

Pressure valve Relief function

$Q_{\max} = 92 \text{ gpm}$, $p_{\max} = 5000 \text{ psi}$

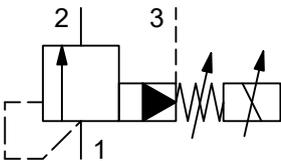
Pilot operated, spool type, proportional solenoid with emergency override

Type series: DVPSA-3BG-_-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 GEBA
- Inverse-proportional design
- Seated pilot stage
- Nominal pressure when solenoid de-energized (fail-safe function)
- With integral manual pressure setting
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- High pressure wet-armature solenoids
- Various plug-connector systems and voltages are available

Symbol



Description

The inverse-proportional pressure relief valves, series DVPS_3BG... are size 16, two stage screw-in valves with an M42×2 mounting thread. They consist of a spool-type main stage and a leak-free, poppet-type pilot stage with a falling pressure/current characteristic. The relief pressure is dependent on the electrical control current and can be continuously varied. When the solenoid is de-energized (initial position), the relief pressure is the nominal pressure of the applicable spring range (fail-safe function). Any pressure at port 3 is additive to the valve setting at the main port 1, therefore port 3 should

preferably be connected directly to tank. In control mode, the relief pressure is inversely 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 spring ranges. If a proportional solenoid is faulty, for example, the integral manual pressure setting enables the required pressure to be set mechanically. All external parts of the screw-in 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°. 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 with emergency override
Characteristic	pilot operated, spool type
Construction size	NG 16
Thread size	M42×2
Mounting attitude	unrestricted (preferably vertical, coil down)
Weight	2.75 lb
Cavity size acc. ISO	fits into ISO 7789: 42-06-0-07
Cavity acc. factory standard	EB
Tightening torque steel	150 ft·lb
Tightening torque aluminium	150 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	5000 psi
Restriction of the operating pressure	no pressure ¹⁾ – (pressure resistance 3600 psi)
Maximum flow rate	92 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
Pilot-oil consumption	0.04 ... 0.105 gpm gpm
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!

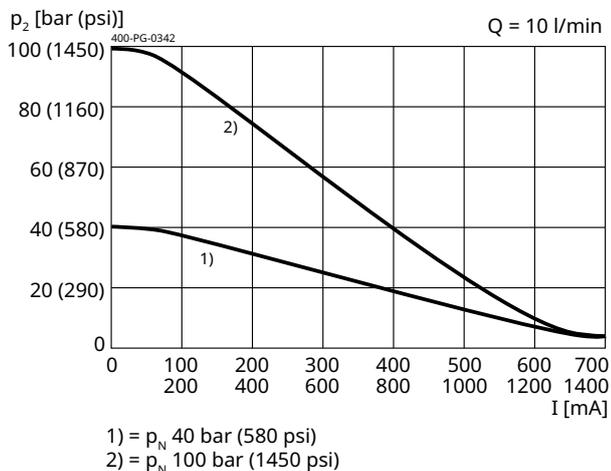
¹⁾ Please note that any tank or return-line pressures acting at port 3 are additive to the pressure setting at port 1.

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...760 mA
Nominal power consumption	19 W
Relative duty cycle	100 %
Coil resistance R	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
Recommended PWM frequency	200 Hz
Response sensitivity with PWM	< 1 % IN
Reproducibility with PWM	< 2 % pN
Hysteresis with PWM	2...4 % IN
Reversal error with PWM	2...4 % IN
Electrical connection coil	DIN EN 175301-803, 3-pole 2 P+E (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)

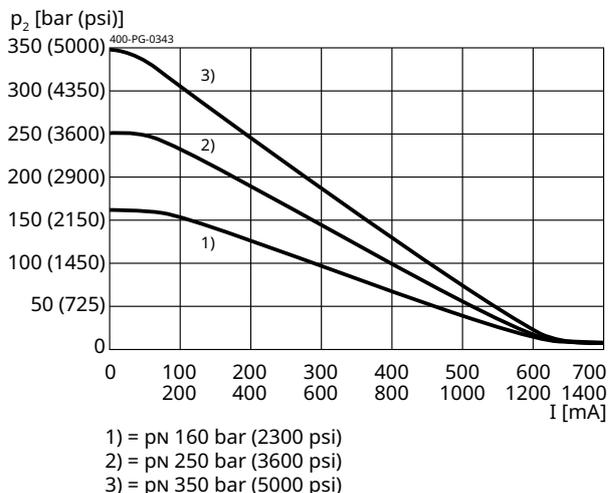
Performance graphs

measured with oil viscosity 33.0 mm²/s (cSt)

