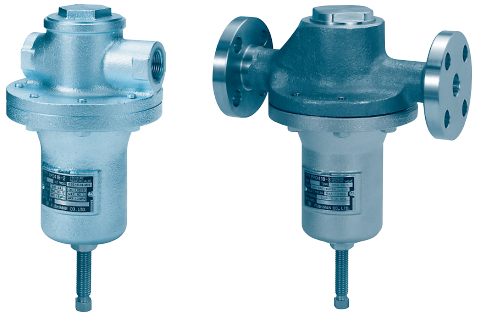
Direct acting

Type PPD41B-3 Pressure Reducing Valves

For liquid

- Negligible influence is exerted by inlet pressure change due to the use of a pressure balancing construction.
- A valve disc made of synthetic rubber ensures tight shut off when closing.
- Built-in strainer (80 mesh)



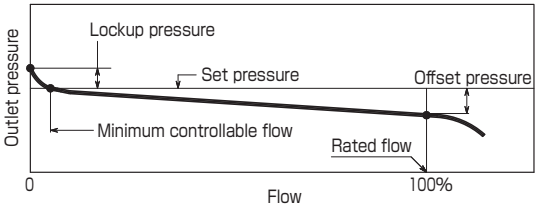
Specifications

Fluid	Pressure (MPa)		Temp. (℃)	Material for main parts					Connection
	Inlet	Outlet set range		Body	Bottom cover	Spring case	Valve disc	Diaphragm	
Oil & non-corrosive liquid	0.05 ~ 1.0	0.03~0.15 0.1~0.7	0 ~ 80	Bronze	Bronze	Cast iron	Stainless steel & synthetic rubber	Synthetic rubber	Screwed JIS Rc
				Stainless cast steel	Stainless steel				
				Stainless cast steel	Stainless steel		Stainless steel & Teflon	Teflon seated synthetic rubber	Flanged JIS10KFF

Performance

Min. differential pressure	0.02MPa
Lockup pressure	Max. 0.02MPa (Max. 0.03MPa for Teflon disc)
Offset pressure	10% of max. set range (min. 0.05MPa) or less
Min. controllable flow (water) (1)	1 ℓ/min (2 ℓ/min for Teflon disc) .
Seat leakage	0.01% of rated flow or less (0.05% of rated flow or less for Teflon disc)
Max. usable viscosity	200mm²/s (at operating temp.) (2)

Flow characteristic curve



Note (1) : Except for water, the flow rate should be devided by $\sqrt{\gamma}$ (γ : sp.gr., water (4℃) : 1).
(2) : When viscosity is over 20mm²/s, flow rate should be corrected.

Cv values

Size	15	20	25
Cv	1.8	2.6	3.9
Max. flow rate (water) ℓ/min (3)	30	55	90

Note (3) : Except for water, the flow rate should be devided by $\sqrt{\gamma}$ (γ : sp.gr., water (4℃) : 1).

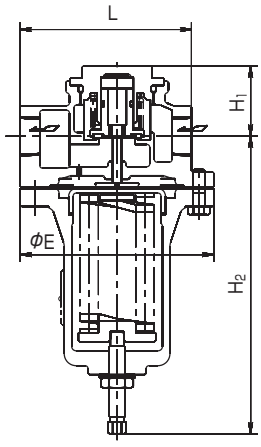
The flow rate calculated by following formula

$$Q = Cv \frac{\sqrt{\triangle P}}{0.696\sqrt{\gamma}}$$

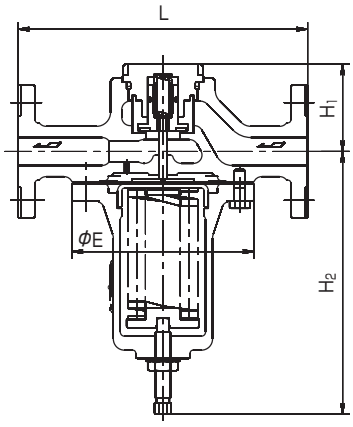
Where △P : Differential pressure (kPa)

The rated flow shall be smaller between Cv calculation and maximum flow rate (left table) which is based on the velocity 2.5m/s at the piping.

