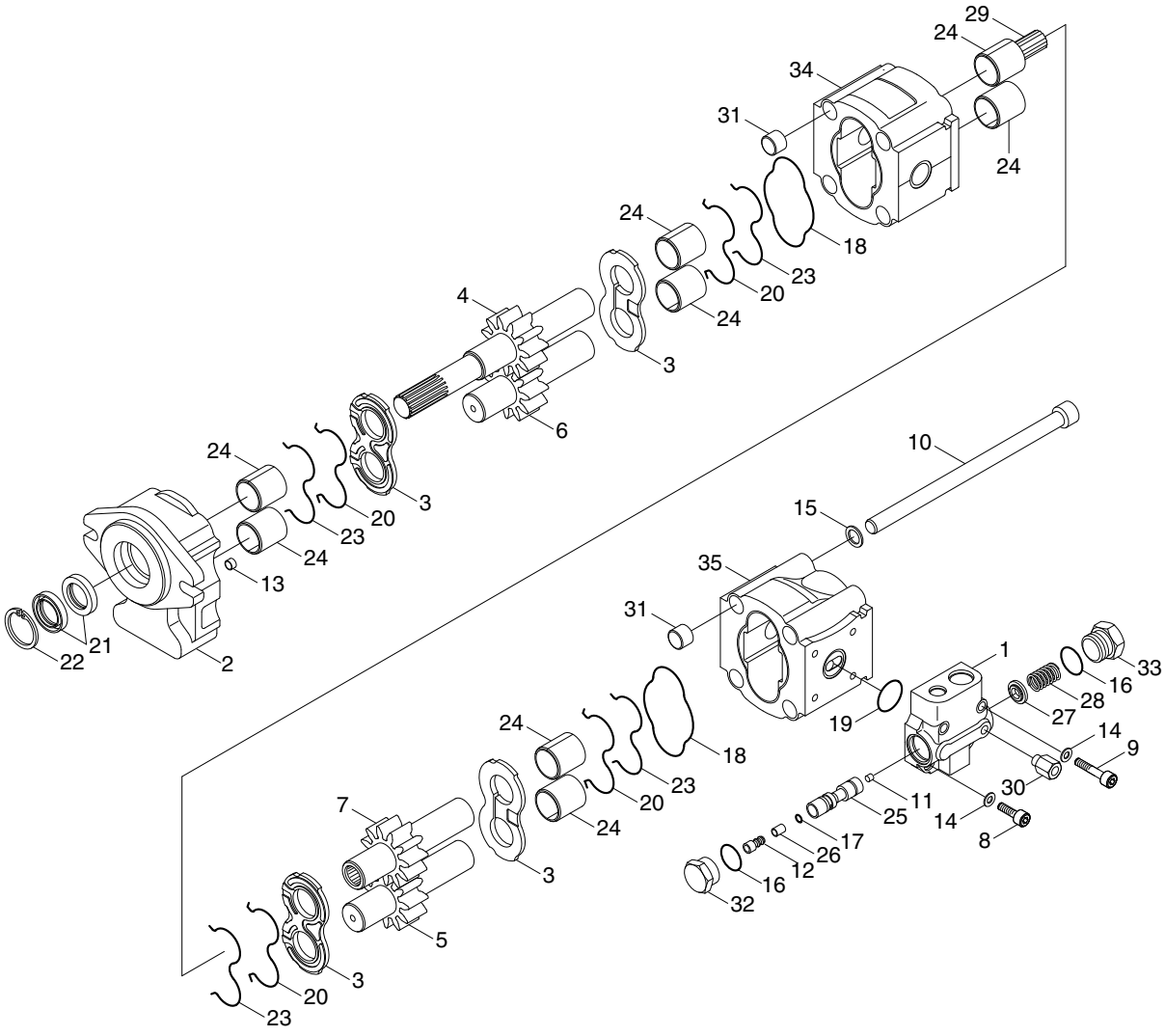
1. MAIN PUMP

1) STRUCTURE



HB100WE21

1	Rear end cover	13	Screw	25	Spool
2	Front cover	14	Washer	26	Filter
3	Thrust plate	15	Washer	27	Spring seat
4	Drive shaft	16	O-ring seal	28	Spring
5	Driven gear	17	O-ring seal	29	Hub
6	Driven gear	18	Ring	30	Connector
7	Drive shaft	19	O-ring seal	31	Steel bushing
8	Screw	20	Seal	32	Plug
9	Screw	21	Shaft seal	33	Plug spring
10	Screw	22	Ring	34	Body
11	Screw	23	Ring	35	Body
12	Screw	24	Sleeve bearing		

2) GENERAL INSTRUCTIONS

(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 of 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 bushing 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

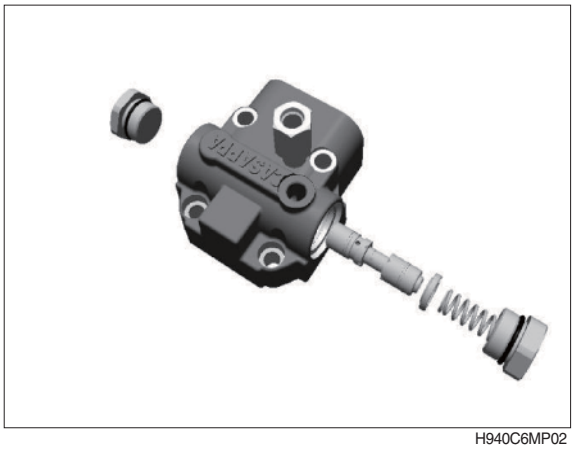
(1) LS priority valve

① Loosen and remove the assembling bolts and washers from the valve.

H940C6MP01

② Loosen and remove plug and take out spring & spool. (Only when it is needed to replace components inside).

※ Pay attention not to give any damage on the surface of the spool and contamination to the orifices prearranged at the spool.



H940C6MP02

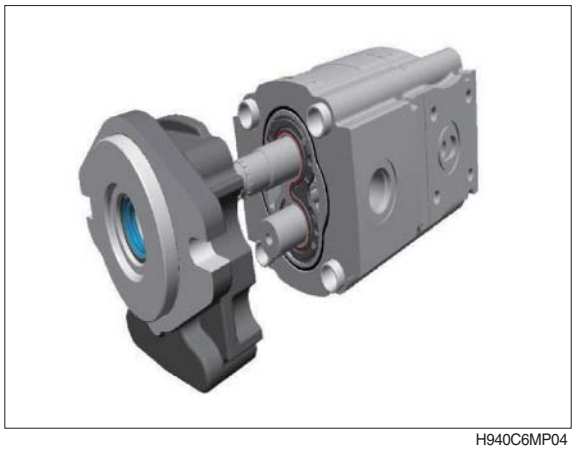
(2) Mounting flange

① Loosen and remove the assembling bolts and washers from the pump.

H940C6MP03

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.

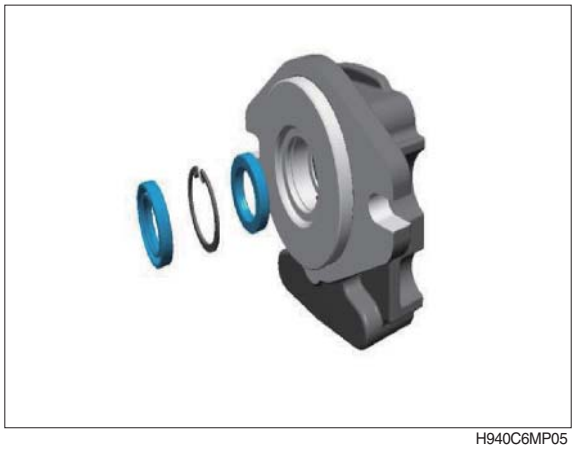
※ Ensure that while removing it, the drive shaft and other components remain position.



H940C6MP04

③ 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.



H940C6MP05

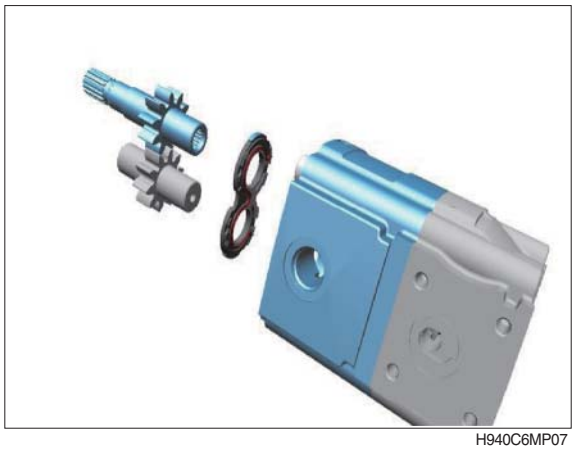
(3) 1st working section

① Remove the pressure plate with prearranged parts, O-ring & back up ring from the working section and examine it carefully.

H940C6MP06

② Pull out driving gear & driven gear keeping gears as straight as possible.

③ Remove other pressure plate on rear side with same way for front side.

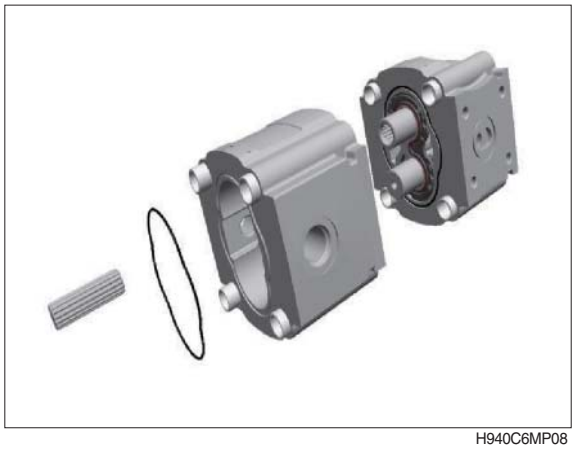


H940C6MP07

④ Remove square O-ring on the groove of body.

⑤ Remove through shaft and front body.

※ Tap around marked points with rubber mallet all around to break away first body from second.
Do not wedge between the bodies, it may give serious damage on the surface.



H940C6MP08

(4) 2nd working section

① Remove all components inside of second body with same way for 1st section.

② Remove the square O-ring if necessary.

H940C6MP09

4) ASSEMBLY

(1) Preassemble

Pressure plates

① Locate O-ring into the groove on the aluminum pressure plate.

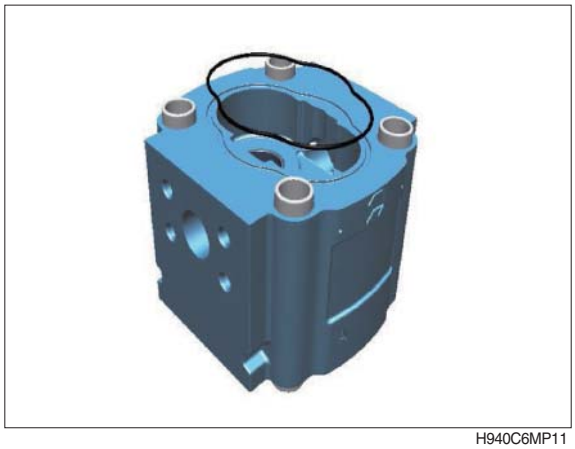
② Locate back-up ring upon the O-ring.

③ Smear clean grease on the O-ring & back-up ring to fix their position while moving.

H940C6MP10

Working body

① Insert square rings into grooves.
Shape of square ring is different depend on type of bodies.



H940C6MP11

Mounting flange

① Locate shaft seal inside shaft hole to the end.

② Insert snap ring and locate it into the groove prearranged on the mounting flange.

③ Locate shaft seal again but different direction.

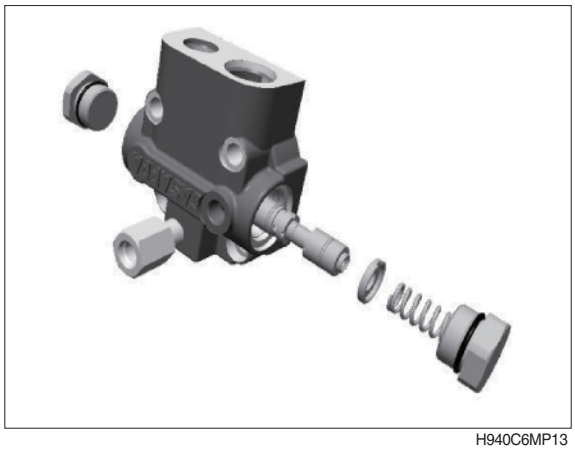
H940C6MP12

LS - priority valve

① Insert the spool prearranged all orifice first, and spring, plugs.

· Torque value of both sides plugs :
10.2 kgf · m (73.8 lbf · ft)

· Torque value of LS plug :
1.53 kgf · m (11.1 lbf · ft)



H940C6MP13

(2) Assembling

① Prepare cleaned 2nd body prearranged guard pins and square O-ring.

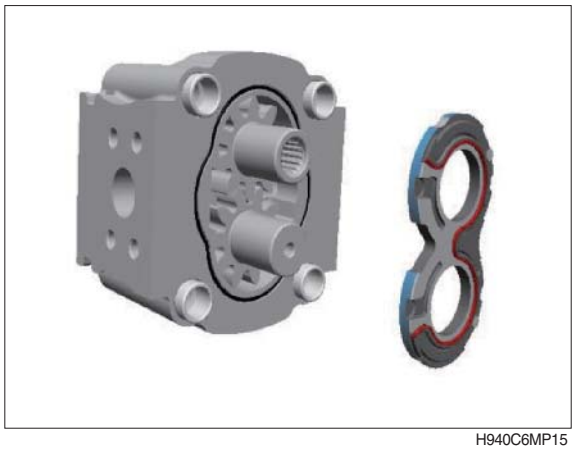
② Insert a pressure plate prearranged O-ring & back-up ring inside of body.

