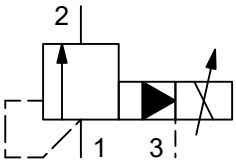
Pressure valve
Relief function

Q_{max} = 350 l/min, p_{max} = 350 bar
Pilot operated, spool type, proportional solenoid
Type series: DVPSB-3B-_-16-...

- Screw-in cartridge valve for cavity EB
- All external parts with zinc-nickel plating according to DIN EN ISO 19598
- Installation in threaded port body type GEBAA
- External pilot-oil drain
- Very stable operation
- Seated pilot stage
- Various plug-connector systems and voltages are available

Symbol



Description

Series DVPS_-3B... are two-stage, spool-type proportional pressure-relief valves. They limit the inlet pressure in port 1 to a value that is proportional to the solenoid current. All external parts are 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 through 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 GEBAA body with threaded ports (G 1") for line-mounting applications.

Technical data

General characteristics	Description, value, unit
Function group	pressure valve
Function	relief function
Design	screw-in cartridge valve
Controls	proportional solenoid
Characteristic	pilot operated, spool type
Construction size	NG 16
Thread size	M42×2
Mounting attitude	unrestricted (preferably vertical, coil down)
Weight	1.25 kg
Cavity acc. ISO	fits into ISO 7789: 42-06-0-07
Cavity acc. factory standard	EB
Minimum ambient temperature	- 30 °C
Maximum ambient temperature	+ 50 °C
Surface protection	all external parts with zinc-nickel plating according to DIN EN ISO 19598
Sealing material	see ordering code
Seal kit order number	main stage: NBR: DS-358-N / FKM: DS-358-V / pilot valve: NBR: DS-355-N / FKM: DS-355-V

Hydraulic characteristics	Description, value, unit
Maximum operating pressure	350 bar
Restriction of the operating pressure	port 3: no pack-pressure [1])
Maximum flow rate	350 l/min
Flow direction	see symbol
Hydraulic fluid	HL and HLP mineral oil according to DIN 51 524; other fluids on request!
Minimum fluid temperature	- 30 °C
Maximum fluid temperature	+ 70 °C
Viscosity range	15 ... 380 mm^2/s (cSt)
Recommended viscosity range	20 ... 130 mm^2/s (cSt)
Minimum fluid cleanliness (cleanlineless class according to ISO 4406:1999)	class 18/16/13
Pressure adjustment range	pressure range ...40 bar pressure range ...100 bar pressure range ...160 bar pressure range ...250 bar pressure range ...350 bar

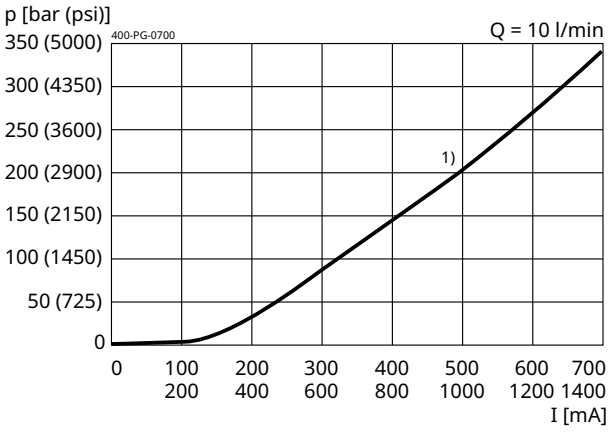
NOTE!
[1]) Please note that any tank or return-line pressures acting at port 3 are additive to the pressure setting at port 1.

Electric characteristics	Description, value, unit
Actuator type	solenoid coil
Solenoid coils type	D36
Supply voltage DC	12/24 V DC
Control current	12 V = 0...1400 mA / 24 V = 0...750 mA
Nominal power consumption	27 W
Relative duty cycle	100 %
Coil resistance R	12 VDC = 5,8 / 8,6 / 24 VDC = 21 / 32 Ω
Recommended PWM frequency	200 Hz
Response sensitivity with PWM	< 1 % I_N
Hysterese with PWM	2...4 % I_N
Reversal error with PWM	2...5 % I_N
Electrical connection coil	ISO 4400 / DIN 43 650 connection, 3-pole (IP 65)
Protection class solenoid coil to ISO 20 653 / EN 60 529	IP 65 / IP 67 / IP 69K, see “Ordering code” (with appropriate mating connector and proper fitting and sealing)

