

# Valve bank type BVH

for the combination with connection blocks acc. to D 6905 A/1 and compact hydraulic power packs

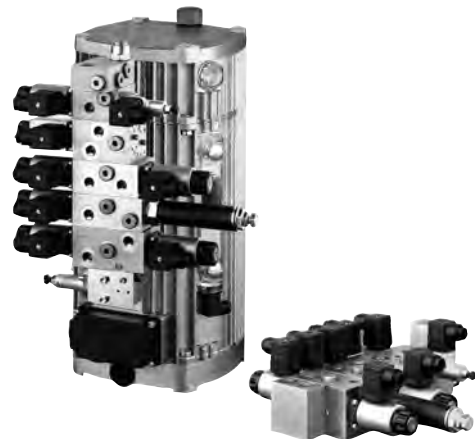
Flow  $Q_{max} = 20 \text{ lpm}$   
 Pressure  $p_{max} = 400 \text{ bar}$  (dep. on mounted valves)

## Additional information

- Connection blocks type A D 6905 A/1
- Compact hydraulic power packs
  - type FP D 7310
  - type HC D 7900
  - type MP, MPN D 7200, D 7200 H, D 7207
  - type HK, HKL D 7600 ++
  - type KA, KAW D 8010

## 1. General information

The valve bank type BVH can be combined very flexibly with connection blocks type A. The individual sections are connected via a banjo bolt in port P. Each of these valve sections can be equipped, beside its basic function, with options for P, R, A and B (e.g. check valve, orifice in port P, filter, pressure switch in port A). The advantage of this design is the flexibility which allows easily customized or retrofitted solutions and minimized stock keeping. Their main field of application are hydraulic clamping systems and general machine tool industry.



## 2. Available versions

Order example:

**KA 2.. A1/250**

- BVH 11 H /GM /R /2  
 - BVH 11 M /GM /R B2,5 /3  
 - BVH 11 W /GM /O /55  
 - BVH 11 M/CZ /35 /GM /R /2 - 8 - G 24

Table 5  
 Pressure switch for A or A and B

Table 4  
 Additional elements for P, A, B, and R

Table 3  
 Actuation

Table 2  
 Symbols

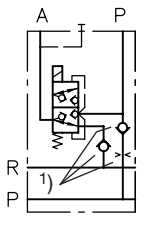
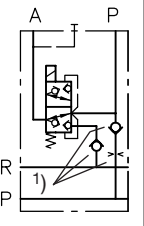
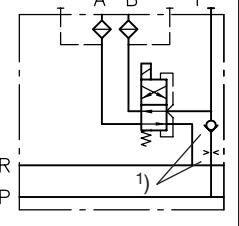
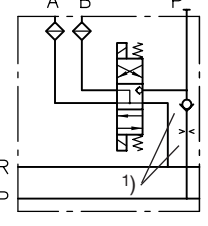
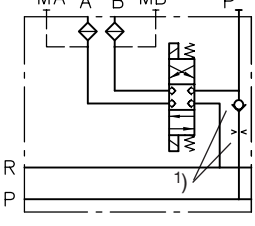
**Table 1:** Connection block

**Note:** Max. pressure rating dep. on the symbol (table 2) and actuation (table 3)

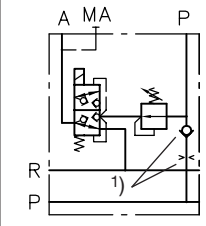
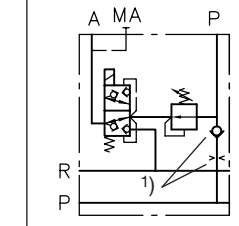
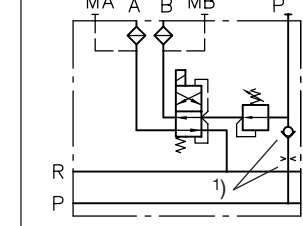
Connection block	Brief description	Ports conf. (BSP)	Symbol
<b>without</b>	Direct mounting at connection blocks type A (D 6905 A/1) for combination with compact hydraulic power packs type: type HK, HKL D 7600 ++, D 7600-3L KA, HC(G) D 8010, D 8010-4, D 7900, D 7900 G MPN, MP D 7207, D 7200	---	without
<b>BVH 11 A5</b>	Version for direct pipe mounting	G 1/4 ISO 228/1	
<b>BVH 11 A5 JIS</b>	Version for direct pipe mounting	G 1/4 JIS B 2351 (O)	

**Table 2:** Symbols

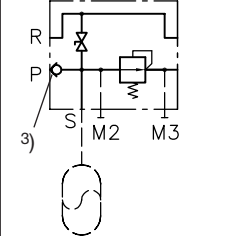
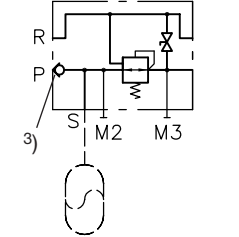
Valve sections without additional function

Symbols	H	M	W	D	G <sup>4)</sup>
Max. pressure <sup>2)</sup>	400 bar	400 bar	250 bar	400 bar	400 bar
<b>BVH 11</b>	●	●	●	●	●
<b>BVH 11 JIS</b>	●	●	●	●	●
					

Valve sections with individual pressure reduction (parallel connection) (see also table 2 a)

Symbols	BVH 11 H/CZ...	BVH 11 M/CZ...	BVH 11 W/CZ...
Max. pressure <sup>2)</sup>	400 bar	400 bar	250 bar
<b>BVH 11</b>	●	●	●
<b>BVH 11 JIS</b>	--	--	--
			

Valve sections with pressure reducing valve for P (see also table 2 a, 2 b)

Symbols	BVH 11 CZD... /5...	BVH 11 LZD... /5...
Max. pressure	400 bar	400 bar
<b>BVH 11</b>	●	●
<b>BVH 11 JIS</b>	--	--
		

1) Additional elements acc. to table 4

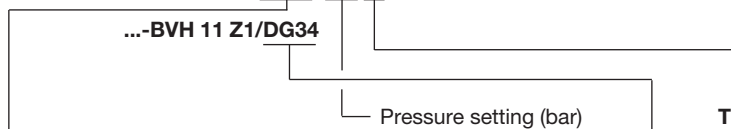
2) Depending on actuation acc. to table 3

3) Check valve at P (optional)

