Proportional Throttle Cartridges, Size 10

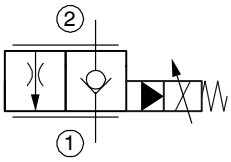
Q_{max} = 140 l/min, p_{max} = 250 bar, Q_N = 55 l/min at Δp 10 bar
Two-Stage, with Seat-Valve Shut-Off
Series MVRPSBB-HG…

- Normally closed
- Seat-valve shut-off from 2 → 1
- Compact construction for cavity type DH to ISO 7789-27-01-0-07
- More reliable operation over the whole pressure and flow range (high pressure differences)
- Low headloss
- All exposed parts with zinc-nickel plating
- 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
- Can be fitted in a line-mounting body

1 Description

Series MVRPSB… two-stage proportional throttle cartridges are size 10, high performance screw-in valves with an M27 x 2 mounting thread. Both the main and pilot stages are designed on the poppet/seat principle and the 2 → 1 flow path is therefore virtually leak-free. With these proportional throttle cartridges, the flow rate from 2 → 1 is dependent on the control current, and it can be varied continuously and set at any desired level. When used with a pressure compensator, these cartridges are particularly suitable for precise and load-compensated 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. All external parts of the cartridge are zinc-nickel plated to DIN 50 979 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°. If you intend to manufacture your own cavities or are designing a line-mounting installation, please refer to the section “Related data sheets”.

2 Symbol



3 Technical data

General characteristics	Description, value, unit
Designation	proportional-throttle cartridge
Design	seat-valve shut-off, two stage
Mounting method	screw-in cartridge M27 x 2
Tightening torque	100 Nm ± 10 %
Size	nominal size 10 mm, cavity type DH
Weight	0.56 kg
Mounting attitude	unrestricted (preferably vertical, coil down)
Ambient temperature range	-25 °C … +50 °C

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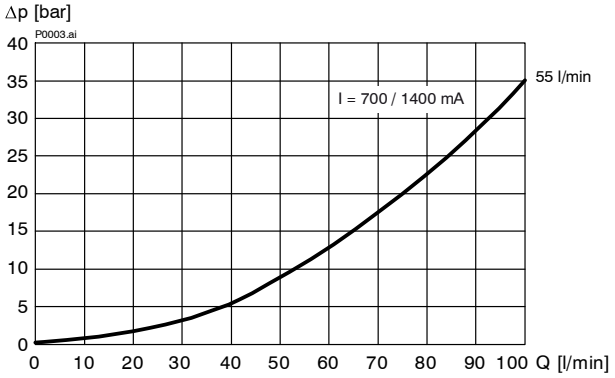
Hydraulic characteristics	Description, value, unit
Maximum operating pressure	250 bar
Maximum flow rate	140 l/min
Nominal flow rate	55 l/min at Δp = 10 bar
	< 0,2 cm^3/min (max. 5 drops/min) with oil viscosity 33 mm^2/s (cSt)
Flow direction	2 → 1 throttle function, see symbols 1 → 2 free flow
Hydraulic fluid	HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER
Hydraulic fluid temperature range	-25 °C … +70 °C
Viscosity range	15…380 mm^2/s (cSt), recommended 20...130 mm^2/s (cSt)
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999	class 18/16/13

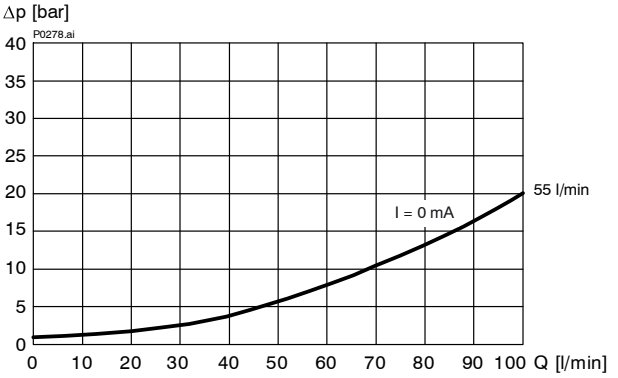
Electrical characteristics		Description, value, unit
Supply voltage		12 V DC, 24 V DC
Control current		12 V = 0…1400 mA, 24 V = 0…750 mA
Coil resistance R	- cold value at 20 °C - max. warm value	12 V = 5.8 Ω / 24 V = 20.9 Ω 12 V = 8.6 Ω / 24 V = 32 Ω
Recommended PWM frequency (dither)		200 Hz
Hysteresis with PWM		2…4 % I_N
Reversal error with PWM		2…4 % I_N
Sensitivity with PWM		< 1 % I_N
Reproducibility with PWM		< 2 % p_N
Switching time		see performance graph
Relative duty cycle		100 %
Protection class 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)
Electrical connection		3-pin square plug to ISO 4400 / DIN 43 650 (standard) for other connectors, see “Ordering code”

