

Proportional Pressure Relief Valves Nominal size 6



Systemtechnik
GmbH

Directly controlled
Interface to DIN 24 340 and ISO

PN [$p_{max.}$] = 315 bar

7501247.06.02.06

Description (standard units)

Design

With these proportional pressure valves, the pressure is controlled by means of a variable magnetic force which acts on the piston. The directly controlled design consists of a small seat piston to which the proportional solenoid is fitted.

The hydraulic pressure can be controlled by varying the current I which is fed to the proportional solenoid; this is carried out with the aid of a potentiometer and an amplifier.

Application

In hydraulic control circuits, there is often a requirement to control the pressure by means of an electrical signal, e.g. for pure remote control, in order to avoid long hydraulic lines, or for program controls where the pressures must be automatically adjusted. These proportional relief valves are very often fitted in process-controlled plastic moulding machines.

Mounting

The units are bolted on subplates and sealed by O-rings.

Line connection

Subplate, interface to DIN 24 340 and ISO.



Features

- Simple electrical programmed control and remote control
- Adjustable transient characteristics
- Suitable for use as remote pilot valve

Type code

Proportional pressure relief valve

D	B	C	6	UP	G	O	...
						1	2	3		4

- 1 Adjustable pressure range: **50** - Up to 50 bar
70 - Up to 100 bar
80 - Up to 210 bar
90 - Up to 315 bar
- 2 Code No.: **101** - Solenoid 800 mA
201 - Solenoid 1600 mA
- 3 Engineering version: **3**
- 4 Sealing material: **V** - Viton

Subplate

P	S	6	G	O	O
				1	2	3		

- 1 Line connection: **2** - G 1/4 (internal thread to ISO 228/1)
3 - G 3/8
- 2 Code No.: **024** - G 1/4
001 - G 3/8
- 3 Engineering version: **2**

Parameters to VDI 3276

Type designation		D B C 6 UP G... 101 3 O V	D B C 6 UP G... 201 3 O V
General parameters			
Designation		Proportional pressure relief valve	
Symbol			
Design		Seat valve, directly controlled	
Type of mounting		Flange	
Line connection		Subplate	
Mounting position		Free	
Flow direction		From P to T	
Actuator		Proportional solenoid	
Weight of valve		[kg]	1.7
Weight of subplate		[kg]	G 1/4 = 0.7 G 3/8 = 1.0
Ambient temperature		ϑ_u	[°C] -20 ... +50
Nominal size		6	
Hydraulic parameters			
Operating pressure		p_e	[bar] ... 315
Adjustable pressure range ¹⁾		p_v	[bar] p_v min.: See characteristic curve ¹⁾ p_v max.: Pressure stage 50: ... 50 Pressure stage 70: ... 100 Pressure stage 80: ... 210 Pressure stage 90: ... 315
Pressure fluid temperature		$\vartheta_{max.}$	[°C] +70
Viscosity range		ν	[mm ² /s] 12 ... 500
Flow		Q	[l/min] See characteristic curves
Regulating time for adjustable pressure range from p_v min. to p_v max.		[ms]	Appr. 20
Hysteresis ²⁾			[% I_N] <3
Repeatability ²⁾			[% p_v max.] Pressure stage 50 and 70: Appr. ±2 Pressure stage 80 and 90: Appr. ±1
Sensitivity of response ²⁾		I_N	[%] <1
Filtering, absolute			[μm] 25
Electrical parameters/Proportional solenoid			
Solenoid Cat. No.		7289	7292
Rated current		I_N	[mA] 800 1600
Nominal power input		P_{20}	[W] 14 14.6
Resistance		R_{20}	[Ω] 21.3 5.7
Duty cycle		ED	[%] 100 100
Protection class of solenoid and electrical connection according to DIN 40 050		IP 65	
Drive electronics		DC 05 / DC 05-XLT see table page 5 pQ 11 und pQ 12 see table page 6	

