

# Hydraulic power packs type MP

turn-key versions with cover plate only

or complete with tank equipped with pumps acc. to D 7200

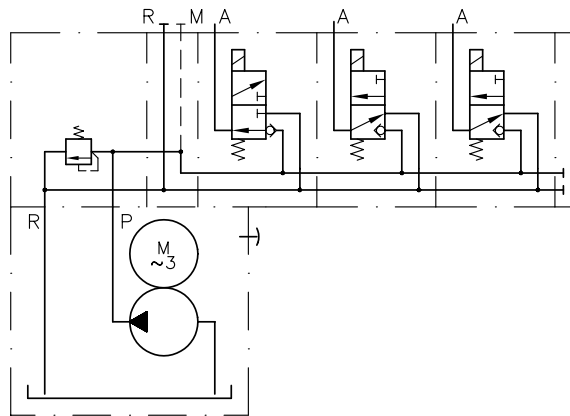
For pumps complete with motor to be installed in customer furnished tanks, see D 7200.

Pressure $p_{\max}$	700 bar
Delivery flow $Q_{\max}$	4,5 lpm (high pressure) 31 lpm (low pressure)



Order coding examples and symbols according to photos below

**MP 24 A - H1,08 / B10 - A2/180 - VB11 FM - RHH - 1 - G 24**  
Motor voltage 3 ~ 230/400V 50Hz



## 1. General information

The hydraulic power packs type MP are ready for use. Special feature is the arrangement of pump and motor being oil immersed. This arrangement yields a number of advantages when compared with power packs of conventional style:

- Higher permissible exploitation of the motor output due to the intensive cooling effect of the surrounding oil
- Lower operating noise by the absence of directly emitted operation noise from fan and motor as well as by the muffling effect of the container filling
- Low spatial requirements due to compact design: Pump and motor are mounted on and into one another
- Wide range of valves to be mounted directly on to single and dual circuit pumps

The pumps should be used preferable for short time and on/off service S2 and S3. No-load operation S6 is possible, depending on pump size and load, see notes in D 7200 sect. 5.5.

## 2. Available versions, main data

### 2.1 Tank and cover plate versions

Order example: **MP 24 A - H 1,39 / B5 T K** Motor voltage 3 ~ 230/400V 50Hz

Pumps acc. to D 7200

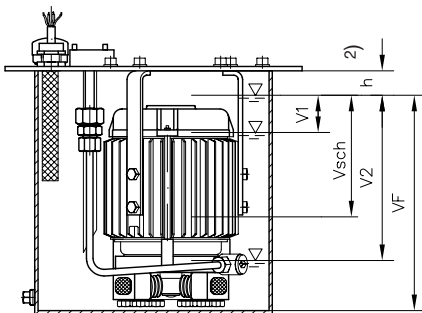
Coding		Suitable motor pumps acc. to D 7200	
Version with tank	Cover plate version	Single circuit pumps MP(W) ..A - H .. <sup>1)</sup> MP(W) ..A - Z ..	Dual circuit pumps MP(W) ..A - H .. - Z ..
<b>B 3</b>	<b>D 3</b>	MP(W)14A - H .. MP(W)12A - H .. MP(W)14A - Z .. (Z0,5 to Z4,5) MP(W)12A - Z .. (Z0,5 to Z4,5)	X
<b>B 5</b>	<b>D 5</b>	MP(W)14A - H .. MP(W)12A - H .. MP(W)14A - Z .. (Z0,5 to Z4,5) MP(W)12A - Z .. (Z0,5 to Z4,5) MP(W)24A - H .. MP(W)22A - H .. MP(W)24A - Z .. (Z0,5 to Z6,9) MP(W)22A - Z .. (Z0,5 to Z6,9)	X
<b>B 10</b>	<b>D 10</b>	MP(W)24A - H .. MP(W)22A - H .. MP(W)24A - Z .. (Z0,5 to Z28) MP(W)22A - Z .. (Z0,5 to Z28)	MP(W)14A - H .. - Z .. (Z2,0 to Z6,9) MP(W)12A - H .. - Z .. (Z2,0 to Z6,9) MP(W)24A - H .. - Z .. (Z2,0 to Z12,3) MP(W)22A - H .. - Z .. (Z2,0 to Z12,3)
<b>B 25</b>	<b>D 25</b>	X	MP(W)24A - H .. - Z .. (Z2,0 to Z28) MP(W)22A - H .. - Z .. (Z2,0 to Z28)

#### Optional equipment

(For dimensional drawings and electrical data, see appendix in sect. 4.4)

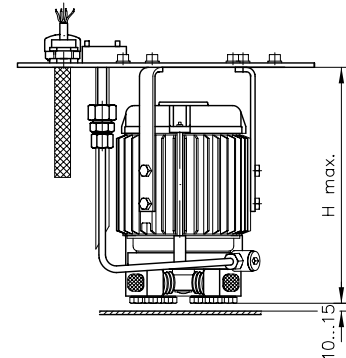
<b>K</b>	Fluid level gauge	
<b>D</b>	One float switch (NC-contact)	
<b>DD</b>	Two float switch	
<b>T</b>	Temperature switches	
<b>R 2</b>	G 3/8 Addition return (R2, R3) and suction port	
<b>R 3</b>	G 1/2 (S3) (for dimensional drawings, see sect. 3.1)	

