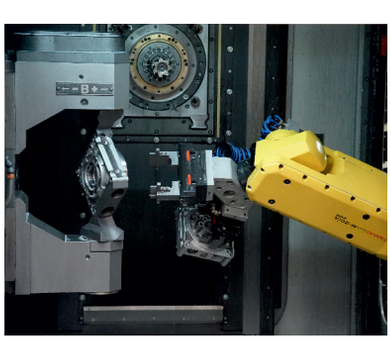
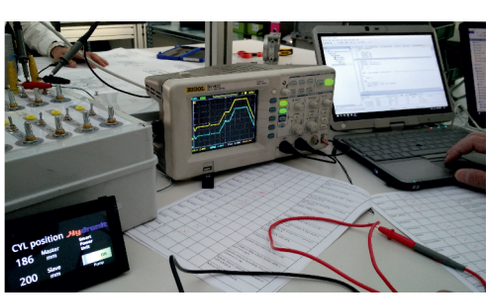
Hydronit: 100% focused on Compact Hydraulics

- 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 through risk analysis, certified **ISO 9001**
- 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 **EU Machine Directive 2006/42/CE**
- Distributors, associated companies and partners in over **70 countries** worldwide



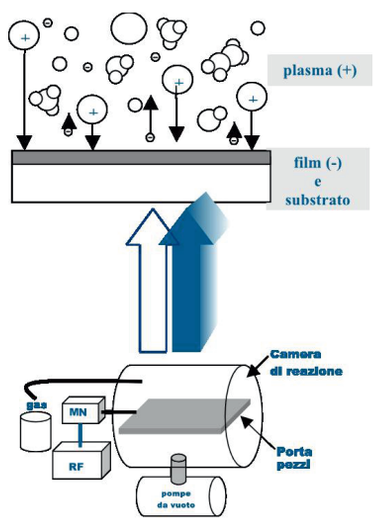


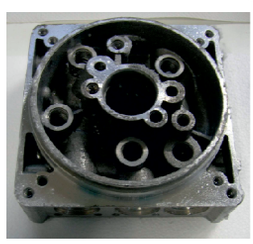
Countinuous innovation

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 processes**, constantly monitoring efficiency and efficacity 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 conducted 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.

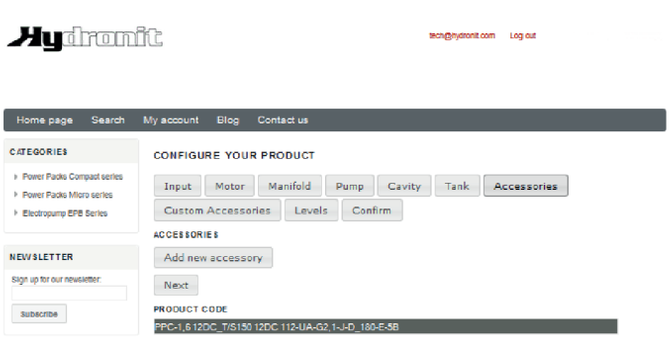


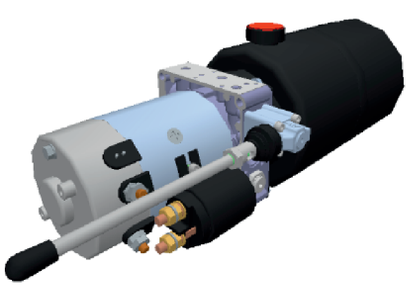


Treated manifold Nanotech Standard manifold

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 mistakes** 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 **reduces the time-to-market** and provides full information on the custom power unit to be realized, which can be easily transmitted to the final customer.

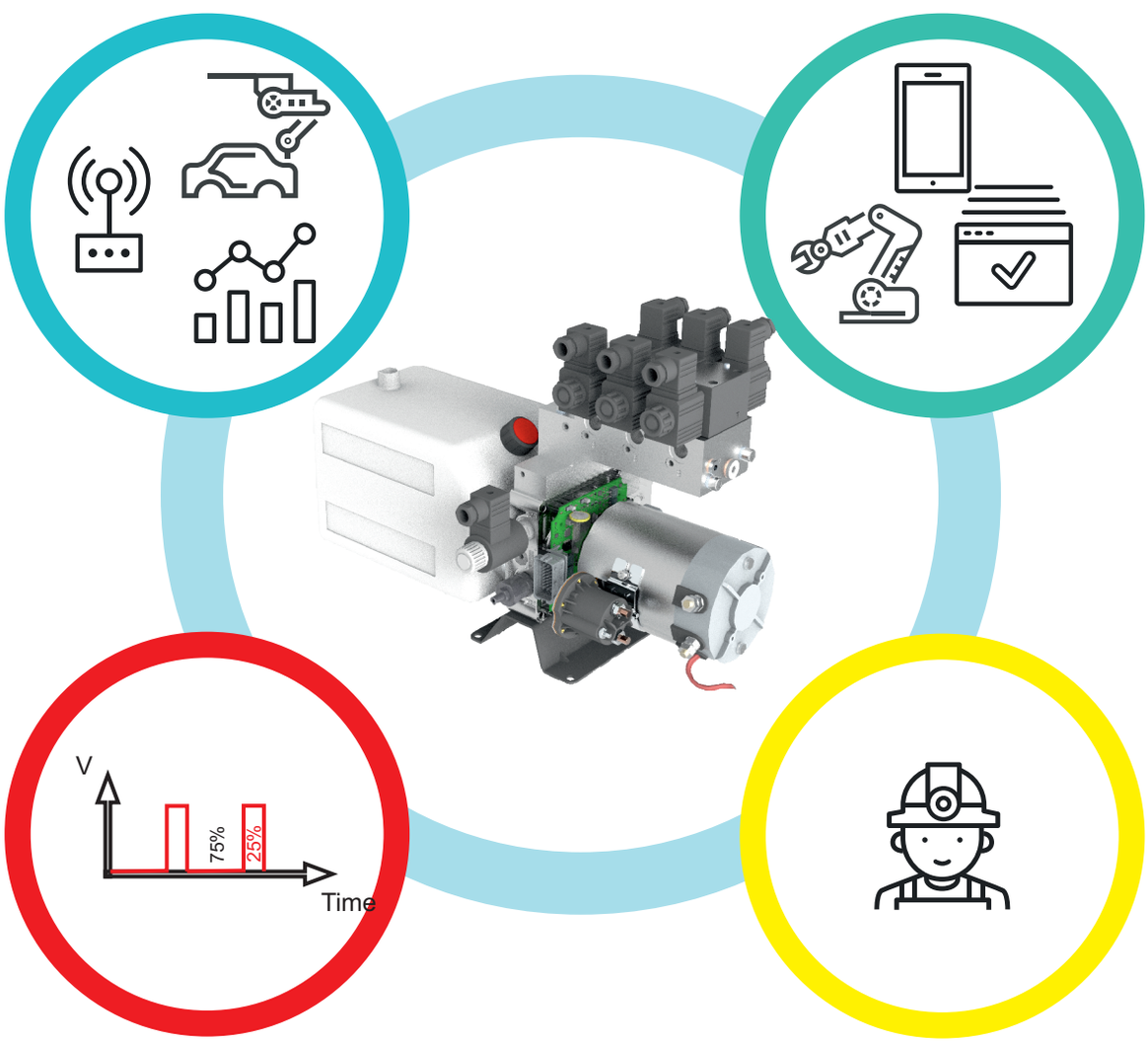
The access to the web configurator is offered free of charge to official partners of Hydronit Srl.

World first Mechatronic Power Unit

Hydronit has developed the world first Mechatronic Power Unit: the SMART Power Unit (SPU).
It is a combination of:
1) a Safe Industrial PLC, digitally programmable,
2) an IoT module for communication,
3) sensors
4) PWM power outputs to directly drive solenoid valves,
5) an Hydraulic Power Unit

INTERNET OF THINGS
- **Ethernet**
- **WiFi**
- **2x CanBus**
- **Hart**
- **Data logging**

INDUSTRIAL PLC
- **IEC 61131-3**
- **Free IDE**
- **Motion libraries**
- **Analog / Digital IO**
- **Embedded sensors**



POWER OUTPUT
- **12 X 2A PWM outputs**
- **2 x 4A on-off outputs**
- **current loop**

SAFETY INSIDE
- **SIL 2**
- **PL d**

ISO 9001 Certified Lean Organization

Hydronit is a lean organized company with a strong focus on efficiency and customer-centricity.

We use state-of-the-art softwares and streamline data to provide our employees an agile decision-making process, minimizing waste, reducing unnecessary costs, and maximizing productivity.

We are driven by our commitment to delivering exceptional value to our partners, fostering a culture of innovation.

By focusing on the needs and preferences of our customers, we build loyalty and also sustain our growth and reputation in the market.

A Clean and Sustainable Factory

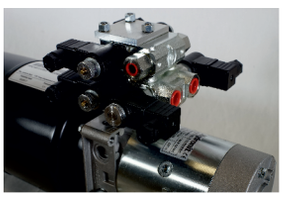
Hydronit is environmentally conscious, integrating sustainable practices into its operations, products, and services:

- the production is carried out in a factory **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, and high efficiency electric **heat pumps**, ensure thermal regulation
- over 200 **photovoltaic panels** provide about 70 kW peak power that covers up to 60% of the plant consumption for its own operation, while **solar thermal panels** provide hot water.
- the **advanced IT infrastructure** increase efficiency, reduce paperwork and human errors
- the use of 100% biodegradable hydraulic fluids and **lead free** raw aluminum, whenever possible, minimize the impact on the environment and on our workers health.
- the design and production of long life, efficient and reliable products reduce the **Total Cost of Ownership** of our products during their life span.
- the materials used in our products are mostly 100% recyclable

Some typical applications

The **high level of modularity** and **circuit flexibility** of Hydronit hydraulic power packs and electropumps allow their use in the most varied applications: in addition to typical applications of **lifting equipment** and hydraulic **vehicles** (dump trucks, tail lifts, ...) and in the **industrial** stationary applications (presses, machine tools, hoists, hydraulic brakes, compactors,...), even in the **automotive industry** (drive doors and hood, suspension, campervan ...), **marine** (bridges, cranes, doors, ...), in the **alternative energies** sector, in **agricultural equipment**, in the field of **construction machinery**, 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







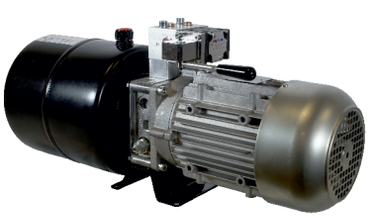






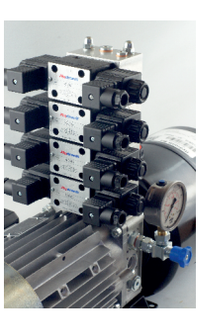
AC applications



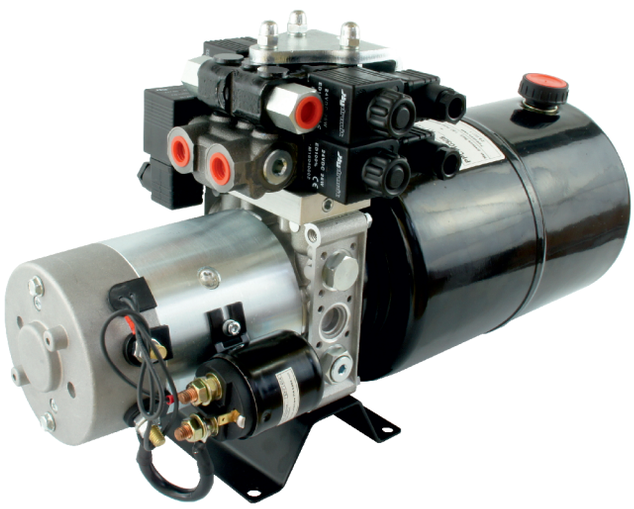









Typical Smart Power Unit applications



- **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

AC & DC **COMPACT**
Hydraulic Power Packs

POWER PACKS COMPACT speaking code

PPC

Power Pack type

2,2 24DC_T/S150

Electric AC or DC motor or motor mounting kit

Power Packs

Standard mounting positioning rules:

- Filler cap on P and T ports side
- AC motor electric box on cavity 2 side
- DC motor and solenoid poles on cavity 1 side
- For horizontal mounting units, suction filter on mounting foot holes side

In lack of specific request made by the customer, all power units are supplied assembled according to these basic rules.

This page contains only the most common codes and options.

For the full available range please check out next pages.

DC motors / Motor mounting kits

code	description
0,15 12DC_T	12VDC 150W + thermal prot.
0,15 24DC_T	24VDC 150W + thermal prot.
0,3 12DC_T	12VDC 300W + thermal prot.
0,3 24DC_T	24VDC 300W + thermal prot.
0,5 12DC_T	12VDC 500W + thermal prot.
0,5 24DC_T	24VDC 500W + thermal prot.
0,8 12DC_T	12VDC 800W + thermal prot.
0,8 24DC_T	24VDC 800W + thermal prot.
0,8 48DC_T	48VDC 800W + thermal prot.
1,2 12DC_T	12VDC 1200W + thermal prot.
1,2 24DC_T	24VDC1200W + thermal prot.

code	description
1,6 12DC_T	12VDC 1600W + thermal pr.
2,1 12DC_T	12VDC 2100W + thermal pr.
2,2 24DC_T	24VDC 2200W + thermal pr.
2,2 48DC_T	48VDC 2200W + thermal pr.

code	description
1,6 12DC_F*	12VDC 1600W + th.pr. + fan
2,1 12DC_F*	12VDC 2100W + th. pr. + fan
2,2 24DC_F*	24VDC 2200W + th. pr. + fan
2,2 48DC_F*	48VDC 2200W + th. pr. + fan

code	description
3 24DC_T	24VDC 3000W + thermal pr.
4 24DC_T	24VDC 4000W + thermal pr.

code	description
3 24DC_F*	24VDC 3000W + th.pr. + fan
4 24DC_F*	24VDC 4000W + th.pr. + fan

code	description
2,5HD 12DC_T	12VDC 2500W heavy duty
3HD 24DC_T	24VDC 3000W heavy duty
4HD 24DC_T	24VDC 4000W heavy duty

DC motors options	
S150T	starting relay 150A
S200	starting relay 200A
R100	inverting / starting relay 100A

code	description
XB14 63-0	B14 frame 63 + pump group 0
XB14 63-1	B14 frame 63 + pump group 1
XB14 71-0	B14 frame 71 + pump group 0
XB14 71-1	B14 frame 71 + pump group 1
XB14 80-0	B14 frame 80 + pump group 0
XB14 80-1	B14 frame 80 + pump group 1
XB14 90-1	B14 frame 90 + pump group 1
XB14 100-1	B14 frame 100/112 +pump gr1
XB14E 90	B14 frame 90 kit + elastic coupling
XB14E 100	B14 frame 100 kit + elastic coupling
XB14E GE	Mounting kit for gasoline engine

code	description
X56C-0	Nema 56C + pump group 0
X56C-1	Nema 56C + pump group 1
X184TC-1	Nema 184TC + pump group 1

code	description
XPU1401-0	belt pulley + pump group 0
XPU1401-1	belt pulley + pump group 1

AC motors

code	description
E0,55AC 32 71	0,55kW S3 3ph 2 poles
E0,75AC 32 71	0,75kW S3 3ph 2 poles
E1,1AC 32 80	1,1kW S3 3ph 2 poles
E1,5AC 32 80	1,5kW S3 3ph 2 poles
E2,2AC 32 80	2,2kW S3 3ph 2 poles
E3,0AC 32 90	3kW S3 3ph 2 poles
E4,0AC 32 90	4kW S3 3ph 2 poles
E5,5AC 32 100	5,5kW S3 3ph 2 poles
B14 7,5AC 32 112	7,5kW S3 3ph 2 poles

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

code	description
E0,55AC S2 71	0,55kW S3 1ph 2 poles
E0,75AC S2 71	0,75kW S3 1ph 2 poles
E1,1AC S2 80	1,1kW S3 1ph 2 poles
E1,5AC S2 80	1,5kW S3 1ph 2 poles
E2,2AC S2 90	2,2kW S3 1ph 2 poles

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

code	description
MG50	5kW Gasoline engine

POWER PACKS COMPACT speaking code

UB — Central manifold

G1,1 — Gear pump

J — Cavity 0

V350 — Relief valve cavity 1

Central manifolds

code	description
UA	Compact A type with 3 lateral cavities
UB	Compact B type with 5 lateral cavities
U4	Compact 4 type for 4 way cartridge valves
UR	Compact R type for reversible pumps

code	description
SB	New Compact SB type with 5 lateral cavities
SB3	New Compact SB3 type with 5 lateral cavities for 3-way valve
SR	New Compact SR for reversible pumps
S4	New Compact S4 type S4 4-way double valve version
SRD	New Compact SRD type with differential valves
SRDT	New Compact SRDT type with differential valves and anti-shock valves
SRT	New Compact SRT type with anti-shock valves
S4T	New Compact S4 type S4T 4-way double valve version and anti-shock valves

Central manifolds options	
US	SAE06 exit ports for North America market

Gear pumps

code	description
RM0,2	0,26 cc/rev reversible gr0
RM0,3	0,32 cc/rev reversible gr0
RM0,4	0,38 cc/rev reversible gr0
RM0,5	0,49 cc/rev reversible gr0
RM0,7	0,64 cc/rev reversible gr0
RM0,9	0,88 cc/rev reversible gr0
RM1,3	1,25 cc/rev reversible gr0
RM1,5	1,5 cc/rev reversible gr0
R2,1	2,1 cc/rev reversible gr1
R2,6	2,6 cc/rev reversible gr1
R3,2	3,2 cc/rev reversible gr1
R4,2	4,2 cc/rev reversible gr1
R5,6	5,6 cc/rev reversible gr1

code	description
GM0,1	0,19 cc/rev gr0
GM0,2	0,26 cc/rev gr0
GM0,4	0,38 cc/rev gr0
GM0,6	0,64 cc/rev gr0
G0,8	0,85 cc/rev gr1
G1,1	1,15 cc/rev gr1
G1,3	1,3 cc/rev gr1
G1,6	1,6 cc/rev gr1
G2,1	2,1 cc/rev gr1
G2,6	2,6 cc/rev gr1
G3,2	3,2 cc/rev gr1
G3,7	3,7 cc/rev gr1
G4,2	4,2 cc/rev gr1
G4,9	4,9 cc/rev gr1
G6,0	6,0 cc/rev gr1
G7,9	7,9 cc/rev gr1
G9,8	9,8 cc/rev gr1

code	description
HM0,1	0,2 cc/rev high P gr0
HM0,2	0,26 cc/rev high P gr0
HM0,4	0,38 cc/rev high P gr0
HM0,6	0,64 cc/rev high P gr0
HM0,8	0,8 cc/rev high P gr0
H1,2	1,2 cc/rev high P gr1
H1,7	1,7 cc/rev high P gr1
H2,2	2,2 cc/rev high P gr1
H2,6	2,6 cc/rev high P gr1
H3,2	3,2 cc/rev high P gr1
H3,8	3,8 cc/rev high P gr1
H4,3	4,3 cc/rev high P gr1
H4,7	4,7 cc/rev high P gr1
H6,0	6,0 cc/rev high P gr1
H7,4	7,4 cc/rev high P gr1

code	description
S2,2	2,2 cc/rev low noise gr1
S3,2	3,2 cc/rev low noise gr1
S4,3	4,3 cc/rev low noise gr1
S5	5 cc/rev low noise gr1
S6	6 cc/rev low noise gr1
S8,3	8,3 cc/rev low noise gr1
S10	10,2 cc/rev low noise gr1
S13	12,9 cc/rev low noise gr1

Gear pumps options	
HL	double pump with hi-lo circuit

Hydraulic valves cavity 0-1

code	description
J	check valve 3/4-16UNF
JF	check valve 3/4-16UNF with exit port
S	flow control valve
L	plug 3/4-16UNF
N	plug 3/4-16UNF with exit port

Cavity 0 options	
MIR63*EM	pressure gauge (*=bar max) + shut-off
PSL01S0100	pressure switch 10÷100bar
PSL01S030	pressure switch 50÷300bar
PSH01S010	pressure switch 10÷100bar high perf.
PSH01S030	pressure switch 50÷300bar high perf.
MINIMESS01	minimess with plastic cap
US	SAE exit port

code	description
V60	relief valve 3÷60 bar for PPC
V120	relief valve 40÷120 bar for PPC
V250	relief valve 80÷250 bar for PPC
V350	relief valve 150÷350 bar for PPC
XP	closed plug for relief valve cavity

POWER PACKS COMPACT speaking code

A 24DC	R5	U	X	X	X	X	X	X	X	X	X	X	5BV
Cavity 2	Cavity 3	Cavity 4	Cavity 5	Cavity 6	Cavity 7	Cavity 8	Cavity 9	Cavity 10	Cavity 11	Cavity 12	Cavity 13	Cavity 14	Tank & mounting style

Hydraulic valves cavity 2-3-4




code	description
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.
M	NO 2/2 way double poppet valve + emerg.
E	lever operated 2/2 valve
EM	lever operated 2/2 valve 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"BSP exit port
N	open plug with 1/4"BSP exit port
P	plug passing through 1/4"BSP exit port
L	basic plug
J	check valve
JF	check valve with 1/4"BSPP exit port
W	pneumatic valve



code	description (M4&U4 manifolds only)
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

code	description
F*	pressure comp. flow control (*=l/min)
R*	adj. pressure comp. flow control (*=l/min)
S	adjustable flow control valve
Z	2 way emergency button
AR	NC 2/2 way poppet valve reverse flow
BR	NC 2/2 way poppet v. reverse flow + emer.
CR	NO 2/2 way poppet v. reverse flow + emer.
D	NC 2/2 way double poppet valve + emerg.
P*	proportional relief valve (*= bar max)
V*	relief valve (*= bar max)
G	closed plug
H	closed plug with 1/4"BSP exit port
N	open plug with 1/4"BSP exit port
P	plug passing through 1/4"BSP exit port
L	basic plug
J	check valve

Hydraulic valves cavity 5-6-8-9 U manifold and for cavity 6-9-10-11-12-13-14 S manifold



code	description
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 ctrl
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
S01Z	start-up 2÷4l/min for 1ph AC mot.
S01W	start-up 3÷6l/min for 1ph AC mot.
S01A	start-up 5÷10l/min for 1ph AC mot.
S01C	start-up 6÷14l/min for 1ph AC mot.
S01F	start-up 11÷22l/min for 1ph AC mot.
TADPH0001	plastic pipe 90° elbow 1/4 BSPP
TADPH0002	plastic pipe 90° elbow 1/4 BSPP
TADPH0003	plastic pipe 90° elbow 1/4 BSPP
TADPH0004	male-male metal 1/4 pipe for VSC01 cavity 6

Hydraulic valves cavity 7 for U and S manifold

code	description
1(04)	1 l/min pressure comp. flow control
1,5(04)	1,5 l/min press. comp. flow control
2(04)	2 l/min pressure comp. flow control
3(04)	3 l/min pressure comp. flow control
5(04)	5 l/min pressure comp. flow control
7(04)	7 l/min pressure comp. flow control
10(04)	10 l/min pressure comp. flow control
13(04)	13 l/min pressure comp. flow control
17(04)	17 l/min pressure comp. flow control
22(04)	22 l/min pressure comp. flow control

Hydraulic valves cavity 5 S manifold

code	description
P01	1/4" BSPP plug

Tanks & mounting style


code	description
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
15NV	15l square plastic
TCTAH00002	5l Q series square plastic
TCTAH00005	12l Q series square plastic


code	description
1,5A	1,5l cylindrical steel
2,5A	2,5l cylindrical steel
5B	5l cylindrical steel
10B	10l cylindrical steel
12B	12l cylindrical steel
F80000001	steel tank adapter - to be welded

code	description
10C	10l square steel
22C	22l square steel
3EV	3l square steel vertical mounting
7EV	7l square steel vertical mounting
8EV	8l square steel vertical mounting
15EV	15l square steel vertical mounting
20EV	20l square steel vertical mounting
30EV	30l square steel vertical mounting

code	description
10HD	10l square aluminum tank
25HD	25l square aluminum tank

Tanks options	
V	vertical mounting

POWER PACKS COMPACT speaking code

E60403010 — External Manifolds

SD03A2 24DC — External Valves

E60543006 — Accessories

External Manifolds & Accessories

code	description
N50403007DN	base manifold for SD02 stackable valves
M60403004	23mm spacer subplate
M60403005	90° rotation manifold
M60403039	additional single acting manifold
M60403010	NG3 MICRO parallel block lateral ports
M60413001	NG3 MICRO manifold with p.o. check valves
PM04M	hand pump 4 cc/stroke
PM09M	hand pump 8,8 cc/stroke
M60403008E	PPM to PPC base converter

code	description
E60403006DN	base manifold for SD02 stackable valves
E60403008M	PPC to PPM base converter
E60403004	28mm spacer subplate
E60403004CV	28mm spacer subplate + check valve
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 3/8 lateral ports
E60403011	NG6 (Cetop3) series block 3/8 lateral ports
E60403012	NG6 (Cetop3) parallel block 1/4 lateral ports
E60413001	NG6 (Cetop3) manifold with p.o. check valves
E60403020	spin-on return line filter manifold
E60403025	pressure line filter manifold
PM04	hand pump 4 cc/stroke
PM09	hand pump 8,8 cc/stroke
E60403030	SAE08 2-way cartridge manifold block
E60403031	SAE08 3-way cartridge manifold block

Manifold blocks option	
US	SAE06 exit ports for North America market

code	description
MIR6360EM	pressure gauge 60bar
MIR63160EM	pressure gauge 160bar
MIR63250EM	pressure gauge 250bar
MIR63315EM	pressure gauge 315bar
PSL01S0100	pressure switch 10÷100bar
PSL01S0300	pressure switch 50÷300bar
PSH01S0100	pressure switch 10÷100bar high performance
PSH01S0300	pressure switch 50÷300bar high performance

code	description
P0201	remote 2 buttons control box
P0202	remote 4 buttons control box
VPC00	PWM driver for proportional valves
E60543003	foot mounting support PPM
E60543006	foot mounting support PPC/EPB
E60543007	foot mounting support PPC/EPB - tall type

code	description
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
BMPPC02	base for Hydronit modular blocks

External Valves

code	description
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 › T
SD02C2RP	stackable directional valve 4/3 H center + p. o. check valves
SD02E2RP	stackable directional valve 4/3 center A-B to T + p. o. check valves
SD02A2TP	stackable dir. v. 4/3 center P to T + cav. SAE08 for additional valves
SD02B2TP	stackable dir. v. 4/3 closed center + cav. SAE08 for additional valves
SD02C2TP	stackable dir. v. 4/3 H center + cav. SAE08 for additional valves
SD02E2TP	stackable dir. v. 4/3 center A-B to T + SAE08 for additional valves

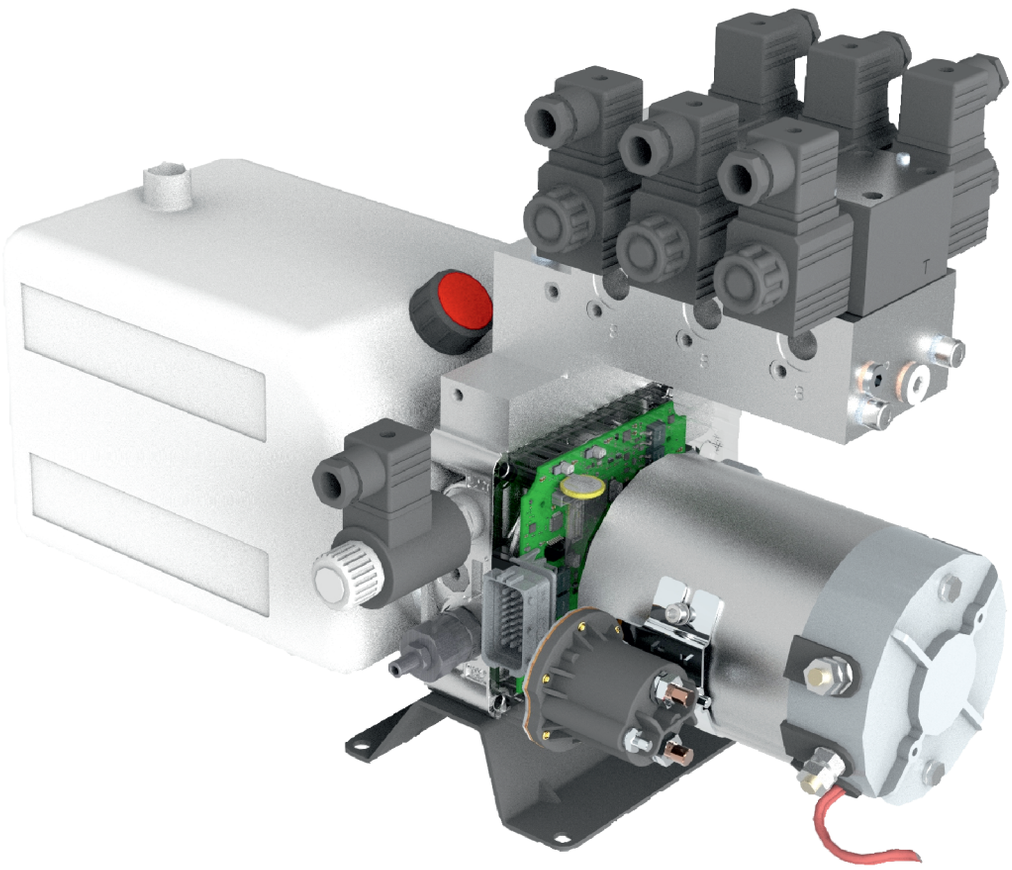
code	description
SD03A11C	NG6 (cetop3) directional valve 4/2
SD03A2	NG6 (cetop3) directional valve 4/3 center P to T
SD03B2	NG6 (cetop3) directional valve 4/3 closed center
SD03C2	NG6 (cetop3) directional valve 4/3 H center
SD03E2	NG6 (cetop3) directional valve 4/3 center A-B to T

code	description
HD03A1	NG6 (cetop3) manual directional valve spring centred P to T
HD03A2	NG6 (cetop3) manual directional valve spring centred closed centre
HD03A3	NG6 (cetop3) manual directional valve spring centred H centre
HD03A4	NG6 (cetop3) manual directional valve spring centred A-B to T
HD03D1	NG6 (cetop3) manual directional valve with detent, centre P to T
HD03D2	NG6 (cetop3) manual directional valve with detent, closed centre
HD03D3	NG6 (cetop3) manual directional valve with detent, H centre
HD03D4	NG6 (cetop3) manual directional valve with detent, centre A-B to T
E60424001	NG6 (cetop3) sandwich type modular relief valve on A & B
E60424002	NG6 (cetop3) sandwich type modular relief valve on A
E60424003	NG6 (cetop3) sandwich type modular relief valve on B
E60433001	NG6 (cetop3) sandwich type modular throttle valve on A & B
E60433002	NG6 (cetop3) sandwich type modular throttle valve on A
E60433003	NG6 (cetop3) sandwich type modular throttle valve on B
E60453001	NG6 (cetop3) sandwich type modular overcentre valve on A & B
E60483001	NG6 (cetop3) sandwich type pressure reducing valve on P
E60483002	NG6 (cetop3) sandwich type pressure reducing valve on A
E60483003	NG6 (cetop3) sandwich type pressure reducing valve on B

Solenoid valves coils voltages	
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 valves codes

NOTES



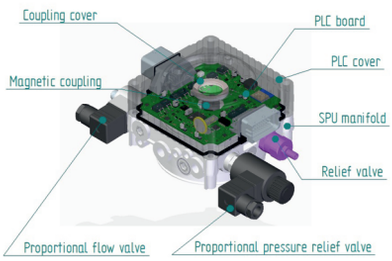
- **The first** and **only** intelligent hydraulic power unit in the world
- Flow: **0,2 ~ 25 l/min**
- **Low pressure drop**
- Pressure up to **300 bar** (or more in special application)
- DC motors up to **4 kW**
- AC motors up to **7,5 kW**
- **High modularity**: single & double acting & reversible circuits from the same micro central manifold

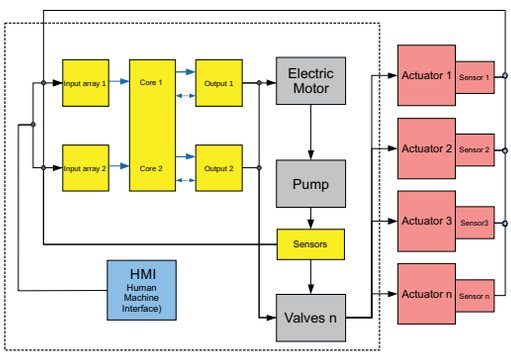
SMART Hydraulic Power Unit with on Board Digital Electronic Safety Architecture up to SIL2 IEC 61131-3 Compliant

Hydronit Smart Power Unit

The **SPU** is the second generation of **Hydronit's Programmable Digital Hydraulic Power Pack** available on the market.

The core of the Smart Power Unit is the **HPC (Hydraulic Process Controller)**: a Mechatronic Module which integrates Sensors, Electronics and Hydraulics in a single device. Programmable with **Codesys™** IEC61131-3 automation software.





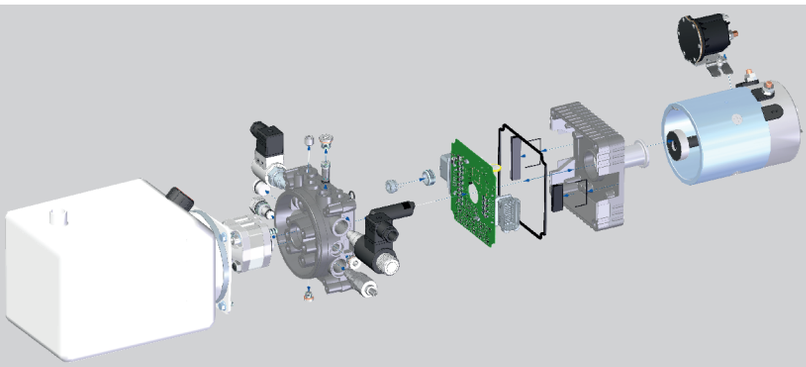
Features

The core of the Smart Power Unit is the **HPC (Hydraulic Process Controller)**: a programmable controller with **SAFETY Architecture**. It integrates I/O, sensors, a double core processor to enable SAFETY features, Power Output in order to directly drive solenoid on-off or proportional valves without the need of external relays.

The **Hydraulic Process Computer** is integrated in the Power Pack and available in different executions: P/Q proportional control and with LS functionality.

Hydraulic Integration

The **HPC** is perfectly integrated with the standard **Hydronit Compact Pack** range since it uses same PPC broad range of standard components. Hydraulic schemes are availble with redundant valves in order to match customers needs and offer a SAFETY mechatronic power pack ready for **Industry 4.0** & **Smart Manufacturing.**



Built in Sensors

The **Hydraulic Process Computer** integrates fluid sensors: one ceramic **Pressure sensor** reading the P line, up to 350 bar.

A hall effect sensor reads the motor speed, which is related to the flow.

An oil temperature sensor completes the fluid monitoring.

Additional external sensors can be red through the I/O lines and the two CAN BUS networks.

Sensors are embedded in the mechanic body and are available as a variable in the software programming environment.

SEAL OF EXCELLENCE

European Commission

Certificate delivered by the European Commission, as the institution managing Horizon 2020, the EU Framework Programme for Research and Innovation 2014-2020

The project proposal **767310, MIDRAULICS**

Modular Intelligent Hydraulics

Submitted under the Horizon 2020's **SME instrument phase 2** call **H2020-SMEInst-2016-2017 (H2020-SMEINST-2-2016-2017)** of **18 January 2017** in the area of **Small business innovation research for Transport and Smart Cities Mobility**

by

HYDRONIT SRL
VIA PASTRENGO 62
20814 VAREDO
Italy

following evaluation by an international panel of independent experts

WAS SUCCESSFUL IN A HIGHLY COMPETITIVEVALUATION PROCESS* AS A HIGH QUALITY PROJECT PROPOSAL

This proposal is recommended for funding by other sources since Horizon 2020 resources available for this specific Call were already allocated following a competitive ranking.

* This means passing all stringent Horizon 2020 assessment thresholds for the 3 award criteria (excellence, impact, quality and efficiency of implementation) required to receive funding from the EU budget Horizon 2020.

Corina Cretu, Commissioner for Regional Policy

Carlos Moedas, Commissioner for Research, Science and Innovation

Brussels, 07/03/2017

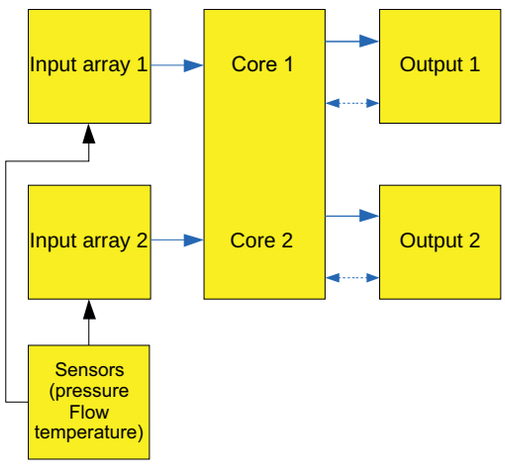
International Awards

Hydronit, directly competing against European most innovative companies, has been awarded with multiple **Seals of Excellence** by the European Commission **during Horizon 2020 Framework Programme for Research and Innovation.**

In July 2017 it has been granted by EU Commission as project 779020.

The **Smart Power Unit** is patented.

Digital Controller Main Features



The Digital Architecture of HPC consists in a processor dual core architecture, ready for safety applications up to SIL2 as per IEC61508 (it requires specific software and certifications, available for quantities). The software, developed with CoDeSys, is uploaded in both cores and in case of incongruency, the hardware Watchdog stops all movements preventig dangerous unattended movements. The Electronic controller built in the HPC is equipped with two CAN BUS lines, in order to have a fast and reliable communication of the Hydraulic Power Unit with a centralised control or, eventually, with Input peripherals or sensors. HPC is able to directly drive up to 12 ON-OFF or Proportional valves with up to 2A current, with a power supply voltage of 9 to 60VDC. Two additional ON-OFF Outputs are suitable for current up to 5A.
Each Output is equipped with current sensing: this simplifies the cable harness by reducing the number of fuses and reducing installation time. The logic supply circuit is independent from the power circuit in order to easily connect emergency circuit breaker while keeping on the logic: this extends data logger possibilities of the system, for a better reliability and troubleshooting capabilities.
Twelve multistandard inputs allow the connection of voltage or current sensors and ON-OFF proximities or keyboards

Technical data:

Voltage range:	9...60V DC
Current consumption:	<= 200mA
Operating temp. range:	-40 ... +85°C
Storage temp. range:	-40 ... +85°C
Weight:	< 0,5 Kg

IOs:

2 x 6 (12) of Digital/Analogue inputs:
0-25 mA, 0-5 V, 0-30 V, ON-OFF

3 x 4 (12) of Digital/PWM outputs 2A:
close current loop with ON/OFF status feedback input

2 x 1 (2) of Digital outputs 5A:
with ON/OFF status feedback input

2 x CAN Bus ISO 11898 24 V DC

1 x Ethernet ISO/IEC/IEEE 8802

Mechanical shocks and vibration resistance

Sinusoidal vibration: 5...500 Hz, 7.5 mm, 5g, 5 cycles, variation 1 octave/min (EN 60068-2-27);

Shock: 25g, 6 ms, 4000 shock for every direction and axis, within the working temperature range;

Free fall (EN 60068-2-32 1 m unit boxed);
Tilt fall (EN 60068-2-31 100 mm)

EMC compatibility

EN13309 (Construction Machinery)
EN61000-6-2 (Immunity for Industrial Environments)
EN61000-6-4 (Emission for Industrial Environments)

Further electrical protection

Inversion of polarity protection
Over voltage protection (SURGE)
Load Dump Protection

General rules compliance

European Standard:
RAEE 2002/96/EC
RoHS 2002/96/E

CPU, Memory and Software:

1 x CPU 32 bit dual core + 1 «WDO» CPU 32 bit

RM48L952 by Texas Instrument

Dual core CPUs Running in Lockstep
ARM®Cortex®-R4F 32-Bit RISC CPU
System Clock up to 220 MHz
3MB of Program Flash With ECC
256KB of RAM With ECC
64KB of Flash With ECC for Emulated EEPROM
16-Bit External Memory Interface
2 x CAN Bus Interface
1 x shared Real Time Clock

«CoDeSys» version 3.5.12 and later

Failure rate:

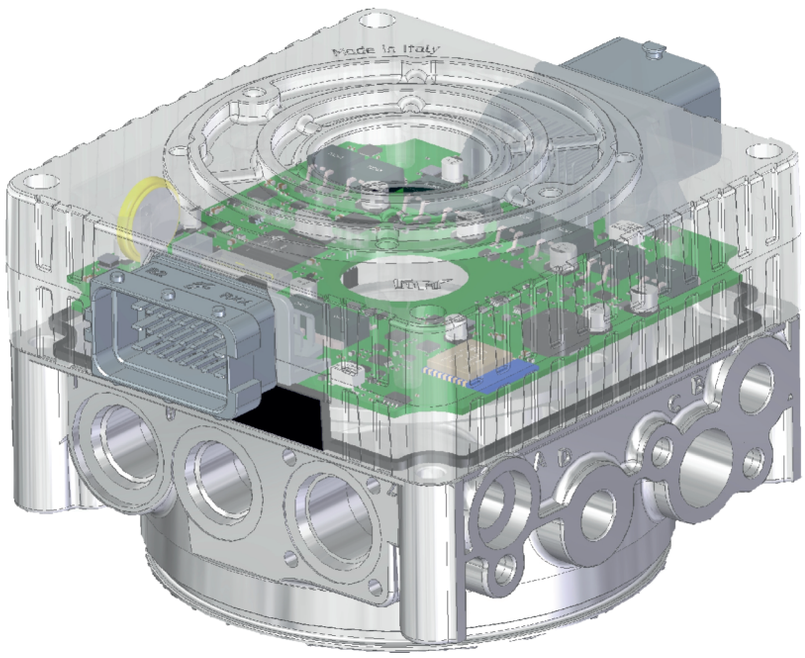
Analisys method:	«Parts count» method over all components assuming 50% dangerous failures;
Data collection:	MIL-HDBK-217F-Notice 2 and manifacturer Information;
Conditions:	Normal operating conditions for environment and temperature;
Environment:	Ground, Mobile;
Temperature:	40°C;
Operating Time:	10 h/d * 6 days * 52 weeks;
Component stress:	Mean stress on components(not according to the circuit diagram)

Note: MTTFd relates to one of two redundant channels;

MTTFd: 48 years

Smart Power Unit Main Features

HPC02



HPC02: the Hydraulic Process Controller is a Mechatronic element embedded into Hydronit power pack. It consists of:

1) die casting aluminium manifold which hosts a proportional flow regulator, pressure compensated, piloted by a proportional pressure relief valve.

2) electronic motherboard a programmable electronic controller with SIL2 processor, local Input and Output such as:

- Codesys programmable
- Software configurable Analog / Digital Input
- Software configurable PWM / Current loop / Digital Output up to 5 Amps
- Two independent CAN-BUS lines
- 3axis accelerometer
- Wifi
- Ethernet
- Built in temperature sensors
- Multi standard I/O
- Indipendent Logic and Power electric supply for safety configuration
- Internal WDO
- Built in motor speed sensor
- Built in delivery pressure sensor
- Hart current loop input
- Digital analog output
- Web server
- IP65 protection

3) die casting aluminium cover for protection and heat dissipate

HPC02 can be supplied with 9-60V DC and is able to output up to 35A, matching the most common and future automotive standards.
HPC02 can control DC or AC electric motors through CAN-BUS lines or through ON-OFF signals

SMART POWER UNITS speaking code

SPU

Power Pack type

2,2 24DC_T/S150

Electric AC or DC motor or motor mounting kit

Power Packs

Standard mounting positioning rules:

- Filler cap on P and T ports side
- AC motor electric box on cavity 2 side
- DC motor and solenoid poles on cavity 1 side
- For horizontal mounting units, suction filter on mounting foot holes side

In lack of specific request made by the customer, all power units are supplied assembled according to these basic rules.