4 Performance graphs

Δp = f (Q) Pressure drop - Flow rate characteristic
[2 → 1]

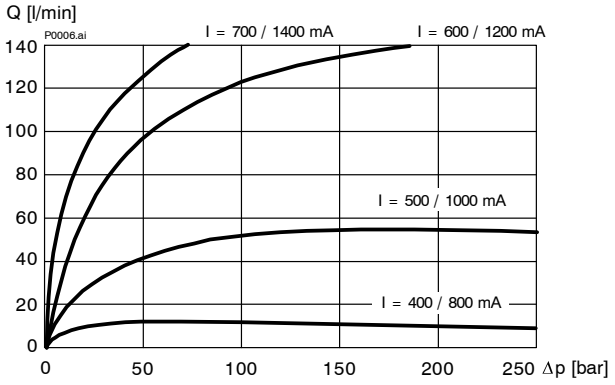


Δp = f (Q) Pressure drop - Flow rate characteristic
[1 → 2]

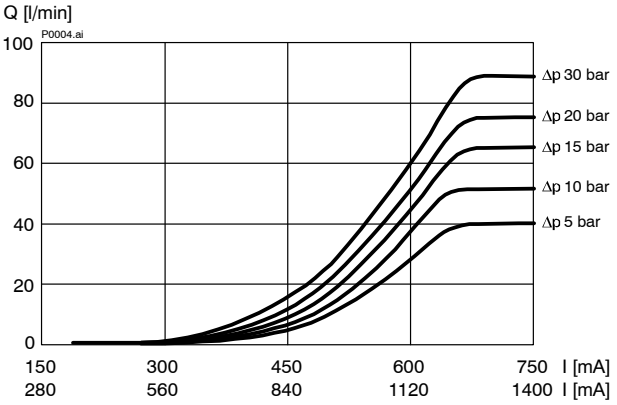


Attention:
where there are large pressure differences in the flow direction 1 → 2, the main stage poppet will become damaged.

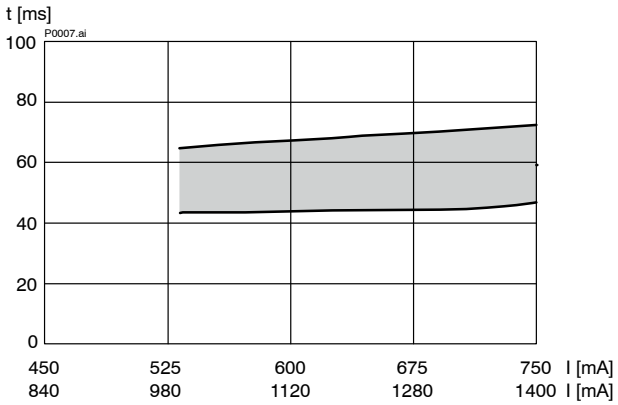
Q = f (Δp; I) Flow rate adjustment characteristic



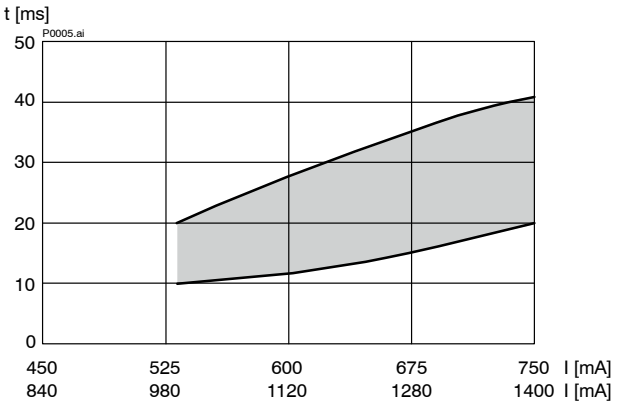
Q = f (I; Δp) Flow rate adjustment characteristic