Version with tank



VF = Filling volume (l)  
 V1 = Usable volume (l) up to top motor outline  
 V2 = Total usable volume (l) (max.)  
 V<sub>Sch</sub> = Removed volume (l) until signal is triggered by the float switch (reference value)

Cover plate version



		B(D) 3	B(D) 5	B(D) 10	B(D) 25
Fluid volume approx. (l) <sup>3)</sup>	VF	4.4	7.5 ... 8.2	15.5 ... 17.5	33 ... 35
	V1	0.5 ... 1.2	0.6 ... 3.2	1 ... 8	6 ... 13
	V2	2.2 ... 3.2	4.2 ... 6.4	8 ... 13	23 ... 27
Mounting depth H <sub>max</sub>		217	255	322	400
Vers. with float switch	V <sub>Sch</sub> (l)	1.35 ... 2.2	2.4 ... 4.8	4.5 ... 10.5	14.5 ... 20

<sup>1)</sup> All pump codings being listed for this size in D 7200 are permissible, when not specified otherwise below (e.g. MP14A-H..)

<sup>2)</sup> h ≈ 20...50 mm depending on tank size

<sup>3)</sup> Depending on the pump type and size

## 2.2 Combinations with add-on equipment

For technical data and dimensions, see the corresponding pamphlets. Additional, detailed order examples are listed there also.

### 2.2.1 Single circuit pumps

Hydraulic power packs type MP are available as turn-key units with connection blocks as well as further directional valves readily installed.

**Attention:** Observe the specified flow when selecting any of these add-on devices (back pressure / power losses)!

Order example:

**MP 24 A - H1,08/B 10 - A2 F1/400 - VB11FM - RH - 1 - G24** Motor voltage  
3 ~ 230/400V 50Hz

Pump to D 7200,  
with container after section 2.1

Connection block  
(For symbol, see page 4)

Directly mounted directional  
valve bank acc. to D 7302

Type	Pamphlet	Port thread ISO 228/1 (BSPP) <sup>3)</sup>	Pressure range from ... to $p_{max}$ (bar) <sup>1)</sup>	Flow $Q_{max}$ (lpm)	Integrated functional elements <sup>6)</sup>			Brief note on the connection block	Direct mounting of directional valve banks as option
					Pressure limiting valve	Idle cir- culati- on valve	Re- flow filter		
<b>C 5</b> <b>C 6</b> <b>C 11</b> <sup>7)</sup> <b>C 45</b> <sup>8)</sup>	D 6905 C	G 1/4 G 3/8 G 1/2 G 3/4 and G 1	700	12 28 80 135	no	no	no	Simple connection block	No possibil- ity for direct mounting
<b>B .. /... -...</b>	D 6905 B	G 1/4	450 (700)	8 ... 25	yes	no	no	For single acting lift or clamping devices	
<b>A 1/... to A 4/...</b>	D 6905 A/1	G 1/4	(0) ... 700 in steps	12	yes	no	no	Wildly used con- nection blocks with pressure limiting valve	①
<b>A 13/... to A 43/...</b>		G 3/8		18	yes	no	no		③
<b>A 51 A 61</b>		G 3/8		18	yes	no	no		④
<b>AS(V) 1/... to AS(V) 4/...</b>		G 1/4	(0) ... 315 in steps	18	yes	yes <sup>2)</sup>	no	With idle circulation valves acc. to D 7490/1	①
<b>A..F../.. AS..F../.. AM..F../.. AK..F../..</b>		G 1/4	(0) ... 700 in steps	12	yes	yes	yes	With return filter 12 µm nom. 50% / 30 µm absolute	①
<b>AP 1/.. AP 3/..</b>		G 1/4	5 ... 700	12	yes	yes <sup>4)</sup>	no	Pressure limiting val- ve with unit approval	①
<b>AX 14.. AX 3..</b>	D 6905 TÜV	G 1/4	80 ... 450	6 ... 10	yes	no	no	Integrated directional spool valve	①
<b>V 1/... to S 4/...</b>	D 6905 A/1 sect. 2.4	---	315	12	Arbitrarily switchable second pressure stage (2/2-way directional valve acc. to D 7490/1)			Only via directly mountable direc- tional valve banks ①	
<b>HSV 21</b>	D 7032	G 1/4	315	20	ja	no	no	For single acting lifting devices	No possibility for direct mounting

<sup>1)</sup> Observe the max. perm. pressure, which might be lower than 700 bar when mounting directional valve banks.

<sup>2)</sup> E.g. to assist starting of type MPW, see D 7200 sect. 3.2 „Starting against pressure“.

<sup>3)</sup> Additional return port on the cover plate, see sect. 2.1 (e.g. MP 24A.../B 25 **R3** - A1/..)