4) Ports only for type BVH 11 G

**Table 2 a:** Pressure reducing valve

Order example: ...-BVH 11 M/CZ5 /55 /M/0/2-G24  
 ...-BVH 11 CZD2/180/5



Coding	Pressure range (bar)	Coding	Pressure range (bar)	Max. flow (lpm)
<b>1</b>	30 ... 300	<b>11</b>	30 ... 380	12
<b>2</b>	20 ... 200	<b>21</b>	20 ... 250	12
<b>5</b>	15 ... 130	<b>51</b>	15 ... 165	12
		<b>211</b>	18 ... 380	6
<b>22</b>	12 ... 200	<b>221</b>	12 ... 250	6
<b>25</b>	8 ... 130	<b>251</b>	8 ... 165	6
		<b>511</b>	70 ... 380	22
<b>52</b>	50 ... 200	<b>521</b>	50 ... 250	22
<b>55</b>	30 ... 130	<b>551</b>	70 ... 165	22
<b>X</b>	without CDK 3... or CLK			

**Table 2 b:** Additional elements

Coding	Brief description
<b>/5</b>	Serie
<b>/5R</b>	Check valve for P
<b>/5X</b>	Plugged port S
<b>/5RX</b>	Check valve for P and plugged port S

**Note:** The check valve is only accessible after removal of the pressure reducing valve.

**to table 2:** Valve sections with pressure switch (see also table 2 c)

Symbols	BVH 11 Z1/... /...	Note:
Max. pressure	400 bar	The 1. pressure switch is mandatory <sup>1)</sup> whereas the 2. is optional for P.
<b>BVH 11</b>	●	
<b>BVH 11 JIS</b>	--	

**Table 2 c:** Pressure switch

Pressure switch	Pressure range (bar)
<b>DG 33</b>	200 ... 700 acc. to D 5440
<b>DG 34</b>	100 ... 400
<b>DG 35</b>	20 ... 250
<b>DG 36</b>	4 ... 12
<b>DG 364</b>	4 ... 50
<b>DG 365</b>	12 ... 170
<b>DG 61</b>	0 ... 100 acc. to D 5440 F
<b>DG 61 R</b>	0 ... 100
<b>DG 62</b>	0 ... 250
<b>DG 62 R</b>	0 ... 250
<b>DG 64</b>	0 ... 400
<b>DG 64 R</b>	0 ... 400

**Table 3:** Actuations

Coding	Brief description	Max. pressure
<b>GM</b>	Solenoid actuation	250 bar
<b>M</b>	Solenoid actuation	400 bar

1) Pressure switch

2) Not available with symbols W and G



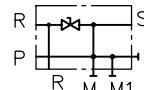
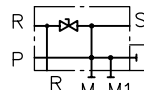
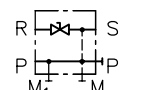
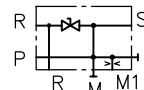
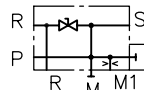
**Table 4:** Additional elements for P, A, B, and R

Coding for additional elements	Brief description	Symbol
<b>0</b>	without	R      B...      RB...
<b>R</b>	Check valve for P	
<b>B...</b>	Orifice for P	
<b>RB...</b>	Orifice diameter    0.4; 0.5; 0.6; 0.8; 0.9; 1.0; 1.2; 1.5; 1.8; 2.0; 2.4; 2.5; 3.0; 3.5	
<b>H</b>	Filter element type HFC 1/4 in port A or A and B	
<b>S</b>	Return pressure stop in port T	S      TB...
<b>TB... <sup>2)</sup></b>	Orifice for T Orifice diameter    0.4; 0.5; 0.6; 0.8; 1.0; 1.5; 2.0	
<b>ABR..E(F)</b> <b>BBR..E(F)</b>	Restrictor check valve BC1 for A and/or B Orifice diameter    0.2; 0.4; 0.5; 0.6; 0.8; 1.0; 1.2	ABR..E      ABR..F BBR..E      BBR..F
<b>ABRX..E(F)</b> <b>BBRX..E(F)</b>	Restrictor check valve BC1 X for A and/or B Orifice diameter    1.5	

**Table 5:** Pressure switch for A with symbols H and M or for A and B with symbol W

Coding	Pressure switch (pressure range (bar))	
<b>2</b>	without DG	---
<b>3</b>	DG 33	(200...700) acc. to D 5440
<b>4</b>	DG 34	(100...400)
<b>5</b>	DG 35	(20...250)
<b>6</b>	DG 36	(4...12)
<b>7</b>	DG 365	(12...170)
<b>8</b>	DG 364	(4...50)
<b>5 E1</b>	DG 5 E-100	acc. to D 5440 E/1
<b>5 E2</b>	DG 5 E-250	
<b>5 E4</b>	DG 5 E-400	
<b>5 E6</b>	DG 5 E-600	
<b>6 E1</b>	DG 61	(0...100) acc. to D 5440 F
<b>6 ER1</b>	DG 61 R	(0...100)
<b>6 E2</b>	DG 62	(0...250)
<b>6 ER2</b>	DG 62 R	(0...250)
<b>6 E4</b>	DG 64	(0...400)
<b>6 ER4</b>	DG 64 R	(0...400)

**Table 6:** End plates

Basic type	Brief description	Ports conf.	Symbols
<b>- 1</b> <b>- 1 JIS</b>	Tapped plug at P and R	ISO 228/1 JIS B 2351 (O)	
<b>- 2</b>		ISO 228/1	
<b>- 81</b> <b>- 82</b> <b>- 82 JIS</b>	With accumulator port and drain valve	ISO 228/1 JIS B 2351 (O)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>- 81</p>  </div> <div style="text-align: center;"> <p>- 82</p>  </div> <div style="text-align: center;"> <p>- 82 JIS</p>  </div> </div>
<b>- 81/B..</b> <b>- 82/B..</b>	With accumulator port drain valve and orifice for M1 Orifice diameter 0.4; 0.5; 0.6; 0.8; 0.9; 1.0; 1.2; 1.5; 1.8; 2.0; 2.4; 2.5; 3.0; 3.5	ISO 228/1	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>- 81/B..</p>  </div> <div style="text-align: center;"> <p>- 82/B..</p>  </div> </div>

**Table 7:** Solenoid voltage  
(Nom. power G, WG, L, X = 30 W; GM, WGM, LM, XM = 27 W)

Pressure $p_{max}$ (bar)	Coding			Nom. voltage
	with plug	plug with LED	without plug	
400	<b>G 12</b> <b>G 24</b> <b>WG 110</b> 1) <b>WG 230</b> 1)	<b>L 12</b> <b>L 24</b> --- ---	<b>X 12</b> <b>X 24</b> <b>X 98</b> <b>X 205</b>	$U_N = 12$ V DC $U_N = 24$ V DC $U_N = 110$ V AC, 50/60 Hz (98 V DC) $U_N = 230$ V AC, 50/60 Hz (205 V DC)
250	<b>GM 12</b> <b>GM 24</b> <b>WGM 110</b> 1) <b>WGM 230</b> 1)	<b>LM 24</b> <b>LM 24</b> --- ---	<b>XM 12</b> <b>XM 24</b> <b>XM 98</b> <b>XM 205</b>	$U_N = 12$ V DC $U_N = 24$ V DC $U_N = 110$ V AC, 50/60 Hz (98 V DC) $U_N = 230$ V AC, 50/60 Hz (205 V DC)
250	<b>M 24/8W</b>	---	---	$U_N = 24$ V DC, 8 Watt

