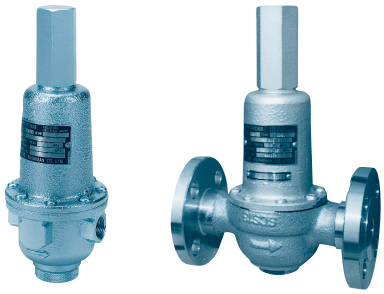
# Direct acting — Type PPD48・PPD48F Pressure Reducing Valves

For liquid



- For small flow.
- A valve disc made of synthetic rubber on rhe surfaces ensures tight shut off when closed.
- For large or small differential pressure and wide pressure range.
- Vertical and horizontal installation are possible. Installation at any angle is possible.
- PPD48 for gases is available on request.



## Specifications

| Type | Fluid | Pressure (MPa) Inlet | Pressure (MPa) Outlet set range (1) | Temp. (℃) | Material for main parts: Body | Spring case | Valve disc | Valve seat | Bottom cover | Diaphragm | Connection |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PPD48 | Water, oil & non-corrosive liquids | 0.035 – 2.0 | 0.015–0.07(A)<br>0.05 –0.3 (B)<br>0.2 –0.8 (C)<br>0.7 –1.4 (D)<br>1.2 –1.98(E) | 0 – 80 | Bronze | Cast iron or stainless steel | Bronze or stainless steel with synthetic rubber disc | Bronze (with body) | Bronze | Synthetic rubber | Screwed 10A-JIS Rc |
| | | | | | Stainless cast steel | | | Stainless cast steel (with body) | Stainless steel | | Screwed 10・15A-JIS Rc<br>Flanged 15–25A-JIS 20KRF |
| | | 0.035 –3.0 | | | | | Stainless steel with Teflon | | | | Screwed 10A-JIS Rc |
| PPD48F | | 0.035 –2.0 | | | Bronze | Cast iron | Bronze or stainless steel with synthetic rubber disc | Bronze (with body) | Bronze | | Screwed 15・20A-JIS Rc |
| | | 0.035 –2.4 | | | Stainless cast steel | | | Stainless cast steel (with body) | Stainless steel | | Flanged 20・25A-JIS 20KRF |

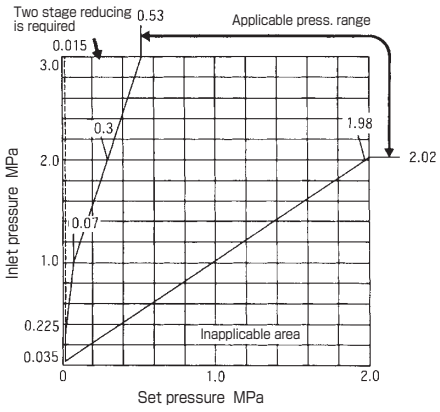
Note (1) : A–E is marking for sizing chart.

## Performance

| | |
|---|---|
| Max. pressure range ability | 15 : 1 See chart of applicable press. range |
| Min. differential pressure | 0.02MPa |
| Offset pressure | 10% of max. set range (min. 0.015MPa) or less |
| Min. controllable flow (water) (2) | 20cc/min for PPD48, 0.5 ℓ /min for PPD48F |
| Max. usable viscosity | 400mm²/s (at operating temperature) |
| Seat leakage | 0.01% of rated flow or less (0.5% or less for valve disc with Teflon) |

Note (2) : Except for water, the flow rate should be devided by $\sqrt{\gamma}$ ($\gamma$ : sp.gr., water (4℃) : 1).

Applicable press. range




## Sizing

Use the chart of next page to select the suitable valve size.
When viscosity is over 20mm²/s, flow rate should be corrected.

### Correction by viscosity

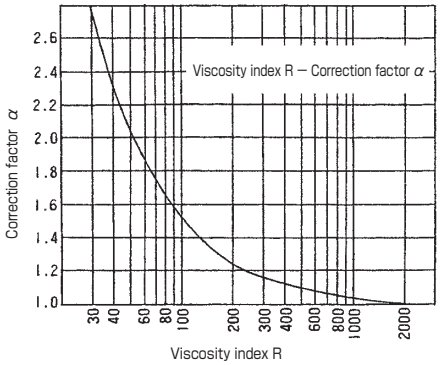
Correct the flow rate Q' by the following formula.

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}
$\gamma$ : Specific gravity (water : 1)

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

③ Then obtain correction factor $\alpha$ 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.

# Type PPD48 · PPD48F Pressure Reducing Valves

The curve A, B, C, D or E in the chart below shows outlet set range (see specifications of the previous page).

## Example

Fluid : Water Inlet pressure : 1.0MPa Outlet pressure : 0.2MPa Flow : 20 ℓ /min (apply line B)
Differential pressure : 1.0−0.2=0.8MPa
From intersecting point of 1 specific gravity line and 20 ℓ /min flow line, draw a vertical line upward to 0.8MPa differential pressure line.
The intersecting point is right side of line B at chart 1 and left side of line B at chart 2.
Therefore, the required valve is PPD48F size 15.

