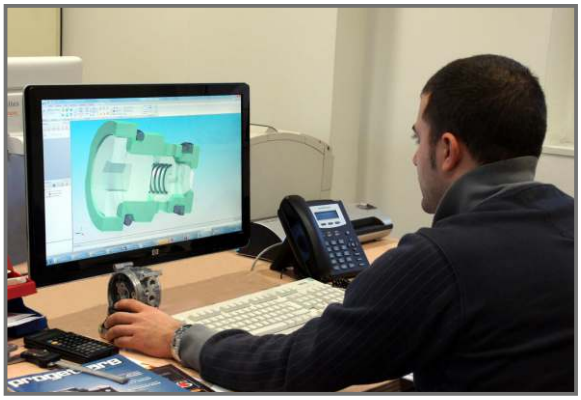
Hydronit®

2014
Hydraulic Power Packs
AC & DC Compact

sales@hydronit.com · +39 02 320 625 145

Why choose Hydronit?

- Complete focus on hydraulic components & modular power packs design, **continuous** research, development and **innovation**
- **Expertise** on hydraulic applications; design and development of **customised solutions**, including special manifolds, ex-proof units, proportional systems,...
- Organization fully based on processes and **Total Quality Management** principles, certified **ISO 9001:2008** and **ISO 50001:2011**
- Lean and **energy efficient** product design and manufacturing
- Mass production and **cost optimization**: hundreds of thousands of Hydronit modular power packs are now reliably running worldwide
- Flexible marketing policy: supply of loose hydraulic components and power packs either in kit or fully assembled and tested in accordance with **Machine Directive 2006/42/CE**
- Distributors, associate companies and partners in over **50 countries** worldwide



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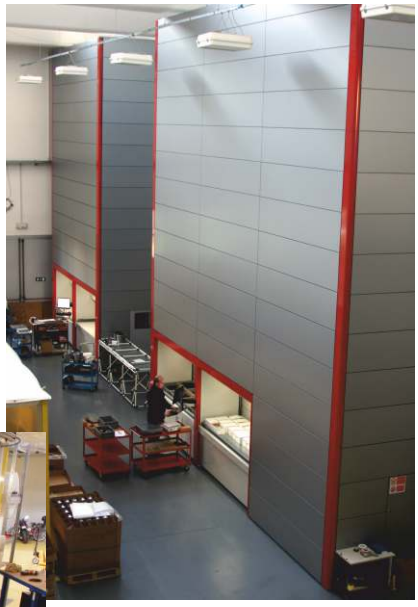
Hydronit - The sustainable factory

- Production is carried out in a building of 13000 m^3 **requiring almost no use of fossil fuels** to operate

- The **hyper insulation of the structure** through the use of materials, mainly natural, such as wood and cork, ensures a consumption of only 7,4 kWh/m^3/year for winter heating and for summer cooling only 3,2 kWh/m^3/year
- A **heat pump** provides **high efficiency** thermal regulation

- A system of 60 solar panels on the roof of the offices provides 13,8 kW of electrical power that contributes about 60% of the electricity consumed by the plant for its own operation
- **Solar thermal panels** provide hot water
- The **automatic wharehouses** and the line of **semi-automatic assembly** increase efficiency, reduce process paperwork and human errors, thus ensuring compliance with **stringent quality standards** and **repeatable test results**



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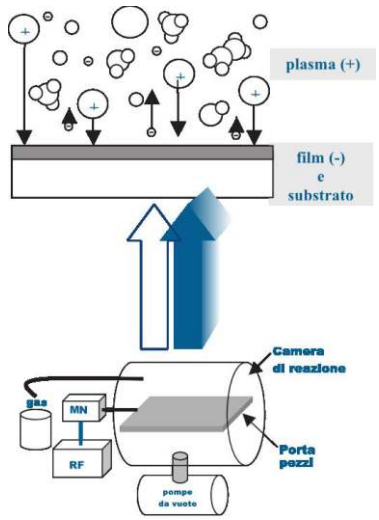
Continuous innovation

Hydronit Srl, in the pursuit of excellence, have dedicated a large part of their profits to **research and continuous development of the product**, in order to increase the performance, efficiency, durability and reliability over time, and for the **continuous improvement of the organization**, constantly monitoring parameters over thirty indicators of the efficiency and effectiveness of the organization as a whole.

Nanotechnology surface treatment

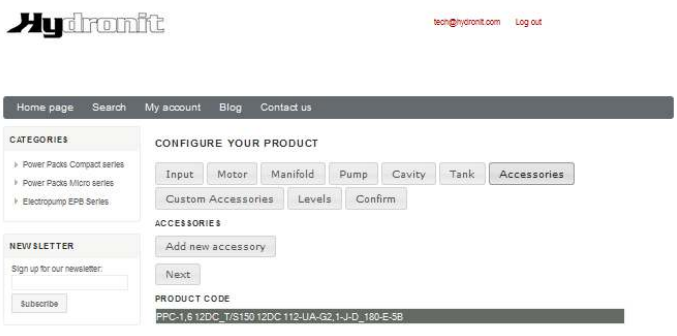
Hydronit Srl, in partnership with research institutions and external bodies, co-financed by the Lombardy Region, has initiated some years ago a project for the **development of advanced applications of plasma surface treatment of metallic materials**. In short it is the application of **nanotechnology** to hydraulic equipment to improve the performance of our units. We have obtained excellent results in the following fields: **improvement of the pressure tightness** of the aluminum die-casting; **improvement of the characteristics of surface hardness** of the treated components and a **remarkable increase in the corrosion resistance of the surface.** More information is available by contacting our sales department.

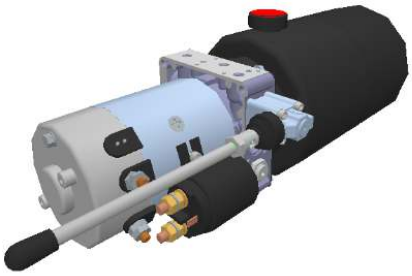


Treated manifold Nanotech Standard manifold

Exposure to salt spray > 300 hours

Product Configurator





Hydronit Srl has developed over the years a smart **Product Configurator** which allows the user, from a PC or mobile device web browser:
- to simply and quickly create the **speaking code** of the unit starting from the customer's specific requirements
- to **limit the possible errors** in the product configuration
- to obtain quickly the **unit description and parts list**, the **hydraulic diagram**, **instant 3D preview**, **weight**, **dimensions**, **price** and **terms of sale**. This facilitates a **reduced time-to-market** and provides full information on the power unit to be realized.

The access to the web configurator is offered free of charge to official partners of Hydronit Srl.

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Hydronit hydraulic range

Three main families: **Power Pack Micro, Power Pack Compact, Electropumps Bull** sharing the most core components allowing mass production and stock optimization.
Design, research & development according to **flexibility, modularity** and **efficiency** principles.

AC & DC MICRO hydraulic power packs

- Extremely **compact and lightweight**
- Flow: **0,2 ~ 6 l/min**
- Pressure up to **250 bar**
- DC motors up to **2,2 kW**
- AC motors up to **1,8 kW**
- High modularity: single & double acting & reversible circuits from the same micro central manifold
- Main valves **on one side** in most configurations for enhanced positioning in small machines

AC & DC COMPACT hydraulic power packs

- **Over 10 years** of serial production
- Hundred of thousands of power packs running worldwide
- Flow: **0,2 ~ 25 l/min**
- **Low pressure drop**
- Pressure up to **300 bar** (or more in special application)
- DC motors up to **4 kW**
- AC motors up to **7,5 kW**
- **High modularity**: single & double acting & reversible circuits from the same micro central manifold
- Ideal choice for hydraulic distributors & assemblers

DC electropumps

- **0,15 ~ 4 kW**, **12V e 24V DC** motors (same used in Compact and Micro power packs)
- Forced ventilation **for high cycle times**
- 0,19 ~ 7,9 cc/rev gear pumps (same used in Compact and Micro power packs. Available also lateral ports pumps)
- **Option:** relief valve, starter witch, thermal protection, foot mounting support

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POWER PACKS COMPACT speaking code

PPC	2,2 24DC_S	UB	K1,2	J	D_310	A24DC	R5	U	X	X	X	X
Power Pack Compact	Electric motor or Mounting kit	Central manifold	Gear pump	Cavity 0	Cavity 1	Cavity 2	Cavity 3	Cavity 4	Cav. 5	Cav. 6	Cav. 7	Cav. 8

DC Motors

0,15 12DC	12VDC 150W
0,15 24DC	24VDC 150W
0,3 12DC	12VDC 300W
0,3 24DC	24VDC 300W
0,5 12DC	12VDC 500W
0,5 24DC	24VDC 500W
0,8 12DC	12VDC 800W
0,8 24DC	24VDC 800W
1,6 12DC	12VDC 1600W
2,1 12DC	12VDC 2100W
2,2 24DC	24VDC 2200W
3 24DC	24VDC 3000W
4 24DC	24VDC 4000W
2,5HD 12DC	12VDC 2500W
3HD 24DC	24VDC 3000W
4HD 24DC	24VDC 4000W

DC Motors Options

_T	thermal switch
_S	starter switch
_FP	fan cooler 1,6÷4kW
_MC	plastic cover

AC 3 Phase Motors

E0,37AC 34 71	0,37kW S3 3 ph 4 poles
E0,55AC 34 71	0,55kW S3 3 ph 4 poles
E0,75AC 34 71	0,75kW S3 3 ph 4 poles
E1,1AC 34 80	1,1kW S3 3 ph 4 poles
E1,5AC 34 90	1,5kW S3 3 ph 4 poles
E2,2AC 34 90	2,2kW S3 3 ph 4 poles
E3,0AC 34 90	3kW S3 3 ph 4 poles
E4,0AC 34 100	4kW S3 3 ph 4 poles
E5,5AC 34 100	5,5kW S3 3 ph 4 poles
B14 7,5AC 34 112	7,5kW S3 3 ph 4 poles

AC Single Phase Motors

E0,37AC S4 71	0,37kW S3 1 ph 4 poles
E0,55AC S4 71	0,55kW S3 1 ph 4 poles
E0,75AC S4 80	0,75kW S3 1 h 4 poles
E1,1AC S4 90	1,1kW S3 1 ph 4 poles
E1,5AC S4 90	1,5kW S3 1 ph 4 poles
E2,2AC S4 90	2,2kW S3 1 ph 4 poles
E3,0AC S4 100	3kW S3 1 ph 4 poles

AC Motors Mounting Kits

XB14 71-0	B14 frame 71 + pump gr. 0
XB14 80-0	B14 frame 80 + pump gr. 0
XB14 71-1	B14 frame 71 + pump gr. 1
XB14 80-1	B14 frame 80 + pump gr. 1
XB14 90-1	B14 frame 80 + pump gr. 1
XB14 100-1	B14 frame 100/112 + p. gr. 1
X56C-0	Nema 56C + pump gr. 0
X56C-1	Nema 56C + pump gr. 1
XPU1401-0	pulley + pump gr. 0
XPU1401-1	pulley + pump gr. 1

Central Manifolds

UA	Universal A type with 3 lateral cavities
UB	Universal B type with 5 lateral cavities
U4	Universal 4 type for 4 way cartridge valves
UR	Universal R type for reversible pump

Central Manifolds Options

US	SAE06 port for North American market

Gear Pumps

K0,2	0,26 cc/rev gr0
K0,4	0,38 cc/rev gr0
K0,6	0,64 cc/rev gr0
K0,9	0,89 cc/rev gr1
K1,2	1,27 cc/rev gr1
K1,6	1,66 cc/rev gr1
K2,1	2,17 cc/rev gr1
K2,7	2,8 cc/rev gr1
K3,2	3,3 cc/rev gr1
K3,7	3,8 cc/rev gr1
K4,2	4,3 cc/rev gr1
K5,0	5,1 cc/rev gr1
K6,0	6,0 cc/rev gr1
K7,9	7,9 cc/rev gr1
G9,8	9,8 cc/rev gr1

Gear Pumps Options

HL	double pump with hi-lo circuit

High Pressure Gear Pumps

H1,2	1,2 cc/rev gr1
H1,7	1,7 cc/rev gr1
H2,2	2,2 cc/rev gr1
H2,6	2,6 cc/rev gr1
H3,2	3,2 cc/rev gr1
H3,8	3,8 cc/rev gr1
H4,2	4,3 cc/rev gr1
H4,7	4,7 cc/rev gr1
H6,0	6,0 cc/rev gr1
H7,4	7,4 cc/rev gr1

Low Noise Gear Pumps

S2,2	2,2 cc/rev low N gr1
S3,2	3,2 cc/rev low N gr1
S4,3	4,3 cc/rev low N gr1
S6,4	6,4 cc/rev low N gr1
S8,3	8,3 cc/rev low N gr1
S10	10,2 cc/rev low N gr1
S13	12,9 cc/rev low N gr1

Reversible Gear Pumps

R0,3	0,32 cc/rev revers. gr0
R0,5	0,49 cc/rev revers. gr0
R0,7	0,64 cc/rev revers. gr0
R0,9	0,88 cc/rev revers. gr0
R1,3	1,25 cc/rev revers. gr0
R1,5	1,54 cc/rev revers. gr0
R2,1	2,1 cc/rev revers. gr1
R2,6	2,6 cc/rev revers. gr1
R3,2	3,2 cc/rev revers. gr1
R4,3	4,3 cc/rev revers. gr1
R6,5	6,5 cc/rev revers. gr1

Cavity 0 Valves

J	check valve 3/4-16UNF
S	flow control valve
L	plug 3/4-16UNF
N	open plug with 1/4 BSPP open port

Cavity 0 options

MIR63*EM*	pressure gauge(*=bar max)+shut-off
F401*W	pressure switch (*=bar max)

Cavity 1 Valves

D_*	relief valve P (*= bar max)
XP	closed plug for relief valve cavity

Cavity 2 and Cavity 4 Valves

A	NC 2/2 way poppet valve
B	NC 2/2 way poppet valve + emergency
Q	NO 2/2 way poppet valve
C	NO 2/2 way poppet valve + emergency
D	NC 2/2 way double poppet valve + emerg.
E	lever operated 2/2 valve
EM	lever operated 2/2 with microswitch
Z	2 way emergency button
S	flow control valve
T*	proportional flow control valve (*=VDC)
U	hand pump 2cc/stroke
G	closed plug
H	closed plug with 1/4 BSPP exit port
N	open plug with 1/4 BSPP open port
P	plug passing through 1/4 BSPP exit port
L	plug 3/4-16UNF
J	check valve 3/4-16UNF

Cavity 2 Valves (U4 Central Manifolds)

4VA11C	4/2 way directional valve
4VA2	4/3 way directional valve , center P to T
4VB2	4/3 way directional valve, closed center
4VC2	4/3 way directional valve, H center
4VE2	4/3 way directional valve, center A-B to T

Cavity 3 Valves

AR	NC 2/2 way poppet valve reverse flow
BR	NC 2/2 way poppet valve+em. reverse flow
CR	NO 2/2 way poppet valve+em. reverse flow
D	NC 2/2 way double poppet valve+emerg.
Z	2 way emergency button
F*	fixed pressure comp. flow control (*=l/min)
R*	pressure comp. flow control (*=l/min)
S	flow control valve
P*	prop. relief valve + emergency (*= bar max)
V*	relief valve (*= bar max)
G	closed plug
H	closed plug with 1/4 BSPP exit port
N	open plug with 1/4 BSPP open port
P	plug passing through 1/4 BSPP exit port
L	plug 3/4-16UNF
J	check valve 3/4-16UNF

Solenoid Valves Coils

12DC	12V direct current
24DC	24V direct current
24AC	24V alternate current 50 or 60Hz
115AC	115V alternate current 50 or 60Hz
230AC	230V alternate current 50 or 60Hz

Cavity 5 - 6 - 7 - 8 Valves

1(04)	1 l/min pres. comp. flow cont. ø 12,7
1,5(04)	1,5 l/min pres.comp.flow cont. ø12,7
2(04)	2 l/min pres. comp. flow cont. ø 12,7
3(04)	3 l/min pres. comp. flow cont. ø 12,7
5(04)	5 l/min pres. comp. flow cont. ø 12,7
7(04)	7 l/min pres. comp. flow cont. ø 12,7
10(04)	10 l/min pres.comp.flow cont. ø 12,7
13(04)	13 l/min pres.comp.flow cont. ø 12,7
17(04)	17 l/min pres.comp.flow cont. ø 12,7
22(04)	22 l/min pres.comp.flow cont. ø 12,7
1(01)	1 l/min 1/4 BSPP p. comp. flow ctrl
1,5(01)	1,5 l/min 1/4 BSPP p. comp. flow
2(01)	2 l/min 1/4 BSPP p. comp. flow ctrl
3(01)	3 l/min 1/4 BSPP p. comp. flow ctrl
5(01)	5 l/min 1/4 BSPP p. comp. flow ctrl
7(01)	7 l/min 1/4 BSPP p. comp. flow ctrl
10(01)	10 l/min 1/4 BSPP p. comp. flow ctrl
13(01)	13 l/min 1/4 BSPP p. comp. flow ctrl
17(01)	17 l/min 1/4 BSPP p. comp. flow ctrl
22(01)	22 l/min 1/4 BSPP p. comp. flow ctrl
P01	1/4 BSPP plug
RETURN-KIT	suction/return line pipe
PP01370	suction/return line pipe
RF01	return line immersed filter

Standard mounting positioning rules:

- Filler cap tank side ports P and T
- Electric box AC motor side cavity 2
- Poles of DC motors and solenoid side cavity 2
- For horizontal mounting units, suction filter side mounting foot holes

Lacking any specific requests by the customer, all power units are supplied assembled according with these rules.

This page contains only most common codes and options.

For the full available range please check following pages.

X	5BV	E60403010	SD03A2 24DC	E60543006
Cavity 9	Tank & mounting style	External blocks	External valves	Accessories

Cavity 9 Start up Under Load Valve

S01C	2~3l/min for 1ph AC motor
S01D	3~4l/min for 1ph AC motor
S01E	4~5,5l/min for 1ph AC motor
S01F	5,5~7l/min for 1ph AC motor
S01G	7~9l/min for 1ph AC motor
S01H	9~10,5l/min for 1ph AC motor
S01I	10,5~12,5l/min for 1ph AC motor
S01L	12,5~14l/min for 1ph AC motor
S01N	14~15,5l/min for 1ph AC motor

Plastic Tanks

1,5L	1,5l square plastic
3L	3l square plastic
6L	6l square plastic
5M	5l square plastic
8M	8l square plastic
5P	5l round plastic
7P	7l round plastic
9P	9l round plastic
11P	11l round plastic

Steel Tanks

1,5A	1,5l cylindrical steel
2,5A	2,5l cylindrical steel
5B	5l cylindrical steel
10B	10l cylindrical steel
12B	12l cylindrical steel
10C	10l square steel
22C	22l square steel
3EV	3l square steel
7EV	7l square steel
8EV	8l square steel
15EV	15l square steel
20EV	20l square steel
30EV	30l square steel
F80000001	steel tank adapter

Tanks Options

V	vertical mounting

External Blocks NG3 PPM

M60403004	23mm spacer subplate
M60403005	90° rotation manifold
M60403010	Ng3 MICRO parallel block lateral ports
M60413001	Ng3 MICRO manifold with p.o. check v.

External Blocks NG6 (cetop3) PPC

E60403004	28mm spacer subplate
E60403002	49mm 90° rotation manifold
E60403005DF	90° rotation manifold double face
E60403039	additional single acting manifold
E60403001	Ng6 (Cetop3) parallel block rear ports
E60403010	Ng6 (Cetop3) parallel block lateral ports
E60403011	Ng6 (Cetop3) series block lateral ports
E60413001	Ng6 (Cetop3) manifold with p.o. check v.
E60403020	spin-on return line filter block
E60403025	filter in pressure block
PM04	hand pump 4 cc/stroke manifold block
PM09	hand pump 8,8 cc/stroke manifold block
E60403030	SAE08 2-way cartridge manifold block
E60403031	SAE08 3-way cartridge manifold block

Blocks Options

/US	SAE06 exit ports for North American market

Piastre Di Adattamento

E60403006	adapter PPC-SD01
E60403006DN	adapter PPC-SD02
E60403008M	adapter PPC-PPM

Accessories

MIR63060EM	pressure gauge 60bar + shut-off
MIR63160EM	pressure gauge 160bar + shut-off
MIR63250EM	pressure gauge 250bar + shut-off
MIR63315EM	pressure gauge 315bar + shut-off
F401050W	pressure switch 5-50bar
F401100W	pressure switch 10-100bar
F401200W	pressure switch 20-200bar
F401400W	pressure switch 50-400bar
P0201	remote 2 buttons control box
P0202	remote 4 buttons control box
VPC00	PWM driver for proportional valves
E60543006	foot mounting support
E60543007	foot mounting support - tall type
VUR01C	in-line check valve 1/4 BSPP
VUR02C	in-line check valve 3/8 BSPP
VURSAE06C	in-line check valve 9/16-18UNF
STU01	in-line unidirectional flow valve 1/4 BSPP
STU02	in-line unidirectional flow valve 3/8 BSPP
STUSAE06	in-line unidirectional flow valve 9/16-18UNF
STB01	in-line bidirectional flow valve 1/4 BSPP
STB02	in-line bidirectional flow valve 3/8 BSPP
STBSAE06	in-line bidirectional flow valve 9/16-18UNF
BFCSAE0801	In-line mounting SAE08 manifold 1/4 BSPP
BFCSAE0802	In-line mounting SAE08 manifold 3/8 BSPP

Solenoid Directional Valves

SD00A11C	NG3 MICRO directional valve 4/2
SD00A2	NG3 MICRO directional valve 4/3 center P to T
SD00B2	NG3 MICRO directional valve 4/3 closed center
SD00C2	NG3 MICRO directional valve 4/3 H center
SD00E2	Ng3 MICRO directional valve 4/3 center A-B to T
SD01A11C	Stackable directional valve 4/2
SD01A2	Stackable directional valve 4/3 P to T
SD01B2	Stackable directional valve 4/3 closed center
SD01C2	Stackable directional valve 4/3 H center
SD01E2	Stackable directional valve 4/3 center A-B to T
SD02C2RP	Stackable dir. valve 4/3 H center + p.o. check valves
SD02E2RP	Stackable dir. valve4/3center A-B to T + p.o. check valves
SD02A2TP	Stackable dir. valve 4/3 P to T + cavity SAE08
SD02B2TP	Stackable dir. valve 4/3 closed center + cavity SAE08
SD02C2TP	Stackable dir. valve 4/3 H center + cavity SAE08
SD02E2TP	Stackable dir. valve 4/3 A-B to T + cavity SAE08
SD03A11C	NG6 (cetop 3) directional valve 4/2
SD03A2	NG6 (cetop 3) directional valve 4/3 center P to T
SD03B2	NG6 (cetop3) directional valve 4/3 closed center
SD03C2	NG6 (cetop3) directional valve 4/3 H center
SD03E2	NG6 (cetop3) directional valve 4/3 center A-B to T

Solenoid Directional Valves Coils

12DC	12V direct current
24DC	24V direct current
24AC	24V alternate current 50 or 60Hz
115AC	115V alternate current 50 or 60Hz
230AC	230V alternate current 50 or 60Hz

Note: not all the voltages are available on some valve codes

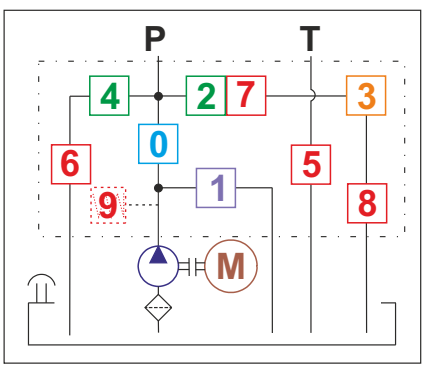
Hand Operated Directional Valves

HD03A1	NG6 (cetop3) manual dir. valve spring centered, P to T
HD03A2	NG6 (cetop3) manual dir. v. spring centered closed center
HD03A3	NG6 (cetop3) manual dir. valve spring centered, H center
HD03A10	NG6 (cetop3) manual dir. valve spring centered, A-B to T
HD03D1	NG6 (cetop3) manual dir. valve with detent, P to T
HD03D2	NG6 (cetop3) manual dir. valve with detent, closed center
HD03D3	NG6 (cetop3) manual dir. valve with detent, H center
HD03D10	NG6 (cetop3) manual dir. v. with detent, center A-B to T

Sandwich Modular Valves

E60423001	NG6 (cetop3) sandwich modular valve with relief valves
E60433001	NG6 (cetop3) sandwich modular valve with throttle valves

Reference hydraulic scheme UB central manifold
(see section B for all central manifolds executions)



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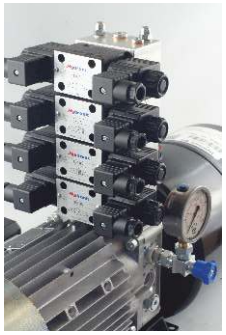
Some typical applications

The **high level of modularity** and **circuit flexibility** of Hydronit hydraulic power packs and electropumps allows you to use them in the most varied applications: in addition to typical applications of **lifting equipment** and hydraulic **vehicles** (dump trucks, tail lifts, ...) and in the **industrial** (presses, machine tools, hoists, hydraulic brakes, ...), even in the **automotive industry** (drive doors and hood, suspension, campervan ...), **marine** (bridges, cranes, doors, ...), in the **alternative energy** sector, in **agricultural equipment**, in the field of **construction machinery**, in **elevator equipment,** in **explosions proof** environments. Hydronit has also developed **solutions for improvement** to equipment previously available on the market, including the use of **proportional components** and **electronics** for **forklift trucks**, **snow plows**, **brake** and **transmission equipment**, **loading ramps**.

DC applications

AC applications



AC & DC electric motors

Section A

DC motors

0,15 12DC_T	12VDC motor - 150W - Ø 80 + thermal switch
0,15 24DC_T	24VDC motor - 150W - Ø 80 + thermal switch
0,3 12DC_T	12VDC motor - 300W - Ø 80 + thermal switch
0,3 24DC_T	24VDC motor - 300W - Ø 80 + thermal switch
0,5 12DC	12VDC motor - 500W - Ø 80
0,5 24DC	24VDC motor - 500W - Ø 80
0,5 12DC_T	12VDC motor - 500W - Ø 80 + thermal switch
0,5 24DC_T	24VDC motor - 500W - Ø 80 + thermal switch
0,8 12DC	12VDC motor - 800W - Ø 80
0,8 24DC	24VDC motor - 800W - Ø 80
0,8 12DC_T	12VDC motor - 800W - Ø 80 + thermal switch
0,8 24DC_T	24VDC motor - 800W - Ø 80 + thermal switch
1,6 12DC_T	12VDC motor - 1600W - Ø 114 + thermal switch
2,1 12DC_T	12VDC motor - 2100W - Ø 114 + thermal switch
2,2 24DC_T	24VDC motor - 2200W - Ø 114 + thermal switch
3 24DC_T	24VDC motor - 3000W - Ø 125 + thermal switch
4 24DC_T	24VDC motor - 4000W - Ø 125 + thermal switch
2,5HD 12DC_T	12VDC motor - 2500W - Ø 151 fan cooled B14-90 frame + thermal switch
3HD 24DC_T	24VDC motor - 3000W - Ø 151 fan cooled B14-90 frame + thermal switch
4HD 24DC_T	24VDC motor - 4000W - Ø 151 fan cooled B14-90 frame + thermal switch

AC motors: three-phase 4 poles (~1450 rpm @ 50Hz / ~1750 rpm @ 60Hz)

E0,37AC 34 71	integral motor 0,37kW S3 3-ph 4-pole 220/380V 50/60Hz frame 71
E0,55AC 34 71	integral motor 0,55kW S3 3-ph 4-pole 220/380V 50/60Hz frame 71
E0,75AC 34 71	integral motor 0,75kW S3 3-ph 4-pole 220/380V 50/60Hz frame 71
E1,1AC 34 80	integral motor 1,1kW S3 3-ph 4-pole 220/380V 50/60Hz frame 80
E1,5AC 34 90	integral motor 1,5kW S3 3-ph 4-pole 220/380V 50/60Hz frame 90
E2,2AC 34 90	integral motor 2,2kW S3 3-ph 4-pole 220/380V 50/60Hz frame 90
E3,0AC 34 90	integral motor 3kW S3 3-ph 4-pole 220/380V 50/60Hz frame 90
E4,0AC 34 100	integral motor 4kW S3 3-ph 4-pole 220/380V 50/60Hz frame 100
E5,5AC 34 100	integral motor 5,5kW S3 3-ph 4-pole 220/380V 50/60Hz frame 100

AC motors: single-phase 4 poles (~1450 rpm @ 50Hz)

E0,37AC S4 71	integral motor 0,37kW S3 1-ph 4-pole 220V 50Hz frame 71
E0,55AC S4 71	integral motor 0,55kW S3 1-ph 4-pole 220V 50Hz frame 71
E0,75AC S4 80	integral motor 0,75kW S3 1-ph 4-pole 220V 50Hz frame 71
E1,10AC S4 90	integral motor 1,1kW S3 1-ph 4-pole 220V 50Hz frame 90
E1,50AC S4 90	integral motor 1,5kW S3 1-ph 4-pole 220V 50Hz frame 90
E2,20AC S4 90	integral motor 2,2kW S3 1-ph 4-pole 220V 50Hz frame 90
E3,00AC S4 100	integral motor 3kW S3 1-ph 4-pole 220V 50Hz frame 90

2 pole and special execution motors (High starting torque, high IP, with thermal protector,...) available on request

INDEX

AC & DC electric motors

B14 AC motors

No motor: B14 Flange + coupling kit

Electric motors options

DC motors options

Universal central manifold

Section B

International execution (1/4" BSP exit ports)

USA execution (SAE 06 exit ports)

Gear pumps

Section C

INDEX

Gear pumps

Bidirectional gear pumps

R0,3	Reversible gear pump group 0 - 0,32 cc/rev R series + adaptor flange for group 0 pump
R0,5	Reversible gear pump group 0 - 0,49 cc/rev R series + adaptor flange for group 0 pump
R0,7	Reversible gear pump group 0 - 0,64 cc/rev R series + adaptor flange for group 0 pump
R0,9	Reversible gear pump group 0 - 0,88 cc/rev R series + adaptor flange for group 0 pump
R1,3	Reversible gear pump group 0 - 1,25 cc/rev R series + adaptor flange for group 0 pump
R1,5	Reversible gear pump group 0 - 1,54 cc/rev R series + adaptor flange for group 0 pump
R2,1	Reversible gear pump group 1 - 2,2 cc/rev R series
R2,6	Reversible gear pump group 1 - 2,6 cc/rev R series
R3,2	Reversible gear pump group 1 - 3,2 cc/rev R series
R4,3	Reversible gear pump group 1 - 4,3 cc/rev R series
R6,5	Reversible gear pump group 1 - 6,5 cc/rev R series

Double gear pumps with Hi-Lo system

K0,9+3,2HL	HI-LO double pump - 0,9 + 3,3cc/rev K series
K1,2+5HL	HI-LO double pump - 1,2 + 5cc/rev K series

Helical rotor pumps for high pressure and low noise and low pulsation applications

S2,2	low noise helical rotor pump group 1 - 2,2 cc/rev S series
S3,2	low noise helical rotor pump group 1 - 3,2 cc/rev S series
S4,3	low noise helical rotor pump group 1 - 4,3 cc/rev S series
S5,0	low noise helical rotor pump group 1 - 5,0 cc/rev S series
S6,4	low noise helical rotor pump group 1 - 6,4 cc/rev S series
S8,3	low noise helical rotor pump group 1 - 8,3 cc/rev S series
S10	low noise helical rotor pump group 1 - 10,2 cc/rev S series
S13	low noise helical rotor pump group 1 - 12,9 cc/rev S series

Integral components: Cavity 0

Section D

Components in central manifold cavity 0

J	check valve ball type 3/4-16UNF
JF	check valve ball type 3/4-16UNF with exit port P static F 1/4 BSPP
S	flow control valve 3/4-16UNF with screw
L	plug 3/4-16UNF basic
N	plug 3/4-16UNF open passage with 1/4"BSPP exit port

Cavity 0 option

P01	plug TCE 1/4 BSPP with copper washer
EM90	pressure gauge shut-off valve 90° F-F spinning + nipples M-M 1/4 BSPP
EMIL	pressure gauge shut-off valve F-F spinning + nipples M-M 1/4 BSPP
MIR63*EM90**	pressure gauge Ø63 where *** = P max (060-160-250-315 bar) + EM90
MIR63*EMIL**	pressure gauge Ø63 where *** = P max (060-160-250-315 bar) + EMIL
F401*W**	pressure switch 1/4 BSPP where *** = P max (050-100-200-400 bar)
V-CSB	handwheel for CSB

Integral components: Cavity 1

Components in central manifold cavity 1

D_60	guided needle relief valve M20x1,5 - 5÷60 bar - socket screw adj.
D_180	guided needle relief valve M20x1,5 - 10÷180 bar - socket screw adj.
D_310	guided needle relief valve M20x1,5 - 35÷310 bar - socket screw adj.
XP	closed plug for relief valve M20x1,5 cavity

Cavity 1 option

2	handwheel M8 for valves VMDC35/VMDC20/VCF6
3	steel cap for valve VMDC35
4	plastic seal for VMDC35 relief valve

Integral components: Cavity 2 and Cavity 4

Components in central manifold cavity 2 and cavity 4

A	NC solenoid 2/2 way 3/4-16UNF poppet valve
B	NC solenoid 2/2 way 3/4-16UNF poppet valve with emergency
Q	NO solenoid 2/2 way 3/4-16UNF poppet valve
C	NO solenoid 2/2 way 3/4-16UNF poppet valve with emergency
D	NC solenoid 2/2 way 3/4-16UNF double poppet valve with emergency
E	lever operated 2/2 way valve without micro-switch
EM	lever operated 2/2 way valve with micro-switch
Z	2 way emergency button valve
S	bidirectional flow control valve 3/4-16UNF with screw
T12DC	proportional flow control valve poppet type 15l/min 315 bar + coil 12VDC ED100%
T24DC	proportional flow control valve poppet type 15l/min 315 bar + coil 24VDC ED100%
U	hand pump 3/4-16UNF 2 cc/stroke + suction/return line pipe 1/4"BSP 370mm
G	closed plug 3/4-16UNF
H	plug 3/4-16UNF with 1/4"BSPP exit port
N	plug 3/4-16UNF open passage with 1/4"BSPP exit port
P	plug 3/4-16UNF passing through 1/4"BSPP
L	plug 3/4-16UNF basic
J	check valve ball type 3/4-16UNF
4VA11C	4/2way solenoid directional valve, closed center transient (only for cav.2 in U4manifolds)
4VA2	4/3 way solenoid directional valve, center P to T (only for cavity 2 in U4 manifolds)
4VB2	4/3 way solenoid directional valve, closed center (only for cavity 2 in U4 manifolds)
4VC2	4/3 way solenoid directional valve, H center (only for cavity 2 in U4 manifolds)
4VE2	4/3 way solenoid directional valve, center A-B to T (only for cavity 2 in U4 manifolds)

Cavity 2 and 4 options

V-CSB	handwheel for CSB
P01	plug TCE 1/4 BSPP with copper washer
EM90	pressure gauge shut-off valve 90° F-F spinning + nipples M-M 1/4 BSPP
EMIL	pressure gauge shut-off valve F-F spinning + nipples M-M 1/4 BSPP
MIR63*EM90**	pressure gauge Ø63 where *** = P max (060-160-250-315 bar) + EM90
MIR63*EMIL**	pressure gauge Ø63 where *** = P max (060-160-250-315 bar) + EMIL
F401*W**	pressure switch 1/4 BSPP where *** = P max (050-100-200-400 bar)
VPC00	PWM driver for proportional valves 12/24VDC

INDEX

Integral components: Cavity 3

Components in central manifold cavity 3

F1	fixed pressure compensated flow control valve 3/4-16UNF flow - 1l/min
F1,5	fixed pressure compensated flow control valve 3/4-16UNF flow - 1,5l/min
F2	fixed pressure compensated flow control valve 3/4-16UNF flow - 2l/min
F3	fixed pressure compensated flow control valve 3/4-16UNF flow - 3l/min
F5	fixed pressure compensated flow control valve 3/4-16UNF flow - 5l/min
F7	fixed pressure compensated flow control valve 3/4-16UNF flow - 7l/min
F10	fixed pressure compensated flow control valve 3/4-16UNF flow - 10l/min
F13	fixed pressure compensated flow control valve 3/4-16UNF flow - 13l/min
F17	fixed pressure compensated flow control valve 3/4-16UNF flow - 17l/min
F22	fixed pressure compensated flow control valve 3/4-16UNF flow - 22l/min
R2	compensated flow control valve 3/4-16UNF with screw - 1 ÷ 2,2 l/min
R3	compensated flow control valve 3/4-16UNF with screw - 1,6 ÷ 4 l/min
R4	compensated flow control valve 3/4-16UNF with screw - 2,5 ÷ 5 l/min
R5	compensated flow control valve 3/4-16UNF with screw - 3 ÷ 7 l/min
R6	compensated flow control valve 3/4-16UNF with screw - 4,9 ÷ 10,8 l/min
R7	compensated flow control valve 3/4-16UNF with screw - 8 ÷ 18,5 l/min
S	flow control valve 3/4-16UNF with screw
Z	2 way emergency button valve
AR	NC solenoid 2/2 way 3/4-16UNF poppet valve with reversible flow
BR	NC solenoid 2/2 way 3/4-16UNF poppet valve +emergency with reversible flow
CR	NO solenoid 2/2 way 3/4-16UNF poppet valve +emergency with reversible flow
D	NC solenoid 2/2 way 3/4-16UNF double poppet valve with emergency
J	check valve ball type 3/4-16UNF
G	closed plug 3/4-16UNF
H	plug 3/4-16UNF with 1/4"BSPP exit port
N	plug 3/4-16UNF open passage with 1/4"BSPP exit port
P	plug 3/4-16UNF passing through 1/4"BSPP
L	basic plug 3/4-16UNF
P*12DC**	prop. relief valve 3/4-16UNF with em. 12VDC where *** = max pressure (80-250 bar)
P*24DC**	prop. relief valve 3/4-16UNF with em. 24VDC where *** = max pressure (80-250 bar)
V***	relief valve 3/4-16UNF where ** = max pressure (40-110-250-350 bar) - socket screw







Cavity 3 option

2	handwheel M8 for valves VMDC35/VMDC20/VCF6
V-CSB	handwheel for CSB
P01	plug TCE 1/4 BSPP with copper wahser
EM90	pressure gauge shut-off valve 90° F-F spinning + nipples M-M 1/4 BSPP
EMIL	pressure gauge shut-off valve F-F spinning + nipples M-M 1/4 BSPP
MIR63*EM90**	pressure gauge Ø63 where *** = P max (060-160-250-315 bar) + EM90
MIR63*EMIL**	pressure gauge Ø63 where *** = P max (060-160-250-315 bar) + EMIL
F401*W**	pressure switch 1/4 BSPP where *** = P max (050-100-200-400 bar)
VPC00	PWM driver for proportional valves 12/24VDC


Integral components: Cavity 5, Cavity 6 and Cavity 8

Components in central manifold cavity 5, cavity 6 and cavity 8

P01	1/4" BSPP plug with copper washer
PP01370	suction/return line pipe 1/4"BSP 370mm
RETURN-KIT	1/4" BSP holder for SF12 + flexible plastic pipe 12 mm for return line / price per meter
RF01	return line tank immersed filter + drain pipe 1/4 BSPP
1(01)	fixed pressure compensated flow control valve 1/4"BSPP - 1l/min
1,5(01)	fixed pressure compensated flow control valve 1/4"BSPP - 1,5l/min
2(01)	fixed pressure compensated flow control valve 1/4"BSPP - 2l/min
3(01)	fixed pressure compensated flow control valve 1/4"BSPP - 3l/min
5(01)	fixed pressure compensated flow control valve 1/4"BSPP - 5l/min
7(01)	fixed pressure compensated flow control valve 1/4"BSPP - 7l/min
10(01)	fixed pressure compensated flow control valve 1/4"BSPP - 10l/min
13(01)	fixed pressure compensated flow control valve 1/4"BSPP - 13l/min
17(01)	fixed pressure compensated flow control valve 1/4"BSPP - 17l/min
22(01)	fixed pressure compensated flow control valve 1/4"BSPP - 22l/min

Integral components: Cavity 7

Components in central manifold cavity 7

1(04)	fixed pressure compensated flow control valve Ø 12,7 con o-ring - 1l/min
1,5(04)	fixed pressure compensated flow control valve Ø 12,7 con o-ring - 1,5l/min
2(04)	fixed pressure compensated flow control valve Ø 12,7 con o-ring - 2l/min
3(04)	fixed pressure compensated flow control valve Ø 12,7 con o-ring - 3l/min
5(04)	fixed pressure compensated flow control valve Ø 12,7 con o-ring - 5l/min
7(04)	fixed pressure compensated flow control valve Ø 12,7 con o-ring - 7l/min
10(04)	fixed pressure compensated flow control valve Ø 12,7 con o-ring - 10l/min
13(04)	fixed pressure compensated flow control valve Ø 12,7 con o-ring - 13l/min
17(04)	fixed pressure compensated flow control valve Ø 12,7 con o-ring - 17l/min
22(04)	fixed pressure compensated flow control valve Ø 12,7 con o-ring - 22l/min

Integral components: Cavity 9

Components in central manifold cavity 9

S01C	starting valve for single-phase motors for flow from 2 to 3 lt/min
S01D	starting valve for single-phase motors for flow from 3 to 4 lt/min
S01E	starting valve for single-phase motors for flow from 4 to 5,5 lt/min
S01F	starting valve for single-phase motors for flow from 5,5 to 7 lt/min
S01G	starting valve for single-phase motors for flow from 7 to 9 lt/min
S01H	starting valve for single-phase motors for flow from 9 to 10,5 lt/min
S01I	starting valve for single-phase motors for flow from 10,5 to 12,5 lt/min
S01L	starting valve for single-phase motors for flow from 12,5 to 14 lt/min
S01N	starting valve for single-phase motors for flow from 14 to 15,5 lt/min

INDEX

Tanks

Section E

Serbatoio in metallo

Plastic tanks

Accessories

Section F

Accessories

External blocks

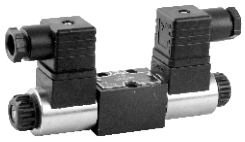
External blocks

INDEX

External valves

Section G

Valvole esterne



External valves

External valves

E60423001L	NG6 (cetop3) sandwich type modular valve with relief valve on A & B 60bar max
E60423001A	NG6 (cetop3) sandwich type modular valve with relief valve on A & B 180bar max
E60423001B	NG6 (cetop3) sandwich type modular valve with relief valve on A & B 310bar max
E60423002L	NG6 (cetop3) sandwich type modular valve with relief valve on A 60bar max
E60423002A	NG6 (cetop3) sandwich type modular valve with relief valve on A 180bar max
E60423002B	NG6 (cetop3) sandwich type modular valve with relief valve on A 310bar max
E60423003L	NG6 (cetop3) sandwich type modular valve with relief valve on B 60bar max
E60423003A	NG6 (cetop3) sandwich type modular valve with relief valve on B 180bar max
E60423003B	NG6 (cetop3) sandwich type modular valve with relief valve on B 310bar max
E60433000	NG6 (cetop3) sandwich type modular valve for unidirectional throttle valve
E60433001	NG6 (cetop3) sandwich type modular valve with unidirectional throttle valve on A & B
E60433002	NG6 (cetop3) sandwich type modular valve with unidirectional throttle valve on A
E60433003	Ng6 (cetop3) sandwich type modular valve with unidirectional throttle valve on B

Coils

External cartridge valves coils

12DC_M630	coil 12V DC ED100% + Electric connector DIN 43650-A
24DC_M630	coil 24V DC ED100% + Electric connector DIN 43650-A
24AC_M631	coil 24V AC ED100% with integrated rectifier + Electric connector DIN 43650-A
115AC_M631	coil 115V AC ED100% with integrated rectifier + Electric connector DIN 43650-A
230AC_M631	coil 230V AC ED100% with integrated rectifier + Electric connector DIN 43650-A
12DC_M130	Coil 12V DC 18W ED75% for MSV30-31 + Electric connector DIN 43650-A
115_50AC_M130	Coil 115V/50Hz AC 28VA ED75% only for MSV30 + Electric connector DIN 43650-A
110RAC_M130	Coil 110V RAC 18W ED75% for MSV30-31 + Electric connector with rectifier 115 V
220RAC_M130	Coil 220V RAC 18W ED75% for MSV30-31 + Electric connector with rectifier 230 V

External SD00 valves coils

12DC_M100	coil 12V DC 16W ED100% + Electric connector DIN 43650-A
24DC_M100	coil 24V DC 16W ED100% + Electric connector DIN 43650-A
24RAC_M100	coil 24V DC 16W ED100% + Electric connector with rectifier 24 V

External SD01 valves coils

12DC_M120	coil 12V DC 22W ED100% + Electric connector DIN 43650-A
24DC_M120	coil 24V DC 22W ED100% + Electric connector DIN 43650-A
24RAC_M120	coil 24V DC 22W ED100% + Electric connector with rectifier 24 V
220RAC_M120	coil 220V RAC 26W ED100% + Electric connector with rectifier 230 V

External SD02 and SD03 valves coils

12DC_M160	coil 12V DC 26W ED100% + Electric connector DIN 43650-A
24DC_M160	coil 24V DC 26W ED100% + Electric connector DIN 43650-A
24RAC_M160	coil 24V DC 26W ED100% + Electric connector with rectifier 24 V
110RAC_M160	coil 110V RAC 26W ED100% + Electric connector with rectifier 115 V
220RAC_M160	coil 220V RAC 26W ED100% + Electric connector with rectifier 230 V

INDEX

General application

Install location	Whatever you do, paying attention to the correct position of the suction filter
Room temperature	-15 ÷ +50°C
Hydraulic fluid	Fluid for hydraulic use mineral based or synthetic ISO 6743/4 / DIN 51519, viscosity 15 ÷ 100 mm^2/s ISO 3448 (recommended viscosity 22 ÷ 46 mm^2/s)
Fluid temperature	-10° ÷ +70°C
Able contamination	Must be higher than the class 18/14 ISO 4406
Instructions for the first start	. After connecting the electric motor and the suction tube, check the direction of rotation of the pump with small goodwill of 1÷2 sec. For standard pumps the direction of motor rotation must be clockwise as viewed from the side of the fan motor. . Flush the oil at atmospheric pressure so as to remove any impurities and air bubbles from the circuit. . Connect all devices to the system and very gradually bring the circuit under pressure. . Check the oil level and, if necessary, fill up to the maximum level. . To ensure a correct and lasting operation, check the oil and replace it after the first 100h and every 3000h of work and/or at most every year.
Torques recommended	. M5: 4÷5,5 Nm . M5 for pumps gr.0,5: 8÷9,5 Nm . M6: 8÷10 Nm . M8: 16÷20 Nm . M8 for pumps gr.1: 21÷25 Nm . M10: 30÷40 Nm . Valves and plugs 1/4 BSPP: 6÷20 Nm . Valves and plugs 3/4-16 UNF: 15÷40 Nm . Relief valves M20x1,5: 50 Nm . Tank's plugs 1/2 BSPP: max 10 Nm

AC & DC ELECTRIC MOTORS

Integral AC motors: the engineered solution for compact and optimised power units from 0,25 to 4 kW, single or three phase, 4 or 2 poles. These AC motors are **directly flanged** on the central manifold for extra compactness. A **single tang drive coupling** can suit all frame sizes and powers.
We suggest that you adopt these advanced motors because of their advantages over standard B14 AC motors and because they are **designed specifically** for our hydraulic mini power packs, offering a **higher power density** and **high starting torque** than market standard motors. These motors are intended for intermittent duty (S3 40%), which is normal for most mini-power pack applications. In emergency situations they may be used continuously to 70% of their nominal power. Given their particular construction, single-phase motors must not be operated without load for a long period, to avoid overheating.

B14 IEC standard AC motors: the standard solution easily available in every market from 0,25 to 7,5 kW, single or three phase. These motors are normally procured by the customer himself. Hydronit provides adaptor flanges and twopiece coupling for frame sizes: 71, 80, 90, 100 and 112.

Coupling with integrated fan cooling: for DC motors frame 114 and 125.

Frame 151 DC motors: heavy duty motors, with fan cooling, thermal protector and running time of 16 min or over. Power from 2,5kW 12VDC up to 4kW 24VDC.

Frame 114 DC motors: the most popular choice. Power up to 2,1kW 12VDC and 2,2kW 24VDC. All motors have thermal protector switch as standard.

Are AC motors compliant with the European Union Minimum Energy Performance Standards?
Hydronit AC motors are manufactured in Italy using the best technologies currently available and are specifically designed for mini power pack duties, typically intermittent. Hydronit motors have higher power density, lower weight and lower cost, compared with standard IE2/IE3 motors on the market. Due to the specific field of application, Hydronit motors are not included in the requirements of the above mentioned Standard since they are specifically and solely manufactured for mini power pack intermittent duties. For continuous duty applications IE2 motors (IEC 60034-30) must be applied. Ask our sales office.

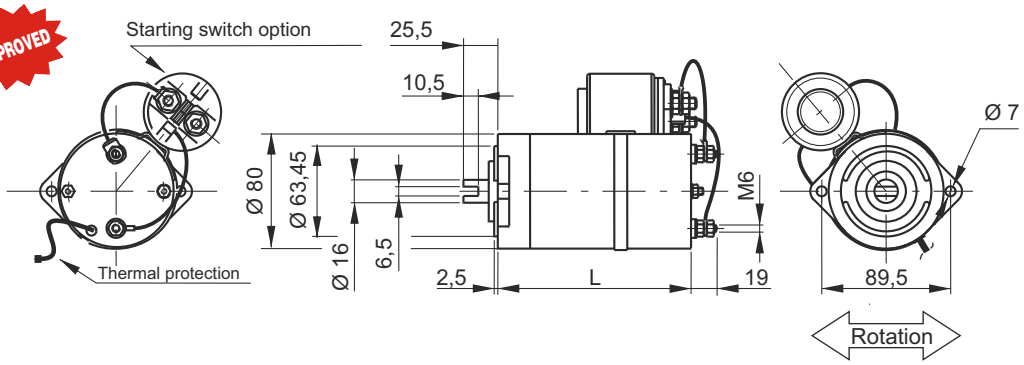
Are there special requirements to mount IEC B14 motors?
No special tools are required. Please carefully follow motor side coupling mounting dimension tolerance per the relevant drawings. Failure to do so may cause malfunction of the power pack and even breakage of the coupling and pump.

Can I start single phase AC motors under load?
Single phase motors have a reduced starting torque due to their intrinsic design. Starting torque is around 30-40% of the nominal torque at full power output. When designing circuits where a single phase motor must start under load, a proper calculation must be done followed by a field test to ensure proper starting. High starting torque «HT» motors are available. Ask our technical office. Alternatively, you can overcome the problem with the startup valve SUV.

How do I dimension a DC motor?
DC motors are normally for intermittent duty. It is important to know the required flow in l/min, working pressure in bar and the duty charge. Then, following the table instructions, a proper motor/pump combination can be selected.

