

**Proportional throttle valve  
Screw-in cartridge**

- Direct operated, not pressure compensated
- Throttle in one flow direction
- $Q_{max} = 65$  l/min,  $p_{max} = 250$  bar
- $Q_{Nmax} = 63$  l/min

**M33x2**

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 zinc coated.

**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**

		EDR1000 - <input type="text"/> - <input type="text"/> # <input type="text"/>	
Proportional throttle valve			
Nominal volume flow rates (at 10 bar pressure drop)	$Q_N = 31,5$ l/min	<input type="text" value="31,5"/>	
	$Q_N = 63$ l/min	<input type="text" value="63"/>	
Nominal voltage, current type	$U_N = 12$ VDC	<input type="text" value="G12"/>	
	$U_N = 24$ VDC	<input type="text" value="G24"/>	
Design-Index (Subject to change)			

**GENERAL SPECIFICATIONS**

Description	Direct operated proportional throttle valve
Construction	Screw-in cartridge for cavity acc. to Wandfluh standard
Operations	Proportional solenoid
Mounting	Screw-in thread M33x2 4 cyl. screws M6
Ambient temperature	-20...50° C
Mounting position	any
Fastening torque	$M_D = 80$ Nm for screw-in cartridge $M_D = 5,5$ Nm (Qual. 8.8) for solenoid screws $M_D = 9,5$ Nm (Qual. 8.8) for fastening screws
Weight	$m = 1,45$ 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	$p_{max} = 250$ bar
Nominal volume flow rates	$Q_N = 31,5$ l/min, $Q_N = 63$ l/min, at 10 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:

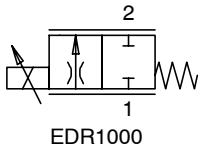
$$\Delta p = \Delta p_N \cdot \left(\frac{Q}{Q_N}\right)^2$$

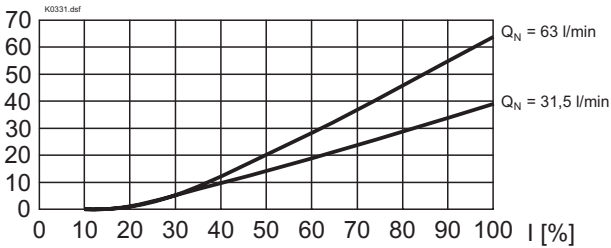
$Q_N$  = Volume flow  
 $Q$  = effective flow  
 $\Delta p_N$  = nominal pressure drop 10 bar  
 $Q_{max} = 65$  l/min  
 see characteristics  
 1 mA  
 $\leq 1\%$  \*  
 $\leq 3\%$  \*  
 \* at optimal dithersignal

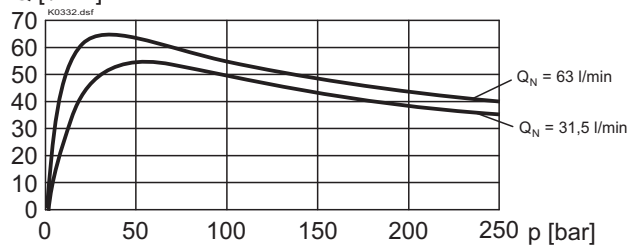
Max. Volume flow	
Leakage volume flow	see characteristics
Resolution	1 mA
Repeatability	$\leq 1\%$ *
Hysteresis	$\leq 3\%$ *

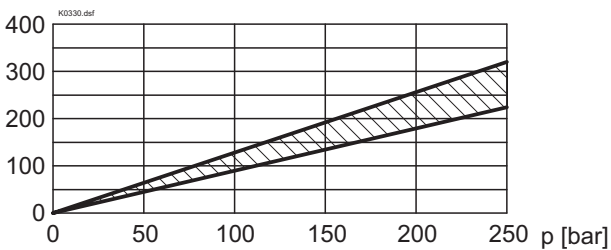
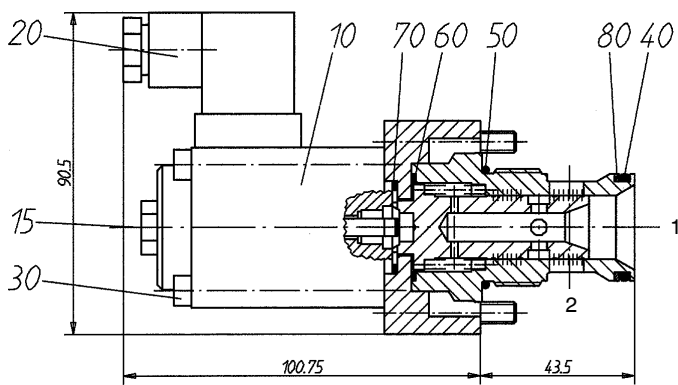
**ELECTRICAL SPECIFICATIONS**

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 to EN 60 529	
Connection/Power supply	Over device plug connection to ISO 4400/ DIN 43650 (2P+E)	
Other electrical specifications	see data sheet 1.1-130 (PI45V)	

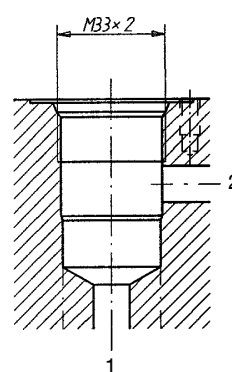
**SYMBOLS**

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

 $Q$  [l/min]

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

 $Q$  [l/min]

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

 $Q_L$  [cm<sup>3</sup>/min]

**DIMENSION / SECTIONAL DRAWING**


Cavity drawing acc. to Wandfluh standard



For detailed cavity drawing see data sheet 2.13-1027

**PARTS LIST**

Position	Article	Description
10	256.4454 256.4418	Proportional solenoid PI45V-G24 Proportional solenoid PI45V-G12
15	253.8001	Mounted screw with integrated manual override HB6
20	219.2002	Plug (black)
30	246.2160	Cyl. screw M5x60 DIN912
40	160.2236	O-ring ID 23,52x1,78
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	49.3307	Back up ring RD 25,5x30x1,4

**ACCESSORIES**

Proportional amplifier

Register 1.13

Technical explanation see data sheet 1.0-100E