DX235NLC

Shop Manual

950106-00303

Serial Number 50001 and Up

DOOSAN reserves the right to improve our products in a continuing process to provide the best possible product to the market place. These improvements can be implemented at any time with no obligation to change materials on previously sold products. It is recommended that consumers periodically contact their distributors for recent documentation on purchased equipment.

This documentation may include attachments and optional equipment that is not available in your machine's package. Please call your distributor for additional items that you may require.

Illustrations used throughout this manual are used only as a representation of the actual piece of equipment, and may vary from the actual item.

Table of Contents

Electrical System

Attachments

Disassembly

The motor should be disassembled in the following order. Numbers in the parenthesis indicate those as shown in the Assembly Diagram.

1. Wrap wire around the motor, use a crane to lift it, wash it with cleaning oil, and then dry it with compressed air.
2. Discharge oil in the casing (301) through the drain port.
3. Put the motor with the driving shaft (201) facing downward for easy disassembly.
   - Mark parts of the casing (301) and the valve casing (101) to be engaged.

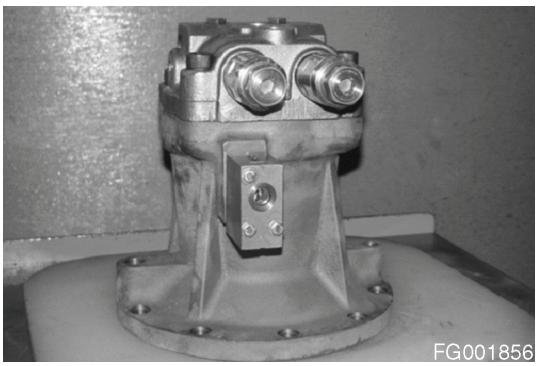

Figure 12

4. Separate the brake valve (400).

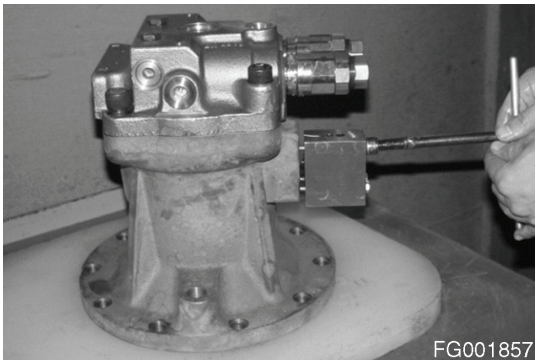

Figure 13

