

**Proportional throttle valve**
**Slip-in cartridge**

- Direct operated, not pressure compensated
- Throttle in one flow direction
- $Q_{max} = 22 \text{ l/min}$ ,  $p_{max} = 200 \text{ bar}$
- $Q_{Nmax} = 10 \text{ l/min}$

## NG4

Wandfluh standard

**DESCRIPTION**

Directly operated proportional throttle valve as a slip-in cartridge with cavity according 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 steel cartridge body is galvanised and the solenoid is phosphatised.

**FUNCTION**

The force controlled proportional solenoid running in the fluid acts directly on the control spool which opens the triangular 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 current, 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 throttle valves are suitable for precise feed control systems. An extremely sensitive opening and closing response allows a smooth control of movements in stationary or mobile installations, e.g. machine tools, public vehicles. The slip-in cartridge is suitable for installation in control blocks.

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**TYPE CODE**

	EDR400	-	[ ]	-	[ ]	#	[ ]
Proportional throttle valve							
Nominal volume flow rates (at 5 bar pressure drop)							
$Q_N = 4 \text{ l/min}$	<input type="text" value="4"/>						
$Q_N = 10 \text{ l/min}$	<input type="text" value="10"/>						
Nominal voltage, current type							
$U_N = 12 \text{ VDC}$	<input type="text" value="G12"/>						
$U_N = 24 \text{ VDC}$	<input type="text" value="G24"/>						
Design-Index (Subject to change)							

**GENERAL SPECIFICATIONS**

Description	Direct operated proportional throttle valve
Construction	Slip-in cartridge for cavity acc. to Wandfluh standard
Operations	Proportional solenoid
Mounting	Slip-in cartridge 4 zyl. screws M4
Ambient temperature	-20...50°C
Mounting position	any
Fastening torque	$M_D = 2,8 \text{ Nm}$ (Qual. 8.8) solenoid screws
Weight	$m = 0,6 \text{ kg}$
Volume flow direction	1 --> 2

**HYDRAULIC SPECIFICATIONS**

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 18/16/13 (Required filtration grade $\beta_{6...10} \geq 75$ ) see data sheet 1.0-50/2
Viscosity range	12 mm <sup>2</sup> /s...320 mm <sup>2</sup> /s
Fluid temperature	-20...+70°C
Peak pressure $p_{max}$	= 200 bar
Nominal volume flow rates	$Q_N = 4 \text{ l/min}$ , $Q_N = 10 \text{ l/min}$ at 5 bar pressure drop
	For valves which deviate from the nominal flow $Q_N$ the valve pressure drop $\Delta p$ can be calculated by following formula:

