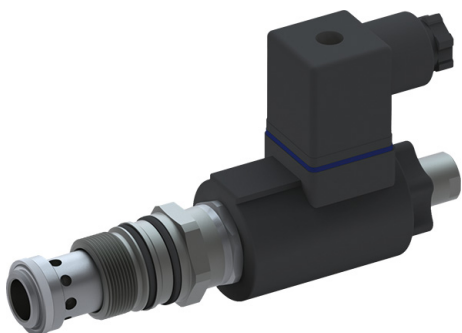


# Proportional Pressure-Relief Valve, Size 10

$Q_{\max} = 120 \text{ l/min}$ ,  $p_{\max} = 315 \text{ bar}$

seated pilot stage, spool-type design, electrically operated

Series DVPSA-3D...



- External pilot drain to Z, so the secondary side can be pressurised
- Surface protection: Cartridge is zinc plated and chromited (Cr VI-free)
- Very stable operation
- Coil can be changed without opening the hydraulic envelope
- Coils with DIN, Deutsch, Kostal or Junior Timer plug connections can be supplied
- Can be fitted in a line-mounting body
- Can be fitted in stack-mounting bodies

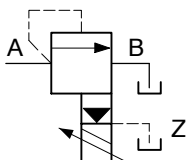
## 1. Description

Series DVPSA-3D... cartridges are two-stage, spool-type proportional pressure-relief valves. They limit the inlet pressure in A to a value that is proportional to the solenoid current.

All external parts are zinc plated and chromited (Cr VI-free) and are thus suitable for use in the harshest operating environments. The core tube / slip-on coil design allows coils to be changed without opening the hydraulic envelope,

even when the valve is under pressure. Coils can be secured at any angle thro' 360° and can be supplied with the most common electrical connectors (see ordering code). For customers who manufacture their own manifold blocks, we offer form-tool sets for sale or hire. Use the DDY-12 body with threaded ports (G1/2") for line-mounting applications.

## 2. Symbol



DVPSA-3D...-10...

## 3. Main characteristics

|                                       |       |   |
|---------------------------------------|-------|---|
| Designation                           |       | proportional pressure-relief cartridge  |
| Design                                |       | seated pilot stage, spool-type main stage with external pilot oil drain to Z  |
| Mounting method                       |       | screw-in cartridge M24 x 1.5  |
| Size                                  |       | nominal size 10 mm, cavity type DD  |
| Weight                                | kg    | 0.50  |
| Mounting attitude                     |       | unrestricted (preferably vertical, coil down)   |
| Flow direction                        |       | A → B (see symbol)  |
| Operating pressure range in A and B   | bar   | ... 315 (please consult BUCHER for 350 bar)   |
| Back-pressure in Z (Tank)             | bar   | no back-pressure  |
| Pressure-setting range $p_N$ at $I_N$ | bar   | pressure range 315 = ... 315<br>pressure range 250 = ... 250<br>pressure range 160 = ... 160<br>pressure range 100 = ... 100<br>pressure range 060 = ... 60 |
| Minimum pressure setting              |       | see performance graphs  |
| Flow rate Q                           | l/min | 10... 120, see performance graphs   |

