

DW-※※H-30 TYPE DISTRIBUTING VALVE INSTRUCTION MANUAL

This distributing valve cannot be used independently but be absolute connected with a manually or motor driven grease pump and two supply pipes. It is intended that the grease or oil carried from the pump to Line I and Line II alternately is correctly calculated and that a fixed quantity is supplied with the up and down stroke of the main piston operated by the differential pressure generated between the supply line and opening line.

1. Main Particulars:

The distributing valve differs in size of discharging amount, number of discharging outlet, service pressure, etc., being classified into the following types.

| No. of outlet 2 | No. of outlet 4 | No. of outlet 6 | No. of outlet 8 | Discharge amount per stroke (cm ³ /stroke) Min. to Max. | Adjusting amount per turn of adjusting screw (cm ³) |
|--------------------|--------------------|--------------------|--------------------|---|--|
| DW-32H-30 | DW-34H-30 | DW-36H-30 | DW-38H-30 | 0.3 to 1.2 | 0.06 |
| DW-42H-30 | DW-44H-30 | DW-46H-30 | DW-48H-30 | 0.6 to 2.5 | 0.10 |
| DW-52H-30 | DW-54H-30 | DW-56H-30 | DW-58H-30 | 1.1 to 5.0 | 0.15 |

This is the used pressure of 21MPa ;
in case of oil, apply under 10MPa.

2. Explanation of Construction and Operation

2-1. Explanation of Operation (Refer to Fig. 1):

Grease supply is assured by the ① Pilot piston which will not operate until the differential pressure of the line is generated and the ② Main piston which plays a part of calibration and discharge.

The main piston is connected with the ③ Indicating rod and sealed with the ④ Gland packing of special manufacturing, leading to the prevention of leakage and enabling to make sure of the operation from the outside.

In Operation 1, grease is pressed forward to Line 1 from the pump through the supply pipe, and Line 2 is opened to the tank.

The pilot piston is pushed down by supplying pressure and, when ready for Operation 2, the passage [b2] opens and the grease acts the main piston.

Moreover, when the grease pushed the main piston down, the condition of Operation 3 comes out, and the grease in the calibration chamber [a1] is forwarded to the discharge outlet [d1] from the passage [c1] through the passage [b1].

When all the distributing valves come to this condition, the pressure of Line 1 increases abruptly, reaches to the reversing pressure and completes one operation. At the same time, Line 1 is opened to the tank by the action of the reversing valve and remained pressure is also opened.

In the next operation, if grease is pressed forward toward Line 2, the pilot piston is pressed up in the reverse direction to the former to be in the condition of Operation 4, the passage [b2] opens and the grease acts the main piston. Moreover, when the grease pushes the main piston up, the condition of Operation 1 is brought back, the grease in the calibration chamber [a2] is forwarded from the passage [c2] to the discharging outlet [d2] through the passage [b2], and the subsequence repeats the foregoing operation.

The distributing valve of double discharging type conducts one cycle grease supply (up and down strokes) of the main piston, and grease is forwarded to all the grease supply ports.