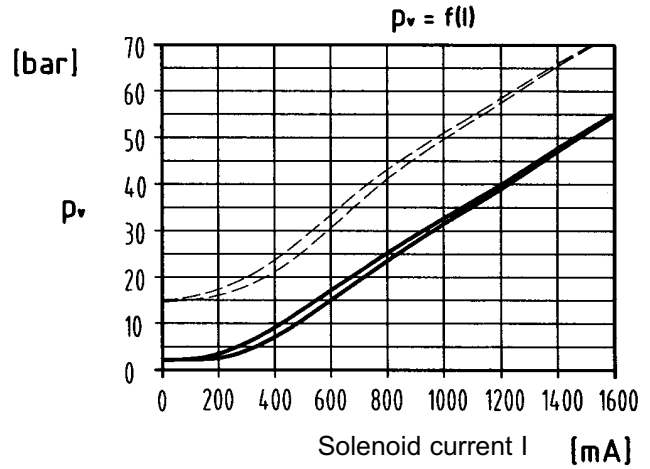
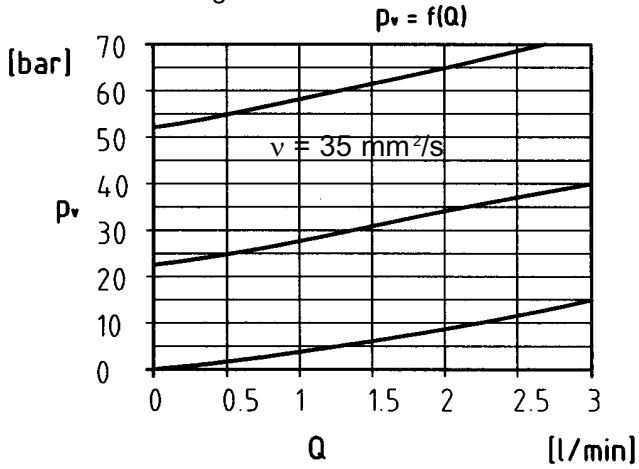
¹⁾ Smaller p_v max. value can be set at amplifier.

²⁾ With dither: Frequency 50 Hz, amplitude 15 % I_N .

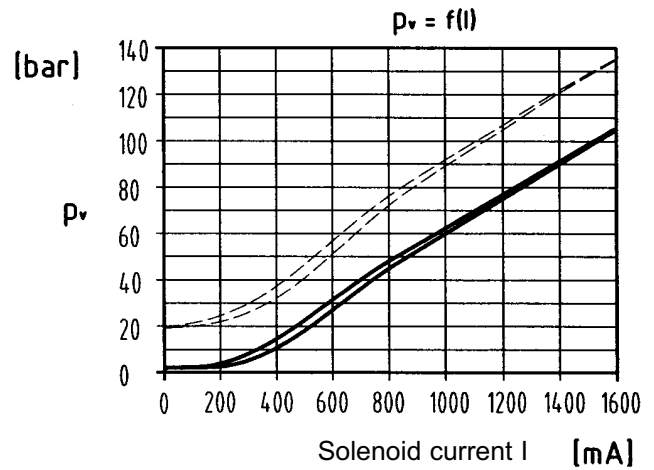
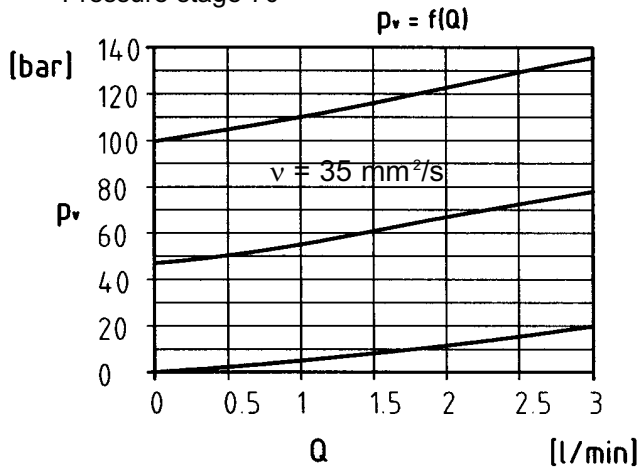
Characteristic curves