t = f (I; Δp) Switching time characteristic **Opening**
at Δp = 10 … 50 bar



t = f (I; Δp) Switching time characteristic **Closing**
at Δp = 10 … 50 bar



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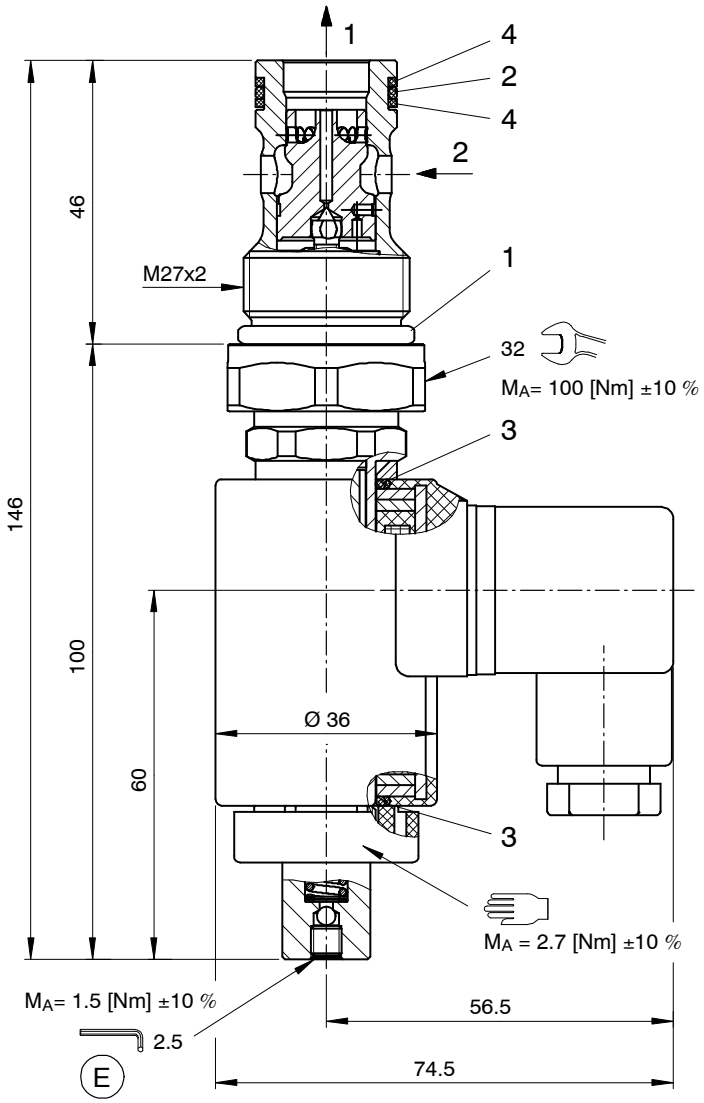
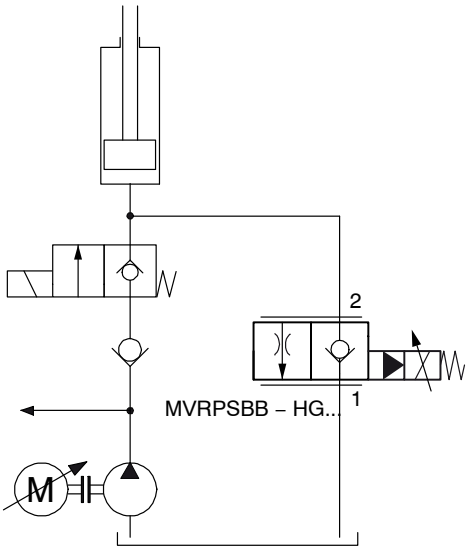
5 Dimensions & sectional view



6 Application examples



7 Installation information

Important:
When fitting the cartridges, note the mounting attitude (preferably vertical, with coil down → automatic air bleed) and use the specified tightening torque. For the initial start-up, we recommend using the air-bleed screw (item E) to bleed air from the cartridges. No adjustments are necessary, since the cartridges are set in the factory.

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.

