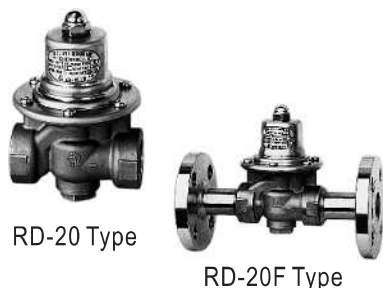
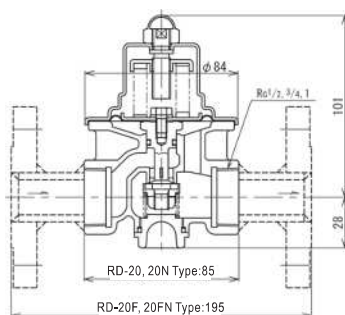


RD-20, 20F Type Pressure Reducing Valve (for Water, Liquids, Air or Gases)

Small-sized stainless steel valve for liquids and gasses. Ideal for applications where rust is greatly concerned and bronze material cannot be used. In addition, it can also be used in stainless steel piping for apartment water supply system.



CONSTRUCTION



Weight
RD-20 : 0.7kg
RD-20F : Size 15mm 2kg
 : Size 20mm 2.3kg
 : Size 25mm 3.3kg

FEATURES

- High corrosion resistance: The parts contacting liquid and the spring case are made of stainless steel and synthesized rubber.
- Compact, light weight, as result of redesigned flow route and adoption of rectangular spring etc.
- Flexible installation.
- Easy maintenance.
- For both liquids and gases, with primary pressure 2.0MPa.

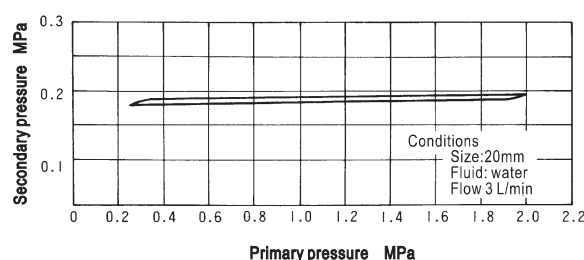
SPECIFICATIONS

Model name	RD-20 Type L/M/H	RD-20F Type L/M/H
Code name	RD20-D □	RD20F-D □
	※ L, M or H for adjustable secondary pressure is required in □.	
Size	15 • 20 • 25(1/2" • 3/4" • 1")	
Applicable fluid	Water, liquids, air or gases(non-corrosive)	
Fluid temperature	5~60°C*1.	
Fluid viscosity	Liquids:Max. 800cSt	
Applicable primary pressure	Max. 2.0MPa	
Adjustable secondary pressure	L:0.02~0.12MPa, M:0.1~0.3MPa, H:0.25~0.5MPa	
Minimum pressure differential across the disc	0.05MPa	
Maximum reducing rate	Water, liquids:10:1*1, Air, gases:20:1	
Leakage allowance	Nil (Confirm at pressure gauge)	
End connection	Screwed JIS Rc	Flanged JIS 10, 20KRF
Valve body pressure test	Hydraulic 3.0MPa	1.5 times of flange rated pressure (Hydraulic)
Materials	Body(Stainless steel), Diaphragm & disc(Synthetic rubber)	

*1. Please contact our local agent in case of applicable temperature 60~90°C.

*2. Applicable temperature Max. 130°C in temporary cleaning steam use at beverage industry, etc. are available upon your request.
(Applicable primary pressure Max. 1.0MPa, Maximum reducing rate 10:1)

