norika®

Name of Reliability in Kuality Accessories

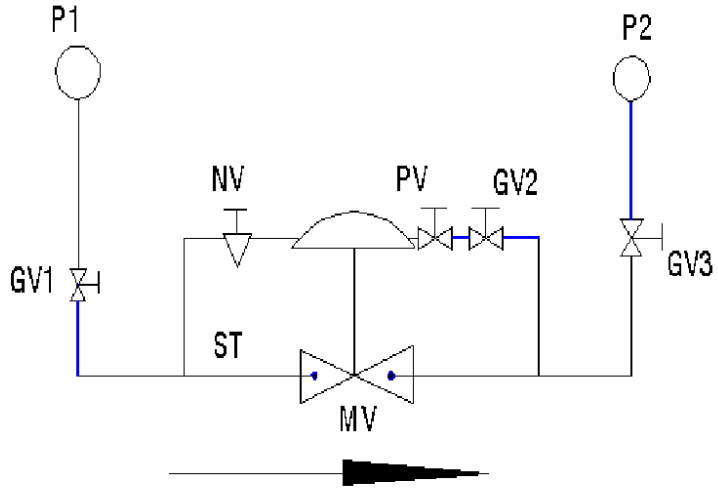
Pilot Operated Flange Pressure Reducing Valve User Manual

(SKU: PRVDIN-F)

Function Description and Operation Manual

The pressure reducing valve mainly consists of main valve, pressure reducing pilot valve, needle valve and other components.

Ⅰ. Piping diagram:



Symbol description:

MV: Main valve	PV: Pressure reducing pilot valve
NV: Needle valve	GV: ball valve
ST: Strainer	P: pressure gauge

Ⅱ. Function description

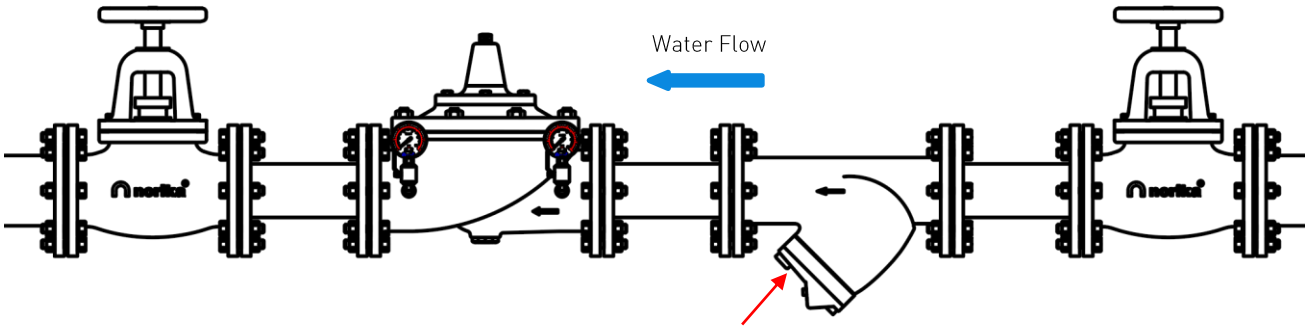
1. This product is a diaphragm-type, hydraulically operated valve installed in water supply systems to regulate and maintain a constant outlet pressure.
2. The valve reduces the inlet pressure to the required outlet pressure by adjusting the pressure reducing pilot valve (PV). It relies on the medium's own energy to maintain a stable outlet pressure, ensuring that variations in upstream pressure and flow do not affect the outlet pressure.
3. The **NV** needle valve must be turned counterclockwise to open; otherwise, the valve will not function. Similarly, the **GV2** ball valve must also be open for proper operation. (All valves are in the open position when shipped from the factory.)
4. During normal operation, the pressure reducing pilot valve automatically regulates the outlet pressure to achieve the pressure reduction function. If a new outlet pressure setting is required, ensure that water is flowing through the pipeline, then adjust the top screw of the pilot valve using an adjustable wrench.

   - Looking from above:
     - **Clockwise rotation increases outlet pressure**
     - **Counterclockwise rotation decreases outlet pressure**
   - Adjust according to the required outlet pressure.