SECTION A

INTEGRAL DC MOTORS Ø80



Permanent magnet
Protection degree: IP54
Insulation class: F
Weight 500W/800W: 2,6 kg (without starter)
Weight 150W: 2 kg (without starter)

Code

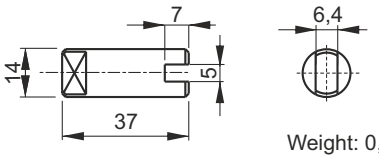
Description	Assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current	L
150W 12V DC + thermal protection	**0,15 12DC_T**	**M46C1ST01**	S2: 20 min S3: 30% ED	1200 rpm	28 A	108 mm
150W 24V DC + thermal protection	**0,15 24DC_T**	**M46C2ST01**	S2: 20 min S3: 30% ED	1650 rpm	12 A	108 mm
300W 12V DC + thermal protection	**0,3 12DC_T**	**M46C1ST03**	S2: 9 min S3: 18% ED	1800 rpm	39 A	137 mm
300W 24V DC + thermal protection	**0,3 24DC_T**	**M46C2ST03**	S2: 9 min S3: 18% ED	1800 rpm	20 A	137 mm
500W 12V DC 500W 12V DC + thermal protection	**0,5 12DC** **0,5 12DC_T**	**M46C1S005** **M46C1ST05**	S2: 5 min S3: 15% ED	2400 rpm	68 A	137 mm
500W 24V DC 500W 24V DC + thermal protection	**0,5 24DC** **0,5 24DC_T**	**M46C2S005** **M46C2ST05**	S2: 5 min S3: 15% ED	2500 rpm	31 A	137 mm
800W 12V DC 800W 12V DC + thermal protection	**0,8 12DC** **0,8 12DC_T**	**M46C1S008** **M46C1ST08**	S2: 3 min S3: 10% ED	2800 rpm	119 A	137 mm
800W 24V DC 800W 24V DC + thermal protection	**0,8 24DC** **0,8 24DC_T**	**M46C2S008** **M46C2ST08**	S2: 3 min S3: 10% ED	3100 rpm	52 A	137 mm

Options & couplings

Description	Assembly code	Spare part code
12V DC 150 Amp start switch + mounting kit	**S150 12DC 80**	**M47SC0001+M47SK0801**
24V DC 150 Amp start switch + mounting kit	**S150 24DC 80**	**M47SC0002+M47SK0801**
12VDC 100 Amp start switch (reversible)	**R100 12DC***	**M47NB0001**
24VDC 100 Amp start switch (reversible)	**R100 24DC***	**M47NB0002**
Remote wired control with 2 buttons and 3m cable	**P0201** (single acting)	
Remote wired control with 4 buttons and 3m cable	**P0202** (double acting)	
Coupling for Ø 80 DC motors and gr.1 pump	**E36200002**	
Coupling for Ø 80 DC motors and gr.0 pump	**E36200006**	

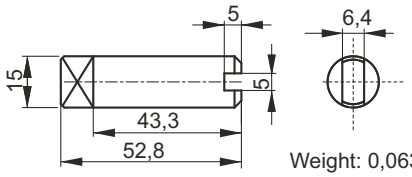
Notes:
The starting switch mounting kit is provided when specifying the **/S150** as motor option in the PPC assembly code.
When ordering spare starting switches, they must be ordered separately (code: M47SK0801).
The coupling is already included when specifying the motor in the PPC assembly code.
It is to be indicated only when ordering PPC with no motor but with a coupling.

Coupling E36200002



Weight: 0,041 kg

Coupling E36200006

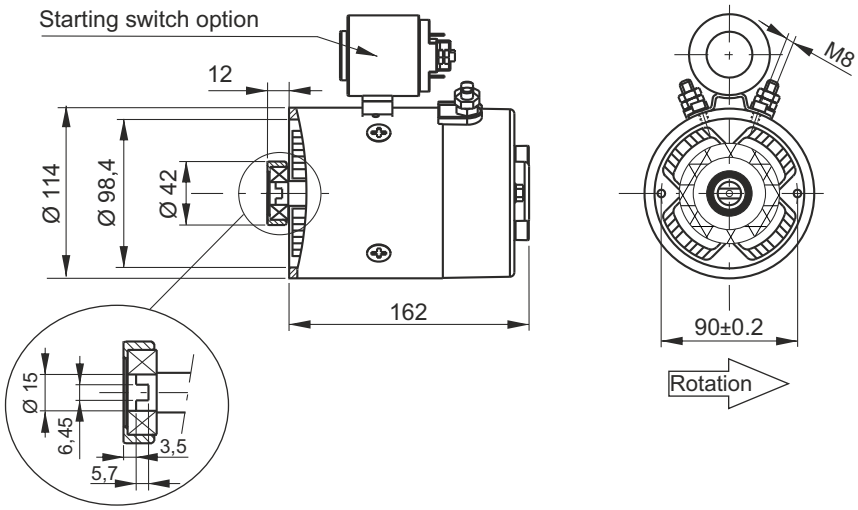


Weight: 0,063 kg

The reversible start switch cannot be mounted on the motor. It must be fixed on the machine

INTEGRAL DC MOTORS Ø114

Series wound
Protection degree: IP54
Insulation class: F
Weight: 7,05 kg (without starter)



Code

Description	Assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current
1600W 12V DC + thermal protection	**1,6 12DC_T**	**M46C1ST16**	S2: 3 min S3: 10% ED	2800 rpm	210 A
2100W 12V DC + thermal protection	**2,1 12DC_T**	**M46C1ST21**	S2: 2,5 min S3: 10% ED	2400 rpm	300 A
2200W 24V DC + thermal protection	**2,2 24DC_T**	**M46C2ST22**	S2: 3,5 min S3: 15% ED	2400 rpm	130 A

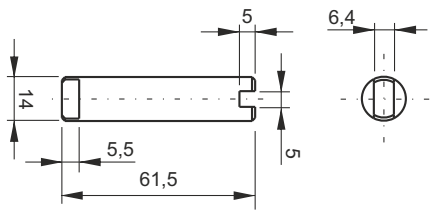
Options & couplings

Description	Assembly code	Spare part
12V DC 150 Amp start switch + mounting kit	**S150 12DC 112**	**M47SC0001 + M47SK1121**
24V DC 150 Amp start switch + mounting kit	**S150 24DC 112**	**M47SC0002 + M47SK1121**
Protezione in plastica per motori DC	**MC**	**F16000001**
Modular kit for forced fan	**FP**	**M46FP1125**
Coupling for Ø114 motors and gr.0 pump	**E36200005**	
Coupling forØ114 motors-Ø125DC motors and gr.1pump	**E36200001**	
Remote wired control with 2 buttons and 3m cable	**P0201** (single acting)	
Remote wired control with 4 buttons and 3m cable	**P0202** (double acting)	

Notes: the starting switch mounting kit is provided when specifying the **/S150** as motor option in PPC assembly code.
When ordering spare starting switches, it must be ordered separately (code: M47SK1121).

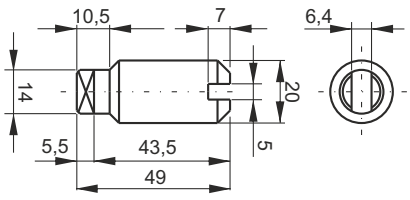
The coupling is already included when specifying the motor in PPC assembly code.
It is to be indicated only when ordering PPC with no motor but with coupling.

Coupling E36200005



Weight: 0,068 kg

Coupling E36200001



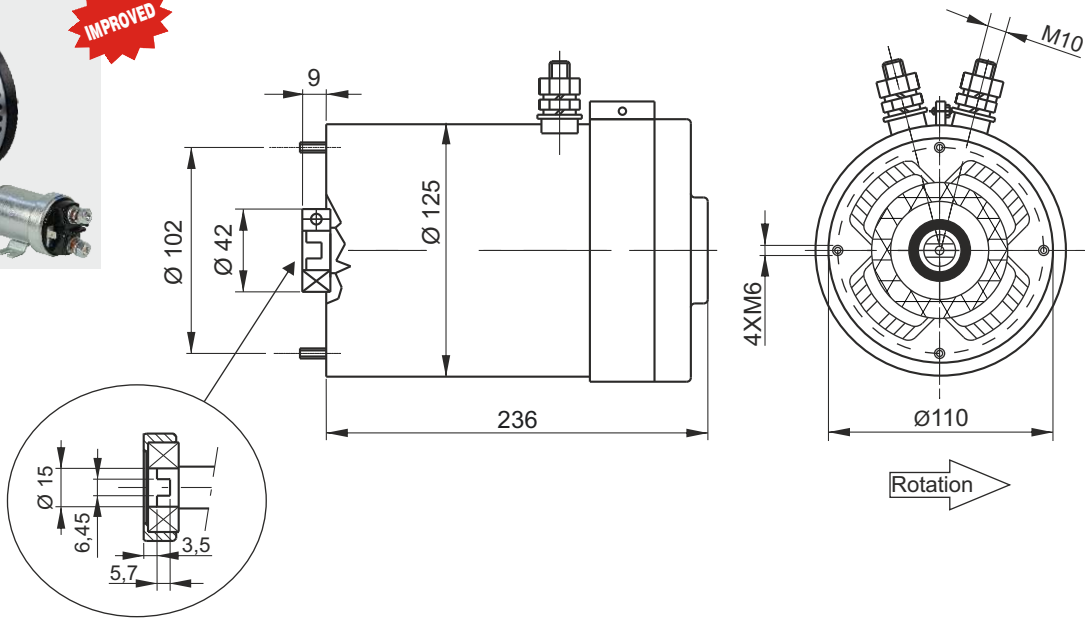
Weight: 0,094 kg

*If there is mounted the modular kit forced fan the protection degree become IP20.

SECTION A

INTEGRAL DC MOTORS Ø125

Compound wound
Protection degree: IP20
Insulation class: F
Weight: 11kg (without starter)



Code

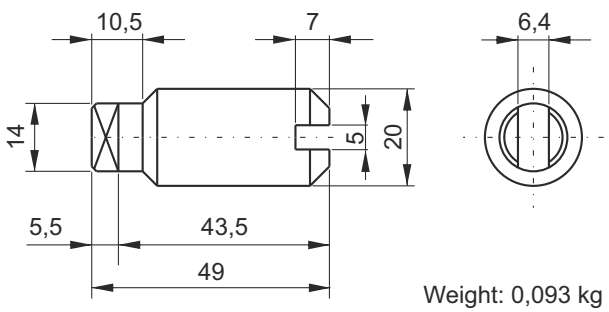
Description	Assembly code	Spare part code	Nomional duty cycle	Nominal speed	Nominal current
3000W 24 V DC + thermal protection	**3 24DC_T**	**M46C2ST30**	S2: 4min S3: 10% ED	2600 rpm	180 A
4000W 24 V DC + thermal protection	**4 24DC_T**	**M46C2ST40**	S2: 3min S3: 8% ED	3500 rpm	230 A

Options & couplings

Description	Assembly code	Spare part code
24V DC 200 Amp start switch + mounting kit	**S200 24DC 125_151**	**M47ZC0002 + M47SK1251**
Modular kit for forced fan	**FP**	**M46FP1125**
Coupling forØ114 motors-Ø125DC motors and gr.1pump	**E36200001**	
Remote wired control with 2 buttons and 3m cable	**P0201** (single acting)	
Remote wired control with 4 buttons and 3m cable	**P0202** (double acting)	

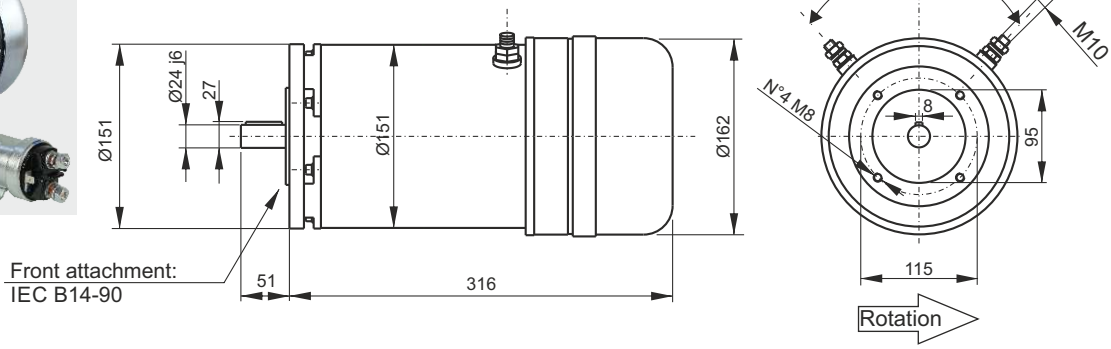
The coupling is already included when specifying the motor in PPC assembly code.
It is to be indicated on the order only when ordering PPC with no motor but with coupling.

Coupling E36200001



Weight: 0,093 kg

HEAVY DUTY DC MOTORS Ø 151 WITH FAN COOLING



Series wound
Protection degree: Ip20
Insulation class: F
Weight: 21,5 kg

Code

Description	Assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current	Mounting kit
2500W 12V DC motor + thermal protection & fan	**2,5HD 12DC_T**	**MB14C1ST25**	S2:16 min S3: 20%	1700 rpm	290 A	XB14 90-1
3000W 12V DC motor + thermal protection & fan	**3HD 24DC_T**	**MB14C2ST30**	S2: 16 min S3: 20%	1700 rpm	170 A	XB14 90-1
4000W 12V DC motor + thermal protection & fan	**4HD 24DC_T**	**MB14C2ST40**	S2: 10 min S3: 15%	2000 rpm	240A	XB14 90-1

Mounting kit & options

Description	Assembly code	Spare part code
12V DC 200 Amp start switch + mounting kit	**S200 24DC 125_151**	**M47ZC0001 + M47SK1251**
24V DC 200 Amp start switch + mounting kit	**S200 24DC 125_151**	**M47ZC0002 + M47SK1251**
Remote wired control with 2 buttons and 3m cable	**P0201** (single acting)	
Remote wired control with 4 buttons and 3m cable	**P0202** (double acting)	
Mounting kit for motors B14 IEC frame 90	**XB14 90-1**	**E36100003 + E36100000 + F27010003**

The mounting kit is already included when specifying the motor in PPC assembly code.
When ordering spare motors, the mounting kit must be ordered separately.

For B14 motors the relay is not normally mounted on the motor.

Other B14 DC motors for heavy duty or special applications

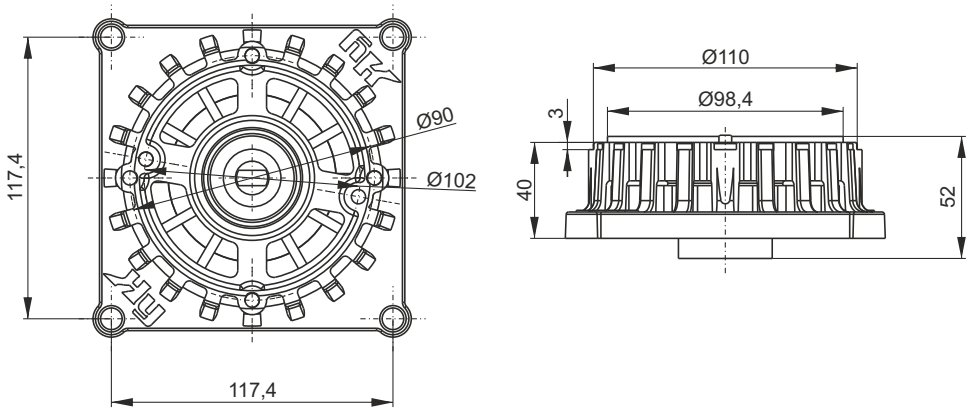
They are available in sizes Ø125, Ø151 or Ø191 in multiple executions, engineered to perform heavy duty cycles and tailor made to suit each specific application, with or without fan cooling or thermal protection. They are normally mounted on the central manifold with B14 standard mounting kits.
To properly select these motors, the following minimum information must be provided: 1) motor power and voltage, 2) application type, 3) duty factors: S2 [min] - continuous running time and S3 [%] - percentage of running time on total cycle time, 4) required motor speed, 5) quantity to be supplied.

SECTION A

MODULAR KIT FOR FORCED VENTILATION DC MOTORS Ø114 E Ø125

Assembly code	Spare part code
FP	M46FP1125

Weight: 0,45 kg

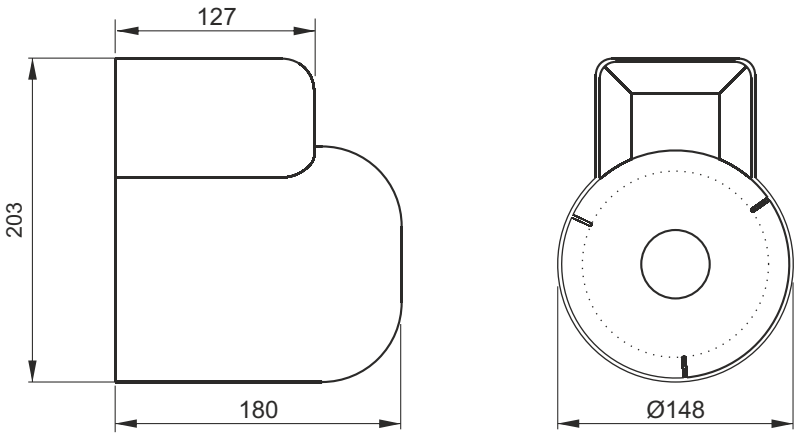


Available also for DC motors Ø114 and Ø125. Modular kit should be mounted between the motor and the central manifold. This will increase the S2 time by 25-30% compared to the non-ventilated motor.

PLASTIC COVER DC MOTORS Ø114

Assembly code	Spare part code
MC	F16000001

Weight: 0,27 kg



DC MOTOR OPTIONS

Starting relay 150A
for motors diameter 80 and 114

Weight: 0,5 kg
Protection degree: IP54
Nominal current: 150A
Peak current (5sec): 300A
Current drawn by the solenoid: 3,6A 12V - 2,0A 24V

Spare part code
M47SC0001 (12V DC) M47SC0002 (24V DC)

Starting relay 200A
for motors diameter 125 and 151

Weight: 0.5 kg 12V - 0,7 kg 24V
Protection degree: IP54
Nominal current: 200A
Peak current (5sec): 800A
Current drawn by the solenoid: 1,6A 12V - 0,7A 24V

Spare part code
M47ZC0001 (12V DC) M47ZC0002 (24V DC)

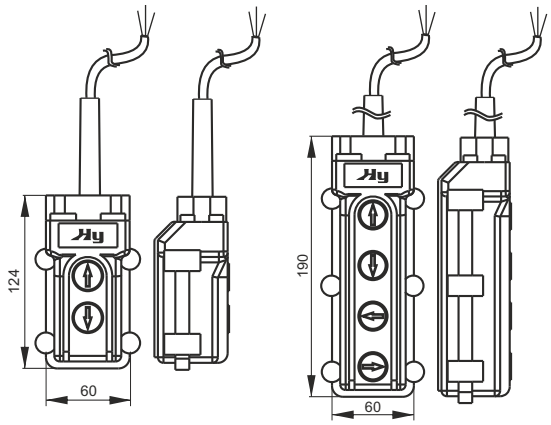
Starting relay (reversible) 100A

for reversible motors and pumps

Weight: 0,50 kg
Protection degree: IP65
Nominal current: 100A (S3 25%)
Peak current (40ms): 400A
Current drawn by the solenoid: 1A 12V - 0,5A 24V

Spare part code
M47NB0001 (12V DC) M47NB0002 (24V DC)

Weight: 0,60 kg
Protection degree: IP65

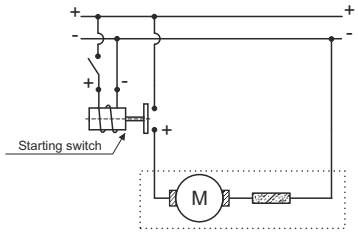


Description	Spare part code
Remote wired control with 2 buttons single/double acting	P0201
Remote wired control with 4 buttons double acting	P0202

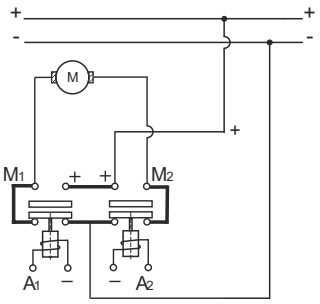
DC MOTOR CHOICE AND ELECTRIC CONNECTION SCHEME

Electric connection scheme

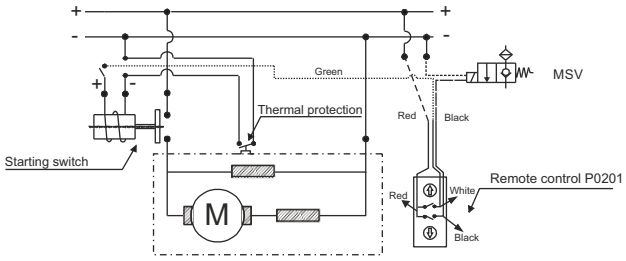
M47SC000* e M47ZC000*



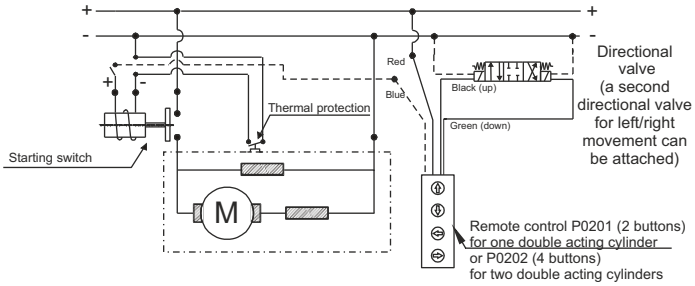
M47NB000*



Single acting cylinder



Double acting cylinder

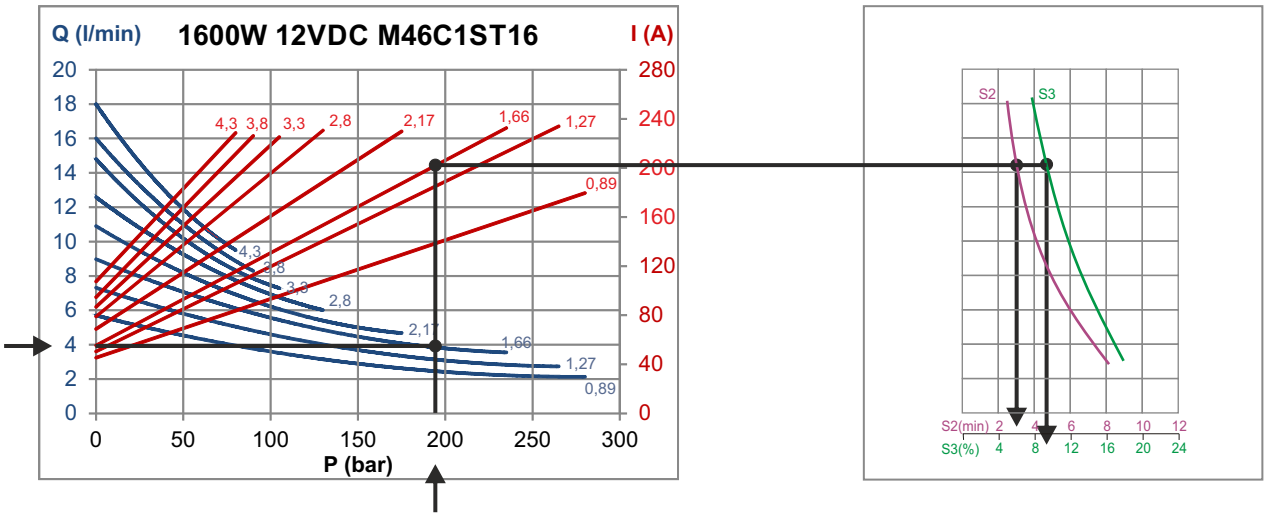


DC motors choice

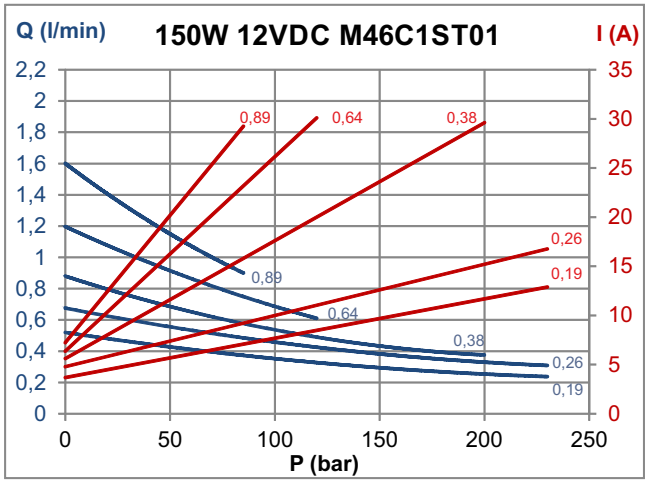
Once required pressure, flow and available voltage (12 or 24V DC) are known, you can select the motor checking on each diagram shown later in this catalogue if a pump displacement is available at the intersection of pressure and flow values. On the relevant "I" curve you obtain the absorbed current. When the intersection point is not exactly on a pump curve, choose the closest smaller pump. On the right hand diagram, from the current value, you can easily obtain the maximum allowed S2 time (min) and S3 (%) values. S2 gives the allowable motor continuous running time in minutes, S3 gives the allowable running time in % of the total cycle. If the obtained S2 and S3 values are not sufficient for the required duty cycle, choose a higher power or heavier duty motor and repeat the calculation on the new motor curves.

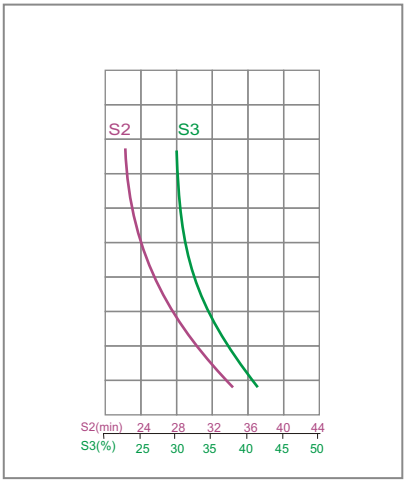
Example:

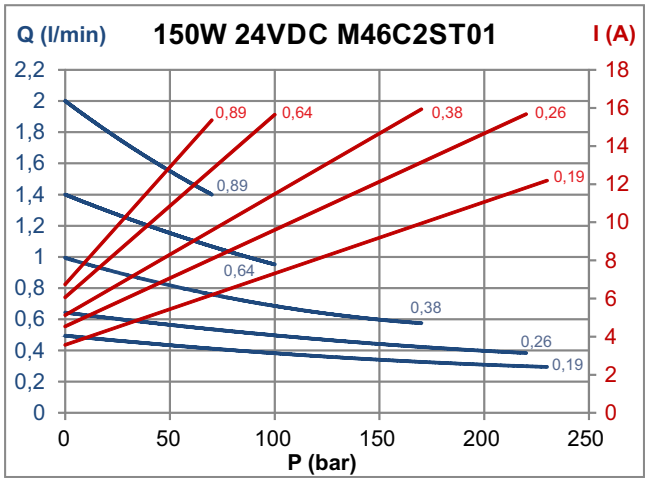
For our application we have following data:
flow = 4 l/min, max pressure = 195 bar, but the duty cycle is not clearly defined.
- We check on 1,6 Kw 12V DC motor diagram and see the 1,66 cc pump is suitable.
- We choose from curves a 1,66 cm^3/rev pump. On the corresponding "I" curve we read 200 A absorbed current at 195 bar.
- Transferring these conditions to the S2 / S3 diagram we read that the DC motor can work for maximum 3 min (S2) and that S3 is about 9% of the total cycle, i.e. after 3 min working, the motor should cool down for at least 30 min.
- The total cycle time is calculated by adding the working time and the idle time (9% working time plus 91% idle time), in this case 33 min. If this duty cycle is not adequate for our application, we must choose a higher power or higher duty DC motor and check the relevant diagram again.

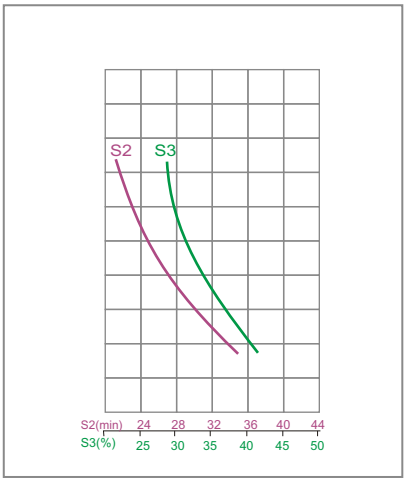


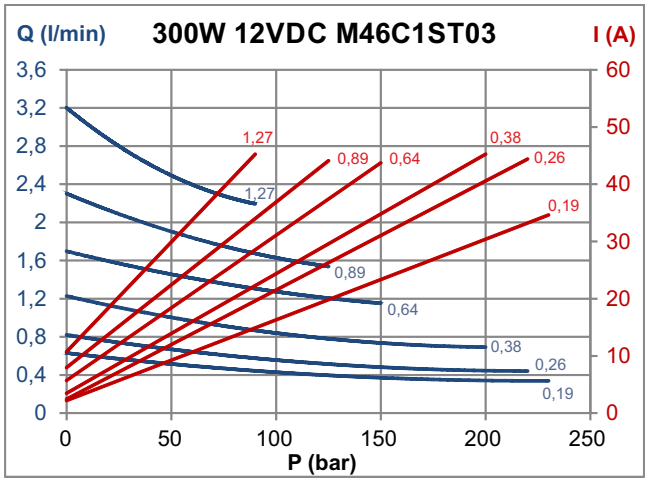
DC MOTORS Ø80 DIAGRAMS

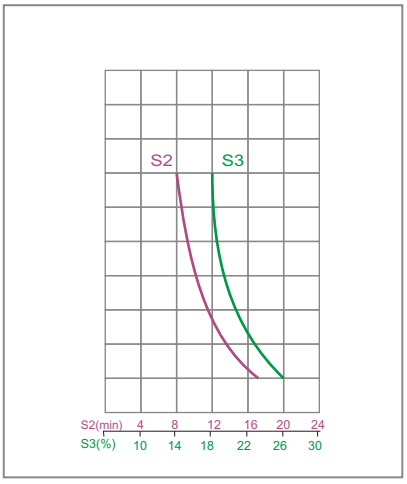








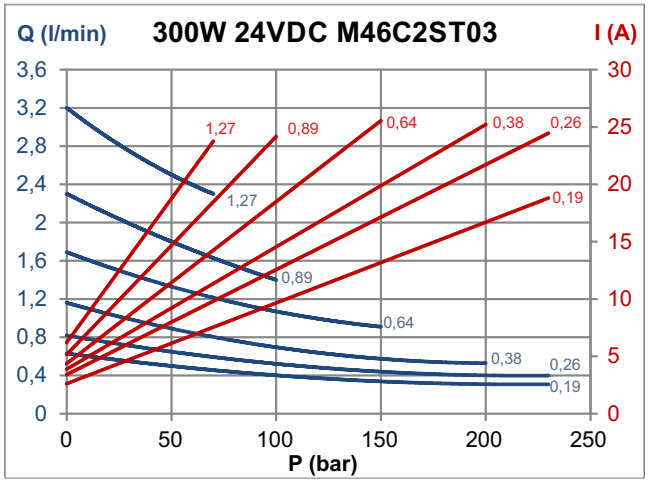


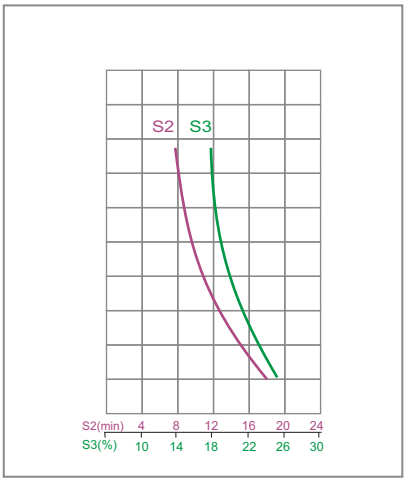


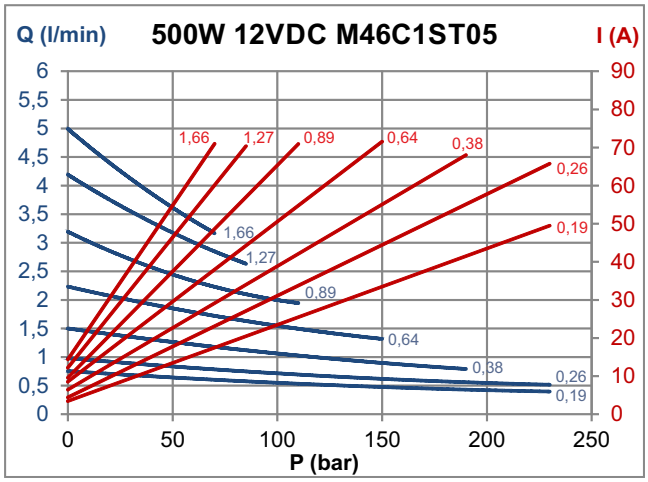
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

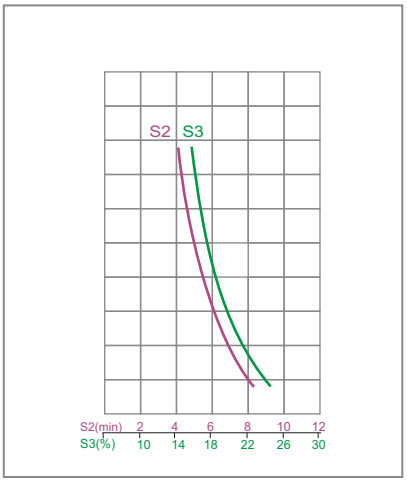
SECTION A

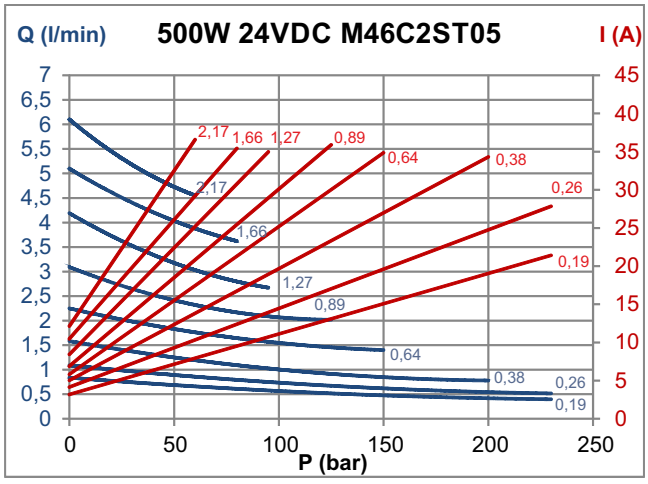
DC MOTORS Ø80 DIAGRAMS

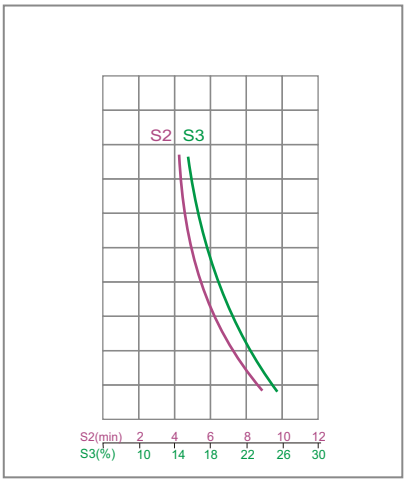






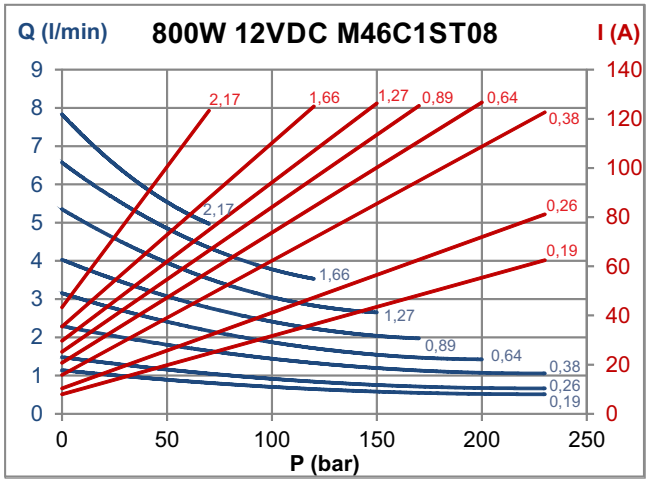


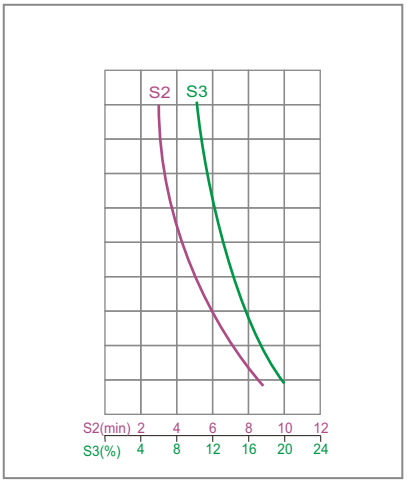


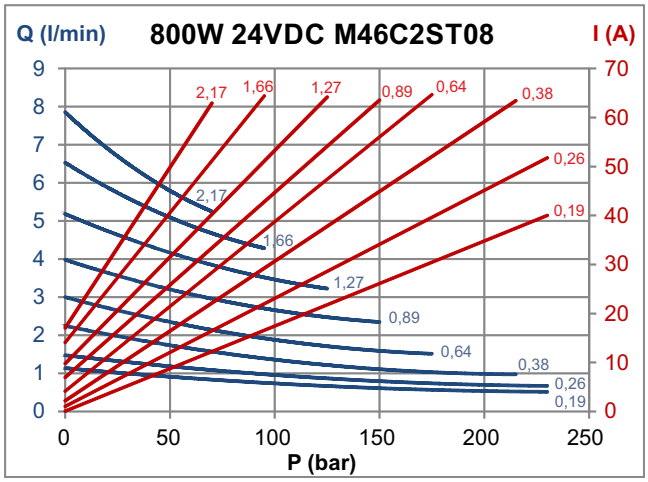


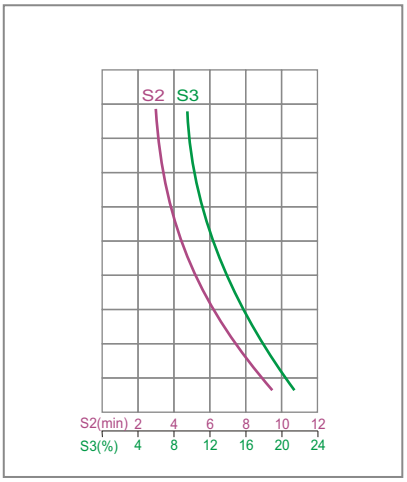
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

DC MOTORS Ø80 DIAGRAMS



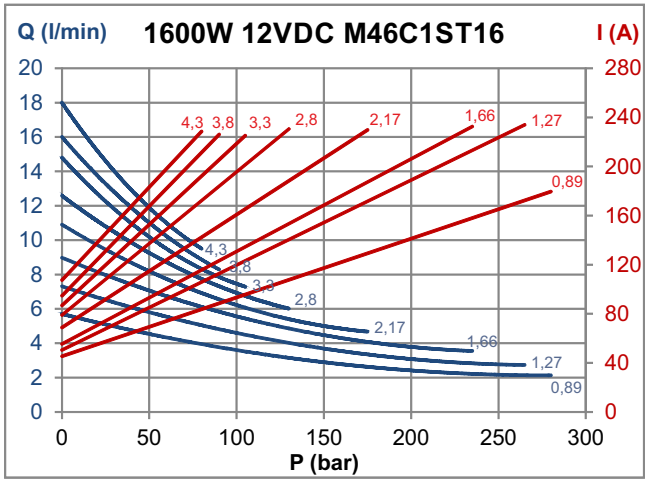


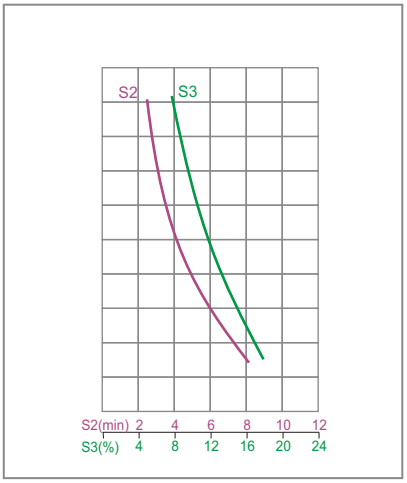


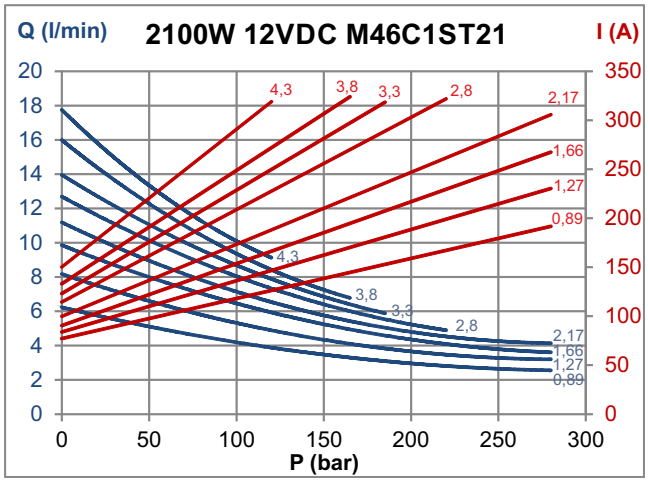


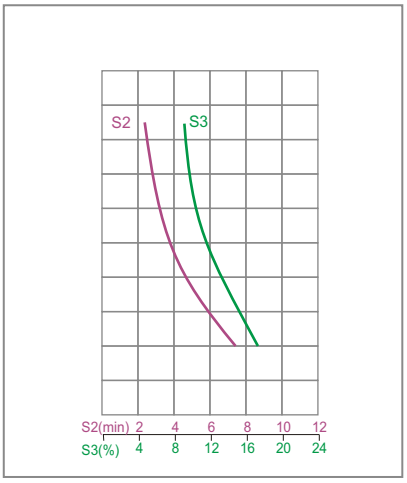
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

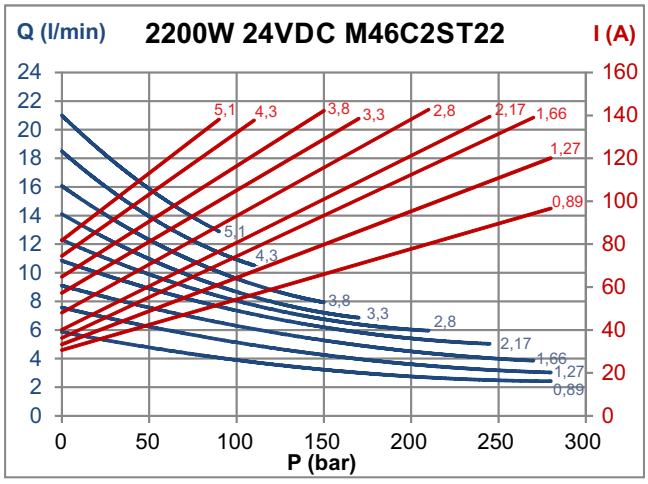
DC MOTORS Ø114 DIAGRAMS

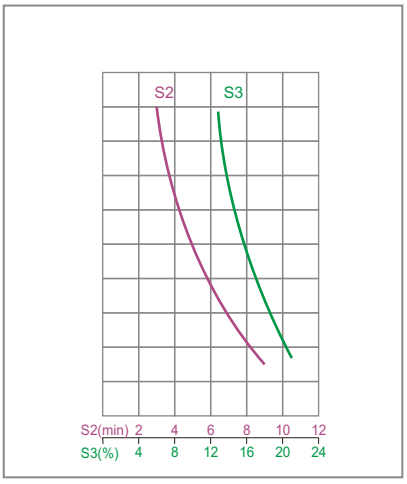






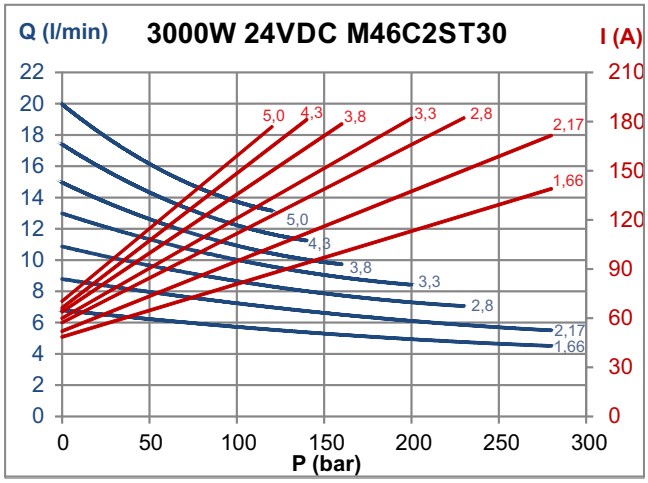


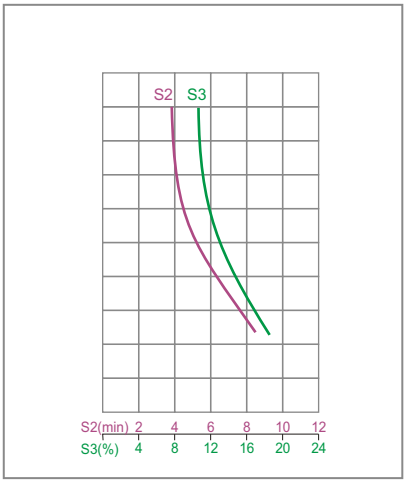


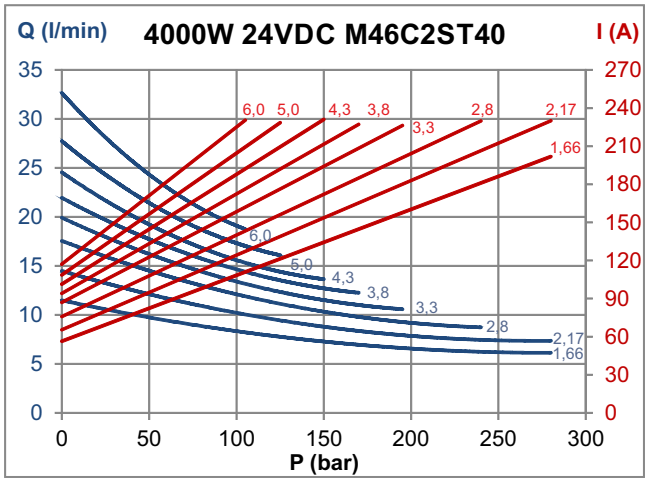


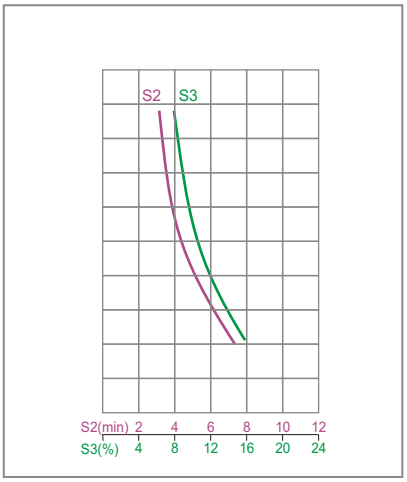
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

DC MOTORS Ø125 DIAGRAMS





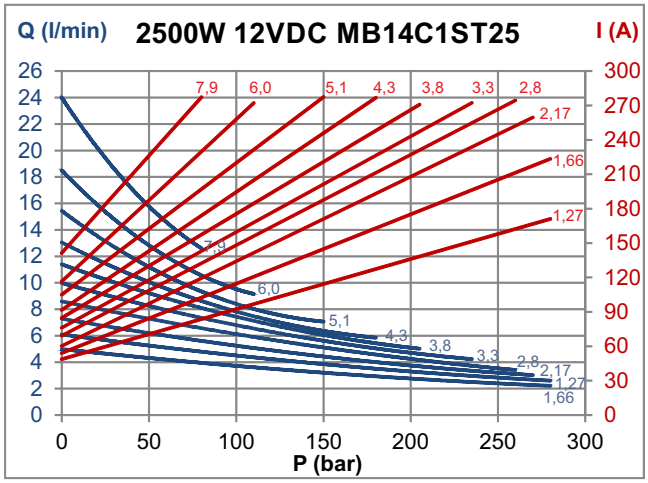


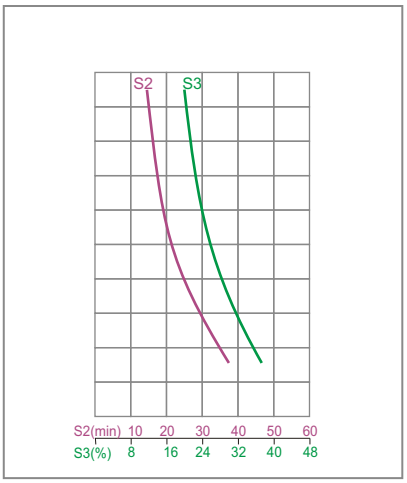


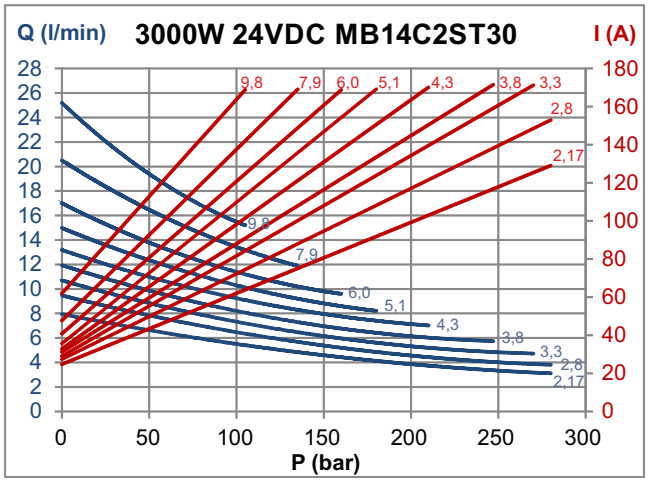
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

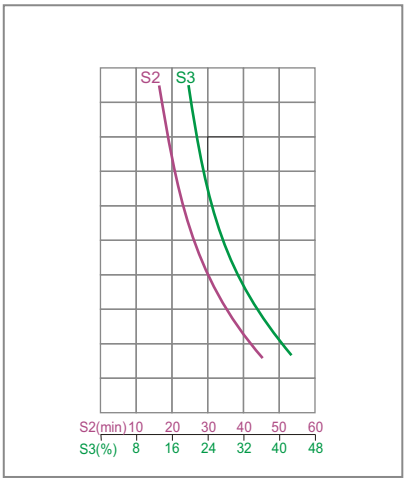
SECTION A

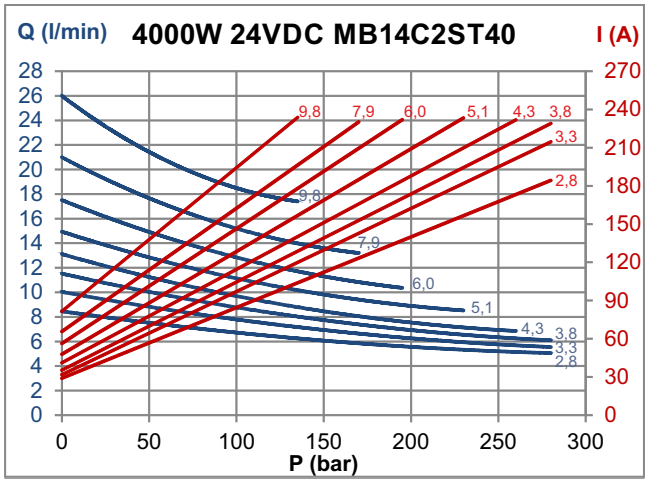
DC MOTORS Ø151 DIAGRAMS

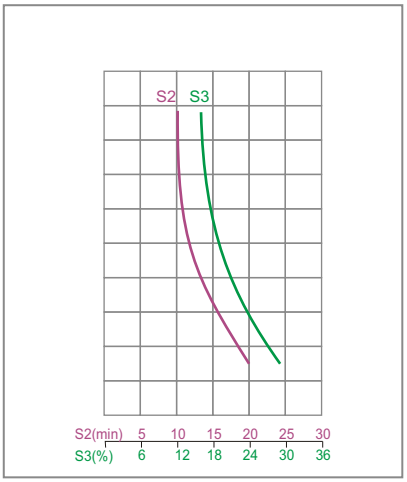












Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

INTEGRAL AC MOTORS

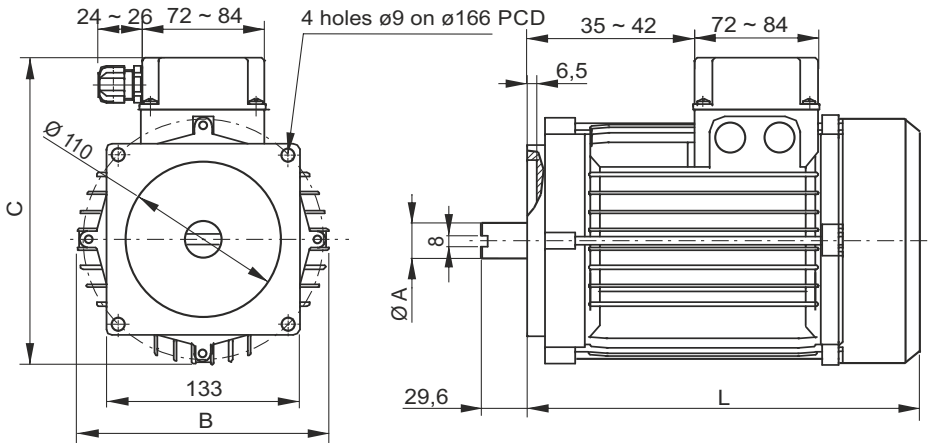
IMPROVED

Integral motors: these are motors specifically engineered and manufactured for our mini power packs, featuring high power density and direct connection to to the PPC central manifold. They are available in single phase or three phase execution, in frame 71, 80 and 90, with square flange and tang drive shaft. A single coupling fits all dimensions. High starting torque single phase «HT» executions available.

