

Directional control valves DN 6 directly actuated Interface to DIN 24 340 and ISO 4401 (CETOP03)

PN [$p_{max.}$] = 350 bar

Increased safety through electrical position monitoring

5-chamber system

No dynamic seals

Delay of switching time by exchangeable nozzle (optional)

Pulse mode through mechanical detent (optional)

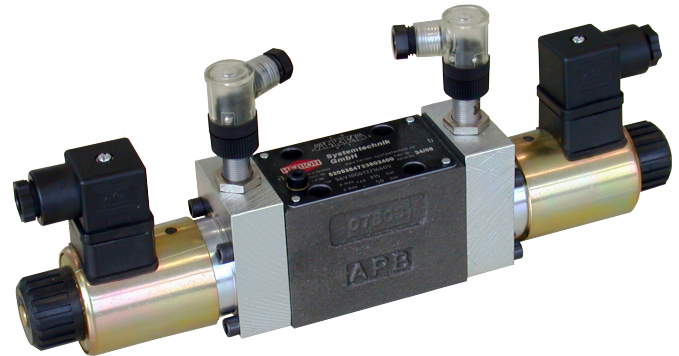
Wet type solenoid with pressure-tight core tube

Easy replacement of solenoids. Solenoids with pressure-tight tube (tube secured to valve body by means of central thread).

Valves with Viton seals standard

Coils designed for DC voltage.

AC operation via connector equipped with rectifier



Technical data

General parameters

Designation:
Directional control valve

Symbol:
See type survey or type key

Design:
Spool-type valve

Type of mounting:
Flange

Line connection:
Subplate

Mounting position:
Preferably horizontal

Weight of valve with:
1 actuator [kg]: 2.1
2 actuators [kg]: 3.1

Weight of subplat.:
G 1/4 [kg]: 0.7
G 3/8 [kg]: 1

Ambient temperature range
 θ_u [°C]:
-20 to +50

Size:
DN 6

MTTF_d [years]:
150

Hydraulic parameters

Operating pressure
 $p_{e,max.}$ [bar]
at port P, A, B:
up to 350
at port T:
up to 50

Pressure fluid temperature
 θ_u max. [°C]:
+70

Viscosity range: ν [mm²/s]:
12 to 500

Flow Q_{max} [l/min]:
See characteristic curves

Filtration:
Oil purity class to ISO 4406:
18/15

Further parameters

Standard: with or without manual override

Switching times, approx. [ms]:
 t_{on} : 50 to 80
 t_{off} : 30 to 55

Rated voltage connector input
 U_N [V]:
Standard voltages:
VH 10 VH 11
(VH 13) (VH 12)
24 DC 230 AC 40...60 Hz
+5%/-10% +5%/-10%

Further voltages:
VH10 VH11*

12 DC	
24 DC	
48 DC	
98 DC	110 AC
110 DC	
125 DC	
185 DC	
205 DC	230 AC
220 DC	
230 DC	

* via connector rectifier

Power consumption

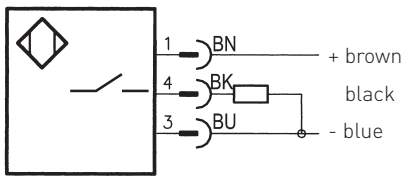
P_{20} [W]:
31

Duty cycle [%]:
100

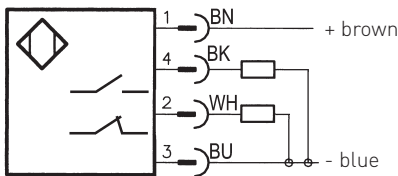
Degree of protection for solenoid and electrical connection to DIN 40050:
IP 65

Electrical parameters (electronic limit switch)

Wiring diagram

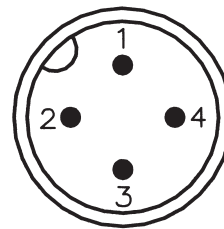


pnp normally open



pnp-antivalent (optional)
antivalent on demand

Pin assignment limit switch



Electronical limit switch M 12x1:
PNP-Schließer
(oder antivalent auf Anfrage)

Rated operational voltage
 U_E [V] DC:
24

Supply voltage
 U_B [V] DC:
10 ... 30

Voltage drop
 U_d at I_g [V]:
 $\leq 1,5$

Rated operational current
 I_g [mA]:
200

Protection against polarity
reversal:
yes

Short circuit protected/overload
protected:
yes/yes

Load capacitance
[μ F]:
 $\leq 1,0$

Degree of protection per IEC 529:
IP 68 to BWN Pr. 20
(IP 67 connector kompl.)

