

Directional seated valves type BVG 1, BVP 1

Product documentation



Operating pressure p_{\max} :

400 bar

Flow rate Q_{\max} :

20 l/min



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1**Overview of directional seated valves type BVG 1, BVP 1**

Directional seated valves are a type of directional valve. Their function is to direct the flow of hydraulic medium in certain directions, therefore connecting the relevant connections, or shutting off the flow with zero leakage. By this means they control the movement of the actuators in a hydraulic system.

The directional seated valve type BVG is installed directly in the pipeline. The valve type BVP is a manifold mounting valve. 2/2 and 3/2 directional seated valves with different actuation types are available. All ports can be pressurised to the same level and can be flowed through as desired.

Features and advantages

- 2/2 and 3/2-way directional valve optionally available with position monitoring
- Versions with partial notching available

Intended applications

- Machine tools
- Testing machinery
- Fixture design

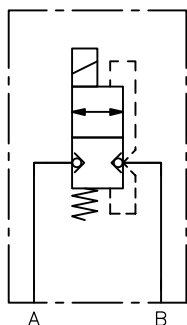


Version for pipe connection type BVG 1

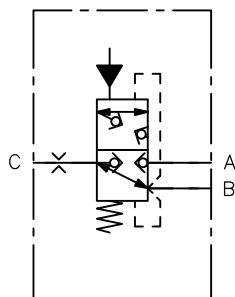
2 Available versions

Circuit symbol - Examples

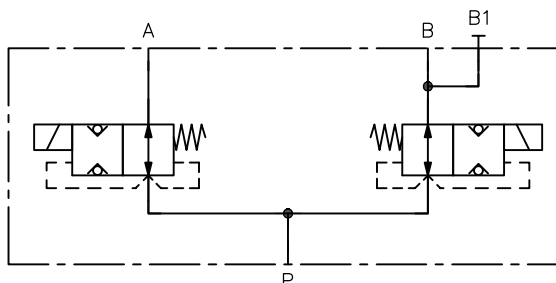
BVP 1 R -G 24



BVG 1 Z /B 1.1 -H



BVG 112 S -GM 24



Ordering examples

BVP 1	R		-WGM 230		
BVP 1	SK		-G 24	-25	-3/8
BVG 1	Z	/B 1,1	-H		-3/8
BVG 112	S		-G 24		

					2.6 "Pipe connection / Single connection block"
					2.5 "Spacer plate"
					2.4 "Actuations"
					2.3 "Orifices / Check valve (Additional elements)"
					2.2 "Circuit symbols"
					2.1 "Basic type and size"

2.1 Basic type and size

Type	Description	Flow rate Q_{max} (l/min)	Pressure p_{max} (bar)
BVG 1	Pipe connection	20	400
BVP 1	Manifold mounting		
BVG 112	Twin valve, Pipe connection		



NOTICE

p_{max} = 250 bar with electrical actuation, coding GM..., WGM..., see Chapter 2.4, "Actuations"

2.2 Circuit symbols

BVG 1, BVP 1

Coding	Description	Circuit symbol	
		BVG 1	BVP 1
R	<ul style="list-style-type: none"> 2/2-way directional valve, normally closed contact 		
S	<ul style="list-style-type: none"> 2/2-way directional valve, normally open contact 		
Z	<ul style="list-style-type: none"> 3/2-way directional valve 		
ZD	<ul style="list-style-type: none"> 3/2-way directional valve, B-C open - With detent - With electrical actuation - With hydraulic or pneumatic actuation only in port size G 1/4 		

BVP 1 - with contact switch or inductive sensor for switching position monitoring

i INFORMATION





Possible for use for pipe connection combination with connection block, see Chapter 2.6!

Coding	Description	Circuit symbol	
		Contact switch "K"	Inductive sensor "U"
RK.. RU..	<ul style="list-style-type: none"> 2/2-way directional valve, normally closed contact <ul style="list-style-type: none"> Only with electrical actuation <p>with contact switch:</p> <ul style="list-style-type: none"> RK: with DIN connector RKM: with M12 connector (normally open contact) RKMO: with M12 connector (normally closed contact) <p>with inductive sensor:</p> <ul style="list-style-type: none"> RU0: with DIN connector (normally closed contact) RUS: with DIN connector (normally open contact) RUMO: with M12 connector (normally closed contact) RUMS: with M12 connector (normally open contact) 	<p>The diagram shows a 2/2-way directional valve with a normally closed contact switch. The valve has two ports, A and B. The contact switch is connected to the valve's internal mechanism. The symbol is enclosed in a dashed box.</p>	<p>The diagram shows a 2/2-way directional valve with a normally closed inductive sensor. The valve has two ports, A and B. The inductive sensor is connected to the valve's internal mechanism. The symbol is enclosed in a dashed box.</p>
SK.. SU..	<ul style="list-style-type: none"> 2/2-way directional valve, normally open contact <ul style="list-style-type: none"> Only with electrical actuation <p>with contact switch:</p> <ul style="list-style-type: none"> SK: with DIN connector SKM: with M12 connector (normally open contact) SKMO: with M12 connector (normally closed contact) <p>with inductive sensor:</p> <ul style="list-style-type: none"> SU0: with DIN connector (normally closed contact) SUS: with DIN connector (normally open contact) SUMO: with M12 connector (normally closed contact) SUMS: with M12 connector (normally open contact) 	<p>The diagram shows a 2/2-way directional valve with a normally open contact switch. The valve has two ports, A and B. The contact switch is connected to the valve's internal mechanism. The symbol is enclosed in a dashed box.</p>	<p>The diagram shows a 2/2-way directional valve with a normally open inductive sensor. The valve has two ports, A and B. The inductive sensor is connected to the valve's internal mechanism. The symbol is enclosed in a dashed box.</p>
ZK.. ZU..	<ul style="list-style-type: none"> 3/2-way directional valve <ul style="list-style-type: none"> Only with electrical actuation <p>with contact switch:</p> <ul style="list-style-type: none"> ZK: with DIN connector ZKM: with M12 connector (normally open contact) ZKMO: with M12 connector (normally closed contact) <p>with inductive sensor:</p> <ul style="list-style-type: none"> ZU0: with DIN connector (normally closed contact) ZUS: with DIN connector (normally open contact) ZUM0: with M12 connector (normally closed contact) ZUMS: with M12 connector (normally open contact) 	<p>The diagram shows a 3/2-way directional valve with a normally open contact switch. The valve has three ports, C, B, and A. The contact switch is connected to the valve's internal mechanism. The symbol is enclosed in a dashed box.</p>	<p>The diagram shows a 3/2-way directional valve with a normally open inductive sensor. The valve has three ports, C, B, and A. The inductive sensor is connected to the valve's internal mechanism. The symbol is enclosed in a dashed box.</p>

BVG 112

Coding	Description	Circuit symbol
R	2x 2/2-way directional valves, normally closed contact for A and B	
S	2x 2/2-way directional valves; normally open contact for A and B	
RS	2x 2/2-way directional valves; normally closed contact for A, normally open contact for B	
SR	2x 2/2-way directional valves, normally open contact for A, normally closed contact for B	

2.3 Orifices / Check valve (Additional elements)

Coding	Description	Suitable for	Orifice Ø (mm)	Circuit symbol
B 0.4 B 0.5 B 0.6 B 0.8 B 1.1 B 1.3 B 1.5	Orifice in port in A or C <ul style="list-style-type: none"> not possible with port size G 3/8 	<ul style="list-style-type: none"> BVG 1 	0.4 0.5 0.6 0.8 1.1 1.3 1.5	
B 0.6 B 0.8 B 1.1 B 1.3 B 1.5 B 2.0 B 2.5	Orifice in port A	<ul style="list-style-type: none"> BVP 1 R BVP 1 RK (RU) BVP 1 S BVP 1 SK (SU) 	0.6 0.8 1.1 1.3 1.5 2.0 2.5	
B 0.8 B 1.0 B 1.2 B 1.4 B 1.6 B 1.8 B 2.0	Orifice in port C	<ul style="list-style-type: none"> BVP 1 Z BVP 1 ZD BVP 1 ZK (ZU) 	0.8 1.0 1.2 1.4 1.6 1.8 2.0	
R	Check valve in C	<ul style="list-style-type: none"> BVP 1 Z BVP 1 ZD BVP 1 ZK (ZU) 	--	

NOTICE

Position of orifice and check valve [see Chapter 3.2.](#)

2.4 Actuators

2.4.1 Electrical actuators

p_{max}: 400 bar

Excitation system with male connector Dimension diagram A to C, see Chapter 4.4.1	Circuit symbol		Nominal voltage
	R, S, Z	ZD, RK, SK, ZK, RU, SU, ZU	
X 12, G 12	C	A	12 V DC
X 24, G 24	C	A	24 V DC
X 48, G 48	C	A	48 V DC
X 98, G 98	C	A	98 V DC
X 205, G 205	C	A	205 V DC
L 12	C	A	12 V DC
L 24	C	A	24 V DC
L5K 24	C	A	24 V DC
WG 110	C	A	110 V AC, 50/60 Hz (98 V DC)
WG 230	C	A	230 V AC, 50/60 Hz (205 V DC)

p_{max}: 250 bar

Excitation system with male connector Dimension diagram A to C, see Chapter 4.4.1	Circuit symbol	Nominal voltage
	R, S, Z, ZD	
XM 12, GM 12	B	12 V DC
XM 24, GM 24	B	24 V DC
XM 48, GM 48	B	48 V DC
XM 98, GM 98	B	98 V DC
XM 205, GM 205	B	205 V DC
LM 12	B	12 V DC
LM 24	B	24 V DC
L5KM 24	B	24 V DC
AMPM 12	B	12 V DC
AMPM 24	B	24 V DC
AMPM 48	B	48 V DC
DTM 12	B	12 V DC
DTM 24	B	24 V DC
M 12	B	12 V DC
M 24	B	24 V DC
WGM 110	B	110 V AC, 50/60 Hz
WGM 230	B	230 V AC, 50/60 Hz

! NOTICE

- For applications which require an explosion-proof magnet type X 24 EX 55 FM, X 24 EX M 55 FM, please use valves type BVE 1 as per [D 7921](#).
- For applications which require a M 24/8 W magnet (8 watts), please use valves type BVE 1 as per [D 7921](#). BVG 1... M 24/8 W only as a discontinued type.

