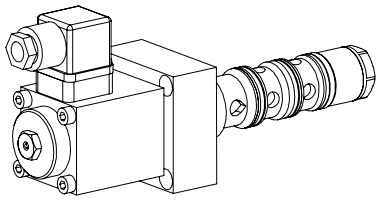
Proportional 3-way flow control valve
Screw-in cartridge
- **Direct operated, pressure compensated**
- **Q_{max} = 50 l/min, p_{max} = 250 bar**
- **$Q_{N\ max}$ = 50 l/min**

M33x2

Wandfluh standard



DESCRIPTION

Direct operated, pressure compmensated proportional flow regulating valve, cavity acc. to Wandfluh standard. Two flow ranges are available. The volume flow is adjusted by a proportional solenoid (VDE standard 0580). A progressive increase in volume flow and reduced hysteresis are characteristic of this valve. The cartridge body is made from steel. The outside parts are phosphatised. The solenoid is zinc coated.

FUNCTION

The 3-way flow control valve is designed to keep the oil flow to any actuator constant irrespectiv of the load. Surplus volume flow will be diverted to the tank line thus saving energy and preventing an overheating of the hydraulic system. The force controlled proportional solenoid running in the fluid acts directly on the control spool wich opens the triangular shaped throttling notches in the cartridge body. The throttle opening, and therefore the flow volume changes proportionally to the current absorption of the proportional solenoid. When the solenoid is without courrent, the control spool is held in the closed position by a spring. To control the valve proportional amplifiers are available from Wandfluh (see register 1.13).

APPLICATION

Proportional flow control valve are suitable for precise feed control system where the supply volume flow needs to be kept constant even when the load fluctuates. The screw-in cartridge is very suitable for mounting in control blocks and is built into the Wandfluh hydraulics NG 10 as a functional element in sandwich style plates and flange-mounted valves (pleas refer to the seperate data sheets in register 2.6).

CONTENT

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TYPE CODE

EMR1003 - [ ] - [ ] # [ ]

3-way flow control valve

Nominal volume flow rates:

Q_N = 31,5 l/min	31,5
Q_N = 50 l/min	50

Standard nominal voltage:

U_N = 12 VDC	G12
U_N = 24 VDC	G24

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	3-way flow control valve
Construction	for cavity acc. to Wandfluh standard
Operations	Proportional solenoid
Mounting	Screw-in thread M33x2
Ambient temperature	-20...50°C
Mounting position	any
Fastening torque	M_D = 80 Nm for screw-in cartride M_D = 5,5 Nm (Qual. 8.8) for solenoid screw M_D = 9,5 Nm (Qual. 8.8) for fixing screw
Weight	m = 1,8 kg

ELECTRICAL SPECIFICATIONS

Construction	Proportional solenoid, wet pin push type, pressure tight	
Standard-nominal voltage	U = 12 VDC	U = 24 VDC
Limiting current	I_G = 1780 mA	I_G =810 mA
Relative duty factor	100% ED (see data sheet 1.1-430)	
Protection class	IP 65 acc. to EN 60 529	
Connection/Power supply	Over divice plug connection to ISO 4400/DIN 43650 (2P+E)	

Other electrical specifications see data sheet 1.1-130 (PI45V)

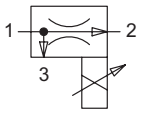
HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 18/16/13 (Required filtration grade ß6...10≥75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s...320 mm²/s
Fluid temperature	-20...+70°C
Peak pressure	p_{max} = 250 bar
Nominal volume flow rates	Q_N = 31,5 l/min, Q_N = 50 l/min,
Max. Volume flow	Q_{max} = 50 l/min
Min. Volume flow	Q_{min} = 0,05 l/min
Leakage volume flow	see characteristics
Resolution	1 mA
Repeatability	≤ 1 % *
Hysteresis	≤ 3 % *

