

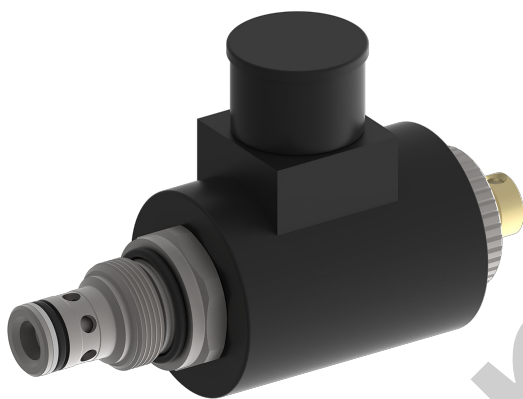
# Flow valve

## Throttle valve

$Q_{\max} = 50 \text{ l/min}$ ,  $p_{\max} = 250 \text{ bar}$

pilot operated, poppet type, proportional solenoid

Type series: MDRSVGP2G-5H-...A...



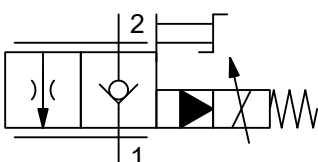
- Screw-in cartridge valve
- For cavity BH/C0820
- All external parts with zinc-nickel plating according to DIN EN ISO 19598
- Reliable operation over the whole pressure and flow range (even with high pressure differentials)
- Can be used with inline or bypass pressure compensator cartridges
- Fine opening in the lower volume range
- Low head loss
- High pressure wet-armature solenoids
- 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

### Description

The proportional throttle valves, series MDRSVGP2G-5H-...A..., are size 5 / SAE 8, pilot-operated, high performance screw-in valves with a 3/4-16 UNF-2A mounting thread. The main and pilot stages are designed on the poppet/seat principle and are therefore virtually leakfree in the 2 to 1 direction. With these proportional throttle valves, the flow rate is dependent on the electrical control current, and it can be varied continuously from 2 to 1. These screw-in valves are predominantly used in certain mobile and industrial applications where shut-off functions are crucially important. When used with a pressure

compensator, these valves are particularly suitable for precise and loadcompensated lifting and lowering movements, but they can also be used on their own for reliable operation in mobile and industrial applications with large pressure differences. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°. All external parts of the screw-in valves are zinc-nickel plated and are thus suitable for use in the harshest operating environments. For installation and further information, please refer to the section related data sheets.

### Symbol



## Technical data

General characteristics	Description, value, unit
Function group	Flow valve
Function	Throttle valve
Design	Screw-in cartridge valve
Controls	proportional solenoid
Characteristic	pilot operated, poppet type
Construction size	NG 5 / SAE 08
Thread size	3/4-16 UNF-2A
Mounting attitude	unrestricted (preferably vertical, coil down)
Weight	0.30 kg
Cavity acc. factory standard	For cavity BH/C0820
Tightening torque steel	40 Nm
Tightening torque aluminium	40 Nm
Tightening torque tolerance	± 10 %
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	NBR: DS-448-N / FKM: DS-448-V

Hydraulic characteristics	Description, value, unit
Maximum operating pressure	250 bar
Maximum flow rate	50 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	+ 80 °C
Viscosity range	15 ... 380 mm <sup>2</sup> /s (cSt)
Recommended viscosity range	20 ... 130 mm <sup>2</sup> /s (cSt)
Minimum fluid cleanliness (cleanliness class according to ISO 4406:1999)	class 18/16/13
Internal leakage flow rate	< 0,2cm <sup>3</sup> /min (max. 5 drops/min) at oil viscosity 33mm <sup>2</sup> /s (cSt)

Electric characteristics	Description, value, unit
Actuator type	solenoid coil
Solenoid coils type	D37/161
Supply voltage DC	12/24 V DC
Control current	12 V = 0...1400 mA / 24 V = 0...700 mA
Nominal power consumption	26 W
Relative duty cycle	100 %
Recommended PWM frequency	120 Hz

