

Pressure valve Relief function

$Q_{\max} = 0.4 \text{ gpm}$, $p_{\max} = 6000 \text{ psi}$

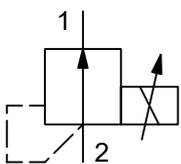
Direct acting, poppet type, proportional solenoid

Type series: DVSA-1L...



- Screw-in cartridge valve for cavity AL
- All external parts with zinc-nickel plating according to DIN EN ISO 19598
- Installation in threaded port body type GALA
- Seated pilot stage
- In a power failure, the pressure setting drops to the minimum value
- Can be used as a pilot valve
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug-connector systems and voltages are available
- High pressure wet-armature solenoids

Symbol



Description

These proportional pressure relief valves, series DVS_-1L..., are size 1 pilot valves featuring a seat-valve design and a 3/4-16 UNF mounting thread. With these pressure-relief valves, the relief pressure is dependent on the electrical control signal and can be continuously varied. When the solenoid is de-energized (initial position), connection 2 to 1 is open and the minimum pressure (free flow) depends on the flow rate. Any pressure at port 1 is additive to the valve setting at port 2, therefore port 1 should preferably be connected directly to

tank. In control mode, the relief pressure is proportional to the change in the required value (amplifier output current). In order to obtain precise pressure settings over the whole of the required pressure range (optimum resolution); the pressure relief valves are available in five pressure levels. All external parts of the valves are zinc-nickel plated and are thus suitable for use in the harshest operating environments. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through

360°. These proportional pressure relief valves are primarily used as pilot valves, mainly in mobile and industrial applications to allow a pressure in hydraulic

installations to be limited electro-proportionally. For self-assembly, please refer to the section related data sheets.

Technical data

General characteristics	Description, value, unit
Function group	pressure valve
Function	relief function
Design	screw-in cartridge valve
Controls	proportional solenoid
Characteristic	direct acting, poppet type
Construction size	NG 1
Thread size	3/4-16 UNF-2A
Mounting attitude	unrestricted (preferably vertical, coil down)
Weight	0.88 lb
Cavity acc. factory standard	AL
Tightening torque steel	30 ft·lb
Tightening torque aluminium	30 ft·lb
Tightening torque tolerance	± 10 %
Minimum ambient temperature	- 22 °F
Maximum ambient temperature	+ 122 °F
Surface protection	all external parts with zinc-nickel plating according to DIN EN ISO 19598
Sealing material	see ordering code
Seal kit order number	NBR: DS-355-N / FKM: DS-355-V

Hydraulic characteristics	Description, value, unit
Maximum operating pressure	6000 psi
Restriction of the operating pressure	port 1 = max. 3600 psi ¹⁾
Maximum flow rate	0.4 gpm
Flow direction	see symbol
Hydraulic fluid	HL and HLP mineral oil according to DIN 51 524; other fluids on request!
Minimum fluid temperature	- 22 °F
Maximum fluid temperature	+ 158 °F
Viscosity range	15 ... 380 mm ² /s (cSt)
Recommended viscosity range	20 ... 130 mm ² /s (cSt)
Minimum fluid cleanliness (cleanliness class according to ISO 4406:1999)	class 18/16/13
Nominal pressure range	nominal pressure range 040: ...580 psi nominal pressure range 100: ...1450 psi nominal pressure range 160: ...2300 psi nominal pressure range 250: ...3600 psi nominal pressure range 350: ... 5000 psi



NOTE!

¹⁾ Please note that any tank or return-line pressures acting at port 1 are additive to the pressure setting at port 2.