5. Undo and remove the relief valve (107) from the casing (101).

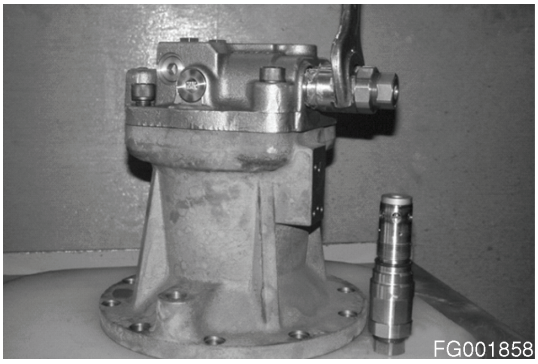

Figure 14

6. Separate the plug (102) from the valve casing (101) and disassemble the spring (103) and the plunger (104).

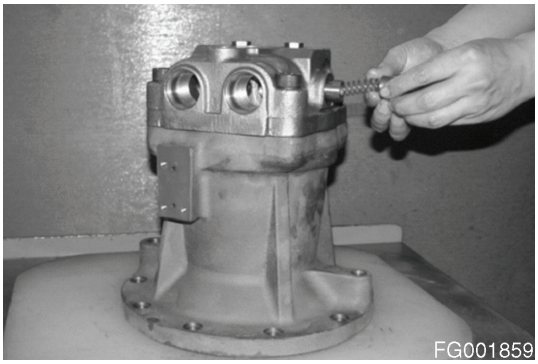

Figure 15

7. Disassemble the S/R V/V ass'y (105) from the valve casing (101).

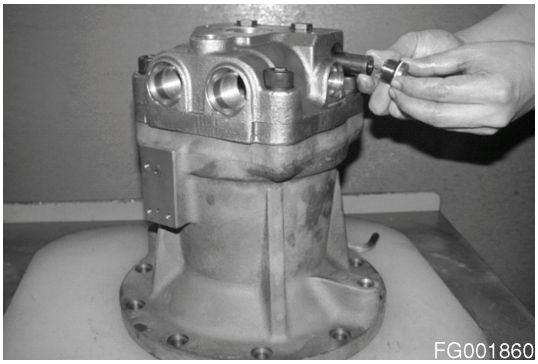

Figure 16

8. Loosen and remove the hexagon socket head cap bolts (109, 110) from the valve casing (101). (Upon removing the bolts with the force of the brake spring (310), the valve casing is separated from the casing automatically.)

   Separate the valve plate (213) from the valve casing (101).

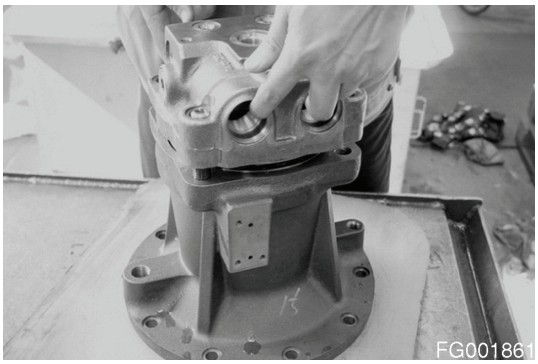

Figure 17

9. Take out the brake spring (310) from the brake piston (309).

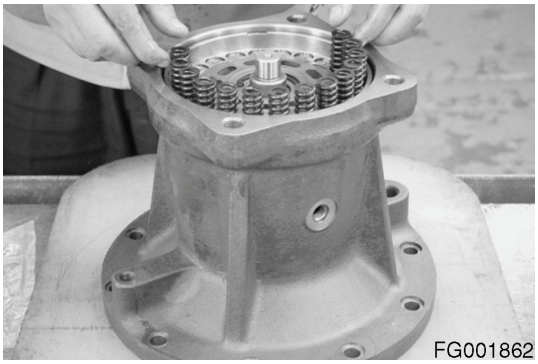

Figure 18

10. Use a tool to take out the brake piston (309) from the casing.

    To use a hole of bolt, pull it upward straight.

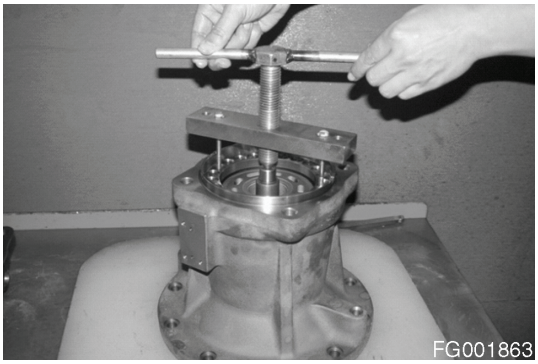

Figure 19

11. Put the motor horizontally and separate the cylinder block (205) from the driving shaft (201). Then, take out piston assemblies (203, 204), the retainer (207), the thrust ball (206), and the collar roller (209). Care should be taken when taking out the cylinder block (205), as it may fall off. Also sliding parts of the cylinder block, the thrust ball, shoes, etc. should not be damaged. [Do not remove the 2 washers (210), the spring (211), and the snap ring (212).]