Performance graphs

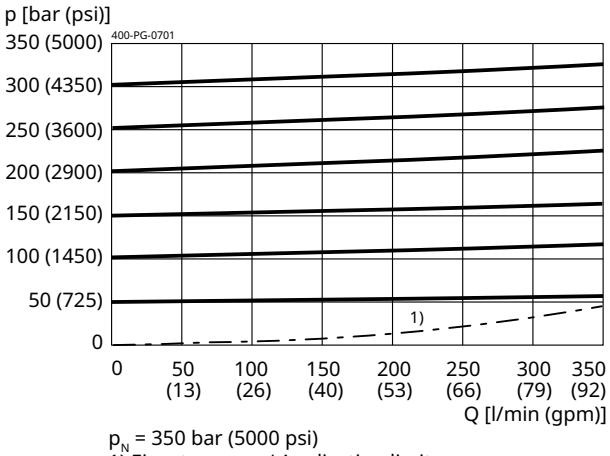
measured with oil viscosity 33.0 mm²/s (cSt)

p = f (I) Pressure adjustment



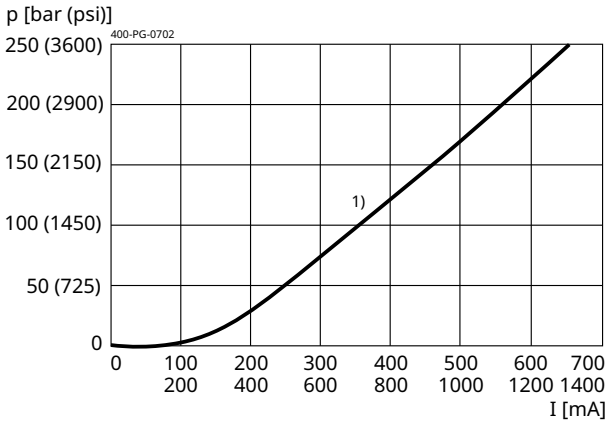
1) 12/24 VDC
p_N 350 bar (5000 psi)

p = f (Q) Pressure-flow rate



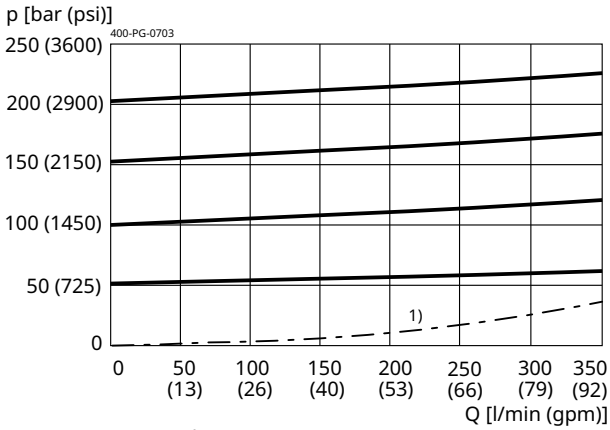
p_N = 350 bar (5000 psi)
1) Einsatzgrenze / Application limit (p min. / I = 0 mA)

p = f (I) Pressure adjustment



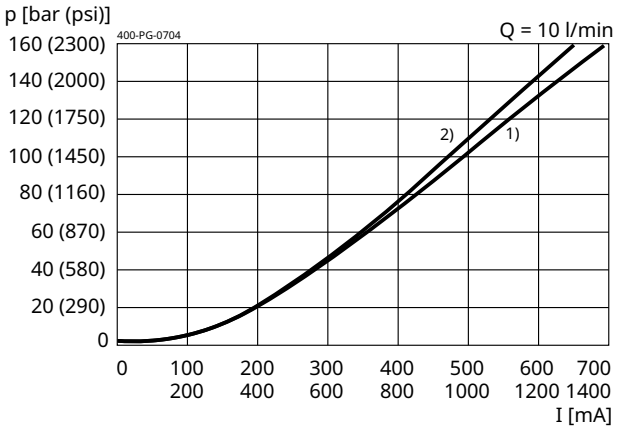
1) 12/24 VDC
p_N 250 bar (3600 psi)

p = f (Q) Pressure-flow rate



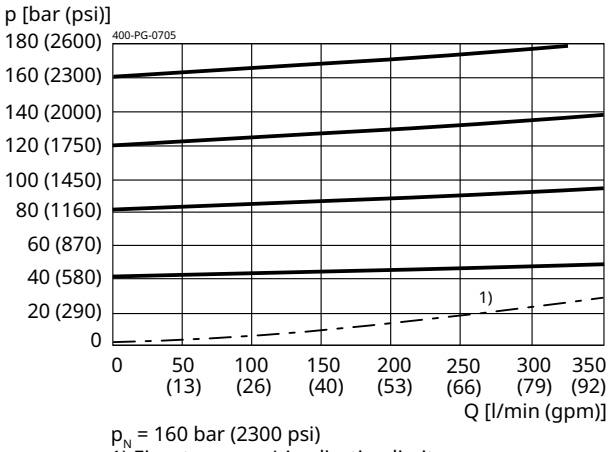
p_N = 250 bar (3600 psi)
1) Einsatzgrenze / Application limit
(p min. / I = 0 mA)

