

Proportional 4/3 Throttle Cartridge, Size 10

$Q_{\max} = 150 \text{ l/min}$, $p_{\max} = 420 \text{ bar}$
 Sliding-spool design, hydraulic proportional
 Series MDHP43...-10...



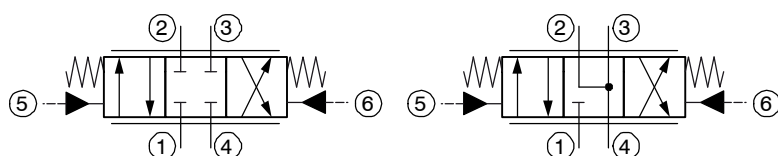
- External hydraulic control
- Compact construction for cavity type DZ – M36x2
- Two nominal volume flow rates
- Different spool options (center position)
- Symmetrical opening characteristics (thanks to two separate tank ports)
- All exposed parts with zinc-nickel plating

1 Description

Series MDHP-43-10... hydraulically controlled proportional 4/3 throttle valves are size 10, high performance screw-in cartridges with an M36x2 mounting thread. The sliding spool is held in neutral position by the spring. As soon as the pilot pressure of around 5 bar is reached, the spool starts to open the connection from port 1 to the actuator (port 2 or 3). The opening cross-section increases proportionally with increasing pilot pressure until the end position of the spool and thus the maximum opening or flow rate is reached at approx. 18 bar. Thanks to two separate tank ports (see sectional drawing), symmetrical opening characteristics are

reached on both sides. In addition to two spool designs (G or D spool), there is a choice of two nominal flow rates with defined pressure loss using a control edge in each case. Thus, an optimal resolution of the opening cross-section can be achieved for the application. These valves are primarily used in mobile and industrial applications where high flow rates need to be controlled with high resolution. All external parts of the cartridge are zinc-nickel plated according to DIN EN ISO 19 598 and are thus suitable for use in the harshest operating environments. For self-assembly, please refer to the section related data sheets.

2 Symbol



MDHP43D...

MDHP43G...

3 Technical data

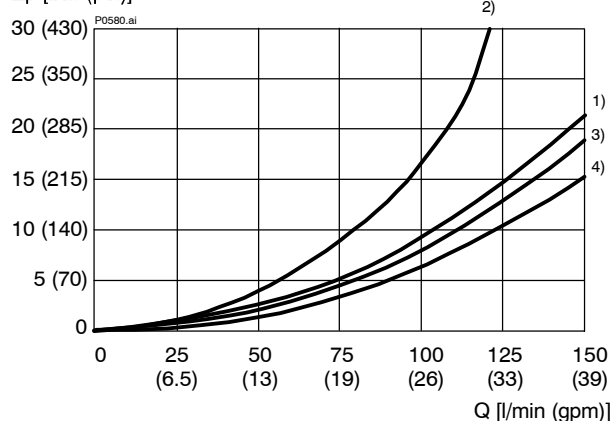
General characteristics	Description, value, unit
Designation	proportional 4/3 throttle cartridge
Design	sliding-spool design, hydraulic proportional
Mounting method	screw-in cartridge M36x2
Tightening torque	250 Nm \pm 10 %
Size	nominal size 10, cavity type DZ
Weight	1.05 kg
Mounting attitude	unrestricted
Ambient temperature range	-25 °C ... +50 °C

Hydraulic characteristics		Description, value, unit
Maximum operating pressure	- ports 1 to 4 - ports 5 and 6	420 bar 30 bar
Maximum flow rate		150 l/min
Nominal flow rate		80 l/min at $\Delta p = 10$ bar 100 l/min at $\Delta p = 10$ bar
Flow direction		see symbols
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

4 Performance graphs measured with oil viscosity 33 mm²/s (cSt)

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

Δp [bar (psi)]



$Q_N = 100$ l/min

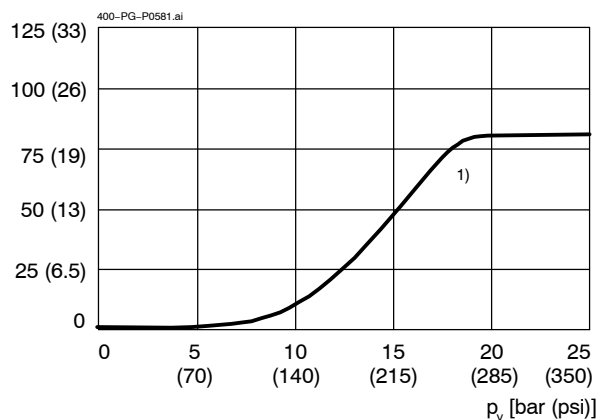
- 1) 1 → 2; 1 → 3 "G", "D" Kolben/spool
- 3) 2 → 4; 3 → 4 "D" Kolben/spool
- 4) 2 → 4; 3 → 4 "G" Kolben/spool

$Q_N = 80$ l/min

- 2) 1 → 2; 1 → 3 "G", "D" Kolben/spool
- 3) 2 → 4; 3 → 4 "D" Kolben/spool
- 4) 2 → 4; 3 → 4 "G" Kolben/spool