<sup>4)</sup> May be used as idle circulation valve when the prop.-solenoid is deenergized (approx. 5 bar), see note for <sup>2)</sup>

<sup>5)</sup> For valve spools featuring connection P→R in idle position

<sup>6)</sup> Optional with additional check valve type RK acc. to D 7445 in the pump gallery, making direct pipe connection impossible. Only directional valves ① and ③ are possible.

<sup>7)</sup> For tank size B 10 (D 10)

<sup>8)</sup> For tank size B 25 (D 25)

① Directional seated valves type 1)  
BWN(H) 1F... acc. to D 7470 B/1  
BWH 2F... acc. to D 7470 B/1  
BVZP 1F... acc. to D 7785 B  
VB01(11)F... acc. to D 7302

Directional spool valves type 1)  
SWR(P) 1F... acc. to D 7450  
SWR 2F... acc. to D 7451

② Directional spool valves  
size 0 and 1 acc. to D 7230 <sup>1)</sup>

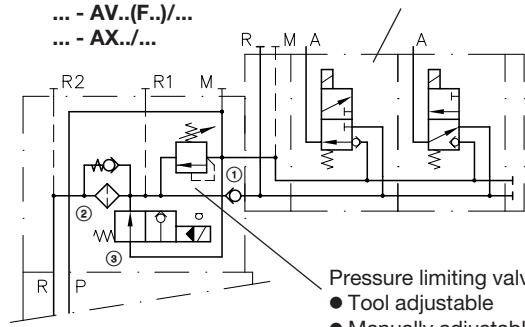
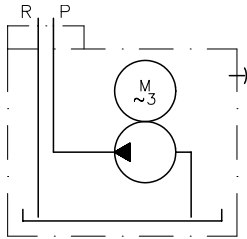
③ Directional seated valves type 1)  
BWH 3F... acc. to D 7470 B/1

④ Directional seated valves type 1)  
VB11(21)G... acc. to D 7302

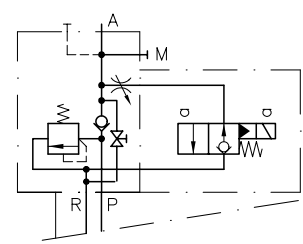
**Symbols**  
(corresponding to sect. 2.2.1)

... - **A..**/... Directly mounted directional valve bank  
 ... - **AS..(F..)**/... AS 2 F1/400 - **VB 11 FM - RH - 1 - G24**  
 ... - **AV..(F..)**/...  
 ... - **AX..**/...

MP .. A - H... - B... - **C 5**  
 - **C 6**  
 - **C 11**



... - **B 31/300 - EM 11 V ...**



Options:  
 ① Check valve in P  
 ② Return filter  
 ③ Idle circulation valve

Pressure limiting valve:  
 ● Tool adjustable  
 ● Manually adjustable  
 ● Adjustable via prop. solenoid  
 ● TÜV - approval

**2.2.2 Dual circuit pumps**

Order example: **MP 24A - H1,77 - Z16 / B 25 - NE 21 - 200/15 - VB 21 GM - RH - 3 - G 24** Motor voltage 3~230/400V 50Hz

Pump acc. to D 7200 with tank, see sect. 2.1

Add-on devices

Directly mounted directional valve bank acc. to D 7302

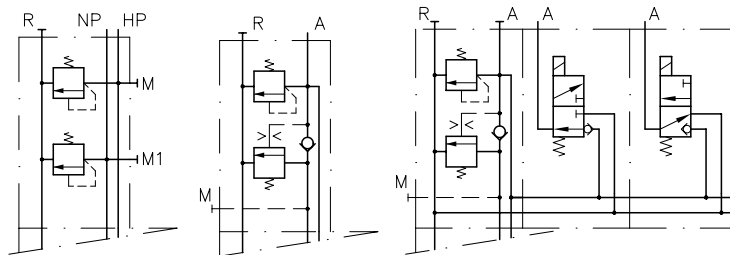
Type	Pam- phlet	Port thread ISO 228/1 (BSPP) <sup>1)</sup>	Pressure range p <sub>max</sub> (bar)	Flow Q <sub>max</sub> (lpm)	Brief note
<b>C 11</b>		NP, R = G 1/2 HP = G 1/4	700	HP = 12 NP = 80	Simple connection block
<b>A 11</b>		NP, HP, R = G 1/2 M, M1 = G 1/4	700	80	Connection block with pressure limiting valve for dual stage pumps
<b>NE 20</b>	D 7161	A, NP, R = G 1/2 HP = G 1/4 M = G 1/8	HP = 700 NP = 80	HP = 10 NP = 40	Two stage valve
<b>NE 21</b>	D 7161	A, R = G 1/2 M = G 1/8	HP = 700 NP = 80	HP = 10 NP = 40	Two stage valve (like type NE 20) with provision for direct mounting of directional valve banks type VB 11 G.. and VB 21 G.. acc. to D 7302 (see example)