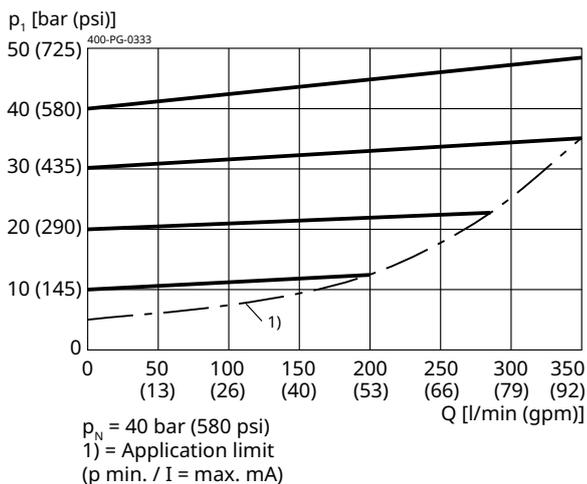
p = f (I) Pressure adjustment



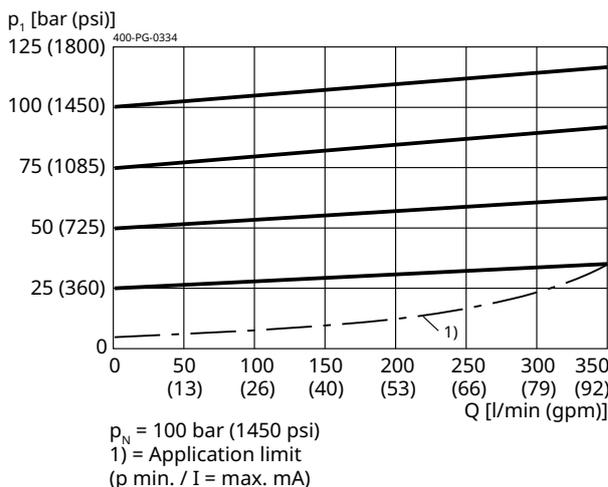
p = f (I) Pressure adjustment



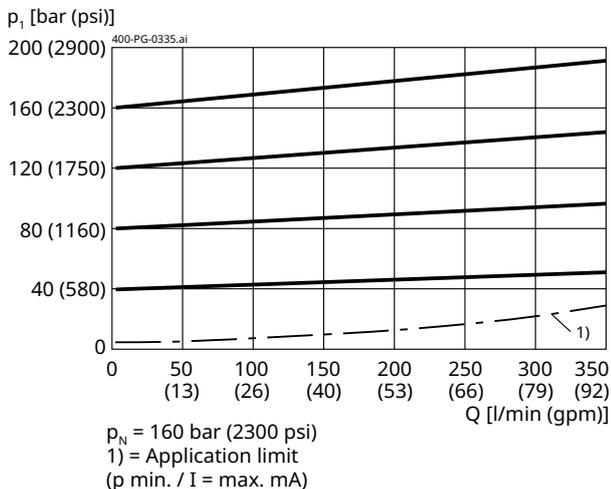
p = f (Q) Pressure-flow rate



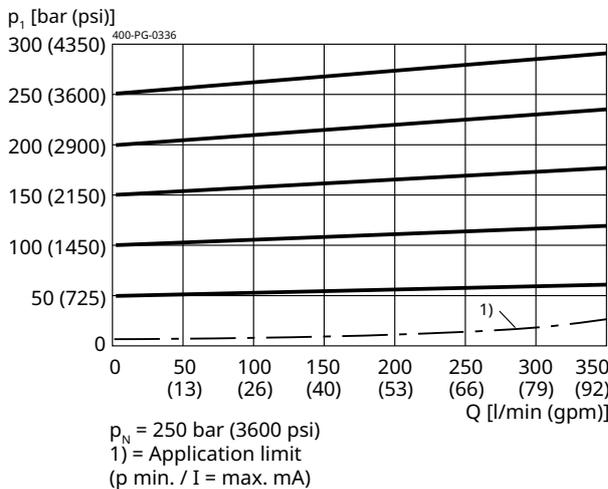
p = f (Q) Pressure-flow rate



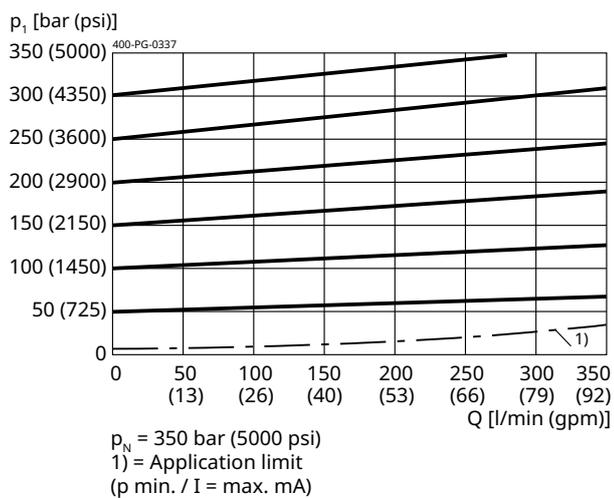
