

Pressure-Relief Cartridge Valve, Size 20

$Q_{\max} = 330 \text{ l/min (87 gpm)}$, $p_{\max} = 450 \text{ bar (6400 psi)}$

Seated design, direct acting

Series DVP 20...



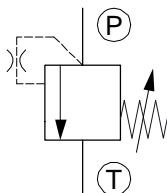
- Compact design for cavity type according to Bucher standard – M45x1.5
- Flat opening characteristic thanks 6 different nominal pressure ranges
- Leak-free when closed
- Low-noise operation thanks to integral damping piston
- High wear resistance because the piston is hardened
- All external parts with zinc-nickel coating according to DIN EN ISO 19598

1 Description

The pressure-relief valves, series DVP 20... are size 20, high performance screw-in cartridge valves with an M45x1.5 mounting thread. They are direct-acting seat valves. The straightforward design delivers an outstanding price/performance ratio and good pressure drop - flow rate characteristics. To cover the large pressure range and to realize a flat opening characteristic at the same time, 6 different nominal pressure ranges are available. A pressure

stage corresponds to a certain spring for a settable maximum operating pressure. The cartridges can be fitted in the cavity M45x1.5 according to Bucher standard. The pressure is set by means of an adjusting screw. All external parts of the screw-in valves are zinc-nickel plated, and are thus suitable for use in the harshest operating environments. These pressure-relief cartridges are used to limit the system pressure in mobile and industrial applications.

2 Symbol



3 Technical data

| General characteristics | Description, value, unit |
|------------------------------|---|
| Designation | pressure-relief cartridge valve |
| Design | seated design, direct acting |
| Mounting method | screw-in cartridge – M45x1.5 |
| Tightening torque | 170 Nm ± 10 % (125 ft-lbs ± 10 %) |
| Size | size 20 |
| Weight | 1.00 kg (2.20 lbs) |
| Mounting attitude | unrestricted |
| Ambient temperature range | -25 °C ... +100 °C (-13 °F ... +212 °F) |
| Surface corrosion protection | All external parts with zinc-nickel coating according to DIN EN ISO 19598 |

| Hydraulic characteristics | | Description, value, unit | |
|---|----------------------------|--|----------------------|
| Maximum operating pressure ¹⁾ | | 450 bar | (6400 psi) |
| Max. pressure at port T | | 50 bar | (700 psi) |
| Maximum flow rate | | 330 l/min | (87 gpm) |
| Flow direction | | P → T, see symbols | |
| Nominal pressure ranges | 025 | 20...30 bar | (290...435 psi) |
| | 050 | 30...65 bar | (435...942 psi) |
| | 100 | 65...150 bar | (942...2175 psi) |
| | 200 | 140...250 bar | (2030...3625 psi) |
| | 300 | 200...320 bar | (2900...4641 psi) |
| | 400 | 300...450 bar | (4351...6400 psi) |
| Adjustment change | Nominal pressure range 025 | 20...30 bar: 1 turn ≙ 4.5 bar | (65 psi) |
| | Nominal pressure range 050 | 30...65 bar: 1 turn ≙ 9.5 bar | (137 psi) |
| | Nominal pressure range 100 | 65...150 bar: 1 turn ≙ 22 bar | (319 psi) |
| | Nominal pressure range 200 | 140...250 bar: 1 turn ≙ 45 bar | (652 psi) |
| | Nominal pressure range 300 | 200...320 bar: 1 turn ≙ 70 bar | (1015 psi) |
| | Nominal pressure range 400 | 300...450 bar: 1 turn ≙ 107 bar | (1551 psi) |
| Hydraulic fluid | | HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER | |
| Hydraulic fluid temperature range | | -25 °C ... +80 °C | (-13 °F ... +176 °F) |
| Viscosity range | | 10...650 mm ² /s (cSt), recommended 15...250 mm ² /s (cSt) | |
| Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999 | | class 20/18/15 | |



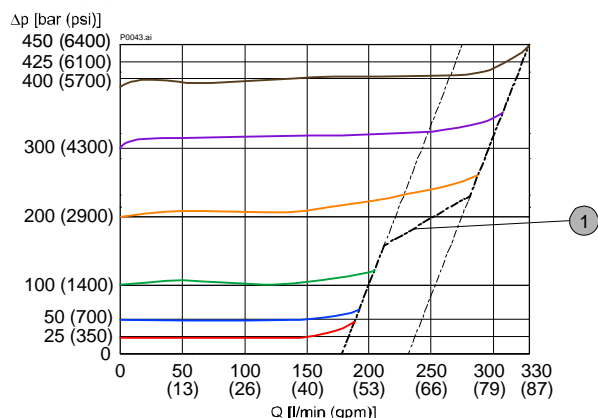
ATTENTION!

