

GROUP 2 MAIN CONTROL VALVE

A. MAIN CONTROL VALVE (SC3A, UP TO #0616)

1. TOOLS FOR DISASSEMBLY AND ASSEMBLY

Tool name	Size (mm)	Q'ty (EA)	Use for
"L" type wrench	5	1	Socket bolt M6
	6	1	Socket bolt M8
Spanner	13	1	Nut M8
	21	1	Lock nut, Check valve plug
	30	1	Relief valve
Rod	Less than 10 x 250	1	Handling of relief valve
		1	Set screw
		1	Spring and set screw

1) DISASSEMBLY

Remove piping and lever cable link parts, fix cylinder port of valve on the work table to the upper direction, loosen cap bolt in spring and then remove cap.

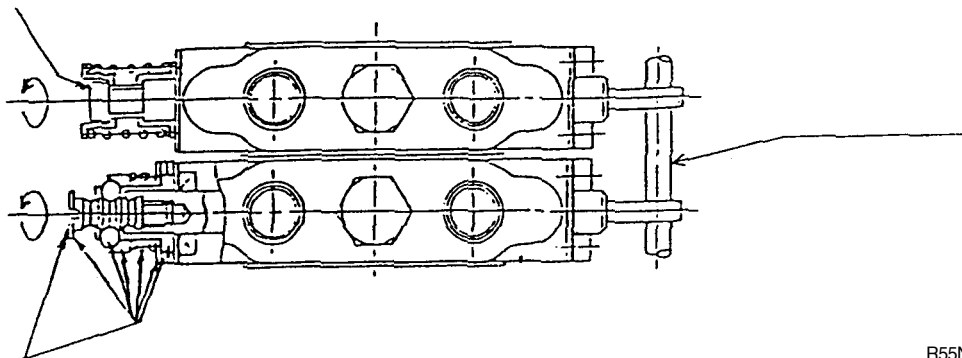
(1) Disassembly of spool

Insert $\varnothing 7$ rod into the link hole of each spool, loosen and remove bolt on end point of valve rod, press and remove spring, spacer, oil seal and then disassembly spool.

At this time, oil seal and spool are disassembled together.

The oil seal of opposite side is removed after loosening 2 bolt and pressing oil seal.

Loosen this and then others will be removed.

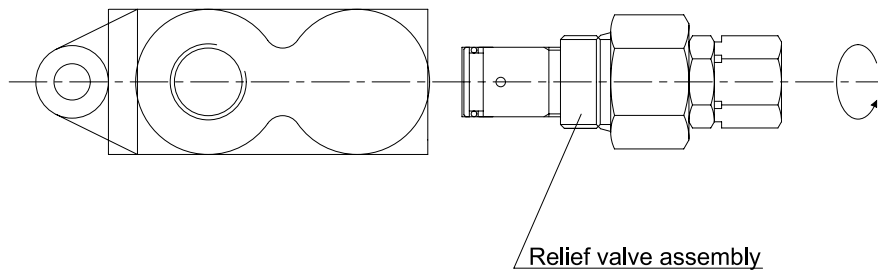


This is removed on condition of set.

Because spool and valve body are assembled at regular interval, mark position to be reassembled and then reassemble according to original position.

(2) Disassembly of main relief valve

Separate the plug assembly from the housing assembly.



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If there is a damage on relief valve, replace valve assembly.

If it is used again, clean the disassembled parts from plug assembly and replace O-ring newly.

(3) Load check valve

Loosen check valve and remove it.

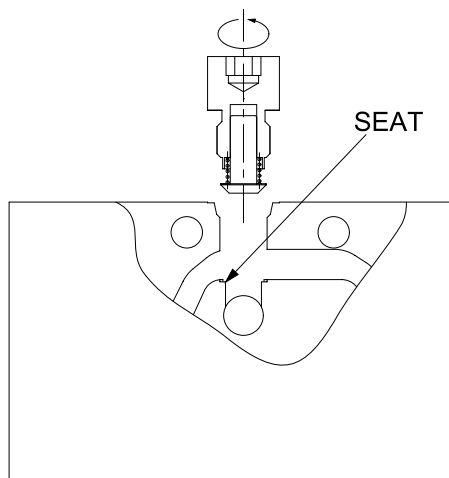
Check if there are dirt, oil and any damage between seat and check valve, then replace if any problems.