Electric characteristics

Actuator type
Solenoid coils type
Supply voltage DC
Supply voltage tolerance
Control current
Nominal power consumption
Relative duty cycle
Coil resistance R
Response sensitivity with PWM
Reproducibility with PWM
Hysteresis with PWM
Reversal error with PWM
Electrical connection coil
Protection class solenoid coil to ISO 20 653 / EN 60 529

Description, value, unit

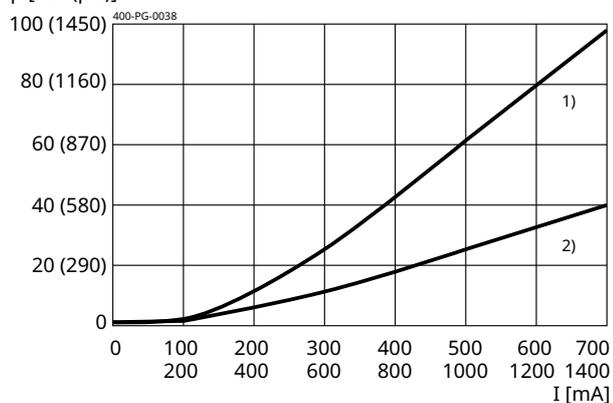
solenoid coil
D36
12/24 V DC
± 10 %
12 V = 0...1400 mA / 24 V = 0...750 mA
19 W
100 %
Cold value at 68°F = 12 V = 5.8 Ω / 24 V = 21 Ω max. warm value = 12 V = 8.6 Ω / 24 V = 32 Ω
< 1 % I _N
< 2 % p _N
2...4 % I _N
2...4 % I _N
DIN EN 175301-803, 3-pole 2 P+E (IP 65)
IP 65 / IP 67 / IP 69K, see "Ordering code" (with appropriate mating connector and proper fitting and sealing)

Performance graphs

measured with oil viscosity 33.0 mm²/s (cSt)

p = f (I) Pressure adjustment

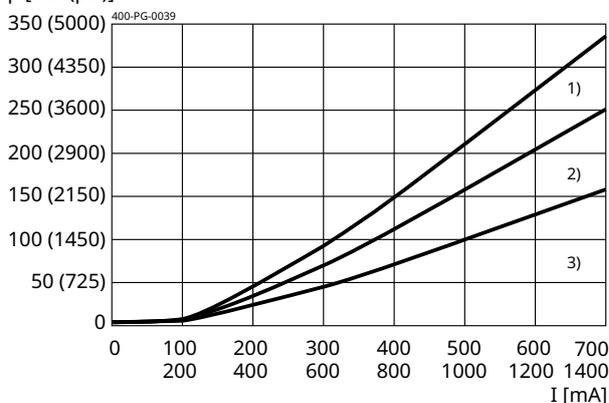
p [bar (psi)]



- 1) p_N 100 bar (1450 psi)
- 2) p_N 40 bar (580 psi)

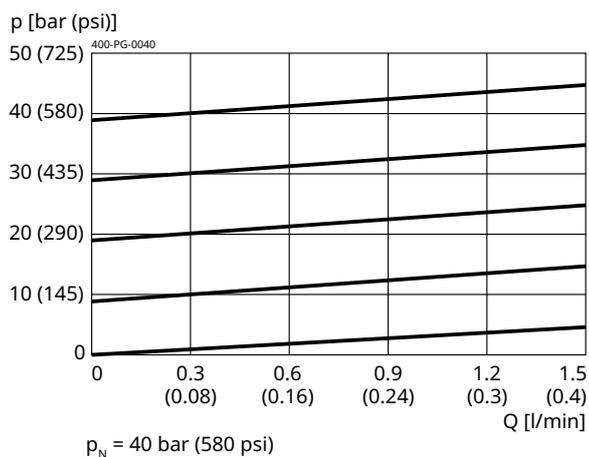
p = f (I) Pressure adjustment

p [bar (psi)]

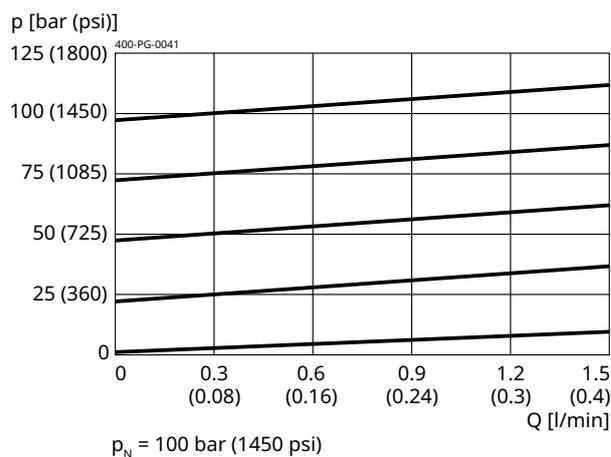


- 1) p_N 350 bar (5000 psi)
- 2) p_N 250 bar (3600 psi)
- 3) p_N 160 bar (2300 psi)

