HERION Systemtechnik GmbH

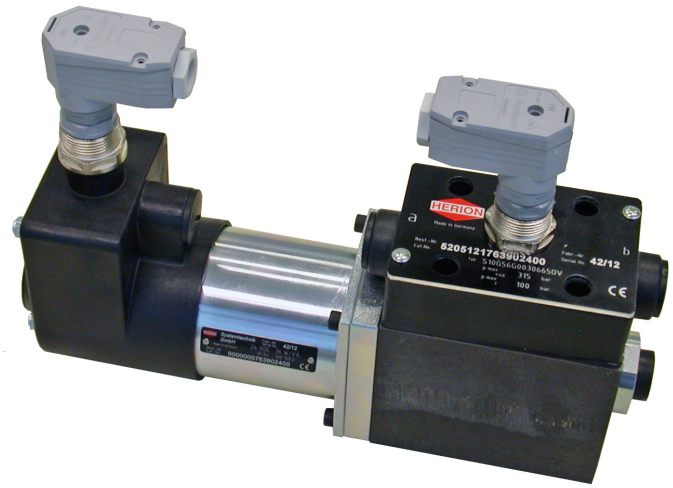
Directional control valves DN 10 directly actuated with switching position monitoring Interface to DIN 24 340 and ISO 4401

Valves with Viton seals standard

Leakage port on request

Via drain of leakage oil into spring space (additional hole in housing and subplate is needed - not included in international standard subplate) the port T can be pressurized up to p_{max}, what leads to a larger range of application.

Significantly improved piston guiding through 5-chamber system. This means reliable switching even with long rest periods as well as long service life.



Technical data

General parameters

Designation:
Directional control valve

Symbol:
See type survey

Design:
Spool-type valve

Type of mounting:
Flange

Line connection:
Subplate

Mounting position:
Preferably horizontal

Weight of valve with:
1 actuator [kg]: 7.2
2 actuators [kg]: 8.8

Weight of subplat.:
G 1/2 [kg]: 2
G 3/4 [kg]: 2.7

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

Size:
DN 10

Hydraulic parameters

Operating pressure p_e max. [bar]
at port P, A, B:
up to 350
at port T
(without leakage port):
up to 100

at port T:
(with leakage port):
up to 350

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

PIN assignment for Tuchel-connection:

Valve with 1 solenoid:
Solenoid "a" at 1 and 2 or
Solenoid "b" at 3 and 4
Ground wire at ⏚

Valve with 2 solenoids:
Solenoid "a" at 1 and 2
Solenoid "b" at 3 and 4
Ground wire at ⏚

Switching times t approx. [ms]:
t_{on}: 70 ... 95 [1]
t_{off}: 70 ... 80 [1]
(measured at 315 bar, 60 l/min)

Rated voltage
U_N [V]:
Standard voltages:
24 DC ±10%
(Further voltages on request)

Power consumption
P_{20} [W]:
36

Duty cycle [%]:
100

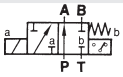
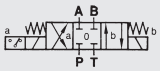
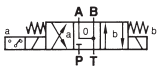
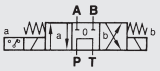
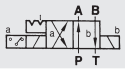
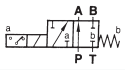
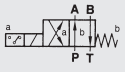
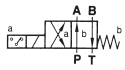
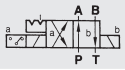
Degree of protection for solenoid and electrical connection to DIN 40050:
IP 54

Maunal override:
at type G:
yes
at type B:
no

[1] on request

Type survey (standard versions)

- Voltage VDC
- Line connection: subplate G 1/2, P S 10 G 4 001 2 O O, Cat No. 1065184
  subplate G 3/4, P S 10 G 5 001 2 O O, Cat No. 1065185
- Actuation: solenoid-actuated, dry op. system