If it is used again, clean the disassembled parts from check valve and replace O-ring newly.

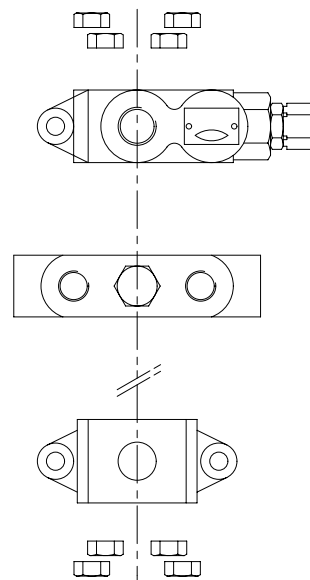
(4) Disassembly of section assembly

Loosen nuts of valve housing, remove 4 bolts, then disassemble each section.

If it is used again, clean the disassembled parts from section assembly and replace O-ring newly.



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2) REASSEMBLY

(1) Reassembly of valve housing

Install O-ring to each valve body, assemble in sequence.

Do not apply grease to O-ring, Tighten with regular torque by wrench.

- Tightening torque : 2kgf · m(19.6N · m)

(2) Spool assembly

Assemble spool in body. Insert Ø7 rod into the link hole of each spool, install oil seal and spacer. After inserting valve assembly, check if it moves by pressing spring supporter, then tighten it with regular torque.

- Tightening torque : 2 ~ 2.5kgf · m(16.6 ~ 24.5N · m)

Tighten socket bolt after inserting rectum spring cap.

- Tightening torque : 1kgf · m(9.8N · m)

Remove Ø7 rod of the spool link hole, insert oil seal and seal supporter, then tighten socket bolt.

- Tightening torque : 1kgf · m(9.8N · m)

(3) Load check valve

Install check valve and spring in valve body, install O-ring in check valve, then tighten it.

Apply grease to O-ring.

(4) Relief valve assembly

Install relief valve assembly to body.

- Tightening torque : 6.5kgf · m(63.7N · m)

Apply grease to O-ring.

(5) Overload valve assembly and anti-cavitation valve assembly

Install each valve assembly to body.

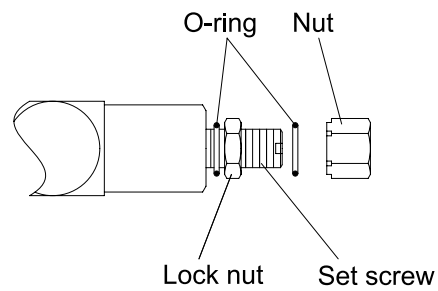
- Tightening torque : 6.5kgf · m(63.7N · m)

Apply grease to O-ring.

(6) Install control valve assembly to machine, connect piping and control link.

2. ADJUSTING THE MAIN RELIEF VALVE PRESSURE

- 1) Install pressure gauge to pressure sensor port.
- 2) Operate the control valve's cylinder spool over its full stroke, then read the value indicated by the pressure gauge.
- 3) Turn the set screw while watching the pressure gauge to adjust.
 - Turn it to the right to increase the set pressure.
 - Turn it to the left to decrease the set pressure.



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- 4) After completing the pressure adjustment, tighten the lock nut while holding the set screw. Operate the relief valve again and check if the pressure is stabilized.

B. MAIN CONTROL VALVE (#0617 AND UP)

1. REMOVAL AND INSTALL OF MOTOR

1) REMOVAL

- (1) Lower the work equipment to the ground and stop the engine.
- (2) Operate the control levers and pedals several times to release the remaining pressure in the hydraulic piping.
- (3) Loosen the breather slowly to release the pressure inside the hydraulic tank.
- ▲ Escaping fluid under pressure can penetrate the skin causing serious injury. When pipes and hoses are disconnected, the oil inside the piping will flow out, so catch it in oil pan.
- (4) Remove bolts and disconnect pipe.
- (5) Disconnect pilot line hoses.
- (6) Disconnect pilot piping.
- (7) Sling the control valve assembly and remove the control valve mounting bolt.
 - Weight : 45kg(99lb)
- (8) Remove the control valve assembly.
When removing the control valve assembly, check that all the piping have been disconnected.