1) DC-solenoid (98 V DC, 205 V DC) with bridge type rectifier integrated in the plug

### 3. Further data

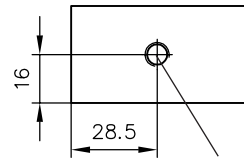
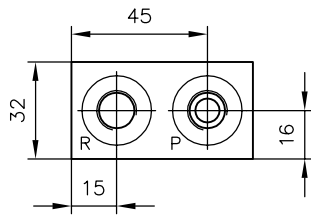
Type coding	See type coding key	
Installed position	Any	
Fastening	Tapped M 8, see dimensional drawings	
Pipe connection	P, R, A, B = G 1/4 (BSPP) S = G 1/2 (BSPP) M, MA, MB = G 1/4 (BSPP)	P = Pressure port R = Return port A, B = Consumer ports S = Port for accumulator M = Port for pressure gauge
Pressure	P 400 bar A, B dep. on symbol and actuation R 50 bar	
Flow	20 lpm	
Pressure fluid	Hydraulic fluid acc. to DIN 51524 table 1 to 3; ISO VG 10 to 68 acc. to DIN 51519 Viscosity range: min. approx. 4; max. approx. 1500 mm <sup>2</sup> /sec (viscosity during start) Optimal operation range: approx. 10 ... 500 mm <sup>2</sup> /sec Also suitable are biologically degradable pressure fluids of the type HEPG (Polyalkylenglycol) and HEES (synth. Ester) at operation temperatures up to approx. +70°C.	
Temperature	Ambient: approx. -40 ... +80°C Oil: -25 ... +80°C, pay attention to the viscosity range! Start temperature down to -40°C are allowable (Pay attention to the viscosity range during start !), as long as the operation temperature during consequent running is at least 20K (Kelvin) higher. Biological degradable pressure fluids: Pay attention to manufacturer's information. With regard to the compatibility with sealing materials do not exceed +70°C.	
Mass (weight)	BVH 11 M(H) 0.8 kg BVH 11 W 1.0 kg BVH 11 M(H)/CZ 1.5 kg BVH 11 W/CZ 1.7 kg BVH 11 D(G) 1.2 kg BVH 11 CZD 0.8 kg BVH 11 LZD 0.8 kg BVH 11 Z1 0.5 kg	
	each pressure switch DG 3. 0.4 kg DG 5. approx. 0.25 kg DG 6. approx. 80 g	

## 4. Unit dimensions

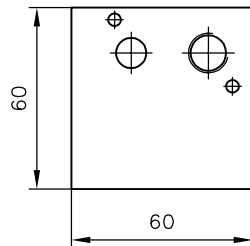
All dimensions in mm, subject to change without notice!

### 4.1 Connection block

Type **BVH 11 A5**  
**BVH 11 A5 JIS**



M8, 10/12 deep

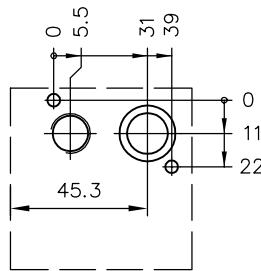


	Ports A, R (BSPP)
BVH 11 A5	G 1/4 ISO 228/1
BVH 11 A5 JIS	G 1/4 JIS B 2351 (O)

### 4.2 Valve sections

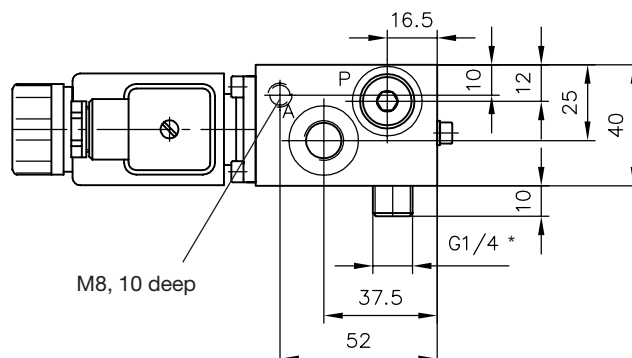
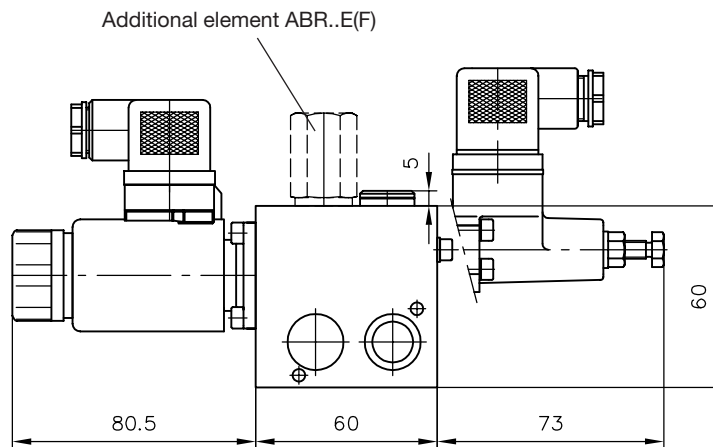
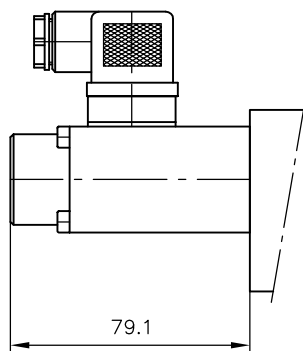
Lateral hole pattern