Other powers and/or special designs are available on request. Standard motors are for intermittent use: **S3 40%** is a typical work cycle consisting of up to six cycles (on-off) in one hour with the motor ON and OFF for 4 min to 6 min. These motors can be used in emergency situations even in continuous use at a reduced power (30% less than the nominal value S3).

Drawings show typical three phase motors. Single phase motors have a larger wiring box which also contains the capacitor(s) or can have an external capacitor(s).

Protection degree: IP54
Insulation class: F
Type of duty: S3 = intermittent duty



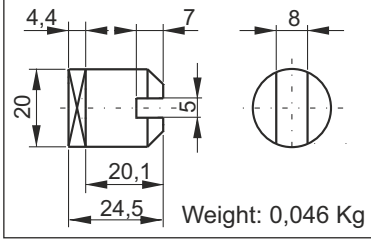
PPC motor assembly code

E	**AC integral motor**
1,5	**Maximum Power [kW]**
AC	**Alternate current**
3	**Phase: 3** = three phase **S** = single phase
4	**Poles: 4** = four poles **2** = two poles
90	**Frame**

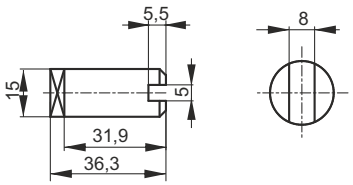
See a table of available codes on next table page

A single coupling will fit all motor frame sizes. This is the same coupling (pump side) included in the B14 motors mounting kit. The coupling is already included when specifying an integral AC motor in the PPC assembly code. When ordering spare motors, the coupling is not included and must be ordered separately.

Coupling code	Coupling code
E36100000 For gr.1 pumps	**E36100006** For gr.0 pumps



Weight: 0,046 Kg



Weight: 0,040 kg

OPTIONS

NEW

Start-up valve for single phase electric motors

It allows single-phase motors starting under load, overcoming the inherent limitation of single phase induction motors. It should be mounted in cavity 9 of the central manifold, after appropriate machining have been made.
For more details see table D080.

INTEGRAL AC MOTORS

Three-phase 4 poles (~1450 rpm at 50Hz)

Frame size	Maximum Power (S3 40%)	Assembly code	Spare part code	Ø A	B	C	L	Weight kg
71	0,37kW (0,5HP)	E0,37AC 34 71	E037AC341S3	17	138	180	214	5,5
	0,55kW (0,75HP)	E0,55AC 34 71	E055AC341S3	17	138	180	214	5,5
	0,75kW (1HP)	E0,75AC 34 71	E075AC341S3	17	138	180	214	5,5
80	1,1kW (1,5HP)	E1,1AC 34 80	E110AC342S3	19	156	202	251	10,5
90	1,5kW (2HP)	E1,5AC 34 90	E150AC343S3	24	176	217	277	14
	2,2kW (3HP)	E2,2AC 34 90	E220AC343S3	24	176	217	277	15
	3kW (4HP)	E3,0AC 34 90	E300AC343S3	24	176	217	277	16
100	4kW (5,5HP)	E4,0AC 34 100	E400AC344S3	25	191	248	321	25
	5,5kW (7,5HP)	E5,5AC 34 100	E550AC344S3	25	191	248	321	32

Three-phase 2 poles (~2900 rpm at 50Hz)

Frame size	Maximum Power (S3 40%)	Assembly code	Spare part code	Ø A	B	C	L	Weight kg
71	0,55kW (0,75HP)	E0,55AC 32 71	E055AC321S3	17	138	180	214	5
	0,75kW (1HP)	E0,75AC 32 71	E075AC321S3	17	138	180	214	5
80	1,1kW (1,5HP)	E1,1AC 32 80	E110AC322S3	19	156	202	251	10
	1,5kW (2HP)	E1,5AC 32 80	E150AC322S3	19	156	202	251	11
	2,2kW (3HP)	E2,2AC 32 80	E220AC322S3	19	156	202	251	12
90	3kW (4HP)	E3,0AC 32 90	E300AC323S3	24	176	217	277	16
	4kW (5HP)	E4,0AC 32 90	E400AC323S3	24	176	217	277	16
100	5,5kW (7,5HP)	E5,5AC 32 100	E550AC324S3	25	191	248	321	35

Single-phases 4 poles (~1450 rpm at 50Hz)

Frame size	Maximum Power (S3 40%)	Assembly code	Spare part code	Ø A	B	C	L	Weight kg
71	0,37kW (0,5HP)	E0,37AC S4 71	E037ACS41S3	17	138	180	214	6,5
	0,55kW (0,75HP)	E0,55AC S4 71	E055ACS41S3	17	138	180	214	7,2
80	0,75kW (1HP)	E0,75AC S4 80	E075ACS42S3	19	156	202	251	10
90	1,1kW (1,5HP)	E1,1AC S4 90	E110ACS43S3	24	176	217	277	13
	1,5kW (2HP)	E1,5AC S4 90	E150ACS43S3	24	176	217	277	15
	2,2kW (3HP)	E2,2AC S4 90	E220ACS43S3	24	176	217	277	15,5
100	3kW (4HP)	E3,0AC S4 100	E300ACS44S3	25	191	248	321	25

Single-phase 2 poles (~2900 rpm at 50Hz)

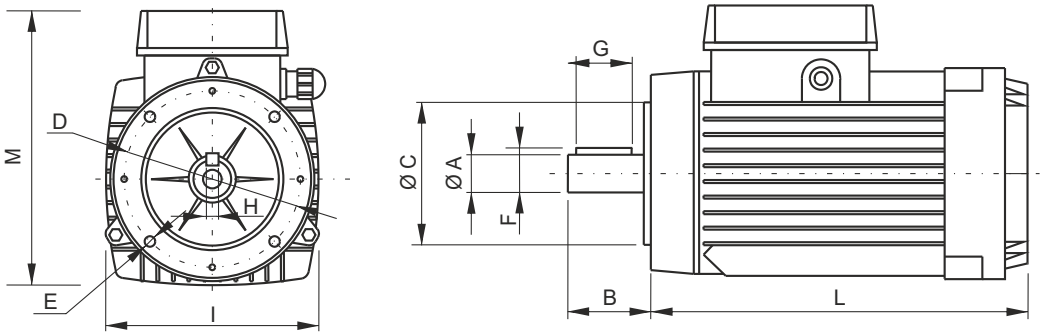
Frame size	Maximum Power (S3 40%)	Assembly code	Spare part code	Ø A	B	C	L	Weight kg
71	0,55kW (0,75HP)	E0,55AC S2 71	E055ACS21S3	17	138	180	214	6
	0,75kW (1HP)	E0,75AC S2 71	E075ACS21S3	17	138	180	214	6,5
80	1,1kW (1,5HP)	E1,1AC S2 80	E110ACS22S3	19	156	202	251	10
	1,5kW (2HP)	E1,5AC S2 80	E150ACS22S3	19	156	202	251	11
90	2,2kW (3HP)	E2,2AC S2 90	E220ACS23S3	24	176	217	277	15

B14 IEC AC MOTORS

B14 IEC motors: for market compatibility, any IEC standard B14 AC motor with frame 71, 80, 90, 100 and 112 can be mounted. In this case two-piece couplings and additional adaptor flanges as per the tables A170, A180, A190, A200 shown on following pages must be fitted.

Motor overall dimensions are not indicated since they can very substantially depending on the motor brand selected.

CE



B14 standard dimensions

Frame size	Typical powers	ØA	B	ØC	D	E	F	G	H	Mounting kit
71	0,25 ~ 0,37 kW 0,37 ~ 0,5 HP	14 j6	30	70	85	M6	16	30	5	**XB14 71-0** (gr. 0) **XB14 71-1** (gr.1)
80	0,55 ~ 0,75 kW 0,75 ~ 1 HP	19 j6	40	80	100	M6	21,5	40	6	**XB14 80-0** (gr. 0) **XB14 80-1** (gr. 1)
90	1,1 ~ 1,5 kW 1,5 ~ 2 HP	24 j6	50	95	115	M8	27	50	8	**XB14 90-1**
100/112	2,2 ~ 7,5 kW 3 ~ 10 HP	28 j6	60	110	130	M8	31	60	9	**XB14 100-1**

Three-phase 4 poles (~1450 rpm at 50Hz)

Frame size	Typical powers (S3 40%)	Assembly code	Spare part code	Ø A	I	L	M	Weight kg
112	7,5kW (10HP)	**E7,5AC 34 112**	**B14750AC345S3**	28 j6	216	327	129	35

Three-phase 2 poles (~2900 rpm at 50Hz)

Frame size	Typical powers (S3 40%)	Assembly code	Spare part code	Ø A	I	L	M	Weight kg
112	7,5kW (10HP)	**E7,5AC 32 112**	**B14750AC325S3**	28 j6	126	327	129	38

Mounting kits - spare parts

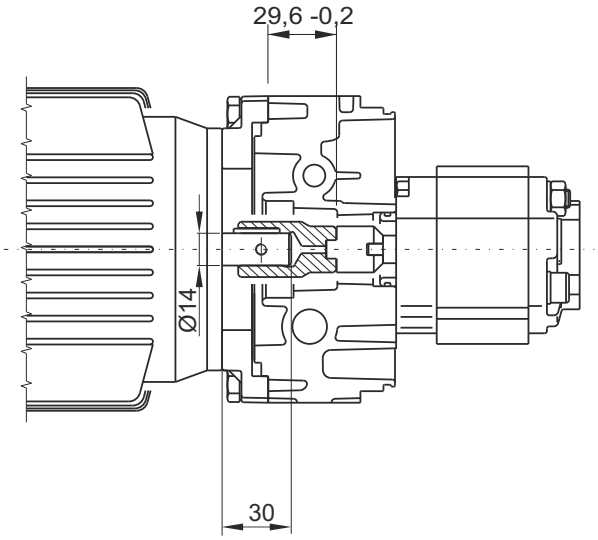
The B14 mounting kits are made of:
- a half-coupling E36100000 (for pumps gr. 1) or E36100006 (for pumps gr. 0) on pump shaft side, the same as used for integral AC motors.
- a half-coupling on motor shaft side, which is different for each frame size.
- an adaptor flange to suit the central manifold, which is also different for each frame size.

The mounting kit is already included when specifying a B14 AC motor in PPC assembly code. When ordering spare motors, the relevant mounting kit is not included and must be ordered separately.

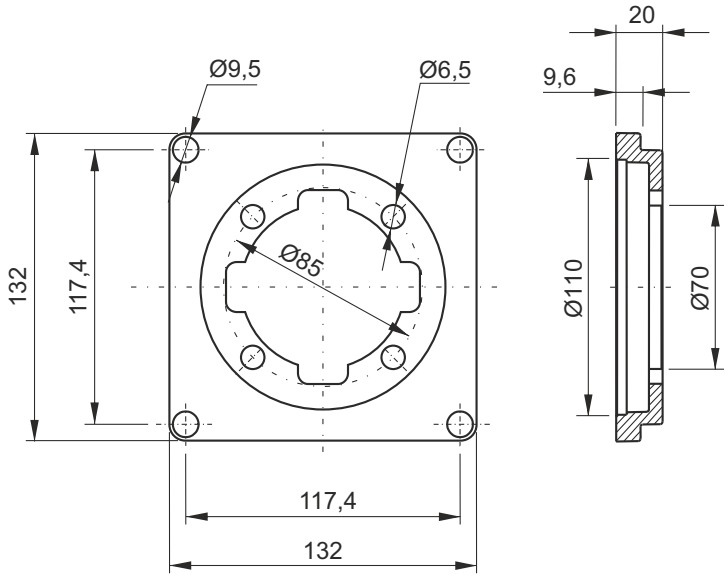
SECTION A

MOUNTING KIT FOR FRAME 71 B14 IEC MOTORS

Kit weight: 0,32 Kg



Adaptor flange



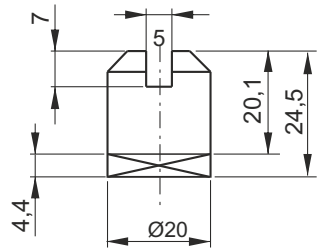
Weight: 0,18 Kg

Description	Assembly code*	Spare part code
B14 71 motor side half-coupling	XB14 71 -0 (gr.0) -1 (gr.1)	**E36100001**
B14 pump side half-coupling		**E36100006 (gr.0)** **E36100000 (gr.1)**
B14 71 adaptor flange		**F27010001**

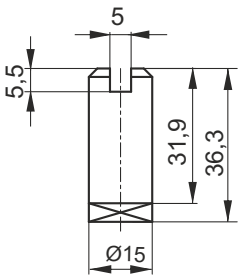
* Note: The coupling+flange kit is already included when specifying a B14 motor in PPC assembly code. XB1471 code has to be indicated only when ordering PPC with no motor but with coupling+flange kit.

Couplings

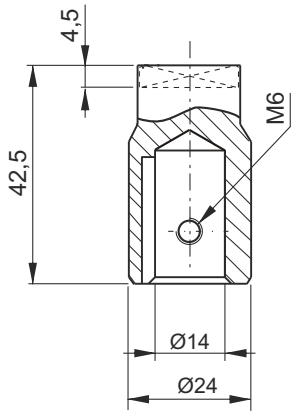
Pump side (group1) **E36100000** Weight: 0,05 Kg



Pump side (group0) **E36100006** Weigh: 0,04 Kg



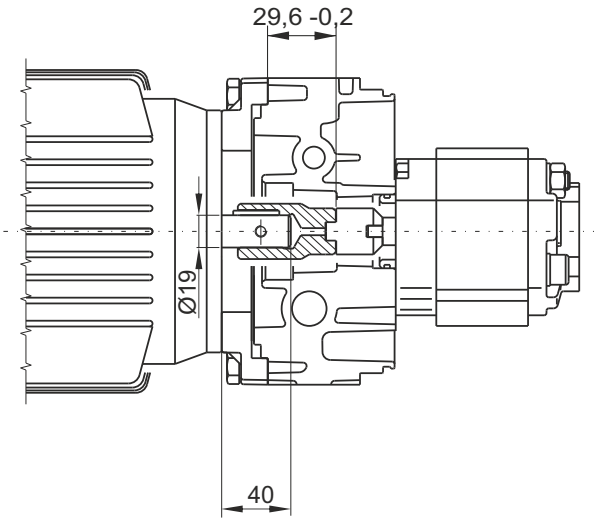
Motor side **E36100001** Weight: 0,08 Kg



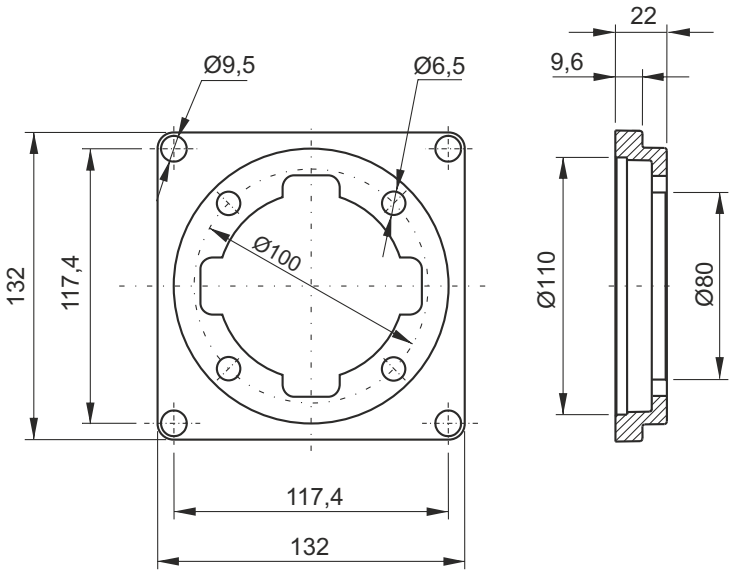
Attention! When assembling frame 71 B14 motors with XB14 flange+couplings kit, please respect positioning tolerances as per top drawing. Failure to do so can cause malfunctioning or component failure.

MOUNTING KIT FOR FRAME 80 B14 IEC MOTORS

Kit weight: 0,36 Kg



Adaptor flange



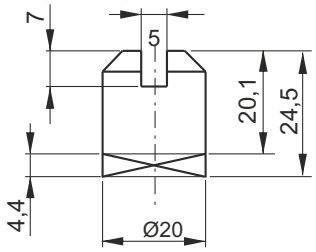
Weight: 0,21 Kg

Description	Assembly code*	Spare part code
B14 80 motor side half-coupling	XB14 80 -0 (gr.0) -1 (gr.1)	**E36100002**
B14 pump side half-coupling		**E36100006 (gr.0)** **E36100000 (gr.1)**
B14 80 adaptor flange		**F27010002**

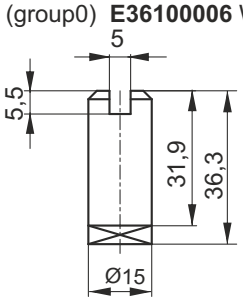
* Note: The coupling+flange kit is already included when specifying a B14 motor in PPC assembly code. XB1480 code has to be indicated only when ordering PPC with no motor but with coupling+flange kit.

Couplings

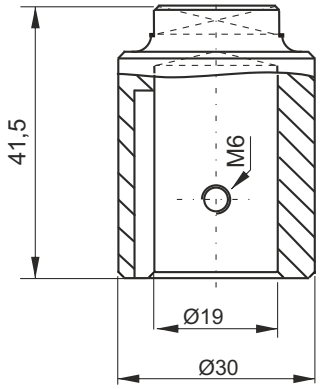
Pump side (group1) **E36100000** Weight: 0,05 Kg



Pump side (group0) **E36100006** Weight: 0,04 Kg



Motor side **E36100002** Weight: 0,12 Kg

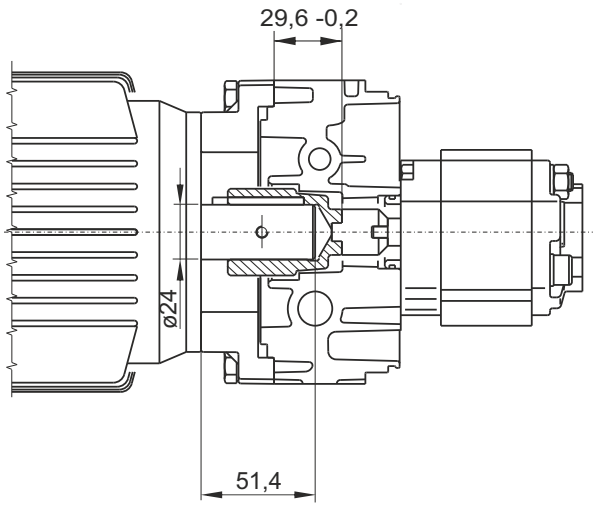


Attention! When assembling frame 80 B14 motors with XB14 flange+couplings kit, please respect positioning tolerances as per top drawing. Failure to do so can cause malfunctioning or component failure.

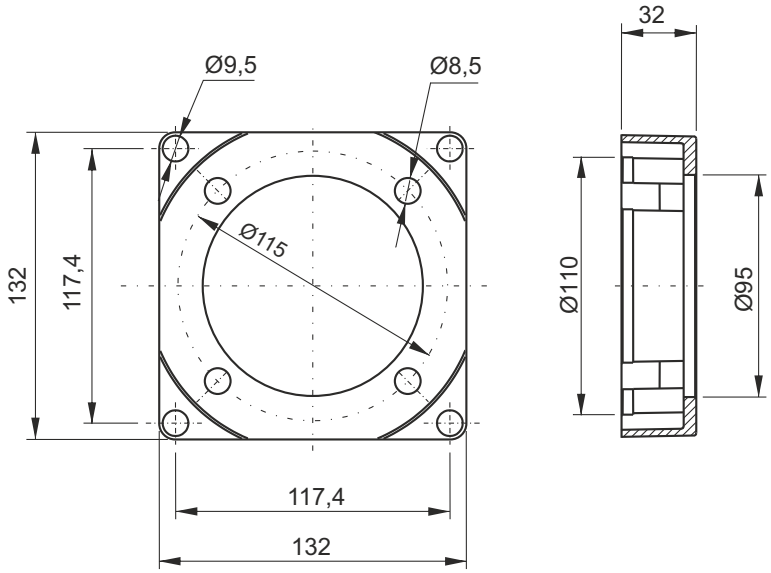
SECTION A

MOUNTING KIT FOR FRAME 90 B14 IEC MOTORS

Kit weight: 0,59 Kg



Adaptor flange



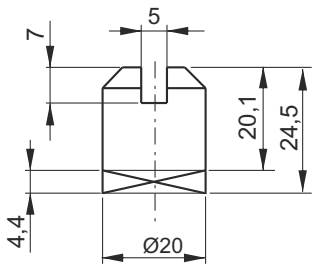
Weight: 0,35 Kg

Description	Assembly code*	Spare part code
B14 90 motor side half-coupling	XB14 90-1	**E36100003**
B14 pump side half-coupling		**E36100000**
B14 90 adaptor flange		**F27010003**

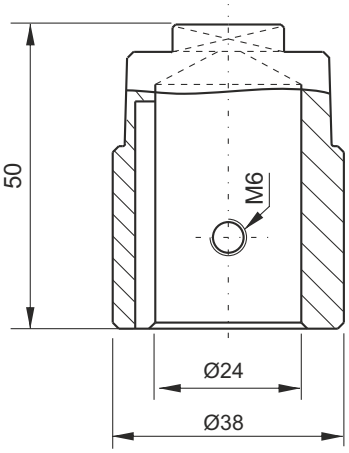
* Note: The coupling+flange kit is already included when specifying a B14 motor in PPC assembly code. XB1490 code have to be indicated only when ordering PPC with no motor but with coupling+flange kit.

Souplings

Pump side **E36100000** Weight: 0,05 Kg



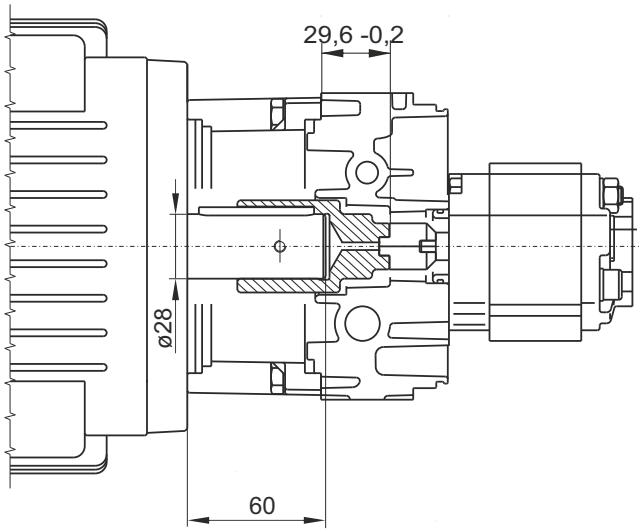
Motor side **E36100003** Weight: 0,22 Kg



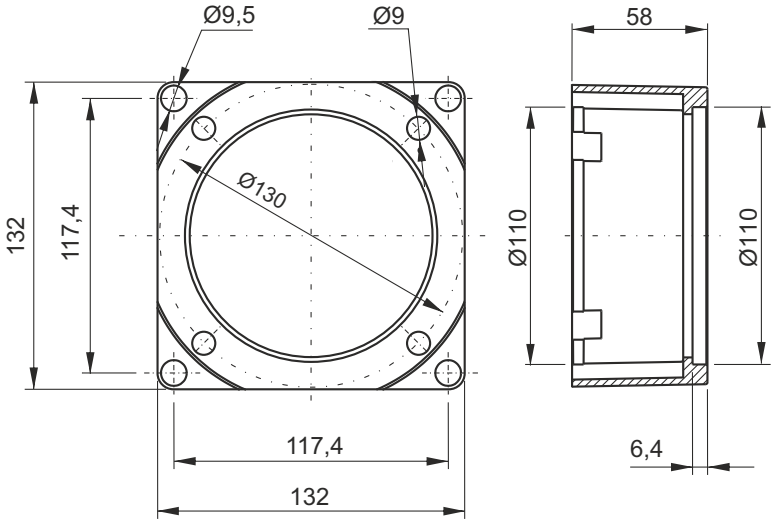
Attention! When assembling frame 90 B14 motors with XB14 flange+coupling kit, please respect positioning tolerances as per top drawing. Failure to do so can cause malfunctioning or component failure.

MOUNTING KIT FOR FRAME 100/112 B14 IEC MOTORS

Kit weight: 0,99 Kg



Adaptor flange



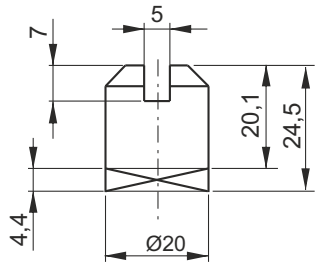
Weight: 0,66 Kg

Description	Assembly code*	Spare part code
B14 100 motor side half-coupling	XB14 100-1	**E36100004**
B14 pump side half-coupling		**E36100000**
B14 100 adaptor flange		**F27010004**

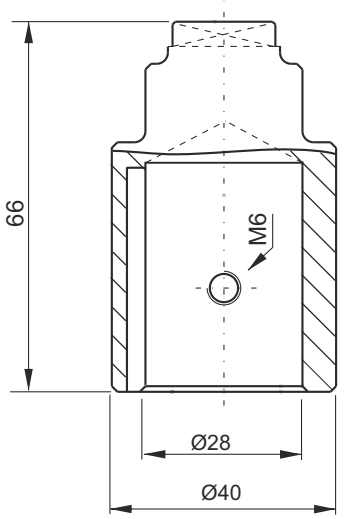
* Note: The coupling+flange kit is already included when specifying a B14 motor in PPC assembly code. XB1490 code has to be indicated only when ordering PPC with no motor but with coupling+flange kit.

Couplings

Pump side **E36100000** Weight: 0,05 Kg



Motor side **E36100004** Weight: 0,31 Kg

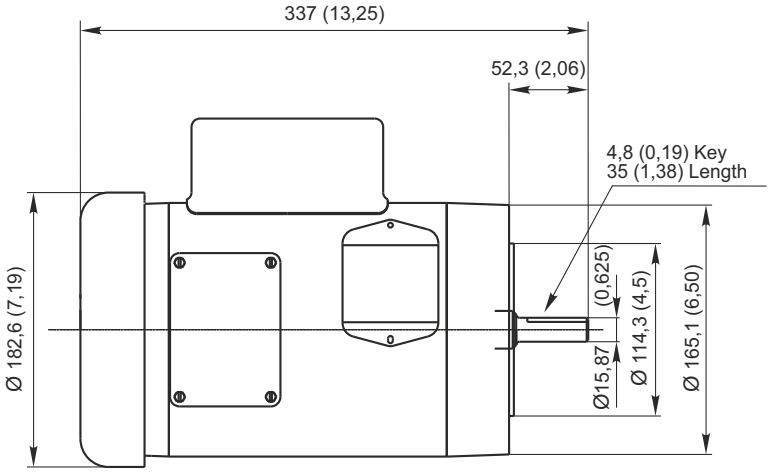


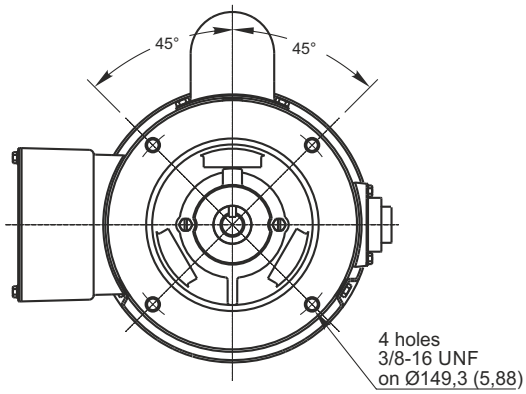
Attention! When assembling frame 90 B14 motors with XB14 flange+coupling kit, please respect positioning tolerances as per top drawing. Failure to do so can cause malfunctioning or component failure.

SECTION A

NEMA 56C AC MOTORS

Nema motors: for market compatibility, any Nema 56C face standard AC motor can be mounted. These motors are NOT supplied by Hydronit and are normally procured by the customer himself. In this case Hydronit can supply a two-piece coupling and additional adaptor flange as per the table on the following page.



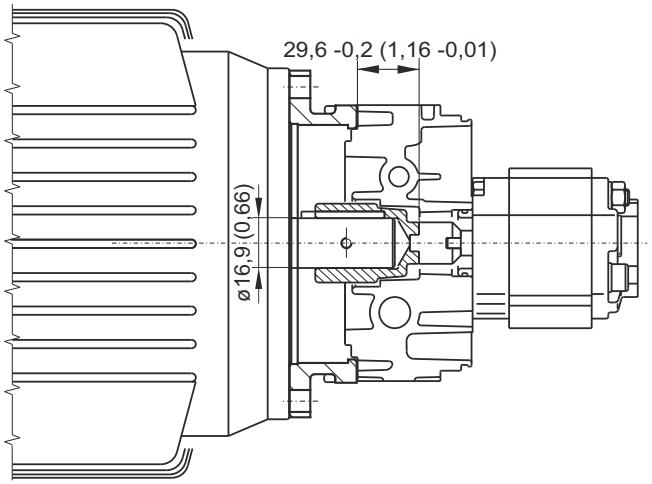


Motor overall dimensions can vary substantially depending on the motor brand.
These dimensions are given only as general indicative references.

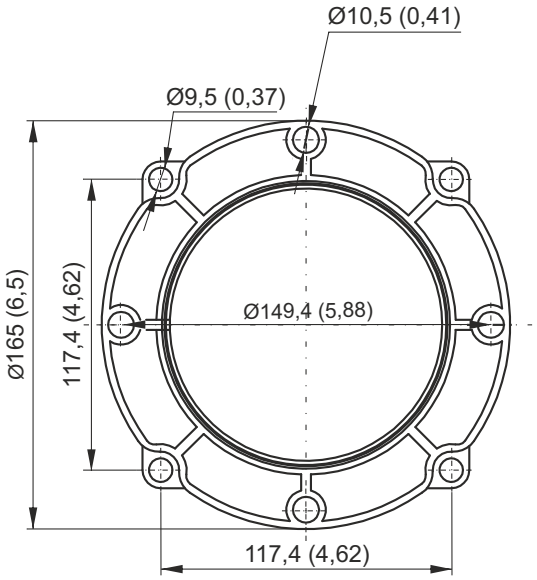
Motor attachment	Typical range power	Pump group	Assembly code mounting kit	Spare part code	Description
56C	0,18 ~ 1,5 kW 0,25 ~ 2,0 HP	0	X56C-0	E36156C01	Nema 56C face motor side half-coupling
				E36100006	gr.0 pump half-coupling
				F27056C01	Nema 56C face adaptor flange
		1	X56C-1	E36156C01	Nema 56C face motor side half-coupling
				E36100000	gr.1 pump half-coupling
				F27056C01	Nema 56C face adaptor flange

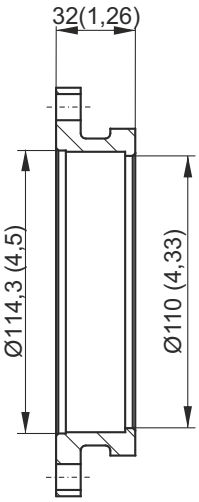
MOUNTING KIT FOR NEM 56C AC MOTORS

Kit weight: 0,54 (1,2 lbs)



Adaptor flange





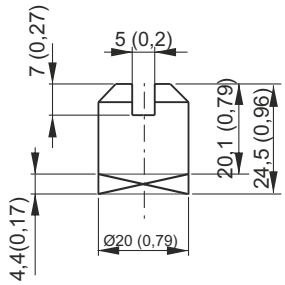
Weight: 0,35kg (0,77 lbs)

Description	Assembly code*	Spare part code
Nema 56C motor side half-coupling	X56C -0 (pumps gr.0) -1 (pumps gr.1)	E36156C01
Pump side half-coupling		E36100006 (gr.0) E36100000 (gr.1)
Nema 56C adaptor flange		F27056C01

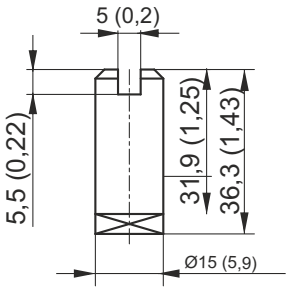
* Note: The coupling+flange kit is already included when specifying a Nema 56C motor in PPC assembly code. Nema 56C code has to be indicated only when ordering PPC with no motor but with coupling+flange kit.

Couplings

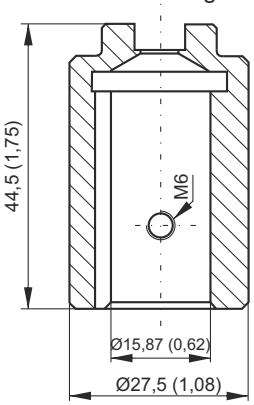
Pump side gp.1 side **E36100000** Weight: 0,05 Kg



Pump side gr.0 **E36100006** Weight: 0,04 Kg



Motor side **E36156C01** Weight: 0,12 Kg

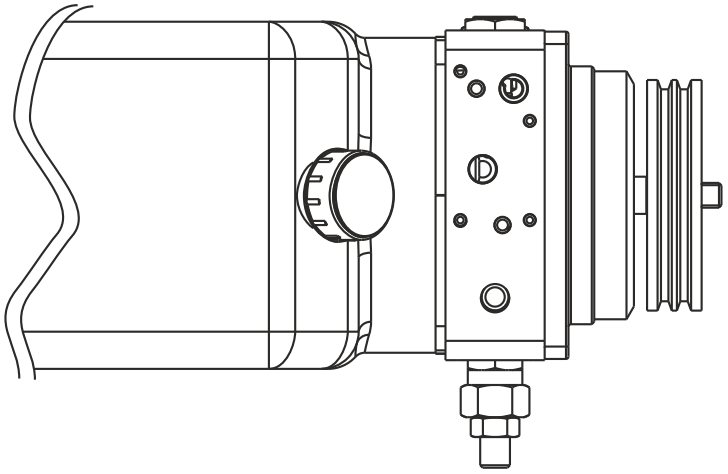


Attention! When assembling Nema 56C-face motors with XB56C-1 flange+couplings kit, please respect positioning tolerances as per top drawing. Failure to do so can cause malfunctioning or component failure.

SECTION A

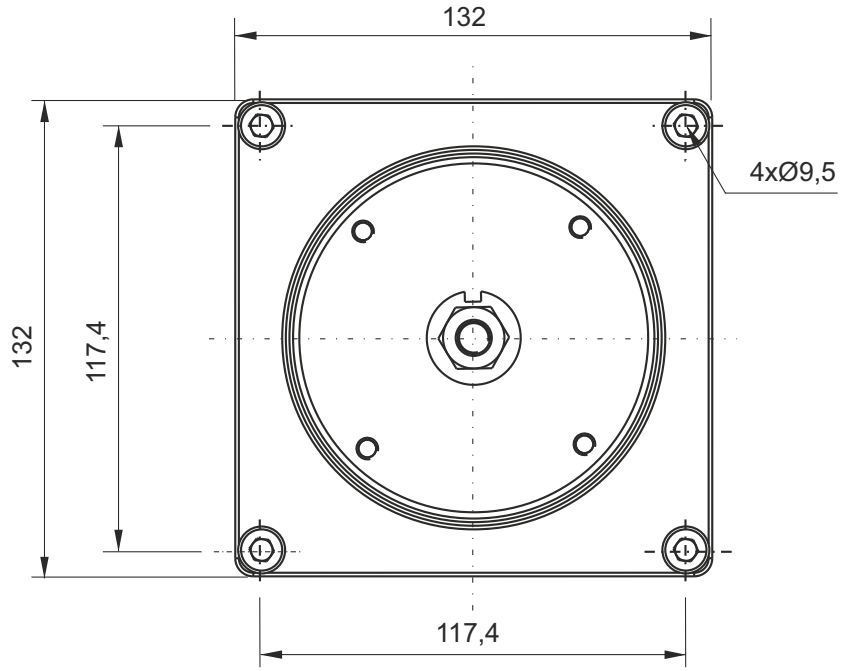
DRIVE A PULLEY

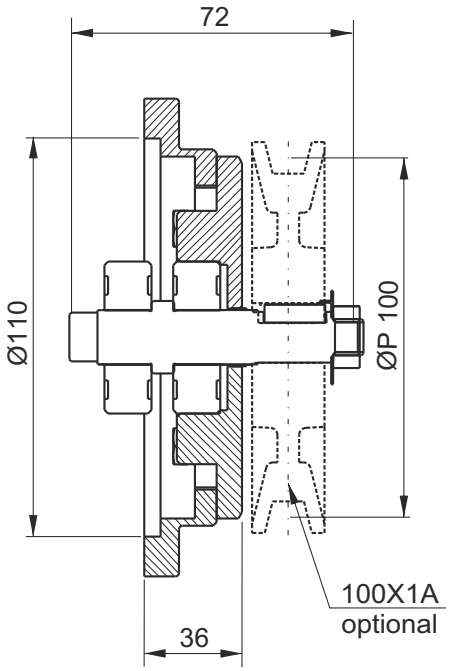
NEW



For pulleys mounted on shaft
Ø14mm with key 5mm

Weight: 0,70 Kg



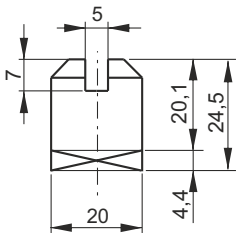


Description	Assembly code	Spare part code
Kit shaft and flange for mounting pulley	XPU1401-0 (pompa gr.0) XPU1401-1 (pompa gr.1)	P46FP1401
B14 pump side half-coupling		E36100006 (gr. 0) E36100000 (gr. 1)
B14 71 adaptor flange		F27010001

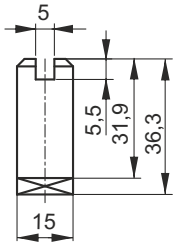
Note: The pulley kit excludes the pulley which is available on request.
The standard model has 100X1A code, suitable for V-belts
Nominal diameter 100mm, 1 throat, section type A.
Pulley weight 100X1A: 0,265 kg

Couplings

Pump side gr. 1
E36100000



Pump side gr. 0
E36100006



SUMMARY TABLE - PUMP/MOTOR COUPLING KITS

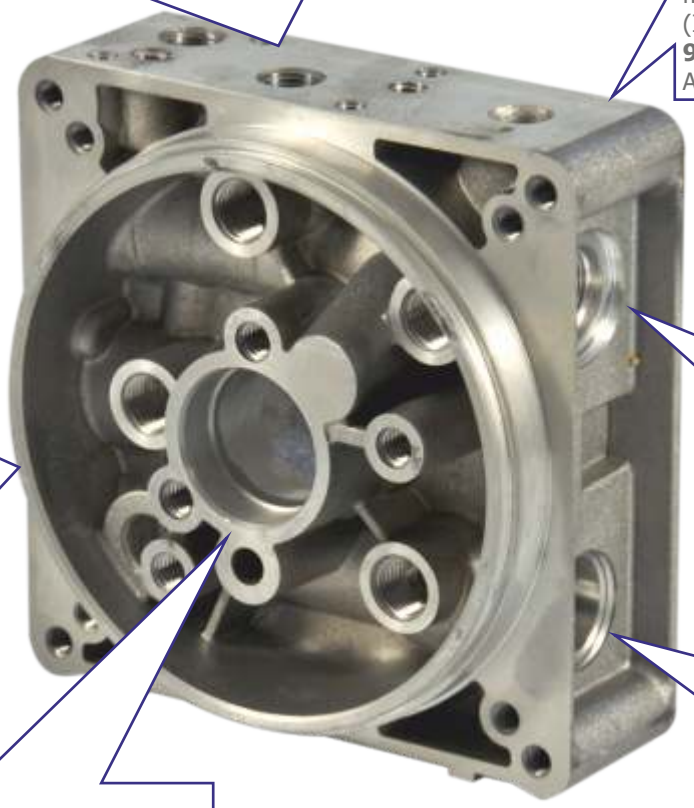
Motor \ Pump	Group 0 pump Series G - K - R	Group 1 pump Series G - K - H - S - R
DC Ø 80	E36200006	E36200002
DC Ø 114	E36200005	E36200001
DC Ø 125	E36200005	E36200001
DC Ø 151	n/a	XB1490-1
INTEGRAL AC	E36100006	E36100000
AC B14 71	XB14 71-0 (E36100001+E36100006+F27010001)	XB14 71-1 (E36100001+E36100000+F27010001)
AC B14 80	XB1480-0 (E36100002+E36100006+F27010002)	XB1480-1 (E36100002+E36100000+F27010002)
AC B14 90	n/a	XB1490-1 (E36100003+E36100000+F27010003)
AC B14 100/112	n/a	XB14100-1 (E36100004+E36100000+F27010004)
AC NEMA 56C	X56C-0 (E36156C01+E36100006+F27056C01)	X56C-1 (E36156C01+E36100000+F27056C01)
PULLEY	XPU1401-0 (P46FP1401+E36100006+F27010001)	XPU1401-1 (P46FP1401+E36100000+F27010001)

NOTE

UNIVERSAL CENTRAL MANIFOLDS

A single **universal die-cast aluminium central manifold** in 4 different executions is the core part from which all power units in industrial, mobile and marine fields are made. It features the **highest integration and flexibility** on the market, with up to **nine devices** which can be fitted inside, plus a wide selection of manifold blocks which can be connected externally to suit spool or cartridge type valves

The **interface** to hose fittings or external additional manifolds is **standardised**. The P and T port threads for direct connection of hose fittings are **1/4" BSPP** (International standard) or **9/16-18UNF** (SAE06) for the American standard version.



The **interfaces** to tanks and motors are **standardised**. All plastic or steel tanks have the same interface and can be easily interchanged.
All AC or DC motors can be fitted easily either directly to the central manifold or through adaptor flanges (B14 IEC standard motors)

Lateral cavities are conform to **SAE08 standard** (3/4-16UNF), except for the main relief valve cavity which is M20x1,5

Maximum flow is **25 l/min**, with a **low pressure drop**. Maximum motor power is 7,5kW, well above the average of other alternative products on the market

Clockwise (our standard) or counterclockwise tang drive shaft **standard gear pumps** can be mounted. **Double pumps**, including those with an integral **HI-LO circuit**, are also available

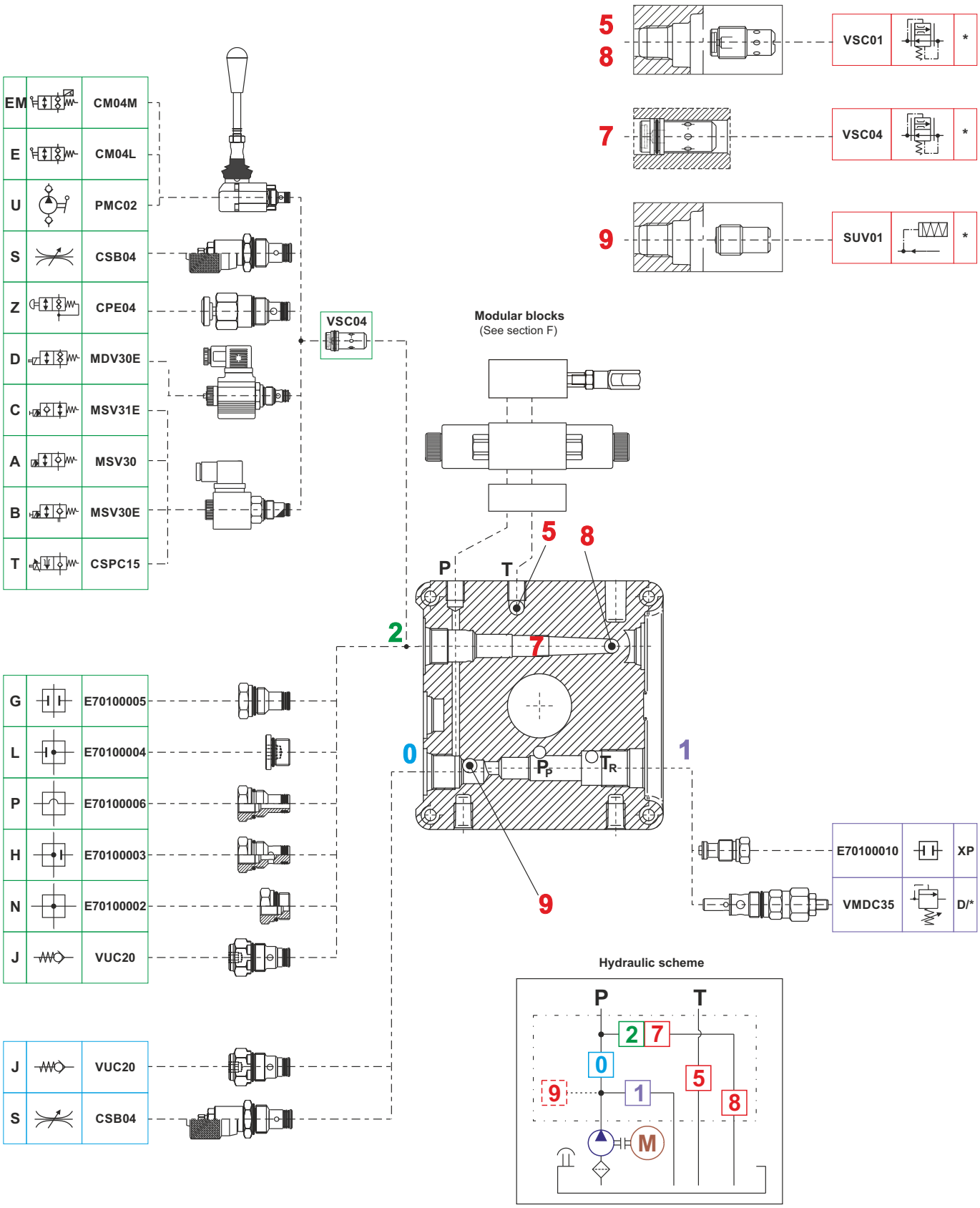
Which universal central manifold execution should I choose?
UA type is the most widely applied for single acting or double acting circuits. UB is the real «Universal» central manifold since in addition to UA type features there are two extra lateral cavities to mount, for example, an integrated emergency hand pump and an externally adjustable flow control. U4 is recommended for compact and cost effective double acting circuits with a single cylinder while UR is for bidirectional pumps.

Do I need special tools to assemble the components within the central manifold?
No. All the valves are screw-in type in a single piece construction (no loose nuts, washers, springs; nothing difficult to assemble or fall apart). The components can be easily assembled with simple hand tools and hexagon keys.

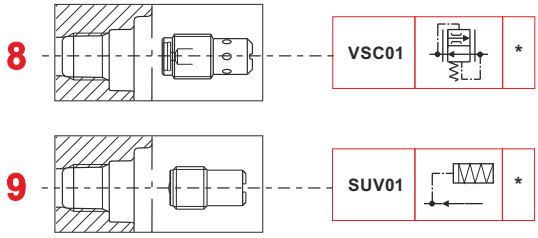
Is the central manifold available as a loose component?
Yes. We can supply either fully assembled and tested power packs or kits of loose components which can be kept in stock by our worldwide distributors and easily assembled to satisfy local market demand quickly and effectively. Central manifolds and other components are 100% tested even when supplied as loose parts.

