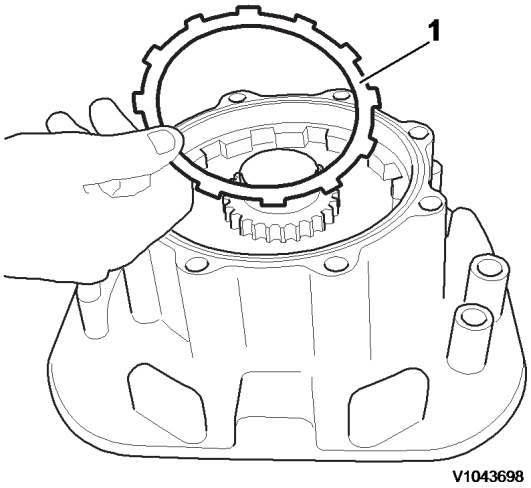

Figure 4

1. Outer brake disc. (7 pcs)

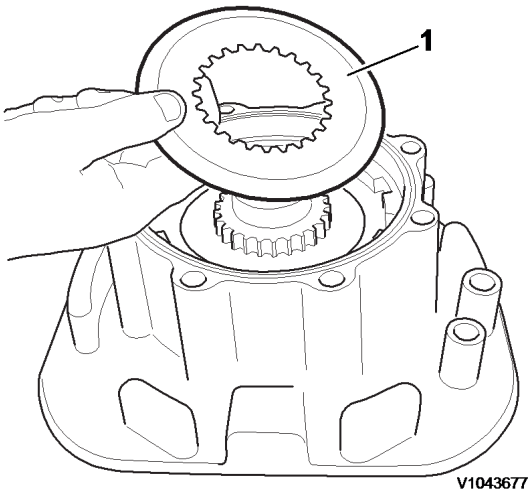

Figure 5

1. Inner brake disc. (6 pcs)

10. Remove and discard the outer brake piston O-ring. Apply grease and install the new O-ring.

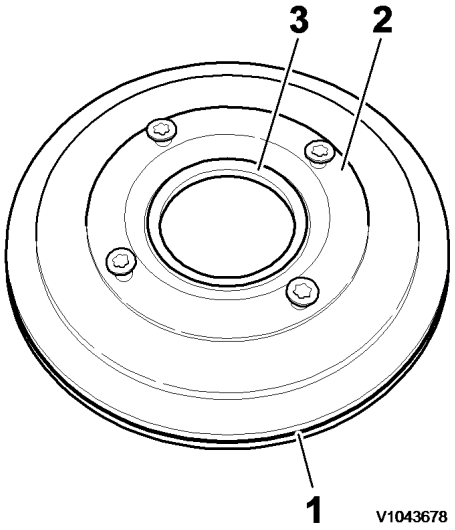

Figure 6

1. Outer O-ring
2. Retaining ring
3. Inner seal

11. Remove the retaining ring from the brake piston.

12. Remove and discard the inner brake piston seal. Apply grease and install the new seal.

Figure 7

13. Reinstall the retaining ring.
    Tightening torque: 9 ±1.5 Nm (7 ±1.1 lbf ft)

14. Remove the retaining ring.

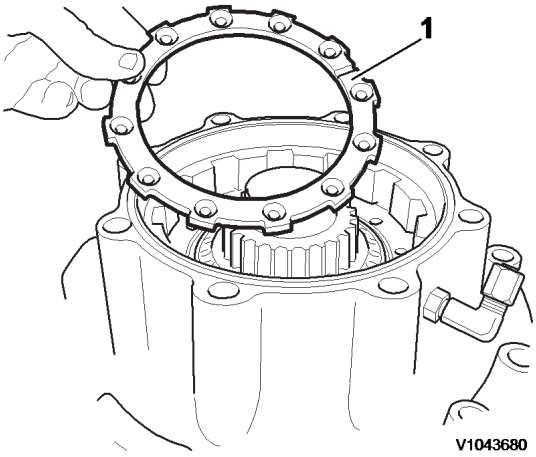

Figure 8

1. Retaining ring

15. Fix the bearing housing into a hydraulic press and press the shaft out of the housing.

