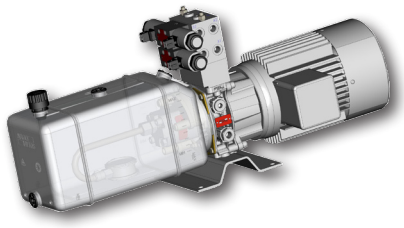
SMA 05

Q_{max} 17 l/min • p_{max} 250 bar • P_{max} 3 kW

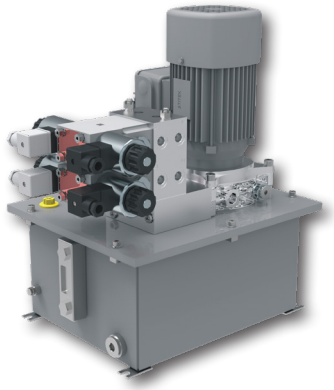
Example: plastic tank version



Technical Features

- AC and DC electro-hydraulic unit, easy-to-assemble, compact
- Modularity offers many combinations of hydraulic circuits to suit various requirements
- Main applications are fork lifts, lifting platforms, automotive lifts, cranes for small trucks, snow plows, machine tools, food and textile industry
- 7 central block basic circuits options
- Possibility of building up an additional circuit in the form of vertical or horizontal stacking assembly
- Rated power up to 3 kW with DC and AC
- Single and triple-phase motors with power ratings of up to 3 kW
- Tank capacities from 1.5 to 40 l with optional plastic tanks for cost saving
- In the standard version, the aluminium basic block is without surface protection and steel plate are zinc coated for 240 h protection acc. to ISO 9227

Example: steel tank version



Functional Description

Compact mini hydraulic power packs are designed to fit small design envelopes and can be used in lifting platforms, elevating tables, manipulators, small presses, machine tools and mobile applications. Each power pack consists of an electric motor, a pump, a manifold and a tank. The aluminum body forms the base of the power pack, on which all the main components, including the hydraulic elements, are mounted. The function of the power packs is apparent from the respective hydraulic circuit diagrams. The desired combination of particular components and hydraulic elements can be defined by reference to the ordering code and the respective tables. The additional hydraulic circuits can be built up in valve sizes 03 (RPEK), 04 (CETOP 02) and 06 (CETOP 03). The size 03 (RPEK) is in a form of sectional directional valves.
The mounting position of the power pack is horizontal or vertical - see Power Pack Dimensions on pages 12 to 19. All ports have G1/4 internal threads (thread G3/8 to be agreed with the manufacturer). With the standard model, the connecting ports A, B of the components of the vertical stacking assembly are oriented to one side. Orientation of ports A, B to different sides is to be discussed with the manufacturer. The basic combinations of electric motors and pumps as well as their code designations are shown in tables 1 - 5.

Technical Data

Flow rate	l/min	see table 1, 2, 3, 4 and 5		
Working pressure	bar	see table 1, 2, 3, 4 and 5		
Max. operating pressure	bar	see table 1, 2, 3 and 4		
Tank capacity	l	1.5 - 40		
Type of hydraulic pump		gear pump, COUNTER-CLOCKWISE		
Electrical Motor power ratings	kW	0.12 - 3		
Type of electric motor		one- , three-phase and DC		
Voltage of electric motor	V	230 AC	230 / 400 AC	12 / 24 DC
Duty cycle S3 of electric motor	%	AC 100, DC see table		
Frequency	Hz	AC 50		
Protection degree of electric motor - insulation class		AC IP 55-F, DC - see table (page 7)		
Viscosity range	mm²/s	20 ... 100		
Fluid temperature range	°C	0 ... +70		
Fluid temperature range, short-time	°C	-20 ... +80		
Ambient temperature max.	°C	+50		
Thread of functional ports P, T, M, A, B		G1/4 (G3/8 A, B on request)		

	Data Sheet	Type
General information	GI_0060	Products and operating conditions

Standard Surface Treatment

Model	Material used	Surface treatment
Cylindrical steel tank	sheet steel	Komaxit RAL 7030
Square steel tank / cover	sheet steel	Komaxit RAL 7030
Cylindrical plastic tank	BOREALIS ME 8131 (transparent)	without surface treatment
Square plastic tank	MOSTEN (transparent)	without surface treatment
DC electric motor		zinc-coated
AC electric motor		RAL 7030
Other components acc. to manufacturer standard		

For other surface treatment consult factory.

SMA 05- □ / □ . □ - □ - □ □ . □ - □ □ □ / □

Compact power pack

Pump displacement in cm³

Series GP0L	
0.32	**03**
0.40	**04**
0.50	**05**
0.63	**06**
Series GP1	
0.8	**08**
1.2	**12**
1.6	**16**
2.1	**21**
2.5	**25**
3.3	**33**
3.6	**36**
4.4	**44**
4.8	**48**
5.8	**58**
6.2	**62**
7.9	**79**

Code of the electric motor
(see tables 1-5)

DC electric motor	
with switch	**R**
one-phase electric motor	
without starting module	**0**
with starting module	**M**
three-phase electric motor	**0**

Type of hydraulic circuit
(see table on pages 8)

Code of the tank
see pages 12, 14-18

Type of filter used

0	without filter
S	suction filter
R*	return line filter without indication
E*	return line filter with el. indication
M*	return line filter with manometer

*only for tank codes 56-60 and 30-32

Foot bracket

0	without foot bracket
F	low foot bracket
K	high foot bracket (only for tank codes 40-45)

Base platte

0	without
A	configuration A
B	configuration B
C	configuration C
D	configuration D
E	configuration E
F	configuration F
	(see page 12)

Parallel plate

0	without
1	1 section
2	2 sections
3	3 sections
4	4 sections
5	5 sections
	(see page 12)

Nominal size of stacking assembly elements

0	without
3	size 03
4	size 04
6	size 06
	(see page 12)

Solenoid voltage

01200	12 V DC
02400	24 V DC
20500	205 V DC
23050	230 V AC 50 (60) Hz

SMA05- □ / □ . 0 - G - □ □ . □ - □ □ □ / □

Compact power pack

Pump displacement in cm³

Series GP1	
4.8 + 1.2 cm³	**4812**
4.8 + 1.6 cm³	**4816**
4.8 + 2.1 cm³	**4821**
5.8 + 1.2 cm³	**5812**
5.8 + 1.6 cm³	**5816**
5.8 + 2.1 cm³	**5821**
6.2 + 1.2 cm³	**6212**
6.2 + 1.6 cm³	**6216**
6.2 + 2.1 cm³	**6221**
7.9 + 1.2 cm³	**7912**
7.9 + 1.6 cm³	**7916**
7.9 + 2.1 cm³	**7921**

Code of the e-motor
1, 2, 3, 4, 5, 6, 7, 8
9, 10, 11, 12, 13,14, 15, 16, 17, 18

(see tables 3, 4)

Code of the tank
24, 31, 32, 44, 45, 55, 58, 59, 60, 69, 70

Type of filter used

without filter	**0**
suction filter	**S**
return line filter without indication	**R***
return line filter with el. indication	**E***
return line filter with manometer	**M***

*only for tank codes 58-60 and 31-32

Solenoid voltage

01200	12 V DC
02400	24 V DC
20500	205 V DC
23050	230 V AC 50 (60) Hz

Nominal size of stacking assembly elements

0	without stacking assembly
3	size 03
4	size 04
6	size 06

(see page 12)

Parallel plate

0	without stacking assembly
1	1 section
2	2 sections
3	3 sections
4	4 sections
5	5 sections

(see page 12)

Base platte

0	without stacking assembly
A	configuration A
B	configuration B
C	configuration C
D	configuration D
E	configuration E
F	configuration F

(see page 12)

Foot bracket

0	without foot bracket
F	low foot bracket
K	high foot bracket (only for tank codes 40-45)

Tab. 1a Single Pumps AC Electric Motors - three-phase

Code of the three-phase motor			Code of the pump															
			03 GP0L-...		04 GP0L-...		05 GP0L-...		06 GP0L-...		08 GP1-...		12 GP1-...		16 GP1-...		21 GP1-...	
p_{max} ** [bar]			240								250							
400V	n[1/min]	P[kW]	Q/p_n* [l/min] / [bar]															
9	1320	0.12	0.3	160	0.4	130	0.6	100	0.7	80	0.9	65	1.4	40	1.8	30		
10	1320	0.18	0.3	220	0.4	190	0.6	150	0.7	120	0.9	95	1.4	60	1.8	45	2.5	35
11	1395	0.25			0.5	220	0.6	200	0.8	160	0.9	125	1.4	80	1.9	60	2.6	45
12	1400	0.37							0.8	200	0.9	180	1.4	120	1.9	90	2.6	70
13	1390	0.55									0.9	200	1.4	180	1.9	135	2.6	105
14	1400	0.75											1.4	200	1.9	180	2.6	140
15	1410	1.10													2.0	200	2.6	200
16	1410	1.50																
17	1425	2.20																
18	1425	3.00																
27	2745	0.18	0.7	115	0.9	90	1.2	75	1.5	60	1.9	45	2.8	30				
28	2740	0.25	0.7	160	0.9	130	1.2	100	1.5	80	1.9	65	2.8	40	3.8	30		
29	2790	0.37	0.7	200	0.9	185	1.2	150	1.5	115	1.9	90	2.9	60	3.9	45	5.2	35
30	2820	0.55					1.2	200	1.5	175	1.9	135	2.9	90	3.9	65	5.3	50
31	2850	0.75							1.5	200	1.9	180	2.9	120	4.0	90	5.3	70
32	2850	1.10									1.9	200	2.9	175	4.0	130	5.3	100
33	2855	1.50											2.9	200	4.0	175	5.3	135
34	2855	2.20													4.0	200	5.3	200
35	2860	3.00																

Tab. 1a Single Pumps AC Electric Motors - three-phase

Code of the three-phase motor			Code of the pump															
			25 GP1-...		33 GP1-...		36 GP1-...		44 GP1-...		48 GP1-...		58 GP1-...		62 GP1-...		79 GP1-...	
p_{max} ** [bar]			250										200				160	
400V	n[1/min]	P[kW]	Q/p_n* [l/min] / [bar]															
9	1320	0.12																
10	1320	0.18	3.0	30														
11	1395	0.25	3.2	40	4.2	30	4.6	25										
12	1400	0.37	3.2	55	4.2	45	4.6	40	5.6	35	6.1	30	7.4	25				
13	1390	0.55	3.2	85	4.2	65	4.6	60	5.6	50	6.1	45	7.4	35	7.9	35	10.1	25
14	1400	0.75	3.2	115	4.3	90	4.6	80	5.7	65	6.2	60	7.5	50	8.0	45	10.2	35
15	1410	1.10	3.2	165	4.3	130	4.7	115	5.7	95	6.2	90	7.5	75	8.0	70	10.2	55
16	1410	1.50	3.2	200	4.3	175	4.7	160	5.7	130	6.2	120	7.5	100	8.0	95	10.2	75
17	1425	2.20			4.3	200	4.7	200	5.8	190	6.3	175	7.6	145	8.1	135	10.4	105
18	1425	3.00									6.3	200	7.6	195	8.1	180	10.4	145
27	2745	0.18																
28	2740	0.25																
29	2790	0.37	6.3	30														
30	2820	0.55	6.4	40	8.6	30	9.3	30	114	25								
31	2850	0.75	6.5	55	8.7	45	9.4	40	11.5	30	12.6	30	15.2	25				
32	2850	1.10	6.5	80	8.7	65	9.4	60	11.5	45	12.6	45	15.2	35	16.3	35		
33	2855	1.50	6.5	110	8.7	85	9.5	80	11.6	65	12.6	60	15.2	50	16.3	45		
34	2855	2.20	6.5	165	8.7	125	9.5	115	11.6	95	12.6	85	15.2	70	16.3	65		
35	2860	3.00	6.5	200	8.7	170	9.5	160	11.6	130	12.6	120	15.3	100	16.3	90		

*p_n- nominal pressure = the highest working pressure allowed without time restriction
** p_{max} - maximum allowable pressure of the pump for max. 20 sec. Motor overload max. 30 % for max. 20 sec.

In the case of rotation speed control keep the speed limits of the gear pump - see Gear Pumps catalog.

