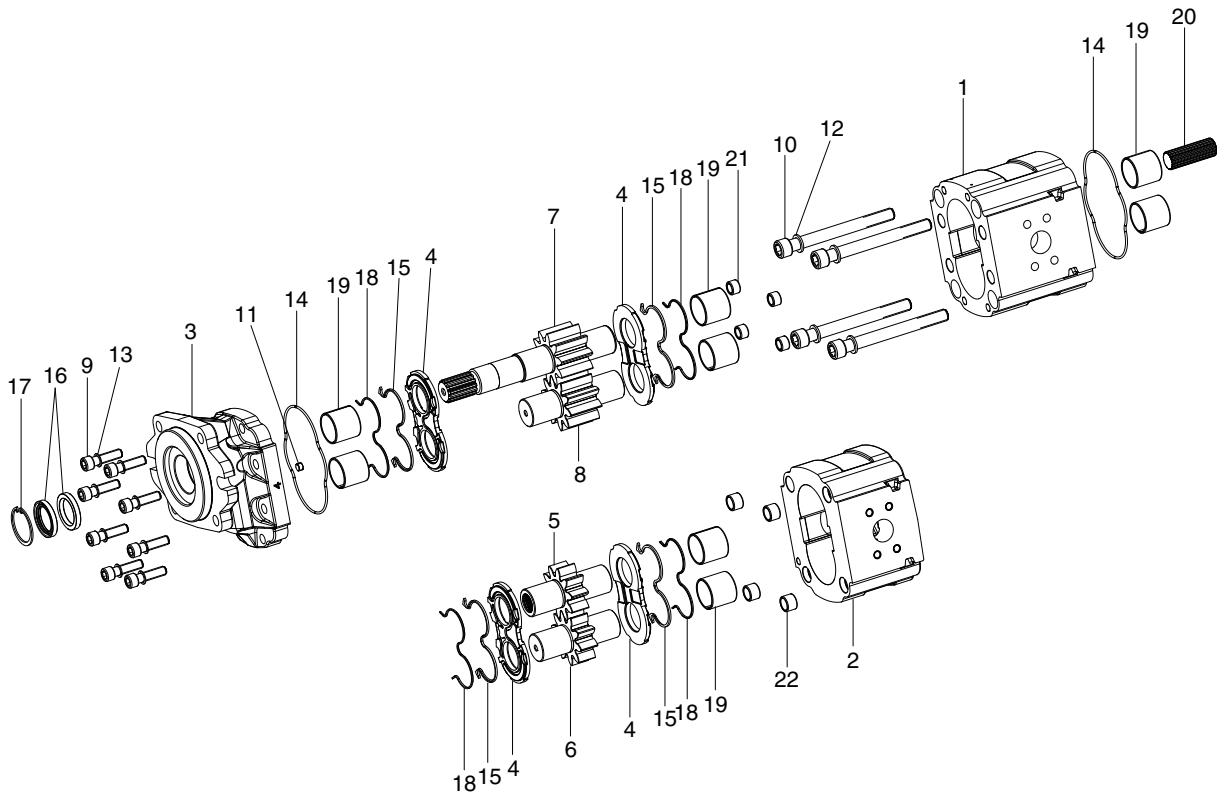


GROUP 4 DISASSEMBLY AND ASSEMBLY

1. MAIN PUMP

1) STRUCTURE



- | | | | |
|----|--------------|----|----------------|
| 1 | Gear housing | 12 | Washer |
| 2 | Gear housing | 13 | Knurled washer |
| 3 | Front cover | 14 | O-ring |
| 4 | Thrust plate | 15 | Seal |
| 5 | Drive gear | 16 | Shaft seal |
| 6 | Driven gear | 17 | Ring |
| 7 | Drive shaft | 18 | Back-up ring |
| 8 | Driven gear | 19 | Sleeve bearing |
| 9 | Screw | 20 | Hub |
| 10 | Screw | 21 | Steel bush |
| 11 | Grub screw | 22 | Steel bush |

7759S6WE28

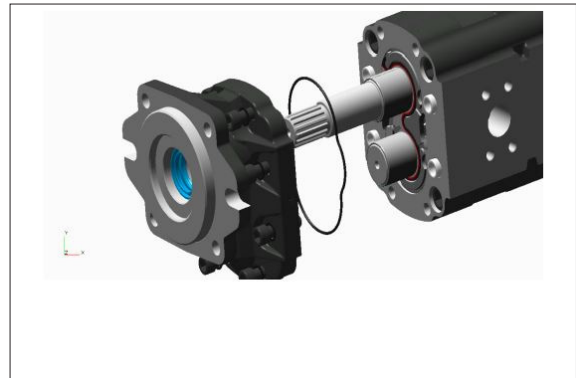
2. GENERAL PRECAUTIONS

- 1) Check immediately that any spare parts you receive have not been damaged in shipment.
- 2) Always work in a clean environment.
- 3) Wash all components in solvent and blow dry with compressed air before refitting.
- 4) Take care not to damage rubber seals.
- 5) Avoid damaging precision machined surfaces.
- 6) Components should fit into their housings without excessive force.
If force is necessary, this normally means that the component does not have the correct dimensional tolerances or is aligned incorrectly.
- 7) When hand pressure is insufficient, only use presses or rubber hammer to fit components.
- 8) Never strike components with steel hammers.
- 9) Steel bush must be fitted only with a suitable press.
- 10) Do not use hammers to fit bearings.
- 11) Always respect the direction of rotation when assembling components.

3. DISASSEMBLY

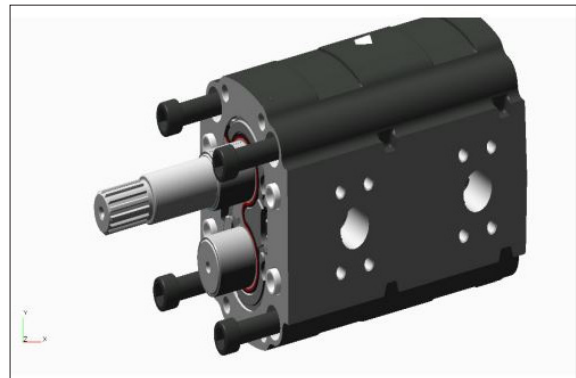
1) Separation of working bodies

- (1) Loosen the nuts and washer.
 - (2) Remove mounting flange taking care to keep it as straight as possible during removal.
Tap around the edge with rubber mallet in order to break away from the body.
- ※ Ensure that while removing it, the drive shaft and other components remain position.



7759S6WE30

- (3) Loosen and remove the assembling bolts and washers from the pump.



7759S6WE31

- (4) Remove the complete 1st and 2nd section.
- (5) Remove through shaft.



7759S6WE32

2) Replacing seals on mounting flange

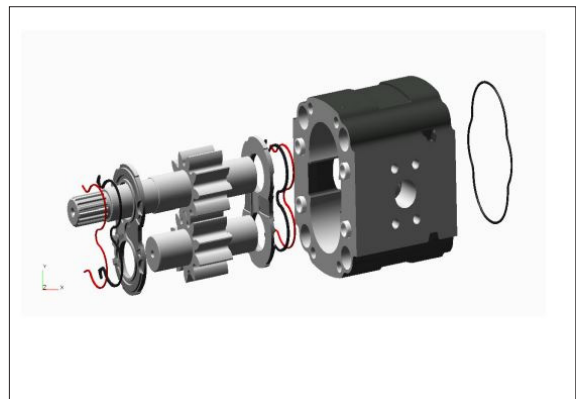
- (1) Remove shaft seal with (-) screwdriver and take out snap ring with proper tool and shaft seal again.
- ※ Take out the shaft seals only needed. Shaft seals disassembled from the mounting flange is not reusable.