Connection:
Connector
pressure rated up to
[bar]:
50 an aktiver Fläche

Connector type:
angle, female, 4-pin

Cable gland:
Pg 7, cable \varnothing 4 to 6 mm
Degree of protection:
IP 67

Degree of protection:
yes (2)
- Power on: green
- Function: yellow

Type key

Directional control valve

S	6	...	...	G	...	...	6	...	V
		1	2		3	4	5	6	7

- 1 Actuation: **VH** – DC solenoid with manual override
V – DC solenoid without manual override
- 2 Electrical connection: **10** – Connector Pg 11
11 – Connector Pg 11 with rectifier insert on plug
13 – Connector Pg 11 with function indicator on solenoid
- 3 Symbol: – Extra symbols see below
– Standard symbols see page 5 and 6

Subplate

P	S	6	G	...	...	2	0	0
				1	2			

- 1 Line connection: **2** – G 1/4 (internal thread)
3 – G 3/8 to DIN ISO 228/1)
- 2 Code: **024** – G 1/4
001 – G 3/8

¹⁾ Only 2-position valves are available with detent.
³⁾ Port T of these 3/2-way valves is to be used as leak oil connection.

Symbol	Symbol No.	Overlap	Symbol	Symbol No.	Overlap	Symbol	Symbol No.	Overlap
	002	-		038	+		117	+
	004	+		039	+		153	-
	005	+		082	+		159	+
	007	+		086	+		172	+
	010	+		087	-		174	+
	011	-		088	+		198	+
	016	+		090	-			
	025	+		094	+			
	031 ³⁾	+						
	033	-						

Further symbols on demand

- 4 Engineering: – For switching position indicator see next page
- 6 Additional data: **O** – Standard design
M¹⁾ – Mechanical detent
- 7 Sealing material: **V** – FKM (e.g. Viton)

Directional control valves DN 6

Code No

for 1 switching position indicator

for 2 switching position indicator

4/2 Directional control valve

210		Solenoid at		Signal to position switch	
		Side a		Side b	
		Solenoid A de-energized		0	
				1	
217		Solenoid at		Signal to position switch	
		Side a		Side b	
		Solenoid A de-energized		1	
				0	
242		Solenoid at		Signal to position switch	
			Side b	Side a	
		Solenoid B de-energized		0	
				1	
243		Solenoid at		Signal to position switch	
			Side b	Side a	
		Solenoid B de-energized		1	
				0	

244		Solenoid at		Signal to position switch	
		Side a		Side a	Side b
		Solenoid A de-energized		0	1
				1	0
245		Solenoid at		Signal to position switch	
		Side a		Side a	Side b
		Solenoid A de-energized		1	0
				0	1
246		Solenoid at		Signal to position switch	
			Side b	Side a	Side b
		Solenoid B de-energized		1	0
				0	1
247		Solenoid at		Signal to position switch	
			Side b	Side a	Side b
		Solenoid B de-energized		0	1
				1	0

4/2 Directional control valve with detent

222		Solenoid at		Signal to position switch	
		Side a	Side b	Side a	
		Solenoid A energized [pulse switching]		1	
				0	
223		Solenoid at		Signal to position switch	
		Side a	Side b	Side a	
		Solenoid A energized [pulse switching]		0	
				1	

238		Solenoid at		Signal to position switch	
		Side a	Side b	Side a	Side b
		Solenoid A energized [pulse switching]		1	0
				0	1

