

Proportional Pressure Relief Valves Sizes 6 and 10



Systemtechnik
GmbH

Poppet valve, direct actuated, with damping
Interface to DIN 24 340 and ISO 4401

PN [p_{max.}] = 315 bar

7501489.06.01.06

Description (standard units)

Design

With these proportional pressure valves, the pressure is adjusted by means of a variable magnetic force acting on the piston. The direct controlled design consists of a small seat which is connected with the proportional solenoid. The hydraulic pressure can be adjusted by increasing or decreasing the current I which is fed to the proportional solenoid, by means of a potentiometer and amplifier.

Application

With hydraulic control circuits there is often the requirement to influence the current by means of an electrical signal, e.g. for remote control in order to avoid long hydraulic pipe lines or for program controls where the different pressures are adjusted automatically. These proportional pressure valves are also very often used in process-controlled plastics injection moulding machines.

Mounting

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

Line connection

Subplate size 6, interface to DIN 24 340-A 6 and ISO 4401-AB-03-4-A

Subplate size 10, interface to DIN 24 340-E 10 and ISO 6264-AR-06-2-A



Features

- Simple electrical program and remote control
- Adjustable transient response

Type key

Proportional pressure relief valves

D	B	C	...	UP	G	O	...
			1			2	3	4		5

- 1 Nominal size: **6** - Size 6
 10 - Size 10
- 2 Setting pressure: **50** - Up to 50 bar
 range **99** - Up to 170 bar
 90 - Up to 315 bar
- 3 Code: **002** - Size 6
 301 - Size 10
- 4 Engineering version: Solenoid 7994 2400 mA
 4 - Size 6
 3 - Size 10
- 5 Sealing material: **O** - Perbunan
 V - Viton

Subplate size 6

P	S	6	G	O	O
				1	2	3		

- 1 Line connection: **2** - G 1/4
 3 - G 3/8
- 2 Code: **024** - G 1/4
 001 - G 3/8
- 3 Engineering version: **2**

Subplate size 10 G 1/2

P	DB	10	G	4	001	...	O	O
						1		

- 1 Engineering version: **1**

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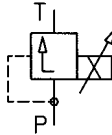


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Parameters

Type	D B C 6 UP G... 002 2 O O	D B C 10 UP G... 301 3 O O
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General parameters

Description	Proportional pressure relief valves	
Symbol		
Design	Seat valve, direct actuated	
Type of mounting	Flange	
Line connection	Subplate	
Mounting position	Valve axis preferably horizontal	
Flow direction	From P to T	
Actuator type	Proportional solenoid	
Weight of valve	[kg]	3.2
Weight of subplate	[kg]	G 1/4 = 0.7 G 3/8 = 1.0
Ambient temperature range	ϑ_u [°C]	-20 ... +50
Nominal size		6
		10

Hydraulic parameters

Operating pressure range	p_e [bar]	... 315
Setting pressure range ¹⁾	p_v [bar]	p_v min.: See characteristic curve ²⁾ p_v max.: Pressure stage 50: up to 50 Pressure stage 99: up to 170 Pressure stage 90: up to 315
Pressure fluid temperature	$\vartheta_{max.}$ [°C]	+70
Viscosity range	ν [mm ² /s]	12 ... 500
Flow	Q [l/min]	See characteristic curve
Regulating time for adjustable pressure range ⁴⁾ from p_v min. to 0.9 p_v max.	[ms]	≈ 35
Hysteresis ³⁾	[% I_N]	Range I <7.5 / Range II <3.5 at Q = 0.5 l/min Range I <3 / Range II <3 at Q = 20 l/min
Repeatability ³⁾	[bar]	
	Pressure stage 50	< ±1
	Pressure stage 99	< ±2 (at Q = const.)
	Pressure stage 90	< ±3
Sensitivity of response ³⁾	I_N [%]	<1
Filtration, absolute		Oil purity class to ISO 4406: 17/15/12

Electrical parameters of proportional solenoid

Solenoid Cat. No.	7994		
Rated current	I_N [mA]	2400	
Rated power	P_{20} [W]	19	
Resistance	R_{20} [Ω]	3.3	
Duty cycle	ED [%]	100	
Degree of protection and electric connection acc. to DIN 40 050	IP 65		
Drive electronics	DC 05/ DC 05-XLT, pQ 11 and pQ 12 See table, Page 5		

¹⁾ If the valve is used as pilot valve for large pressure valves, measures must be taken to dampen the complete hydraulic system.