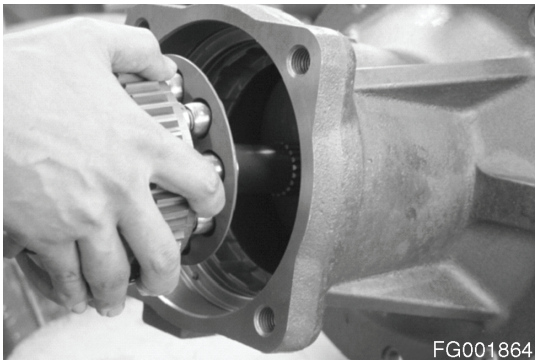

Figure 20

12. Separate 2 friction plates (306) and 3 separation plates (305) from the casing (301).

    (For TSM72 : 4 separation plates and 3 friction plates)

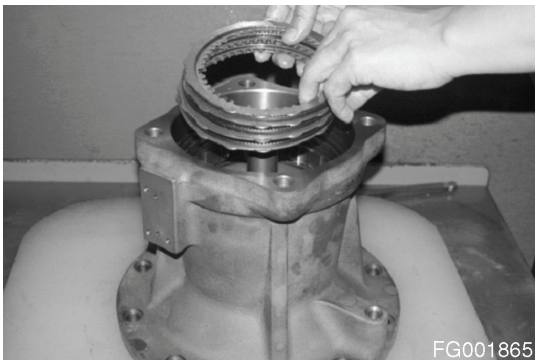

Figure 21

13. Use a plastic hammer to tap the face of the casing shaft to disassemble the driving shaft (201) consisting of the swash plate (202) and the ball bearing (303). Care should be taken not to damage sliding parts of the oil seal when separating the driving shaft from the casing.

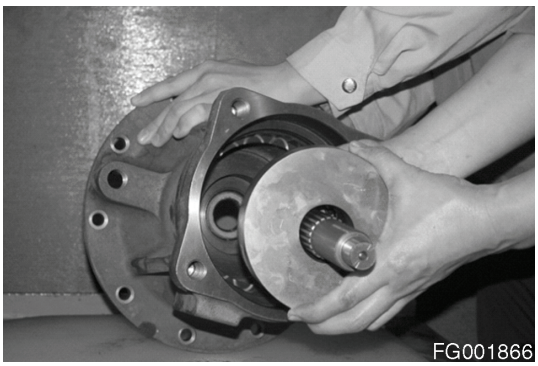

Figure 22

14. Carry out the following procedures as necessary.

A. Remove the parallel pin (304) from the casing.

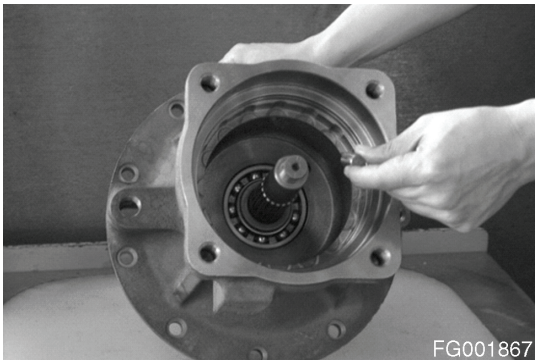

Figure 23

B. Remove the ball bearing (303) from the driving shaft (201). Do not reuse the removed bearing.

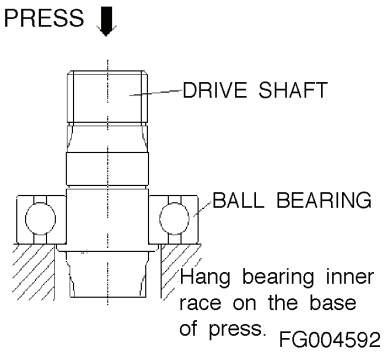

Figure 24

C. Use a tool to separate from the casing (301) the oil seal (302), which should not be reused.

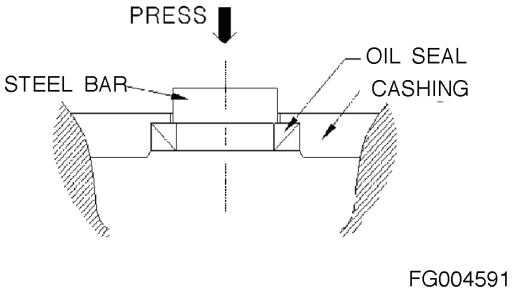

Figure 25

D. Remove the ball bearing (303) from the valve casing.

Now, disassembly is done. Check every component carefully to see if there is any defect.