Symbol	Symbol-NO.	Code	Overlap	Dimensional drawing	Electrical connection (solenoid)	Type	Cat No.
	001 [5]	039	+	01	No. 10 Connector (Pg 11) to DIN 43650 on solenoid	S10G10 G 001 039 5 O V S10B10 G 001 039 5 O V	**5205219.7623.02400** **5205379.7624.02400**
	003	039	+	01	No. 10 Connector (Pg 11) to DIN 43650 on solenoid	S10G10 G 003 039 5 O V	**5205236.7623.02400**
	020	039	+	01	No. 10 Connector (Pg 11) to DIN 43650 on solenoid	S10G10 G 020 039 5 O V S10B10 G 020 039 5 O V	**5205118.7623.02400** **5205210.7624.02400**
	008	061	+	02	No 56 Connector (Tuchel) at connection box	S10G56 G 008 061 5 O V	**5204988.9000.02400** [2]
	009	061	+	02	No 56 Connector (Tuchel) at connection box	S10G56 G 009 061 5 O V	**5204989.9000.02400** [2]
	013	061	-	02	No 56 Connector (Tuchel) at connection box	S10G56 G 013 061 5 O V S10B56 G 013 061 5 O V	**5204990.9000.02400** [2] **5204991.9000.02400** [3]
	020	061	+	05	Electrical connection 51	S10G51 G 020 061 5 O V	**5205258.7637.02400**
	019	061	+	05	Electrical connection 51	S10G51 G 019 061 5 O V	**5205126.9000.02400** [2]
	001 [5]	066	+	03	No 56 Connector (Tuchel) at connection box	S10G56 G 001 066 5 O V	**5205101.7639.02400**
	003	066	-	03	No 56 Connector (Tuchel) at connection box	S10G56 G 003 066 5 O V	**5205121.7639.02400**
	020	066	+	03	No 56 Connector (Tuchel) at connection box	S10G56 G 020 066 5 O V	**5205192.7639.02400**
	019	066	+	04	No 56 Connector (Tuchel) at connection box	S10G56 G 019 066 5 M V	**5204987.9000.02400** [4]

[1] For other symbols, see Publication 7503297
[2] Solenoid-Cat.- No. 9000 means: Solenoid a = 7637, Solenoid b = 7601
[3] Solenoid-Cat.- No. 9000 means: Solenoid a = 7638, Solenoid b = 7605
[4] Solenoid-Cat.- No. 9000 means: Solenoid a = 7639, Solenoid b = 7601
[5] Port T of this 3/2 directional control valves is used as leak oil connection..

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.
Subplate and mounting screws must be ordered separately.

Type key

Directional control valve

S	10	...	...	G	...	...	...	...	...
		1	2		3	4	5	6	7

1 Actuation:
- **G** – DC solenoid (with dry operation system) with manual override
- **B** – DC solenoid (with dry operation system) without manual override

2 Electrical connection:

Actuation	Code No.	Description
G, B	10	Connector Pg 11 to DIN 43 650 on solenoid
G, B	51	Connector in connector box
G, B	56	Connector (Tuchel) in connection box

3 Symbol:
- **020** – See type survey

4 Code:

Mechanical end switch
- **039** – Position monitoring of switching position directly at spool, 1 end switch. Electrical connection: Connector, number of pins: 6 + PE
- **061** – Position monitoring of 3 switching positions at the solenoid, 3 end switches. Electrical connection: Harting-connector R 15
- **066** – Position monitoring of 2 switching positions at the solenoid, 2 end switches. Electrical connection: Connector

5 Engineering version:
- **5**

6 Additional data:
- **O** – Standard design
- **M** – Mechanical detent

7 Sealing material:
- **V** – FKM (e.g. Viton)

Subplate

P	S	10	G	...	...	...	...	O	O
				1	2	3			

1 Line connection:
- **4** – G 1/2 (Internal thread
- **5** – G 3/4 to DIN ISO 228/1)

2 Code:
- **001** – Standard design

3 Engineering version:
- **2**

Electrical parameters and pin-plan (inductive proximity switches)