7759S6WE33

3) 1st Working section

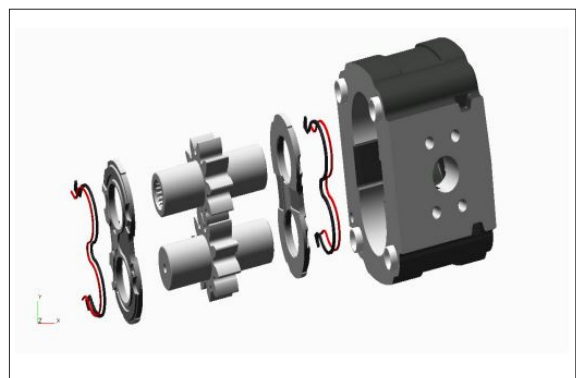
- (1) Remove the pressure plate with prearranged parts, O-ring and back-up ring from the working section and examine it carefully.
 - (2) Pull out driving gear and driven gear keeping gears as straight as possible.
 - (3) Remove other pressure plate on rear side with same way for front side.
 - (4) Take out square O-ring from the groove on the body.
- ※ Be careful not to give any damage on the surface of the rings.



7759S6WE34

4) 2nd Working section

- (1) Follow same process like 1st working section.
- (2) Remove through shaft.



7759S6WE35

4. ASSEMBLY

1) Preassemble

(1) Pressure plates for 1st section and 2nd section working section

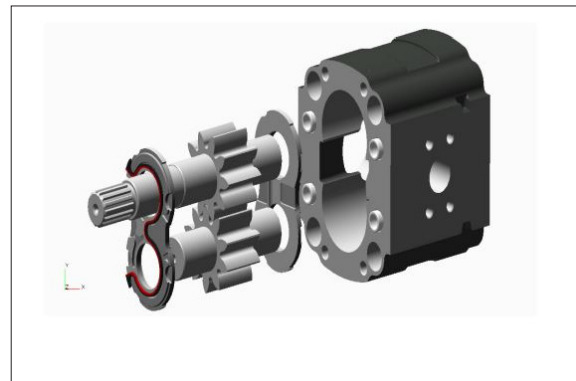
- ① Locate O-ring into the groove on the pressure plate.
 - ② Locate back-up ring upon the O-ring.
 - ③ Smear clean grease on the O-ring and back-up ring to fix their position while moving.
- ※ Be careful! Do not apply different size of seal to different size of pressure plate.
There are two different sizes of seals depending on the pressure plate.



7759S6WE36

(2) 1st working section

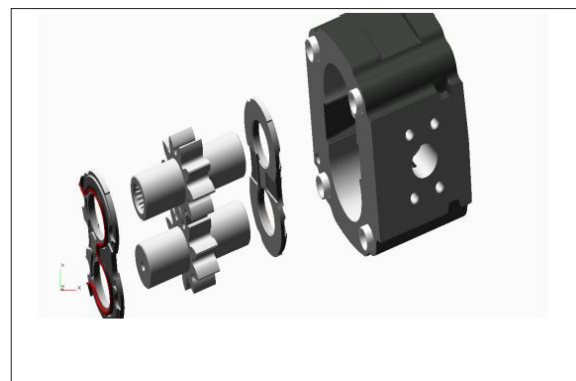
- ① Insert square rings into the groove and 4 alignment pins.
 - ② Smear clean grease on the square ring to fix its position while moving.
 - ③ Put one of preassembled pressure plates into the body and locate two gears, then load another plate upon the gears.
- ※ Pay attention the positions of gears and directions of pressure plates.



7759S6WE37

(3) 2nd working section

- ① Follow same way of 1st working section.

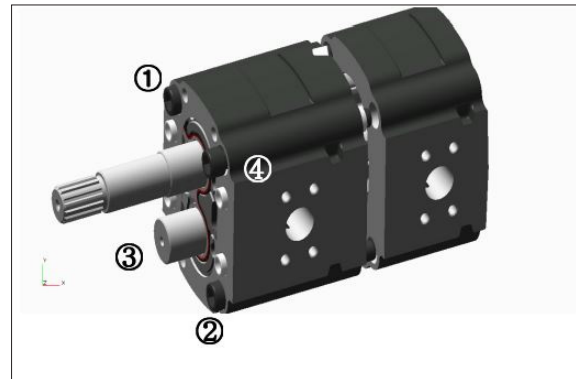


7759S6WE38

2) Assembling

- (1) Assemble the bolts and tighten the bolts with in a crisscross pattern to a torque value of $28.6\text{kgf} \cdot \text{m}$ ($207\text{lbf} \cdot \text{ft}$)

※ Pay attention not to miss through drive.



7759S6WE39

- (2) Assemble all preassembled mounting flange and working sections.

- (3) Assemble and tighten the nuts with in a crisscross pattern to a torque value of $10.2\text{kgf} \cdot \text{m}$ ($73.8\text{lbf} \cdot \text{ft}$)

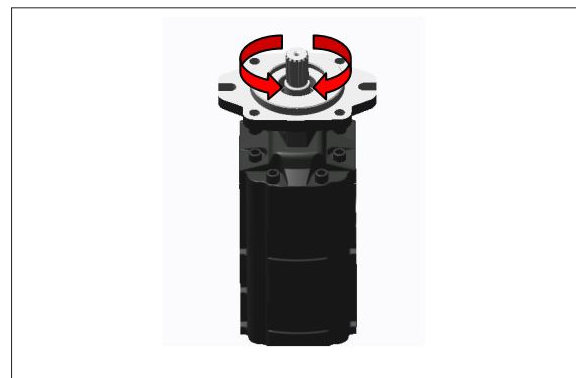
※ Take care not to give any damage on the shaft seals by sharp edge of shaft.

※ Smear clean grease on the lips of shaft seals before assembling.



7759S6WE40

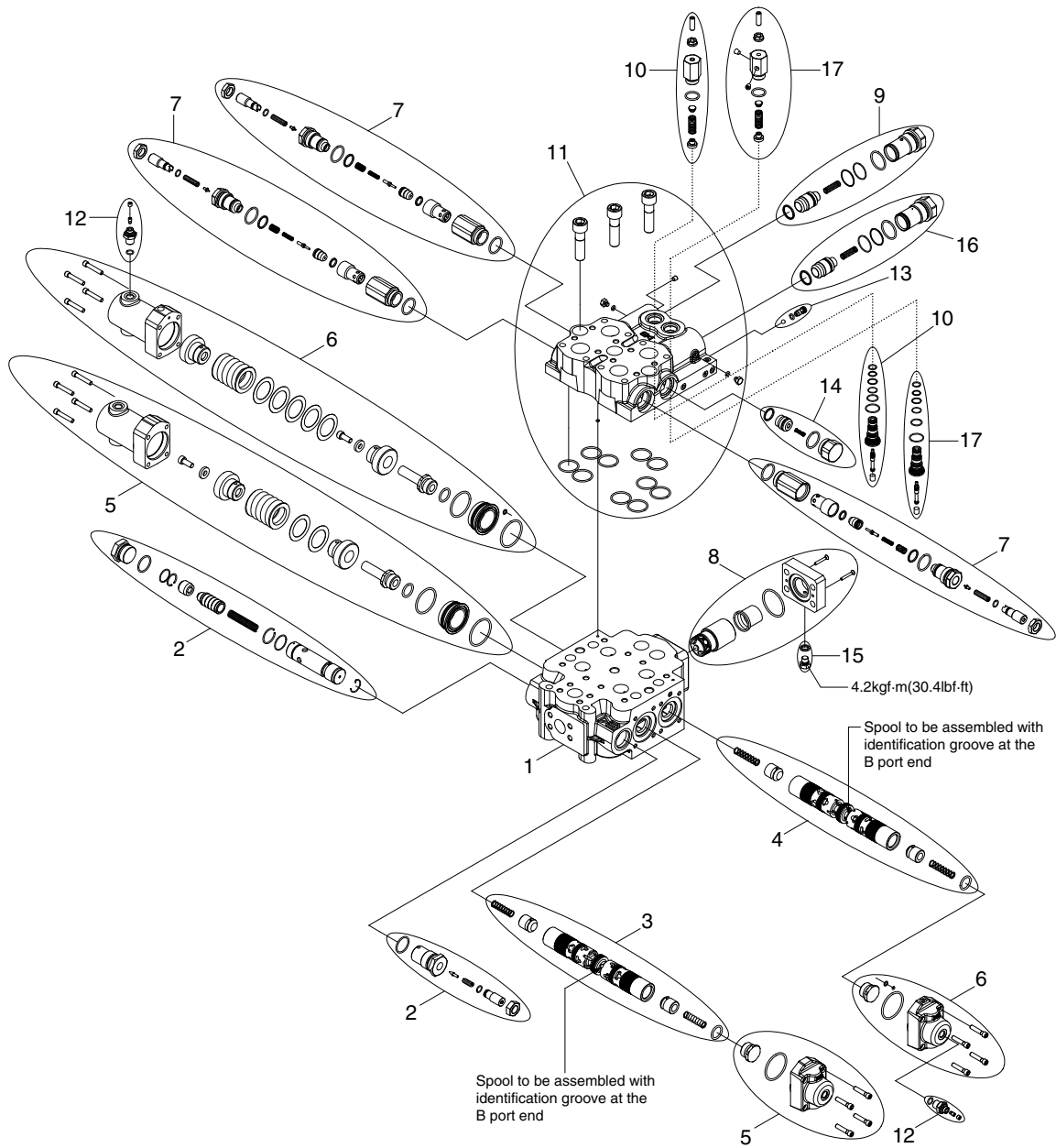
- (4) Check that the pump rotates freely when the drive shaft is turned by hand, if not a possible, plate seal may be pinched.