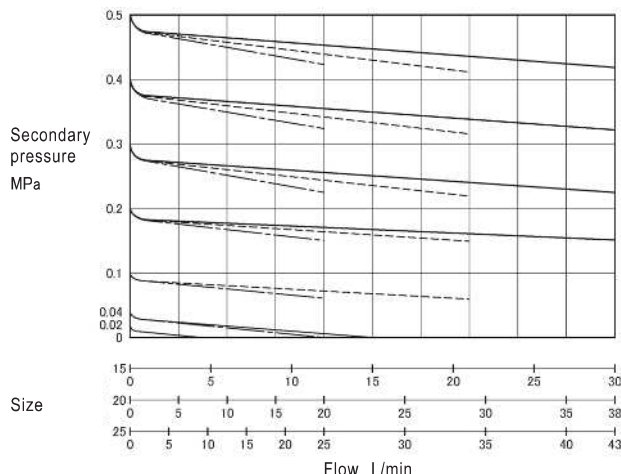
PESSURE CHARACTERISTICS



In the figure on the left, the primary pressure is set to be 1.0MPa when flow is 0 and the secondary pressure is 0.2MPa. It shows the change of the secondary pressure when the flow is 10% rated flow and the primary pressure changes from 1.0~0.25 to 2.0~1.0MPa. The range of change of secondary pressure = less than set pressure × 10% (minimum 0.02MPa)

FLOW CHARACTERISTICS (FOR WATER)

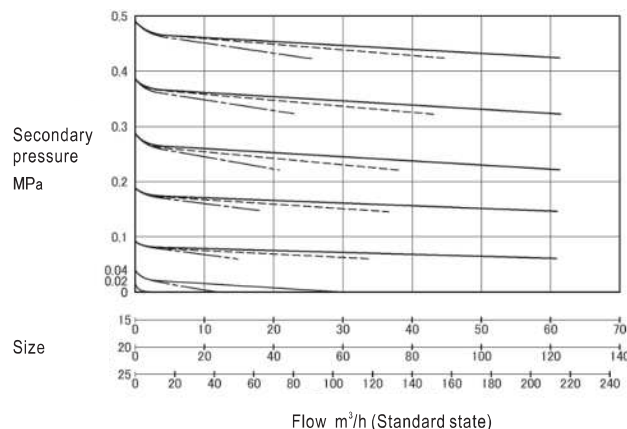
Primary pressure
—— : 2.0MPa or Maximum reducing rate 10:1
- - - : 1.0MPa
- - - : Secondary pressure +0.05MPa



The flow of liquids other than water should be converted into flow of water.
Converted flow = Liquid flow × √G
G: specific gravity (See Page 279)

(FOR AIR)

Primary pressure
—— : 2.0MPa or Maximum reducing rate 20:1
- - - : 1.0MPa
- - - : Secondary pressure +0.05MPa



The flow of gases other than air should be converted into flow of air.
Converted air flow = gas flow × √G = gas flow × √(M/28.96)
M: molecular weight of gas (See Page 279)

DATA/Pressure Reducing Valve (for Water or Liquids)

PIPING EXAMPLE

Fig 1. With bypass line

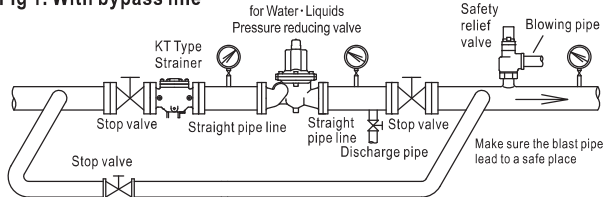


Fig 3. Screwed type connection with bypass line

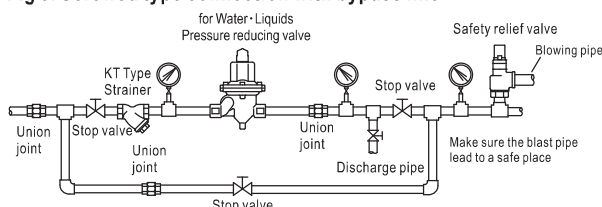
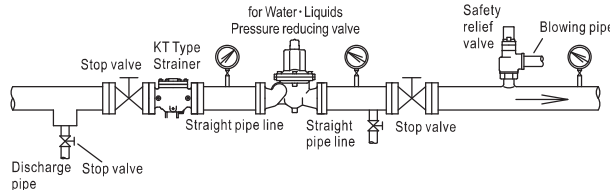


Fig 2. Without bypass line



Note: See Fig.2 for piping with screw type end connection and without bypass pipe.

