

SERVICE MANUAL

Robex 16-7

SER. NO. HY1670001~

 **HYUNDAI**
HEAVY INDUSTRIES CO.,LTD.

[*https://marengine.com/r16-7-excavator*](https://marengine.com/r16-7-excavator)

INTRODUCTION

To insure a long life for the machine and the engine and to prevent failure and problems, proper operation, maintenance and repairs are indispensable.

This service manual includes an “outline,” “structure and operation,” “inspection and adjustment,” “disassembly and assembly,” “standard maintenance,” and “repair and replacement of parts” of the machine which are necessary to carry out the inspections and repairs in the repair shop.

We hope that this manual helps you to efficiently and effectively carry out repairs by providing an accurate description of the product and the correct repair techniques.

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1 PRECAUTIONS ON MAINTENANCE

1. Correct operation

Correct operation means to follow the correct “procedure” and “method.”

Procedure focuses on speed and accuracy of each job.

In the method, are addressed what type of facility, tools, instruments, materials, oil should be used, how and which part should be checked, adjusted or disassembled, and what matters to attend to.

2. Precautions on operation

1. Safety check

Check that stoppers and sleepers are correctly installed for the vehicle jack-up operation.

2. Preparation

Prepare all of the tools and inspect and adjust the instruments.

3. For efficiency

1) Understand the state before disassembly.

What is the problem? Is disassembly absolutely necessary?

2) Before disassembly

Determine whether match marks are necessary. For the electrical system, disconnect the cable from the battery terminal.

3) Precautions for disassembly

In stead of checking all of the disassembled parts at once, check each part individually as it is disassembled. When removing the hydraulic unit or the hoses, mount a dust cap on the connection.

4) Repair of disassembled parts

Keep the disassembled parts in order. Clearly distinguish the parts to be replaced with new parts from those to be reused. Packings, seals, rings, split pins must be replaced.

NOTE:

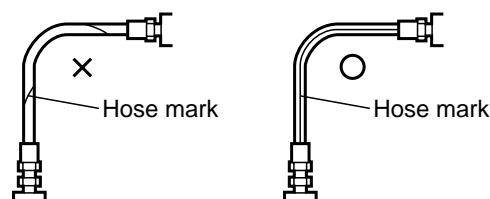
Electrical equipment, rubbers and V belts (which are easily affected by water and oil) must be handled carefully in order to prevent soiling them.

