Hydraulic power packs type MP

turn-key versions with cover plate only
or complete with tank equipped with pumps acc. to D 7200

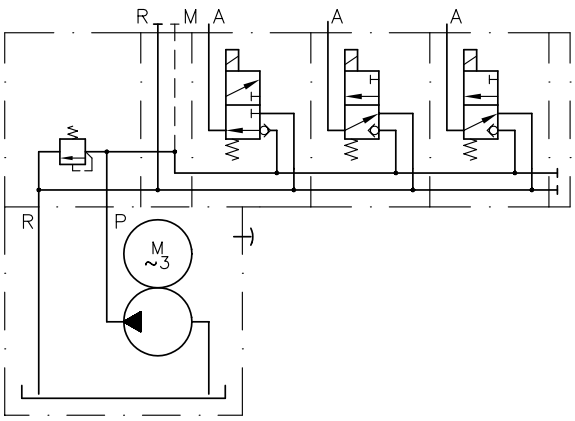
For pumps complete with motor to be installed in customer furnished tanks, see D 7200.

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.

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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

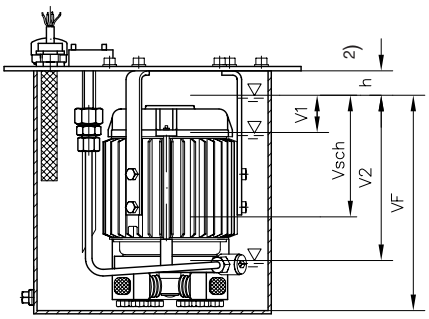
Pumps acc. to D 7200

Coding		Suitable motor pumps acc. to D 7200	
Version with tank	Cover plate version	Single circuit pumps MP(W) ..A - H .. [1] MP(W) ..A - Z ..	Dual circuit pumps MP(W) ..A - H .. - Z ..
B 3	**D 3**	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)	
B 5	**D 5**	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)	
B 10	**D 10**	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 25	**D 25**		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)

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

Version with tank



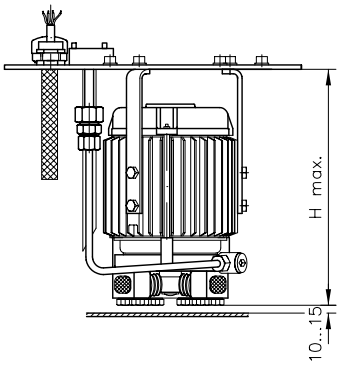
VF = Filling volume (l)

V1 = Usable volume (l) up to top motor outline

V2 = Total usable volume (l) (max.)

V_{Sch} = 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) [3]	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_{max}		217	255	322	400
Vers. with float switch	V_{Sch} (l)	1.35 ... 2.2	2.4 ... 4.8	4.5 ... 10.5	14.5 ... 20

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

[2]) h ≈ 20...50 mm depending on tank size

[3]) 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**

- MP 24 A - H1,08/B 10: Pump to D 7200, with container after section 2.1
- A2 F1/400: Connection block (For symbol, see page 4)
- VB11FM: Directly mounted directional valve bank acc. to D 7302
- RH: Motor voltage 3 ~ 230/400V 50Hz
- 1: Type
- G24: Direct mounting of directional valve banks as option

Type	Pamphlet	Port thread ISO 228/1 (BSPP) [3]	Pressure range from ... to p_{max} (bar) [1]	Flow Q_{max} (lpm)	Integrated functional elements [6]			Brief note on the connection block	Direct mounting of directional valve banks as option
					Pressure limiting valve	Idle circulation valve	Reflow filter		
C 5 **C 6** **C 11** [7] **C 45** [8]	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 possibility for direct mounting
B ../...-...	D 6905 B	G 1/4	450 (700)	8 ... 25	yes	no	no	For single acting lift or clamping devices	
A 1/... to **A 4/...**	D 6905 A/1	G 1/4	(0) ... 700 in steps	12	yes	no	no	Wildly used connection blocks with pressure limiting valve	①
A 13/... to **A 43/...**		G 3/8		18	yes	no	no		③
A 51 **A 61**		G 3/8		18	yes	no	no		④
AS(V) 1/... to **AS(V) 4/...**		G 1/4	(0) ... 315 in steps	18	yes	yes [2]	no	With idle circulation valves acc. to D 7490/1	①
A..F../.. **AS..F../..** **AM..F../..** **AK..F../..**		G 1/4	(0) ... 700 in steps	12	yes	yes	yes	With return filter 12 µm nom. 50% / 30 µm absolute	①
AP 1/.. **AP 3/..**		G 1/4	5 ... 700	12	yes	yes [4]	no	Pressure limiting valve with unit approval	①
AX 14.. **AX 3..**	D 6905 TÜV	G 1/4	80 ... 450	6 ... 10	yes	no	no	Integrated directional spool valve	①
V 1/... to **S 4/...**	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 directional valve banks ①
HSV 21	D 7032	G 1/4	315	20	ja	no	no	For single acting lifting devices	No possibility for direct mounting