5. **Temperature range:** 0–80°C
6. **Pressure range:** 0.1–0.5 MPa

Installation and Operation Precautions

PIPE LINE：



Note: A strainer must be installed before the pressure reducing valve to prevent damage from debris.

1. Before installing the main valve and pipeline, thoroughly remove any debris such as iron filings, stones, branches, plastic bags, and other foreign objects from the pipeline.
2. A strainer must be installed at the front end of the main valve, with gate valves (or butterfly valves) installed on both the inlet and outlet sides for future cleaning and maintenance.
3. If the main valve is installed in a valve chamber, ensure there is sufficient space for technicians to perform adjustments and maintenance.
4. Pay attention to the flow direction arrow marked on the valve body and install the valve accordingly.
5. The recommended installation method is to mount the main valve on a horizontal pipeline outside the water tank, with the valve cover facing upwards.
6. During winter, take precautions to insulate the valve, ensuring that the ambient temperature does not drop below freezing to prevent valve damage due to freezing.

Maintenance Instructions

1. This valve generally requires no maintenance. However, the filter screen in the valve piping should be cleaned regularly, approximately once every 2–3 months, depending on the water quality.
2. Troubleshooting:
    - No pressure reduction
    - Flow is slightly large, and pressure drops quickly
    - Vibration
    - Excessive noise

Troubleshooting Guide

Problem	Inspection Method	Possible Cause	Solution
No Pressure Reduction	1. Close **GV2** and discharge water at the outlet. If pressure drops to zero after some time, the pilot valve is faulty.	Faulty pilot valve	Service the pilot valve
	2. If pressure is not zero, check for a bypass short circuit.	Bypass short circuit	Close the bypass
	3. If no short circuit is found, the main valve is faulty.	Faulty main valve	Perform maintenance on the main valve
Flow is slightly large, and pressure drops quickly	Check if the main valve is blocked.	Main valve blockage	Perform maintenance on the main valve
Vibration	Inspect for air in the pipeline.	Air in the pipeline	Install an exhaust valve and adjust **NV**
Excessive noise	Check for large differential pressure.	Excessive differential pressure	Increase the number of pressure reducing valves and use multi-stage pressure reduction.

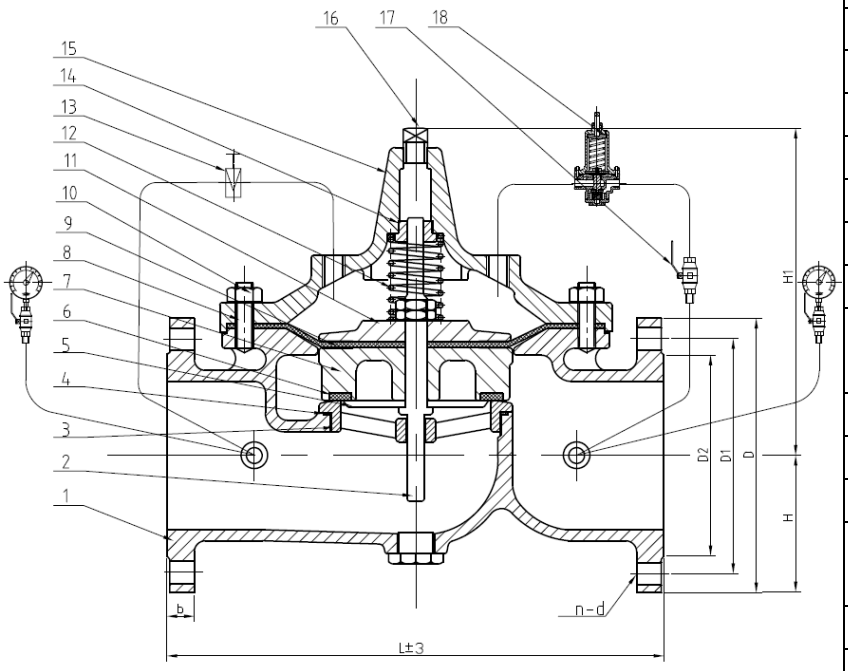
Main Valve Maintenance

The hydraulic control valve is a water-lubricated valve body that does not require additional oil lubrication. If internal components are damaged, follow the disassembly instructions below or seek assistance from our technicians. The main consumable parts in the valve are the diaphragm and O-ring.