Type **BVH 11 M..**  
**BVH 11 JIS M..**  
**BVH 11 H..**  
**BVH 11 JIS H..**



Actuation M

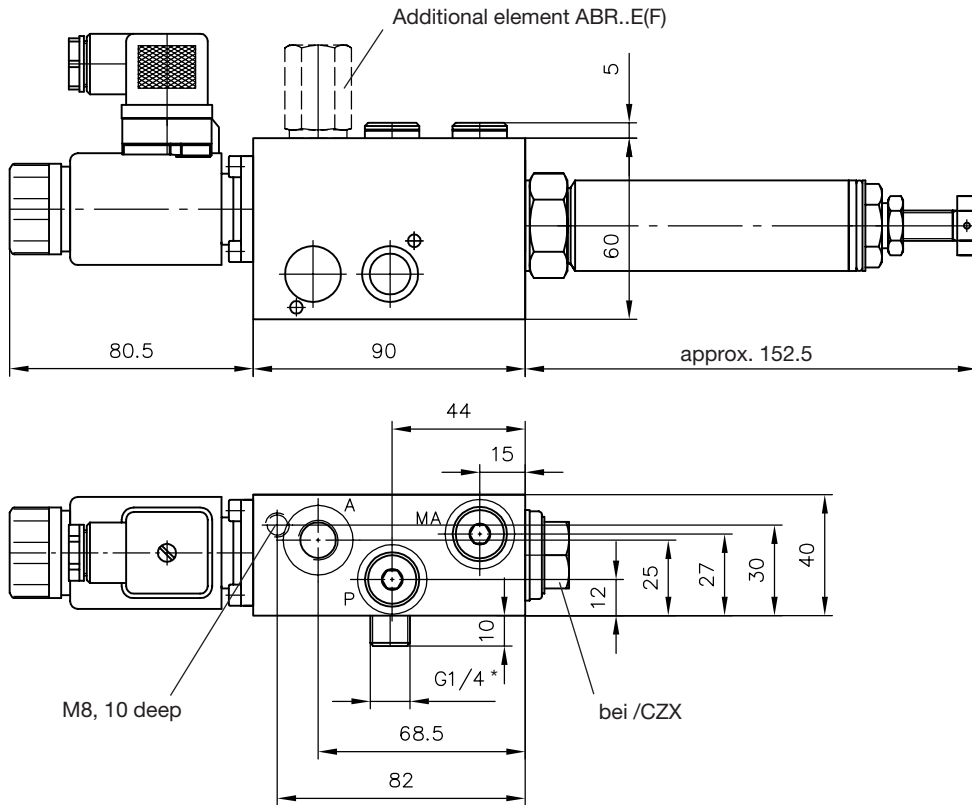
Actuation GM



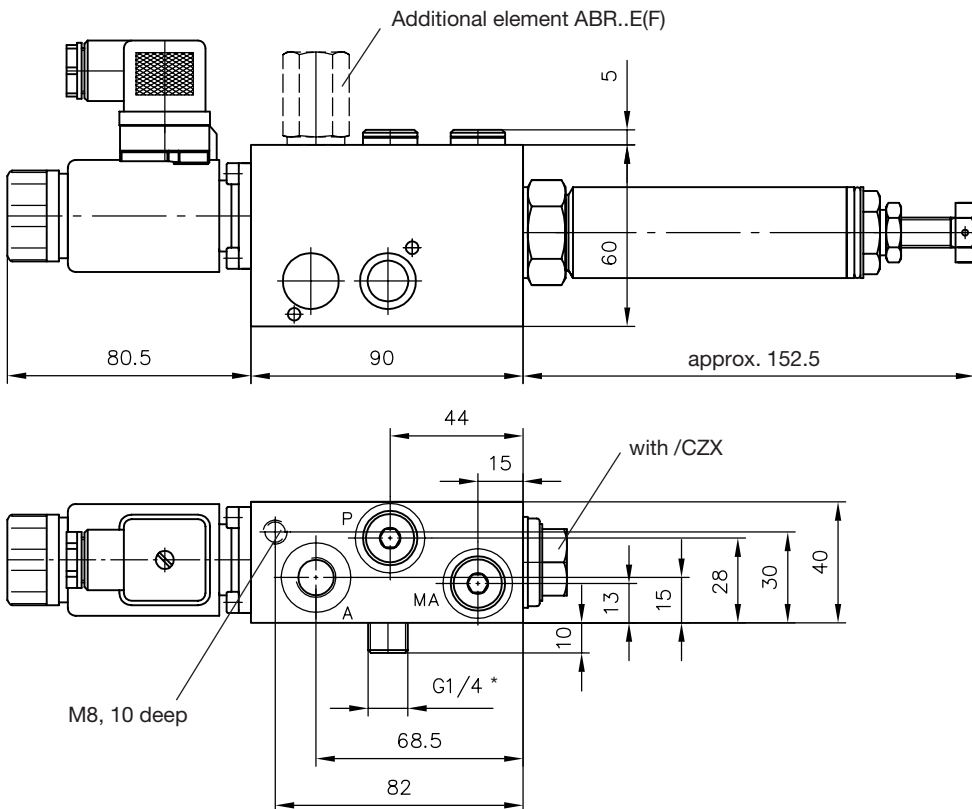
	Ports A, P (BSPP)
BVH 11	G 1/4 ISO 228/1
BVH 11 JIS	G 1/4 JIS B 2351 (O)