5) Clean disassembled parts

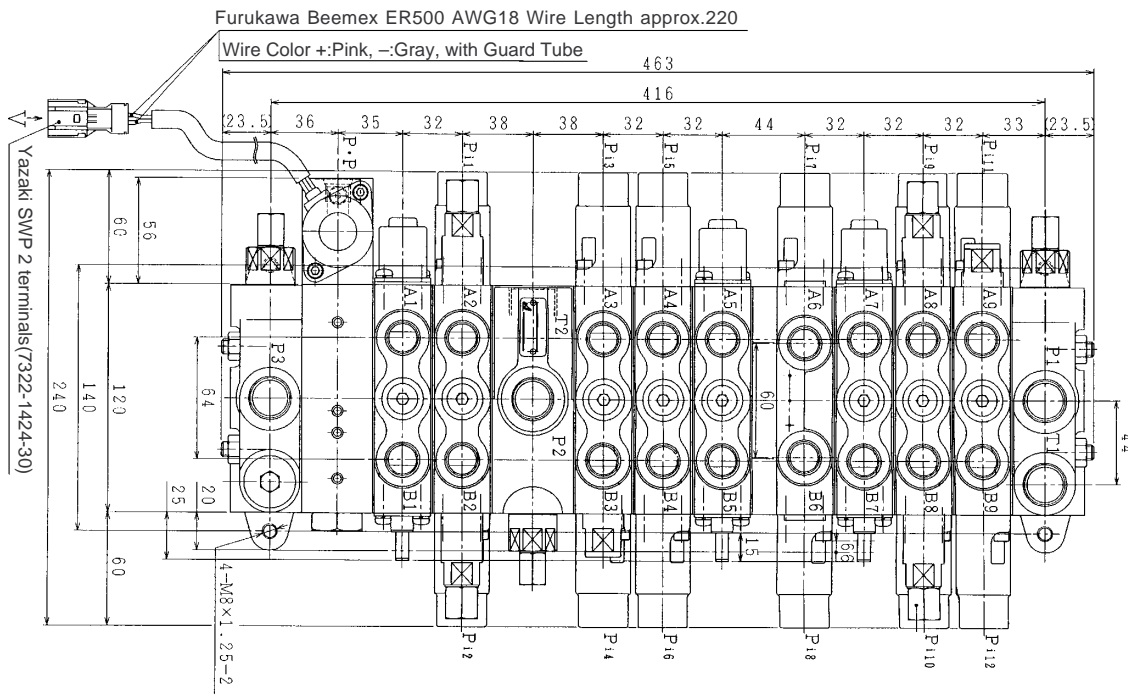
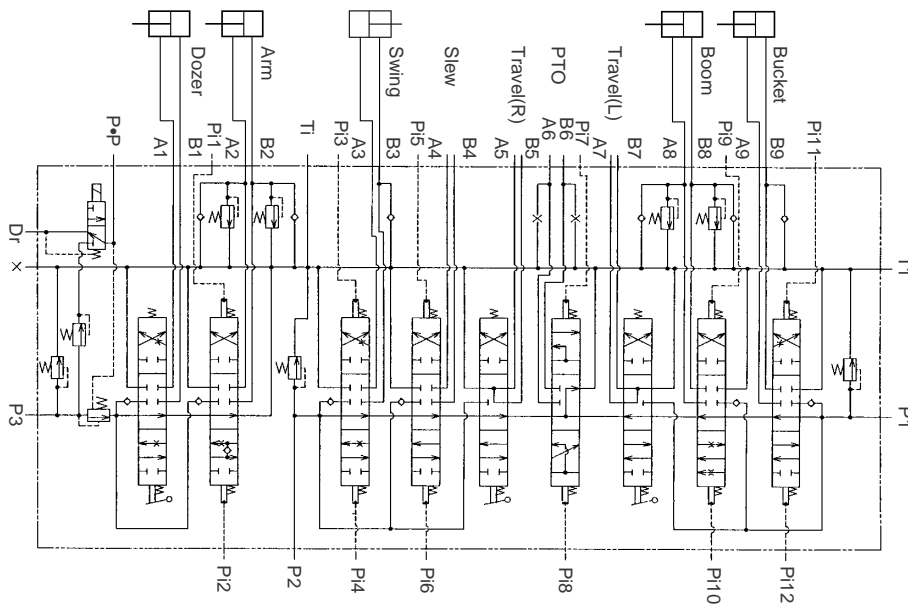
Thoroughly clean the disassembled parts.

6) Assembly

Perform the assembly correctly (tightening torque, application of Three Bond, screw lock, grease, use of seal tape, etc.). Also install the hose correctly.

