

Proportional pressure relief valve inverse Screw-in cartridge

- · Integrated electronics
- · Direct operated
- $Q_{max} = 20 I/min$
- = 400 bar • **Q**_N
- **p**_{max} = 315 bar



M22x1,5

ISO 7789

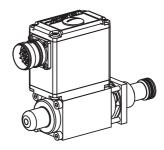


DESCRIPTION

Direct operated proportional pressure relief valve with integrated electronics and inverse function. Thread M22x1,5 for cavity according to ISO 7789. These plug & play valves are factory set and adjusted. High valve-to-valve reproducibility. Housing for electronics with protection class IP67 for harsh environment. As standard versions, 7 pressure ranges are available: 20, 40, 63, 100, 160, 200, 315 bar. Good flow performance due to the differential area principle. Small leakage along the poppet guide. Adjustment by a Wandfluh (VDE-Norm 0580) proportional solenoid. The cartridge and the solenoid made of steel are zinc coated and therefore rust-protected.

FUNCTION

The valve limits the pressure in the port P (1) and reliefs the volume flow to tank port T (2). The back pressure in T (2) influences the pressure in P (1). The reliefed pressure drops with rising solenoid current (inverse function), and the with deenergised solenoid, a maximum pressure is present. The control connection is provided by an analog interface or a fieldbus interface (CANopen or Profibus DP). Parameter setting and diagnosis with the free-of-charge software «PASO» or via fieldbus interface. After taking off the cover of the electronic housing, the serial interface to adjust the settings is accessible. The menu controlled Windows program «PASO» allows easy adjustment of all variable settings. Data are stored in a non-volatile memory. Even after an electric power failure settings can easily be reproduced and transmitted.



APPLICATION

Proportional pressure relief valves with inte-grated electronics are well suited for demanding applications, in which the pressure frequently has to be changed. They are implemented in systems calling for good valve-to-valve reproducibility, easy installation, comfortable operation and high precision in industrial hydraulics as well as in mobile hydraulics. The proportional pressure relief catridge is very suitable for mounting in control blocks, flange bodies and sandwich plates size NG4-Mini and NG6. (Please note the separate data sheets in register 2.3). 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

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TYPE CODE

	В	D W PN	Л22		# _
Pressure relief valve					
Direct operated					
Proportional inverse valve with integrated electronics					
Screw-in cartridge M22x1,5					
Standard nominal pressure ranges p _N :	20 bar 20 40 bar 40 63 bar 63 100 bar 100	160 bar 200 bar 315 bar	200 315		
Standard nominal voltage U_N :	12 VDC 24 VDC		12 24		
Hardware configuration: With analog signal (0+10 V factory set) With CANopen acc. to DSP-408 With Profibus DP in accordance with Fluid Power Technology With CAN J1939 (on request)			A1 P1 C1 J1		
Design-Index (Subject to change)					

GENERAL SPECIFICATIONS

Direct operated proportional pressure relief Description

valve with inverse function

Construction Screw-in cartridge for cavity acc. to ISO 7789

Operations Proportional solenoid with spring Screw-in thread M22x1,5 Mounting

Ambient temperature

-20...+65°C (typical)
(The upper temperature limit is a guideline value for typical applications, in individual cases it may also be higher or lower. The electronics of the valve limit the power in case of a too high electronics temperature. More detailed information can be obtained from the operating instructions «DSV».)

Mounting position

 M_D = 50 Nm for screw-in cartridge Fastening torque

 $M_D = 2.6$ Nm (qual. 8.8) for solenoid screws

Weight m = 0.9 kg

SYMBOL





HYDRAULIC SPECIFICATIONS

Viscosity range

Fluid Mineral oil, other fluid on request Contamination ISO 4406:1999, class 18/16/13 efficiency (Required filtration grade $\& 6...10 \ge 75$)

see data sheet 1.0-50/2 12 mm²/s...320 mm²/s

 $\begin{array}{lll} \mbox{Fluid temperature} & -20...+70\,^{\circ}\mbox{C} \\ \mbox{Peak pressure} & p_{\mbox{\tiny max}} = 400 \mbox{ bar} \\ \mbox{Nominal pressure ranges} & \mbox{see type code} \\ \mbox{Min. volume flow} & Q_{\mbox{\tiny min}} = 0,2 \mbox{ l/min} \\ \end{array}$

