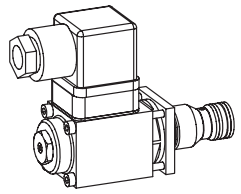
Proportional throttle valve
Screw-in cartridge

- **Direct operated, not pressure compensated**
- **Throttle in one flow direction**
- **Q_{max} = 12 l/min, p_{max} = 250 bar**
- **$Q_{N\,max}$ = 6,3 l/min**

M18x1,5
ISO 7789



DESCRIPTION

Direct operated proportional throttle valve. Thread M18x1,5 and cavity in accordance with ISO 7789. Spool options „normally closed“ and „normally open“. Two flow ranges are available. The volume flow is adjusted by a Wandfluh-proportional solenoid (VDE standard 0580). Progressive increase and decrease of volume flow and reduced hysteresis are characteristics of this valve. The cartridge body is made of steel. Its special surface coating protects the outside against corrosion and reduces friction of the control spool. The solenoid is zinc coated.

FUNCTION

The force controlled wet pin proportional solenoid acts directly on the control spool which opens or closes the trottle segments of the radial holes in the valve body. The throttle opening and therefore the flow volume changes proportionally to the current input to the proportional solenoid. With deenergised solenoid the control spool is held in closed respectivly open position by a spring. To control the valve proportional amplifiers are available from Wandfluh (see register 1.13).

APPLICATION

Proportional throttel valves are suitable for precise feed control systems. Very sensitive opening and closing characteristics allow smooth control of movements in stationary or mobile installations, e.g. machine tools, public vehicles. Installation of the screw-in cartridge in control blocks as well as in the Wanfluh sandwich plates (vertical stacked systems) and flange valves of the NG3-Mini types. (Please note the separate data sheets in register 2.6). Cavity tools are available for machining the cavities in steel and aluminium (hire or purchase). Please refer to the data sheets in register 2.13.

CONTENT

TYPE CODE

D ☐ P PM18 - ☐ - ☐ # ☐

Throttle valve		
Normally closed	N	
Normally open	O	
Proportional		
Screw-in cartridge M18x1,5		
Nominal volume flow rates: (at 10 bar pressure drop)	Q_N = 4 l/min	4
	Q_N = 6,3 l/min	6,3
Standard nominal voltage:	U_N = 12 VDC	G12
	U_N = 24 VDC	G24
Design-Index (Subject to change)		

GENERAL SPECIFICATIONS

Description	Direct operated proportional throttle valve
Construction	Screw-in cavity acc. to ISO 7789
Operations	Proportional solenoid
Befestigungsart	Screw-in thread M18x1,5
Ambient temperature	-20…50° C
Mounting position	any
Fastening torque	M_D = 30 Nm for screw-in cartridge M_D = 1,2 Nm (Qual. 8.8) for solenoid screws
Weight	m = 0,25 kg
Volume flow direction	1 → 2

ELECTRICAL SPECIFICATIONS

Construction	Proportional solenoid, wet pin push type, pressure tight.	
Standard-Nominal voltage	U_N = 12 VDC	U_N = 24 VDC
Limiting current	I_G = 1080 mA	I_G = 540 mA
Relative duty factor	100% DF (see data sheet 1.1-430)	
Protection class	IP 65 to EN 60 529	
Connection/Power supply	Over device plug connection to ISO 4400 / DIN 43 650 (2P+E)	

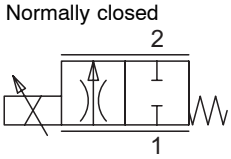
Other electrical specifications see data sheet 1.1-90 (PI29V)

HYDRAULIC SPECIFICATIONS

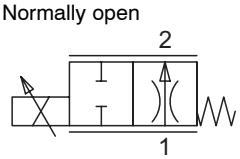
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 18/16/13 (Required filtration grade ß 6...10 ≥ 75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20...+70° C
Peak pressure	p_{max} = 250 bar
Nominal volume flow rates	Q_N = 4 l/min, Q_N= 6,3 l/min at 10 bar pressure drop
Max. Volume flow	Q_{max} = 12 l/min
Leakage volume flow	see characteristics
Resolution	1 mA
Repeatability	≤ 1 % ∗
Hysteresis	≤ 2 % ∗
	∗ at optimal dithersignal