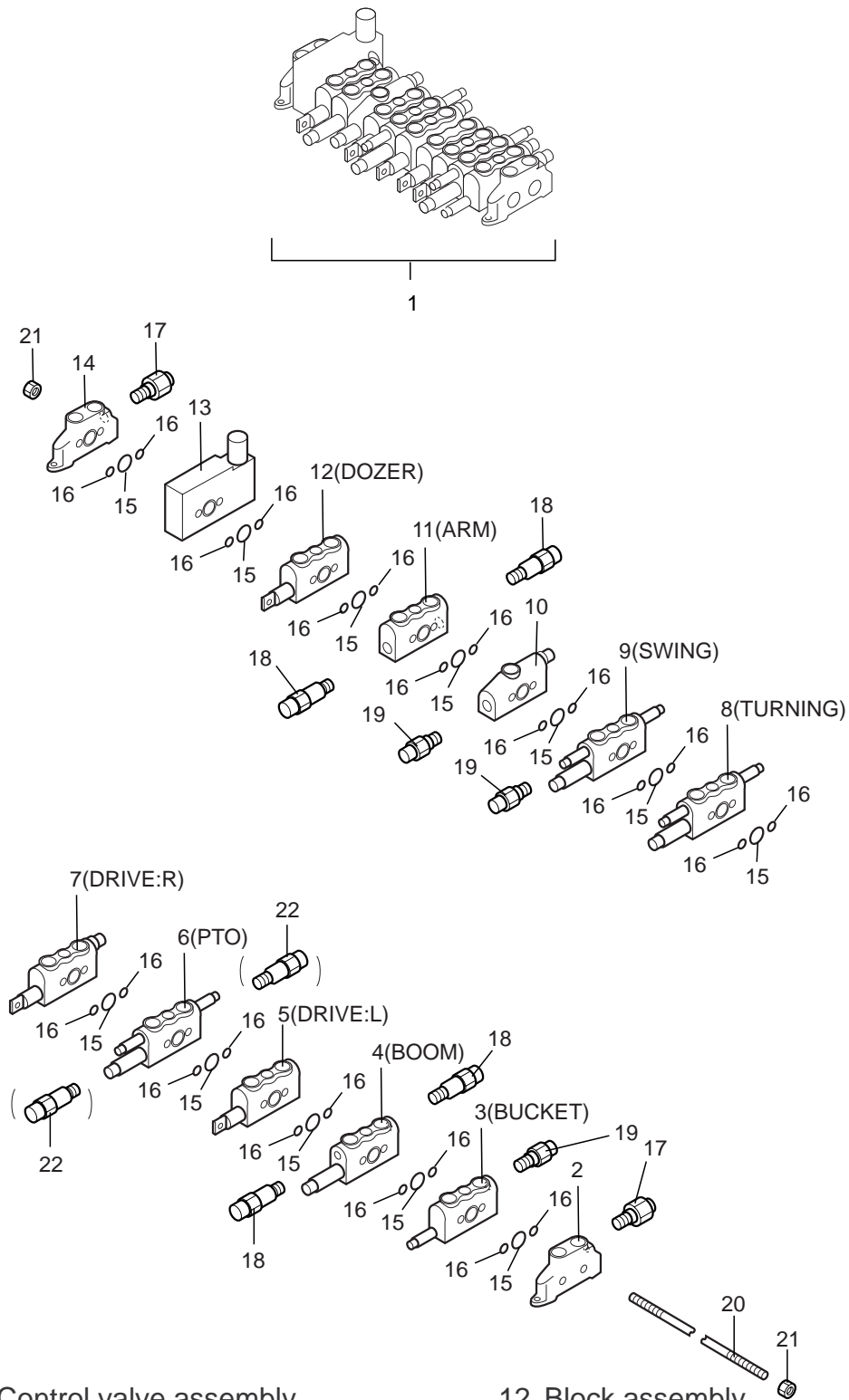


7-1 Specification

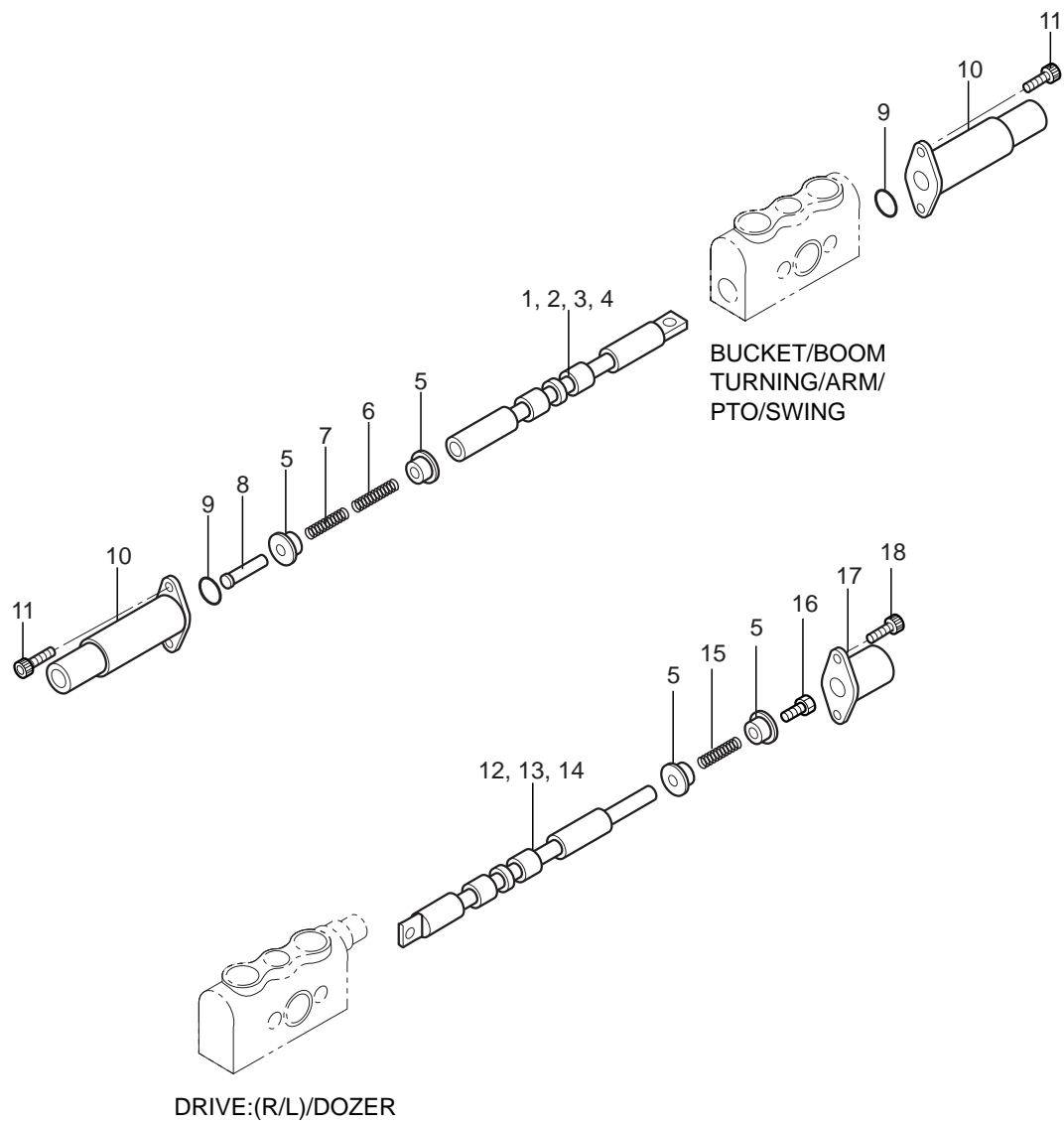


Port size	
T2	PF 3 / 4
P1,P2,P3,T1	PF 1 / 2
A1~A9, B1~B9	PF 3 / 8
Pi1~8, P•P	PF1 / 4
Dr	PT1 / 8

P1 and P2,P3 Main relief pressure	18.6MPa(190kgf/cm ²)at 14.5 ℓ /min
A2, B2, A8, B8 Port relief pressure	20.6MPa(210kgf/cm ²)at 5 ℓ /min



- | | |
|---------------------------|---------------------------|
| 1. Control valve assembly | 12. Block assembly |
| 2. Block assembly | 13. Block assembly |
| 3. Block assembly | 14. Block assembly |
| 4. Block assembly | 15. O-ring |
| 5. Block assembly | 16. O-ring |
| 6. Block assembly | 17. Relief valve assembly |
| 7. Block assembly | 18. Relief valve assembly |
| 8. Block assembly | 19. Relief valve assembly |
| 9. Block assembly | 20. Rod |
| 10. Block assembly | 21. Nut |
| 11. Block assembly | 22. Relief valve assembly |