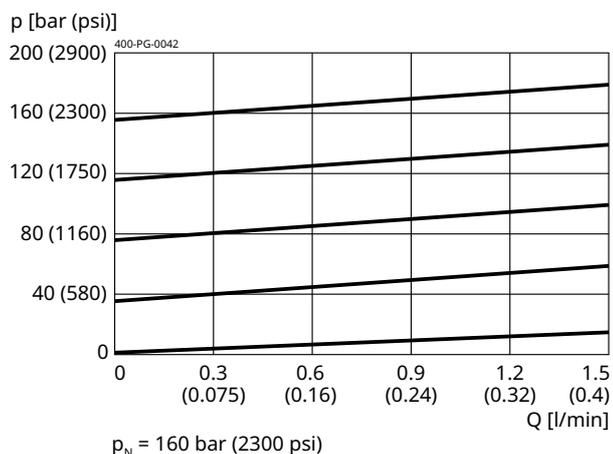
$p = f(Q)$ Pressure-flow rate



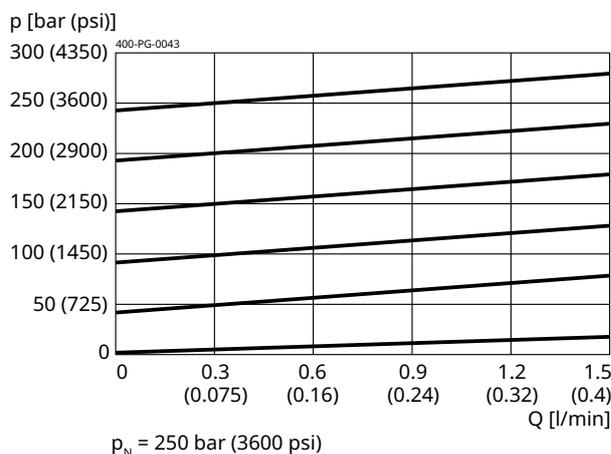
$p = f(Q)$ Pressure-flow rate



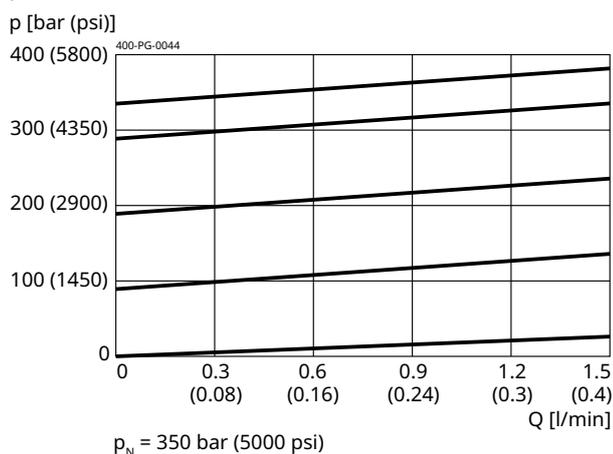
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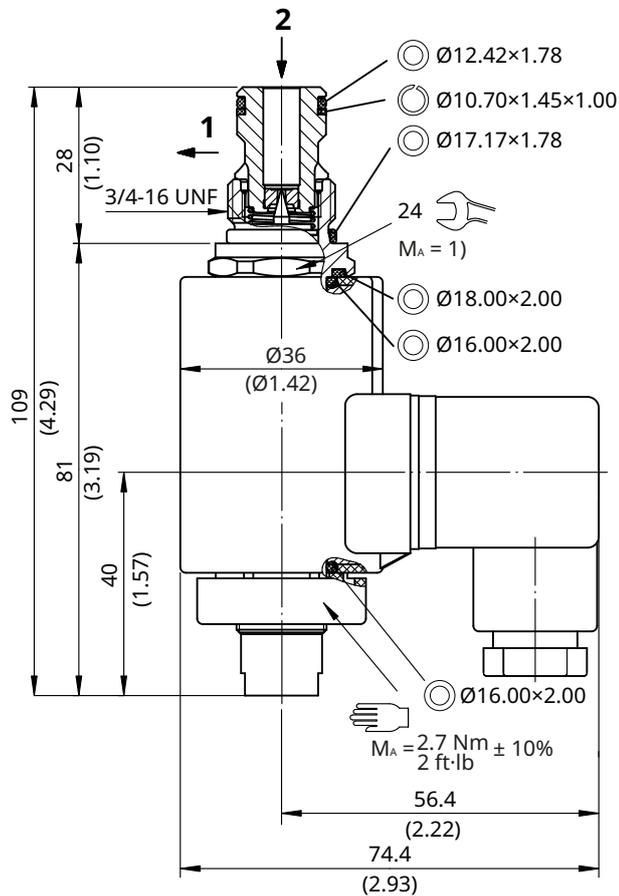