This page contains only the most common codes and options.

For the full available range please check out next pages.

DC motors / Motor mounting kits

code	description
0,15 12DC_T	12VDC 150W + thermal prot.
0,15 24DC_T	24VDC 150W + thermal prot.
0,3 12DC_T	12VDC 300W + thermal prot.
0,3 24DC_T	24VDC 300W + thermal prot.
0,5 12DC_T	12VDC 500W + thermal prot.
0,5 24DC_T	24VDC 500W + thermal prot.
0,8 12DC_T	12VDC 800W + thermal prot.
0,8 24DC_T	24VDC 800W + thermal prot.
0,8 48DC_T	48VDC 800W + thermal prot.
1,2 12DC_T	12VDC 1200W + thermal prot.
1,2 24DC_T	24VDC1200W + thermal prot.

code	description
1,6 12DC_T	12VDC 1600W + thermal pr.
2,1 12DC_T	12VDC 2100W + thermal pr.
2,2 24DC_T	24VDC 2200W + thermal pr.
2,2 48DC_T	48VDC 2200W + thermal pr.

code	description
1,6 12DC_F*	12VDC 1600W + th.pr. + fan
2,1 12DC_F*	12VDC 2100W + th. pr. + fan
2,2 24DC_F*	24VDC 2200W + th. pr. + fan
2,2 48DC_F*	48VDC 2200W + th. pr. + fan

code	description
3 24DC_T	24VDC 3000W + thermal pr.
4 24DC_T	24VDC 4000W + thermal pr.

code	description
3 24DC_F*	24VDC 3000W + th.pr. + fan
4 24DC_F*	24VDC 4000W + th.pr. + fan

code	description
2,5HD 12DC_T	12VDC 2500W heavy duty
3HD 24DC_T	24VDC 3000W heavy duty
4HD 24DC_T	24VDC 4000W heavy duty

DC motors options	
S150T	starting relay 150A
S200	starting relay 200A
R100	inverting / starting relay 100A

code	description
XB14 63-0	B14 frame 63 + pump group 0
XB14 63-1	B14 frame 63 + pump group 1
XB14 71-0	B14 frame 71 + pump group 0
XB14 71-1	B14 frame 71 + pump group 1
XB14 80-0	B14 frame 80 + pump group 0
XB14 80-1	B14 frame 80 + pump group 1
XB14 90-1	B14 frame 90 + pump group 1
XB14 100-1	B14 frame 100/112 +pump gr1
XB14E 90	B14 frame 90 kit + elastic coupling
XB14E 100	B14 frame 100 kit + elastic coupling
XB14E GE	Mounting kit for gasoline engine

code	description
X56C-0	Nema 56C + pump group 0
X56C-1	Nema 56C + pump group 1
X184TC-1	Nema 184TC + pump group 1

code	description
XPU1401-0	belt pulley + pump group 0
XPU1401-1	belt pulley + pump group 1

AC motors

code	description
E0,55AC 32 71	0,55kW S3 3ph 2 poles
E0,75AC 32 71	0,75kW S3 3ph 2 poles
E1,1AC 32 80	1,1kW S3 3ph 2 poles
E1,5AC 32 80	1,5kW S3 3ph 2 poles
E2,2AC 32 80	2,2kW S3 3ph 2 poles
E3,0AC 32 90	3kW S3 3ph 2 poles
E4,0AC 32 90	4kW S3 3ph 2 poles
E5,5AC 32 100	5,5kW S3 3ph 2 poles
B14 7,5AC 32 112	7,5kW S3 3ph 2 poles

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

code	description
E0,55AC S2 71	0,55kW S3 1ph 2 poles
E0,75AC S2 71	0,75kW S3 1ph 2 poles
E1,1AC S2 80	1,1kW S3 1ph 2 poles
E1,5AC S2 80	1,5kW S3 1ph 2 poles
E2,2AC S2 90	2,2kW S3 1ph 2 poles

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

code	description
MG50	5kW Gasoline engine

SMART POWER UNITS speaking code

UB — Central manifold

G1,1 — Gear pump

J — Cavity 0

V350 — Relief valve cavity 1

Central manifolds

code	description
UA	Compact A type with 3 lateral cavities
UB	Compact B type with 5 lateral cavities
U4	Compact 4 type for 4 way cartridge valves
UR	Compact R type for reversible pumps

Central manifolds options	
US	SAE06 exit ports for North America market

Gear pumps

code	description
RM0,2	0,26 cc/rev reversible gr0
RM0,3	0,32 cc/rev reversible gr0
RM0,4	0,38 cc/rev reversible gr0
RM0,5	0,49 cc/rev reversible gr0
RM0,7	0,64 cc/rev reversible gr0
RM0,9	0,88 cc/rev reversible gr0
RM1,3	1,25 cc/rev reversible gr0
RM1,5	1,5 cc/rev reversible gr0
R2,1	2,1 cc/rev reversible gr1
R2,6	2,6 cc/rev reversible gr1
R3,2	3,2 cc/rev reversible gr1
R4,3	4,3 cc/rev reversible gr1
R6,5	6,5 cc/rev reversible gr1

code	description
GM0,1	0,19 cc/rev gr0
GM0,2	0,26 cc/rev gr0
GM0,4	0,38 cc/rev gr0
GM0,6	0,64 cc/rev gr0
G0,8	0,85 cc/rev gr1
G1,1	1,15 cc/rev gr1
G1,3	1,3 cc/rev gr1
G1,6	1,6 cc/rev gr1
G2,1	2,1 cc/rev gr1
G2,6	2,6 cc/rev gr1
G3,2	3,2 cc/rev gr1
G3,7	3,7 cc/rev gr1
G4,2	4,2 cc/rev gr1
G4,9	4,9 cc/rev gr1
G6,0	6,0 cc/rev gr1
G7,9	7,9 cc/rev gr1
G9,8	9,8 cc/rev gr1

code	description
HM0,1	0,2 cc/rev high P gr0
HM0,2	0,26 cc/rev high P gr0
HM0,4	0,38 cc/rev high P gr0
HM0,6	0,64 cc/rev high P gr0
HM0,8	0,8 cc/rev high P gr0
H1,2	1,2 cc/rev high P gr1
H1,7	1,7 cc/rev high P gr1
H2,2	2,2 cc/rev high P gr1
H2,6	2,6 cc/rev high P gr1
H3,2	3,2 cc/rev high P gr1
H3,8	3,8 cc/rev high P gr1
H4,3	4,3 cc/rev high P gr1
H4,7	4,7 cc/rev high P gr1
H6,0	6,0 cc/rev high P gr1
H7,4	7,4 cc/rev high P gr1

code	description
S2,2	2,2 cc/rev low noise gr1
S3,2	3,2 cc/rev low noise gr1
S4,3	4,3 cc/rev low noise gr1
S5	5 cc/rev low noise gr1
S6	6 cc/rev low noise gr1
S8,3	8,3 cc/rev low noise gr1
S10	10,2 cc/rev low noise gr1
S13	12,9 cc/rev low noise gr1

Gear pumps options	
HL	double pump with hi-lo circuit

Hydraulic valves cavity 0-1

code	description
J	check valve 3/4-16UNF
JF	check valve 3/4-16UNF with exit port
S	flow control valve
L	plug 3/4-16UNF
N	plug 3/4-16UNF with exit port

Cavity 0 options	
MIR63*EM	pressure gauge (*=bar max) + shut-off
PSL01S0100	pressure switch 10÷100bar
PSL01S030	pressure switch 50÷300bar
PSH01S010	pressure switch 10÷100bar high perf.
PSH01S030	pressure switch 50÷300bar high perf.
MINIMESS01	minimess with plastic cap
US	SAE exit port

code	description
V60	relief valve 3÷60 bar for PPC
V120	relief valve 40÷120 bar for PPC
V250	relief valve 80÷250 bar for PPC
V350	relief valve 150÷350 bar for PPC
XP	closed plug for relief valve cavity

SMART POWER UNITS speaking code

A 24DC	R5	U	X	X	X	X	X	5BV
Cavity 2	Cavity 3	Cavity 4	Cavity 5	Cavity 6	Cavity 7	Cavity 8	Cavity 9	Tank & mounting style

Hydraulic valves cavity 2-3-4

code	description
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.
M	NO 2/2 way double poppet valve + emerg.
E	lever operated 2/2 valve
EM	lever operated 2/2 valve 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"BSP exit port
N	open plug with 1/4"BSP exit port
P	plug passing through 1/4"BSP exit port
L	basic plug
J	check valve
JF	check valve with 1/4"BSPP exit port

code	description (M4&U4 manifolds only)
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

code	description
F*	pressure comp. flow control (*=l/min)
R*	adj. pressure comp. flow control (*=l/min)
S	adjustable flow control valve
Z	2 way emergency button
AR	NC 2/2 way poppet valve reverse flow
BR	NC 2/2 way poppet v. reverse flow + emer.
CR	NO 2/2 way poppet v. reverse flow + emer.
D	NC 2/2 way double poppet valve + emerg.
P*	proportional relief valve (*= bar max)
V*	relief valve (*= bar max)
G	closed plug
H	closed plug with 1/4"BSP exit port
N	open plug with 1/4"BSP exit port
P	plug passing through 1/4"BSP exit port
L	basic plug
J	check valve

Hydraulic valves cavity 5-6-7-8-9

code	description
1(04)	1 l/min pressure comp. flow control
1,5(04)	1,5 l/min press. comp. flow control
2(04)	2 l/min pressure comp. flow control
3(04)	3 l/min pressure comp. flow control
5(04)	5 l/min pressure comp. flow control
7(04)	7 l/min pressure comp. flow control
10(04)	10 l/min pressure comp. flow control
13(04)	13 l/min pressure comp. flow control
17(04)	17 l/min pressure comp. flow control
22(04)	22 l/min pressure comp. flow control
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 ctrl
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
S01Z	start-up 2÷4l/min for 1ph AC mot.
S01W	start-up 3÷6l/min for 1ph AC mot.
S01A	start-up 5÷10l/min for 1ph AC mot.
S01C	start-up 6÷14l/min for 1ph AC mot.
S01F	start-up 11÷22l/min for 1ph AC mot.

Tanks & mounting style

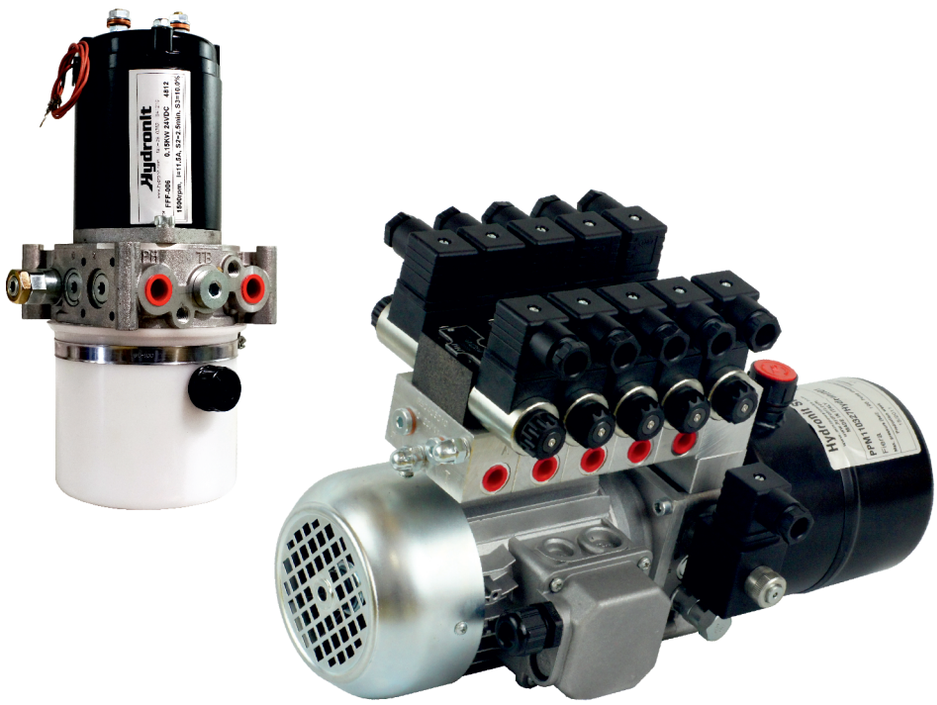
code	description
1,5L	1,5l square plastic
3L	3l square plastic
6L	6l square plastic
5M	5l square plastic
8M	8l square plastic
5P	5l round plastic
7P	7l round plastic
9P	9l round plastic
11P	11l round plastic
15NV	15l square plastic

code	description
1,5A	1,5l cylindrical steel
2,5A	2,5l cylindrical steel
5B	5l cylindrical steel
10B	10l cylindrical steel
12B	12l cylindrical steel
F80000001	steel tank adapter - to be welded

code	description
10C	10l square steel
22C	22l square steel
3EV	3l square steel vertical mounting
7EV	7l square steel vertical mounting
8EV	8l square steel vertical mounting
15EV	15l square steel vertical mounting
20EV	20l square steel vertical mounting
30EV	30l square steel vertical mounting

code	description
10HD	10l square aluminum tank
25HD	25l square aluminum tank

Tanks options	
V	vertical mounting



- 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 **Micro series**
Hydraulic Power Packs

POWER PACKS MICRO speaking code

PPM	**2,2 24DC_T/S150**
Power Pack type	Electric AC or DC motor or motor mounting kit

Power Packs

Standard mounting positioning:

- Filler cap on P and T ports side
- AC motor electric box on cavity 0-1-2 side
- DC motor and solenoid poles on cavity 0-1-2 side
- For horizontal mounting units, suction filter on mounting foot holes side

In lack of specific request by the customer, all power units are supplied assembled according to these basic rules.

This page contains only the most common codes and options.

For the full available range please check out next pages.

DC motors / Motor mounting kits

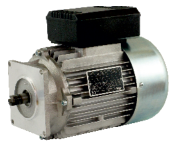
code	description
0,15 12DC_T	12VDC 150W + thermal prot.
0,15 24DC_T	24VDC 150W + thermal prot.
0,3 12DC_T	12VDC 300W + thermal prot.
0,3 24DC_T	24VDC 300W + thermal prot.
0,5 12DC_T	12VDC 500W + thermal prot.
0,5 24DC_T	24VDC 500W + thermal prot.
0,8 12DC_T	12VDC 800W + thermal prot.
0,8 24DC_T	24VDC 800W + thermal prot.
0,8 48DC_T	48VDC 800W + thermal prot.
1,2 12DC_T	12VDC 1200W + thermal prot.
1,2 24DC_T	24VDC1200W + thermal prot.

code	description
1,6 12DC_T	12VDC 1600W + thermal pr.
2,1 12DC_T	12VDC 2100W + thermal pr.
2,2 24DC_T	24VDC 2200W + thermal pr.
2,2 48DC_T	48VDC 2200W + thermal pr.

DC motors options	
S150T	starting relay 150A
S300	starting relay 200A
R100	inverting / starting relay 100A

code	description
NB14 63-0	B14 frame 63
NB14 71-1	B14 frame 71

AC motors



code	description
N0,37AC 34 71	0,37kW S3 3 ph 4 poles
N0,55AC 34 71	0,55kW S3 3 ph 4 poles
N0,75AC 34 71	0,75kW S3 3 ph 4 poles
N0,55AC 32 71	0,55kW S3 3 ph 2 poles
N0,75AC 32 71	0,75kW S3 3 ph 2 poles
N0,37AC S4 71	0,37kW S3 1 ph 4 poles
N0,55AC S4 71	0,75kW S3 1 ph 4 poles
N0,55AC S2 71	0,75kW S3 1 ph 2 poles
N0,75AC S2 71	0,75kW S3 1 ph 2 poles
N0,55AC 34 71	0,55kW S3 3 ph 4 poles
N0,75AC 34 71	0,75kW S3 3 ph 4 poles

POWER PACKS MICRO speaking code

MB — Central manifold

GM0,4 — Gear pump

JM — Cavity 0

DM_280 — Cavity 1

Central manifolds

code	description
MB	Micro B type with 4 lateral cavities
MR	Micro R type for reversible pump
M4	Micro 4 type for 4 way cartridge valves

Central manifolds options	
US	SAE06 exit ports for North America market

Gear pumps

code	description
GM0,1	0,19 cc/rev G type gr0
GM0,2	0,26 cc/rev G type gr0
GM0,4	0,38 cc/rev G type gr0
GM0,6	0,64 cc/rev G type gr0

code	description
KM0,1	0,20 cc/rev K type gr0
KM0,2	0,26 cc/rev K type gr0
KM0,4	0,38 cc/rev K type gr0
KM0,6	0,64 cc/rev K type gr0
KM0,9	0,8 cc/rev K type gr0
KM1,3	1,2 cc/rev K type gr0
KM1,5	1,5 cc/rev K type gr0

code	description
HM0,1	0,20 cc/rev high P gr0
HM0,2	0,26 cc/rev high P gr0
HM0,4	0,38 cc/rev high P gr0
HM0,6	0,64 cc/rev high P gr0
HM0,8	0,88 cc/rev high P gr0
HM1,2	1,20 cc/rev high P gr0
HM1,5	1,50 cc/rev high P gr0

code	description
RM0,1	0,19 cc/rev reversible gr0
RM0,2	0,26 cc/rev reversible gr0
RM0,3	0,32 cc/rev reversible gr0
RM0,4	0,38 cc/rev reversible gr0
RM0,5	0,49 cc/rev reversible gr0
RM0,7	0,64 cc/rev reversible gr0
RM0,9	0,88 cc/rev reversible gr0
RM1,3	1,25 cc/rev reversible gr0
RM1,5	1,50 cc/rev reversible gr0

Hydraulic valves cavity 0

code	description
JM	check valve 5/8-18UNF
ML	plug 5/8-18UNF

Hydraulic valves cavity 1

code	description
DM_*	relief valve P (*= bar max)
XM	closed plug for relief valve cavity

POWER PACKS MICRO speaking code

A 24DC	R5	U	X	X	X	1,2R
Cavity 2	Cavity 3	Cavity 4	Cavity 5	Cavity 7	Cavity 8	Tank & mounting style

Hydraulic valves cavity 2-3-4

code	description
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.
M	NO 2/2 way double poppet valve + emerg.
E	lever operated 2/2 valve
EM	lever operated 2/2 valve 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"BSP exit port
N	open plug with 1/4"BSP exit port
P	plug passing through 1/4"BSP exit port
L	basic plug
J	check valve
JF	check valve with 1/4"BSP exit port

code	description (M4 manifolds only)
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

code	description
F*	pressure comp. flow control valve (*=l/min)
R*	adj. pressure comp. flow control valve (*=l/min)
S	adjustable flow control valve
Z	2 way emergency button
AR	NC 2/2 way poppet valve reverse flow
BR	NC 2/2 way poppet v. reverse flow + emer.
CR	NO 2/2 way poppet v. reverse flow + emer.
D	NC 2/2 way double poppet valve + emerg.
P*	proportional relief valve (*= bar max)
G	closed plug
H	closed plug with 1/4"BSP exit port
N	open plug with 1/4"BSP exit port
P	plug passing through 1/4"BSP exit port
L	basic plug
J	check valve

code	description (MR manifolds only)
DM_*	relief valve P (*= bar max)
XM	closed plug for relief valve cavity

code	description (MR manifolds)
MG	closed plug
JP	check valve 5/8-18UNF poppet type

Hydraulic valves cavity 5-7-8

code	description
1(04)	1 l/min pressure comp. flow control
1,5(04)	1,5 l/min press. comp. flow control
2(04)	2 l/min pressure comp. flow control
3(04)	3 l/min pressure comp. flow control
5(04)	5 l/min pressure comp. flow control
7(04)	7 l/min pressure comp. flow control
10(04)	10 l/min pressure comp. flow control
13(04)	13 l/min pressure comp. flow control
17(04)	17 l/min pressure comp. flow control
22(04)	22 l/min pressure comp. flow control
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 ctrl
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
TADPH00001	Plastic pipe 90 degrees elbow 1/4 BSPP 126mm
TADPH00002	Plastic pipe 90 degrees elbow 1/4 BSPP 150 mm
TADPH00003	Plastic pipe 90 degrees elbow 1/4 BSPP 207mm

Tanks & mounting style

code	description
0,4R	0,4l cylindrical plastic
0,7R	0,7l cylindrical plastic
1,2R	1,2l cylindrical plastic
1T	1l square plastic
1,5T	1,5l square plastic
2T	2l square plastic
2,7T	2,7l square plastic
3,5T	3,5l square plastic

code	description
0,7F	0,7l cylindrical steel
1,2F	1,2l cylindrical steel
1,7H	1,7l cylindrical steel
2,4H	2,4l cylindrical steel
F80000012	steel tank adapter - to be welded

Tanks options	
V	vertical mounting

POWER PACKS MICRO speaking code

M60403010 — External Manifolds

SD00A2 24DC — External Valves

E60543003 — Accessories

External Manifolds & Accessories

code	description
N50403007DN	base manifold for SD02 stackable valves
M60403004	23mm spacer subplate
M60403005	90° rotation manifold
M60403039	additional single acting manifold
M60403010	NG3 MICRO parallel block lateral ports
M60413001	NG3 MICRO manifold with p.o. check valves
PM04M	hand pump 4 cc/stroke
PM09M	hand pump 8,8 cc/stroke
M60403008E	PPM to PPC base converter

code	description
E60403006DN	base manifold for SD02 stackable valves
E60403008M	PPC to PPM base converter
E60403004	28mm spacer subplate
E60403004CV	28mm spacer subplate + check valve
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 valves
E60403020	spin-on return line filter manifold
E60403025	pressure line filter manifold
PM04	hand pump 4 cc/stroke
PM09	hand pump 8,8 cc/stroke
E60403030	SAE08 2-way cartridge manifold block
E60403031	SAE08 3-way cartridge manifold block

Manifold blocks option	
US	SAE06 exit ports for North America market

code	description
MIR6360	pressure gauge 60bar
MIR63160	pressure gauge 160bar
MIR63250	pressure gauge 250bar
MIR63315	pressure gauge 315bar
PSL01S0100	pressure switch 10÷100bar
PSL01S0300	pressure switch 50÷300bar
PSH01S0100	pressure switch 10÷100bar high performance
PSH01S0300	pressure switch 50÷300bar high performance

code	description
P0201	remote 2 buttons control box
P0202	remote 4 buttons control box
VPC00	PWM driver for proportional valves
E60543003	foot mounting support PPM

code	description
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

External Valves

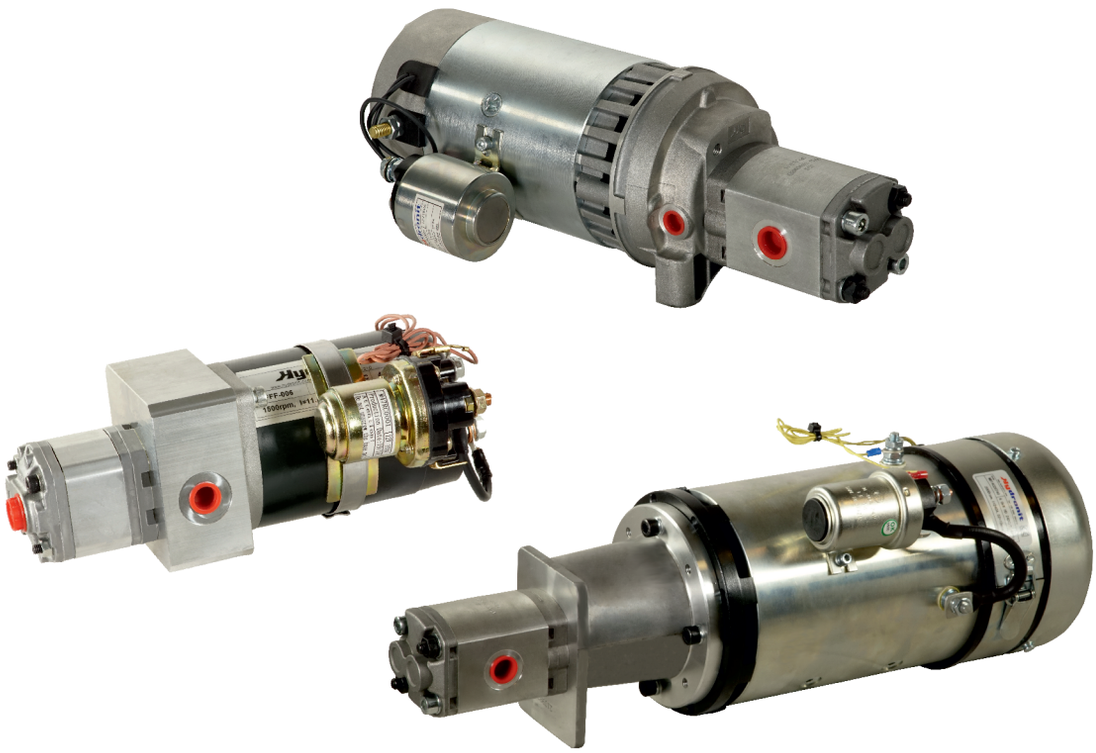
code	description
SD00A11C	NG3 MICRO directional valve 4/2
SD00A2	NG3 MICRO directional valve 4/3 center P to T
SD00B2	NG3 MICRO directional valve 4/3 closed center
SD00C2	NG3 MICRO directional valve 4/3 H center
SD00E2	NG3 MICRO directional valve 4/3 center A-B › T
SD02C2RP	stackable directional valve 4/3 H center + p. o. check valves
SD02E2RP	stackable directional valve 4/3 center A-B to T + p. o. check valves
SD02A2TP	stackable dir. v. 4/3 center P to T + cav. SAE08 for additional valves
SD02B2TP	stackable dir. v. 4/3 closed center + cav. SAE08 for additional valves
SD02C2TP	stackable dir. v. 4/3 H center + cav. SAE08 for additional valves
SD02E2TP	stackable dir. v. 4/3 center A-B to T + SAE08 for additional valves

code	description
SD03A11C	NG6 (cetop3) directional valve 4/2
SD03A2	NG6 (cetop3) 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

code	description
HD03A1	NG6 (cetop3) manual directional valve spring centred P to T
HD03A2	NG6 (cetop3) manual directional valve spring centred closed centre
HD03A3	NG6 (cetop3) manual directional valve spring centred H centre
HD03A4	NG6 (cetop3) manual directional valve spring centred A-B to T
HD03D1	NG6 (cetop3) manual directional valve with detent, centre P to T
HD03D2	NG6 (cetop3) manual directional valve with detent, closed centre
HD03D3	NG6 (cetop3) manual directional valve with detent, H centre
HD03D4	NG6 (cetop3) manual directional valve with detent, centre A-B to T
E60424001	NG6 (cetop3) sandwich type modular relief valve on A & B
E60424002	NG6 (cetop3) sandwich type modular relief valve on A
E60424003	NG6 (cetop3) sandwich type modular relief valve on B
E60433001	NG6 (cetop3) sandwich type modular throttle valve on A & B
E60433002	NG6 (cetop3) sandwich type modular throttle valve on A
E60433003	NG6 (cetop3) sandwich type modular throttle valve on B
E60453001	NG6 (cetop3) sandwich type modular overcentre valve on A & B
E60483001	NG6 (cetop3) sandwich type pressure reducing valve on P
E60483002	NG6 (cetop3) sandwich type pressure reducing valve on A
E60483003	NG6 (cetop3) sandwich type pressure reducing valve on B

Solenoid valves coils voltages	
12DC	12V direct current
24DC	24V direct current
24AC	24V alternate current 50 or 60Hz
48DC	24V direct current
115AC	115V alternate current 50 or 60Hz
230AC	230V alternate current 50 or 60Hz

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



- **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 switch, thermal protection, foot mounting support

DC Bull series

Hydraulic Electropumps

ELECTROPUMPS BULL 80 speaking code

EPB80 — Electropump Bull Series 80

0,3 24DC_T/S100 — DC Electric Motor

KM0,4 — Gear Pump

E60543003 — Accessories

DC Motors

0,15 12DC_T	12VDC 150W + thermal prot.
0,15 24DC_T	24VDC 150W + thermal prot.
0,3 12DC_T	12VDC 300W + thermal prot.
0,3 24DC_T	24VDC 300W + thermal prot.
0,5 12DC_T	12VDC 500W + thermal prot.
0,5 24DC_T	24VDC 500W + thermal prot.
0,8 12DC_T	12VDC 800W + thermal prot.
0,8 24DC_T	24VDC 800W + thermal prot.

DC Motors Options

/S100	starter switch
/R100	reversible starter switch

G Series Gear Pumps

GM0,1	0,19 cc/rev gr0
GM0,2	0,26 cc/rev gr0
GM0,4	0,38 cc/rev gr0
GM0,6	0,64 cc/rev gr0

K Series Gear Pumps

KM0,2	0,26 cc/rev gr0
KM0,4	0,38 cc/rev gr0
KM0,6	0,64 cc/rev gr0
KM0,9	0,88 cc/rev gr0
KM1,3	1,25 cc/rev gr0
KM1,5	1,54 cc/rev gr0

H Series Gear Pumps

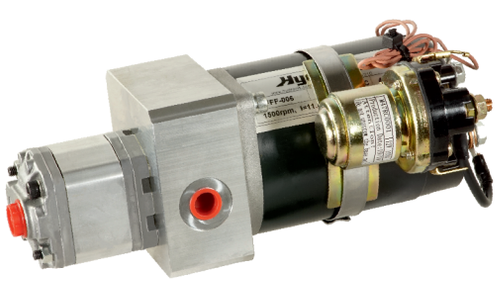
HM0,1	0,19 cc/rev gr0
HM0,2	0,26 cc/rev gr0
HM0,4	0,4 cc/rev gr0
HM0,6	0,63 cc/rev gr0
HM0,8	0,8 cc/rev gr0
HM1,2	1,2 cc/rev gr0
HM1,5	1,5 cc/rev gr0

R Series Gear Pumps

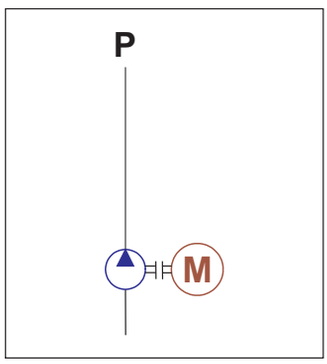
RM0,3	0,32 cc/rev gr0
RM0,5	0,49 cc/rev gr0
RM0,7	0,64 cc/rev gr0
RM0,9	0,88 cc/rev gr0
RM1,3	1,25 cc/rev gr0
RM1,5	1,54 cc/rev gr0

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
P0201	wired remote control 2 buttons
P0202	wired remote control 4 buttons
E60543003	foot mounting support
VMDC20**	direct acting relief valve
VUR01C	in-line check valve 1/4 BSPP
VUR02C	in-line check valve 3/8 BSPP
VURSAE06C	in-line check 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



Reference hydraulic scheme



ELECTROPUMPS BULL 114-125 speaking code

EPB114 — **2,2 24DC_T/S150** — **K1,2** — **E60543006**

Electropump Bull Series 114-125

DC Electric Motor

DC Motors

1,6 12DC_T	12VDC 1600W + thermal prot.
1,6 12DC_FE	12VDC 1600W with cooling fan + thermal prot.
2,1 12DC_T	12VDC 2100W + thermal prot.
2,1 12DC_FE	12VDC 2100W with cooling fan + thermal prot.
2,2 24DC_T	24VDC 2200W + thermal prot.
2,2 24DC_FE	24VDC 2200W with cooling fan + thermal prot.
3 24DC_T	24VDC 3000W + thermal prot.
3 24DC_FE	24VDC 3000W with cooling fan + thermal prot.
4 12DC_T	24VDC 4000W + thermal prot.
4 12DC_FE	24VDC 4000W with cooling fan + thermal prot.

DC Motors Options

/S150	starter switch

Gear Pump

Gear Pumps

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

Gear Pumps Lateral Ports

KL0,9	0,89 cc/rev gr1
KL1,2	1,27 cc/rev gr1
KL1,6	1,66 cc/rev gr1
KL2,1	2,17 cc/rev gr1
KL2,7	2,8 cc/rev gr1
KL3,2	3,3 cc/rev gr1
KL3,7	3,8 cc/rev gr1
KL4,2	4,3 cc/rev gr1
KL5,0	5,1 cc/rev gr1
KL6,0	6,0 cc/rev gr1
KL7,9	7,9 cc/rev gr1

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

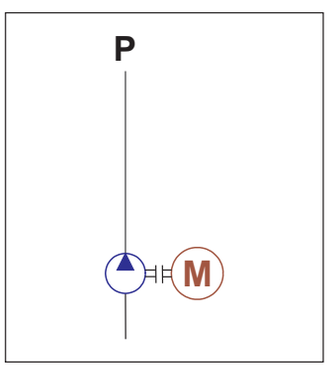
S2,2	2,2 cc/rev low noise gr1
S3,2	3,2 cc/rev low noise gr1
S4,3	4,3 cc/rev low noise gr1
S6,4	6,4 cc/rev low noise gr1
S8,3	8,3 cc/rev low noise gr1
S10	10,2 cc/rev low noise gr1
S13	12,9 cc/rev low noise gr1

Accessories

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
P0201	wired remote control 2 buttons
P0202	wired remote control 4 buttons
E60543006	foot mounting support
VMDC20**	direct acting relief valve
VUR01C	in-line check valve 1/4 BSPP
VUR02C	in-line check valve 3/8 BSPP
VURSAE06C	in-line check 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

Reference hydraulic scheme



ELECTROPUMPS BULL 151 speaking code

EPB151 — Electropump Bull Series 151

3HD 24DC_T/S200 — DC Electric Motor

KL5,0 — Gear Pump

P0201 — Accessories

DC Motors

2,5HD 12DC_T	12VDC 1600W + thermal prot.
3HD 24DC_T	24VDC 2100W + thermal prot.
4HD 24DC_T	24VDC 2200W + thermal prot.

DC Motors Options

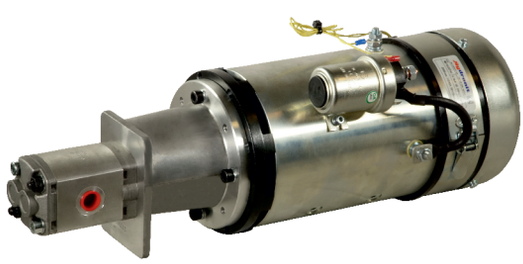
/S200	starter switch

Gear Pumps Lateral Ports

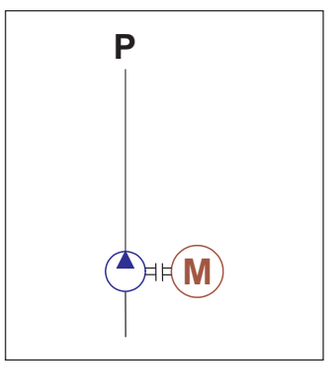
KL0,9	0,89 cc/rev gr1
KL1,2	1,27 cc/rev gr1
KL1,6	1,66 cc/rev gr1
KL2,1	2,17 cc/rev gr1
KL2,7	2,8 cc/rev gr1
KL3,2	3,3 cc/rev gr1
KL3,7	3,8 cc/rev gr1
KL4,2	4,3 cc/rev gr1
KL5,0	5,1 cc/rev gr1
KL6,0	6,0 cc/rev gr1
KL7,9	7,9 cc/rev gr1

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
P0201	wired remote control 2 buttons
P0202	wired remote control 4 buttons
VMDC20**	direct acting relief valve
VUR01C	in-line check valve 1/4 BSPP
VUR02C	in-line check valve 3/8 BSPP
VURSAE06C	in-line check 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



Reference hydraulic scheme



BASIC INSTRUCTIONS

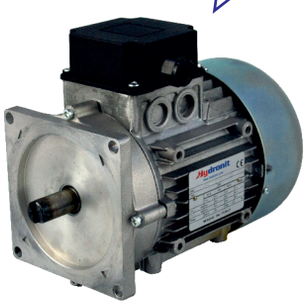
General application for Hydronit Power Units

Installation location	Any. Take care of the correct positioning of the suction filter and pipe to avoid negative pressure at the pump inlet
Environment 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
Commissioning instructions	• After connecting the electric motor and the suction pipe, check the direction of rotation of the pump with pulses of 1÷2 sec. For standard pumps the direction of motor rotation must be clockwise as viewed from the side of the motor fan. • Flush the oil at atmospheric pressure in order to remove any impurity and air bubbles from the circuit. • Connect all devices to the system and gradually increase oil pressure. • Check the oil level and, if necessary, fill up to the maximum level. • To ensure a correct and longlasting operation, check oil after 100h from commissioning and replace every year or 300h of use.
Recommended torques	• M5: 4÷5,5 Nm (35÷49 lbf·in) • M5 for plastic tank: 0,3÷0,4 Nm (2,66÷3,54 lbf·in) • M5 for pumps gr.0,5: 8÷9,5 Nm (71÷84 lbf·in) • M6: 8÷10 Nm (71÷89 lbf·in) • M6 for E10103010 flanges: 6 Nm (53,1 lbf·in) • M8: 16÷20 Nm (142÷177 lbf·in) • M8 for pumps «G» and «K» type gr.1: 21÷25 Nm (186÷221 lbf·in) • M8 for pumps «H» type gr. 1: 31÷35 Nm (274÷310 lbf·in) • M10: 30÷40 Nm (266÷354 lbf·in) • 3/8-16 UNC: 30÷40 Nm (266÷354 lbf·in) • 5/16-24 UNF: 16÷20 Nm (142÷177 lbf·in) • Valves and plugs 1/8 BSP: 12÷15 Nm (106÷133 lbf·in) • Valves and plugs 1/4 BSP (ISO 228): 15÷20 Nm (133÷177 lbf·in) • Valves and plugs 3/4-16 UNF: 25÷30 Nm (221÷266 lbf·in) • Valves and plugs M18x1,5: 30÷35 Nm (266÷310 lbf·in) • Relief valves M20x1,5: 50 Nm (443 lbf·in) • Metal tank's plugs 1/2 BSP (ISO 228): Max 10 Nm (89 lbf·in) • Plastic tank's plugs 1/2 BSP (ISO228): Max 10 Nm (89 lbf·in) • Relief valves M14x1: 15÷25 Nm (133÷221 lbf·in) • Valves and plugs 9/16-18 UNF: 6÷20 Nm (53÷177 lbf·in) • Valves and plugs 5/8-18 UNF: 15÷25 Nm (133÷177 lbf·in) • Valves 7/8-14 UNF: 45÷55 Nm (398÷487 lbf·in) • Steel clamp band for plastic tank neck: 2,1÷2,5 Nm (18,59÷ 22,13 lbf·in) • Relay's electric poles 5/16-24 UNF: 5 Nm (44 lbf·in)
Fluid contamination	Must be better than class 19/17/14 ISO 4406 *
Ambient relative humidity	30% ÷ 60%

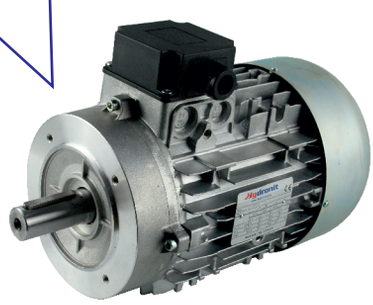
* The three ISO 4406 numbers mean the number of particles/ml:
19: particles > 4µm = 2500÷5000 ; 17: particles > 6µm = 640÷1300 ;14: particles > 14µm = 80÷160.

AC & DC ELECTRIC MOTORS

Integral AC motors: the engineered solution for compact and optimised power units from 0,25 to 7,5 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 you to adopt these advanced motors because of their advantages over standard B14 AC/IEC motors and because they are **designed specifically** for our hydraulic mini power packs, offering a **higher power density** and **higher starting torque** than market standard motors. These motors are intended for intermittent duty (S3 40%), which is the standard 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, and are not suggested for «start under load» applications, unless proper techniques and precautions are taken.



B14 IEC and Nema standard AC motors: commodity motors easily available in every market from 0,18 to 7,5 kW, single or three phase. These motors are normally procured and mounted by the customer himself. Hydronit provides adaptor flanges and two piece coupling for frame sizes: 63, 71, 80, 90, 100 and 112 (IEC) + 56C and 184TC (Nema).



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

Frame 114 DC motors: the most popular choice. Power up to 2,1kW 12VDC, 2,2kW 24VDC and 2,2kW 48VDC. All motors have thermal protector switch as standard.

Q & A

Are Integral AC motors compliant with the European Union Minimum Energy Performance Standards?
Hydronit AC integral motors are manufactured using the best technologies currently available and are specifically designed for mini power pack duties, typically intermittent ones. Hydronit motors have higher power density, lower weight and are cost effective, compared with standard 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 (S1) applications with 3 phase supply voltage, IE4 motors (IEC 60034-30) must be applied. Ask our sales office.

Are there special requirements to mount IEC B14 or NEMA motors?
No special tools are required. Please carefully follow motor side coupling mounting dimension tolerance as 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. Alternatively, you can overcome the problem with the startup valve SUV. Ask our technical office.

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 or Gpm, working pressure in bar or PSI and the duty charge. Then, following the diagrams in following pages and relevant instructions, a proper motor/pump combination can be selected.

DC MOTOR CHOICE

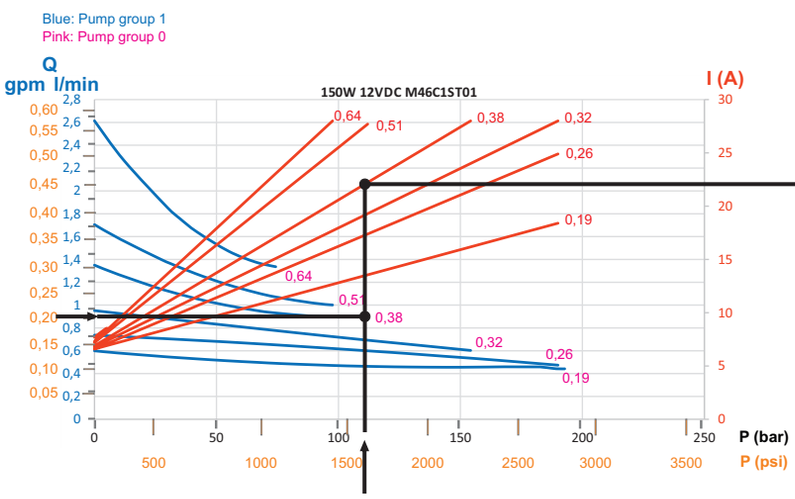
DC motors selection

DC motor selection is a critical step for the proper power pack definition. Required Pressure, Required Flow, Service Factor (or Duty Cycle) should be known before starting the motor selection. Please note that DC motors speed is **not** constant and depends on torque.
Once you choose a motor, look at Motor-Pump Performance diagram if a pump displacement (blue curve) is available at the **intersection** of required pressure and flow values. On the relevant "I" axis (red curve) you obtain the current drawn. When the intersection point is not exactly on a pump curve, select a smaller pump . On Motor Ratings diagram you can easily obtain the maximum allowed Service Factor: S2, Short Time Duty (min); S3, Intermittent Periodic Duty (% of total cycle). If the obtained Service values are not sufficient to meet required performances, choose a higher power or heavier duty motor and repeat the calculation on the new motor curves.

Example:

an application requires the following data: flow = 4 l/min, max pressure = 195 bar, duty cycle is unknown.
- check on 1,6 Kw 12V DC motor diagram: the 1,66 cc pump curve meet the intersection of 4 liters/minutes and 195 bar
- choose from curves a 1,66 cm^3/rev pump. the corresponding "I" curve declares 200 A drawn current at 195 bar.
- project horizontally the current drawn to the Motor Rating diagram: the DC motor can work for maximum 3 min (S2) and 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.