**Symbols**

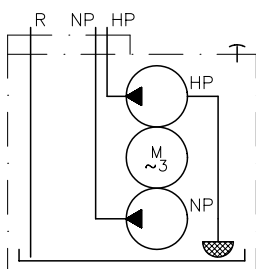
... - **A 11**

... - **NE 20**  
 ... - **NE 70**

... - **NE 21-.../.. - VB 21GM-RH-3-G24**



MP .. A - H... - Z../B .. - **C 11**

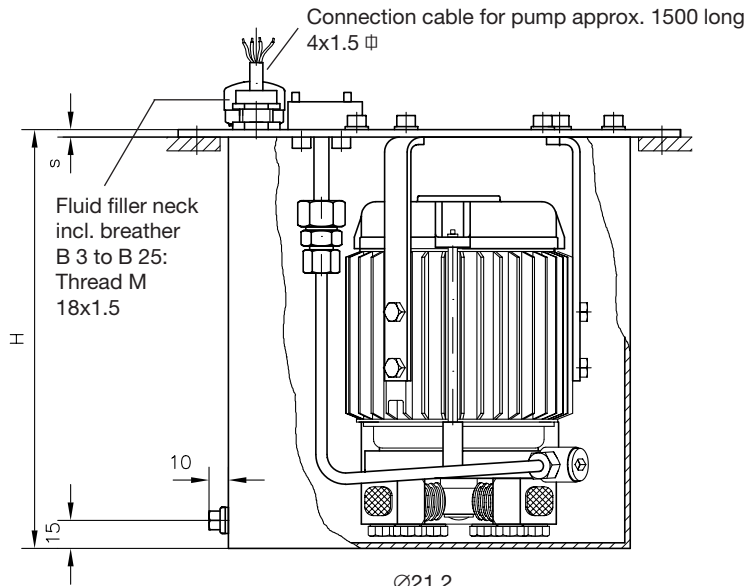


1) Additional return on the cover plate, see sect. 2.1 and 3.1 (e.g. MP 24A ../B25 **R3** - ..)

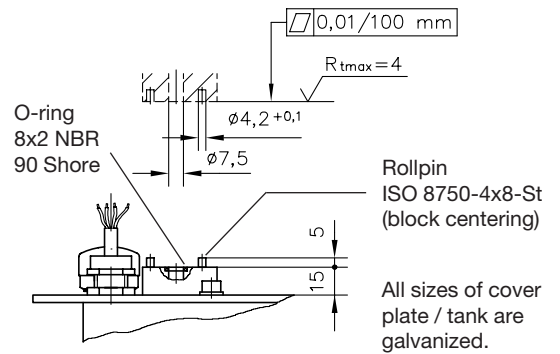
### 3. Unit dimensions

All dimensions in mm, subject to change without notice !

#### 3.1 Hydraulic power packs (basic unit)

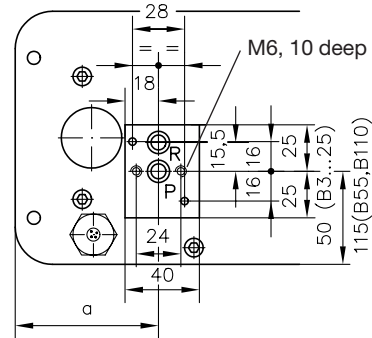
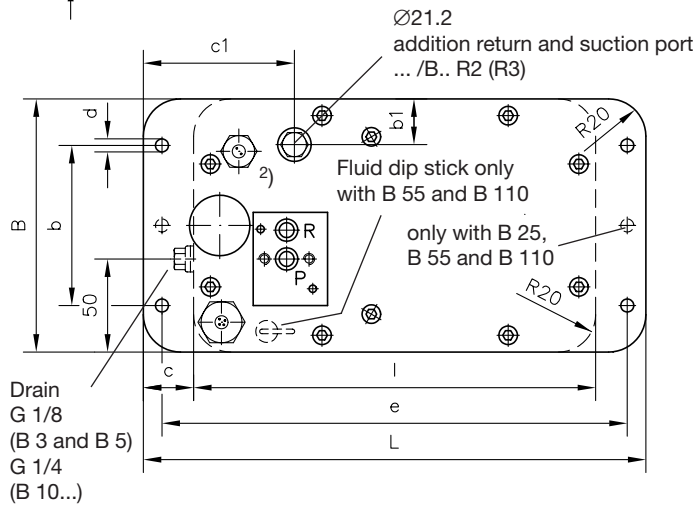


Hole pattern of the connection area when a customer furnished connection block should be mounted.