p = f (I) Pressure adjustment



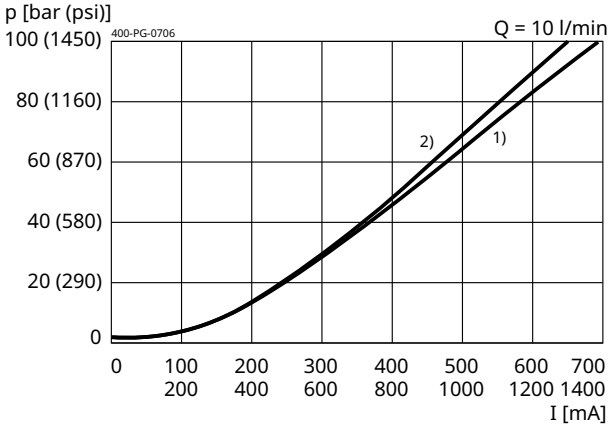
1) 12 VDC
2) 24 VDC
p_N 160 bar (2300 psi)

p = f (Q) Pressure-flow rate



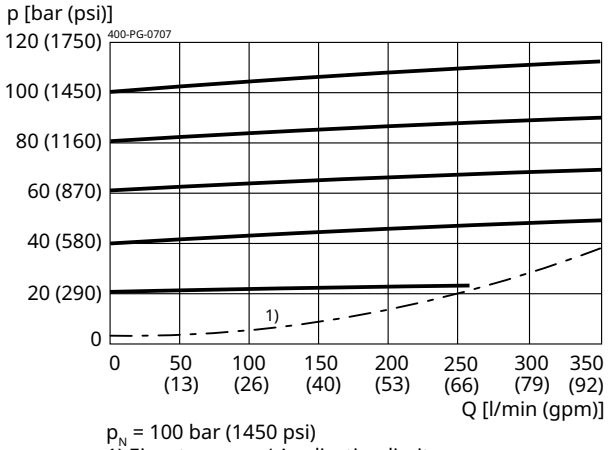
p_N = 160 bar (2300 psi)
1) Einsatzgrenze / Application limit
(p min. / I = 0 mA)

p = f (I) Pressure adjustment



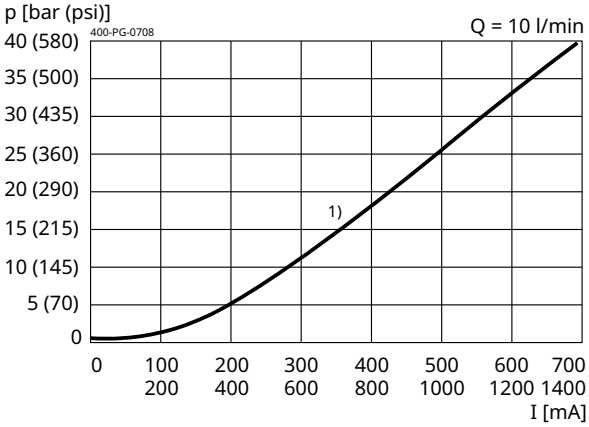
1) 12 VDC
2) 24 VDC
p_N 100 bar (1450 psi)

p = f (Q) Pressure-flow rate



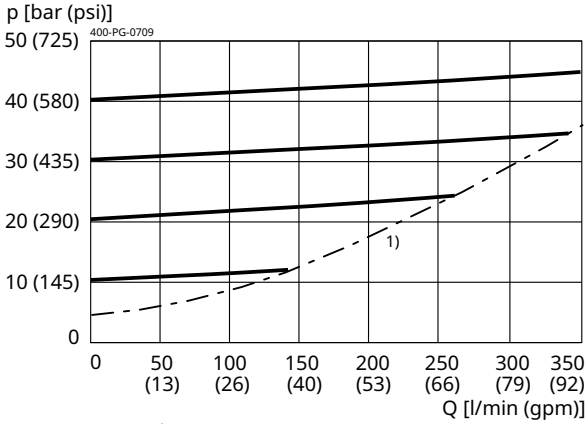
p_N = 100 bar (1450 psi)
1) Einsatzgrenze / Application limit
(p min. / I = 0 mA)

p = f (I) Pressure adjustment



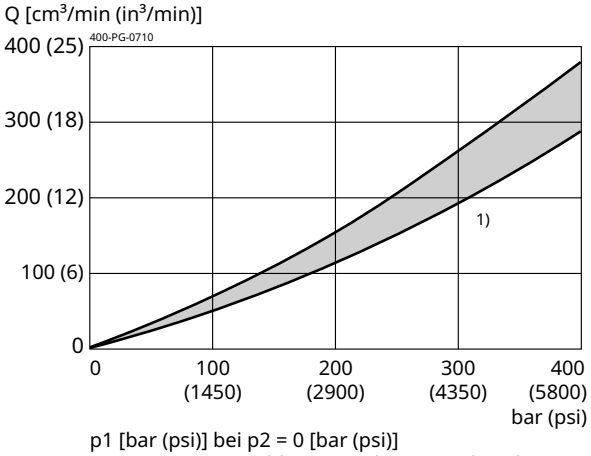
1) 12, 24 VDC
p_N 40 bar (580 psi)

p = f (Q) Pressure-flow rate



p_N = 40 bar (580 psi)
1) Einsatzgrenze / Application limit
(p min. / I = 0 mA)