Motor-Pump Performances

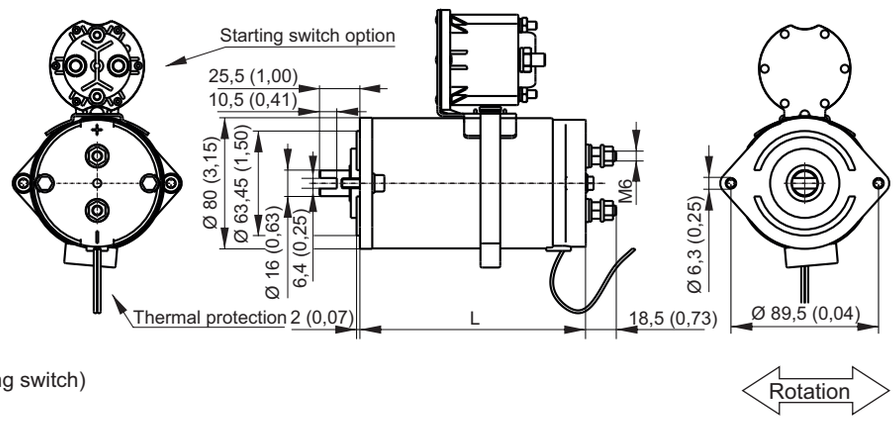


Motor Ratings

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 cooling fan and 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.
For environment with humidity over 80%, motors with optional IP67 protection index are available and recommended. Please ask our sales office. The thermal switch is set at 120°C.
The motors indicated above in particular operating cycles can reach temperatures of 100-110 °C on the outher part of the housing, it is recommended to use the special protective cover (MACVH00003) to prevent the motor from burning up.

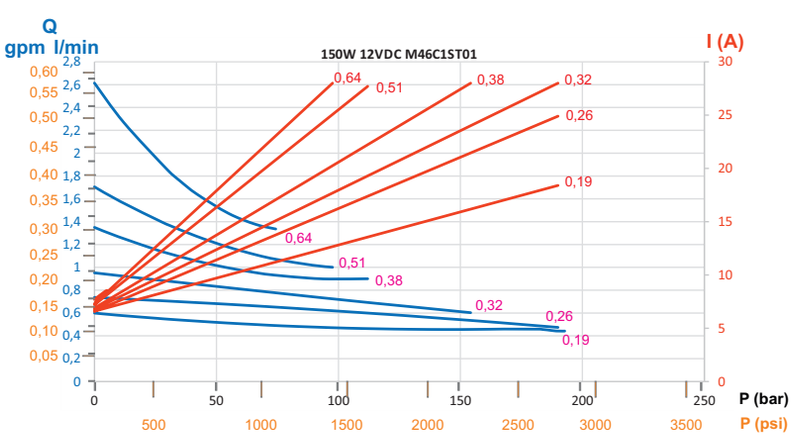
INTEGRAL DC MOTORS Ø80

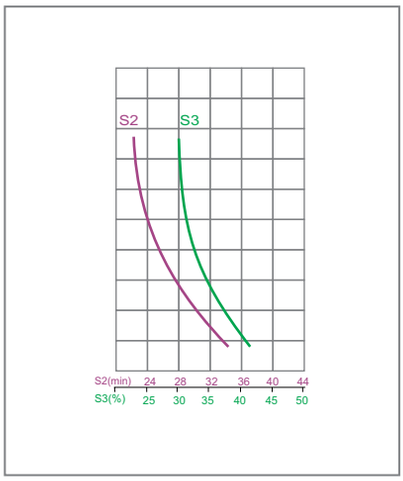


Permanent magnets
Protection degree: IP65
Insulation class: F
Weight 300W/500W/800W: 2,6 kg (without starting switch)
Weight 150W: 1,85 kg (without starting switch)
UL motors available on request

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
150W 48V DC + thermal protection	**0,15 48DC_T**	**M46C2ST01**	S2: 6 min S3: 20% ED	1650 rpm	12 A	108 mm
300W 12V DC + thermal protection	**0,3 12DC_T**	**M46C4ST03**	S2: 9 min S3: 18% ED	1800 rpm	10 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
300W 48V DC + thermal protection	**0,3 48DC_T**	**M46C4ST03**	S2: 6 min S3: 10% ED	1800 rpm	23 A	137 mm
500W 12V DC + thermal protection	**0,5 12DC_T**	**M46C1ST05**	S2: 5 min S3: 15% ED	2400 rpm	68 A	137 mm
500W 24V DC + thermal protection	**0,5 24DC_T**	**M46C2ST05**	S2: 5 min S3: 15% ED	2500 rpm	31 A	137 mm
500W 48V DC + thermal protection	**0,5 48DC_T**	**M46C4ST05**	S2: 6 min S3: 10% ED	2500 rpm	18 A	137 mm
800W 12V DC + thermal protection	**0,8 12DC_T**	**M46C1ST08**	S2: 3 min S3: 10% ED	2800 rpm	119 A	137 mm
800W 24V DC + thermal protection	**0,8 24DC_T**	**M46C2ST08**	S2: 3 min S3: 10% ED	3100 rpm	52 A	137 mm

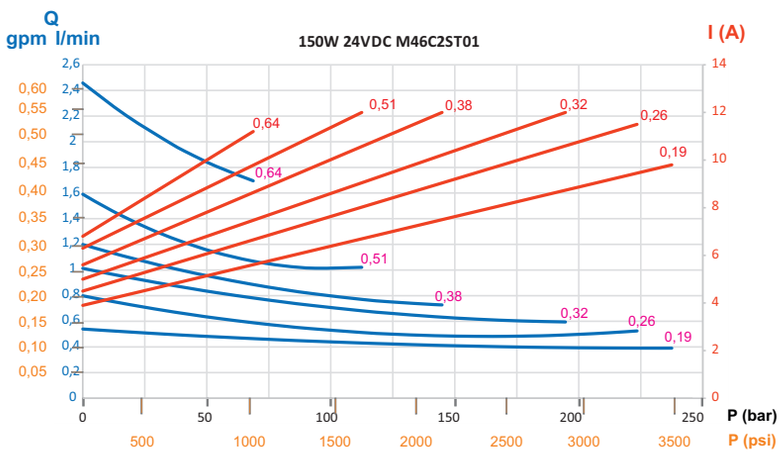


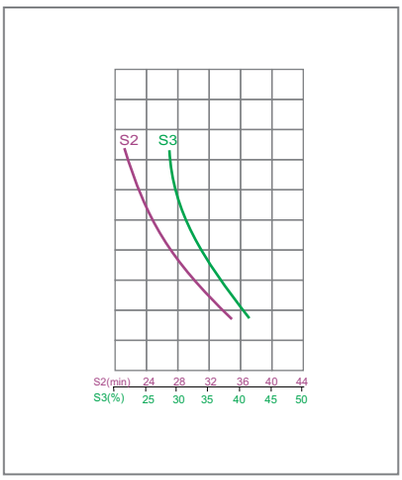


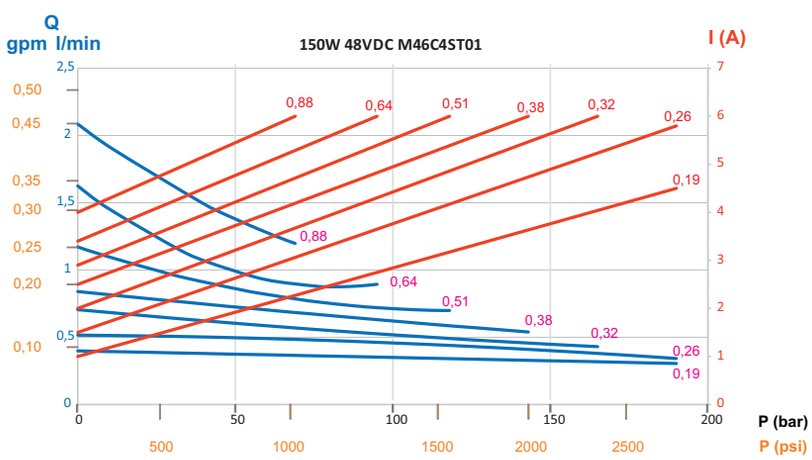
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

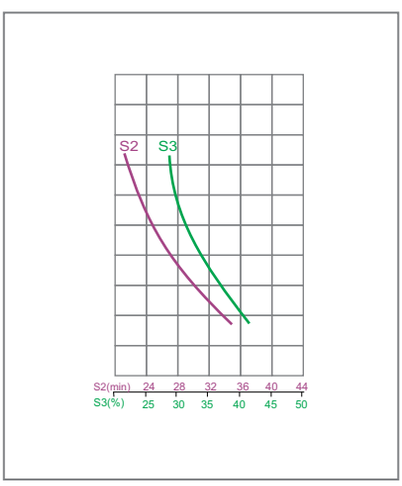
23-01

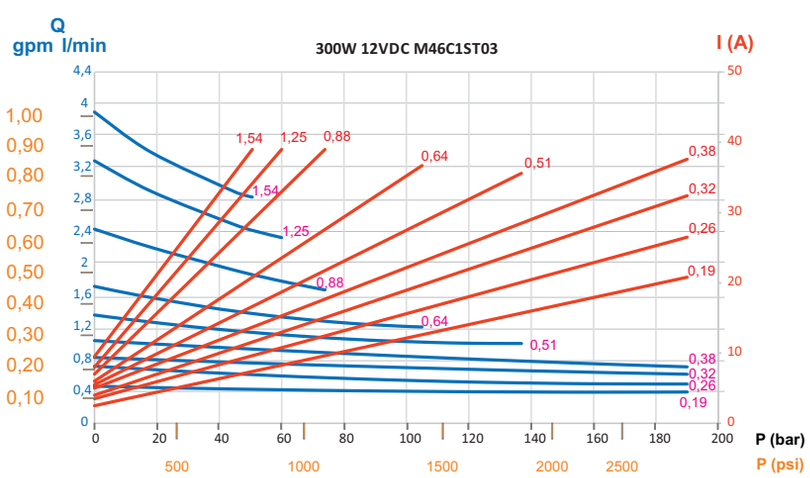
DC MOTORS Ø80 DIAGRAMS

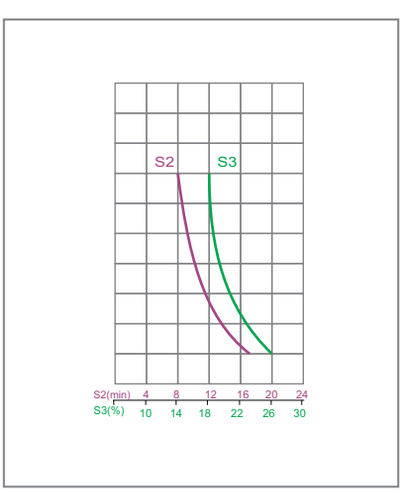






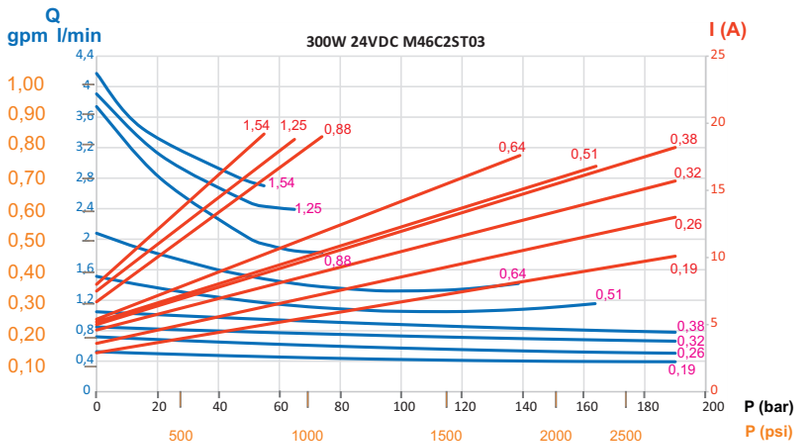


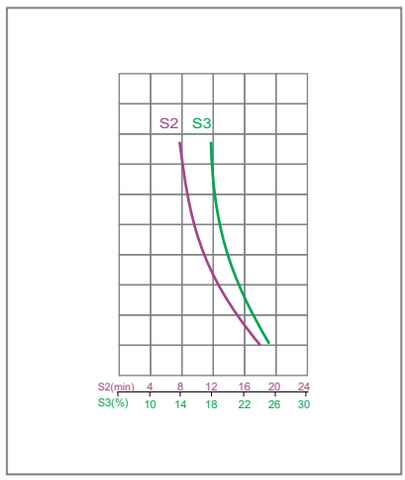


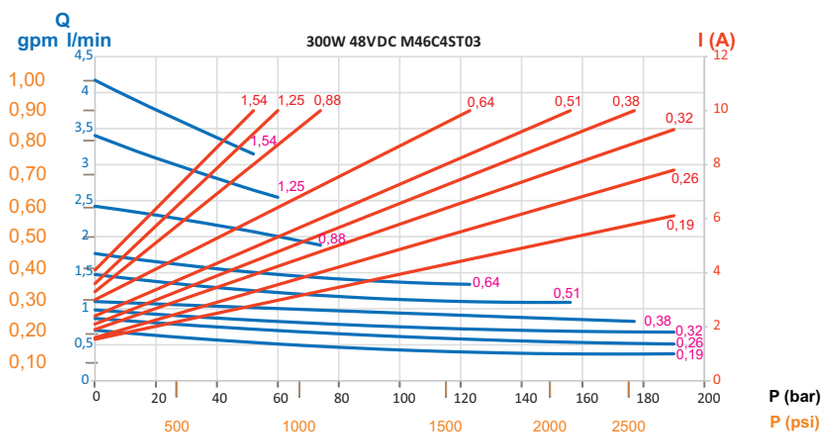


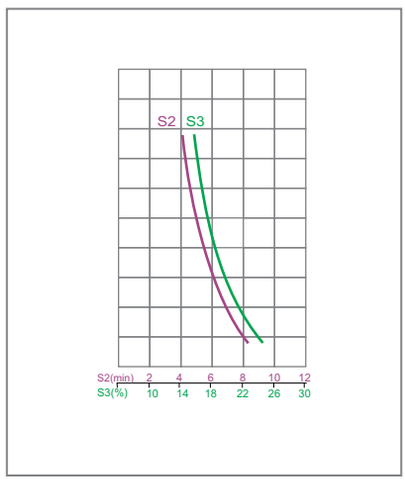
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

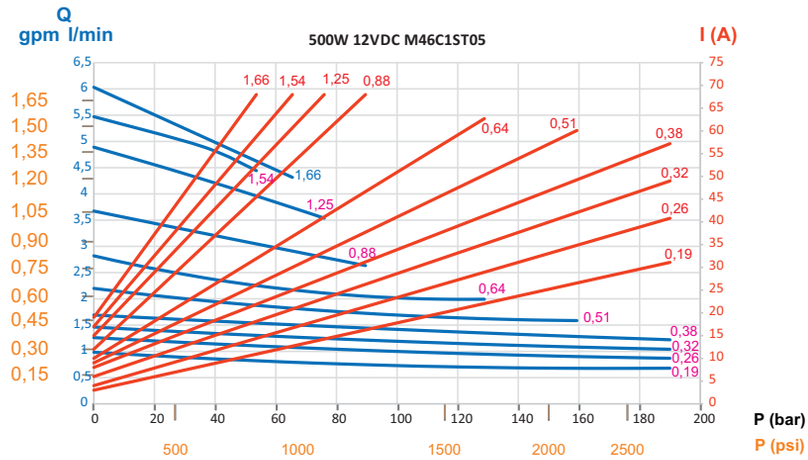
DC MOTORS Ø80 DIAGRAMS

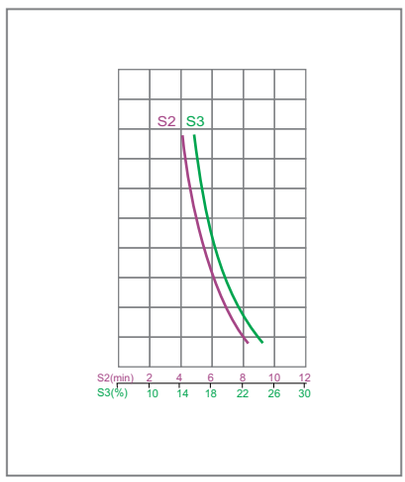






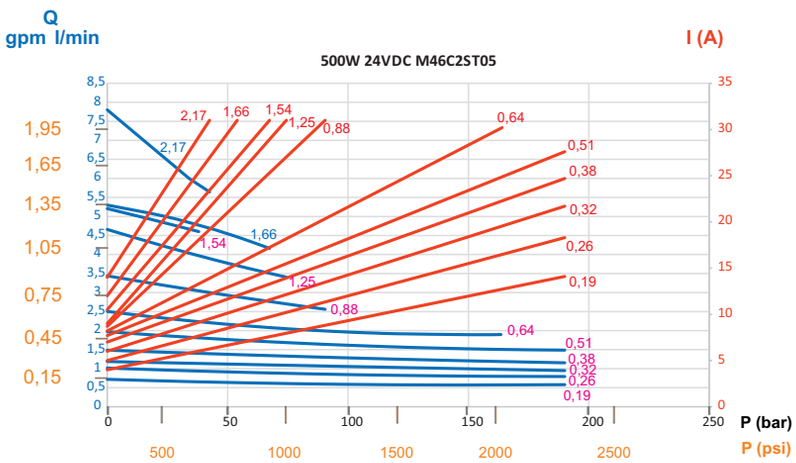


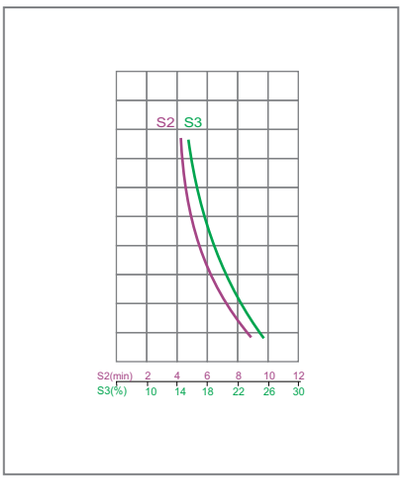


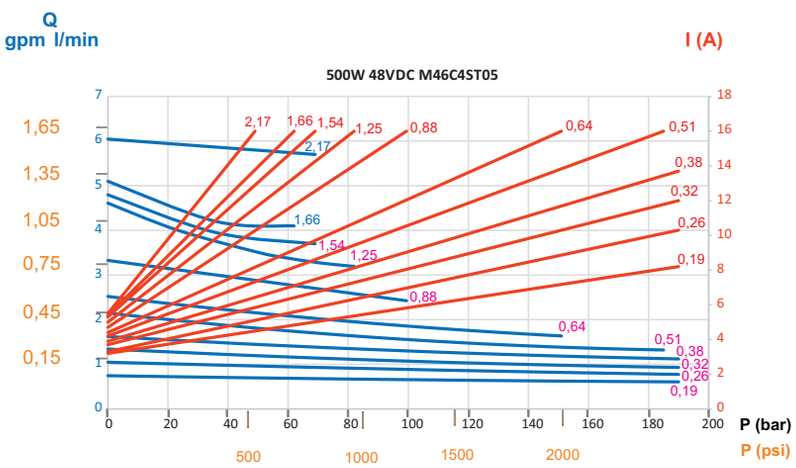


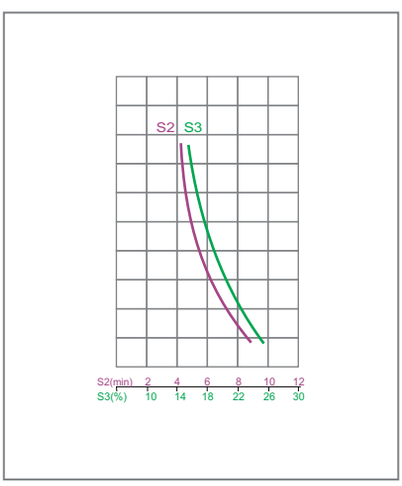
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

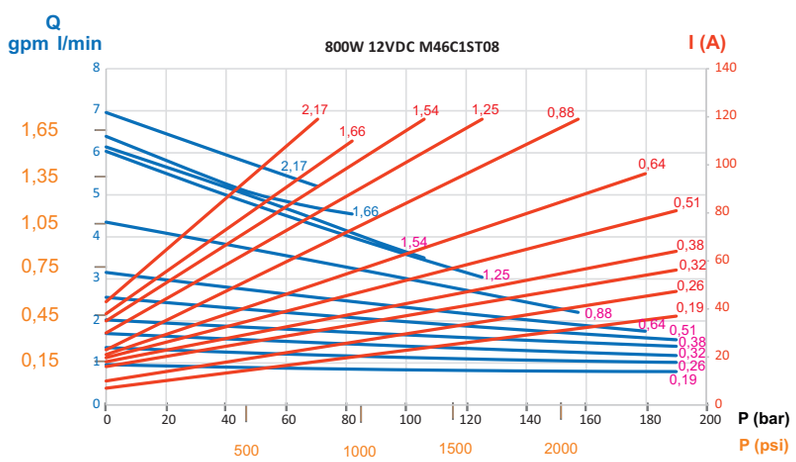
DC MOTORS Ø80 DIAGRAMS WITH PUMP GR.1

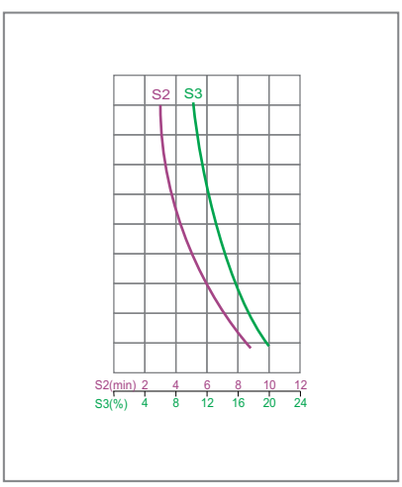






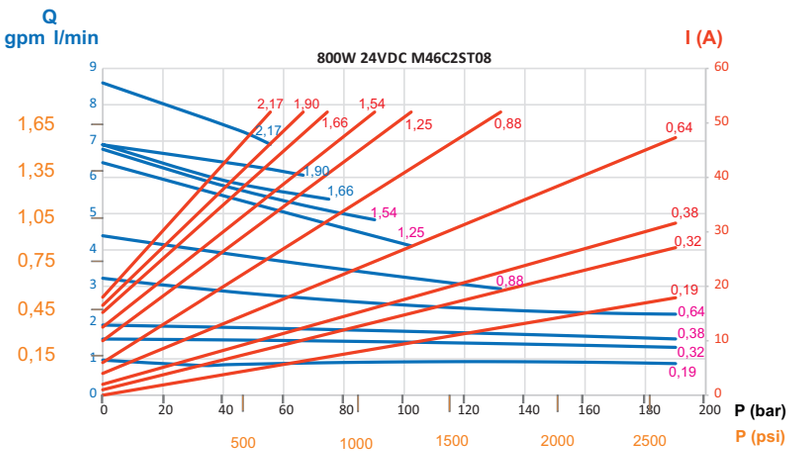


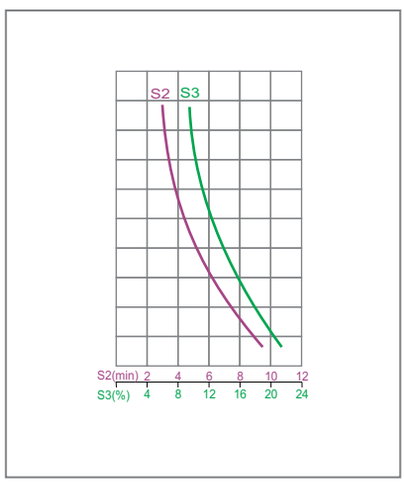




Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

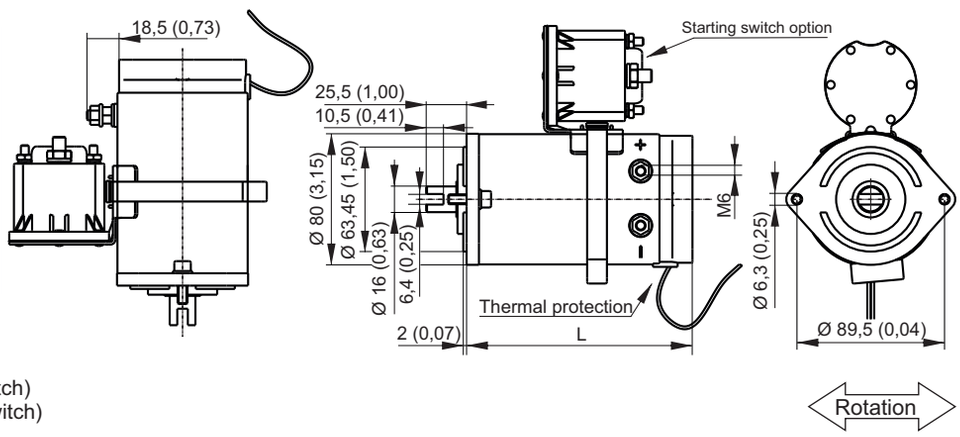
DC MOTORS Ø80 DIAGRAMS





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

INTEGRAL DC MOTORS Ø80

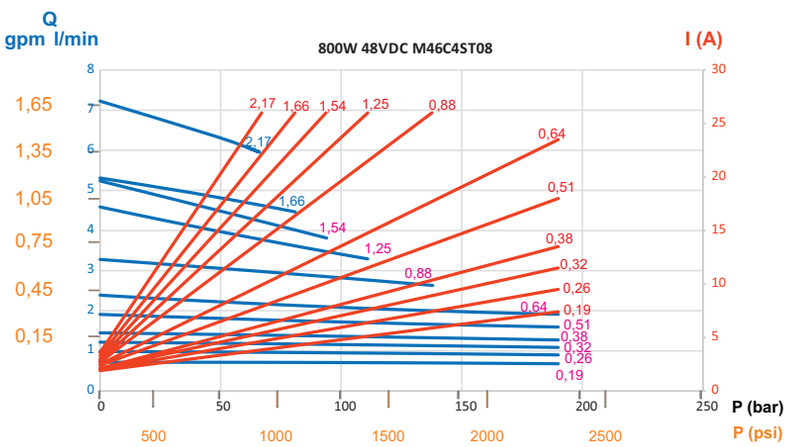


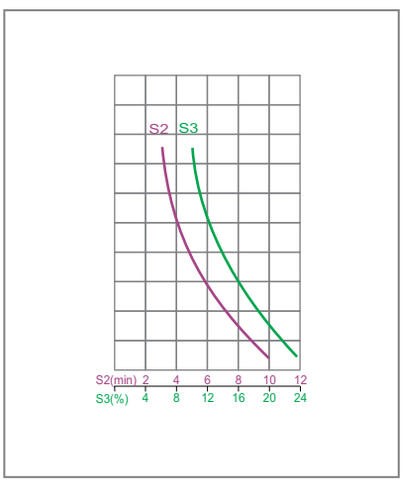
Permanent magnets
Protection degree: IP54
Insulation class: F
Weight 800W: 2,6 kg (without starting switch)
Weight 1200W: 3,7 kg (without starting switch)
UL motors available on request

RoHS COMPLIANT 2011/65/EU

Code

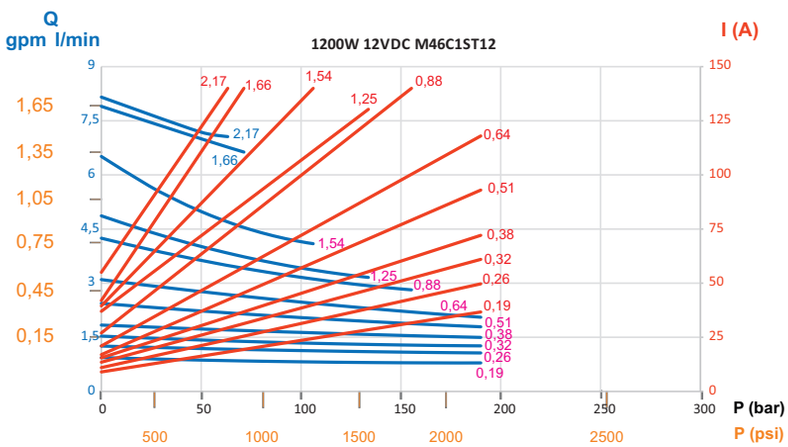
Description	Assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current	L
800W 48V DC + thermal protection	**0,8 48DC_T**	**M46C4ST08**	S2: 3 min S3: 10% ED	2900 rpm	26 A	187 mm
1200W 12V DC + thermal protection	**1,2 12DC_T**	**M46C1ST12**	S2: 1,5 min S3: 7% ED	3200 rpm	140 A	186 mm
1200W 24V DC + thermal protection	**1,2 24DC_T**	**M46C2ST12**	S2: 1,5 min S3: 7% ED	3200 rpm	70 A	186 mm

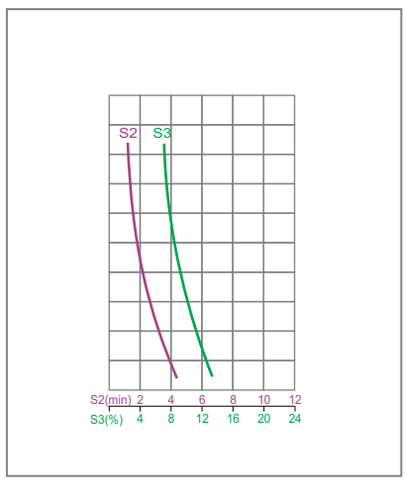


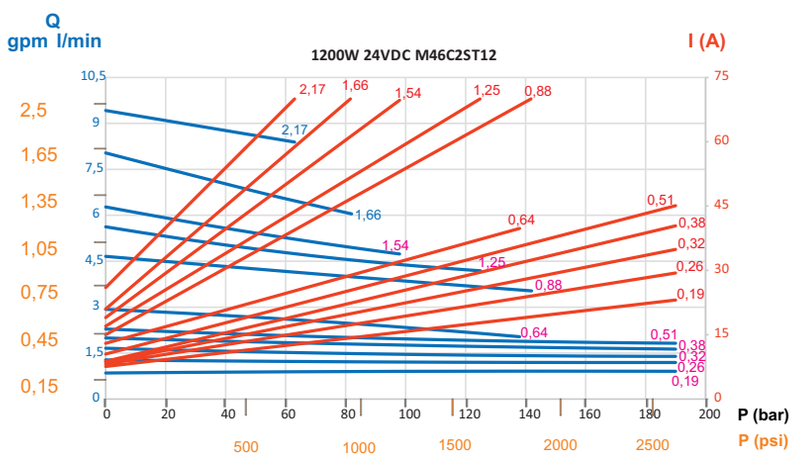


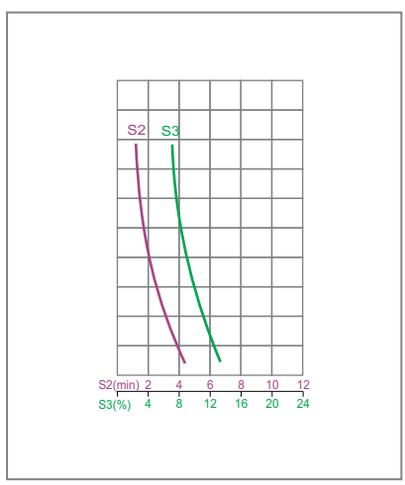
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

DC MOTORS Ø80 DIAGRAMS



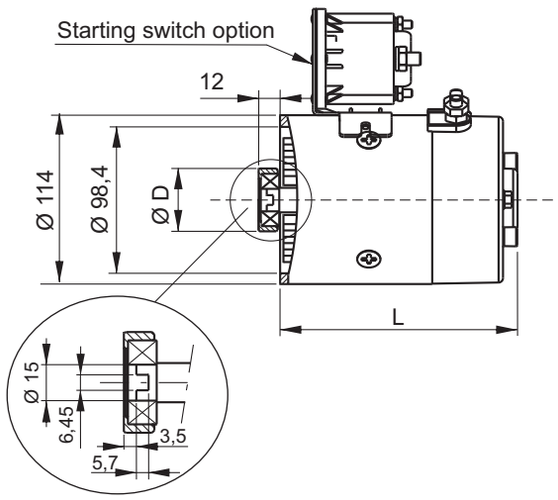


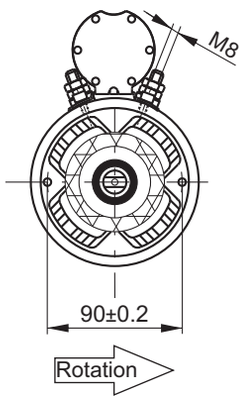




INTEGRAL DC MOTORS Ø114

Compound wound
Protection degree: IP54
Insulation class: F
Weight: 8,15 kg (without starting switch)
UL motors available on request





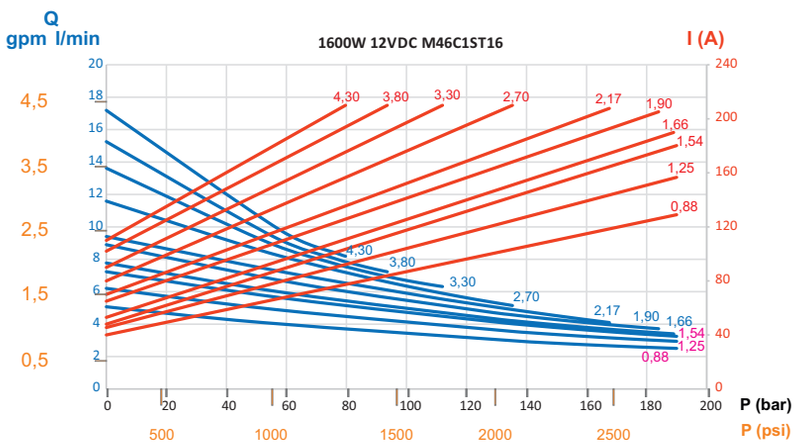
Code for PPC/SPU/EPB

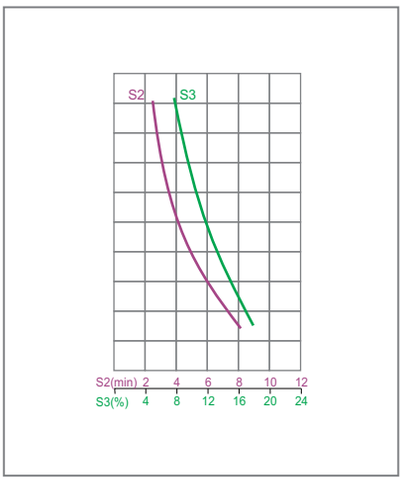
Description	Assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current	L	D
1600W 12V DC + thermal protection	**1,6 12DC_T**	**M46C1ST16**	S2: 3 min S3: 10% ED	2800 rpm	210 A	165 mm	42 mm
2100W 12V DC + thermal protection	**2,1 12DC_T**	**M46C1ST21**	S2: 2,5 min S3: 10% ED	2400 rpm	300 A	182 mm	42 mm
2200W 24V DC + thermal protection	**2,2 24DC_T**	**M46C2ST22**	S2: 2,5 min S3: 10% ED	2400 rpm	130 A	165 mm	42 mm
2200W 48V DC + thermal protection	**2,2 48DC_T**	**M46C4ST22**	S2: 3 min S3: 15% ED	3000 rpm	65 A	163 mm	42 mm

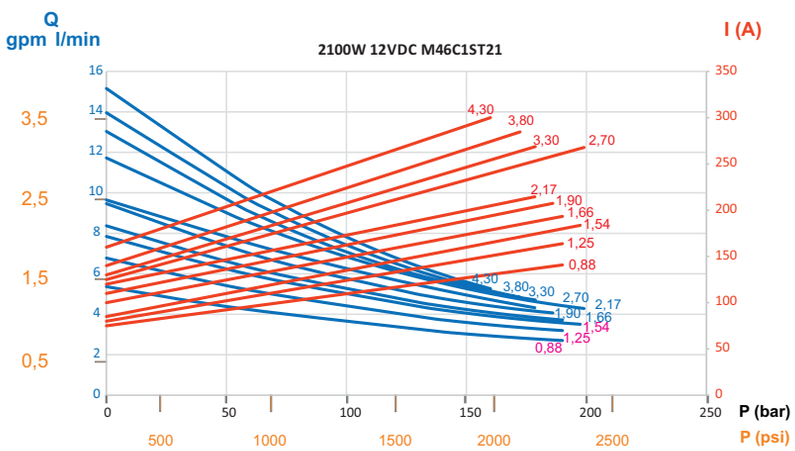
Code for PPM

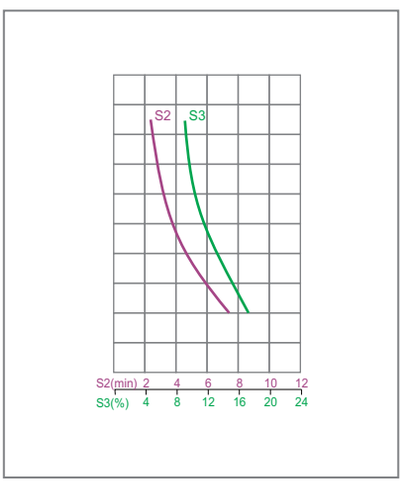
Description	Assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current	L	D
1600W 12V DC + thermal protection	**1,6 12DC_T**	**M46C1ST16M**	S2: 3 min S3: 10% ED	2800 rpm	210 A	165 mm	28 mm
2100W 12V DC + thermal protection	**2,1 12DC_T**	**M46C1ST21M**	S2: 2,5 min S3: 10% ED	2400 rpm	300 A	182 mm	28 mm
2200W 24V DC + thermal protection	**2,2 24DC_T**	**M46C2ST22M**	S2: 2,5 min S3: 10% ED	2400 rpm	130 A	165 mm	28 mm
2200W 48V DC + thermal protection	**2,2 48DC_T**	**M46C4ST22M**	S2: 3 min S3: 15% ED	3000 rpm	65 A	163 mm	28 mm

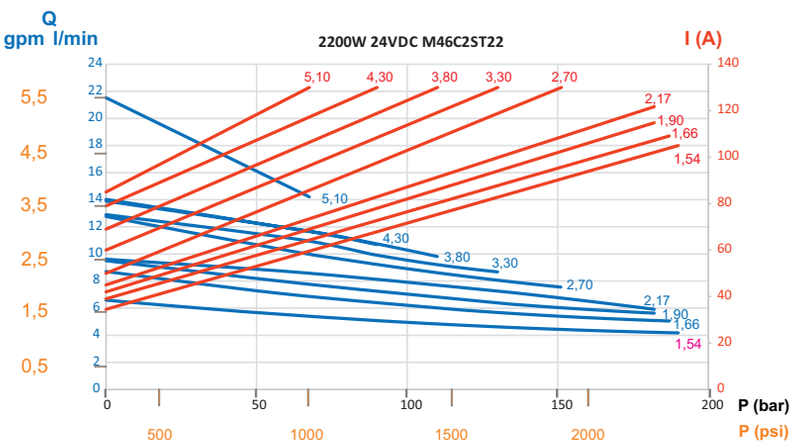
DC MOTORS Ø114 DIAGRAMS

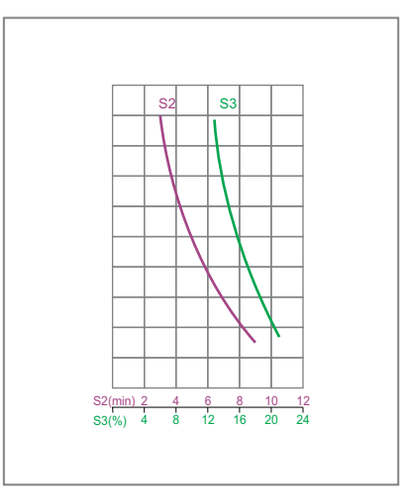






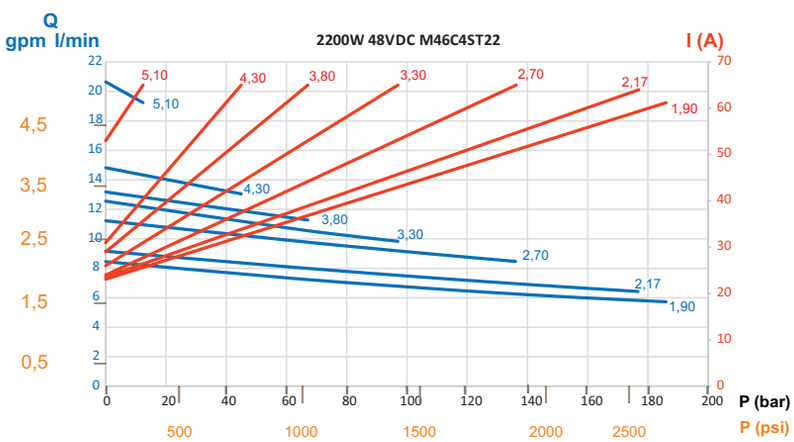


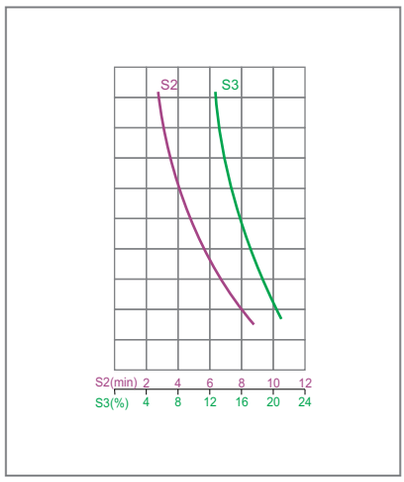




Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

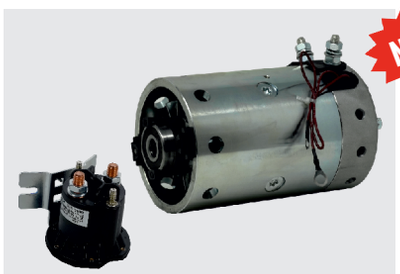
DC MOTORS Ø114 DIAGRAMS

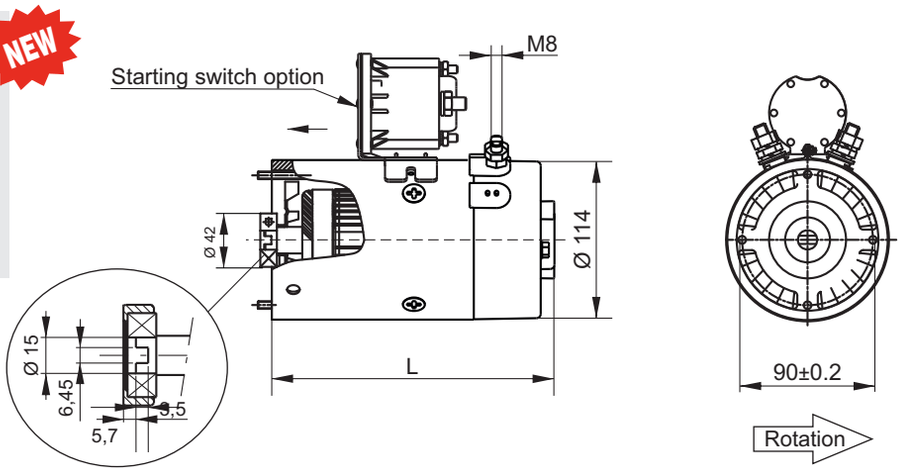




Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

INTEGRAL DC MOTORS Ø114 WITH INTEGRATED COOLING FAN





Compound wound
Protection degree: IP20
Insulation class: F
Weight: 8,0 kg (without starting switch)
UL motors available on request