[1] Observe the max. perm. pressure, which might be lower than 700 bar when mounting directional valve banks.

[2] E.g. to assist starting of type MPW, see D 7200 sect. 3.2 „Starting against pressure".

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

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

[5] For valve spools featuring connection P→R in idle position

[6] 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.

[7] For tank size B 10 (D 10)

[8] 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 [1])

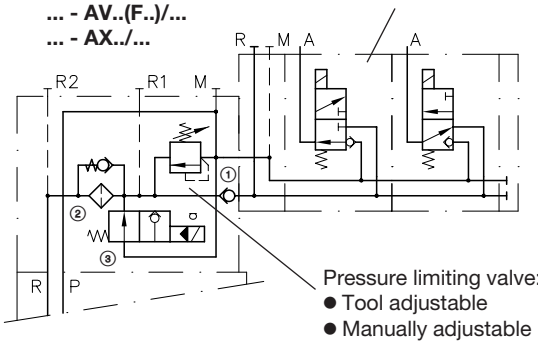
③ Directional seated valves type [1])
BWH 3F... acc. to D 7470 B/1

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

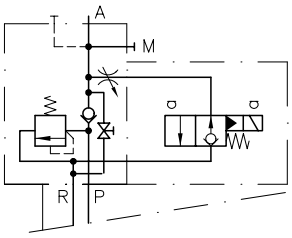
Symbols
(corresponding to sect. 2.2.1)

... - A../...
... - AS..(F..)/...
... - AV..(F..)/...
... - AX../...

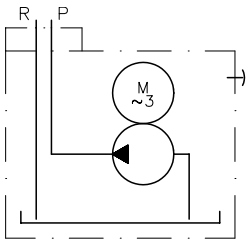
Directly mounted directional valve bank
AS 2 F1/400 - **VB 11 FM - RH - 1 - G24**



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



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



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

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

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

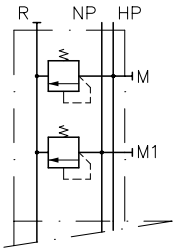
Add-on devices

Directly mounted directional valve bank acc. to D 7302

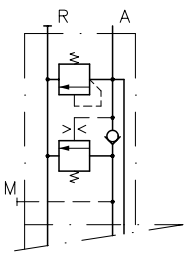
Type	Pam-phlet	Port thread ISO 228/1 (BSPP) [1]	Pressure range p_{max} (bar)	Flow Q_{max} (lpm)	Brief note
C 11		NP, R = G 1/2 HP = G 1/4	700	HP = 12 NP = 80	Simple connection block
A 11		NP, HP, R = G 1/2 M, M1 = G 1/4	700	80	Connection block with pressure limiting valve for dual stage pumps
NE 20	D 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
NE 21	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