— Q = 0.5 l/min
 - - - Q = 3 l/min

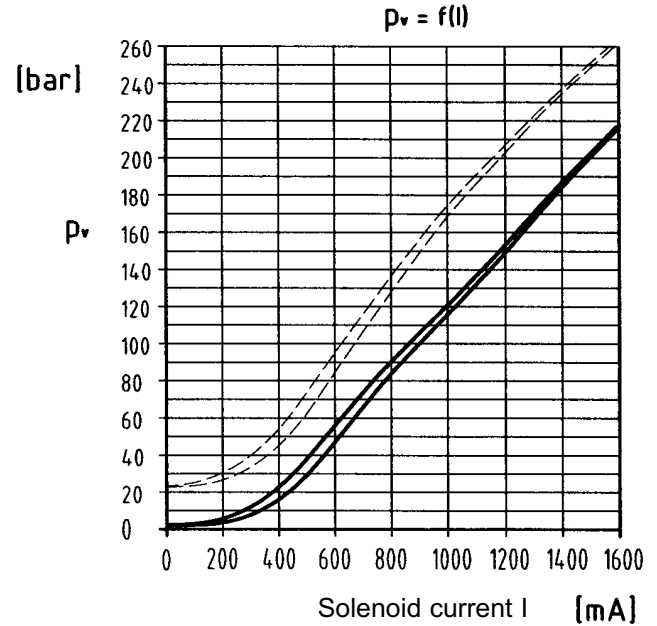
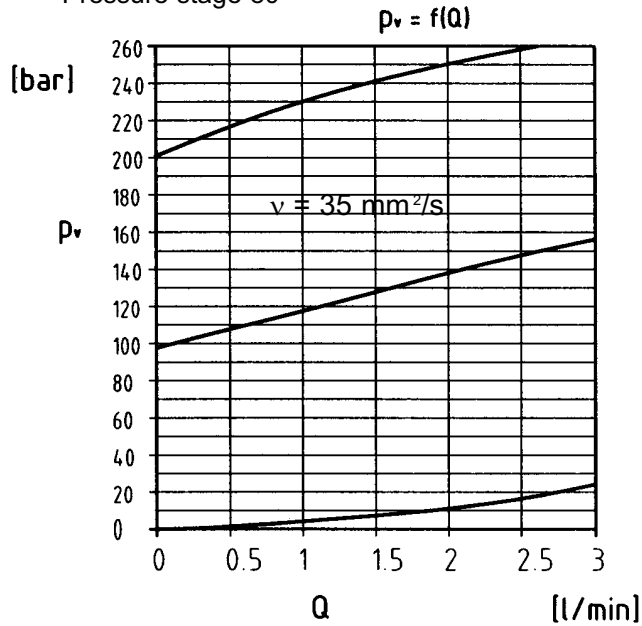
Pressure stage 50