※ Opened area of O-ring should face to suction side. And O-ring side should face to the body.

H940C6MP14

③ Locate driving gear and driven gear keeping as straight as possible during assembling.

④ Locate one of pressure plates prepared.

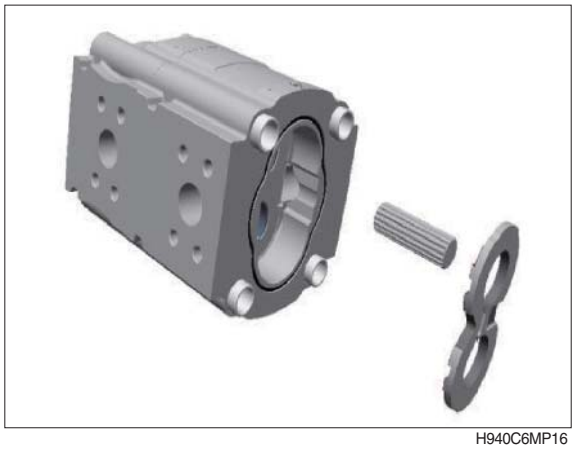


H940C6MP15

⑤ Locate 1st body on the 2nd body tapping around the body with rubber mallet to fit it completely.

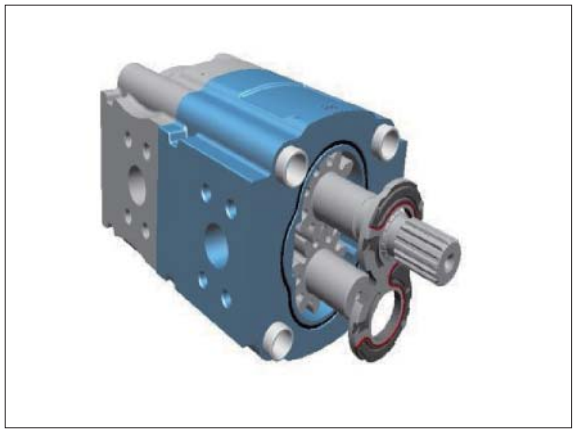
⑥ Locate through shaft on the driving gear.

⑦ Locate pressure plate with same way for 2nd body.



H940C6MP16

⑧ Locate driving gear and driven gear and last pressure plate also.



H940C6MP17

⑨ Assemble mounting flange to the body, taking 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.

H940C6MP18

⑩ Assemble the bolts and tighten the bolts with in a crisscross pattern to a torque value of 14.3 kgf · m (103 lbf · ft).

⑪ Check that the pump rotates freely when the drive shaft is turned by hand, if not a possible, plate seal may be pinched.

H940C6MP19

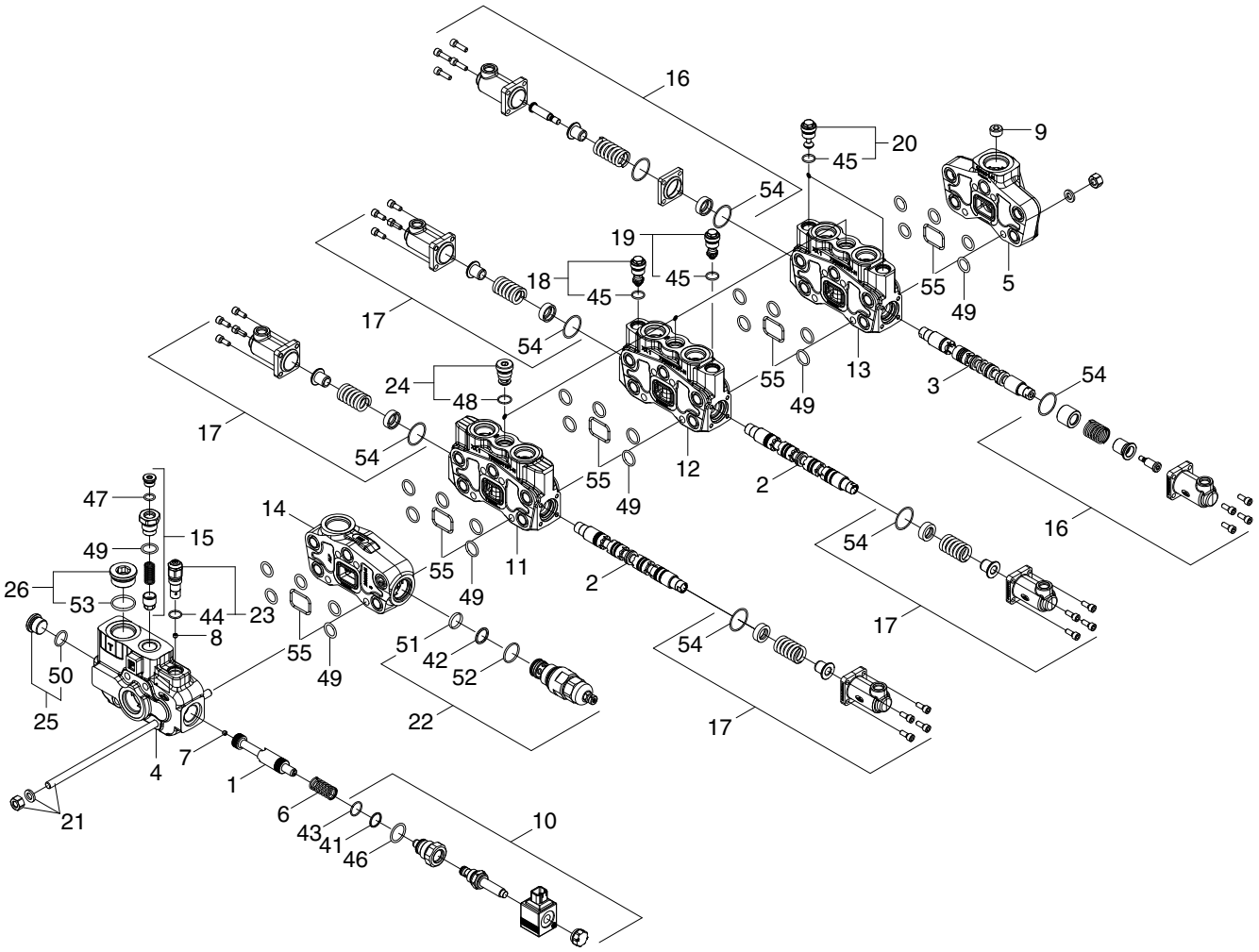
⑫ Locate an O-ring into the groove on the body.

⑬ Locate preassembled LS - priority valve on the 1st working section and tighten the bolts with in a crisscross pattern to a torque value of 7.14 kgf · m (51.6 lbf · ft).

H940C6MP20

2. MAIN CONTROL VALVE (LOADER)

1) STRUCTURE



H930ST6WE36

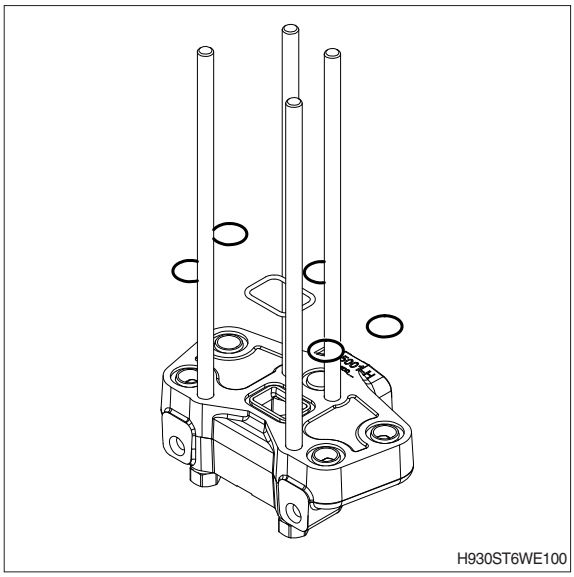
1	Unloader spool	12	Element kit	22	Main relief valve	46	Seal
2	Spool	13	Element kit	23	Cartridge	47	O-ring
3	Spool	14	P1 block kit	24	VR kit	48	O-ring
4	Inlet cover	15	Plug kit	25	Plug	49	O-ring
5	Outlet cover	16	Control kit	26	Plug	50	O-ring
6	Spring	17	Control kit	41	O-ring	51	O-ring
7	Screw	18	Port relief valve	42	Seal	52	Seal
8	Screw	19	Port relief valve	43	O-ring	53	O-ring
9	Conical plug	20	Port relief valve	44	O-ring	54	O-ring
10	Electro valve kit	21	Tie rod kit	45	O-ring	55	O-ring
11	Element kit						

2) STACKING

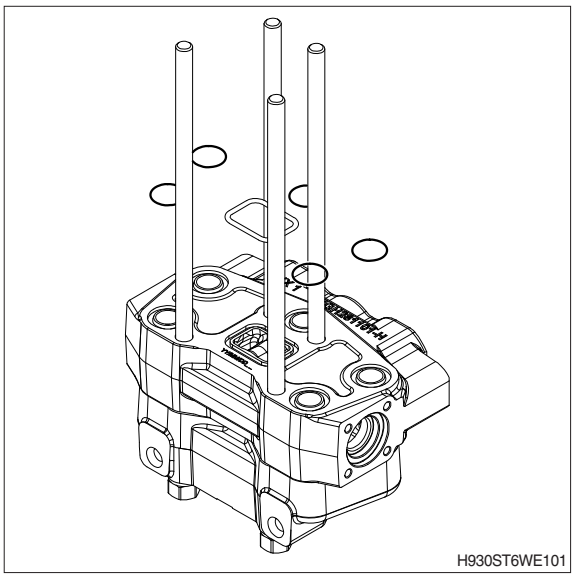
(1) Place the inlet cover with O-ring grooves should upward on the tie rod kit as shown in the figure.

(2) Clean the valve using compressed air so that valve is free from any dust or dirt.

(3) Place the O-ring as shown.


H930ST6WE100

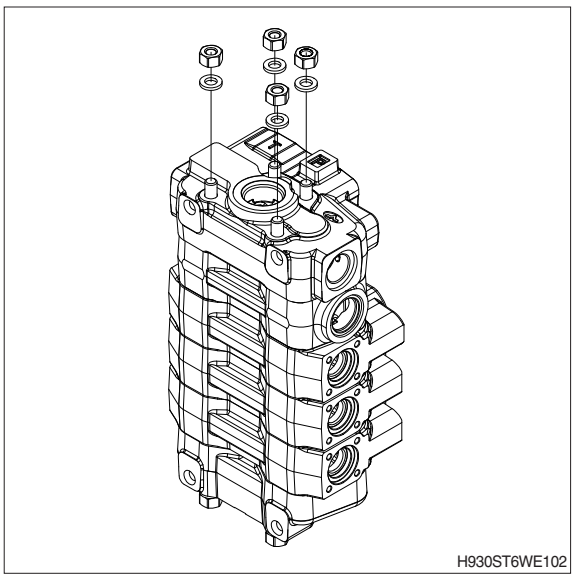
(4) Insert the working section one by one with O-ring grooves should be upward.


H930ST6WE101

(5) Insert the outlet cover.

(6) Insert washers and assemble the nuts (hand tight).

(7) Position the valve to horizontal (mounting holes should be on bottom), place the valve on clamps and tighten the nuts to 4.1 kgf · m (29.7 lbf · ft) torque (wrench 17 mm) using pneumatic torque gun (tight the nut diagonal first and then all as shown in the figure). After tightening the nut, remove the fixture from the valve.

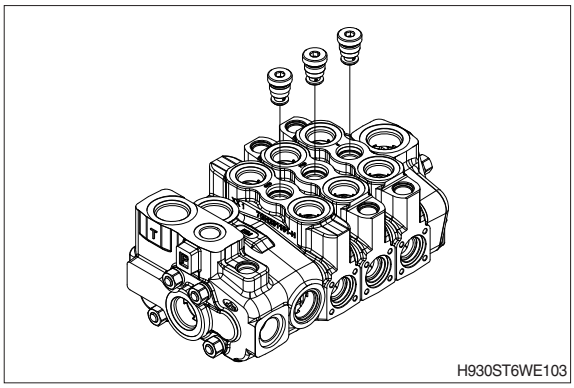

H930ST6WE102

3) LOAD DROP CHECK VALVE ASSEMBLY

(1) Insert the poppet into the VR cavity.

(2) Then place the spring into the poppet.

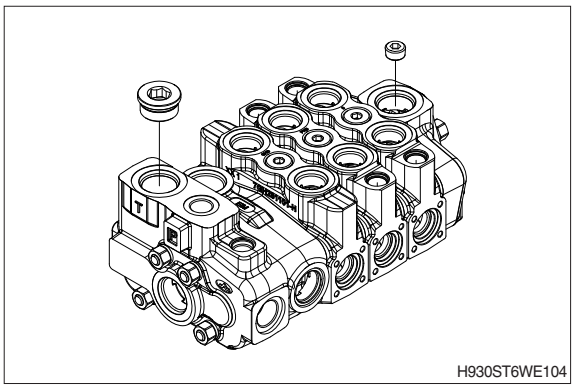
(3) And assemble the VR plug above into the VR cavity and tighten it to 4.3 kgf · m (31.1 lbf · ft) (wrench 8 mm) torque using pneumatic torque gun (make sure that O-ring is present in the VR plug).


H930ST6WE103

4) P AND T PLUGS ASSEMBLY

(1) Assemble the conical plug at outlet as shown.

(2) Assemble the plug to inlet (make sure that O-ring is present in the plug) and tighten it to the 4.3 kgf · m (31.1 lbf · ft) torque (wrench 17 mm) using pneumatic torque gun.