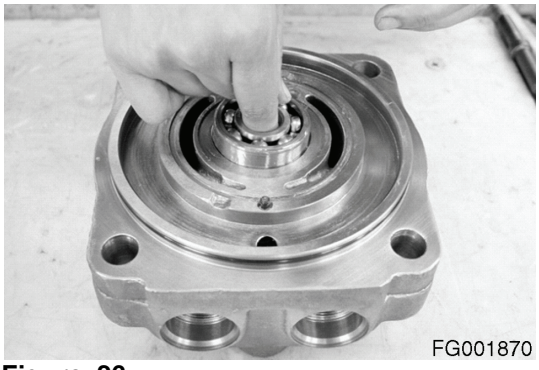

Figure 26

Assembly

Assembly shall be done in the reverse order of disassembly described above, taking into consideration the following points:

1. Parts damaged during disassembly should be repaired without fail and spare parts should be prepared in advance.
2. Every part should be cleaned enough with cleaning oil and dried with compressed air before starting assembly.
3. Sliding parts and bearings should be applied clean active oil before their assembly.
4. Seal parts of the O-ring and the oil seal should be replaced according to the standards.
5. Use a torque wrench to tighten or engage bolts and plugs in accordance with reference torques as shown in Table 1.

The Following is the Order of Assembly:

1. Put the casing (301) on a proper place.

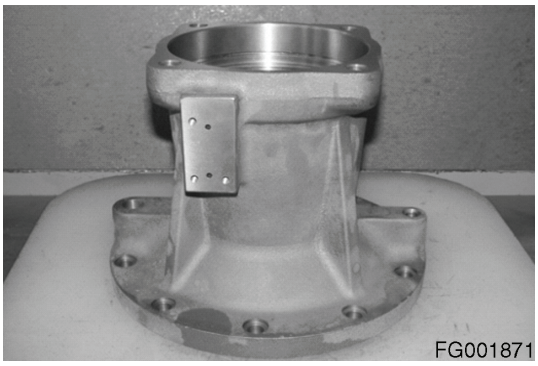

Figure 27

2. (This procedure is necessary when the oil seal is separated from the casing.)

   Use a tool to insert the oil seal (302) in the casing (301).

   (Give heed to the direction of the oil seal and insert it until it reaches the end completely.)

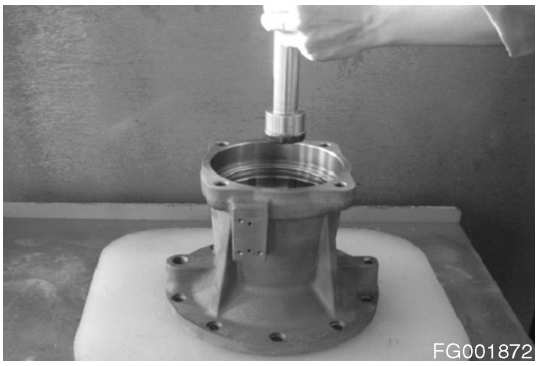

Figure 28

3. (This procedure is necessary when the ball bearing was separated from the driving shaft.)

   Install the ball bearing (303) in the driving shaft (201) by shrinkage fitting.