²⁾ Smaller p_v max. value can be set at amplifier

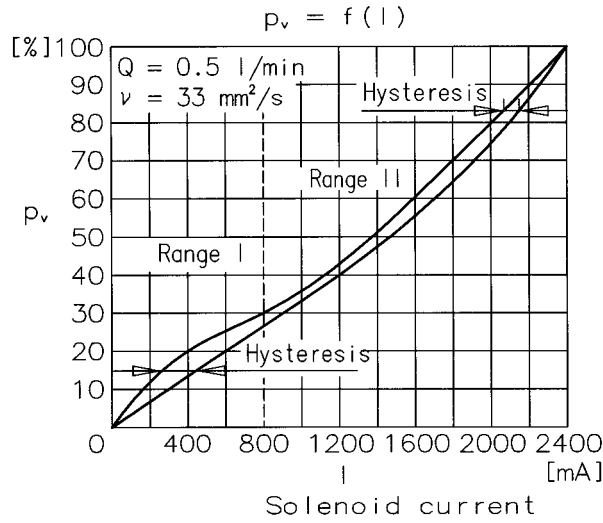
³⁾ With dither: Frequency 50 Hz, amplitude 15 % I_N .

⁴⁾ For size 6, 15l/min, DC 05 (lab arrangement)

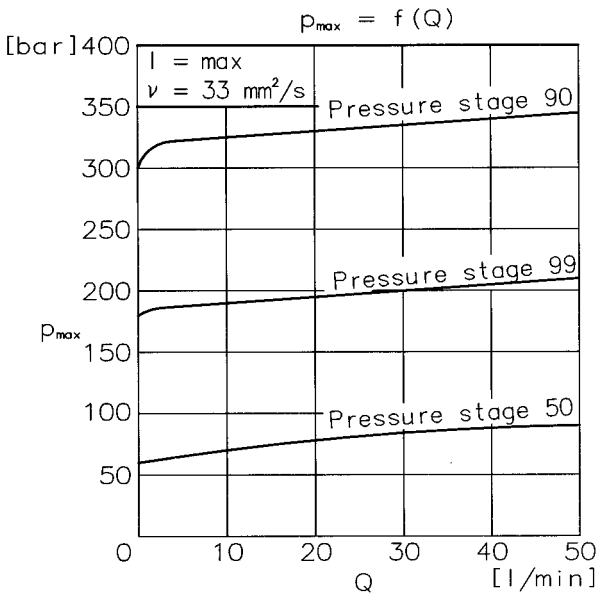
Characteristic curves

Proportional pressure relief valve, sizes 6 and 10, all pressure stages

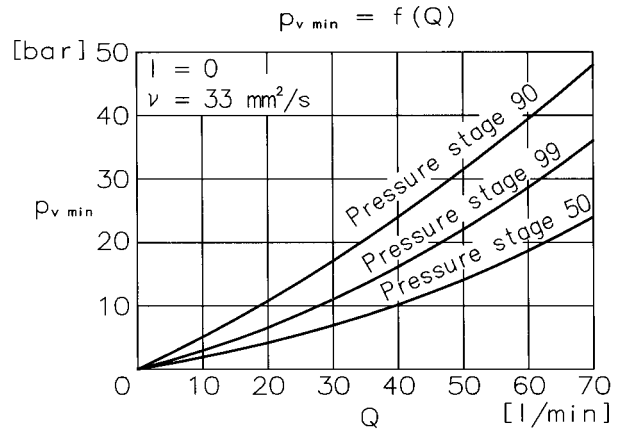
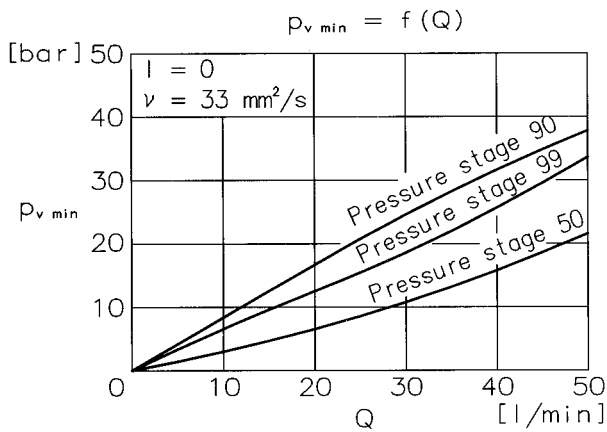
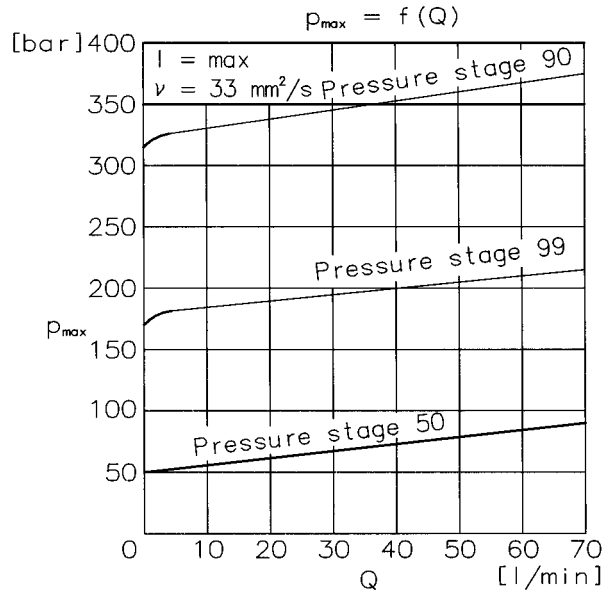
DBC 6 UP ... and DBC 10 UP ...



DBC 6 UP ...



DBC 10 UP ...



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. O-rings are enclosed with flanged units. The subplate, mounting screws and drive electronics must be ordered separately.

Example of order

Electrically adjustable proportional pressure relief valve, size 6, flanged version. Max. setting pressure = 315 bar, with additional subplate and mounting screws. The electronic control unit must be ordered separately.

Proportional pressure relief valve:

Type: D B C 6 UP G 90 002 4 O O
Cat. No.: **6015983.7994**

Subplate:

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

Mounting screws:

(4 bolts required)
Socket head screw (M 5 x 70 DIN 912-10.9)