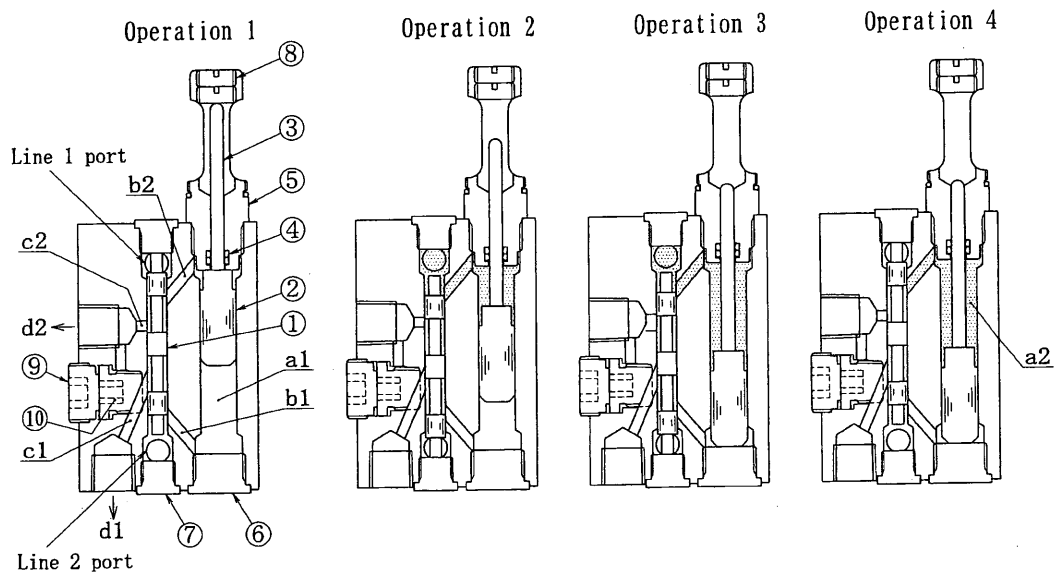


Fig. 1

2-2. Adjustment of Discharge Volume

Discharge volume of one stroke means amount of [a1] or [a2] and depends on stroke amount of main piston. By turning ⑧ Grease amount adjusting screw, stroke of main piston can be restricted, grease amount can be freely adjusted between maximum and minimum.

Grease amount adjusting screw has two steps. After removing the upper screw, turn the lower screw. Retighten and lock the upper screw up after adjustment.

2-3. Modifying to Odd Number of Port (Refer to Fig. 2):

In case of using this distributing valve with odd number of port, modifying to a single discharge type is possible by concentrating the grease discharged from the upper and lower discharging ports into the discharging port of other side.

After removing the ⑨ Cross port plug, take out the ⑩ Hexagonal holed plug from the inside and plug the discharging port of one side not for use on.

Tighten the cross port plug on original position again and seal with copper packing.

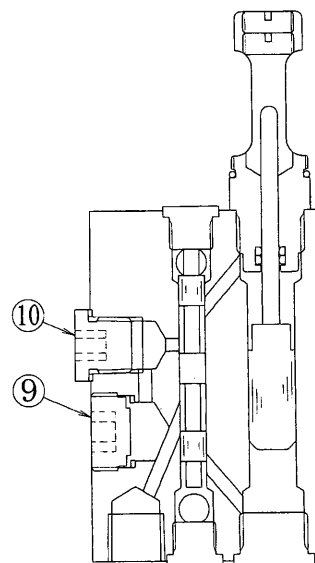


Fig. 2

In normal double discharging, the cross port plug hangs out approximately 3mm.

When modifying to single discharge type, the cross port plug comes to be the same level with the body. Therefore, they are apparently distinguishable. The piston operation is same as the foregoing.

When modifying to single discharge type, because the grease for two strokes will be discharged from one port, so that, in order to be the same amount as the other ports, discharge amount should be adjusted in 1/2.

2-4. Frame and Frame Cover (Refer to Fig. 3) :

The ① Frame cover of this Distributing valve is fixed to the ⑤ Frame with screw. In order to remove, turn the knurled part on frame cover bottom. Also, O-Ring is fixed to frame cover bottom, seals between frame and frame cover, and makes water or dust hard to get into.