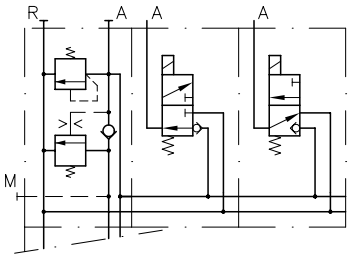
... - A 11



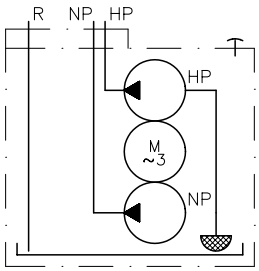
... - NE 20
... - NE 70



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



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

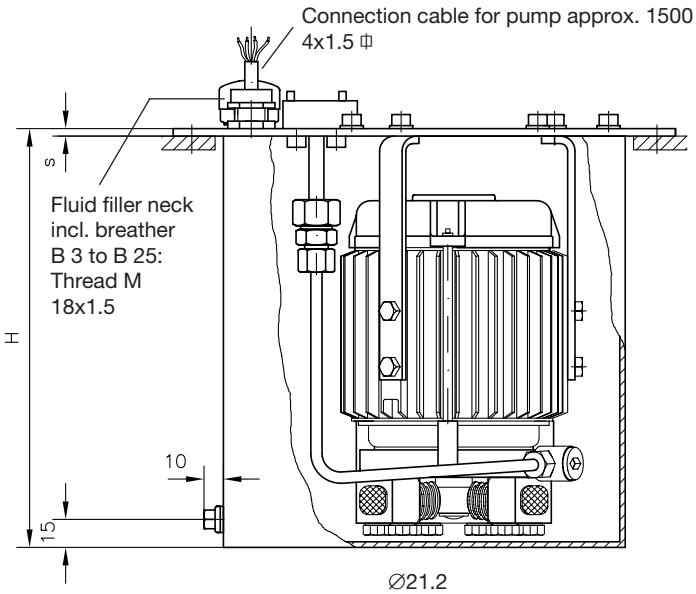


[1] Additional return on the cover plate, see sect. 2.1 and 3.1 (e.g. MP 24A ../B25 **R3** - ..)

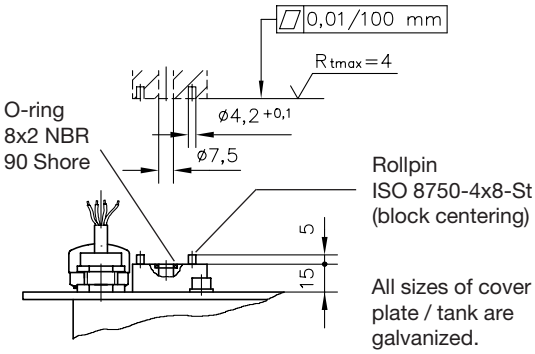
3. Unit dimensions

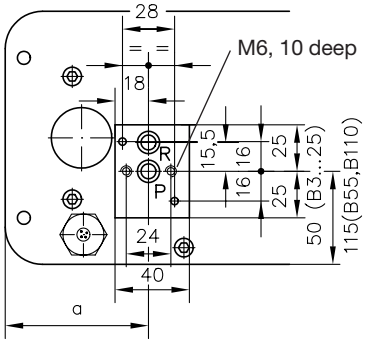
All dimensions in mm, subject to change without notice !

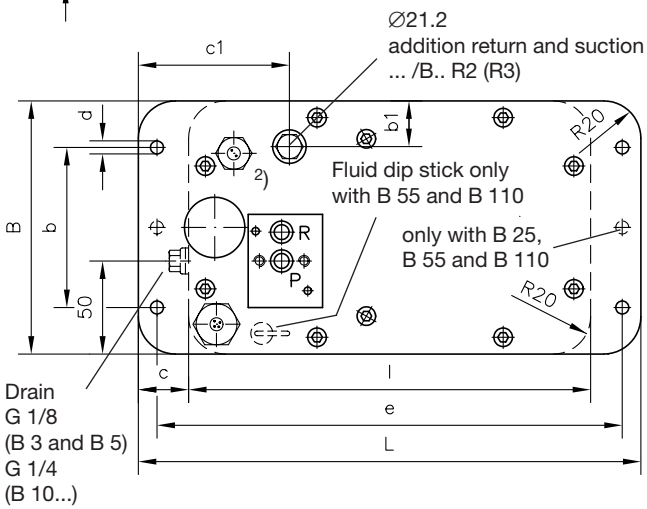
3.1 Hydraulic power packs (basic unit)