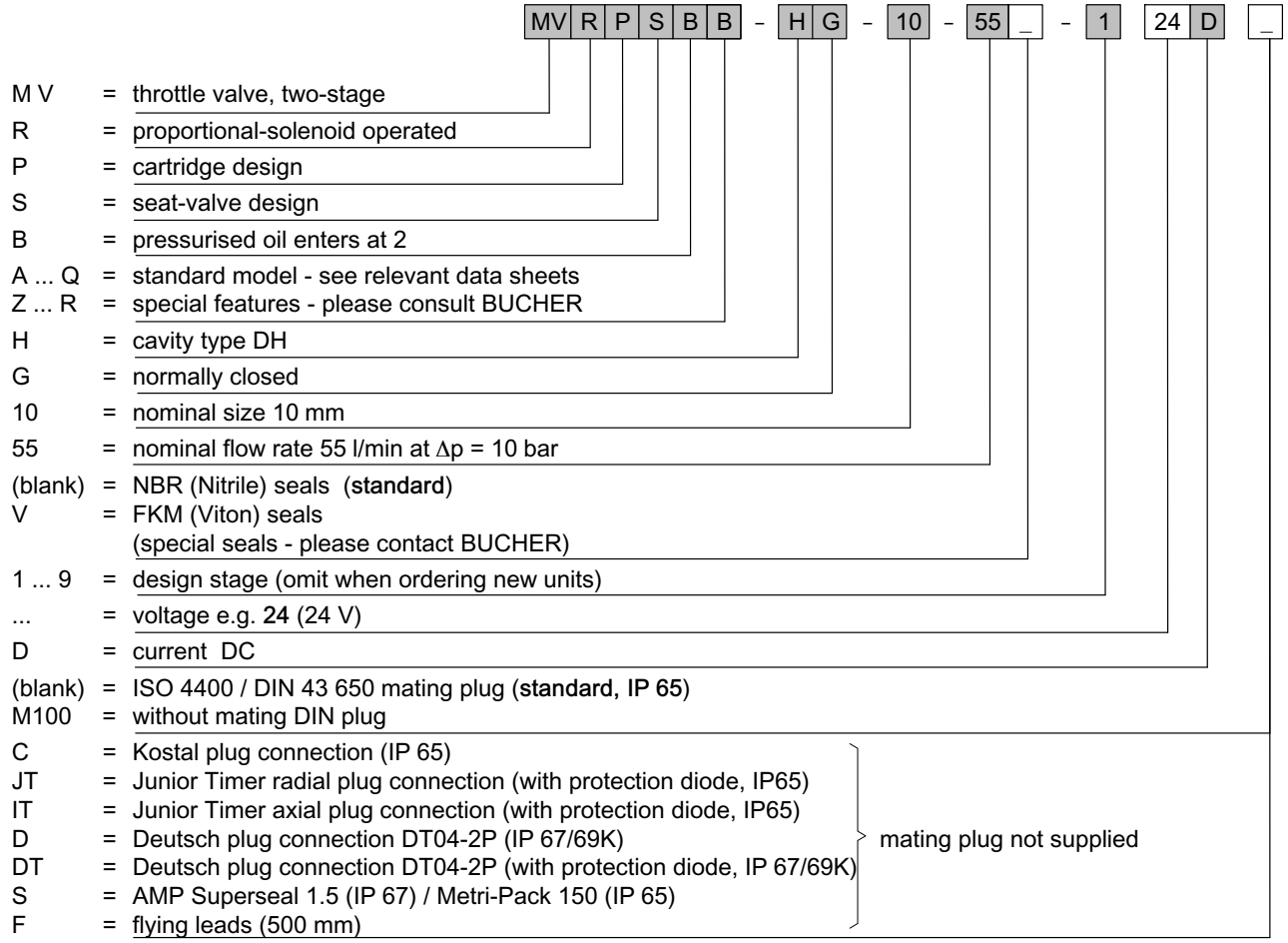
Seal kit NBR no. DS-368-N [1)]

Item	Qty.	Description
1	1	O-ring no. 119 ∅ 23.47 x 2.62 N90
2	1	O-ring no. 018 ∅ 18.77 x 1.78 N90
3	2	O-ring ∅ 16.00 x 2.00 FKM
4	2	Backup ring ∅ 18.00 x 1.40 x 1.40 FI0751

IMPORTANT!

1) Seal kit with FKM (Viton) seals, no. DS-368-V

8 Ordering code



9 Related data sheets

Reference	(Old no.)	Description
400-P-040011	(i-32)	The form-tool hire programme
400-P-060171		Cavity type DH to ISO 7789-27-01-0-07
400-P-120110	(W-2.141)	Coils for screw-in cartridge valves
400-P-510101		Amplifier unit for proportional valves (1-channel) PBS - 3A
400-P-511101		Amplifier card for proportional valves (1-channel) SAN-535…
400-P-740161		Line-mounting body, type GCDHA (G 3/4")

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Classification: 430.310.325.305.320.310