7759S6WE41

2. MAIN CONTROL VALVE

1) STRUCTURE



7707WE50

- | | | | |
|---|--|----|---|
| 1 | Housing group | 10 | Pilot valve assembly |
| 2 | Main relief valve assembly | 11 | Pilot operated float check block assembly |
| 3 | Double acting spool(Bucket) | 12 | Adaptor & check valve |
| 4 | Double acting spool(Boom) | 13 | Shuttle valve assembly |
| 5 | Bucket spool centering | 14 | Anti-cavitation check valve assembly |
| 6 | Boom spool centering | 15 | 1/4 " BSPP plug |
| 7 | Combined overload & anti-cavitation assembly | 16 | Check valve assembly |
| 8 | Back pressure valve | 17 | Pilot valve assembly |
| 9 | Check valve assembly | | |

2) DISASSEMBLY AND ASSEMBLY

- * Ensure that the machine is in a safe condition with no suspended loads or trapped pressure within the system before removing any pipework or component.
Servicing must only be carried out by trained personnel.

(1) MAIN RELIEF VALVE(Item 2)

① Removal

Unscrew both the pilot assembly and the plug from both ends of the relief valve. The main stage assembly must be driven or pressed out in the direction of the pilot assembly using a soft drift.

② Refitting

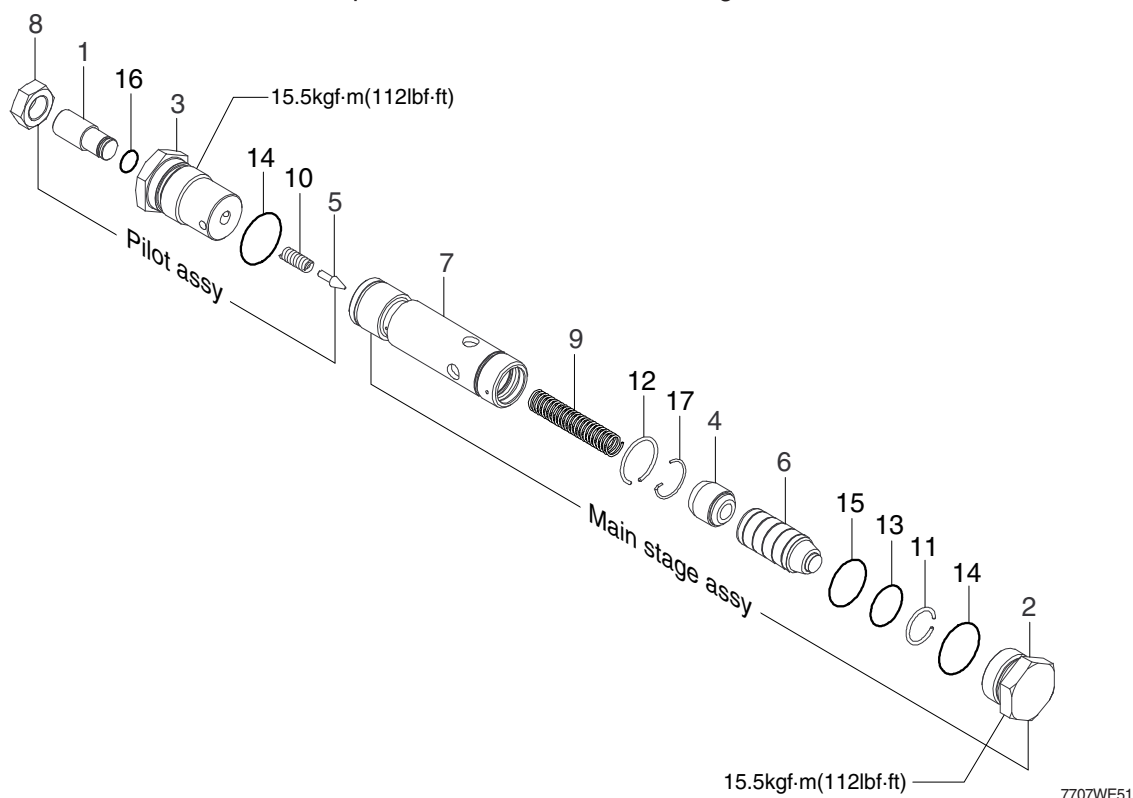
Lubricate sleeve and assemble by pressing into housing until detent ring(12) locates on housing. Fit the pilot assembly and end cap.

③ Adjusting

The main relief valve must be adjusted to the required setting when the machine is recommissioned.

Adjustment is made by first unscrewing the adjuster(1) until there is no load on the pilot spring(10). Select a machine service to its end stop.

Screw in the adjuster until the correct pressure setting is measured at the valve inlet, account must be taken for the effect of back pressure on the measured setting.

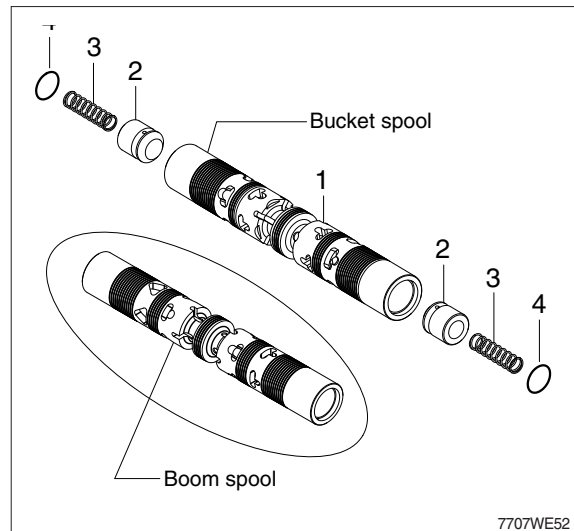


1	Adjusting screw	7	Sleeve	13	O-ring
2	Plug cap	8	Lock nut	14	O-ring
3	Cap	9	Spring	15	O-ring
4	Seat	10	Spring	16	O-ring
5	Poppet	11	Detent ring	17	Orifice wire
6	Plunger	12	Detent ring		

(2) DOUBLE ACTING SPOOL (Item 3, 4)

Control spools are not replaceable as they are individually sized to suit the housing. When removing and refitting spools ensure that they are refitted into the correct bore and correctly orientated as shown by the identification groove location on the valve assembly drawing.