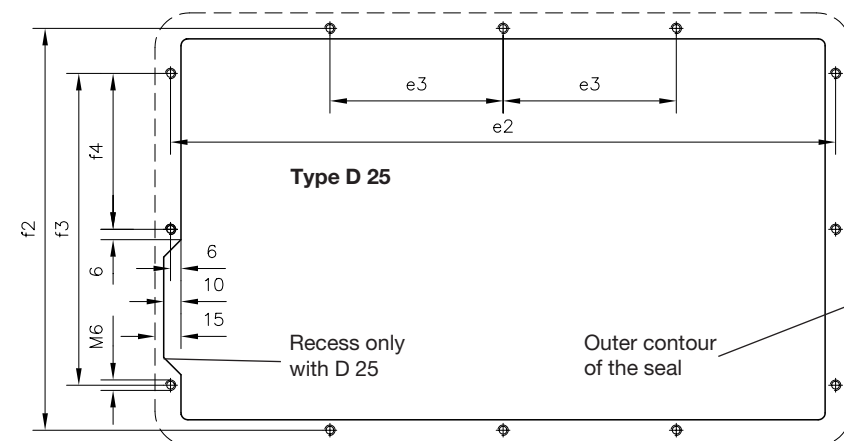
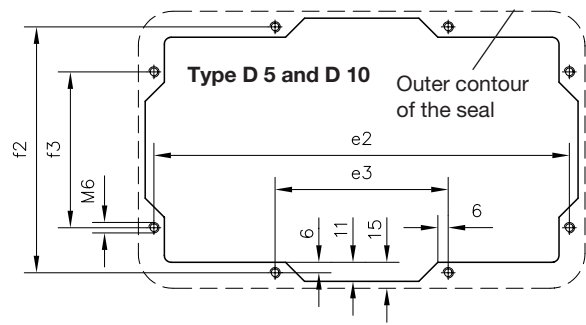
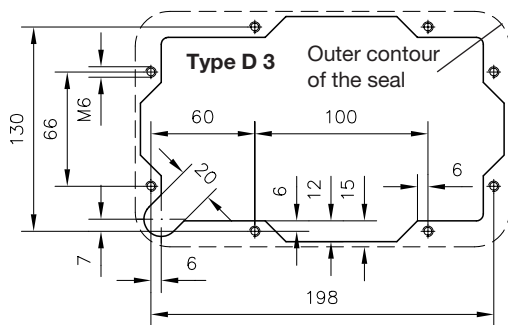
Rollpin ISO 8750-4x8-St (block centering)

All sizes of cover plate / tank are galvanized.



	H 1)	L	B	a	b	b <sub>1</sub>	c	c <sub>1</sub>	d	e	l	s
B 3	225	270	136	77	86	--	27	--	7	250	216	4
B 5	265	325	160	92	90	25	33.5	65	9	295	258	4
B 10	332	395	200	95	130	65	35.5	60	9	365	324	4
B 25	413	485	250	105	180	50	41.5	90	9	455	402	6

Important for customer furnished tanks: Required internal tank contour for pipework, pump etc.



	D 5	D 10	D 25
e2	240	306	384
e3	100	130	100
f2	142	182	232
f3	90	130	180
f4	--	--	90

- 1) For mounting depth of the cover plate version, see sect. 2.1
- 2) Cable entry for the temperature switch (2-leads)

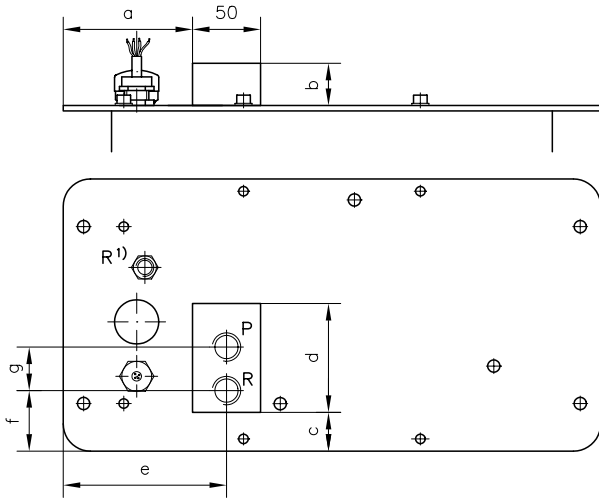
**3.1.1 Mass (weight) approx. kg**

Tank and cover plate version complete with accessories but without motor pump (see D 7200)

Suited for	Tank complete (incl. cover plates, mounting, and piping)				Cover plate complete (incl. mounting, and piping)			
	B 3	B 5	B 10	B 25	D 3	D 5	D 10	D 25
MP ... H	4.0	5.6	8.4	15.0	1.7	2.5	3.4	7.2
MP ... Z	4.2	5.8	8.9	15.5	1.9	2.7	3.9	7.7

**3.2 Add-on equipment acc. to section 2.2.1**

**Type C 5, C 6, C 11 and C 45**

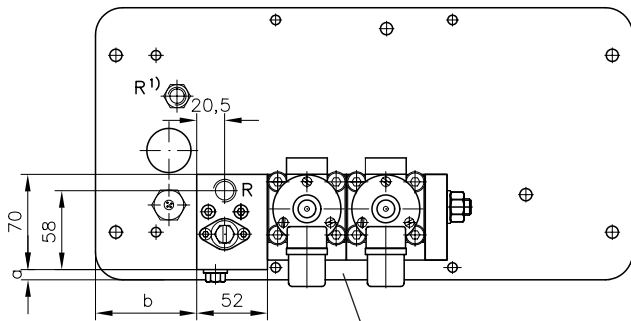
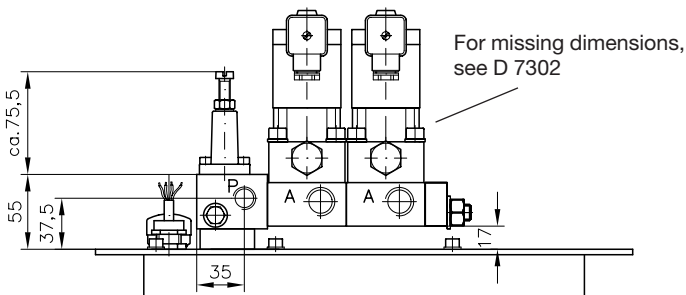


