

DV-※※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 1 and Line 2 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 1	No. of outlet 2	No. of outlet 3	No. of outlet 4	Discharge amount per stroke (cm ³ /stroke) Min. to Max.	Adjusting amount per turn of adjusting screw (cm ³)
DV-31H-30	DV-32H-30	DV-33H-30	DV-34H-30	0.4 to 1.3	0.06
DV-41H-30	DV-42H-30	DV-43H-30	DV-44H-30	0.6 to 2.5	0.10
DV-51H-30	DV-52H-30	DV-53H-30	DV-54H-30	1.1 to 5.2	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 forwarded 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 [d] from the passage [c] 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 forwarded 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 [c] to the discharging outlet [d] through the passage [b2], and the subsequence repeats the foregoing operation.

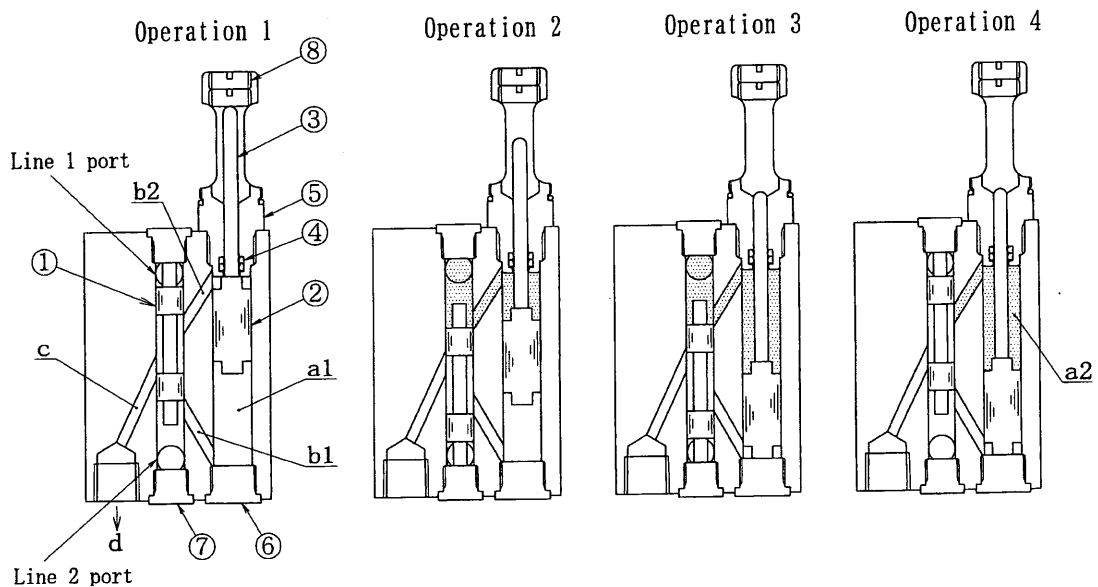


Fig. 1

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. Frame and Frame Cover (Refer to Fig. 2) :

The ⑪ 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.

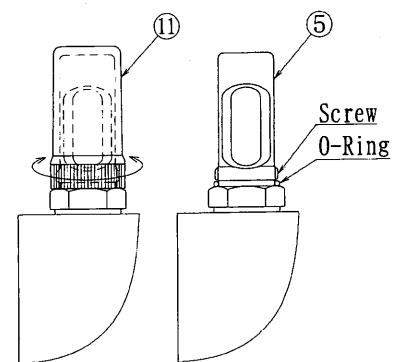


Fig. 2

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) The discharging outlet not in use must be applied with a plug. (Because even the minimum stroke cannot become 0.)