Tab. 2a Single Pumps AC Electric Motors - single-phase

Code of the single-phase motor			Code of the pump															
			03 GP0L-...		04 GP0L-...		05 GP0L-...		06 GP0L-...		08 GP1-...		12 GP1-...		16 GP1-...		21 GP1-...	
p_{max}** [bar]			240								250							
230V	n[1/min]	P[kW]	Q/p_n* [l/min] / [bar]															
1	1300	0.12	0.3	160	0.4	125	0.6	100	0.7	80	0.9	65	1.3	40	1.8	30		
2	1350	0.18	0.4	220	0.4	185	0.6	150	0.7	115	0.9	90	1.4	60	1.9	45	2.5	35
3	1390	0.25			0.5	220	0.6	200	0.8	160	0.9	125	1.4	80	1.9	60	2.6	45
4	1410	0.37							0.8	200	0.9	180	1.4	120	1.9	90	2.6	70
5	1370	0.55									0.9	200	1.4	180	1.9	135	2.6	105
6	1410	0.75											1.5	200	2.0	180	2.6	140
7	1410	1.10															2.6	200
8	1410	1.50																
19	2840	0.18	0.7	110	0.9	90	1.2	70	1.5	55	1.9	45	2.9	30				
20	2840	0.25	0.7	155	0.9	125	1.2	100	1.5	80	1.9	60	2.9	40	3.9	30		
21	2780	0.37	0.7	200	0.9	185	1.2	150	1.5	120	1.9	90	2.9	60	3.9	45	5.2	35
22	2820	0.55					1.2	200	1.5	175	1.9	135	2.9	90	3.9	65	5.3	50
23	2820	0.75							1.5	200	1.9	185	2.9	120	3.9	90	5.3	70
24	2845	1.10									1.9	200	2.9	175	4.0	130	5.3	100
25	2855	1.50											2.9	200	4.0	175	5.3	135
26	2810	2.20															5.3	200

Tab. 2b Single Pumps AC Electric Motors - single-phase

Code of the single-phase motor			Code of the pump															
			25 GP1-...		33 GP1-...		36 GP1-...		44 GP1-...		48 GP1-...		58 GP1-...		62 GP1-...		79 GP1-...	
p_{max}** [bar]			250										200				160	
230V	n[1/min]	P[kW]	Q/p_n* [l/min] / [bar]															
1	1300	0.12																
2	1350	0.18	3.1	30														
3	1390	0.25	3.1	40	4.2	30	4.6	30										
4	1410	0.37	3.1	55	4.2	45	4.6	40	5.6	30	6.1	30	7.4	25				
5	1370	0.55	3.1	85	4.2	65	4.6	60	5.6	50	6.1	45	7.4	35	7.8	35	10.0	30
6	1410	0.75	3.2	115	4.3	85	4.7	80	5.7	65	6.2	60	7.5	50	8.0	45	10.2	35
7	1410	1.10	3.2	165	4.3	130	4.7	115	5.7	95	6.2	90	7.5	75	8.0	70	10.2	55
8	1410	1.50	3.2	200	4.3	175	4.7	160	5.7	130	6.2	120	7.5	100	8.0	95	10.2	75
19	2840	0.18																
20	2840	0.25																
21	2780	0.37	6.3	30														
22	2820	0.55	6.4	40	8.6	30	9.3	30										
23	2820	0.75	6.4	55	8.6	45	9.3	40	11.4	35	12.5	30	15.0	25				
24	2845	1.10	6.5	85	8.6	65	9.4	60	11.5	50	12.5	45	15.1	35	16.2	35		
25	2855	1.50	6.5	110	8.6	85	9.4	80	11.5	65	12.5	60	15.1	50	16.2	45		
26	2810	2.20	6.5	165	8.6	130	9.4	120	11.5	95	12.5	90	15.1	75	16.1	70		

Attention! Pay special attention to the start-up torque of single-phase motors. Use the start-up module during start-up under pressure.

*p_n - nominal pressure = the highest working pressure allowed without time restriction

** p_{max} - maximum allowable pressure of the pump for max. 20 sec. Motor overload max. 30 % for max. 20 sec.

In the case of rotation speed control keep the speed limits of the gear pump - see Gear Pumps catalog.

Tab. 3a Double Pumps AC Electric Motors 400 V - three-phase

Pump code P1+P2		4812		4816		4821		5812		5816		5821	
P2 p_{max} [bar]		250	for a short period only - max. 20 s										
P1 p_{max} [bar]		184		173		160		166		157		147	
3 phase E-motor		Q1	$p1_n$		Q1, Q2 [l/min] $p1_n$, $p2_n$ [bar] P1 p_{max} is limited due to torque of the pump shaft								
code	P[kW]	Q2	$p2_n$										
12	0.37	6.1	25	6.1	20								
		1.4	120	1.9	90								
13	0.55	6.1	35	6.1	35	6.1	30	7.4	30				
		1.4	180	1.9	135	2.6	105	1.4	180				
14	0.75	6.1	50	6.1	45	6.1	45	7.4	45	7.4	40	7.4	35
		1.4	200	1.9	180	2.6	140	1.4	200	1.9	180	2.6	140
15	1.1	6.1	75	6.1	70	6.1	65	7.4	65	7.4	60	7.4	55
		1.4	200	1.9	200	2.6	200	1.4	200	1.9	200	2.6	200
16	1.5	6.1	100	6.1	95	6.1	85	7.4	85	7.4	80	7.4	75
		1.4	200	1.9	200	2.6	200	1.4	200	1.9	200	2.6	200
17	2.2	6.1	150	6.1	140	6.1	130	7.4	130	7.4	120	7.4	110
		1.4	200	1.9	200	2.6	200	1.4	200	1.9	200	2.6	200
18	3	6.1	184	6.1	173	6.1	160	7.4	166	7.4	157	7.4	147
		1.4	200	1.9	200	2.6	200	1.4	200	1.9	200	2.6	200

Tab. 3b Double Pumps AC Electric Motors 400 V - three-phase

Pump code P1+P2		6212		6216		6221		7912		7916		7921	
P2 p_{max} [bar]		250	for a short period only - max. 20 s										
P1 p_{max} [bar]		151		143		134		139		133		127	
3 phase E-motor		Q1	$p1_n$		Q1, Q2 [l/min] $p1_n$, $p2_n$ [bar] P1 p_{max} is limited due to torque of the pump shaft								
code	P[kW]	Q2	$p2_n$										
13	0.55	8	30	8	25								
		1.4	180	1.9	135								
14	0.75	8	40	8	40	8	35	10.2	30				
		1.4	200	1.9	180	2.6	140	1.4	200				
15	1.1	8	60	8	55	8	50	10.2	50	10.2	45	10.2	45
		1.4	200	1.9	200	2.6	200	1.4	200	1.9	200	2.6	200
16	1.5	8	80	8	75	8	70	10.2	65	10.2	60	10.2	60
		1.4	200	1.9	200	2.6	200	1.4	200	1.9	200	2.6	200
17	2.2	8	120	8	115	8	105	10.2	95	10.2	90	10.2	90
		1.4	200	1.9	200	2.6	200	1.4	200	1.9	200	2.6	200
18	3	8	151	8	143	8	134	10.2	130	10.2	125	10.2	120
		1.4	200	1.9	200	2.6	200	1.4	200	1.9	200	2.6	200

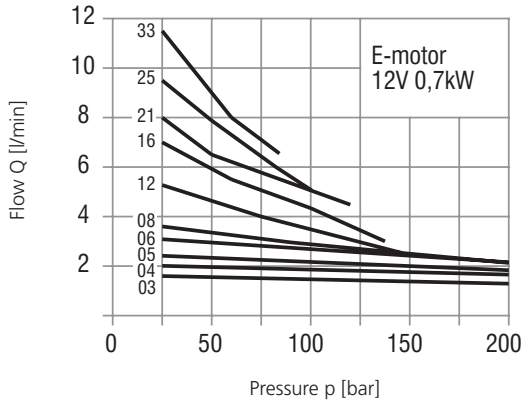
Tab. 4a Double Pumps AC Electric Motors 230 V - one-phase

Pump code P1+P2		4812		4816		4821		5812		5816		5821	
P2 p_{max} [bar]		250	for a short period only - max. 20 s										
P1 p_{max} [bar]		184		173		160		166		157		147	
1 phase E-motor		Q1	$p1_n$		Q1, Q2 [l/min] $p1_n$, $p2_n$ [bar] P1 p_{max} is limited due to torque of the pump shaft								
code	P[kW]	Q2	$p2_n$										
4	0.37	6.1	25	6.1	20								
		1.4	120	1.9	90								
5	0.55	6.1	35	6.1	35	6.1	30	7.4	30				
		1.4	180	1.9	135	2.6	105	1.4	180				
6	0.75	6.1	50	6.1	45	6.1	45	7.4	45	7.4	40	7.4	35
		1.4	200	1.9	180	2.6	140	1.4	200	1.9	180	2.6	140
7	1.1	6.1	75	6.1	70	6.1	65	7.4	65	7.4	60	7.4	55
		1.4	200	1.9	200	2.6	200	1.4	200	1.9	200	2.6	200
8	1.5	6.1	100	6.1	95	6.1	85	7.4	85	7.4	80	7.4	75
		1.4	200	1.9	200	2.6	200	1.4	200	1.9	200	2.6	200

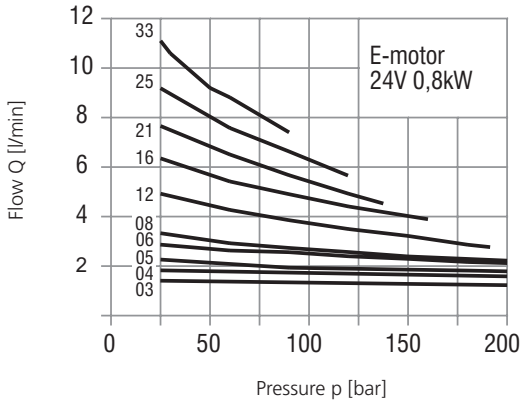
Tab. 4b Double Pumps AC Electric Motors 230 V - one-phase

Pump code P1+P2		6212		6216		6221		7912		7916		7921	
P2 p_{max} [bar]		250	for a short period only - max. 20 s										
P1 p_{max} [bar]		151		143		134		139		133		127	
1 phase E-motor		Q1	$p1_n$		Q1, Q2 [l/min] $p1_n$, $p2_n$ [bar] P1 p_{max} is limited due to torque of the pump shaft								
code	P[kW]	Q2	$p2_n$										
5	0.55	8	30	8	25								
		1,4	180	1,9	135								
6	0.75	8	40	8	40	8	35	10,2	30				
		1,4	200	1,9	180	2,6	140	1,4	200				
7	1.1	8	60	8	55	8	50	10,2	50	10,2	45	10,2	45
		1,4	200	1,9	200	2,6	200	1,4	200	1,9	200	2,6	200
8	1.5	8	80	8	75	8	70	10,2	65	10,2	60	10,2	60
		1,4	200	1,9	200	2,6	200	1,4	200	1,9	200	2,6	200

Code 45



Code 44



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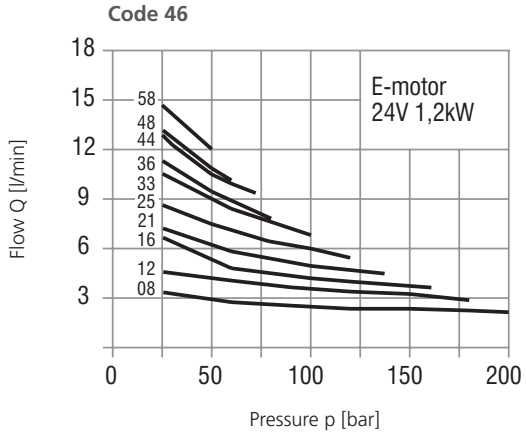

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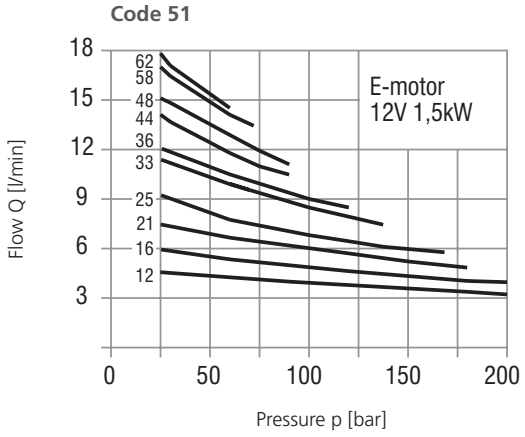