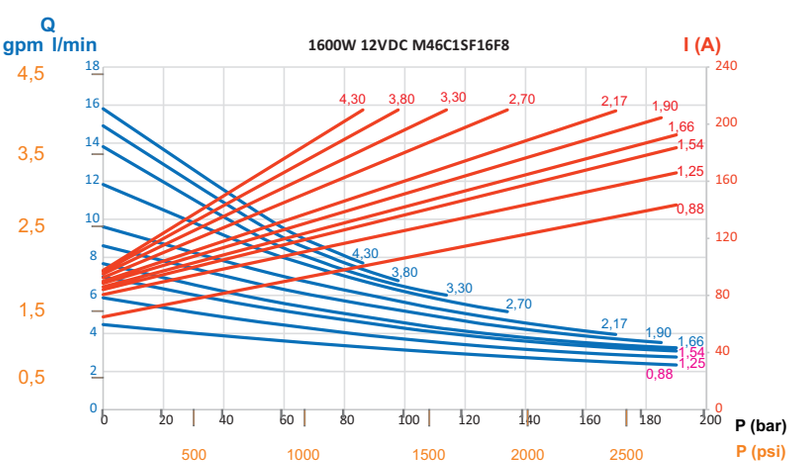
RoHS COMPLIANT 2011/65/EU

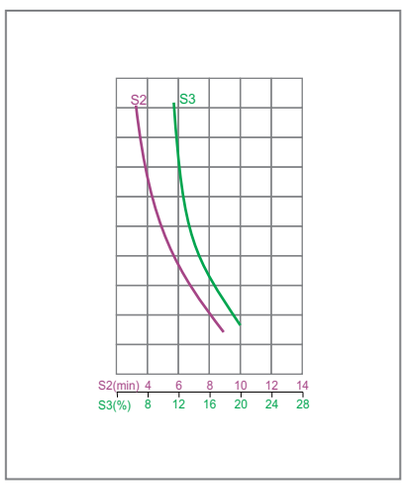
Code for PPC/SPU/EPB

Description	Assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current	L	D
1600W 12V DC fan cooled	**1,6 12DC_FC**	**M46C1SF16F8**	S2: 4 min S3: 10% ED	2800 rpm	210 A	188 mm	42 mm
2100W 12V DC fan cooled	**2,1 12DC_FC**	**M46C1SF21F8**	S2: 3,5 min S3: 10% ED	2400 rpm	300 A	204 mm	42 mm
2200W 24V DC fan cooled	**2,2 24DC_FC**	**M46C2SF22F8**	S2: 3,5 min S3: 10% ED	2400 rpm	130 A	188 mm	42 mm
2200W 48V DC fan cooled	**2,2 48DC_FC**	**M46C4SF22F8**	S2: 3,5 min S3: 15% ED	3000 rpm	65 A	188 mm	42 mm

Code for PPM

Description	Assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current	L	D
1600W 12V DC fan cooled	**1,6 12DC_FC**	**M46C1SF16MF8**	S2: 4 min S3: 10% ED	2800 rpm	210 A	188 mm	28 mm
2100W 12V DC fan cooled	**2,1 12DC_FC**	**M46C1SF21MF8**	S2: 3,5 min S3: 10% ED	2400 rpm	300 A	204 mm	28 mm
2200W 24V DC fan cooled	**2,2 24DC_FC**	**M46C2SF22MF8**	S2: 3,5 min S3: 10% ED	2400 rpm	130 A	188 mm	28 mm
2200W 48V DC fan cooled	**2,2 48DC_FC**	**M46C4SF22MF8**	S2: 3,5 min S3: 15% ED	3000 rpm	65 A	188 mm	28 mm

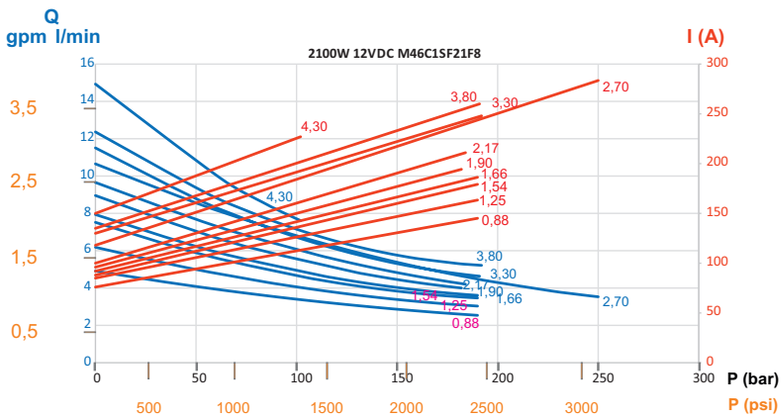


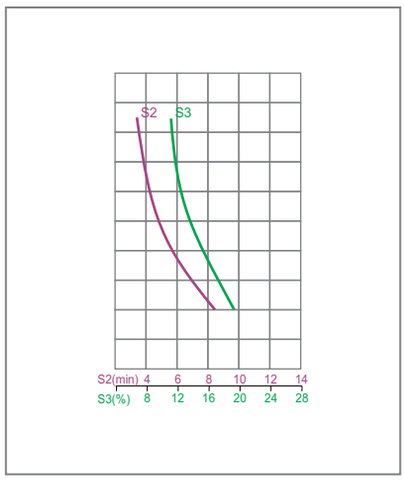


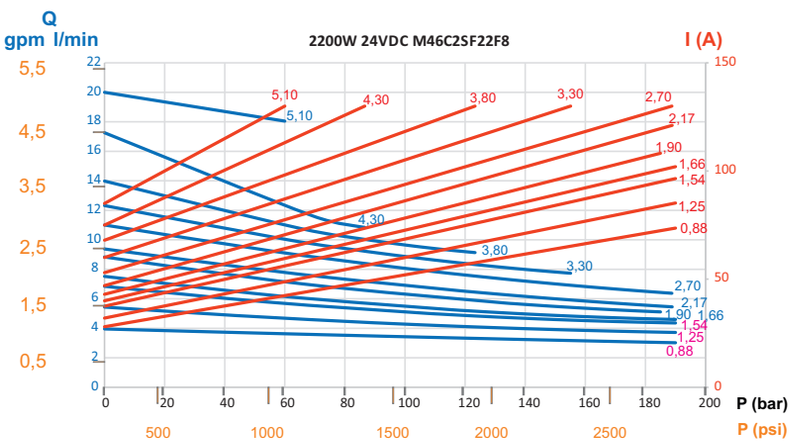
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

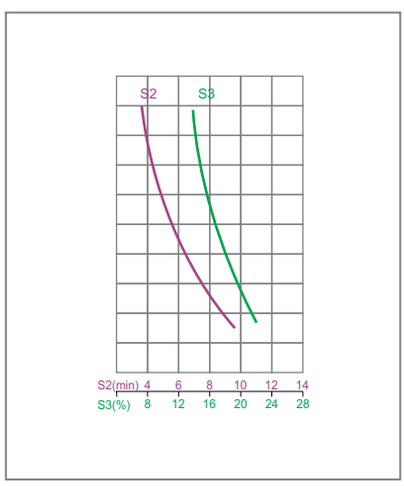
23-01

DC MOTORS Ø114 WITH COOLING FAN DIAGRAMS





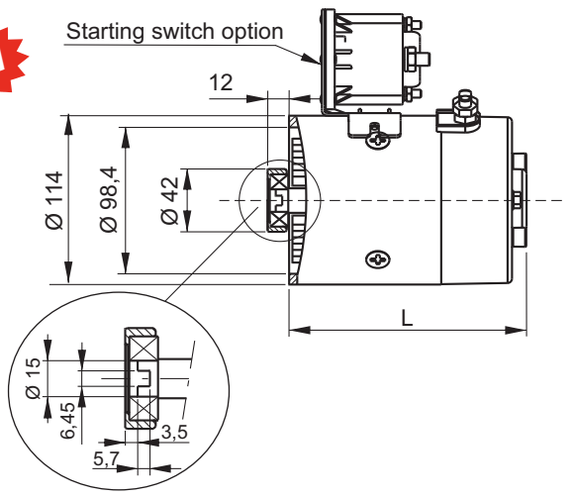


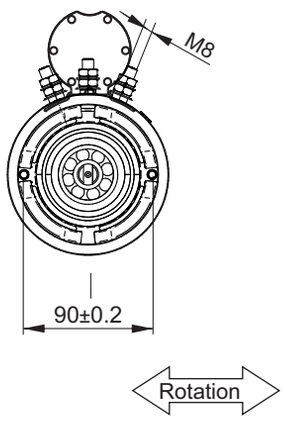


Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

INTEGRAL 3 POLES DC MOTORS Ø114 REVERSIBLE FOR PPC

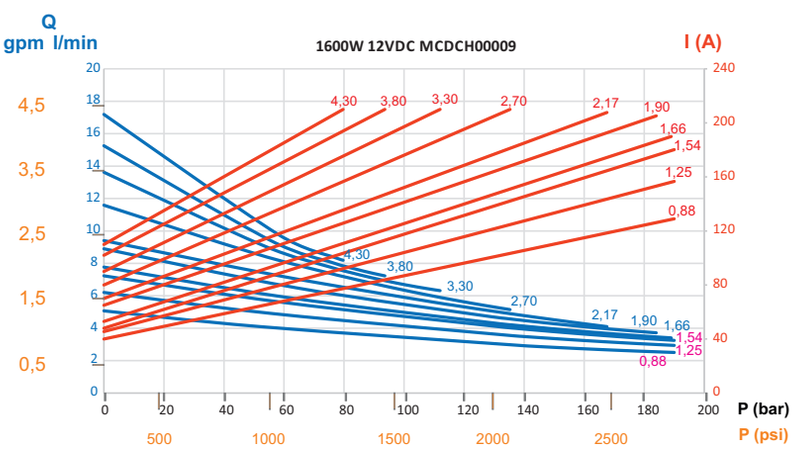
Compound wound
Protection degree: IP54
Insulation class: F
Weight: 8,15 kg (without starting switch)
UL motors available on request

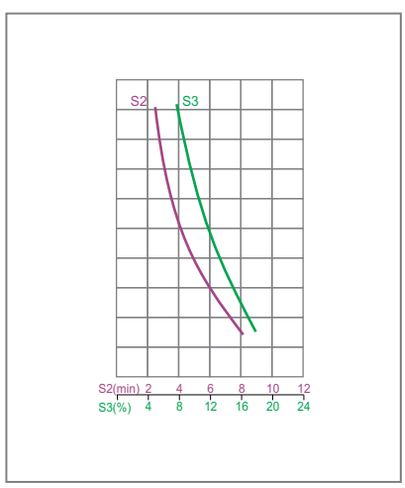


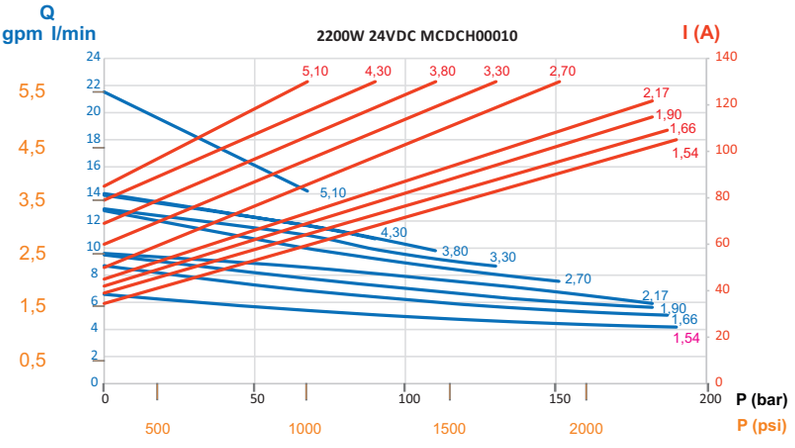


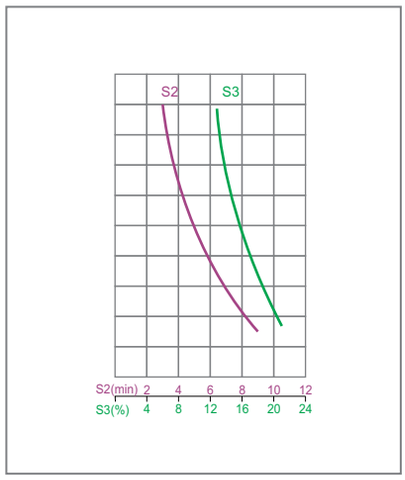
Code

Description	Assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current	L
1600W 12V DC 3 poles + thermal protection	**1,6 12DC_T_3**	**MCDCH00009**	S2: 2 min S3: 7.5% ED	2600 rpm	210 A	165 mm
2200W 24V DC 4 poles + thermal protection	**2,2 24DC_T_3**	**MCDCH00010**	S2: 2 min S3: 7.5% ED	2650 rpm	125 A	165 mm





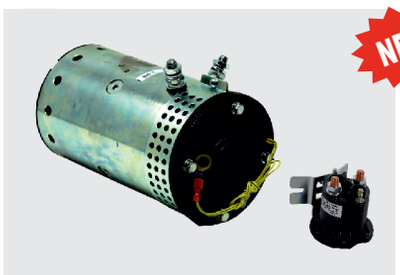




Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

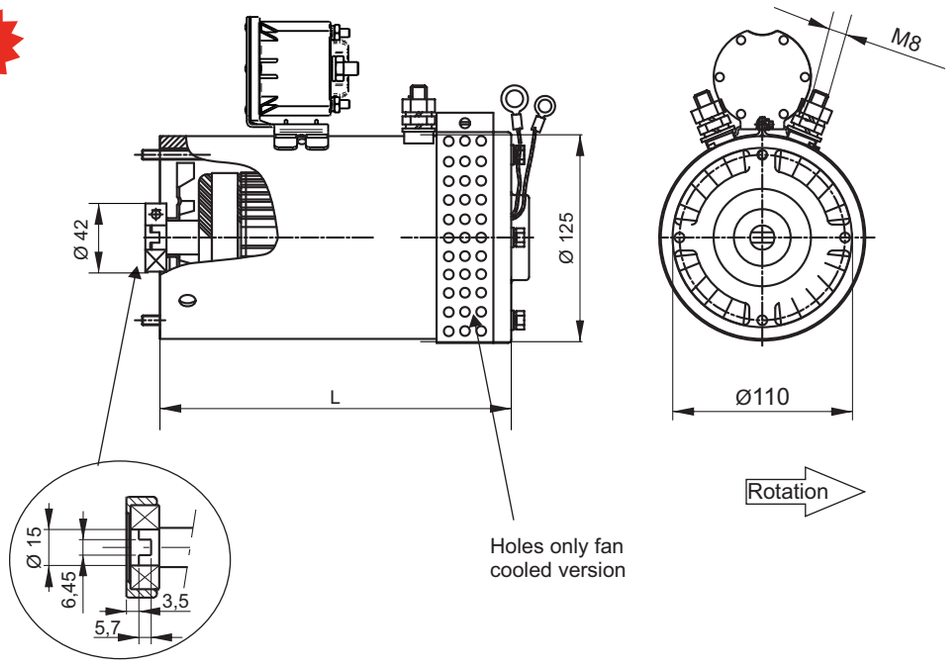
23-01

INTEGRAL DC MOTORS Ø125



Compound wound (3kW)
Series wound (4kW)
Protection degree: IP20
Insulation class: F
Weight: 11,45kg (without start switch)
UL motors available on request

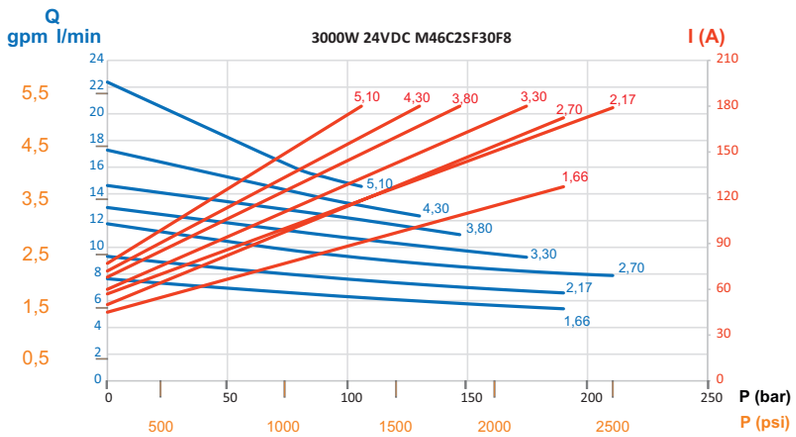
Compound wound
Protection degree: IP42
Insulation class: F
Weight: 11kg (without start switch)
UL motors available on request

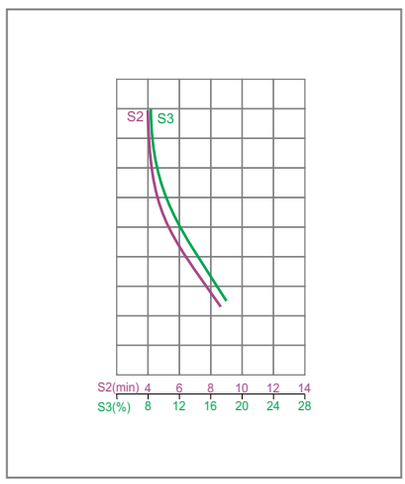


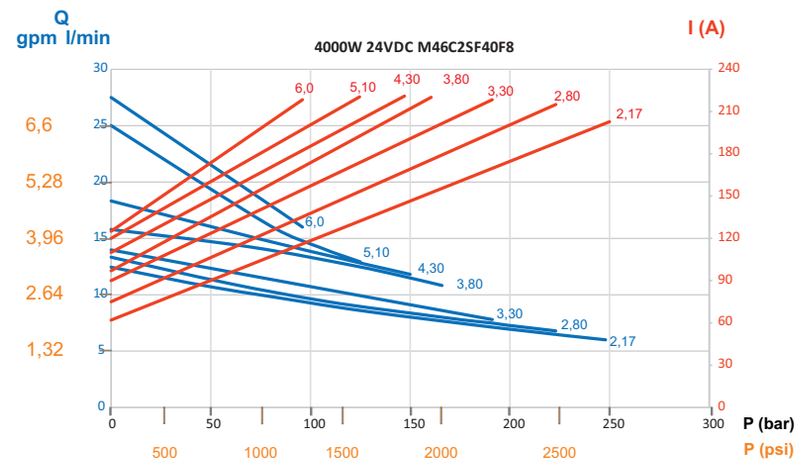
Code

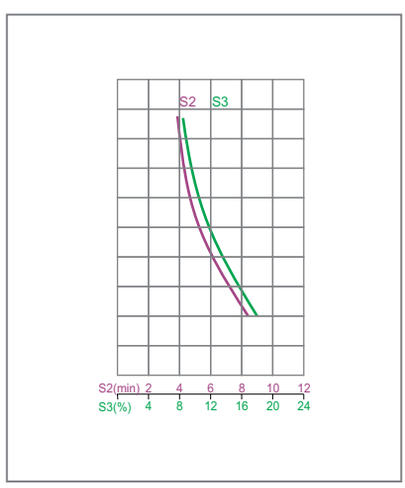
Description	Assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current	L
3000W 24 V DC with cooling fan + thermal protection	**3 24DC_FC**	**M46C2SF30F8**	S2: 4 min S3: 8% ED	2600 rpm	180 A	227,5 mm
4000W 24 V DC with cooling fan + thermal protection	**4 24DC_FC**	**M46C2SF40F8**	S2: 4min S3: 6% ED	3500 rpm	230 A	227,5 mm
3000W 24 V DC + thermal protection	**3 24DC_T**	**M46C2ST30F8**	S2: 4min S3: 8% ED	2600 rpm	180 A	215 mm

DC MOTORS Ø125 WITH COOLING FAN DIAGRAMS



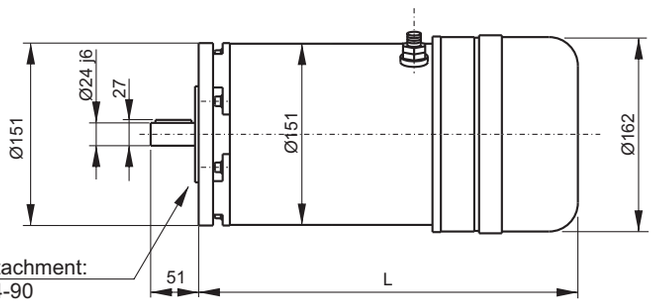


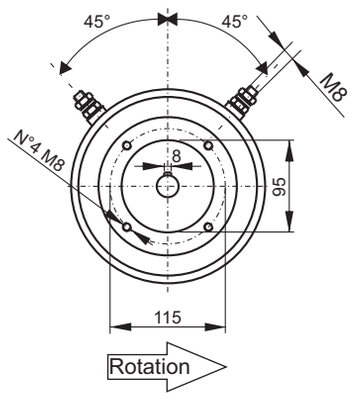




Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C
Motors with no coolong fan have a lower duty charge S2 and S3 values (about 20% less than above diagrams)

HEAVY DUTY DC MOTORS Ø 151 WITH COOLING FAN

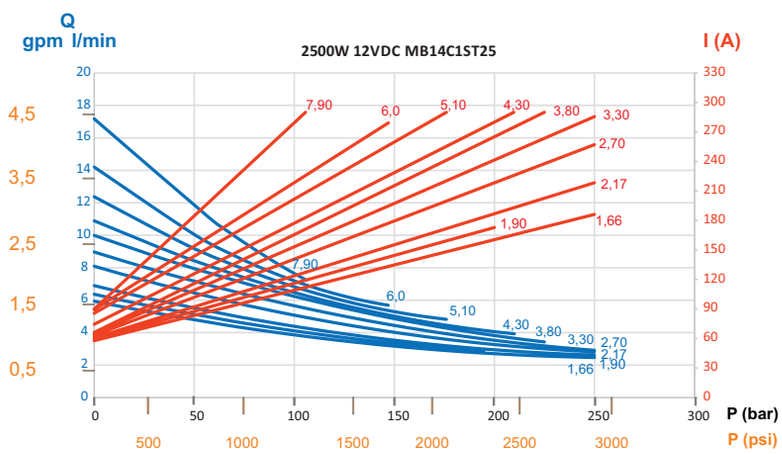


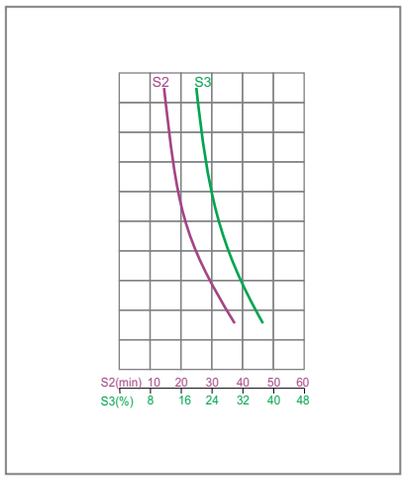


Series wound
Colingfan
Protection degree: IP20
Insulation class: F
Weight: 21,5 kg
B14-90 interface

Code

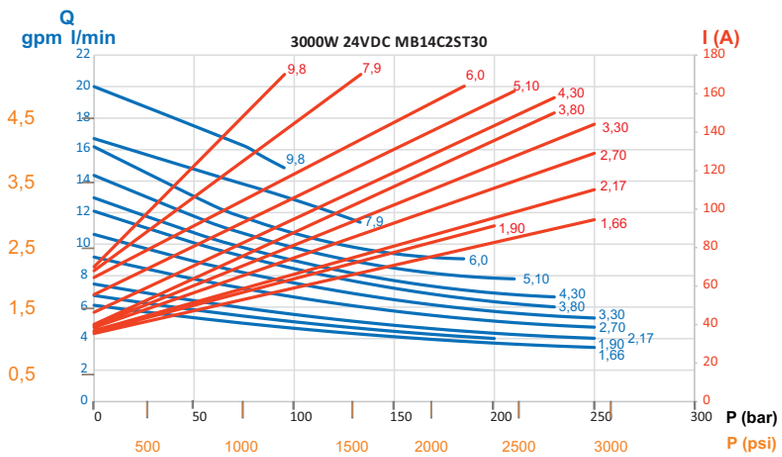
Description	Assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current	Mounting kit	L
2500W 12V DC motor + thermal protection & fan	**2,5HD 12DC_T**	**MB14C1ST25**	S2:11 min S3: 20%	1700 rpm	290 A	XB14 90-1	320 mm
3000W 24V DC motor + thermal protection & fan	**3HD 24DC_T**	**MB14C2ST30**	S2: 13 min S3: 20%	1700 rpm	170 A	XB14 90-1	320 mm
4000W 24V DC motor + thermal protection & fan	**4HD 24DC_T**	**MB14C2ST40**	S2: 8 min S3: 15%	2000 rpm	240A	XB14 90-1	320 mm

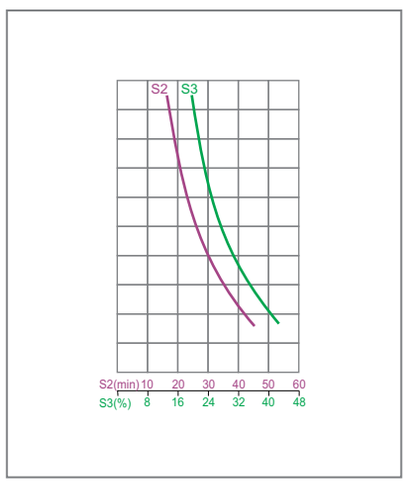


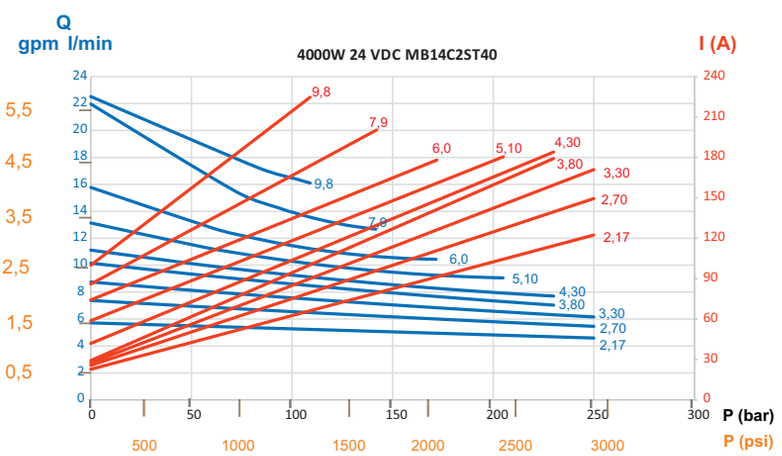


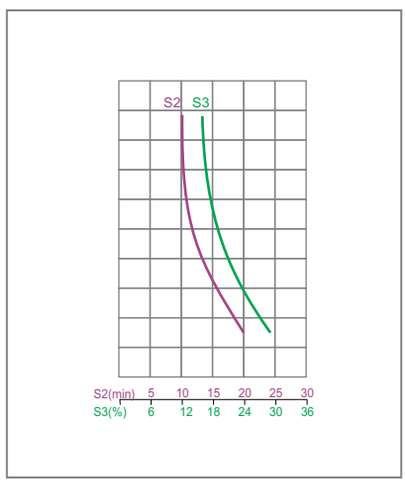
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

DC MOTORS 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

DC MOTOR STARTING RELAYS

Ø 80 motors

Description	Assembly code	Spare part code
12V DC 150 Amp start relay + mounting kit	**S150T 12DC 80**	**M47TC0001+M47SK0801**
12V DC 150 Amp start relay + mounting kit + Faston optional connector	**S150 T 12DC 80 F**	**M47TC0001+M47SK0801+24556**
24V DC 150 Amp start relay + mounting kit	**S150T 24DC 80**	**M47TC0002+M47SK0801**
24V DC 150 Amp start relay + mounting kit + Faston optional connector	**S150 T 24DC 80 F**	**M47TC0002+M47SK0801+24556**
48V DC 150 Amp start relay + mounting kit	**S225T 48DC 80**	**M47TC0004+M47SK0801**
48V DC 150 Amp start relay + mounting kit + Faston optional connector	**S225 T 48DC 80 F**	**M47TC0004+M47SK0801+24556**

Ø 114 motors

Description	Assembly code	Spare part
12V DC 150 Amp start switch + mounting kit	**S150T 12DC 112**	**M47TC0001 + XACNH00001**
12V DC 150 Amp start relay + mounting kit + Faston optional connector	**S150T 12DC 112 F**	**M47TC0001+XACNH00001+2x24556**
24V DC 150 Amp start switch + mounting kit	**S150T 24DC 112**	**M47TC0002 + XACNH00001**
24V DC 150 Amp start relay + mounting kit+ Faston optional connector	**S150T 24DC 112 F**	**M47TC0002+XACNH00001+2x24556**
48V DC 150 Amp start relay + mounting kit	**S150T 48DC 112**	**M47TC0004+XACNH00001**
48V DC 150 Amp start relay + mounting kit+ Faston optional connector	**S150T 48DC 112 F**	**M47TC0004+XACNH00001+2x24556**
12V DC 300 Amp start switch + mounting kit	**S300T 12DC 112**	**MASRH00001 + XACNH00001**
12V DC 300 Amp start relay + mounting kit + Faston optional connector	**S300T 12DC 112F**	**MASRH00001+XACNH00001+x24556**

Ø 125-151 motors

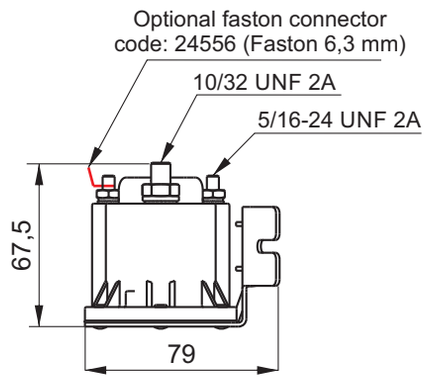
Description	Assembly code	Spare part code
12V DC 300 Amp start switch + mounting kit	**S300T 12DC 125_151**	**MASRH000011**
12V DC 300 Amp start relay + mounting kit + Faston optional connector	**S300T 12DC 125_151 F**	**MASRH00001+2x24556**
24V DC 300 Amp start switch + mounting kit	**S300T 24DC 125_151**	**MASRH00002+ M47SK1121**
24V DC 300 Amp start relay + mounting kit + Faston optional connector	**S300T 24DC 125_151 F**	**MASRH00002+M47SK1121+x24556**

Notes: The starting switch mounting kit is provided when specifying the **/S150**T 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. The reversible start switch cannot be mounted on the motor. It must be fixed on the machine.
For environment with humidity over 40%, motors with optional IP67 protection index are available and recommended. Please ask our sales office. The thermal switch is set at 110-120°C.
The motors indicated above in particular operating cycles can reach temperatures of 100-110 °C on the outher part of the housing, it is recommended to use the special protective cover (MACVH00001) to prevent burning injuries.

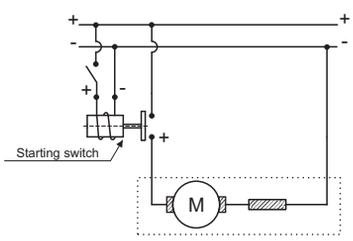
DC MOTOR STARTING RELAYS

Starting relay 150A
for motors Ø80 - Ø114

Weight: 0,38kg
Protection degree: IP67
Max current draw: 2A@12VDC - 1A@24VDC - 0,5A@48VDC
Standard temperature range: -40°C to +82°C
Poles thread: 2 x 10-32 UNF 2A; 2 x 5/16-24 UNF 2A
UL starting relays available on request
* on resistive load



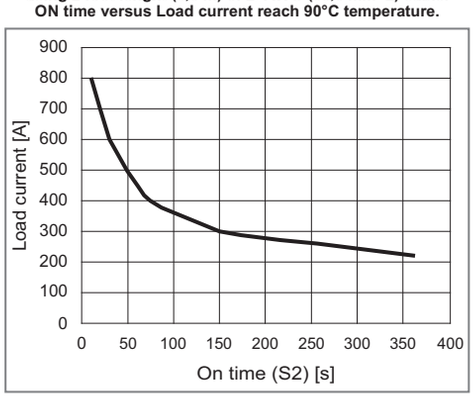
Electrical connection scheme



Nominal current	Peak Current (3ms) *	Spare part code
150A	800A	**M47TC0001 (12V DC)** **M47TC0002 (24V DC)**
225A	600A	**M47TC0004 (48V DC)**
300A	1000A	**MASRH00001 (12V DC)** **MASRH00002 (24V DC)**

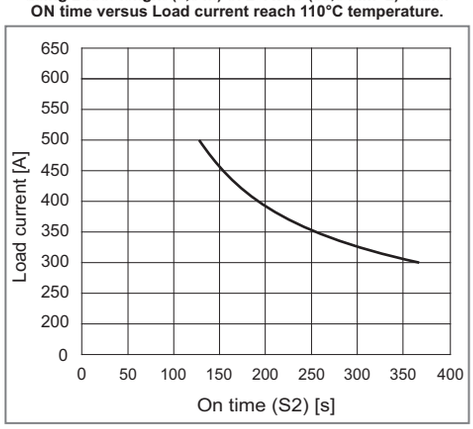
150 A	M47TC0001 12V DC	M47TC0002 24V DC	M47TC0004 48V DC
Max Sustained Duty Cycle (S3)	25%	25%	25%
Max On-Time (S2) @ 150A	6 min	6 min	6 min
Pull In Voltage at 25°C	7,6 V	15,5 V	33 V
Hold minimum Voltage at 25°C	3,5 V	7,0 V	14 V
Coil Resistance at 25°C [Ohms]	5,7 Ω	20,1 Ω	86 Ω

Typical Intermittent Duty Unit Performance in a + 25°C Ambient using 2 foot lenght (0,6 m) of 2#AWG (33,6 mm^2) cable. ON time versus Load current reach 90°C temperature.



300 A	MASRH00001 12V DC	MASRH0002 24V DC
Max Sustained Duty Cycle (S3)	25%	25%
Max On-Time (S2) @ 300A	6 min	6 min
Pull In Voltage at 25°C	8,5 V	15 V
Hold minimum Voltage at 25°C	4,5 V	7,0 V
Coil Resistance at 25°C [Ohms]	5,37 Ω	20,1 Ω

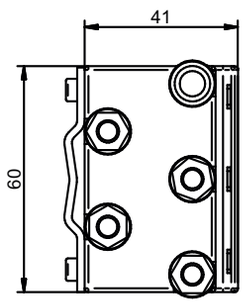
Typical Intermittent Duty Unit Performance in a + 25°C Ambient using 2 foot lenght (0,6 m) of 2#AWG (33,6 mm^2) cable. ON time versus Load current reach 110°C temperature.

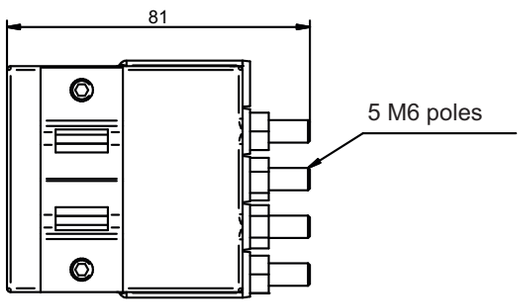


Recommended working position: either horizontal or vertical with poles set upwards.
Optional faston connector code: 24556.
All tests are made at environmental temperature of 25 °C.

DC MOTOR STARTING RELAY FOR REVERSIBLE UNITS

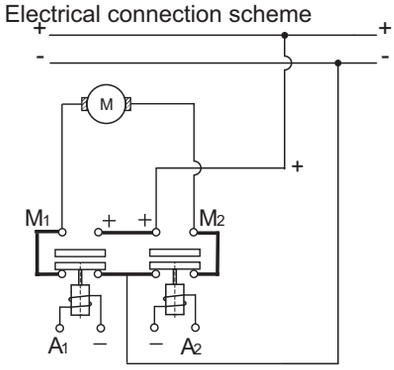
Starting relay (reversible) 100A
for reversible motors and pumps





Weight: 0,5kg
Protection degree: IP65
Max current draw: 1A@12VDC - 0,5A@24VDC
Max environment temperature: 40°C
Poles thread: 4 x M6

Electrical connection scheme



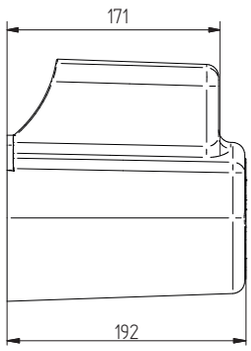
Nominal current	Peak Current (40ms)	Spare part code
100A	400A	**M47NB0001 (12V DC)** **M47NB0002 (24V DC)**

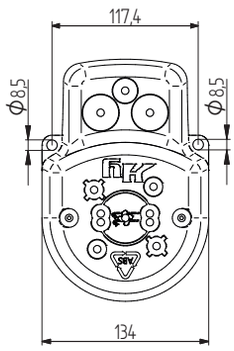
Recommended working position: either horizontal or vertical with poles set upwards.
All tests are made at environmental temperature of 25 °C.

DC MOTOR OPTIONS

Plastic cover for DC motors Ø 114
Weight: 0,35 kg

Assembly code
MC
Spare part code
MACVH00003

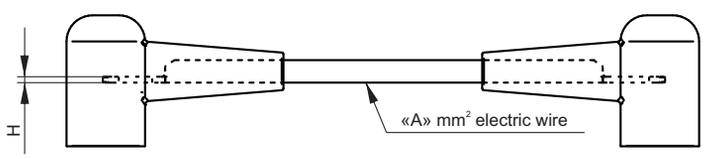


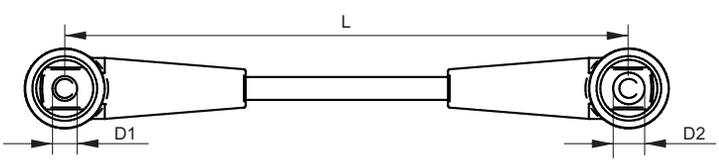


Note: this cover is not intended to improve IP grade but to avoid inadvertent contact with high temperature motor surface.
DC motors S2/S3 values as per the relevant tech tables must be downgraded due to reduced motor ventilation.

Mounting kit for DC motors

Motor Type	Mounting Kit code	Mounting kit sub-parts	
		Power cable	Fixing system
Ø 80 Flexible	M47SK0801	M47SK000A	Clamp band E60513080
Ø 114 Rigid	XACNH00001	MACNH00001	2xscrew TCEIM5X8 + 2xwasher WASHL05
Ø 125 Rigid	XACNH00001	MACNH00001	2xscrew TCEIM5X8 + 2xwasher WASHL05
Ø 114 Ø 125 Ø151 Flexible	M47SK1121	M47SK000C	2xscrew TCEIM5X8 + 2xwasher WASHL05
Ø151 12V DC Flexible	M47SK1151	M47SK000H	2xscrew TCEIM5X8 + 2xwasher WASHL05

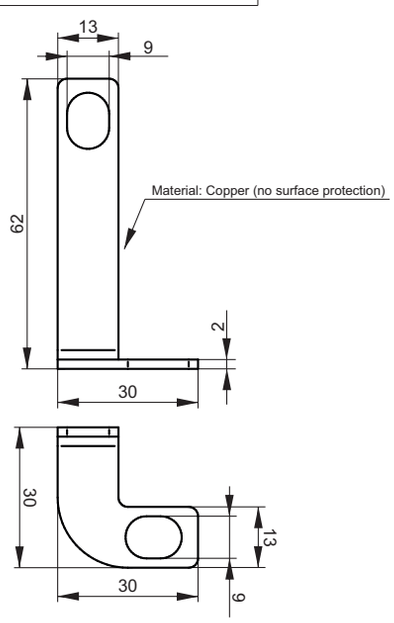




Power Cables

Spare part	L (mm)	A (mm²)	D1 (mm)	D2 (mm)	H (mm)
M47SK000A	148	10	6	8	1,5
M47SK000C	158	16	8	8	2
M47SK000H	163	25	8	8	2

Spare part code
MACNH00001



The use of the MACNH00001 component in marine environments is not recommended.