Plug types

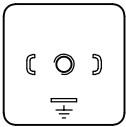
Coding	Designation, connector	Protection class (IEC 60529)
G(M)..	Line connector MSD3-309	IP 65
X(M)..	without connector	
L(M)..	LED connector	
L5K(M)..	Line connector with 5-m connecting line	
AMPM..	AMP-Junior, 2-pin, coding 1	
DTM..	Deutsch connector, 2-pin, type DT04-2P	IP 68
M..	M 12 connector	IP 54
WG(M)..	LED connector with alternating rectifier	IP 65

! NOTICE

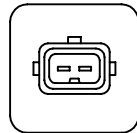
The specifications regarding the IP protection class apply for versions featuring a properly assembled male connector. The specified protection classes only refer to the plug connections and not to the complete valve.

Connection pattern

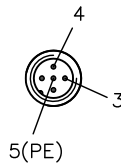
G.., X.., L.., (WG..)



AMP..



M..



DT..



2.4.2 Manual override

Coding	Description
without coding	Series
T	with detent
T1	without detent (spring return mechanism)

2.4.3 Alternative actuations

Coding	Pressure p_{max} (bar)	Circuit symbols
Hydraulic		
H 1/4	400	R, S, Z
H	400	R, S, Z, ZD
Pneumatic		
P	400	R, S, Z, ZD
Mechanical pin		
T	400	R, S, Z
Mechanical roller		
K	400	R, S, Z
Manual with hand lever		
A	400	R, S, Z
Manual with detent with hand lever		
CD	400	R, S, Z
Manual with detent without hand lever		
KD	400	R, S, Z

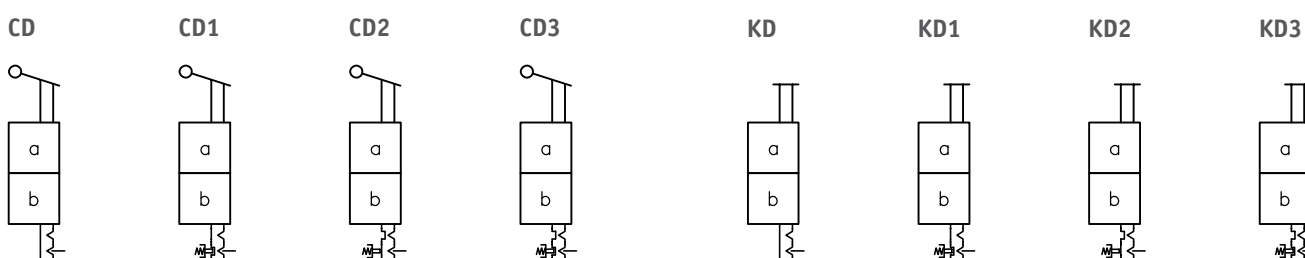
Actuation symbols

Electrical	Hydraulic		Pneumatic P	Mechanical		Manual A
	H 1/4 for BVP H for BVG	H for BVP		Pin T	Roller K	

Additional locking for notched actuations CD, KD

Coding	Description
without coding	without
1	Locking in switch position b
2	Locking in switch position a
3	Locking in switch position a and b

Circuit symbol



2.5 Spacer plate

Coding	Description
without coding	without spacer plate
Z5	Spacer plate 5 mm for BVP 1 RK(SK), BVP 1 RU(SU)


2.6 Pipe connection / Single connection block

Coding	Description	Ports (ISO 228-1 or JIS B 2351)
		A, B, C
without coding	without pipe connection/single connection block	--
-1/4	<ul style="list-style-type: none"> ▪ Pipe connection for BVG 1 	G 1/4
-3/8	<ul style="list-style-type: none"> ▪ Single connection block for BVP 1 	G 3/8
-1/4 JIS	<ul style="list-style-type: none"> ▪ Pipe connection for BVG 1, not possible for BVG 1 ZD 	G 1/4 JIS

3 Parameters

3.1 General data

Designation	2/2, 3/2-way directional seated valve
Design	Conical seated valve, zero leakage
Model	Pipe connection and manifold mounting
Material	Steel, basic valve galvanised, ZnNi, magnet ZnNi
Installation position	As desired
Overlap	For 3/2-way directional valves negative, transition from one flow direction to the other is completed only at the stroke end position. During switching, all passages are connected to each other. For 2/2 and 3/2 directional seated valves monitored for switching position, positive overlap in the event of signal change.
Hydraulic fluid	Hydraulic fluid, according to DIN 51524 Parts 1 to 3; ISO VG 10 to 68 according to DIN ISO 3448 Viscosity range: 4 - 1500 mm ² /s Optimal operating range: approx. 10 - 500 mm ² /s Also suitable for biologically degradable hydraulic fluids type HEPG (polyalkylene glycol) and HEES (synthetic ester) at operating temperatures up to approx. +70°C.
Cleanliness level	ISO 4406 <hr/> 21/18/15...19/17/13 Exemptions: <ul style="list-style-type: none"> for inductive sensor for switching position monitoring, see Chapter 2.2, "Circuit symbols" ISO 4406 <hr/> 20/14/14 Particle size X = 15 µm according to VDA 19
Temperatures	Environment: approx. -40 to +80 °C, hydraulic fluid: -25 to +80 °C, pay attention to the viscosity range. Start temperature: down to -40 °C is permissible (take account of the start viscosities!), as long as the steady-state temperature is at least 20 K higher during subsequent operation. Biologically degradable hydraulic fluids: note manufacturer specifications. With consideration for the seal compatibility, not above +70°C.

 **NOTICE**
Observe the correct duty cycle, see Chapter 3.5.1, "Electrical actuation"

3.2 Pressure and volumetric flow

Operating pressure	<ul style="list-style-type: none"> ▪ $p_{\max A, B, C} = 400 / 250 \text{ bar}$
Flow rate	<ul style="list-style-type: none"> ▪ $Q_{\max} = 20 \text{ l/min}$ ▪ $Q_{\max} = 15 \text{ l/min}$ for valves with position monitoring ▪ Valves with position monitoring: Defined leakage flow rate at the switching point $Q \leq 1 \text{ l/min}$
Flow limit	<ul style="list-style-type: none"> ▪ In the event of accumulator circuits or in the event of connection to high-pressure circuits with large pump delivery flows (ring lines, central supplies), the flow streams must be limited to Q_{\max} dependent on the system pressure through orifices. ▪ The orifice must always be located on the accumulator side. ▪ The check valve prevents unwanted reversal of the flow direction. <ul style="list-style-type: none"> - see Chapter 2.3, "Orifices / Check valve (Additional elements)" - see Chapter 2, "Available versions"
	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Orifice</p> </div> <div style="text-align: center;"> <p>Check valve</p> </div> </div>

3.3 Weight

Complete with actuation

Electrical G., L., X., WG., M..	Type	
	BVG 1 R, BVP 1 R, BVG 1 S, BVP 1 S	= 1.0 kg
	BVG 1 Z, BVP 1 Z	= 1.2 kg
	BVP 1 ZK (ZU)	= 1.4 kg
	BVP 1 RK (RU), BVP 1 SK (SU)	= 1.2 kg
	BVG 1 ZD, BVP 1 ZD	= 1.7 kg
Electrical GM., LM., XM., WGM..	Type	
	BVG 1 R, BVP 1 R, BVG 1 S, BVP 1 S	= 0.9 kg
	BVG 1 Z, BVP 1 Z	= 1.1 kg
	BVP 1 ZR (ZU)	= 1.3 kg
	BVP 1 RK (RU), BVP 1 SK (SU)	= 1.0 kg
	BVG 1 ZD, BVP 1 ZD	= 1.5 kg
Hydraulic H, H 1/4	Type	
	BVG 1 R, BVP 1 R, BVG 1 S, BVP 1 S	= 0.6 kg
	BVG 1 Z, BVP 1 Z	= 0.8 kg
	BVG 1 ZD	= 1.3 kg
Pneumatic P	Type	
	BVG 1 R, BVP 1 R, BVG 1 S, BVP 1 S	= 0.5 kg
	BVG 1 Z, BVP 1 Z	= 0.7 kg
	BVG 1 ZD	= 1.1 kg
Mechanical T	Type	
	BVG 1 R, BVP 1 R, BVG 1 S, BVP 1 S	= 0.6 kg
	BVG 1 Z, BVP 1 Z	= 0.8 kg
Mechanical K	Type	
	BVG 1 R, BVP 1 R, BVG 1 S, BVP 1 S	= 0.9 kg
	BVG 1 Z, BVP 1 Z	= 1.1 kg
manual A	Type	
	BVG 1 R, BVP 1 R, BVG 1 S, BVP 1 S	= 0.9 kg
	BVG 1 Z, BVP 1 Z	= 1.1 kg