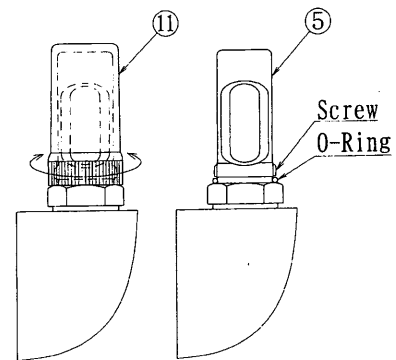


Fig. 3

3. Precautions for Handling :

- 1) In case of fitting to high temperature parts, insulation boards, etc. must be applied not to be subjected to direct heat.
When the surrounding temperature comes up over 100°C, operating period may be shortened.
- 2) This distributing valve has dust and water resistive construction. But it does not mean positive recommending the installation to such a dusty environment. In case of installation to places of much dust, fitting with distributing covers are recommended.
- 3) Installation must be made so that the distributing valve frame may be vertical as much as possible.
- 4) Too much tightening of fitting bolts will cause deformation inside the distributing valve, for which care should be paid.
- 5) In case of using with odd number of port, be sure to modify to single discharging type. If plug on one side only, the distributing valve does not work.
- 6) Every periodical term, all the distributing valves must be made sure of the operation of the indicating rod of both in coming-up and coming-down strokes.
- 7) In case of removing the frame cover, be careful to avoid the mixture of water or alien materials into inside of frame cover. It may cause inner rust or damage of seal.
- 8) Be careful on painting, because the frame cover is made of polycarbonate, there is a possibility that it will be dissolved into organic solvent.

9) Depending on operating environment, there are cases when early deterioration of O-Ring of frame may be caused. To prevent water intrusion, internal condensation or rust, inspect and replace at regular intervals.

4. Maintenance and Adjustment :

1) Most trouble in the distributing valve is malfunction caused by alien materials are fed in the pilot piston or main piston.

Remove ⑤ Frame, ⑥ Calibration chamber screw, ⑦ Supply valve box screw, take off the pilot piston and main piston, and wash them and inside of the distributing valve.

2) After washing, both pistons must be tested if they will move smoothly in the distributing valve and if they are favorable, be re-assembled to the original condition.

If flaws are found due to alien materials, etc., it is necessary to repair by lapping.

3) Because each screw being hard tightened, be careful on disassembling.

Tools must be applied with the regular disassembling ones.

Copper packing should be changed every time.

Basic tightening torque of each screw is follows.

| Part No. of Fig. 1 | Part name | Torque (N · m) |
|--------------------|-------------------------------|----------------|
| ⑤ | Frame | 41 to 49 |
| ⑥ | Calibration chamber screw | 61 to 73 |
| ⑦ | Supply valve box screw | 23 to 27 |
| ⑨ | Cross port plug | 39 to 47 |
| ⑩ | Hexagon socket head flat plug | 32 to 38 |

Value of ⑨ Cross port plug should cut into half, if it includes ⑩ Hexagon socket head flat plug inside.

DW-※※H-20 TYPE DISTRIBUTING VALVE
INSTRUCTION MANUAL

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1. Main Particulars:

The distributing valve differs in size of discharging amount, number of discharging outlet, service pressure, etc., being classified into the following types.

| No. of outlet 2 | No. of outlet 4 | No. of outlet 6 | No. of outlet 8 | Discharge amount per stroke (cm ³ /stroke) MIN. ~MAX. | Adjusting amount per turn of adjusting screw (cm ³) |
|--------------------|--------------------|--------------------|--------------------|---|---|
| DW-22H-20 | 24 | 26 | 28 | 0.15~0.6 | 0.04 |
| DW-32H-20 | 34 | 36 | 38 | 0.2 ~1.2 | 0.06 |
| DW-42H-20 | 44 | 46 | 48 | 0.6 ~2.5 | 0.10 |
| DW-52H-20 | 54 | 56 | 58 | 1.2 ~5.0 | 0.15 |

This is the used pressure of 21MPa ;
in case of oil, apply under 10MPa.

2. Explanation of Construction and Operation (Refer to Fig. 1):

Grease supply is assured by the ① Pilot Piston which will not operate until the differential pressure of the line is generated and the ② Main Piston which plays a part of calibration and discharge.

The main piston is connected with the ③ Indicating Rod and sealed with the ④ Gland Packing of special manufacturing, leading to the prevention of leakage and enabling to make sure of the operation from the outside.

