

## GROUP 6 TRAVEL DEVICE

### 1. REMOVAL AND INSTALL

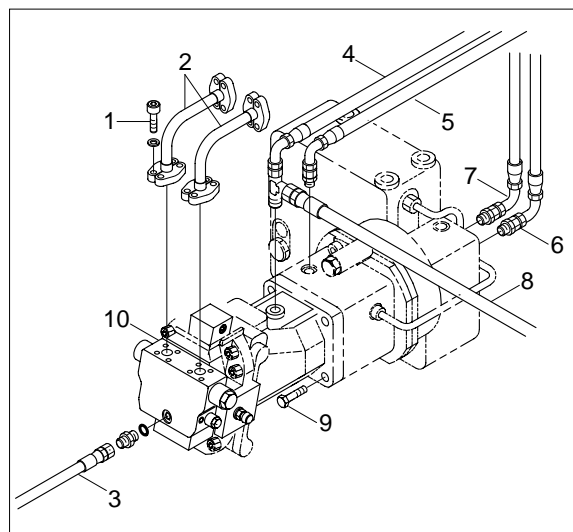
#### 1) REMOVAL

- (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.
- (4) Loosen the socket bolt(1) and remove the pipe assy(2).
- (5) Disconnect hoses(3, 4, 5, 6, 7, 8).

- (6) Loosen the hexagon bolt(9) and remove travel motor(10).

- Weight : 87kg(190lb)
- Tightening torque :  $29.6 \pm 3.2 \text{ kgf} \cdot \text{m}$   
( $214 \pm 23.1 \text{ lbf} \cdot \text{ft}$ )

- ※ When removing the travel motor assembly, check that all the hoses have been disconnected.



#### 2) INSTALL

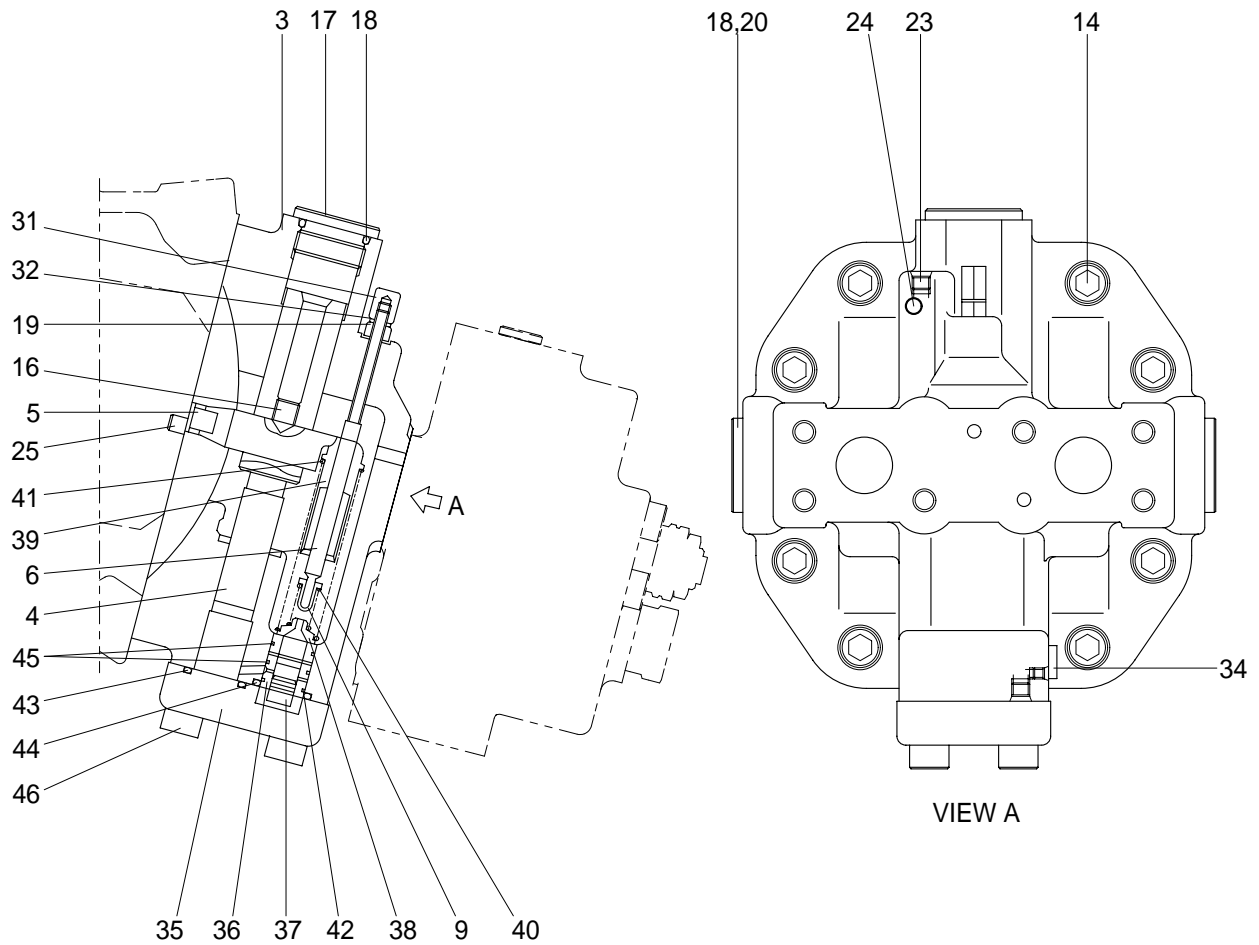
- (1) Carry out installation in the reverse order to removal.
- (2) Bleed the air from the travel motor.
  - ① Remove the air vent plug.
  - ② Pour in hydraulic oil until it overflows from the port.
  - ③ Tighten plug lightly.
  - ④ Start the engine, run at low idling, and check oil come out from plug.
  - ⑤ Tighten plug fully.
- (3) Confirm the hydraulic oil level and check the hydraulic oil leak or not.