Cat. No.: **0662315**

Type survey (standard versions)

Size	p _v max. [bar]	Proportional solenoid current	Drive electronics	Line connection	Type	Cat. No.
6	50	0 ... 2400 mA	DC 05, DC 05-XLT, pQ 11 or pQ 12 (see tables)	Subplate G 1/4 P S 6 G 2 024 2 OO Cat. No. 1065173	D B C 6 UP G 50 002 4 O O	6015980.7994
	170				D B C 6 UP G 99 002 4 O O	6015999.7994
	315				Subplate G 3/8 P S 6 G 3 001 2 OO Cat. No. 1065183	D B C 6 UP G 90 002 4 O O
10	50			Subplate G 1/2 P DB 10 G 4 001 1 OO Cat. No. 2852600	D B C 10 UP G 50 301 3 O O	6015976.7994
	170				D B C 10 UP G 99 301 3 O O	6015998.7994
	315				D B C 10 UP G 90 301 3 O O	6015979.7994

Subplates

Size	Port size	Subplate with interface to	Type	Cat. No.
6	G 1/4	DIN 24 340-A 6 and ISO 4401-AB-03-4-A	P S 6 G 2 024 2 OO	1065173
6	G 3/8	DIN 24 340-A 6 and ISO 4401-AB-03-4-A	P S 6 G 3 001 2 OO	1065183
10	G 1/2	DIN 24 340-E 10 and ISO 6264-AB-06-2-A	P DB 10 G 4 001 1 O O	2852600

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_u : 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)	5150000 ¹⁾	7503503
DC 05-XLT	0...±10V		4	2	48	○	5150001 ¹⁾	7503504
			Functional compatible to pQ 03					

1) Pre-parametred electronics on request.