		a	b	c	d	e	f	g
B 3	C 5, C 6	59	35	26.5	50	77	38.5	26
B 5	C 5, C 6	74	35	26.5	50	92	38.5	26
B 10	C 5, C 6	77	35	26.5	50	95	38.5	26
	C 11	85	31	28.5	80	120	44.5	32
B 25	C 5, C 6	80	35	26.5	50	105	38.5	26
	C 11	82	31	46	80	117	98	32
	C 45	79.5	36	79	90	104.5	102.5	45

Ports conforming  
ISO 228/1 (BSPP):

- P and R = G 1/4 (C 5)
- P and R = G 3/8 (C 6)
- P and R = G 1/2 (C 11)
- P = G 3/4 (C 45)
- R = G 1 (C 45)

**Type A 51 and A 61**



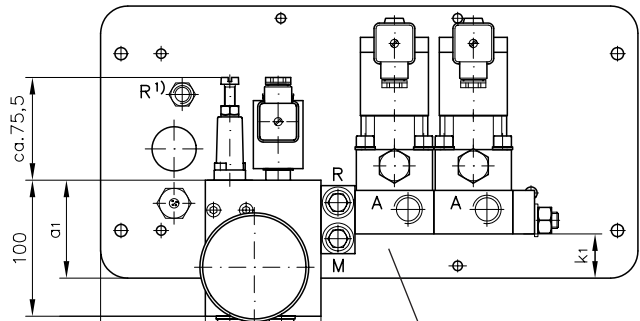
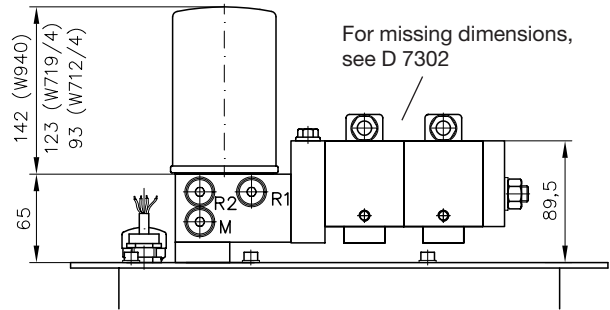
Example with directly mounted  
VB 21 GM...

	B 3	B 5	B 10	B 25
a	34.5	49.5	52.5	62.5
b	29.5	29.5	29.5	29.5

Ports conforming ISO 228/1 (BSPP): P and R = G 3/8

1) Addition return and suction port (for position, see 3.1)

**Type AS.. F./...**

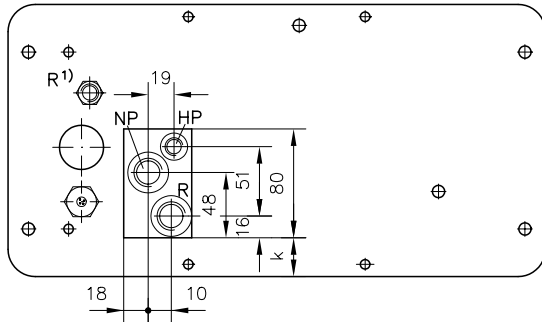
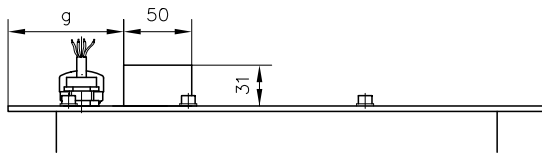


Example with directly mounted  
VB 21 FM...

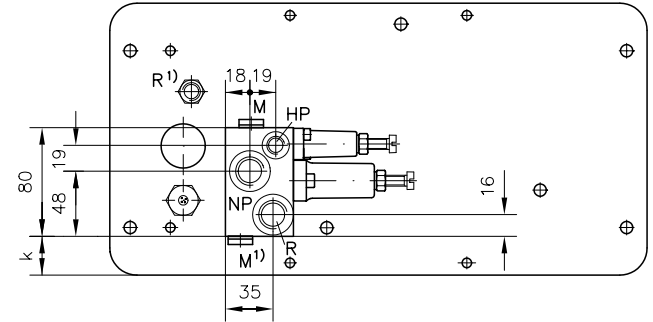
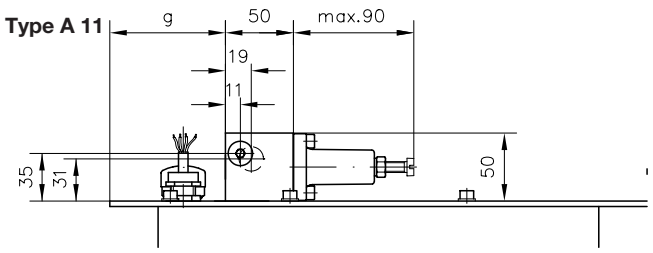
	B 3	B 5	B 10	B 25
a <sub>1</sub>	72	72	72	72
b <sub>1</sub>	46	61	64	74
k <sub>1</sub>	32.5	32.5	32.5	32.5