Code 039
Precision switch according to DIN 43 695

Isolation:
Group "C" according to VDE 0110

Nominal voltage ~[V]:
250

Continuous current [A]:
6

Contact system:
Dual-circuit directional contact with 2 galvanical and thermical separated contact bridges

Switching system:
Snap system with friction contacts

Switching force [N] max.:
4,4

Reset force [N] min.:
1,3

Duration of bounce
(at 10 mm/min contact velocity)
[ms]:
≤ 1,5

Circuit time
(at 10 mm/min contact velocity)
[ms]:
≤ 10

Number of switching max.
switching/min:
300

mechanical at 1,6 switchings/s:
› 50 million switching cycles
(VDE 0660 E3)

electrical:
dependance on load cycles/min

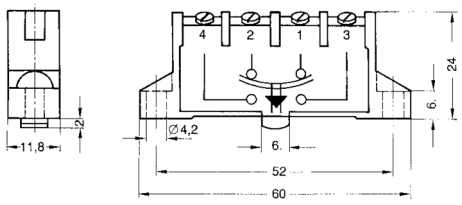
Reproduceability of switching point [µm]:
± 2

Allowable ambient temperature t [°C]:
-30 ... +90

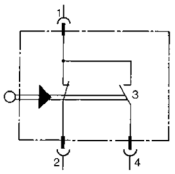
Contact material:
Fine silver, system gold plated

Contact arrangement
normally closed contact: 1 + 2
normally open contact: 3 + 4

Dimensional drawing



Pin plan (Hirschmann connector)



Code 061 and 066
Micro switch
(mechanical end switch according to DIN 41 635)

Type:
VCS

Directional contact:
single line

Reset force [N] max:
1.1

Switching force [N] max:
3.3

Allowable ambient temperature t [°C]:
-20 ... +85

Switching performance

DC =:
Resistive load:

24 V	6 A
125 V	0,5 A
250 V	0,25 A

Inductive load:

24 V	6 A
125 V	0,07 A
250 V	0,03 A

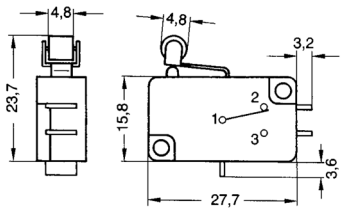
AC ~:
Resistive load:

125 V	10 A
250 V	10 A

Inductive load:

24 V	6 A
125 V	0,07 A
250 V	0,03 A

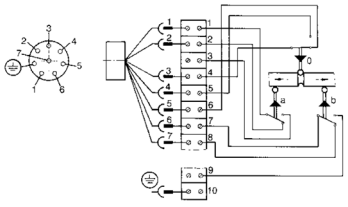
Dimensional drawing



1 = common
2 = normally closed
3 = normally open

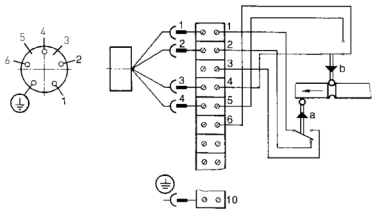
Pin plan (switch with Harting-connector R15)
Code 061

Valve with 3 switching positions **0570722**



Pin plan (Hirschmann connector)
Code 066

Valve with 2 switching positions **0660690**



Ordering example

Wanted:
4/2 directional control valve
DN 10, 24 VDC, connector on solenoid, Symbol 020, along with corresponding subplate.

Directional control valve::
Type No.:
S 10 G 10 G 020 039 5 O V
Cat. No.:
5205118.7623.02400

Subplate:
Type No.:
P S 10 G 4 001 2 O O
Cat. No.:
1065184

Mounting screws:
(4 pcs. required)
Socket-head screw:
(M 6 x 60 DIN 912-10.9)
Cat. No.:
0700416

Design

These directional control valves are based on the **5-chamber system**, and are designed in the form of spool valves. A spool of hardened steel slides in an housing made of high-strength cast iron. Therefore the units are suitable for rough operating conditions. Depending on the design of the device the end switching position of the spool is monitored via inductive or mechanical proximity switches.