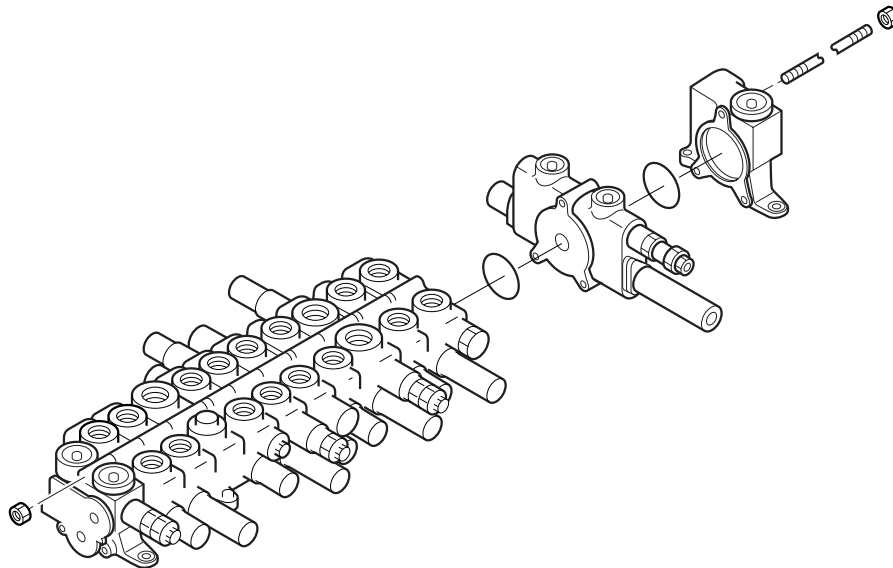
1. Spool
2. Spool
3. Spool
4. Spring
5. Spring holder
6. Spring
7. Spring
8. Spool end
9. O-ring

10. Cover
11. Socket head bolt
12. Open spool
13. Spool
14. Spool
15. Spring
16. Bolt
17. Cover
18. Panhead screw

7-2 Disassembly and assembly

7-2-1 Replacing the O ring on the contact surface and each block assembly

1. Loosen the nut of tie rod.
2. Remove each block. Be careful not to damage the machine contact surface.
3. When disassembled, it is recommended to replace the O rings on the contact surface.
4. When assembling, clean the contact surface so that no dust sticks to the surface. Then attach the O ring and reassemble in the reverse order of the above procedure. When attaching the O ring, give grease to it.
5. Tighten nut temporarily.
6. After tightening, place them on their side. Pressing the inlet cover and end cover from above, check the level of the mounting legs and tighten the nut.
The tightening torque of the tie rod nut is 23.5N-m(2.4kg-m). While tightening them, check that the spool of each block operates smoothly.