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

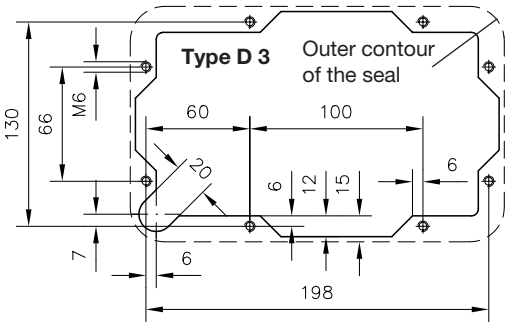


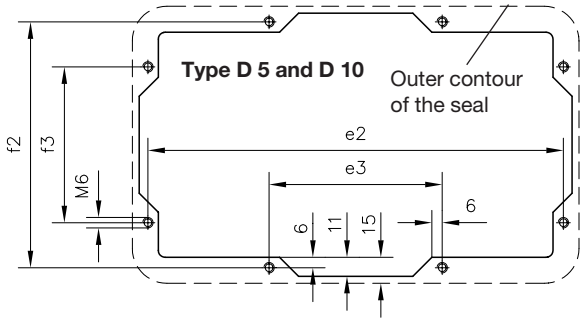


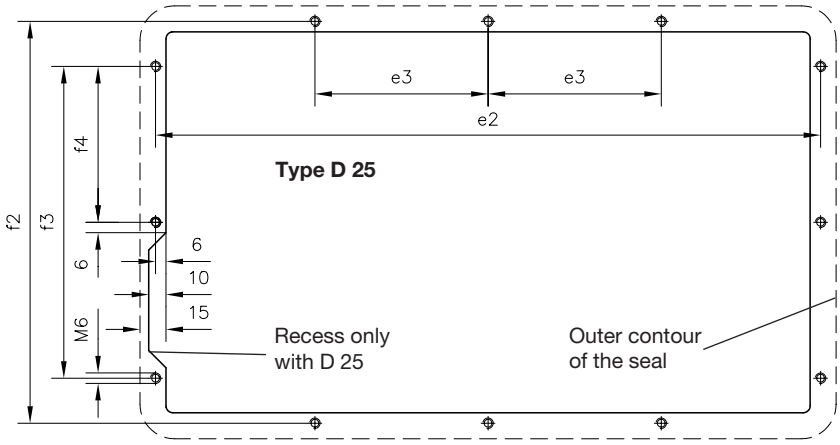


	H [1]	L	B	a	b	b_1	c	c_1	d	e	l	s
B 3	225	270	136	77	86	--	27	--	7	250	216	4
B 5	265	325	160	92	90	25	33.5	65	9	295	258	4
B 10	332	395	200	95	130	65	35.5	60	9	365	324	4
B 25	413	485	250	105	180	50	41.5	90	9	455	402	6

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-leeds)