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



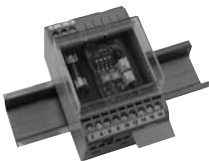
Setpoint input (switchable)	Type of connection		Weight	Cat. No.	For Further information, see script
[V]	[mA]	Connecting cable, 2 m	Connector acc. to DIN 43651	[kg]	
For proportional valves with 2 solenoids 2 pQ 11 necessary					HERION 7502961
Rated current I_N: 0 ... 2400 mA, allowed resistance of solenoid R₂₀: 2,5...4,5 Ω					
0 ... 10	0 (4)...20	●	○	0,18	
0 ... 10	0 (4)...20	○	●	0,18	5980081 ¹⁾

Mark in table: ○ without, ● with

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

Drive electronics pQ 12

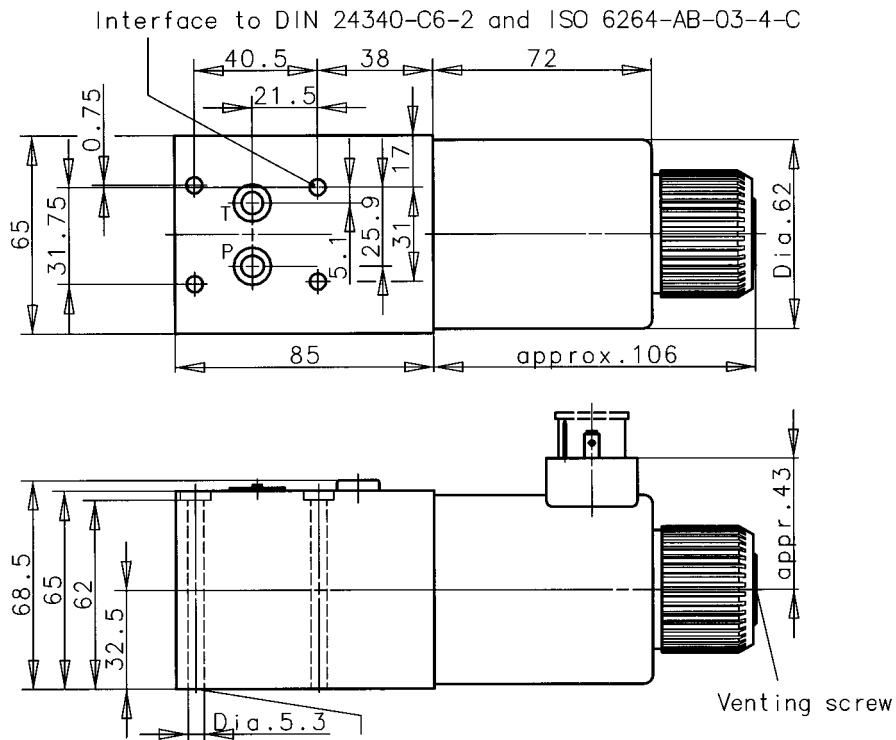
Amplifier module with constant current regulator PWM
 Degree of protection: IP 65
 Power supply: 18 ... 32 VDC,
 Residual ripple: ≤ 10 %
 Ambient temperature ϑ_u : -20 ... +50 °C
 Mounting position: Optional
 For attachment on mounting rail acc. to EN 50022