manual with detent CD, KD

Type

BVG 1 R, BVP 1 R, BVG 1 S, BVP 1 S

= 0.9 kg

BVG 1 Z, BVP 1 Z

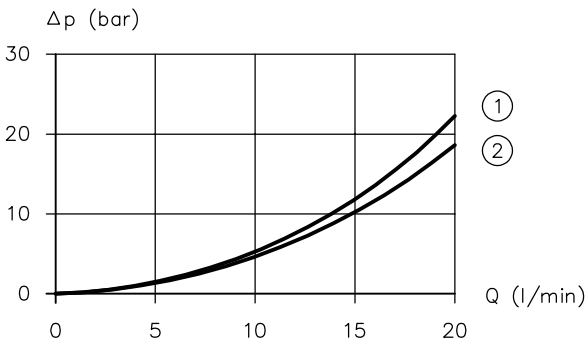
= 1.1 kg

All weights are approximate specifications and without guarantee.

3.4 Characteristic lines

Viscosity of the hydraulic fluid approx. 60 mm²/s

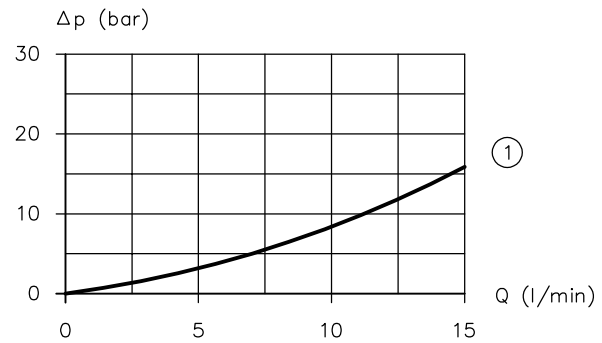
Basic valves



Q flow rate (l/min); Δp flow resistance (bar)

1 BVG(P) 1 Z, ZD, ZK (ZU)

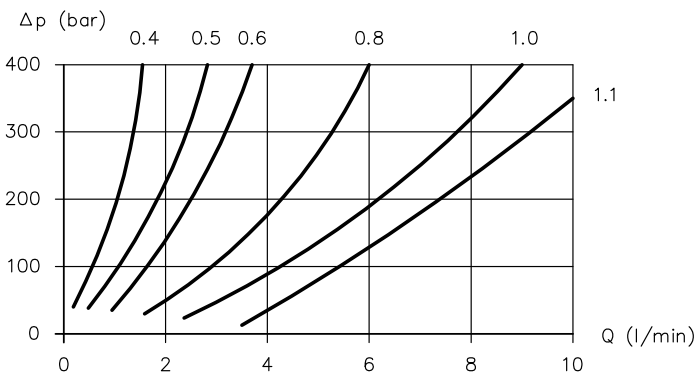
2 BVG(P) 1 R, S



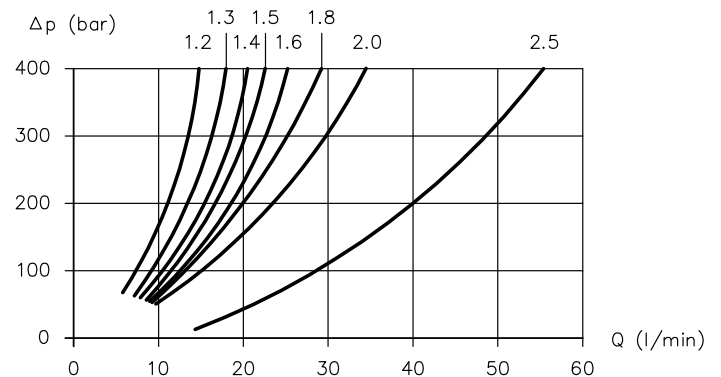
Q flow rate (l/min); Δp flow resistance (bar)

1 BVP 1 RK, SK, RU, SU

Additional orifices



Q flow rate (l/min); Δp flow resistance (bar)



Q flow rate (l/min); Δp flow resistance (bar)

3.5 Electrical data

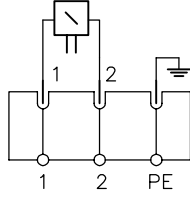
3.5.1 Electrical actuation

Nominal power P _N		12 V DC	24 V DC	48 V DC	98 V DC	205 V DC
Actuations with dimension diagram "A"	G.., X.., L.., L5K..	30 W	30 W	30 W	29.1 W	29.9 W
	WG..	--	--	--	29.1 W	29.9 W
Actuations with dimension diagram "B"	GM.., XM.., LM.., L5KM.., AMPM.., DTM..	26.2 W	26.5 W	26 W	24.8 W	28 W
	WGM..	--	--	--	24.8 W	28 W
Actuations with dimension diagram "C"	G.., X.., L.., L5K..	29.3 W	27.5 W	--	28.7 W	30.1 W
	WG..	--	--	--	28.7 W	30.1 W
Switching times (reference value)	<ul style="list-style-type: none"> ▪ on or off: approx. 50 to 60 ms ▪ for WG ... 2–3 times longer 					
Actuation pulse	Circuit symbol ZD: approx. 500 ms					
Switching operations	approx. 2000/h, to be seen as approximately evenly distributed					
Contact temperature	120°C at 20°C ambient temperature					
Insulation material class	F					
Relative duty cycle	relative duty cycle during operation (100% duty cycle marking on the solenoid) <div style="text-align: center;"> <p>ϑ_u (°C)</p> <p>M24/8W</p> <p>%ED</p> <p>% duty cycle 5 min rel. duty cycle; ϑ_u ambient temperature (°C)</p> </div>					
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p>NOTICE</p> <p>The thermal load on the coil can be reduced by means of an economy circuit, for example.</p> </div>						
Protection class	Depending on the actuating solenoid see Chapter 2.4, "Actuations"					
Electrical connection	Depending on the actuating solenoid see Chapter 2.4, "Actuations"					
Cut-off energy	WA ≤ 0.4 Ws					

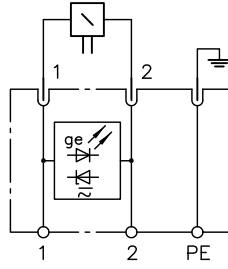
Circuit diagrams

DC voltage

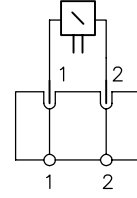
G(M).., X(M)..



L(M)..

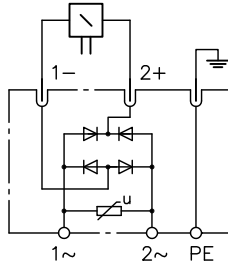


AMPM.., DTM..



AC voltage

WG(M)..



3.5.2 Electrical data for contact switch

Mechanical contact switch ..K(M)

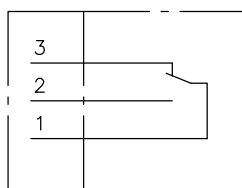
Coding	..K	..KM(0)
Type	V4NC SET 7 SAIA-Burgess	
Mechanical service life	5 x 10 ⁶	
Electrical service life	12 V, 3 A = 0.05 x 10 ⁶ , 100 mA = 3 x 10 ⁶ (cos φ = 1)	
Direct current	12 V DC 24 V DC	5 A
<p>NOTICE For reliable contact, certain minimum flows must not be undershot; I_{min} (12 V DC) = 10 mA, I_{min} (24 V DC) = 100 mA</p>		
Male connector	EN 175 301-803	M12x1
Protection class	IP 65 (IEC 60529)	IP 54 (IEC 60529)
<p>NOTICE The specified protection classes only refer to the plug connections and not to the complete valve.</p>		

Electrical connection

Rest position 1-3; switching position 1-2



Male connector
Micro switch

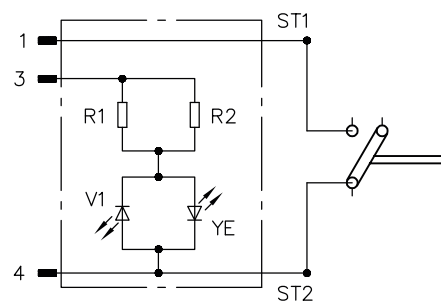


⊕ ————— Pol E

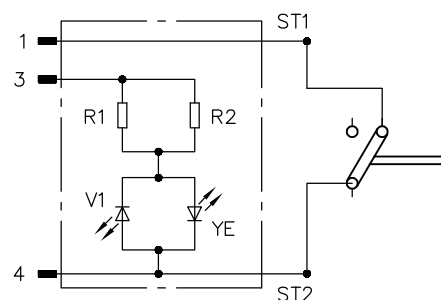
Rest position 1-3; switching position 1-4