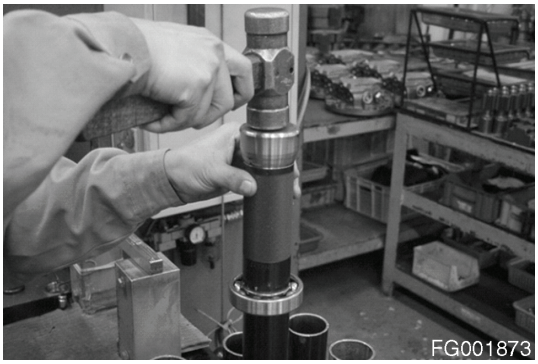

Figure 29

4. Insert the driving shaft (101) with the ball bearing (303) in the casing (301) with its output shaft facing upward and use a hammer to tap the surface of the ball bearing into the casing. At this point, apply grease to the lip of the oil seal light and then insert it carefully that it may not be damaged.

   (Wrap a tape around the spline of the driving shaft to prevent the damage of the spline due to the lip. Tap the surface of the external circumference evenly until it reaches the end completely.)

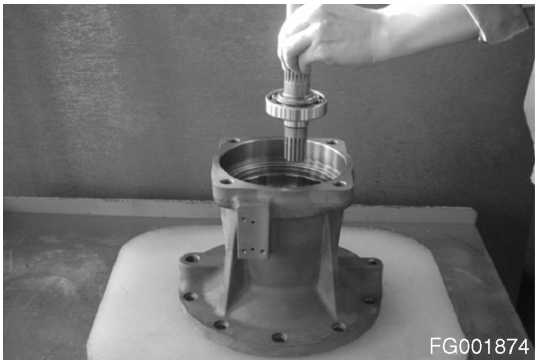

Figure 30

5. (This procedure is necessary when the parallel pin was removed from the casing.)

   Insert the parallel pin (304) in the casing(301).

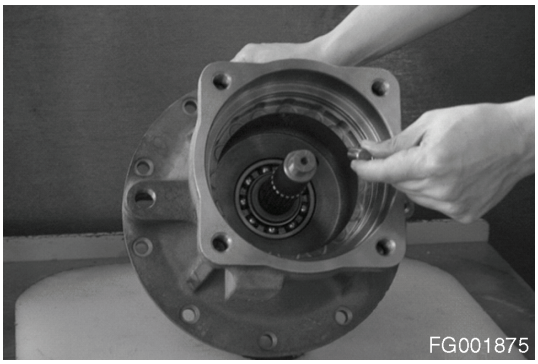

Figure 31

6. Assemble the swash plate (202) in the casing (301). (It is easy to assembly when the casing is put horizontally.)

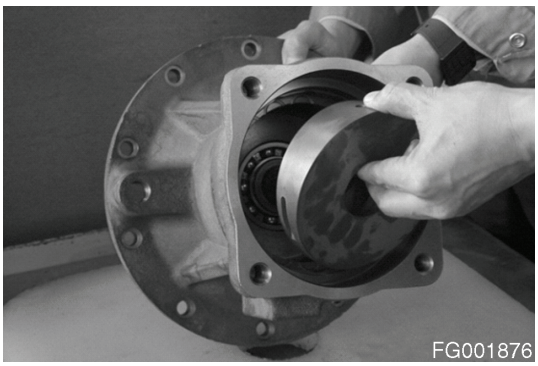

Figure 32

7. Insert the roller (209) in the cylinder block (205). [Check if the cylinder block has the washer (210), the spring (211), and the ring snap (212). Sliding parts of the cylinder block should not be damaged. Put a roller into a hole.]