## 2. MOTOR UNIT



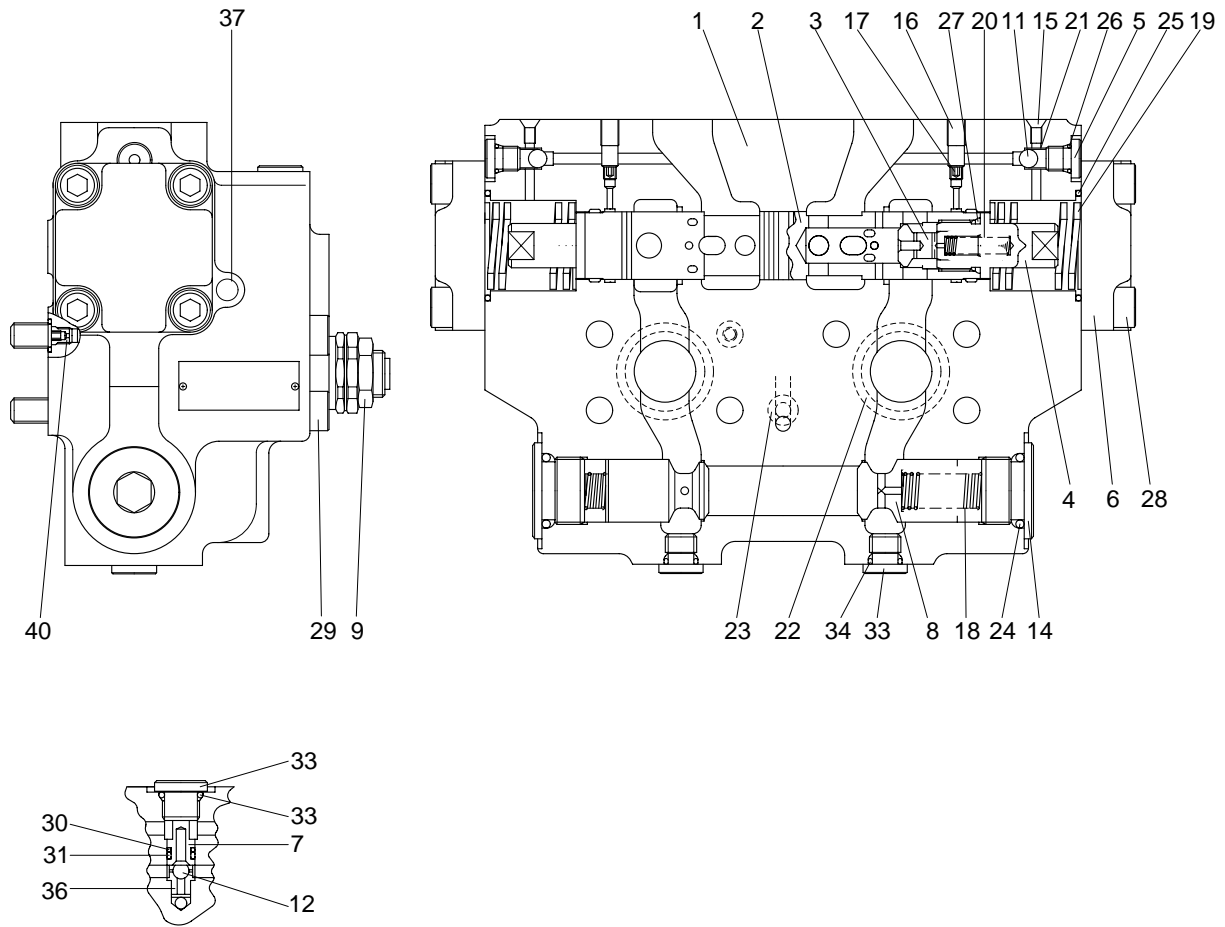
1	Shaft	12	Bearing	21	Shim
2	Cylinder block	13	Piece	22	Shim
3	Center pin	14	Nut	23	Shim
4	Piston	16	Seal case	30	Shim
5	Piston ring	17	Oil seal	31	Shim
7	Spring seat	18	Retaining	33	Shim
8	Spring	19	O-ring	34	Housing
9	Plate	20	Shim	35	Control plate
10	Screw				
11	Bearing				

## REGULATOR



3	Control body	20	Plug	38	Spring seat
4	Piston	23	Plug	39	Spring seat
5	Rod	24	Plug	40	Spring
6	Adjust screw	25	Pin	41	Spring
9	Spring seat	31	Cap nut	42	O-ring
14	Bolt	32	Seal	43	O-ring
16	Screw	34	Plug	44	O-ring
17	Plug	35	Cover	45	Piston ring
18	O-ring	36	Barrel	46	Bolt
19	Lock nut	37	Spool		

## COUNTER BALANCE VALVE

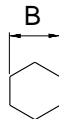


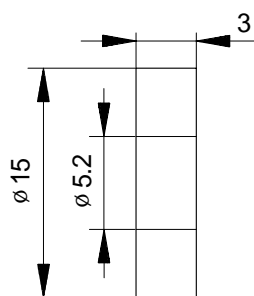
- 1 Body
- 2 Spool
- 3 Plunger
- 4 Plug
- 5 Plug
- 6 Cover
- 7 Guide
- 8 Plunger
- 9 Relief valve
- 11 Steel ball
- 12 Steel ball
- 14 Plug

- 15 Plug
- 16 Plug
- 17 Orifice
- 18 Spring
- 19 Spring
- 20 Spring
- 21 Spring
- 22 O-ring
- 23 O-ring
- 24 O-ring
- 25 O-ring

- 26 O-ring
- 27 O-ring
- 28 Bolt
- 29 Bolt
- 30 Back up ring
- 31 O-ring
- 33 Plug
- 34 O-ring
- 36 Valve seat
- 37 Plug
- 40 Orifice

### 3. TOOLS

Tool name	Remark	
Allen wrench	4	
	8	
	10	
	17	
Rubbe disk assy	Refer below figure	
Pliers for snap ring	For hole(Snap ring 50-130)	
Liquid cleaner	Spray type is better	
Torque wrench	Capable of tightening with the specified torque	
Pliers	Nominal size 125 level	
(-) Driver	Medium size(2EA)	
Plastic hammer	Medium size	
Liquid packing	Threebond 1215	
Hex socket head bolt	M5 × 30	



## **4. DISASSEMBLY**

### **1) GENERAL PRECAUTIONS**

#### **(1) Disassembly**

- ① Before disassembling the motor, check the items to be inspected and for remedy against trouble, closely examine the nature of the trouble, so that the motor can be disassembled effectively.
- ② To disassemble the motor, use the disassembling procedures described in section 2) and select a clean place.
- ③ Place a rubber or vinyl sheet or other such protective materials on your working bench to protect the surface of the motor to be serviced.
- ④ During disassembly, give a match mark to the mating surfaces of each part.
- ⑤ Arrange removed parts in order so that they will not become damaged or missing during disassembly.
- ⑥ Once seals have been disassembled, they should be replaced even if damage is not observed. Have replacement seals ready on hand before starting your disassembling job.