H930ST6WE104

5) ADAPTER KIT AND LS VALVE ASSEMBLY

(1) Insert the poppet in the manometer cavity.

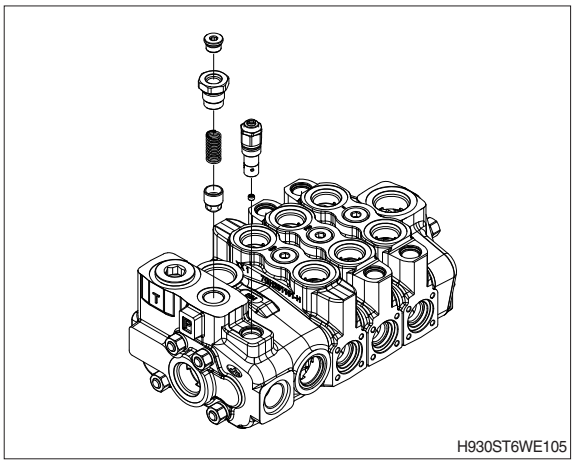
(2) Then insert the spring on to the poppet.

(3) Assemble the 1/2" plug and tighten it to 4.3 kgf · m (31.1 lbf · ft) torque (wrench 27 mm) using pneumatic torque gun (make sure that washer is present in the plug).

(4) And assemble the plug and tighten it to the 2.4 kgf · m (17.4 lbf · ft) torque (wrench 6 mm) using pneumatic torque gun.

(5) Insert orifice of (1.25 mm dia) in the LS cavity as shown in figure.

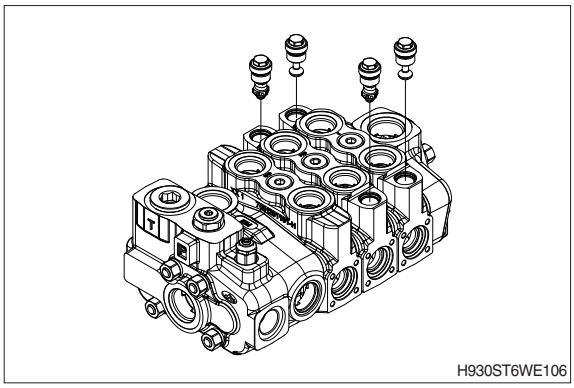
(6) Assemble the LS valve into LS cavity and tighten it to 2.4 kgf · m (17.4 lbf · ft) torque (wrench 19 mm) using pneumatic torque gun.


H930ST6WE105

6) PORT RELIEF VALVES AND PLUGS ASSEMBLY

(1) Assemble the port relief valves into the port relief valve cavities on both sides of the valve (A & B sides) as shown (make sure that O-rings are present in the relief valves).

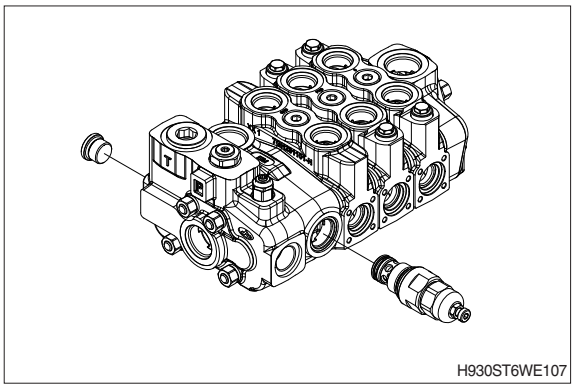
(2) And tighten it to the 2.4 kgf · m (17.4 lbf · ft) torque (wrench 13 mm) using pneumatic torque gun.


H930ST6WE106

7) MAIN RELIEF VALVE ASSEMBLY

(1) Position the valve with main relief valve cavity facing the operator side. Assemble the main relief valve into the main relief valve cavity and tighten it to 4.3 kgf · m (31.3 lbf · ft) torque (wrench 36) using pneumatic torque gun.

(2) Assemble the plug to inlet (make sure that O-ring is present in the plug) and tighten it to the 4.3 kgf · m (31.3 lbf · ft) torque (wrench 17 mm) using pneumatic torque gun.


H930ST6WE107

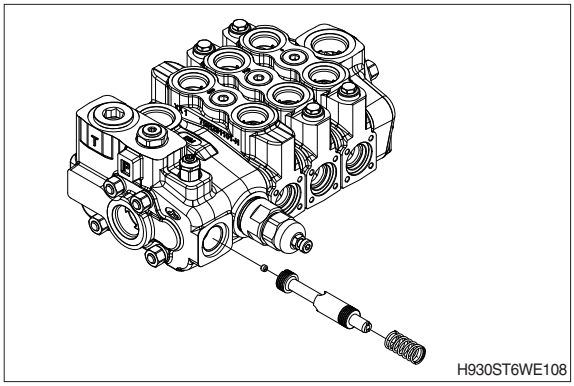
8) UNLOADER SPOOL AND COMPENSATOR SPOOL ASSEMBLY

(1) Insert orifice of (0.75 mm dia) in the spool as shown in figure.

(2) Lubricate the spool cavity with hydraulic oil.

(3) Insert the spool into the spool cavity with orifice face should go inside.

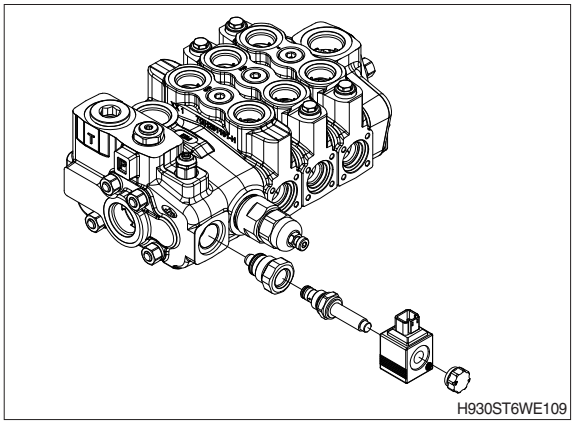
(4) Insert the spring on to the spool seat.


H930ST6WE108

9) ELECTRO VALVE ASSEMBLY

(1) Insert the junction plug (make sure that O-ring is present in the plug) and tighten it to 4.3 kgf · m (31.3 lbf · ft) torque (wrench 32 mm) using pneumatic torque gun.

(2) Assemble the solenoid cartridge (and tighten it to 3.1 kgf · m (22.1 lbf · ft) torque (wrench 24 mm) using pneumatic torque gun as shown in the figure.


H930ST6WE109

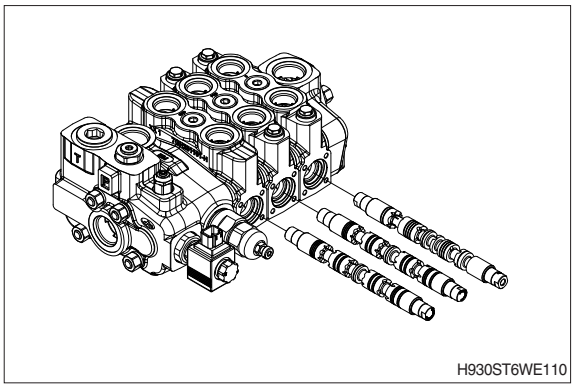
10) SPOOLS ASSEMBLY

(1) Lubricate the spool cavities with hydraulic oil.

(2) Insert the spools with control kit end facing the operator.

(3) Move the spool in and out two to three times for free movement.

(4) Assemble the spools by checking the part numbers engraved on the spools on the right place with spool eye end facing the operator side.



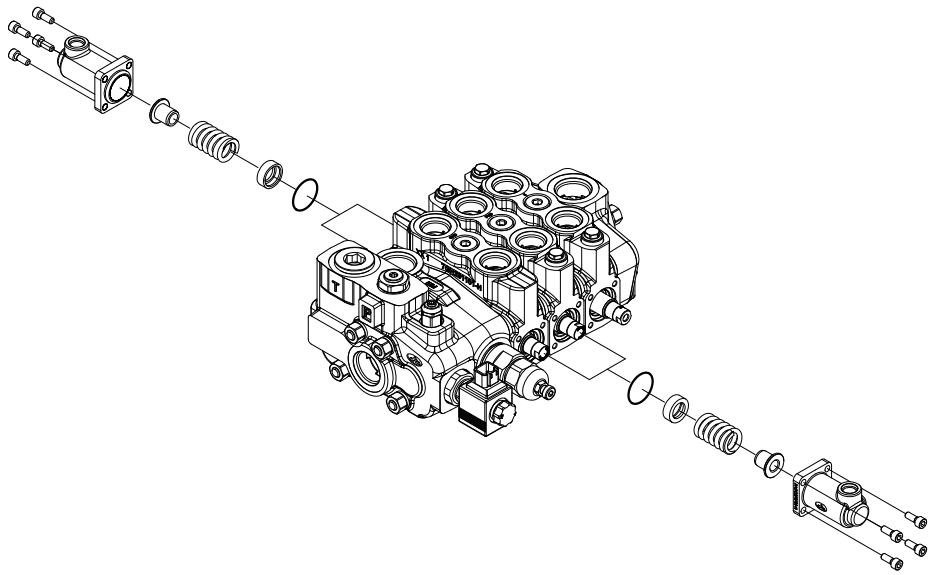
H930ST6WE110

11) CONTROL KIT ASSEMBLY

(1) Place control kit spring in between two bushes as shown, and then assemble these into the spool on both sides of the valve.

(2) Lubricate the spool end with proper quantity of grease.

(3) Assemble the end caps both sides with M6 screws and tighten the control kit cap to 1.0 kgf · m (7.2 lbf · ft) torque (wrench 5 mm) using pneumatic torque gun (make sure that O-rings are present in the control kit).



H930ST6WE111

12) CONTROL KIT ASSEMBLY

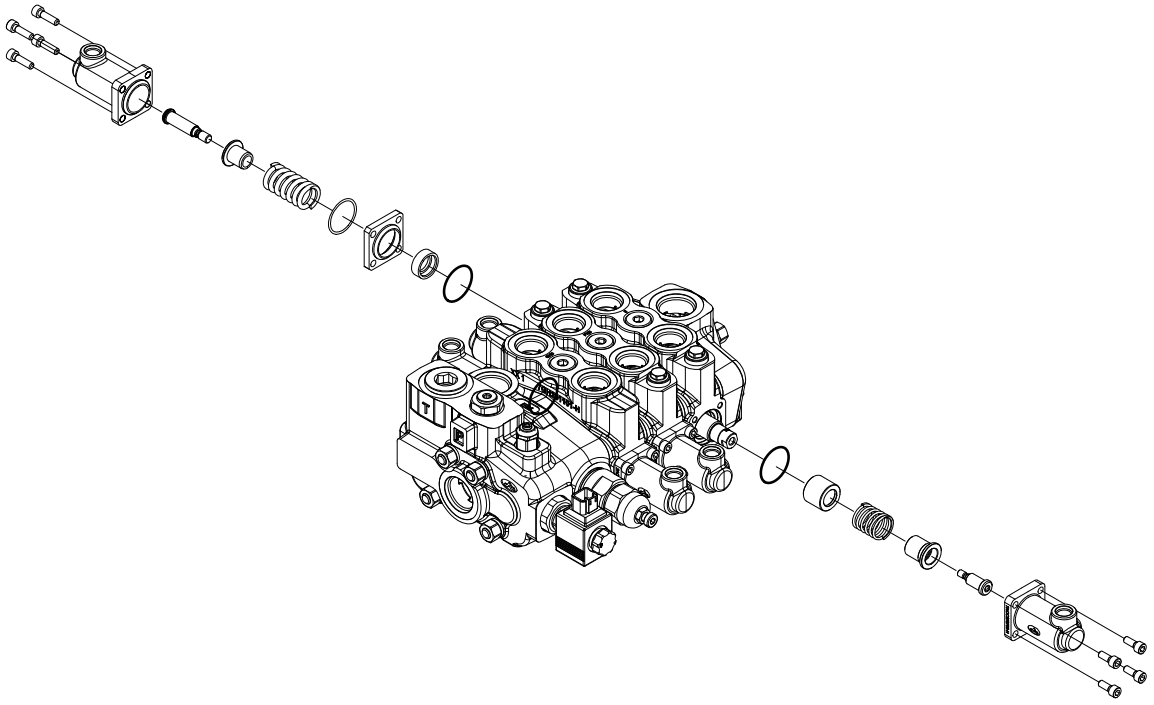
(1) Apply a drop of loctite #270 thread locker on control kit screw threads.

(2) Place control kit spring in between two bushes as shown, and then assemble these into the spool with control kit screw both sides.

(3) Tighten the control kit to 1.0 kgf · m (7.2 lbf · ft) (wrench 5 mm) torque using pneumatic torque gun.

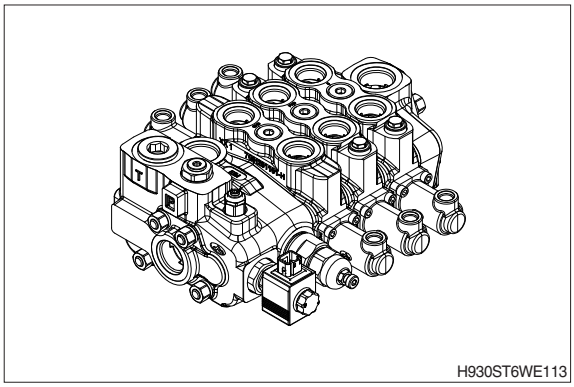
(4) Lubricate the proper quantity of grease.

(5) Assemble the end cap both sides of the valve with M6 screws and tighten the control kit to 1.0 kgf · m (7.2 lbf · ft) (wrench 5 mm) torque using pneumatic torque gun as shown in the figure (make sure that O-rings are present in the control kit).