Actuation

The directional control vlaves are actuated electromagnetically and by means of a spring or operated by hand lever.

Mounting

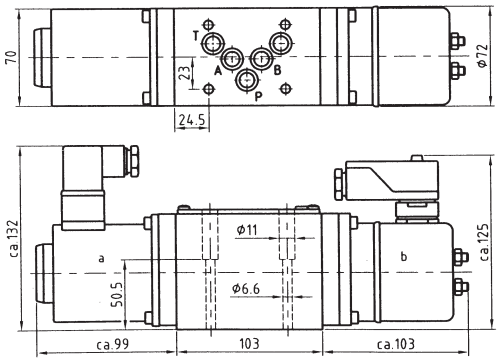
The units are bolted on subplates and sealed by O-rings.

Line connection

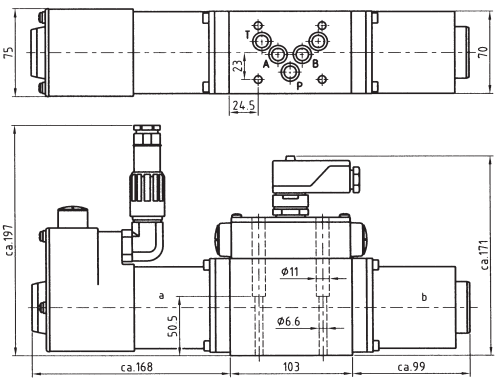
Subplate, interface to DIN 24340-A10 and
ISO 4401-AC-05-4-A.

Dimensional drawings

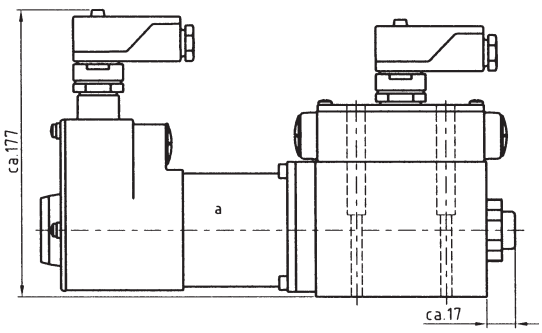
01 Code 039: S 10 G, S 10 B, 3/2- and 4/2-directional control valve



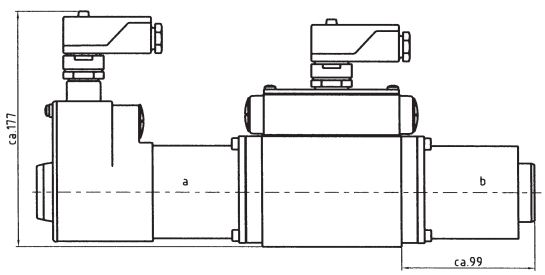
02 Code 061: S 10 G, S 10 B, 4/3-directional control valve