2) INSTALL

- (1) Carry out installation in the reverse order to removal.
- (2) Bleed the air from below items.
 - Cylinder(Boom, arm, bucket)
 - Swing motor
 - Travel motor
 - See each item removal and install.
- (3) Confirm the hydraulic oil level and recheck the hydraulic oil leak or not.



2. DISASSEMBLY AND ASSEMBLY

1) PRECAUTION

(1) Disassembly

Handle the components carefully not to drop them or bump them with each other as they are made with precision.

Do not force the work by hitting or twisting as burred or damaged component may not be assembled or result in oil leakage or low performance.

When disassembled, tag the components for identification so that they can be reassembled correctly.

Once disassembled, O-rings and backup rings are not to be used again. (Remove them using a wire with its end made like a shoehorn. Be careful not to damaged the slot.)

If the components are left disassembled or half-disassembled, they may get rust from moisture or dust. If the work has to be interrupted, take measures to prevent rust and dust.

(2) Assembly

Take the same precautions as for disassembly.

When assembling the components, remove any metal chips or foreign objects and check them for any burrs or dents. Remove burrs and dents with oil-stone, if any.

O-rings and backup rings are to be replaced with new ones, as a rule.

When installing O-rings and backup rings, be careful not to damage them. (Apply a little amount of grease for smoothness.)

Tighten the bolts and caps with specified torque. (See **Disassembly/Assembly**.)

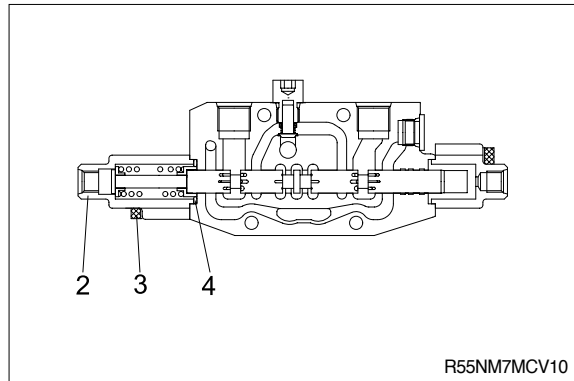
2) PLUNGER

(1) Main plunger

Loosen socket bolt(3), to remove cover(2), and O-ring(4).

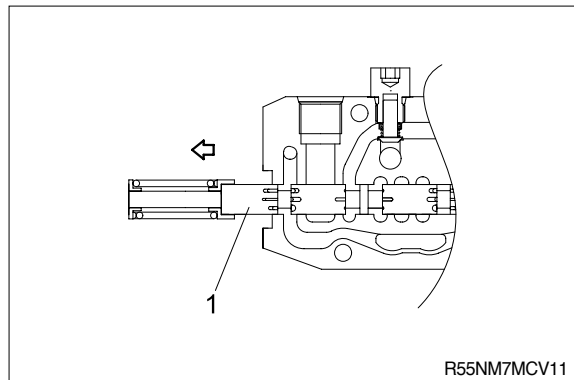
- Tightening torque : 1.2kgf · m(8.7lb · ft)
- Socket bolt : 5mm

Install cover(2) after making sure that O-ring is placed on the edge of the valve hole.



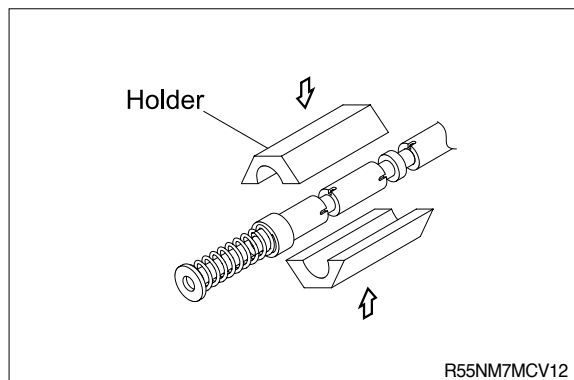
Pull the plunger(1) out while holding the spring.

Do not pull it out violently, but draw it out gently while making sure of its contact with HG hole.



Place the plunger between holders and loosen plunger cap(3) by using a vise.

- Plunger cap : 5mm
- Tightening torque : 0.5kgf · m(8.7lb · ft)
- Loctite



Main relief assembly(P1, P2, P3 port)

Relief assy is assembled into a single block as a cartridge. Do not disassemble the relief assembly as a rule.