4/3 Directional control valve

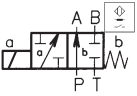
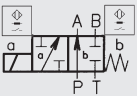
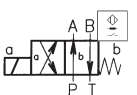
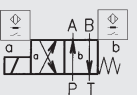
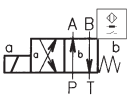
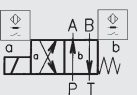
208		Solenoid at		Signal to position switch	
		Side a	Side b		Side b
		Solenoid A + B de-energized			0
		Solenoid A energized			1
				1	
248		Solenoid at		Signal to position switch	
		Side a	Side b		Side b
		Solenoid A + B de-energized			1
		Solenoid A energized			0
				0	

216		Solenoid at		Signal to position switch	
		Side a	Seite b	Side a	Side b
		Solenoid A + B de-energized		0	0
		Solenoid A energized		1	0
				0	1

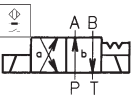
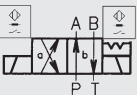
Type survey (standard versions)

- Magnet 24VDC (Further voltages on request)
- With manual override → VH
- Without manual override → V
- Electrical connection, symbol 10 connector 0570275 (Further plugs on demand)
- pnp normally open (andere Nahrungsschalter - Ausfuhungen auf Anfrage)
- Operating pressure: at port P, A and B : 350 bar
- Operating pressure: at port T : 50 bar (210 bar on request)

4/2 Directional control valves (standard versions)

Symbol	Symbol-No.	Code	Type	Cat. No.
	001	210	S6 VH 10 G 001 210 60V S6 V 10 G 001 210 60V	5205076.7234.024.00 5205350.7238.024.00
		217	S6 VH 10 G 001 217 60V S6 V 10 G 001 217 60V	on request on request
	001	244	S6 VH 10 G 001 244 60V S6 V 10 G 001 244 60V	on request on request
		245	S6 VH 10 G 001 245 60V S6 V 10 G 001 245 60V	on request on request
	003	210	S6 VH 10 G 003 210 60V S6 V 10 G 003 210 60V	on request on request
		217	S6 VH 10 G 003 217 60V S6 V 10 G 003 217 60V	on request 5205517.7238.024.00
	003	244	S6 VH 10 G 003 244 60V S6 V 10 G 003 244 60V	on request on request
		245	S6 VH 10 G 003 245 60V S6 V 10 G 003 245 60V	on request on request
	020	210	S6 VH 10 G 020 210 60V S6 V 10 G 020 210 60V	5205042.7234.024.00 5205257.7238.024.00
		217	S6 VH 10 G 020 217 60V S6 V 10 G 020 217 60V	5205045.7234.024.00 5205375.7238.024.00
	020	244	S6 VH 10 G 020 244 60V S6 V 10 G 020 244 60V	5205662.7234.024.00 5205661.7238.000.00
		245	S6 VH 10 G 020 245 60V S6 V 10 G 020 245 60V	on request on request

with mechanical detent

Symbol	Symbol-No.	Code	Type	Cat. No.
	019	222	S6 VH 10 G 013 222 6MV S6 V 10 G 013 222 6MV	5205129.7234.024.00 on request
		223	S6 VH 10 G 013 223 6MV S6 V 10 G 013 223 6MV	5205208.7234.024.00 on request
	019	238	S6 VH 10 G 019 238 6MV S6 V 10 G 019 238 6MV	5205659.7234.024.00 5205660.7238.024.00

Further symbols on request.

Directional control valves DN 6

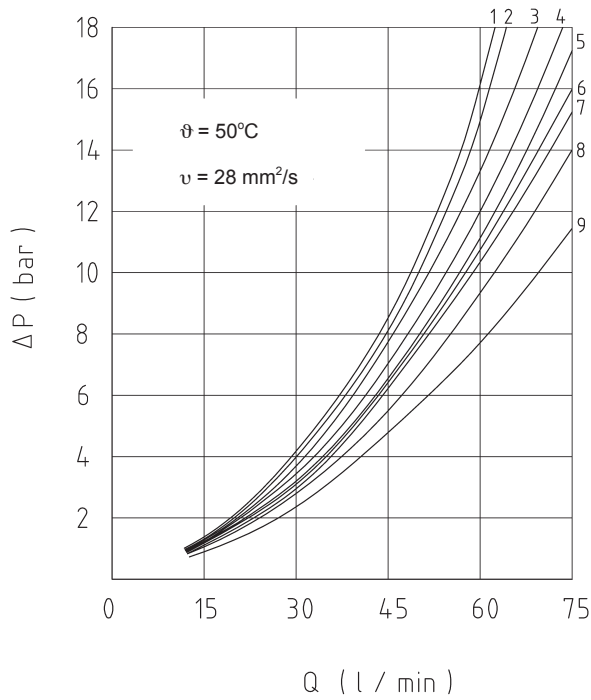
4/3 Directional control valves (standard versions)