Min. volume flow $Q_{min} = 0.2 \text{ l/min}$ Max. volume flow $Q_{max} = 20 \text{ l/min for } p_N = 20/40/100/160/200 \text{ bar}$

 $Q_{\text{max}}^{\text{max}} = 15 \text{ l/min for } p_{\text{N}} = 63/315 \text{ bar}$

Leakage volume flow see characteristics

Repeatability ≤ 3 % Hysteresis ≤ 5 %

ELECTRICAL SPECIFICATIONS

Protection class IP 67 acc. to EN 60 529

with suitable connector and closed

electronic housing 12 VDC or 24 VDC

Ramps adjustable

Parameterisation via Fieldbus or USB

Interface USB (Mini B for parameterisation

with «PASO»

(under the closing screw of the housing cover, factory set parameters)

Analog interface:

Device receptacle (male) M23, 12-poles

Mating connector Plug (female), M23, 12-poles

(not incl. in delivery)

Preset value signal Voltage/Current

Fieldbus interface:

Supply voltage

Device receptacle supply (male) M12, 4-poles

Mating connector Plug (female), M12, 4-poles

(not incl. in delivery)

Device receptacle

CANopen (male) M12, 5-poles (acc. to DRP 303-1) Mating connector Plug (female), M12, 5-poles

(not incl. in delivery)

Device receptacle
Profibus (female)
Mating connector
M12, 5-poles B-coded (acc. to IEC 947-5-2)
Plug (male), M12, 5-poles, B-coded

(not incl. in delivery)
Preset value signal Fieldbus

NOTE!

Detailed electrical characteristics and description of «DSV» electronics are shown on data sheet 1.13-75.

START-UP

Normally there is no need to adjust settings by the customer. The connector has to be wired according to the chapter «Connector wiring diagram».

Additional information can be found on our website:

«www.wandfluh.com»

Free-of-charge download of the «PASO»-software and the instruction manual for the «DSV» hydraulic valves as well as the operation instruction CANopen eg. Profibus DP protocol with device profile DSP-408 for «DSV».

CONNECTOR WIRING DIAGRAM

Analog interface:

Device receptacle (male) X1



1 = Supply voltage + 2 = Supply voltage 0 VDC

3 = Stabilised output voltage 4 = Preset value voltage +

5 = Preset value voltage -6 = Preset value current +

7 = Preset value current -8 = Reserved for extensions

9 = Reserved for extensions

10 = Enable control (Digital input)11 = Error signal (Digital output)

12 = Chassis

Preset value voltage (PIN 4/5) resp. current (PIN 6/7) are selected with set-up and diagnosis software.

Factory setting: Voltage (0...+10 V), (PIN 4/5)

Fieldbus interface:

Device receptacle supply (male) X1



MAIN

1 = Supply voltage + 2 = Reserved for extensions 3 = Supply voltage 0 VDC 4 = Chassis

Device receptacle CANopen (male) X3



1 = not connected 2 = not connected

3 = CAN Gnd 4 = CAN High 5 = CAN Low Device receptacle Profibus (female) X3



Profibus 1 = VP

1 = VP 2 = RxD/TxD - N 3 = DGND

4 = RxD/TxD - P5 = Shield

Parameterisation interface (USB, Mini B) X2

Under the closing screw of the housing cover

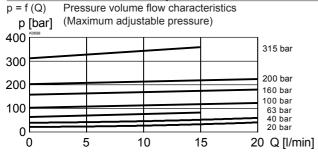


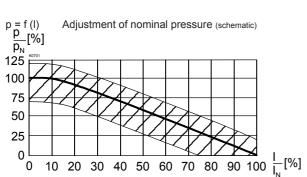
NOTE

The mating connectors and the cable to adjust the settings are not part of the delivery. To order the cable, look up the article no. in the chapter «Accessories».