- 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)		
		DV-30H-30	DV-40H-30	DV-50H-30
⑤	Frame	29 to 35	41 to 49	48 to 57
⑥	Calibration chamber screw	32 to 39	38 to 46	61 to 73
⑦	Supply valve box screw	23 to 28		

DV-※※H-20 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 1 and Line 2 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 1	No. of outlet 2	No. of outlet 3	No. of outlet 4	Discharge amount per stroke (cm ³ /stroke) MIN. ~MAX.	Adjusting amount per turn of adjusting screw (cm ³)
DV-31H-20	32	33	34	0.2~ 1.2	0.06
DV-41H-20	42	43	44	0.6~ 2.5	0.10
DV-51H-20	52	53	54	1.2~ 5.0	0.15
DV-61H-20	62	/	/	3.0~14.0	0.68

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 forward to Line 1 from the pump through the supply pipe, and Line 2 is opened 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 discharge outlet [e] from the passage [d] through the connecting hole [c].

When all the distributing valves come to this condition, the pressure of Line 1 increases abruptly and amounts to the reversing pressure, completing one operation. At the same time, Line 1 is opened to the tank by the action of the valve handle, preventing accumulation of remained pressure.

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, and grease opens 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.

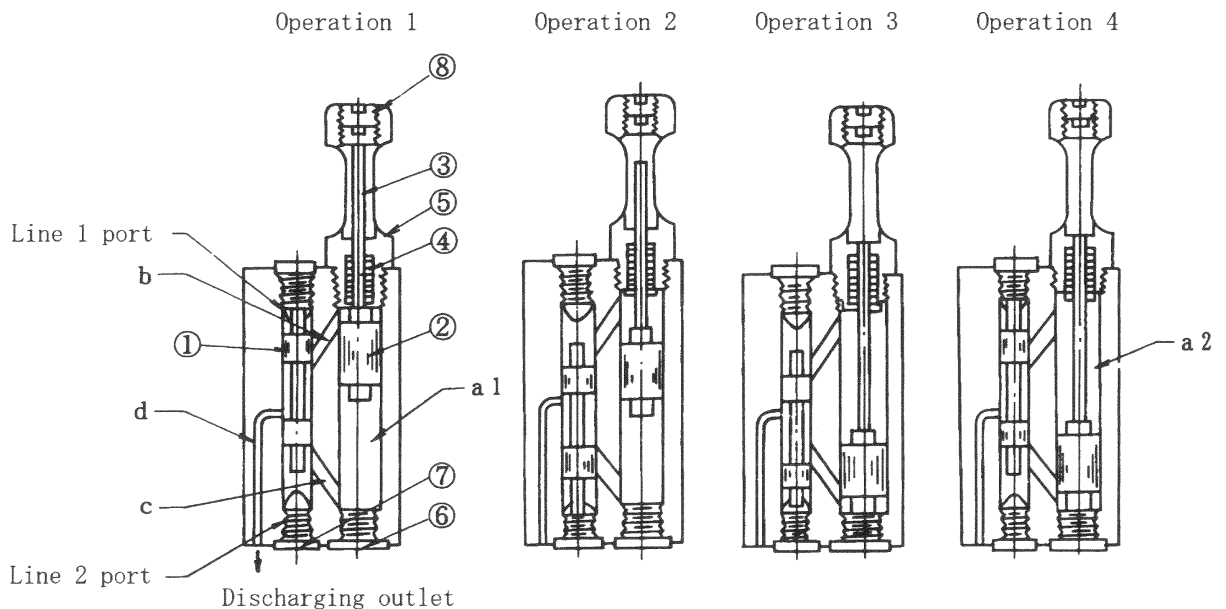


Fig. 1

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) The discharging outlet not in use must be applied with a 1/4B plug because even the minimum stroke cannot become 0.
- 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 ⑤ Frame, ⑥ Calibration chamber screw, ⑦ Supply valve box screw, take off the pilot piston and main piston and wash them with them 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	DV-30H	DV-40H	DV-50H	DV-60H
⑤	Frame	29 to 35	41 to 49	48 to 57	186 to 216
⑥	Hexagon socket head flat plug	32 to 39	38 to 46	61 to 73	
⑦	Hexagon socket head flat plug	23 to 28			

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.