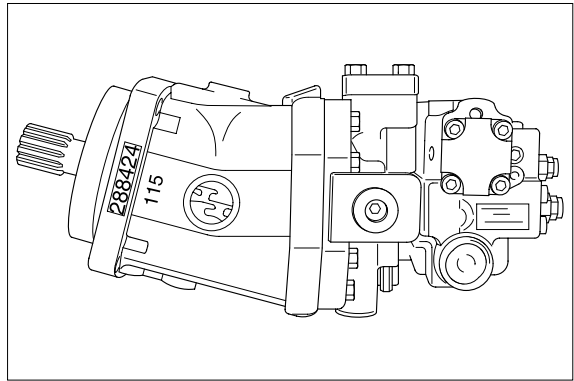
#### **(2) Assembly**

- ① Reassemble in a work area that is clean and free from dust and grit.
- ② Handle parts with bare hands to keep them free of liny contaminants.
- ③ Repair or replace the damaged parts.  
Each parts must be free of burrs its corners.
- ④ Do not reuse O-ring oil seal and floating seal that were removed in disassembly.  
Provide the new parts.
- ⑤ Wash all parts thoroughly in a suitable solvent.  
Dry thoroughly with compressed air.  
Do not use the cloths.
- ⑥ When reassembling oil motor components of motor, be sure to coat the sliding parts of the motor and valve with fresh hydraulic oil.(NAS class 9 or above)
- ⑦ Use a torque wrench to tighten bolts and plugs, to the torque specified as follows.

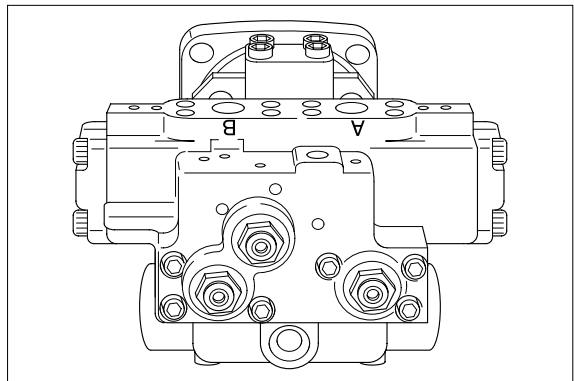
## 2) DISASSEMBLY

### (1) Outside appearance of motor

① Side view.

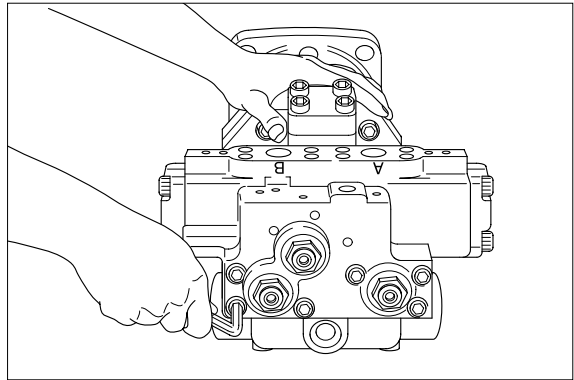


② Rear view.

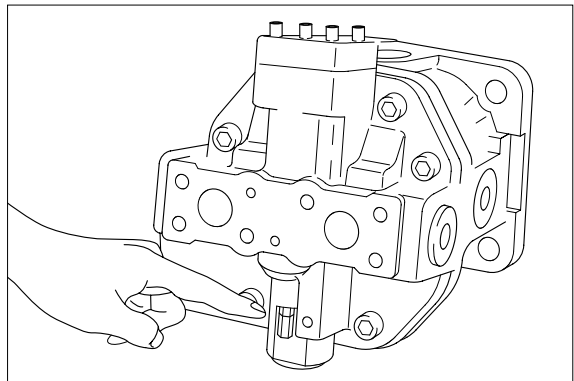


### (2) Removal of counter balance valve

① Remove the counter balance valve, by loosening hexagon socket(29).  
· Hexagon socket : 8mm

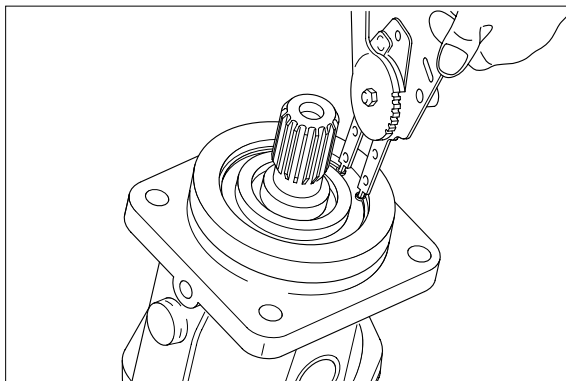


② Do not change the adjusting screw for pressure at the start of swivelling.

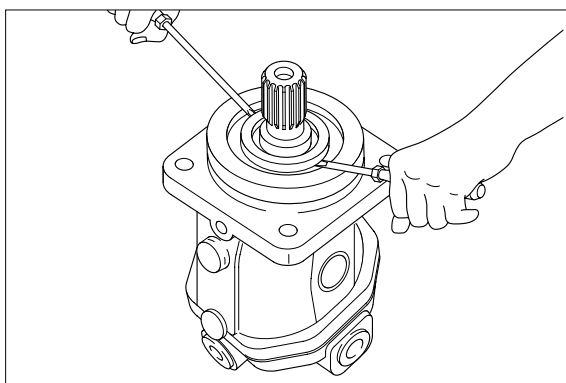


### (3) Disassembly of oil seal part

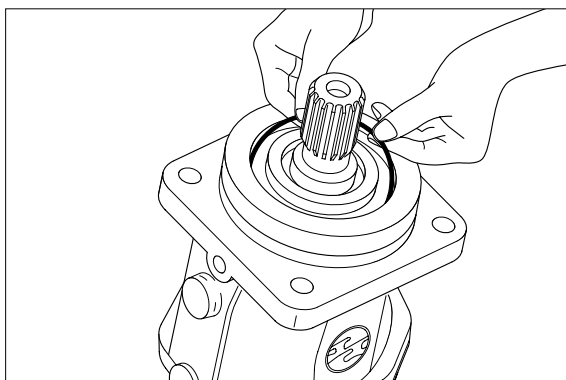
- ① Remove C type retaining ring(18, for hole 110) with the pliers for snap ring.