$p = f(Q)$ Pressure-flow rate



Installation

Beispiel für die Masseinheit:
Example for the dimensional units:
0.79 = 0.79 mm millimeter
(.031) = 0.031" inch



- NOTE!**
1) When fitting the screw-in cartridge valve, use the specified tightening torque. The value can be found in the chapter "Technical data".
- IMPORTANT!**
To achieve the screw-in valve's maximum performance rating, fit the solenoid coil as shown (with the plug pins nearest the valve body).
- NOTE!**
The seals are not available individually. The seal kit order number can be found in the chapter "Technical data".



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.

Ordering code

Ex.

D	V	S	A
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 -

1	L
---	---

 -

040

 -

1	-
---	---

 -

1

24	D
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-

D	=	pressure-control valve
V	=	pilot operated
S	=	electrically operated, D36
A ... Q	=	standard model according to valid data sheet
Z ... R	=	special model (on request)
1	=	pressure relief (with internal control oil outlet)
L	=	cavity type AL
040	=	pressure range ... 40 bar
100	=	pressure range ...100 bar
160	=	pressure range ...160 bar
250	=	pressure range ...250 bar
350	=	pressure range ...350 bar
1	=	nominal size 1 (primarily for pilot controls)
(blank)	=	NBR (nitril-butadien-rubber / BUNA) seals (standard)
V	=	FKM (fluorocarbon rubber / VITON) seals (special seals on request)
1...9	=	technical design no. (omit by ordering)
...	=	voltage e.g. 24 (24 V)
D	=	current DC
(blank)	=	DIN EN 175301-803 connection 3-pole 2 P+E (standard) (IP 65) with mating plug
T	=	DIN EN 175301-803 connection 3-pole 2 P+E, with protection diode (IP 65) with mating plug
M100	=	DIN EN 175301-803 connection 3-pole 2 P+E (IP 65)
J	=	Junior Timer plug connection 2-pole radial (IP 65)
JT	=	Junior Timer plug connection 2-pole radial, with protection diode (IP 65)
I	=	Junior Timer plug connection 2-pole axial (IP 65)
IT	=	Junior Timer plug connection 2-pole axial, with protection diode (IP 65)
D	=	Deutsch plug connection DT04-2P 2-pole 45° (IP 67/69K)
DT	=	Deutsch plug connection DT04-2P 2-pole 45°, with protection diode (IP 67/69K)
		other plug-variants, please consult BUCHER.

} mating plug
not supplied



IMPORTANT!

Not every combination of voltage values, current type and plug connections available.

Related data sheets

Reference	Description
400-P-040011	form tools
400-P-040171	cavity AL
400-P-120110	solenoid coil D36
400-P-720101	threaded port body GALA

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