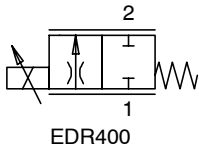
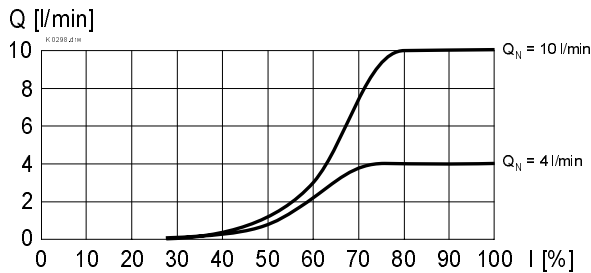
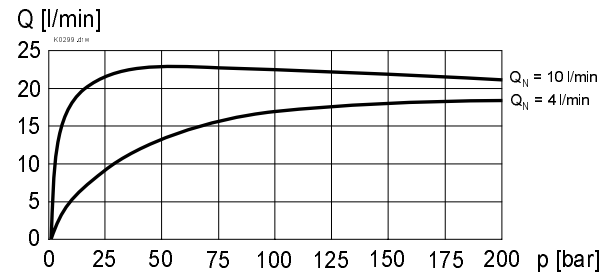
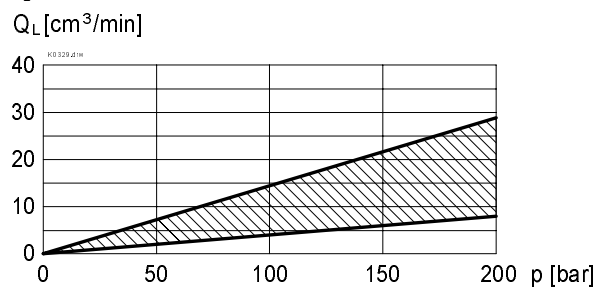
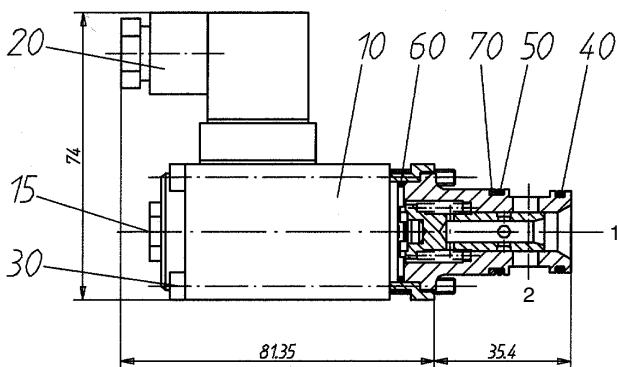
$$\Delta p = \Delta p_N \cdot \left(\frac{Q}{Q_N}\right)^2$$

$Q_N$  = Volume flow  
 $Q$  = effective flow  
 $\Delta p_N$  = nominal pressure drop 5 bar  
 $Q_{max} = 22 \text{ l/min}$   
 see characteristics  
 Resolution 1 mA  
 Repeatability  $\leq 1\% *$   
 Hysteresis  $\leq 3\% *$   
 \* at optimal dithersignal

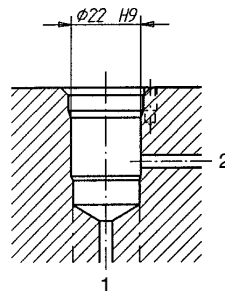
**ELECTRICAL SPECIFICATIONS**

Construction	Proportional solenoid, wet pin push type, pressure tight.	
Standard-Nominal voltage	$U = 12 \text{ VDC}$	$U = 24 \text{ VDC}$
Limiting current	$I_G = 1250 \text{ mA}$	$I_G = 680 \text{ mA}$
Relative duty factor	100% ED (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 43650 (2P+E)	
Other electrical specifications	see data sheet 1.1-115 (PI35V)	

Max. Volume flow  
 Leakage volume flow  
 Resolution  
 Repeatability  
 Hysteresis

**SYMBOLS**

**CHARACTERISTICS** Oil viscosity  $\nu = 30 \text{ mm}^2/\text{s}$ 
 $Q = f(I)$  Volume flow signal characteristics

 $Q = f(p)$  Volume flow pressure characteristics

 $Q_L = f(p)$  Leakage volume flow characteristics

**DIMENSION / SECTIONAL DRAWING**


Cavity drawing acc. to Wandfluh standard



For detailed cavity drawing see data sheet 2.13-1025

**PARTS LIST**

Position	Article	Description
10	256.3454 256.3426	Proportional solenoid PI35V-G24 Proportional solenoid PI35V-G12
15	253.8000	Mounted screw with integrated manual override HB4,5
20	219.2002	Plug (black)
30	246.1170	Zyl. screw M4x70 DIN 912
40	160.2170	O-ring ID 17,17x1,78
50	160.2188	O-ring ID 18,77x1,78
60	160.2236	O-ring ID 23,52x1,78
70	49.3226	Back up ring RD 19,1x22x1,4

**ACCESSORIES**

Proportional amplifier	register 1.13
Proportional handbook	on request