.KM normally open contact



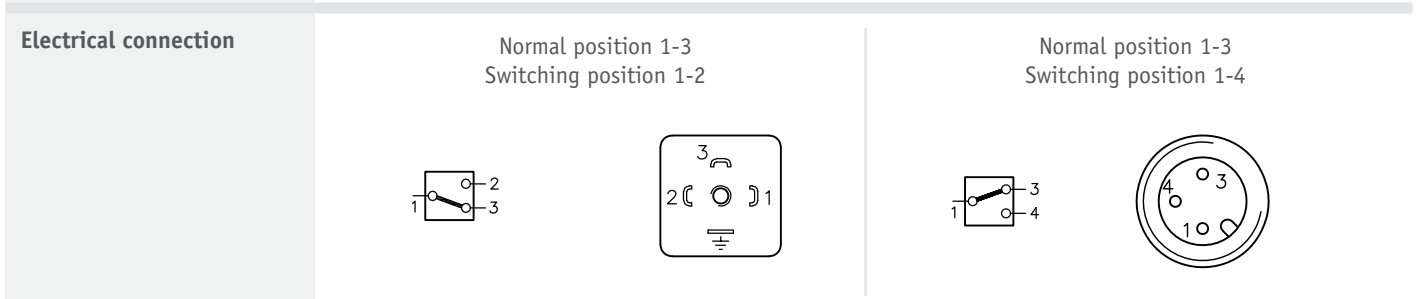
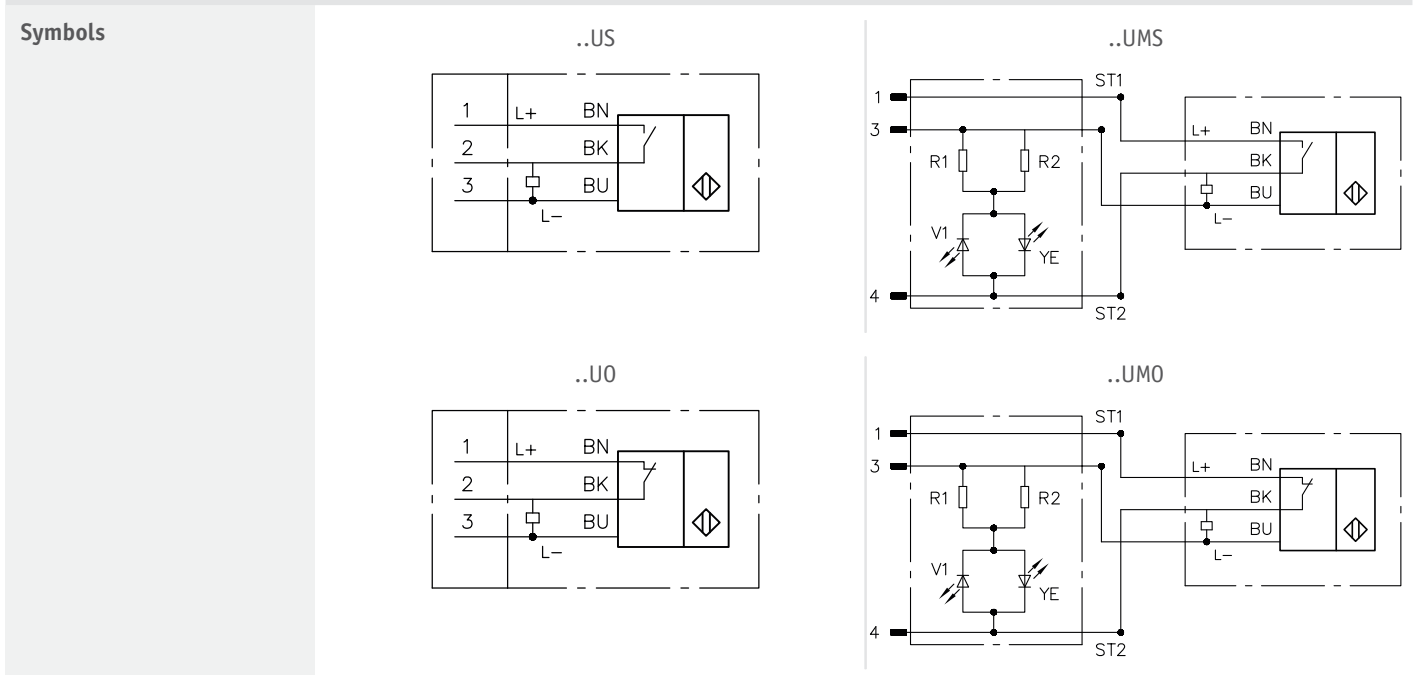
.KMO (normally closed contact)



Inductive contact switch ..US(U0), ..UMS(UM0)

Coding	..US(U0)	..UMS(UM0)
Type	Pepperl & Fuchs NBB 1.5-F79-E2	
Operating current	24 V DC	0 to 100 mA
Idle current	≤ 15 mA	
Switching frequency max.	1 Hz	
Switching frequency max.	2000/h	
Male connector	EN 175 301-803	M12x1
Protection class	IP 65 (IEC 60529)	IP 54 (IEC 60529)

NOTICE
The specified protection classes only refer to the plug connections and not to the complete valve.



3.6 Alternative actuations

Coding	H 1/4	P	A, CD, KD	T	K
	hydraulic	pneumatic	manual	mechanical	
Permissible residual pressure in the control line for safe return to the neutral position	< 2 bar	--	--	--	--
Control volume (geometric)	1.4 cm ³	9.3 cm ³	--	--	--
Housing material and surface treatment	Control head, steel, zinc, nickel-coated	Control head, aluminium, black anodised	Lever housing, steel, zinc, nickel-coated	Control head, steel, zinc, nickel-coated	
External control port	G 1/4	G 1/4	--	--	--
Pilot pressure	p _{contr. min}	24 bar	3.5 bar	--	--
	p _{contr. max}	400 bar	15 bar	--	--
Actuation torque	--	--	1.5 to 3 Nm *	--	--
Actuation force	--	--	--	80 to 190 N	22 to 35 N

* with coding KD: Actuation with tool 13 AF

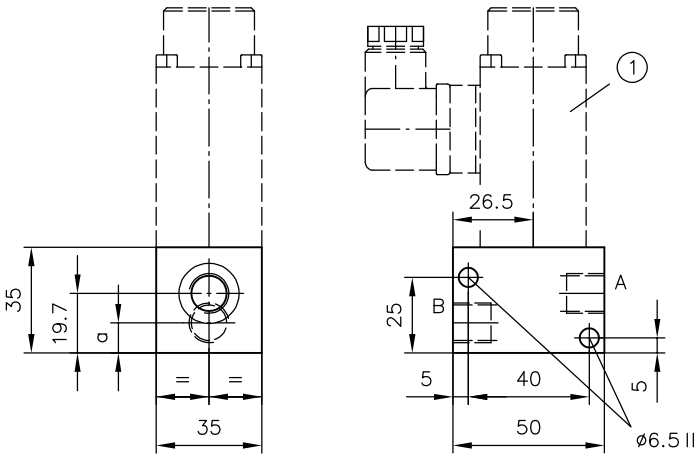
4 Dimensions

All dimensions in mm, subject to change.

4.1 Pipe connection

Dimensions of the actuating elements see Chapter 4.4, "Actuations"