p = f (Q) Pressure-flow rate



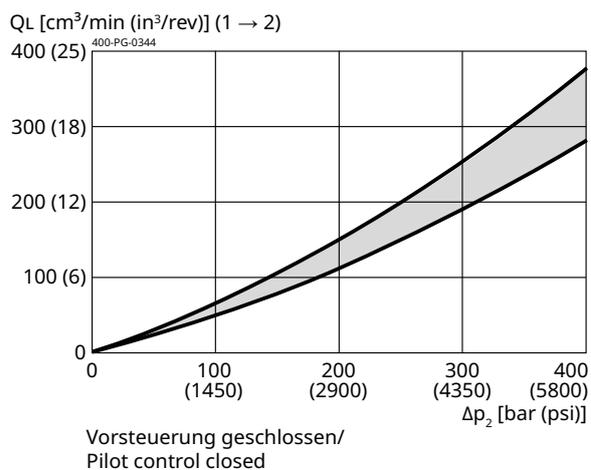
p = f (Q) Pressure-flow rate



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

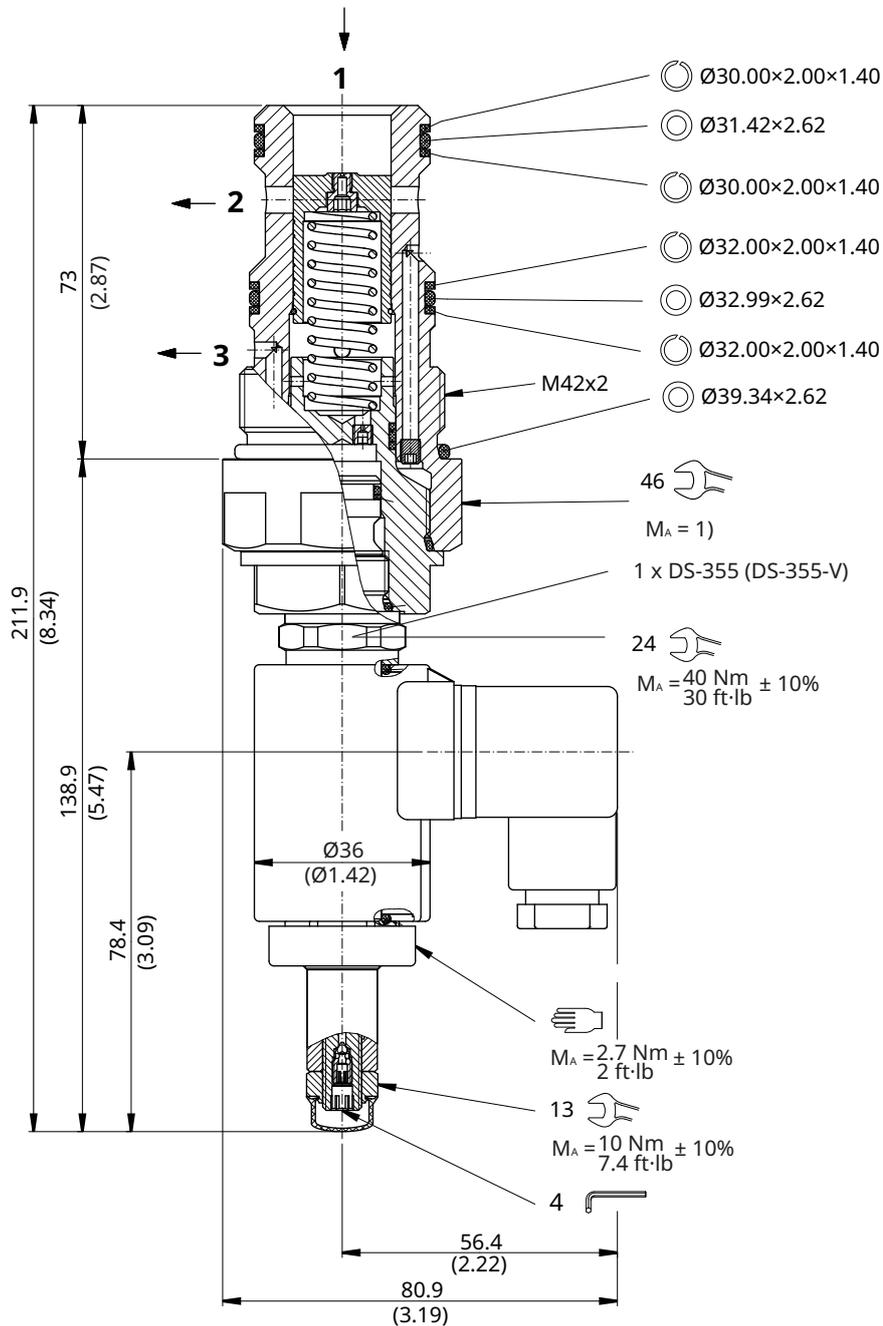


$QL = f(Q;p)$ Leakage flow rate



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). The valve must be installed in a steel body.