¹⁾ Any tank pressure acting at port T is additive to the pressure setting at the main port P.

4 Performance graphs

measured with oil viscosity 33 mm²/s (cSt)

$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic



1 recommended max. flow

brown DVP 20-B/400/...

lila DVP 20-B/300/...

orange DVP 20-B/200/...

green DVP 20-B/100/...

blue DVP 20-B/050/...

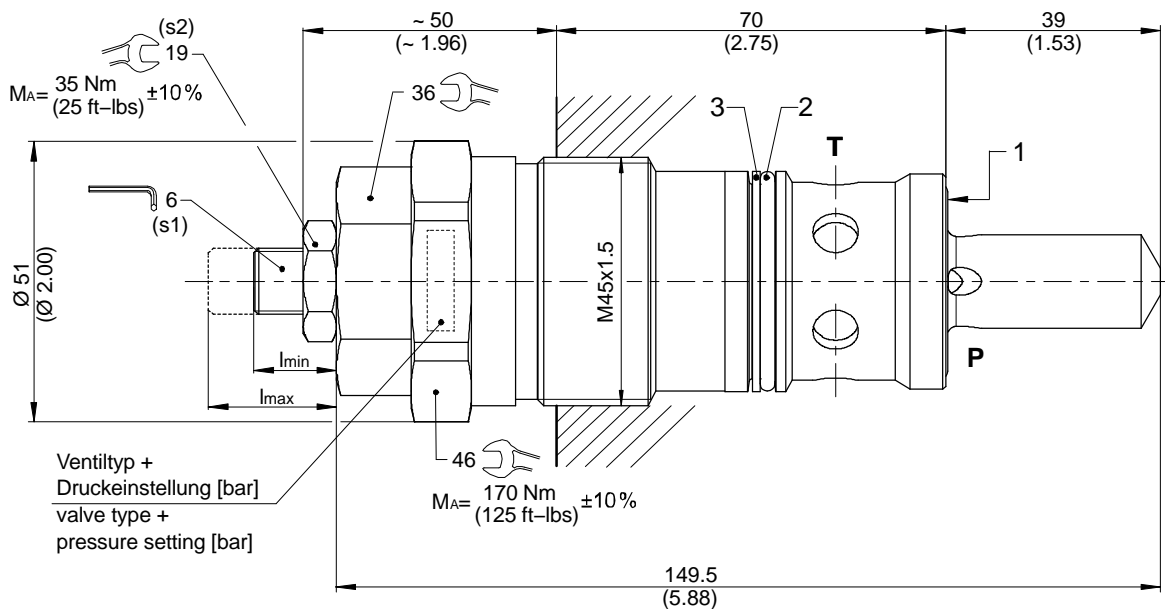
red DVP 20-B/025/...

5 Dimensions & sectional view

Example for the dimensional units:

0.79 = 0.79 mm [millimeter]

(.031) = 0.031" [inch]



| Type | l_{min} | l_{max} | max. turns |
|----------------------|-----------|-----------|------------|
| DVP 20-B / 025 / ... | 12.2 mm | 15 mm | ~ 2.2 |
| DVP 20-B / 050 / ... | 10.5 mm | 15 mm | ~ 3.6 |
| DVP 20-B / 100 / ... | 10.25 mm | 15 mm | ~ 3.8 |
| DVP 20-B / 200 / ... | 12 mm | 15 mm | ~ 2.4 |
| DVP 20-B / 300 / ... | 13.3 mm | 15 mm | ~ 2.1 |
| DVP 20-B / 400 / ... | 13.2 mm | 15 mm | ~ 1.4 |

6 Installation information



IMPORTANT!

When fitting the cartridges, use the specified tightening torque. Set the required pressure with the adjusting screw (s1). After you have set the valve, lock the adjusting screw with the lock nut.



ATTENTION!

Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

| Item | Qty. | Description |
|------|------|--|
| 1 | 1 | O-Ring $\varnothing 29.82 \times 2.62$ |
| 2 | 1 | O-Ring $\varnothing 34.59 \times 2.62$ |
| 3 | 1 | Backup ring $\varnothing 40.0 / 35.8 \times 1.3$ |



IMPORTANT!