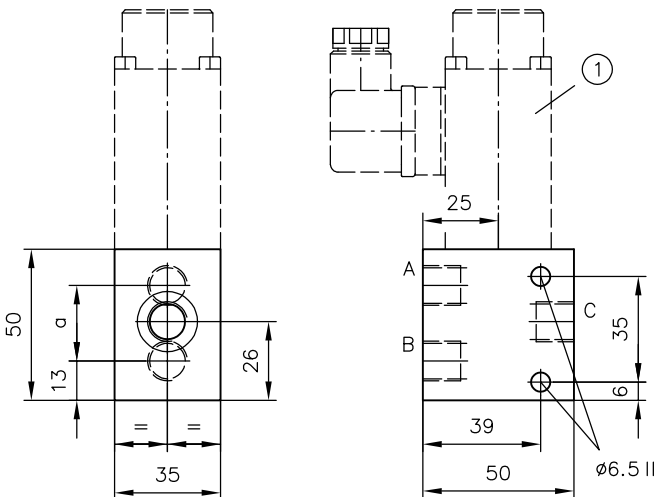
BVG 1 R, BVG 1 S



1 Actuating element

Type	a
BVG 1 R(S) -1/4	10
BVG 1 R(S) -1/4 JIS	10
BVG 1 R(S) -3/8	12

BVG 1 Z

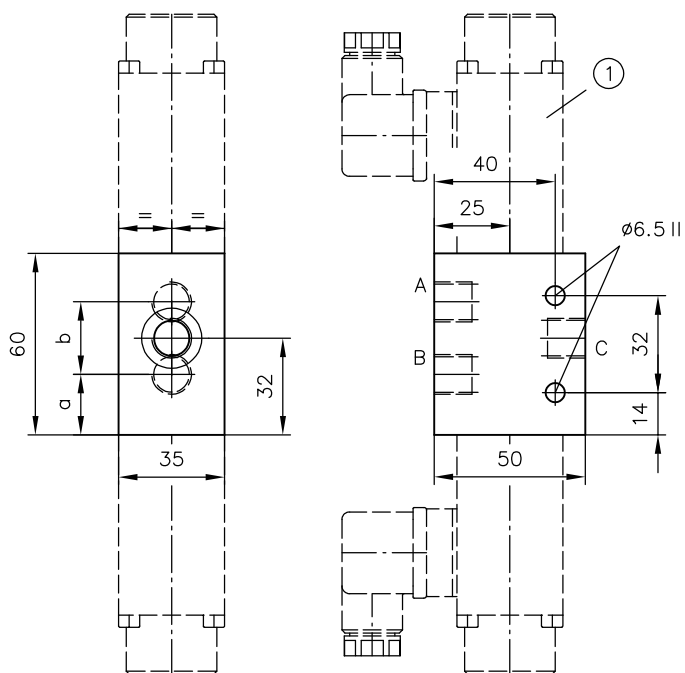


1 Actuating element

Type	a
BVG 1 Z -1/4	25
BVG 1 Z -1/4 JIS	25
BVG 1 Z -3/8	27

Coding	Ports (ISO 228-1 or JIS B 2351)
-1/4	G 1/4
-3/8	G 3/8
-1/4 JIS	G 1/4 JIS

BVG 1 ZD



1 Actuating element

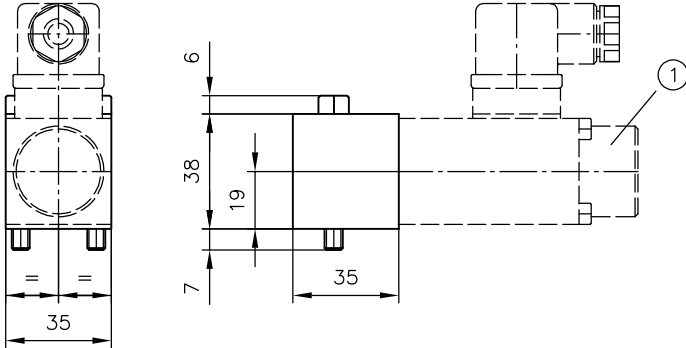
Type	a	b
BVG 1 ZD -1/4	20	24
BVG 1 ZD -3/8	18.5	26

Coding	Ports (ISO 228-1)
-1/4	G 1/4
-3/8	G 3/8

4.2 Manifold mounting

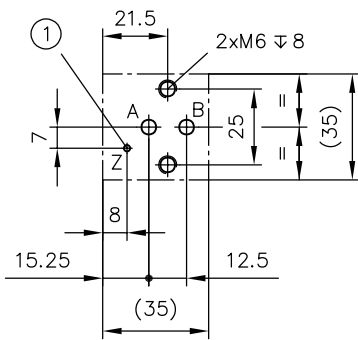
Dimensions of the actuating elements see Chapter 4.4, "Actuations"

BVP 1 R, BVP 1 S

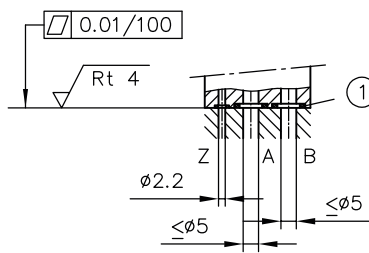


1 Actuating element

Hole pattern of the base plate



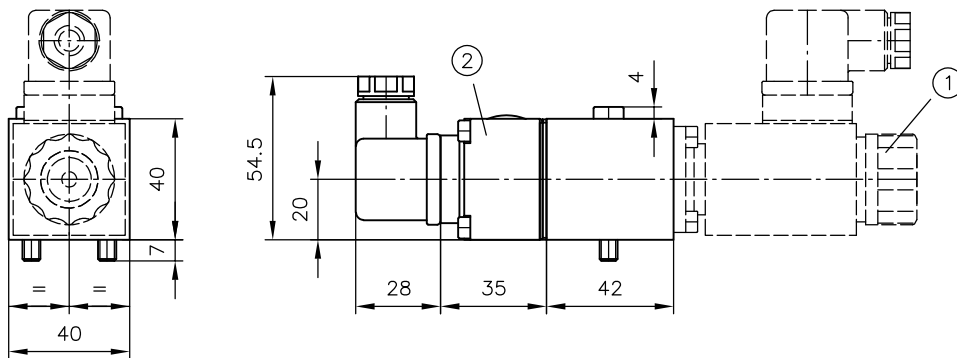
1 Z port only with actuation coding H



1 O-ring

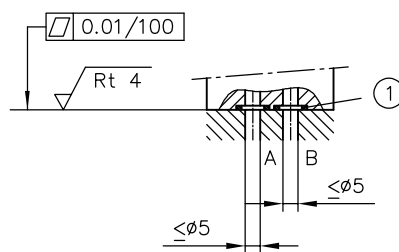
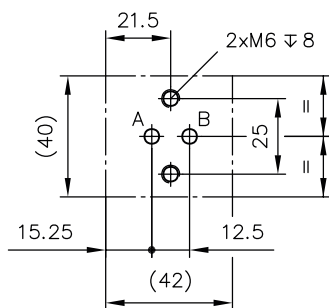
Ports	O-ring NBR 90 Sh
A, B	7.65x1.78
Z	2.54x1.78