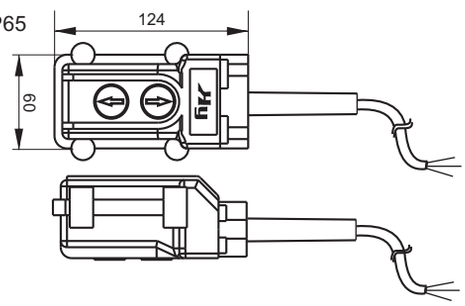
DC MOTOR OPTIONS

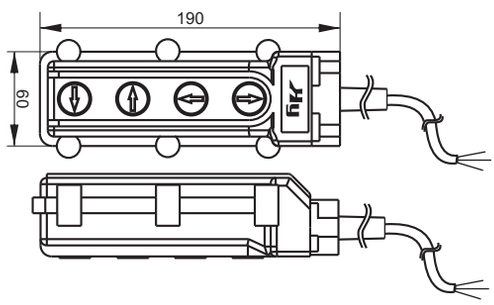
Description	Spare part code
Wired remote control with 2 buttons single/double acting 3 m lenght	**P0201**

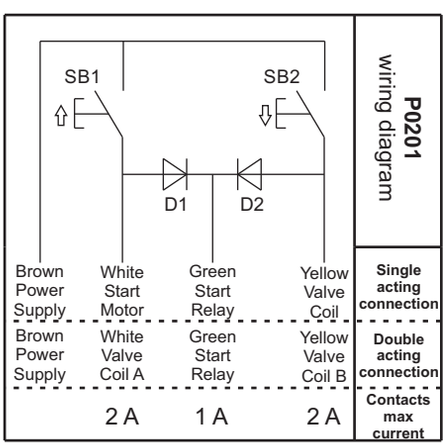
Description	Spare part code
Wired remote control with 4 buttons double acting 3 m lenght	**P0202**

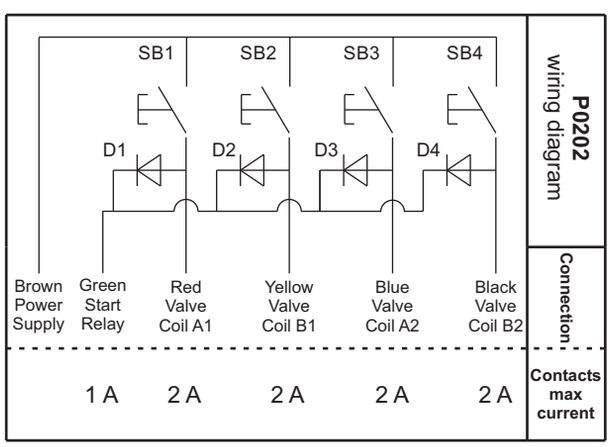
Wired remote control

Weight: 0,60 kg
Protection degree: IP65
DC only use

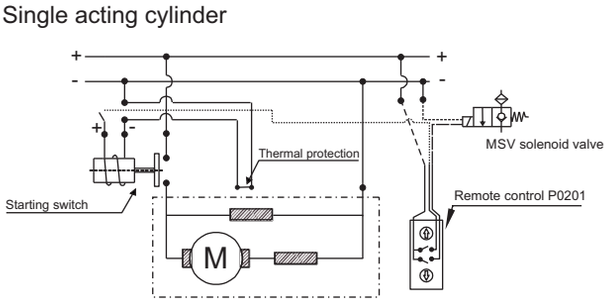




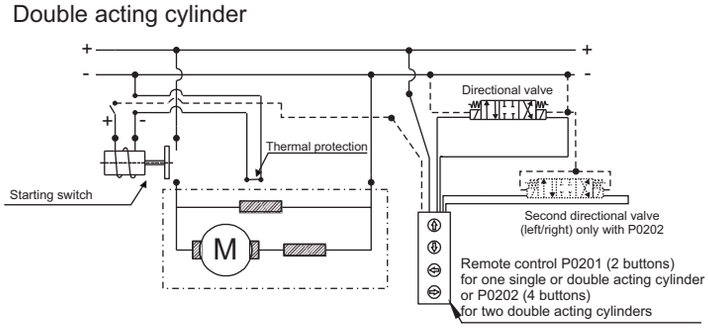




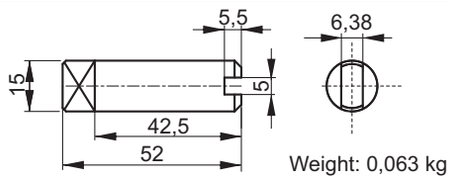
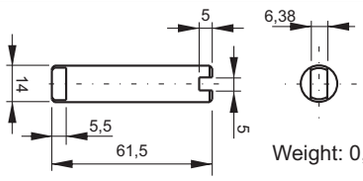
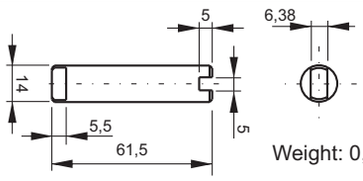
Single acting cylinder

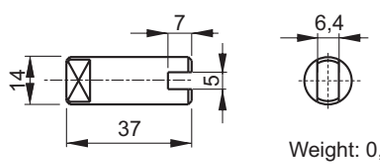
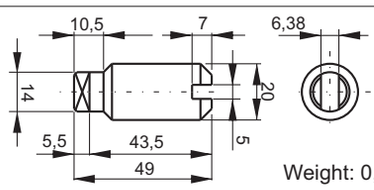
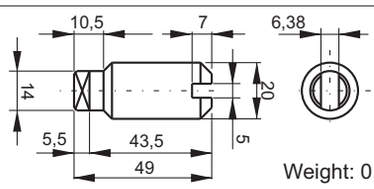
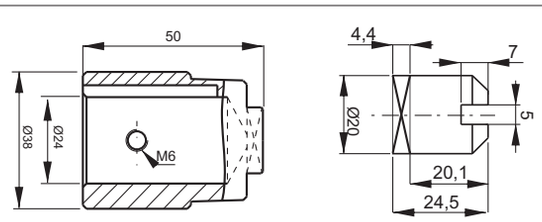


Double acting cylinder

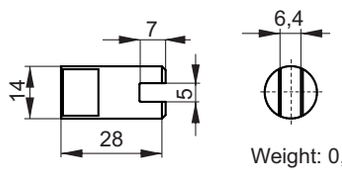
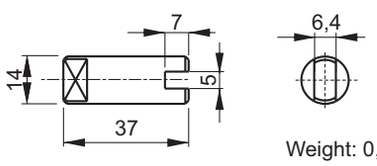


SUMMARY TABLE - DC PUMP/MOTOR COUPLING KITS PPC MANIFOLDS

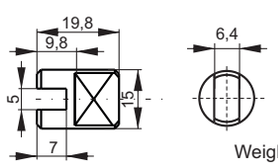
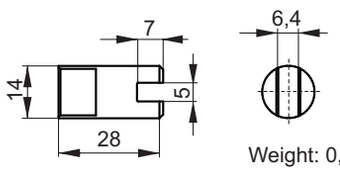
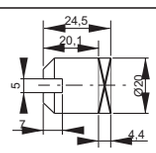
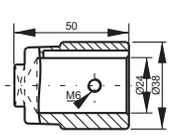
Motor \ Pump	Group 0 pump	Dimensional drawings
DC Ø 80	E36200006	 Weight: 0,063 kg
DC Ø 114	E36200005	 Weight: 0,068 kg
DC Ø 125	E36200005	 Weight: 0,068 kg
DC Ø 151	n/a	

Motor \ Pump	Group 1 pump	Dimensional drawings
DC Ø 80	E36200002	 Weight: 0,041 kg
DC Ø 114	E36200001	 Weight: 0,094 kg
DC Ø 125	E36200001	 Weight: 0,094 kg
DC Ø 151	XB14 90-1	 Motor side **E36100003** Weight: 0,22 Kg Pump side **E36100000** Weight: 0,05 Kg

SUMMARY TABLE - DC PUMP/MOTOR COUPLING KITS PPM MANIFOLDS

Pump / Motor	Group 0 pump	Dimensional drawings
DC Ø 80	E36200003	 Weight: 0,028 kg
DC Ø 114	E36200002	 Weight: 0,041 kg

SUMMARY TABLE - DC PUMP/MOTOR COUPLING KITS EPB MANIFOLDS

Pump / Motor	Group 0 pump	Dimensional drawings
DC Ø 80	E36200007	 Weight: 0,063 kg
DC Ø 114 Ø 125	E36200003	 Weight: 0,028 kg
DC Ø 114 Ø 125	E36100003 + E36100000	 Weight: 0,05 kg  Weight: 0,22 kg

INTEGRAL AC MOTORS

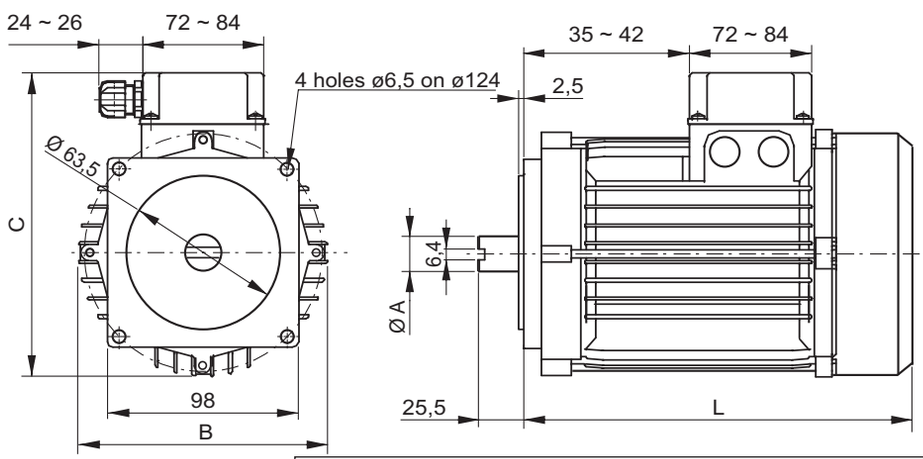
Integral motors: these are motors specifically engineered and manufactured for our mini power packs, featuring high power density and direct connection to the PPM.
They are available in single phase or three phase execution, in frame 71 with square flange and tang drive shaft. A single coupling fits all dimensions.

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).

CE

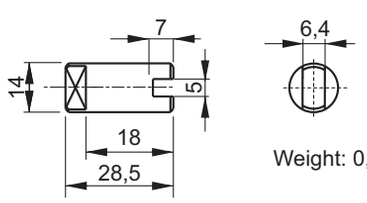
Drawings show typical three phase motors. Single phase motors have a larger wiring box which also contains the capacitor(s) or can have an external capacitor(s).

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



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

Coupling code
E36200003



Weight: 0,063 kg

PPM motor assembly code

N	**AC integral motor**
0,75	**Maximum Power [kW]**
AC	**Alternate current**
3	**Fasi: 3** = three phase **S** = single phase
4	**Poli: 4** = four poles **2** = two poles
71	**Cassa**

See a table of available codes on next page

INTEGRAL AC MOTORS

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

Frame size	Maximum Power (S3 40%)	Assembly code	Spare motor code	Ø A	B	C	L	Weight kg
71	0,37kW (0,5HP)	**N0,37AC 34 71**	**N037AC341S3**	15	138	180	210	5,5
	0,55kW (0,75HP)	**N0,55AC 34 71**	**N055AC341S3**	15	138	180	210	5,5
	0,75kW (1HP)	**N0,75AC 34 71**	**N075AC341S3**	15	138	180	210	5,5

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

Frame size	Maximum Power (S3 40%)	Assembly code	Spare motor code	Ø A	B	C	L	Weight kg
71	0,55kW (0,75HP)	**N0,55AC 32 71**	**N055AC321S3**	15	138	180	210	5
	0,75kW (1HP)	**N0,75AC 32 71**	**N075AC321S3**	15	138	180	210	5

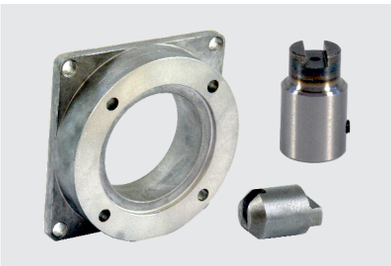
Single-phase 4 poles (~1450 rpm at 50Hz)

Frame size	Maximum Power (S3 40%)	Assembly code	Spare motor code	Ø A	B	C	L	Weight kg
71	0,37kW (0,5HP)	**N0,37AC S4 71**	**N037ACS41S3**	15	138	180	210	6,5
	0,55kW (0,75HP)	**N0,55AC S4 71**	**N055ACS41S3**	15	138	180	210	7,2

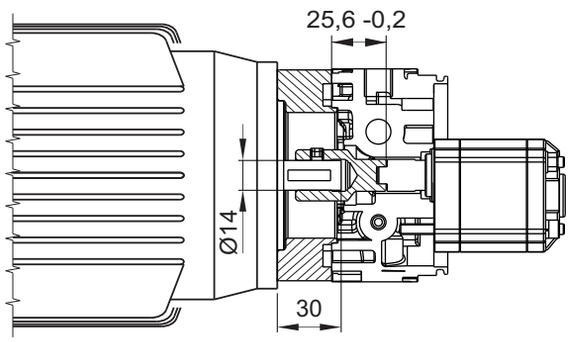
Single-phase 2 poles (~2900 rpm at 50Hz)

Frame size	Maximum Power (S3 40%)	Assembly code	Spare motor code	Ø A	B	C	L	Weight kg
71	0,55kW (0,75HP)	**N0,55AC S2 71**	**N055ACS21S3**	15	138	180	210	6
	0,75kW (1HP)	**N0,75AC S2 71**	**N075ACS21S3**	15	138	180	210	6,5

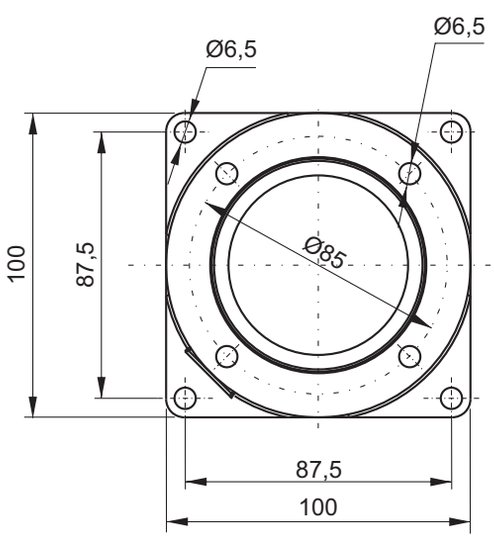
MOUNTING KIT FOR FRAME 71 B14 IEC MOTORS

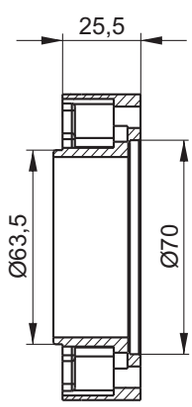


Kit weight: 0,18 Kg



Adaptor flange



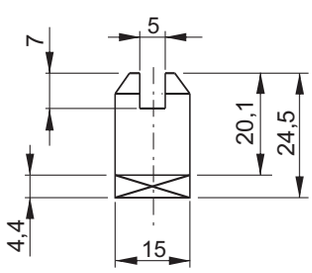


Description	Assembly code*	Spare part code
B14 71 motor side semi-coupling	NB14 71	E36100001
B14 pump side semi-coupling		E36100000M
B14 71 adaptor flange		F25030003

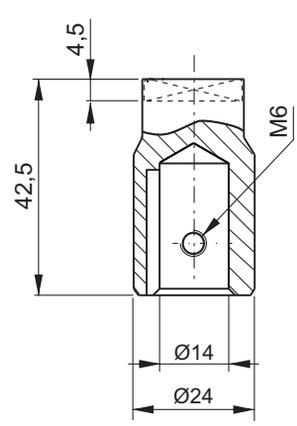
* Note: the coupling + flange kit is already included when specifying a B14 motor in PPM assembly code. NB1471 code to be indicated only when ordering PPM with no motor but with coupling + flange kit.

Couplings

Pump side **E36100000M**

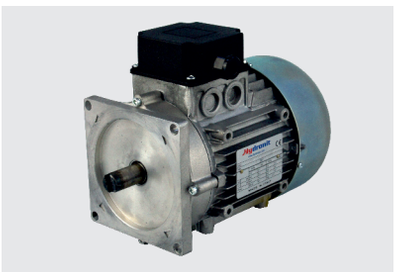


Motor side **E36100001**



Attention! When assembling B14 IEC motors with NB14 flange + couplings kit, please respect positioning tolerances as shown in the drawing at the top of this page. Failure to do so can cause malfunctioning or component failure.

INTEGRAL AC MOTORS

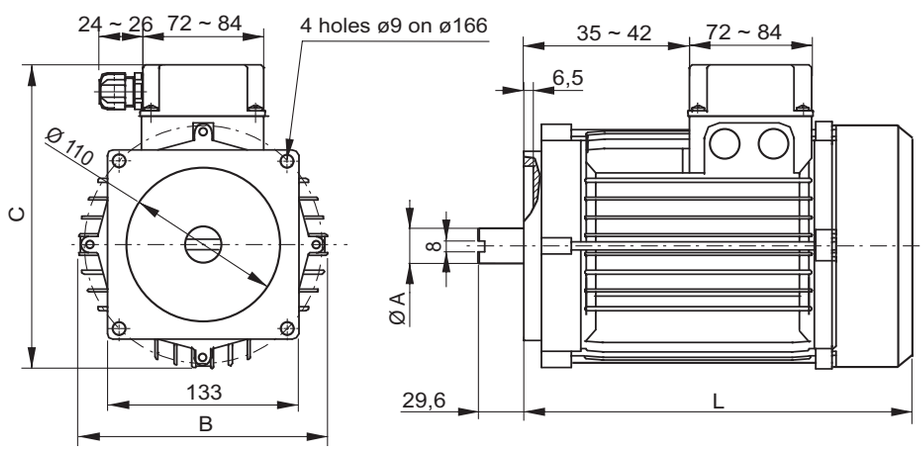


Integral motors: these are motors with a peculiar square flange and tang drive shaft, specifically engineered and manufactured for our mini power packs, featuring high power density and direct connection to the PPC central manifold. They are available in single phase or three phase execution, in frame 71, 80, 90 and 100, with square flange and tang drive shaft.

Additional nominal powers and/or special designs are available on request. Standard motors are for intermittent use: **S3 40%** means a typical duty 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



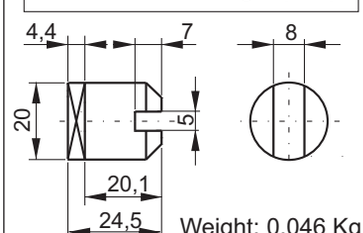
PPC motor assembly code

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**

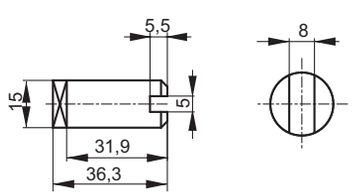
See a table of available motors on next page

A single tang drive coupling fits 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

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 has been made.
For more details see SUV01* technical table in section D.

INTEGRAL AC MOTORS

Three-phase 4 poles (~1450 rpm at 50Hz, ~1750 rpm at 60Hz)

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	6.2
	0,75kW (1HP)	E0,75AC 34 71	E075AC341S3	17	138	180	214	6,7
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	28	191	248	321	32

Three-phase 2 poles (~2900 rpm at 50Hz,~3500 rpm at 60Hz)

Frame size	Maximum Power (S3 40%)	Assembly code	Spare part code	Ø A	B	C	L	Weight kg
71	0,75kW (1HP)	E0,75AC 32 71	E075AC321S3	17	138	180	214	5,8
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

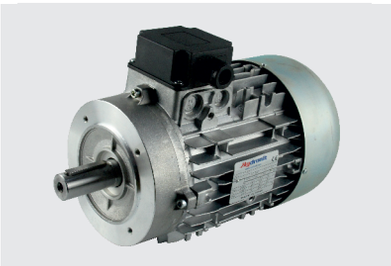
Single-phases 4 poles (~1450 rpm at 50Hz)

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

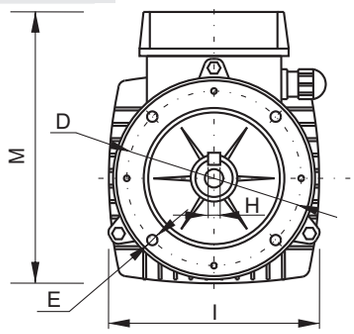
B14 IEC AC MOTORS

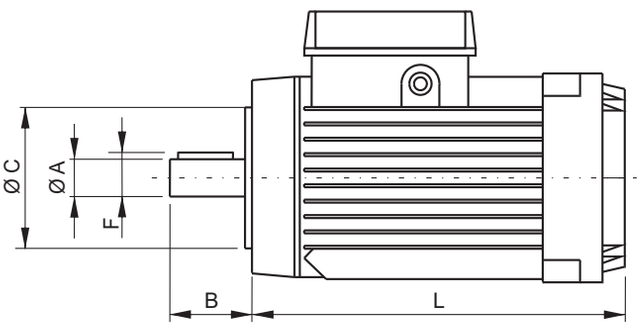


B14 IEC motors: for market compatibility, any IEC standard B14 AC motor with frame 63, 71, 80, 90, 100 or 112 can be mounted. These motors are normally procured and mounted by the customer himself. Two-piece couplings and additional adaptor flanges as per following tables must be fitted. Hydronit can supply frame 112 B14 AC 3-phase motors

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	H	Mounting kit
63	0,12 ~ 0,18 kW 0,18 ~ 0,25 HP	11 j6	23	60	75	M5	12,5	4	**XB14 63-0** (gr. 0) **Xb14 63-1** (gr.1)
63	0,12 ~ 0,25 kW 0,16 ~ 0,35 HP	11 j6	23	60	75	M5	12,5	4	**NB14 63**
71	0,25 ~ 0,37 kW 0,37 ~ 5 HP	14 j6	30	70	85	M6	16	5	**NB14 71**
71	0,25 ~ 0,37 kW 0,37 ~ 0,5 HP	14 j6	30	70	85	M6	16	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	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	8	**XB14 90-1**
100/112	2,2 ~ 7,5 kW 3 ~ 10 HP	28 j6	60	110	130	M8	31	8	**XB14 100-1**

Three-phase 4 poles (~1450 rpm at 50Hz, ~1750 rpm at 60Hz)

Frame size	Typical powers (S3 40%)	Assembly code	Spare part code	Ø A	I	L	M	Weight kg
112	7,5kW (10HP)	**7,5AC 34 112**	**B14750AC345S3**	28 j6	216	327	219	35

Three-phase 2 poles (~2900 rpm at 50Hz,~3500 rpm at 60Hz)

Frame size	Typical powers (S3 40%)	Assembly code	Spare part code	Ø A	I	L	M	Weight kg
112	7,5kW (10HP)	**7,5AC 32 112**	**B14750AC325S3**	28 j6	216	327	219	38

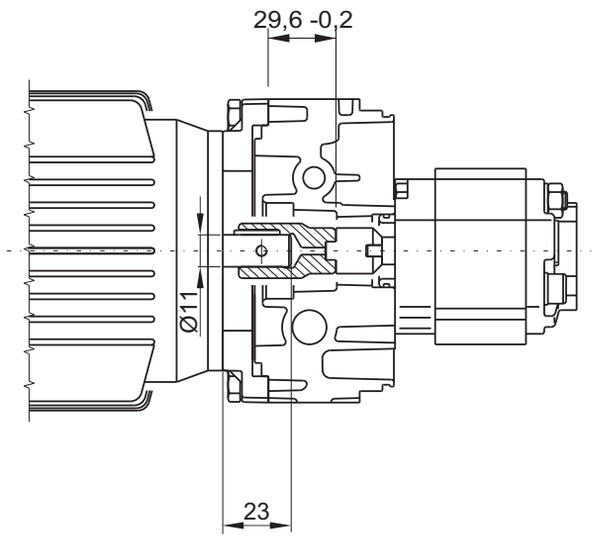
Mounting kits - spare parts

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.

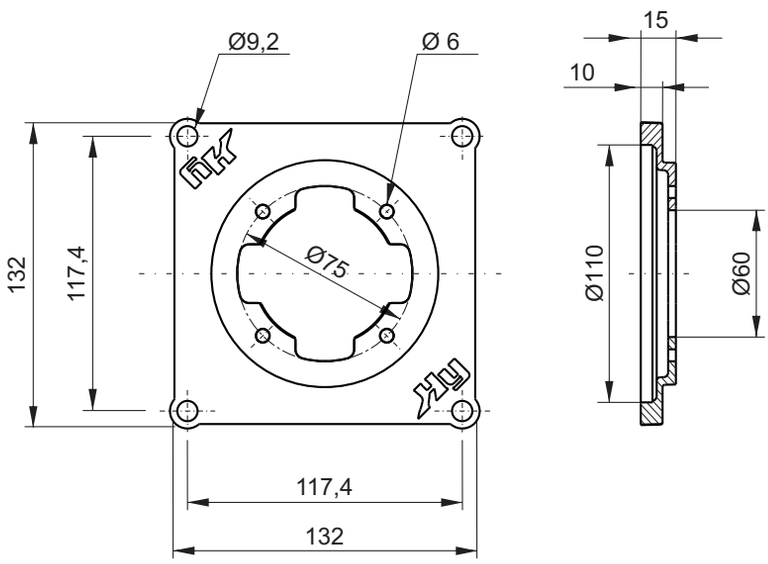
MOUNTING KIT FOR FRAME 63 B14 IEC MOTORS

Kit weight: 0,26 Kg



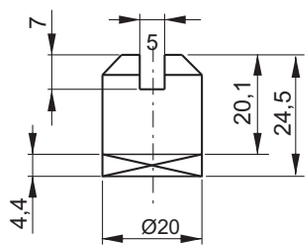
Adaptor flange

Adaptor flange **F27010011** Weight: 0,16 Kg

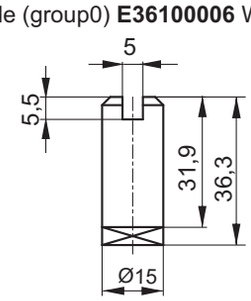


Couplings

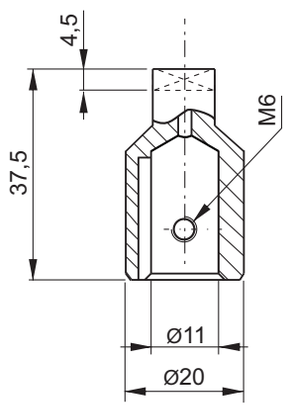
Pump side (group1) **E36100000** Weight: 0,05 Kg



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



Motor side **M36100011**



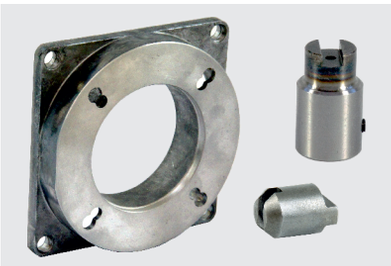
Description	Assembly code*	Spare part code
B14 63 motor side half-coupling	XB14 63 **-0** (gr.0) **-1** (gr.1)	**M36100011**
B14 pump side half-coupling		**E36100006 (gr.0)** **E36100000 (gr.1)**
B14 63 adaptor flange		**F27010011**

* Note: The coupling+flange kit is already included when specifying a B14 motor in PPC assembly code. XB14 63 code has to be indicated only when ordering PPC with no motor but with coupling+flange kit.

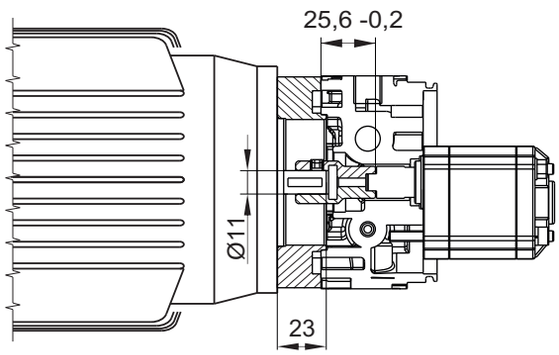
Attention! When assembling frame 63 B14 motors with XB14 flange+couplings kit, please respect positioning tolerances as per top drawing. Non-compliance can cause malfunctioning or component failure.

23-01

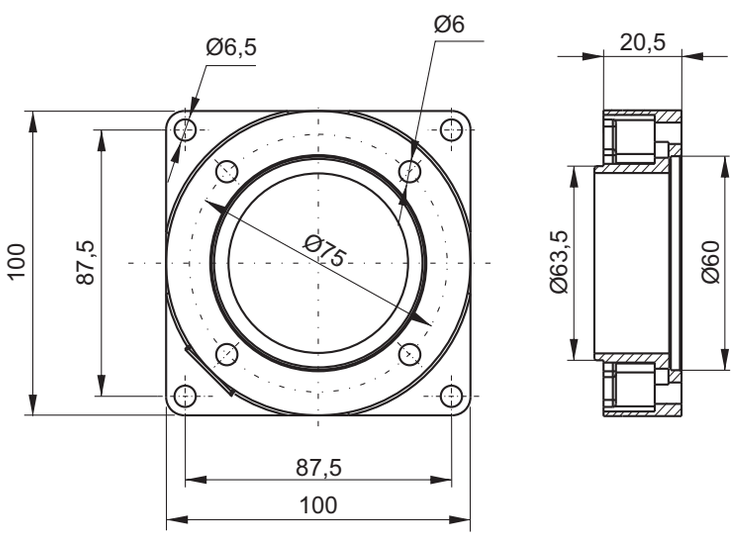
MOUNTING KIT FOR FRAME 63 B14 IEC MOTORS



Kit weight: 0,18 Kg



Adaptor flange

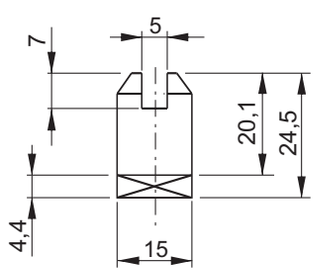


Description	Assembly code*	Spare part code
B14 63 motor side semi-coupling	NB14 63	M36100011
B14 pump side semi-coupling		E36100000M
B14 63 adaptor flange		F25030002

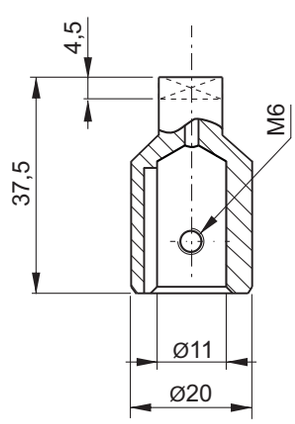
* Note: the coupling + flange kit is already included when specifying a B14 motor in PPM assembly code. NB1463 code to be indicated only when ordering PPM with no motor but with coupling + flange kit.

Coupling

Pump side **E36100000M**



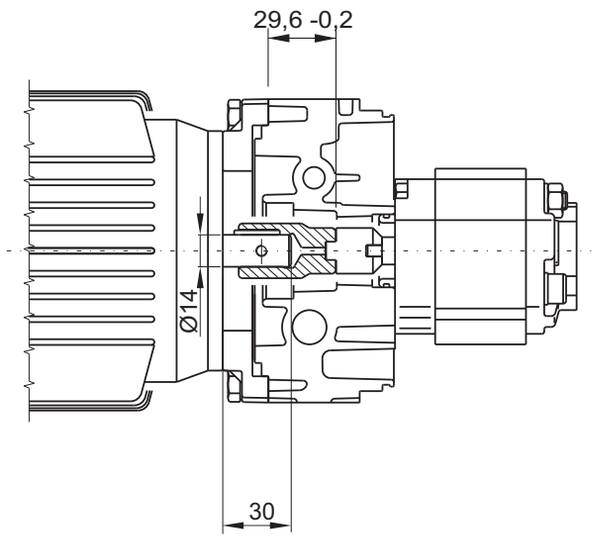
Motor side **M36100011**



Attention! When assembling B14 IEC motors with NB14 flange + couplings kit, please respect positioning tolerances as shown in the drawing at the top of this page. Failure to do so can cause malfunctioning or component failure.

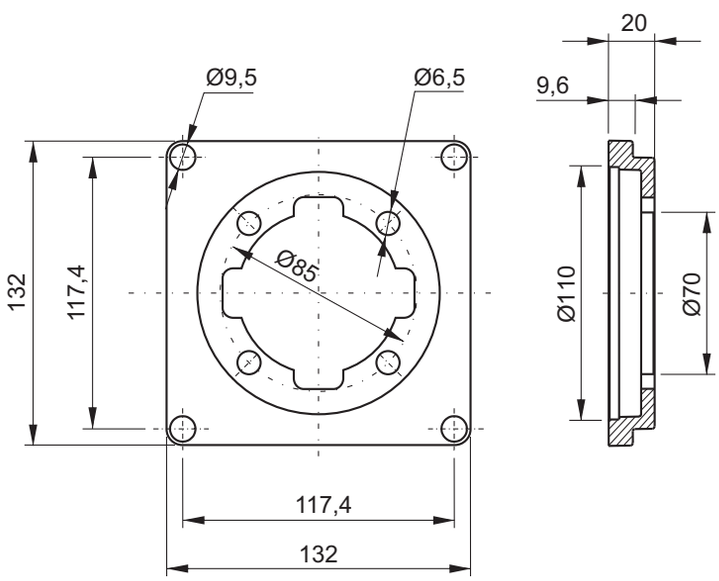
MOUNTING KIT FOR FRAME 71 B14 IEC MOTORS

Kit weight: 0,32 Kg



Adaptor flange

Adaptor flange **F27010001** Weight: 0,18 Kg

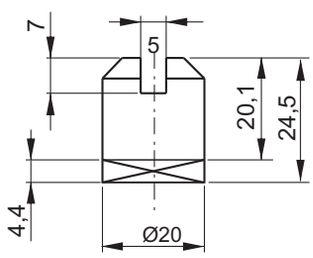


Description	Assembly code*	Spare part code
B14 71 motor side half-coupling	XB14 71 **-0** (gr.0) **-1** (gr.1)	**E36100001**
B14 pump side half-coupling		**E36100006 (gr.0)** **E36100000 (gr.1)**
B14 71 adaptor flange		**F27010001**

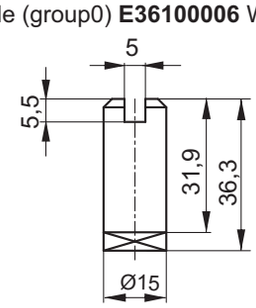
* Note: The coupling+flange kit is already included when specifying a B14 motor in PPC assembly code. XB14 71 code has to be indicated only when ordering PPC with no motor but with coupling+flange kit.

Couplings

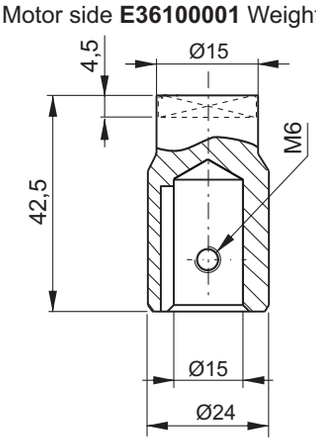
Pump side (group1) **E36100000** Weight: 0,05 Kg



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



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

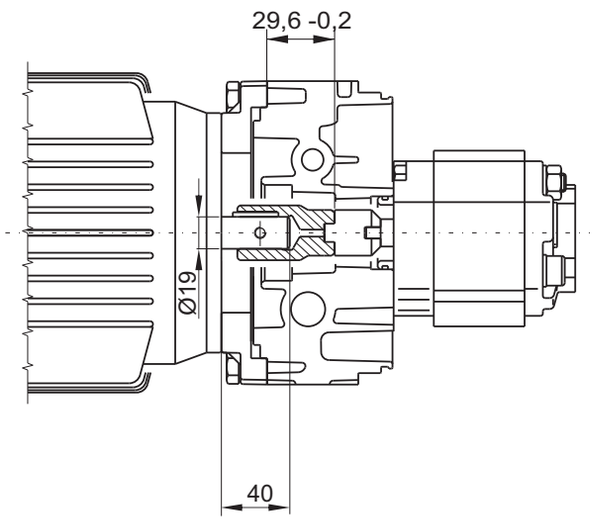


Attention! When assembling frame 71 B14 motors with XB14 flange+couplings kit, please respect positioning tolerances as per top drawing. Non-compliance can cause malfunctioning or component failure.

23-01

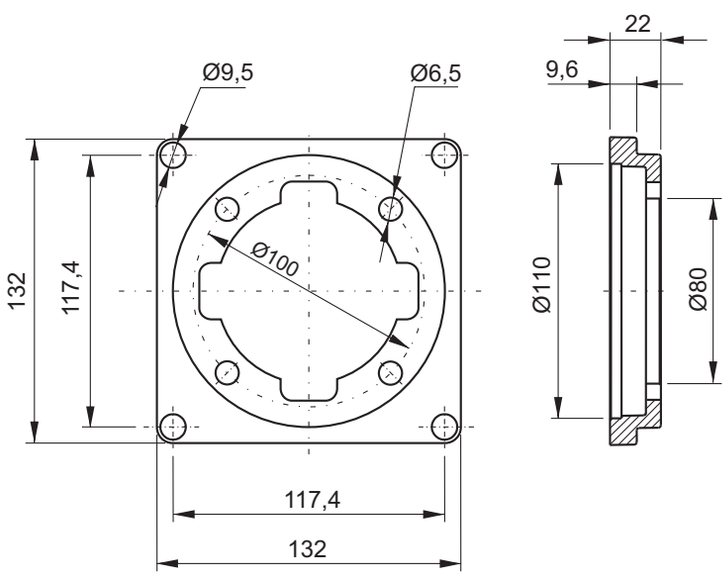
MOUNTING KIT FOR FRAME 80 B14 IEC MOTORS

Kit weight: 0,36 Kg



Adaptor flange

Adaptor flange **F27010002** Weight: 0,21 Kg

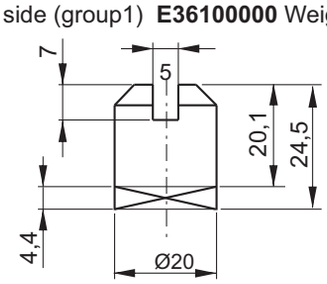


Description	Assembly code*	Spare part code
B14 80 motor side half-coupling	XB14 80 -0 (gr.0) -1 (gr.1)	E36100002
B14 pump side half-coupling		E36100006 (gr.0) E36100000 (gr.1)
B14 80 adaptor flange		F27010002

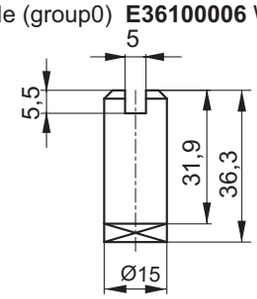
* Note: The coupling+flange kit is already included when specifying a B14 motor in PPC assembly code. XB14 80 code has to be indicated only when ordering PPC with no motor but with coupling+flange kit.

Couplings

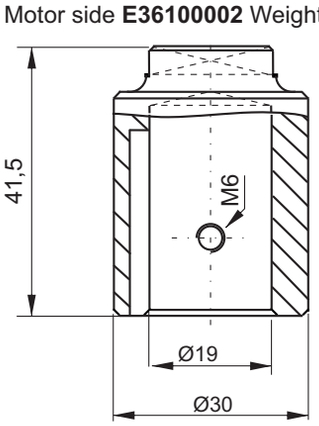
Pump side (group1) **E36100000** Weight: 0,05 Kg



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



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

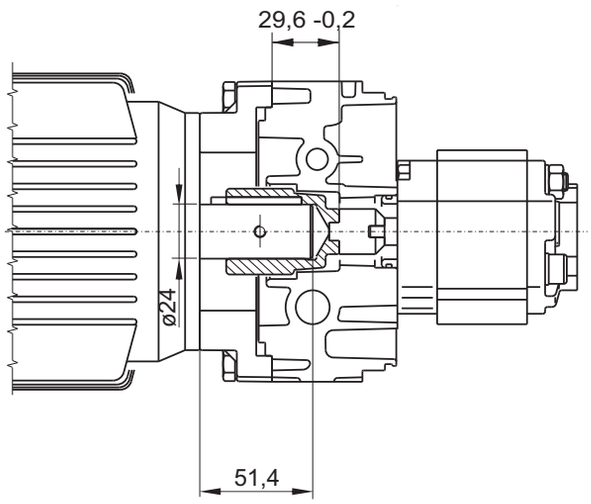


Attention! When assembling frame 80 B14 motors with XB14 flange+couplings kit, please respect positioning tolerances as per top drawing. Non-compliance can cause malfunctioning or component failure.

23-01

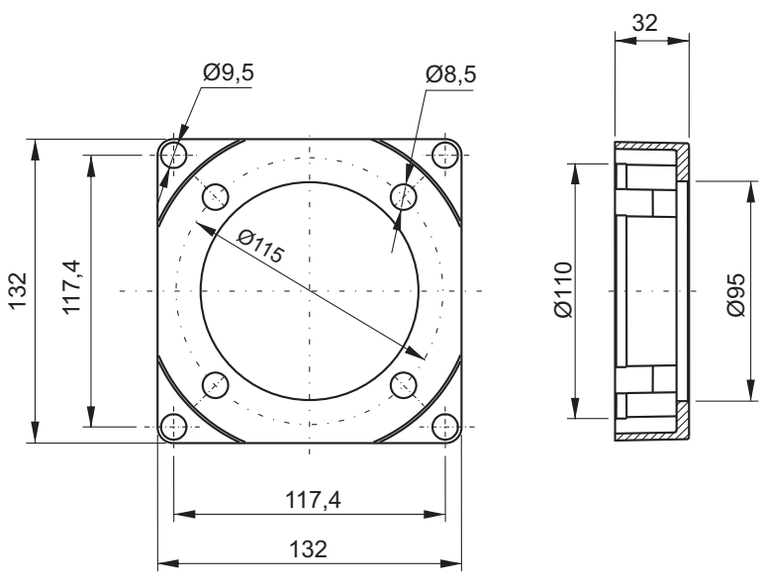
MOUNTING KIT FOR FRAME 90 B14 IEC MOTORS

Kit weight: 0,59 Kg



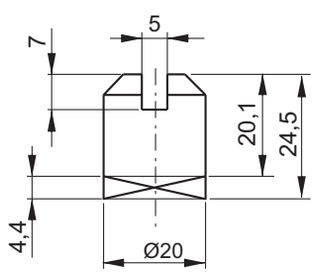
Adaptor flange

Adaptor flange **F27010003** Weight: 0,35 Kg

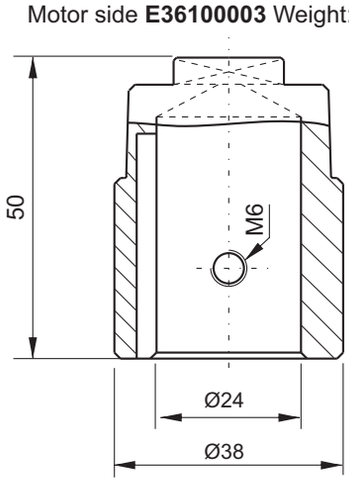


Couplings

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



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



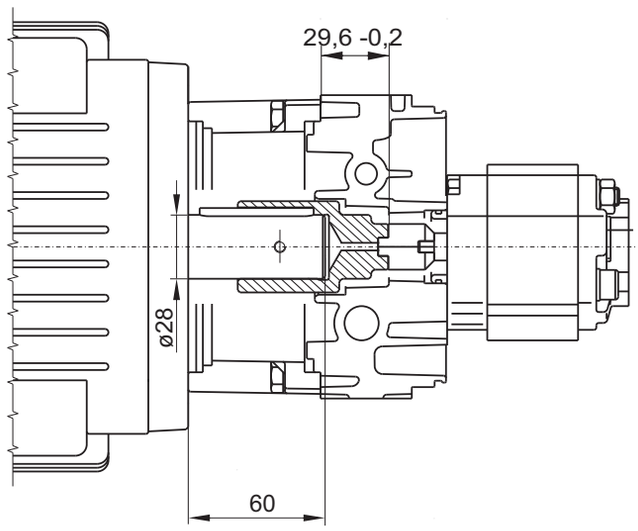
Description	Assembly code*	Spare part code
B14 90 motor side half-coupling	XB14 90-1	E36100003
B14 pump side half-coupling		E36100000
B14 90 adaptor flange		F27010003

* Note: The coupling+flange kit is already included when specifying a B14 motor in PPC assembly code. XB14 90 code has to be indicated only when ordering PPC with no motor but with coupling+flange kit.

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

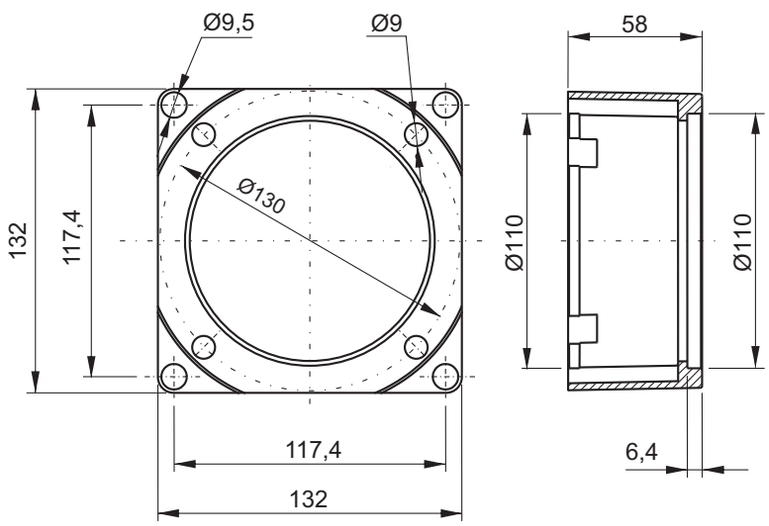
MOUNTING KIT FOR FRAME 100/112 B14 IEC MOTORS

Kit weight: 0,99 Kg



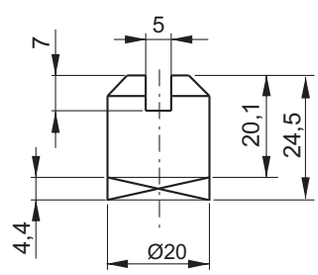
Adaptor flange

Adaptor flange **F27010004** Weight: 0,66 Kg

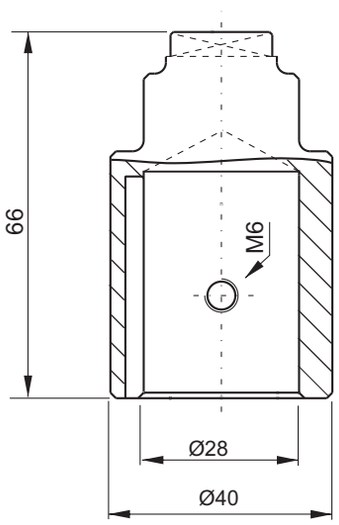


Couplings

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



Motor side **E36100004** Weight: 0,31 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. XB14 90 code has to be indicated only when ordering PPC with no motor but with coupling+flange kit.

Attention! When assembling frame 100 B14 motors with XB14 flange+coupling kit, please respect positioning tolerances as per top drawing. Non-compliance can cause malfunctioning or component failure.