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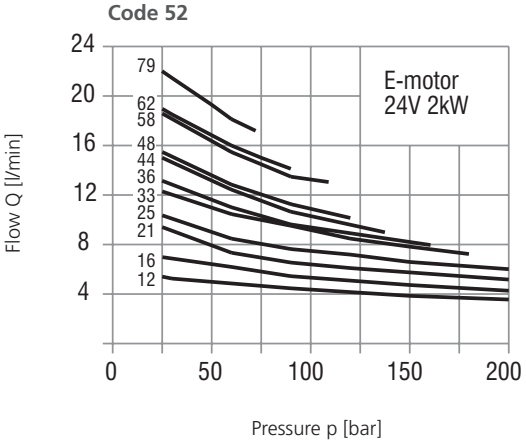
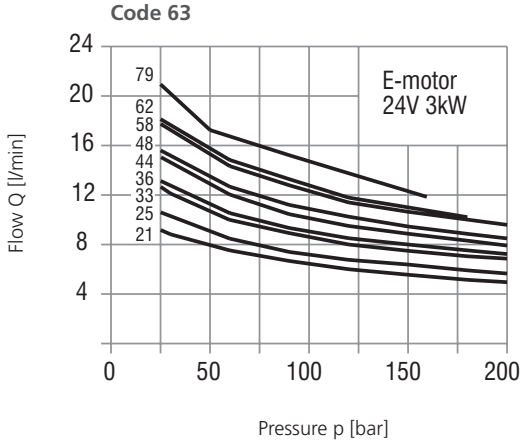
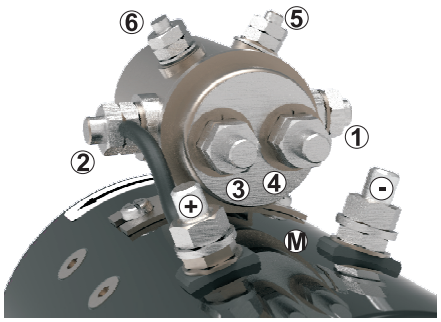
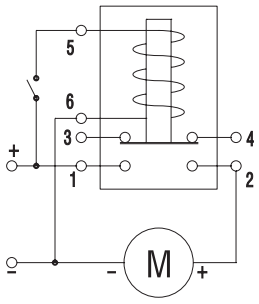


Code 63



Tab. 5 DC Electric Motors



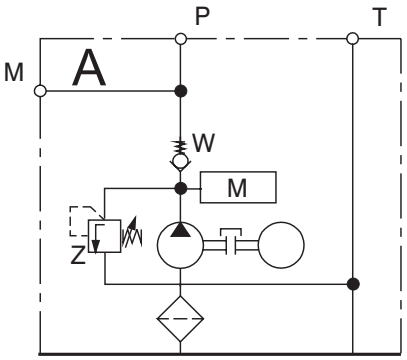


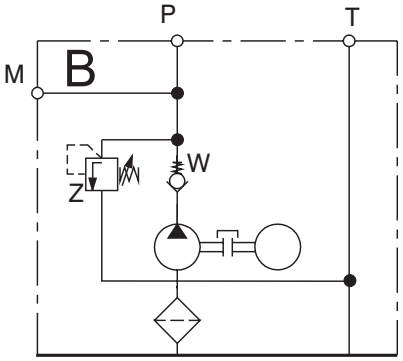
12 V	24 V	HP	(kW)	Protection degree - insulation class
Code of the electric motor				
45	/	1	(0.7)	IP 44
/	44	1	(0.8)	IP 44
/	46	1-1/2	(1.2)	IP 44
51	/	2	(1.5)	IP 54
/	52	2-1/2	(2.0)	IP 54
/	63	4	(3.0)	IP 20

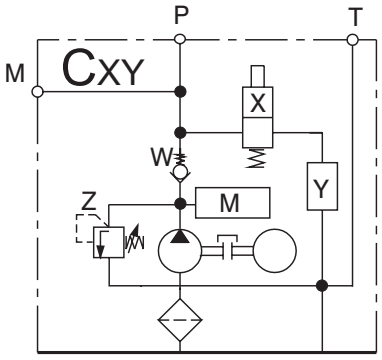
Attention! The DC motors must be loaded. so as to reduce the revolutions! Do not run the motors without pressure loading!

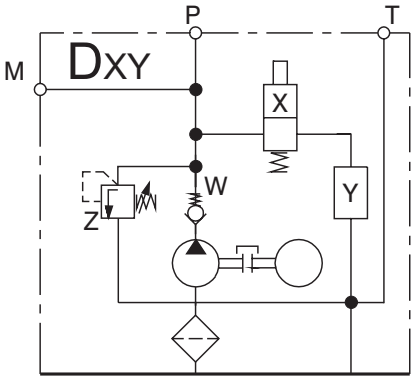
Voltage limits for the switch (between terminals 5 and 6) - min.18 V for 24 V nominal
- min. 9 V for 12 V nominal

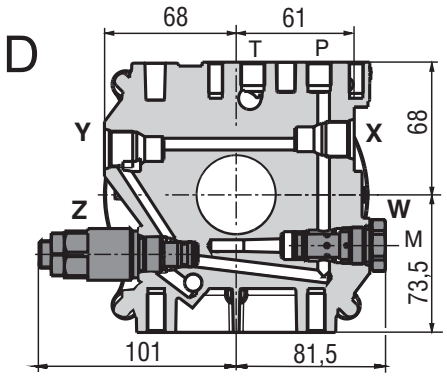
In the case of rotation speed control keep the speed limits of the gear pump - see Gear Pumps catalog.

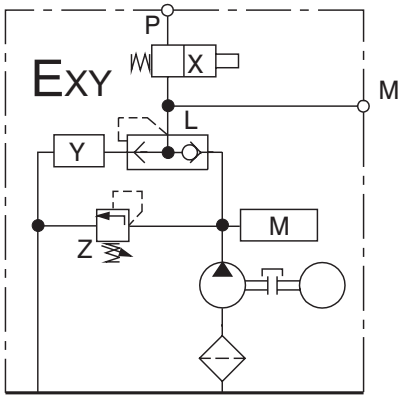


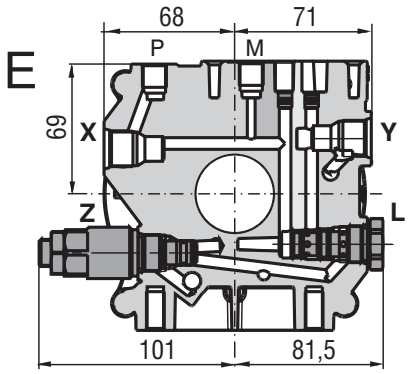


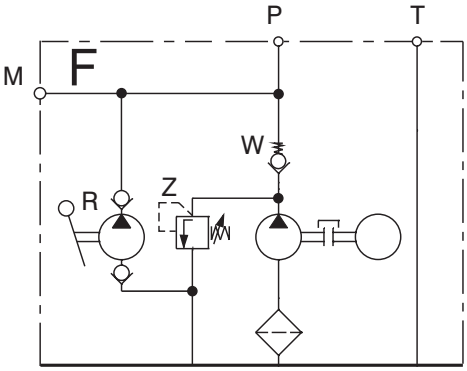


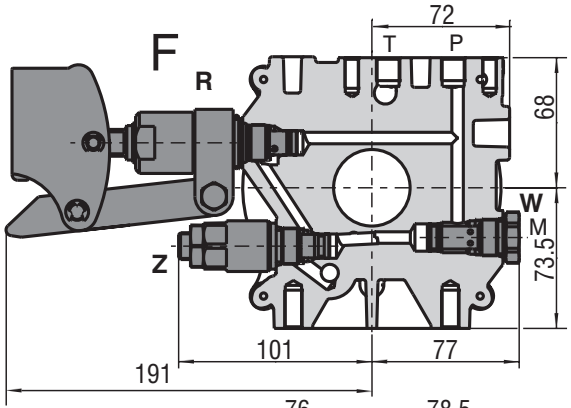


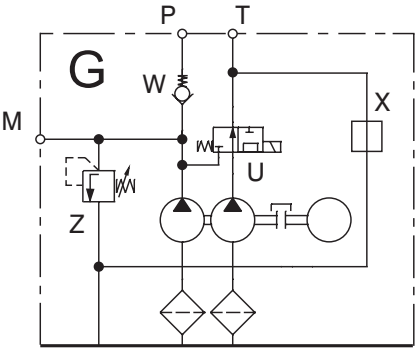






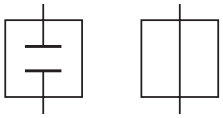


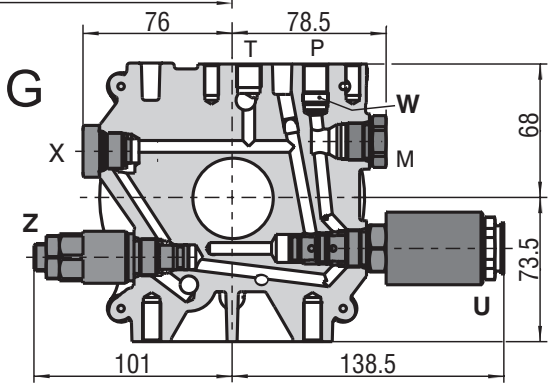


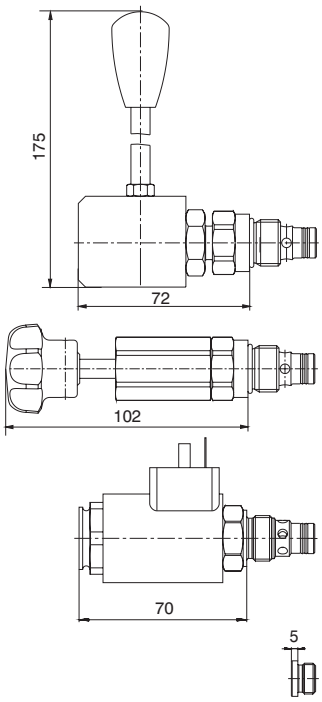


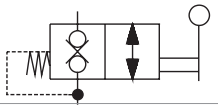
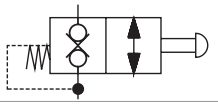
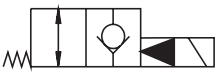
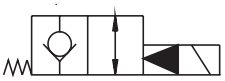
PLUG in the Cavity X:

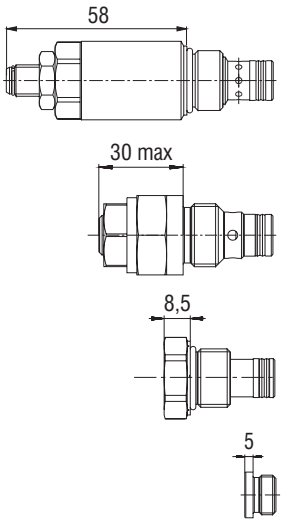
15960800 17250900



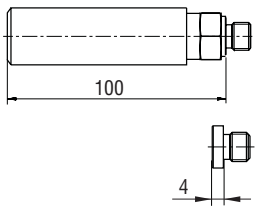


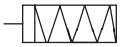


X	X	Functional symbol
4	SD1M-A2/L2S5-2*	
3	SD1M-A2/L2S5-1*	
2	SD3E-A2/*2O2*	
1	SD3E-A2/*2L2*	
0*	17250900	



Y	Type of the throttle valve	Functional symbol
2	SF22A-A2/H**	
**The size of the throttle valve corresponds regularly with the flow rate Q of the pump used. Other throttle valve size on request of the customer.		
1	ST21A-A2/L20S	
0	15960800 for X=0	
0	17250900 for X≠0	