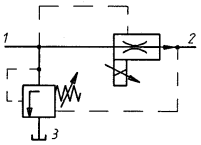
* at optimal dither signal

SYMBOLS

simplified

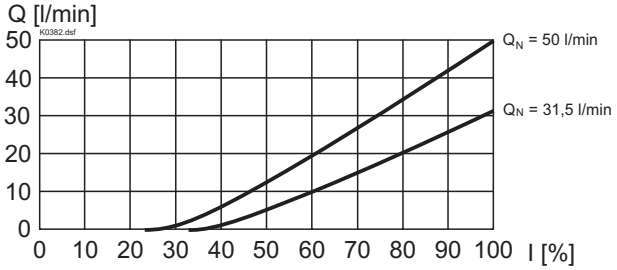


detailed

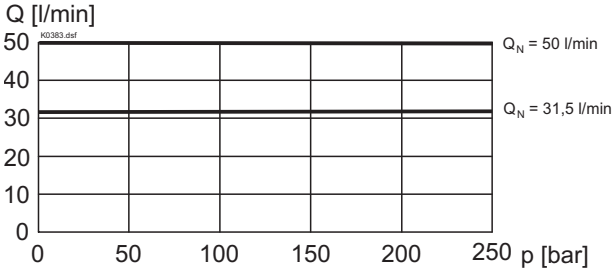


CHARACTERISTICS Oil viscosity υ = 30mm²/s

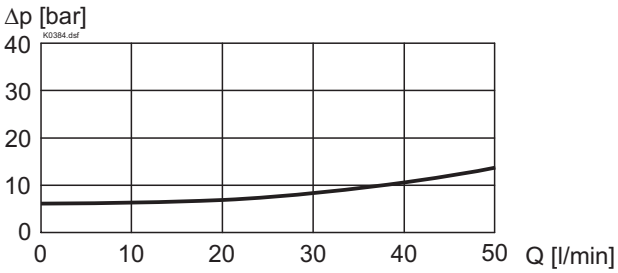
Q = f (I) Volume flow adjustment characteristics



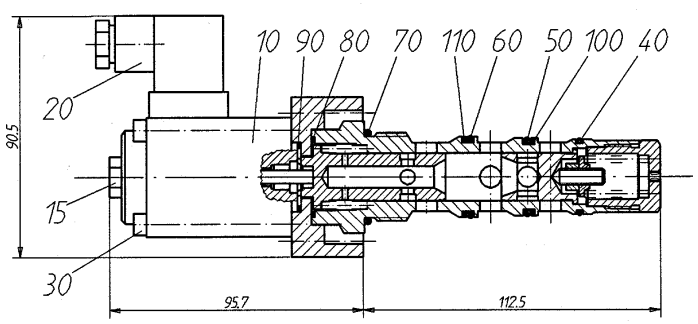
Q = f (p) Volume flow pressure characteristics



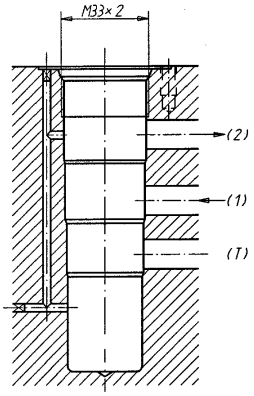
Δp = f (Q) Pressure drop volume flow characteristics



DIMENSIONS / SECTIONAL DRAWINGS



Cavity drawing acc. to
Wandfluh standard



For detailed cavity drawing
and cavity tools, see data sheet
2.13-1032

PARTS LIST

Position	Article	Description
10	256.4454 256.4418	Proportional solenoid PI45V-G24 Proportional solenoid PI45V-G12
15	253.8001	Locking screw with integrated manual override HB6
20	219.2002	Plug (black)
30	246.2160	Cylinder screw M5x60 DIN912
40	160.2235	O-Ring ID 23,47x2,62
50	160.2251	O-Ring ID 25,07x2,62
60	160.2298	O-Ring ID 29,82x2,62
70	160.2267	O-Ring ID 26,70x1,78
80	160.2252	O-Ring ID 25,12x1,78
90	160.2236	O-Ring ID 23,52x1,78
100	49.3297	Back up ring 24,5x29x1,4
110	49.3307	Back up ring RD 25,5x30x1,4

ACCESSORIES

Proportional amplifier Register 1.13

Technical explanation see data sheet 1.0-100E