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	

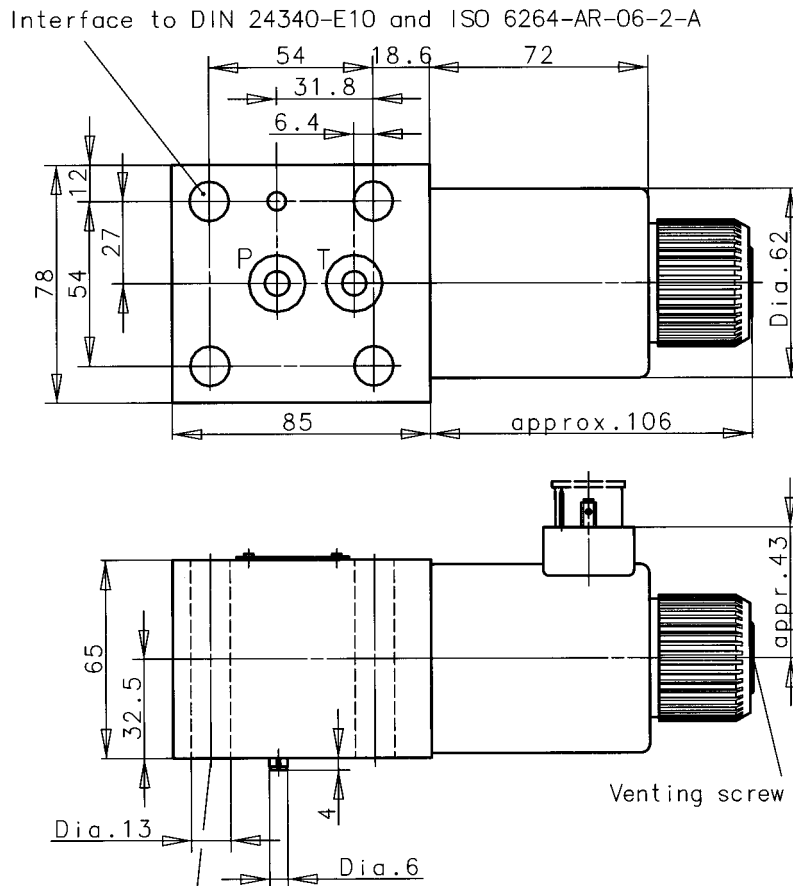
Dimensional drawings [mm]

Size 6



For socket head screw M5x70 to DIN 912 - 10.9 tightening torque 7.6 Nm
The mounting screws are not included in the delivery.