H930ST6WE112

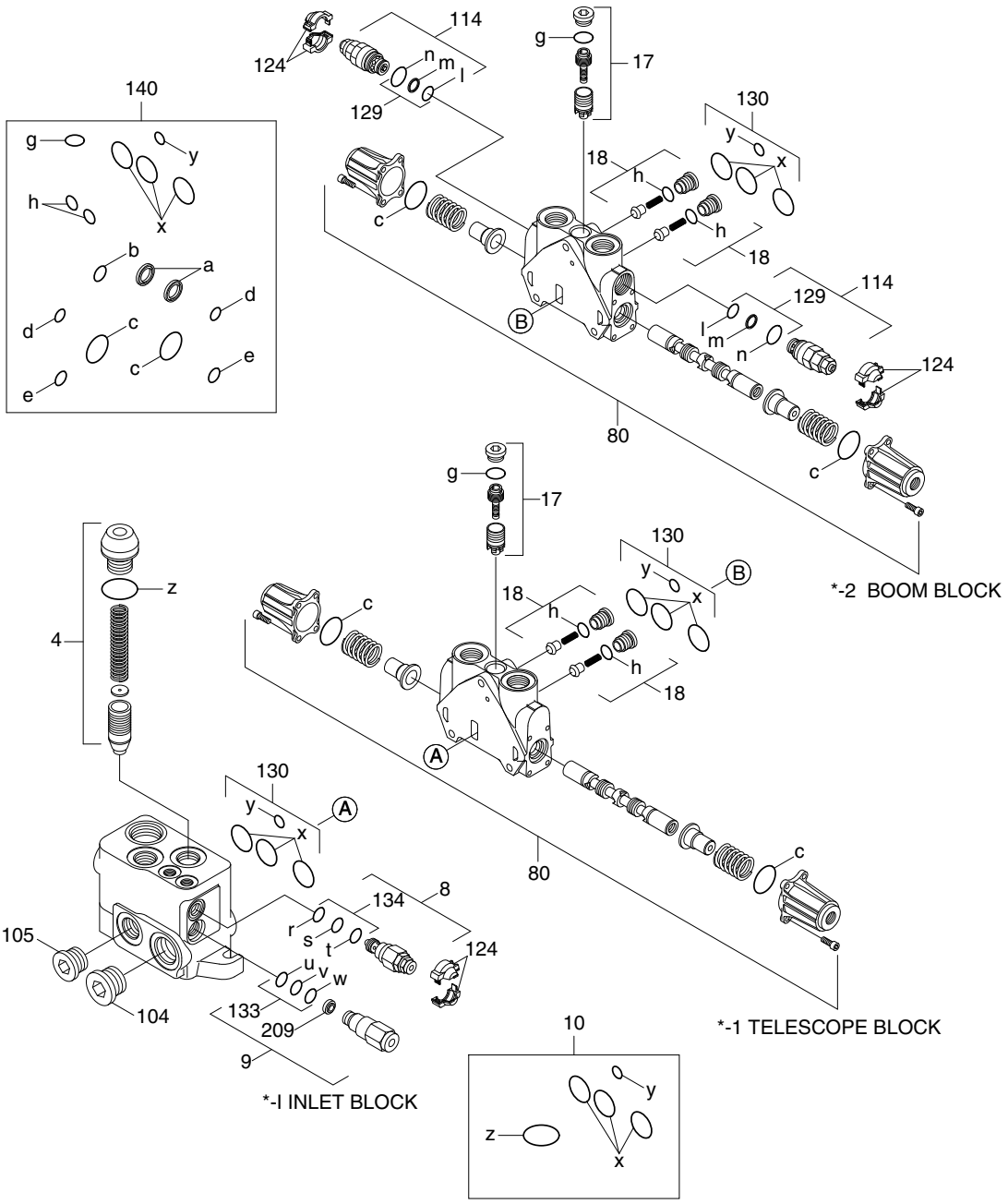
13) FINAL ASSEMBLED VALVE



H930ST6WE113

3. MAIN CONTROL VALVE (BACKHOE)

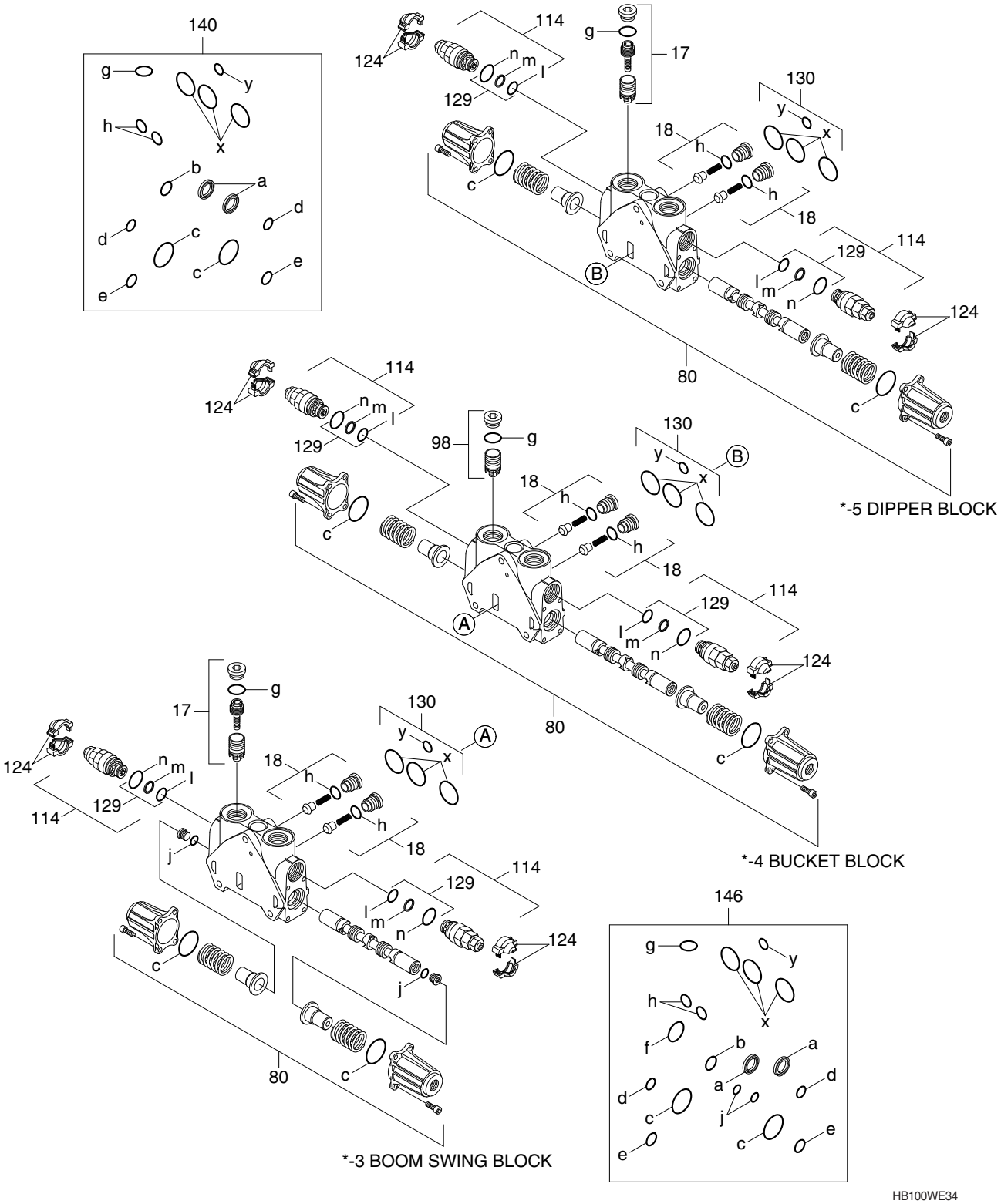
1) STRUCTURE (1/3)



HB100WE33

4	Regulation kit	80	Hydraulic operation	130	Seal kit
8	Relief valve	104	Plug	133	Seal kit
9	Flow regulator	105	Plug	134	Seal kit
10	Seal kit	114	Relief valve	140	Seal kit
17	Pressure compensator kit	124	Cover	209	Filter
18	Check valve kit	129	Seal kit		

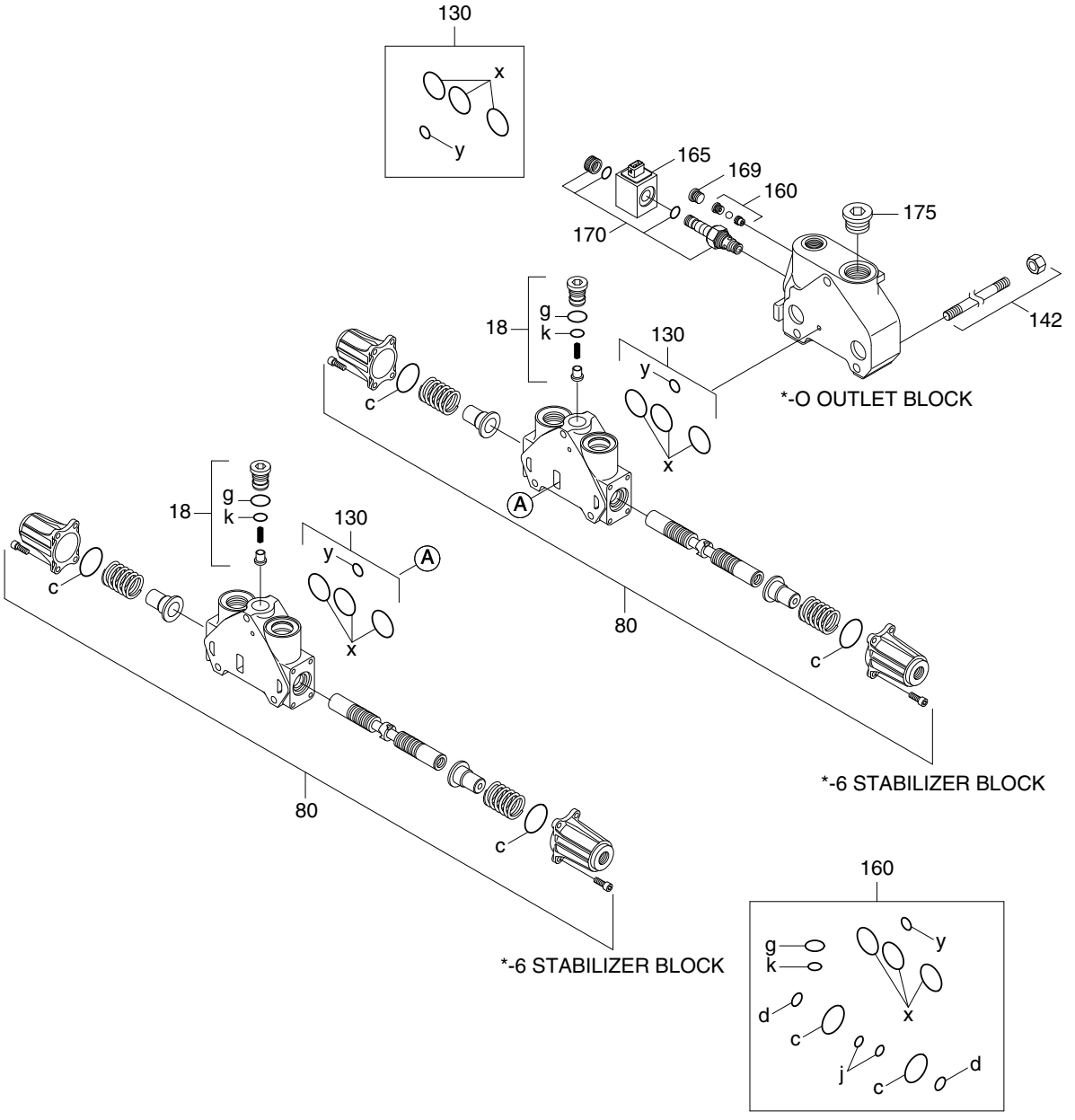
STRUCTURE (2/3)



HB100WE34

17	Pressure compensator kit	114	Relief valve	140	Seal kit
18	Check valve kit	124	Cover	146	Seal kit
80	Hydraulic operation	129	Seal kit		
98	Pressure compensator kit	130	Seal kit		

STRUCTURE (3/3)



18	Check valve	142	Stud & Nut	169	Plug
80	Hydraulic operation	160	Seal kit	170	2 ways valve kit
130	Seal kit	165	Solenoid	175	Plug

2) REMOVAL / INSTALLATION OF THE CONTROL BLOCK

(1) General recommendations

※ Before removing the control block from the machine, the block and its surroundings must be thoroughly cleaned (Do not direct the jet of a pressure washing unit directly at the unit).

No impurities must enter the hydraulic system. Plastic plugs are to be fitted on lines and orifices immediately following their removal.

⚠ Wear protective clothing and use suitable equipment to prevent accidents, particularly concerning the hydraulic fluid.
Use the lifting eyes and suitable handling equipment.
Set all actuators connected to the machine in neutral position (on the ground, at lower limit ...) to avoid accidents which could result from uncontrolled movements of the equipment when the hydraulic system is disconnected.
With the machine off, release the pressure remaining in the system by manipulating all of the distribution spools. This is performed by moving the handle in all directions.

(2) Removal

Install a vacuum pump on the tank to limit oil leakage when connections are removed.
After disconnecting the lines from the block, immediately fit the sealing plugs. Make sure to collect any possible oil leakage in a suitable receptacle.
Unscrew the mounting screws and remove the control block.

(3) Installation

Contact faces must be perfectly clean.
Check the evenness of support area on the machine (tolerance: 0.5 ㎜).
Check the condition of line connector seals.
Clean the block if it has been in storage for a long period of time.
Correctly place and secure the control block onto the machine with the mounting screws.
Connect the lines to the block as per the connecting diagram and tighten to the torque specification.
Ensure that hoses are not twisted or rub.
Once correctly installed, the unit can be placed into operation.