M	Type	Symbols
M*	Starting module	
0*	Plug VSTI G1/4	

*Exact position of the starting module or plug ... ref. page 18

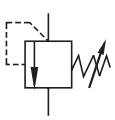
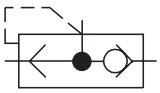
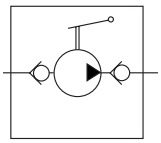
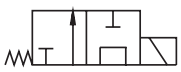
Z	W		L	R	U
Pressure relief valve directly operated	Check valve		Load shuttle	Hand pump	Unloading valve
SR1A-A2/S (HA 5063)	SC1F-A3 (HA 5016)	VJ01-06/SG-01	SH1F-A3 (HA 5029)	RC 3/4-16UNF	SD2E-A3/H (HA 4041)
	A, B, C, D, F	G (HA 5004)	E	F (HA 2020)	G
					

Table of Dimensions Dimensions of Electric Motors in millimeters

AC Electric Motor one-phase and three-phase							
Code of EM	Power [kW]	Voltage [V]	Current [A]*	Speed [1/min]*	B max. [mm]	C max. [mm]	∅ D [mm]
1	0.12	230	1.30	1300	248	139	120
2	0.18	230	1.70	1350	248	139	120
3	0.25	230	2.13	1390	261	151	141
4	0.37	230	2.82	1410	261	151	141
5	0.55	230	5.00	1370	305	157	159
6	0.75	230	6.00	1410	305	157	159
7	1.10	230	8.20	1410	314	165	174
8	1.50	230	10.00	1410	339	165	174
9	0.12	400	0.65	1320	248	101	120
10	0.18	400	0.78	1320	248	101	120
11	0.25	400	0.83	1395	261	105	140
12	0.37	400	1.14	1400	261	105	140
13	0.55	400	1.51	1390	305	127	159
14	0.75	400	1.98	1400	305	127	159
15	1.10	400	2.78	1410	314	139	174
16	1.50	400	3.61	1410	339	139	174
17	2.20	400	5.07	1425	390	148	196
18	3.00	400	6.66	1425	390	148	196
19	0.18	230	1.52	2840	248	139	120
20	0.25	230	1.90	2840	248	139	120
21	0.37	230	2.90	2780	261	151	141
22	0.55	230	4.10	2820	261	151	141
23	0.75	230	5.45	2820	305	157	159
24	1.10	230	8.00	2845	305	157	159
25	1.50	230	11.50	2855	314	165	174
26	2.20	230	14.80	2810	339	165	174
27	0.18	400	0.56	2745	248	101	120
28	0.25	400	0.73	2740	248	105	120
29	0.37	400	1.00	2790	261	105	140
30	0.55	400	1.40	2820	261	105	140
31	0.75	400	1.80	2850	305	127	159
32	1.10	400	2.54	2850	305	127	159
33	1.50	400	3.50	2855	314	139	174
34	2.20	400	4.95	2855	339	139	174
35	3.00	400	6.35	2860	390	148	196

DC Electric Motor								
Code of EM	Power [kW]	Voltage [V]	Current [A]*	Speed [1/min]*	Load factor *	B [mm]	C [mm]	D [mm]
44	0.8	24	40	3300	S2 - 2.5 min S3 - 7 % ED	143	97	80
45	0.7	12	135	3300	S2 - 2.5 min S3 - 4 % ED	165	97	80
46	1.2	24	90	3000	S2 - 1.2 min S3 - 4 % ED	172	100	80
51	1.5	12	220	2600	S2 - 2 min S3 - 7.5 % ED	179	114	117
52	2.0	24	140	2600	S2 - 1.2 min S3 - 4.5 % ED	179	114	117
63	3.0	24	200	1700	S2 - 16 min S3 - 10 % ED	336	134	162

*Valid for rated power values

Load factor

Duty S1 (min) – Intended for use under continuous duty cycle conditions (load factor S1) for various press-related applications and those which involve dynamic strokes, with recommendation to consult the conditions of use with manufacturer.

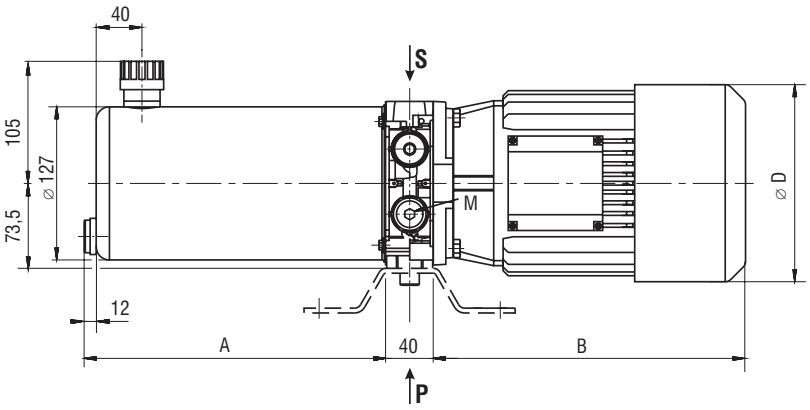
Duty S2 (min) - short-time operation

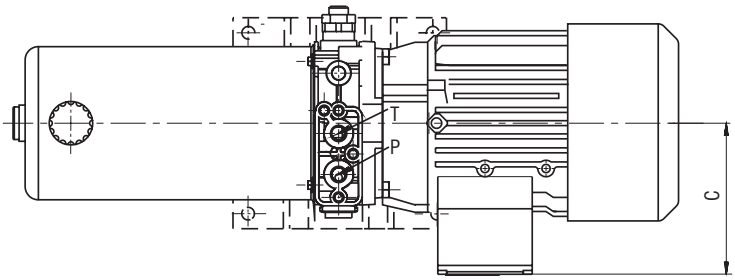
The motor operates with constant load for a definite time until the motor reaches the maximum permissible temperature T max. It is followed by an idle period long enough to reach equality between motor temperature and ambient temperature.

Duty S3 (% ED) - periodic operation

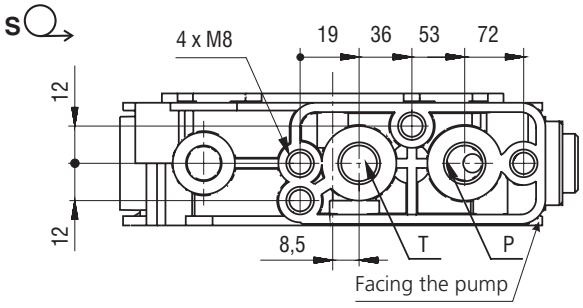
The operation of the motor is a continuous sequence of identical cycles, each compound from a load period and an idle period. During the load period the motor can reach the maximum permissible temperature. S3 value shows, in percentage, the length of the load period with respect to the total cycle-load period more idle period. The S3 curve quoted in the performance specifications is referred to a lenghts cycle of 10 minutes.

Power pack with cylindrical steel tank, one-phase and three-phase motors
- mounting position horizontal

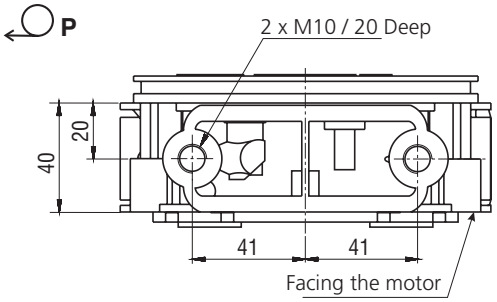




Connecting Block

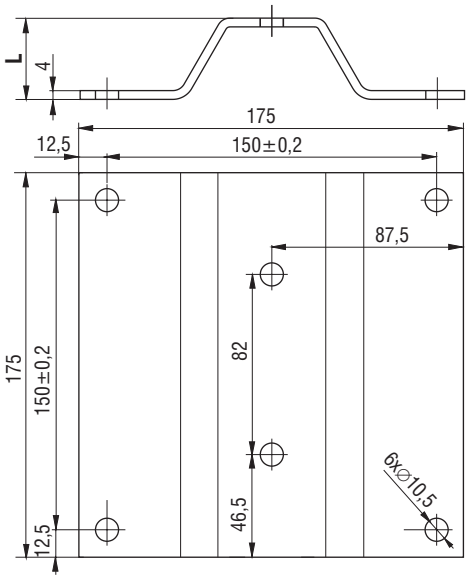


Connecting Holder

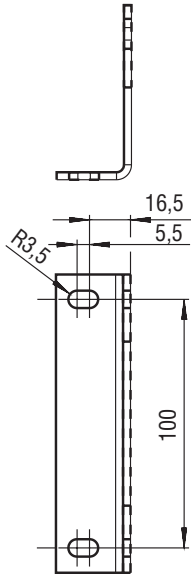


Code of the tank	Tank capacity [l]	Working volume [l]	A [mm]
10 (steel)	1.5	0.8	152
11 (steel)	2	1.1	252
12 (steel)	3	1.6	332
13 (steel)	4	2	412

Dimensions B, C, Ø D see Table of Dimensions - page 10



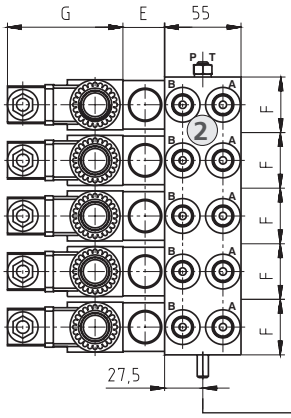
Power pack foot bracket	
Typ	Dimensions L [mm]
F	37
K	62



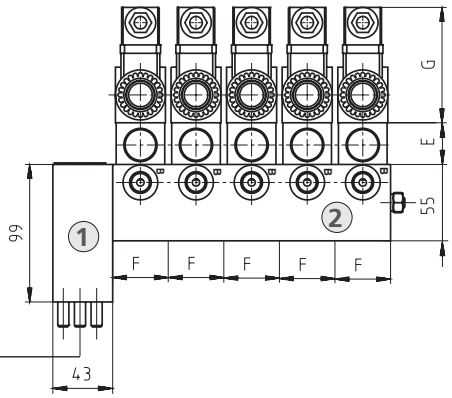
Tank Support
code 64-70 with holder
of power pack
configuration F