In Operation ①, grease is pressed forwarded to Line I from the pump through the supply pipe, and Line II is open to the tank.

The pilot piston is pushed up by differential pressure and, when ready for Operation ②, the grease opens the connecting hole [b] and acts the main piston.

When the pressure grease pushed up the main piston, the condition of Operation ③ comes out, and the grease in the calibration chamber [a1] is forwarded to the underside discharge outlet [e] from the passage [d1] through the connecting hole [c].

When all the distributing valves come to this condition, the pressure of Line I increases abruptly and amounts to the reversing pressure, completing one operation. At the same time, Line I is opened to the tank by the action of the reversing valve handle, preventing accumulation of remained pressure.

In the next operation, if grease is pressed forwarded toward Line II, the pilot piston is pressed up in the reverse direction to the former to be in the condition of Operation ④, and grease opens the connecting hole [c] to act the main piston.

If the pressure grease pushes up the main piston, the condition of Operation ① is brought back, the grease in the calibration chamber [a2] is forwarded from the passage [d] to the discharging outlet [e] through the connecting hole-[b], and the subsequence repeats the foregoing operation.

The distributing valve of double discharging type conducts one cycle grease supply (up and down strokes) of the main piston, and grease is forwarded to all the grease supply ports.

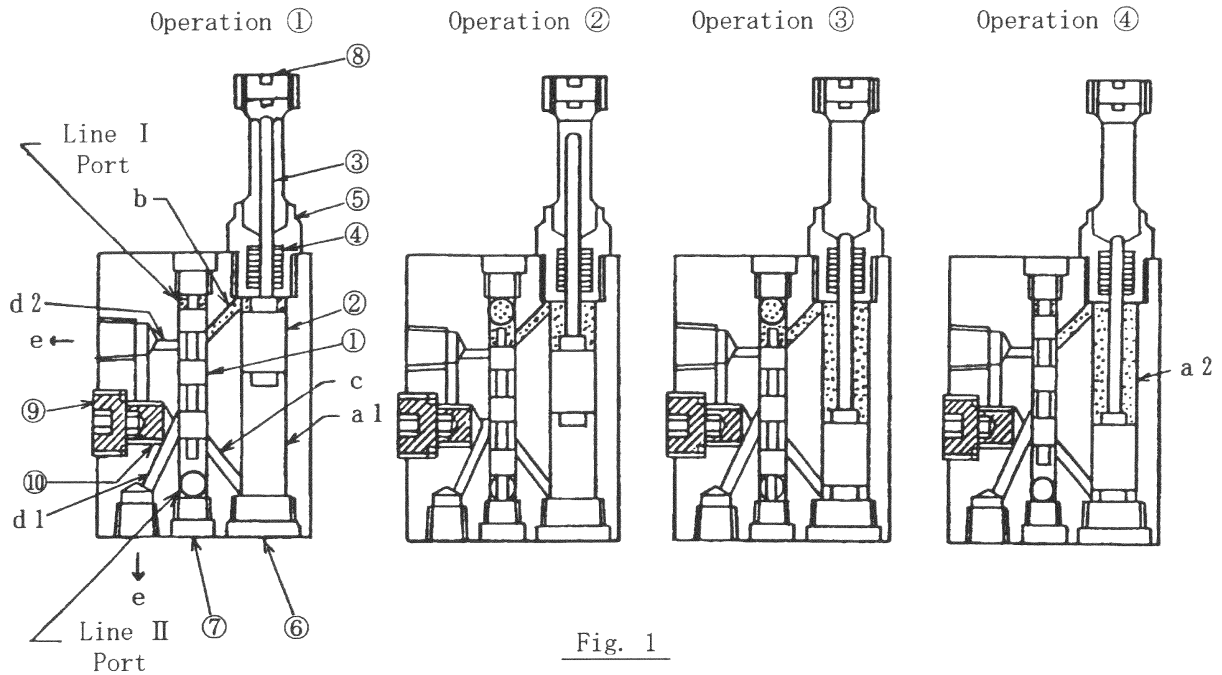
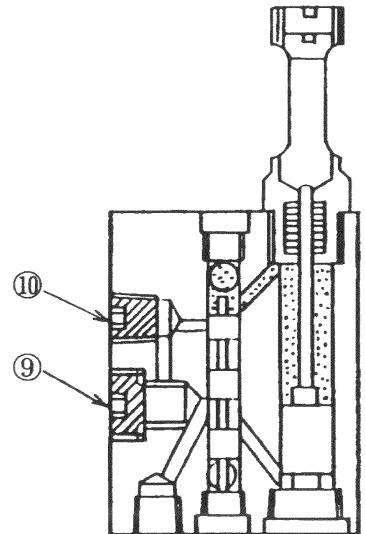