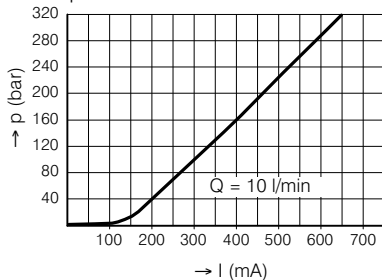
Reference: 400-P-581401-EN-00

|                                    |       |  |
|------------------------------------|-------|--|
| Hydraulic fluid                    |       | HL and HLP hydraulic oils to DIN 51 524;<br>for other fluids, please consult BUCHER                |
| Fluid temperature range            | °C    | -25 ... +70  |
| Ambient temperature                | °C    | -25 ... +50  |
| Viscosity range                    | (cSt) | 10 ... 650 mm <sup>2</sup> /s, empfohlen 15 ... 250 mm <sup>2</sup> /s/recommended                 |
| Minimum fluid cleanliness level    |       | 18/16/13 to ISO 4406 : 1999  |
| Nominal voltages                   | VDC   | 12, 24   |
| Control current                    | mA    | 12 VDC = 1400, 24 VDC = 750  |
| Nominal resistance R20 / R60       | Ω     | 12 VDC = 5,8 / 8,6, 24 VDC = 21 / 32   |
| Recommended PWM frequency (dither) | Hz    | 200  |
| Hysteresis with PWM                | % IN  | 2 ... 4  |
| Reversal error with PWM            | % IN  | 2 ... 5  |
| Sensitivity with PWM dither        | % IN  | ≤ 1  |
| Repeatability with PWM             | % pN  | better than 1.5  |
| Relative duty cycle                | %     | 100  |
| Protection class to EN 60 529      |       | IP 65 / IP 67, see "Ordering code"<br>(when connector plugs are properly fitted)                   |
| Electrical connection              |       | 3-pin square plug to ISO 4400 / DIN 43 650 (standard)<br>for other connectors, see "Ordering code" |

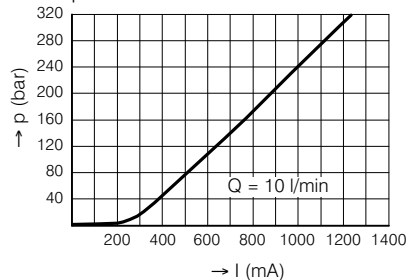
## 4. Performance graphs

measured with oil viscosity 33 mm<sup>2</sup>/s (cSt)

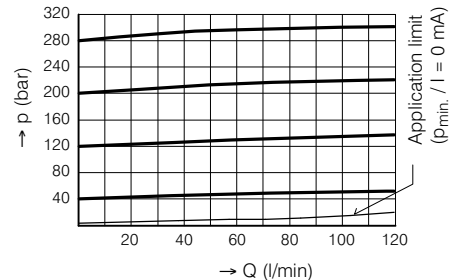
DVPSA-3D-315-10  
p/l characteristic at 24 VDC



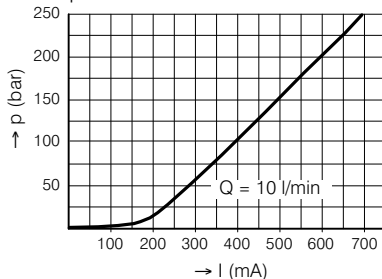
DVPSA-3D-315-10  
p/l characteristic at 12 VDC



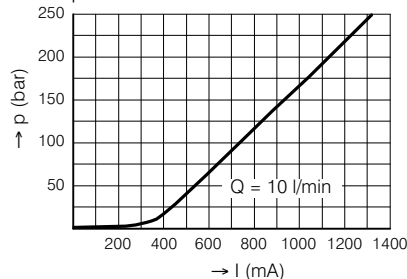
Variation in pressure setting  
with flow rate from A → B



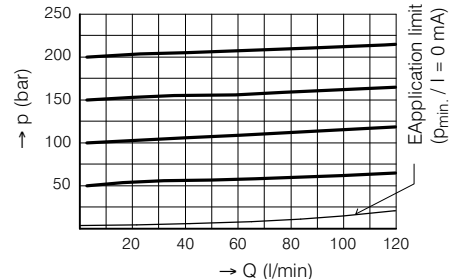
DVPSA-3D-250-10  
p/l characteristic at 24 VDC



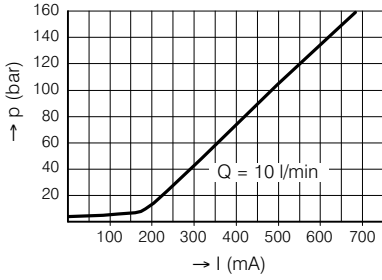
DVPSA-3D-250-10  
p/l characteristic at 12 VDC



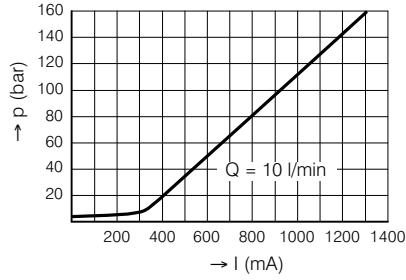
Variation in pressure setting  
with flow rate from A → B