Maintenance Procedure:

1. Close the front and rear gate valves of the main valve.
2. Loosen the screw of the pipe fitting on the valve bonnet to release internal pressure.
3. Remove all screws, including necessary copper pipes and nuts in the control pipeline.
4. Detach the valve cover and spring.
5. Carefully dismantle the pressure plate, diaphragm, and valve clack, ensuring the diaphragm and cup are not damaged.
6. Inspect the diaphragm and seal ring for any damage. If undamaged, avoid further disassembly of internal parts.
7. Loosen the nuts on the pressure plate and disassemble the components one by one. Remove the diaphragm or seal ring and replace it with a new one.
8. Thoroughly check the valve interior, including the valve seat, for any damage or debris. Remove any foreign objects.
9. Reassemble all replaced parts in the reverse order and reinstall the main valve, ensuring no jamming occurs.
10. Refer to the installation precautions before putting the valve back into use.

The main valve body diagram and parts list are as follows：



Item	Part	Material
1	Body	QT450
2	Valve Stem	20Cr13
3	Valve Seat	AISI304
4	Sealing	EPDM
5	Lower Platen	AISI304
6	Sealing	EPDM
7	Disc	20Cr13
8	Bolt	AISI304
9	Diaphragm	Reinforced Nylon +EPDM
10	Nut	AISI304
11	Upper Platen	AISI304
12	Spring	AISI304
13	Regulating Valve	AISI304
14	Bearing	H59
15	Bonnet	QT450
16	Cap	AISI304
17	Shut-off Valve	AISI304
18	Pilot Valve	AISI304

Pilot Valve Maintenance

The maintenance of the pilot valve should be carried out in the following order. **Note:** It is not necessary to remove the pressure reducing valve from the pipeline during maintenance.

Important: Before disassembling the pilot valve, ensure that all pressure to the pressure reducing valve is turned off. However, there will still be pressure between the valves at both ends and the pressure reducing valve (which may be "locked"). Please release the pressure before continuing maintenance.

Maintenance Procedure:

1. **Loosen** the adjusting spring, remove the valve cover screws, and take off the valve cover.
2. **Remove** the bottom cover. Use a screwdriver to hold the valve groove, and use a wrench to remove the diaphragm fixing nut, pressure plate, and diaphragm.
3. **Remove** the cartridge assembly.
4. **Inspect** all parts for damage. Replace any damaged components as necessary.
5. **Remove** the filter screen cover and check whether the filter screen is blocked. Clean the filter screen regularly to maintain optimal performance.

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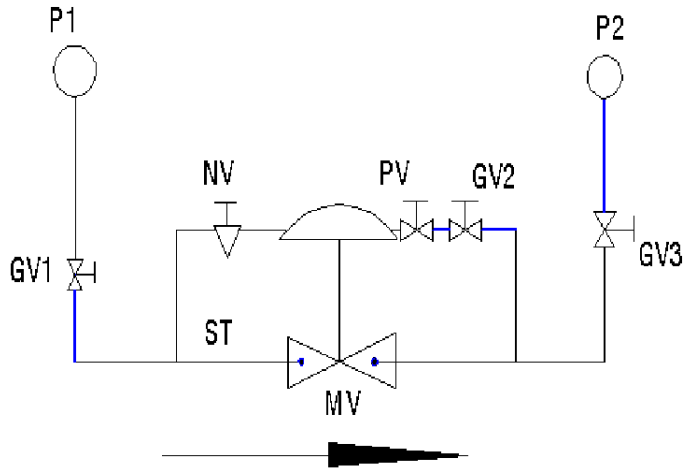
先导式法兰减压阀安装说明