Pressure stage 70

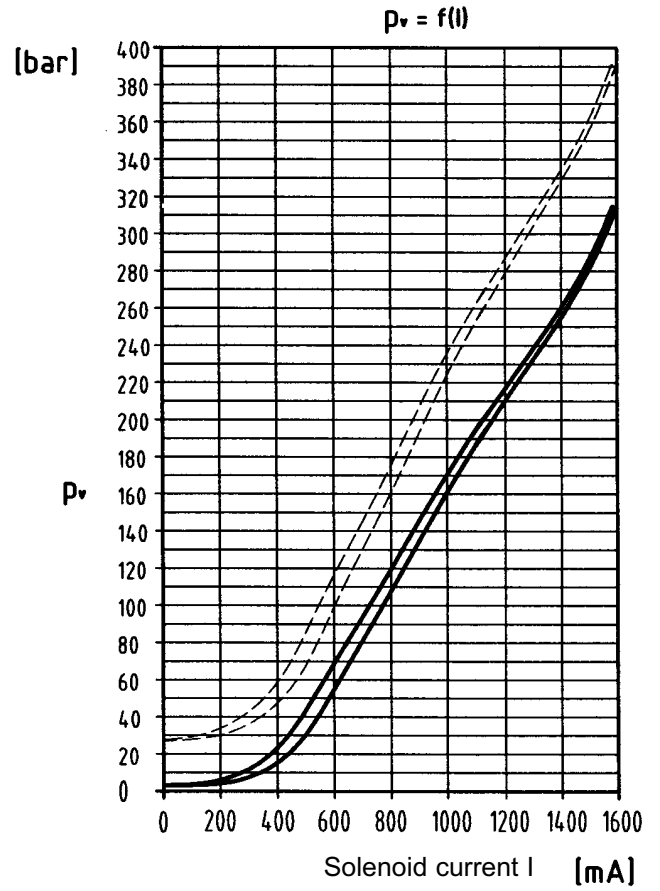
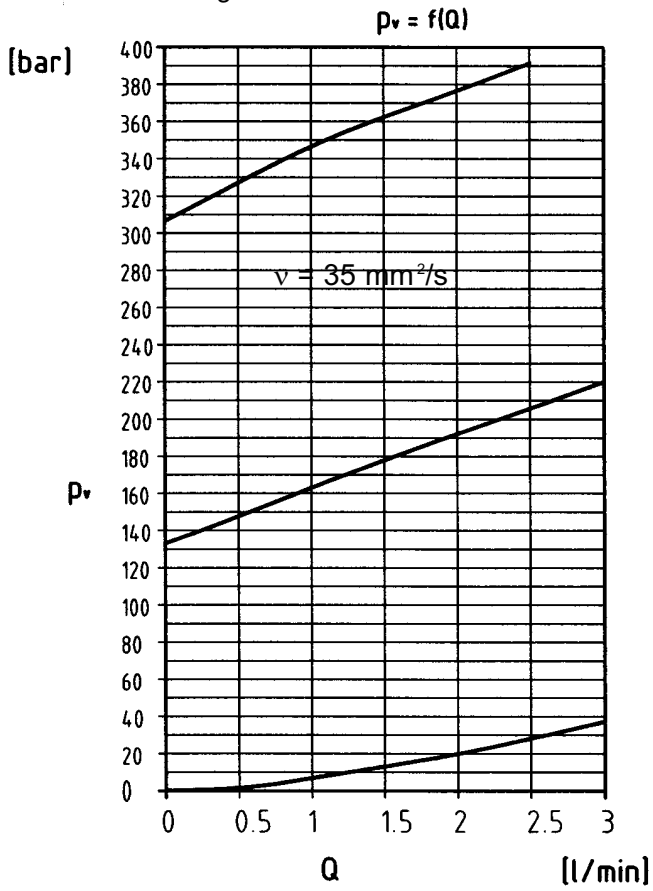


Pressure stage 80



Pressure stage 50

— Q = 0.2 l/min
 - - - Q = 2.5 l/min



Ordering

The units are designated by their type number. The composition of this number can be drawn from the type code. The standard versions are listed in the type survey. When ordering any of the standard versions, please state type number as well as catalog number to preclude possible misinterpretations.

When inquiring about or ordering units not listed in our type survey of this publication, the type number made up by you by means of the type code, however, will do. The corresponding catalog number will then be stated in our confirmation of order. Mounting bolts and O-rings are included in the delivery. The subplate, amplifier and setpoint potentiometer are to be ordered separately.

Example of order

Wanted: Proportional pressure relief valve, nominal size 6, electrically-adjustable, for flanged mounting. Setting pressure max. 50 bar, with mating subplate.

Proportional pressure relief valve:

Type-No.: D B C 6 UP G 50 201 3 O V
Cat. No.: **6016071.7292**

Subplate G 1/4:

Type-No.: P S 6 G 2 024 2 O O
Cat No.: **1065173**

Drive electronics must be ordered separately.

Type survey (standard design)

Nominal size	p_v max. [bar]	Proportional solenoid current	Drive electronics	Line connection	Type	Cat. No.
6	50	0 ... 1600 mA	DC 05, DC 05-XLT, pQ 11 or pQ 12 see table below	Subplate G 1/4 P S 6 G 2 024 2 O O Cat. No. 1065173	D B C 6 UP G 50 201 3 O V	6016071.7292
	100				D B C 6 UP G 70 201 3 O V	6016073.7292
	210				D B C 6 UP G 80 201 3 O V	6016075.7292
	315				D B C 6 UP G 90 201 3 O V	6016077.7292
	50	0 ... 800 mA		Subplate G 3/8 P S 6 G 3 001 2 O O Cat No. 1065183	D B C 6 UP G 50 101 3 O V	6016072.7289²⁾
	100				D B C 6 UP G 70 101 3 O V	6016074.7289²⁾
	210				D B C 6 UP G 80 101 3 O V	6016076.7289²⁾
	315				D B C 6 UP G 90 101 3 O V	6016078.7289²⁾