Base Plates and Parallel Plates

Configuration **A**
Size 04, 06

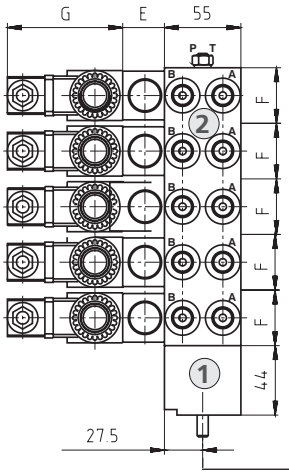


Configuration **B**
Size 04, 06

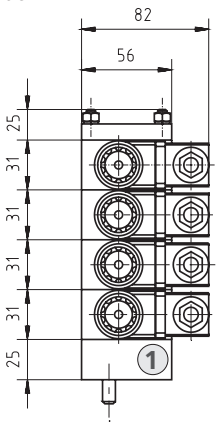


1	Base Plate
2	Parallel Plate

Configuration **C**
Size 04, 06

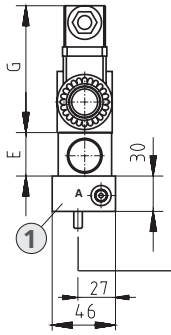


Configuration **D**
Size 03

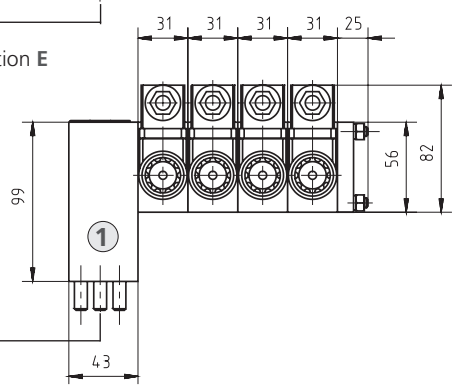


1	Base Plate
2	Parallel Plate

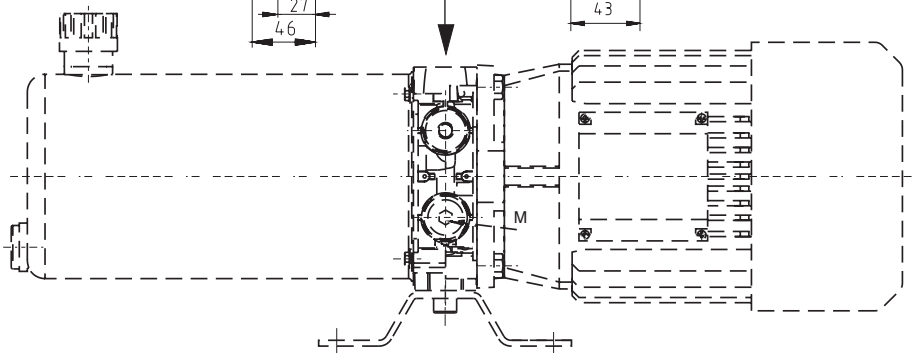
Configuration **F**
Size 04, 06



Configuration **E**
Size 03



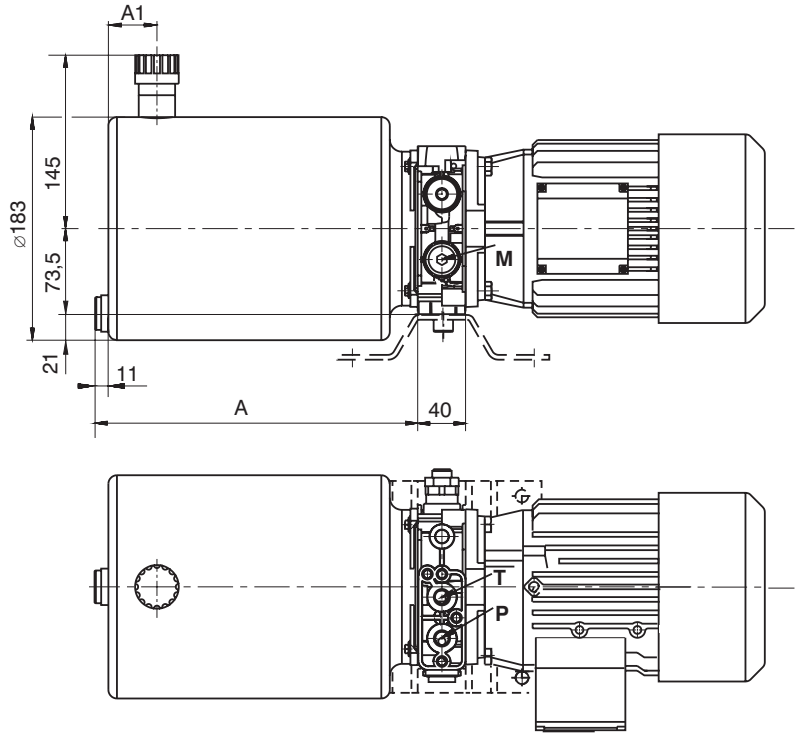
1	Base Plate



Thread of the connecting ports A, B, P, T, M - G1/4 standard (A, B - G3/8 option)

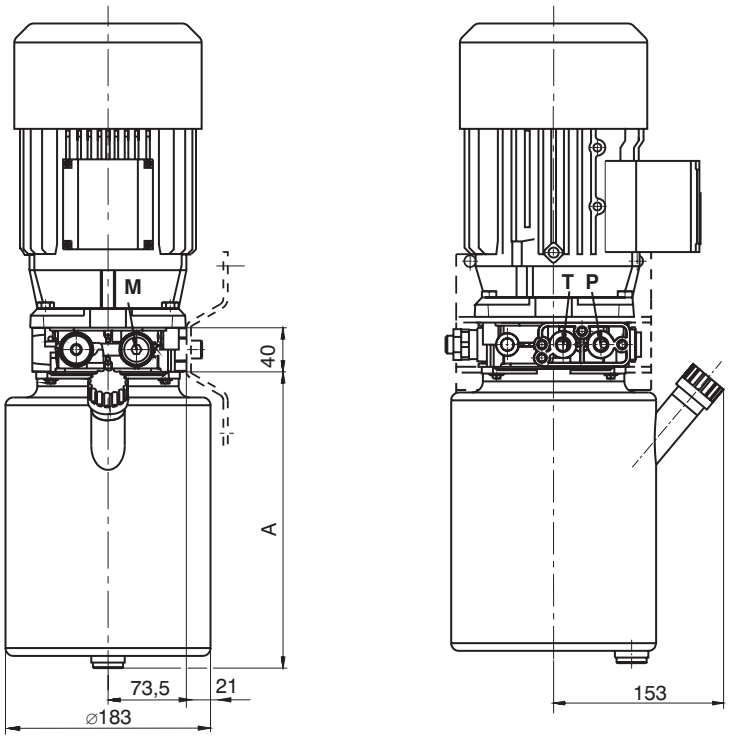
Dimension	E [mm]						F [mm]	G [mm]
	Pressure switch	Reducing valves	Pressure relief valves	Pilot operated check valves cartridge	Check valves	Flow valves		
Size 04	35	30	35	30	30	30	40	79
Size 06	43	45	40	40	31.4	40	50	92

Power pack with cylindrical steel tank - mounting position horizontal



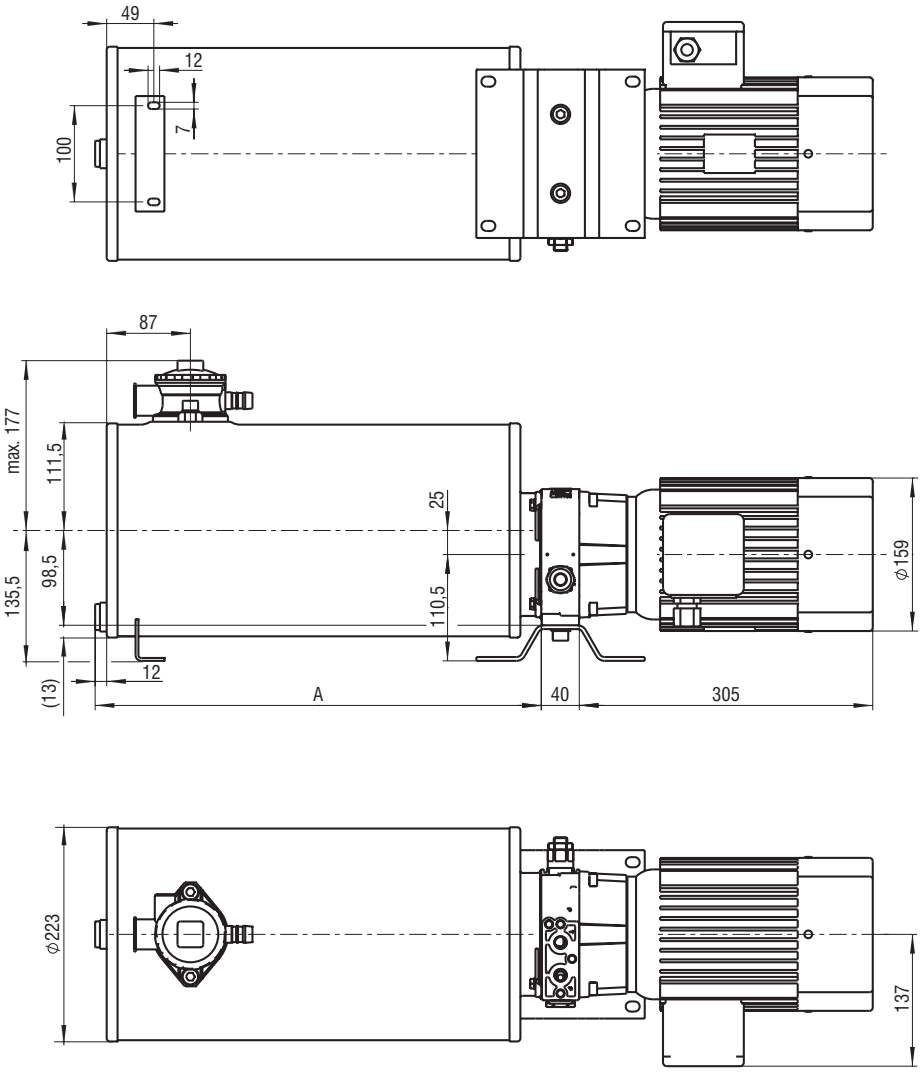
Code of the tank	Tank capacity [l]	Working volume [l]	A [mm]	A1 [mm]
20 (steel)	6	3.7	269	40
22 (steel)	8	4.9	349	155
24 (steel)	10	6.1	429	195

Power pack with cylindrical steel tank - mounting position vertical



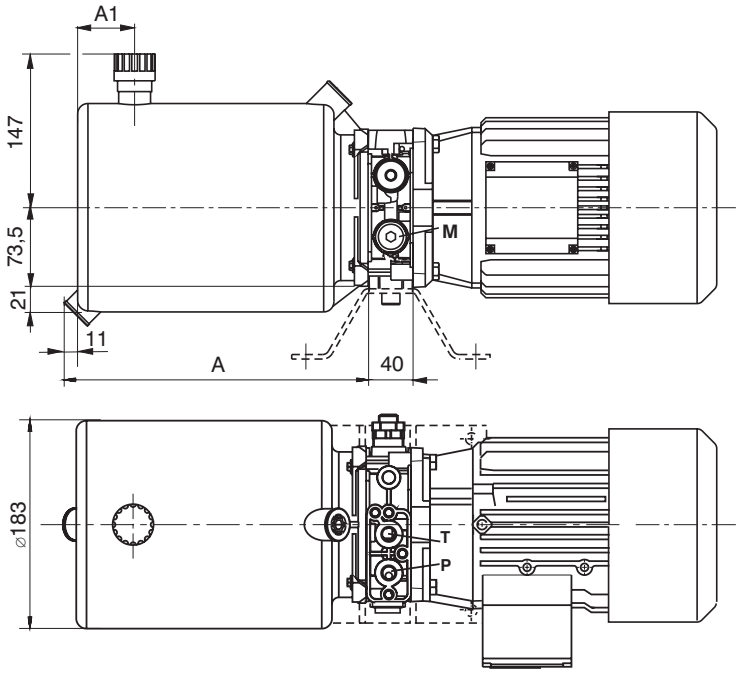
Code of the tank	Tank capacity [l]	Working volume [l]	A [mm]
51 (steel)	6	3.4	269
53 (steel)	8	5.4	349
55 (steel)	10	7.4	429

Power pack with cylindrical steel tank - mounting position horizontal



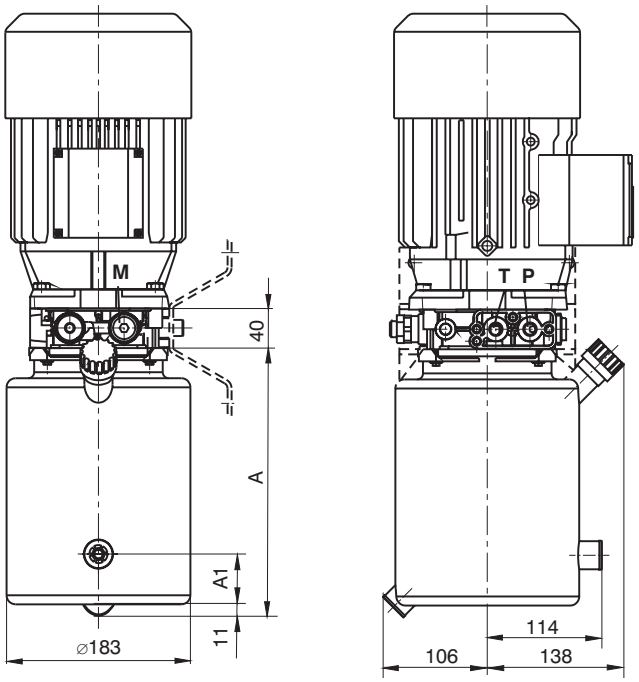
Code of the tank	Tank capacity [l]	Working volume [l]	A [mm]	B [mm]
30 (steel)	9	7.5	304	188
31 (steel)	15	12	464	348
32 (steel)	25	20	724	608

Power pack with cylindrical plastic tank - mounting position horizontal
Plastic tanks are not UV stable. Place the unit in the shade for outdoor application.