Electric characteristics	Description, value, unit
Response sensitivity with PWM	< 1 % IN
Reproducibility with PWM	< 2 % pN
Hysteresis with PWM	3...7 % IN
Reversal error with PWM	3...7 % 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 (with appropriate mating connector and proper fitting and sealing)

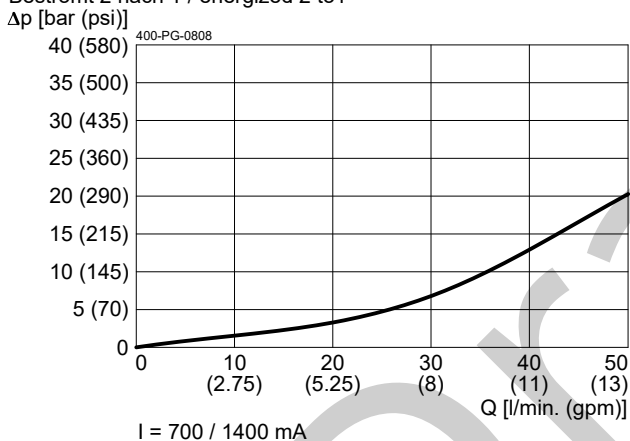
## Performance graphs

measured with oil viscosity 33.0 mm<sup>2</sup>/s (cSt)

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

Without filter screen

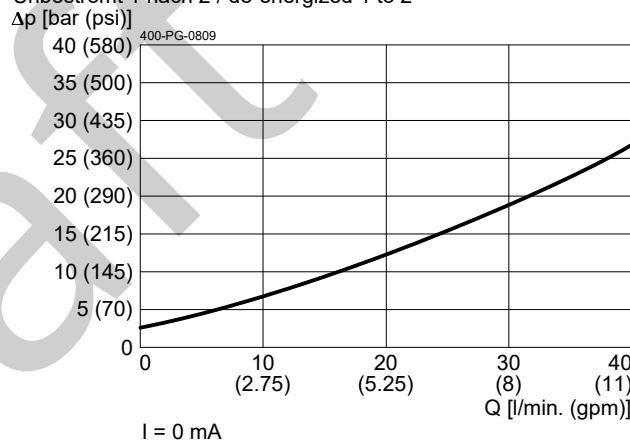
Bestromt 2 nach 1 / energized 2 to 1



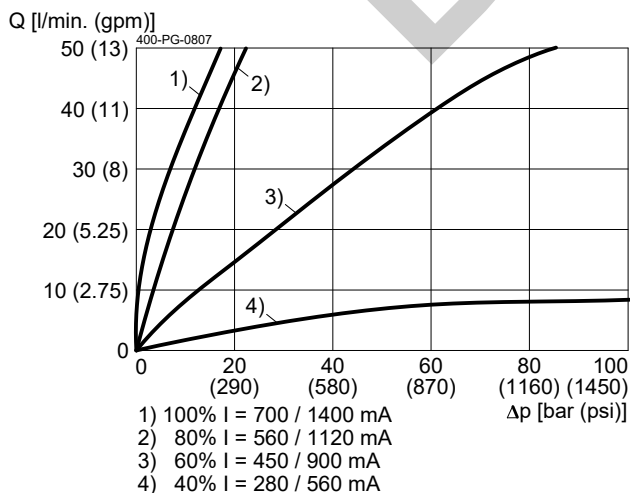
$\Delta p = f(Q)$  Pressure drop-flow rate characteristic

Without filter screen

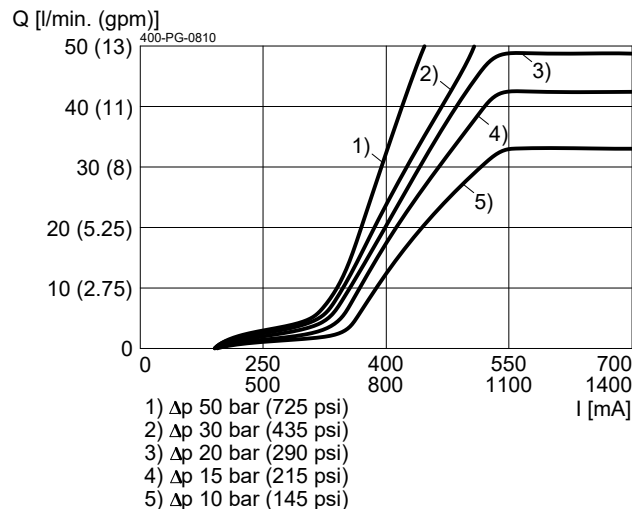
Unbestromt 1 nach 2 / de-energized 1 to 2