\* BSPP

**Type BVH 11 H/CZ**



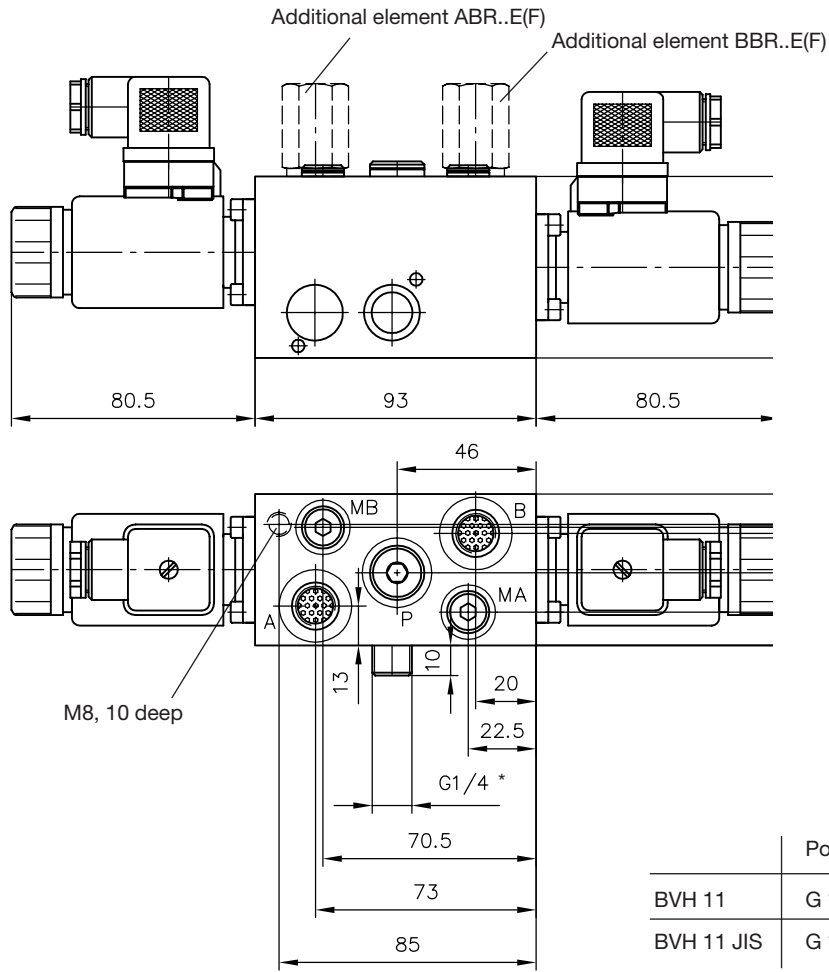
**Type BVH 11 M/CZ**



	Ports A, MA, P (BSPP)
BVH 11	G 1/4 ISO 228/1

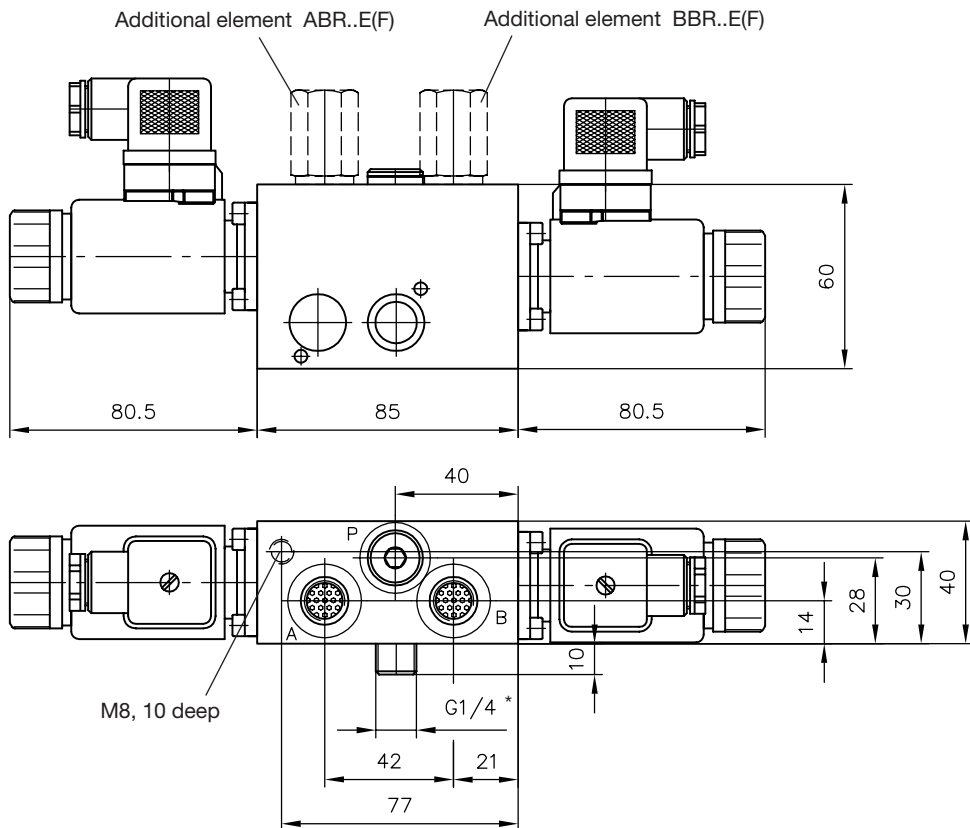
\* BSPP

**Type BVH 11 G  
BVH 11 G JIS**



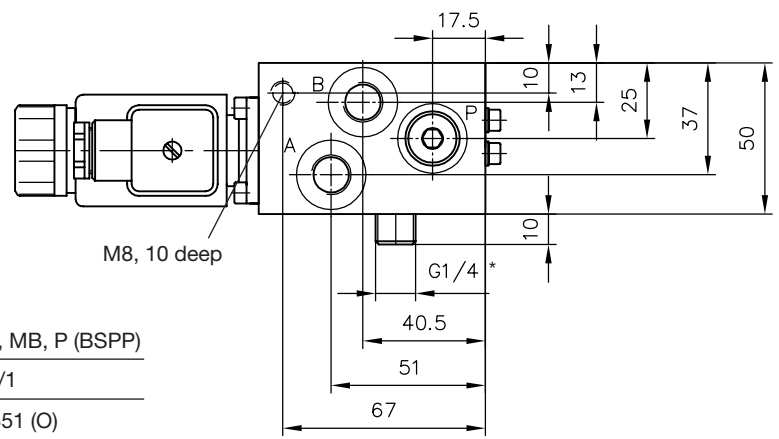
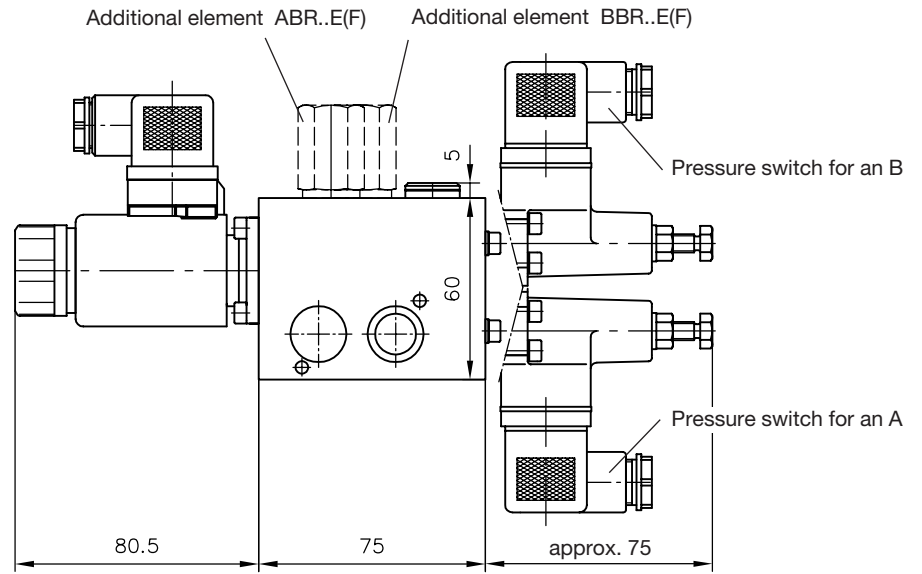
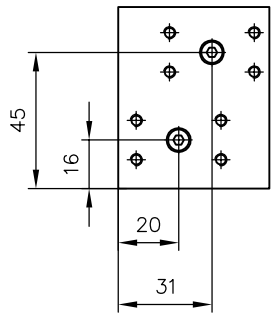
\* BSPP