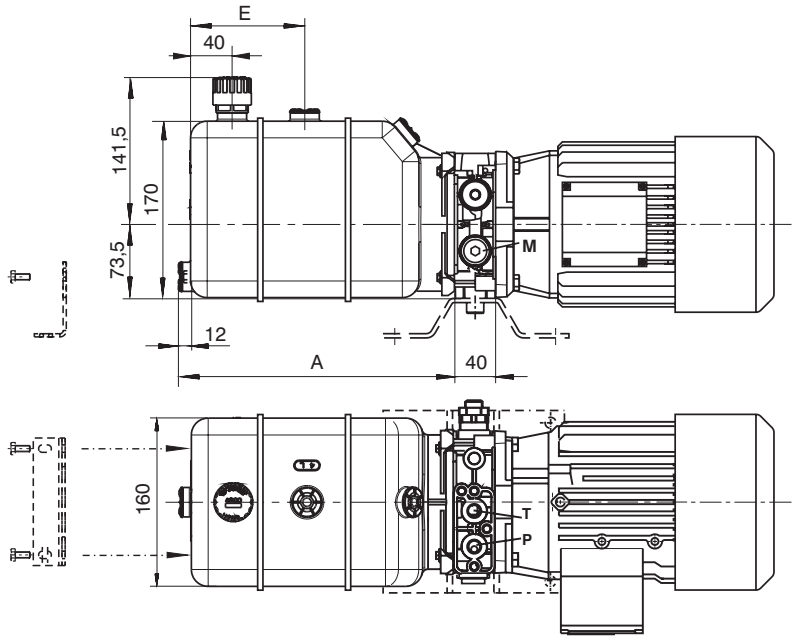
Code of the tank	Tank capacity [l]	Working volume [l]	A [mm]	A1 [mm]
40 (plastic)	6	3.7	280	61
42 (plastic)	8	4.9	360	121
44 (plastic)	10	6.1	440	201

Power pack with cylindrical plastic tank - mounting position vertical
Plastic tanks are not UV stable. Place the unit in the shade for outdoor application.



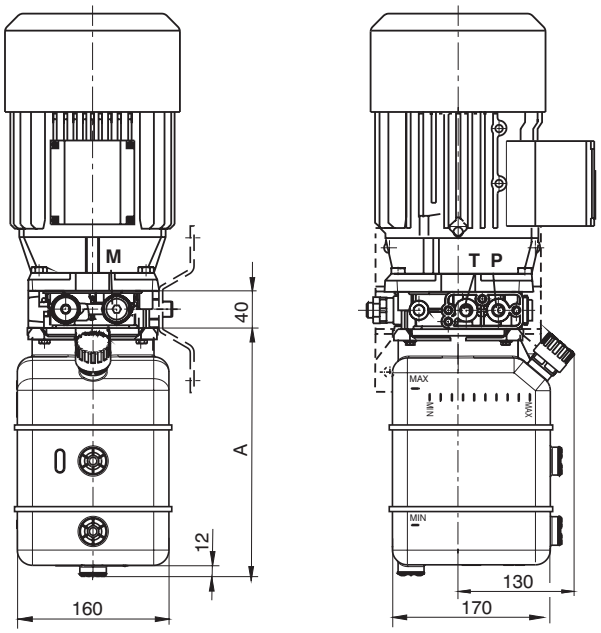
Code of the tank	Tank capacity [l]	Working volume [l]	A [mm]	A1 [mm]
41 (plastic)	6	3.7	280	61
43 (plastic)	8	4.9	360	121
45 (plastic)	10	6.1	440	201

Power pack with square plastic tank - mounting position horizontal
Plastic tanks are not UV stable. Place the unit in the shade for outdoor application.



Code of the tank	Tank capacity [l]	Working volume [l]	A [mm]	E [mm]
62 (plastic)	2	1.7	178	-
64 (plastic)	4	3.0	270	120
66 (plastic)	6	4.5	359	165
68 (plastic)	8	6.0	449	208
70 (plastic)	10	7.5	543	208

Power pack with square plastic tank - mounting position vertical
Plastic tanks are not UV stable. Place the unit in the shade for outdoor application.



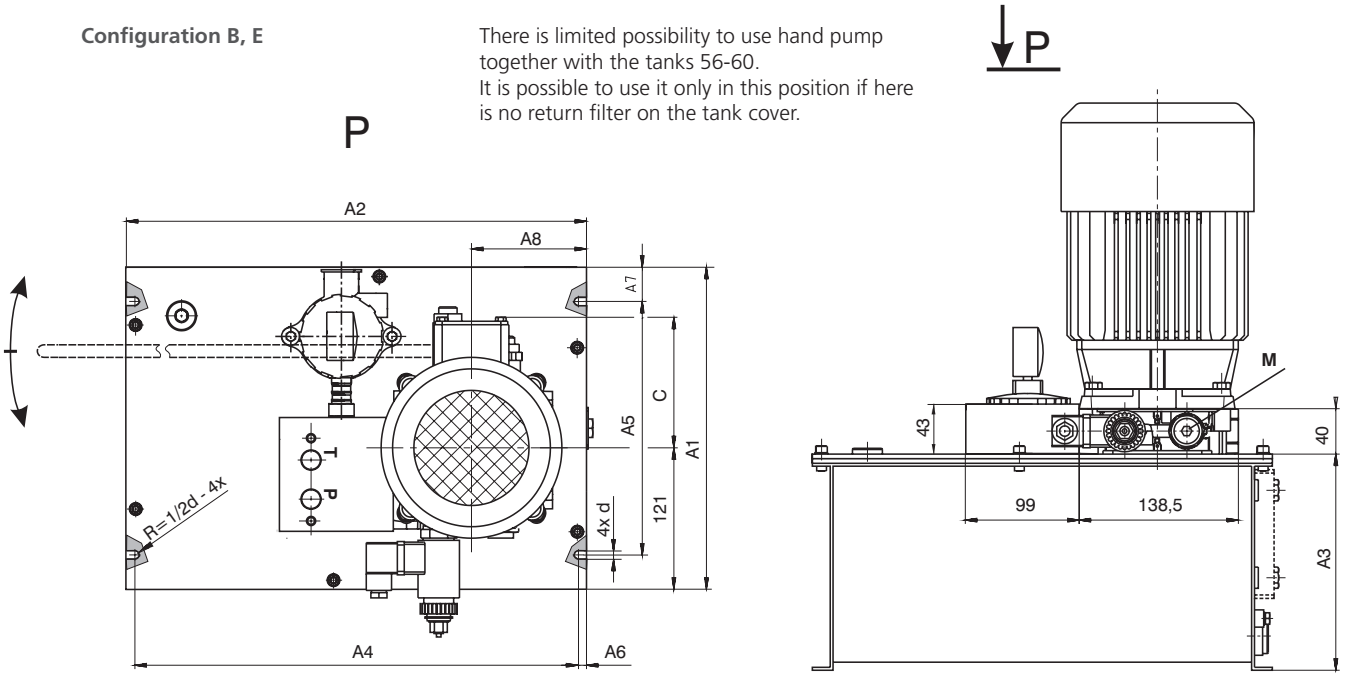
Code of the tank	Tank capacity [l]	Working volume [l]	A [mm]
61 (plastic)	2	1.3	178
63 (plastic)	4	3.5	270
65 (plastic)	6	5.5	359
67 (plastic)	8	7.5	449
69 (plastic)	10	9.5	543

Tank Dimensions Dimensions in millimeters

Power pack with square steel tank - one-phase and three-phase motors with return line filter

Configuration B, E

There is limited possibility to use hand pump together with the tanks 56-60.
It is possible to use it only in this position if here is no return filter on the tank cover.

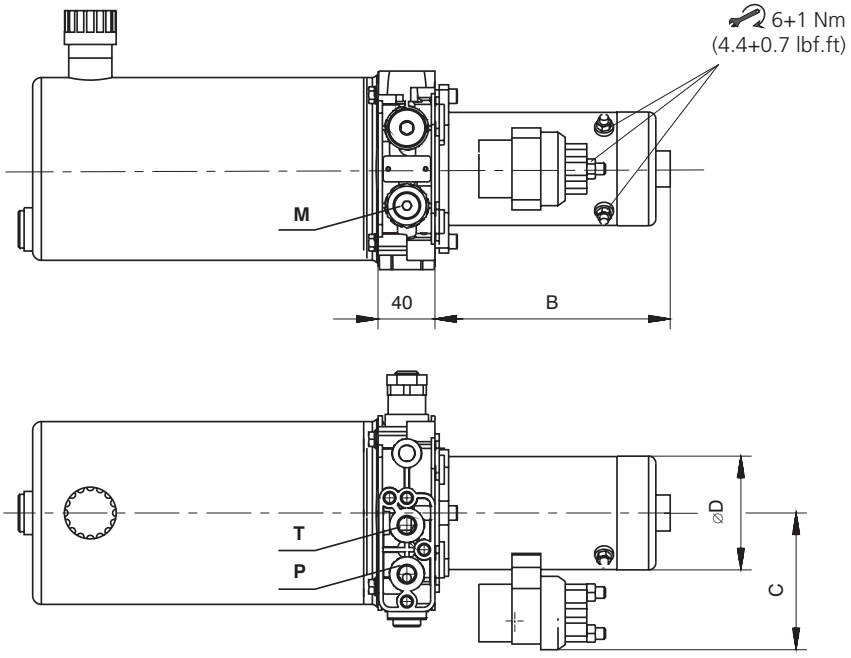


Code of the tank	Tank capacity [l]	Working volume [l]	A1	A2	A3	A4	A5	A6	A7	A8	d
56 (steel)	8	4.5	280	340	165	319	220	10.5	30	100	9
57 (steel)	10	8	280	400	188	388	220	6	30	100	9
58 (steel)	20	16	280	400	276	388	220	6	30	100	9
59 (steel)	30	24	320	500	287	479	260	9.5	30	132	11
60 (steel)	40	34	320	500	366	479	260	9.5	30	132	11

Dimensions C see Table of Dimensions - page 10

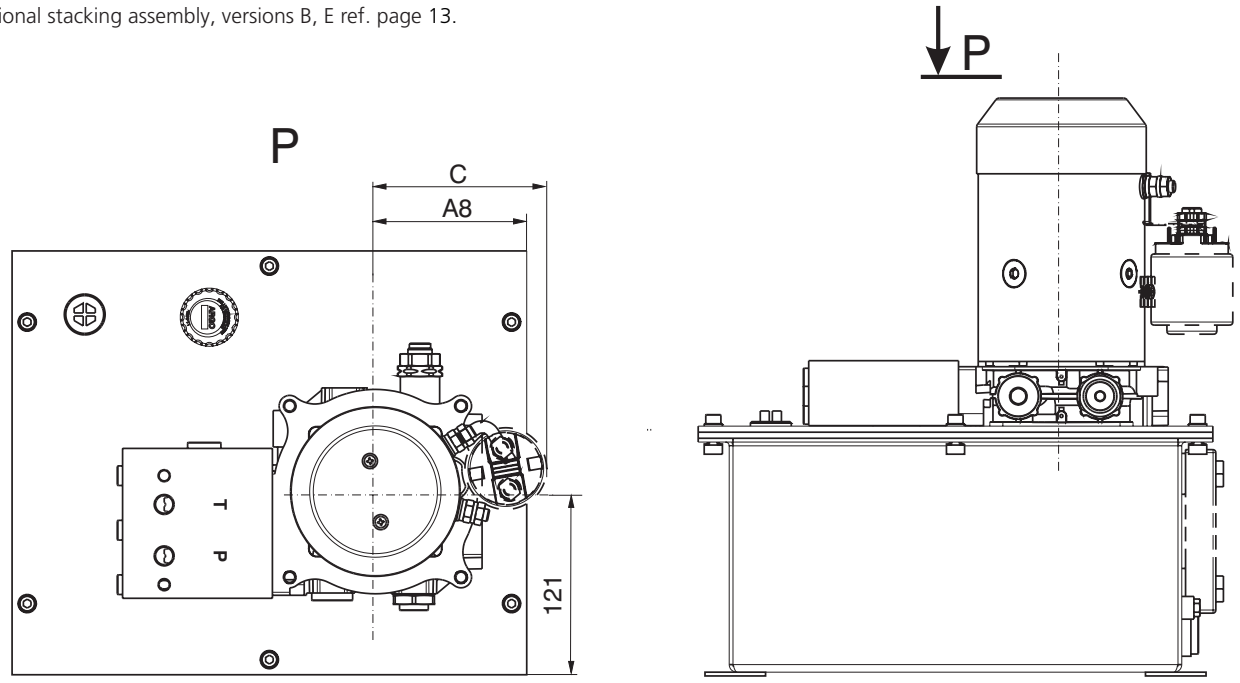
Power Pack Dimensions in millimeters

Power pack with cylindrical steel tank - with DC electric motor without return line filter