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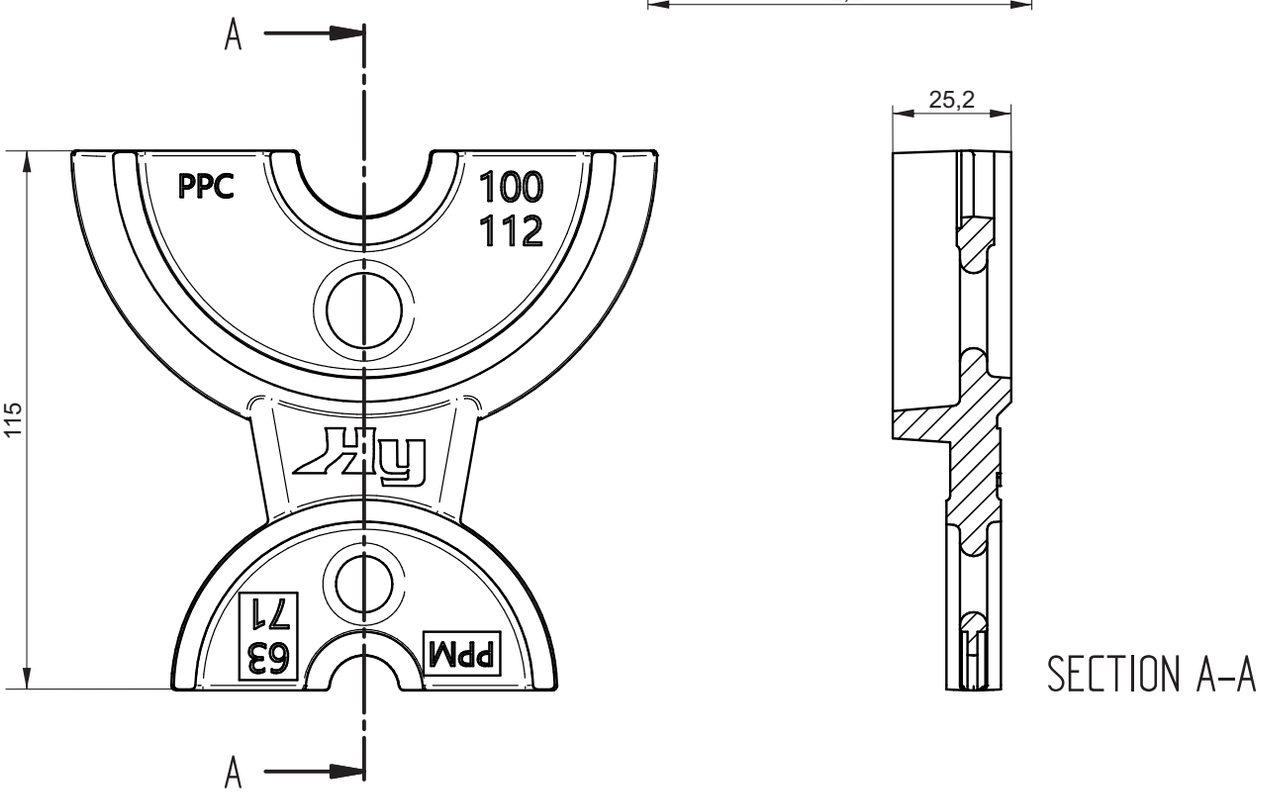
COUPLING MOUNTING TOOL FOR FRAME 63/71/80/90/100/112 B14 MOTORS PPC-PPM



Description	Spare part code
Coupling mounting tool for B14 motors	**ATZB14001**

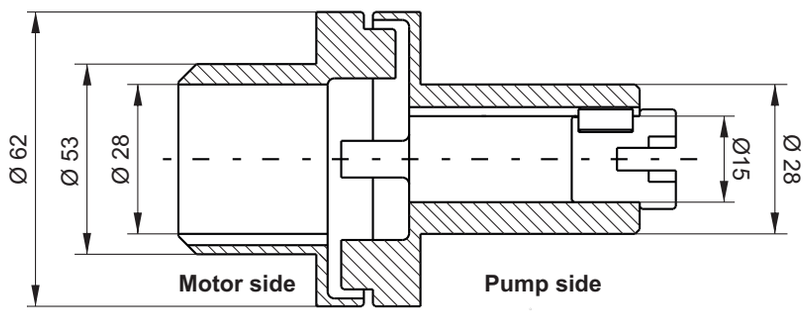
Attention! Cannot be used for EPB151 electropumps with flange E10105010.

ELASTIC MOUNTING KIT FOR FRAME 100/112 B14 IEC MOTORS

Kit weight: 1,9 Kg

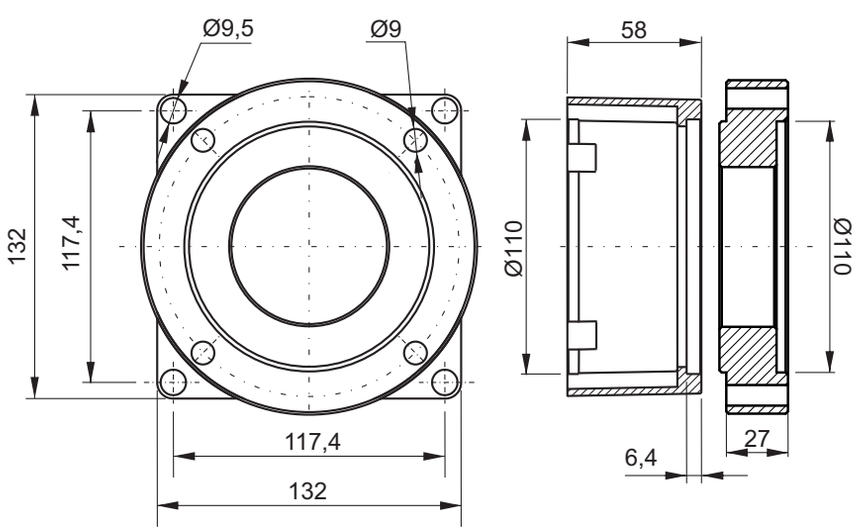
Elastic coupling

Elastic coupling **T54001100** Weight: 0,36 Kg



Adaptor flange

Adaptor flange **FTE270100** Weight: 1,54 Kg



Description	Assembly code*	Spare part code
Elastic coupling	XB14E 100	T54001100
B14 mounting flanges		FTE270100

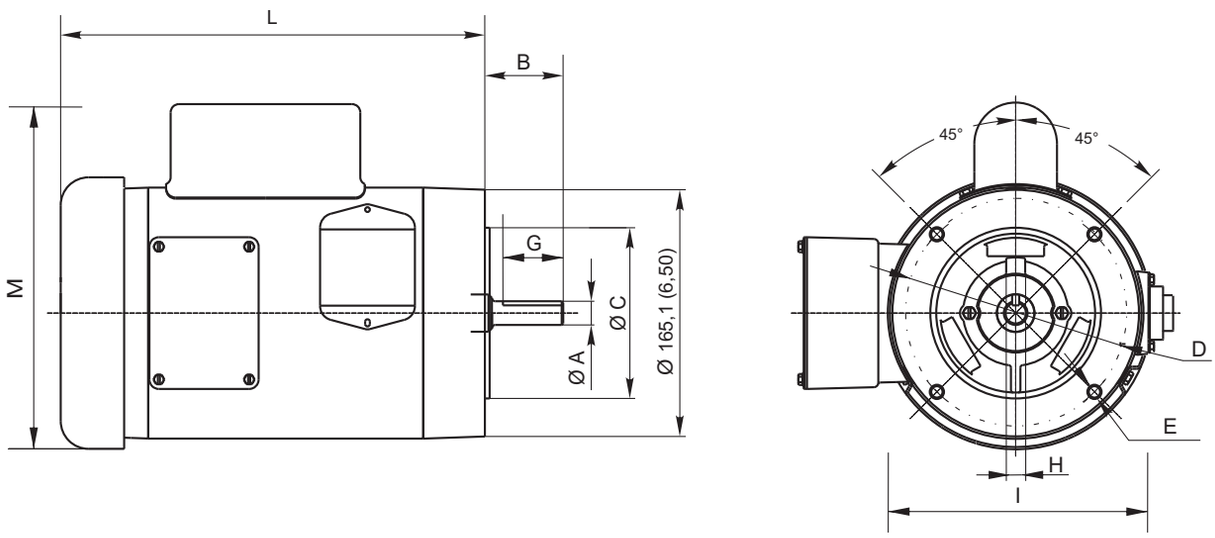
* Note: The coupling+flange kit is already included when specifying a B14 motor in PPC assembly code. XB14E 100 code has to be indicated only when ordering PPC with no motor but with coupling+flange kit. Other couplings for different motor sides are available on request. Not suitable for S series pump.

Attention! When assembling frame 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.

Attention! Heat up ONLY the aluminium coupling motor side in order to ease the assembly with the motor shaft.

NEMA AC MOTORS

Nema motors: for market compatibility, any Nema 56C and 184TC face standard AC motor can be mounted. These motors are normally procured by the customer himself.
Two-piece couplings and additional adaptor flanges as per following tables must be fitted.

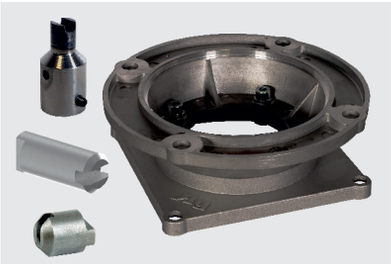


NEMA standard dimensions in mm (inches)

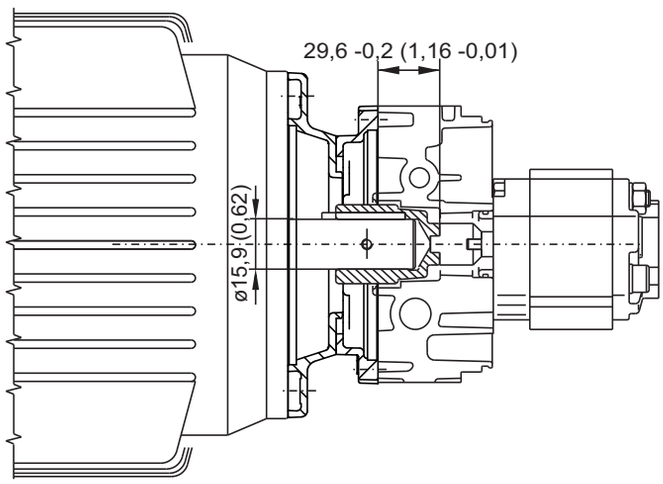
Frame size	Typical powers	ØA	B	ØC	D	E	G	H	I max	L max	M max	Mounting kit
56C	0,18 ~ 1,1 kW 0,25 ~ 1,5 HP	15,87 (0,6)	52,3 (2,1)	114,3 (4,5)	149,3 (5,9)	3/8-16 UNF	35 (1,4)	4,83 (0,2)	144,5 (5,7)	284 (11,2)	200 (7,9)	**X56C-0** (gr. 0) **X56C-1** (gr.1)
184TC	1,1 ~ 3,7 kW 1,5 ~ 5 HP	28,57 (1,1)	66,55 (2,6)	215,9 (8,5)	184,15 (7,3)	1/2-13 UNF	44,5 (1,8)	6,35 (0,2)	268 (10,6)	406 (16)	296 (11,7)	**X184TC-1** (gr.1)

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

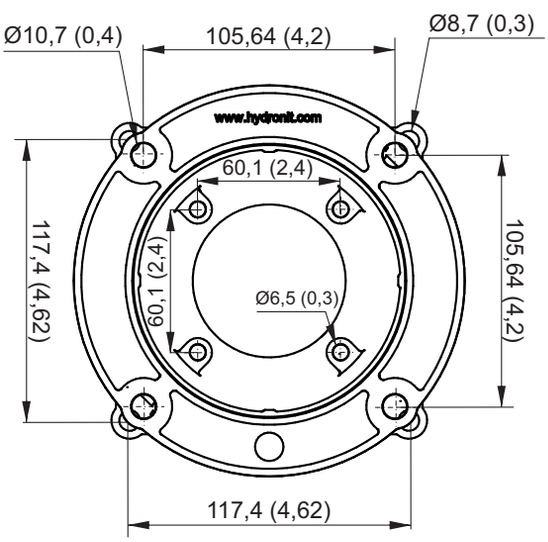
MOUNTING KIT FOR NEMA 56C AC MOTORS

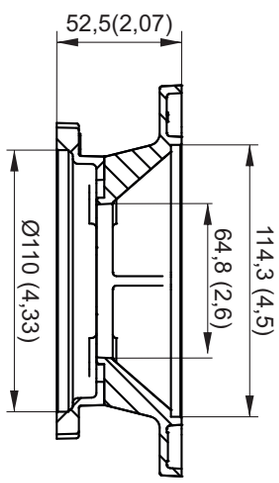


Kit weight: 0,81 kg (1,8 lbs)



Adaptor flange





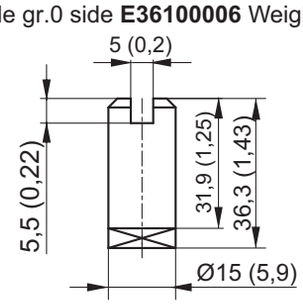
Weight: 0,41kg (0,9 lbs)

Description	Assembly code*	Spare part code
Nema 56C motor side half-coupling	X56C -0 (pumps gr.0) -1 (pumps gr.1)	E36156C02
Pump side half-coupling		E36100006 (gr.0) E36100000 (gr.1)
Nema 56C adaptor flange		F27056C03

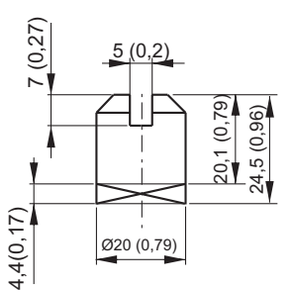
* Note: The coupling+flange kit is already included when specifying a Nema 56C motor in PPC assembly code. Nema 56C flange assembly code has to be indicated only when ordering PPC with no motor but with coupling+flange kit.

Couplings

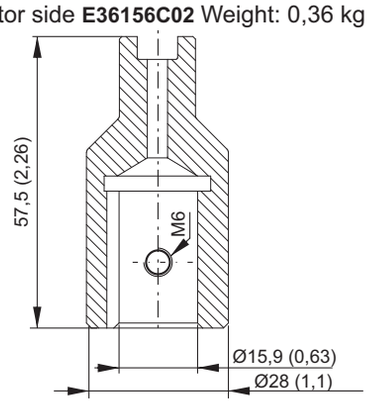
Pump side gr.0 side **E36100006** Weight: 0,04 kg



Pump side gr.1 **E36100000** Weight: 0,05 kg

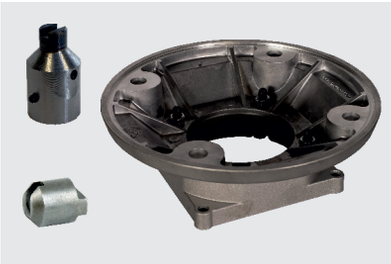


Motor side **E36156C02** Weight: 0,36 kg

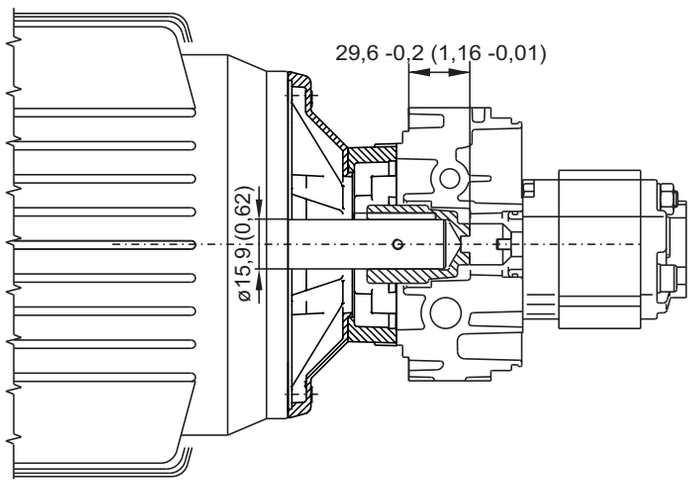


Attention! When assembling Nema 56C-face motors with X56C-1 flange+couplings kit, please respect positioning tolerances as per top drawing. Failure to do so can cause malfunctioning or component failure.

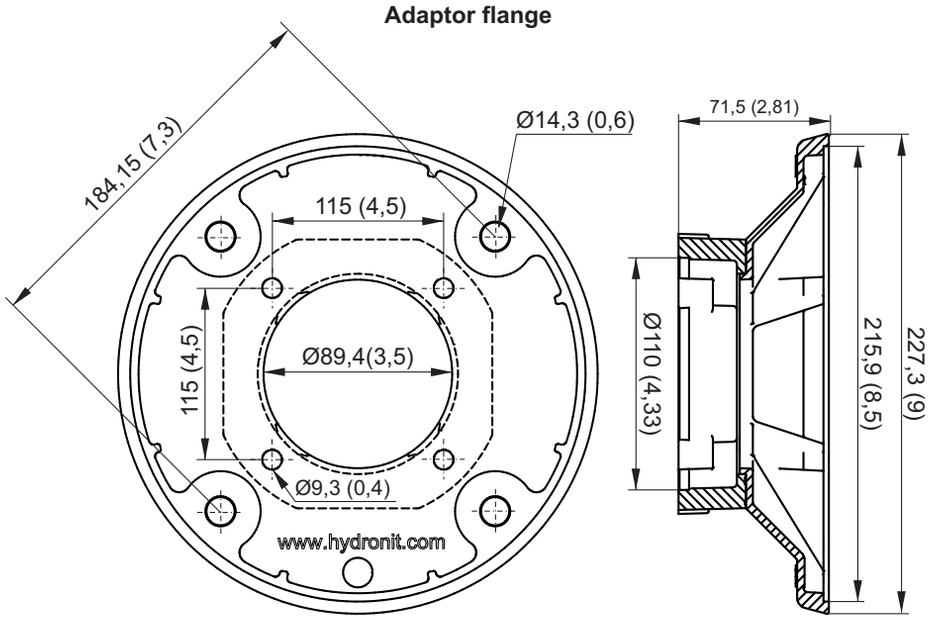
MOUNTING KIT FOR NEMA 184TC AC MOTORS



Kit weight: 1,85 kg (4,1 lbs)



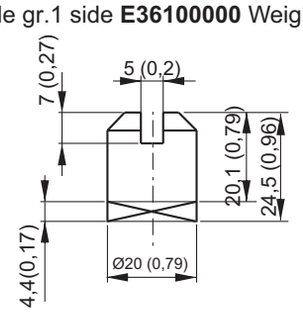
Adaptor flange



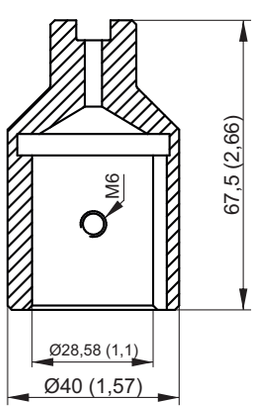
Weight: 1,4 kg (3,1 lbs)

Couplings

Pump side gr.1 side **E36100000** Weight: 0,05 kg



Motor side **C184TC** Weight: 0,36 kg



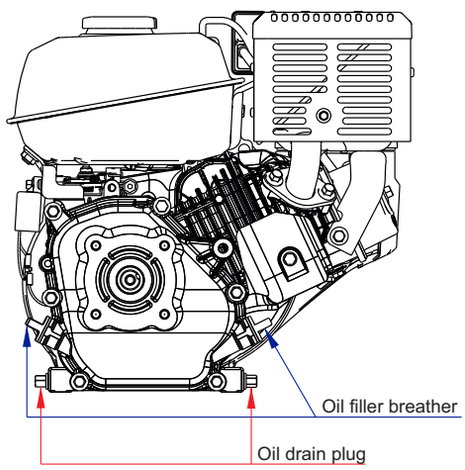
Description	Assembly code*	Spare part code
Nema 184TC motor side half-coupling	X184TC -1 (pumps gr.1)	C184TC
Pump side half-coupling		E36100000 (gr.1)
Nema 184TC adaptor flange		X184TC03

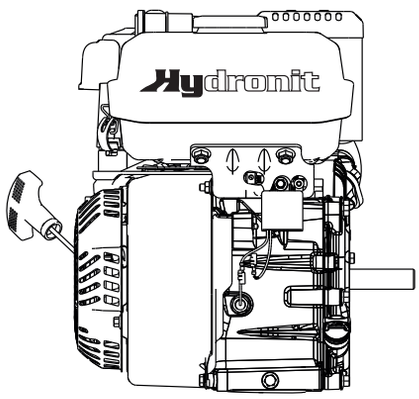
* Note: The coupling+flange kit is already included when specifying a Nema 184TC motor in PPC assembly code. Nema 184TC flange assembly code has to be indicated only when ordering PPC with no motor but with coupling+flange kit.

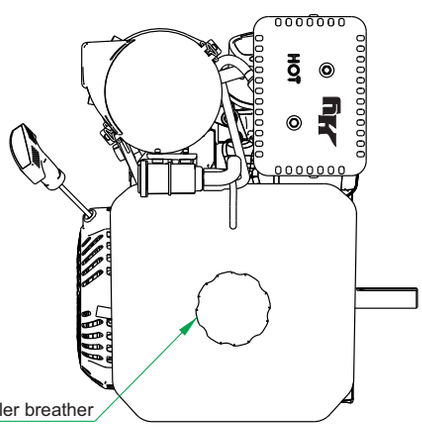
Attention! When assembling Nema 184TC-face motors with XB184TC-1 flange+couplings kit, please respect positioning tolerances as per top drawing. Failure to do so can cause malfunctioning or component failure.

GASOLINE ENGINE

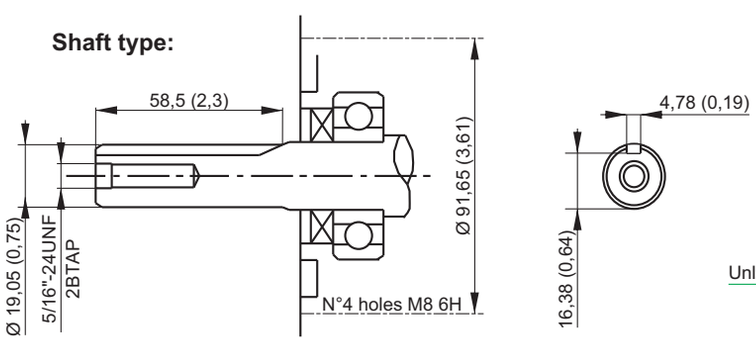
Engine type: single-cylinder, air-cooled, 4 stroke.
Power: 5 kW
Displacement: 208 cc
Nominal speed: 3600 rpm
Compression ratio: 8,2:1
Recoil start
Fuel: unleaded gasoline
Fuel capacity: 3 l
Oil: SAE 10W-40
Oil capacity: 0,5 l
Oil alert system
Dry air filter
Dry weight: 16 Kg
Max angle of operation: 25°
Overall dimension (mm): 400 x 360 x 400







Shaft type:

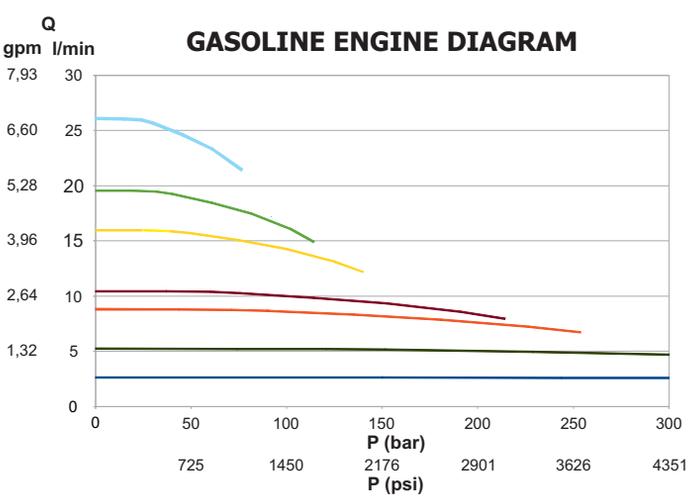


The gasoline engine is sold with no oil. Attention! FILL oil before operating the engine.
With gasoline engines we suggest to use plastic tanks.

Code

Description	Assembly code	Spare part code
5000W gasoline engine + oil alert protection	**MG50**	**MGE00ST50**

GASOLINE ENGINE DIAGRAM



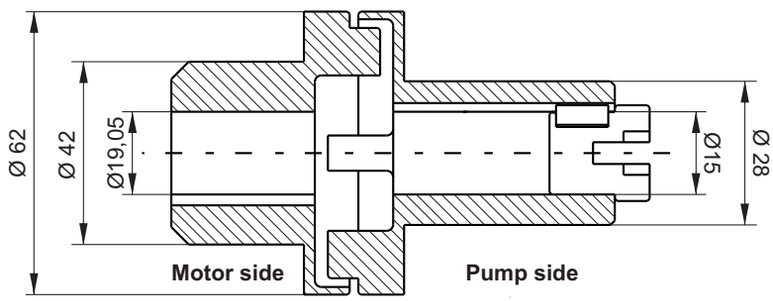
Flow-pressure curves parameterized on the pump displacement.
Choose the correct motor-pump coupling according to the hydraulics required pressure value.
Diagrams made using ISO VG46 fluid at 10°C environmental temperature.

ELASTIC MOUNTING KIT FOR GASOLINE ENGINE

Kit weight: 1,9 Kg

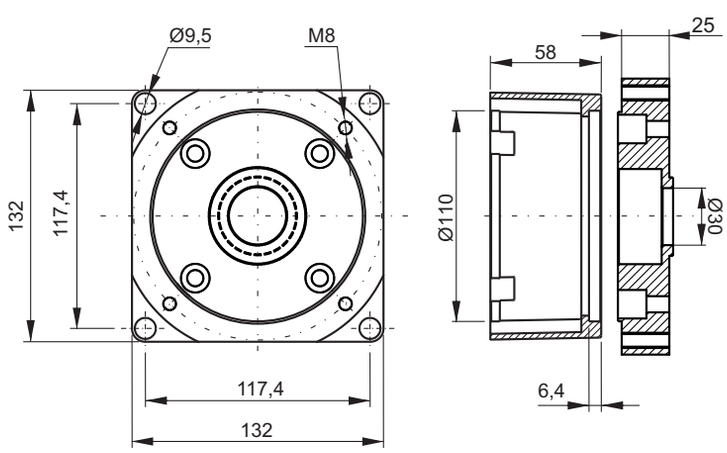
Elastic coupling

Elastic coupling **T54001010** Weight: 0,34 Kg



Adaptor flanges

Adaptor flange **FTE270000** Weight: 1,56 Kg



Description	Assembly code*	Spare part code
Elastic coupling	XB14E GE	T54001010
Gasoline engine adaptor kit flange		FTE270000

This elastic mounting kit for gasoline engine can be used also for other types of engine. For example:

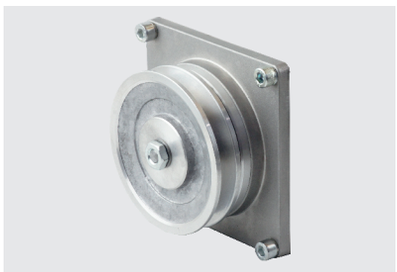
- Honda GTX with Q shaft
- Kohler with 3/4" shaft
- Yanmar with E-D L48N shaft
- Yamaha with PTO type A and M. face A shaft
- Subaru with 3/4" shaft

* Note: The coupling+flange kit is already included when specifying a B14 motor in PPC assembly code. XB14GE code has to be indicated only when ordering PPC with no motor but with coupling+flange kit. Not suitable for S series pump.

Attention! When assembling frame B14 motors with XB14 flange+coupling kit, please respect positioning tolerances as per top drawing. Non-compliance can cause malfunctioning or component failure.

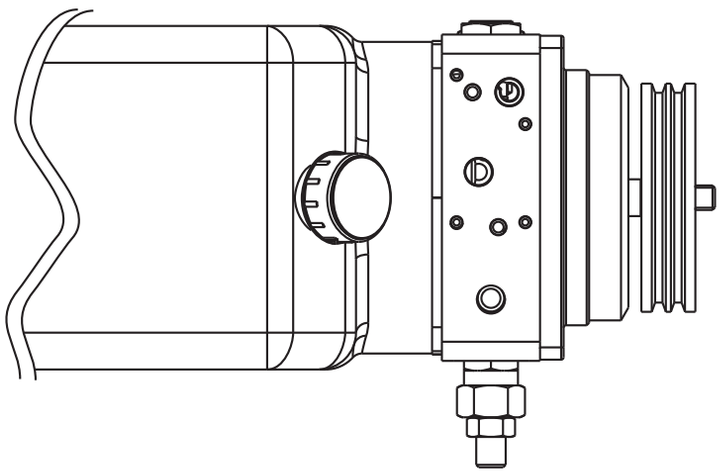
Attention! Heat up ONLY the aluminium coupling motor side in order to ease the assembly with the motor shaft.

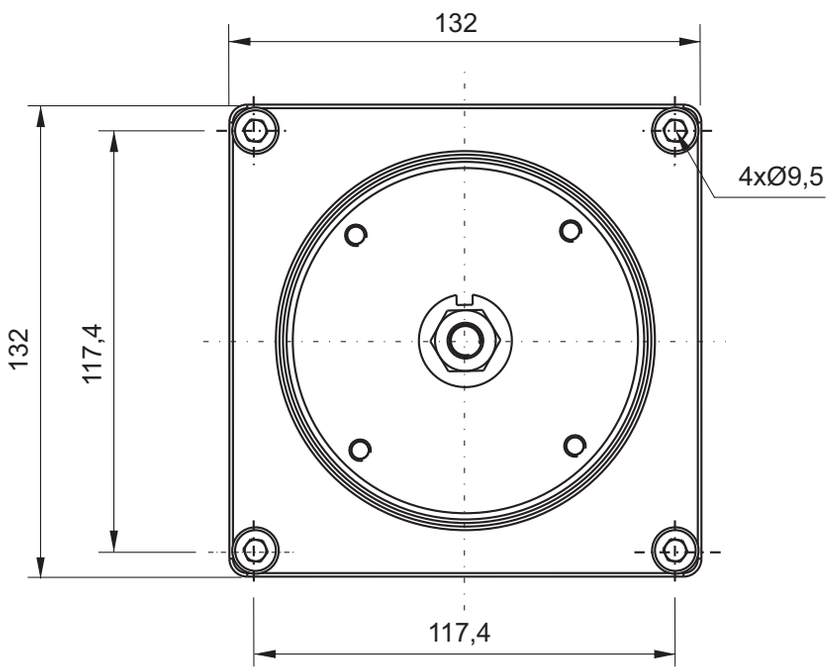
PULLEY DRIVE

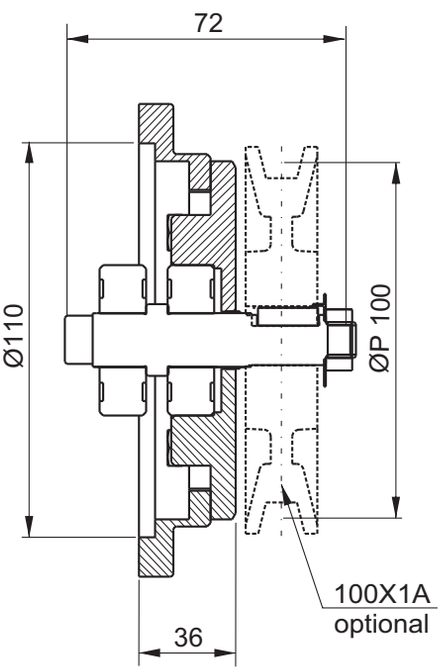


For pulleys mounted on shaft
Ø14mm with 5mm key

Weight: 0,70 Kg





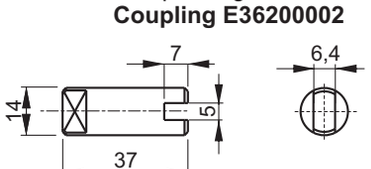


Description	Assembly code	Spare part code
Kit shaft and flange for mounting pulley	XPU1401-0 (pompa gr.0) XPU1401-1 (pompa gr.1)	P46FP1401
B14 pump side half-coupling		E36200006 (gr. 0) E36200002 (gr. 1)
B14 71 adaptor flange		F27010001

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

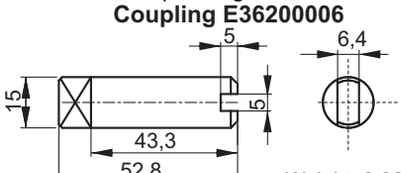
Couplings

Pump side gr. 1
Coupling E36200002



Weight: 0,041 kg

Pump side gr. 0
Coupling E36200006



Weight: 0,063 kg

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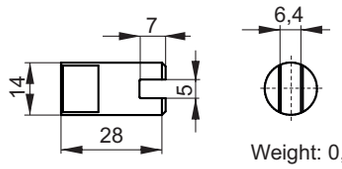
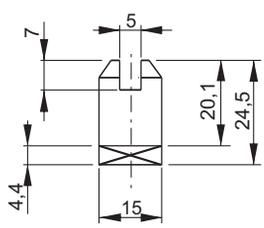
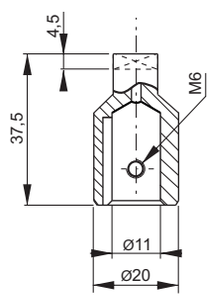
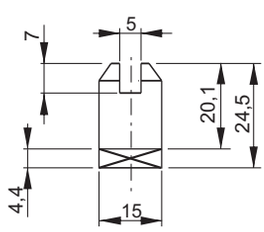
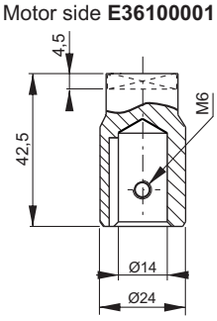
SUMMARY TABLE - AC PUMP/MOTOR COUPLING KITS

Motor \ Pump	Group 0 pump	Dimensional drawings
INTEGRAL AC	E36200003	 Weight: 0,028 kg
AC B14 63	NB14 63 (M36100011+E36100000M+F25030002)	Pump side **E36100000M**  Motor side **M36100011** 
AC B14 71	NB14 71 (E36100001+E36100000M+F25030003)	Pump side **E36100000M**  Motor side **E36100001** 

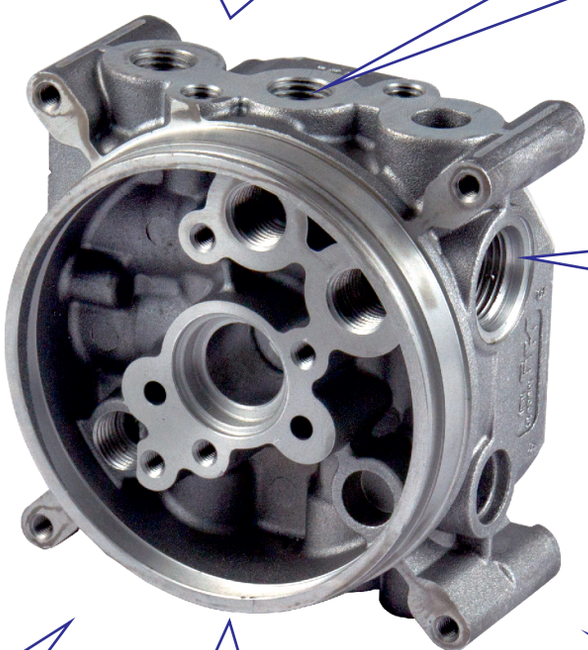
SUMMARY TABLE - AC PUMP/MOTOR COUPLING KITS

Motor \ Pump	Group 0 pump	Group 1 pump
INTEGRAL AC	E36100006	E36100000
AC B14 63	XB14 63-0 (M36100011+E36100006+F27010011)	XB14 63-1 (M36100011+E36100000+F27010011)
AC B14 71	XB14 71-0 (E36100001+E36100006+F27010001)	XB14 71-1 (E36100001+E36100000+F27010001)
AC B14 80	XB14 80-0 (E36100002+E36100006+F27010002)	XB14 80-1 (E36100002+E36100000+F27010002)
AC B14 90	n/a	XB14 90-1 (E36100003+E36100000+F27010003)
AC B14 100/112	n/a	XB14 100-1 (E36100004+E36100000+F27010004)
XB14E 100	n/a	XB14E 100 (T54001100+FTE2700100)
AC NEMA 56C	X56C-0 (E36156C02+E36100006+F27056C03)	X56C-1 (E36156C02+E36100000+F27056C03)
AC NEMA 184TC	n/a	X184TC-1 (C184TC+E36100000+X184TC03)
XB14E GE	n/a	XB14E GE (T54001010+FTE270000)
PULLEY	XPU1401-0 (P46FP1401+E36200006+F27010001)	XPU1401-1 (P46FP1401+E36200002+F27010001)

MICRO CENTRAL MANIFOLD

A single **Micro die-cast aluminium** central manifold in 4 different executions is the core part to realize extremely small power units in industrial, mobile and marine fields. It features the **highest integration and flexibility** on the market, with up to **seven devices** which can be fitted inside, plus a wide selection of manifold blocks which can be connected to cartridge type valves or NG3 valves

The **interface** to hose fittings or external additional manifolds is **unified**. The P and T port tappings for the hose fittings are **1/4" BSP** (International standard) or **9/16-18UNF** (SAE06) for the American standard



Lateral cavities are according **SAE08 standard** (3/4-16UNF), except for the main check valve (5/8-18UNF) and main relief valve (M14)

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

Clockwise (our standard) or counterclockwise or bidirectional rotation tang drive shaft **standard gear pumps** can be mounted

The maximum flow is **6 l/min**, with a **low pressure drop**, and maximum motor power is 2,2kW, well above the average of other alternative products on the market

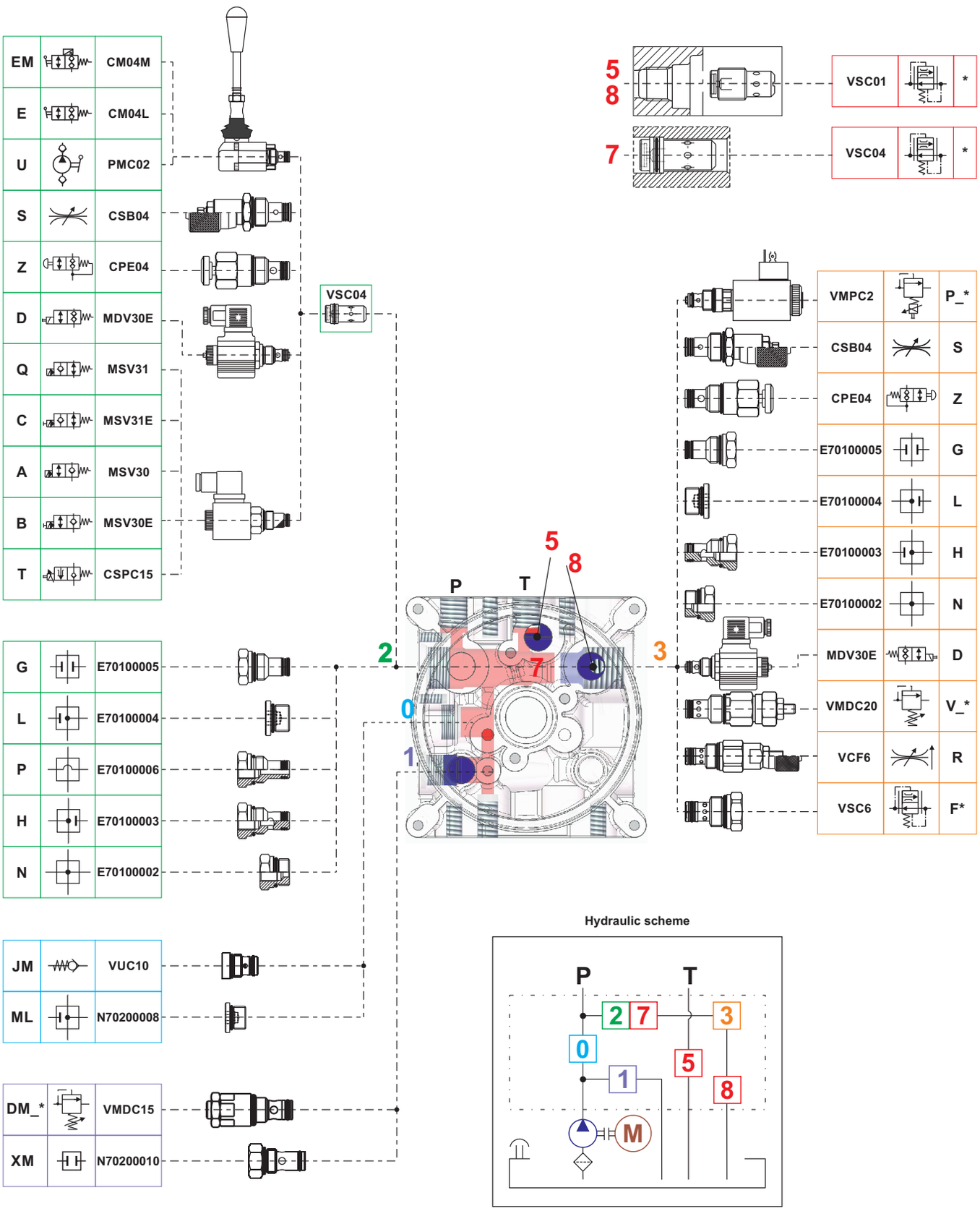
Q & A

Which micro central manifold execution should I choose?
MB type is the most widely applied for single acting or double acting circuits. M4 execution is recommended for compact and cost effective double acting circuits with a single cylinder while MR is for bidirectional pump and may integrate double relief valve, double pilot operated check valves and also an extra pilot operated check valve to ensure that differential cylinder circuits function properly (this extra valve discharges excess return flow from the piston side of the cylinder).

Do I need special tools to assemble the components within the central manifold?
No. All valves are screw-in type in a single piece construction (no loose nuts, washers, springs,... difficult to assemble and falling apart). The components are easily assemblable with simple hand tools and hexagon keys.