（型号：PRVDIN-F）

功能说明及使用手册

减压阀主要构成部分为主阀 、减压先导阀、针阀等组成。

一、配管示意图如下：



符号说明：

MV：主阀　　PV：减压先导阀

NV：针阀　　GV：球阀

ST：　过滤器　　P ：压力表

一、功能说明

1、 本产品为一种隔膜型水力操作式阀体，安装于给水系统中，控制主阀出口压力为一定值。

2、 本产品是通过调节减压先导阀（PV）将进口压力减至某一需要的出口压力，并依靠介质本身能量，使出口压力保持稳定即出口压力不因上游压力及流量变化而变化。

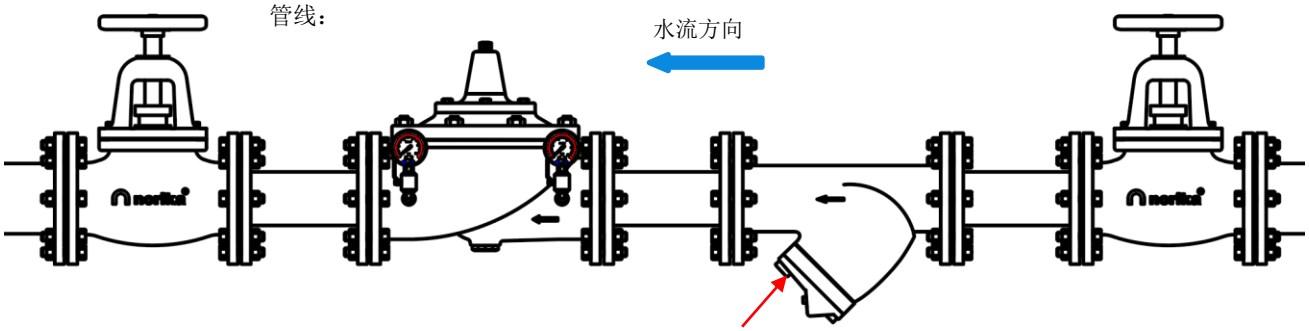
3、 上图之 NV 针阀必须逆时针方向打开，否则此阀无效。GV2 球阀亦需要打开，否则无效。（出厂时，以上阀门均为打开状态）

4、 正常操作时由减压向导阀自动调节出口压力，从而达到减压目的。需要重新设定出口压力时，在确定管道内水在流动的情况下，用活动扳手旋转导阀顶部螺杆，从上往下看，顺时针旋转时出口压力增加，逆时针旋转时出口压力减少，根据所需要出口压力值进行调节。

5、 温度范围：0～80℃

6、 压力范围：0.1～0.5MPa

安 装 操 作 注 意 事 项



注意：减压阀前必须安装过滤器，以防止残渣杂质造成损坏。

1.安装主阀与管线之前，请将管线内的铁屑、石块、树枝、塑料袋等杂物彻底清除。
2.请务必在主阀前端安装一只过滤器，前后端各安装一只闸阀(蝶阀)，以便将来清洗及维修。
3.主阀安装在荫井内，应有足够空间以便容纳技术人员调整及维护。
4.主阀安装时，请注意阀体上表示水流方向的箭头，遵循方向安装。
5.建议最佳的安装方式是将主阀安装在水箱外水平管线上，阀盖朝上。
6.在冬季请注意阀门的保温，环境温度不得低于零度，以防阀门冻裂。

维 护 说 明

1、 本阀基本上不需要任何维护及保养，但阀门配管上的滤网需经常清洗，视水质情况 2～3 个月清洗一次。

2、问题检查：

（1）、不减压　　（2）、流量稍大，压力降低很快

（3）、振动　　（4）、噪音太大

根据下列程序进行检视：

问题	检查方法	原因	解决措施
不减压	1. 关闭 GV2，出口放水，一段时间后，若压力为零，则证明先导阀坏了； 2. 若压力不为零，检查是否有旁通短路。 3. 若无短路，则证明主阀坏了。		维修先导阀
			关闭旁路
			维修主阀
流量稍大 压力降低很快		主阀有塞阻	维修主阀
振动		管路内有空气	安装排气阀， 关小针阀 NV
噪音太大		压差太大	增加减压阀个数，采用多级减压。