²⁾ Not for new developments

Drive electronics

Drive electronics DC 05 / DC 05-XLT



Digital amplifier with constant current regulator PWM
Power supply: 18 ... 30 VDC, incl. residual ripple
Ambient temperature ϑ_a : 0 ... +50 °C
Weight: 0,4 kg
Mounting position: Upright
Free air circulation must be ensured
Space requirement for installation of 19" card rack: 50 mm
European format: 100 x 160 mm



Type	Setpoint input (switchable)		Internal setpoints	Ramps	Terminal strip Form F DIN 41612	PID controller for external control loops	Cat. No.	For Further information, see script
	[V]	[mA]	Pcs.	Pcs.	Number of pins			
For proportional directional control valves								
Rated current I_N: 0 ... 1600 mA								
DC 05	2x0...±10V	0(4)...20 mA	4	4	48	● / ○ (switchable)	5150000¹⁾	7503503
DC 05-XLT	0...±10V		4	2	48	○	5150001¹⁾	7503504
			Functional compatible to pQ 03					

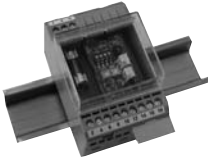

¹⁾ Pre-parametred electronics on request.

Drive electronics

Drive electronics pQ 11 Plug-in amplifier with constant current regulator PWM Degree of protection: IP 65 Power supply: 18 ... 32 VDC, Residual ripple: ≤ 10 % Ambient temperature ϑ_u : -20 ... +50 °C Mounting position: Optional  	Setpoint input (switchable)		Type of connection		Weight	Cat. No.	For Further information, see script
	[V]	[mA]	Connecting cable, 2 m	Connector acc. to DIN 43651	[kg]		
For proportional valves with 2 solenoids 2 pQ 11 necessary Rated current I_N: 0 ... 2400 mA, allowed resistance of solenoid R_{20}: 2,5...4,5 Ω							HERION 7502961
0 ... 10	0 (4)...20	●	○	0,18	5980085		
0 ... 10	0 (4)...20	○	●	0,18	5980081¹⁾		

Mark in table: ○ without, ● with

1) Cable connector to be ordered separately. Cat. No. **0660689**

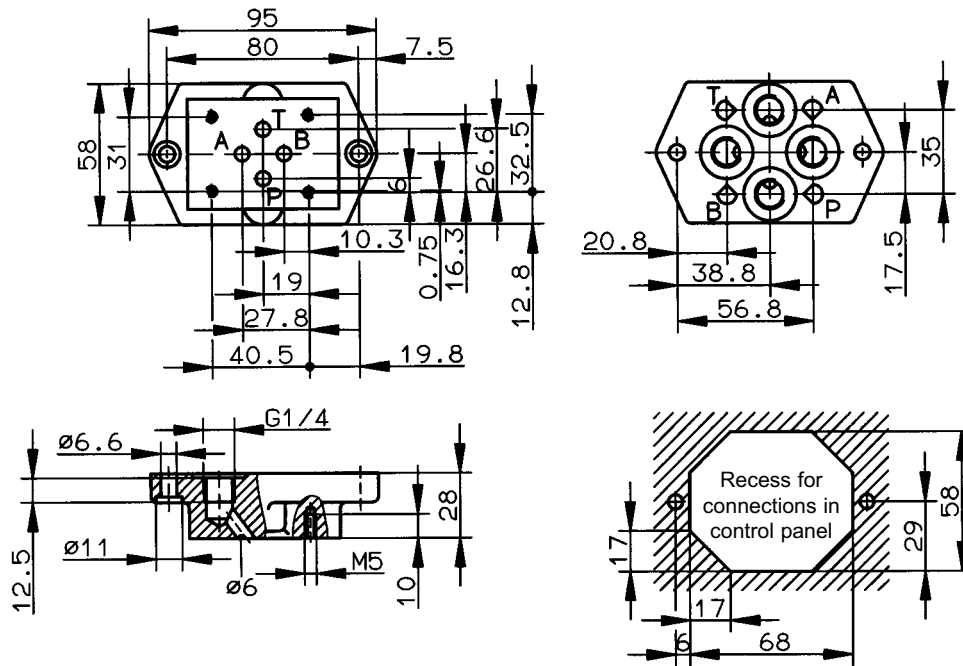
Drive electronics pQ 12 Amplifier module with constant current regulator PWM Degree of protection: IP 65 Power supply: 18 ... 32 VDC, Residual ripple: ≤ 10 % Ambient temperature ϑ_u : -20 ... +50 °C Mounting position: Optional For attachment on mounting rail acc. to EN 50022  	Setpoint input (switchable)		Output currents	Cat. No.	For Further information, see script
	[V]	[mA]	[mA]		
For proportional valves with 2 solenoids 2 pQ 11 necessary					HERION 7503109
0 ... 10	0 (4)...20	0 ... 1600 / 2400	5980126		