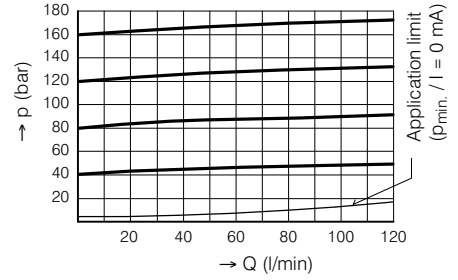
DVPSA-3D-160-10  
p/l characteristic at 24 VDC



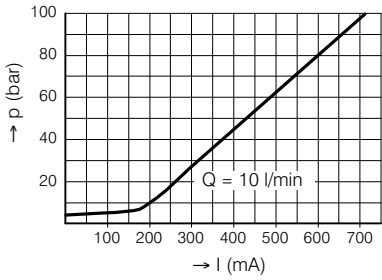
DVPSA-3D-160-10  
p/l characteristic at 12 VDC



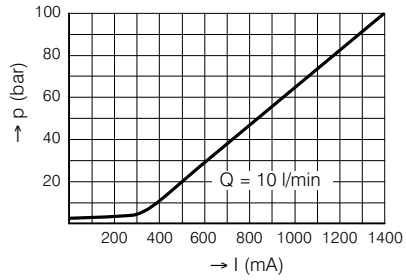
Variation in pressure setting  
with flow rate from A → B



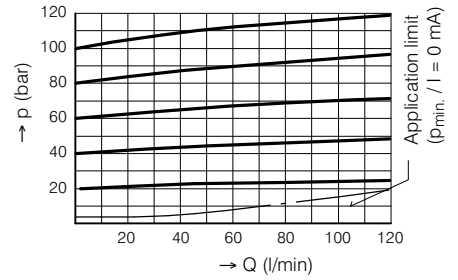
DVPSA-3D-100-10  
p/l characteristic at 24 VDC



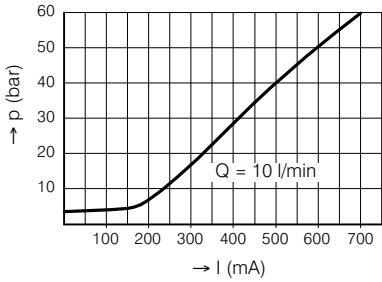
DVPSA-3D-100-10  
p/l characteristic at 12 VDC



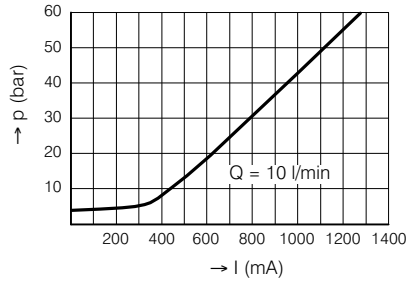
Variation in pressure setting  
with flow rate from A → B



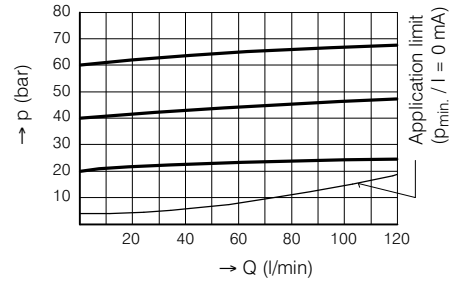
DVPSA-3D-060-10  
p/l characteristic at 24 VDC