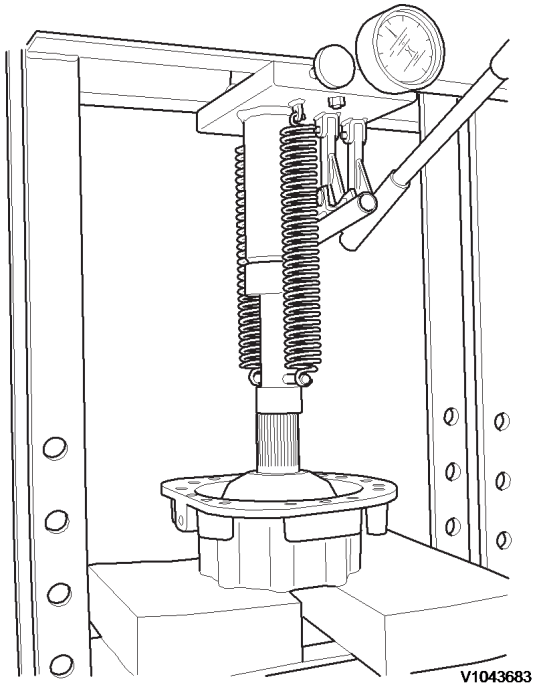

Figure 9

16. Remove and discard the drive shaft seal.

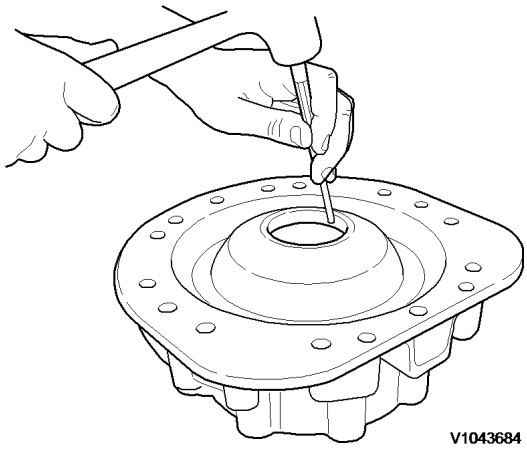

Figure 10

17. **Assembly**
    Apply grease to the seal. With 11667001 Handle and 11667080 Drift plate, fit the new drive shaft seal.

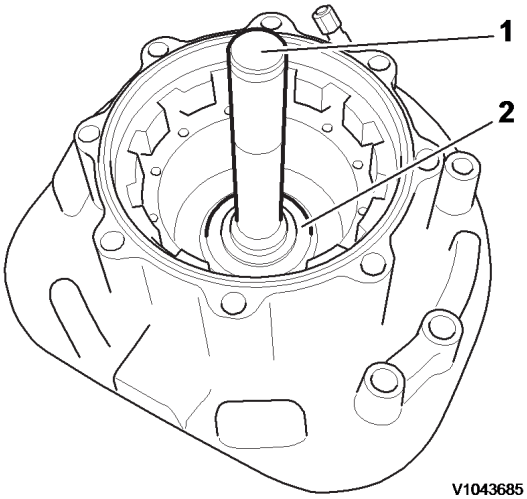

Figure 11

1. 11667001 Handle
2. 11667080 Drift plate

18. Remove the filter orifice from inside the drive shaft.

Figure 12

1. Filter orifice

19. Clean the filter orifice and reinstall into the shaft.
    Tightening torque: 30 ±5 Nm (22 ±4 lbf ft)

20. Fix the housing in the hydraulic press and with a suitable drift ring, press the shaft into the housing.
    NOTE!
    Do not press directly on the thin edge of the shaft. Use a suitable ring as drift.