$Q = f(\Delta p; I)$  Flow rate adjustment



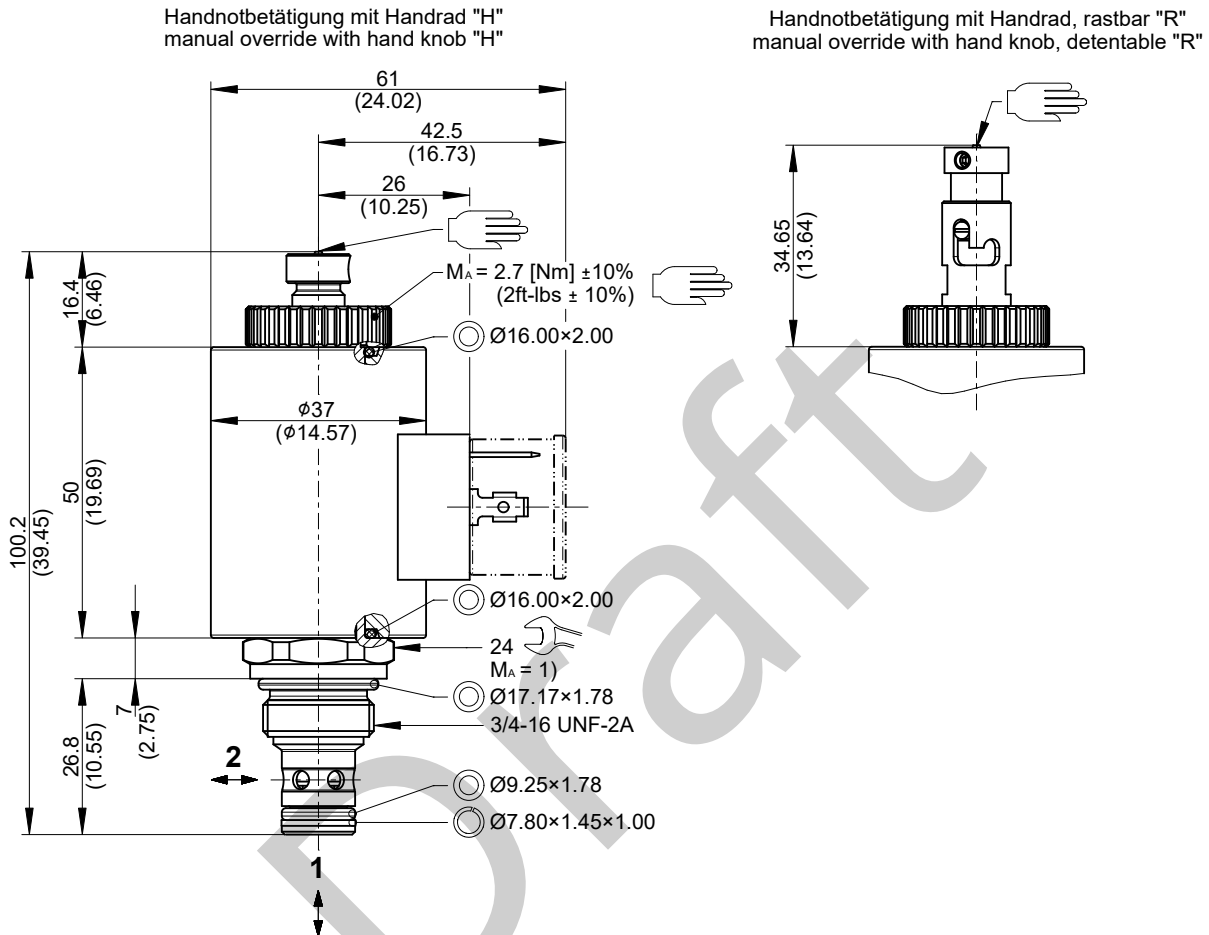
$Q = f(I; \Delta p)$  Flow rate adjustment