QL = f (I;Δp) Leakage flow rate

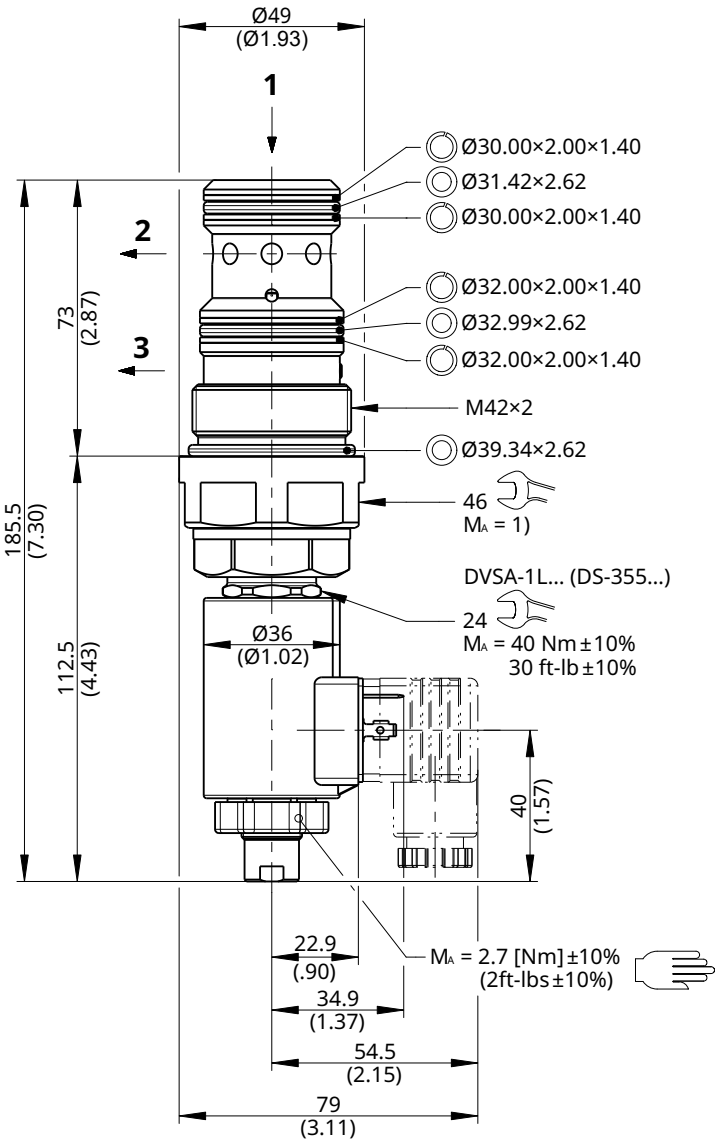


p1 [bar (psi)] bei p2 = 0 [bar (psi)]
Vorsteuerung geschlossen / pilot stage closed
1) = 1 → 2

Installation

Beispiel für die Masseinheit:
Example for the dimensional units:

0.79 = 0.79 mm millimeter
(.031) = 0.031'' inch



NOTE!
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!
1) When fitting the screw-in cartridge valve, use the specified tightening torque. The value 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 P S B - 3 B - 040 - 16 _ - 1 - 24 D - _

D	=	pressure-control valve			
V	=	pilot operated			
P	=	proportional			
S	=	electrically operated, D36			
A ... Q	=	standard model according to valid data sheet			
Z ... R	=	special model (on request)			
3	=	pressure relief (with external control oil outlet)			
B	=	cavity type EB			
040	=	pressure range ... 40 bar / ... 580 psi			
100	=	pressure range ...100 bar / ...1450 psi			
160	=	pressure range ...160 bar / ...2300 psi			
250	=	pressure range ...250 bar / ...3600 psi			
350	=	pressure range ...350 bar / ...5000 psi			
16	=	nominal size 16			
(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)	mating plug not supplied
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.			

IMPORTANT!
Not every combination of voltage values, current type and plug connections vailable.

Related data sheets

Reference	Description
400-P-040011	form tools
400-P-080111	cavity EB
400-P-120110	solenoid coil D36
400-P-750115	threaded port body GEBAA

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