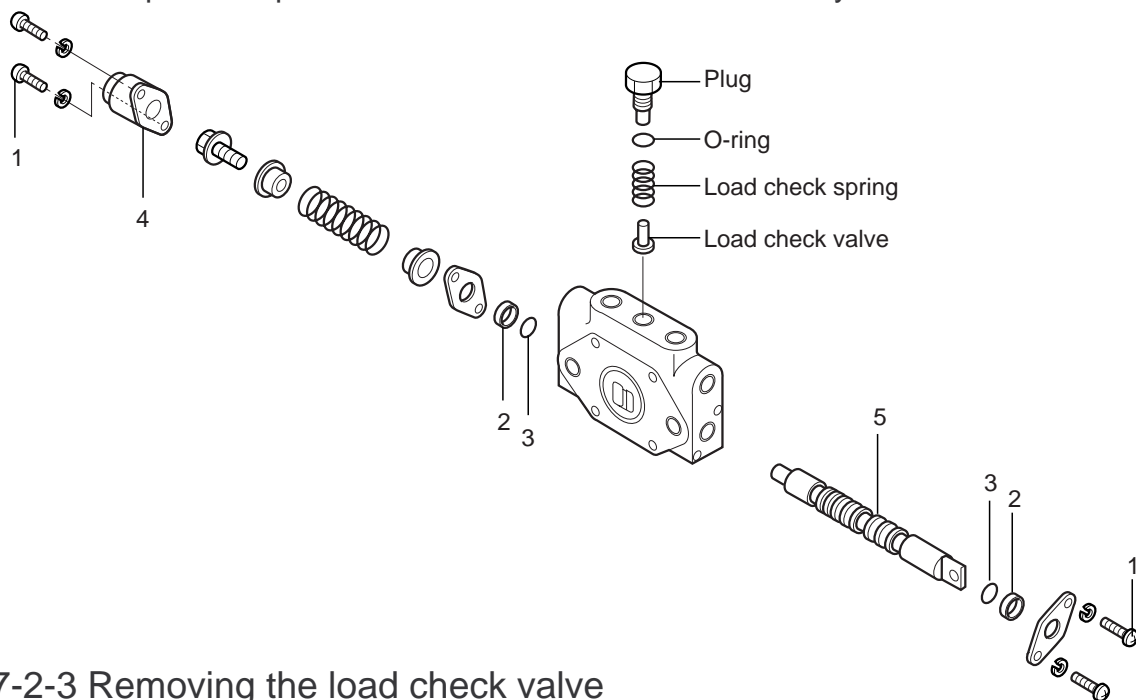
7-2-2 Replacing the O ring on the spool

1. On the lever side

- 1) Remove the mounting screws (1) of the O-ring presser from the block.
- 2) Replace the backup ring (2) and O-ring (3).
- 3) When mounting the O-ring presser, be sure not to damage the O-ring.

2. On the cap side

- 1) Loosen the cap mounting screws (1) and remove the cap (4).
Take out spool (5) and replace O-ring (3)
- 2) Rinse the spool and insert it in the body.
- 3) When installing the spring cap, be careful not to damage the O-ring.
The spool is replaced in the units of the block assembly.



7-2-3 Removing the load check valve

1. Loosen the plug and remove the load check spring and load check valve from the valve block.
2. Clean the parts sufficiently before assembling them.

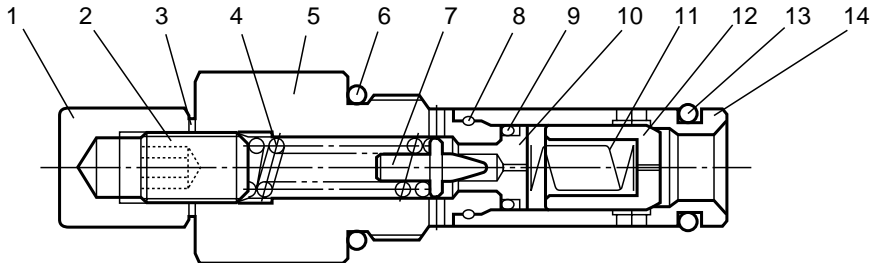
7-2-4 Replacing the relief valve assembly and the O-ring.

1. Remove the inlet section assembly and the relief valve.
2. If necessary, replace the O-ring or the relief valve assembly.
3. During installation, give grease to the O-ring.
4. When the relief set, cap nut of adjusting screw and hexagon nut are loosened, always check relief set pressure using the pressure gauge.
At this time, the relief set pressure and flow rate shall be conformed to the specification indicated on the page of external drawing.
5. When the relief valve assembly is removed, check whether the small hole on the center of relief piston is clogged with foreign matter.

7-3 Structure of the relief valve

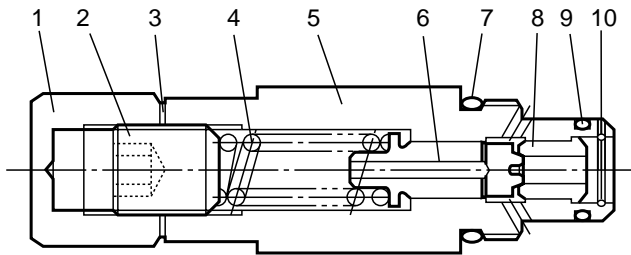
7-3-1 Main relief valve

Part	Tightening torque
Cap nut	29.4N-m(3.0kgf-m)
Installation of the relief valve	68.6N-m(7.0kgf-m)



- | | | |
|--------------|-----------------|------------|
| 1. Cap nut | 6. O-ring | 11. Spring |
| 2. Set screw | 7. Needle valve | 12. Poppet |
| 3. Gasket | 8. Wire | 13. O-ring |
| 4. Spring | 9. O-ring | 14. Sleeve |
| 5. Housing | 10. Seat valve | |