- ② Lift off case(16), by using the groove of seal case, with 2 off screw (-) driver.

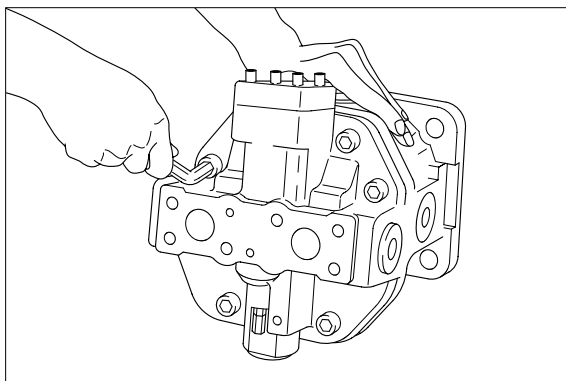


- ③ Remove O-ring(19) from inside of the case.

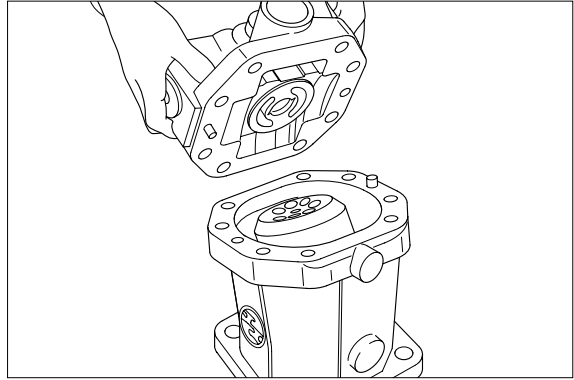


### (4) Disassembly of the regulator assembly

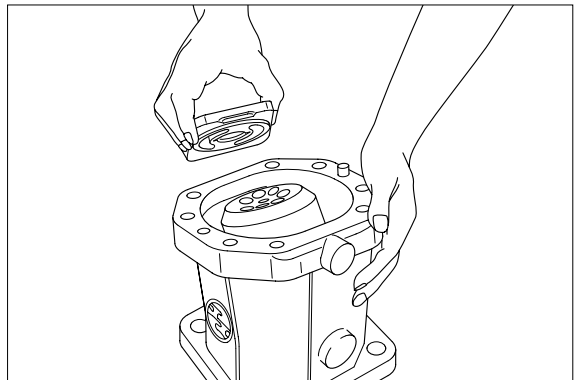
- ① Loosen hexagon head cap bolts(14) and take them off.
  - Hexagon socket : 10mm



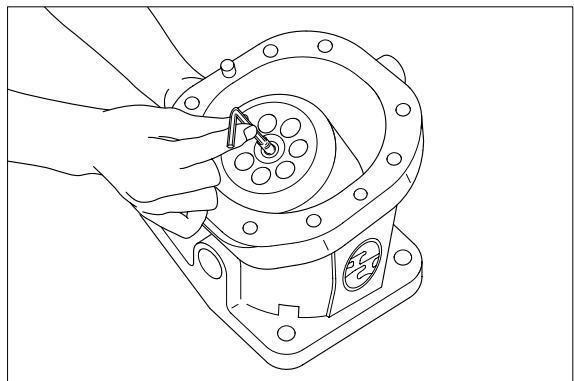
- ② Place the motor in standing, with the shaft being in the downwards.  
Lift off regulator(3).  
During removal, control plate(35) is removed together with regulator part, as shown in picture.  
In this case, care should be taken not to drop out the control plate and damage the cylinder block.



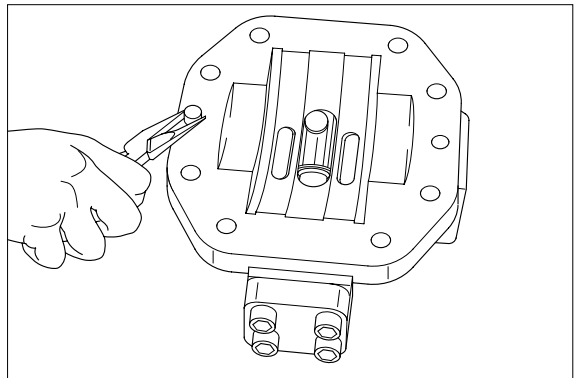
- ③ Remove control plate(35).



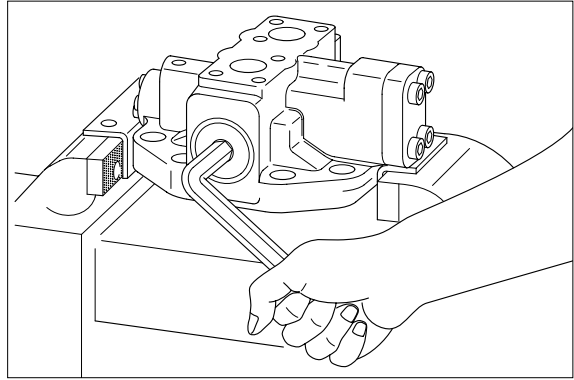
- ④ In order to prevent cylinder block(2) dropping out, rubber disk assembly is used to fix it.  
• Hexagon socket : 4mm



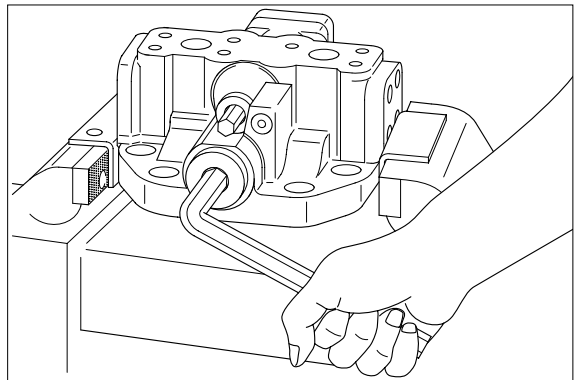
- ⑤ Take off parallel pin(25), with pliers etc.