3、主阀检修：

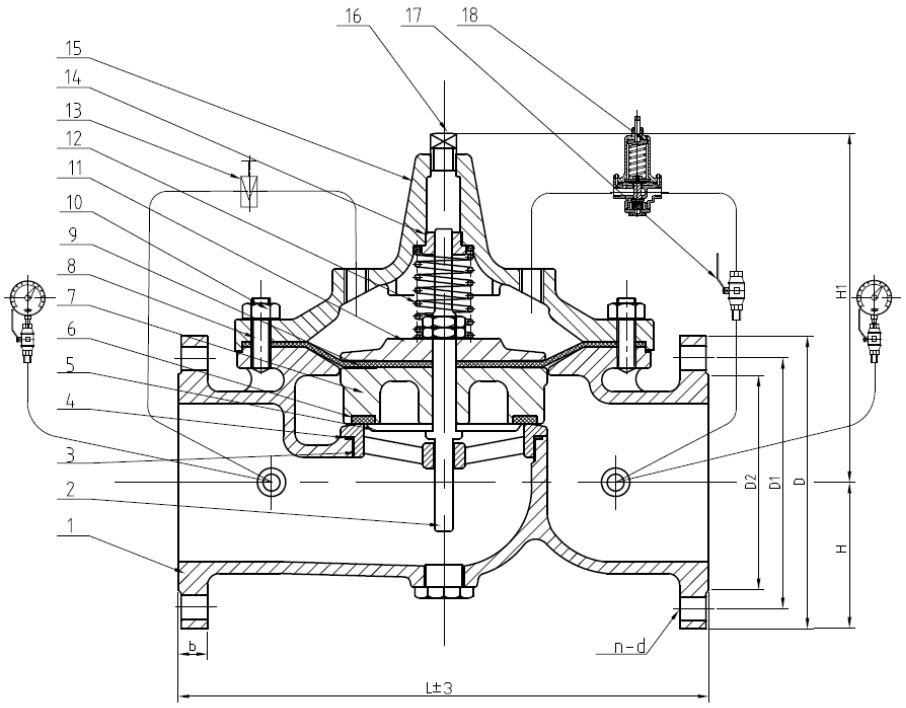
水力控制阀本身是一种利用水自润式阀体，无须另加机油润滑，如遇主阀内部零件损坏时，请按下列指示进行拆卸，或通过本公司技术人员前往检修。主阀内一般消耗品为膜片及 O 型密封圈。

检修顺序如下：

1）将主阀前后端闸阀关闭。
2） 将主阀阀盖上之配管接头螺丝松开，释放主阀内压力。
3） 将所有螺丝取下，包括控制管路中之必要铜管及螺帽。
4） 取下阀盖及弹簧。
5） 将压板、膜片、阀瓣等拆下，切勿损伤膜片及皮碗。
6） 将上述东西取出，检查膜片及密封圈是否损坏，如无损坏请勿再自行分解内部。
7） 将压板上之螺帽松脱，逐件将其分解，将膜片或密封圈取出，重新换上新的膜片或密封圈。
8） 详细检视主阀内部、阀座等，是否有损坏，或其他杂物在主阀内部，将其清出。
9）依反向顺序将更换后之零件组合，把主阀装好，注意阀门不能有卡阻现象。

10）请参考安装操作注意事项重新使用。

主阀阀体示意图及零件表如下：



序号	部件	材质
1	阀体	QT450
2	阀杆	20Cr13
3	阀座	AISI304
4	密封圈	EPDM
5	下压板	AISI304
6	密封圈	EPDM
7	阀瓣	20Cr13
8	螺栓	AISI304
9	膜片	强化尼龙+EPDM
10	螺母	AISI304
11	上压板	AISI304
12	弹簧	AISI304
13	调节阀	AISI304
14	轴承	H59
15	阀盖	QT450
16	塞头	AISI304
17	关断阀	AISI304
18	导阀	AISI304

4、先导阀检修：

检修请按下列顺序操作（维修时无须把减压阀从管线中拆下）

注意：*在拆卸先导阀之前请把通向减压阀之压力全部关掉，但两端阀门和减压阀之间仍有压力被"锁住"继续维修之前，请把压力释放。*

1） 拧松调节弹簧，拆下阀盖螺钉，去掉阀盖。

2）拆下底盖，用螺丝刀抵住活门沟槽，用扳手配合拆下膜片固定螺母、压板、膜片。

3）拆下阀芯组件。

4） 检查各零件有无损害，更换损坏零件。

5）拆下滤网盖，检查滤网有无堵塞，定期清洗滤网。