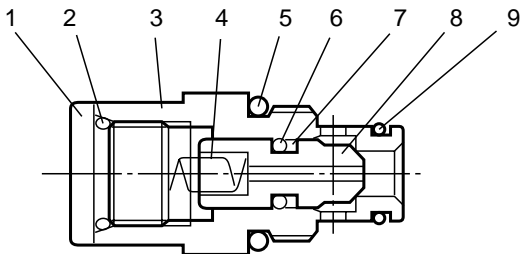
7-3-2 Port relief valve



Part	Tightening torque
Cap nut	29.4N-m(3.0kgf/m)
Installation of the relief valve	68.6N-m(7.0kgf-m)

- | | | |
|--------------|-------------------|-----------|
| 1. Cap nut | 5. Relief housing | 9. O-ring |
| 2. Set screw | 6. Poppet | 10. Clip |
| 3. Gasket | 7. O-ring | |
| 4. Spring | 8. Seat | |

7-3-3 Suction check valve



Part	Tightening torque
Plug	29.4N-m(3.0kgf/m)
Installation of the check valve	68.6N-m(7.0kgf/m)

- | | | |
|-----------|-----------|----------------|
| 1. Plug | 4. Spring | 7. Backup ring |
| 2. O-ring | 5. O-ring | 8. Poppet |
| 3. Body | 6. O-ring | 9. O-ring |

Diesel Engines

ABS	Agco-Sisu
Akasaka	Baudouin
BMW	Bukh
Caterpillar	CHN 25/34
Cummins	Daihatsu
Detroit	Deutz
Doosan-Daewoo	Fiat
Ford	GE
Grenaa	Guascor
Hanshin	Hatz
Hino	Honda
Hyundai	Isotta
Isuzu	Iveco
John-Deere	Kelvin
Kioti	Komatsu
Kubota	Liebherr
Lister	Lombardini
MAK	MAN B&W
Mercedes	Mercruiser
Mirrlees BS	Mitsubishi
MTU	MWM
Niigata	Paxman
Perkins	Pielstick
Rolls / Bergen	Ruggerini
Ruston	Scania
Shibaura	Sisu-Valmet
SKL	Smit-Bolnes
Sole	Stork
VM-Motori	Volvo
Volvo Penta	Westerbeke
Wichmann	Yanmar

Machinery

ABG	Airman
Akerman	Ammann
Astra	Atlas Copco
Atlas Weyha.	Atlet
Bell	Bendi
Bigjoe	Bobcat
Bomag	BT
Carelift	Case
Caterpillar	Cesab
Challenger	Champion
Claas	Clark
Combilift	Crown
Daewoo-Doosan	Demag
Deutz-Fahr	Dressta

Machinery

Drott	Dynapack
Extec	Faun
Fendt	Fiat
Fiatallis	Flexicoil
Furukawa	Gehl
Genie	Grove-gmk
Halla	Hamm
Hangcha	Hanix
Hanomag	Hartl
Haulpack	Hiab
Hidromek	Hino truck
Hitachi	Hyster
Hyundai	IHI
Ingersoll-rand	JCB
JLG	John-Deere
Jungheinrich	Kalmar
Kato	Kioti
Kleeman	Kobelco
Komatsu	Kramer
Kubota	Lamborghini
Landini	Liebherr
Linde	Link-belt
Manitou	Massey-Ferg.
Mccormick	MDI-Yutani
Mitsubishi	Moxy
Mustang	Neusson
New-Holland	Nichiyu
Nissan	OK
OM-Pimespo	others-tech
Pel-Job	PH-mining
Poclain	Powerscreen
Same	Samsung
Sandvik	Scania
Schaefer	Schramm
Sennebogen	Shangli
Shibaura	Steiger
Steinbock	Steyr
Still	Sumitomo
Super-pac	Tadano
Takeuchi	TCM
Terex	Toyota
Valpadana	Venieri
Versatile	Vogele
Volvo	Weidemann
Wirtgen	Yale
YAM	Yanmar