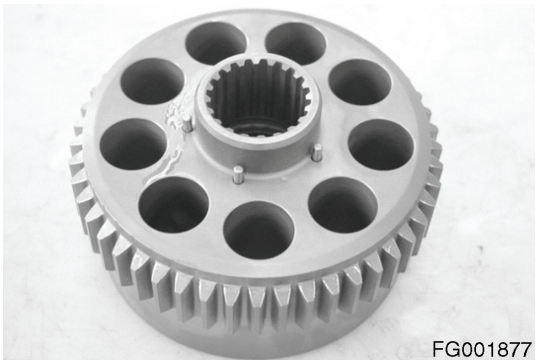

Figure 33

8. Assemble the collar (208) and the thrust ball (206) in cylinder block (205).

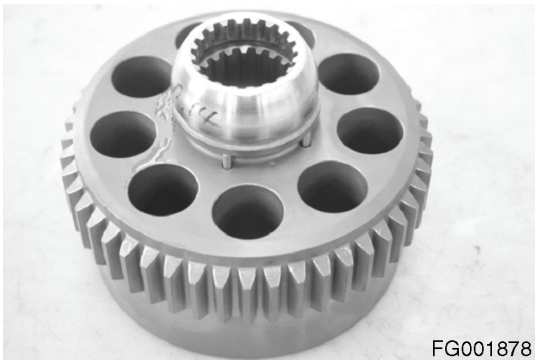

Figure 34

9. Assemble the piston ass'y (203, 204) assembled in the retainer (207) in the cylinder block (205).

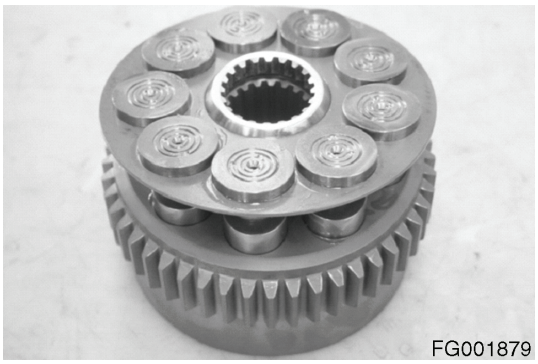

Figure 35

10. Assemble the cylinder block (205) in the driving shaft (201).

    At this point, arrange phases of the thrust ball and the cylinder block that it may be inserted in the driving shaft more easily.

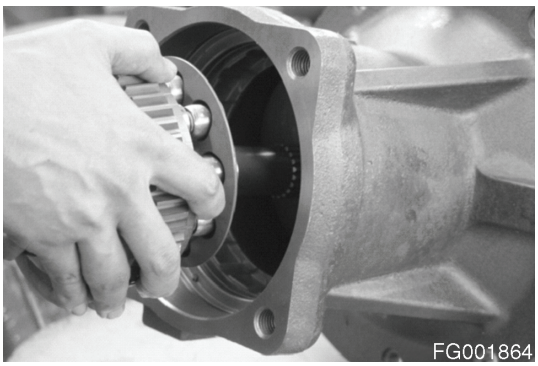

Figure 36

11. Insert the separation plate (305) and then the friction plate (306) in the casing (301). 3 separation plates and 2 friction plates shall be assembled. (To assemble them, the friction should have the same phase for its parts where 4 gears are cut face up and down, and do does the separation plate for its parts where 4 jaws are cut.)

    (For TSM72 : 4 separation plates and 3 friction plates)

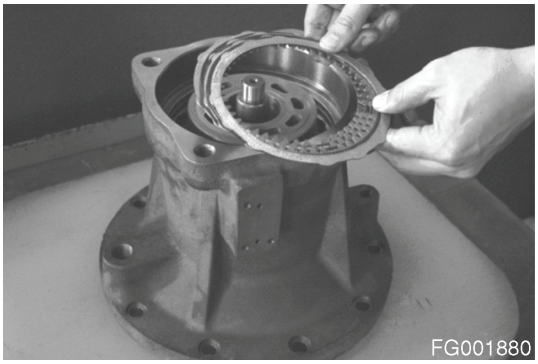

Figure 37

12. Insert the O-rings (307, 308) in the casing (301). (Apply grease to the O-rings light to prevent their breakage when inserting them in the brake piston.)