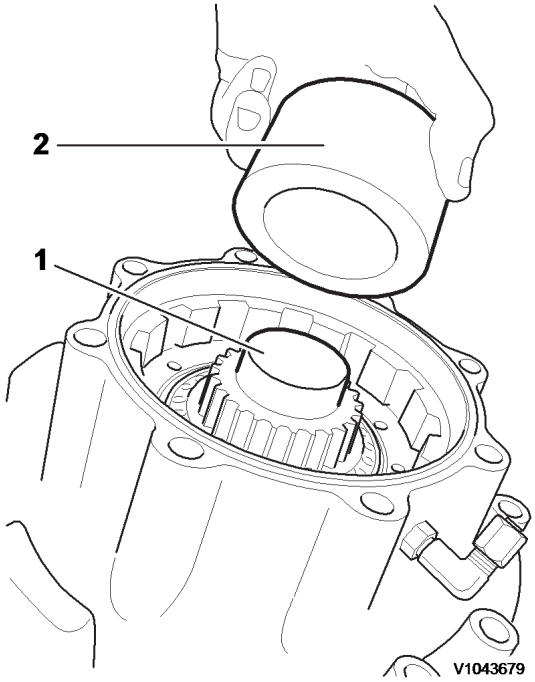

Figure 13

1. Drive shaft
2. Drift ring

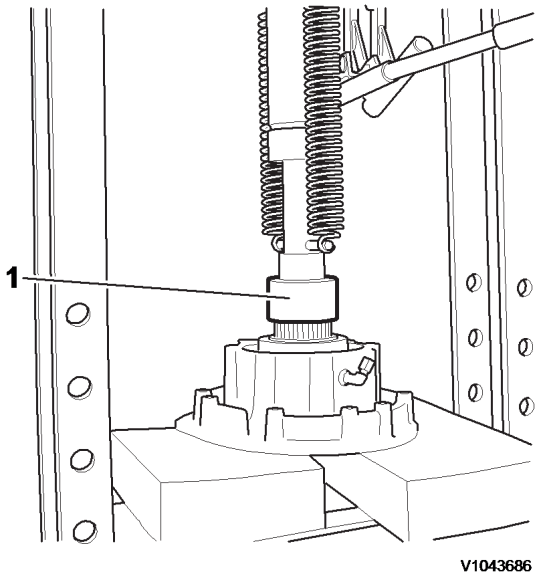

Figure 14

1. Drift ring

21. Fit the retaining ring

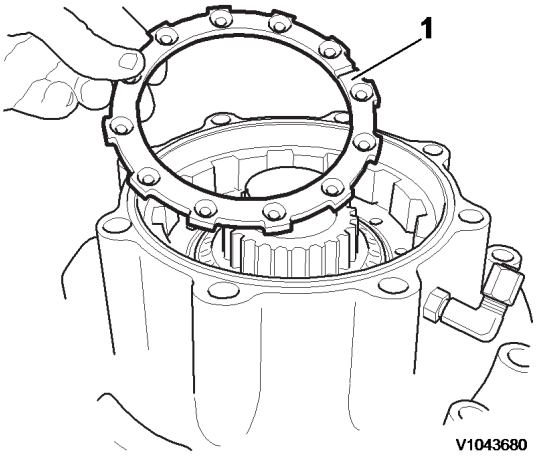

Figure 15

1. Retaining ring

22. Fit the brake discs.

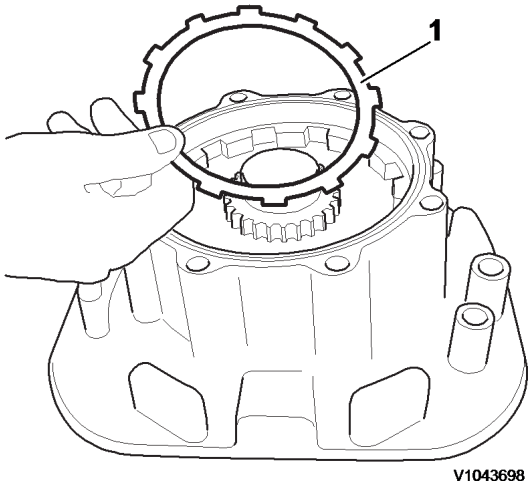

Figure 16

1. Outer brake disc. (7 pcs)

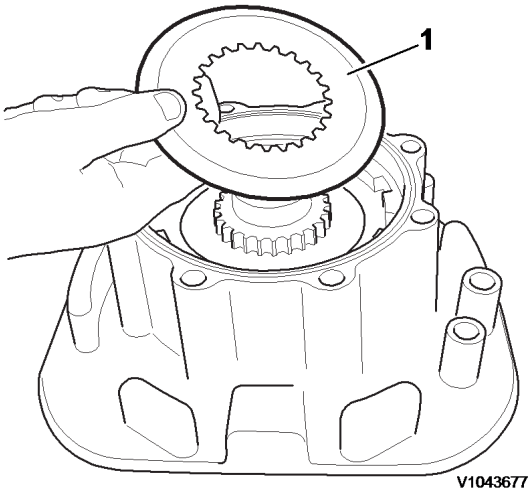

Figure 17

1. Inner brake disc. (6 pcs)

23. Fit the brake piston.

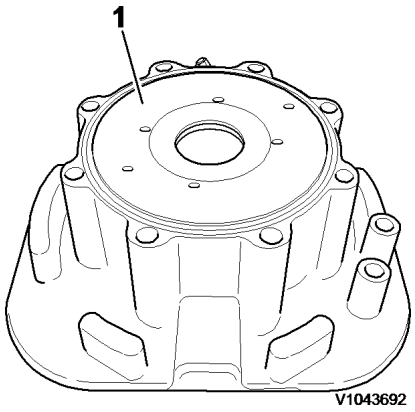

Figure 18

1. Brake piston

24. Fit the brake spring

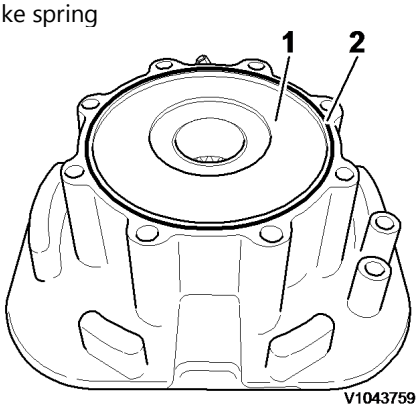

Figure 19

1. Brake spring
2. O-ring

25. Remove and discard the brake housing O-ring. Apply grease and fit the new O-ring.

26. Fit the drive motor assembly to the brake assembly.
    Tighten in equally stages on opposite sides around the flange.
    Tightening torque: **75 ±10 Nm (55 ±7 lbf ft)**

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