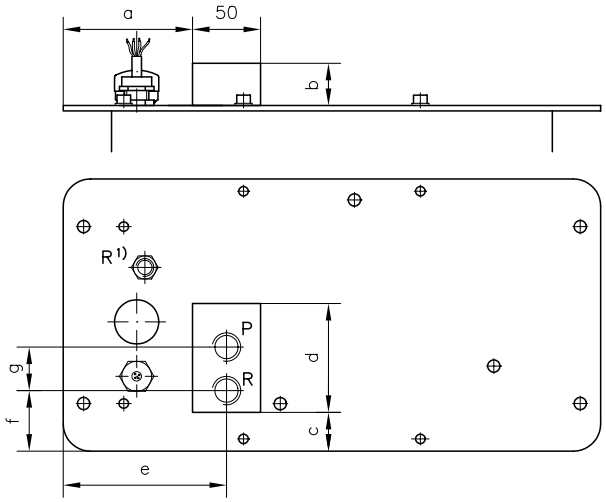
3.1.1 Mass (weight) approx. kg

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

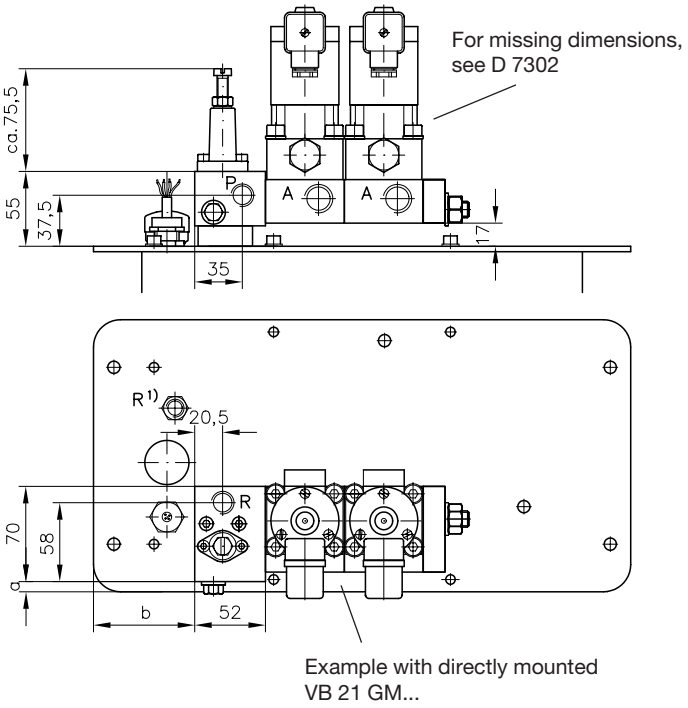


		a	b	c	d	e	f	g
B 3	C 5, C 6	59	35	26.5	50	77	38.5	26
B 5	C 5, C 6	74	35	26.5	50	92	38.5	26
B 10	C 5, C 6	77	35	26.5	50	95	38.5	26
	C 11	85	31	28.5	80	120	44.5	32
B 25	C 5, C 6	80	35	26.5	50	105	38.5	26
	C 11	82	31	46	80	117	98	32
	C 45	79.5	36	79	90	104.5	102.5	45

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)

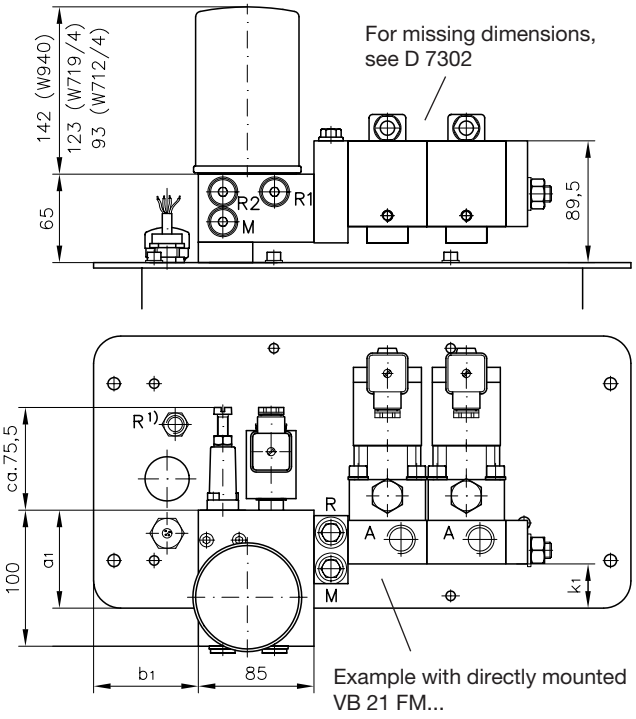
Type A 51 and A 61



	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

Type AS.. F../...