03 Code 066: S 10 G, 3/2- and 4/2-directional control valve

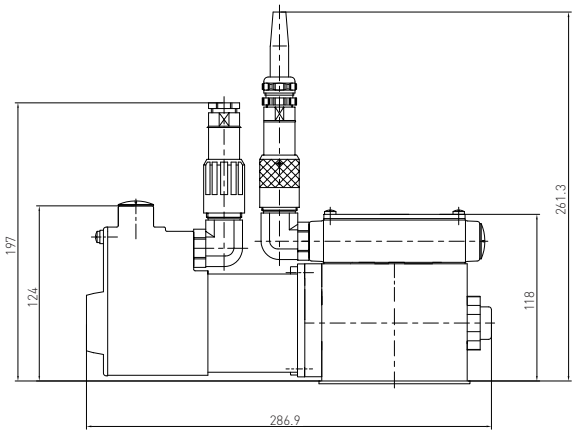


04 Code 066: S 10 G with mechanical detent, 4/2-directional control valve

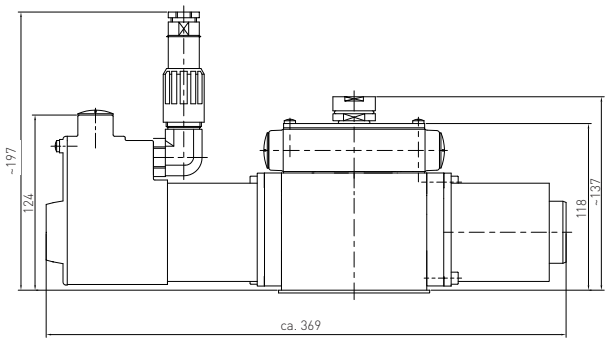


Dimensional drawings

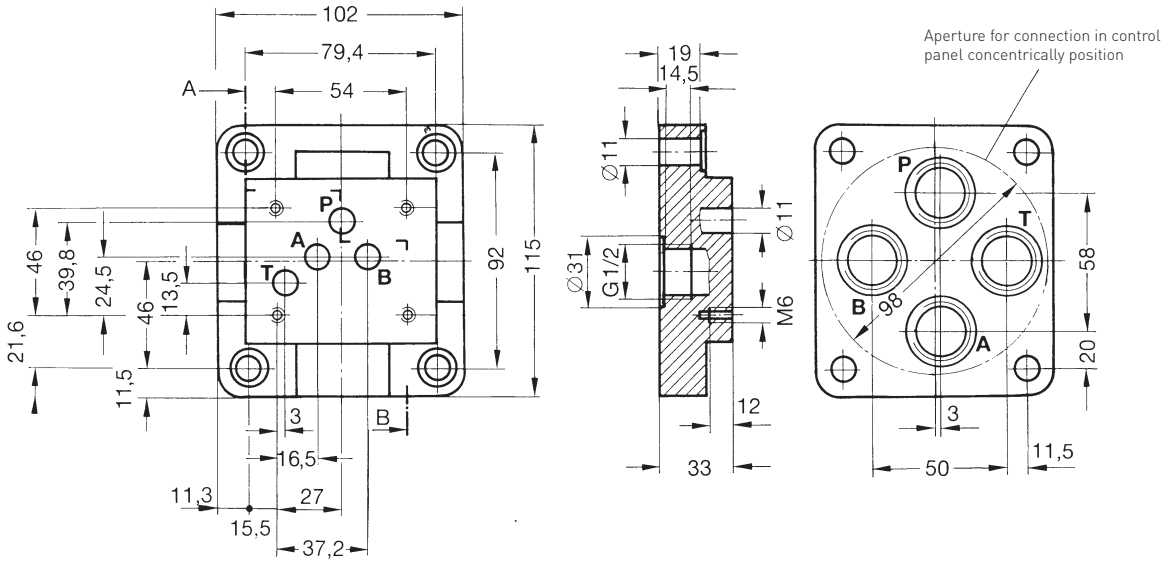
05 Code 061: S 10 G, 3/2- and. 4/2-directional control valve