- ⑥ Remove plug(20).  
· Hexagon socket : 17mm

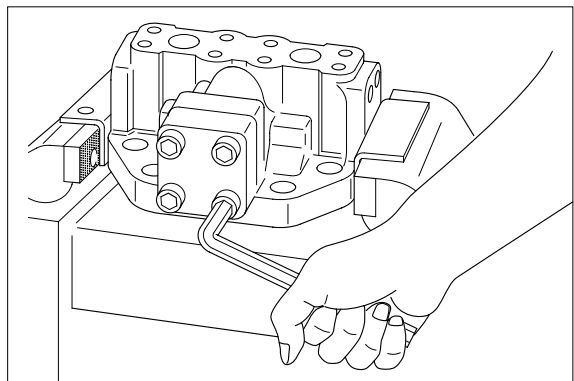


- ⑦ Remove plug(17).  
· Hexagon socket : 17mm

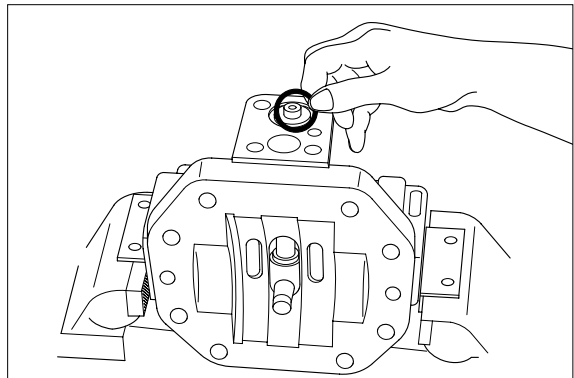


**(5) Disassembly of control assembly**

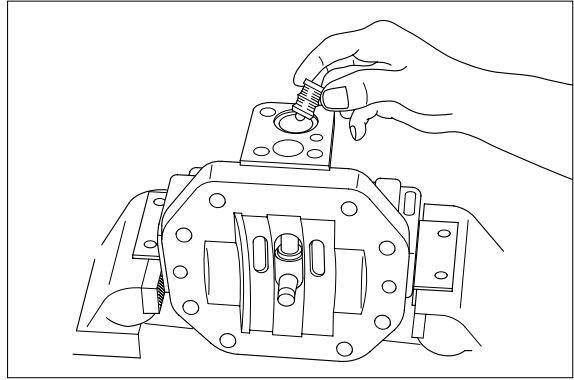
- ① Remove cover(35), by loosening  
hexagon socket head cap bolts(46).  
· Hexagon socket : 10mm



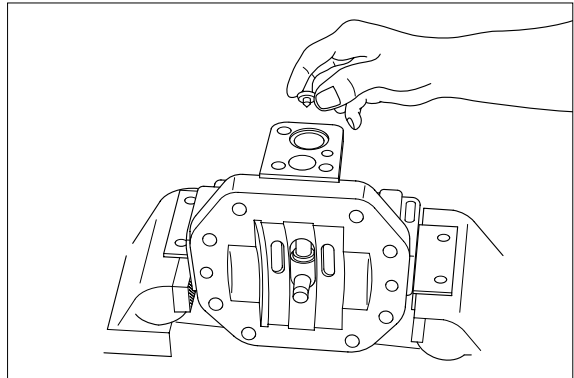
- ② Remove O-ring(44).



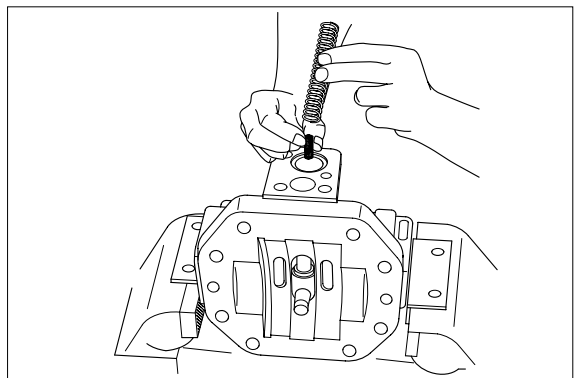
- ③ Pull spool(37) and extract barrel(36).  
Piston ring(45) is mounted around the barrel. Take care not to break it off.



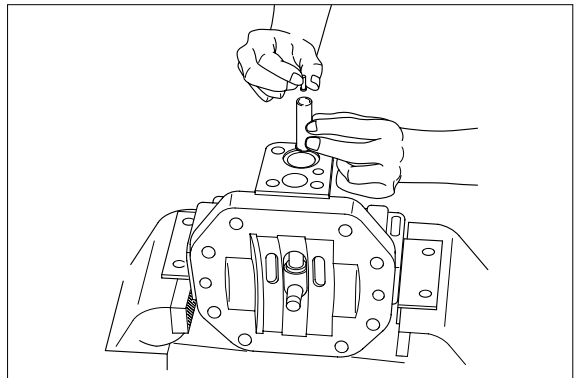
- ④ Extract spring seat(38).



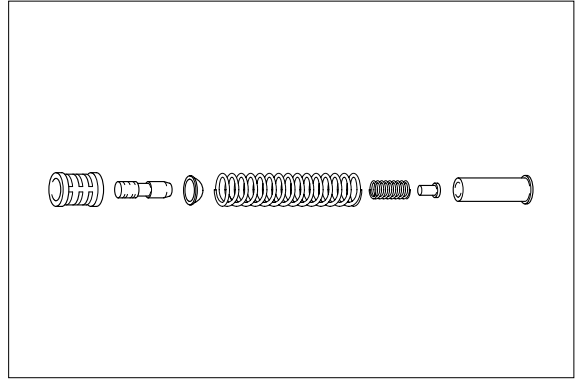
- ⑤ Extract 2 off spring(40, 41).



- ⑥ Extract spring seat(9, 39).



- ⑦ Above parts should be lined up as shown in picture.