Chart 1
(PPD48 Size10−25)

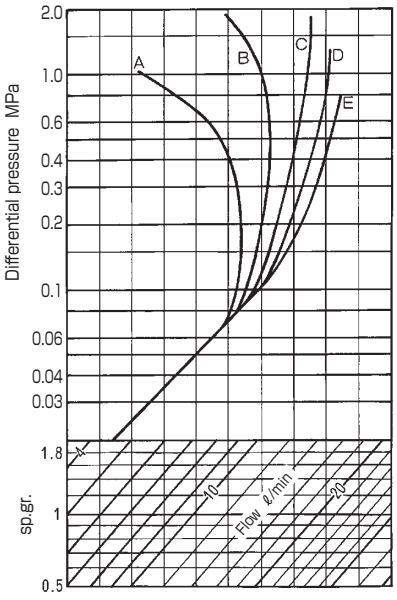



Chart 2
(PPD48F Size15)

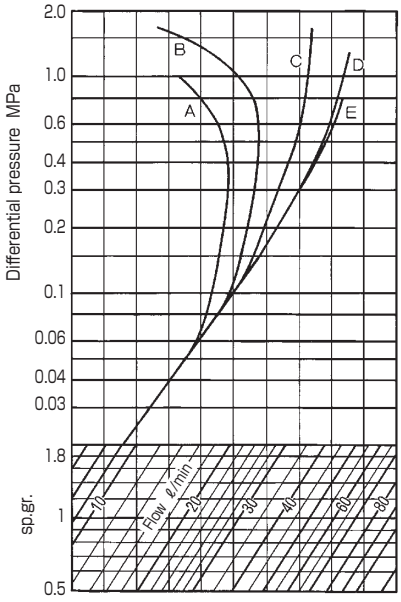
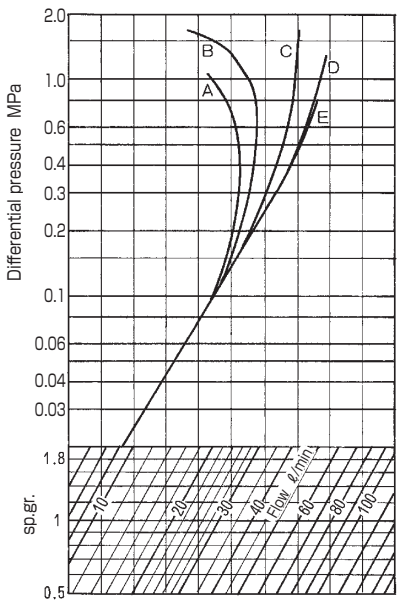
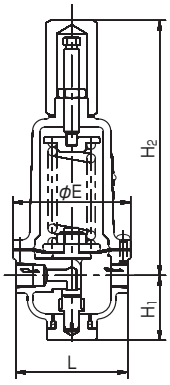



Chart 3
(PPD48F Size20 · 25)



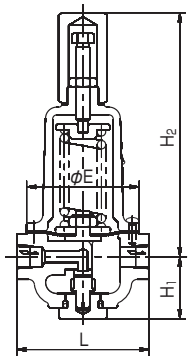

## Construction

PPD48 · PPD48F



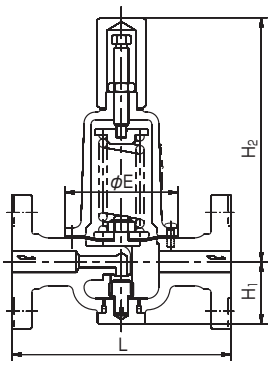

Bronze 2MPa

PPD48



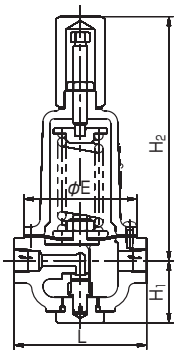

Stainless cast steel 2MPa

PPD48 · PPD48F




Stainless cast steel 2MPa, 2.4MPa

PPD48




Stainless cast steel 3MPa

## Dimensions and weights

(mm, kg)

| Model | Specification | | | Size | Dimensions | | | | Weight |
|---|---|---|---|---|---|---|---|---|---|
| | Body material | Max. inlet pressure (MPa) | Connection | | L | $H_1$ | $H_2$ | E | |
| PPD48 | Bronze | 2.0 | Screwed | 10 | 76 | 44 | 173 | 80 | 2.4 |
| | Stainless cast steel | 2.0 | Screwed | 10 | 94 | 44 | | | 3.5 |
| | | | | 15 | 130 | 44 | | | 3.6 |
| | | | Flanged | 15−25 | 155 | 44 | | | 5.7 |
| | | 3.0 | Screwed | 10 | 94 | 44 | | | 3.5 |
| PPD48F | Bronze | 2.0 | Screwed | 15 · 20 | 110 | 61 | 212 | 120 | 5.2 |
| | Stainless cast stee | 2.4 | Flanged | 20 · 25 | 195 | | | | 9.1 |