## Dimensions and sectional view

**Beispiel für die Masseinheit:**  
**Example for the dimensional units:**

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



## Installation information



### 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).

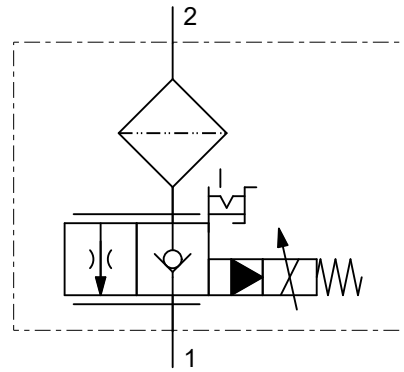
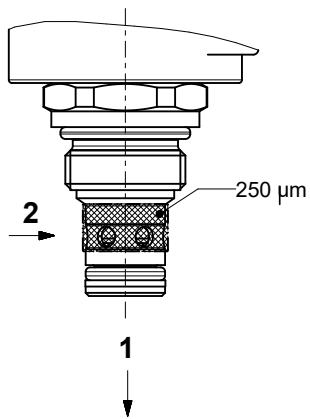


### ATTENTION!

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.

### filter option

Please note that the pressure drop of the filter amounts to approx. 2.5 bar (35 psi) at 50 l/min (13 gpm).



Mit Filtersieb in Anschluss 2, mit Handrad rastbar /  
with filter screen in port 2, with hand knob detentable

## Ordering code

Ex. 

M	D	R	S	V	G	P	2	G	-	5	H	-	42	-	O	-	H	-	N	A	1		24	D	G	-
---	---	---	---	---	---	---	---	---	---	---	---	---	----	---	---	---	---	---	---	---	---	--	----	---	---	---

M	=	flow-regulating valve
D	=	throttle valve
R	=	check valve function
S	=	seat valve
V	=	pilot operated
G	=	electrically operated, D37/161, 26 W
P	=	proportional
2	=	2-way function
G	=	de-energized closed
5	=	nominal size 5 / SAE 8
H	=	cavity type BH/C0820
42	=	nominal flow rate 42 l/min ( 11.5 gpm ) at $\Delta p = 15$ bar ( 215 psi )
O	=	without filter screen <b>(standard)</b>
F2	=	with filter screen in port 2
H	=	manual override with hand knob <b>(standard)</b>
R	=	manual override with hand knob, detentable
N	=	NBR (nitril-butadien-rubber / BUNA) seals <b>(standard)</b>
V	=	FKM (fluorocarbon rubber / VITON) seals (special seals on request)
A ... Q	=	standard model according to valid data sheet
1 ... 9	=	technical design no. (omit by ordering)
...	=	voltage e.g. 24 (24 V)
D	=	current DC
G	=	DIN EN 175301-803 connection 3-pole 2 P+E <b>(standard)</b> (IP 65)
J	=	Junior Timer plug connection 2-pole radial (IP 65)
		other plug-variants, please consult BUCHER.
(blank)	=	connection without mating plug <b>(standard)</b>
Q	=	only connection "G" and "GR" with mating plug

} mating plug  
not supplied



### IMPORTANT!

Not every combination of voltage values and plug connections available.

## Related data sheets

Reference	Description
<a href="#">400-P-040011</a>	Form tools
<a href="#">400-P-040401</a>	Cavity BH/C0820
<a href="#">400-P-120150</a>	Solenoid coil D37/161
<a href="#">400-P-738571</a>	Threaded port body GBH-38...
<a href="#">400-P-010101</a>	MTTFd Values for Hydraulic Valves

Draft

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