SECTION B

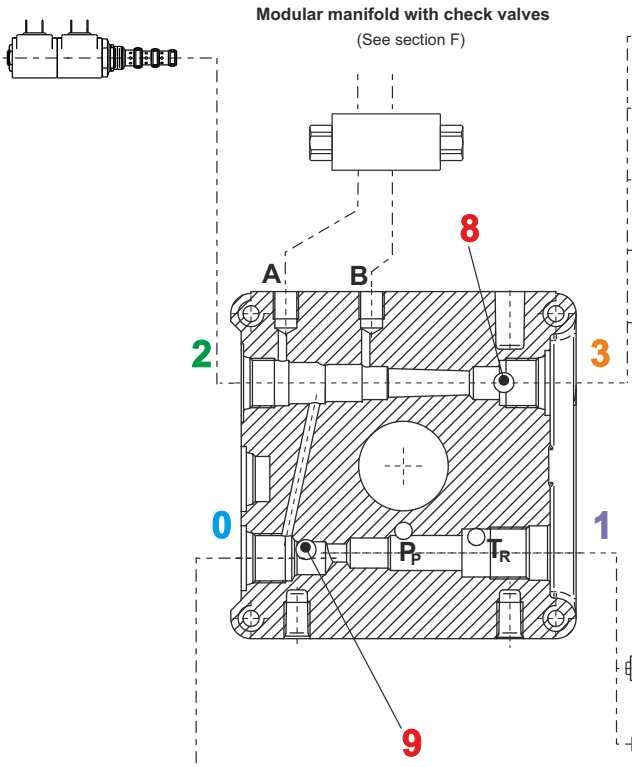
UNIVERSAL CENTRAL MANIFOLDS «UA» - VALVE COMBINATIONS

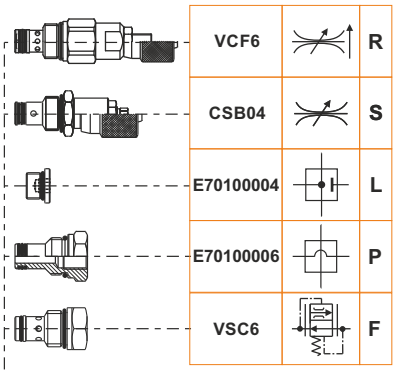


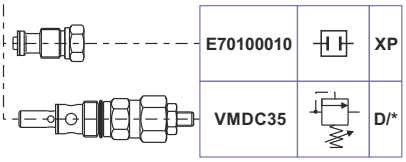
UNIVERSAL CENTRAL MANIFOLDS «U4» - VALVE COMBINATIONS



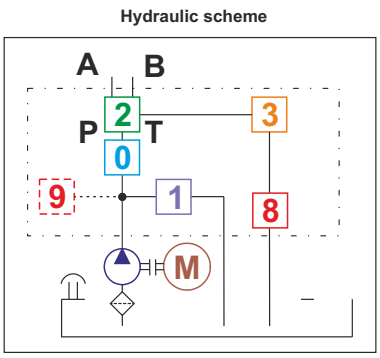
4VA2		MSV4VA2
4VB2		MSV4VB2
4VC2		MSV4VC2
4VE2		MSV4VE2
4VA11C		MSV4VA11C



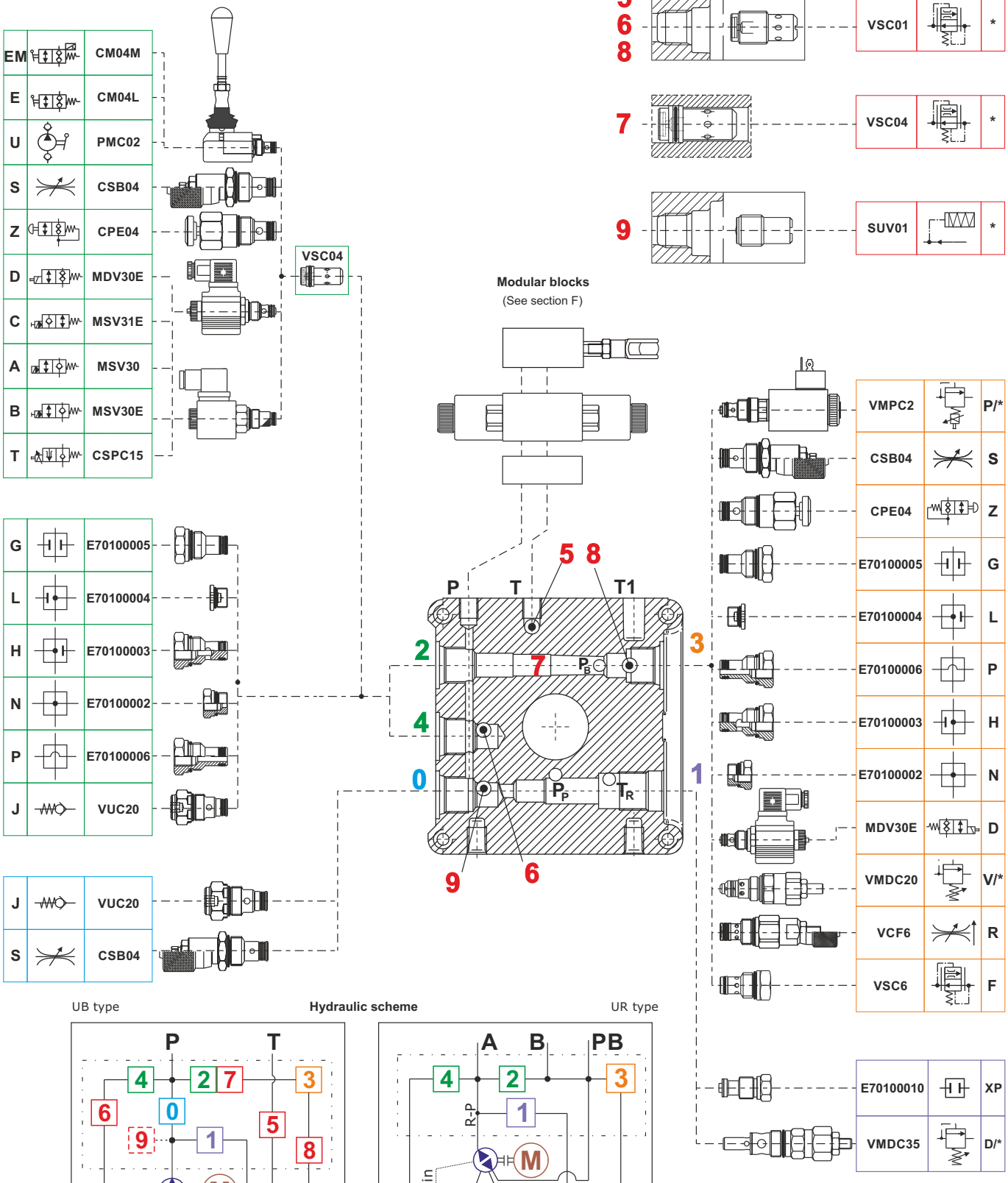




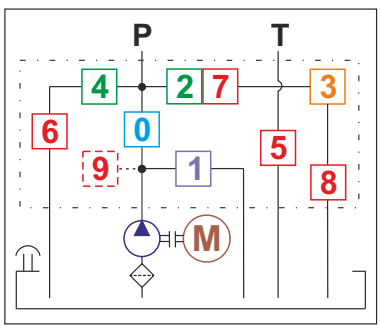
J		VUC20
S		CSB04



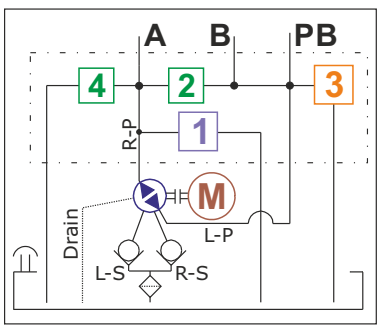
UNIVERSAL CENTRAL MANIFOLDS «UB» AND «UR» - VALVE COMBINATIONS



UB type



Hydraulic scheme



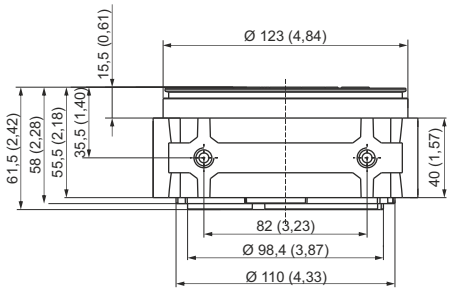
UR type

UR type is for reversible pumps.

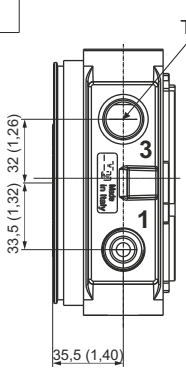
UNIVERSAL CENTRAL MANIFOLDS - OVERALL DIMENSIONS

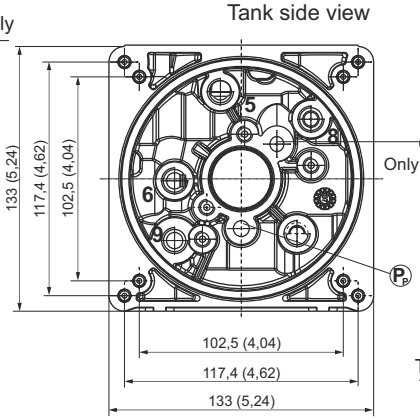
Type	Spare part code
UA	E60104020
UB	E60104021
U4	E60104022
UR	E60104023
UAUS	E60104020US
UBUS	E60104021US
U4US	E60104022US
URUS	E60104023US

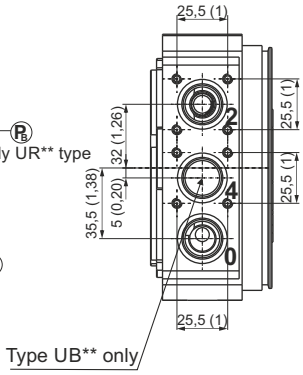
Notes:
- codes ending with US are destined for the American market and are machined with 9/16-18 UNF (SAE06) exit ports.
- all dimensions in mm + (inches)



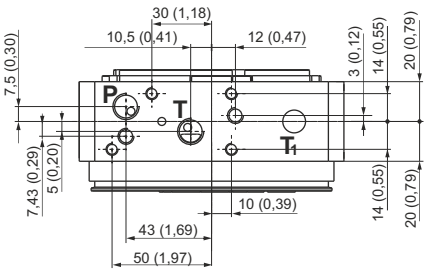
Weight: 1,1 kg (2,42 lb)

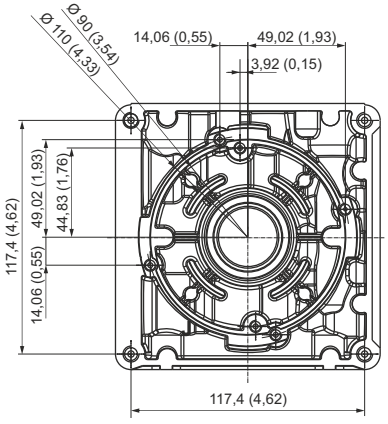






Cavity	Thread
1	M20x1,5 (relief valve)
0, 2, 3, 4	3/4-16 UNF (SAE08)
P-T	1/4 BSPP 9/16-18UNF (SAE06) tipo US
T_1	1/4 BSPP (threaded on request only)
5, 6, 8, 9	1/4 BSPP (9 threaded on request only)
Fixings - External manifolds	2 tie rods M8 4 tie rods M6
Fixings Tank	4 screws M6x14
Fixings Direct mount AC motors	4 screws M8x25
Fixings DC motors	2 screws M6x14 or tie rods M6
Fixings Pump	2 screws M8 (see pump lenghts on the relevant tables)
Fixings Mounting Foot	2 screws M10x18 7/16-20UNF type US
Fixings for cover of PMC hand pump or CM lever valve	4 screws M5x45





Motor side view

NOTES

PUMPS

K series. The standard pressure balanced design for cost effective solutions. Also available as a double pump with or without HI-LO circuit integrated within the pump itself

G series. The lightweight, pressure balanced, low noise and high efficiency pump specifically designed for mini power packs

H series. It features an oversized shaft and a higher number of teeth for high pressure applications, up to 280 bar peak.

R series. Bidirectional pumps with integrated suction check valves and two front outlet ports. They can be fitted on UR type central manifold.

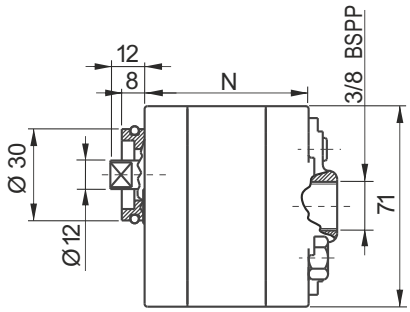
Why are pressure balanced gear pumps better than fixed clearance gear pumps used by some competitors?
Pressure balanced gear pumps are built with lateral pressure plates which reduce the mechanical clearance on the gears with the increase of the pressure on the outlet, thus greatly improving the hydrodynamic efficiency, reducing heat generation and energy consumption. The mechanical efficiency is kept at an optimal level too.

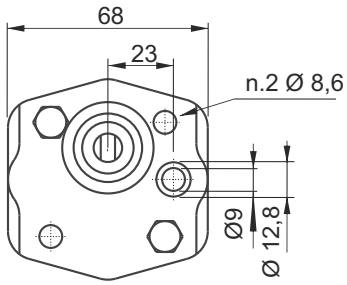
How can we mount both group 0 and group 1 pumps on the same Universal central manifold?
The group 1 pumps fit directly on the central manifold and are fixed by two bolts provided with the pump.
The group 0 pumps are fitted by adaptor plate E60513025, which adapts the pump front flange to to the central manifold.

Why do the pump technical specifications show three maximum pressure levels?
Our pumps have three ratings for the maximum allowable pressure: 1-Peak: is the and can be allowed for a maximum cycle of 2 seconds. 2-Intermittent: it can be applied on the pump for a maximum cycle of 20 seconds; 3-Continuous: it can be applied to the pump at all times.

SECTION C

G TYPE GEAR PUMPS, GROUP 1





Main features

Oil temperature	-15 ÷ +80 °C
Inlet pressure	0,7 < P < 3,0 bar (absolute pressure)
Fixing bolts	2 x M8 8.8 class steel tightening torque: 21 ÷ 25 Nm
Pressure definition	Peak pressure: cycle 2 s ON Intermittent pressure: cycle 20 s ON Continuous pressure: cycle always ON

Standard rotation direction: clockwise (from shaft side).
Counterclockwise rotation pumps can be mounted on request.
Ask our sales department.

Spare part code

E60 60 30 **

Pump type:
60 = Group 1

Size:
see below table

Assembly code

G — **Pump type:**
G = G type

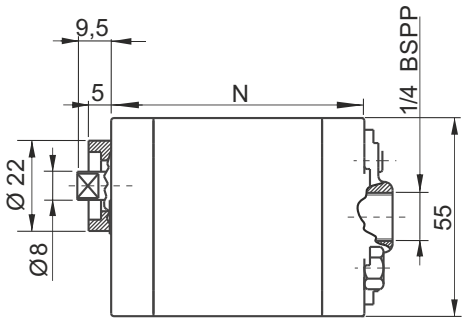
1,1 — **Nominal displacement:**
(cc/rev) see below table

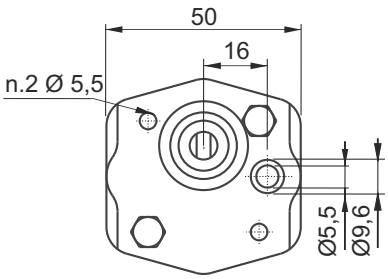
Available range

Nominal displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Code marked on pump	Spare part code	Weight [Kg]
0,8	250	230	210	6000	35,8	M8x50	EK1PD1.3G	E60603001	0,49
1,1	250	230	210	6000	36,8	M8x50	EK1PD1.6G	E60603002	0,50
1,3	250	230	210	6000	37,8	M8x50	EK1PD2G	E60603003	0,51
1,6	250	230	210	6000	38,8	M8x55	EK1PD2.5G	E60603035	0,52
2,1	250	230	210	6000	40,8	M8x55	EK1PD3.3G	E60603004	0,54
2,6	250	230	210	6000	42,3	M8x60	EK1PD4.2G	E60603005	0,56
3,2	230	210	190	5000	43,8	M8x60	EK1PD5G	E60603006	0,58
3,7	230	210	190	4500	45,8	M8x60	EK1PD5.8G	E60603007	0,61
4,2	230	210	190	4000	47,3	M8x60	EK1PD6.7G	E60603008	0,63
4,9	210	190	170	3500	49,3	M8x65	EK1PD7.5G	E60603009	0,65
6,0	210	190	170	3000	51,3	M8x65	EK1PD9.2G	E60603010	1,01
7,9	200	180	160	2100	88,0	M8x100	K1PD11.5G	E60603012	1,12
9,8	170	150	130	1700	95,0	M8x110	K1PD14.5G	E60603014	1,27

* A washer is always fitted to ensure correct bolt engagement

G TYPE GEAR PUMPS, GROUP 0



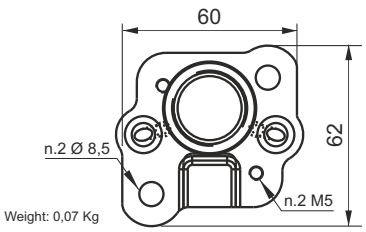


Main features

Oil temperature	-15 ÷ +80 °C
Inlet pressure	0,7 < P < 3,0 bar (absolute pressure)
Fixing bolts	2 x M5 8.8 class steel tightening torque: 8 ÷ 9,5 Nm
Pressure definition	Peak pressure: cycle 2 s ON Intermittent pressure: cycle 20 s ON Continuous pressure: cycle always ON

Standard rotation direction: clockwise (from shaft side).
Counterclockwise rotation pumps can be mounted on request.
Ask our sales department.

Aluminium adapter flange for group 0
Code: E60513025



Weight: 0,07 Kg

Spare part code

E60 50 30 **

Pump type:
50 = Group 0

Size:
see below table

Assembly code

G — **Pump type:**
G = G type

0,4 — **Nominal displacement:**
(cc/rev) see below table

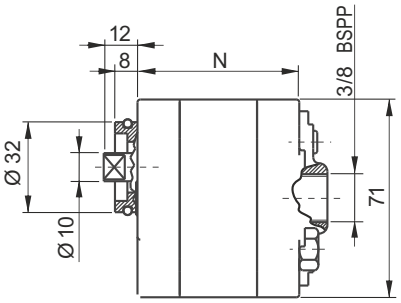
Available range

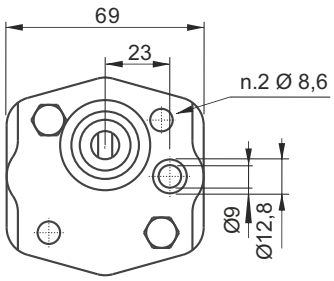
Nominal displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Code marked on pump	Spare part code	Weight [Kg]
0,1	230	210	190	7000	44,5	M5x55	UK0,25D18G	E60503001	0,49
0,2	230	210	190	7000	44,5	M5x55	UK0,25D24G	E60503002	0,50
0,4	230	210	190	7000	47,5	M5x55	UK0,25D36G	E60503004	0,51
0,6	230	210	190	7000	51,5	M5x65	UK0,25D0,75G	E60503006	0,52

* A washer is always fitted to ensure correct bolt engagement

SECTION C

K TYPE GEAR PUMPS, GROUP 1





Main features

Oil temperature	-15 ÷ +80 °C
Inlet pressure	0,7 < P < 3,0 bar (absolute pressure)
Fixing bolts	2 x M8 8.8 class steel tightening torque: 21 ÷ 25 Nm
Pressure definition	Peak pressure: cycle 2 s ON Intermittent pressure: cycle 20 s ON Continuous pressure: cycle always ON

Standard rotation direction: clockwise (from shaft side).
Counterclockwise rotation pumps can be mounted on request.
Ask our sales department.

Spare part code

E60 60 40 **

Pump type:
60 = Group 1

Size:
see below table

Assembly code

K — **Pump type:**
K = K type

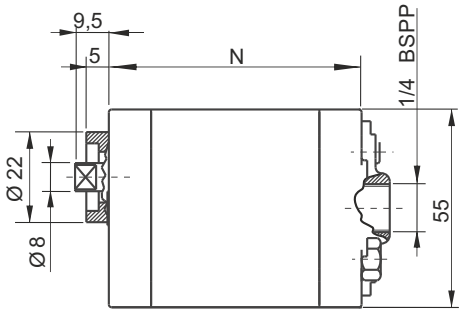
1,2 — **Nominal displacement:**
(cc/rev) see below table

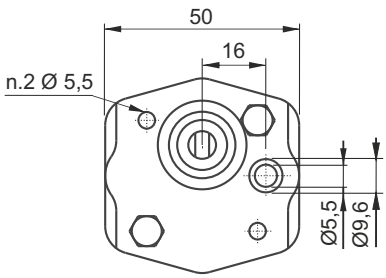
Available range

Nominal displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Spare part code	Weight [Kg]
0,9	250	230	210	4500	61,3	M8x75	E60604001	0,73
1,2	250	230	210	4500	62,8	M8x75	E60604002	0,75
1,6	250	230	210	4500	64,3	M8x80	E60604035	0,77
2,1	250	230	210	4500	66,0	M8x80	E60604004	0,79
2,7	250	230	210	4500	68,5	M8x80	E60604005	0,82
3,2	250	230	210	4500	70,0	M8x85	E60604006	0,86
3,7	230	210	180	3600	72,0	M8x85	E60604007	0,88
4,2	230	210	180	3600	74,0	M8x85	E60604008	0,90
5,0	210	180	140	3000	77,0	M8x90	E60604009	0,94
6,0	210	180	140	3000	81,0	M8x100	E60604010	0,98
7,9	180	140	100	3000	88,5	M8x100	E60604012	1,10

* A washer is always fitted to ensure correct bolt engagement

K TYPE GEAR PUMPS, GROUP 0



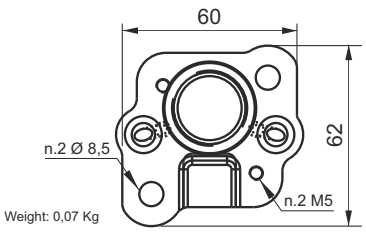


Main features

Oil temperature	-15 ÷ +80 °C
Inlet pressure	0,7 < P < 3,0 bar (absolute pressure)
Fixing bolts	2 x M5 8.8 class steel tightening torque: 8 ÷ 9,5 Nm
Pressure definition	Peak pressure: cycle 2 s ON Intermittent pressure: cycle 20 s ON Continuous pressure: cycle always ON

Standard rotation direction: clockwise (from shaft side).
Counterclockwise rotation pumps can be mounted on request.
Ask our sales department.

Aluminium adapter flange for group 0
Code: E60513025



Weight: 0,07 Kg

Spare part code

E60 50 40 **

Pump type:
50 = Group 0

Size:
see below table

Assembly code

K — **Pump type:**
K = K type

0,4 — **Nominal displacement:**
(cc/rev) see below table

Available range

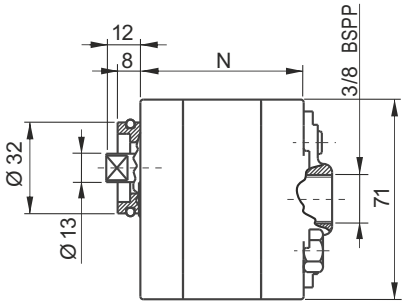
Nominal displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Spare part code	Weight [Kg]
0,2	200	180	160	6000	45,5	M5x60	E60504002	0,33
0,4	200	180	160	6000	47,5	M5x65	E60504004	0,35
0,6	200	180	160	6000	51,5	M5x65	E60504006	0,40

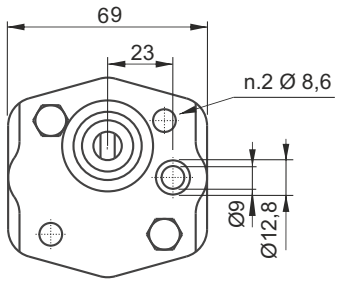
Other pumps with different pressure/speed are available on request.

* A washer is always fitted to ensure correct bolt engagement

SECTION C

H TYPE GEAR PUMPS, GROUP 1





Main features

Oil temperature	-15 ÷ +80 °C
Inlet pressure	0,7 < P < 3,0 bar (absolute pressure)
Fixing bolts	2 x M8 8.8 class steel tightening torque: 21 ÷ 25 Nm
Pressure definition	Peak pressure: cycle 2 s ON Intermittent pressure: cycle 20 s ON Continuous pressure: cycle always ON

Standard rotation direction: clockwise (from shaft side).
Counterclockwise rotation pumps can be mounted on request.
Ask our sales department.

Spare part code

E60 60 50 **

Pump type:
60 = Group 1

Size:
see below table

Assembly code

H — **Pump type:**
H = H type

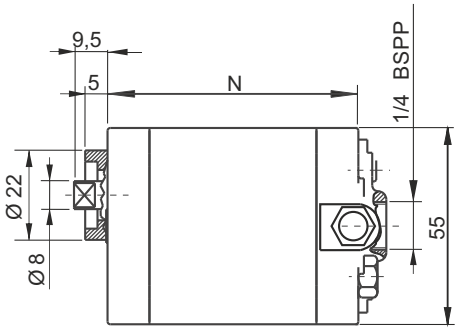
6,0 — **Nominal displacement:**
(cc/rev) see below table

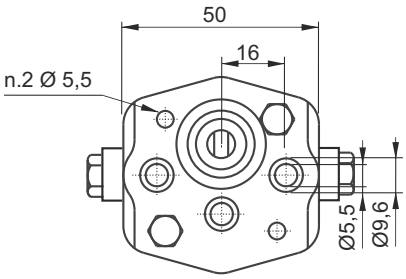
Available range

Nominal displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Spare part code	Weight [Kg]
1,2	280	270	250	5000	39,5	M8x55	E60605002	0,50
1,7	280	270	250	4500	41,3	M8x55	E60605035	0,52
2,2	280	270	250	4500	44,2	M8x60	E60605004	0,54
2,6	280	270	250	4500	45,7	M8x60	E60605005	0,56
3,2	280	270	250	4000	51,9	M8x65	E60605006	0,58
3,8	280	270	250	3800	54,1	M8x70	E60605007	0,61
4,2	280	270	250	3500	82,0	M8x100	E60605008	1,05
4,7	260	250	240	3200	83,5	M8x100	E60605009	1,12
6,0	230	220	210	3000	94,3	M8x110	E60605010	1,22
7,4	230	210	190	2000	97,5	M8x110	E60605012	1,80

* A washer is always fitted to ensure correct bolt engagement

R TYPE BIDIRECTIONAL GEAR PUMPS, GROUP 0

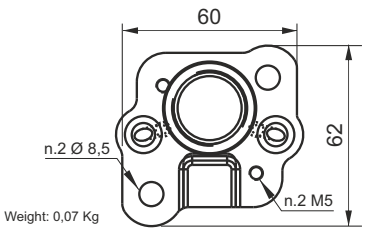




Main features

Oil temperature	-15 ÷ +80 °C
Inlet pressure	0,7 < P < 3,0 bar (absolute pressure)
Fixing bolts	2 x M5 8.8 class steel tightening torque: 8 ÷ 9,5 Nm
Pressure definition	Peak pressure: cycle 2 s ON Intermittent pressure: cycle 20 s ON Continuous pressure: cycle always ON

Aluminium adapter flange for group 0
Code: E60513025



Weight: 0,07 Kg

Spare part code

E60 50 45 **

Pump type:
50 = Group 0

Size:
see below table

Assembly code

R — **Pump type:**
R = R type

1,3 — **Nominal displacement:**
(cc/rev) see below table

Available range

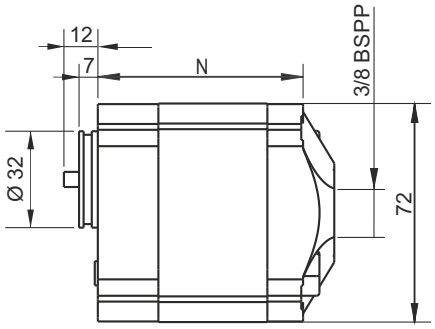
Nominal displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Spare part code	Weight [Kg]
0,3	200	180	160	6000	52,7	M5x60	E60504503	0,46
0,5	200	180	160	6000	54	M5x60	E60504505	0,48
0,7	200	180	160	6000	55,2	M5x65	E60504506	0,49
0,9	200	180	160	5000	57,1	M5x65	E60504509	0,50
1,3	200	180	160	3900	60,2	M5x70	E60504513	0,51
1,5	200	180	160	3900	62,3	M5x70	E60504515	0,52

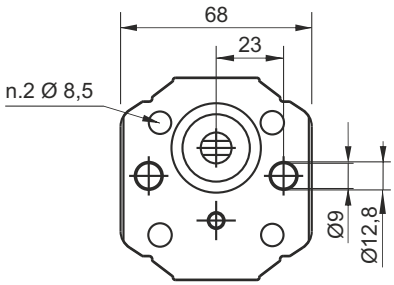
Other pumps with different pressure/speed are available on request.

* A washer is always fitted to ensure correct bolt engagement

SECTION C

R TYPE BIDIRECTIONAL GEAR PUMPS, GROUP 1





Main features

Oil temperature	-15 ÷ +80 °C
Inlet pressure	0,7 < P < 3,0 bar (absolute pressure)
Fixing bolts	2 x M8 8.8 class steel tightening torque: 21 ÷ 25 Nm
Pressure definition	Peak pressure: cycle 2 s ON Intermittent pressure: cycle 20 s ON Continuous pressure: cycle always ON

Spare part code

E60 60 35 **

Pump type:
60 = Group 1

Size:
see below table

Assembly code

R — **Pump type:**
R = R type

3,2 — **Nominal displacement:**
(cc/rev) see below table

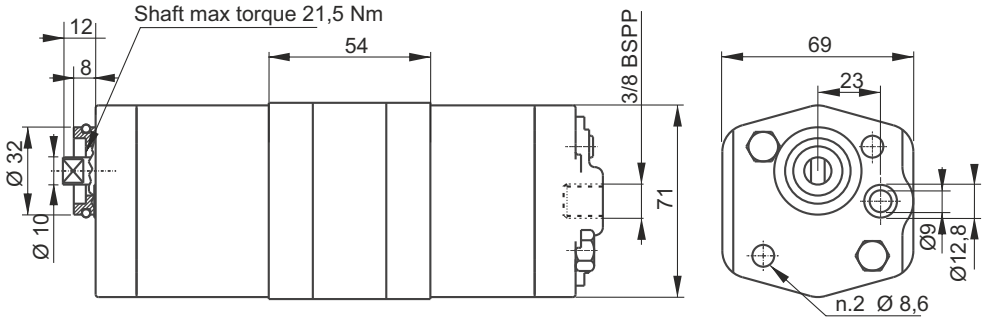
Available range

Nominal displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Spare part code	Weight [Kg]
2,1	270	260	250	4000	54,5	8x70	E60603504	0,92
2,6	270	260	250	4000	56,5	8x70	E60603505	0,95
3,2	240	230	220	4000	58,5	8x75	E60603506	0,98
4,3	150	140	130	4000	62,5	8x75	E60603508	1,05
6,5	120	110	100	3500	71,5	8x85	E60603510	1,32

Other pumps with different pressure/speed are available on request.

* A washer is always fitted to ensure correct bolt engagement

K TYPE DOUBLE GEAR PUMPS, GROUP 1



Common 3/8'' BSPP inlet port (on the rear cover) alternatively individual side inlet ports are available

Main features

Oil temperature	-15 ÷ +80 °C
Inlet pressure	0,7 < P < 3,0 bar (absolute pressure)
Fixing bolts	2 x M8 8.8 class steel tightening torque: 21 ÷ 25 Nm
Pressure definition	Peak pressure: cycle 2 s ON Intermittent pressure: cycle 20 s ON Continuous pressure: cycle always ON

Choosing the right pump combination:

- Check that the power absorption of the front element is equal to or higher than the rear one
- Pump performance and features are the same as the details of the corresponding single pumps
- Double pump maximum rotation speed is determined by the lowest speed among maximum rotation speeds of each single pump.
- Torque applied on the shaft of the front pump is the sum of the torques absorbed by the two pumps (see above diagram); this value must never go over the limit allowed for the shaft (21,5 Nm).

Spare part code

E60 60 ** ** HL

Pump type:
60 = Group 1

Size:
see below table

Assembly code

K — **Pump type:** K = K type

1,2 — **Displacement 1st section**

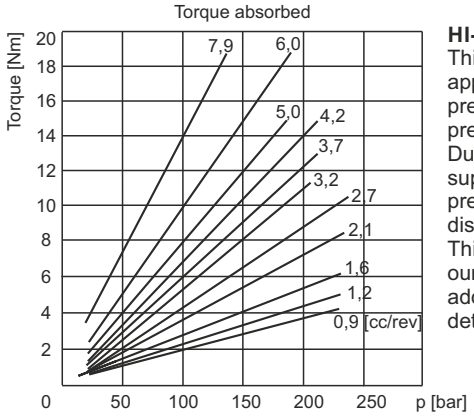
+

5 — **Displacement 2nd section**

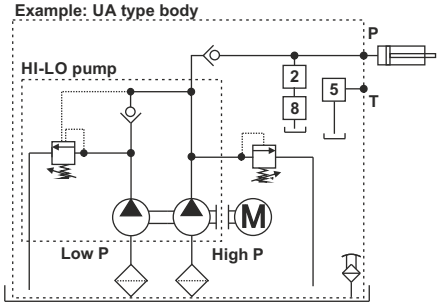
HL — **Option:** Hi - Lo execution

Available range

Nominal displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Unloading pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Spare part code	Weight [Kg]
0,9 + 3,2	250	230	210	42±5	1750	128,3	M8x160	E60600932HL	2,12
1,2 + 5,0	250	230	210	42±5	1750	141,3	M8x160	E60601250HL	2,29



HI-LO
This is an efficient and energy saving solution for applications where a fast approach and a high pressure working phase are needed (industrial presses, garbage compactors, balers,...).
During the high speed phase both pumps are supplying flow to the system while during the high pressure phase, the low pressure pump is discharged back to tank with no load.
This solution can be conveniently assembled with our UA or UB or U4 central manifold without any additional kit. Ask to our technical office for more details.

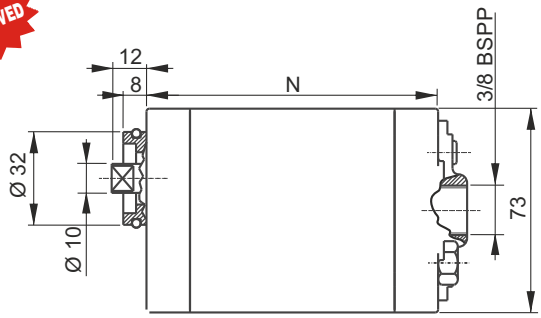


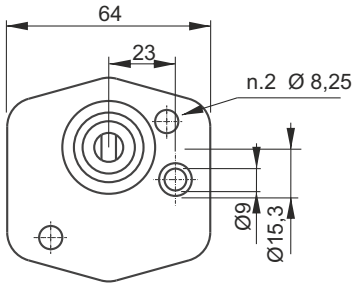
Other pumps with different pressure/speed are available on request.

* A washer is always fitted to ensure correct bolt engagement

SECTION C

S SERIES HELICAL ROTOR PUMPS FOR HIGH PRESSURE, HIGH FLOW AND LOW NOISE APPLICATIONS, GROUP 1





Main features

Oil temperature	-15 ÷ +80 °C
Inlet pressure	0,7 < P < 3,0 bar (absolute pressure)
Fixing bolts	2 x M8 8.8 class steel tightening torque: 21 ÷ 25 Nm
Pressure definition	Peak pressure: cycle 2 s ON Intermittent pressure: cycle 20 s ON Continuous pressure: cycle always ON

Standard rotation direction: clockwise (from shaft side).
Counterclockwise rotation pumps can be mounted on request.
Ask our sales department.

Spare part code

S60 60 30 **

Pump type:
60 = Group 1

Size:
see below table

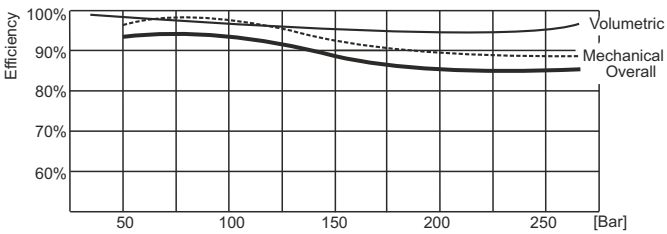
Assembly code

S — **Pump type:**
S = S type

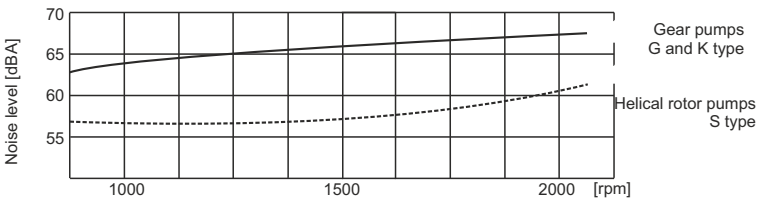
6,4 — **Nominal displacement:**
(cc/rev) see below table

Available range

Nominal displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Noise level [dbA]**	Spare part code	Weight [Kg]
2,2	270	250	210	3000	66,2	M8x80	50	S60603004	0,85
3,2	270	250	210	3000	69,9	M8x85	51	S60603006	0,9
4,3	270	250	210	3000	81,6	M8x100	52	S60603008	0,95
5,0	270	250	210	3000	83,8	M8x100	52	S60603009	1,1
6,4	250	200	200	3600	93,6	M8x110	57	S60603010	2,03
8,3	215	195	153	3600	98,6	M8x120	57	S60603012	2,08
10	190	170	126	3600	103,6	M8x120	57	S60603014	2,12
13	160	140	99	3600	110,5	M8x140	57	S60603016	2,15



Note: reference values measured at 1500rpm with oil ISO VG 46 cSt at 40 ° C.



** The noise level is for guidance only since it depends on the values of the resonance of the mounting structure and other components of the system.

* A washer is always fitted to ensure correct bolt engagement

INTEGRAL COMPONENTS

The PMC02 **cartridge hand pump** SAE08 (3/4-16UNF), 2 cc/stroke is an affordable and easy way to add an emergency function to your power pack.

Two way **positive seat solenoid valves** SAE08 (3/4-16UNF) are available in Normally Closed, Normally Open, single and double locking types. Manual override also available.

Pressure and flow **proportional control valves** are available as standard, also with integrated **PWM driver**

All cartridges are **single piece** valves, easily fitted with no loose parts.

The **main relief valve** is fitted in a M20x1,5 cavity. It is built with a **guided poppet** to improve pressure setting, stability and to avoid the noise typical of lower cost alternatives.

The **main check valve** fits in a SAE08 (3/4-16UNF) standard cavity and can be **easily removed** from the outside for easy cleaning and servicing

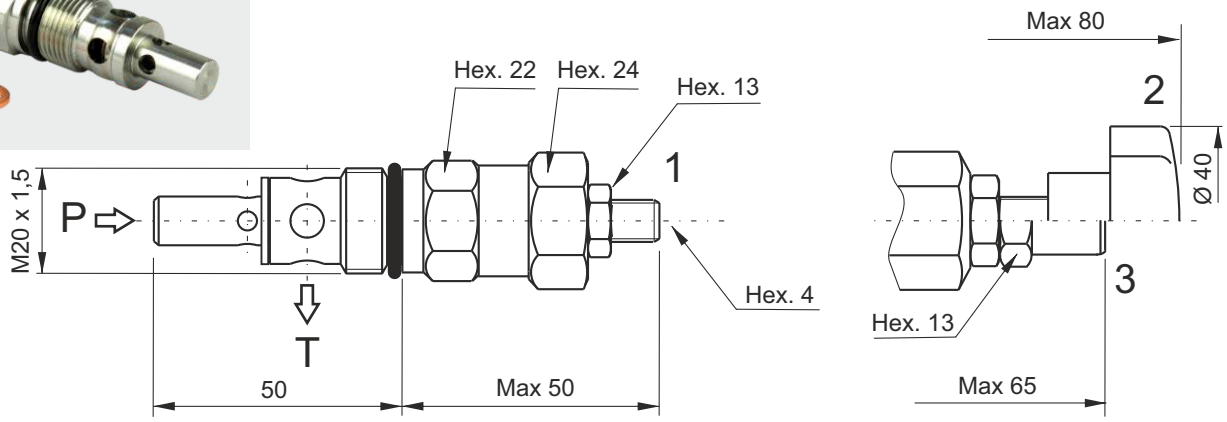
How does the coding of the power pack works?
The power packs are coded with a speaking code, which is basically the list of sub-assemblies which make up the power pack (motor, pump, valves, tank,...). Integral components are those fitting inside central manifold cavities and are numbered from 0 to 9. Each component has an assembly code, normally a single letter, which build up the speaking code. It also has a spare part code in case it is ordered as a loose component. The numbered cavities are indicated in the hydraulic scheme too, so that it is easy to draw the schematic diagram starting from the speaking code itself.

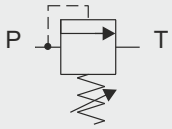
There are several different coils and connectors for the cartridge solenoid valves. How do I choose the proper ones?
Normally closed 2-way solenoid valves (MSV30*) use M130/M140/M63 series of coils either DC or directly AC. Normally open 2-way solenoid valves (MSV31E) can only use DC or RC (rectified current) coils due to their internal construction. When choosing a RC coil, a rectifying connector must be fitted (KA132R***). MSV4V 4-way cartridge valves use the new M63* series coils. M630 are for DC supply voltage, while M631 are rectified coils with integral rectifying circuit to be supplied with AC current. A standard KA13200000 connector must be always used in this case. On page D180 you will find the coil table for all valves.

Which are the mostly used plugs?
G or H plugs are normally fitted in cavity 2 and 4, of types UA and UB central manifolds when these cavities are not used. H type has a 1/4"BSP connection port to allow mounting of a pressure gauge or switch. L type plug fits cavity 3 of U4 and UB manifolds when this cavity is not used.

SECTION D

VMDC35 - DIRECT ACTING MAIN RELIEF VALVES





Main features

Max pressure	450 bar
Max flow	35 l/min
Weight	0,16 kg

Recommended tightening torque: 50 Nm
Recommended filtration: 25 ÷ 50 µ
Oil temperature: -30 ÷ + 80 °C

Spare part code

VMDC — **Main relief valve**

35 — **Nominal size:**
35 = 35 l/min

B — **Working range:**
L = 5 ÷ 60 bar
A = 10 ÷ 180 bar
B = 35 ÷ 310 bar

1 — **Option:**
1 = screw (std)
2 = handwheel
3 = with cap
4 = plastic seal

Assembly code

D_*¨**

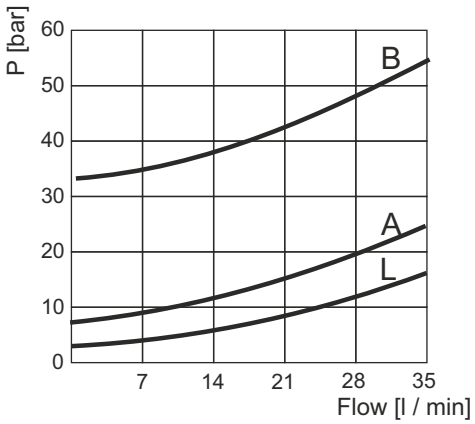
where *** stands for max setting pressure [bar]. eg. D_310
where ¨ is the option

Mounting cavities

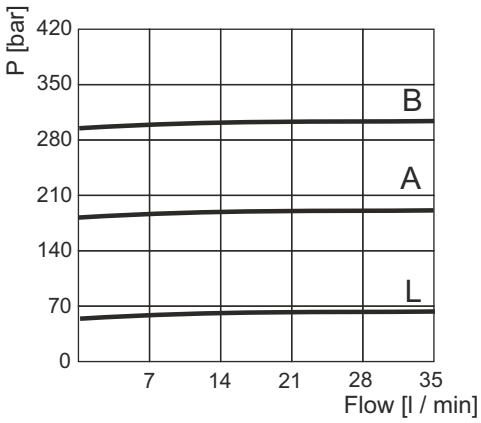
0	**1**		
2	3	4	
5	6	7	8

Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Minimum setting pressure

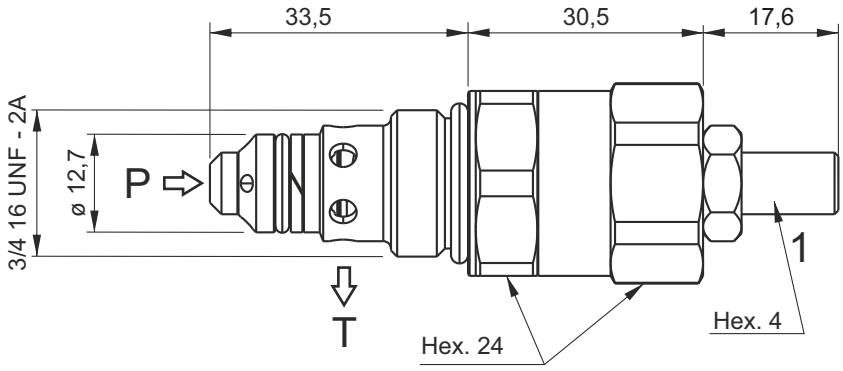


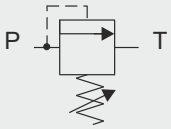
Pressure vs Flow



Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

VMDC20 - DIRECT ACTING RELIEF VALVES





Main features

Max pressure	350 bar
Max flow	20 l/min
Weight	0,14 kg

Recommended tightening torque: 40 Nm
Recommended filtration: 25 ÷ 50 µ
Oil temperature: -30 ÷ + 80 °C

Spare part code

VMDC — **Relief valve**

20 — **Nominal size:**
20 = 20 l/min

B — **Working range:**
B = 20 ÷ 120 bar
C = 30 ÷ 250 bar
D = 70 ÷ 350 bar

1 — **Option:**
1 = screw (std)
V = handwheel

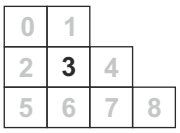
Assembly code

V* ¨**

where *** stands for max setting pressure [bar]. Ex. V250

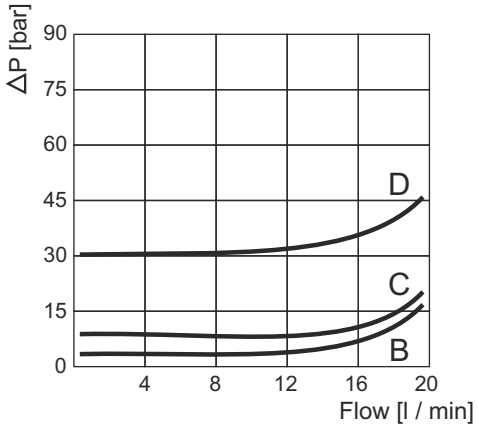
where ¨ is the option

Mounting cavities

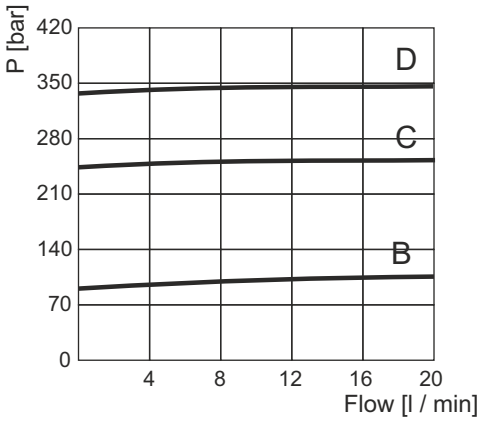


Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Minimum setting pressure



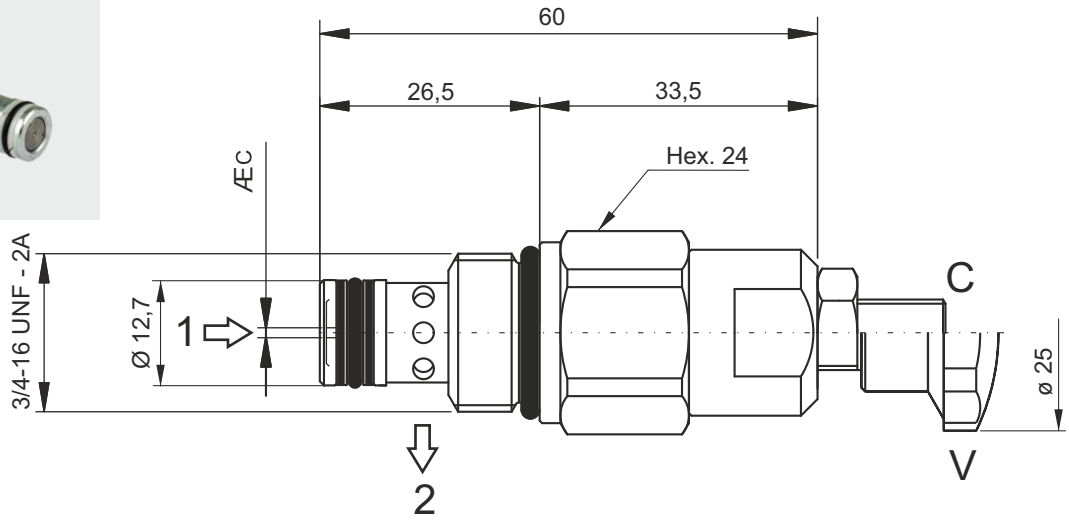
Pressure vs Flow

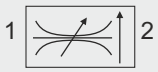


Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

SECTION D

VCF6 - PRESSURE COMPENSATED FLOW CONTROL VALVES





Main features

Max pressure	350 bar
Max flow	18 l/min
Weight	0,11 kg

Recommended tightening torque: 40 Nm
Recommended filtration: 25 ÷ 50 µ
Oil temperature: -30 ÷ + 80 °C

Spare part code

VCF6 — **Flow control valve pressure compensated**

***** — **Nominal dimension:** see below table

C — **Adjustment:** C = screw (std) V = handwheel

Assembly code

R *

Where * stands for nominal dimension

Mounting cavities

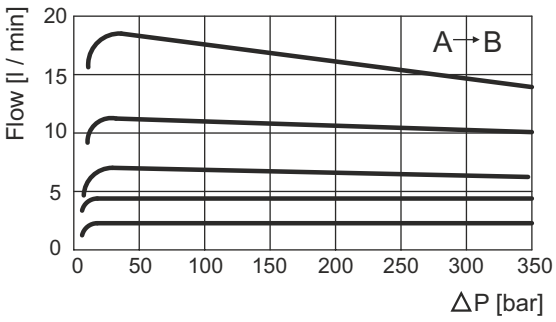
0	1		
2	**3**	4	
5	6	7	8

Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Range available

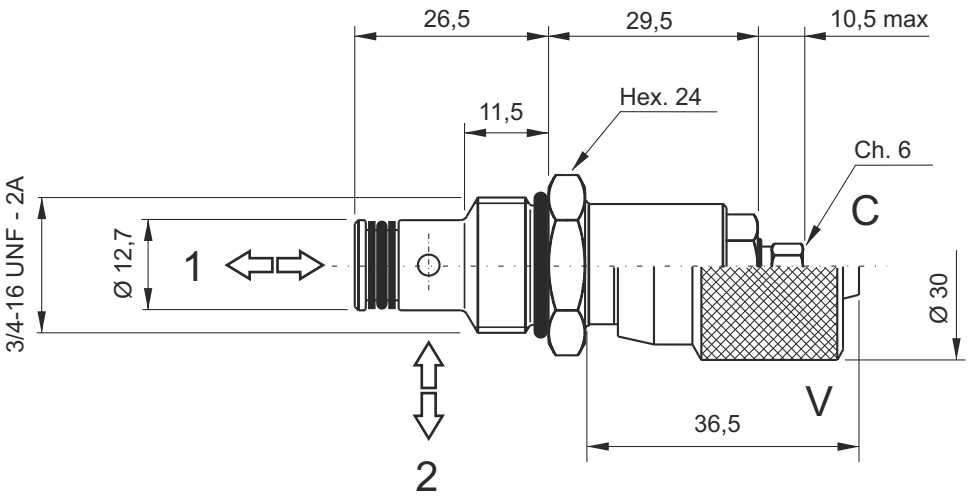
Nominal dimension	ÆC	Controlled flow at 100 bar ± 10% l/min
2	0,6	1,0 ÷ 2,2
3	1,0	1,6 ÷ 4,0
4	1,2	2,5 ÷ 5,0
5	1,8	3,0 ÷ 7,0
6	2,8	4,9 ÷ 10,8
7	4,8	8,0 ÷ 18,5

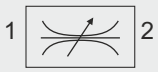
Pressure drop diagram



Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

CSB - BIDIRECTIONAL FLOW CONTROL VALVES





Main features

Max pressure	300 bar
Max flow	15 l/min
Weight	0,08 kg

Recommended tightening torque: 25 Nm
Recommended filtration: 25 ÷ 50 μ
Oil temperature: -30 ÷ + 80 °C

Spare part code

CSB — **Flow control valve**

04 — **Nominal size:**
04 = 3/4-16 UNF

C — **Adjustment:**
C = screw (std)
V = handwheel

Assembly code

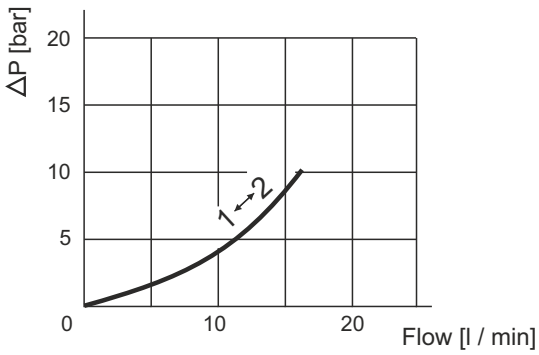
S

Mounting cavities

0	1		
2	**3**	**4**	
5	6	7	8

Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Pressure drop diagram

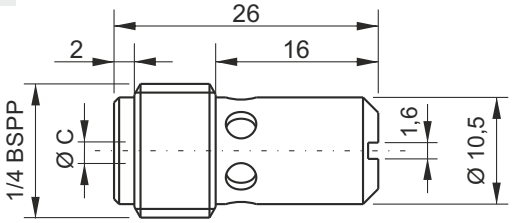


Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

SECTION D

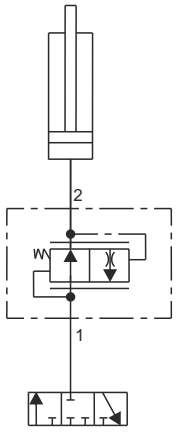
VSC01 - PRESSURE COMPENSATED FIXED FLOW CONTROL VALVES

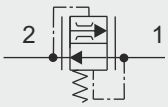
Controlled flow 2 ⇨



⇦ 1 Free flow

Typical application





Main features

Max pressure	300 bar
Max flow	22 l/min
Weight	0,012 kg

Recommended tightening torque: 25 Nm
Recommended filtration settings: 25 ÷ 50 µ
Oil temperature: -30 ÷ + 80 °C

Spare part code

VSC — **Flow control valve pressure compensated**

01 — **Nominal size:** 01

***** — **Controlled flow:** see below table

Assembly code

***(01)**

Where * stands for controlled flow [l/min]

Mounting cavities

0	1		
2	3	4	
5	**6**	7	**8**

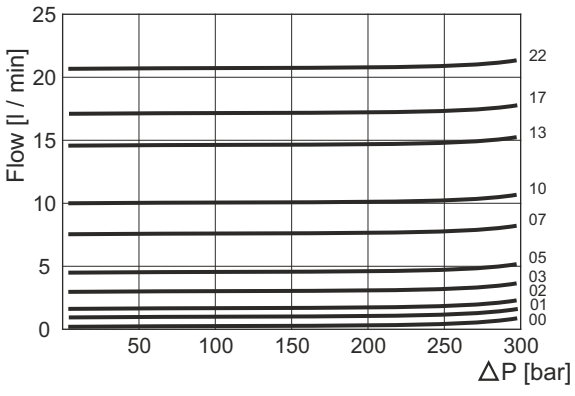
Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Controlled flow

Spare part code	Ø C [mm]	Portata [l/min]
VSC0100	0,8	1
VSC0101	1	1,5
VSC0102	1,25	2
VSC0103	1,5	3
VSC0105	1,75	5
VSC0107	2	7
VSC0110	2,5	10
VSC0113	2,75	13
VSC0117	3	17
VSC0122	3,5	22

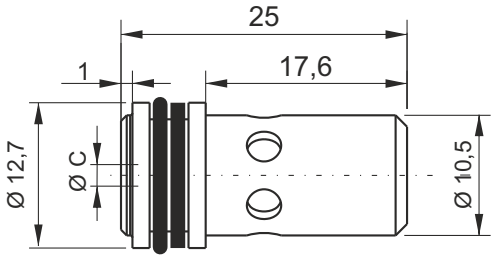
Note: nominal controlled flow, measured at 100 bar with an oil viscosity of 46 cSt at 50 °C, are to be taken as general reference values and must be tested in the field.