(4) Starting, maximal pressure set up

① Decalibrate the main relief valve (19 ㎜ open end spanner on counternut) before starting the machine.
② Maintain one of the control block spool valve in action before the linked hydraulic tank is at the end of stroke.
※ On the spool valve, the value of the port relief must be greater than that of the relief valve to adjust.
③ Adjust the maximum pressure measured using the main relief valve (6 ㎜ socket wrench).
④ Tighten the counternut of the adjusting screw to the torque : 2.04±0.2 ㎏f · m (14.8±1.48 lbf · ft).

3) INLET AND OUTLET ELEMENTS REPAIR PROCEDURE

(1) Main relief valve replacement

※ The control block does not need to be removed from the machine to perform this operation.

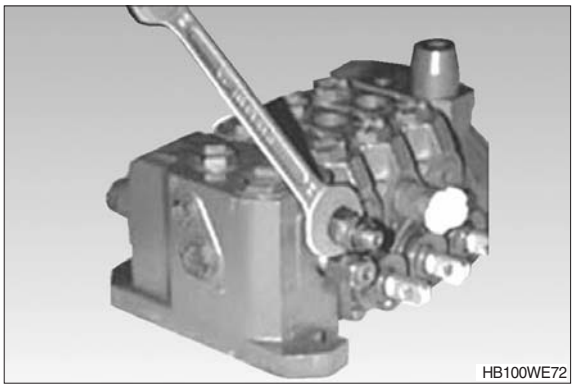
⚠ **Place all of the machine's actuators connected to the control block in neutral position.**

⚠ **Release stored pressure by operating all the spools.**

※ Install a vacuum pump on the tank to limit oil leakage during this operation.
Collect possible leaks with a suitable receptacle.

① On the inlet element, unscrew the pressure relief valve (24 mm open end spanner).

② Reassembly :
- Install the main relief valve on the inlet element.
- Torque : 4.59±0.46 kgf · m
  (33.2±3.32 lbf · ft).
- Set the main relief valve to the specified value (250 kgf/cm² [3560 psi])
- Fit a new appropriate locking cover.


HB100WE72

(2) Flow regulator replacement

※ The control block does not need to be removed from the machine to perform this operation.

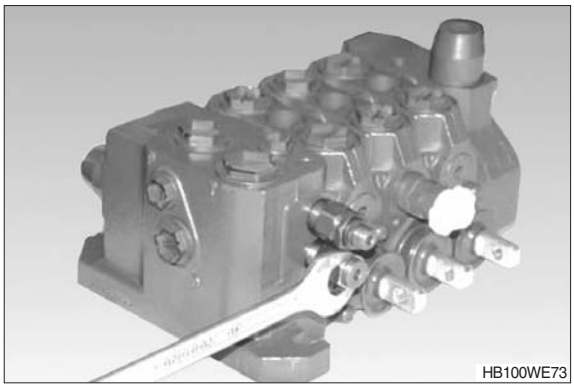
⚠ Place all of the machine's actuators connected to the control block in neutral position.

⚠ Release stored pressure by operating all the spools.

※ Install a vacuum pump on the tank to limit oil leakage during this operation.
Collect possible leaks with a suitable receptacle.

① On the inlet or outlet element:
- Unscrew the main relief valve.
- Unscrew the flow regulator (22 ㎜ open end spanner).

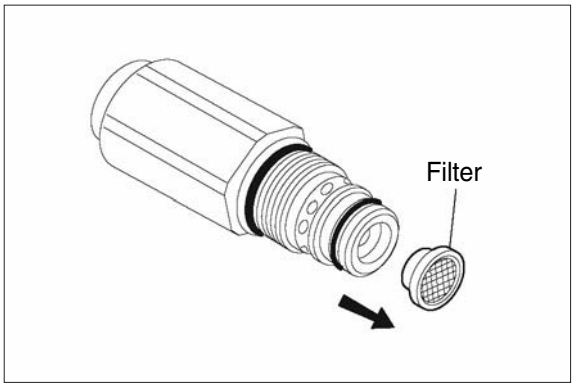
② Reassembly :
- Install the flow regulator on the inlet or outlet element.
- Torque : 2.04±0.2 kgf · m
  (14.8±1.48 lbf · ft)


HB100WE73

(3) Flow regulator filter replacement

① Using pliers, extract the filter from the end of the flow regulator.
Be careful not to damage the seal and the end of the flow regulator.

② Reassemble parts in reverse order.



HB100WE74

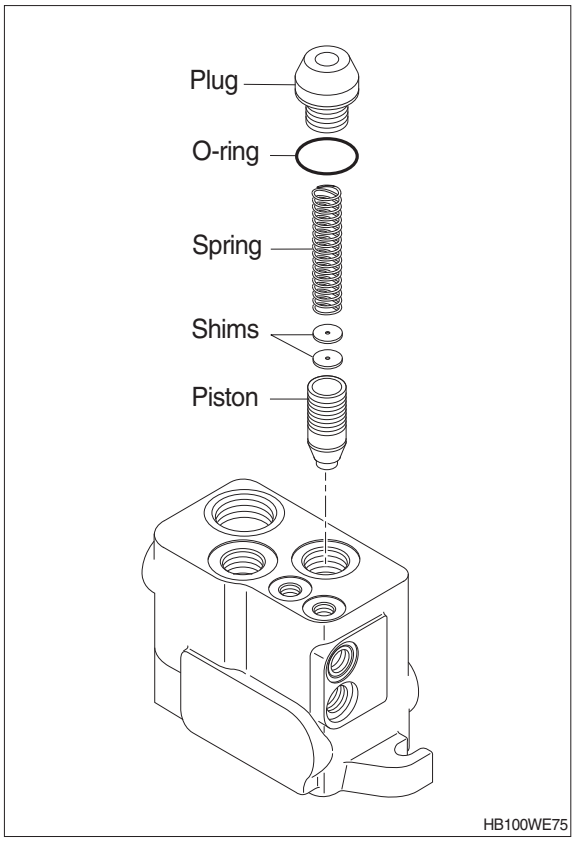
(4) Removal of the regulation kit for "closed center"

※ The control block does not need to be removed from the machine to perform this operation.

⚠ Place all of the machine's actuators connected to the control block in neutral position.

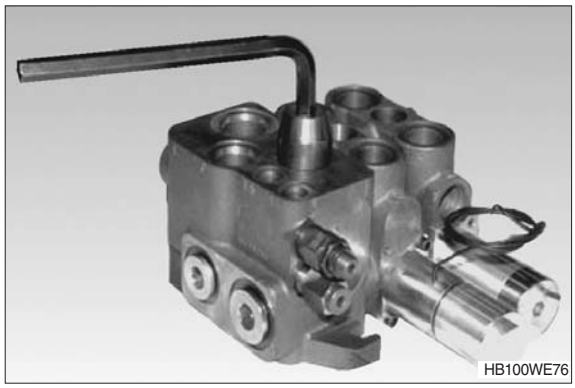
⚠ Release stored pressure by manipulating all the spools.

※ Install a vacuum pump on the tank to limit oil leakage during this operation.
Collect possible leaks with a suitable receptacle.



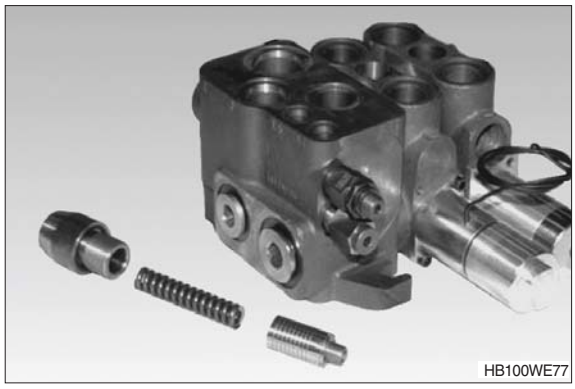
① On the inlet element, unscrew the regulation kit plug (12 mm socket wrench).

② Reassembly :
- Replace the plug O-ring.
- Torque : 10.2±1.02 kgf · m
(73.8±7.38 lbf · ft)



③ Remove spring, shims and piston.

④ Reassemble parts in reverse order.



4) DISTRIBUTION ELEMENT REPAIR PROCEDURE

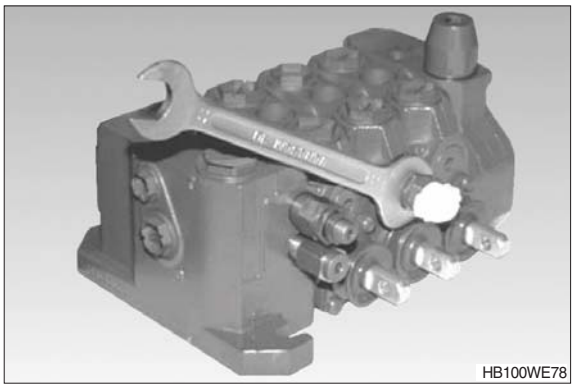
(1) Secondary valves replacement

※ The control block does not need to be removed from the machine to perform this operation.

⚠ Place all of the machine's actuators connected to the control block in neutral position.

⚠ Release stored pressure by operating all the spools.

※ Install a vacuum pump on the tank to limit oil leakage during this operation.
Collect possible leaks with a suitable receptacle.


HB100WE78

Port relief valve replacement

① On the distribution element in question, unscrew the port relief valve (24 mm open end spanner).

② Reassembly :
- Set the port relief valve to the specified value.
- Install the secondary port relief valve on the distribution element.
- Torque : 7.14±0.71 kgf · m
  (51.6±5.16 lbf · ft)
- Fit a new appropriate locking cover.

③ Replace valve seals or port relief valve.

Plug replacement

① On the distribution element in question, unscrew the plug (8 mm socket wrench).

② Reassembly :
· Torque : 7.14±0.71 kgf · m
(51.6±5.16 lbf · ft)

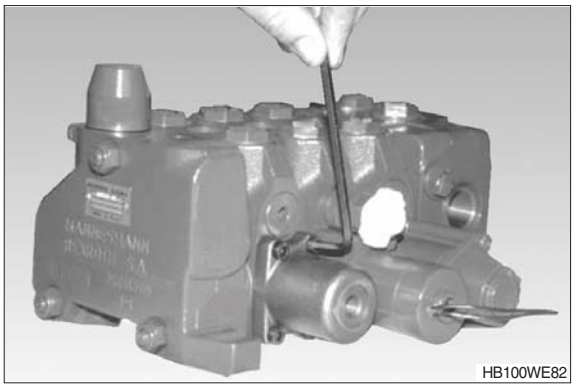
③ Replace plug seals or plug.

(2) Hydraulic control housing removal

① Remove the 4 mounting screws (screwdriver for 5 mm socket wrench for socket head screws).

② Reassembly :
Replace the O-ring on the body.
· Torque : 1.02±0.10 kgf · m
(7.38±0.74 lbf · ft)

③ Reassemble parts in reverse order.


HB100WE82

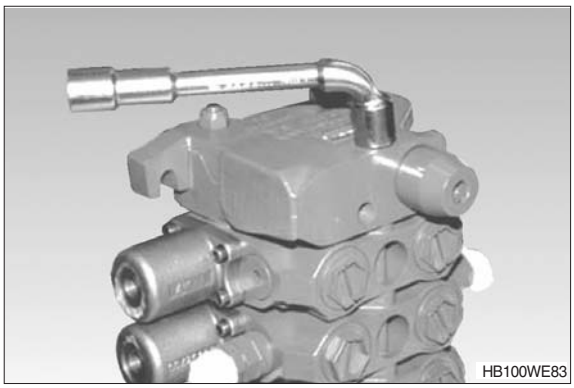
(3) Control block disassembly / assembly

Preliminary operation

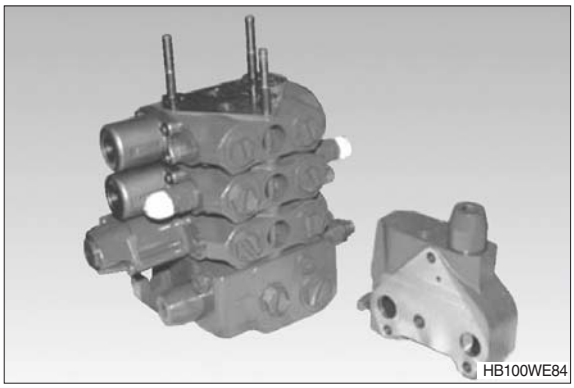
① Remove the control block from the machine.

② Remove the 3 nuts (19 mm ring wrench)

③ Reassembly :
· Torque : 6.12±0.61 kgf · m
(44.3±4.43 lbf · ft)


HB100WE83

④ Remove the outlet element.


HB100WE84

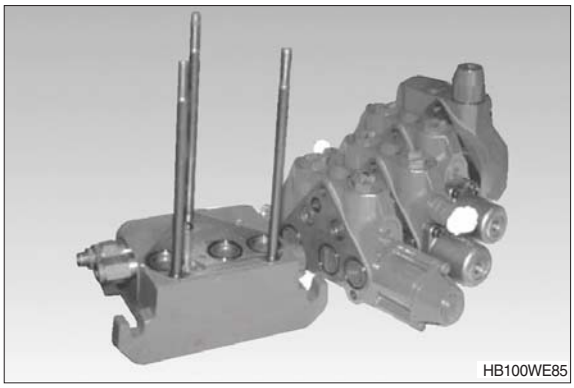
⑤ Separate the working sections from the inlet element.

⑥ Reassembly :
- Replace the O-rings located between the working sections, the inlet element and the outlet element.
- Check the cleanliness of the element faces.
- Place the control block horizontally on an even support area to tight the nuts.