**(6) Disassembly of rotary group**

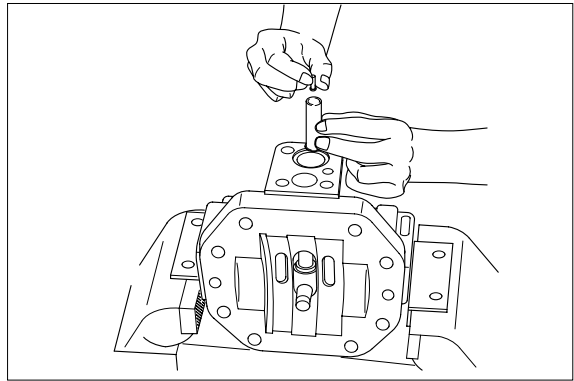
Since the tools such as hardraulics press etc. is required for extraction of the rotary group from the housing, disassembly of rotary group is not allowable.

This completes disassembly.

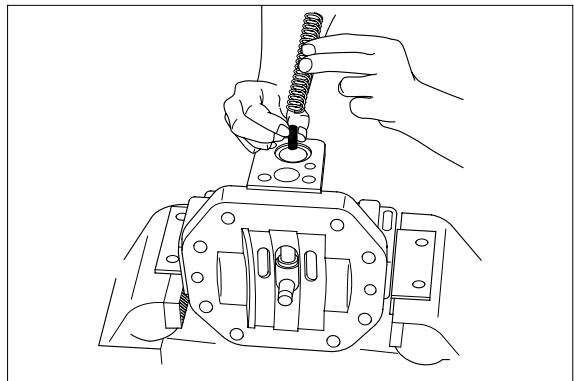
### 3) ASSEMBLY

#### (1) Assembly of the control assembly

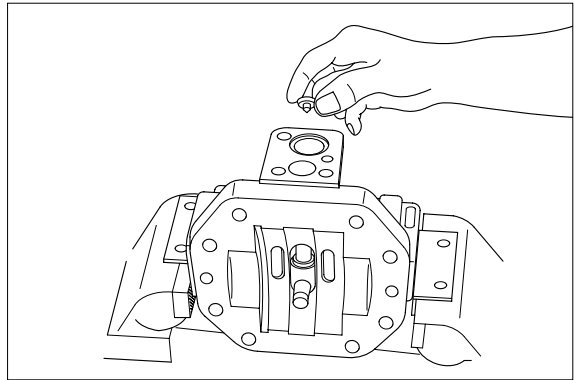
① Install spring seat(9, 39).



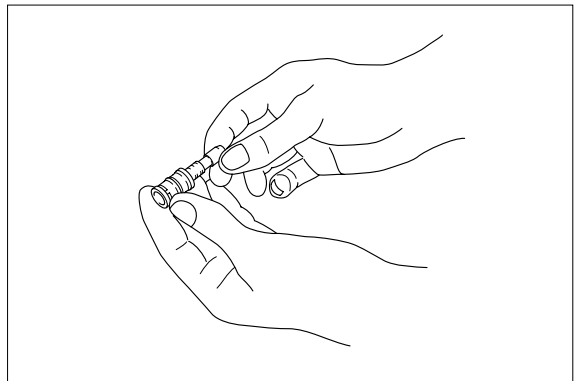
② Install 2 off spring(40, 41).



③ Install spring seat(38).



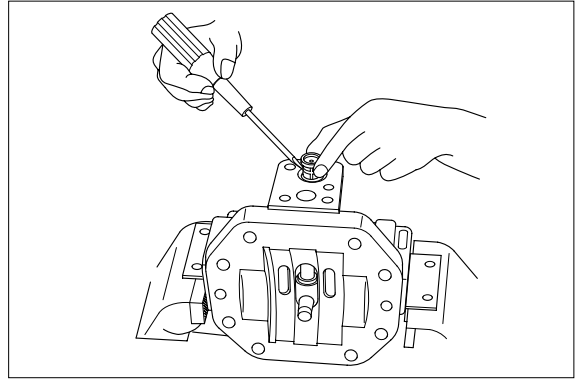
④ Set spool(37) in barrel(36).



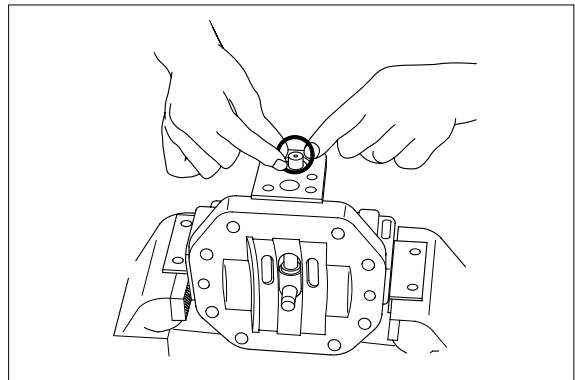
⑤ Insert barrel(36).

During inserting, care should be taken not to break piston ring(45).

It is easier way that piston ring should be pressed in a groove with a screw (-) driver, on pressing the barrel into the regulator.

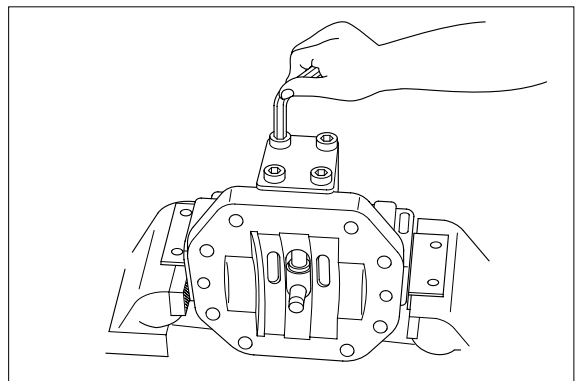


⑥ Install O-ring(44).



⑦ Tighten cover(35) with hexagon socket head cap bolts(46).