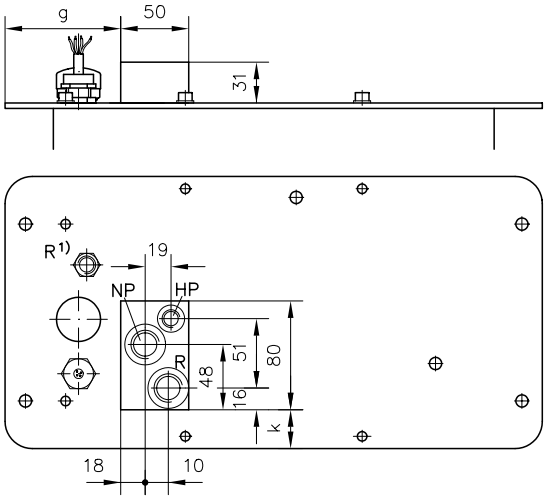


	B 3	B 5	B 10	B 25
a_1	72	72	72	72
b_1	46	61	64	74
k_1	32.5	32.5	32.5	32.5

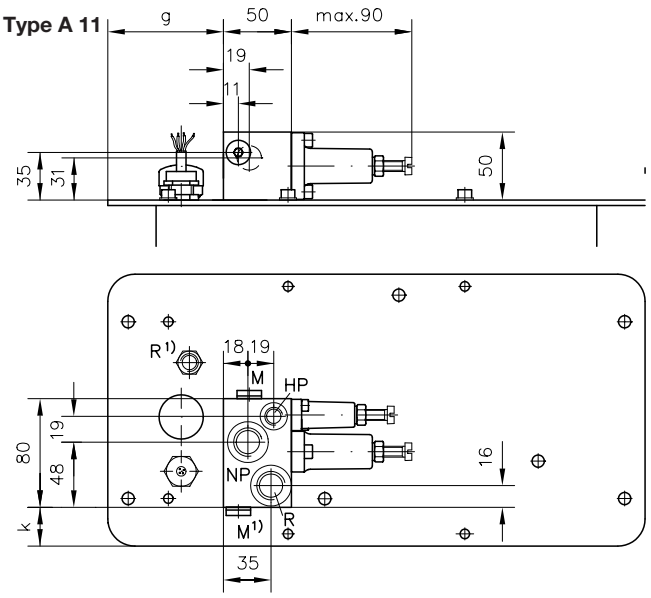
[1]) Addition return and suction port (for position, see 3.1)

3.3 Add-on equipment acc. to section 2.2.2

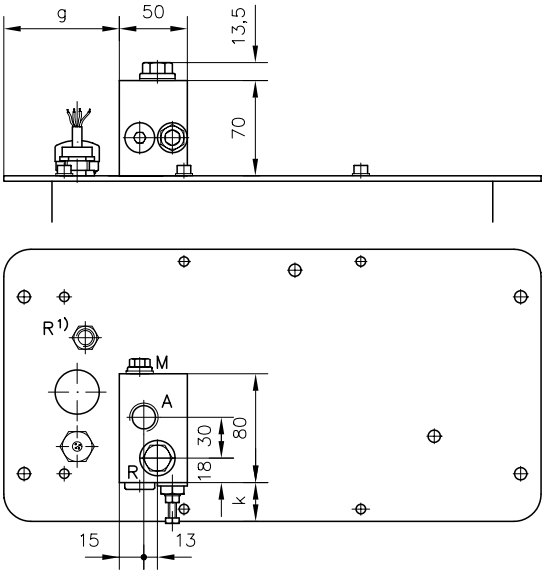
Type C 11



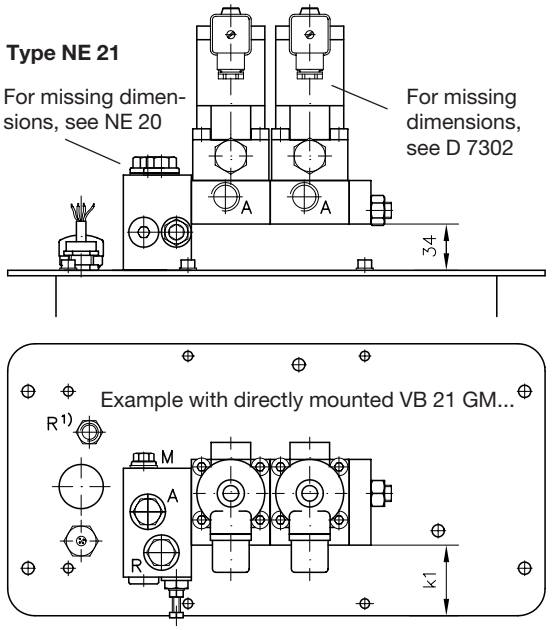
Type A 11



Type NE 20



Type NE 21



Type	g	k	k_1
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.