⑦ If the inlet element is to be replaced, remove the tie rods.

⑧ Reassembly :
- Make sure that the tie rods are tightened to the specified torque.

⑨ Reassemble parts in reverse order.


HB100WE85

Individual pressure compensator removal

① Unscrew the compensator plug (8 mm socket wrench).

② Reassembly :
- Replace the plug O-ring,
- Torque : 6.12±0.61 kgf · m
  (44.3±4.43 lbf · ft)

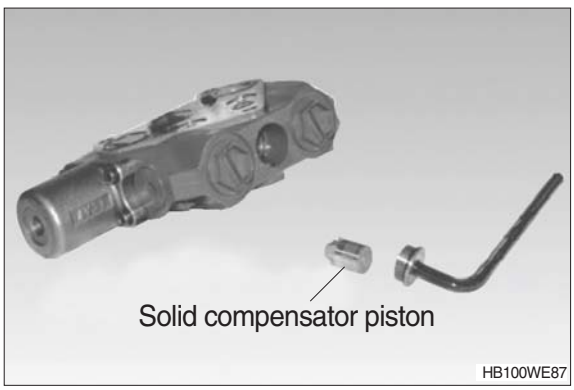

HB100WE86

③ Remove the compensator piston using a magnet to extract it from its bore.

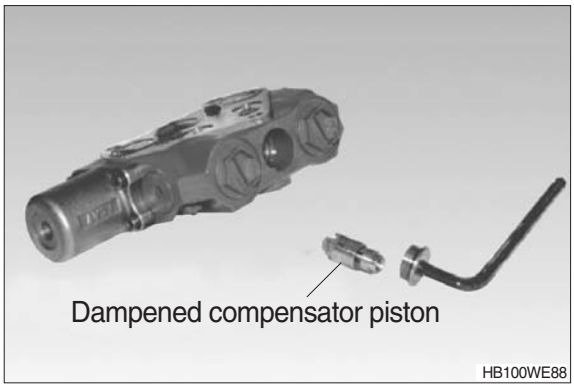
④ Clean the piston's nozzle with compressed air to remove all traces of pollution.

⑤ Check the condition of the bore in the distribution element body.

⑥ Reassemble parts in reverse order.



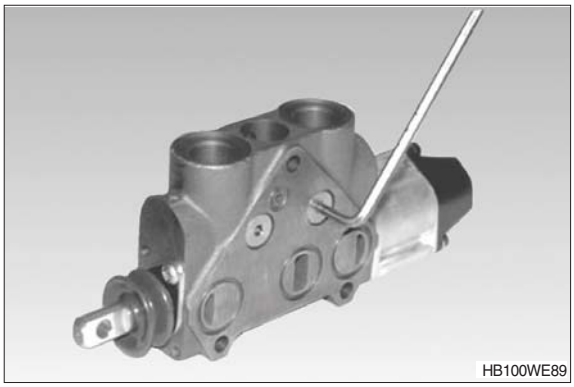
HB100WE87



Check valve compensator removal

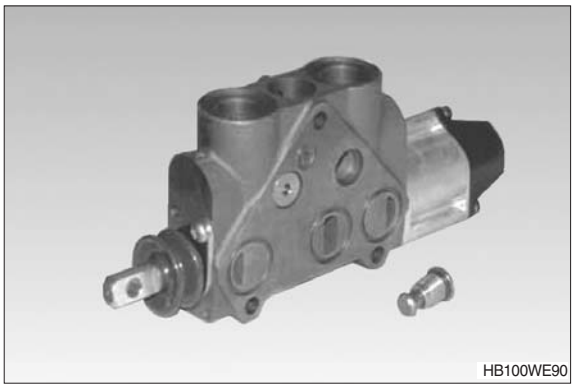
① Unscrew the check valve plug (5 mm socket wrench).

② Reassembly :
- Replace the plug O-ring.
- Torque : 3.06±0.31 kgf · m
  (22.1±2.21 lbf · ft)



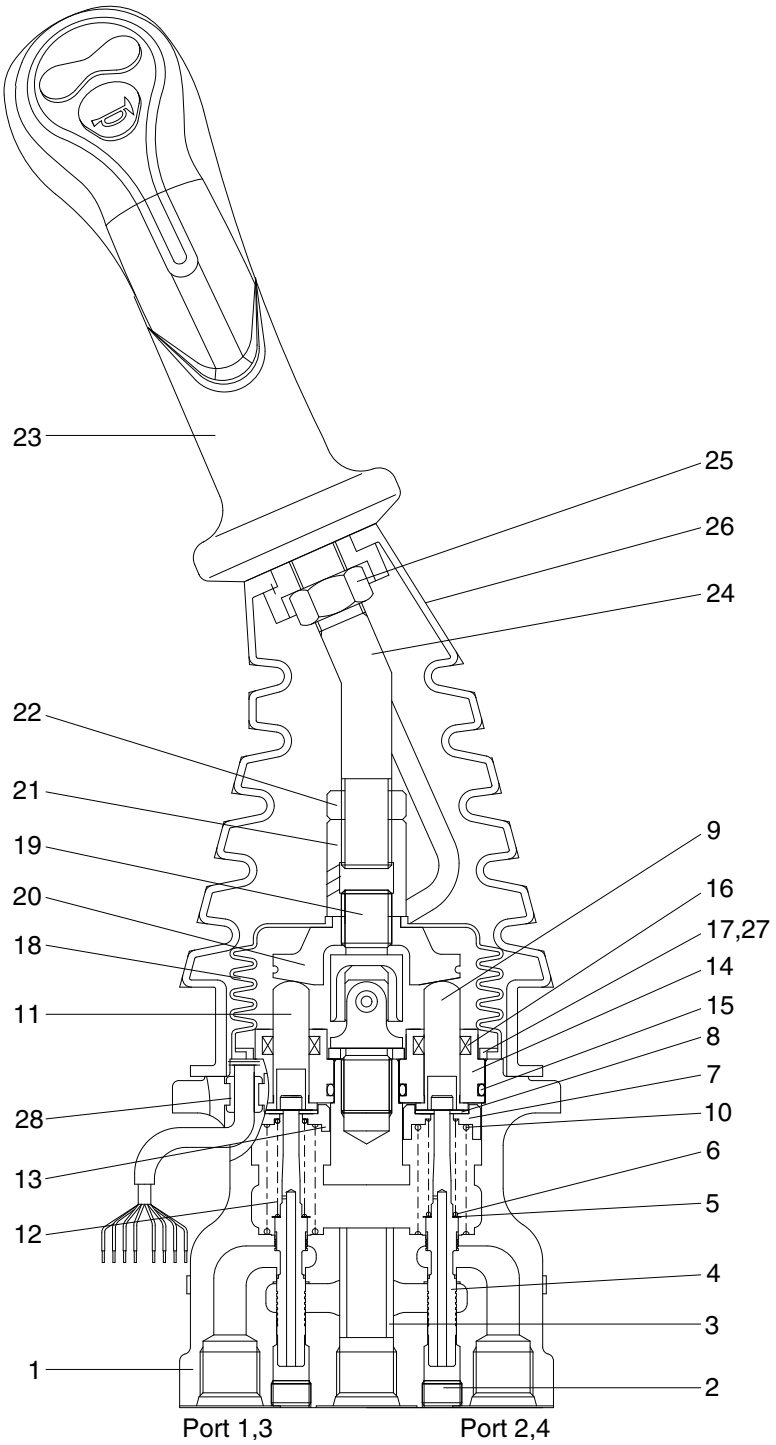
③ Visually check the condition of parts.

※ Replace the assembly if necessary.



4. RCV LEVER

1) STRUCTURE

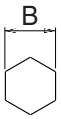


H940C6WE71

1	Case	8	Stopper	15	O-ring	22	Lock nut
2	Plug	9	Push rod	16	Rod seal	23	Handle assembly
3	Bushing	10	Spring	17	Plate	24	Handle bar
4	Spool	11	Push rod	18	Boot	25	Nut
5	Shim	12	Spring	19	Joint assembly	26	Boot
6	Spring	13	Spring seat	20	Swash plate	27	Spring pin
7	Spring seat	14	Plug	21	Adjusting nut	28	Bushing

2) TOOLS AND TIGHTENING TORQUE

(1) Tools

Tool name	Remark	
Allen wrench	6	
Spanner	22	
	27	
(+) Driver	Length 150	
(-) Driver	Width 4~5	
Torque wrench	Capable of tightening with the specified torques	

(2) Tightening torque

Part name	Item	Size	Torque	
			kgf · m	lbf · ft
Plug	2	PT 1/8	3.0	21.7
Joint	19	M14	3.5	25.3
Swash plate	20	M14	5.0±0.35	36.2±2.5
Adjusting nut	21	M14	5.0±0.35	36.2±2.5
Lock nut	22	M14	5.0±0.35	36.2±2.5

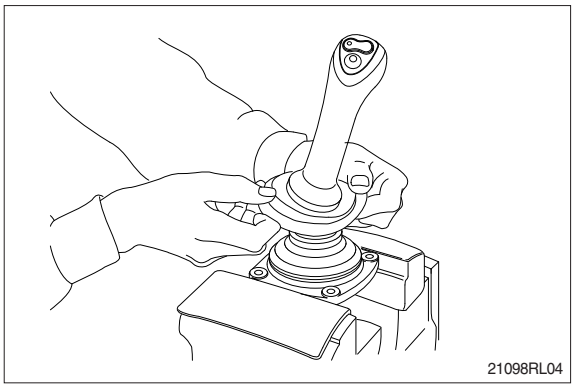
3) DISASSEMBLY

(1) Clean pilot valve with kerosene.

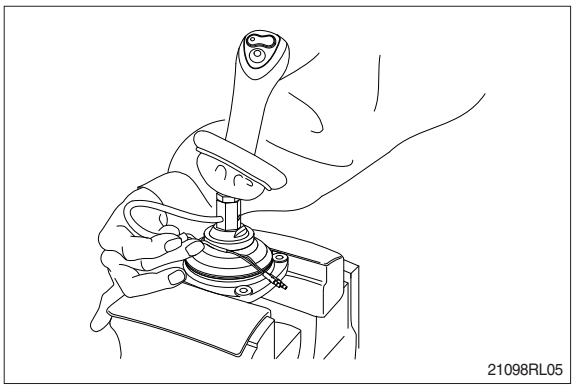
※ Put blind plugs into all ports

(2) Fix pilot valve in a vise with copper (or lead) sheets.

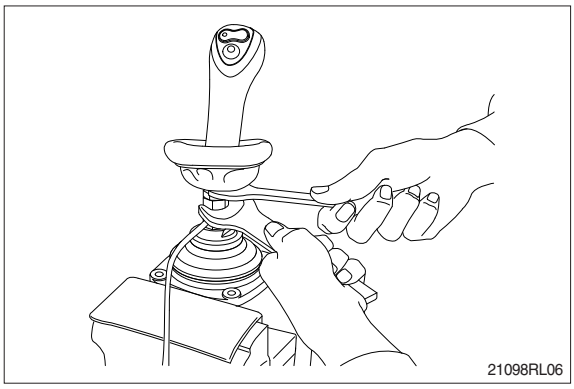
(3) Remove end of boot (26) from case (1) and take it out upwards.



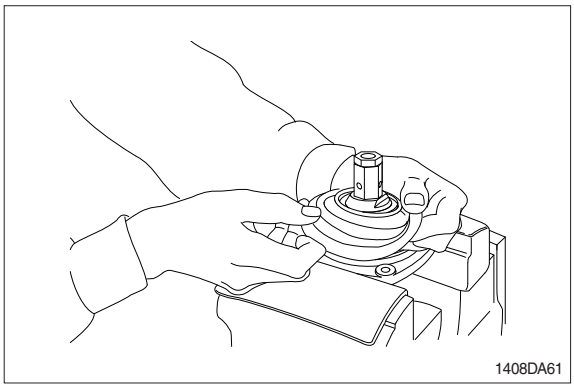
※ For valve with switch, remove cord also through hole of casing.



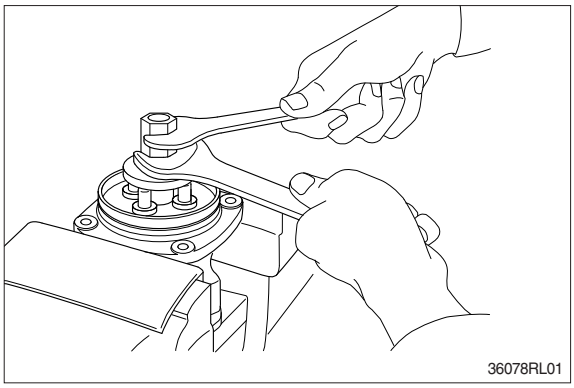
(4) Loosen lock nut (22) and adjusting nut (21) with spanners on them respectively, and take out handle section as one body.

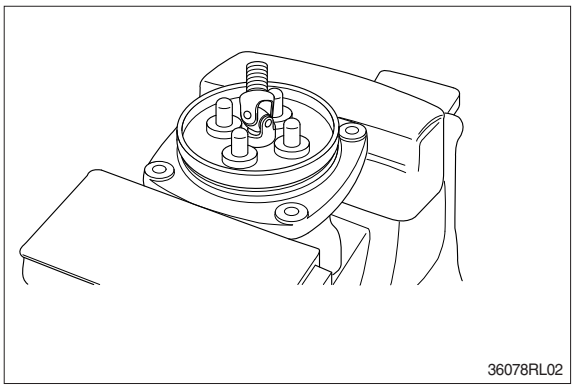


(5) Remove the boot (18).