SYMBOLS

Normally closed

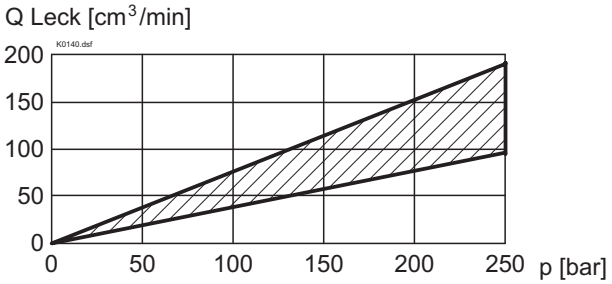


Normally open

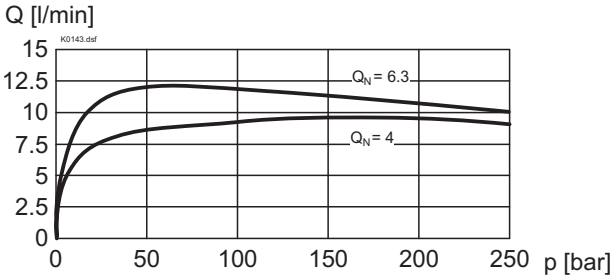


CHARACTERISTICS Oil viscosity υ = 30 mm²/s

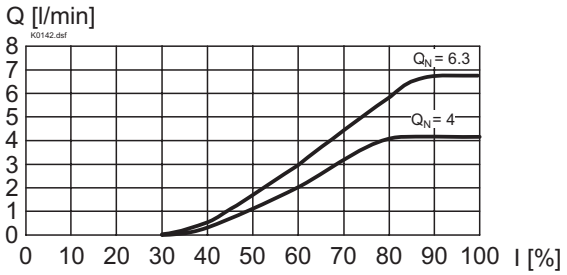
Q_L = f (p) Leakage volume flow characteristics



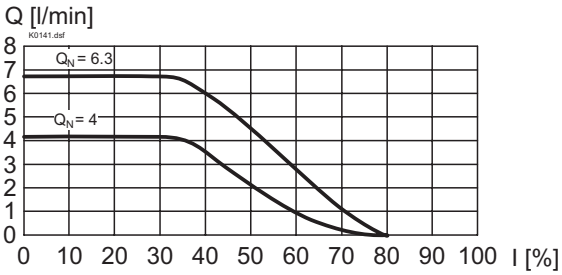
Q = f (p) Volume flow pressure characteristics



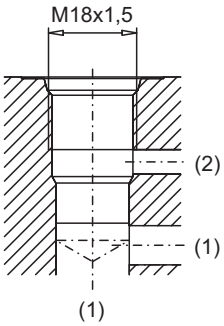
Q = f (I) DNPPM18 Volume flow adjustment characteristics



Q = f (I) DOPPM18 Volume flow adjustment characteristics

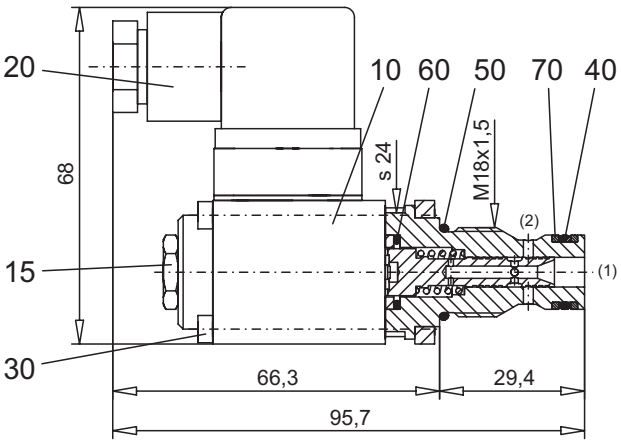


DIMENSIONS / SECTIONAL DRAWINGS



Cavity drawing according to ISO 7789–18–01–0–98

For detailed cavity drawing and cavity tools see data sheet 2.13-1002.



PARTS LIST

Position	Article	Description
10	256.2453 256.2418	Proportional solenoid PI29V-G24 Proportional solenoid PI29V-G12
15	253.8000	Mounted screw with integrated manual override HB4,5
20	219.2002	Plug (black)
30	246.0146	Socket head cap screw M3x45 DIN912
40	160.2111	O-ring ID 11,11x1,78
50	160.2156	O-ring ID 15,60x1,78
60	160.2120	O-ring ID 12,42x1,78
70	049.3156	Back up ring RD 12,1x15x1,4

ACCESSORIES

Cartridge built-in flange- or sandwich body

Flange/Sandwichplate	register 2.6
Proportional amplifier	register 1.13

Technical explanation see data sheet 1.0-100E