BVP 1 RK, BVP 1 SK
BVP 1 RU, BVP 1 SU



- 1 Actuating element
- 2 Contact switch or inductive sensor

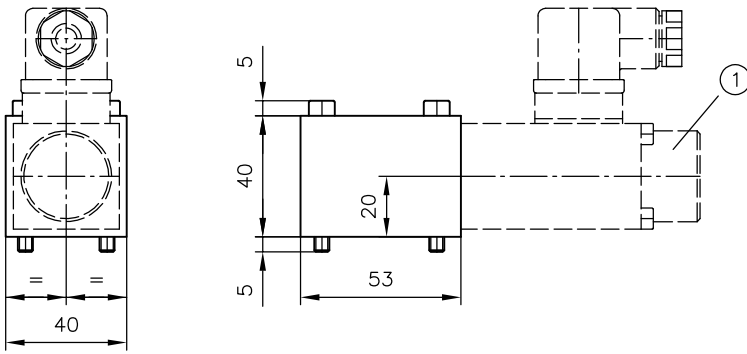
Hole pattern of the base plate



- 1 O-ring

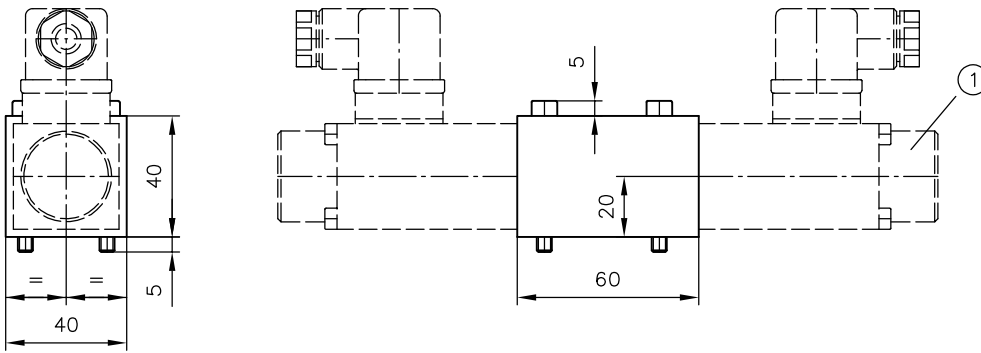
Ports	O-ring NBR 90 Sh
A, B	7.65x1.78

BVP 1 Z



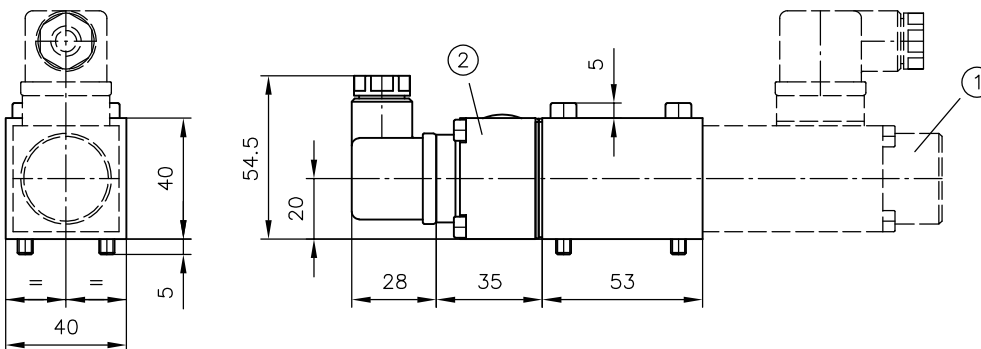
1 Actuating element

BVP 1 ZD



1 Actuating element

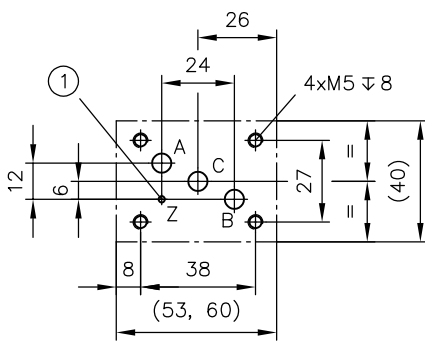
BVP 1 ZK, BVP 1 ZU



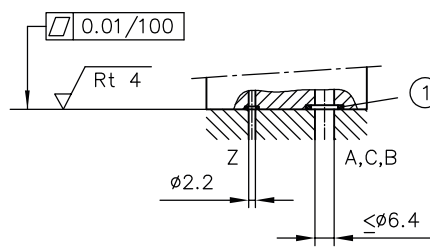
1 Actuating element

2 Contact switch or inductive sensor

Hole pattern of the base plate



1 Z port only with actuation coding H



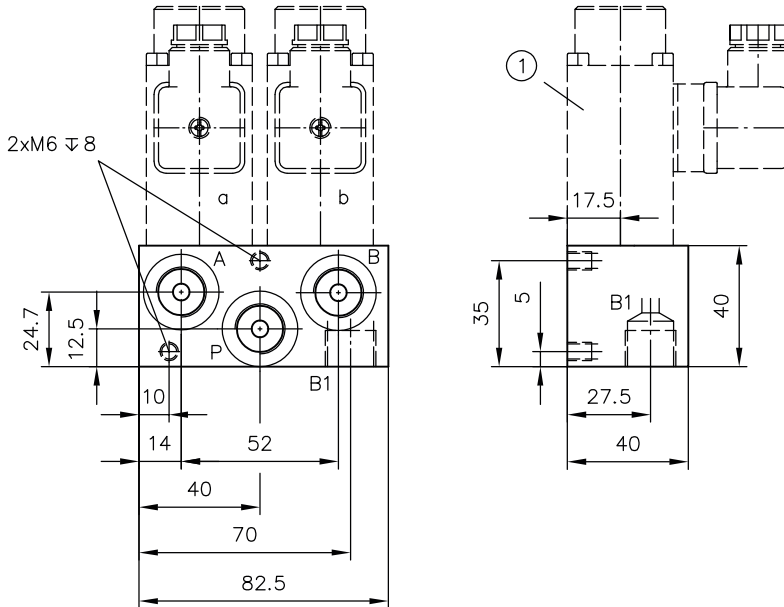
1 O-ring

Ports	O-ring NBR 90 Sh
A, B, C	8.73x1.78
Z	2.54x1.78

4.3 Twin valve

Dimensions of the actuating elements see Chapter 4.4, "Actuations"

BVG 112



1 Actuating element

Ports (ISO 228-1)

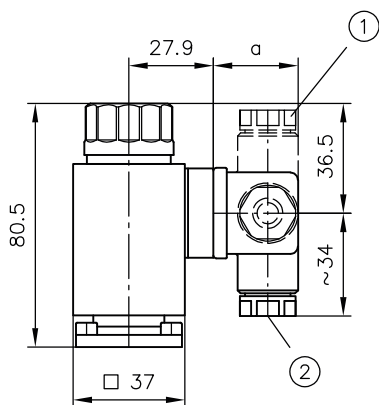
P, A, B	G 3/8
B1	M18x1.5

4.4 Actuators

4.4.1 Electrical actuators

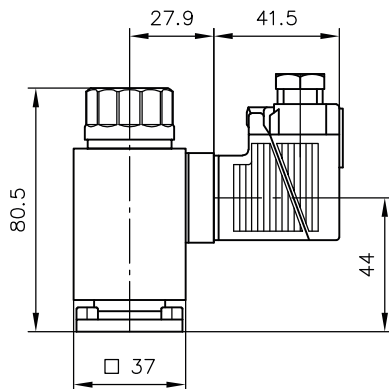
4.4.1.1 Actuation "dimension diagram A"

Coding X, G, WG

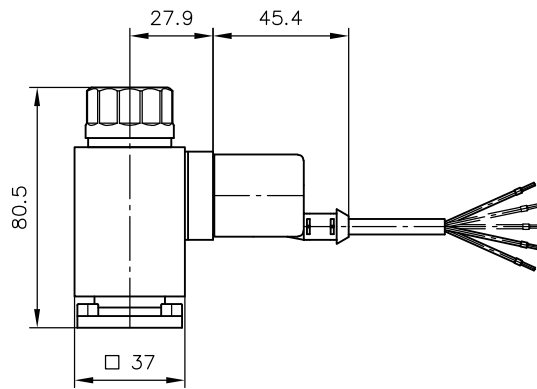


- 1 Plug can be mounted offset 4x 90°
2 Cable fitting

Coding L

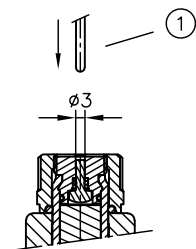


Coding L5K



Version	a
G	28
WG	34.5

Manual actuation with aid



To actuate the valve:

- Use a steel pin or screwdriver etc. to depress the brass bolt (visible on the upper face).

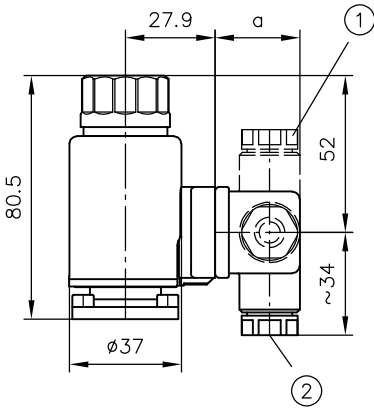
NOTICE

The pressure at the consumer or T port generates a load on the brass bolt acting on the area of $\varnothing 3$ mm; 50 bar approx. 40 N!

- 1 Auxiliary tool for actuation (do not use parts with sharp edges)

4.4.1.2 Actuation "dimension diagram B"

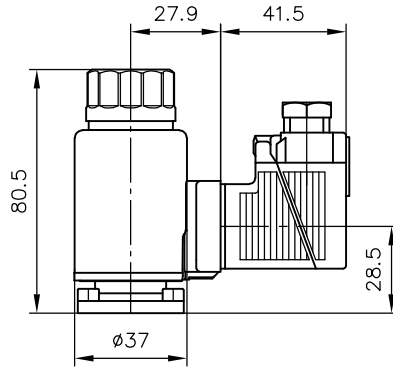
Coding **XM, GM, WGM**



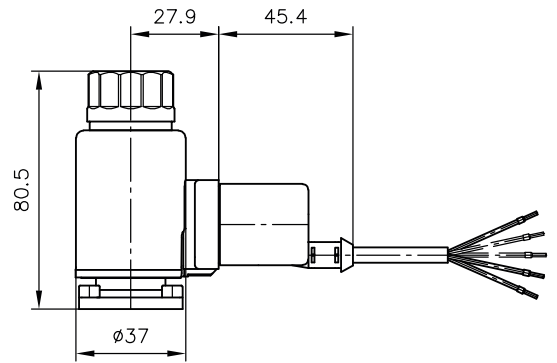
- 1 Plug can be mounted offset 4x 90°
- 2 Cable fitting

Version	a
GM	28
WGM	34,5

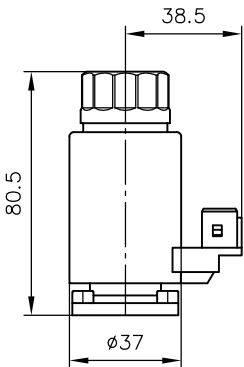
Coding **LM**



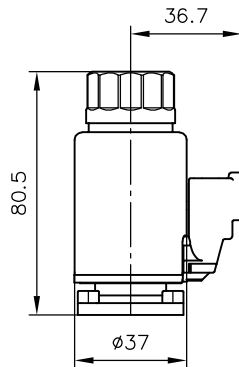
Coding **L5KM**



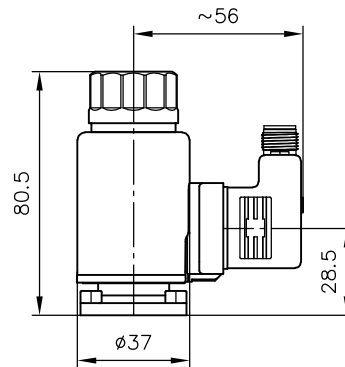
Coding **AMPM**



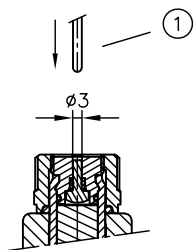
Coding **DTM**



Coding **M**



Manual actuation with aid



To actuate the valve:

- Use a steel pin or screwdriver etc. to depress the brass bolt (visible on the upper face).

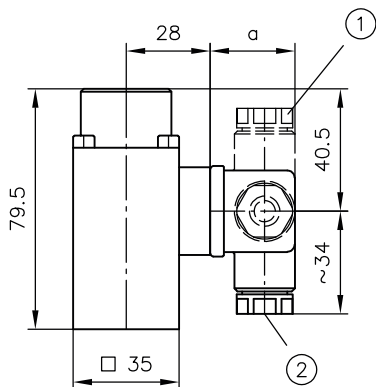
! NOTICE

The pressure at the consumer or T port generates a load on the brass bolt acting on the area of $\phi 3$ mm; 50 bar approx. 40 N!