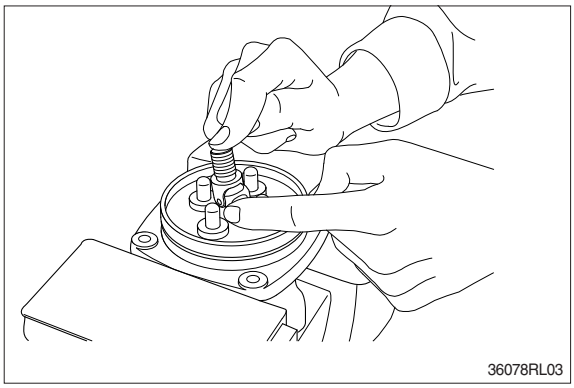
(6) Loosen adjusting nut (21) and swash plate (20) with spanners on them respectively, and remove them.

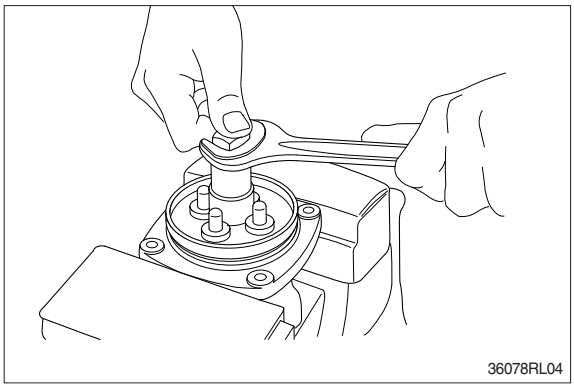




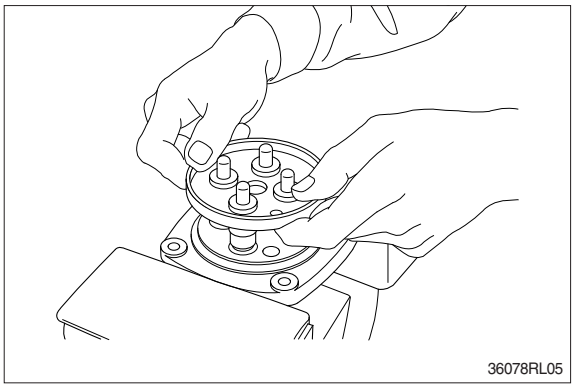
(7) Turn joint anticlockwise to loosen it, utilizing jig (Special tool).

※ When return spring (10) is strong in force, plate (17), plug (14) and push rod (11) will come up on loosening joint.
Pay attention to this.





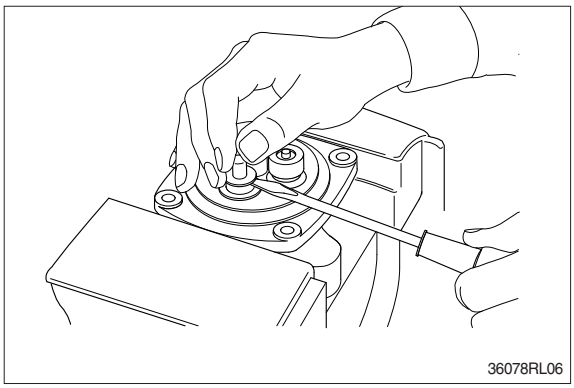
(8) Remove plate (17).



(9) When return spring (10) is weak in force, plug (14) stays in casing because of sliding resistance of O-ring.

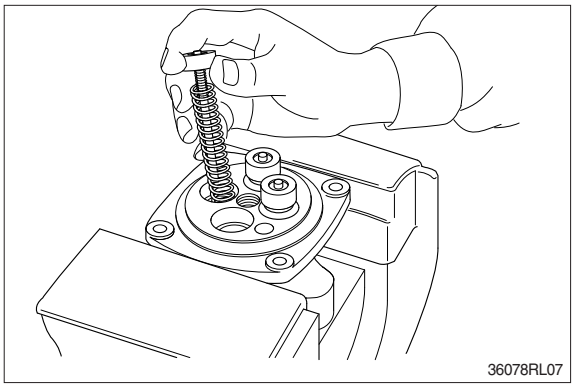
※ Take it out with minus screwdriver.
Take it out, utilizing external periphery groove of plug and paying attention not to damage it by partial loading.

※ During taking out, plug may jump up due to return spring (10) force.
Pay attention to this.

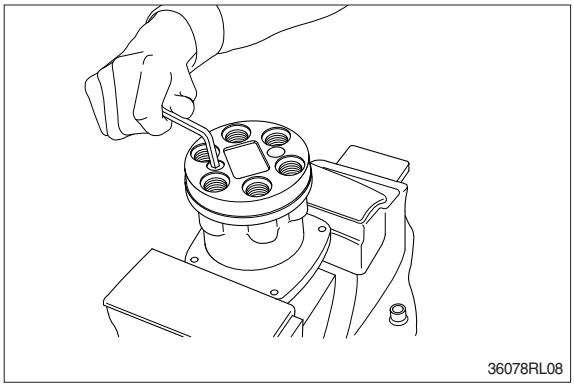


(10) Remove reducing valve subassembly and return spring (10) out of casing.

※ Record relative position of reducing valve subassembly and return springs.



(11) Loosen hexagon socket head plug(2) with hexagon socket screw key.

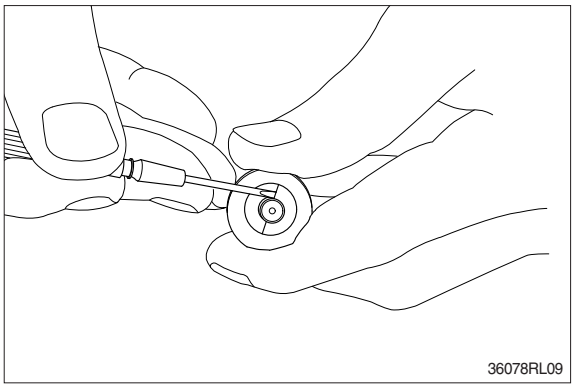


(12) For disassembling reducing valve section, stand it vertically with spool (4) bottom placed on flat workbench. Push down spring seat (7) and remove two pieces of semicircular stopper (8) with tip of small minus screwdriver.

※ Pay attention not to damage spool surface.

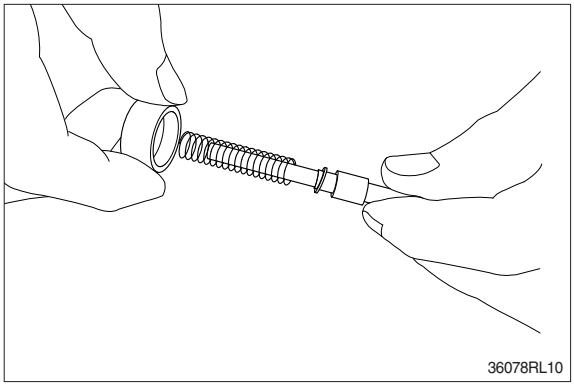
※ Record original position of spring seat (7).

※ Do not push down spring seat more than 6㎜.

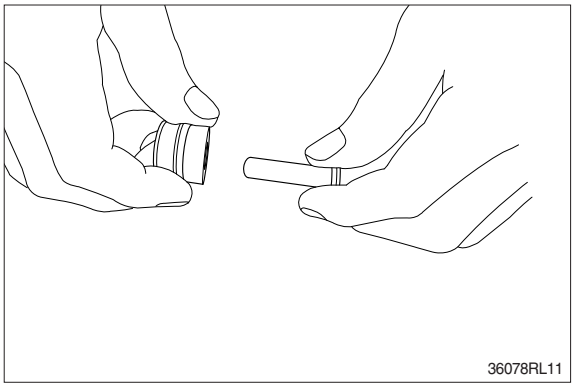


(13) Separate spool (4), spring seat (7), spring (6) and shim (5) individually.

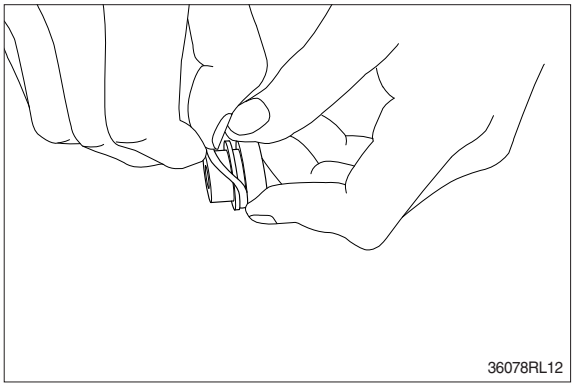
※ Until being assembled, they should be handled as one subassembly group.

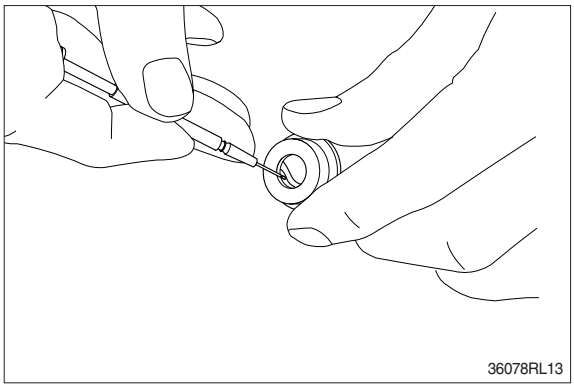


(14) Take push rod (11) out of plug (14).

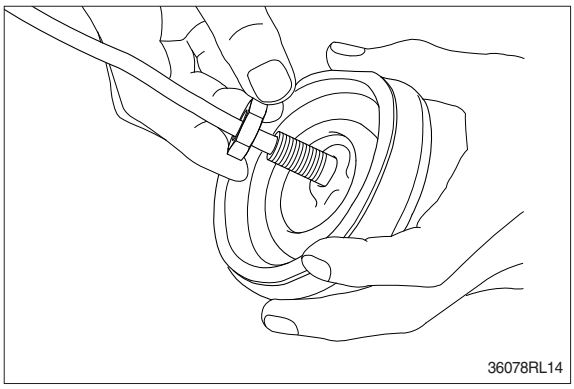


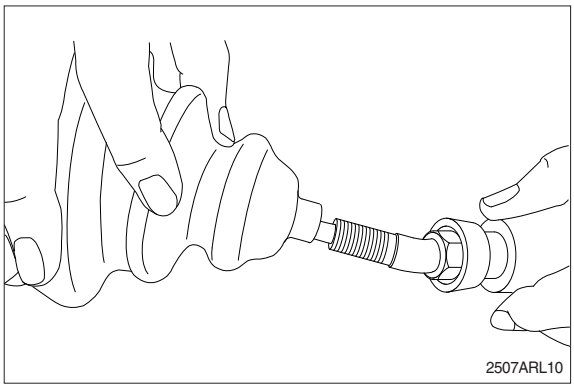
(15) Remove O-ring (15) and seal (16) from plug (14).
Use small minus screwdriver or so on to remove this seal.





(16) Remove lock nut (22) and then boot (26).





(16) Cleaning of parts

① Put all parts in rough cleaning vessel filled with kerosene and clean them (rough cleaning).

※ If dirty part is cleaned with kerosene just after putting it in vessel, it may be damaged. Leave it in kerosene for a while to loosen dust and dirty oil.

※ If this kerosene is polluted, parts will be damaged and functions of reassembled valve will be degraded.
Therefore, control cleanliness of kerosene fully.

② Put parts in final cleaning vessel filled with kerosene, turning it slowly to clean them even to their insides (finish cleaning).

※ Do not dry parts with compressed air, since they will be damaged and/or rusted by dust and moisture in air.

(17) Rust prevention of parts

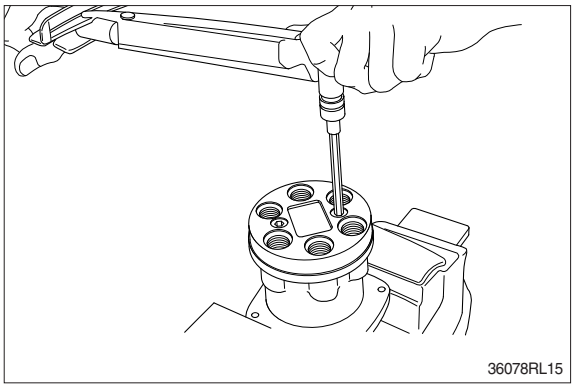
Apply rust-preventives to all parts.

※ If left as they after being cleaned, they will be rusted and will not display their functions fully after being reassembled.

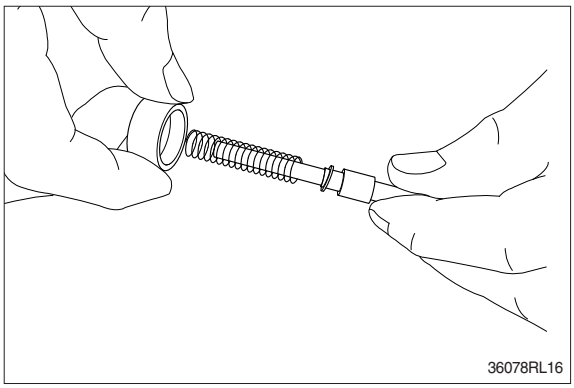
4) ASSEMBLY

(1) Tighten hexagon socket head plug (2) to the specified torque.

※ Tighten two bolts alternately and slowly.

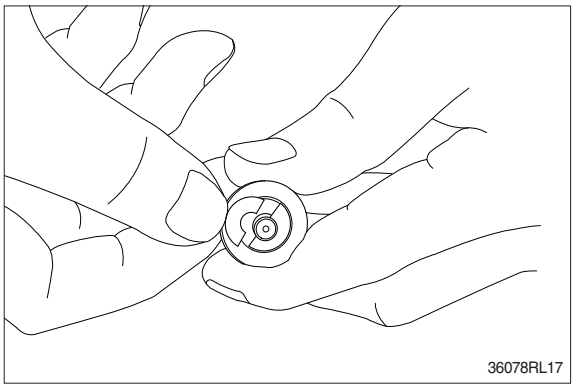


(2) Put shim (5), springs (6) and spring seat (7) onto spool (4) in this order.