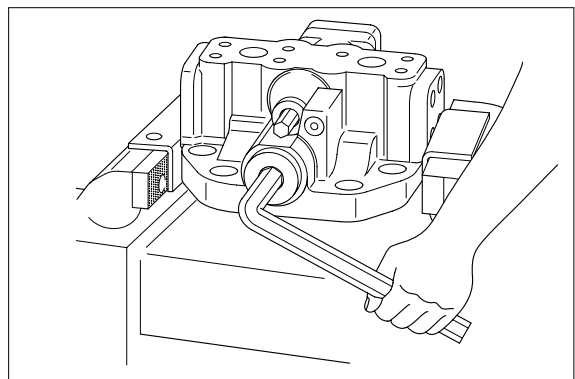
- Hexagon socket : 10mm
- Tightening torque : 12.5kgf · m  
(90.4lbf · ft)



**(2) Assembly of regulator assembly**

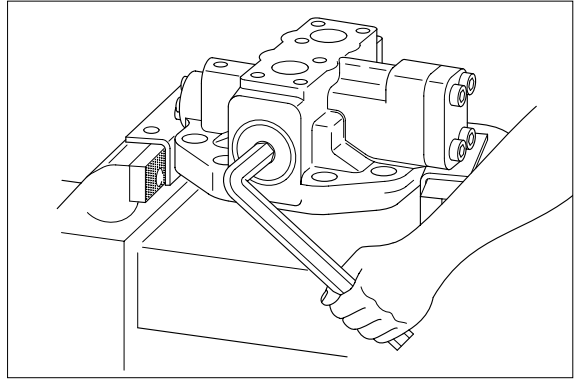
① Tighten plug(17).

- Hexagon socket : 17mm
- Tightening torque : 15.6kgf · m  
(113lbf · ft)



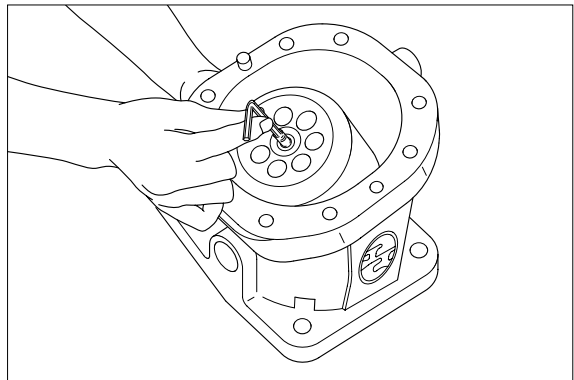
② Tighten plug(20).

- Hexagon socket : 17mm
- Tightening torque : 27.0kgf · m  
(195lbf · ft)



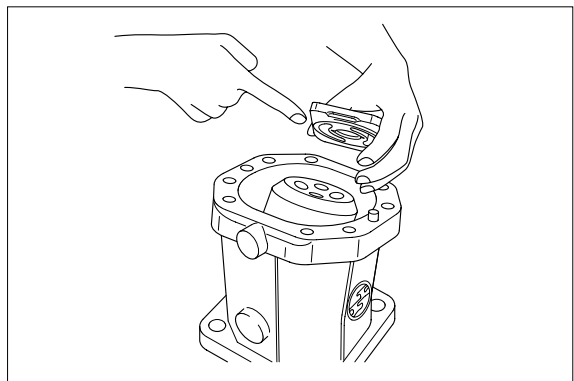
③ Remove rubber disk assembly for fixing cylinder block(2).

- Hexagon socket : 4mm



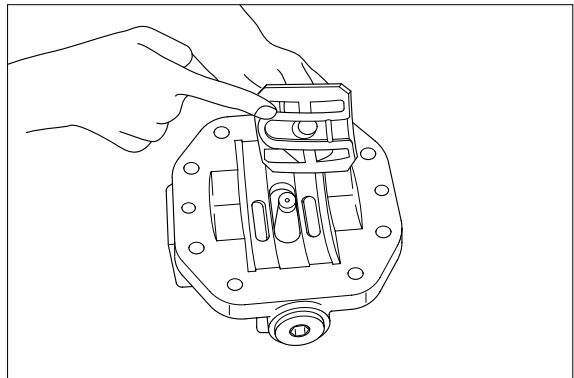
④ Confirm the direction of control plate(35).

- ※ The relief part as shown in picture should be positioned at the side of minimum swivel angle.

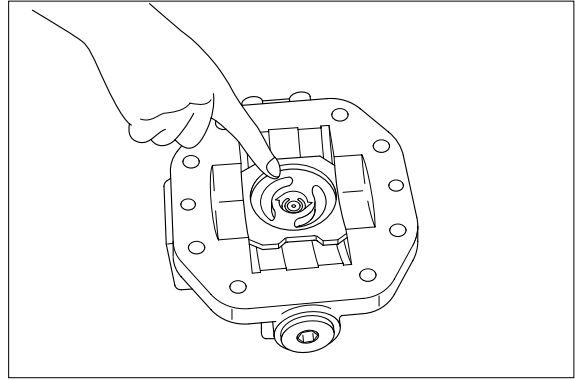


⑤ Apply the grease on control plate(35), and install it in regulator(3).

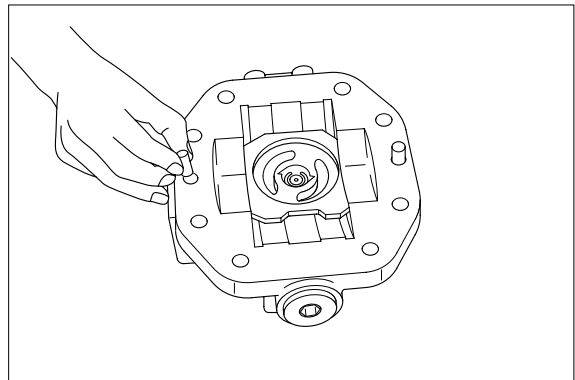
- ※ Grease is applied on the both side of control plate and also its lateral side.



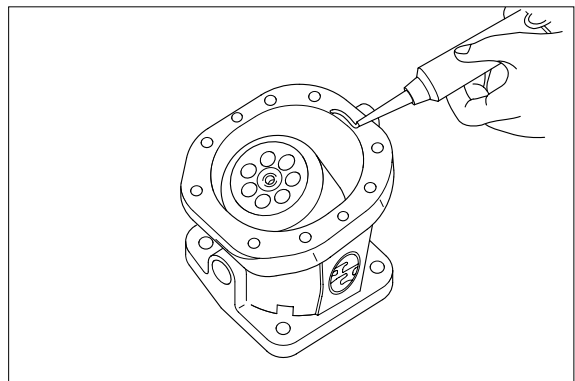
- ⑥ Apply a small amount of grease onto the upper surface of control plate(35), in order to confirm the relief part.