Symbol	Symbol-No.	Code	Type	Cat. No.
	008	208	S6 VH 10 G 008 208 60V S6 V 10 G 008 208 60V	on request on request
		248	S6 VH 10 G 008 248 60V S6 V 10 G 008 248 60V	on request on request
	008	216	S6 VH 10 G 008 216 60V S6 V 10 G 008 216 60V	5205196.7234.024.00 5205467.7238.024.00
	009	208	S6 VH 10 G 009 208 60V S6 V 10 G 009 208 60V	on request on request
		248	S6 VH 10 G 009 248 60V S6 V 10 G 009 248 60V	on request on request
	009	216	S6 VH 10 G 009 216 60V S6 V 10 G 009 216 60V	5205365.7234.024.00 on request
	013	208	S6 VH 10 G 013 208 60V S6 V 10 G 013 208 60V	on request on request
		248	S6 VH 10 G 013 248 60V S6 V 10 G 013 248 60V	on request on request
	013	216	S6 VH 10 G 013 216 60V S6 V 10 G 013 216 60V	5205098.7234.024.00 5205384.7238.024.00

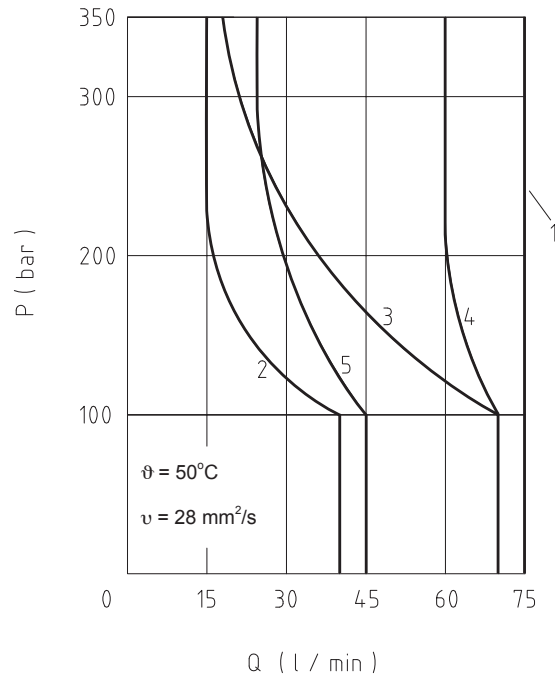
Further symbols on request.

Characteristic curves

Flow curves $Q = f(\Delta p)$



Power limits



Symbol	Flow direction				
	P-A	P-B	A-T	B-T	P-T
001	7	7	-	-	-
003	8	8	3	3	-
008	8	8	6	6	-
009	5	5	9	9	-
013	5	5	4	4	2
019	5	5	1	1	-
020	5	5	1	1	-

Symbol	Characteristic curve
001	2
003	4
008	1
009	3
013	5
019	1
020	1

Maximum values determined with solenoid in warmed-up condition and at an undervoltage of 10%.
 Fluid passing in two directions (from P to A and B to T).
 If one port is closed, a reduced breaking capacity must be taken into consideration.
 A reduced breaking capacity must also be taken into consideration for valve types with switching delay (nozzle).

Directional control valves DN 6

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. Further valve versions can be composed via combination of types - order numbers on request.

Flanged valves are provided with O-rings and connector (type 10, 11 and 13). Subplate and mounting screws must be ordered separately.

Ordering example

4/2-directional control valve
DN 6, 24 V=,
Electrical connection 10,
symbol 020, Schaltstellungs-
überwachung an A- und B-Seite
(code 236), pnp normally open,
subplate G1/4.