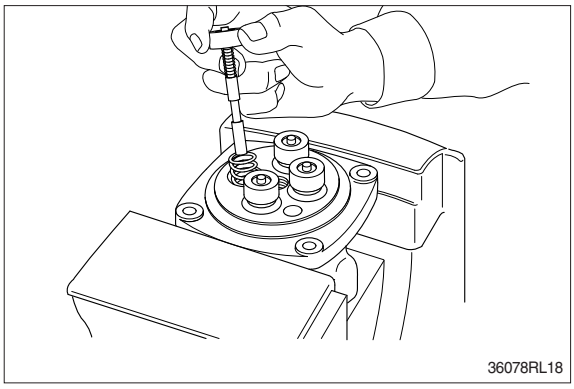
(3) Stand spool vertically with its bottom placed on flat workbench, and with spring seat pushed down, put two pieces of semicircular stopper (8) on spring seat without piling them on.

※ Assemble stopper (8) so that its sharp edge side will be caught by head of spool. Do not push down spring seat more than 6mm.

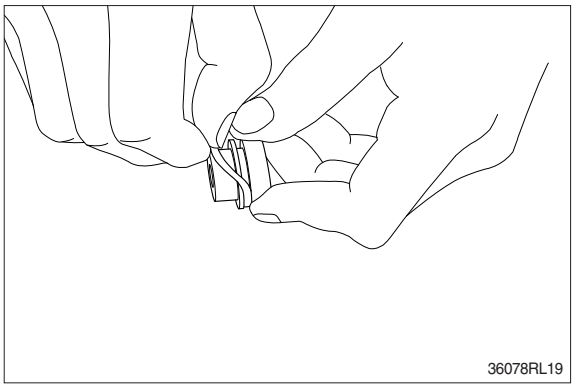


(4) Assemble spring (10) into casing (1). Assemble reducing valve subassembly into casing.

※ Assemble them to their original positions.

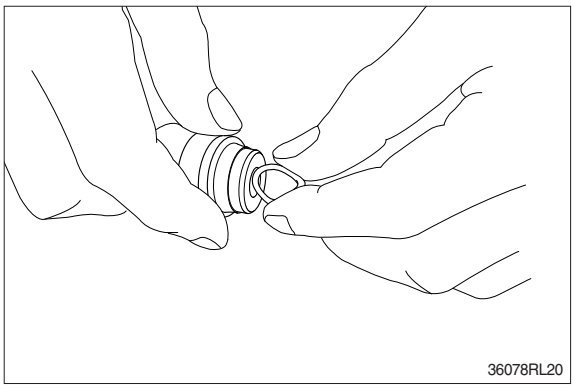


(5) Assemble O-ring (15) onto plug (14).



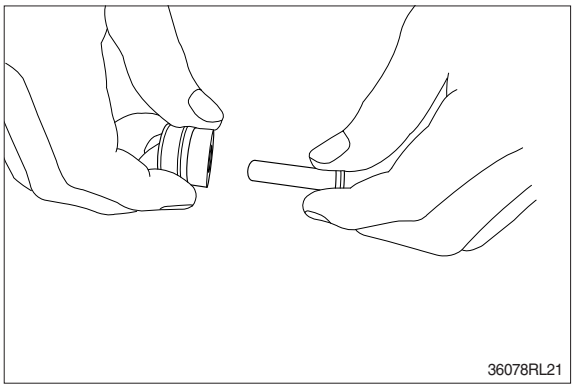
(6) Assemble seal (16) to plug (14).

※ Assemble seal in such lip direction as shown below.



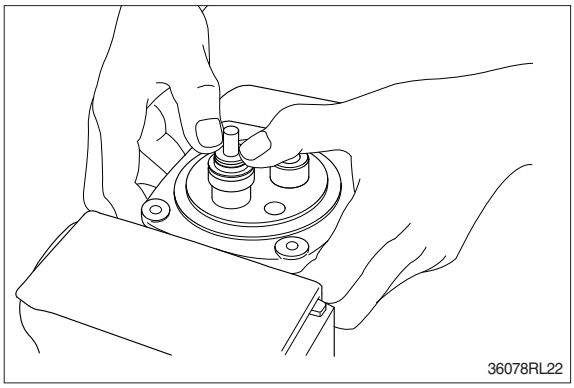
(7) Assemble push rod (11) to plug (14).

※ Apply working oil on push-rod surface.

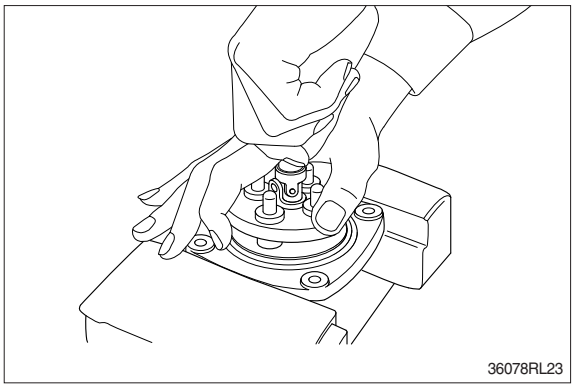


(8) Assemble plug subassembly to casing.

※ When return spring is weak in force, subassembly stops due to resistance of O-ring.

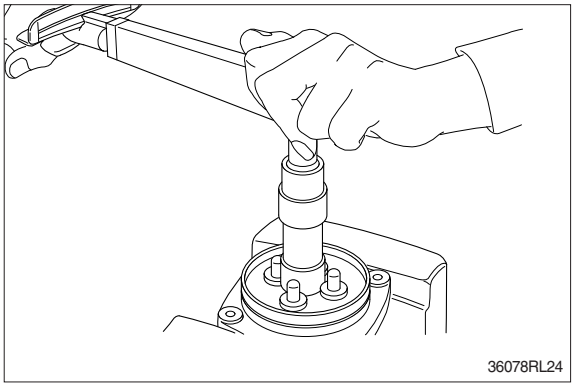


(9) When return spring is strong in force, assemble 4 sets at the same time, utilizing plate (17), and tighten joint (19) temporarily.



(10) Fit plate (17).

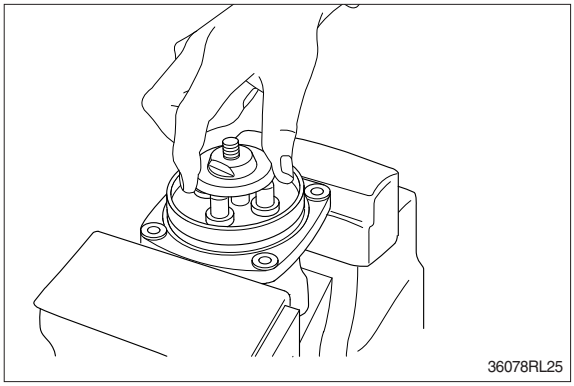
(11) Tighten joint (19) with the specified torque to casing, utilizing jig.



(12) Assemble swash plate (20) to joint (19).

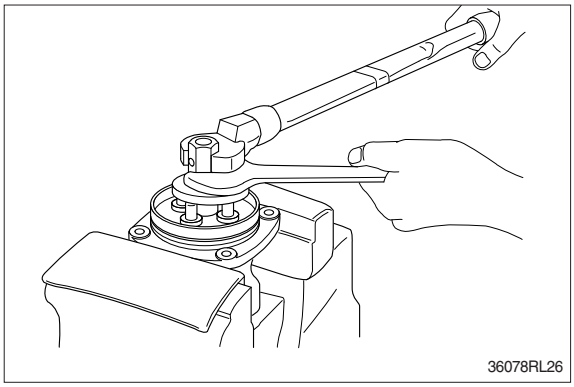
※ Screw it to position that it contacts with 4 push rods evenly.

※ Do not screw it over.

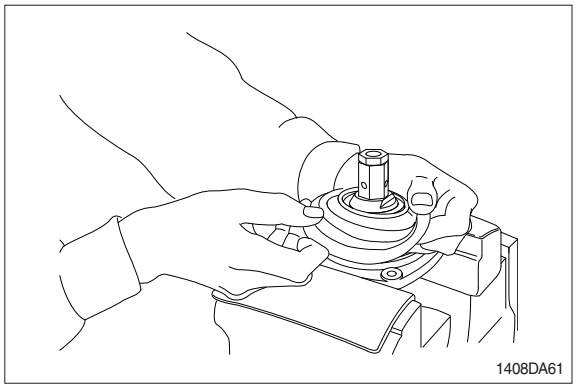


(13) Assemble adjusting nut (21), apply spanner to width across flat of plate (20) to fix it, and tighten adjusting nut to the specified torque.

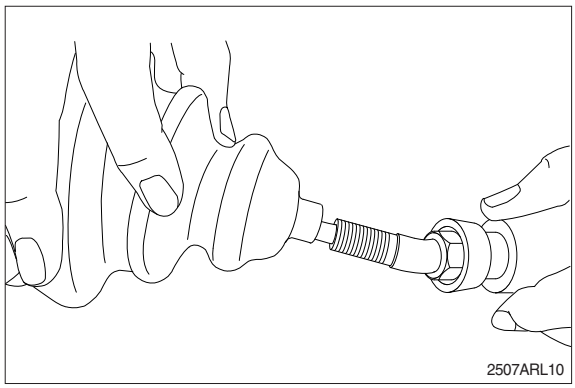
※ During tightening, do not change position of disk.

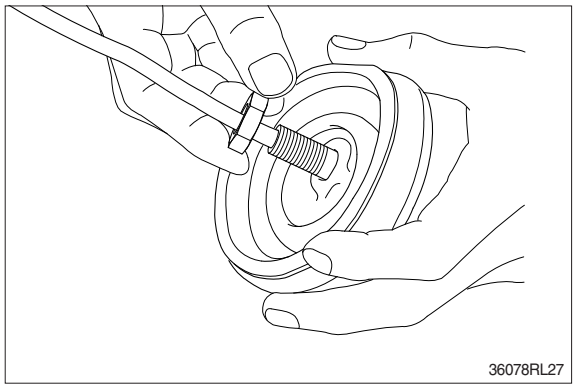


(14) Fit boot (18) to plate.

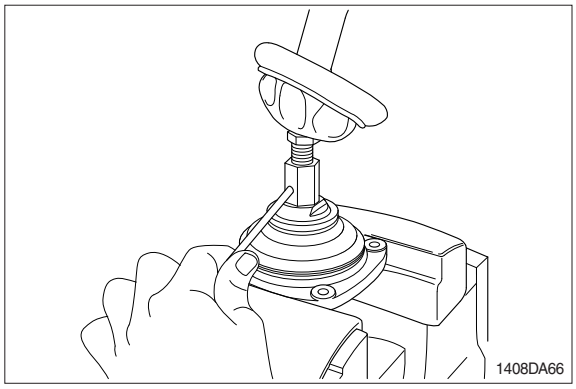


(15) Fit boot (26) and lock nut (22), and handle subassembly is assembled completely.



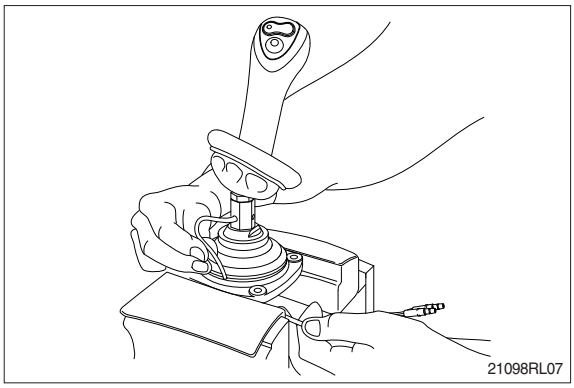


(16) Pull out cord and tube through adjusting nut hole provided in direction 60° to 120° from casing hole.

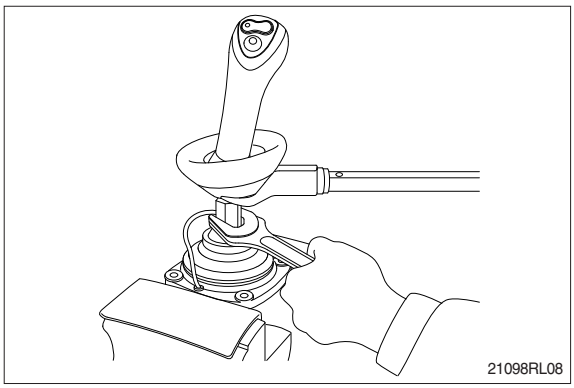


(17) Assemble bushing (27) to plate and pass cord and tube through it.

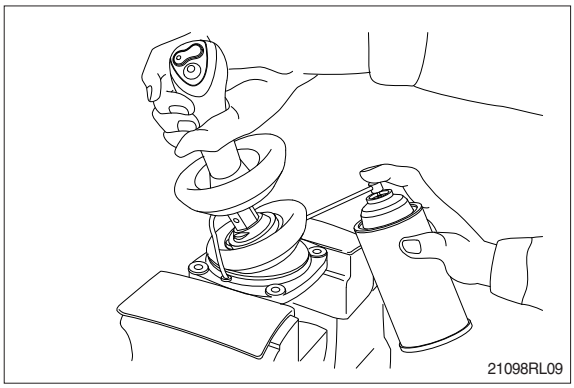
※ Provide margin necessary to operation.



(18) Determine handle direction, tighten lock nut (22) to specified torque to fix handle.



(19) Apply grease to rotating section of joint and contacting faces of disk and push rod.



(20) Assemble lower end of bellows to casing.

(21) Inject volatile rust-preventives through all ports and then put blind plugs in ports.