Pressure drop diagram

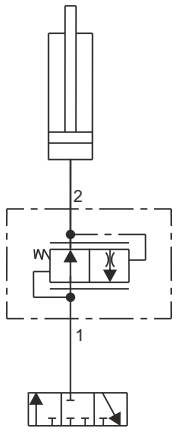


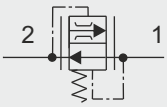
Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

VSC04 - PRESSURE COMPENSATED FIXED FLOW CONTROL VALVES



Typical application





Main features

Max pressure	300 bar
Max flow	22 l/min
Weight	0,012 kg

Mounting in cavity: 12,7 H8
Recommended filtration settings: 25 ÷ 50 µ
Oil temperature: -30 ÷ + 80 °C

Spare part code

VSC — **Flow control valve pressure compensated**

04 — **Nominal size:** 04

***** — **Controlled flow:** see below table

Assembly code

***(04)**

Where * stands for controlled flow [l/min]

Mounting cavities

0	1		
2	3	4	
5	6	**7**	8

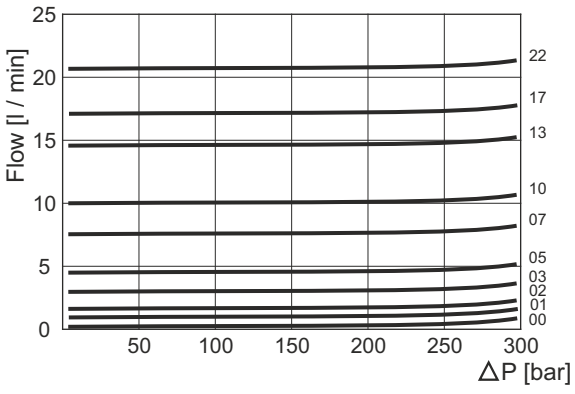
Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Controlled flow

Spare part code	Ø C [mm]	Portata [l/min]
VSC0400	0,8	1
VSC0401	1	1,5
VSC0402	1,25	2
VSC0403	1,5	3
VSC0405	1,75	5
VSC0407	2	7
VSC0410	2,5	10
VSC0413	2,75	13
VSC0417	3	17
VSC0422	3,5	22

Note: nominal controlled flow, measured at 100 bar with an oil viscosity of 46 cSt at 50 °C, are to be taken as general reference values and must be tested in the field.

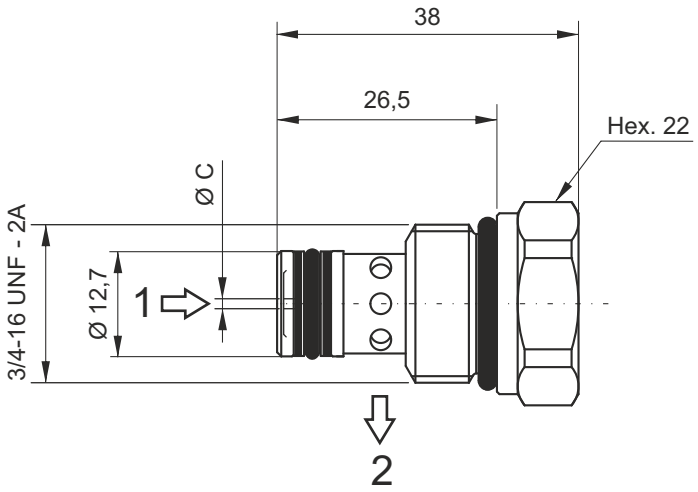
Pressure drop diagram

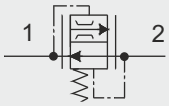


Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

SECTION D

VSC6 - PRESSURE COMPENSATED FIXED FLOW CONTROL VALVES





Main features

Max pressure	350 bar
Max flow	22 l/min
Weight	0,06 kg

Recommended tightening torque: 25 Nm
Recommended filtration: 25 ÷ 50 µ
Oil temperature: -30 ÷ + 80 °C

Spare part code

VSC — **Flow control valve pressure compensated**

6 — **Nominal size:** 6

***** — **Controlled flow:** see below table

Assembly code

F*

Where * stands for controlled flow [l/min]

Mounting cavities

0	1		
2	**3**	4	
5	6	7	8

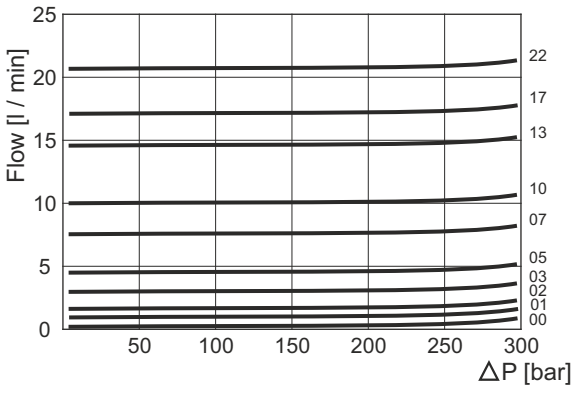
Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Controlled flow

Spare part code	Ø C [mm]	Portata [l/min]
VSC600	0,8	1
VSC601	1	1,5
VSC602	1,25	2
VSC603	1,5	3
VSC605	1,75	5
VSC607	2	7
VSC610	2,5	10
VSC613	2,75	13
VSC617	3	17
VSC622	3,5	22

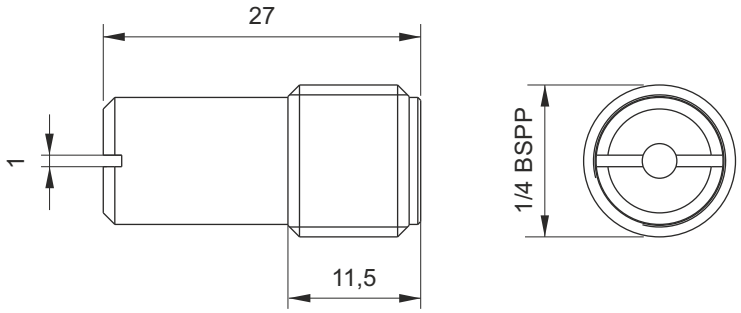
Note: nominal controlled flow, measured at 100 bar with an oil viscosity of 46 cSt at 50 °C, are to be taken as general reference values and must be tested in the field..

Pressure drop diagram

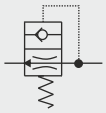


Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

SUV01 - START-UP VALVE FOR SINGLE PHASE ELECTRIC MOTORS



It is intended to be mounted in cavity 9 of the central manifold, after an appropriate machining (drilling and threading) is made on it. The function of this valve is to discharge the pressure inside the central manifold between the pump and the check valve in cavity 0, when the power pack is off. It is typically used with single-phase motor starting under load, overcoming the inherent limitation of single phase induction motors.



Main features

Max pressure	300 bar
Max flow	17 l/min
Weight	0,025 kg

Recommended tightening torque: 25 Nm
Recommended filtration: 25 ÷ 50 μ
Oil temperature: -10 ÷ + 80 °C

Spare part code

SUV — **Start-up valve for single phase electric motors**

01 — **Nominal size:** 01 = 1/4 BSPP

G — **Flow reference:** see below table for the proper choice depending on pump flow and fluid temperature

Assembly code

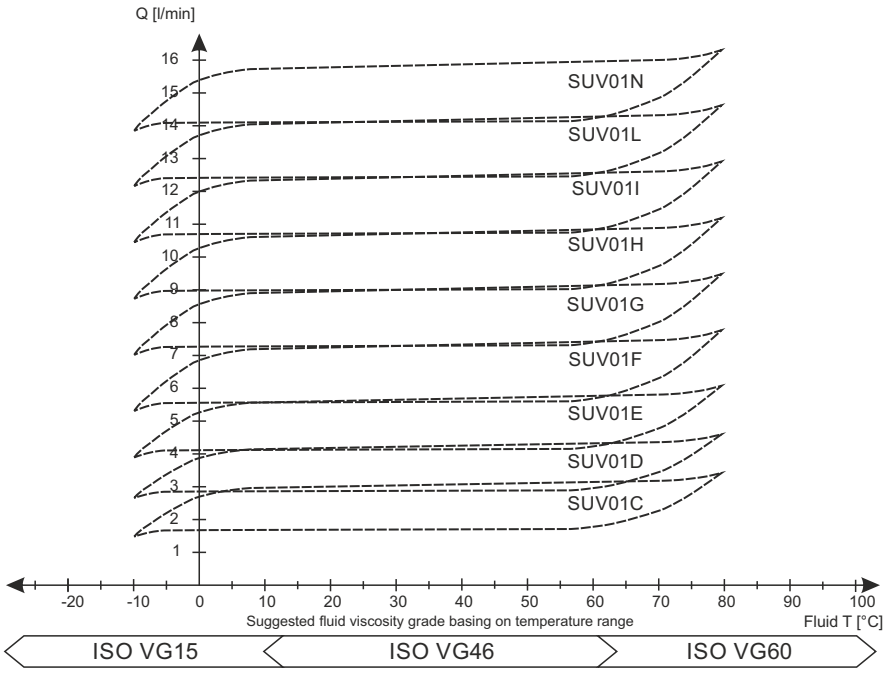
S01*

Where * stands for the setting

Mounting cavities

0	1			
2	3	4		
5	6	7	8	**9**

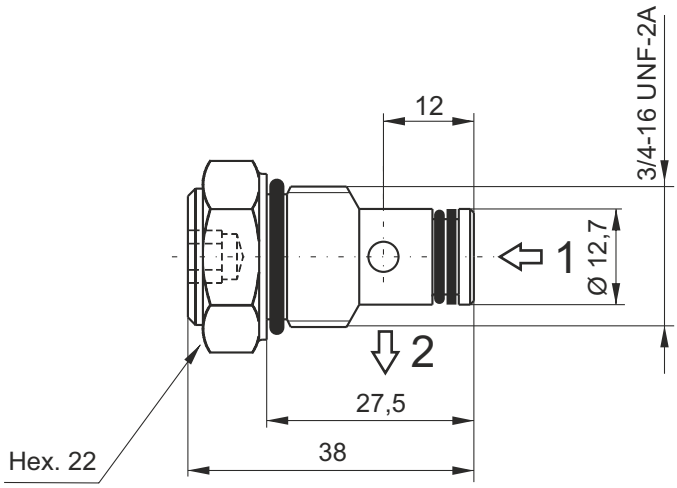
Note: cavities 3, 4 and 6 are present on central manifold type UB only.

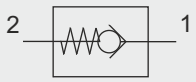


SECTION D

VUC20 - BASIC CHECK VALVES

The optional pressure port “F” may be used to connect a gauge to measure static pressures. Due to the nature of this Check Valve it will not always capture instantaneous pressure.





Main features

Max pressure	350 bar
Max flow	25 l/min
Weight	0,052 kg
Pressione di apertura	0,5 bar

Recommended tightening torque: 25 Nm
Recommended filtration: 25 ÷ 50 µ
Oil temperature: -30 ÷ + 80 °C

Spare part code

VUC — **Check valve**

20 — **Nominal size:** 20

***** — **Options:**
- = no options
F = pressure port M 1/4 BSPP

Assembly code

J *

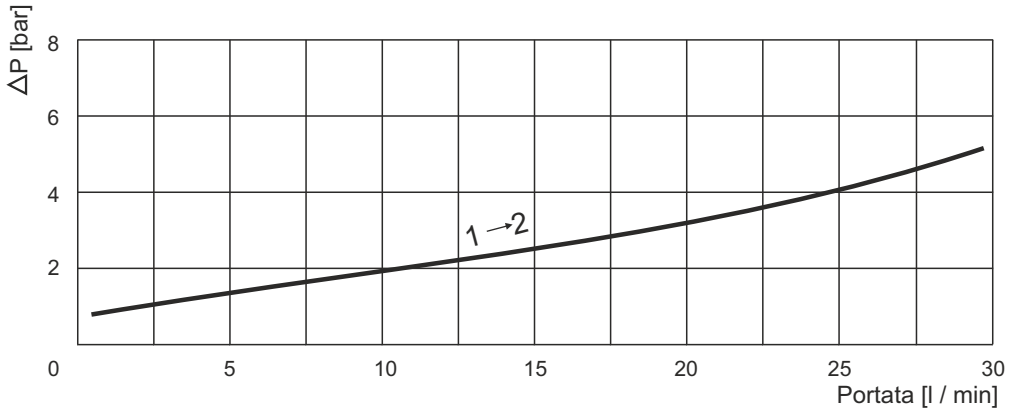
where * is the option

Mounting cavities

0	1		
2	**3**	**4**	
5	6	7	8

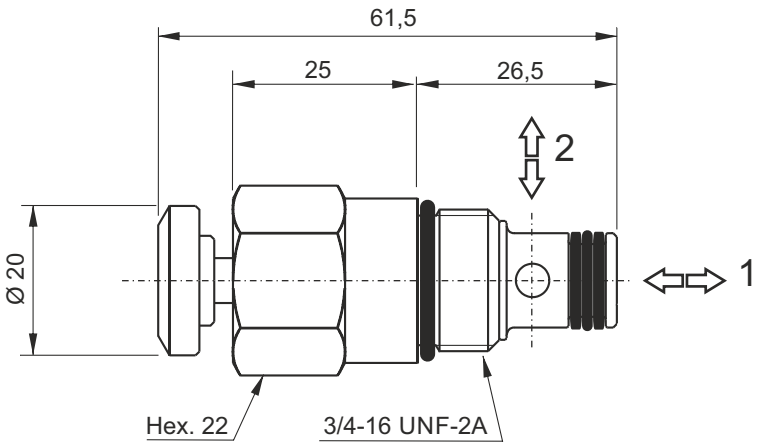
Note: cavities 3, 4 and 6 are present on central manifold type UB only.

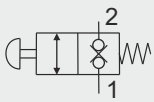
Pressure drop diagram



Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

CPE - MANUAL EMERGENCY VALVES





Main features

Max pressure	300 bar
Max flow	25 l/min
Weight	0,12 kg

Recommended tightening torque: 25 Nm
Recommended filtration: 25 ÷ 50 µ
Oil temperature: -30 ÷ + 80 °C

Spare part code

CPE — **Two-way manual emergency valve**

04 — **Nominal size:** 04 = 3/4-16 UNF

P — **Operating device:** P = press button

Assembly code

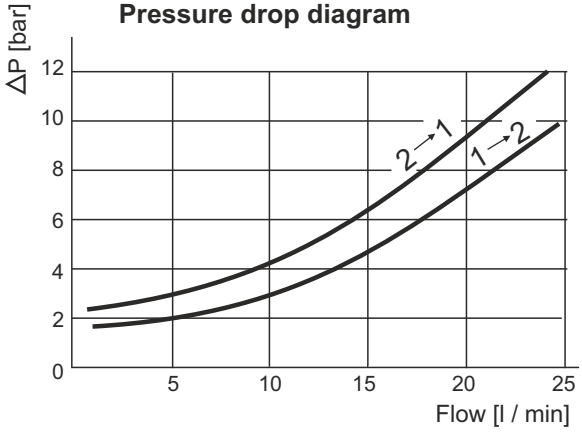
Z

Mounting cavities

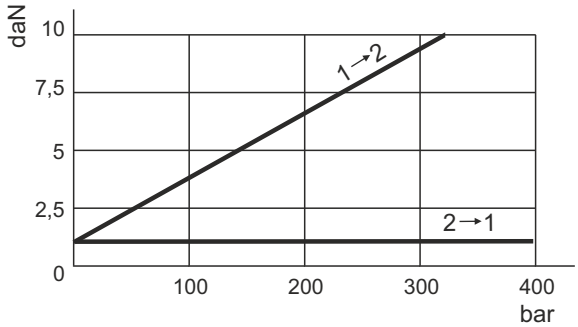
0	1		
2	**3**	**4**	
5	6	7	8

Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Pressure drop diagram

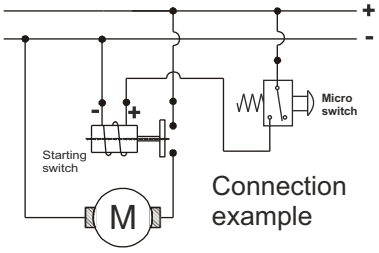


Operating force (daN) on the button

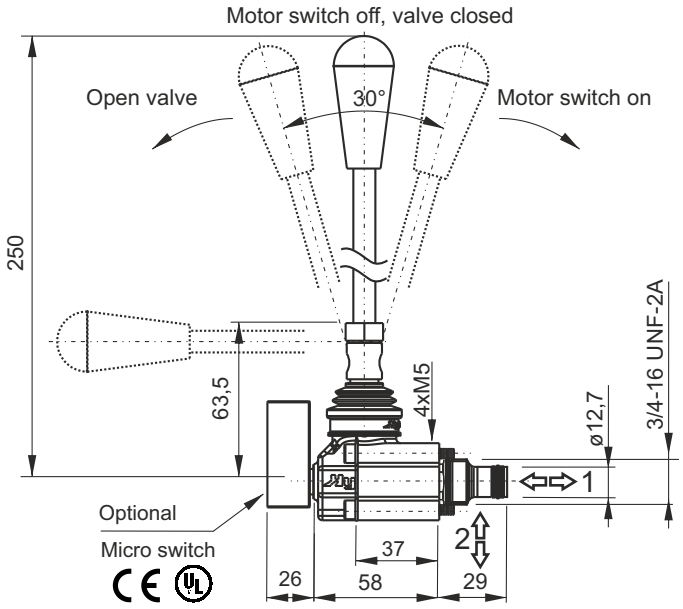


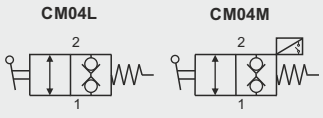
Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

CM - MANUAL LEVER VALVES



Connection example





Main features

Max pressure	300 bar
Max flow	25 l/min
Weight	0,34 kg
Max current	10 A - 400 V
Protection	IP20 (up to IP65 on request)
Room temp.	-25°C ÷ +85°C (higher temperature on request)

Fixing screws 4 x M5x45 (torque 5Nm)
Cartridge tightening torque 20Mn
Recommended filtration: 25 ÷ 50 µ
Oil temperature: -30 ÷ + 80 °C

Spare part code

CM — **Two-way manual lever valve**

04 — **Nominal size:** 04 = 3/4-16 UNF

L — **Type:** L = lever (std), M = lever+micro switch

Assembly code

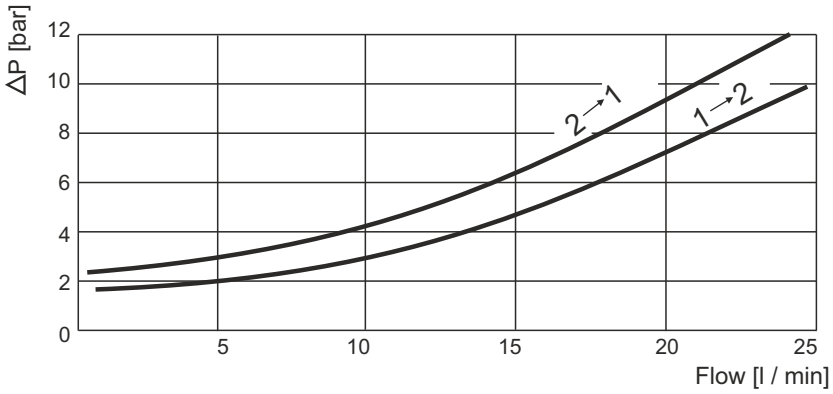
E (CM04L)
EM (CM04M)

Mounting cavities

0	1		
2	3	**4**	
5	6	7	8

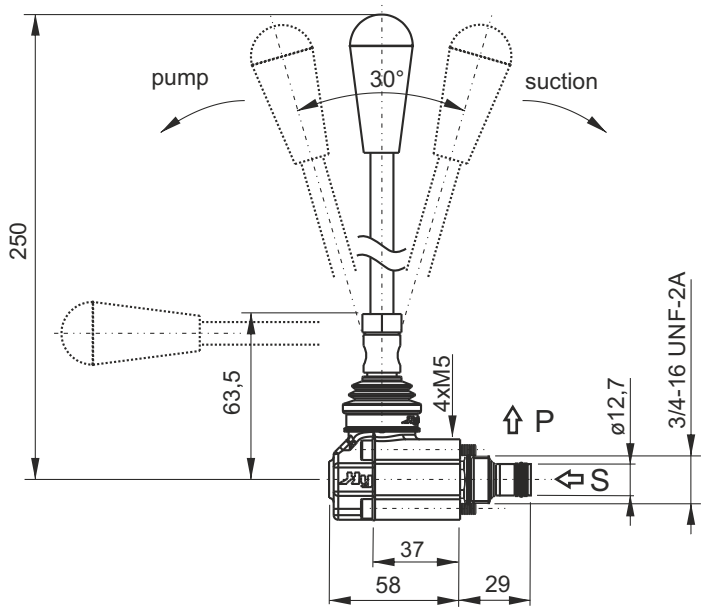
Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Pressure drop diagram



Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

PMC - CARTRIDGE HAND PUMPS



Main features

Max pressure	200 bar
Max flow	-
Weight	0,34 kg

Fixing bolts: 4x M5x45 (tightening torque: 5 Nm)
Recommended cartridge tightening torque: 15 Nm
Recommended filtration: 25 ÷ 50 µ
Oil temperature: -30 ÷ + 80 °C

Spare part code

PMC — **Hand pump**

02 — **Nominal size:**
02 = 2 cc/stroke

L — **Type:**
L = lever (std)

Assembly code

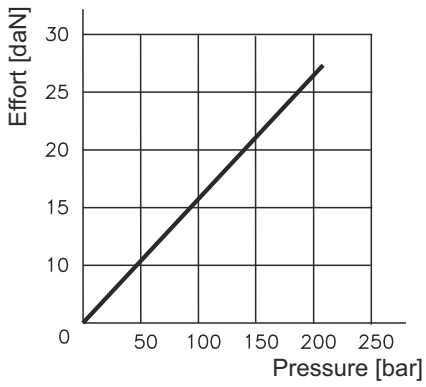
U

Mounting cavities

0	1		
2	3	**4**	
5	6	7	8

Note: cavities 3, 4 and 6 are present on central manifold type UB only.

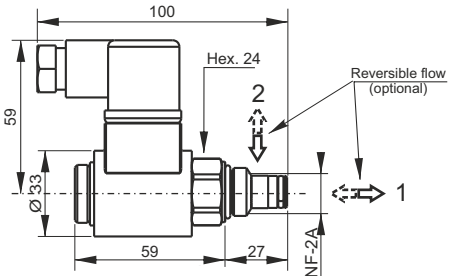
Effort (daN)
operating on the lever end



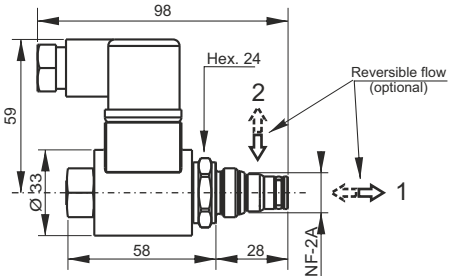
Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

MSV - PILOT OPERATED TWO-WAY SINGLE LOCKING SOLENOID VALVES

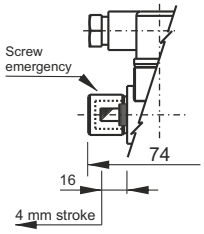
Normally closed

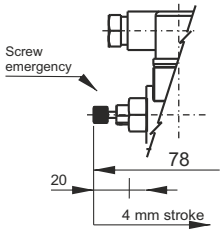


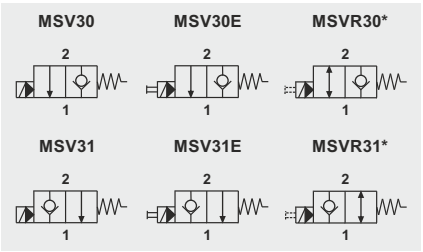
Normally open



Options







Main features

Max pressure	up to 350 bar
Max flow	up to 40 l/min
Weight	0,11 Kg (without coil)
Internal leakage	5 drops/min at 350bar
Response time	30ms (energizing) 50ms (de-energizing)
Available voltages	12VDC 24VDC 24VAC 110RAC 220RAC
Coils (see page D180)	M130 series M630 series M631 series
Standards	EN50081-1/EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

Recommended tightening torque: 25 Nm
Recommended filtration settings: 25 ÷ 50 μ
Oil temperature: -30 ÷ + 80 °C

Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

Spare part code

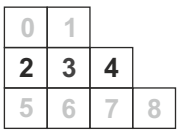
MSV	**Pilot Operated 2-way Single Locking Valve**
-	**Options:** R = with reversible flow A = for AC coil
30	**Operation:** 30 = normally closed 31 = normally open
0	**Emergency override:** 0 = no emergency (std) E = emergency
0000	**Supply voltage:** 0000 = no coil (std) see D190 table

Assembly code

A (MSV30) **Voltage**
B (MSV30E) **Voltage**
Q (MSV31) **Voltage**
C (MSV31E) **Voltage**

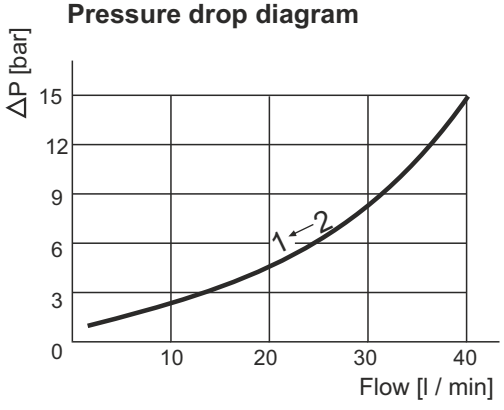
Eg: A12DC

Mounting cavities

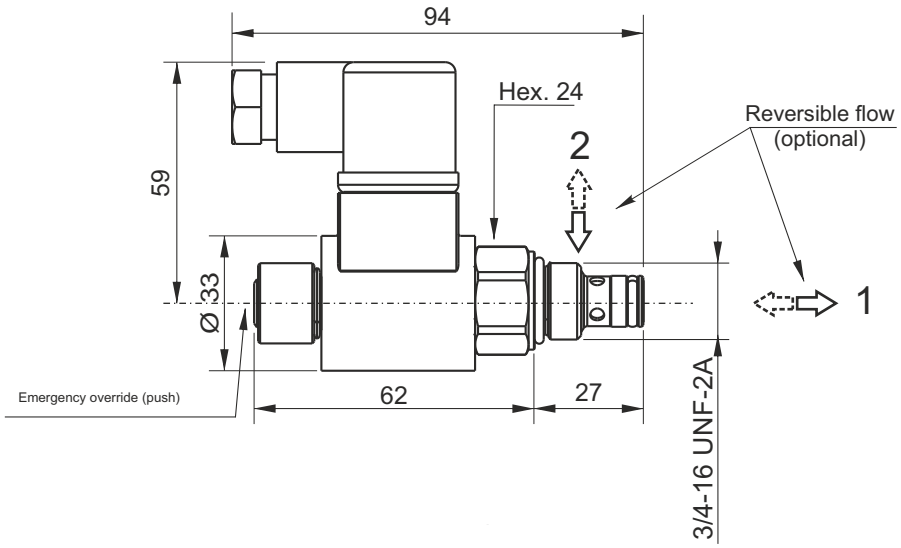


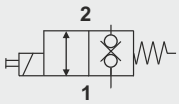
Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Pressure drop diagram



MDV - DIRECT OPERATED TWO-WAY DOUBLE BLOCKING SOLENOID VALVES





Main features

Max pressure	up to 250 bar
Max flow	up to 40 l/min
Weight	0,11 Kg (without coil)
Internal leakage	5 drops/min at 350bar
Response time	30ms (energizing) 50ms (de-energizing)
Available voltage	12VDC 24VDC 24VAC 110RAC 220RAC
Coils (see page D180)	M130 series M630 series M631 series
Normatives	EN50081-1/EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

Recommended tightening torque: 25 Nm
Recommended filtration: 25 ÷ 50 µ
Oil temperature: -30 ÷ + 80 °C

Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

Spare part code

MDV — **Two-way double blocking solenoid valve**

30 — **Operation:**
30 = normally closed

E — **Option:**
E = emergency (std)

0000 — **Supply voltage:**
0000 = no coil (std)
see D190 table

Assembly code

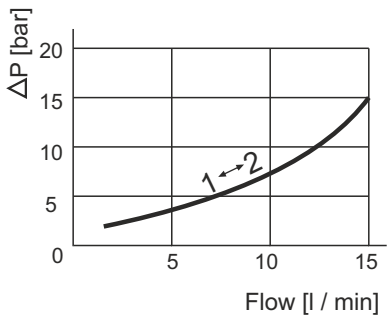
D Voltage
eg: D24DC

Mounting cavities

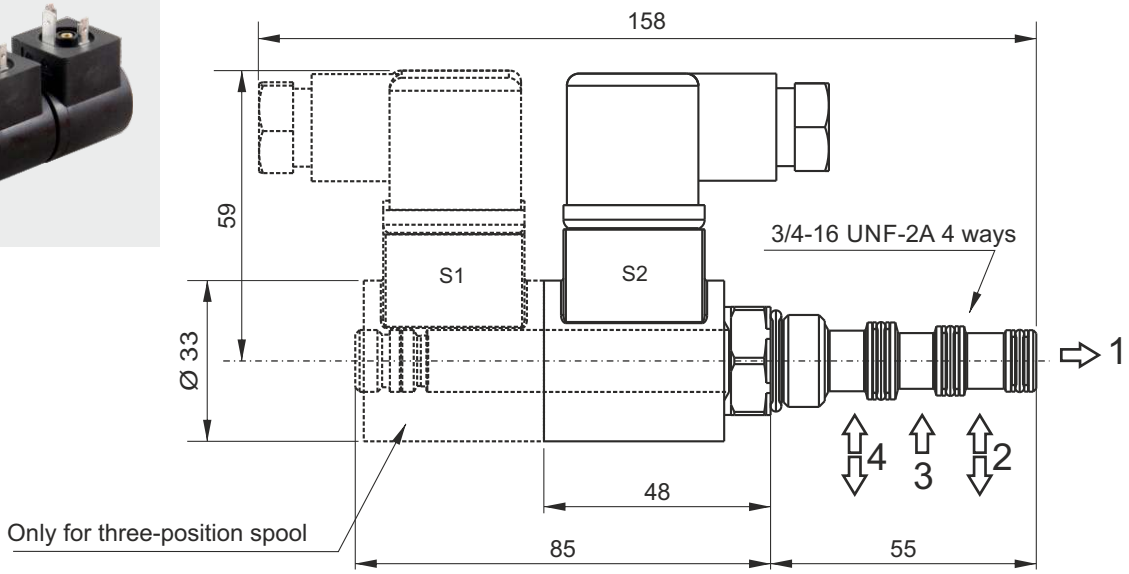
0	1		
2	**3**	**4**	
5	6	7	8

Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Pressure drop diagram



MSV4V - DIRECT OPERATED 4/3 OR 4/2 DIRECTIONAL SPOOL SOLENOID VALVES



Main features

Max pressure	210 bar
Max flow	11,5 l/min
Weight	0,37 Kg (1 solenoid) 0,64 Kg (2 solenoid)
Internal leakage	278 cc/min at 210 bar
Minimum pull-in voltage	85% of nominal
Available voltage	12VDC 24VDC 24VAC 110RAC 220RAC
Bobine (vedere tabella pag. D180)	serie M630 serie M631
Normatives	EN50081-1/EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

Recommended tightening torque: 25 Nm
Recommended filtration: 25 ÷ 50 µ
Oil temperature: -30 ÷ + 80 °C

Spare part code

MSV4V — **4/3 or 4/2 directional spool solenoid valve**

A2 — **Spool configuration:** see side table

00 — **Option:** 00 = std

24DC — **Supply voltage:** see D190 table

Assembly code

4VA2 Voltage

Ex: 4VA2 24DC

Mounting cavities

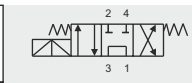
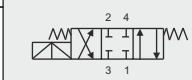
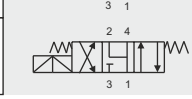
0	1		
2	3	4	
5	6	7	8

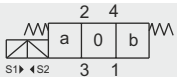
Note: MS4V may only be fitted to type U4 central manifold

Note: cavities 3, 4 and 6 are present on central manifold type UB only.

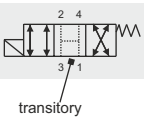
Spool

Double solenoid

Code	
A2	
B2	
C2	
E2	

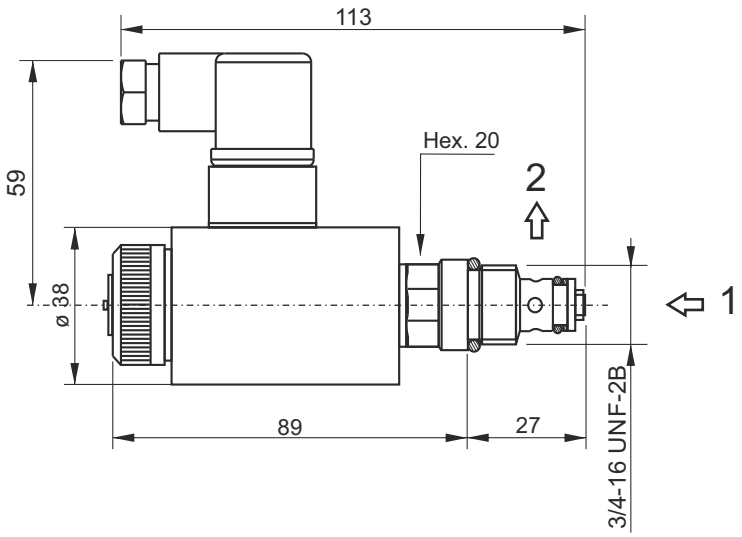
Code 

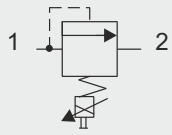
Single solenoid

A11C 

VMPC2 - PROPORTIONAL PRESSURE RELIEF VALVES

CE





Main features

Max pressure	350 bar
Max flow	2l/min
Weight	0,46 Kg
PWM	120Hz
Hysteresis	5%
Duty cycle	ED 100%
Voltage	+/- 10% nominal voltage
Normatives	EN50081-1/EN50082-2(89/336 CEE electr. comp.) - 73/23/CEE / 96/68/CEE (low voltage)

Recommended tightening torque: 25Nm
Recommended filtration: 25 ÷ 50 µ
Oil temperature: -30 ÷ + 80 °C
For the controller see table D180

Note: Supplying current to the coil from 0 to I max (see diagram), a proportional pressure variation is obtained on port P.

Sezione bobine

Supply Voltage	Code for Coil	Code for Connector
12DC	098001190	KA132000B1
24DC	098002190	KA132000B1

Spare part code

VMPC — **Direct acting proportional relief valve**

2 — **Nominal size:**
2 = 2 l/min

C — **Working range:**
A = 2 ÷ 80 bar
C = 4 ÷ 250 bar

E — **Options:**
E = emergency std

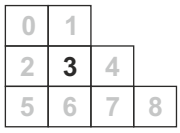
0000 — **Supply voltage:**
- 0000 = no coil
- 12DC
- 24DC

Assembly code

P* Voltage**

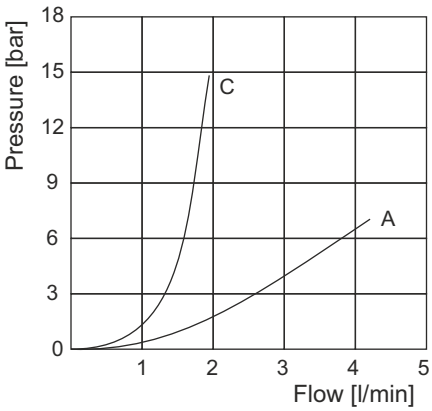
where *** stands for max setting pressure [bar]. eg. P25012DC

Mounting cavities

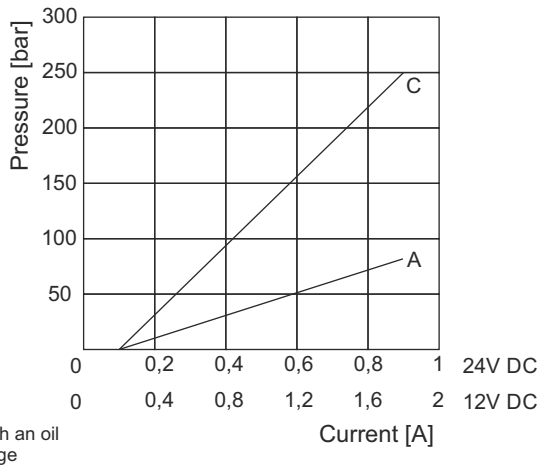


Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Pressure drop diagram

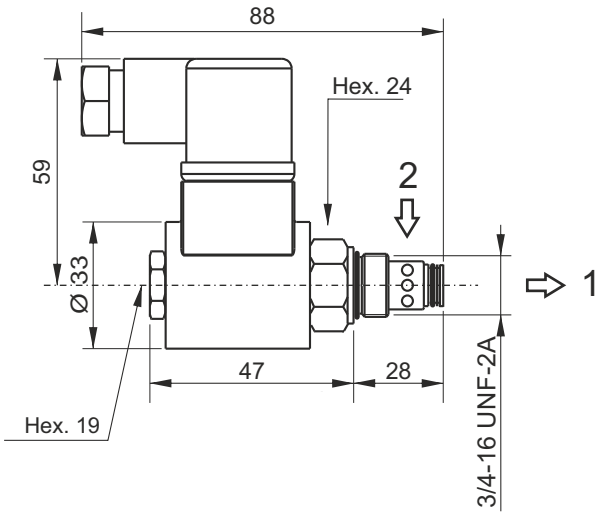


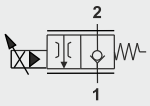
Pressure vs current



Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

CSPC15 - PROPORTIONAL FLOW CONTROL VALVES





Main features

Max press.	210 bar
Max flow	22 l/min
Weight	0,1 Kg (without coil)
PWM	120Hz
Hysteresis	5% (10% above 85% Imax)
Duty cycle	ED 100%
Voltage	+/- 10% nominal voltage
Normatives	EN50081-1/EN50082-2 (89/336 CEE) 73/23/CEE / 96/68/CEE
Oil temperature	-40 - +120°C
Filtration	10 ÷ 25 µ
Tightening torque	30Nm

Spare part code

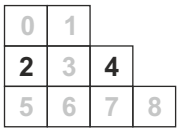
CSPC	**Proportional flow control valve**
15	**Nominal size:** 15 = 15 l/min
0	**Option:** 0 = no option
0000	**Supply voltage:** - 0000 = no coil - 12DC - 24DC

Assembly code

T* Voltage**

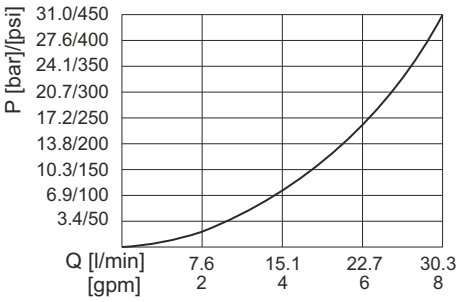
eg: T12DC

Mounting cavities

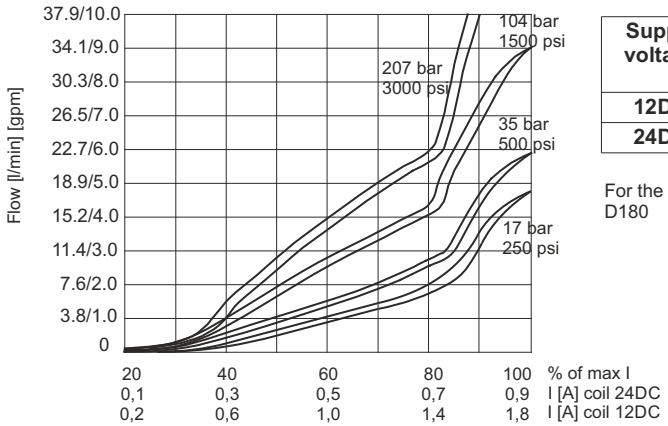


Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Pressure Drop 2 > 1 with fully open valve



Flow vs current at different pressure drops



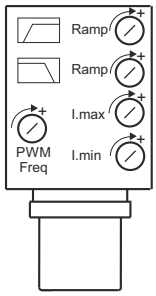
Coil selection

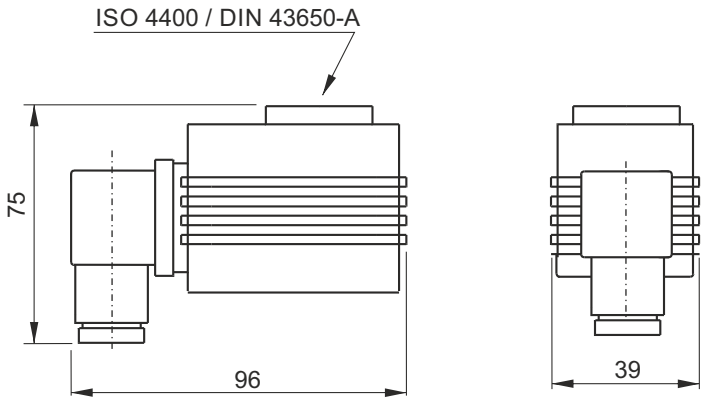
Supply voltage	Spare part code
12DC	M6306012
24DC	M6306024

For the controller see table D180

Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

VPC - ELECTRONIC AMPLIFIER FOR PROPORTIONAL SOLENOID VALVES





Main features

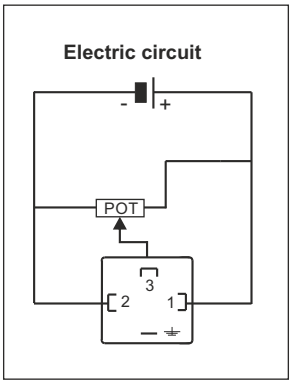
Supply voltage	12 / 24V DC
Voltage input signal range	0 ~ 10 V
Max current range	2,5A
PWM (optionally adjustable)	120 Hz (50 ÷ 400 Hz)
Ramp adjustment (independent)	5%
Input impedance	100 kohm
Voltage	+/- 10% nominal voltage
Weight	0,11 kg
Normatives	EN50081-1/EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

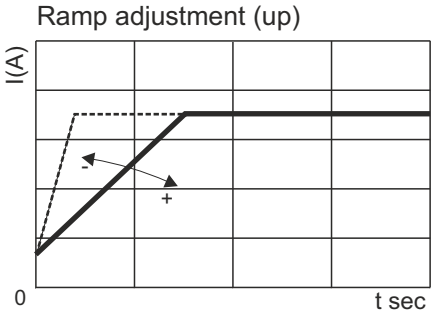
Spare part code

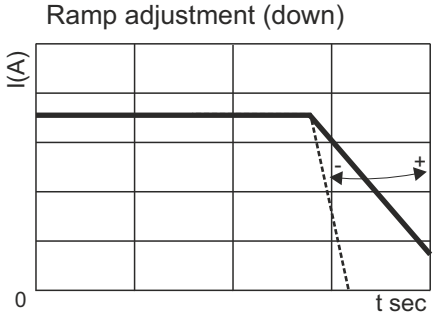
VPC — **Electronic amplifier for solenoid valves**

00 — **Options**

Suitable for:
- CSPC15**** proportional flow control valve
- VMPC2**** proportional pressure relief valve







Instruction for use:

1) turn the “I MIN” trimmer fully counterclockwise;
2) adjust the external voltage input signal to the desired initial regulating (flow or pressure) value;
3) turn “I MIN” trimmer in a clockwise direction until valve just starts regulating;
4) adjust the external voltage input signal to the max value and adjust “I MAX” trimmer until the valve regulates the maximum flow or pressure on the hydraulic system.

SECTION D

COILS FOR VALVES

M630* / M631*

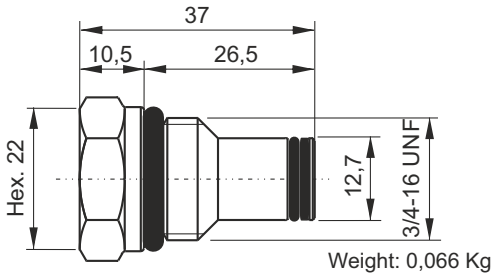
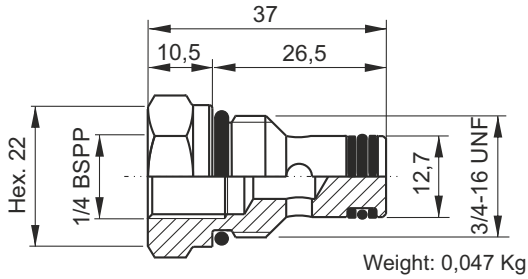
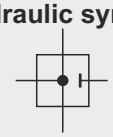
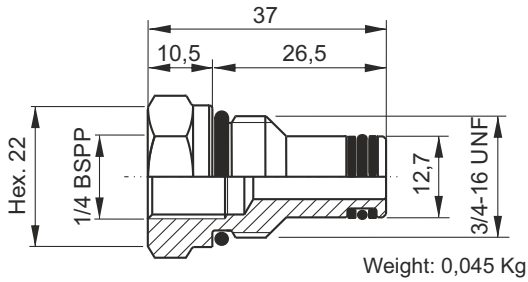
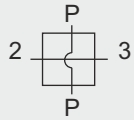
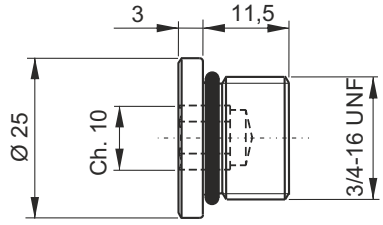
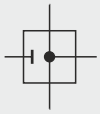
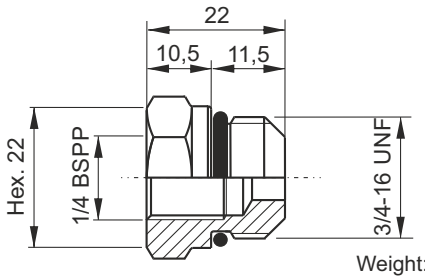
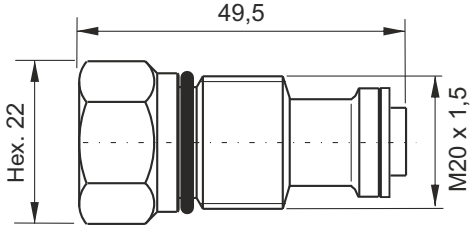
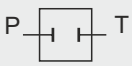
M130*

09800*

Supply voltage [V]	Assembly code	Coil type	Spare part code	Spare connector code	Holding Power [W]	Duty charge ED [%]	Prot. class	Wt [g]	Suitable for valves
12DC	12DC_M630	DC	**M6306012**	KA132000B1	18W	100	H	130	MSV30/31 MDV MSV4V CSPC15
24DC	24DC_M630	DC	**M6306024**	KA132000B1	18W	100	H	130	MSV30/31 MDV MSV4V CSPC15
24AC	24AC_M631	RC with integrated rectifying bridge	**M6316024**	KA132000B1	18W	100	H	130	MSV30/31 MDV MSV4V
115AC	115AC_M631	RC with integrated rectifying bridge	**M6316115**	KA132000B1	18W	100	H	130	MSV30/31 MDV MSV4V
230AC	230AC_M631	RC with integrated rectifying bridge	**M6316230**	KA132000B1	18W	100	H	130	MSV30/31 MDV MSV4V
12DC	12DC_M130	DC	**M13040001**	KA132000B1	18W	75	H	139	MSV30 MSV31 MDV
115AC 50Hz	115AC_50AC_ M130	AC - not usable on N Open valves	**M13040006**	KA132000B1	28VA	75	H	139	MSV30 MDV
115AC	110RAC_M130	RC - needs external rectifying connector	**M13040004**	KA132R12B1	18W	75	H	139	MSV30 MSV31 MDV
230AC	220RAC_M13 0	RC - needs external rectifying connector	**M13040005**	KA132R13B1	18W	75	H	139	MSV30 MSV31 MDV
12DC	Embedded code in the code proportional valve VMPC2	DC	**098001190**	KA132000B1	36W	100	H	257	VMPC2
24DC	Embedded code in the code proportional valve VMPC2	DC	**098002190**	KA132000B1	36W	100	H	247	VMPC2

Other voltages and electric connector types (Amp Junior, flying leads,...) available on request.
Inrush power consumption can be up to 3,5 times higher than holding power.
Coil thermal insulation: Class H. Electric connection: DIN 43650-A / ISO 4400. Coil protection degree: Ip65

PLUGS

 Weight: 0,066 Kg	**Hydraulic symbol**  **Spare part code** **E70100005**	**Assembly code** **G** **Mounting cavities** 0 1 2 3 4 5 6 7 8
 Weight: 0,047 Kg	**Hydraulic symbol**  **Spare part code** **E70100003**	**Assembly code** **H** **Mounting cavities** 0 1 2 3 4 5 6 7 8
 Weight: 0,045 Kg	**Hydraulic symbol**  **Spare part code** **E70100006**	**Assembly code** **P** **Mounting cavities** 0 1 2 3 4 5 6 7 8
 Weight: 0,027 Kg	**Hydraulic symbol**  **Spare part code** **E70100004**	**Assembly code** **L** **Mounting cavities** 0 1 2 3 4 5 6 7 8
 Weight: 0,042 Kg	**Hydraulic symbol**  **Spare part code** **E70100002**	**Assembly code** **N** **Mounting cavities** 0 1 2 3 4 5 6 7 8
 Weight: 0,110 Kg	**Hydraulic symbol**  **Spare part code** **E70100010**	**Assembly code** **XP** **Mounting cavities** 0 1 2 3 4 5 6 7 8

Note: cavities 3, 4 and 6 are present on central manifold type UB only.