**Type BVH 11 D  
BVH 11 D JIS**





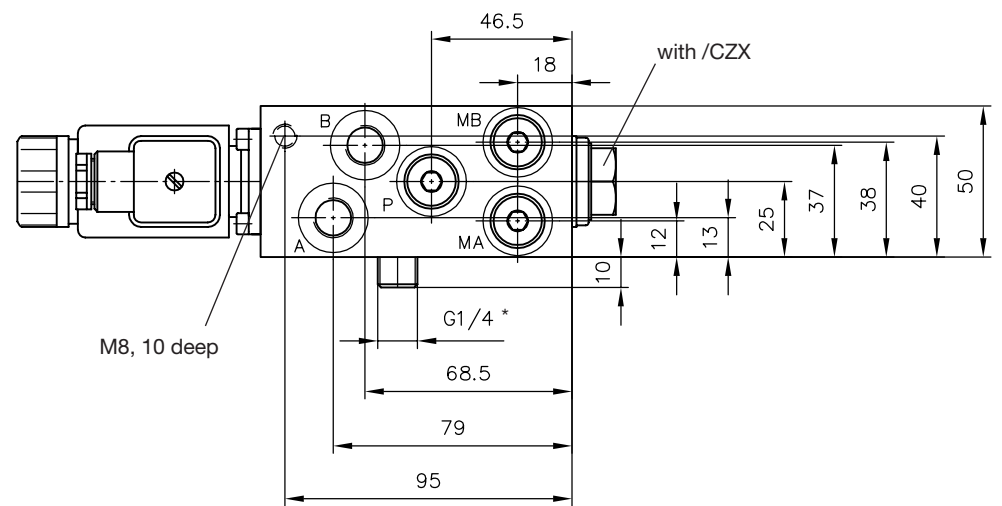
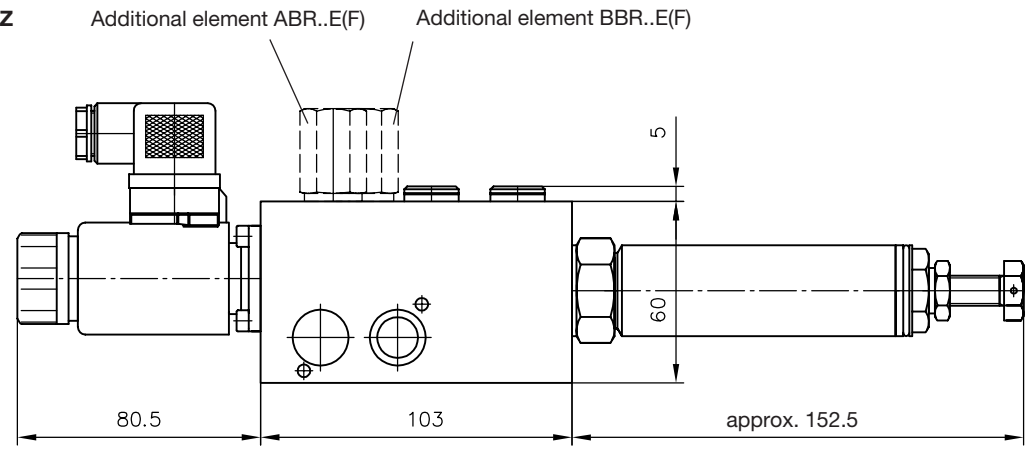
**Type BVH 11 W  
BVH 11 JIS W**



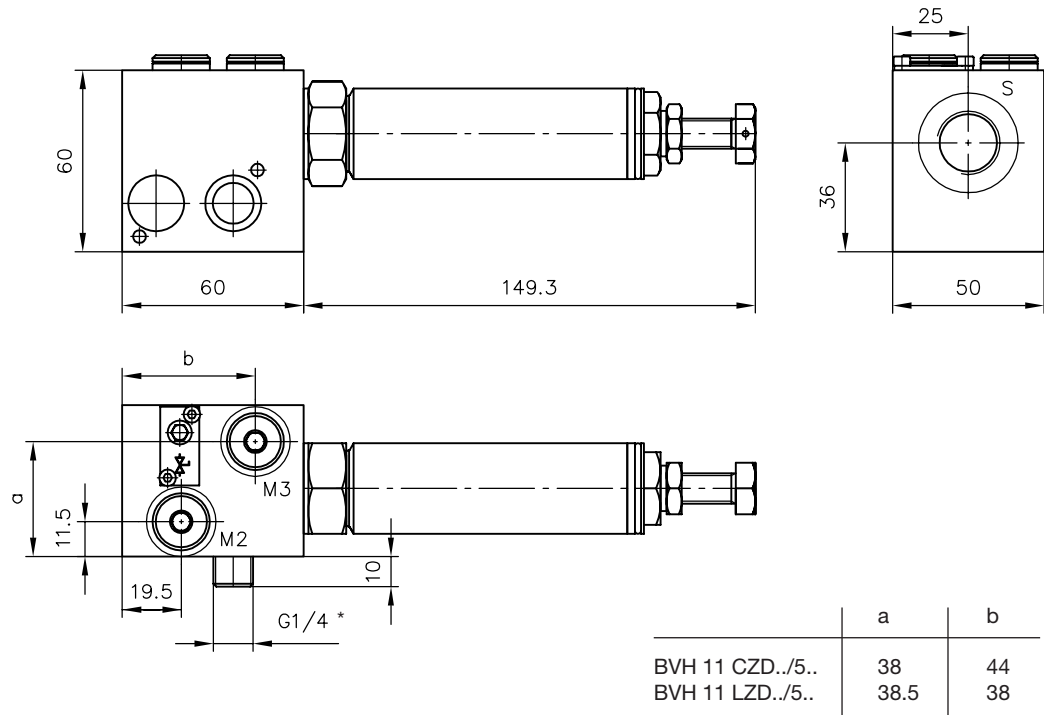
	Ports A, B, MA, MB, P (BSPP)
BVH 11	G 1/4 ISO 228/1
BVH 11 JIS	G 1/4 JIS B 2351 (O)

\* BSPP

**Type BVH 11 W/CZ**



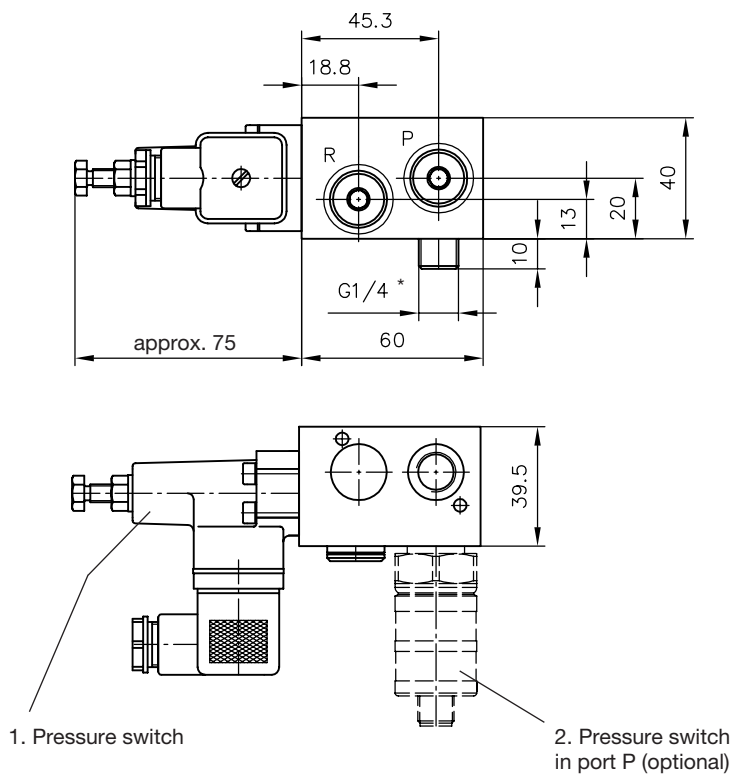
**Type BVH 11 CZD../5..  
BVH 11 LZD../5..**