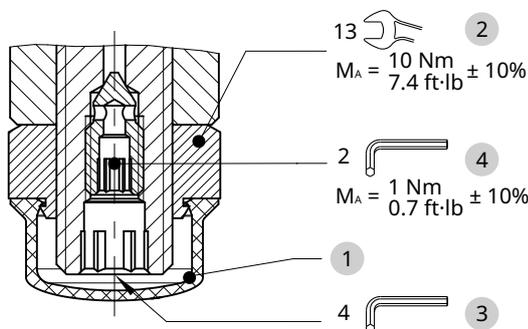
i NOTE!
The seals are not available individually. The seal kit order number can be found in the chapter "Technical data".

! 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.

Emergency pressure setting

Optionally, the proportional pressure screw-in cartridge valves can be supplied with an integral manual emergency pressure setting. If a proportional solenoid is faulty, for example, this manual pressure setting enables the required pressure to be set mechanically up

to max. 60% of the nominal pressure. The manual pressure setting is not designed for adjusting the pressure in a dynamic control mode. The following steps must be observed.



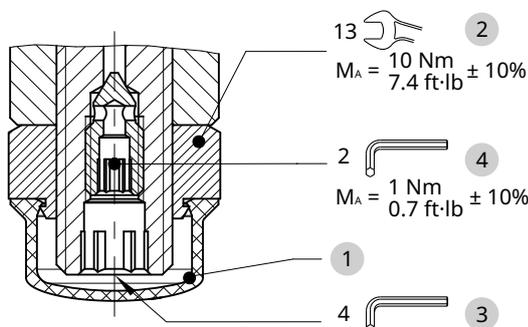
1. Remove the protective cap **1**
2. Loosen the lock nut **2**
3. Screw-in (turn to right) the adjusting spindle **3** until the required pressure is set.
4. Tighten the lock nut **2** to the specified torque.
5. Fit the protective cap **1**

i NOTE!
Any changes to the emergency pressure setting have a direct impact on the factory setting.

Reset to factory settings

To reset the proportional pressure-relief cartridges to their initial position (the factory setting), a constant flow rate and a pressure gauge that measures the pressure

in the input port are needed. The pressure setting must not exceed the nominal pressure of the spring range in use. The following steps must be observed.

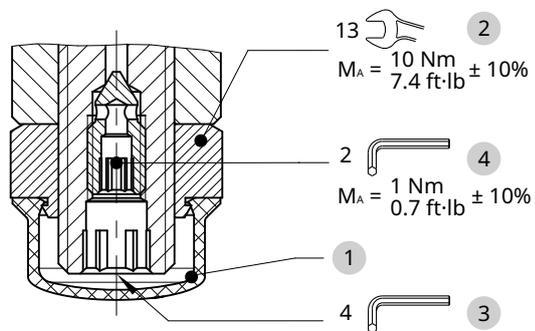


1. Ensure that the solenoid coil is de-energized
2. Remove the protective cap **1**
3. Loosen the lock nut **2**
4. Unscrew the adjusting spindle **3** to its end-stop
5. Screw-in the adjusting spindle **3** until the pressure on the gauge reaches the nominal pressure (pN) of the spring range in use
6. Tighten the lock nut **2** to the specified torque
7. Fit the protective cap **1**

Air-bleeding

The integrated air-bleed screw allows the proportional pressure valves to be vented if necessary. If the screw-in valve is mounted as preferred (solenoid-coil hanging), it

is self-venting. To vent the valve manually, follow the steps below.



1. Remove the protective cap 1
2. Loosen the air-bleed screw 4 approx. 2 turns
3. Switch the valve ON/OFF several times until no more air bubbles escape
4. Tighten the air-bleed screw 4 to the specified torque
5. Fit the protective cap 1

Ordering code

Ex.

DV	P	S	A	-	3	B	G	-	040	-	16	-	1	24	D	-
----	---	---	---	---	---	---	---	---	-----	---	----	---	---	----	---	---

DV	= pilot operated pressure relief cartridge																	
P	= pilot operated																	
S	= electrically operated, D36, proportional																	
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																	
G	= proportional solenoid, inverse type (pulling)																	
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																	
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 available.

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

info.ch@bucherhydraulics.com

www.bucherhydraulics.com

© 2026 by Bucher Hydraulics AG Frutigen, 3714 Frutigen, Switzerland

All rights reserved.

Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense. The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.