3.3 Add-on equipment acc. to section 2.2.2

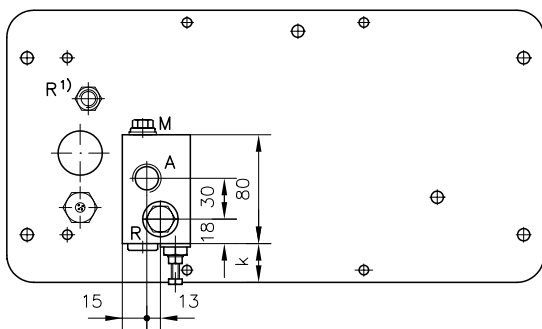
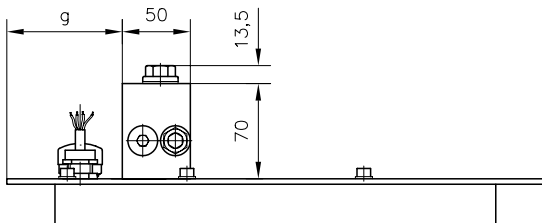
Type C 11



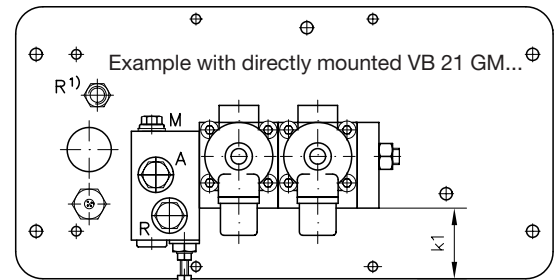
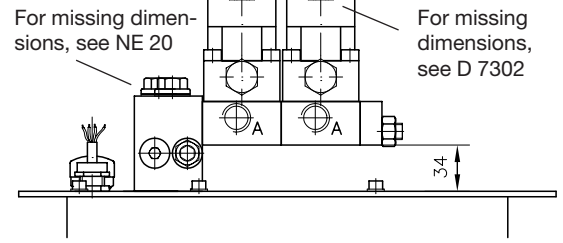
Type A 11



Type NE 20



Type NE 21



Type	g	k	k <sub>1</sub>
B 10	85	28.5	50.5
B 25	82	46	68

1) Addition return and suction port (for position, see 3.1)

## 4. Appendix

### 4.1 Service temperature

For detailed data, see D 7200 sect. 5.5 !

### 4.2 Motor safeguarding against over heating (protective motor switch)

The protective motor switch has to be adjusted in such a manner, that too early triggering is avoided during undisturbed operation and operation cycles permanently succeeding one another. Whereas it should safeguard the motor against over heating in case of stand-still due to a pressure limiting valve being adjusted to high, malfunction of a pressure switch which should trigger a stop signal etc. Guideline for proper setting of the protective switch:  $I_E$  should be 0.7  $I_M$  in general, 0.65  $I_M$  for operation in the range of  $p_{max}$  and 0.8  $I_M$  for low loads. The motor current  $I_M$  can be read for various pressure settings of the pressure limiting valve in D 7200 sect. 5.5.

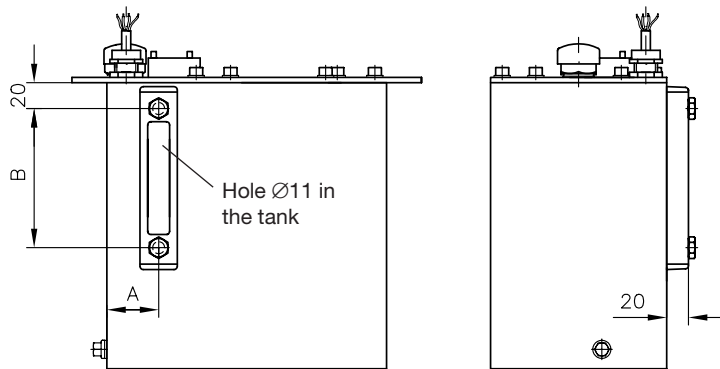
### 4.3 Comparison protection class

IP 54 acc. to DIN EN 60529 / IEC 60529

### 4.4 Optional equipment

#### Fluid level gauge

Order example: MP 24 A - H 1,1/B 10 K <sup>1)</sup>



<sup>1)</sup> For spare parts order:  
SNA 127 B-S-0-10 for B 3 ... B 10  
SNA 254 B-S-0-10 for B 25 ...