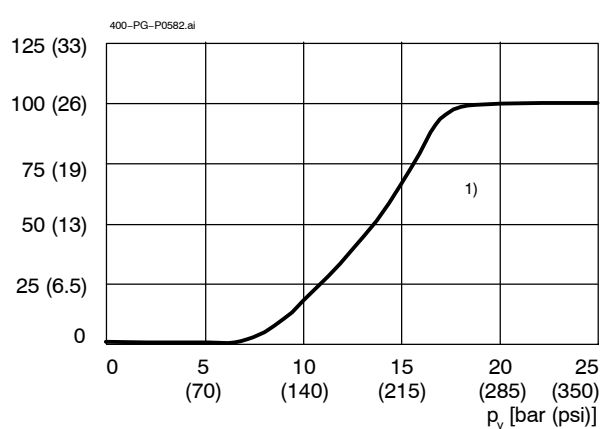
$Q = f(p_v)$ Flow rate adjustment
[measured at $\Delta p = 10$ bar over
control edge 1 to 2 or 1 to 3]

Q [l/min (gpm)]



$Q = f(p_v)$ Flow rate adjustment
[measured at $\Delta p = 10$ bar over
control edge 1 to 2 or 1 to 3]

Q [l/min (gpm)]



5 Installation information



IMPORTANT!

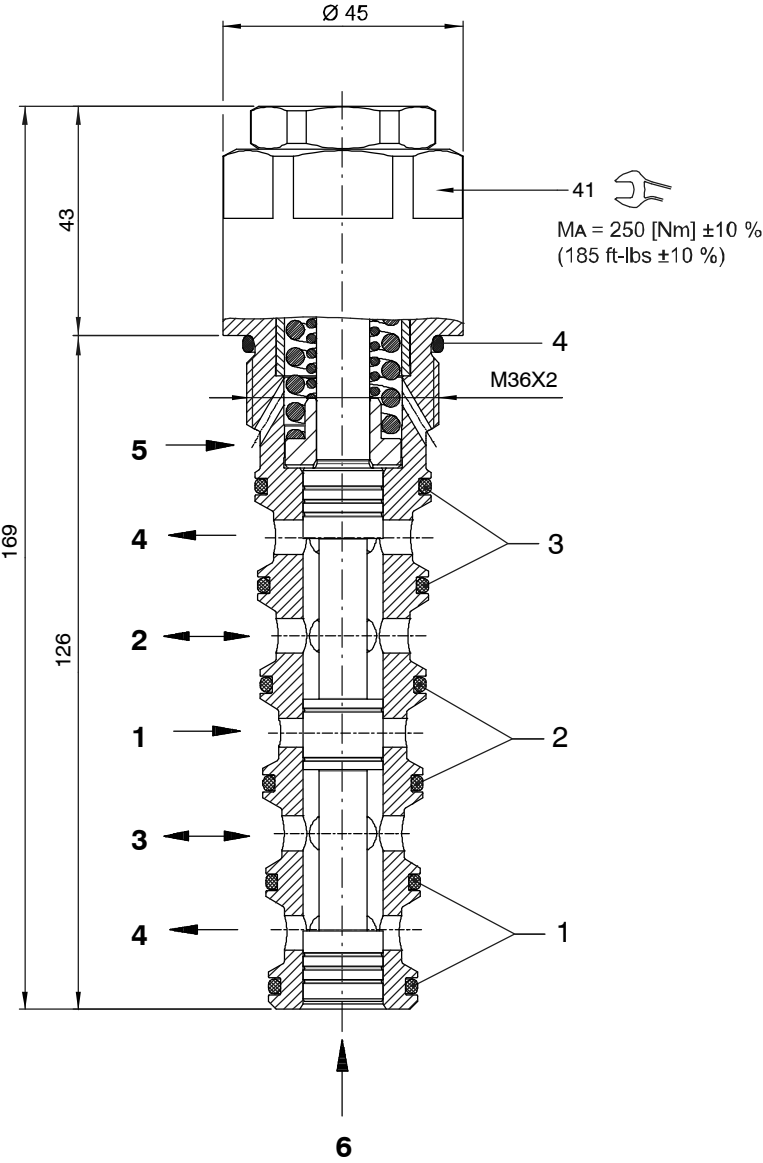
When fitting the cartridges, the tightening torque of the fixing screws must be considered. No adjustments are necessary, since the cartridges are set in the factory.



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.

6 Dimensions & sectional view



Seal kit NBR/PU no. DS-513-NU

Item	Qty.	Description
1	2	O-ring no. 119 $\varnothing 23, 47 \times 2,62$ PU92
2	2	O-ring no. 120 $\varnothing 25,07 \times 2,62$ PU92
3	2	O-ring no. 121 $\varnothing 26,64 \times 2,62$ PU92
4	1	O-ring no. 124 $\varnothing 31,42 \times 2,62$ N90

7 Ordering code

Ex.	M	D	H	P	43D	Z	A	-	10	U	-	80	-	0518	-	1
M	=	flow-control valve														
D	=	throttle function, direct acting														
H	=	hydraulically operated														
P	=	proportional														
43D	=	4-way/3-position, spool type D														
43G	=	4-way/3-position, spool type G														
Z	=	cavity type DZ														
A	=	standard model - see relevant data sheets														
Z	=	special features - please consult BUCHER														
10	=	nominal size 10														
U	=	PU (Polyurethane) seals and NBR (Nitrile) seals (standard) (special seals - please consult BUCHER)														
80	=	80 l/min Q _N 1-2 / 1-3 at Δp = 10 bar														
100	=	100 l/min Q _N 1-2 / 1-3 at Δp = 10 bar														
0518	=	actuation range (set pressure range)														
1 ... 9	=	design stage (omit when ordering new units)														

8 Related data sheets

Reference	(Old no.)	Description
400-P-060291	(i-33.12)	Cavity type DZ

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