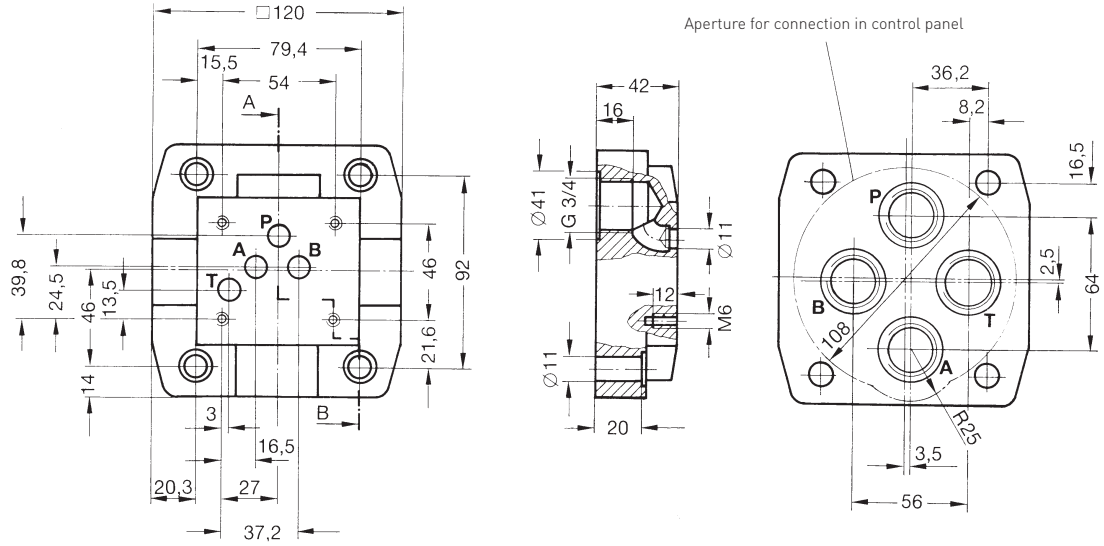
06 Code 061: S 10 G, S 10 B, 4/3-directional control valve



Subplate G 1/2 with hole pattern according to DIN 24 340-A 10 and ISO 4401-AC-05-4-A

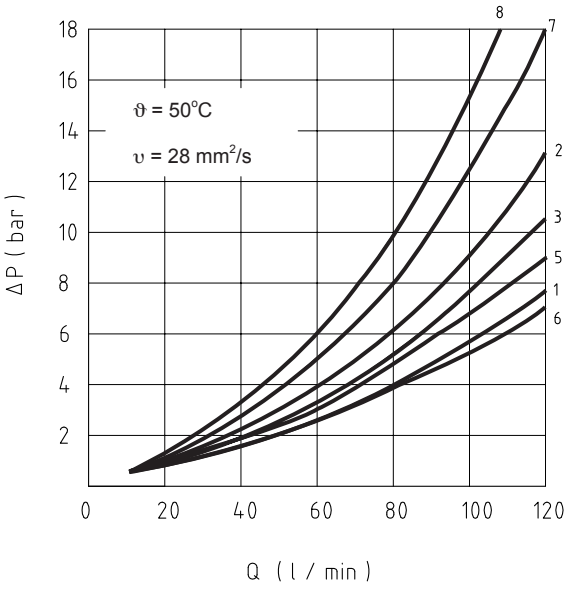


Subplate G 3/4 with hole pattern according to DIN 24 340-A 10 and ISO 4401-AC-05-4-A

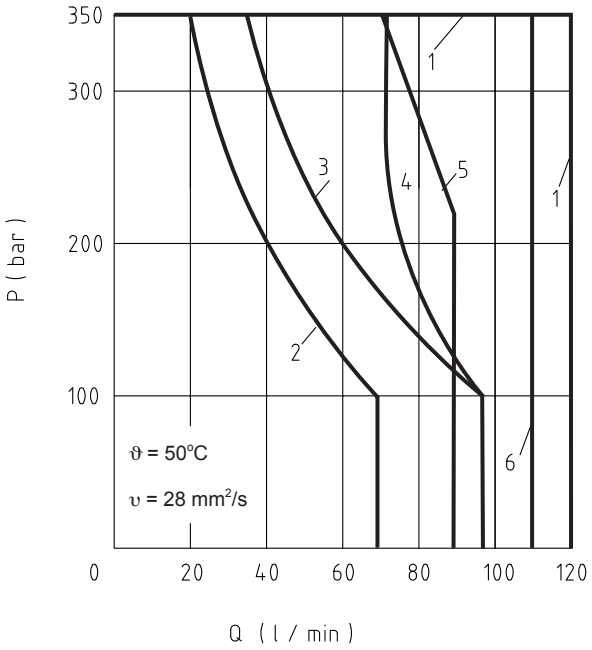


Characteristic curves

Flow curves Q = f(Δp)