Directional control valve:
Type No.:
S 6 VH 10 G 020 236 6 OV
Cat. No.:
5205046.7234.024.00

Subplate:
Type No.:
P S 6 G 2 024 2 0 0
Cat. No.:
1065173

Mounting screws:
(4 pcs. required)
Socket-head screw:
(M 5 x 30 DIN 912-10.9)
Cat. No.:
0700387

244		solenoid at		Signal to position switch		
		Side a		Side a	Side b	
		Solenoid A de-energized		0	1	
		Solenoid A energized		1	0	

Design

The design is based upon the **5-chamber system**. A spool of hardened steel slides in a housing made of high-strength cast-iron. Therefore the units are suitable for rough operating conditions. The switch contact at the end positions of the spool can be used, for example, for acknowledgements in safety circuits

Actuation

The directional control valves are actuated electro-mechanically or by spring.

Mounting

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

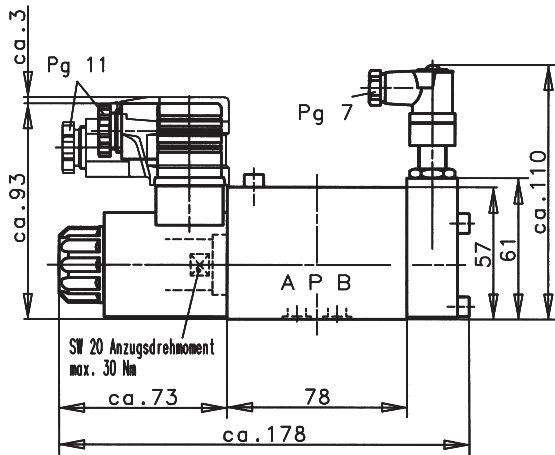
Line connection

Subplate, interface to
DIN 24340 - A6 and
ISO 4401 - AB - 03 - 4 - A.

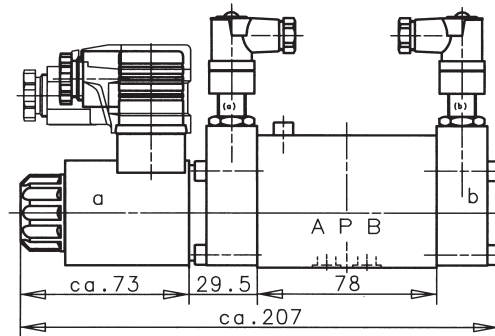
Spare parts drawings

Directional control valve

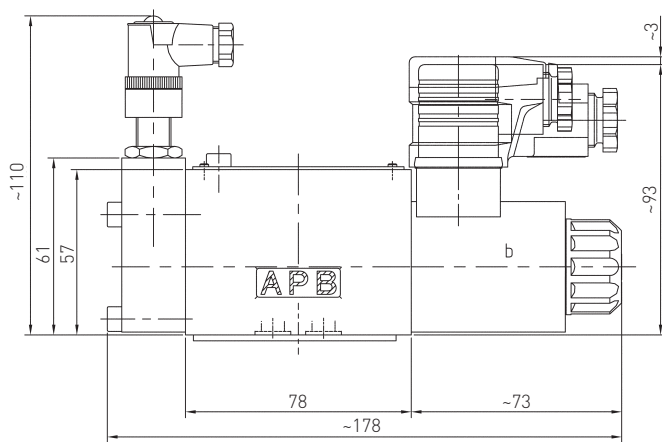
S 6 VH 10 ...
 S 6 VH 11 ...
 S 6 VH 13 ... code 210, 217



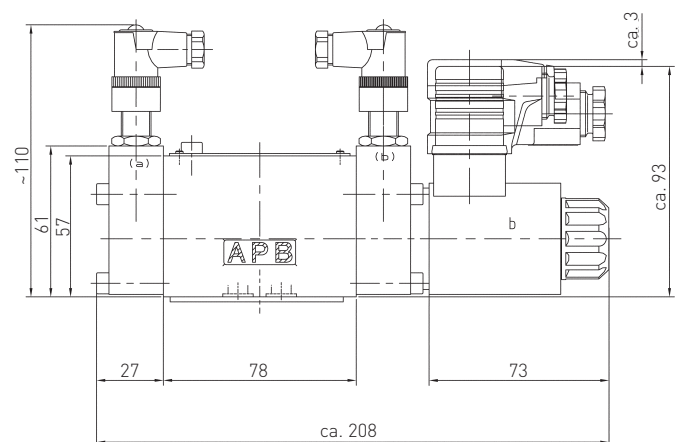
S 6 VH 10 ...
 S 6 VH 11 ...
 S 6 VH 13 ... code 244, 245