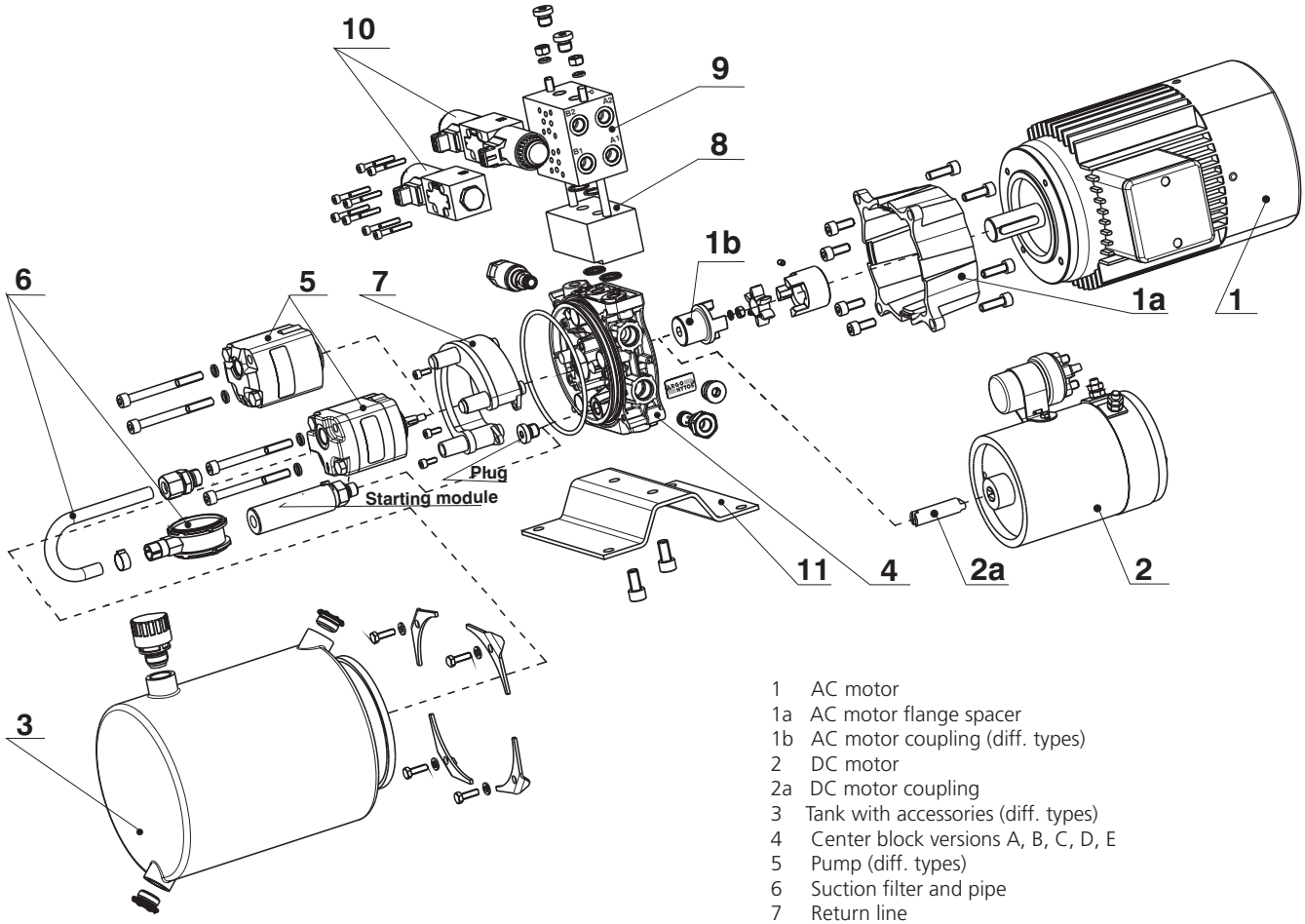
Power pack with square steel tank - with DC electric motor without return line filter

Optional stacking assembly, versions B, E ref. page 13.



Dimensions B, C, ∅ D see Table of Dimensions - page 10
Dimensions A8 see Table of Dimensions - page 17

SMA05 - Illustration Figure



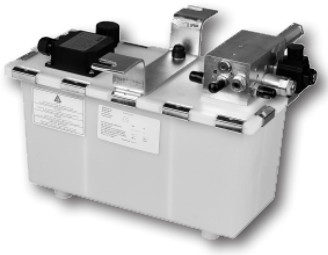
1 AC motor
1a AC motor flange spacer
1b AC motor coupling (diff. types)
2 DC motor
2a DC motor coupling
3 Tank with accessories (diff. types)
4 Center block versions A, B, C, D, E
5 Pump (diff. types)
6 Suction filter and pipe
7 Return line
8 Base-plate for different types of stacking assembly
9 Cover plate for horizontal stacking
10 Stacking assembly valves
11 Foot bracket

Hydraulic Power Pack with Under Oil Motor

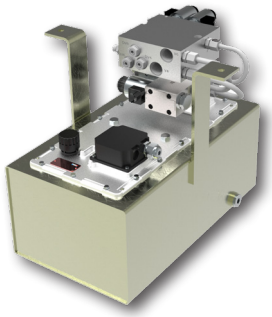
SPA 01

Q_{max} 10 l/min • p_{max} 250 bar • P_{max} 3 kW

Example: plastic tank version



Example: steel tank version additional valves in stacking assembly



Technical Features

- AC electro-hydraulic compact unit with under oil motor
- Compact design with reduced overall dimensions for production cost saving
- Main applications are lifting platforms
- 3 central block basic circuits option
- Possibility of building up an additional circuit in the form of vertical or horizontal stacking assembly
- One- and three-phase motors with power ratings of up to 3 kW
- Tank capacities from 7 to 30 l with optional plastic tanks for cost saving
- In the standard version, the aluminium basic block is without surface protection and steel plate are zinc coated for 240 h protection acc. to ISO 9227

Functional Description

The under oil power packs are designed for applications which require low noise levels as well as small envelope dimensions. They are designed to operated only occasionally, thus being suitable mainly for the use in lifting platforms, elevating tables and handling devices. Each power pack consists of an electric motor, a pump, a manifold and a tank. The aluminum body forms the base of the power pack, on which all the main components, including the hydraulic elements, are mounted. The function of the power packs is apparent from the respective hydraulic circuit diagrams. The desired combination of particular components and hydraulic elements can be defined by reference to the ordering code and the respective tables. The additional hydraulic circuits can be built up valve sizes 03 (RPEK), 04 (CETOP 02) and 06 (CETOP 03). The size 03 (RPEK) is in the form of a sectional directional valve.
The mounting position of the power pack is horizontal - see Power Pack Dimensions. The basic combinations of electric motors and pumps, as well as their code designations, are shown in table 1.

Technical Data

Flow rate	l/min	see table 1
Working pressure	bar	see table 1
Max. operating pressure	bar	see table 1
Tank capacity	l	7, 10, 20, 30
Type of hydraulic pump		Gear pump, CLOCKWISE
Electrical Motor power ratings	kW	0.55 - 3
Type of electric motor		one- and three-phase
Voltage of electric motor	V	230 / 400
Duty cycle S3 of electric motor	%	20
Frequency	Hz	50
Protection degree of power unit		IP 55
Viscosity range	mm²/s	20 ... 100
Fluid temperature range	°C	-20 ... +80
Ambient temperature max.	°C	+50
Thread of functional ports P, T, M		G1/4
	Data Sheet	Type
General information	GI_0060	Products and operating conditions

Ordering Code

SPA 01 - [ ] / [ ] . [ ] - [ ] - [ ] - [ ] [ ] / [ ]

Under oil power pack

Pump displacement in cm³

0.8	**08**	3.6	**36**
1.2	**12**	4.4	**44**
1.6	**16**	4.8	**48**
2.1	**21**	5.8	**58**
2.5	**25**	6.2	**62**
3.3	**33**	7.9	**79**

Code of the electric motor - see table 1

Start-up module

without start-up module	**0**
with start-up module	**M**

Type of the block - see page 3

Code of the tank

7 l	**7**
10 l	**10**
20 l	**20**
30 l	**30**

Solenoid voltage

01200	12 V DC	**06000**	60 V DC
01400	14 V DC	**10200**	102 V DC
02100	21 V DC	**20500**	205 V DC
02400	24 V DC	**02450**	24 V / 50 (60) HZ
04200	42 V DC	**11550**	115 V / 50 (60) HZ
04800	48 V DC	**23050**	230 V / 50 (60) HZ

Nominal size of stacking assembly elements

0	without stacking assembly
3	size 03
4	size 04
6	size 06

Number of add-on units

0	without stacking assembly
1	1 section
2	2 sections
3	3 sections
4	4 sections
5	5 sections

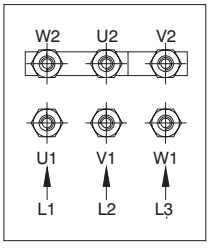
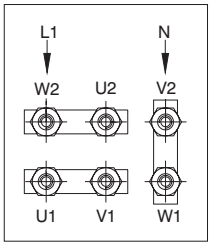
Tab. 1a

Code of the electric motor			Code of the pump					
			08 GP1..	12 GP1..	16 GP1..	21 GP1..	25 GP1..	33 GP1..
p_{max}** [bar]			250					
rpm [1/min]	400 V	kW	Q/p_n*[l/min]/[bar]					
1500	13	0.55		1.5/175	2.0/130	2.6/100	3.1/85	4.2/65
	14	0.75			1.9/190	2.5/145	3.0/120	3.9/90
	15	1.10			2.1/200	2.8/190	3.3/160	4.4/120
	16	1.50					3.2/200	4.2/170
	17	2.20						
	18	3.0						
3000***	30	0.55	2.2/120	3.2/80	4.3/60	5.6/45	6.7/40	8.9/30
	31	0.75	2.2/160	3.2/110	4.3/80	5.6/65	6.7/55	8.9/40
	32	1.10	2.2/200	3.2/165	4.3/120	5.6/95	6.7/80	8.9/60
	33	1.50		3.2/200	4.3/165	5.6/130	6.7/110	8.9/80
	34	2.20			4.2/200	5.5/190	6.6/160	8.7/120
	35	3.00					6.4/200	8.5/170
rpm [1/min]	230 V	kW	Q/p_n*[l/min]/[bar]					
1500	5	0.55		1.6/165	2.1/125	2.7/100	3.2/80	4.3/60
	6	0.75		1.6/200	2.1/170	2.8/130	3.3/110	4.4/80
	7	1.10				2.8/190	3.3/160	4.4/120
	8	1.50					3.3/200	4.4/165

Tab. 1b

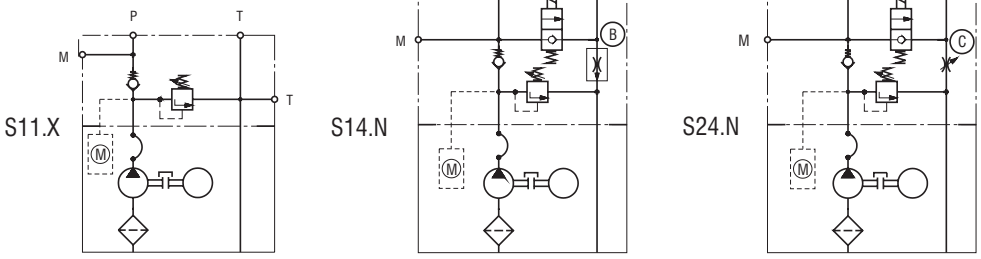
Code of the electric motor			Code of the pump					
			36 GP1..	44 GP1..	48 GP1..	58 GP1..	62 GP1..	79 GP1..
p_{max}** [bar]			250			200		160
rpm [1/min]	400 V	kW	Q/p_n*[l/min]/[bar]					
1500	13	0.55	4.5/60	5.5/50	6.0/45	7.3/35	7.8/35	9.9/25
	14	0.75	4.3/85	5.2/70	5.7/65	6.9/50	7.4/50	9.4/40
	15	1.10	4.8/110	5.8/90	6.3/85	7.7/70	8.2/65	10.4/50
	16	1.50	4.6/155	5.6/130	6.2/115	7.4/100	8.0/90	10.1/70
	17	2.20		5.0/200	5.5/190	6.6/160	7.1/150	9.0/120
	18	3.00			5.9/200	7.1/200	7.6/180	9.7/150
3000***	30	0.55						
	31	0.75	9.7/35					
	32	1.10	9.7/55	11.8/45	12.9/40	15.6/35		
	33	1.50	9.7/75	11.8/60	12.9/55	15.6/45	16.7/40	
	34	2.20	9.5/110	11.6/90	12.7/85	15.3/70	16.4/65	20.9/50
	35	3.00	9.3/155	11.3/125	12.4/115	15.0/95	16.0/90	20.4/70
rpm [1/min]	230 V	kW	Q/p_n*[l/min]/[bar]					
1500	5	0.55	4.7/55	5.7/45	6.2/40	7.5/35	8.0/30	10.2/25
	6	0.75	4.8/75	5.9/60	6.4/55	7.7/45	8.3/45	10.5/35
	7	1.10	4.8/110	5.9/90	6.4/80	7.7/70	8.5/65	10.5/50
	8	1.50	4.8/150	5.9/120	6.4/110	7.7/95	8.5/85	10.5/70

*p_n - nominal pressure = the highest working pressure allowed without time restriction
**p_{max} - maximum pressure = maximum pressure allowed for a short time - max. 20 s
***Before motor selection contact the producer.