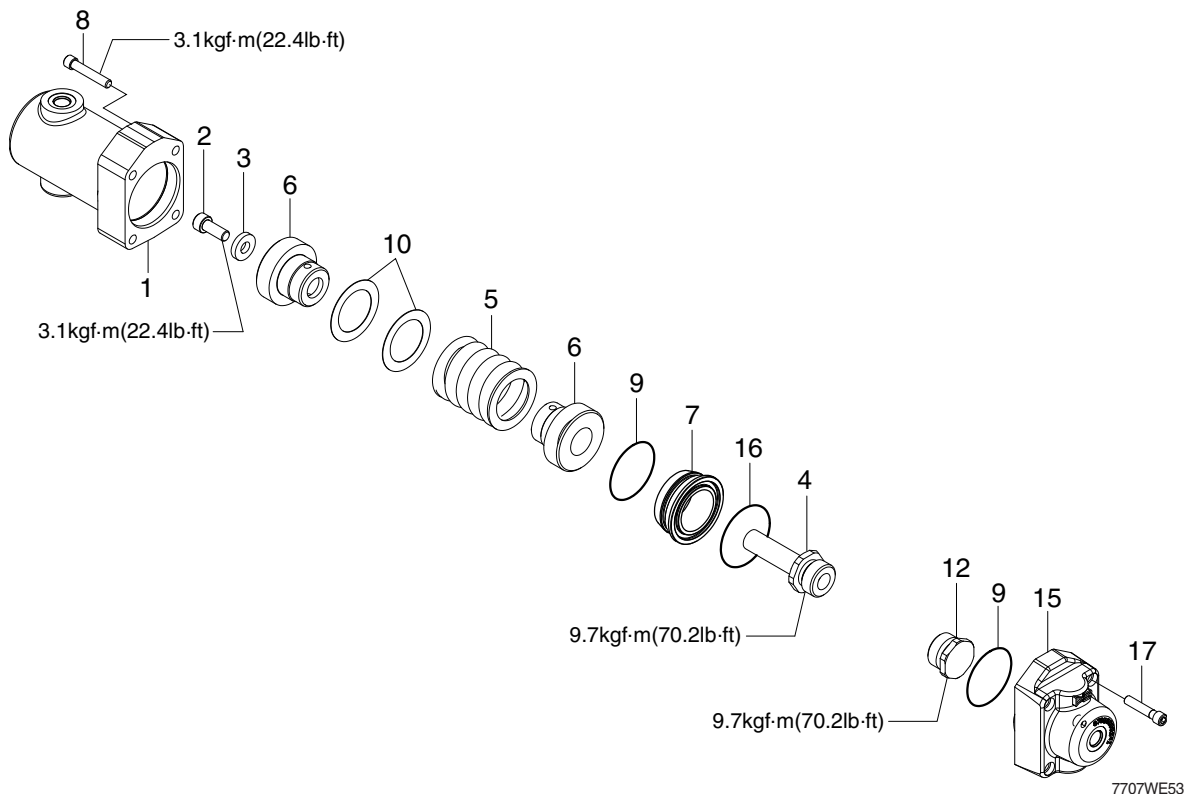
- | | |
|-----------|----------|
| 1 Spool | 3 Spring |
| 2 Plunger | 4 O-ring |



(3) BUCKET SPOOL CENTERING (Item 5)

Remove 4 retaining screws(8) from the spring centring end. Remove the cover(1) and withdraw the spring pack and spool from the valve.

Hold the spool in a suitable soft clamp being careful not to damage the spool surface or bend the spool. Remove the spool caps from the spool. The replacement assembly is supplied with the spring set to the correct load. Refit the spool caps to the specified torque using Loctite 542 or similar medium strength oil tolerant thread locking product.

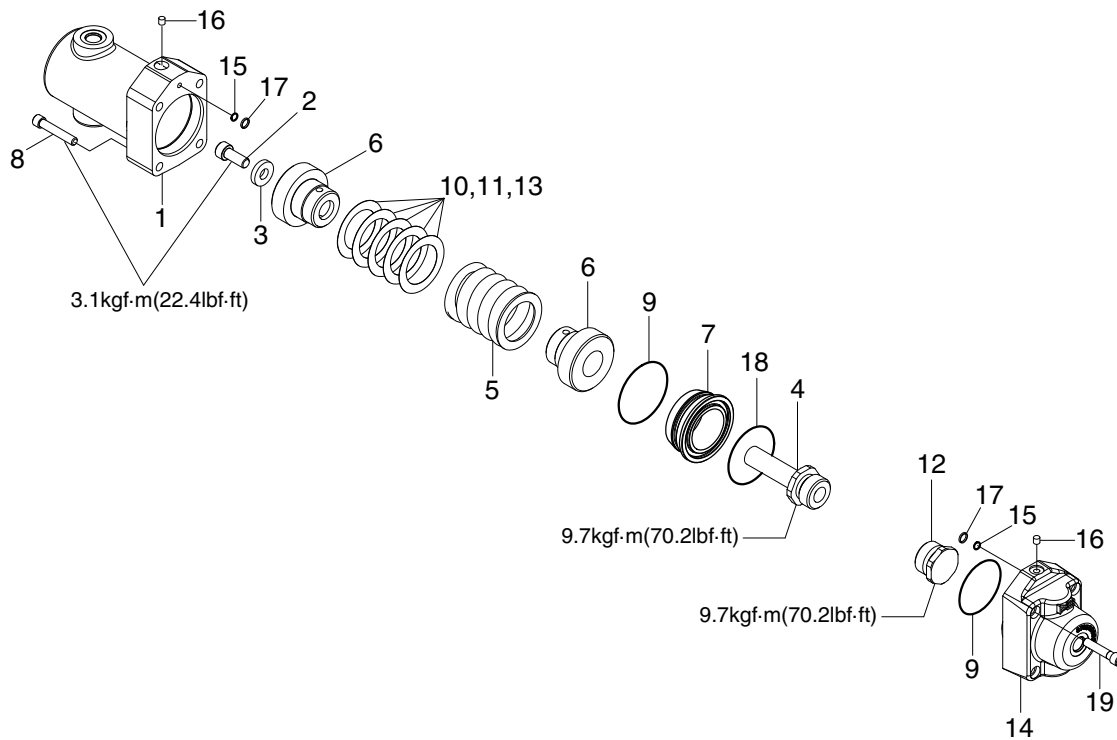


- | | | |
|-------------|--|--------------|
| 1 Cover | 6 Spring retainer | 12 Spool cap |
| 2 Cap screw | 7 Seal retainer | 15 Cover |
| 3 Washer | 8 Cap screw | 16 O-ring |
| 4 Spool cap | 9 O-ring | 17 Cap screw |
| 5 Spring | 10 Shim(0.020, 0.010, 0.005,0.002inch) | |

(4) BOOM SPOOL CENTERING(Item 6)

Remove 4 retaining screws(8) from the spring centering end. Remove the cover(1) and withdraw the spring pack and spool from the valve.

Hold the spool in a suitable soft clamp being careful not to damage the spool surface or bend the spool. Remove the spool caps from the spool. The replacement assembly is supplied with the spring set to the correct load. Refit the spool caps to the specified torque using loctite 542 or similar medium strength oil tolerant thread locking product.