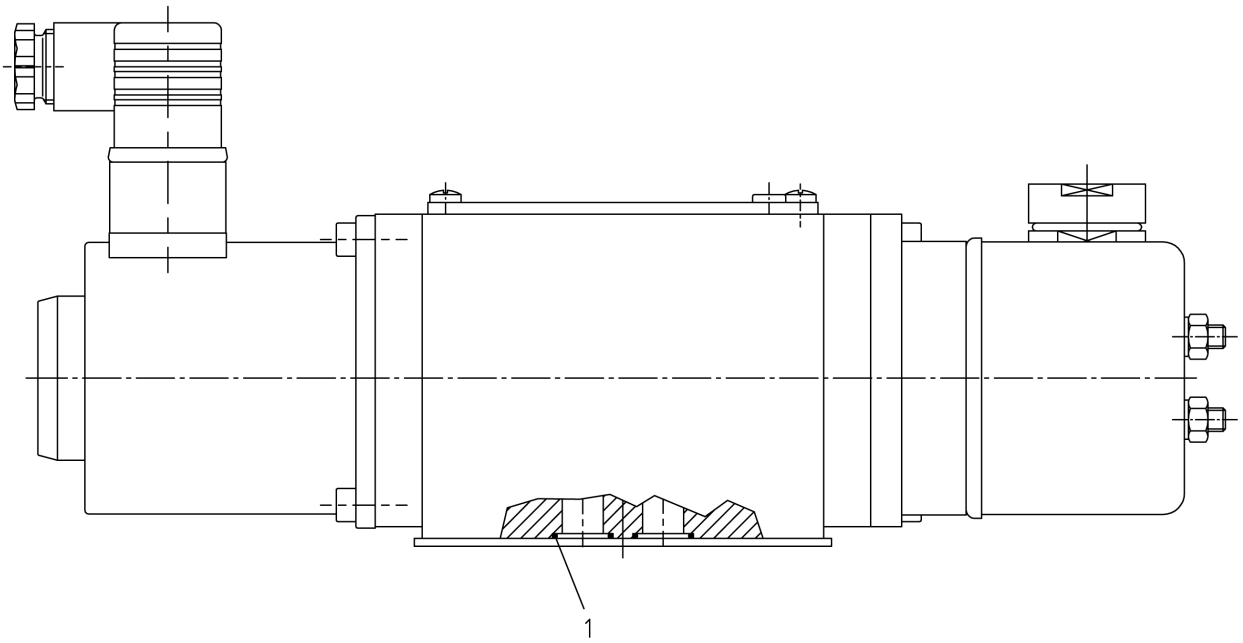
Power limits Qmax:



	Flow direction				
Symbol	**P-A**	**P-B**	**A-T**	**B-T**	**P-T**
001	6	6	-	-	-
003	1	1	3	3	-
008, 004, 094	1	1	5	5	-
013	3	3	2	7	8
019	1	1	3	3	-
020, 039	1	1	3	3	-

Symbol	**Characteristic curve**
001	2
003	4
008, 004, 094, 019	1
013, 0220, 039	5

Spare parts drawings



Spare parts kit

0701623, containing:
5 x O-ring (12,42 x 1,78)

Sealings are exclusively available as spare parts kit.

Repairs and maintenance must only be carried out by the valve manufacturer or authorized personnel.

Electrical spare parts

Electrical connection 10		**Cat. No.**
	Plug form B (black)	**0570275**
e.g. on solenoid 7637 or 7638		**Cat. No.**
	Connector compl. Number of pins: 7 + PE	**0570722**
Electrical connection 51		**Cat. No.**
	Connector compl. Number of pins: 7 + PE	**0571057**
Electrical connection 56		**Cat. No.**
	Connector Number of pins: 6 + PE	**0660690**
	Female connector Number of pins: 6 + PE	**0660689**

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