Dimensional drawings

Subplate with interface according to DIN 24 340-A and ISO 4401-AB-03-4-A

Cat. No.: 1065173

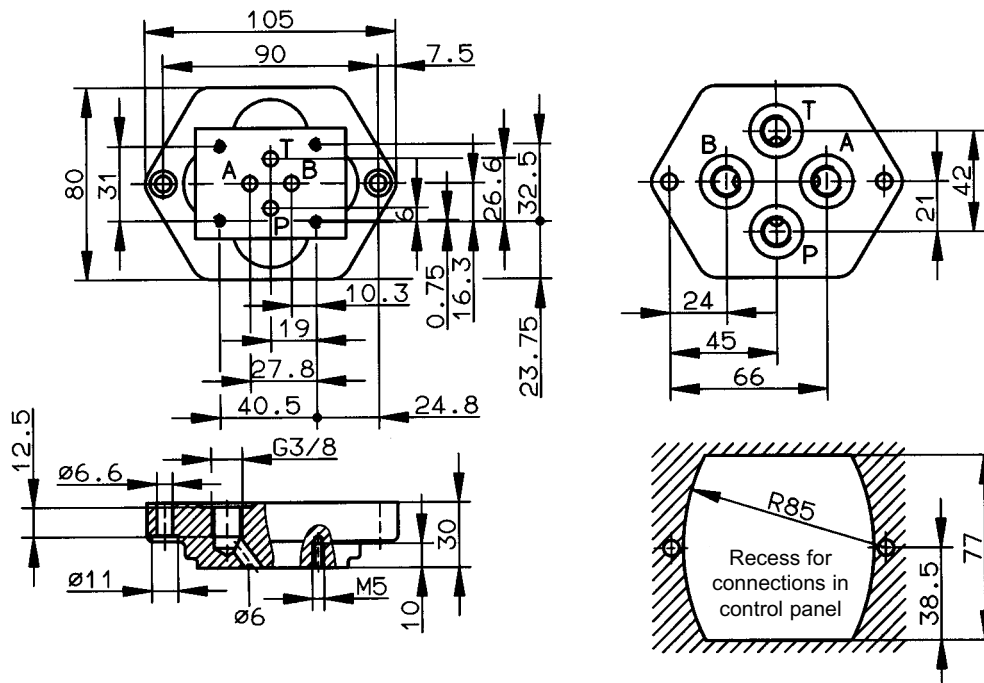
G 1/4



Subplate with interface according to DIN 24 340-A and ISO 4401-AB-03-4-A

Cat. No.: 1065183

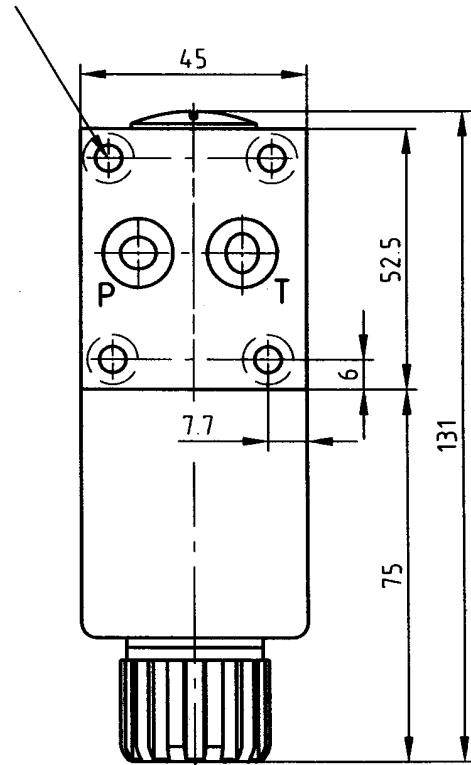
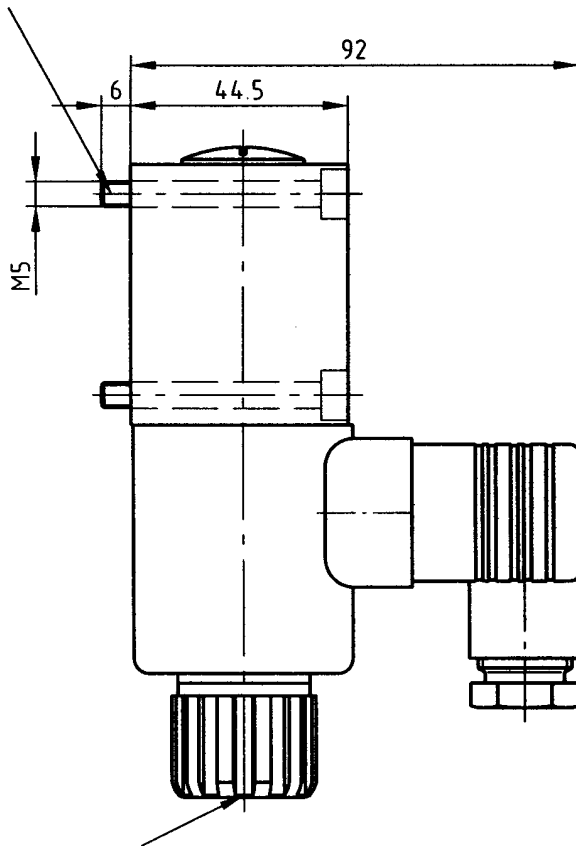
G 3/8



Dimensional drawings

Tightening torque
Appr. 7.6 Nm

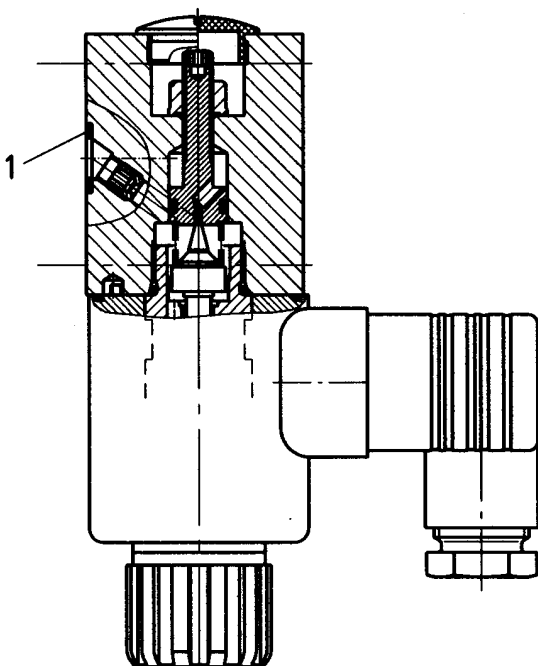
Interface according to DIN 24 340-A6
and ISO 4401



Vent screw
Vent prior to putting into operation
(if solenoid is in horizontal position or
vertical on upside)

Automatic venting if solenoid
is on vertical downside position

Spare part drawing



Spare parts / Accessories

Spare parts

Part	No. of pcs.	Designation	Cat. No.
1	2	O-ring (10.8 x 1.8)	0701622

Accessories

-	1	Electrical connector	0570275
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Mounting bolts

-	4	Cylinder bolt (M5 x 45 DIN 912-10.9) Tightening torque $M_A = 7.6$ Nm	0700390
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