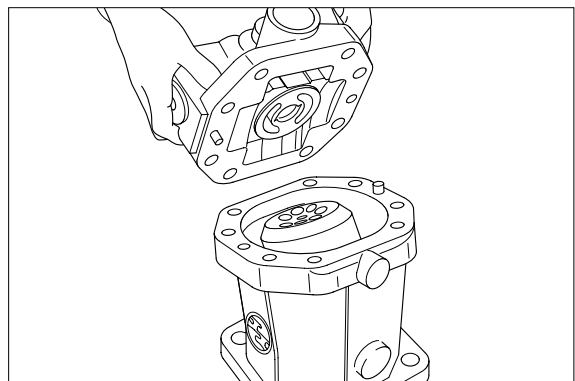
- ⑦ Fit parallel pin(25) to regulator(3).  
Clean the contact surface of regulator with housing(5) and remove the grease sufficiently.



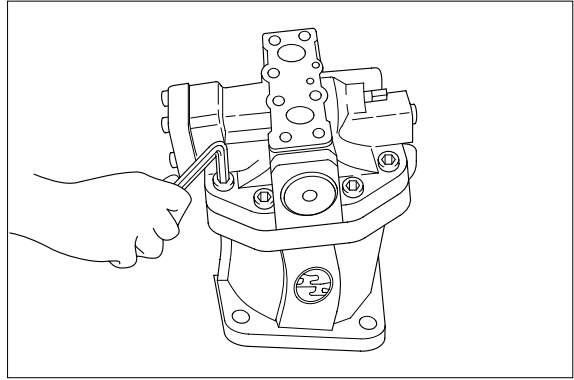
- ⑧ Clean the contact surface of housing with regulator(3) and remove the grease sufficiently.  
After that, the liquid packing **Threebond 1215** should be applied.



- ⑨ Fit regulator(3) to housing(5).  
When fitting, take care not to drop off control plate(6).

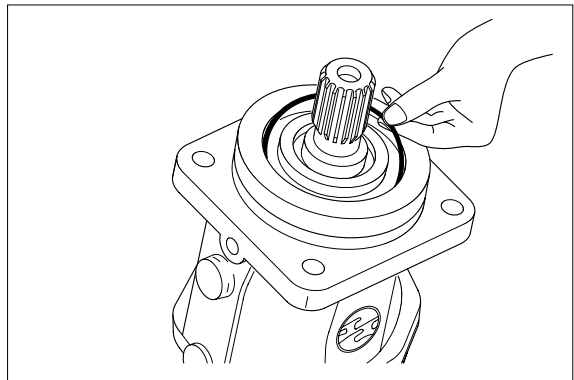


- ⑩ Tighten hexagon socket head bolt(14).
- Hexagon socket : 10mm
  - Tightening torque : 12.5kgf · m  
(90.4lbf · ft)

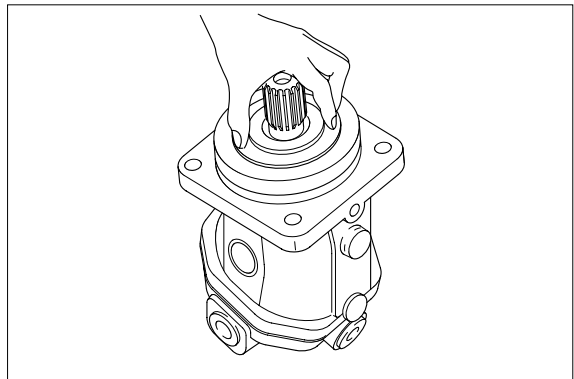


### (3) Assembly of oil seal part

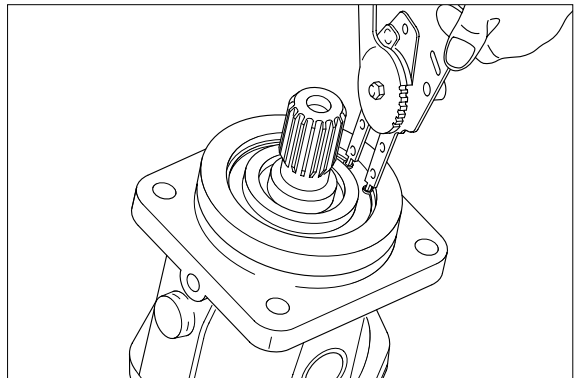
- ① Install O-ring(19).



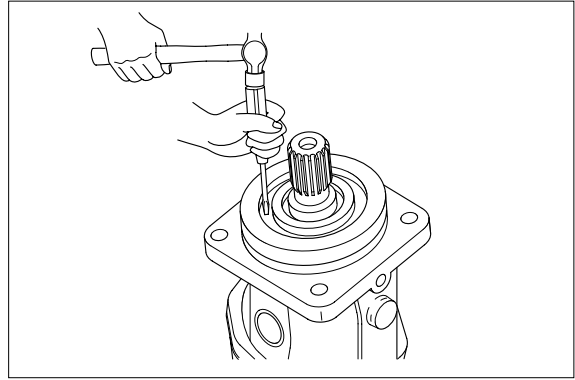
- ② Install seal case(16).



- ③ Fit C type retaining ring(18) with snap ring pliers.

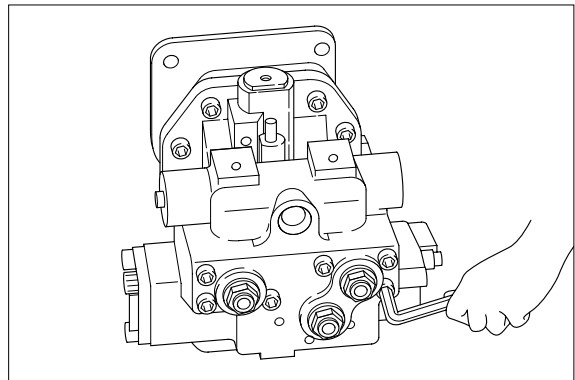


- ④ In order to install C type retaining ring (18) into the groove completely, using the screw (-) driver, confirm of the fitting by hammering with plastic hammer.



#### (4) Installation of counter balance valve

- ① Install counter balance valve by tightening hexagon socket head cap bolts(29).
- Hexagon socket : 8mm
  - Tightening torque : 7kgf · m(50.6lbf · ft)



- ② Assembly was completed.