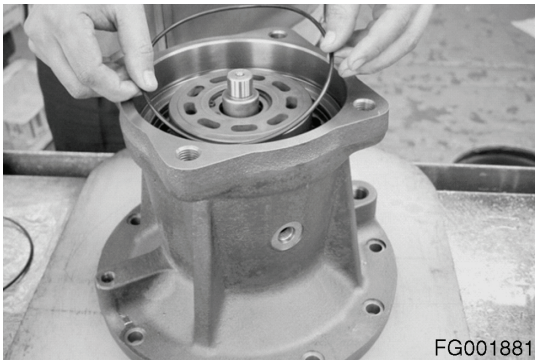

Figure 38

13. Assemble the brake piston in the casing (301). If it is not inserted well due to the resistance of the O-ring, engage a hex M8 bolt to the brake piston and use a plastic hammer to tap its surface evenly.

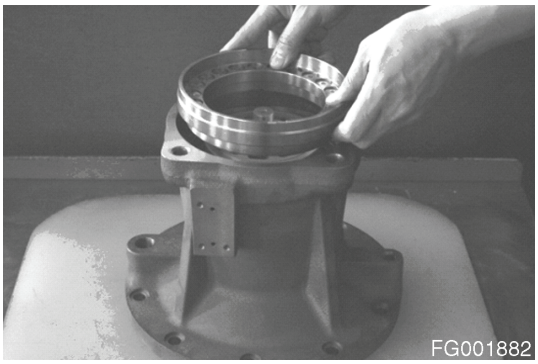

Figure 39

14. Assemble the brake spring (310) in the brake piston (309). Make sure that the spring should take the seat of the brake piston firmly.

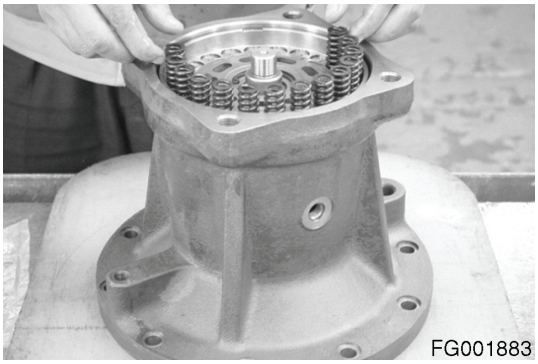

Figure 40

15. [This procedure is necessary when the ball bearing (108) was disassembled.] Use a hammer tied to a steel bar to tap the surface of the ball bearing into the valve casing (101).

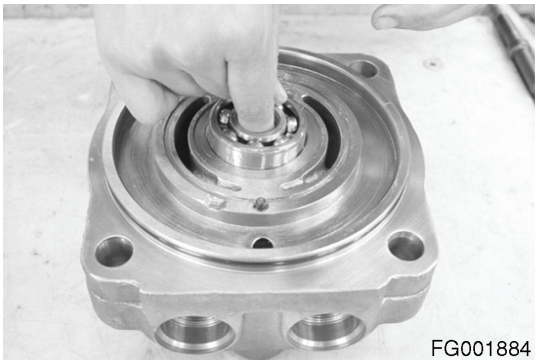

Figure 41

16. Assemble the valve plate (213) in the valve casing (101) and insert the O-ring (112). Apply grease to the engaging part of the valve plate light (to prevent its falling off).

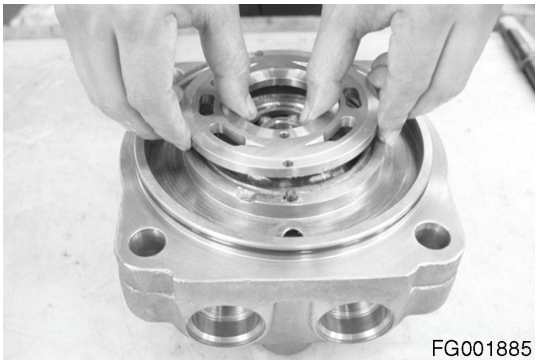

Figure 42

17. Mount the valve casing (101) on the casing (301) and connect them with hex socket head cap bolts (109, 110). Give heed to the mounting direction of the valve casing (and its external measures).

    Care should be taken not to have the valve plate fall off and the brake spring fall down. Tighten hex socket head cap bolts uniformly.