NOTES

TANKS

Square steel tanks from **3** to **30 l**

Cylindrical steel tanks from **1,5** to **12 l**, for horizontal and vertical mounting

Square plastic tanks, from **1,5** to **8 l**, for horizontal or vertical mounting

Round plastic tanks with **5** or **11 l** volume, for horizontal or vertical mounting.

Plastic or steel tanks?
Plastic tanks have various advatanges: they do not rust, the oil level is visible and they do not damage easily if bumped,... On the other hand steel tanks are preferable in case of ultra high or ultra low temperatures. They are the only choice for volumes over 11 l.

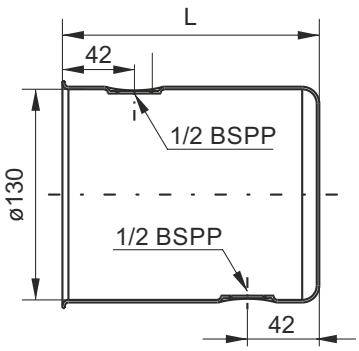
Is it possible to use custom made tanks?
Yes. We can provide an adaptor flange (F80000001) which can be welded by a customer on a custom made tank.

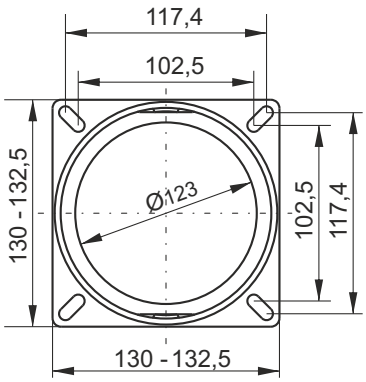
How do I order spare tanks?
Tanks can be ordered without accessories just by adding a J in front of the relevant code (e.g. JE60303015 instead of E60303015). When ordered with the normal code (e.g. E60303015) they include the relevant accesories such as: plugs, filler breather, oil level gauge, fixing devices,... depending on the kind of tank. Tanks specified in PPC speaking code (e.g. 5BV) always include all the relevant accessories.

SECTION E

CYLINDRICAL STEEL TANKS A & B SERIES

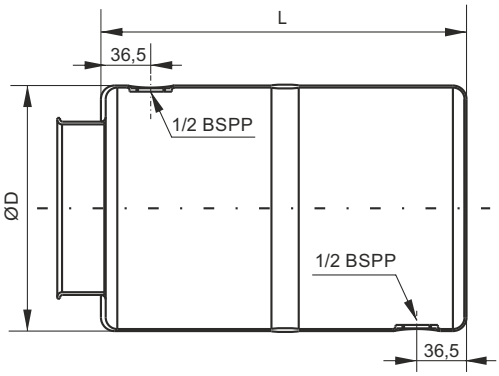
Recommended tightening torque for Filler Cap: 5 Nm

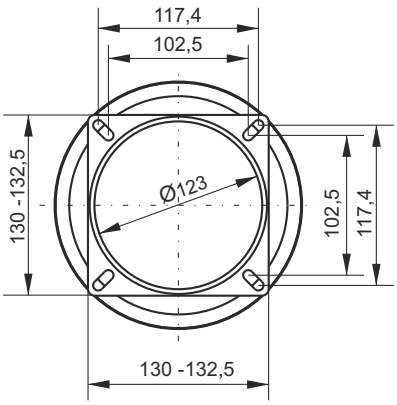




Description	Spare part code	Assembly code	L (mm)	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
1,5 l cylindrical horizontal / vertical mounting	**E60303001**	**1,5A / 1,5AV**	150	0,78 Kg	1,5	1,0
2,5 l cylindrical horizontal / vertical mounting	**E60303004**	**2,5A / 2,5AV**	235	1,04 Kg	2,5	2,0

Recommended tightening torque for Filler Cap: 5 Nm





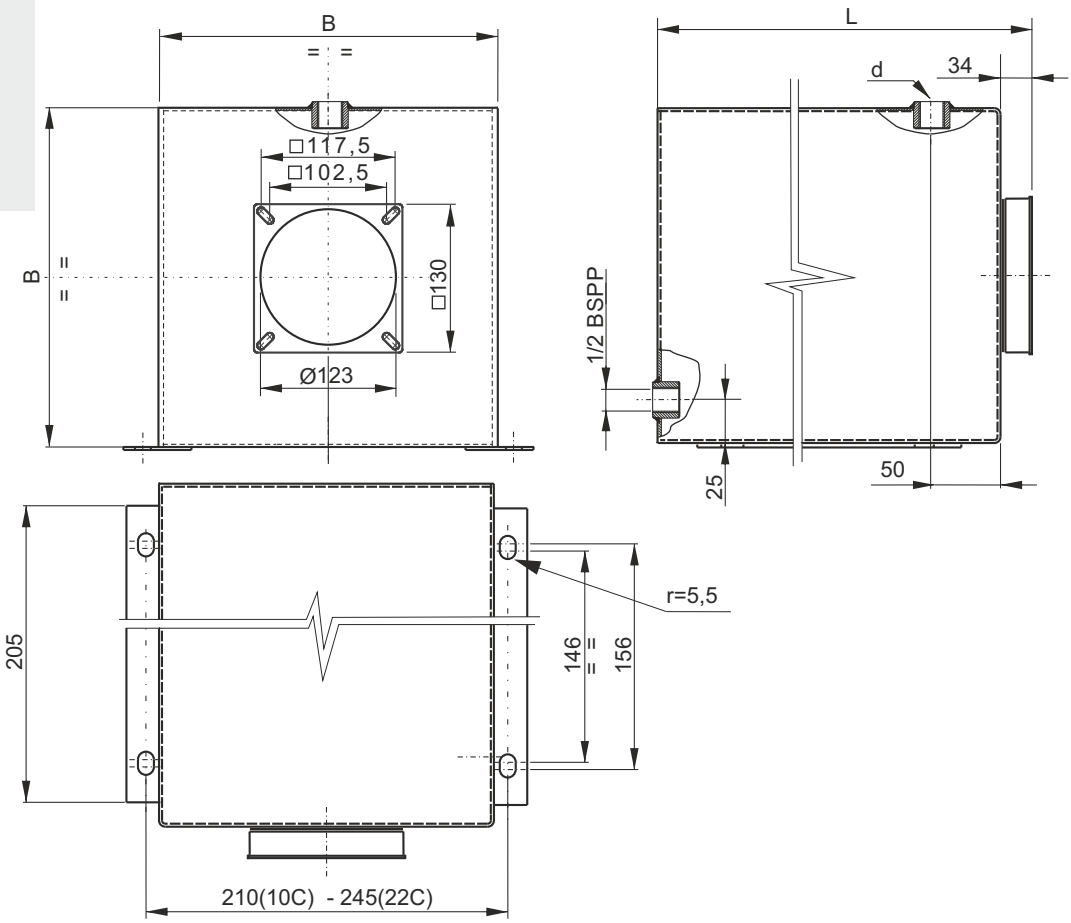
Description	Spare part code	Assembly code	L (mm)	ØD (mm)	Weight	Actual filling volume (lt)	
						Horiz.	Vert.
5 l cylindrical horizontal / vertical mounting	**E60303006**	**5B / 5BV**	300	180	1,82 Kg	6,3	5,1
10 l cylindrical horizontal / vertical mounting	**E60303011**	**10B / 10BV**	262	220	2,01 Kg	8,3	6,3
12 l cylindrical horizontal / vertical mounting	**E60303012**	**12B / 12BV**	380	220	2,47 Kg	12,5	10,9

All dimensions are in mm

Material	Fe P04-EN10130 steel sheet 1,5mm thickness
Fluid	Mineral based oil ISO/DIN 6743/4
Working temperature	-15 / +70°C

Notes: the piping kit, standard suction filter, filler/breather and drain plug are included when specifying the tank in PPC assembly code. When ordering spare parts, only the drain plug and filler/breather are included.

HORIZONTAL/VERTICAL SQUARE WELDED STEEL TANKS C SERIES



Description	Spare part code	Assembly code	L (mm)	B (mm)	d	Weight	Actual filling volume (lt)	
							Horiz.	Vertical
10 l square horiz. / vert. mounting	**E60303042**	**10C / 10CV**	330	185	1/2 BSPP	5,50 Kg	9,6	8,1
22 l square horiz. / vert. mounting	**E60303044**	**22C / 22CV**	470	223	3/4 BSPP	6,80 Kg	20,6	18,5

All dimensions are in mm

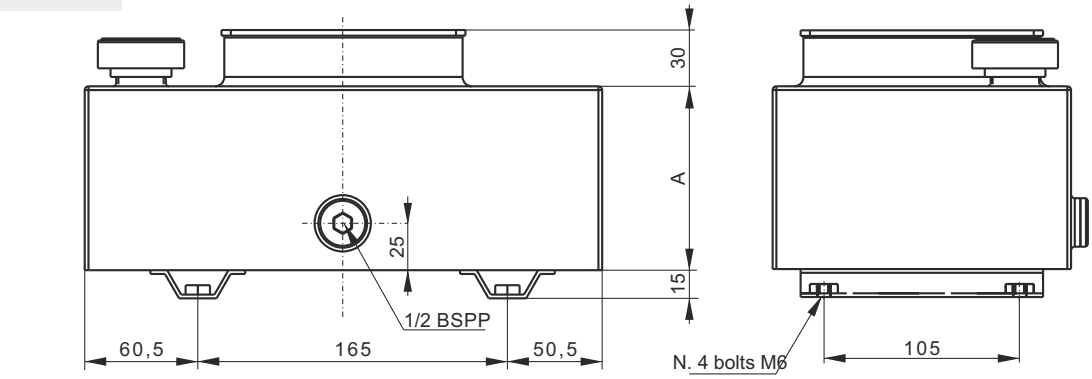
Material	Fe P04-EN10130 steel sheet 1,5mm thickness
Fluid	Mineral based oil ISO/DIN 6743/4
Working temperature	-15 / +70°C

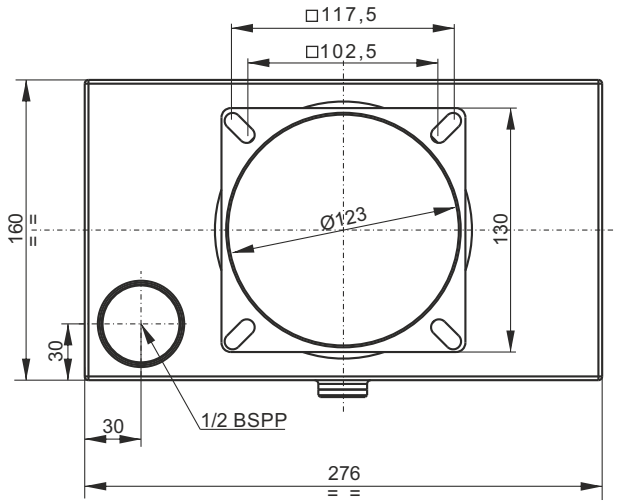
Notes: the piping kit, standard suction filter, filler/breather and drain plug are included when specifying the tank in PPC assembly code. When ordering spare parts, only the drain plug and filler/breather are included.

On request special square welded tanks can be manufactured. An inquiry must be sent to our technical department with indication of quantities.

SECTION E

SMALL SIZE SQUARE WELDED STEEL TANKS E SERIES





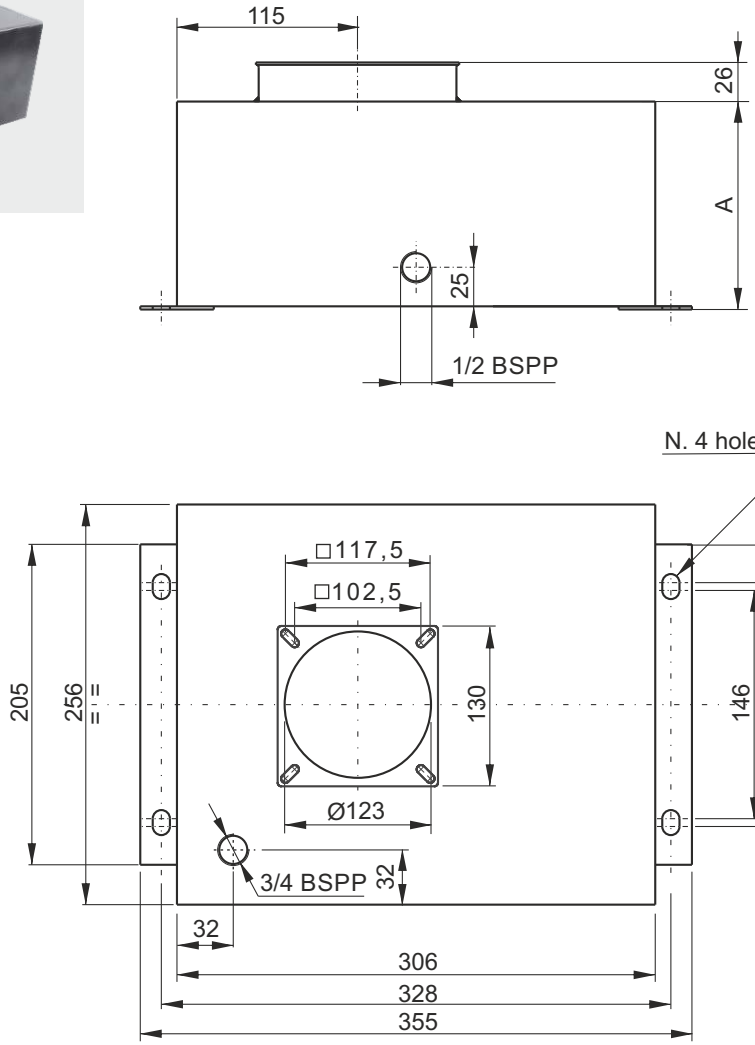
Description	Spare part code	Assembly code	A	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
3 l square vertical mounting	**E60303053**	**3EV**	98 mm	3,09 Kg	-	4,2
7 l square vertical mounting	**E60303057**	**7EV**	190 mm	4,32 Kg	-	8,3

All dimensions are in mm

Material	Fe P04-EN10130 steel sheet 1,5mm thickness
Fluid	Mineral based oil ISO/DIN 6743/4
Working temperature	-15 / +70°C

Notes: the piping kit, standard suction filter, filler/breather and drain plug are included when specifying the tank in PPC assembly code. When ordering spare parts, only the drain plug and filler/breather are included.

SMALL SIZE SQUARE WELDED STEEL TANKS E SERIES



Description	Spare part code	Assembly code	A	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
8 l square vertical mounting	**E60303041**	**8EV**	133 mm	4,50 Kg	-	10,4
15 l square vertical mounting	**E60303014**	**15EV**	237 mm	5,20 Kg	-	18,5

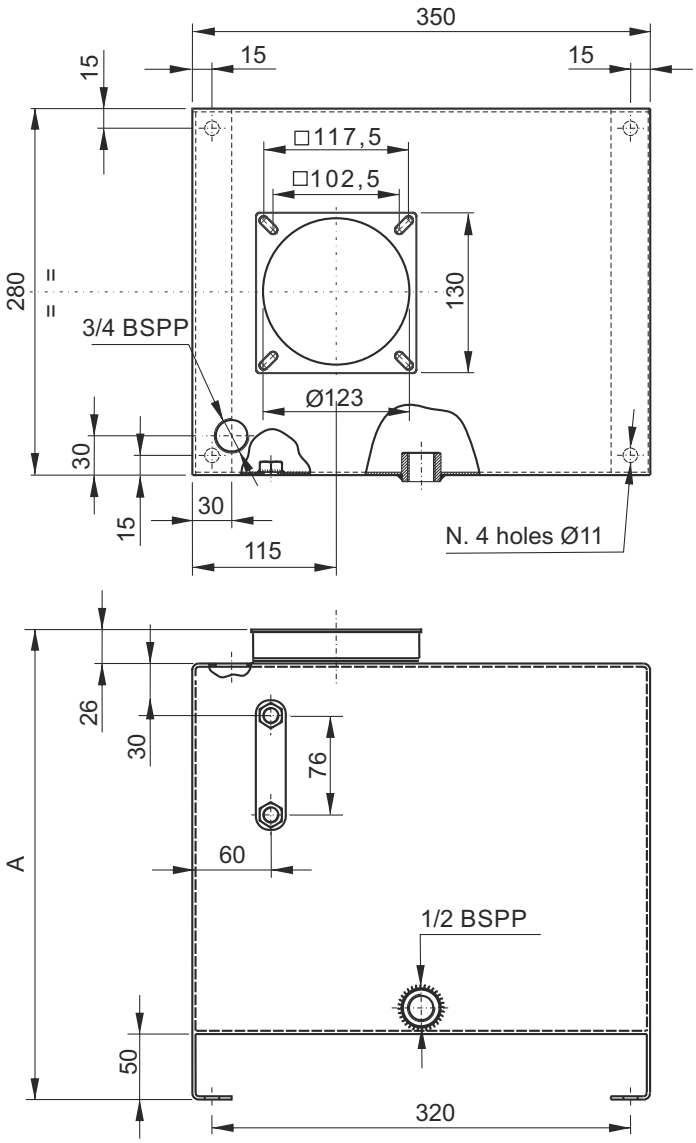
All dimensions are in mm

Material	Fe P04-EN10130 steel sheet 1,5mm thickness
Fluid	Mineral based oil ISO/DIN 6743/4
Working temperature	-15 / +70°C

Notes: the piping kit, standard suction filter, filler/breather and drain plug are included when specifying the tank in PPC assembly code. When ordering spare parts, only the drain plug and filler/breather are included.

SECTION E

SQUARE WELDED STEEL TANKS E SERIES



Description	Spare part code	Assembly code	A	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
20 l squared vertical mounting	**E60303015**	**20EV**	293 mm	6,50 Kg	-	20,8
30 l squared vertical mounting	**E60303048**	**30EV**	423 mm	8,50 Kg	-	33,5

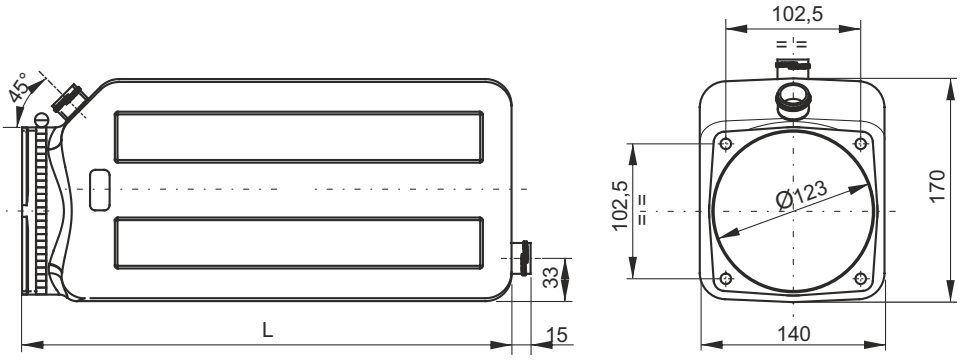
All dimensions are in mm

Material	Fe P04-EN10130 steel sheet 2,5mm thickness on top and side, 1,5mm thickness front and rear
Fluid	Mineral based oil ISO/DIN 6743/4
Working temperature	-15 / +70°C

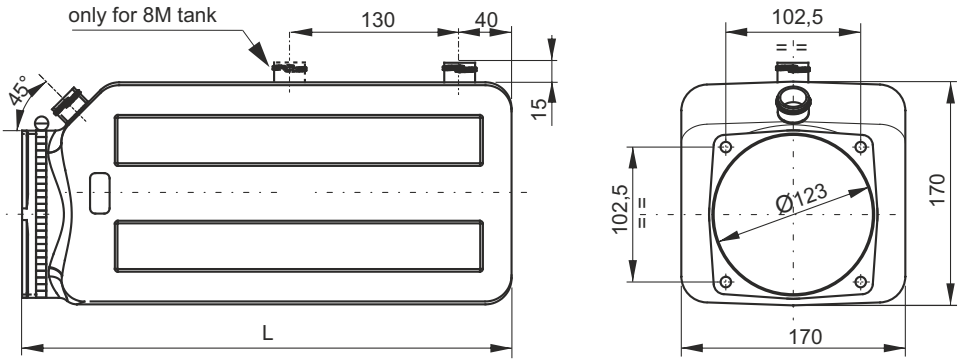
Notes: the piping kit, standard suction strainer, filler/breather, level gauge and drain plug are included when specifying the tank in PPC assembly code.
When ordering spare tanks, only the drain plug, filler/breather and level gauge are included.

On request special square welded tanks can be manufactured. An inquiry must be sent to our technical department with indication of quantities.

SQUARE PLASTIC TANKS L & M SERIES



Description	Spare part code	Assembly code	L (mm)	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
1,5 l square horizontal / vertical mounting	**H60303016**	**1,5L / 1,5LV**	135	0,32 Kg	2,4	1,5
3 l square horizontal / vertical mounting	**H60303018**	**3L / 3LV**	250	0,42 Kg	4,4	4,2
6 l square horizontal / vertical mounting	**H60303020**	**6L / 6LV**	350	0,63 Kg	6,2	6,6



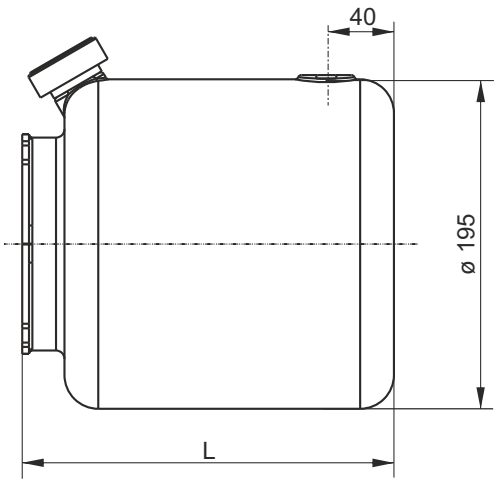
Description	Spare part code	Assembly code	L (mm)	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
5 l square horizontal / vertical mounting	**H60303025**	**5M / 5MV**	270	0,60 Kg	5,8	5,7
8 l square horizontal / vertical mounting	**H60303033**	**8M / 8MV**	375	0,76 Kg	8,1	8,8

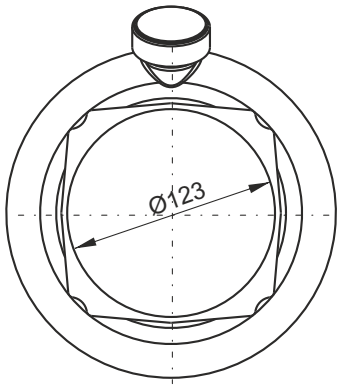
Material	PE-HD neutral / transparent colour (DO NOT EXPOSE TO DIRECT SUNLIGHT)
Fluid	Mineral based oil ISO/DIN 6743/4
Working temperature	-15 / +70°C

Notes: the piping kit, standard suction strainer and filler/breather are included when specifying the tank in PPC assembly code. When ordering spare tanks, only the filler/breather C86100003 or C86100001 and clamp band are included. Discharge ports are normally moulded blind.

SECTION E

CYLINDRICAL PLASTIC TANKS P SERIES





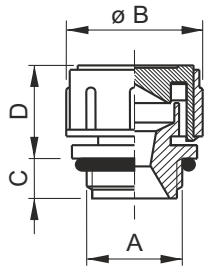
Description	Spare part code	Assembly code	L (mm)	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
5 l cylindrical horizontal / vertical mounting	**H60303028**	**5P / 5PV**	219	0,60 Kg	5,0	4,2
7 l cylindrical horizontal / vertical mounting	**H60303030**	**7P / 7PV**	271	0,61 Kg	6,0	5,5
9 l cylindrical horizontal / vertical mounting	**H60303032**	**9P / 9PV**	323	0,76 Kg	7,2	6,5
11 l cylindrical horizontal / vertical mounting	**H60303035**	**11P / 11PV**	453	1,06 Kg	9,0	10,5

Material	PE-HD neutral / transparent colour (DO NOT EXPOSE TO DIRECT SUNLIGHT)
Fluid	Mineral based oil ISO/DIN 6743/4
Working temperature	-15 / +70°C

Notes: the piping kit, standard suction strainer and filler/breather are included when specifying the tank in PPC assembly code.
When ordering spare tanks, only the filler/breather C86100003 or C86100001 and clamp band are included.
Discharge ports are normally moulded blind. On request these tanks are available with an offset collar. Enquire for details.

TANKS PLUGS AND ACCESSORIES

Filler breather 1/2" - 3/4" BSPP



	1/2"	3/4"
A	1/2"	3/4"
B	30	47
C	10	17
D	21	17

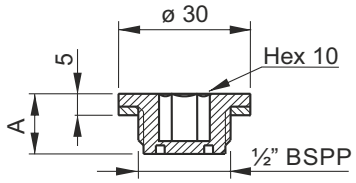
Weight: 0,02 Kg

Suitable for B/BV type tanks (1/2" BSPP)
Suitable for EV type tanks (3/4" BSPP)

Spare part code

C86100001 (1/2 BSPP)
C86100002 (3/4 BSPP)

Drain plug



	A
TCNB0800	15
TB050801	19

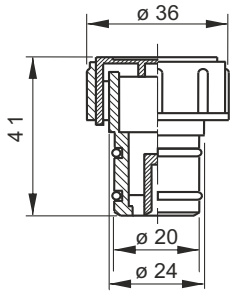
Weight: 0,01 Kg
Weight: 0,04 Kg

Suitable for all steel tanks

Spare part code

TCNB0800 (plastic)
TB050801 (steel)

Filler breather slip-in



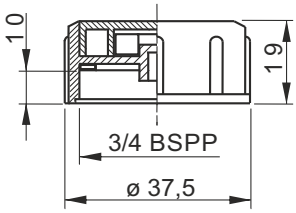
Weight: 0,02 Kg

Suitable for L/M type tanks
only upon request and for small batches

Spare part code

C86200002

Filler breather 3/4" BSPP female



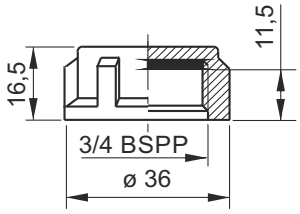
Suitable for all series plastic tanks

Weight: 0,01 Kg

Spare part code

C86100003

3/4" BSPP female drain plug



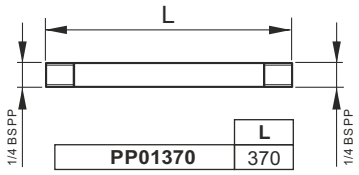
Suitable for all series plastic tanks

Weight: 0,01 Kg

Spare part code

E60513005

1/4" suction/return pipe



	L
PP01370	370

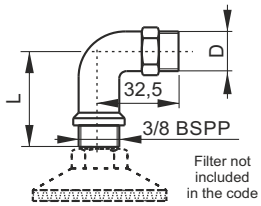
Recommended as suction pipe for PMC02 hand pumps and as return pipe with C3420001 return filter.

Weight: 0,04 Kg

Spare part code

PP01370

90° elbow for suction pipe M 1/4" & 3/8" BSPT - M 3/8" BSPP



	L	D
PP01E40	40	1/4 BSPT
PP01E77	77	1/4 BSPT
PP02E40	40	3/8 BSPT
PP02E77	77	3/8 BSPT

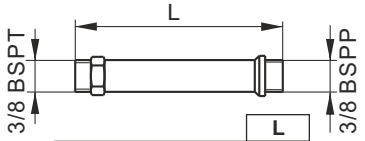
Recommended for horizontal tanks

Weight: 0,01 Kg

Spare part code

PP0*E**

3/8" suction pipe



	L
PP0242	42
PP0268	68
PP02105	105
PP02125	125
PP02142	142
PP02165	165
PP02180	180
PP02190	190
PP02237	237
PP02370	370

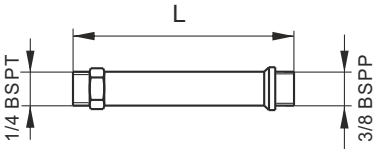
To fit inlet strainers C34100005 to Gr.1 pumps

Weight: 0,02 Kg

Spare part code

PP02**

1/4" - 3/8" suction pipe



	L
PP0130	30
PP0180	80
PP01120	120

To fit inlet strainers C34100005 to Gr.0 pumps

Weight: 0,01 Kg

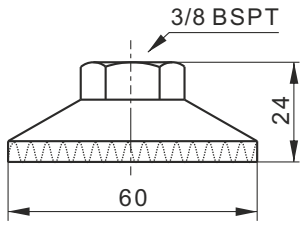
Spare part code

PP01**

SECTION E

TANK ACCESSORIES

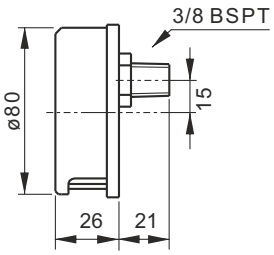
Standard inlet strainer filters
Filtration degree: 90 micron



Weight: 0,01 Kg

Spare part code
C34100005

Inlet eccentric filters
Filtration degree: 90 micron

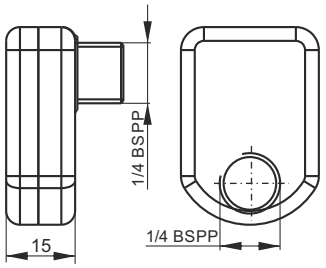


Recommended for 1,5 l tanks horizontal mounting

Weight: 0,13 Kg

Spare part code
C34100001

Micro inlet filters
Filtration degree: 90 micron

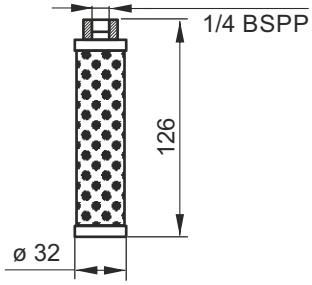


Recommended for pumps gr. 0

Weight: 0,01 Kg

Spare part code
C34100100

Return filter
Filtration degree: 90 micron

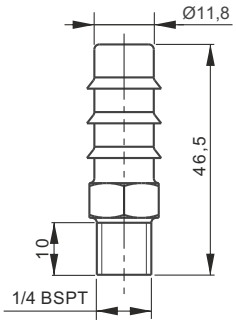


Suitable for all tanks over 3l

Weight: 0,09 Kg

Spare part code
C34200001

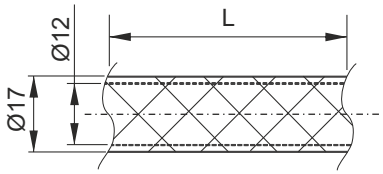
Flexible plastic pipe holder for return line 1/4" BSPT



Weight: 0,01 Kg

Spare part code
TR0112

Flexible plastic pipe

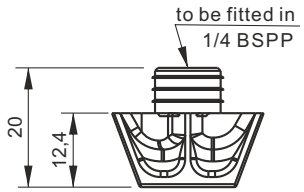


Recommended as standard return pipe.
To be fixed with TR01-12 and cut to correct length.
To be ordered in meters.

Weight: 0,18 Kg/meter

Spare part code
SF12

Relief valve diffuser
To be mounted in cavity Tr

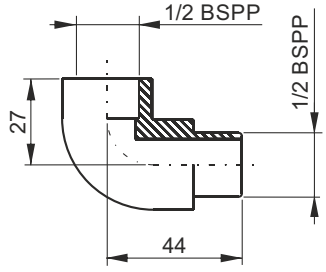


It reduces foam and noise when relief valve is working
Recommended for all vertical mounted tanks.

Weight: 0,01 Kg

Spare part code
SFEP01D

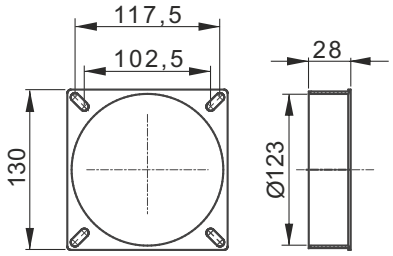
90° adapter for vertical tanks



Weight: 0,02 Kg

Spare part code
E60513004

Bare steel tank adapter



Unpainted, to be welded on custom made tanks

Weight: 0,18 Kg

Spare part code
F80000001

EXTERNAL MANIFOLDS & ACCESSORIES

Standard NG6 (Cetop 3) base modular manifold blocks with parallel or series connections, rear or lateral ports. They can be stacked one upon the other. Top manifold P and T ports can be plugged with simple 1/4" or 1/8" BSP plugs

Pilot operated check valves can be integrated within modular manifold blocks for NG6 (Cetop 3) valves, thus avoiding the extra modular Cetop 3 sandwich type valve between the base block and the spool valve

External hand pumps of 4 cc or 8,8 cc/stroke can be fixed between the central manifold and the Cetop3 modular block. The lever may be rotated 360° enabling you to set it to the best position

The PPC-to-SD01 stackable valve converter lets you mount our range of **modular stackable valves**. This is an **up-to-date and lightweight alternative** to NG6 (Cetop3) directional valves

The **pressure line** or **return line filters** are mounted in a modular manifold which can be stacked under NG6 (Cetop 3) modular manifolds

A full set of **accessories** is available to complete the power pack configuration

The **NG3 MICRO** set of blocks and valves is an **ultracompact and cost effective alternative** to NG6 (Cetop3), up to 15 l/min. They can be mounted thanks to the PPC-to-PPM adaptor

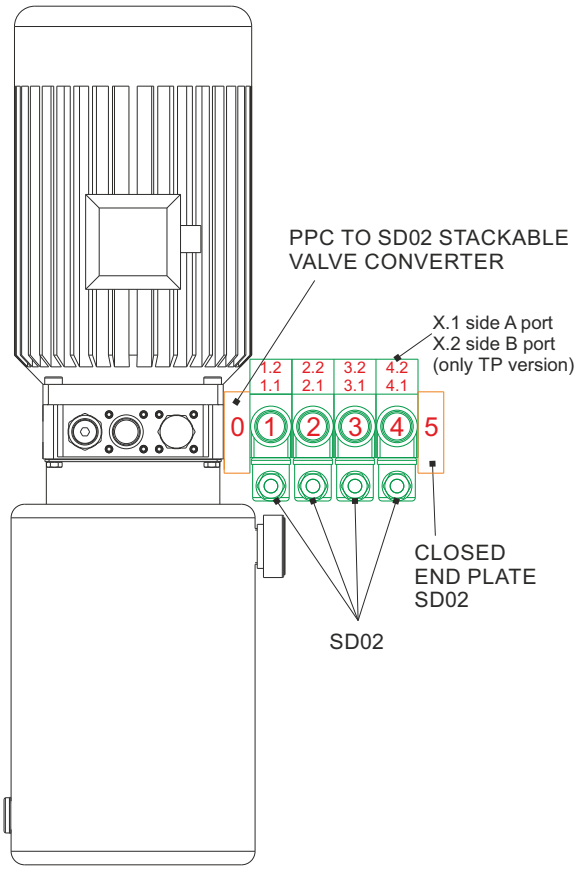
How many types of external manifold blocks can be mounted?
The central manifold exit face allows the mounting of two different block systems, fixed by 2x M8 bolts (normally used for cetop3 modular manifolds stacks) or 4x M6 bolts (for modular manifolds for cartridge valves). The two types of bolt systems cannot be mixed on the same stack. For every product code the fixing system type is clearly displayed in following tables. To mount stackable directional valves or NG3 MICRO directional valves an adaptor plate is required. See section G for the relevant valve details.

When do I need to mount the 28mm spacer block?
Whenever a big motor is mounted on the power pack. Normally the E60403004 spacer must be mounted below the stack of Cetop3 blocks with AC motors with frame 80 or higher and with DC motors with frame 125 or higher.

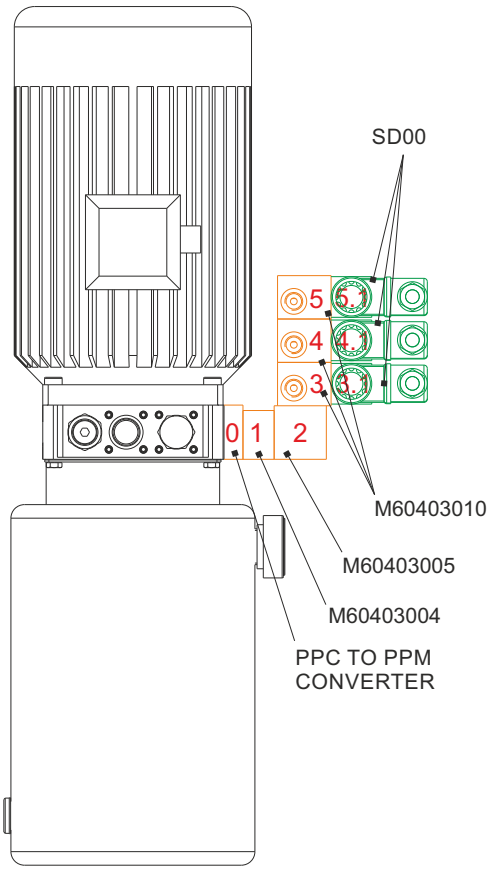
When are the modular manifolds for differential area cylinders used?
With UR central manifolds, for reversible pump circuits, the exit port are A and B instead of P and T. With differential area cylinders, when the bidirectional pump flow is outputting to B port, there will be more flow returning to A port, connected to the piston side of the cylinder, than that going to B port, connected to the rod side, due to the cylinder differential area ratio. This function of this block is to discharge the extra flow generated to tank as this cannot be absorbed by the pump itself.

EXTERNAL MANIFOLDS & VALVE MOUNTING EXAMPLES

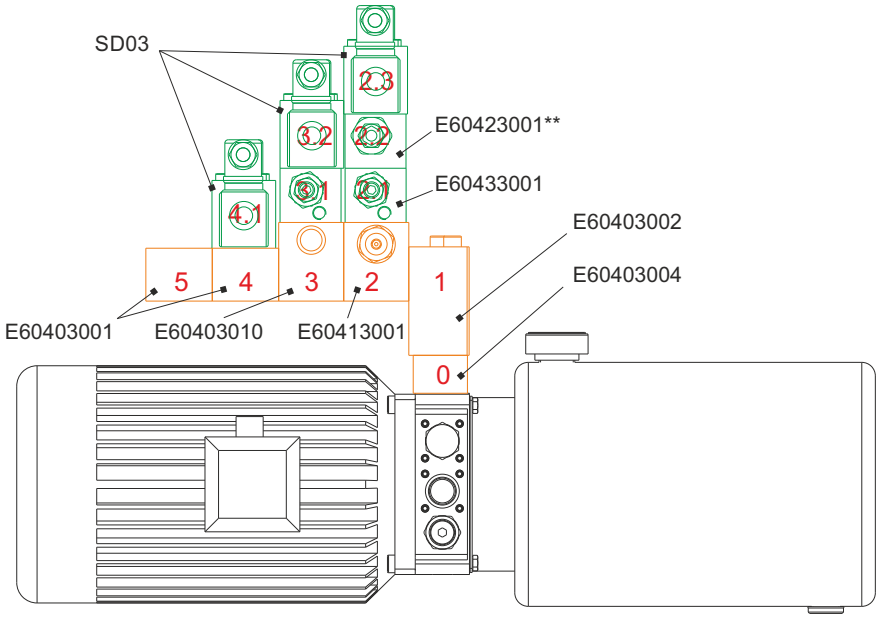
PPC + SD02 STACKABLE VALVES



PPC + NG3 MICRO BLOCKS & VALVES



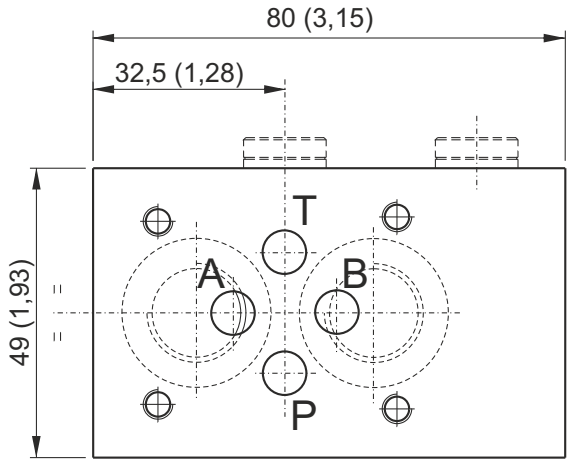
PPC + NG6 (CETOP 3) BLOCKS & VALVES

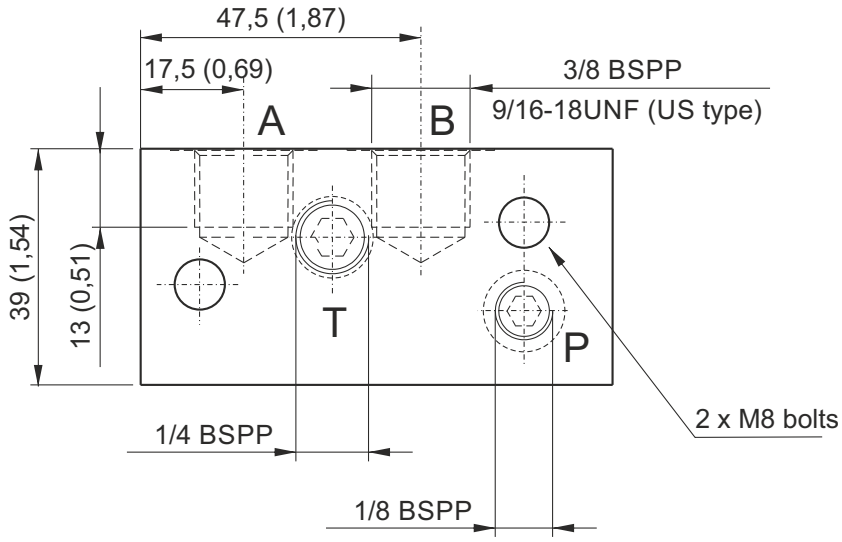


The mini powerpack external manifolds and valves are arranged following a stack level logic. Each stack is numbered eg. n, n.1, n.2, n.3,... where n is the basic manifold stack number, n.1 is the first valve mounted on top of manifold n; n.2 is the second one mounted on top of n.1,... See above self-explanatory drawings where manifolds are coloured in orange and valves in green. Stack levels are numbered in red.

NG6 (CETOP 3) MODULAR MANIFOLDS, REAR PORTS

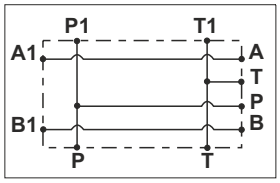
Dimensions in mm (inches)





Main features

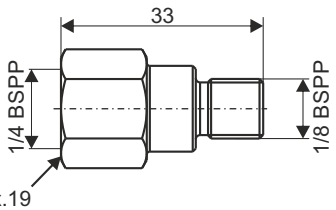
Weight	0,37 Kg (0,82lb)
Fixing bolts	2 M8 tie-rods steel class 8.8 or above



Parallel connection	Spare part code
Rear ports	**E60403001**
Rear ports US execution	**E60403001US**

Option P port:

PORTMF001
P port 1/4 BSPP F
for modular blocks



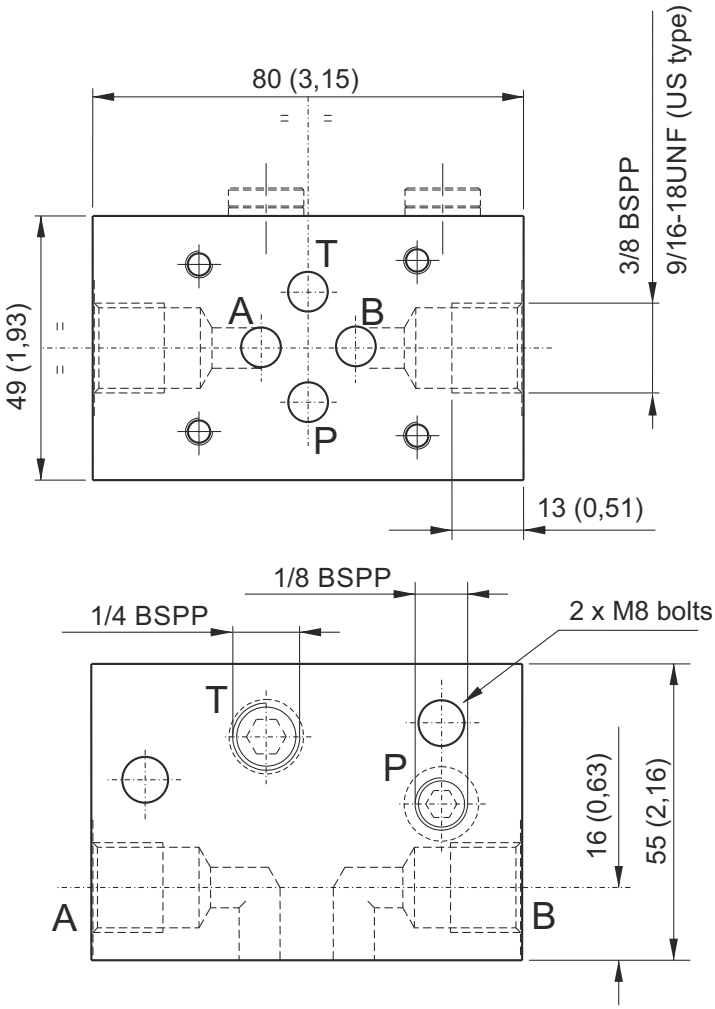
Note: to add external manifolds to PPC assembly code, just add their spare part codes at the end of the PPC code.
eg: PPC-0,8 12DC-UA-J-G1,1-D/280-G-1,5L+**E60403004**+**E60403001**

The Cetop attachment is on motor side. With AC motor frames bigger than 71 and DC motors bigger than dia. 125mm, always add a spacer manifold E60403004 (see next page) below the Cetop manifold to avoid interference between the Cetop valve and the motor.

Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8..

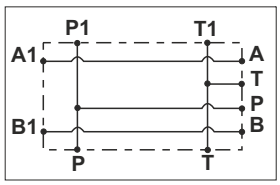
NG6 (CETOP 3) MODULAR MANIFOLDS, LATERAL PORTS

Dimensions in mm (inches)

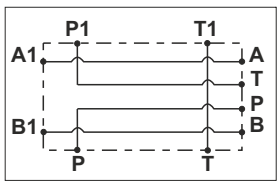


Main features

Weight	0,56 Kg (1,2lb)
Fixing bolts	2 M8 tie-rods steel class 8.8 or above



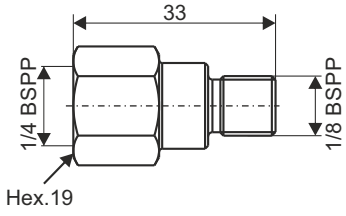
Parallel connection	Spare part code
Rear ports	E60403010
Rear port US execution	E60403010US



Series connection	Spare part code
Rear ports	E60403011
Rear port US execution	E60403011US

Option P port:

PORTMF0001
P port for modular blocks



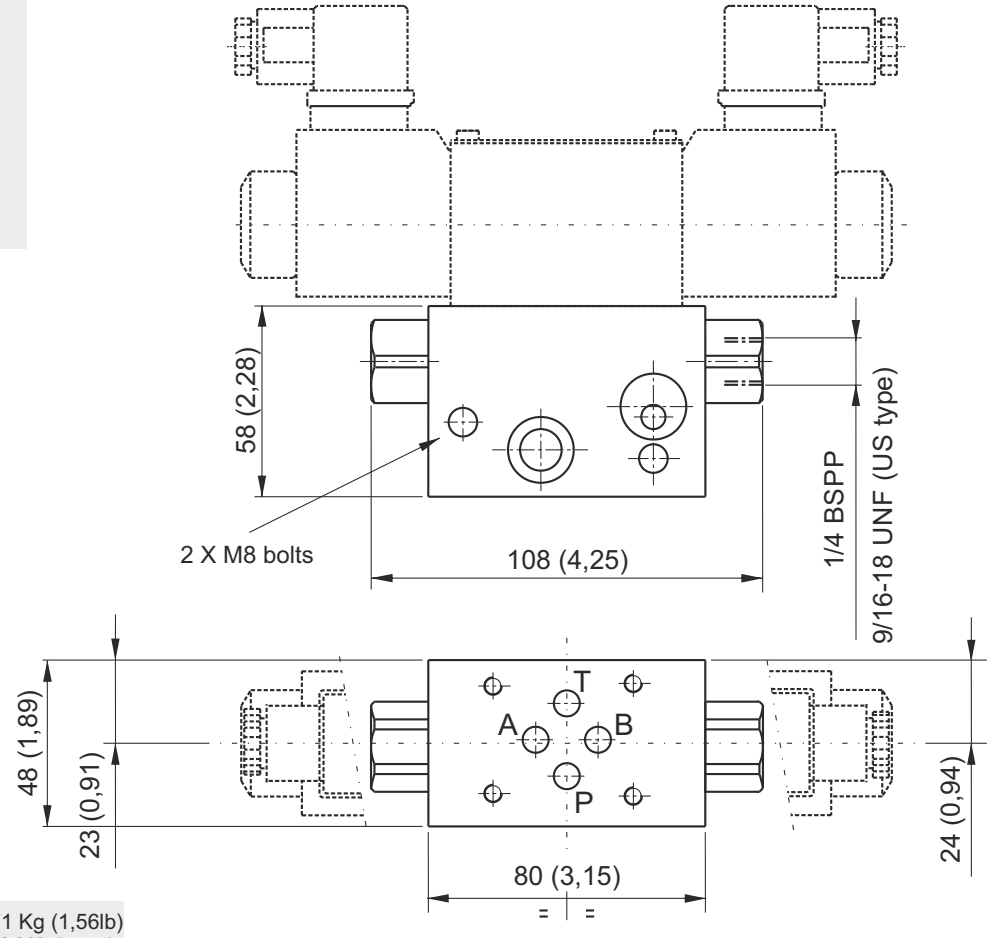
Note: to add external manifolds to PPC assembly code, just add their spare part codes at the end of the PPC code.
Ex: PPC-0,8 12DC-UA-J-G1,1-D/280-G-1,5L+**E60403004+E60403010**

The Cetop attachment is on motor side. With AC motor frames bigger than 71 and DC motors bigger than dia. 125mm, always add a spacer manifold E60403004 (see next page) below the Cetop manifold to avoid interference between the Cetop valve and the motor.

Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.

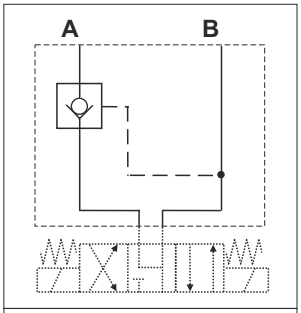
NG6 (CETOP 3) MODULAR MANIFOLDS WITH INTEGRAL PILOT OPERATED CHECK VALVES

Dimensions in mm (inches)

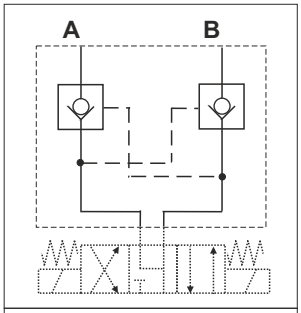


Main features

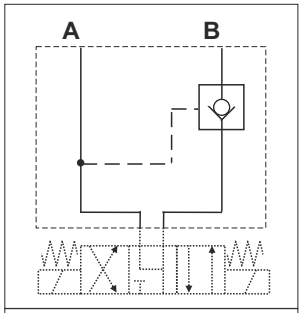
Weight	0,71 Kg (1,56lb)
Fixing bolts	2 M8 tie-rods steel class 8.8 or above



Spare part code
E60413002
E60413002US*



Spare part code
E60413001
E60413001US*



Spare part code
E60413003
E60413003US*

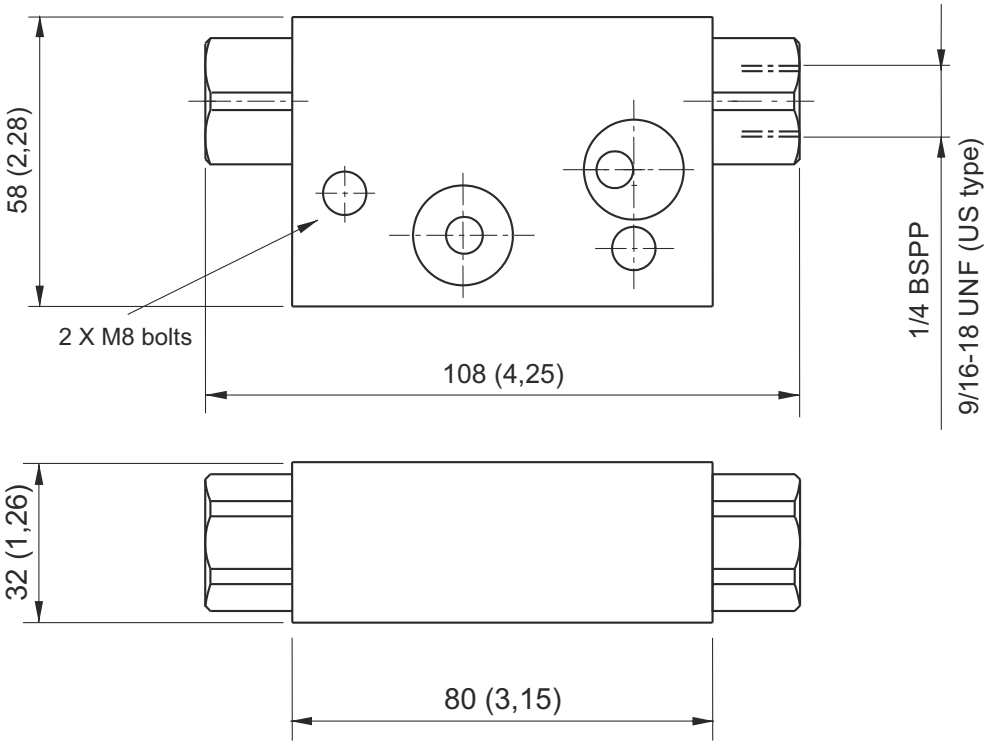
*: US execution with 9/16-18UNF SAE06 exit ports
Code does not include the Cetop solenoid valve.
Recommended tightening torque for M8 bolts: 16 Nm. Attention! Don't use tie-rods less than 8.8.

SECTION F

MODULAR MANIFOLDS WITH PILOT OPERATED CHECK VALVES

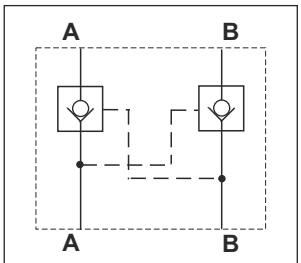
Dimensions in mm (inches)

Available on:
Central manifold U4
Central manifold UR



Main features

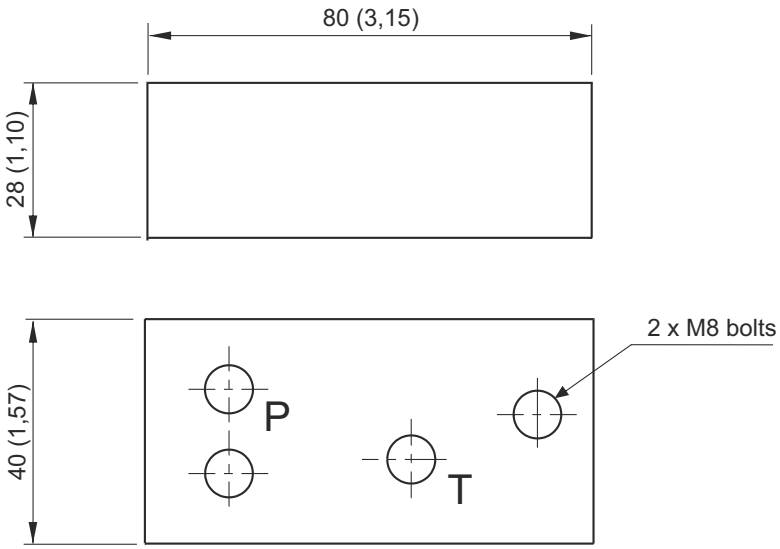
Weight	0,5 Kg (1,1lb)
Fixing bolts	2 M8 tie-rods steel class 8.8 or above



Spare part code
E60403027
E60403027US*

*: US execution with 9/16-18UNF SAE06 exit ports
Recommended tightening torque for M8 bolts: 16 Nm.
Attention! Do not use tie-rods less than 8.8.

SPACER ELEMENTS



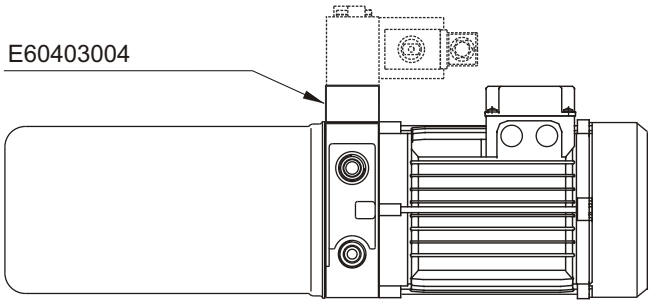
Dimensions in mm (inches)

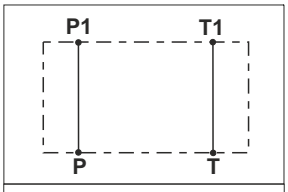
Suitable for all central manifolds with
AC motors with frame bigger than 71
and DC motors with frame bigger than Ø125.

Main features

Weight	0,23 Kg (0,5lb)
Fixing bolts	2 M8 tie-rods steel class 8.8 or above

Mounting example



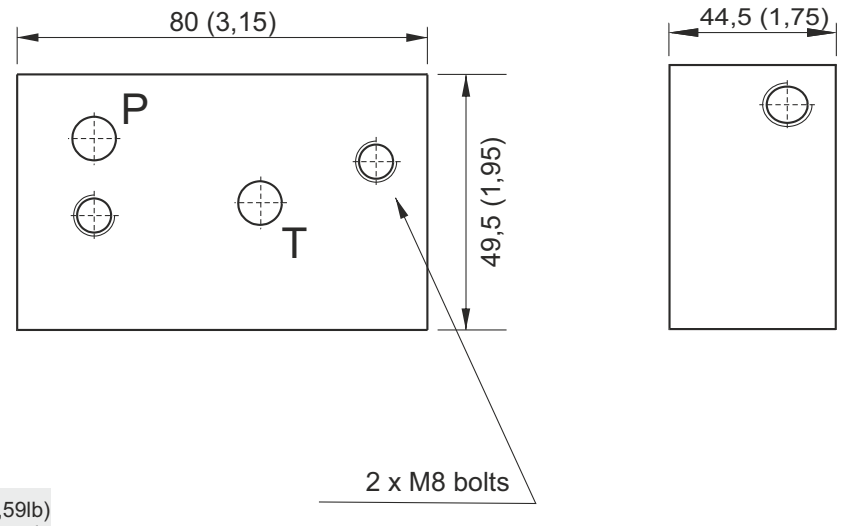


Spare part code
E60403004

Attention! Do not use tie-rods less than 8.8.

SECTION F

90° ROTATION MANIFOLDS 49MM

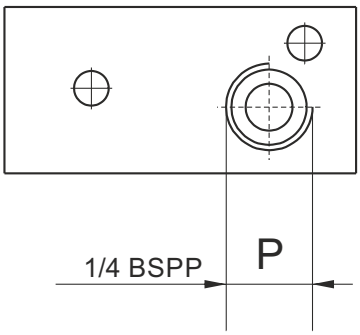


Dimensions in mm (inches)

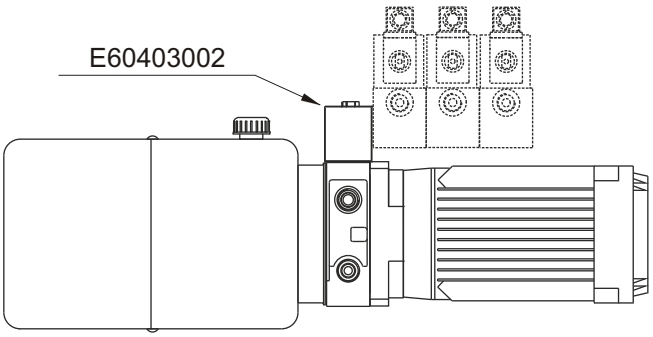
For AC motor with frame 90 or above and DC motor Ø151 or above muste be used with E60403004.

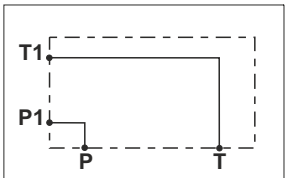
Main features

Weight	0,72 Kg (1,59lb)
Fixing bolts	2 M8 tie-rods steel class 8.8 or above



Mounting example

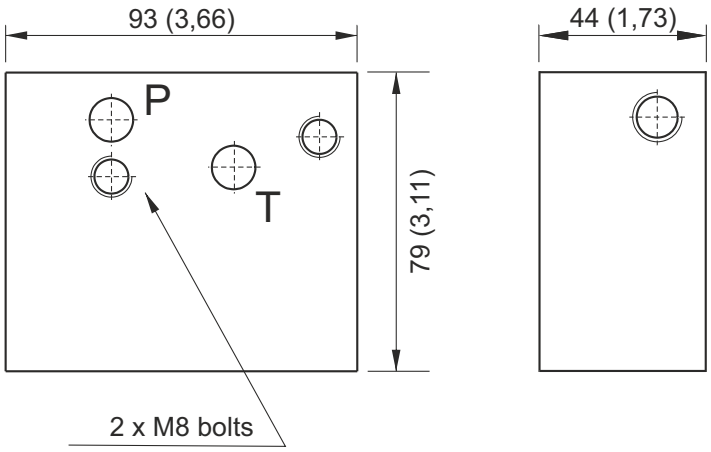




Spare part code
E60403002

Attention! Do not use tie-rods less than 8.8.

90° ROTATION MANIFOLDS WITH DOUBLE-SIDED ATTACHMENT P & T 79MM

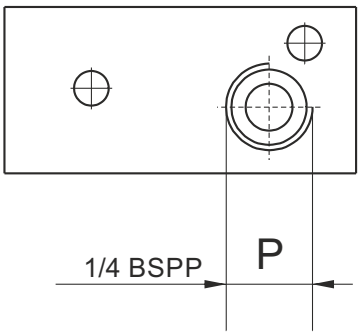


Dimensions in mm (inches)

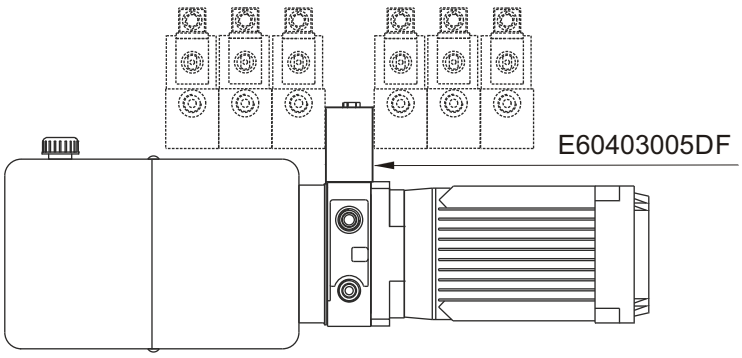
For AC motor with frame 90 or above and DC motor Ø151 or above must be used with E60403004.

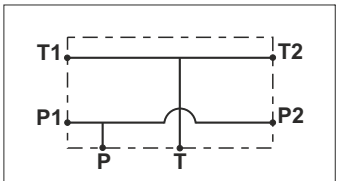
Main features

Weight	0,72 Kg
Fixing bolts	2 M8 tie-rods steel class 8.8 or above



Mounting example





Spare part code
E60403005DF

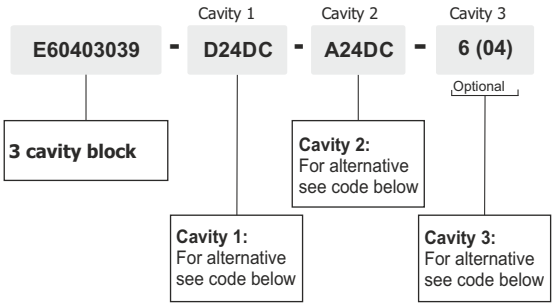
Attention! Do not use tie-rods less than 8.8.

MANIFOLD FOR ADDITIONAL SINGLE ACTING CIRCUIT

Dimensions in mm (inches)

Can be used to create a single acting circuit in parallel with a double acting circuit

ASSEMBLY CODE - example

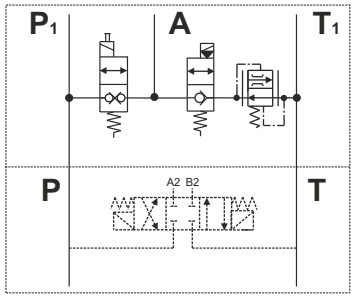


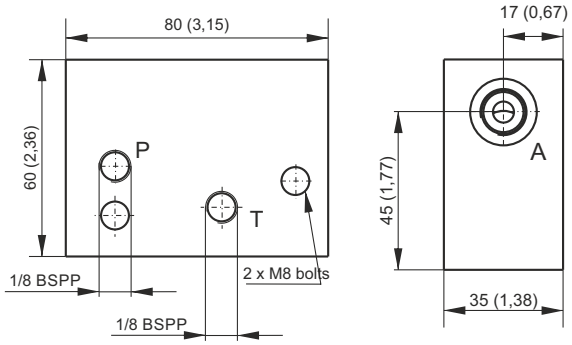
Main features

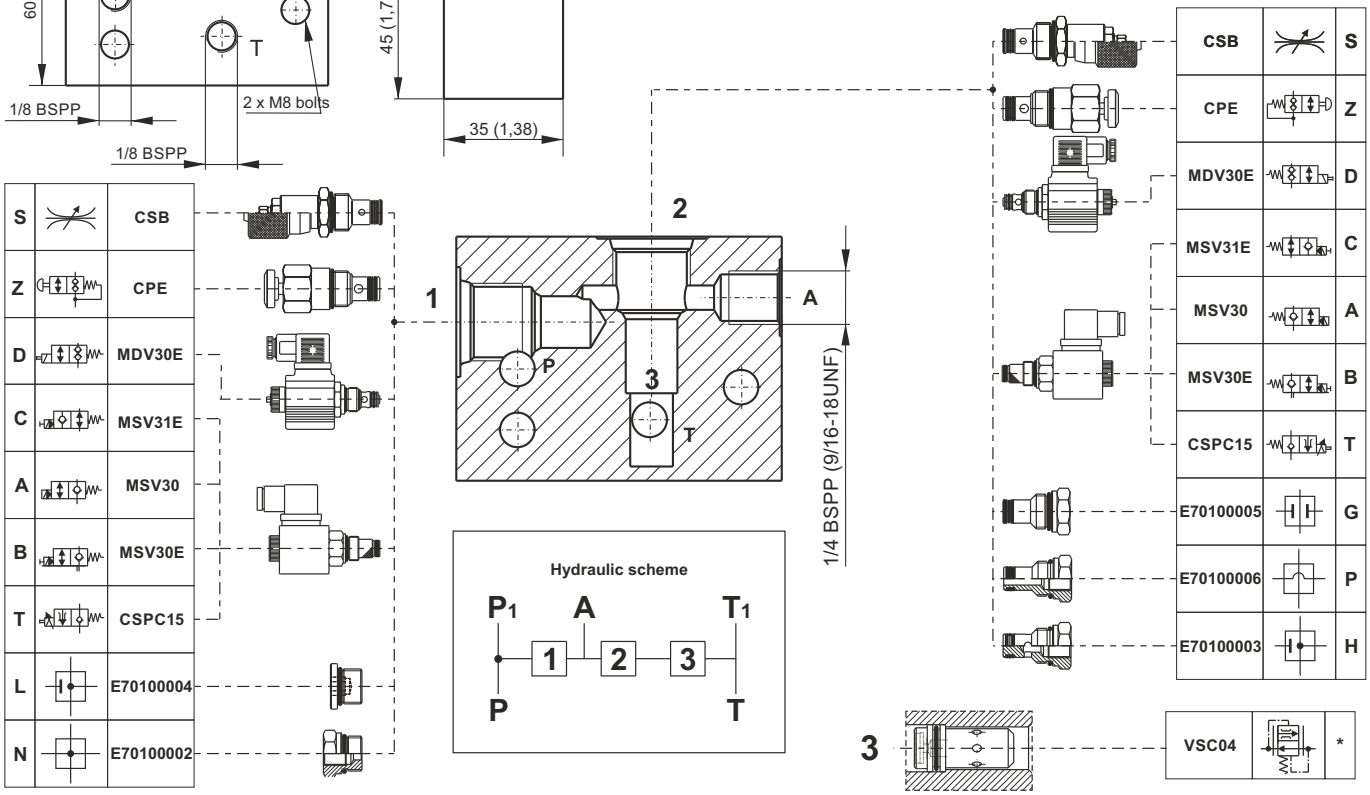
Weight	0,39 Kg (1,47lb)
Fixing bolts	2 M8 tie-rods steel class 8.8 or above

Spare part code
E60403039
E60403039US*

Application example





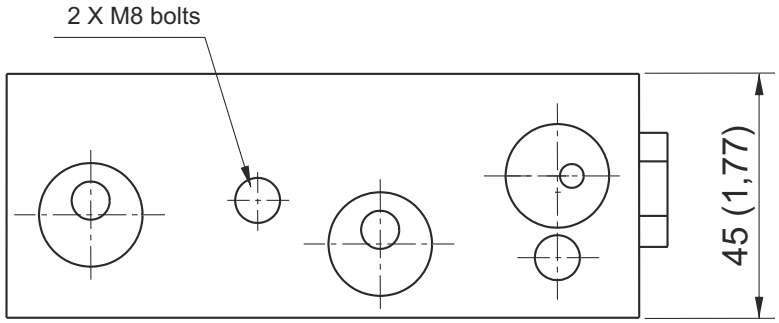


Note: to add external manifolds to PPC assembly code, just add their spare part codes at the end of the PPC code.
eg: PPC-0,8 12DC-UA-J-G1,1-D/280-G-1,5L+**E60403039-D24DC-A24DC-6(04) see application example**

The valve attachment is on the motor side. With AC motor frames bigger than 71 and DC motors bigger than dia. 125, always add a spacer manifold (page PPC2013/1-F060) below the modular block to avoid interference between the valve and the motor.

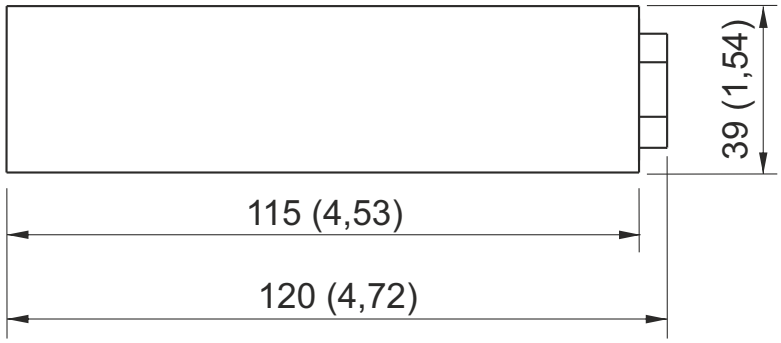
Recommended tightening torque for M8 bolts: 16 Nm.
Attention! Do not use tie-rods less than 8.8.

MODULAR MANIFOLD WITH CHECK VALVE FOR DIFFERENTIAL AREA CYLINDER



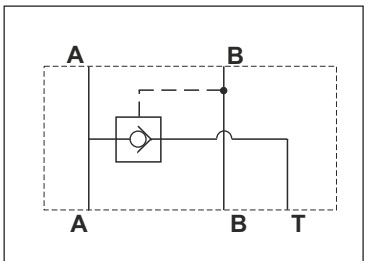
Dimensions in mm (inches)

Suitable for: UR manifold with differential cylinders
Provides for the drilling of the T1 port.



Main features

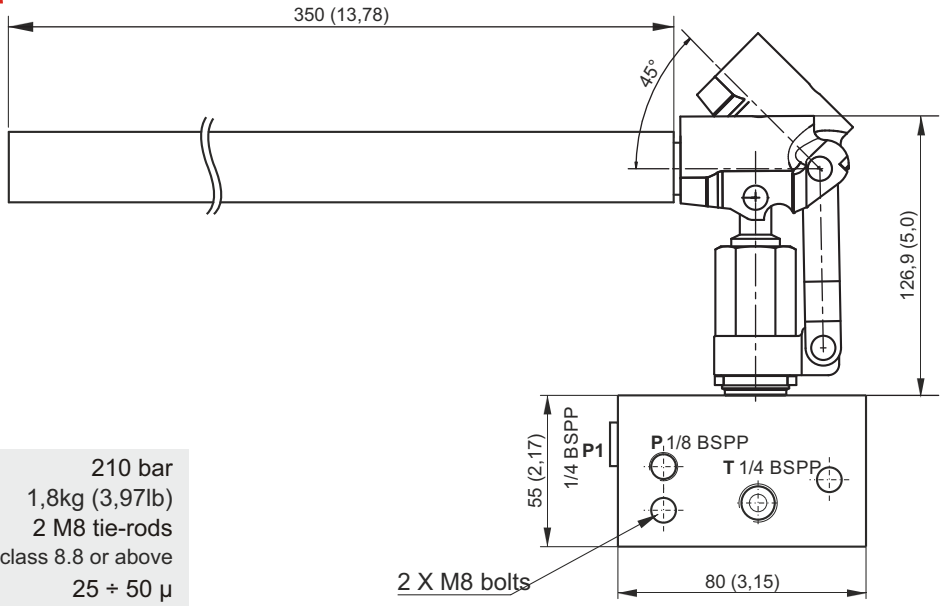
Weight	0,23 Kg (0,5lb)
Fixing bolts	2 M8 tie-rods steel class 8.8 or above



Spare part code
E60403028

Recommended tightening torque for M8 bolts: 16 Nm.
Attention! Do not use tie-rods less than 8.8.

PM09 HAND PUMP MODULAR MANIFOLD



Dimensions in mm (inches)

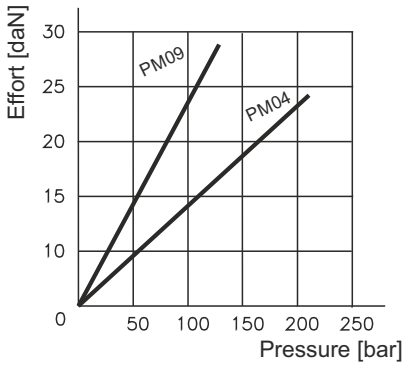
Block thickness: 39mm (1,54)

Main features

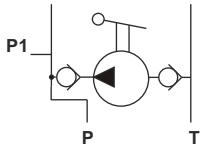
Max pressure	210 bar
Weight	1,8kg (3,97lb)
Fixing bolts	2 M8 tie-rods steel class 8.8 or above
Filtration grade	25 ÷ 50 µ
Working temperature	-20 ÷ +70°C

Effort (daN)

operating on the top of the lever



Note: Values are measured only on the valve (no cavity) with oil viscosity of 46 cSt at 50 °C. The drop of the pressure can change by the fluid viscosity and fluid temperature.



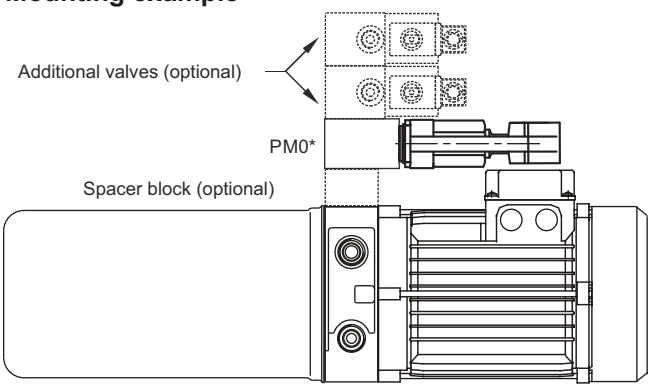
Spare part code	Displacement cc/stroke
PM04	4
PM09	8,8

Spare part code without block

CARTPM04L — **hand pump cartidge 4cc 7/8-14 UNF + lever**

CARTPM09L — **hand pump cartidge 8,8cc 7/8-14 UNF + lever**

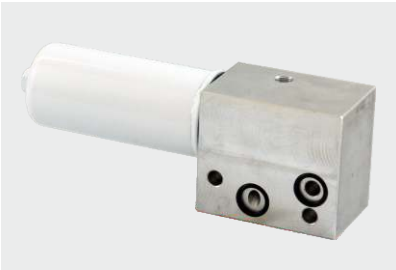
Mounting example

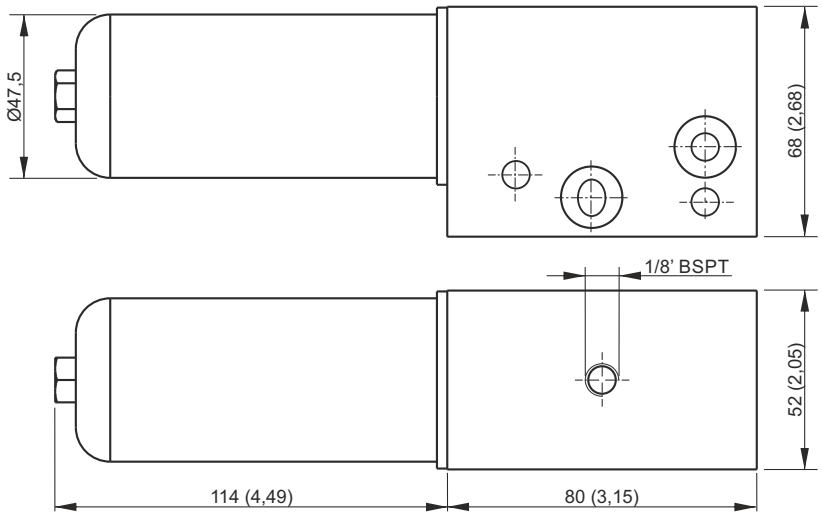


Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.

Commissioning: the pump must be bled by opening the plug of the unused pressure port (P or P1), pumping a few times until oil comes out, then tightening the plug again.

RETURN LINE FILTER MODULAR MANIFOLD





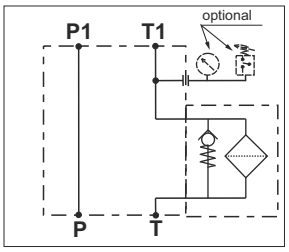
Dimensions in mm (inches)

Main features

Open by-pass valve press.	1 bar
Max flow	20 l/min
Filtration grade	15 µ
Working temperature	-30 ÷ + 80 °C
Weight	0,87 kg
Fixing bolts	2 M8 bolts steel class 8.8 or above

Recommended tightening torque for M8 bolts: 16 Nm.
Recommended tightening torque for spin on cartridge: 10 Nm.
Attention! Do not use tie-rods less than 8.8.

Hydraulic scheme



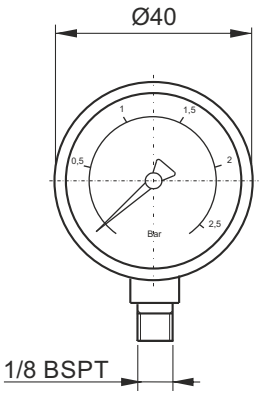
Note: standard code does not include the MIR40 pressure gauge or F4 pressure switch

Spare part code

E60403020	**Modular manifold with return filter on T**
FO201385	**Replacement cartridge part code**

OPTIONS

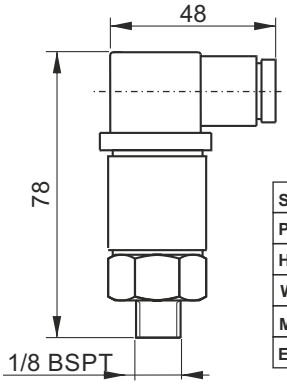
Pressure gauge for return filter manifold



Weight: 0,1 Kg

Spare part code
MIR4010

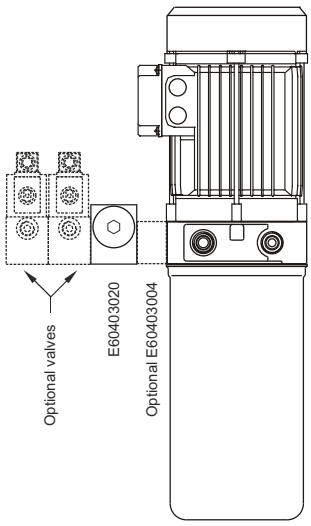
Pressure switch for return filter manifold



Setting range	0,2 ÷ 2,5 bar
Protection degree	IP 65
Hysteresis	10 ÷ 15 %
Weight	0,05 Kg
Max load	0,5 A a 250 VAC
Electric switch	NO/NC

Spare part code
F4R0M3

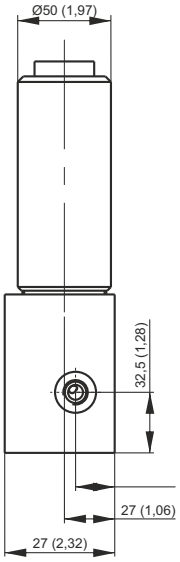
Mounting example

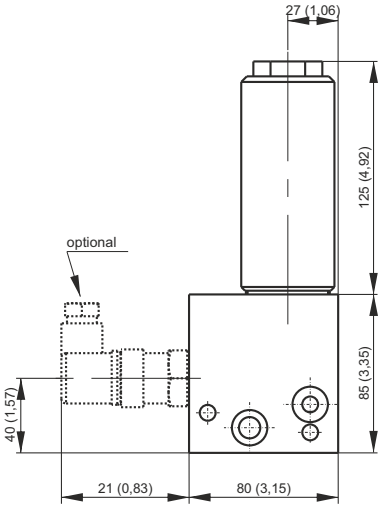


SECTION F

MODULAR BLOCK WITH PRESSURE FILTER

Dimensions in mm (inches)



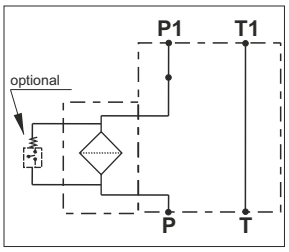


Main features

Backpressure allowable	21 bar
Max pressure	400 bar
Max flow	32 l/min
Filtration grade	15 µ
Oil temperature	-30 ÷ + 80 °C
Weight	4,0 kg
Fixing bolts	2xM8 steel 8.8 or better

Recommended tightening torque for M8 bolts: 16 Nm.
Recommended tightening torque for spin on cartridge: 45 Nm.
Attention! Do not use tie-rods less than 8.8.

Hydraulic scheme



Note: standard code does not include the differential electric or visual pressure switch

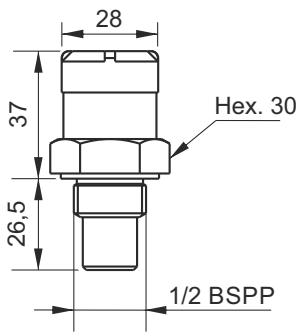
Spare part code

E60403025	**Modular manifold with return filter on P**
HPFEHY15	**Filter cartridge 15 micron fiber reinforced inorganic not included. To be ordered separately.**

Note: other filtration grades available upon request

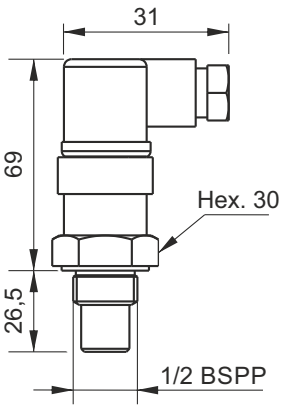
OPTIONS

Differential pressure visual indicator



Spare part code
DPV04400

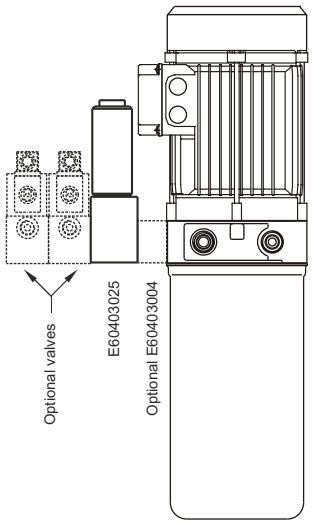
Differential pressure switch



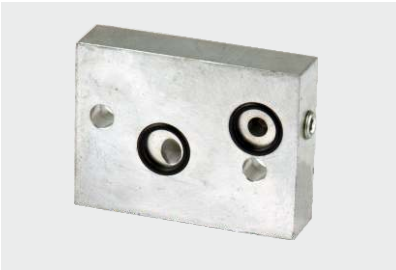
Setting range	1,3 ÷ 8 bar
Protection degree	IP 65
Tollerance	10 %
Weight	0,16 Kg
Max load	0,5 A a 250 VAC
Electric switch	NO/NC

Spare part code
DPE04400

Mounting example

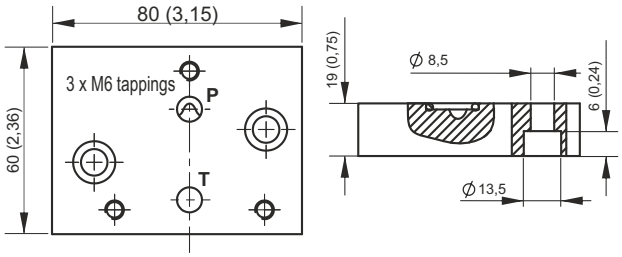


BASE MANIFOLD CONVERTERS



Dimensions in mm (inches)

PPC TO SD01 STACKABLE VALVE CONVERTER
(needed to mount SD01 stackable valves)

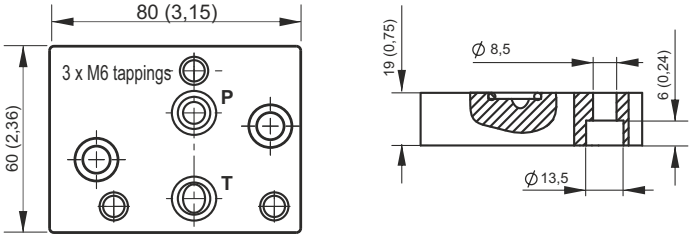


Fixing system: 2 M8x20 bolts steel class 8.8 or above
Weight: 0,22 Kg

Spare part code
E60403006

Dimensions in mm (inches)

PPC TO SD02 STACKABLE VALVE CONVERTER
(needed to mount SD02 stackable valves)



Fixing system: 2 M8x20 bolts steel class 8.8 or above
Weight: 0,22 Kg

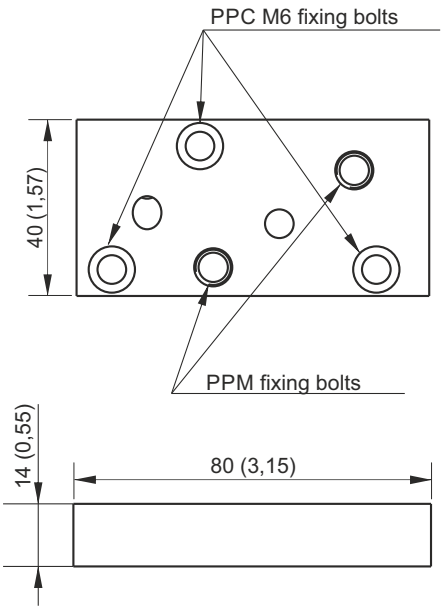
Spare part code
E60403006DN

Measures in mm (inches)

PPC TO PPM BASE CONVERTER
(needed to mount PPM NG3 MICRO blocks range)

Fixing system: 3 M6x20 bolts steel class 8.8 or above
Weight: 0,11 Kg

Spare part code
E60403008M

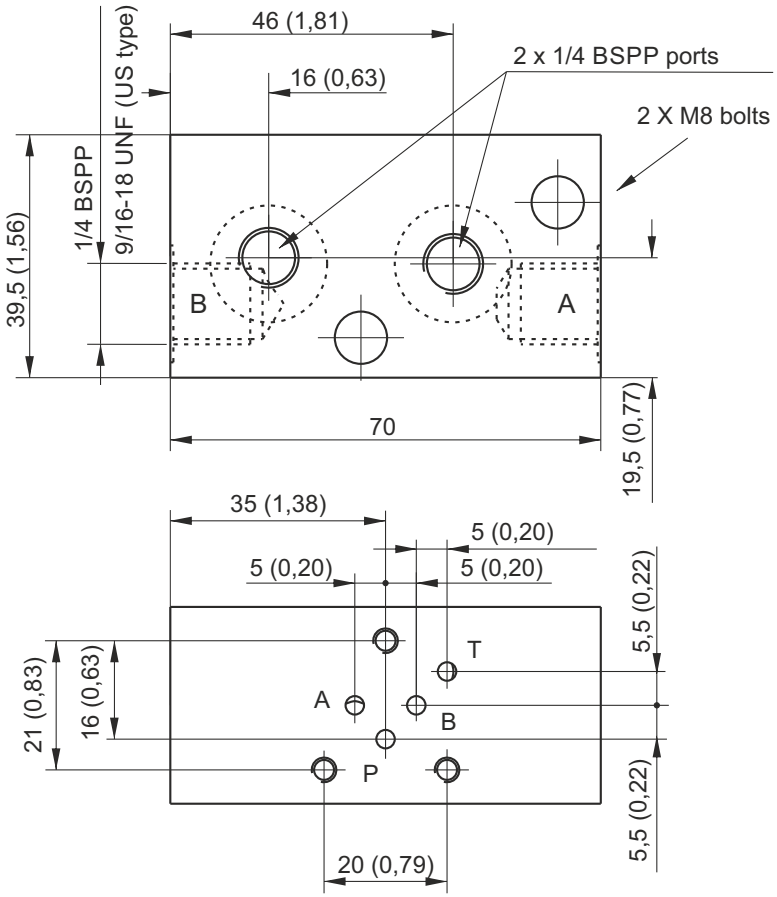


Recommended tightening torque for M8 bolts: 16 Nm.
Attention! Do not use tie-rods less than 8.8.

SECTION F

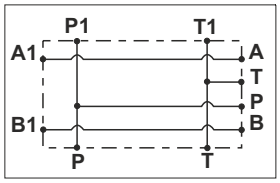
PPM NG3 MICRO MODULAR MANIFOLD, LATERAL PORTS

Dimensions in mm (inches)



Main features

Weight	0,21 kg
Fixing bolts	2 M8 bolts steel class 8.8 or above



Parallel connection	Spare part code
Rear ports	M60403010
Rear ports US execution	M60403010US

Recommended tightening torque for M8 bolts: 16 Nm.

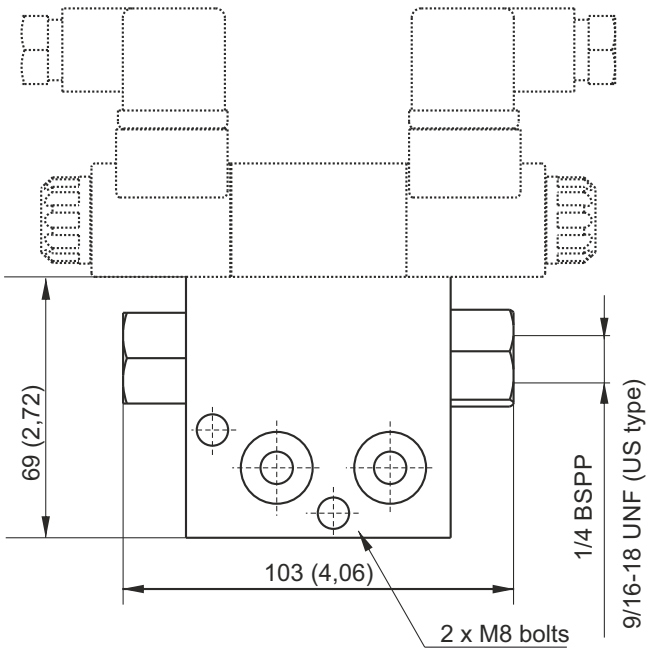
Attention! Do not use tie-rods less than 8.8.

Note: to add NG3 MICRO external manifolds to PPC a base converter assembly code, just add their spare part codes at the end of the PPM code. eg: PPC-0,8 12DC-MB-J-K0,6-D/280-G-1,5L+**M60403004**+**M60403010**

The NG3 micro valve attachment is on motor side.

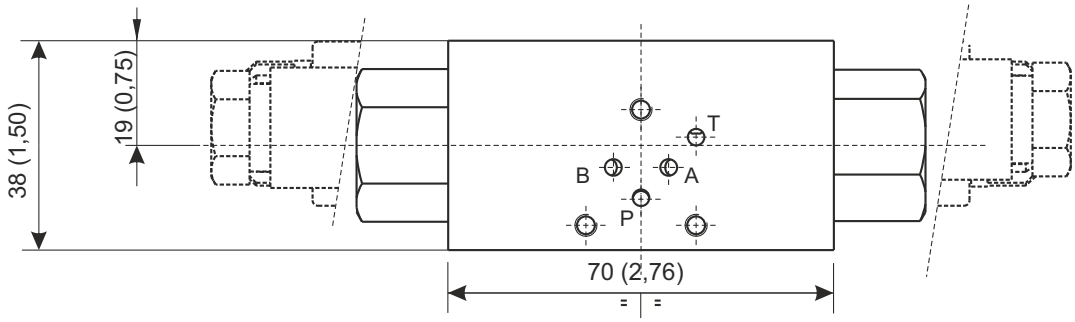
NG3 MODULAR MANIFOLD WITH INTEGRAL PILOT OPERATED CHECK VALVES

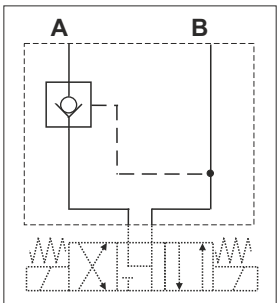
Dimensions in mm (inches)



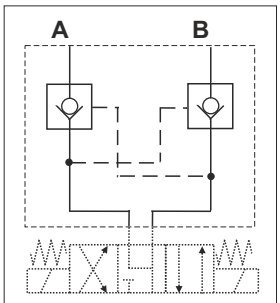
Main features

Weight	0,26 kg
Fixing bolts	2 M8 bolts steel class 8.8 or above

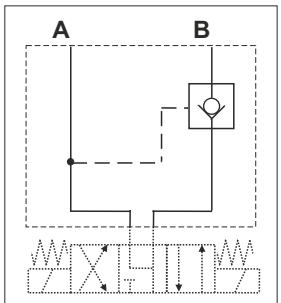




Spare part code
M60413002
M60413002US*



Spare part code
M60413001
M60413001US*



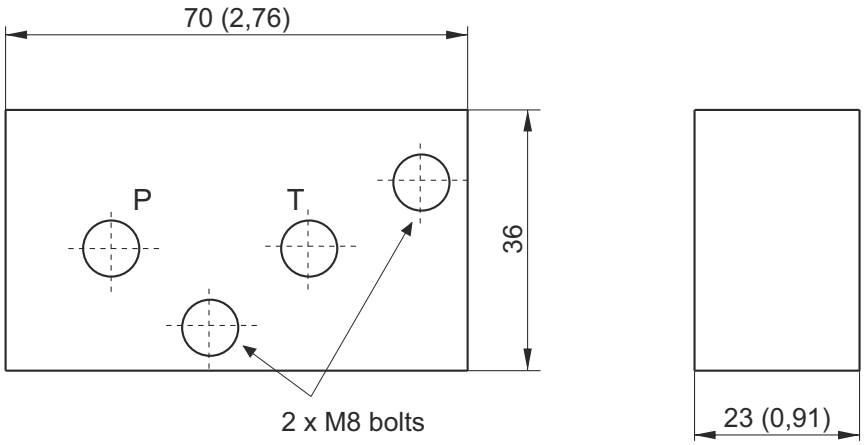
Spare part code
M60413003
M60413003US*

*: US execution with 9/16-18UNF SAE06 exit ports
Code does not include the NG3 valve.
Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.

SECTION F

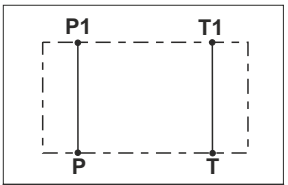
PPM SPACER ELEMENT 23MM

Dimensions in mm (inches)



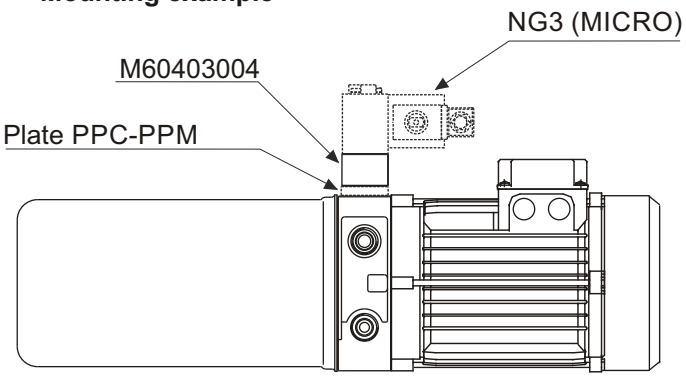
Main features

Weight	0,14 kg
Fixing bolts	2 M8 bolts steel class 8.8 or above



Spare part code
M60403004

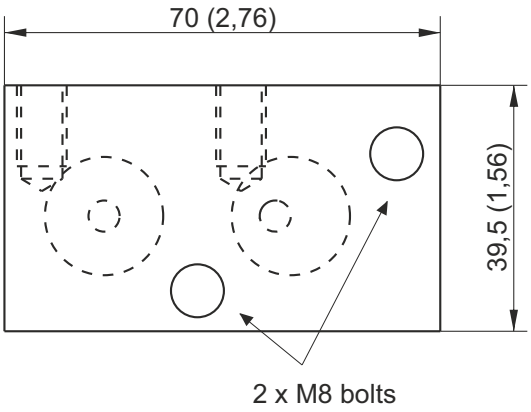
Mounting example



Recommended tightening torque for M8 bolts: 16 Nm.
Attention! Do not use tie-rods less than 8.8.

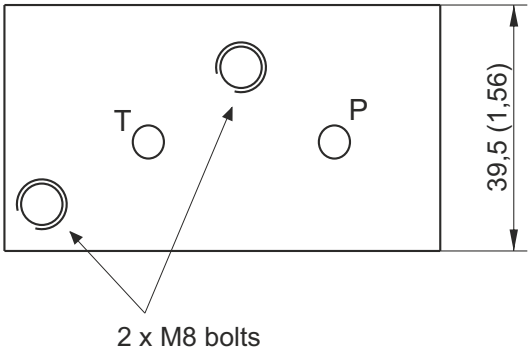
PPM 90° ROTATION MANIFOLD

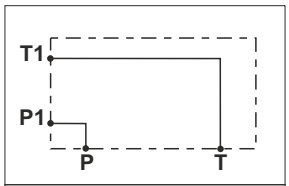
Dimensions in mm (inches)



Main features

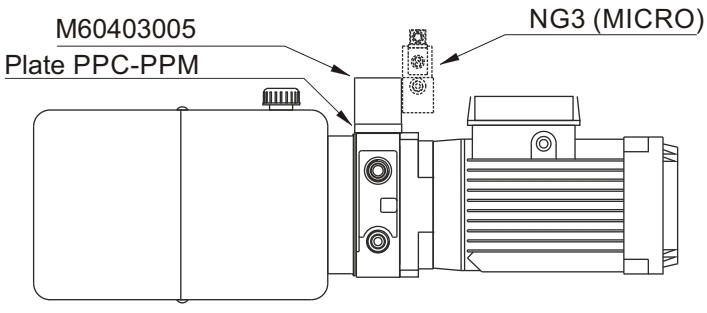
Weight	0,26 kg (0,57lb)
Fixing bolts	2 M8 bolts steel class 8.8 or above





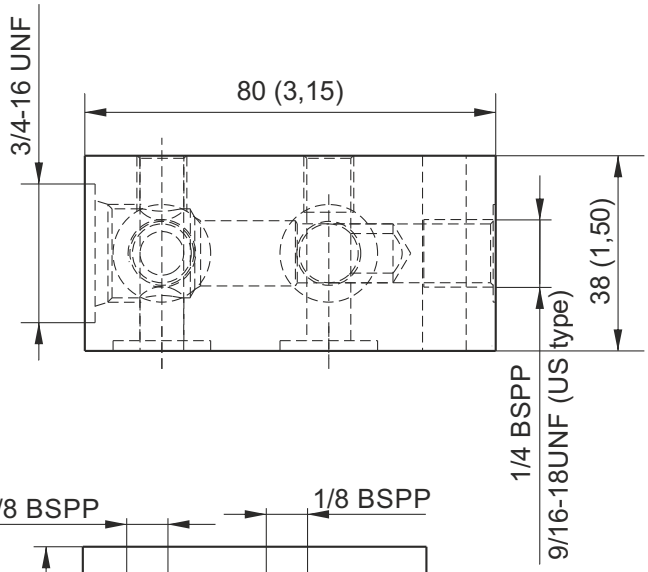
Spare part code
M60403005

Mounting example



Recommended tightening torque for M8 bolts: 16 Nm.
Attention! Do not use tie-rods less than 8.8.