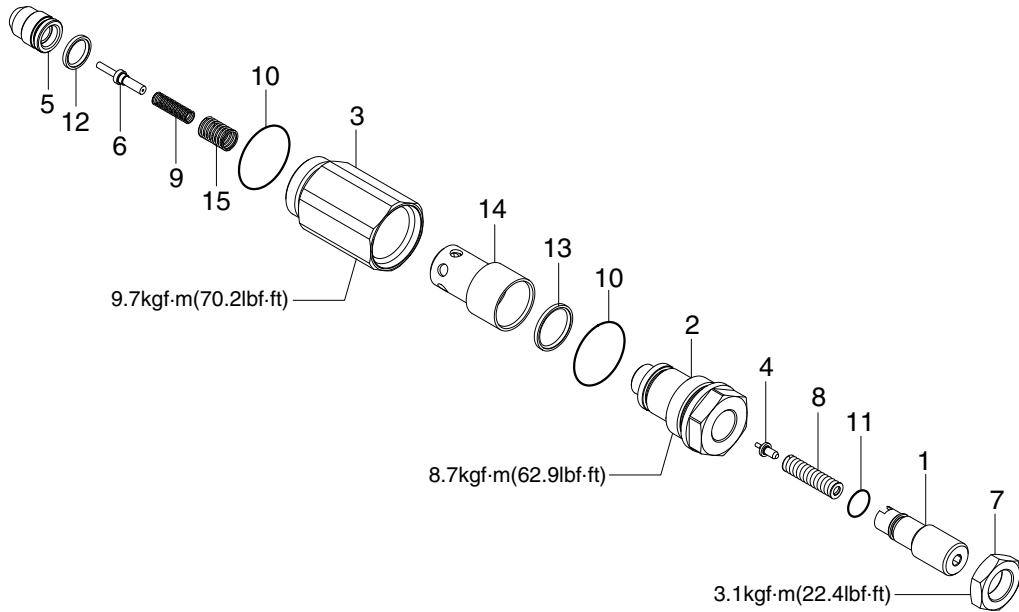


7707WE54

- | | | | | | |
|---|-----------------|----|----------------------|----|--------------|
| 1 | Cover | 8 | Cap screw | 14 | Cover |
| 2 | Cap screw | 9 | O-ring | 15 | O-ring |
| 3 | Washer | 10 | Shim(0.020inch, 2EA) | 16 | Plug |
| 4 | Spool cap | 11 | Shim(0.005inch, 2EA) | 17 | Back up ring |
| 5 | Spring | 12 | Spool cap | 18 | O-ring |
| 6 | Spring retainer | 13 | Shim(0.005inch, 1EA) | 19 | Cap screw |
| 7 | Seal retainer | | | | |

(5) COMBINED OVERLOAD AND ANTI-CAVITATION(Item 7)

This is a non servicable item and a replacement unit factory set to the correct setting should be fitted.

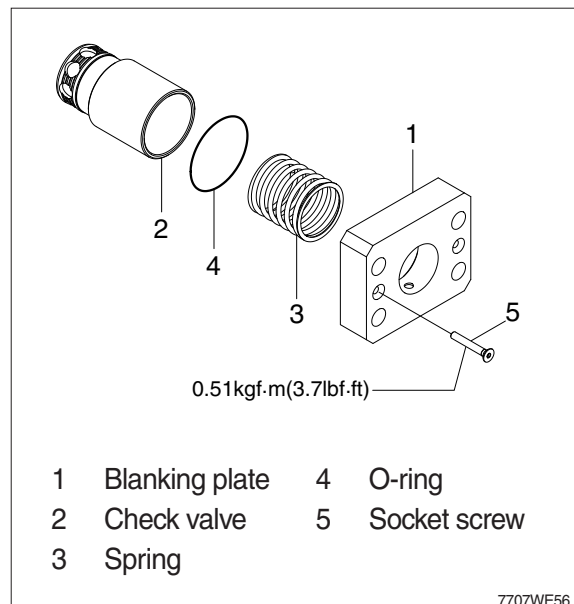


7707WE55

- | | | | | | |
|---|-----------------|----|--------------|----|----------------------------|
| 1 | Adjusting screw | 6 | Pilot pin | 11 | O-ring |
| 2 | Pilot housing | 7 | Thin nut | 12 | Composite piston seal |
| 3 | A/C housing | 8 | Pilot spring | 13 | Composite piston seal |
| 4 | Pilot poppet | 9 | Spring | 14 | A/C check and main housing |
| 5 | Main plunger | 10 | O-ring | 15 | Return spring |

(6) BACK PRESSURE VALVE(Item 8)

This assembly is retained by screws(5) when replacing the check valve(2) ensure that it is free to slide in the housing before refitting the blanking plate.



- | | | | |
|---|----------------|---|--------------|
| 1 | Blanking plate | 4 | O-ring |
| 2 | Check valve | 5 | Socket screw |
| 3 | Spring | | |

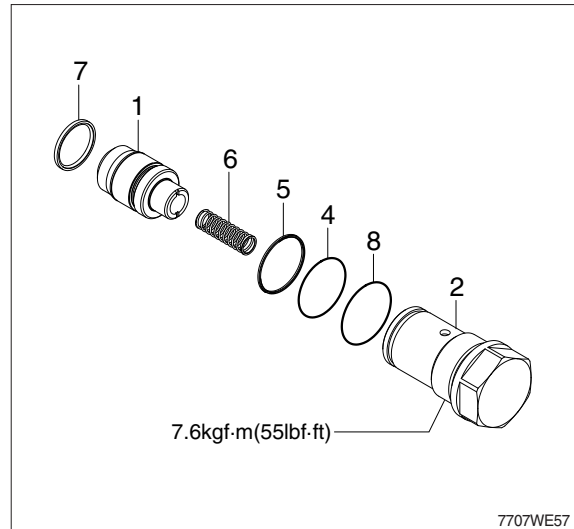
7707WE56

(7) CHECK VALVE ASSEMBLY(Item 9, 16)

This is a non servicable item and a replacement unit should be fitted.

Ensure that orifice in check valve(1) is clear when refitting. Inspect seat in float check block for damage before refitting.

- | | | | |
|---|-------------------|---|-----------------------|
| 1 | Float check valve | 6 | Spring |
| 2 | Housing | 7 | Composite piston seal |
| 4 | O-ring | 8 | O-ring |
| 5 | Back up ring | | |



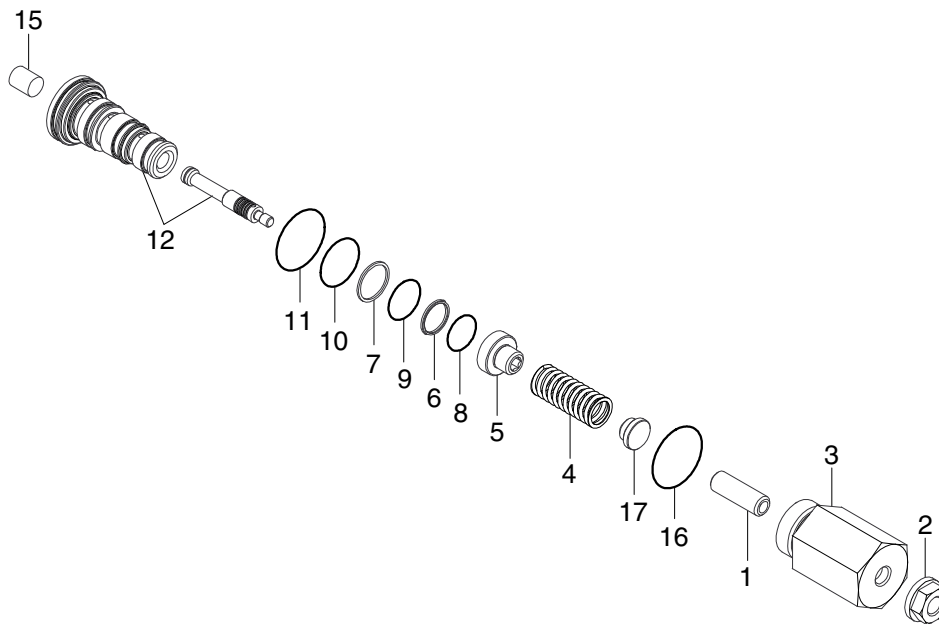
(8) PILOT VALVE ASSEMBLY(Item 10)

The replacement of this item requires that the float check block is first removed from the valve.

This is a non servicable item and a replacement unit should be fitted.

The logic spool is individually sized to the housing bore in item 12.