Tank	A	B
B 3	40	127
B 5	50	127
B 10	50	127
B 25	50	254

For missing dimensions, see section 3.1

#### Float switch

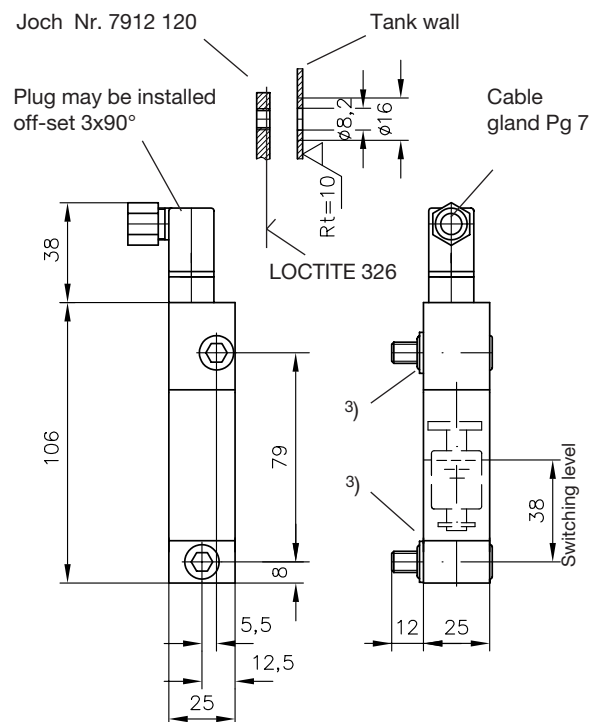
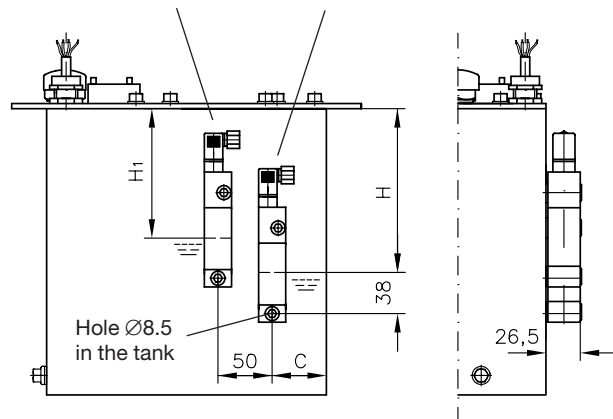
Order example: MP 24 A - H 1,1/B 25 D <sup>2)</sup>

Technical data: Float switch material PA  
Float NBR  
Switching performance 230V DC/AC 0,5A 30VA  
Plug conforming DIN 43 650 - C (8 mm)



2. Float switch  
(Coding DD)

1. Float switch  
(Coding D)



Tank	C	H	H1
B 3	40	142	92
B 5	50	142	92
B 10	50	162	112
B 25	50	265	185

For missing dimensions, see section 3.1

<sup>2)</sup> For individual order: Float switch complete No. 7912 300  
<sup>3)</sup> Seal ring A12x15.5x1.5 DIN 7603-St  
O-ring 8x2.4 NBR 90 Sh  
USIT-ring 8.7x13x1 NBR 90 Sh



### Temperature switch

MP 24 A - H 1,1/B 10 T <sup>1)</sup> - A 1/700

The bimetallic temperature switch detects critical heat built-ups, triggering a signal which may cause cut-off of the motor.

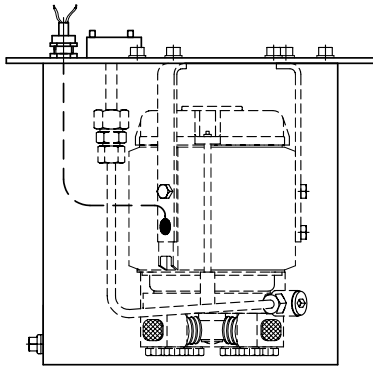
A protective switch should be employed for supervising the motor against spontaneous overheating causing the current consumption being too high (over-current protection) e.g. when the motor is blocked i.e. too high pressure or phase failure.

#### Electrical data:



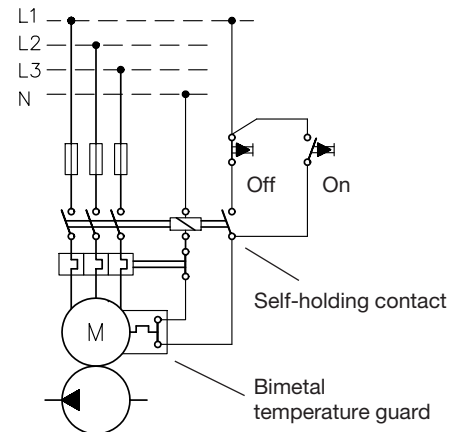
The response temperature of the temperature switch is pre-set. It is fixed with screws to one of the three motor stands (contact temperature guard). The housing is isolated via a shrunk foil.

Nom. voltage $U_N$ .....	250 V ~ 50 and 60 Hz
Nom. current $I_N$ .....	1.6 A ( $\cos \varphi = 0.6$ )
Contact version .....	NC-contact
Switching temperature .....	90°C + approx. 10%
Cable connection .....	2 x 0.75 mm, length approx. 2 m; external $\varnothing 6$ mm, led through the cover plate via cable gland Pg 7 (see sect. 3.1)



#### Electrical wiring diagram (circuitry, simplified)

Example:  
Cut-off of the motor



<sup>1)</sup> For spare parts order:  
No. 7200 336