Construction



Body : Bronze, stainless cast steel



Body : Stainless cast steel

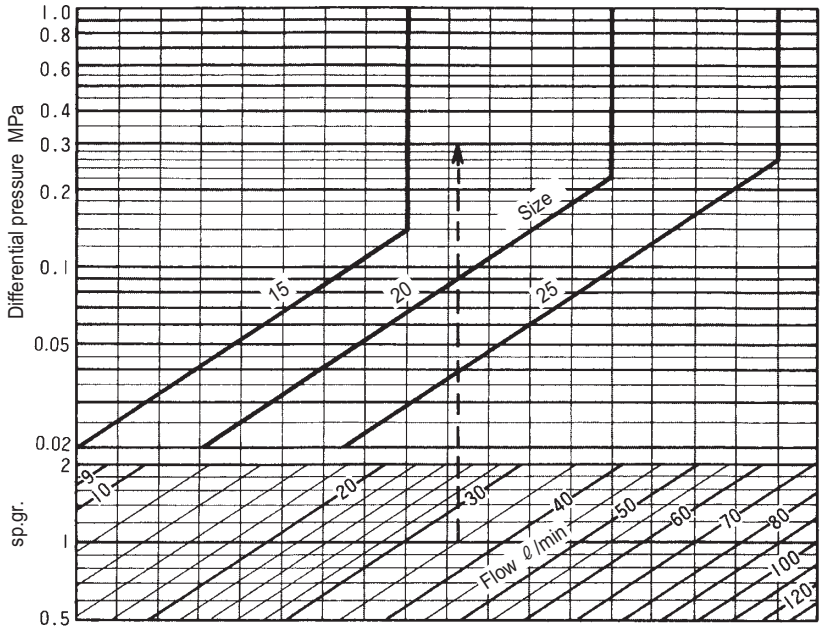
Dimensions and weights (mm, kg)

Material Connection	Size	Dimensions				Weight
		L	H_1	H_2	E	
Bronze Screwed	15	85	43	168	100	2.8
	20	115	47	222	130	5.5
	25	115	47	222	130	5.5
Stainless cast steel Screwed	15	135	49	224	130	6.8
	20	135	49	224	130	6.8
	25	135	49	224	130	6.7
Stainless cast steel Flanged JIS10K	15	207	63	210	130	8.3
	20	211	63	210	130	8.7
	25	211	63	210	130	9.3

Type PPD41B-3 Pressure Reducing Valves

Sizing

Use the following chart to select the suitable valve size.
When viscosity is over 20㎟/s, flow rate should be corrected.
In the event that the inlet pressure or the outlet pressure is not constant but stays within range, select the minimum difference in pressure between the inlet pressure and outlet pressure to choose the correct size.



Example

Fluid : Water
Specific gravity : 1
Inlet pressure : 0.5MPa
Outlet pressure : 0.2MPa
Flow : 35 ℓ/min

Differential pressure : 0.5−0.2=0.3MPa

From intersecting point of 1 specific gravity line and 35 ℓ/min flow line, draw a vertical line upward to 0.3MPa differential pressure line.
The final intersecting point is between size 15 line and size 20 line.
The required valve size is 20.

Correction by viscosity

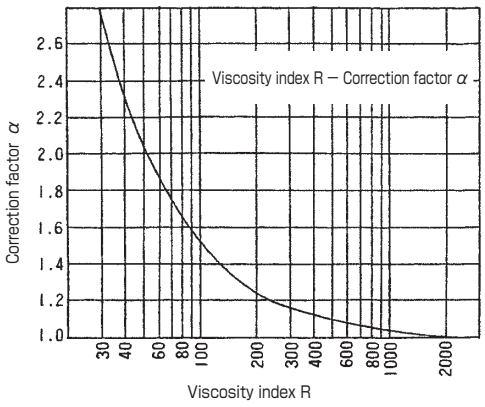
Correct the flow rate Q' by the following formula.

① $Cv=\dfrac{0.696Q\sqrt{\gamma}}{\sqrt{\triangle P}}$ $\left\{Cv=\dfrac{0.022Q\sqrt{\gamma}}{\sqrt{\triangle P}}\right\}$

Where Q : Flow rate ℓ/min
△P : Differential pressure kPa {MPa}
γ : Specific gravity (water : 1)

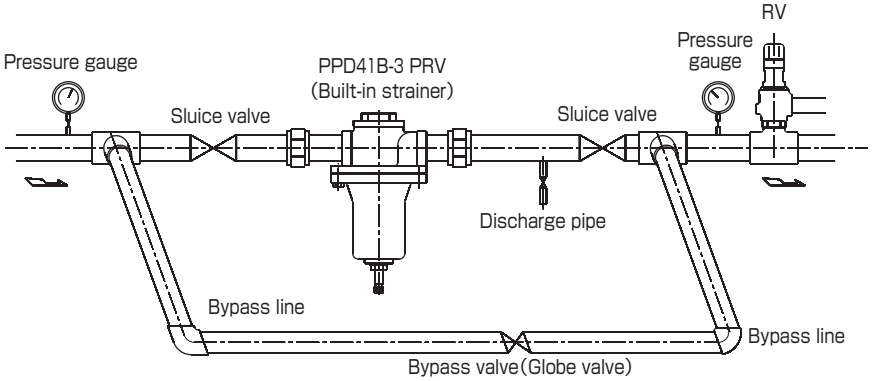
② $R=\dfrac{2642\times Q}{\sqrt{Cv}\times \text{Viscosity at operating temperature mm}^2/s}$

③ Then obtain correction factor α from the chart on right using viscosity index R.
Corrected flow rate $Q'=Q\times\alpha$



Remark : Refer to page 252 of "Calculation formula for Cv value and flow capacity" for further details.

Installation example



Note : Install upside-down in horizontal piping.