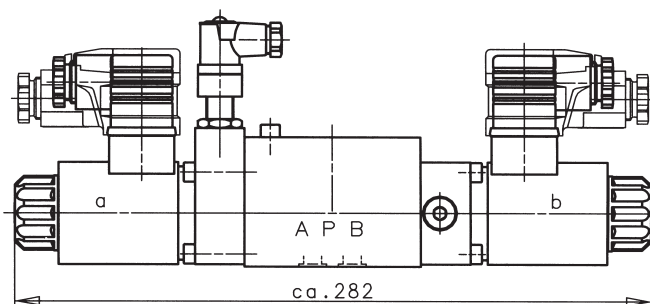
S 6 VH 10 ...
 S 6 VH 11 ...
 S 6 VH 13 ... code 242, 243



S 6 VH 10 ...
 S 6 VH 11 ...
 S 6 VH 13 ... code 246, 247

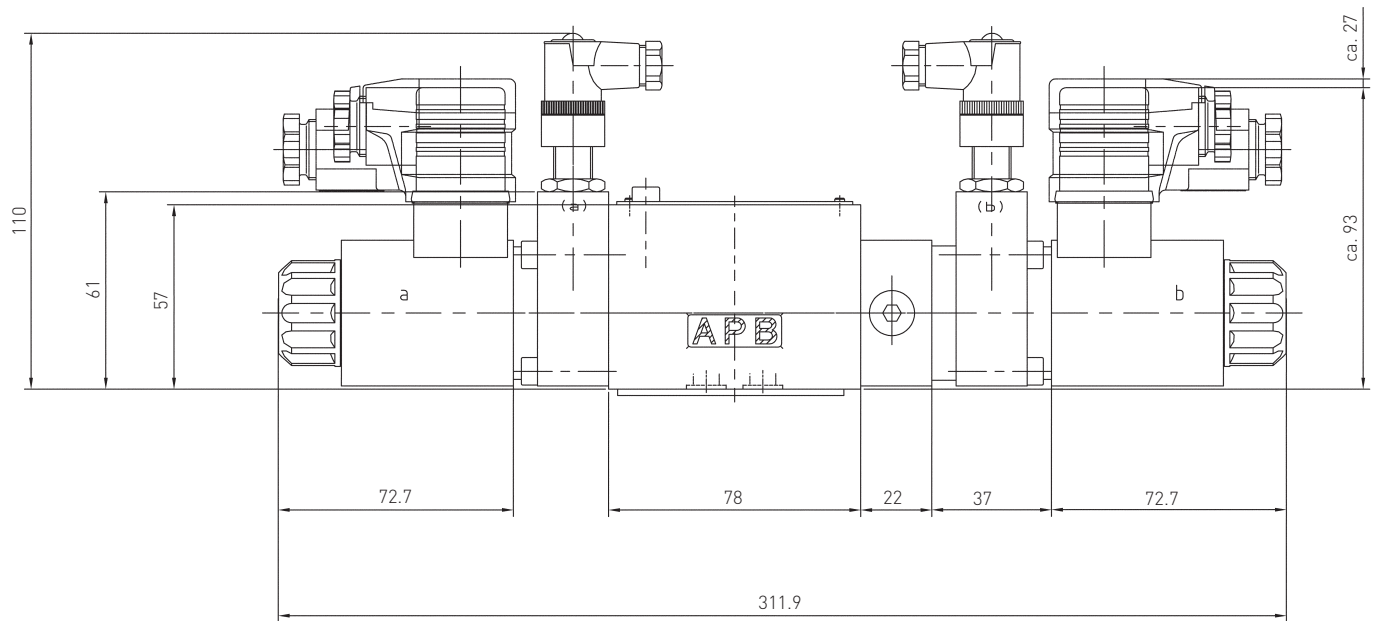


S 6 VH 10 ... M
 S 6 VH 11 ... M
 S 6 VH 13 ... M code 222, 223



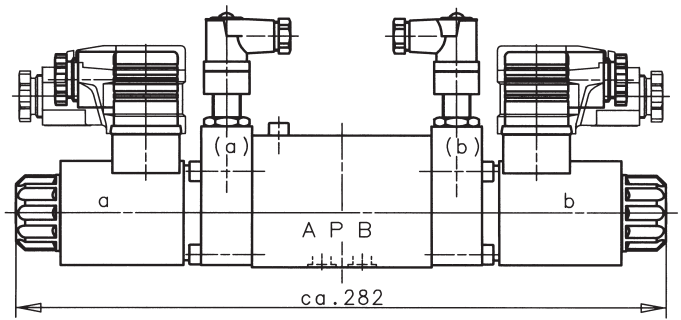
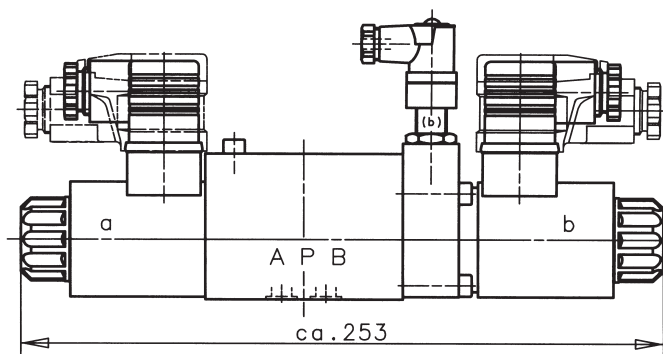
Directional control valves DN 6