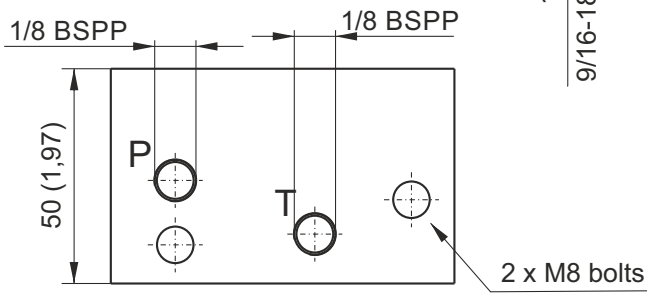
MODULAR MANIFOLD FOR 3/4-16 UNF CARTRIDGES, TWO WAY



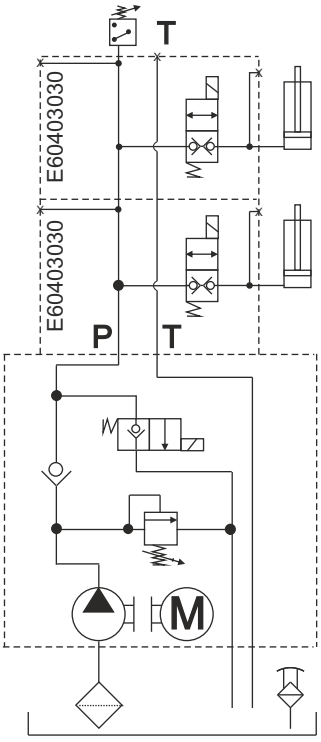
Dimensions in mm (inches)

Main features

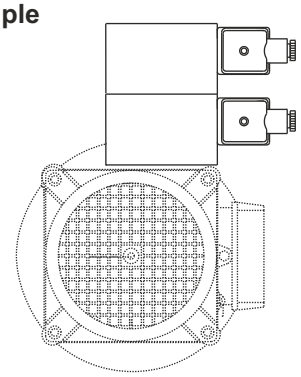
Weight	0,35 kg (0,78lb)
Fixing bolts	2 M8 bolts steel class 8.8 or above

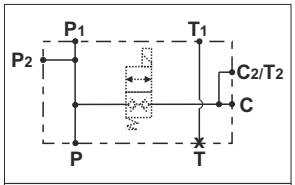


Circuit example



Mounting example





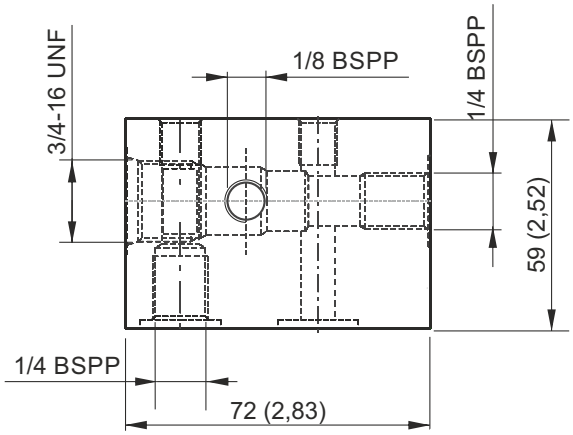
Codice componente
E60403030
E60403030US*

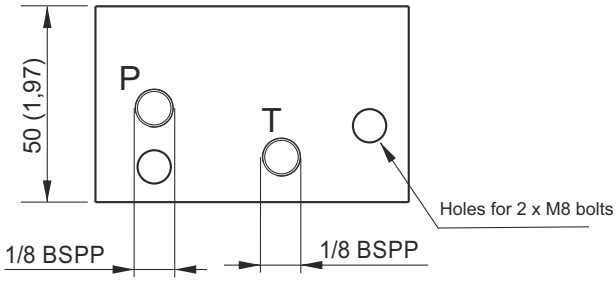
Note: code does not include the MSV or MDV solenoid valve.

Recommended tightening torque for M8 bolts: 16 Nm.
Attention! Do not use tie-rods less than 8.8.
*: US execution with 9/16-18 UNF SAE06 exit ports.
The blocks can be mounted in series but cannot be used with the modular blocks for cetop 3 because the mounting interface is different.

MODULAR MANIFOLD FOR 3/4-16 UNF CARTRIDGES, THREE WAY

Dimensions in mm (inches)

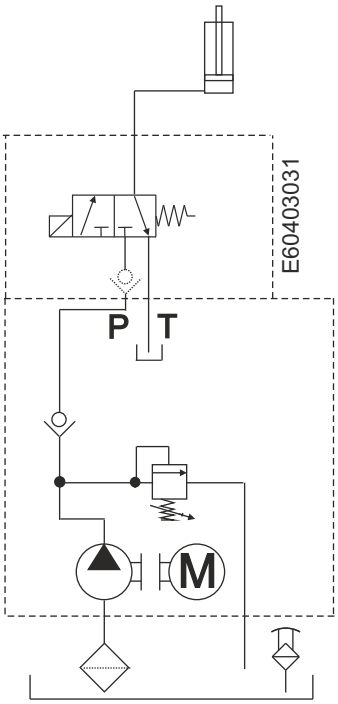




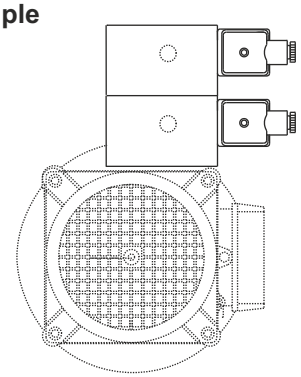
Main features

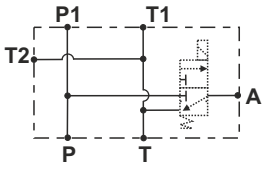
Weight	0,32 kg (0,7lb)
Fixing bolts	2 M8 bolts steel class 8.8 or above

Circuit example



Mounting example





Spare part code
E60403031
E60403031US*

Note: code does not include the MSV3V solenoid valve.

Recommended tightening torque for M6 bolts: 8 Nm

Recommended tightening torque for M8 bolts: 16 Nm.
Attention! Do not use tie-rods less than 8.8.
Note: 3/4-16 UNF manifolds can be stacked one upon the other but cannot be used with cetop 3 modular manifolds since the tie rod bolt pattern is different. The three way block is not compatible with square vertical tanks.

ACCESSORIES

Base plate in-line mounting of modular blocks + relief valve

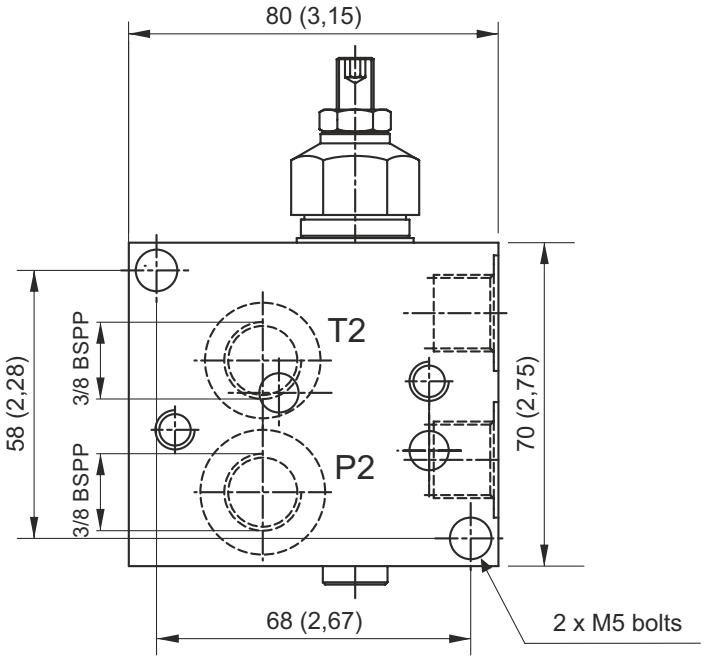
Dimensions in mm (inches)

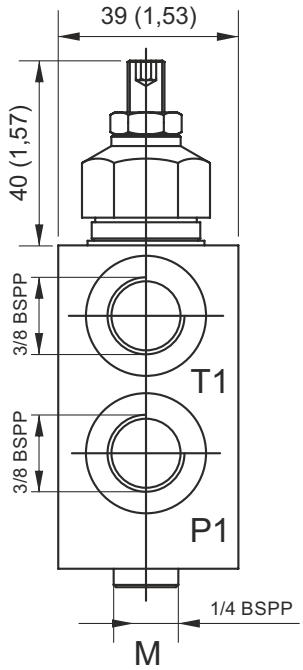
Allows you to mount the entire system of Hydronit on-line modular blocks

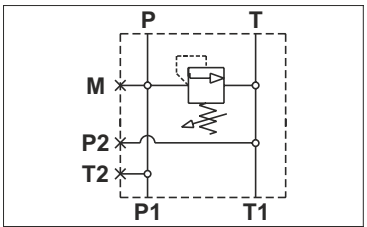
A typical example is the application of a conventional system where the control block and the valve are separated from the engine driven pump.

Main features

Max flow	40 l/min
Weight	0,8 Kg (1,76lb)
Fixing bolts	2 M5 bolts steel class 8.8 or above





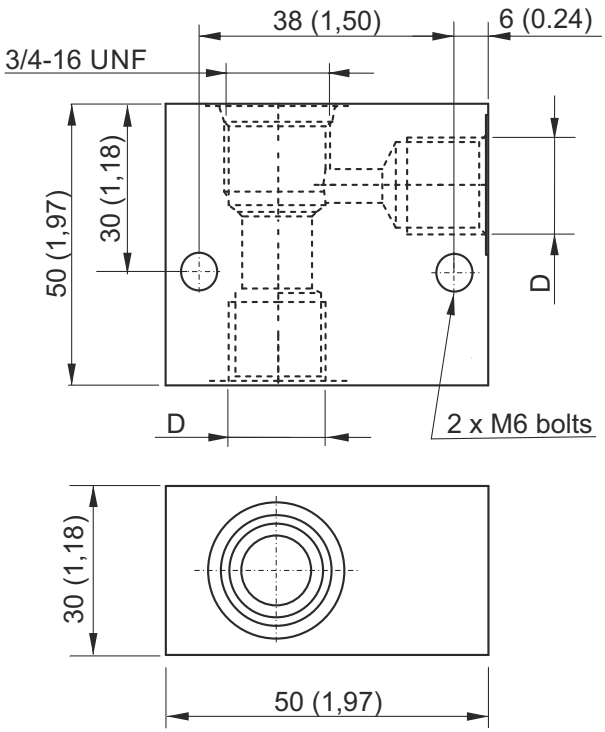


Spare part code	Relief valve
BM100PPC02	100 bar
BM250PPC02	250 bar

ACCESSORIES

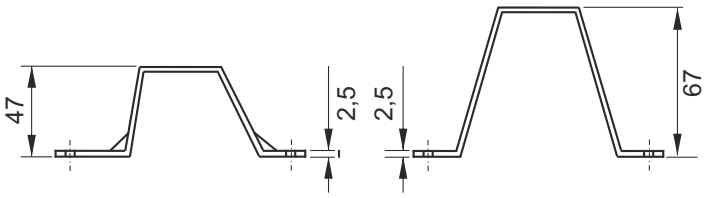
Dimensions in mm (inches)

In line mounting SAE 8 manifold



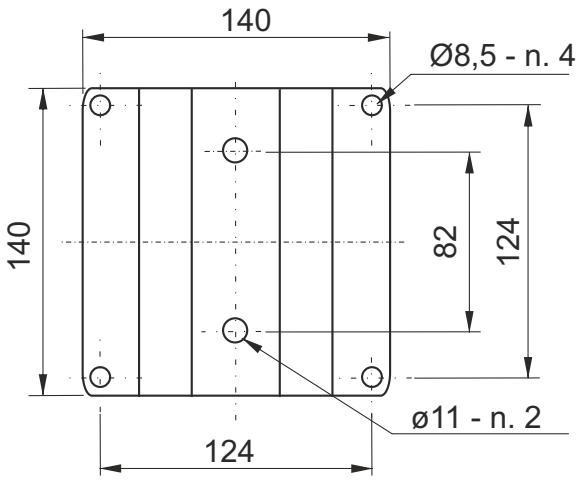
Spare part code	D	Peso
BFCSAE0801	1/4 BSPP	0,16 Kg
BFCSAE0802	3/8 BSPP	0,16 Kg

Foot mounting support



E60543006
Weight: 0,5 Kg

E60543007
Weight: 0,6 Kg



E60543006: suitable for all tanks except E60303044

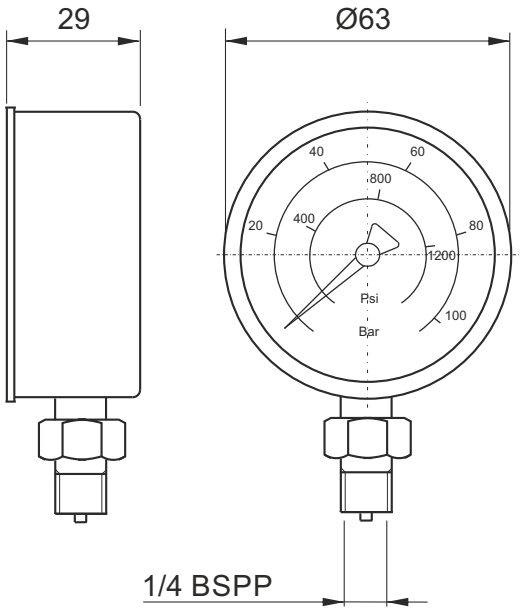
Spare part code	
E60543006	E60543007

SECTION F

ACCESSORIES

Pressure gauge

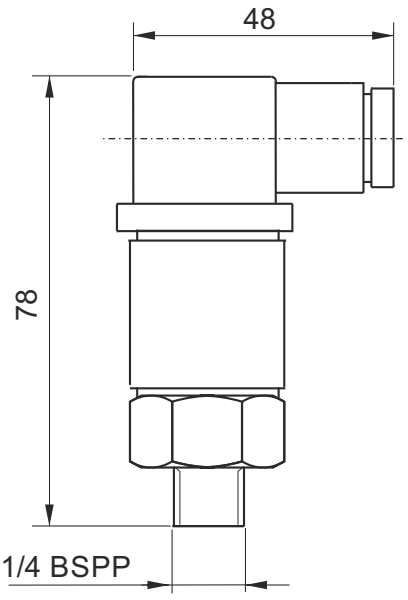
Protection degree	IP 65
Thermal drift	±0,04%/1K a 20°C
Weight	0,206 Kg
Static working pressure	75% end of scale
Peak working pressure	end of scale
Working temperature	-10 ÷ +60°C
Precision class	cl. 1.6 EN837-1



Spare part code	
MIR63* **	***: max pressure in bar (60, 160, 250, 315 bar)

Pressure switch

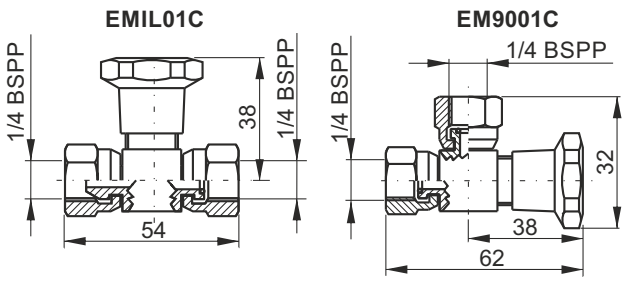
Protection degree	IP 65
Hysteresis	15 ÷ 25%
Weight	0,05 Kg
Max load	0,5A a 250VAC
Working temperature	-25 ÷ +85°C
Accuracy	±4% full scale at 20°C
Electric switch	NO / NC



Spare part code	
F401* **	***: max pressure in bar (050, 100, 200, 400 bar)

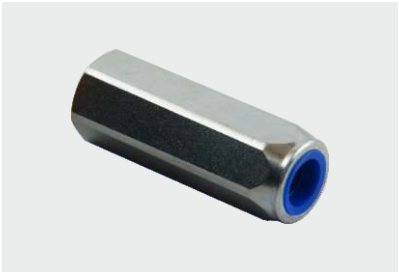
ACCESSORIES

Gauge isolator F-F

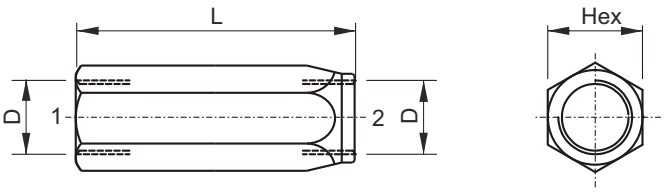


Weight: 0,14 Kg. Max working pressure: 400 bar

Spare part code
EM9001C / EMIL01C

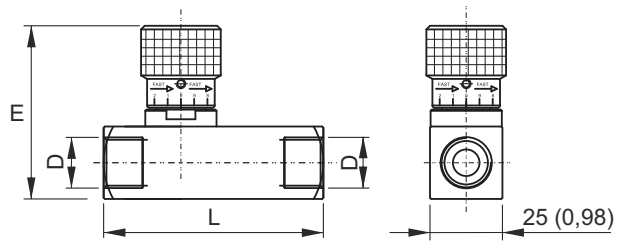


In-line check valve



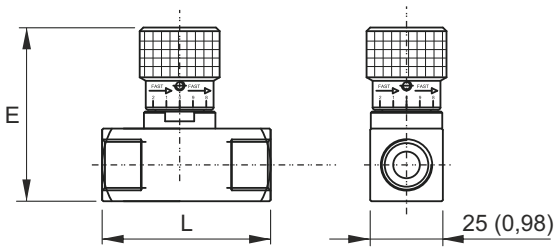
Spare part code	D	Ch	L	Weight
VUR01C	1/4 BSPP	19	55	0,10 kg
VUR02C	3/8 BSPP	24	65	0,18 kg
VURSAE06C	9/16-18UNF	19 (0,75)	58 (2,28)	0,10 kg (0,22 lb)

In-line unidirectional flow control valve



Spare part code	D	E	L	Weight
STU01	1/4 BSPP	68	66	0,34 kg
STU02	3/8 BSPP	68	77	0,36 kg
STUSAE06	9/16-18UNF	68 (2,68)	70,5 (2,78)	0,38 kg (0,84 lb)

In-line bidirectional flow control valve



Spare part code	D	E	L	Weight
STB01	1/4 BSPP	68	54	0,29 kg
STB02	3/8 BSPP	68	54	0,27 kg
STBSAE06	9/16-18UNF	68 (2,68)	54 (2,13)	0,30 kg (0,66 lb)

NOTES

EXTERNAL VALVES

NG3 MICRO directional valves: the optimized solution for **top performance** with **ultra compact dimensions**. Each valve requires a base modular manifold

STACKABLE directional valves: the alternative solution to reduce power pack dimensions and weight. A and B threaded ports are directly machined in to the valve body

NG6 (Cetop 3) modular **sandwich valves** for flow and pressure control. These valves use the same cartridges as those in the power pack central manifold

NG6 (Cetop 3) valves: the conventional choice for market compatibility and universal service around the world. Each valve requires a base modular manifold.

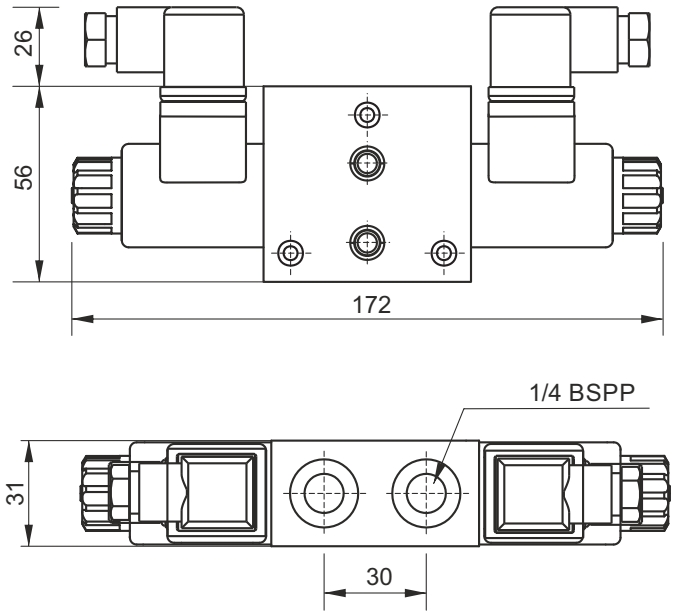
Cartridge valves in external blocks: the cost effective and lightweight solution

What are the advantages of NG3 MICRO directional valves and stackable directional valves compared to NG6 (Cetop 3) valves?
Lower weight, smaller dimensions, lower cost. Each stackable valve height of just 31mm allows you build a stack of, for example, 7 valves in 217mm. A similar stack made with cetop 3 valves would be nearly double the height. NG6 (Cetop3) directional valves are to be preferred when other valves (pilot operated check valves, flow controls, pressure controls,...) are added to the hydraulic circuit. Ng3 MICRO valves are currently available with 12V or 24V DC coils.

Is it possible to manufacture special manifold blocks with customized valve combinations for specific applications?
Yes. Whenever quantities justify the investment in design and manufacturing. Ask our sales department first.

Which coils and connectors do I select for the spool type directional control valves?
Ng3 MICRO valves SD00* series use the M100 series of coils, 12 or 24 VDC. Stackable valves SD01* series use DC or RC M120 coils. NG6 (Cetop3) valves SD03* series use M160 series of coils either DC or RC (rectified current). When choosing a RC coil, a rectifying bridge connector must be chosen (KA132R***). A standard KA13200000 connector must be always used with DC coils.

STACKABLE DIRECTIONAL SOLENOID VALVES



Main features

Max pressure	250 bar
Press. max port T	210 bar static, 140 bar dynamic
Max flow	20 l/min
Weight	0,89 Kg (1 solenoid) 1,09 Kg (2 solenoid)
Fixing bolts	3 x M6 tie-rods 6 Nm torque. 10.9 class steel or above
Coil insulation	Class H
Electric connection	DIN 43650-A / ISO 4400
Protection class	IP 65 / DIN 40050
Duty cycle	ED 100%
Voltage required	+/- 10% nominal voltage
Manual overide	included as standard
Standards	EN50081-1 / EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)
Working temperature	-20°C +80°C

Spare part code

SD01 — **Stackable directional solenoid valve**

A2 — **Spool configuration:**
see table below

24DC — **Supply voltage:**
see G100 table

- — **Position type:**
- = intermediate
C = closing end valve with P and T closed

Type C valve must be used to blank off the valve stack. If only 1 valve in stack then type C must be used.

Spool

Code	
	A B / a 0 b / S2 P T S1

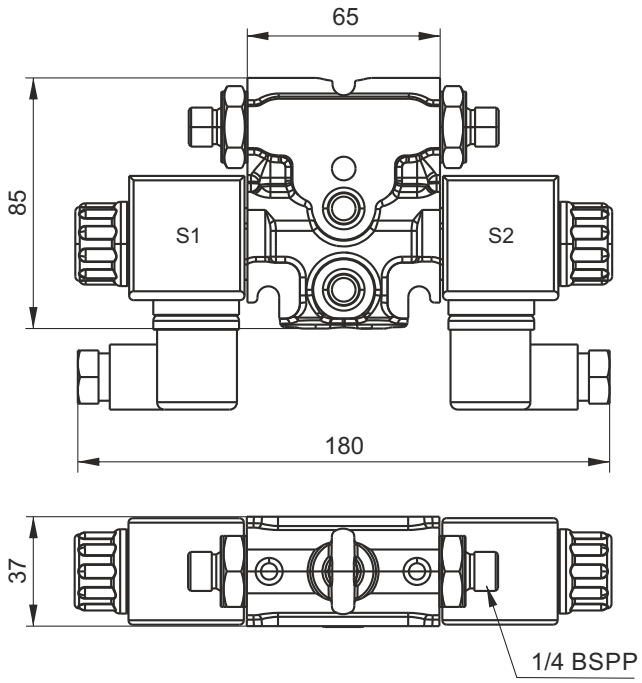
Double solenoid

A2	A B / P T
B2	A B / P T
C2	A B / P T
E2	A B / P T

Single solenoid

A11C	A B / P T (transitory)

STACKABLE MODULAR DIRECTIONAL SOLENOID VALVES WITH REAR PORTS



Options

Description	Spare part code
Closure plate, to be used as the last element	**SD02TOP**
Kit 3 tie rods + nut M8 8.8 (x = number of element)	**SD020x**

Main features

Max pressure	250 bar
Max pressure on T port	50 bar
Max flow	25 l/min
Weight	1,67 Kg (1 solenoid) 1,37 Kg (2 solenoid)
Internal leakage	0,02 l/min at 200bar
Fixing bolts	3 TCEI M8 tie-rods 15 Nm torque. 8.8 class steel or above
Coil insulation	Class H
Electric connection	DIN 43650-A / ISO 4400
Protection class	IP 65 / DIN 40050
Duty cycle	ED 100%
Voltage required	+/- 10% nominal voltage
Manual Overide	included as standard
Standards	EN50081-1 / EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)
Working temperature	-20°C +80°C

Spare part code

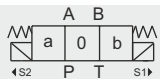
SD02 — **Stackable modular directional solenoid valve**

E2 — **Spool configuration:**
see below table

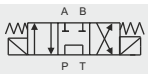
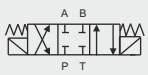
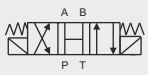
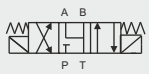
RP — **Option:**
- = free outputs
RP = outputs with piloted check valves (only spool E2 and C2)

24DC — **Supply voltage:**
see table G100

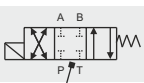
Spool

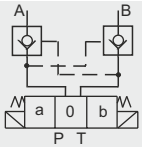
Code	
	

Double solenoid

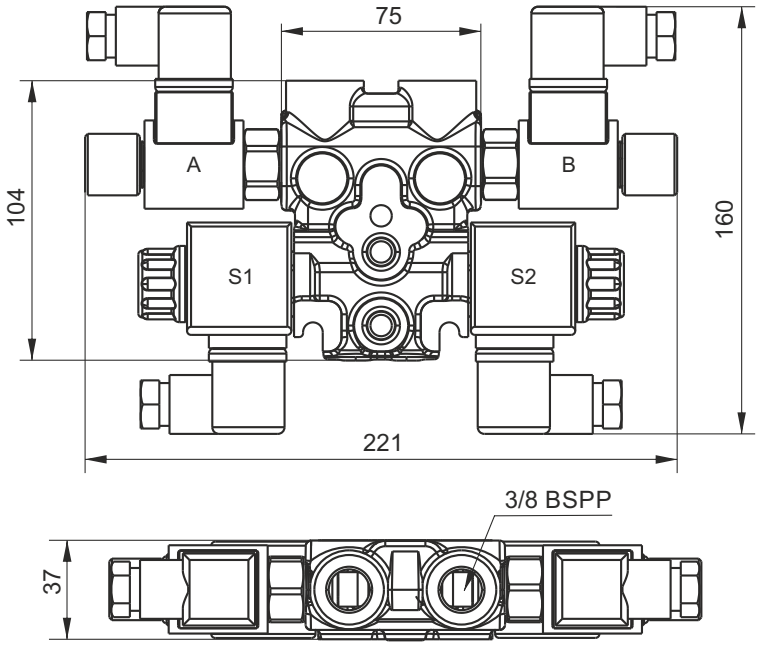
A2	
B2	
C2	
E2	

Single solenoid

A11C	

Option RP	
Code RP	

STACKABLE SOLENOID VALVES WITH 3/4-16UNF CAVITY FOR ADDITIONAL VALVES



Options

Description	Spare part code
Closure plate, to be used as the last element	**SD02TOP**
Kit 3 tie rods + nut M8 8.8 (x = number of element)	**SD020x**

Main features

Max pressure	250 bar
Max pressure on T port	50 bar
Max flow	25 l/min
Weight	2,38 Kg (1 solenoid) 2,08 Kg (2 solenoid)
Internal leakage	0,02 l/min at 200bar
Fixing bolts	3 x M8 tie-rods 15 Nm torque. 8.8 class steel or above
Coil insulation	Class H
Electric connection	DIN 43650-A / ISO 4400
Protection class	IP 65 / DIN 40050
Duty cycle	ED 100%
Voltage required	+/- 10% nominal voltage
Manual Overide	included as standard
Standards	EN50081-1 / EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)
Working temperature	-20°C +80°C

Spare part code

SD02 — **Stackable modular directional solenoid valve + cavity 3/4-16UNF for additional valves**

E2 — **Spool configuration:**
see table below

TP — **Version:**
TP = parallel ports
with 3/4-16 UNF cavity

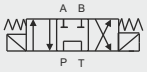
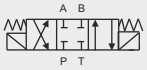
24DC — **Supply voltage:**
see G100 table

AR24DC — **Cavity A:**
X = open cavity
L = closed plug
ARxx = valve 2/2 NC (xx = voltage)
S = check flow bidirectional valve

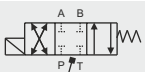
AR24DC — **Cavity B:**
X = open cavity
L = closed plug
ARxx = valve 2/2 NC (xx = voltage)
S = bidirectional flow control valve

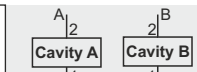
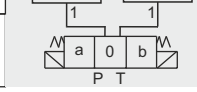
Spool

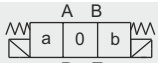
Double solenoid

A2	
B2	
C2	
E2	

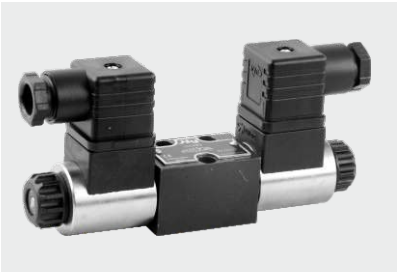
Single solenoid

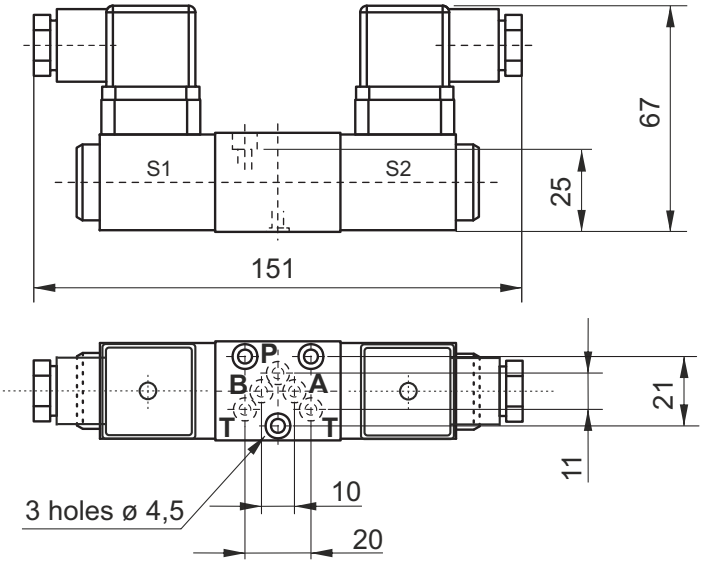
A11C	

Cavity option	
Code	

Code	

NG3 MICRO DIRECTIONAL SOLENOID VALVES





Mean features

Max pressure	315 bar
Max pressure on T port	100 bar
Max flow	15 l/min
Weight	0,7 kg (2 solenoid) 0,55 kg (1 solenoid)
Internal leakage	< 0,01 l/min at 200bar
Fixing bolts	3 TCEI M4x30 bolts 2,8 Nm torque. 10,9 class steel or above
Coil insulation	Class H
Electric connection	DIN 43650-A / ISO 4400
Protection class	IP 65 / DIN 40050
Duty cycle	ED 100%
Voltage required	+/- 10% nominal voltage
Manual Overide	included as standard
Standards	EN50081-1 / EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

Spare part code

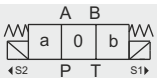
SD00 — **NG3 micro directional solenoid valve**

A2 — **Spool configuration:** see table below

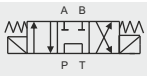
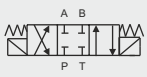
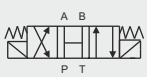
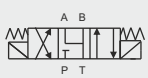
24DC — **Supply voltage:** see G100 table

- — **Options:** - = std

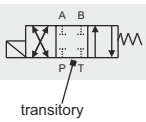
Spool

Code	
	

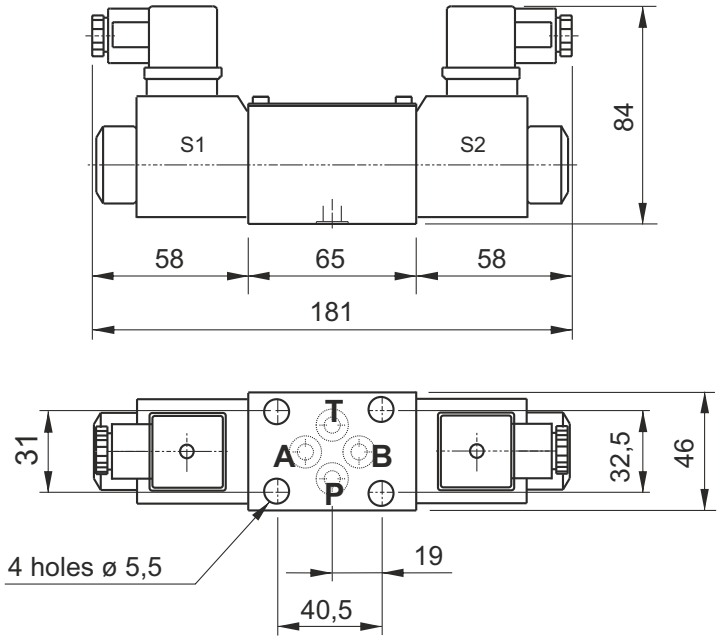
Double solenoid

A2	
B2	
C2	
E2	

Single solenoid

A11C	

NG6 (CETOP 3) DIRECTIONAL SOLENOID VALVES



Mean features

Max pressure	250 bar
Max pressure on T port	210 bar static, 180 bar dinamic
Max flow	40 l/min
Weight	1,43 kg (2 solenoid) 1,16 kg (1 solenoid)
Internal leakage	0,04 l/min at 200bar
Fixing bolts	4 M5x30 bolts. 5Nm torque 10,9 class steel or above
Coil insulation	Class H
Electric connection	DIN 43650-A / ISO 4400
Protection class	IP 65 / DIN 40050
Duty cycle	ED 100%
Voltage required	+/- 10% tensione nominale
Manual Overide	inclusa come standard
Standards	EN50081-1 / EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

Spare part code

SD03 — **Cetop 3 directional solenoid valve**

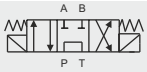
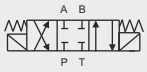
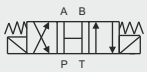
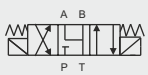
A2 — **Spool configuration:** see table below

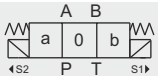
24DC — **Supply voltage:** see G100 table

- — **Options:** - = std

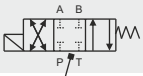
Spool

Double solenoid

Code	
A2	
B2	
C2	
E2	

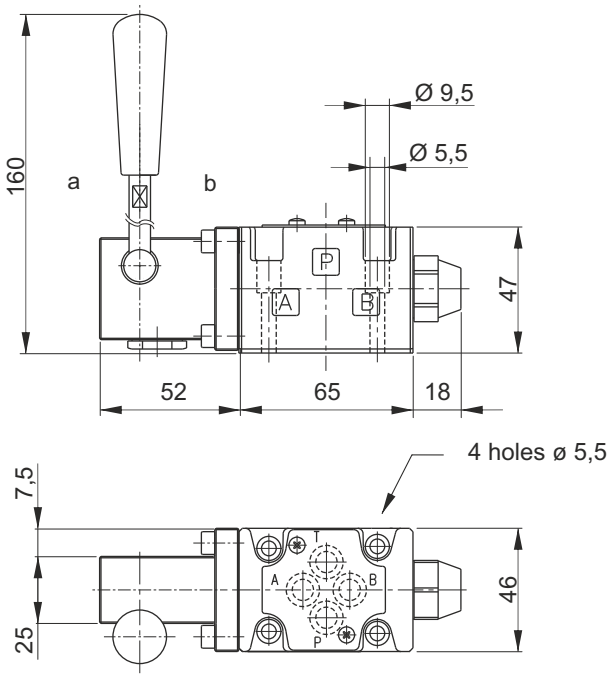
Code	
	

Single solenoid

Code	
A11C	

transitory

NG6 (CETOP 3) MANUAL DIRECTIONAL CONTROL VALVES



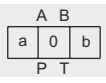
Mean features

Max pressure	300 bar
Max pressure on T port	150 bar
Max flow	30 l/min
Weight	1,32 kg
Fixing bolts	4 M5x30 bolts 5Nm torque 10,9 class steel or above
Temperature	-20 ÷ +80°C
Filtration degree	25 ÷ 50 µ

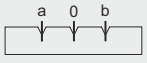
Spare part code

HD03	**Cetop 3 manual directional control valve**
A	**Spool control:** see table below
1	**Spool configuration** see table below
-	**Options:** - = std

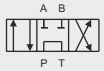
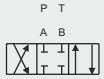
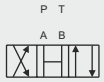
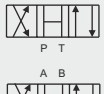
Code



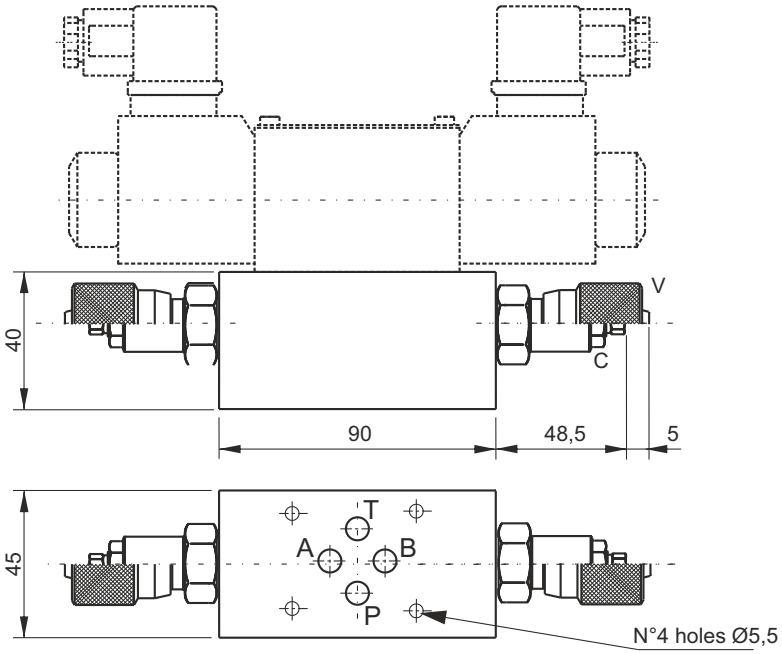
Spool control

Spring centered	**A**	
Detented	**D**	

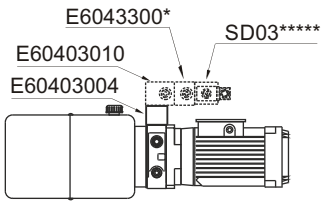
Spool

1	
2	
3	
4	

NG6 (CETOP 3) SANDWICH FLOW CONTROL VALVES



Mounting example



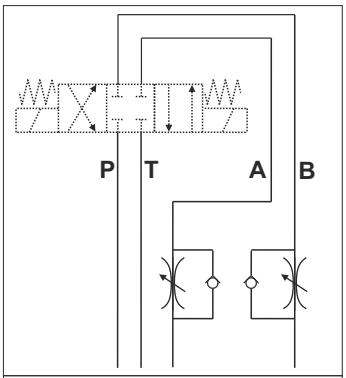
Mean features

Max pressure	300 bar
Max flow	15 l/min
Weight	Single valve: 0,52 kg Double valve: 0,64 kg
Fixing bolts	4 M5x** bolts. 5Nm torque 10,9 class steel or above
Temperature	-20 ÷ +80°C
Filtration degree	25 ÷ 50 µ

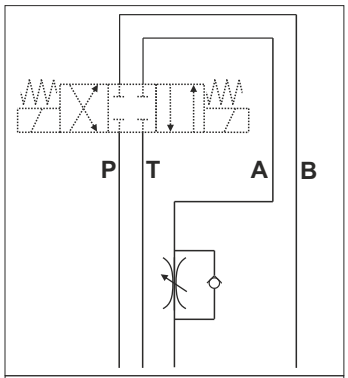
Spare part code

E60433001* — **Cetop3 sandwich meter-out flow control valve**

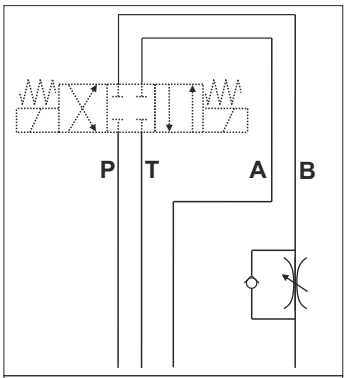
- — **Adjusting device:**
- = screw (std)
V = handwheel



Spare part code
E60433001*



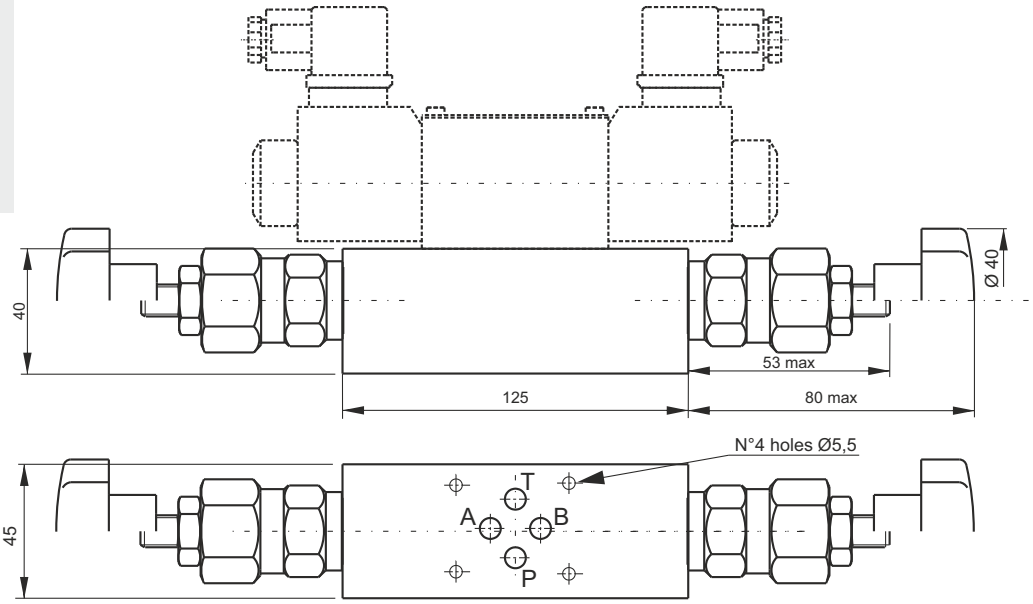
Spare part code
E60433002*



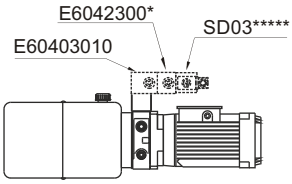
Spare part code
E60433003*

Notes: code does not include the Cetop solenoid valve.
** length depends on number of modular blocks and type of valve.

NG6 (CETOP 3) SANDWICH RELIEF VALVES



Mounting example



Mean features

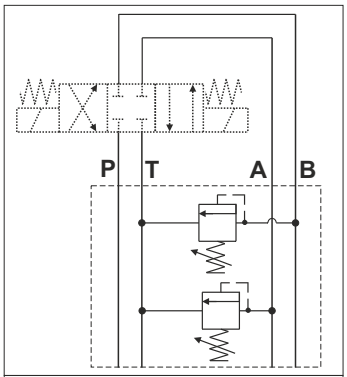
Max pressure	300 bar
Max flow	35 l/min
Weight	Single valve: 0,71 kg Double valve: 0,87 kg
Fixing bolts	4 M5x** bolts. 5Nm torque 10,9 class steel or above
Temperature	-20 ÷ +80°C
Filtration	25 ÷ 50 µ

Spare part code

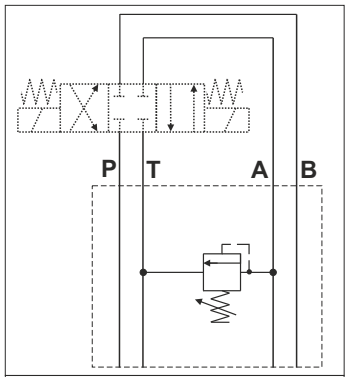
E6042300* — **Cetop3 sandwich relief valve**

B — **Pressure range settings:**
L = 10 ÷ 60 bar
A = 20 ÷ 180 bar
B = 35 ÷ 310 bar

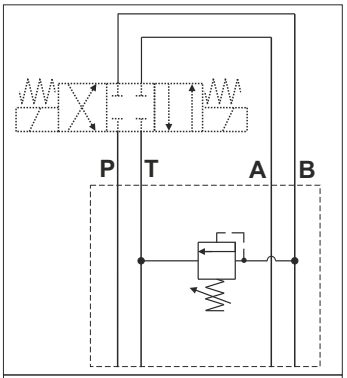
***** — **Option:**
1 = screw (std)
2 = handwheel
3 = with cap
4 = plastic seal



Spare Part Code
E60423001**



Spare Part Code
E60423002**

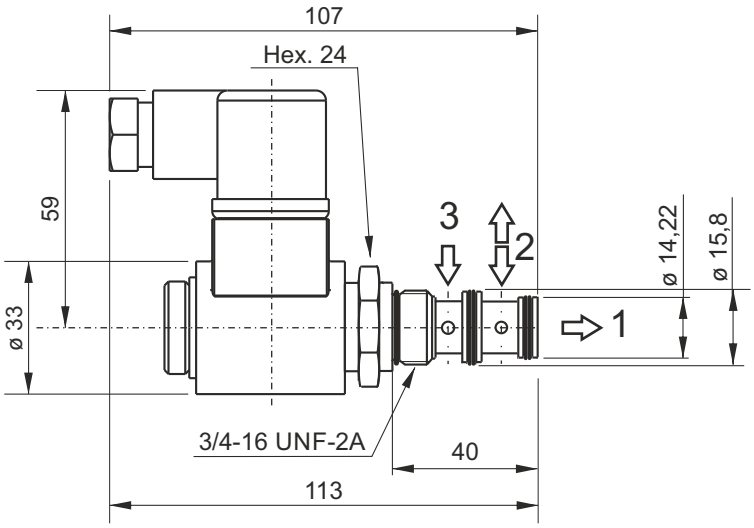


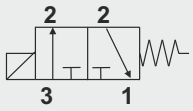
Spare Part Code
E60423003**

Notes: code does not include the Cetop solenoid valve. When E60423001 relief valves have different pressure ranges, please specify them separately.
eg: E60423001AB=180 bar max for valve on A port, 310bar max for valve on B port.
** length depends on number of modular blocks and type of valve.

SECTION G

MSV3V - DIRECT OPERATED 3/2 WAY DIRECTIONAL SPOOL SOLENOID CARTRIDGE





Mean features

Max pressure	210 bar
Max flow	12 l/min (20 l/min without block)
Weight	0,35 Kg (with coil)
Coil insulation	Class H
Electric connection	DIN 43650-A / ISO 4400
Protection class	IP 65 / DIN 40050
Duty cycle	ED 100%
Voltage required	+/- 10% nominal voltage
Torque recommended	30 Nm
Oil temperature	-25 ÷ +70°C

Spare part code

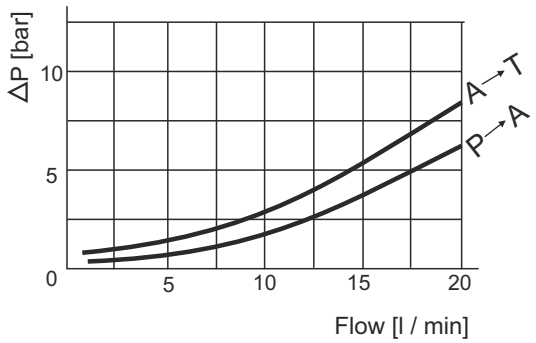
MSV3V — **Three-way direct acting solenoid valve**

40 — **Spool type:**
40 = std

0 — **Options:**
0 = no options (std)
E = manual overide

0000 — **Supply voltage:**
0000 = no coil (std)
see G100 table

Pressure drop diagram



VALVE COILS

M100

M120

M630/M631

M160

CE

Supply voltage [V]	Assembly code	Coil type	Spare part code	Spare connector code	Holding power [W]	Duty cycle ED [%]	Coil insulation	Weight [g]	Suitable for valves
12DC	12DC_M100	DC	**M10040001**	KA132000B1	16W	100	H	121	SD00
24DC	24DC_M100	DC	**M10040002**	KA132000B1	16W	100	H	121	SD00
24AC	24RAC_M100	RC - needs external rectifying connector	**M10040002**	KA132R11B1	16W	100	H	121	SD00
12DC	12DC_M120	DC	**M12040001**	KA132000B1	22W	100	H	134	SD01
24DC	24DC_M120	DC	**M12040002**	KA132000B1	22W	100	H	134	SD01
24AC	24RAC_M120	RC - needs external rectifying connector	**M12040002**	KA132R11B1	22W	100	H	134	SD01
230AC	220RAC_M120	RC - needs external rectifying connector	**M12040005**	KA132R13B1	22W	100	H	134	SD01
12DC	12DC_M160	DC	**M16040001**	KA132000B1	26W	100	H	190	SD03
24DC	24DC_M160	DC	**M16040002**	KA132000B1	26W	100	H	190	SD03
24AC	24RAC_M160	RC - needs external rectifying connector	**M16040002**	KA132R11B1	26W	100	H	190	SD03
115AC	110RAC_M160	RC - needs external rectifying connector	**M16040004**	KA132R12B1	26W	100	H	190	SD03
230AC	220RAC_M160	RC - needs external rectifying connector	**M16040005**	KA132R13B1	26W	100	H	190	SD03
12DC	12DC_M630	DC	**M6306012**	KA132000B1	18W	100	H	130	MSV3V MSV30/31 SD02
24DC	24DC_M630	DC	**M6306024**	KA132000B1	18W	100	H	130	MSV3V MSV30/31 SD02
24AC	24AC_M631	RC with integrated rectifying bridge	**M6316024**	KA132000B1	18W	100	H	130	MSV3V MSV30/31 SD02
115AC	115AC_M631	RC with integrated rectifying bridge	**M6316115**	KA132000B1	18W	100	H	130	MSV3V MSV30/31 SD02
230AC	230AC_M631	RC with integrated rectifying bridge	**M6316230**	KA132000B1	18W	100	H	130	MSV3V MSV30/31 SD02

Standard electric connector: ISO 4400 DIN 43650-A. Other voltages and electric connector types (Amp Junior, flying leads,...) available on request.
Inrush power consumption can be up to 3,5 times higher than the holding power.
Electric connector: DIN 43650-A / ISO 4400. Coil protection class: Ip65.

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Hydronit®
via Pastrengo 62
20814 Varedo (MB), Italy
☎: +39 0232 0625 145
+39 0362 1841 210
: +39 0362 1841 214
@ : info@hydronit.com
www.minipowerpacks.com
www.hydronit.it

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