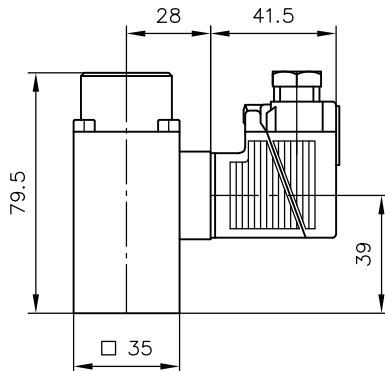
- 1 Auxiliary tool for actuation (do not use parts with sharp edges)

4.4.1.3 Actuation "dimension diagram C"

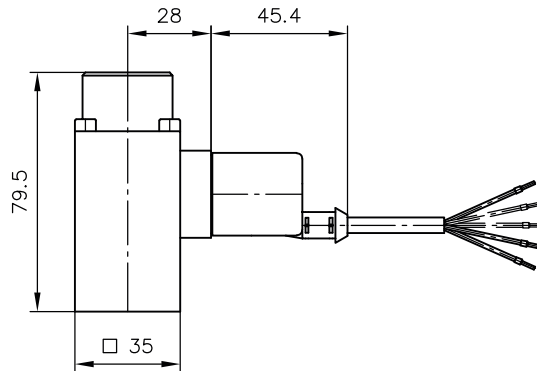
Coding X, G, WG



Coding L



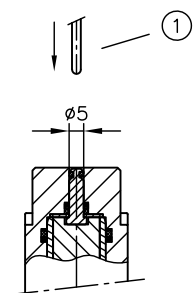
Coding L5K



- 1 Plug can be mounted offset 4x 90°
- 2 Cable fitting

Version	a
G	28
WG	34,5

Manual actuation with aid



To actuate the valve:

- Use a steel pin or screwdriver etc. to depress the brass bolt (visible on the upper face).

! NOTICE

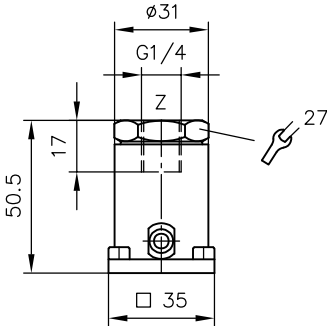
Any pressure at the consumer or T port produces a counterforce that acts on the brass bolt. This bolt has a \varnothing 5 mm, i.e. 100 bar Δ 195 N!

- 1 Auxiliary tool for actuation (do not use parts with sharp edges)

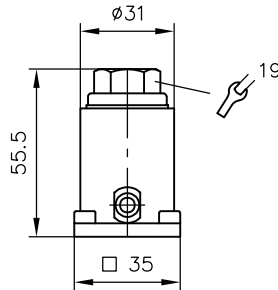
4.4.2 Alternative actuations

Hydraulic actuation

Coding **H 1/4** (for BVP 1)
Coding **H** (for BVG 1)

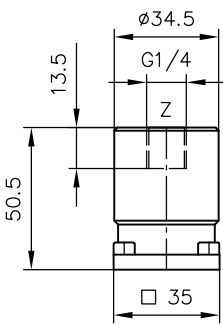


Coding **H** (for BVP 1)



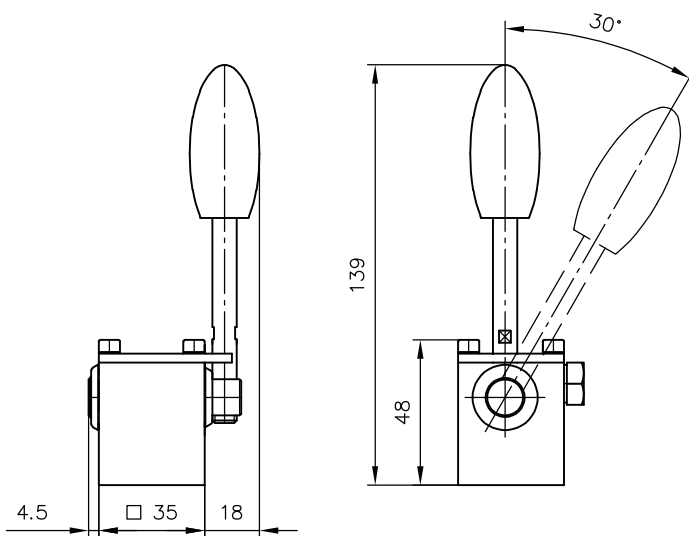
Pneumatic actuation

Coding **P**



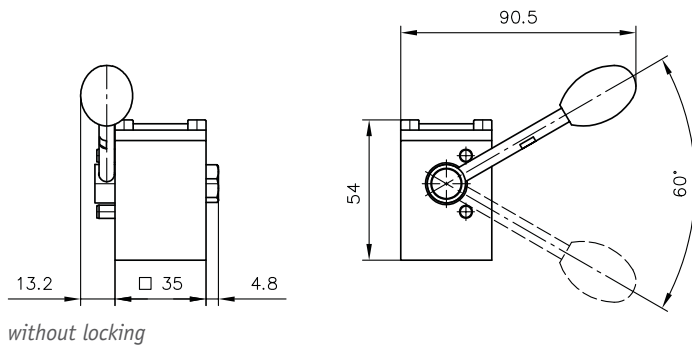
Manual operation

Coding **A**

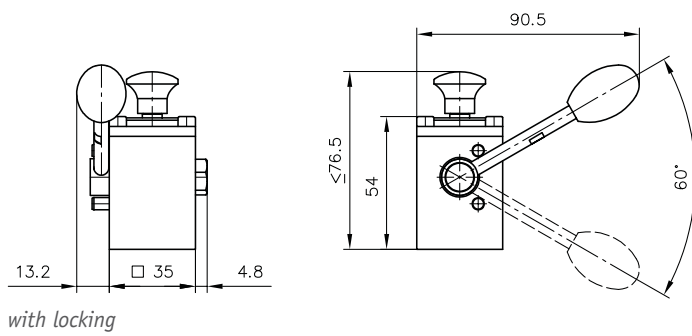


Installation position: Actuating lever points to the front.

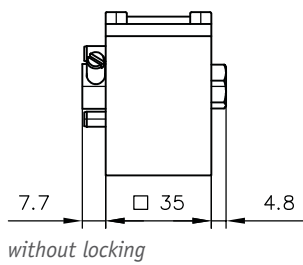
Coding **CD**



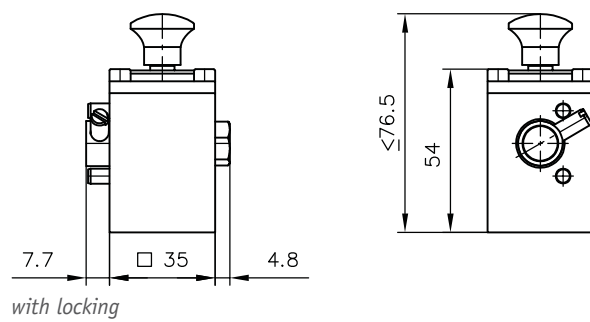
Coding **CD 1, CD 2, CD 3**



Coding **KD**



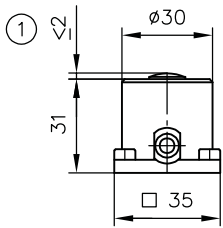
Coding **KD 1, KD 2, KD 3**



Installation position CD., KD. : Actuating lever points to the rear.

Mechanical actuation

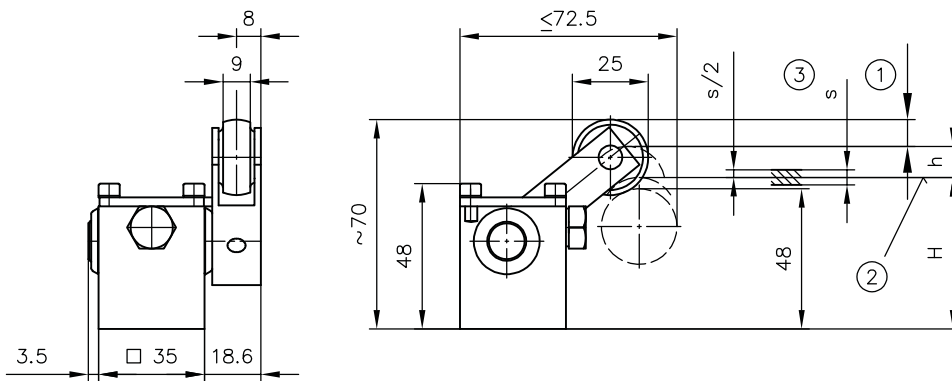
Coding T



1 Total

Type	Actuation force F at 100 to 400 bar
BVG 1 R-T BVP 1 R-T	80 to 140 N
BVG 1 Z-T BVP 1 Z-T BVG 1 S-T BVP 1 S-T	140 to 190 N

Coding K



- 1 Idle stroke
- 2 Do not use as stop!
- 3 Safety stroke

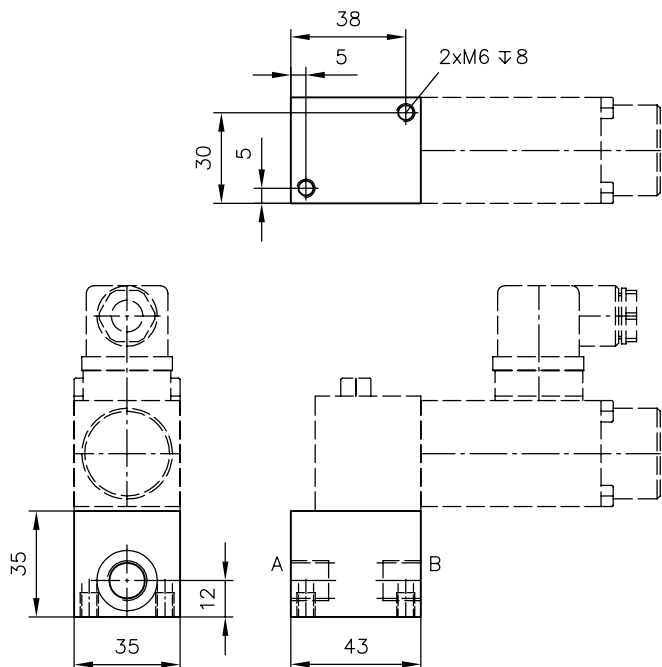
Installation position: Roller lever points to the front.