POINTS FOR INSTALLATION

○ Installation of pressure reducing valve and piping

- If not otherwise specified, the pressure reducing valve should be vertical to horizontal pipe.
Install safety valve or safety relief valve at secondary side.
 - ※ 1. In the case of failure of pressure reducing valve, expansion of fluid due to rise of ambient temperature, or water hammer, the secondary pressure may rise and equipment may be damaged.
 - ※ 2. See Tab.1 for set pressure of safety valve or safety relief valve.
 - ※ 3. In the case safety valve or safety relief valve is used as an alarm, its nominal diameter should be big enough to allow discharge of 10% maximum flow of pressure reducing valve, which is about the leakage of pressure reducing valve. In very few cases, nominal diameter is selected by discharging amount of maximum flow for pressure reducing valve. (reference value: see Table 2 and Table 3)

TABLE2. FLOW FOR SAFETY VALVE (Water)

SL-37~40 Type

(kg/h)

Set pressure (MPa)	Size					
	15(1/2")	20(3/4")	25(1")	32(1 1/4")	40(1 1/2")	50(2")
0.05	375	640	930	1720	2690	4380
0.1	531	905	1310	2430	3810	6200
0.2	742	1260	1830	3400	5320	8650
0.3	875	1490	2160	4010	6280	10200
0.4	976	1660	2410	4480	7000	11300
0.5	1070	1820	2650	4910	7690	12400
0.6	1150	1970	2860	5310	8310	13500
0.7	1230	2110	3060	5680	8890	14400
0.8	1310	2240	3250	6030	9440	15300
0.9	1380	2360	3430	6360	9950	16100
1.0	1450	2470	3600	6680	10400	16900

TABLE1. SET PRESSURE FOR SAFETY RELIEF VALVE

(MPa)

Set pressure of pressure reducing valve	Set pressure of safety valve ^{※1}
0.1 or less	+0.05 (+0.08)
over 0.1 and less than 0.4	+0.08 (+0.14)
0.4 or more and less than 0.6	+0.12 (+0.2)
0.6 or more and less than 0.8	+0.15 (+0.28)
0.8 or more and less than 1.0	+0.19
1.0 or more and 1.2 or less	+0.23

Add above value to set pressure of pressure reducing valve.

※ 1. The above value is added to the set pressure of pressure-reducing valve.

※ 2. The values in parentheses are applicable to soft-seated safety relief valve (SL-37V~40FV, 43V, 44V Type).

TABLE3. FLOW FOR SAFETY VALVE (Air)

SL-37~40 Type

(kg/h)

Set pressure (MPa)	Size					
	15(1/2")	20(3/4")	25(1")	32(1 1/4")	40(1 1/2")	50(2")
0.05	21.7	37	53.8	99.8	156	253
0.1	28.3	48.3	70.2	130	203	331
0.2	41.2	70.2	102	189	296	481
0.3	55.3	94.3	137	254	397	645
0.4	69.5	118	171	318	498	810
0.5	83.6	142	206	383	600	975
0.6	97.7	166	241	448	701	1140
0.7	111	190	276	513	803	1300
0.8	126	214	311	578	904	1470
0.9	140	238	346	643	1000	1630
1.0	154	262	381	708	1100	1790

- Install strainer at the primary side of pressure reducing valve.
 - For devices that cannot be stopped, install bypass piping (with stop valve) from the primary side to the secondary side of pressure reducing valve (see Fig.1).
If bypass piping is not suitable, then install stop valve for blowing which is derived from the main pipe before the primary side of pressure reducing valve, so as to make flushing possible(see Fig.2).
 - Install straight piping, stop valve, and pressure gauge before and after pressure reducing valve.
In case of screwed type end connections, use union joint for easy maintenance and repair.(see Fig. 3).
 - In the case a solenoid valve (ON/OFF operation) is installed at the secondary side of pressure reducing valve, the solenoid valve should be 1~2m away from pressure reducing valve.
- There should also be a 1~2m distance between pressure reducing valves in the case of 2-step pressure reduction. (See Fig.4, Fig.5)

DATA/Pressure Reducing Valve (for Water or Liquids)