S 6 VH 10 ...
S 6 VH 11 ...
S 6 VH 13 ... code 238



S 6 VH 10 ...
S 6 VH 11 ...
S 6 VH 13 ... code 208, 248

S 6 VH 10 ...
S 6 VH 11 ...
S 6 VH 13 ... code 216

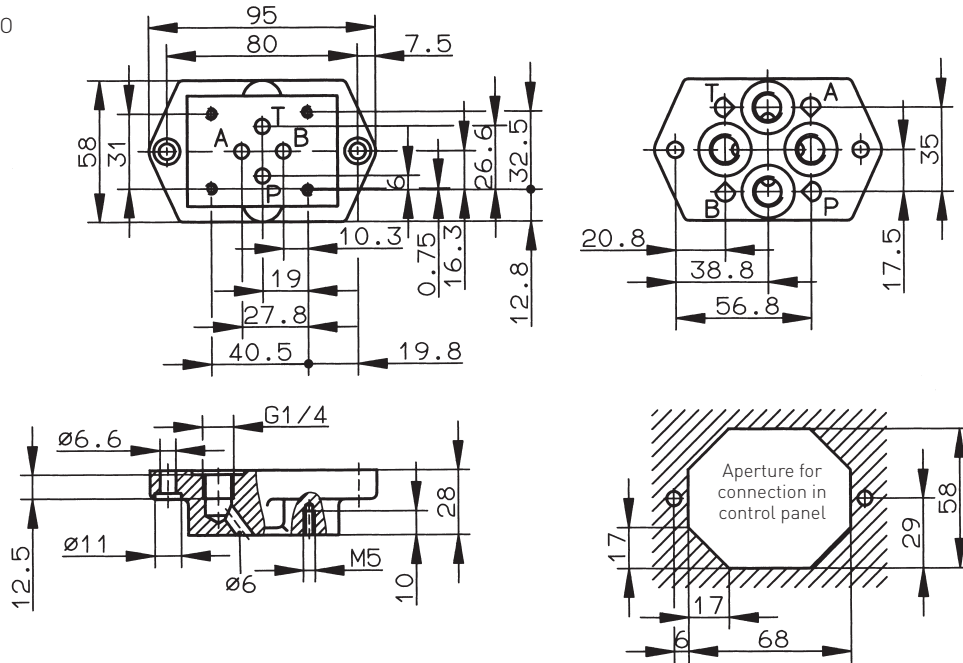


Dimensional drawings

Subplate mit interface according to DIN 24 340-A 6 and ISO 4401-AB-03-4-A

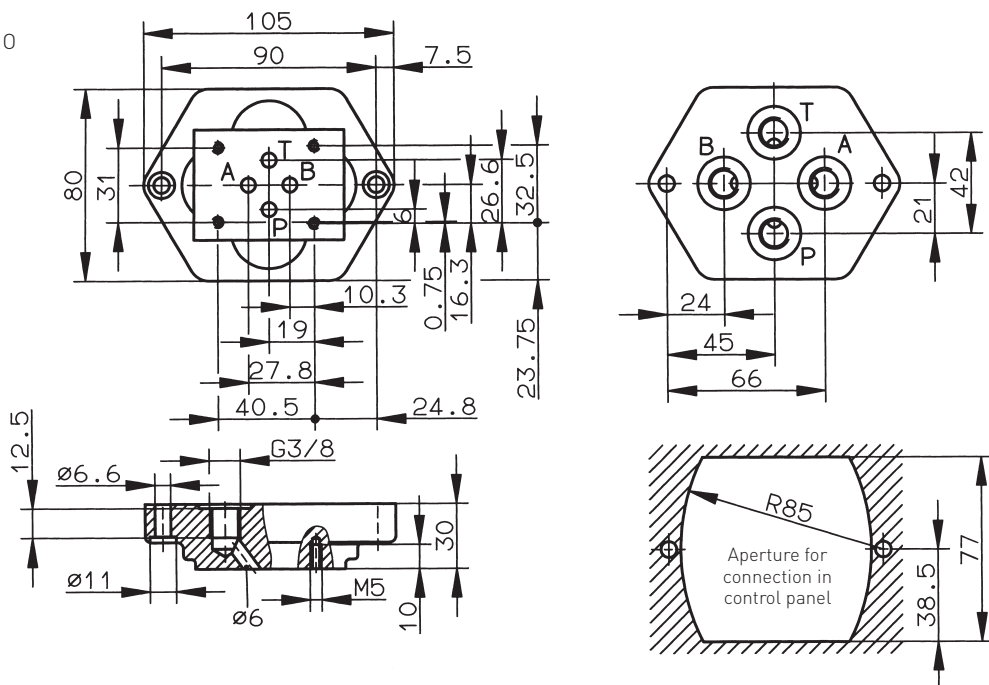
G 1/4

Type: P S 6 G 2 024 2 0 0
Reference: **1065173**



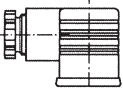
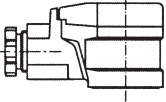
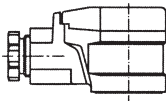
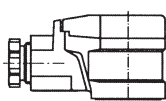
G 3/8

Type: P S 6 G 3 001 2 0 0
Reference: **1065183**



Directional control valves DN 6

Electrical spare parts

Electrical connection, Symbol 10	Cat. No.
 <p>Connector Pg 11 (Operating voltage: 0...300 V DC)</p>	0570275
Electrical connection, Symbol 11	Cat. No.
 <p>Connector Pg 11 with rectifier (Operating voltages: 15...250 V AC or 10...250 V DC)</p>	0570819
Electrical connection, Symbol 12	Cat. No.
 <p>Connector Pg 11 with rectifier and indicator (Operating voltages: 80...130 V AC or 100...130 V DC)</p>	0588568
<p>Connector Pg 11 with rectifier and indicator (Operating voltages: 150...250 V AC or 135...250 V DC)</p>	0571502
Electrical connection, Symbol 13	Cat. No.
 <p>Connector Pg 11 with indicator (Operating voltages: 24 V DC)</p>	0570818
<p>Connector Pg 11 with indicator (Operating voltages: 90...130 V DC)</p>	0570816
<p>Connector Pg 11 with indicator (Operating voltages: 150...250 V DC)</p>	0570817
Angle plug connector Proximity switch	Cat. No.
	0615517

Further spares

	Cat. No.
O-ring (9.2 x 1.8)	0701728
O-ring (22 x 1,5) (26.7 x 1.78) on solenoid	
Socket-head screw (M5 x 30 DIN 912-10.5)	0700387

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