Type	Switching travel (mm) at			Actuation force approx. (N)
	Start of function	Functional travel	Switching position range	
	(H + h)	h	s	
BVG 1 R-K BVP 1 R-K	66	14	--	26
BVG 1 S-K BVP 1 S-K	66	10	± 1	22
BVG 1 Z-K BVP 1 Z-K	66	14	± 1	35

4.5 Single connection block / Spacer plate

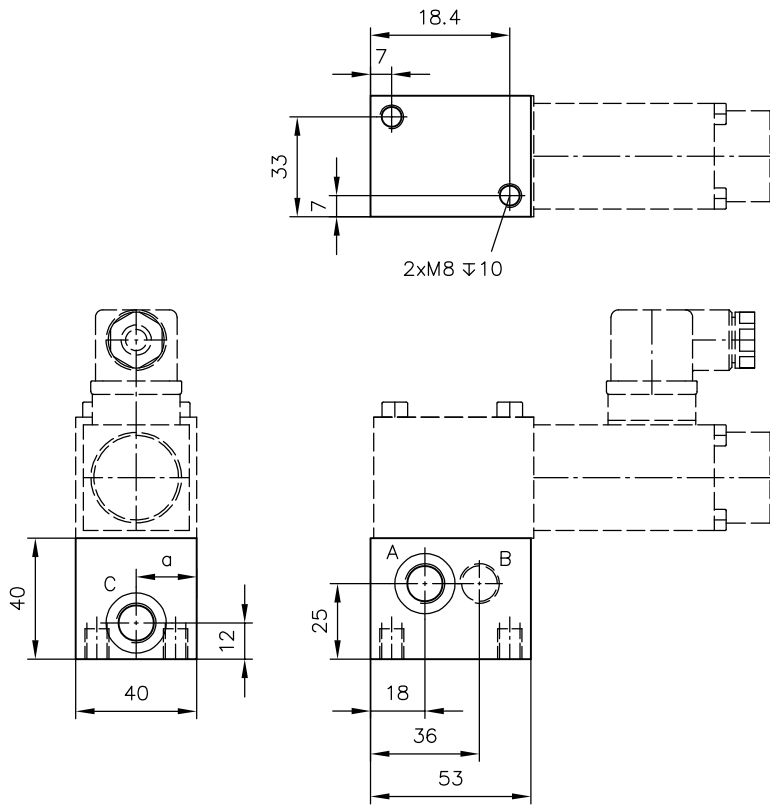
Single connection block

BVP 1 R, BVP 1 RK, BVP 1 RU
BVP 1 S, BVP 1 SK, BVP 1 SU



Coding	Ports (ISO 228-1)
-1/4	G 1/4
-3/8	G 3/8

BVP 1 Z, BVP 1 ZK,
BVP 1 ZU, BVP 1 ZD

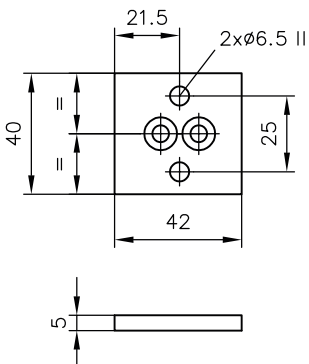


Coding	Ports (ISO 228-1)
	A, B, C
-1/4	G 1/4
-3/8	G 3/8

Type	a
BVP 1 Z	
BVP 1 ZK	20
BVP 1 ZU	
BVP 1 ZD	24

Spacer plate

Coding **Z5**
for BVP 1 RK(SK), BVP 1 RU(SU)



5 Installation, operation and maintenance information

Observe the document B 5488 "General operating instructions for assembly, commissioning, and maintenance."

5.1 Intended use

This product is intended exclusively for hydraulic applications (fluid technology).

The user must observe the safety measures and warnings in this document.

Essential requirements for the product to function correctly and safely:

- ▶ All information in this documentation must be observed. This applies in particular to all safety measures and warnings.
- ▶ The product must only be assembled and put into operation by specialist personnel.
- ▶ The product must only be operated within the specified technical parameters described in detail in this document.
- ▶ All components must be suitable for the operating conditions when using an assembly.
- ▶ The operating instructions for the components, assemblies and the specific complete system must also always be observed.

If the product can no longer be operated safely:

1. Remove the product from operation and mark it accordingly.
 - ✓ It is then not permitted to continue using or operating the product.

5.2 Assembly information

The product must only be installed in the complete system with standard and compliant connection components (screw fittings, hoses, pipes, fixtures etc.).

The product must be shut down correctly prior to disassembly (in particular in combination with hydraulic accumulators).

DANGER

Sudden movement of the hydraulic drives when disassembled incorrectly

Risk of serious injury or death

- ▶ Depressurise the hydraulic system.
- ▶ Perform safety measures in preparation for maintenance.

5.3 Operating instructions

Observe product configuration and pressure/flow rate.

The statements and technical parameters in this document must be strictly observed.

The instructions for the complete technical system must also always be followed.

NOTICE

- ▶ Read the documentation carefully before usage.
- ▶ The documentation must be accessible to the operating and maintenance staff at all times.
- ▶ Keep documentation up to date after every addition or update.

CAUTION

Overloading components due to incorrect pressure settings.

Risk of minor injury. Parts may burst or fly off, and uncontrolled leakage of hydraulic fluid.

- Pay attention to the maximum operating pressure of the pump, valves and fittings.
- Always monitor the pressure gauge when setting and changing the pressure.

Purity and filtering of the hydraulic fluid

Fine contamination can significantly impair the function of the product. Contamination can cause irreparable damage.

Examples of fine contamination include:

- Swarf
- Rubber particles from hoses and seals
- Dirt due to assembly and maintenance
- Mechanical debris
- Chemical ageing of the hydraulic fluid

! NOTICE

New hydraulic fluid from the manufacturer may not have the required purity.

Damage to the product is possible.

- ▶ Filter new hydraulic fluid to a high quality when filling.
- ▶ Do not mix hydraulic fluids. Always use hydraulic fluid that is from the same manufacturer, of the same type, and with the same viscosity properties.

For smooth operation, pay attention to the cleanliness level of the hydraulic fluid (cleanliness level [see Chapter 3, "Parameters"](#)).

Additionally applicable document: [D 5488/1](#) oil recommendations

5.4 Maintenance information

Check regularly (at least once a year) by visual inspection whether the hydraulic connections are damaged. If external leakages are found, shut down and repair the system.

Clean the surface of the device regularly (at least once a year) (dust deposits and dirt).

6 Other information

6.1 Accessories, spare and individual parts

Orifices

Coding	Ø (mm)	For type	Order coding
undrilled	--	BVG 1..-1/4	7406 012a
B 0.4	0.4		7406 012 e
B 0.5	0.5		7406 012 g
B 0.6	0.6		7406 012 b
B 0.8	0.8		7406 012 c
B 1.1	1.1		7406 012 d
B 1.3	1.3		7406 012 f
B 1.5	1.5		7406 012 h
undrilled	--	BVP 1 R	7921 012
B 0.6	0.6	BVP 1 S	7921 012-0.6
B 0.8	0.8		7921 012-0.8
B 1.1	1.1		7921 012-1.1
B 1.3	1.3		7921 012-1.3
B 1.5	1.5		7921 012-1.5
B 2.0	2.0		7921 012-2.0
B 2.5	2.5		7921 012-2.5
undrilled	--	BVP 1 Z	7785 018
B 0.8	0.8	BVP 1 ZD	7785 018a
B 1.0	1.0		7785 018 b
B 1.2	1.2		7785 018 c
B 1.4	1.4		7785 018 d
B 1.6	1.6		7785 018 e
B 1.8	1.8		7785 018 f
B 2.0	2.0		7785 018 g
R	--	BVP 1 Z	ER 12
		BVP 1 ZD	

Single connection block

Designation	Connection type	Order coding
BVP 1 R (RK, RU)	G 1/4	7921 092
BVP 1 S (SK, SU)	G 3/8	7921 093
BVP 1 Z (ZD)	G 1/4	7921 094
BVP 1 ZK (ZU)	G 3/8	7921 095

Spacer plate

Designation	Order coding
Z5 for BVP 1 RK(SK), BVP 1 RU(SU)	7936 411

References

Additional versions

- Directional seated valve type BVE: D 7921
- Directional seated valve type NBVP 16: D 7765 N
- Directional seated valve type ROLV: D 8144