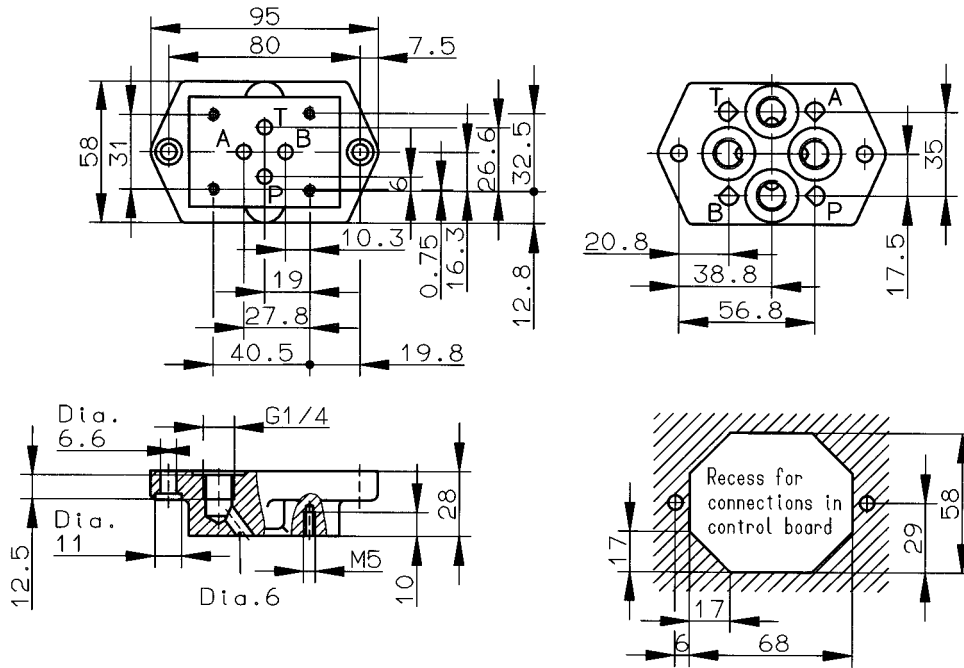
Size 10



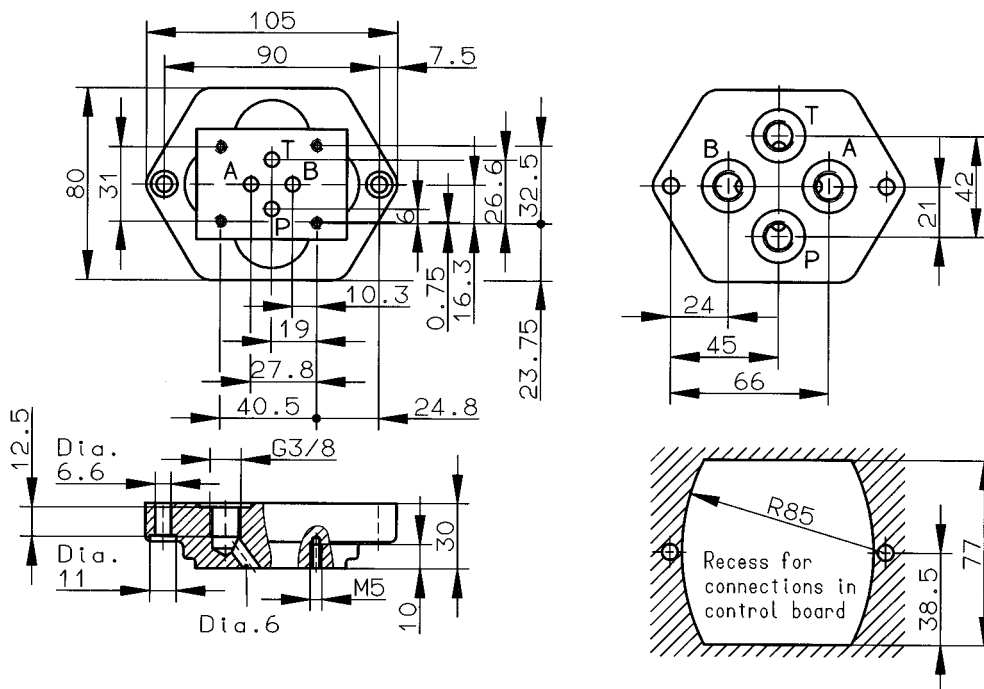
For socket head screw M12x80 to DIN 912 - 10.9
tightening torque 110 Nm
The mounting screws are not included in the delivery.

Dimensional drawings [mm]

Subplates size 6 with interface to DIN 24 340-A 6 and ISO 4401-AB-03-4-A
Cat. No. 1065173
G 1/4



Subplates size 6 with interface to DIN 24 340-A 6 and ISO 4401-AB-03-4-A
Cat. No. 1065183
G 3/8