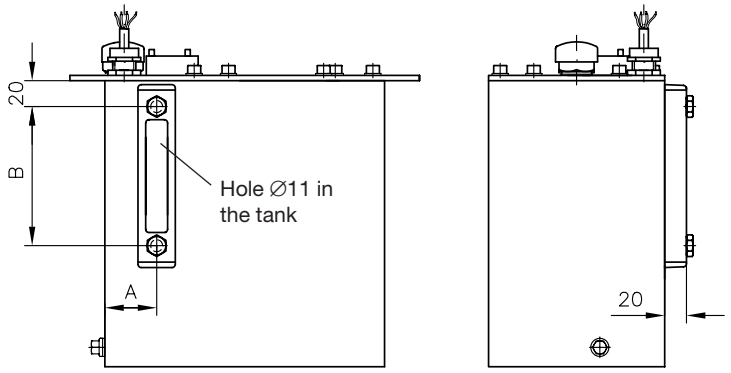
4.3 Comparison protection class

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** [1])



[1]) 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

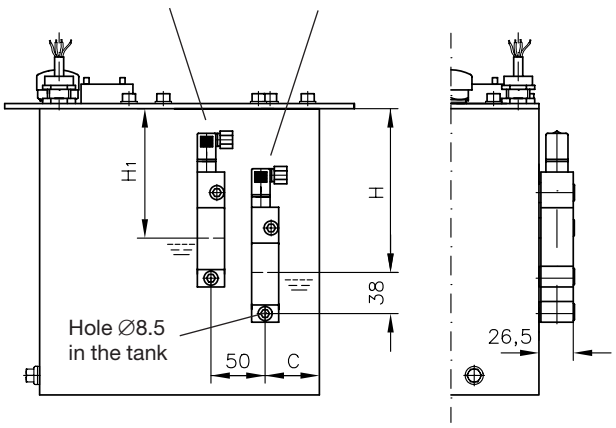
Float switch

Order example: MP 24 A - H 1,1/B 25 **D** [2])

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

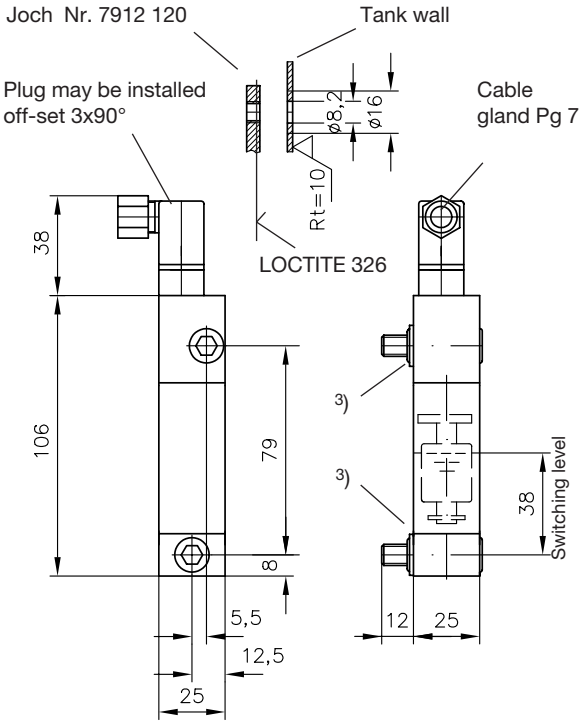


2. Float switch (Coding **DD**)
1. Float switch (Coding **D**)



Tank	C	H	H_1
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

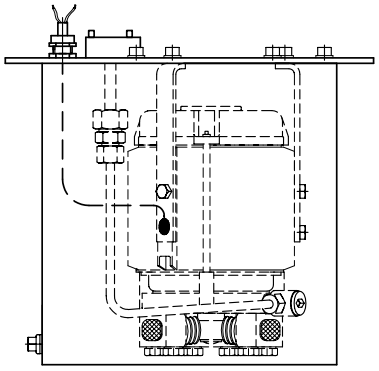


[2]) For individual order: Float switch complete No. 7912 300
[3]) Seal ring A12x15.5x1.5 DIN 7603-St
O-ring 8x2.4 NBR 90 Sh
USIT-ring 8.7x13x1 NBR 90 Sh

Temperature switch

MP 24 A - H 1,1/B 10 **T** [1]) - A 1/700

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



[1]) For spare parts order:
No. 7200 336

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 φ = 0.6)
Contact version	NC-contact
Switching temperature	90°C + approx. 10%
Cable connection	2 x 0.75 mm, length approx. 2 m; external ∅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