\* BSPP

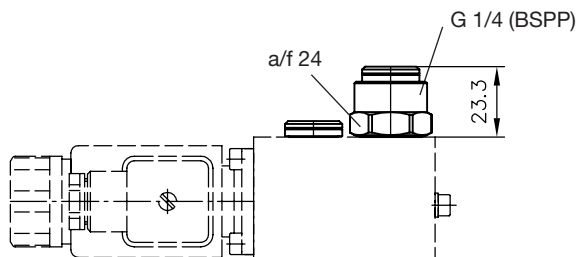
	Ports M2, M3, R, P (BSPP)	S (BSPP)
BVH 11	G 1/4 ISO 228/1	G 1/2 ISO 228/1

**Type BVH 11 Z1**

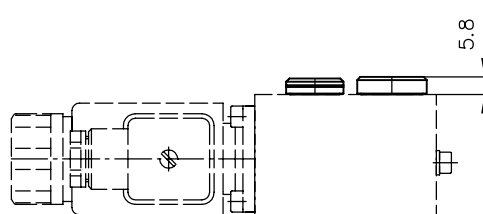


### 4.3 End plates

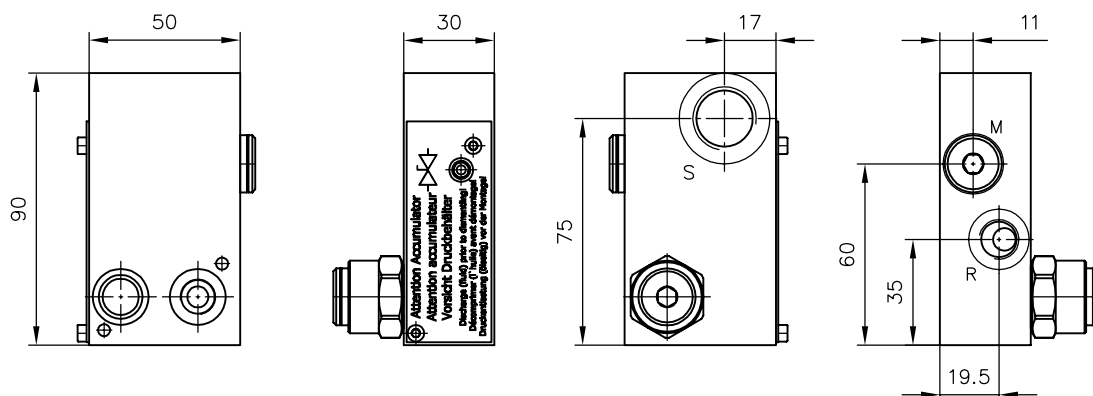
Termination via tapped plug - 1



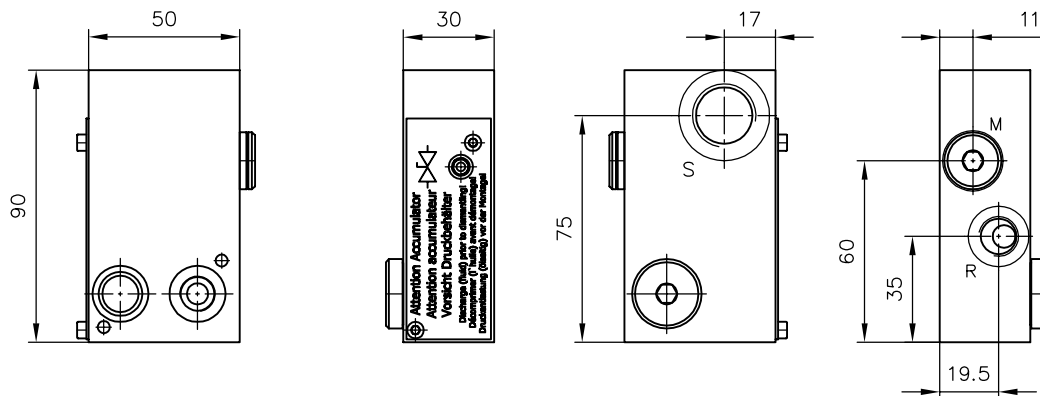
Termination via tapped plug - 2



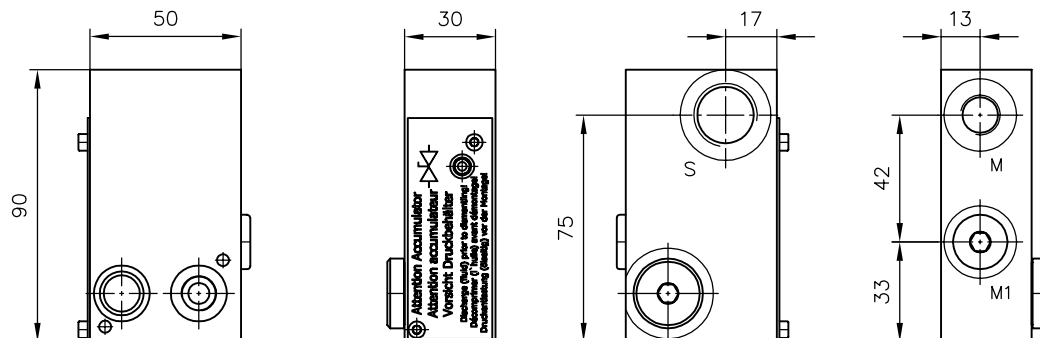
End plate - 81



End plate - 82  
- 82 JIS



End plate - 82/B.. JIS



Ports	S (BSPP)	M, M1, R (BSPP)
- 81, - 82	G 1/2 ISO 228/1	G 1/4 ISO 228/1
- 82/B JIS	G 1/2 ISO 228/1	G 1/4 JIS 2351 (O)