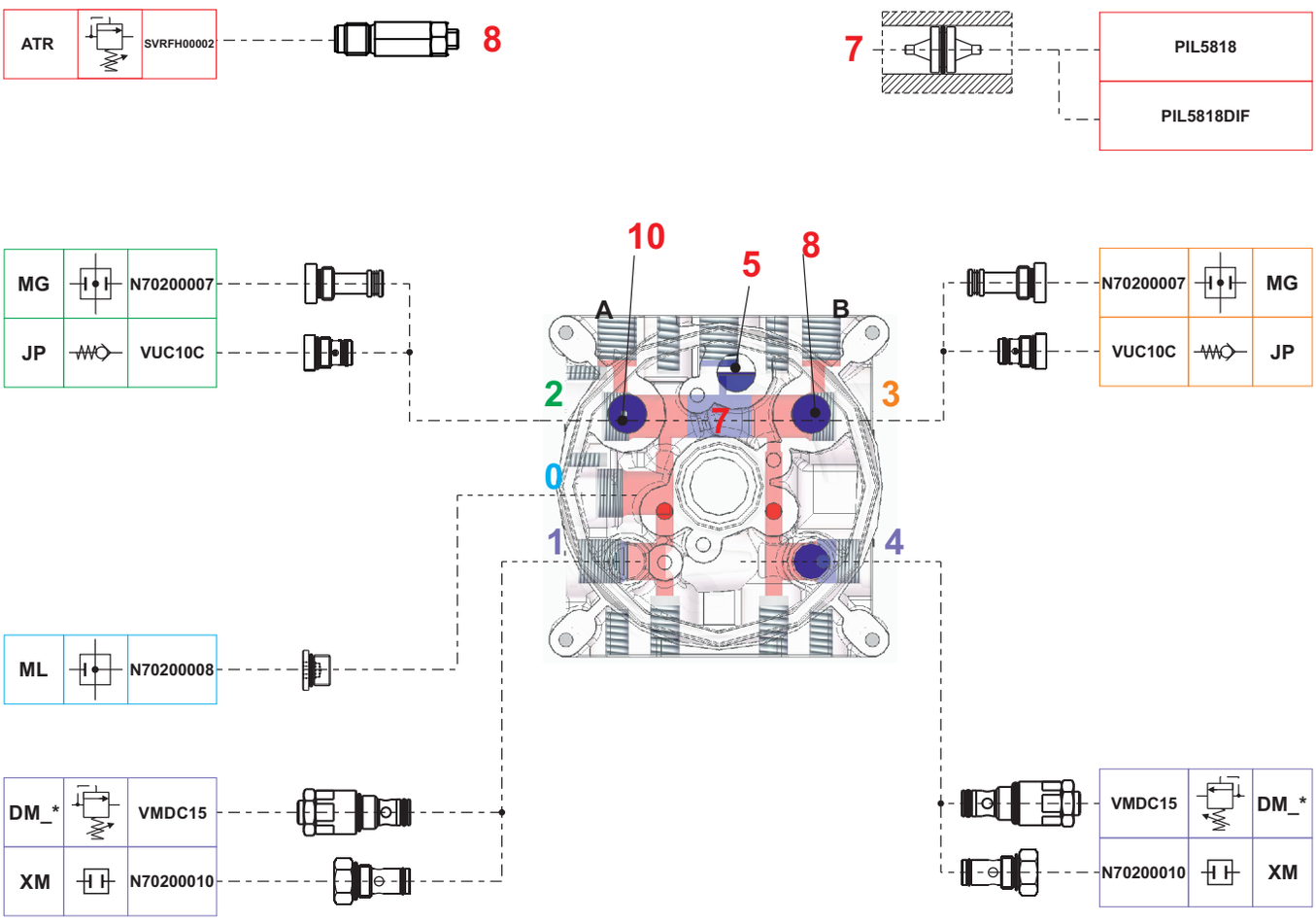
Is the central manifold available as a loose component?
Yes. We can supply either fully assembled and tested power packs or kits of loose components, which can be kept in stock by our worldwide distributors and easily assembled to satisfy local market demand quickly and effectively. Central manifolds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

MICRO CENTRAL MANIFOLD «MB»

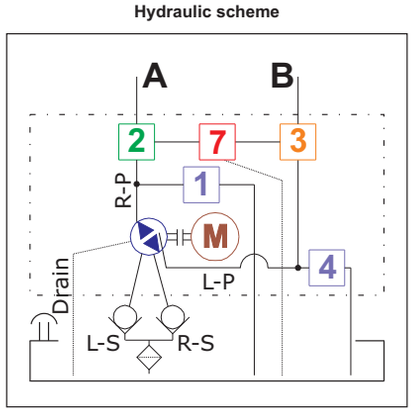


Hydraulic scheme

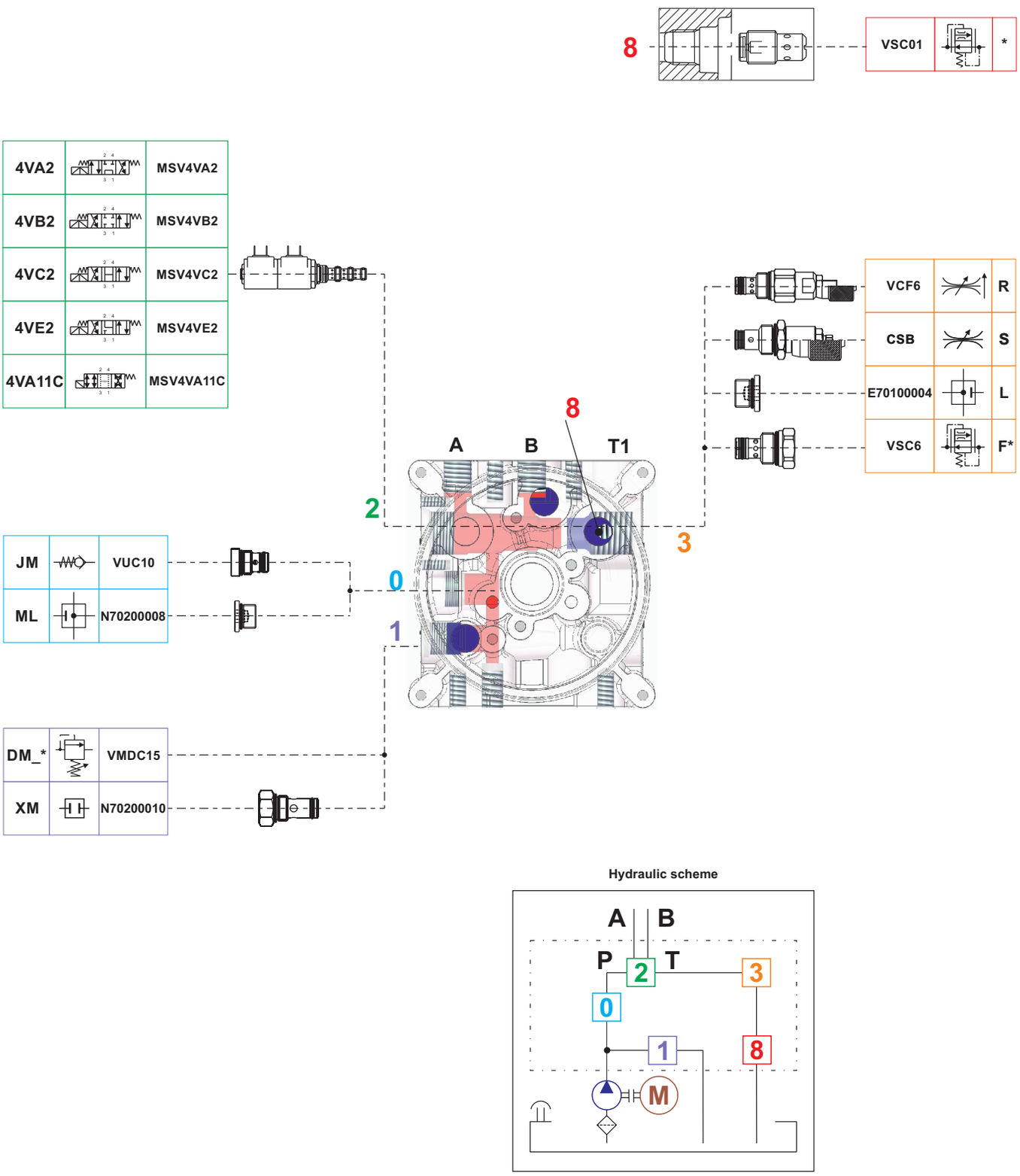
MICRO CENTRAL MANIFOLD «MR»



Hydraulic scheme



MICRO CENTRAL MANIFOLD «M4»

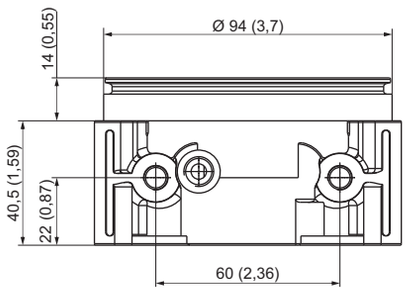


Hydraulic scheme

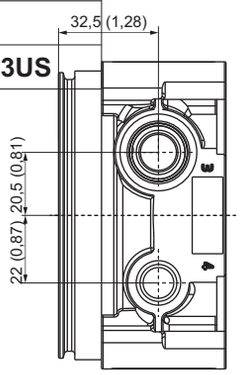
MICRO CENTRAL MANIFOLD OVERALL DIMENSIONS

Type	Spare part code
MB	E60102031
MR	E60102032
M3	
M4	E60102033
MBUS	E60102031US
MRUS	E60102032US
M3US	
M4US	E60102033US

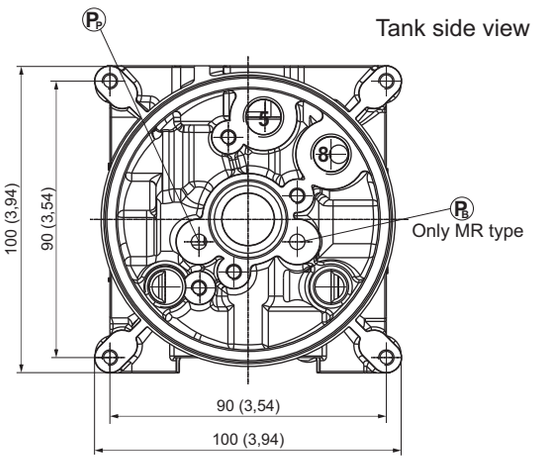
Notes:
- codes ending with US are intended for the American market and machined with 9/16-18 UNF (SAE06) exit ports.
- all dimensions in mm and (inches)

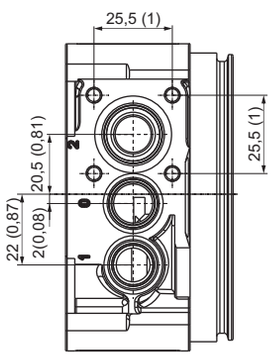


Weight: 0,60 kg (1,32 lb)

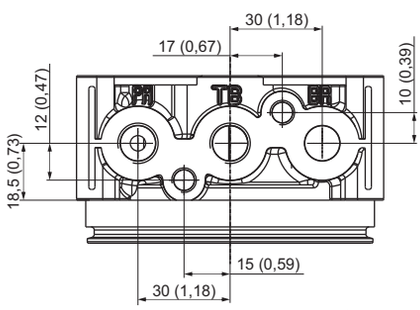


Tank side view

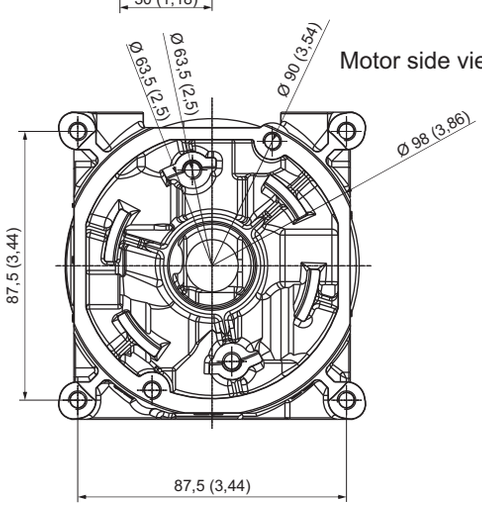




Cavity	Threads
1, 4 (MR type)	M14x1 (relief valve)
0	5/8-18 UNF
2, 3	3/4-16 UNF (SAE 08) 5/8-18 UNF (MR type)
P-T, A-B, T1 (threaded on request only)	1/4 BSP 9/16-18 UNF (US type)
5, 8	1/4 BSP
External manifold attachment	2 M8 tie-rods
Tank attachment	4 bolts M5x10
Integral AC motor attachment	4 bolts M6x20
DC motor attachment	2 bolts M6x14 or M6 tie-rods
Pump attachment	2 bolts M5x** (see pump length on the relevant tables)
Foot mounting support attachment	2 bolts M8x16 5/16-24UNF (US type)
PMC hand pump / CM lever valve cap attachments	4 bolts M5x45



Motor side view

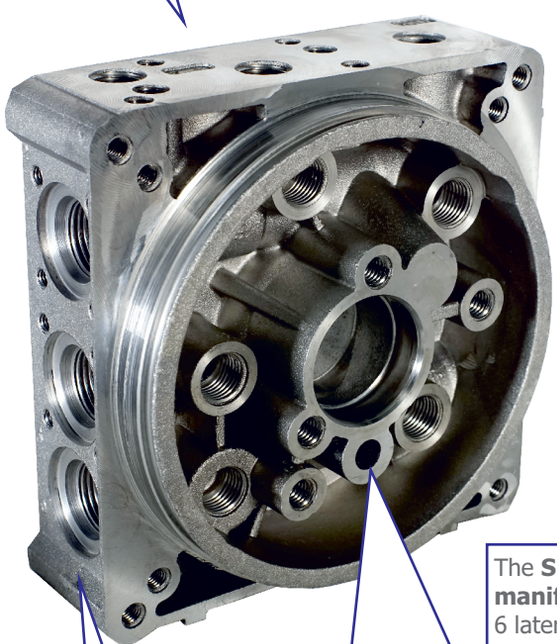


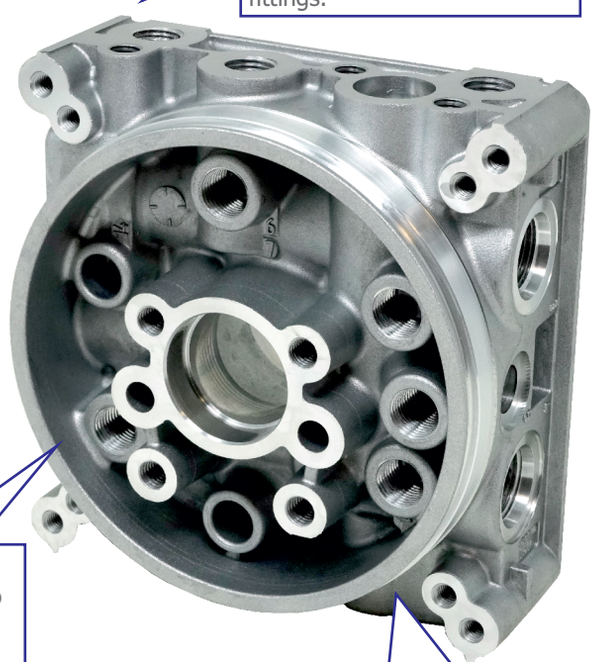
CENTRAL MANIFOLDS for PPC

The **Universal central manifold** with up to 5 lateral cavities in 3 main executions

Two **die-cast aluminium central manifold**s in eight main executions is the core part of all power units for all industrial, mobile and marine applications. They feature the **highest integration and flexibility** on the market, with up to **eleven cavities** where valves and components can be fit

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





The **Smart central manifold** with up to 6 lateral cavities in 5 main executions

Lateral cavities are conform to **SAE08 standard** (3/4-16UNF)

Clockwise (our standard) or counterclockwise tang drive shaft **external gear pumps** can be mounted. **Double pumps**, including those with an integral **HI-LO circuit**, and **low noise helicoidal gear pumps** are also available. The maximum flow is **25l/min** (6,5GPM), with a **low pressure drop**. Electric motor power up to 7,5kW.

The **interfaces** to tanks and motors are **unified.** All plastic and steel tanks can be easily interchanged.
AC or DC motors can be fit.
B14 IEC or NEMA 56C and 184TC standard motors interfaces are available

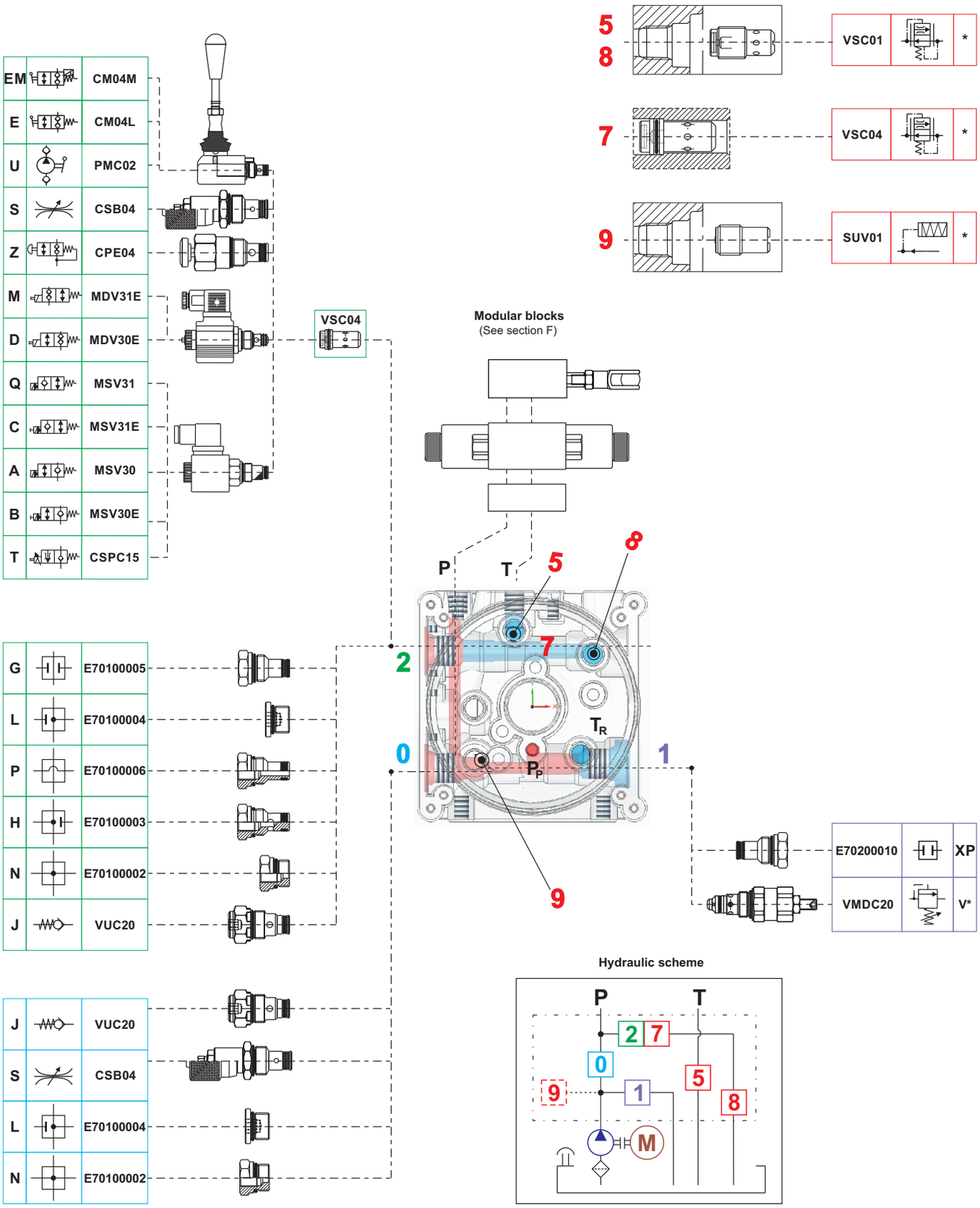
Q & A

Which central manifold type and 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.
SR type is used with bidirectional pumps and can integrate P.O. check valves and differential cylinder vent valve (SRD version), SB3 is for circuits with 3-way hydraulic operated valve for automatic venting when the electric motor is off, SB is applied for single acting or double acting circuits with alternative components location than the UB and additional features. S4 is recommended for driving up to two double acting cylinders with integrated cartridge valves. SX* are for SPU. Further exectutions are available on request.

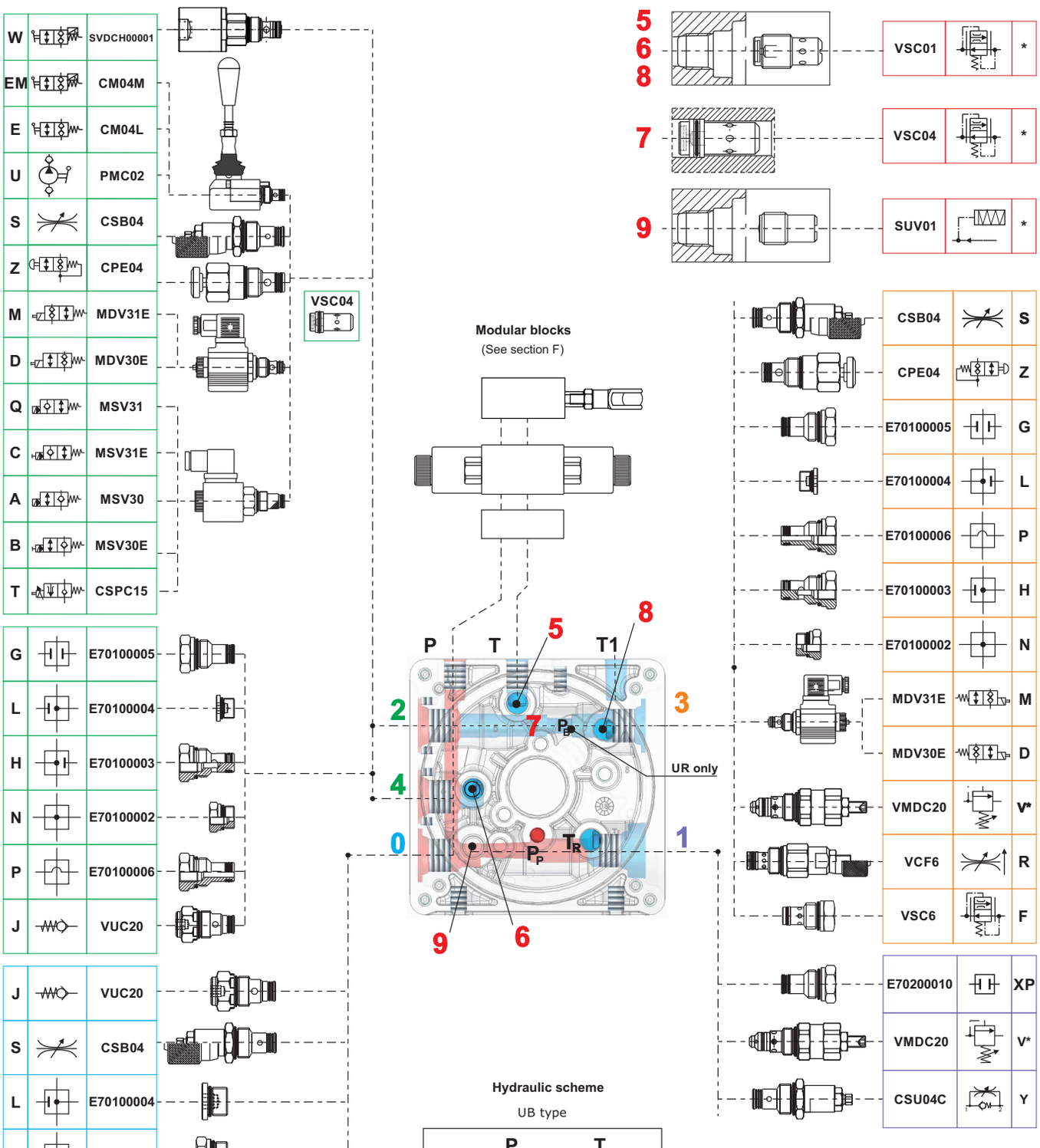
Do I need special tools to assemble the components within the central manifold?
No. All valves are screw-in type in a single piece construction (no loose nuts, washers, springs; nothing difficult to assemble or fall apart). The components can be easily assembled with simple hand tools and hexagon or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

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.

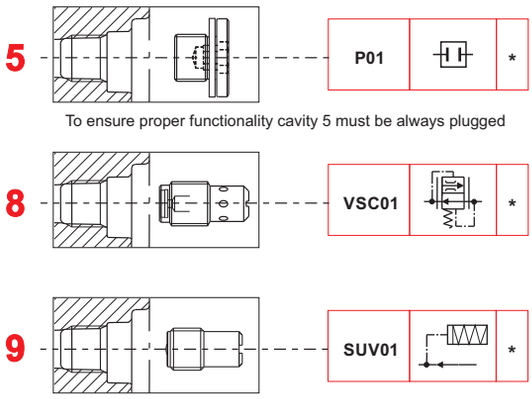
UNIVERSAL CENTRAL MANIFOLD «UA»



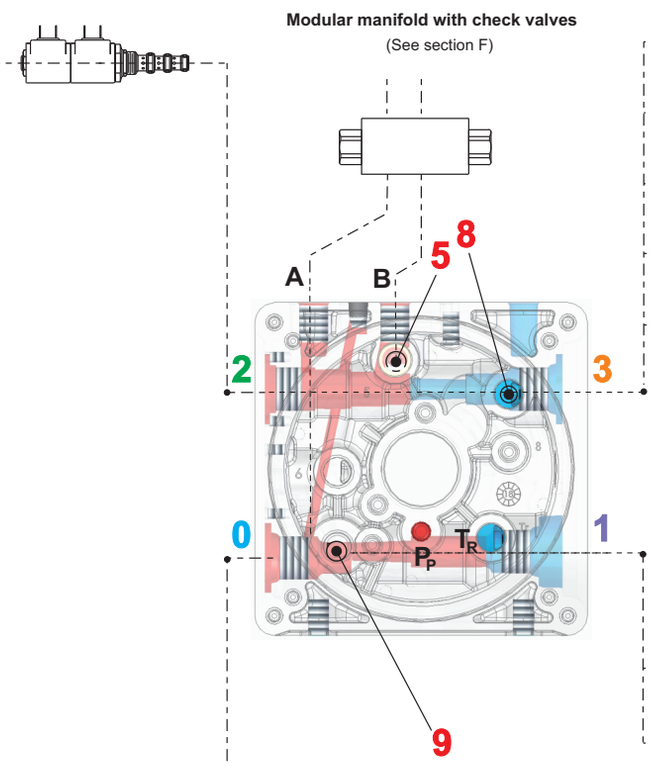
UNIVERSAL CENTRAL MANIFOLD «UB»

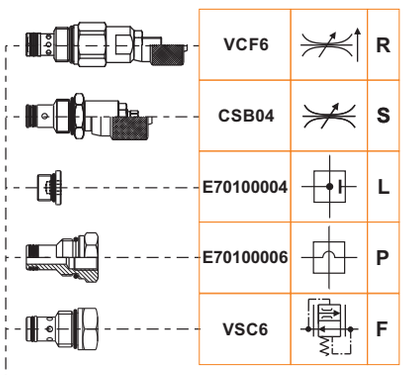


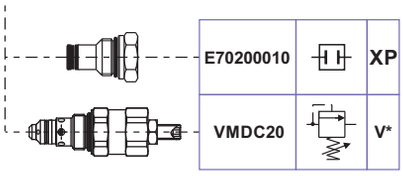
UNIVERSAL CENTRAL MANIFOLD «U4»



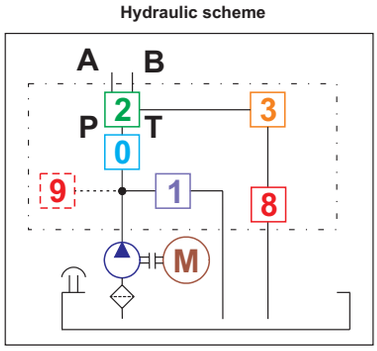
4VA2		MSV4VA2
4VB2		MSV4VB2
4VC2		MSV4VC2
4VE2		MSV4VE2
4VA11C		MSV4VA11C





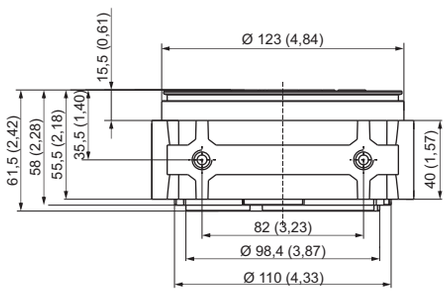


J		VUC20
S		CSB04
L		E70100004
N		E70100002



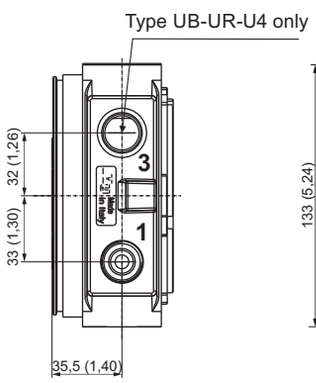
UNIVERSAL CENTRAL MANIFOLDS - OVERALL DIMENSIONS

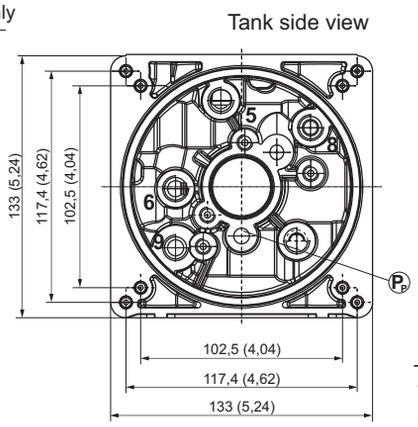
Type	Spare part code
UA	C30401000
UB	C30402000
U4	C30404000
UAUS	C30401010
UBUS	C30402010
U4US	C30404010

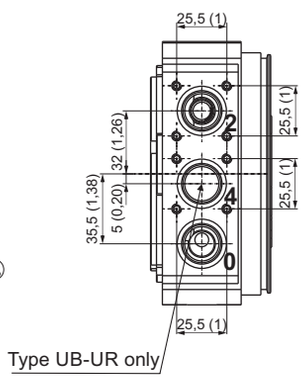


Weight: 1,2 kg (2,65 lb)

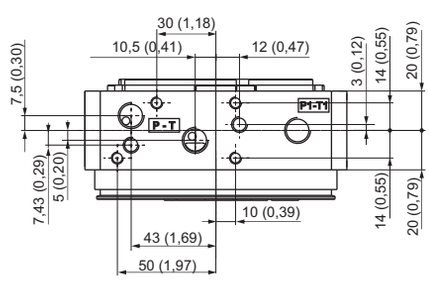
Notes:
- codes ending with **US** are according American standards, machined with 9/16-18 UNF (SAE06) P-T exit ports.
- all dimensions in mm (inches)

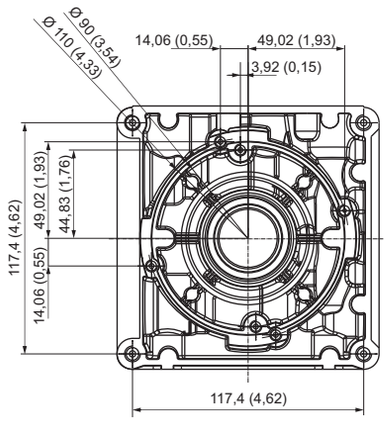






Cavity	Thread
0, 1, 2, 3, 4	3/4-16 UNF (SAE08)
P-T	1/4 BSP 9/16-18UNF (SAE06 - US type)
P_1-T_1	1/4 BSP (threaded on request only)
5, 6, 8, 9	1/4 BSP (cavity 9 threaded on request only)
External manifolds fixings	2 tie rods M8 4 tie rods M6 (UB type only)
Tank fixings	4 screws M6x14
Integral AC motors and B14 flanges fixings	4 screws M8x25
DC motors fixings	2 screws M6x14 or tie rods M6
Pumps fixings	2 screws M8 (see pump lenghts on the relevant tables)
Mounting Foot fixings	2 screws M10x18 3/8-16 UNC US type
PMC hand pump and CM lever valve fixings	4 screws M5x45

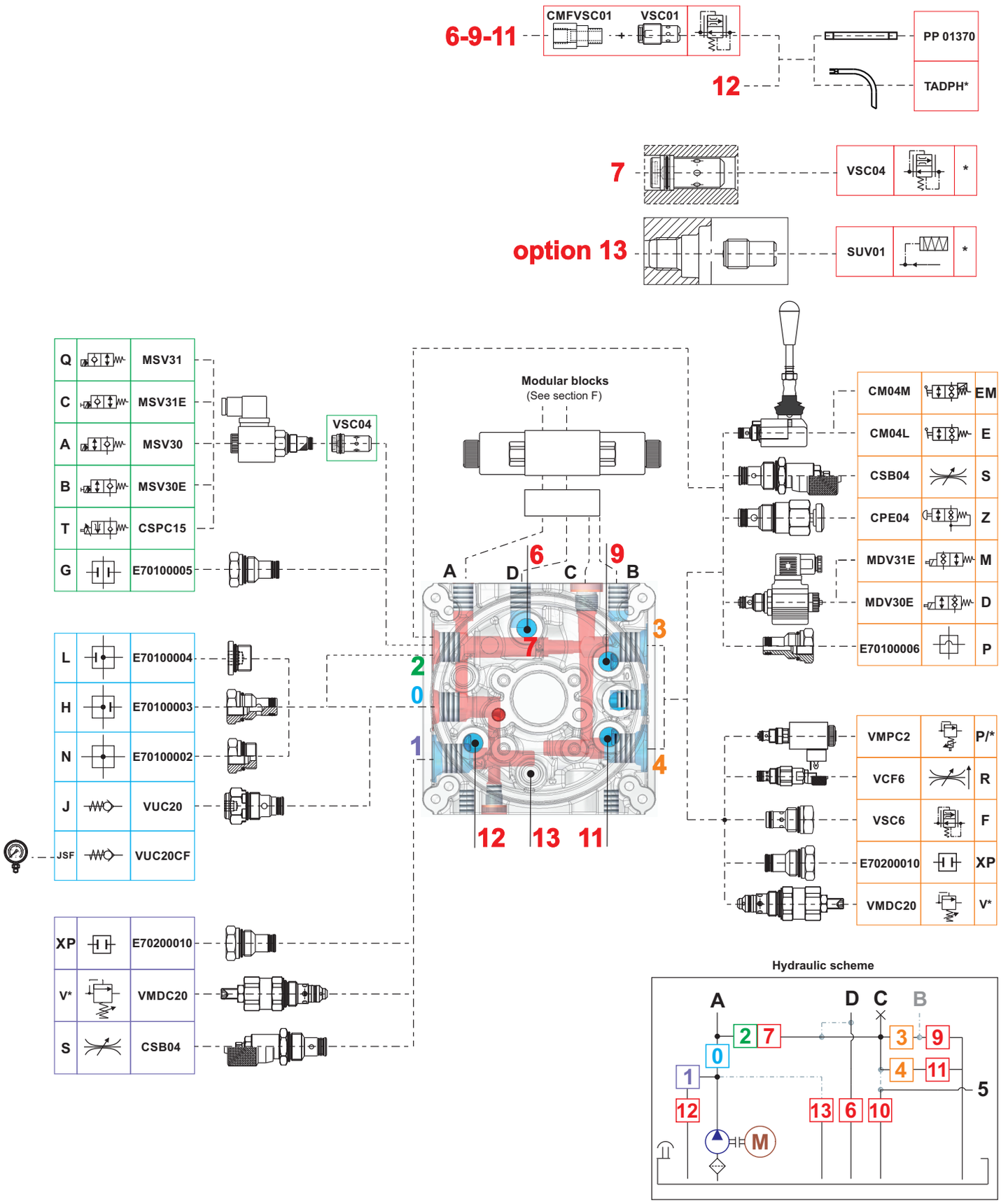




Motor side view

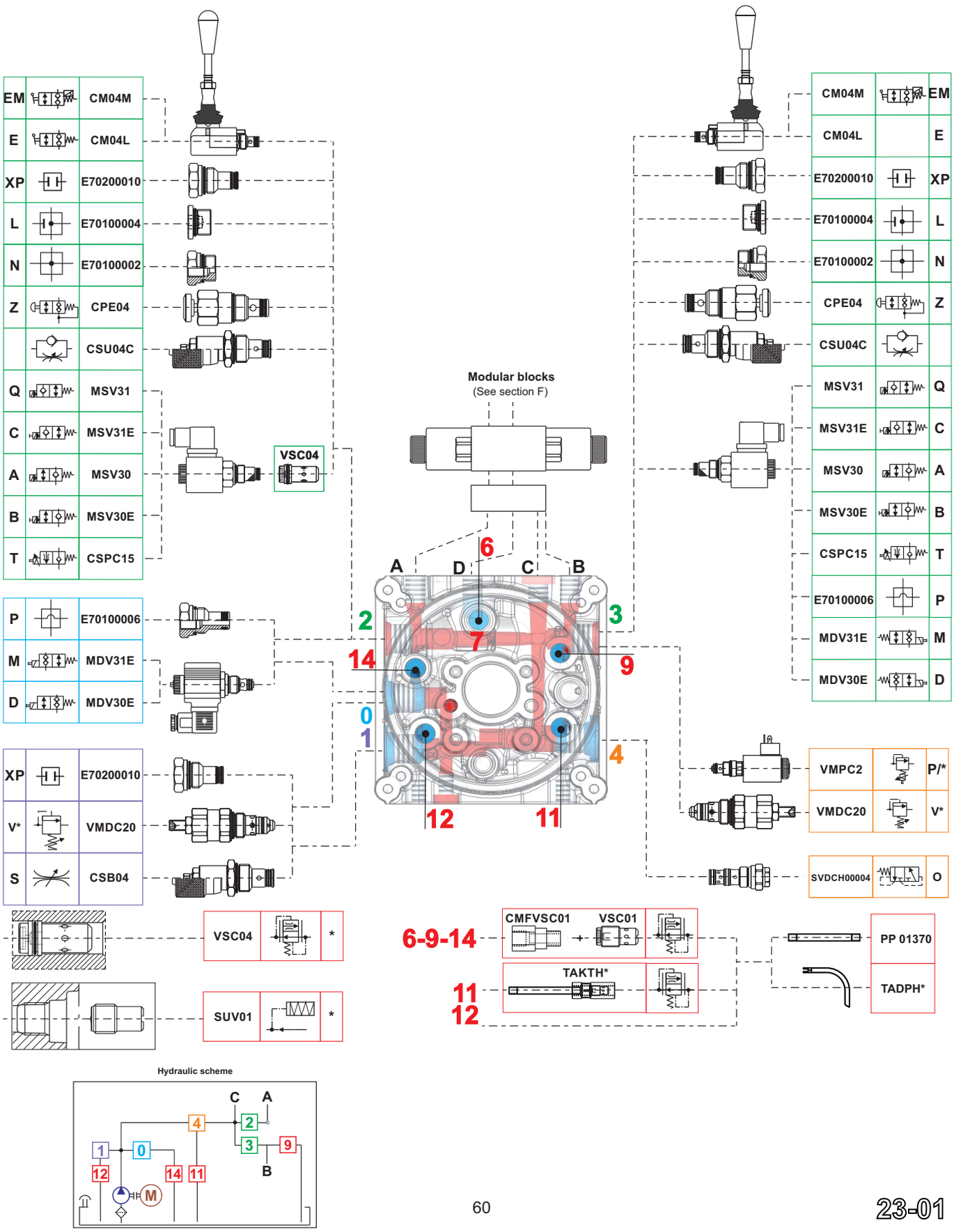
SMART CENTRAL MANIFOLD «SB»

NEW



SMART CENTRAL MANIFOLD «SB3»

NEW



Hydraulic scheme

SMART CENTRAL MANIFOLDS «SR, SRD, SRT & SRDT»

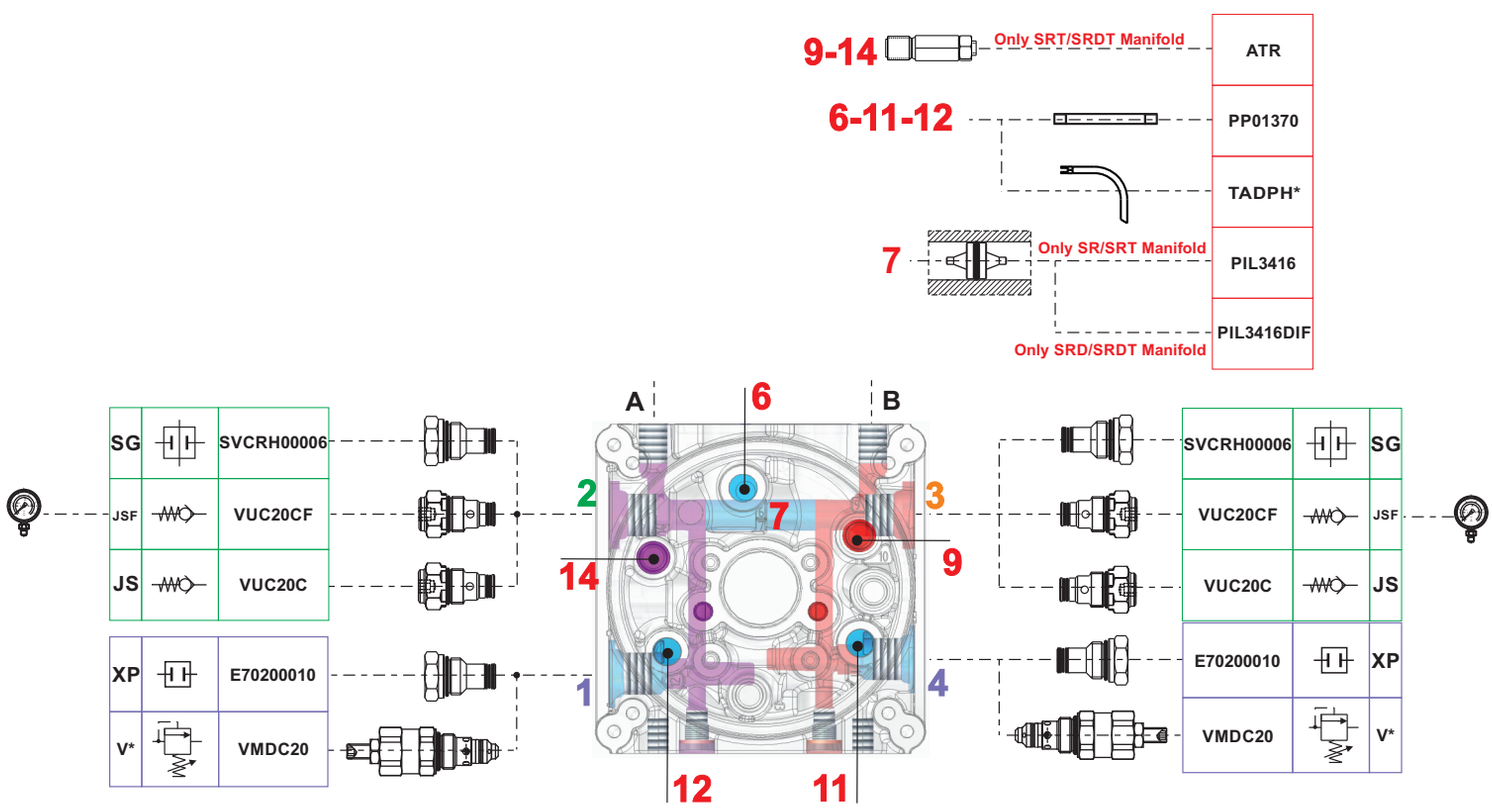
NEW

SR: Smart Central Manifold for reversible applications with cylinder area ratio equal to 1

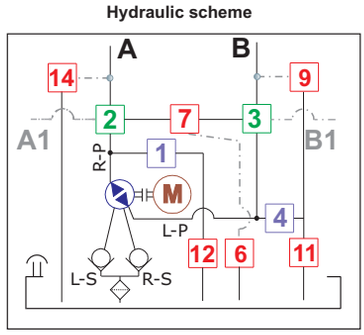
SRD: Smart Central Manifold for reversible applications with differentialarea cylinder area

SRT: Smart Central Manifold for reversible applications with cylinder area ratio equal to 1 plus termal valves

SRDT: Smart Central Manifold for reversible applications with differential area cylinder plus termal valves



Hydraulic scheme

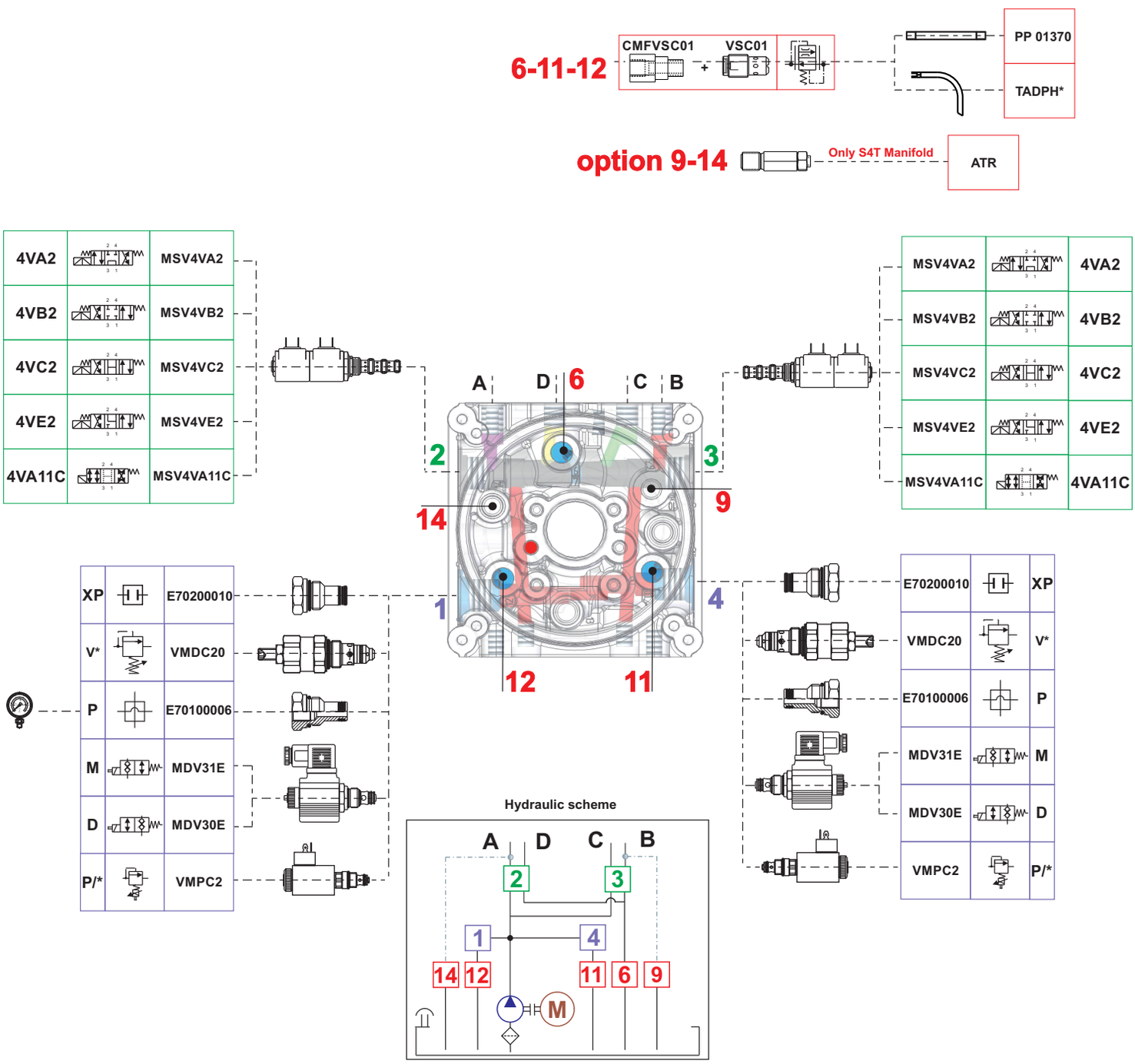


SMART CENTRAL MANIFOLDS «S4 & S4T»

NEW

S4: Smart Central Manifold with double 4/3 cartridges

S4T: Smart Central Manifold with double 4/3 cartridges plus thermal valves

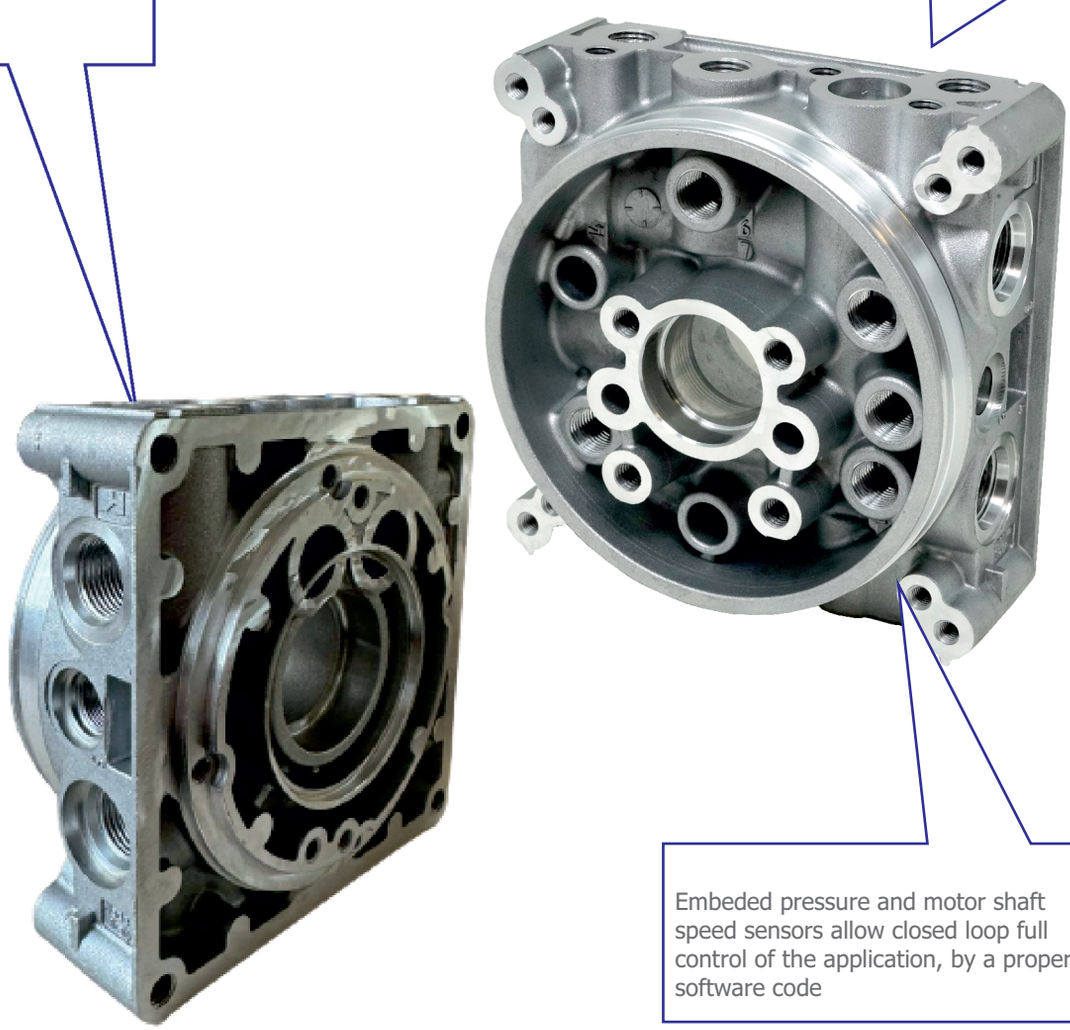


SMART CENTRAL MANIFOLDS «SX1 & SX2»

NEW

The **cavity #2** can accomodate SAE08 or SAE10 proportional flow control or standard on-off valves, for higher flow, specifically designed for the Smart Power Unit functionality.