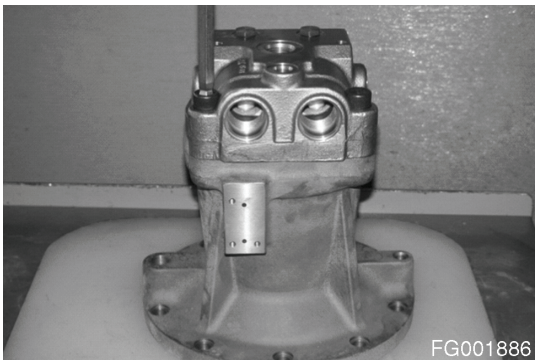

Figure 43

18. Insert the plunger (104) and the spring (103) in the valve casing (101) and engage the plug (102) with the O ring (106) to the valve casing (101). Make sure that the plunger moves smooth.

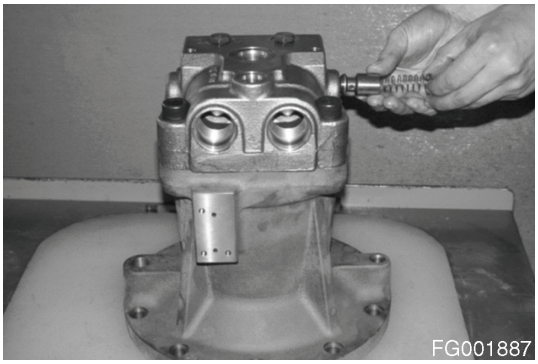

Figure 44

19. Assemble the S/R V/V ass'y (105) in the valve casing (101). Check the spring in the S/R V/V ass'y.

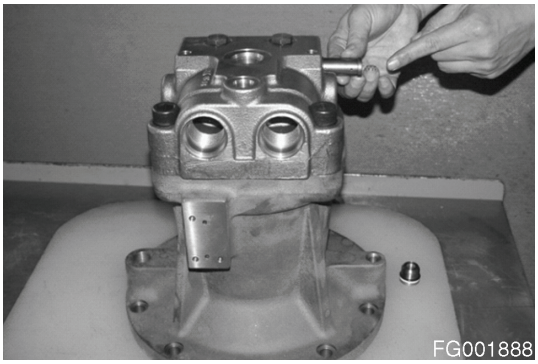

Figure 45

20. Apply grease to O-ring on the relief valve (107) and insert it in the valve casing (101).

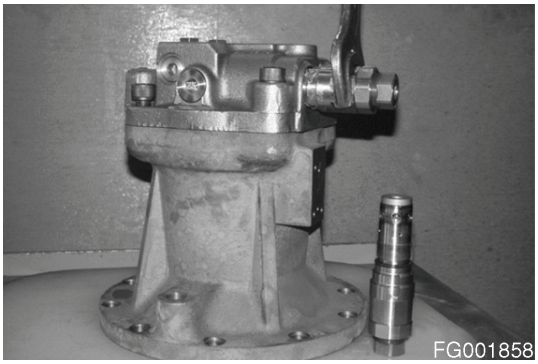

Figure 46

21. Use hex socket head cap bolts to connect the brake valve (400) and the casing (301).

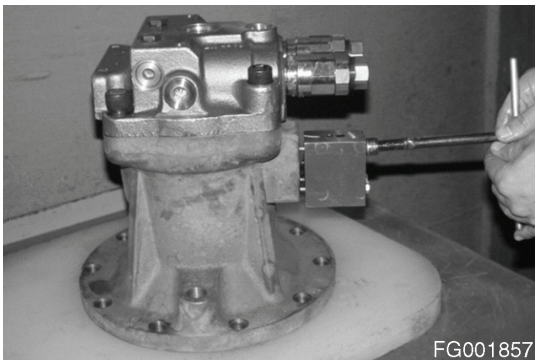

Figure 47

Our support email:

ebooklibonline@outlook.com