Item No. 30003002350 = seal kit NBR (Nitril)
Item No. 30003002340 = seal kit FKM (Viton)

7 Ordering code

Ex.

| |
|-----|
| DVP |
|-----|

| |
|----|
| 20 |
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|---|
| B |
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 /

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| 025 |
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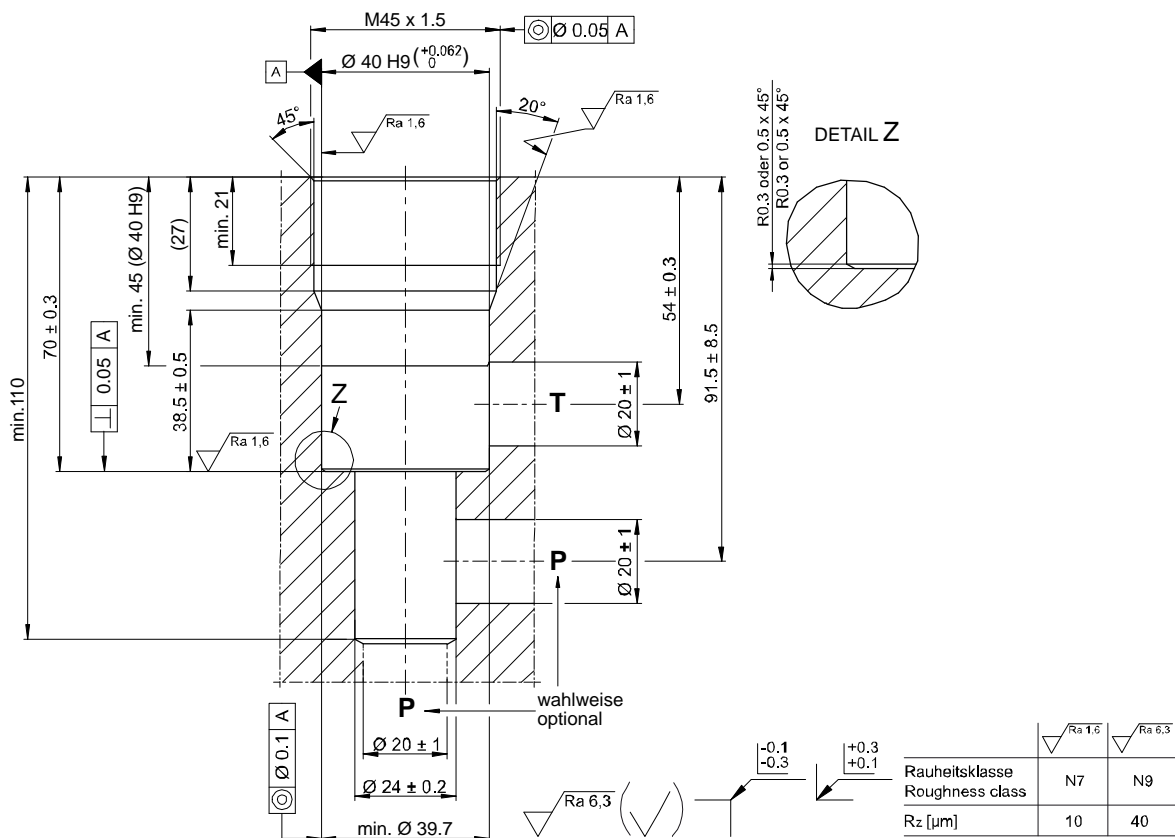
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|-----|---|--|
| DVP | = | pressure-relief cartridge valve |
| 20 | = | size 20 |
| B | = | model / version |
| 025 | = | pressure range 20...30 bar |
| 050 | = | pressure range 30...65 bar |
| 100 | = | pressure range 65...150 bar |
| 200 | = | pressure range 140...250 bar |
| 300 | = | pressure range 200...320 bar |
| 400 | = | pressure range 300...450 bar |
| N | = | NBR (Nitrile) seals (standard) |
| V | = | FKM (Viton) seals (special seals - please contact BUCHER) |
| ... | = | factory-pressure setting |

8 Cartridge cavity



ATTENTION!

You must maintain the specified positional and diametral tolerances. To ensure trouble-free operation of the screw-in cartridges, we strongly recommend that pilot drilling, boring, reaming and cavity thread-cutting are always performed in one setup.