Fig. 1

Furthermore, this distributing a valve is applicable for a discharging type which concentrates the grease discharged from the upper and lower discharging ports into the discharging port of other side. With the plug for the ⑨ Cross port removed, take out the ⑩ hexagonal holed plug from the inside and plug the discharging port of one side not for use. The plug for the cross port comes to be the same level with the body proper when tightened up, being so designed as to be able to distinguish in appearance. [In case of the double discharge, the cross port plug will project about 2mm.] The piston operation is game as the foregoing.



3. Precautions for Handling :

- 1) Places of much dust or hard confirmation should be avoided.
In case of fitting to places of much dust, distributing covers must be fitted.
- 2) Even in case of fitting to high temperature parts, insulation boards, etc. must be applied not to be subjected to direct heat.
When the surrounding temperature comes up over 80°C, operating period is limited.
- 3) Fitting must be made so that the distributing valve may be vertical as much as possible.
- 4) Too much tightening of fitting bolts will cause deformation inside the distributing valve, for which care should be paid.
- 5) If the number of use comes odd, don't fail to make it a single discharging type. Application of a sole blind to the discharge port will cause poor operation of the distributing valve.
- 6) Every periodical term, all the distributing valves must be made sure of the operation of the indicating of both in coming-up and coming-down strokes.

4. Maintenance and Adjustment :

1) Most troubles in the distributing valve lie in foreign matter fed in the pilot piston and main piston, causing poor operation accordingly.

Remove the ⑤ Frame, ⑥ Calibration chamber screw, ⑦ Supply valve box screw, take off the pilot piston and main piston and wash them together with the inside of the distributing valve.

2) After washing both pistons must be tested for smooth operation in the distributing valve and, if satisfactory, be re-assembled to the original condition. If flaws are found due to foreign matter, etc., repair by lapping is required.

3) Each screw being hard tightened, easy enlightening is possible, when disassembling, after tapping the screw head by hammering.

Tools must be applied with the regular disassembling ones.

Copper packing should be changed.

Basic tightening torque of each screw is follows.

Unit : N · m

| Part No. of Fig. 1 | Part name | DW-20 type | DW-30 to 50 type |
|--------------------|-------------------------------|------------|------------------|
| ⑤ | Frame | 14 to 17 | 41 to 49 |
| ⑥ | Hexagon socket head flat plug | 23 to 28 | 61 to 73 |
| ⑦ | Hexagon socket head flat plug | 10 to 12 | 23 to 28 |
| ⑨ | Cross port plug | 33 to 39 | 39 to 47 |
| ⑩ | Hexagon socket head flat plug | 3 to 5 | 32 to 38 |

However, value of ⑨ Cross port plug should cut into half, if it includes ⑩ Hexagon socket head flat plug inside.

4) The discharging amount of one stroke means that of [a1] or [a2] and is decided by the stroke of the main piston.

⑧ Adjusting screw is two-staged; optional movement of the lower screw after the removal of the upper screw can lead to free adjustment between the maximum and minimum amount.