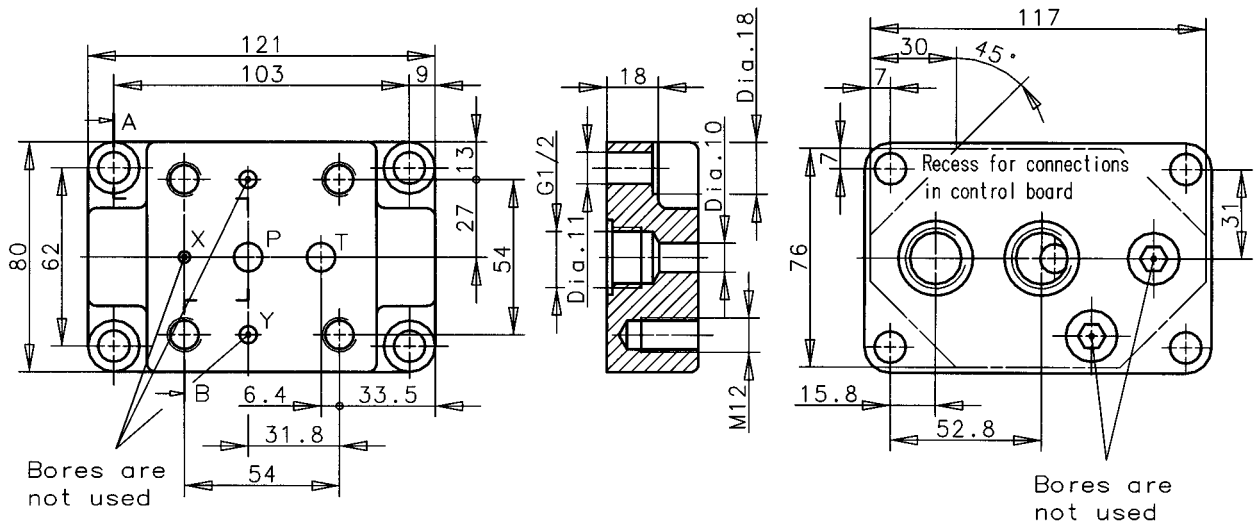


Dimensional drawings [mm]

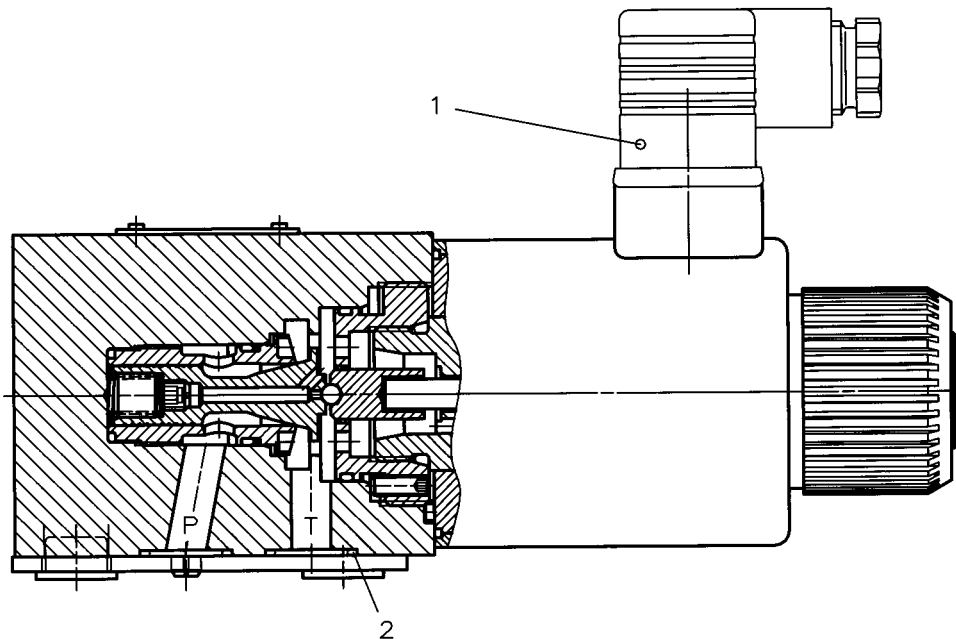
Subplates size 10 with interface to DIN 24 340-E 10 and ISO 6264-AB-06-2-A

Cat. No. 2852600

G 1/2



Spare parts drawing



Spare parts and mounting screws / Accessories

Spare parts

Part	Size	Qty.	Description	Cat. No.
2	6	2	O-ring (9.25 x 1.78)	0701252
2	10	2	O-ring (15.6 x 1.78)	0701256

Accessories

Part	Size	Qty.	Description	Cat. No.
1	-	1	Connector	0657859

Mounting screws¹⁾

Part	Size	Qty.	Description	Cat. No.
-	6	4	Socket head screw (M5 x 70 DIN 912-10.9) Tightening torque MA = 7.6 Nm	0662315
-	10	4	Socket head screw (M12 x 80 DIN 912-10.9) Tightening torque MA = 110 Nm	0700479

¹⁾ The mounting screws are not included in the delivery