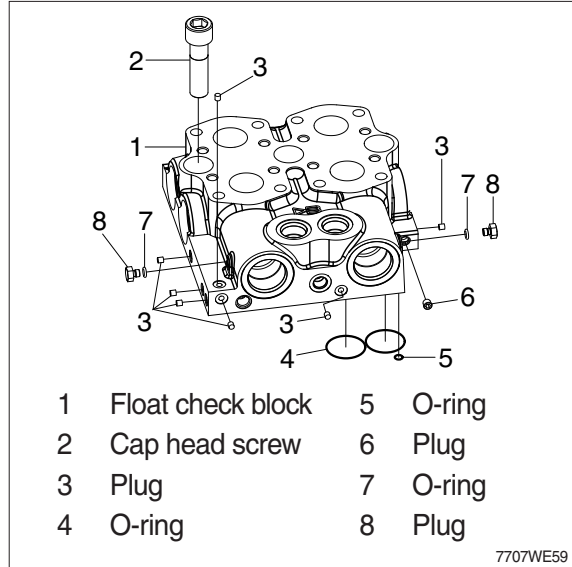
Replacement assemblies are supplied factory set.



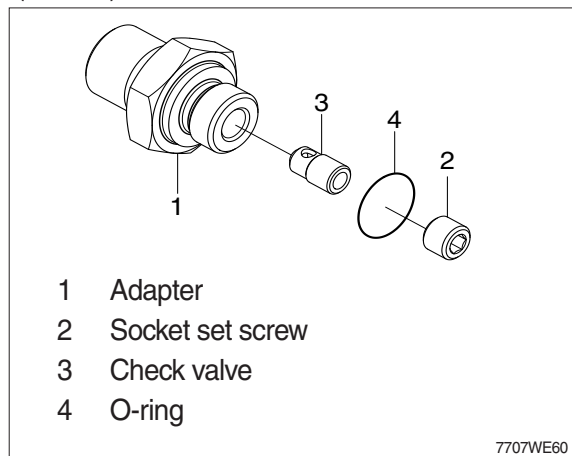
- | | | | | | |
|---|------------------|----|--------------|----|----------------------|
| 1 | Socket set screw | 6 | Back up ring | 11 | O-ring |
| 2 | Lock nut | 7 | Back up ring | 12 | Logic seat and spool |
| 3 | Spring body | 8 | O-ring | 15 | Plug |
| 4 | Spring | 9 | O-ring | 16 | O-ring |
| 5 | Spring retainer | 10 | O-ring | 17 | Spring guide |

(9) PILOT OPERATED FLOAT CHECK BLOCK ASSEMBLY(Item 11)

Remove the three retaining screws(2) and lift the block from the main housing.
Do not slide the block across the face as this may damage the sealing face and seals.

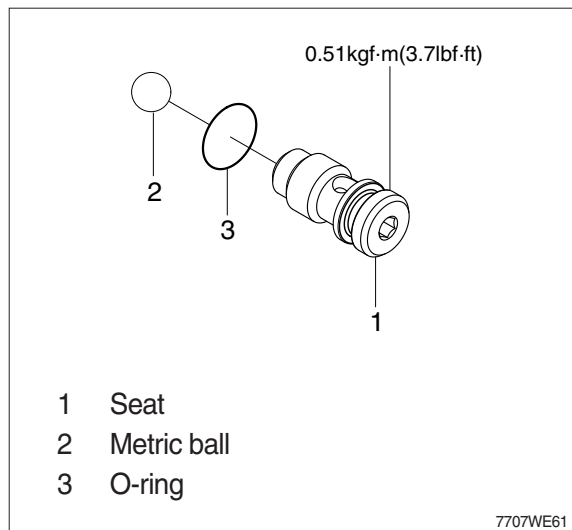


(10) ADAPTER+ORIFICE SCREW+CHECK VALVE(Item 12)



(11) SHUTTLE VALVE ASSEMBLY(Item 13)

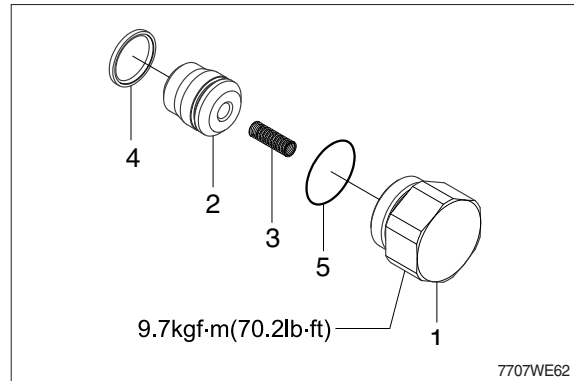
This is non servicable item and a replacement unit should be fitted.
Inspect seat in float check block for damage before refitting.



(12) A/C CHECK VALVE ASSEMBLY (Item 14)

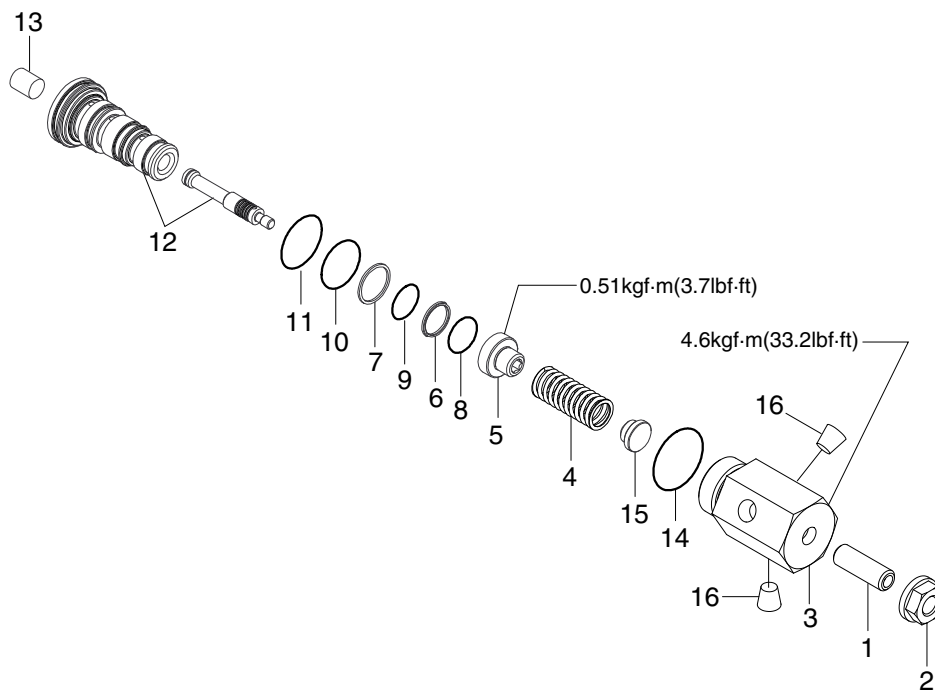
This is a non servicable item and a replacement unit should be fitted. Inspect seat in float check block for damage before refitting.

- | | | | |
|---|-------------|---|-------------|
| 1 | Body | 4 | Piston seal |
| 2 | Check valve | 5 | O-ring |
| 3 | Spring | | |



(13) PILOT VALVE ASSEMBLY (Item 17)