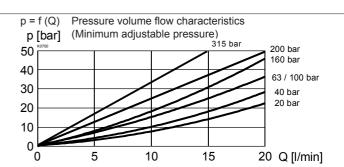


$\textbf{CH} \underline{\textbf{ARACTERISTICS}} \hspace{0.2cm} \text{Oil viscosity } \upsilon \text{ = } 30 \text{ mm}^2\text{/s}$

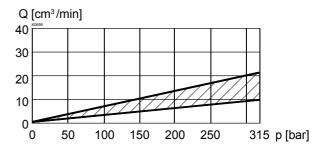


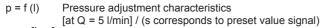


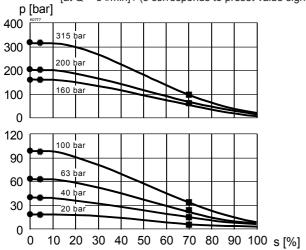
Adjustable range of nomial pressure, adjusted with set screw under the clamp cap.



Q_i = f (p) Leakage volume flow characteristics







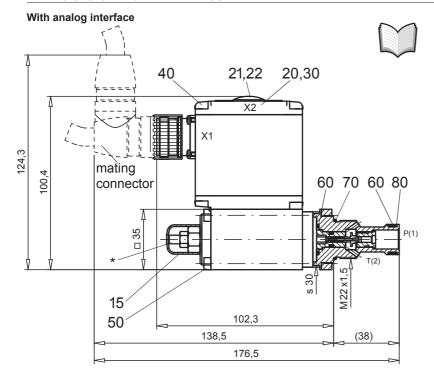
Factory settings:

Dither set for optimal hysteresis

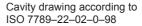
- = Deadband: Solenoid switched off with command preset value signal <5 %</p>
- = p_N mechanically pre-set at Q = 5 l/min
- = Limited pressure in port P (1) at 70 % of preset value signal:
 - 95 bar with pressure range 315 bar
 - 65 bar with pressure range 200 bar
 - 56 bar with pressure range 160 bar
 - 32 bar with pressure range 100 bar
 - 22 bar with pressure range 63 bar
 - 14,5 bar with pressure range 40 bar
 - 6,5 bar with pressure range 20 bar

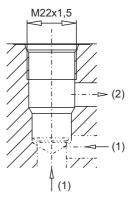


DIMENSIONS/SECTIONAL DRAWINGS



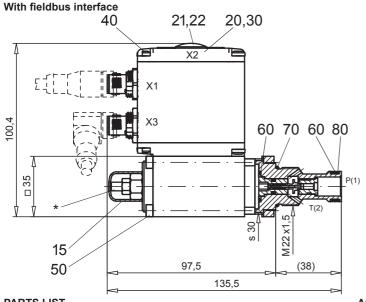
The cable connector is not part of the delivery. Regarding the dimensions see also the connector in the chapter





For detailed cavity drawing and cavity tools see data sheet 2.13-1003

* Adjustment screw to set the nominal pressure (+20 % / -30 %)



PARTS LIST

Position	Article	Description
15	253.8012 override HB	Plug with integrated manual 4,5-H44
20	062.0102	Cover
21	223.1317	Dummy plug M16x1,5
22	160.6131	O-ring ID 13,00 x 1,5
30	072.0021	Gasket 33x2x59,9x2
40	208.0100	Socket head cap screw M4 x 10
50	246.1171	Socket head cap screw M4x70 DIN 912
60	160.2140	O-ring ID 14,00 x 1,78
70	160.2188	O-ring ID 18,77 x 1,78
80	049.3177	Back-up ring RD 14,6 x 17,5 x 1,4

Technical explanation see data sheet 1.0-100E

ACCESSORIES

· Cartridge built in: flange and sandwich bodies

see register 2.3

· Set-up software

see start-up

· Cable to adjust the settings through interface USB (from plug type A to Mini B, 3 m)

article no. 219.2896

· Cable connector for analog interface:

- straight, soldering contact

article no. 219.2330 article no. 219.2331

- 90°, soldering contact Recommended cable size:

- Outer diameter 9...10,5 mm

- Single wire max. 1 mm²

- Recommended wire size:

 $0...25 \,\mathrm{m} = 0.75 \,\mathrm{mm}^2 \,\mathrm{(AWG18)}$

 $25...50 \,\mathrm{m} = 1 \,\mathrm{mm}^2 \,(AWG17)$