AC Motors	3-phase	1-phase
Phase-connections for correct direction of motor rotation		

Type of the Block

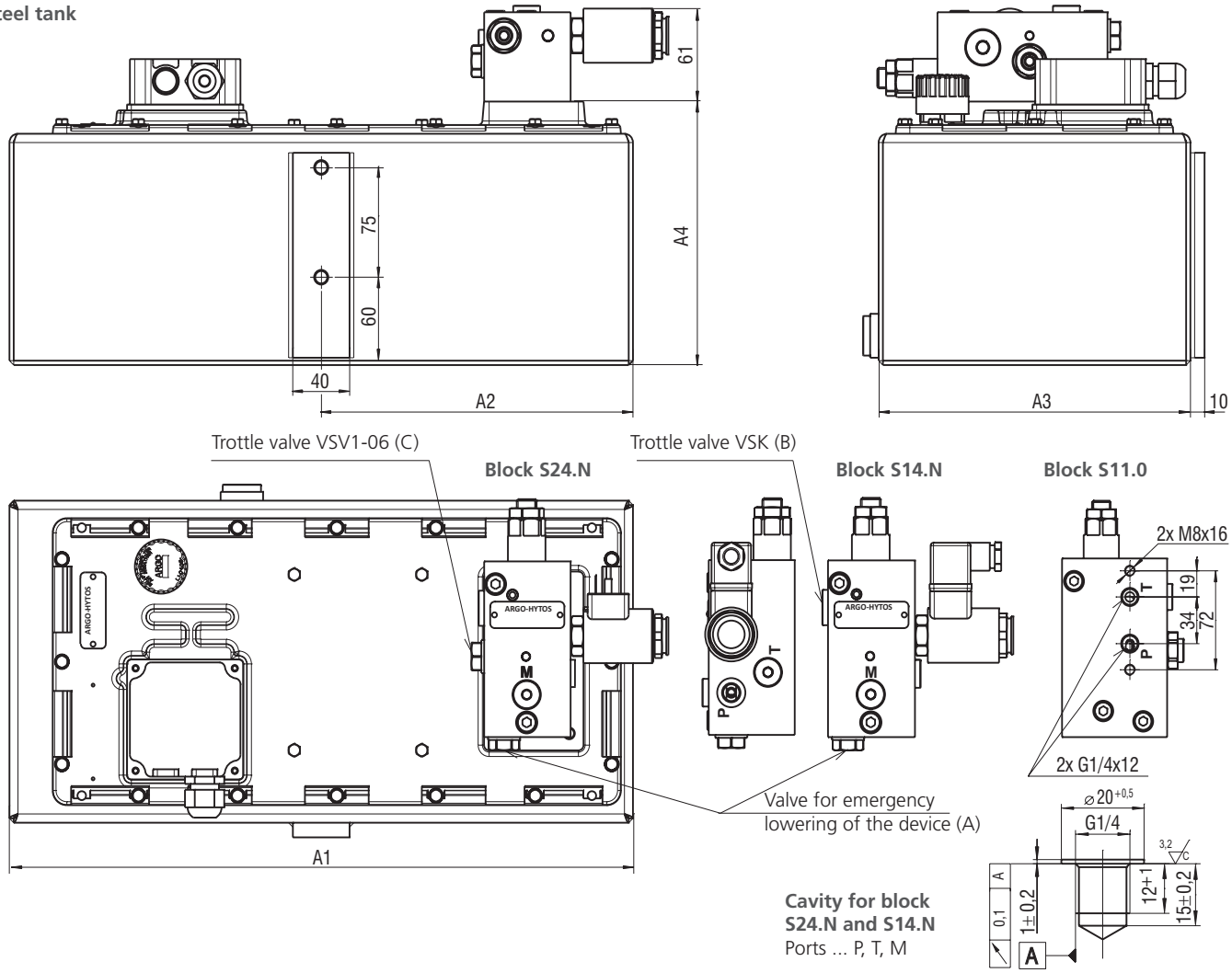
S11.0 Connecting face for valves size 04, 06
S11.1 Connecting face for valves size 03



The hydraulic circuit S11.X enables the power pack to be used as a simple pressure supply for general applications with the possibility to build up additional hydraulic circuits in the form of horizontal stacking assemblies of the size 04 or 06 (S11.0) or size 03 (S11.1).
The hydraulic circuits S14.N and S24.N enable the power pack to be used as pressure supply for lifting platforms and other devices, in which the mass of the system provides returning into the basic position. The shuf-off valve (A) enables emergency lowering of the device, should a disconnection of the supply voltage occur.
The hydraulic circuit S14.N comprises a flow control valve VSK (B) which is adjustable only in a certain range (see cataloge VSK - HA 5121). This valve is accessible from outside of the block. If not otherwise required, a valve VSK is mounted into the block. The stabilized flow rate of this valve corresponds with the respective flow rate of the power pack (see Tab. 1).
The hydraulic circuit S24.N comprises a throttle valve VSV1-06 (C) without pressure compensation. This valve is accessible from outside of the block.
M - start-up module is suitable for one-phase E-motors (codes 5-9).
Use it if there is no possibility to unload the pressure in the circuit.

Dimensions in millimeters (inches)

Steel tank

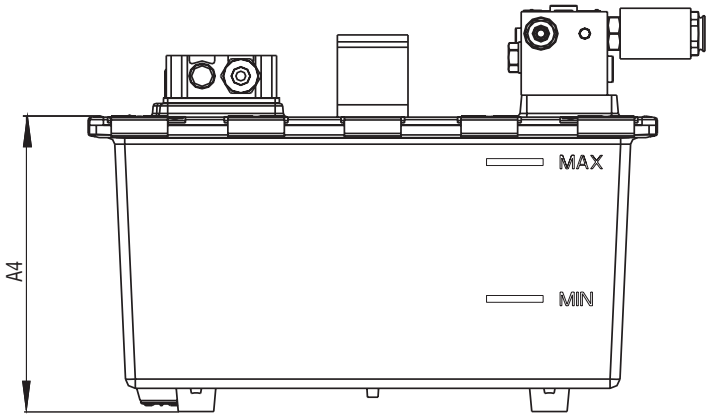


Cavity for block S24.N and S14.N
Ports ... P, T, M

Code of the tank	Tank Capacity [l]	Working volume [l]	A1 [mm]	A2 [mm]	A3 [mm]	A4 [mm]
10 (steel)	10	6	440	220	220	180
20 (steel)	20	10	500	220	260	222
30 (steel)	30	20	500	220	260	302

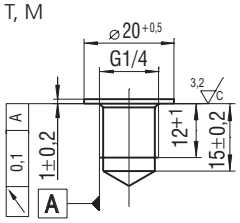
Plastic tank

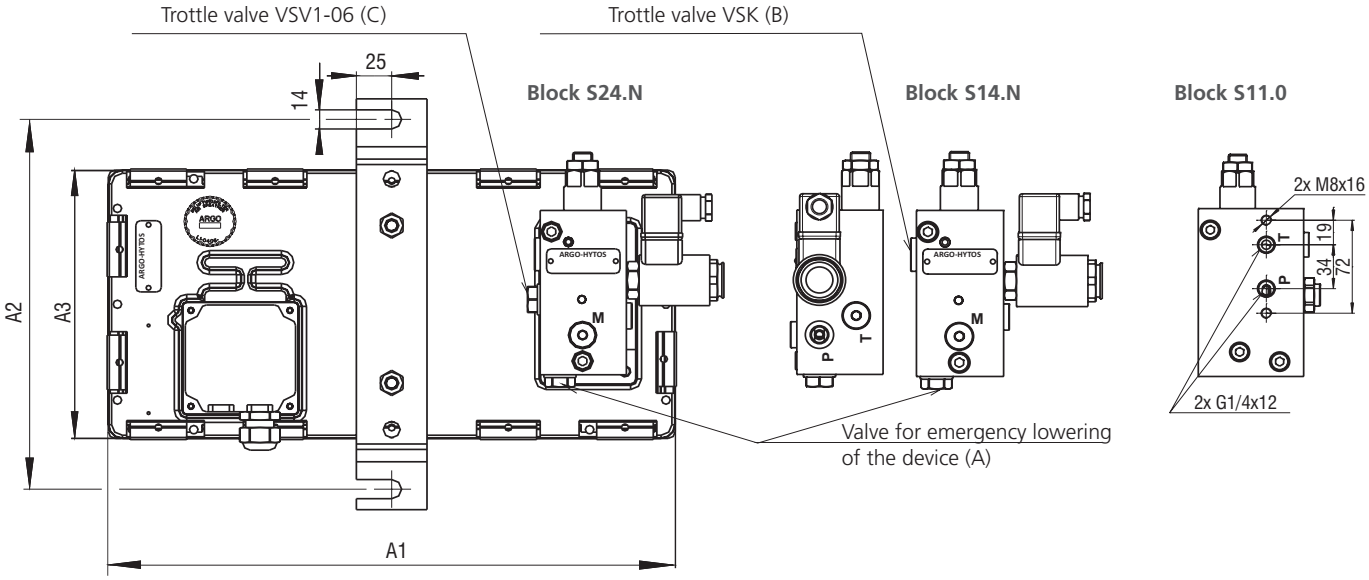
Plastic tanks are not UV stable. Place the unit in the shade for outdoor application.



Cavity for block S24.N and S14.N

Ports ... P, T, M





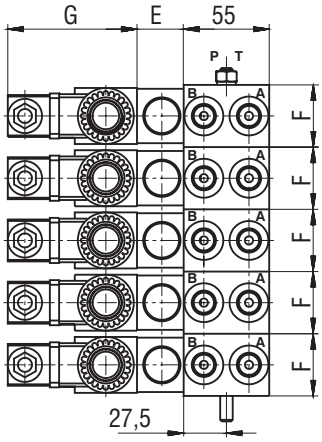
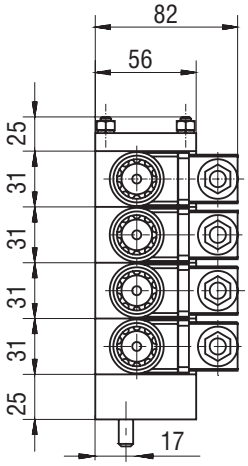
Code of the tank	Tank Capacity [l]	Working volume [l]	A1 [mm]	A2 [mm]	A3 [mm]	A4 [mm]
7 (plastic)	7	4	401	270	196	215

Example of horizontal stacking assembly

- possible only with hydraulic circuit S11.0

- possible only with hydraulic circuit S11.1

E - according to the elements used,
see datasheet of modular elements
HA 5021, HA 5023, HA 5051, HA 5093

F - Size 04=40 mm
Size 06=50 mm

G- Size 04=79 mm
Size 06=92 mm