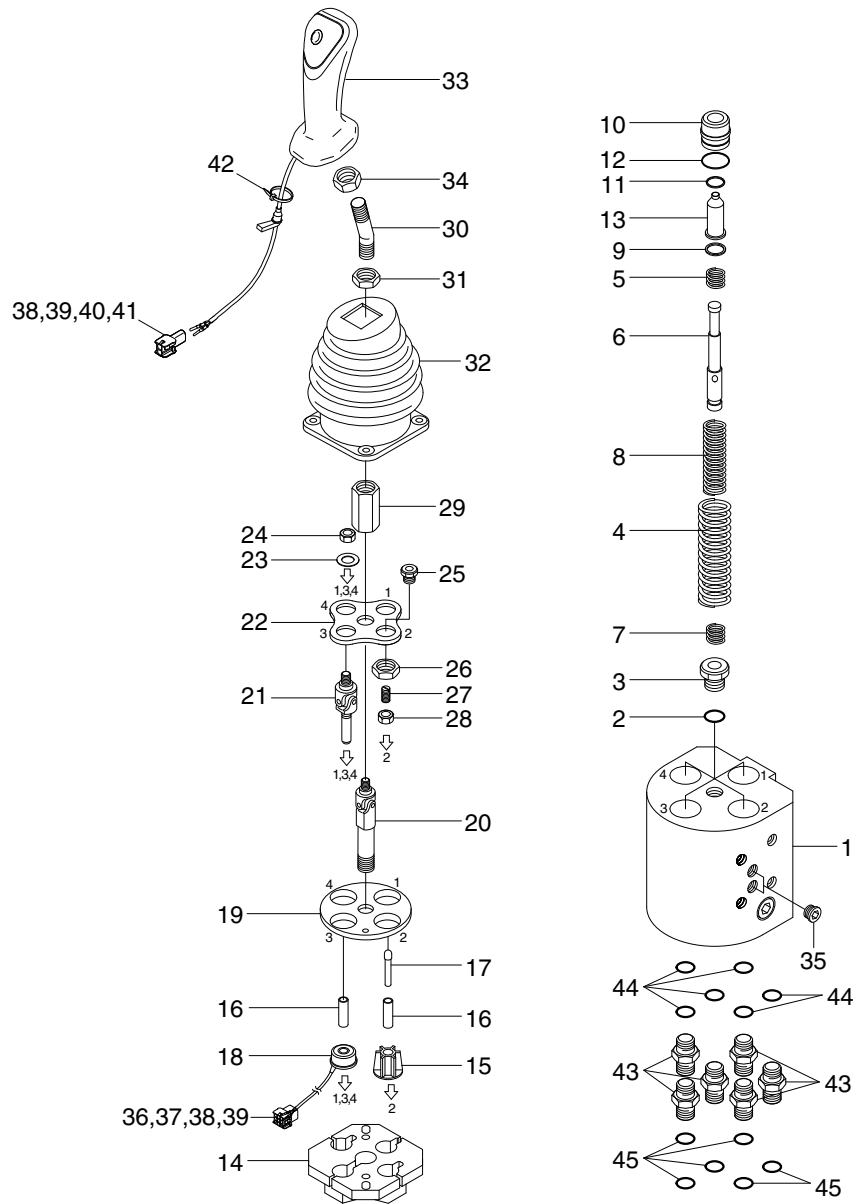
The replacement of this item requires that the float check block is first removed from the valve. This is a non servicable item and a replacement unit should be fitted. The logic spool is individually sized to the housing bore in item 12. Replacement assemblies are supplied factory set.



- | | | | | | |
|---|------------------|----|--------------|----|----------------------|
| 1 | Socket set screw | 7 | Back up ring | 12 | Logic seat and spool |
| 2 | Hexagon nut | 8 | O-ring | 13 | Plug |
| 3 | Spring body | 9 | O-ring | 14 | O-ring |
| 4 | Spring | 10 | O-ring | 15 | Spring guide |
| 5 | Spring retainer | 11 | O-ring | 16 | Plug |
| 6 | Back up ring | | | | |

3. REMOTE CONTROL VALVE

1) STRUCTURE



7607B6WE48

1	Body	13	Push rod	25	Plug	37	Rear holder
2	O-ring	14	Plate	26	Nut	38	Terminal
3	Plug	15	Rod stopper	27	Set screw	39	Seal wire
4	Spring	16	Bushing	28	Nut	40	2 Pin connector
5	Spring seat	17	Rod	29	Nut	41	Rear holder
6	Spool	18	Magnet	30	Handle bar	42	Clip band
7	Spring seat	19	Plate	31	Nut	43	Connector
8	Spring	20	Joint assy	32	Boot	44	O-ring
9	Stooper	21	Joint assy	33	Handle assy	45	O-ring
10	Plug	22	Plate	34	Nut		
11	Rod seal	23	Washer	35	Plug		
12	O-ring	24	Nut	36	6 Pin connector		

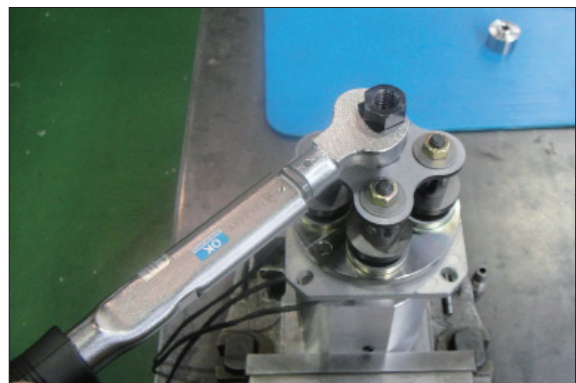
2) DISASSEMBLY

(1) Remove the boots (32) and loosen nut (31).

- Tool : spanner 19 mm



7607BRCV01



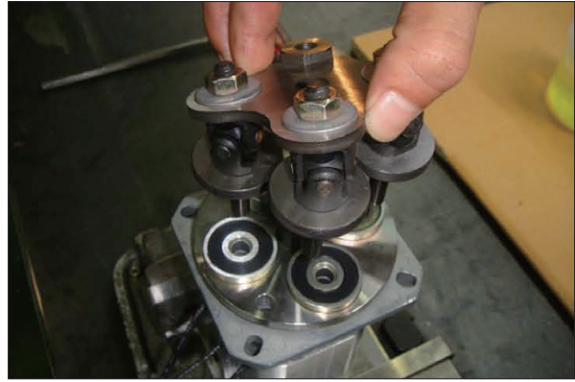
7607BRCV02

(2) Remove nut (29).



7607BRCV03

(3) Disassemble plate kit.



7607BRCV04

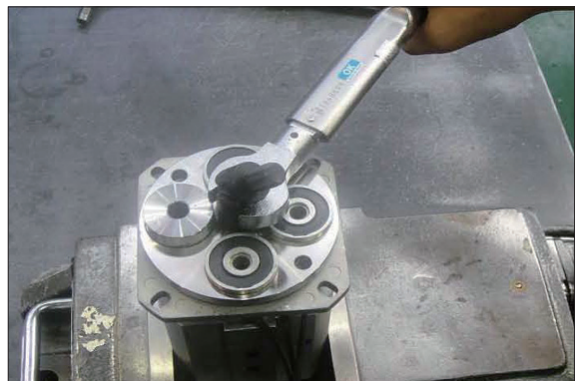
(4) Remove rod (17).



7607BRCV05

(5) Remove joint assembly (20).

· Tool : Spanner 17 mm



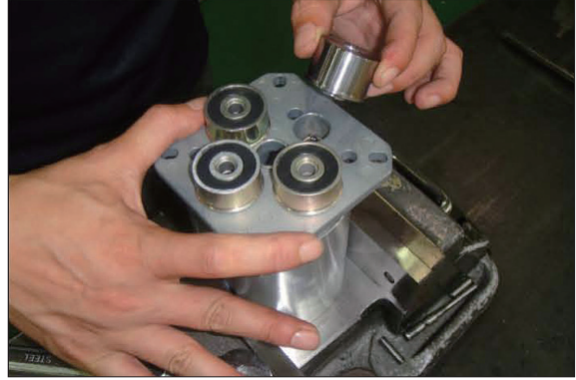
7607BRCV06

(6) Disassemble plate (19).



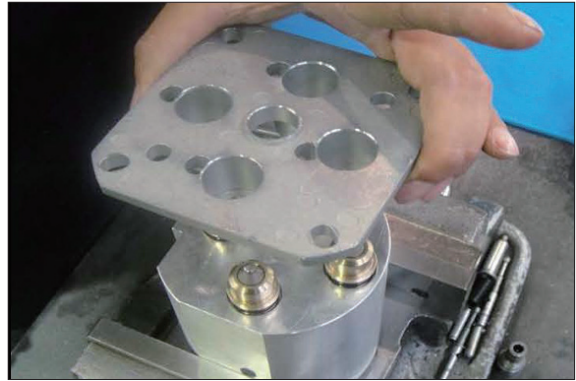
7607BRCV07

(7) Disassemble magnet (18) and rod stopper (15).