Fig.4 Solenoid valve (on/off operation) installation

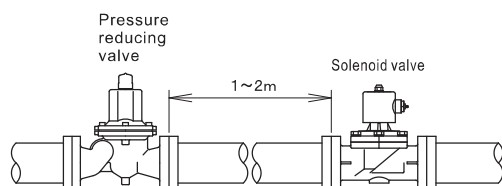
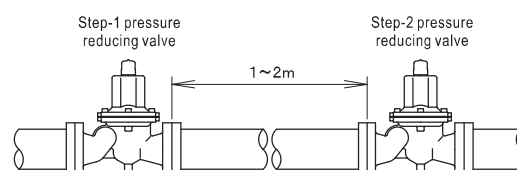


Fig.5 2-Step pressure reduction



7. In water supply system with roof tank in tall/medium height buildings, water hammer may occur if one step or 2 more steps of pressure reducing valves are installed. In such case, install a water hammer preventing device at the primary side of pressure reducing valve. (See Fig.6)
8. Leave some space for disassembling and maintenance.
9. Apply appropriate support to pressure reducing valve to protect from the weight of piping itself, bending force, or vibration.
10. If it is possibility of freezing, perform thermal insulation or discharge the drain.
11. In the case of buried piping, install pressure reducing valve in pit (box).

The pit should have drainage system to prevent accumulation of rain etc., and thermo-insulation or drainage may be necessary if there is possibility of freezing. (See Fig. 7)

Fig.6 Roof tank in tall/medium height building

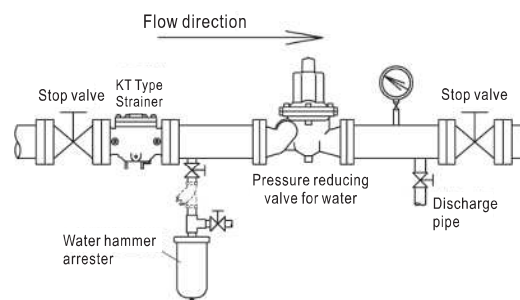
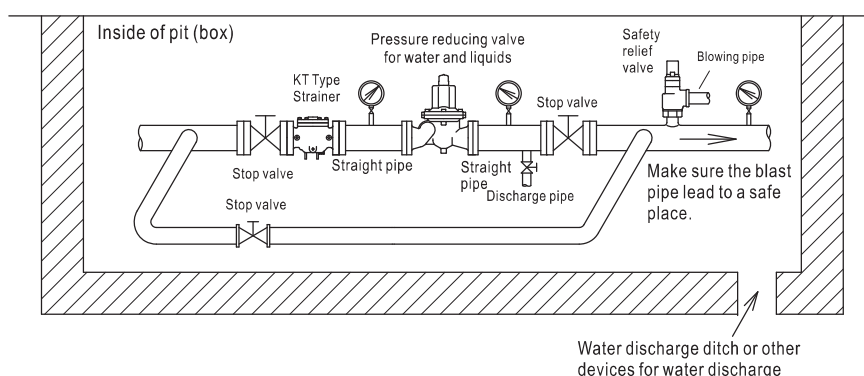


Fig.7 BURIED PIPING



12. In most cases, the secondary pressure is not adjusted when product is delivered. Therefore, adjust the secondary pressure to a desired pressure.

※ The secondary pressure of a non-adjusted valve is near to zero. To adjust the secondary pressure, follow the following steps.

※ How to adjust the secondary pressure:

- ① Close the stop valves at primary and secondary sides.
- ② Open the blowing stop valve or stop valve in bypass and remove any content inside. Such operation is called flushing and should be carried out sufficiently by spending sufficient time on it. Take care not to make the secondary pressure rise excessively.
- ③ Close the blowing stop valve or stop valve of bypass pipe.
- ④ Make sure there is not any spring load caused by adjusting screw.
- ⑤ Open the stop valve at primary side gradually.
- ⑥ Make sure you have adjusted the secondary pressure. Open the stop valve at the secondary side slightly to allow small flow.
- ⑦ Use the adjusting screw and apply a tiny spring load. Open the secondary stop valve gradually once fluid starts to flow.
- ⑧ Read the pressure gauge and apply more spring load to make the pressure reach the set pressure. The secondary pressure rises if you turn the adjusting screw clockwise, and the pressure drops if you turn the screw counterclockwise.
- ⑨ Once the desired pressure is reached, use the lock nut to lock the adjusting screw. After the screw is locked, the spring load will not change.

Fig.8 A TYPICAL ADJUSTING METHOD