## 5. Appendix

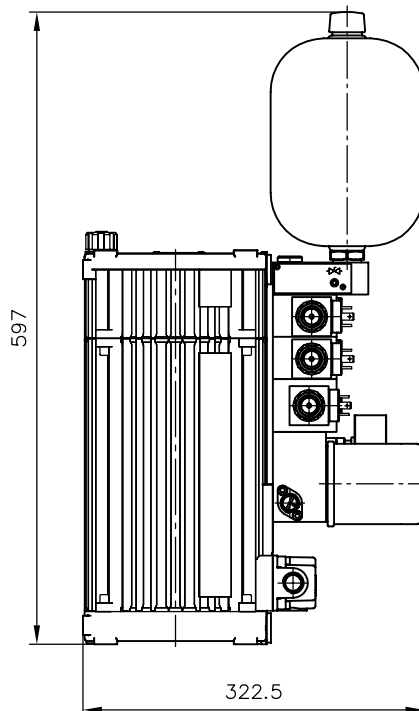
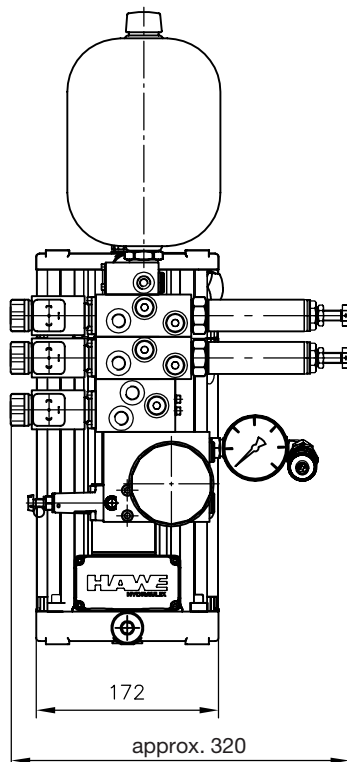
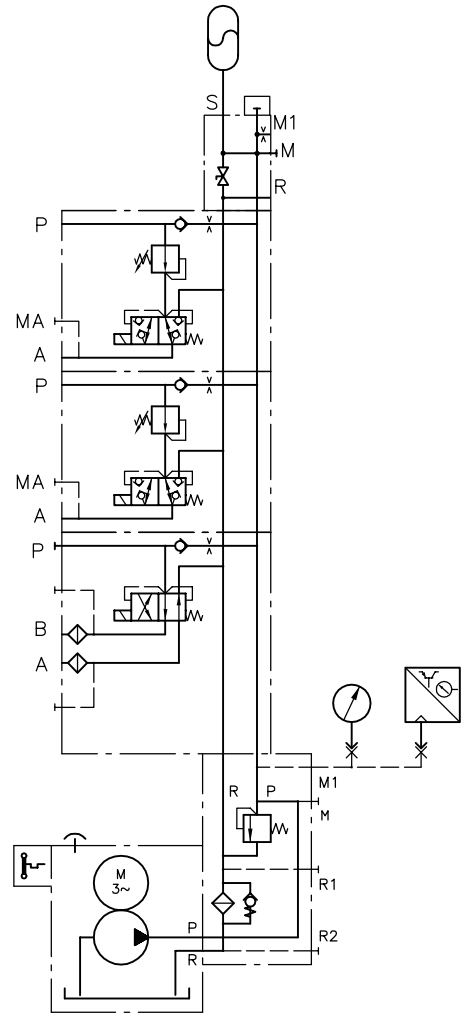
### 5.1 Order examples

Example circuitry:  
KA 281 SKT/Z 9,8

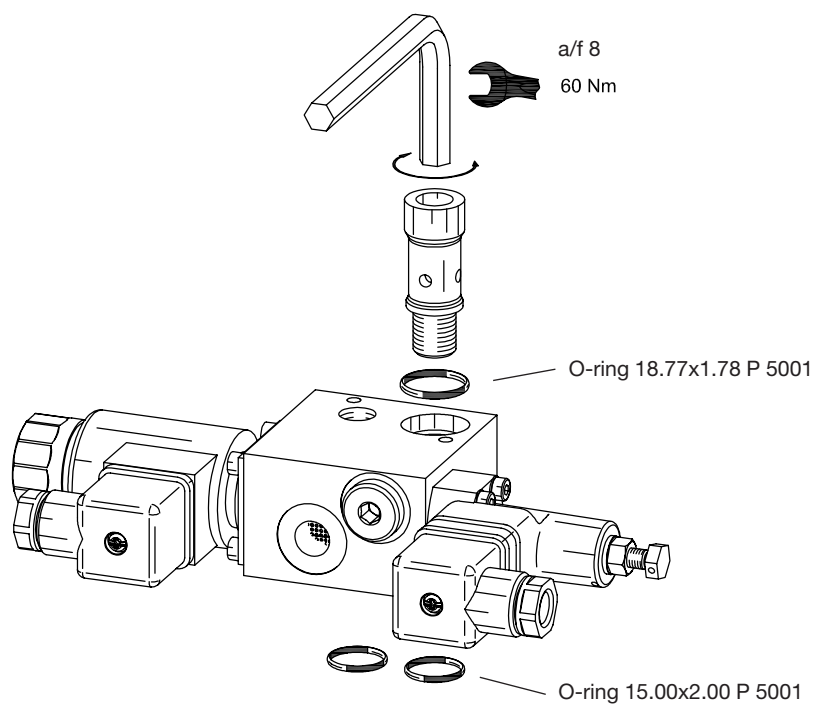
- AX 1 F 1 E/120
- BVH 11 W/M/RH/22
- BVH 11 M/CZ5/35/M/RHB 2,5
- BVH 11 M/CZ5/35/M/RHB 2,5
- 82/B 1,5-X 24
- AC 2001/60/3/A 3x400 V 50 Hz

Compact hydraulic power pack type KA, 1 kW; connection block with return flow filter and unit approved (TÜV) safety valve adjusted to 120 bar.

Valve bank type BVH with three valve sections, two clamping functions with individually adjustable clamping pressure.



## 5.2 Assembly notes



## 5.3 Individual components

	Coding	Nomenclature individual component
Check valve in P	<b>R</b>	RK 1 acc. to D 7445
Orifice in P	<b>B...</b>	Orifice G-M8x-...-ST acc. to Sk Düse └── orifice diameter mm
Filter element in A, B	<b>H</b>	HFC 1/4 acc. to D 7235
Return pressure stop in T	<b>S</b>	RK 1 acc. to D 7445
Orifice in T	<b>TB...</b>	Orifice acc. to Sk 7445 400
Restrictor check valve at A, B	<b>ABR..E(F)</b> <b>BBR..E(F)</b> <b>ABRX 1,5 E(F)</b> <b>BBRX 1,5 E(F)</b>	BC 1-..E, BC 1-..F acc. to D 6969 B BC 1X-1,5 E, BC 1X-1,5 F acc. to D 6969 B
Orifice in the end plate for M1	<b>- 8. /B..</b>	Orifice G-M8x-...-ST acc. to Sk Düse └── orifice diameter mm