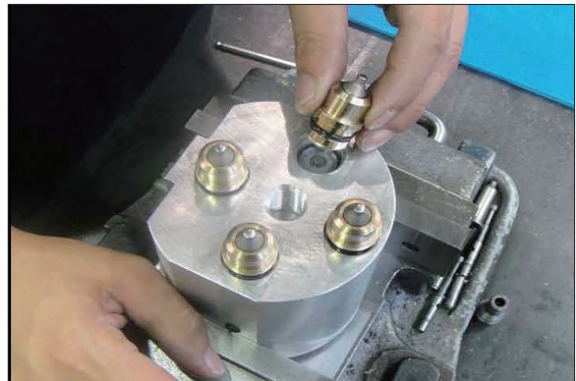
7607BRCV08

(8) Disassemble plate (14).



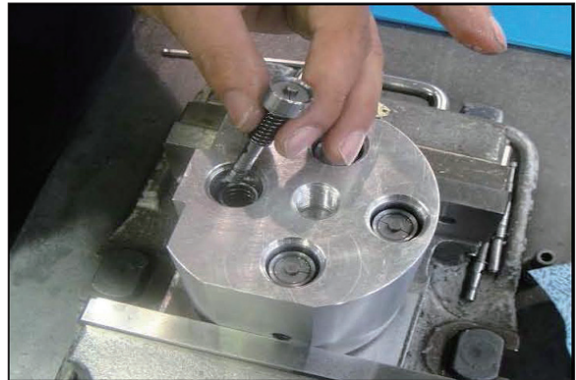
7607BRCV09

(9) Disassemble plug kit.



7607BRCV10

(10) Disassemble spring (4) and spool kit.



7607BRCV11

- (11) Disassemble plug (2).
· Tool : Wrench 10 mm



7607BRCV12

3) ASSEMBLY

- (1) Coat oil on O-ring and mount plug (3) into body assembly (1).



7607BRCV13

- (2) Tighten the plug (3).

- Tool : Wrench 10 mm
- Tightening torque : $30 \pm 3 \text{ kgf} \cdot \text{m}$
($217 \pm 21.7 \text{ lbf} \cdot \text{ft}$)



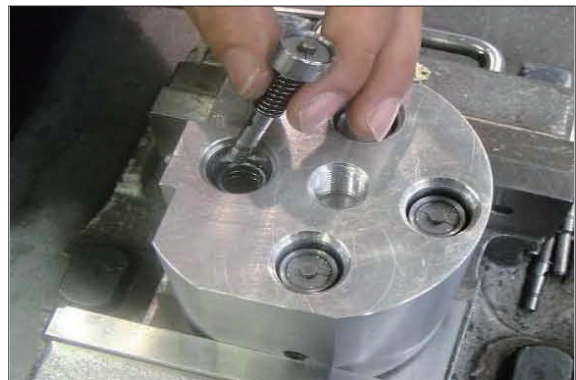
7607BRCV14

- (3) Assemble spring (4).



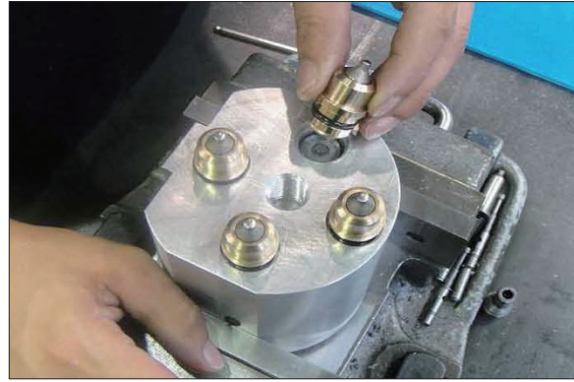
7607BRCV15

- (4) Assemble spool kit.



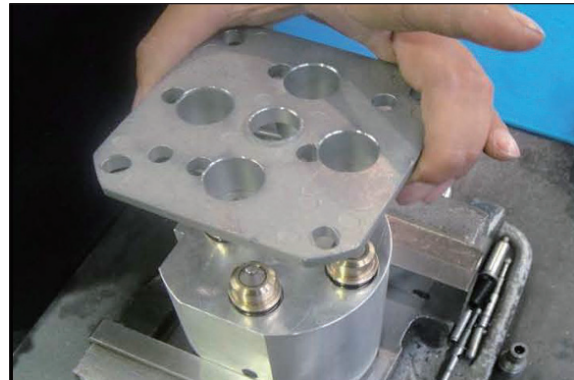
7607BRCV16

(5) Assemble plug kit.



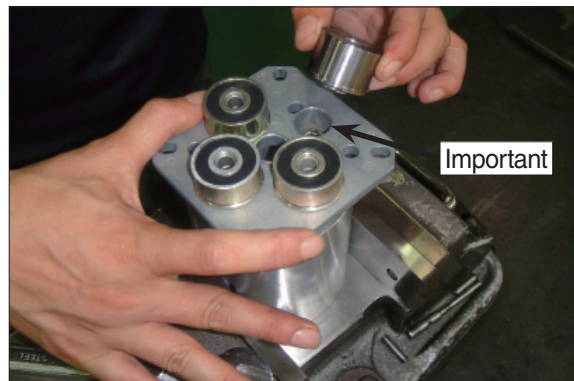
7607BRCV17

(6) Assemble plate (14).



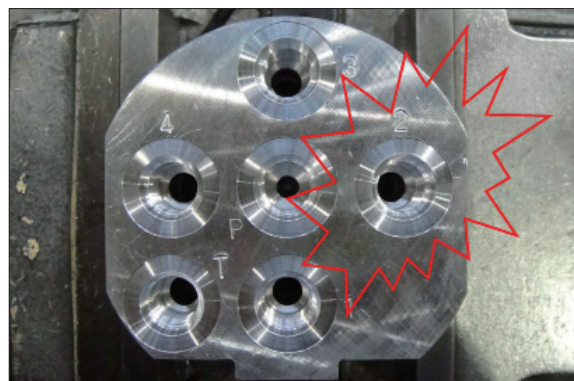
7607BRCV09

(7) Assemble magnet (18) at port 1, 3 and 4.
Assemble rod stopper (15) at port 2.



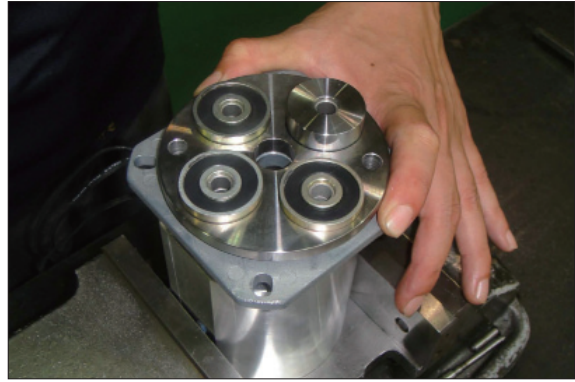
7607BRCV19

(8) Confirm port 2 on the bottom of the body.



7607BRCV20

(9) Assemble plate (19).



7607BRCV21

(10) Assemble joint assembly (20) and put grease on joint pin lightly.

- Tools : spanner 17 mm
- Tightening torque (M16) :
 $45 \pm 4.5 \text{ kgf} \cdot \text{m}$ ($325 \pm 32.5 \text{ lbf} \cdot \text{ft}$)



7607BRCV22



7607BRCV23

(11) Assemble rod (17).



7607BRCV24

(12) Assemble plate kit.

Put a bit of grease on rod (17) and Joint (21).



7607BRCV04

(13) Assemble nut (29).

- Tool : spanner 17 mm
- Tightening torque :
 $40 \pm 4 \text{ kgf} \cdot \text{cm}$ ($289 \pm 28.9 \text{ lbf} \cdot \text{ft}$)



7607BRCV03



7607BRCV02

(14) Assembled nut (31).

- Tool : spanner 19 mm
- Tightening torque (M12) :
 $40 \pm 4 \text{ kgf} \cdot \text{cm}$ ($28 \pm 28.9 \text{ lbf} \cdot \text{ft}$)



7607BRCV01

(15) Assemble the boots (32).



7607BRCV25