DVPSA-3D-060-10  
p/l characteristic at 12 VDC

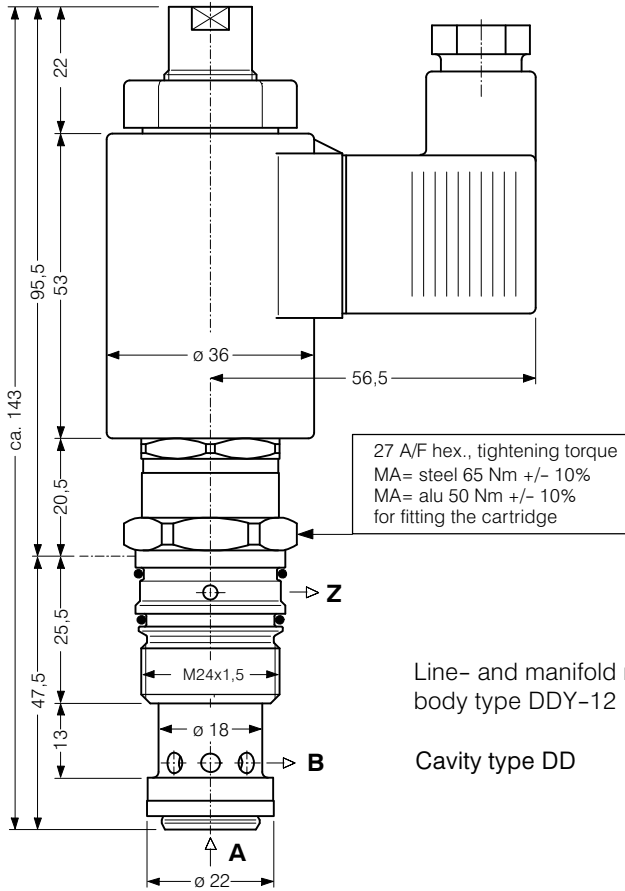


Variation in pressure setting  
with flow rate from A → B



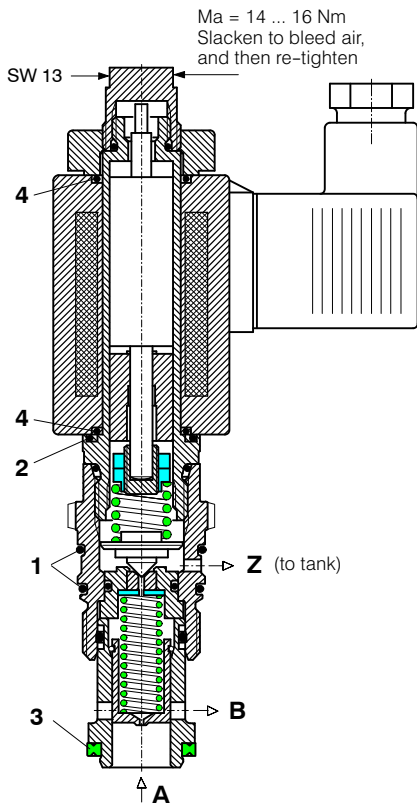
Pilot oil consumption: 180 ... 600 cm<sup>3</sup> / min

## 5. Dimensions



Attention: to achieve the cartridge's maximum performance rating, fit the solenoid coil as shown (with the plug pins at the top).

## 6. Schematic section



Seal kit no. DS-339, comprising:

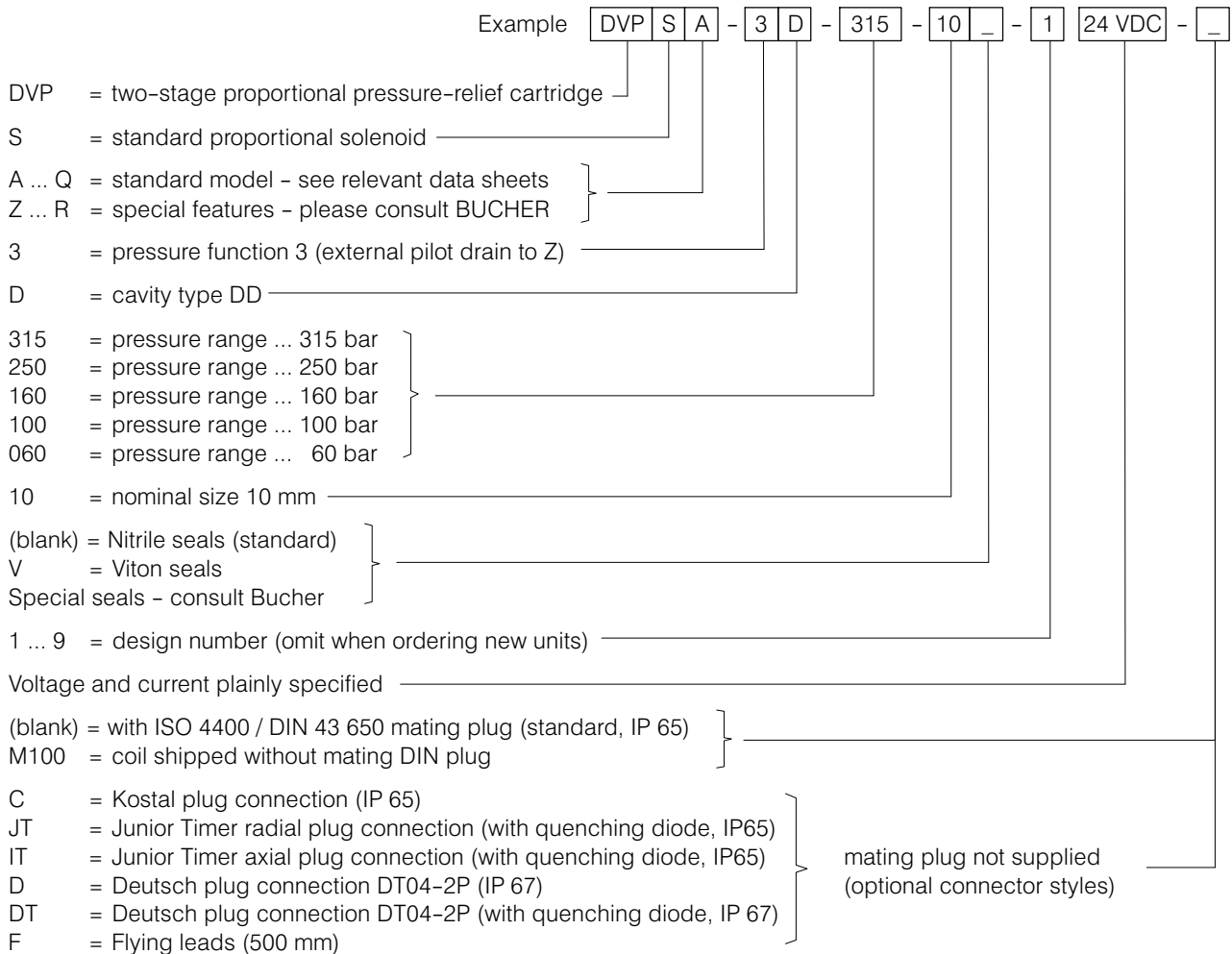
| lt. | Qty. | Description    | Size                                  |
|-----|------|----------------|---------------------------------------|
| 1   | 2    | O-ring no. 020 | $\varnothing 21.95 \times 1.78$ N90   |
| 2   | 1    | O-ring         | $\varnothing 18.00 \times 2.00$ Viton |
| 3   | 1    | Seal ring      | $\varnothing 22.1 / 16.5 \times 2.5$  |
| 4   | 2    | O-ring         | $\varnothing 16.00 \times 2.00$ Viton |

## 7. Installation and servicing

All work must be carried out with care and by qualified personnel only. When fitting the cartridge, ensure that the seals are oiled or greased and use the specified tightening torque. When changing seals, oil or grease the new seals thoroughly before fitting them. The proportional pressure-

relief cartridge is precision-set in the factory. To achieve the cartridge's maximum performance rating, fit the solenoid coil as shown in "Dimensions". The Z port must be piped separately to tank. Take steps to prevent the spring chamber from emptying by either gravity or suction.

## 8. Ordering code



## 9. Related data sheets

|              |  |
|--------------|--|
| New no.      |  |
| 400-P-040011 | The form-tool hire programme                 |
| 400-P-060121 | Cavity type DD                               |
| 400-P-120110 | Coils for solenoid-operated cartridge valves |
| 400-P-740111 | Line-mounting body, type DDY-12 (G1/2")      |

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