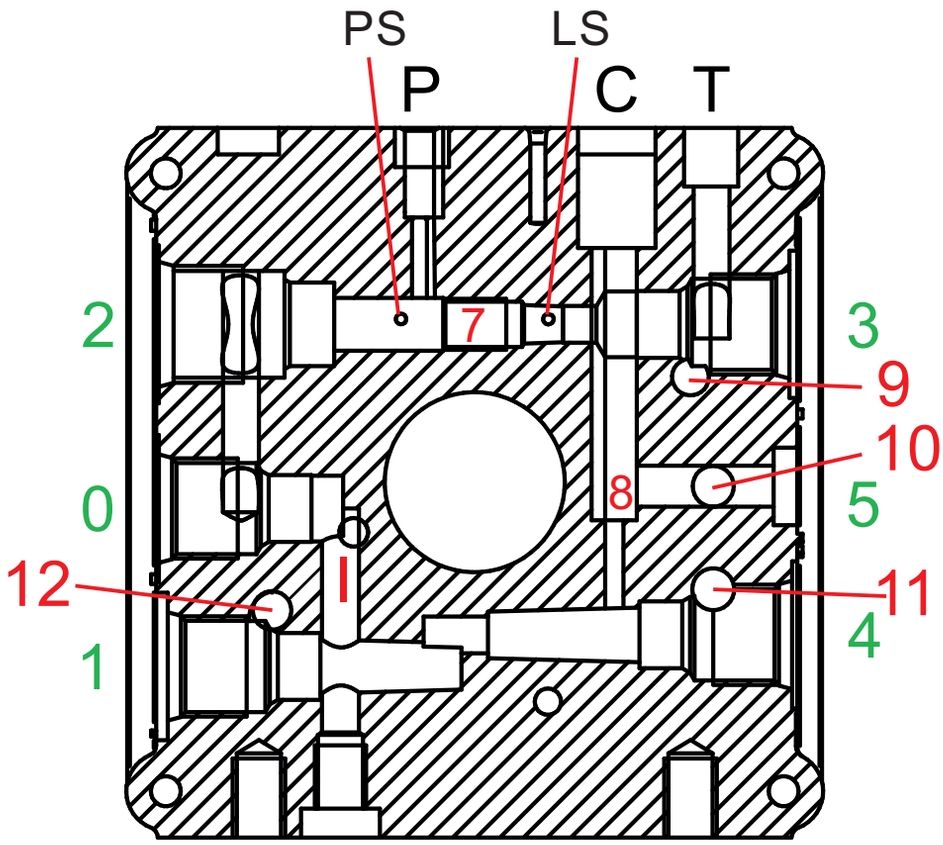
The **die-cast aluminium Smart central manifold** is the core part of all power units for all industrial, mobile and marine applications, requiring the embedded electronics and sensors provided by the HPC02 unit. Proportional flow, proportional pressure, or both PQ, and load sensing option.



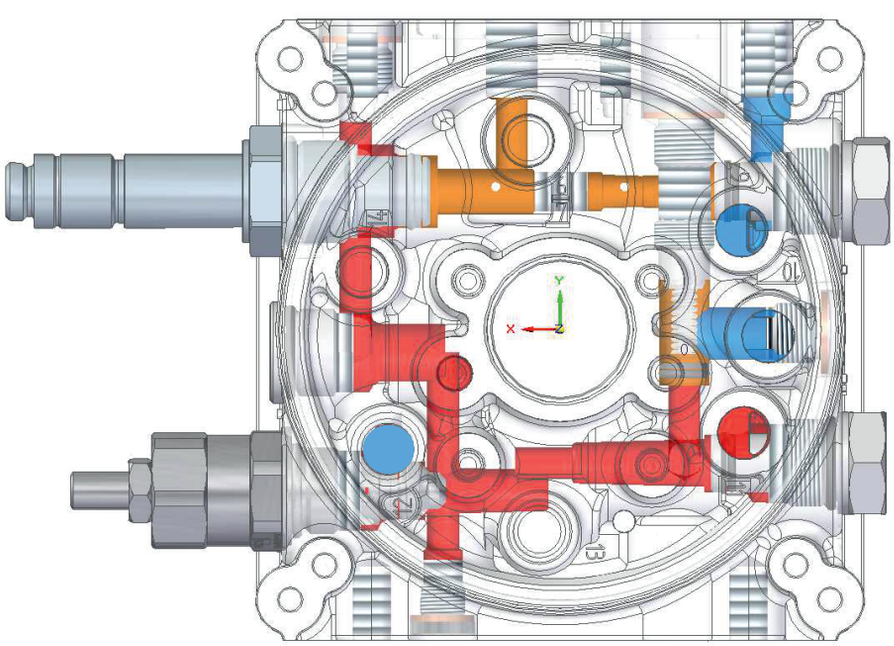
Embeded pressure and motor shaft speed sensors allow closed loop full control of the application, by a proper software code

SMART CENTRAL MANIFOLD «SX*Q» WITH PROPORTIONAL METER-IN FLOW CONTROL

NEW

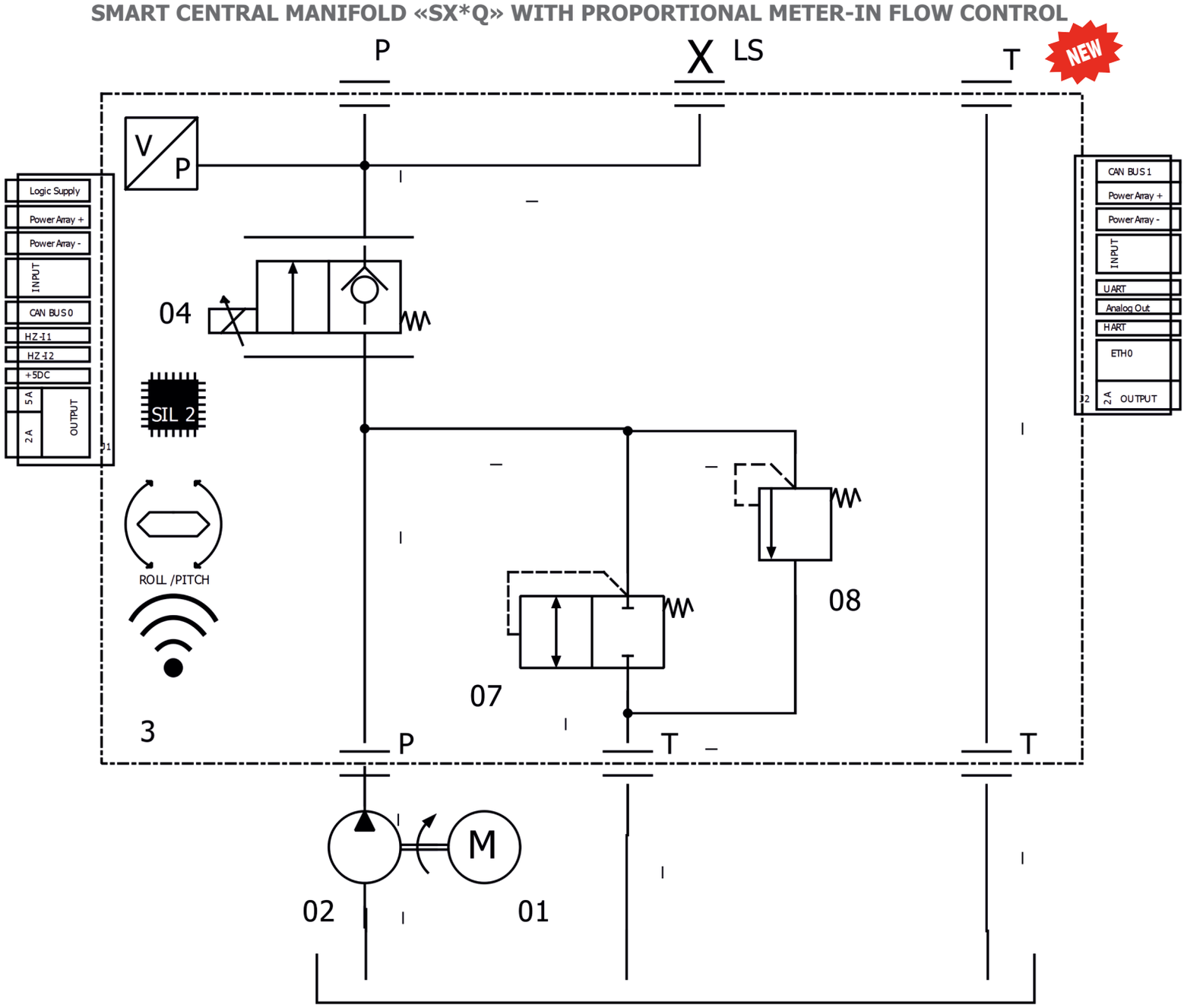


0) Plug
1) Relief valve or plug
2) Proportional flow valve
3) Plug
4) Relief valve or plug
5) Plug
7) Calibrated orifice
8) 3 way compensator
9) Return pipe
10) Return pipe
11) Empty or Relief valve return line
12) Empty or Relief valve return line
PS) Pressure transducer
LS) Pressure transducer on LS line
C) Plug



P line
Return line
Reduced pressure line

SMART CENTRAL MANIFOLD «SX*Q» WITH PROPORTIONAL METER-IN FLOW CONTROL



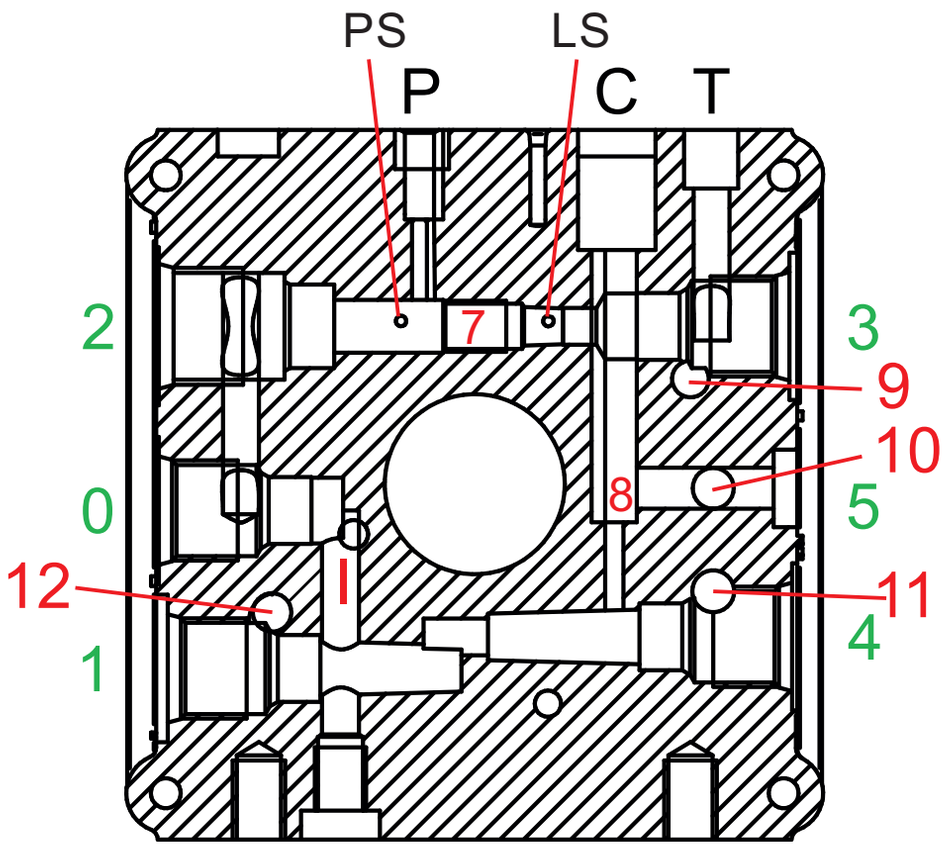
HPC02:** Hydraulic Diagrams with meter-in proportional Flow control

The Q type diagram is useful for sequential motion in automation, normally the Q manifold feeds an array of ON-OFF directional valves, regulating the common flow and the max pressure. Q system allows just sequential asynchronous movements. Typical applications are: personal lift equipment, small cranes,...

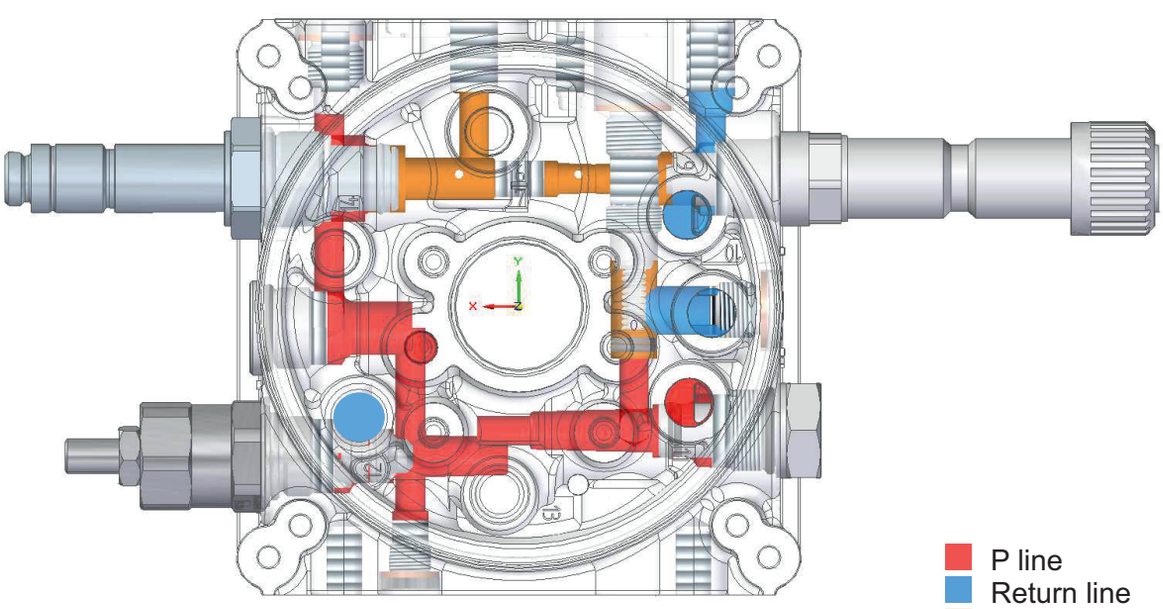
The Manifold contains a 3rd way pre-compensator wich is sensing pressure across the proportional flow regulator. The proportional pressure relief valve is limiting the max pressure allowed on the system. Pressure sensors (rated for 300 bar) sense Delivery line (P) or Load Sensing Line (the other line being plugged); pressure sensor is rated for max 5 bar and senses the return line pressure.
They are installed and electrically connected inside the manifold to the Logic controller. The Electronic Programmable controller drives the proportional valves according to the application software.

SMART CENTRAL MANIFOLD «SX*PQ» WITH PROPORTIONAL PQ CONTROL

NEW

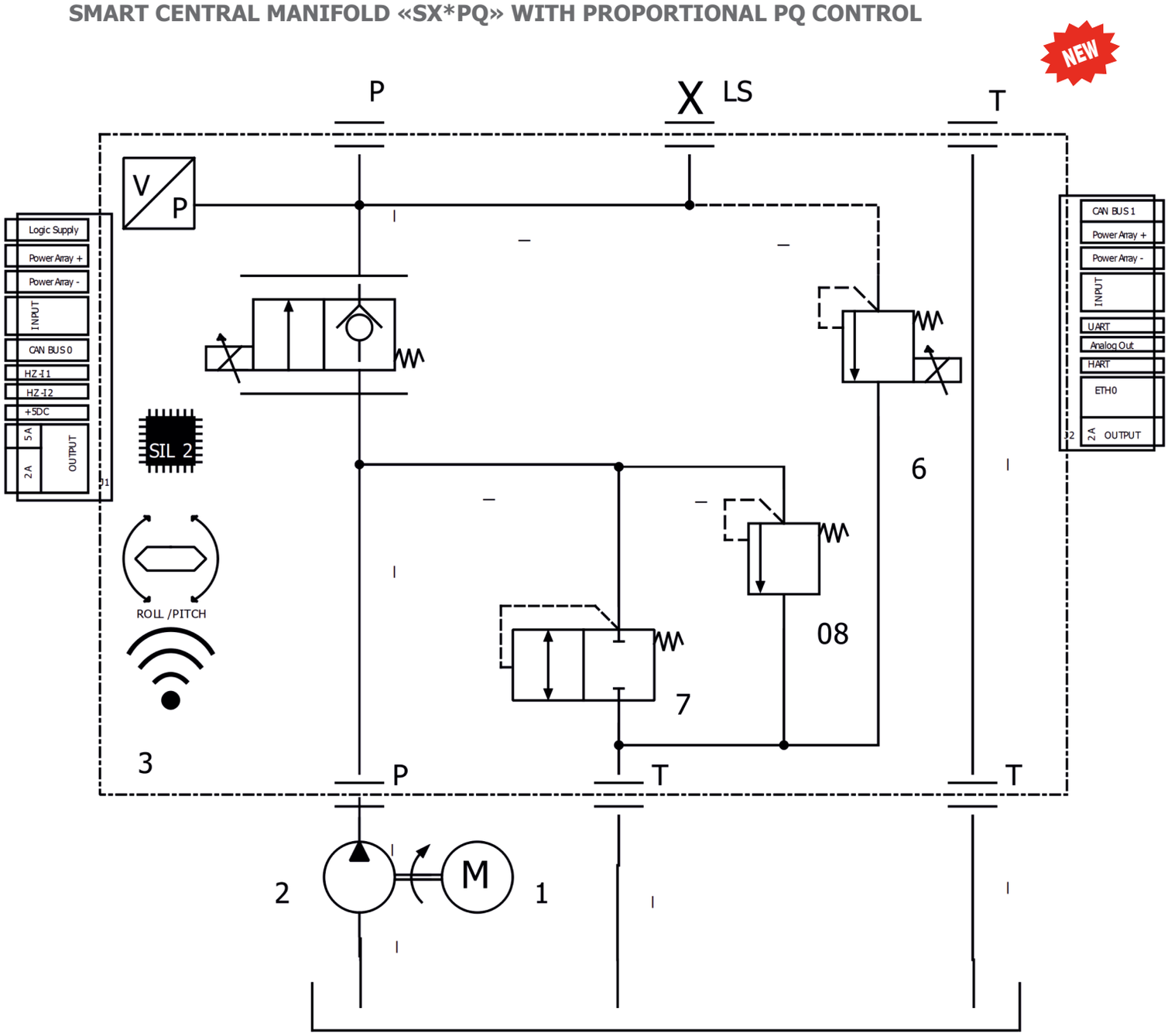


0) Plug
1) Relief valve or plug
2) Proportional flow valve
3) Proportional relief valve
4) Relief valve or plug
5) Plug
7) Calibrated orifice
8) 3 way compensator
9) Return pipe
10) Return pipe
11) Empty or Relief valve return line
12) Empty or Relief valve return line
PS) Pressure transducer
LS) Pressure transducer on LS line
C) Plug



P line
Return line
Reduced pressure line

SMART CENTRAL MANIFOLD «SX*PQ» WITH PROPORTIONAL PQ CONTROL



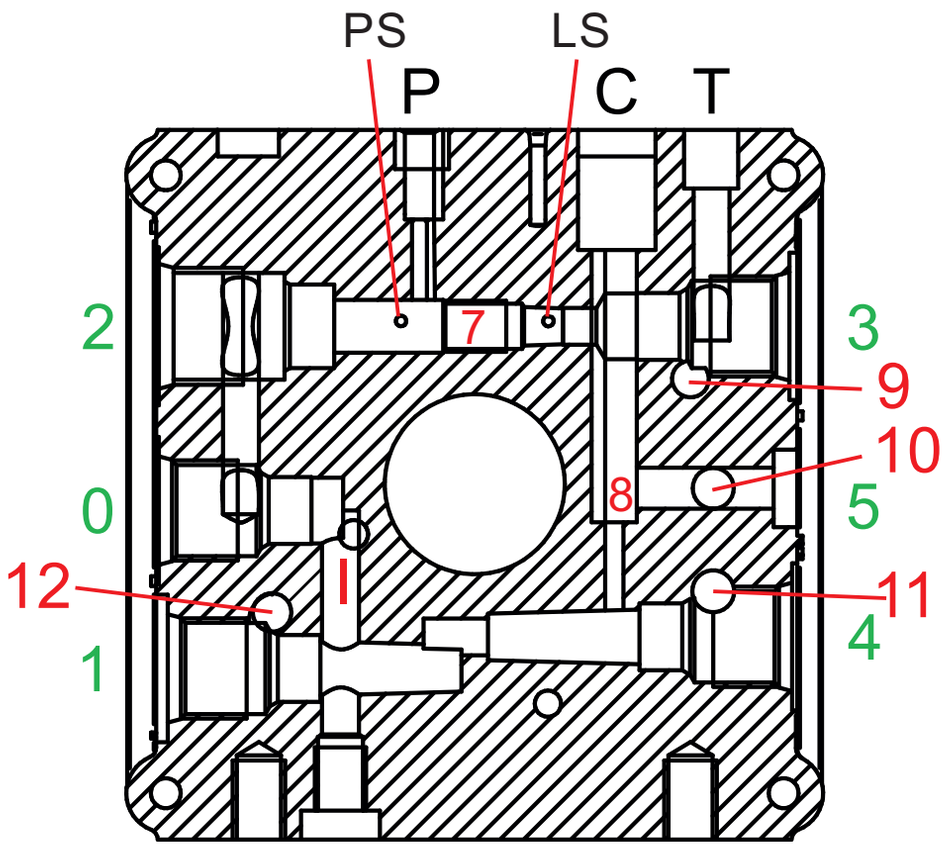
HPC02PQ: Hydraulic Diagram

The PQ type diagram is useful for sequential motion in automation, normally the PQ manifold feeds an array of ON-OFF directional valves, regulating the common flow and the max pressure. PQ system allows just sequential asynchronous movements. Typical applications are: personal lift equipment, small cranes,...

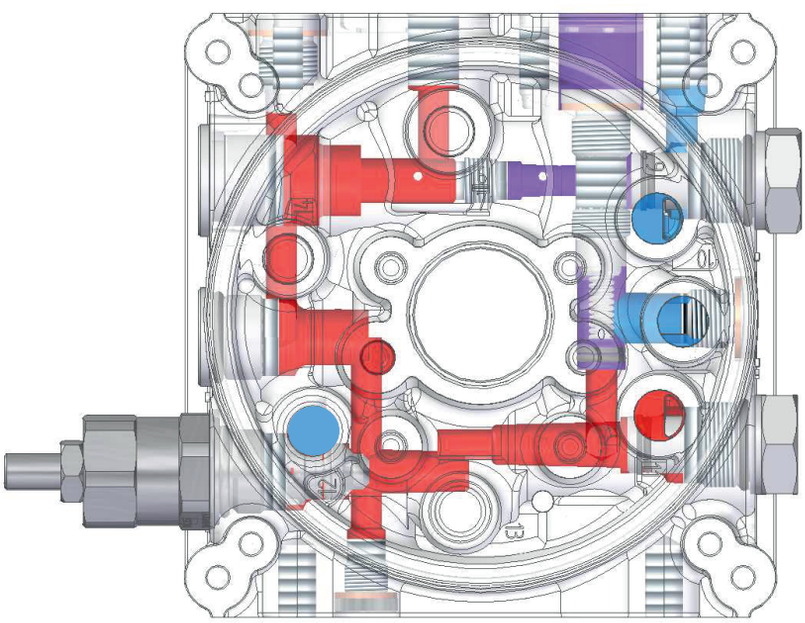
The Manifold contains a 3rd way pre-compensator wich is sensing pressure across the proportional flow regulator. The proportional pressure relief valve is limiting the max pressure allowed on the system. Pressure sensors (rated for 300 bar) sense Delivery line (P) or Load Sensing Line (the other line being plugged); pressure sensor is rated for max 5 bar and senses the return line pressure.
They are installed and electrically connected inside the manifold to the Logic controller. The Electronic Programmable controller drives the proportional valves according to the application software.

SMART CENTRAL MANIFOLD «SX*LS» WITH LOAD SENSING

NEW

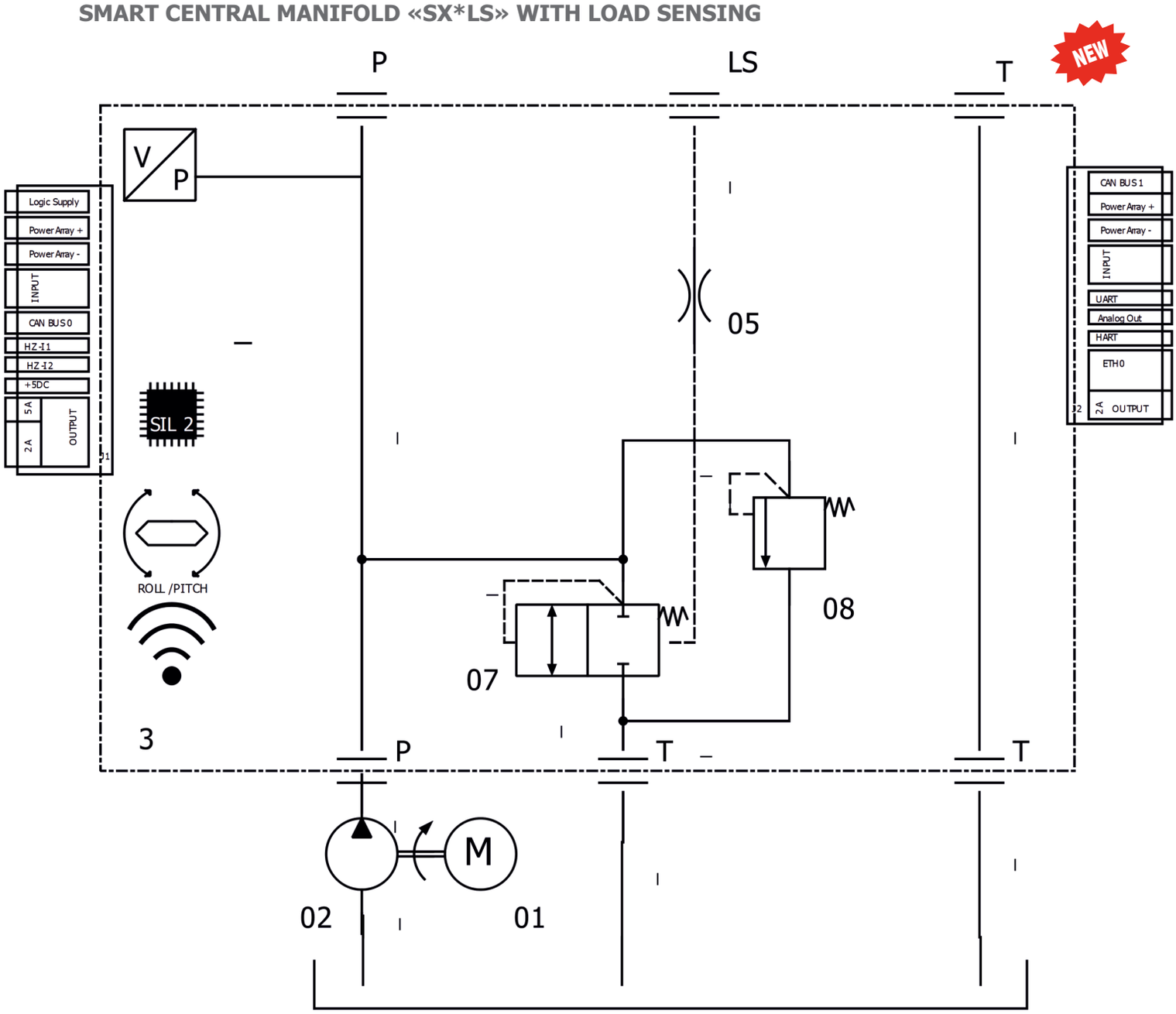


0) Plug
1) Relief valve or plug
2) 7/8"-14 UNF Plug
3) Plug
4) Relief valve or plug
5) Plug
7) Calibrated orifice
8) 3 way compensator
9) Return pipe
10) Return pipe
11) Empty or Relief valve return line
12) Empty or Relief valve return line
PS) Pressure transducer
LS) Pressure transducer on LS line
C) Special Plug



P line
Return line
LS line

SMART CENTRAL MANIFOLD «SX*LS» WITH LOAD SENSING

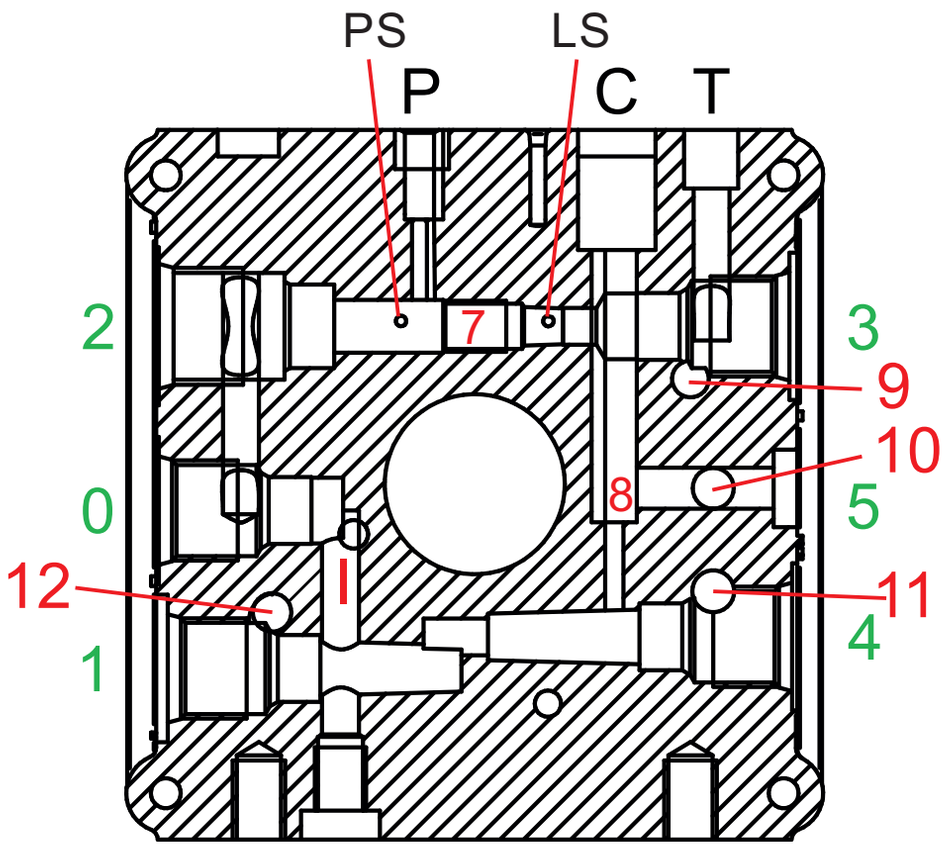


HPC02LS: Hydraulic Diagrams with Load Sensing for external proportional LS valves (type SDP02):

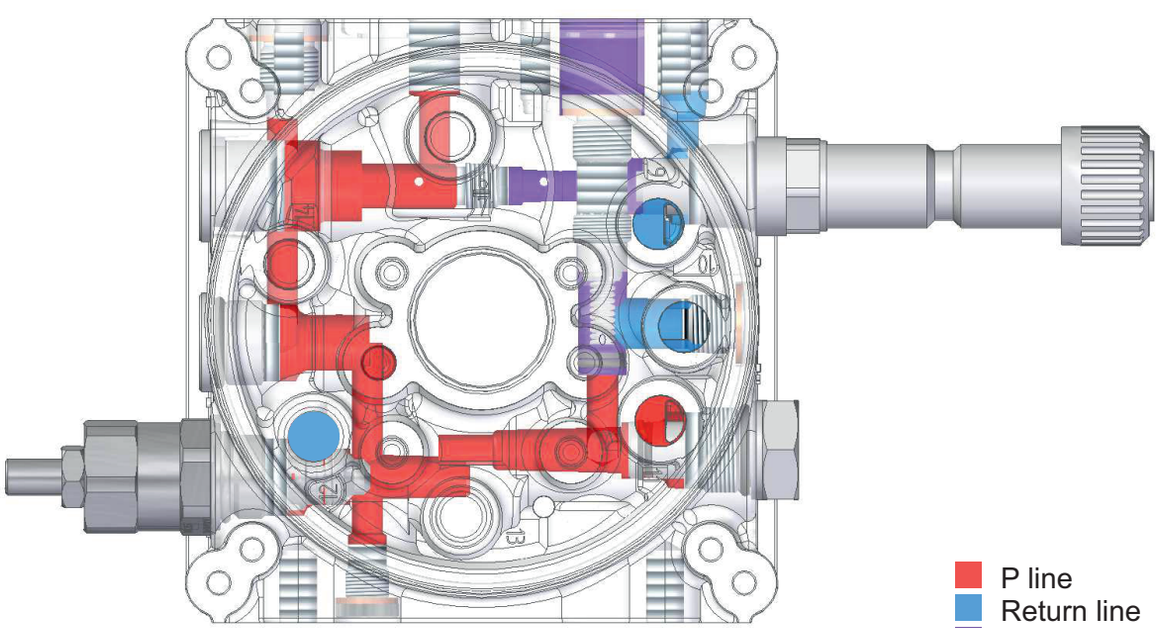
By replacing the Proportional Flow Control valve or/and the Proportional Pressure Relief valve with the related manual adjustment valves, and plugging/unplugging the LS lines, additional hydraulic configurations are available as well.
HPC02 is equipped with SAE08 normalised cavities in order to offer the maximum flexifibility in configuration.
Also available with ON/OFF valves.
The Manifold contains a 3rd way pre-compensator wich is sensing the load driven by LS line of the highest loaded valve.
Pressure sensors (rated for 300 bar) sense the Load Sensing Line (the other line being plugged); pressure sensor is rated for max 5 bar and senses the return line pressure.
They are installed and electrically connected inside the manifold to the Logic controller. The Electronic Programmable controller drives the proportional valves according to the application software.

SMART CENTRAL MANIFOLD «SX*LSP» WITH LS AND PROPORTIONAL P CONTROL

NEW

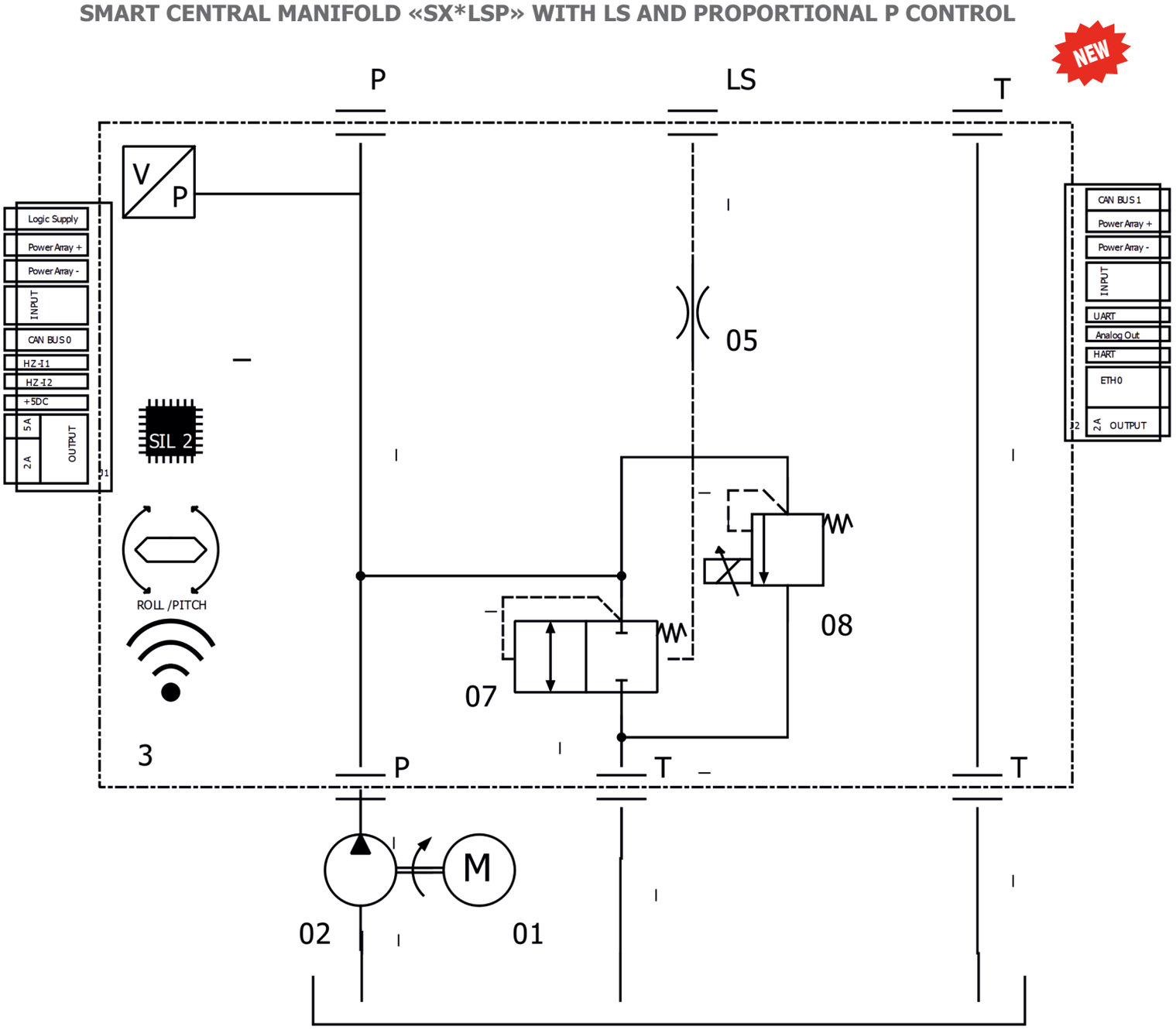


0) Plug
1) Relief valve or plug
2) 7/8"-14 UNF Plug
4) Relief valve or plug
5) Plug
7) Calibrated orifice
8) 3 way compensator
9) Return pipe
10) Return pipe
11) Empty or Relief valve return line
12) Empty or Relief valve return line
PS) Pressure transducer
LS) Pressure transducer on LS line
C) Special Plug



P line
Return line
LS line

SMART CENTRAL MANIFOLD «SX*LSP» WITH LS AND PROPORTIONAL P CONTROL



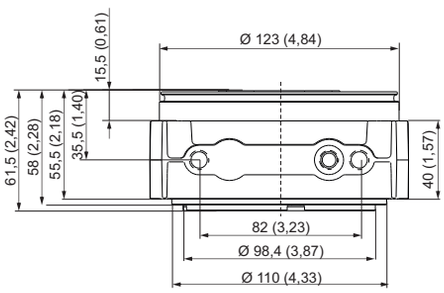
HPC02LSP: Hydraulic Diagram LS type for external proportional LS valves (type SDP02):

The LS type diagram is useful for simultaneous motion in automation, normally the PQ manifold feeds an array of Proportional or ON-OFF LS pre-compensated valves, regulating the common flow and the max pressure in the classic LoadSensing architecture. Contemporary movements are possible.

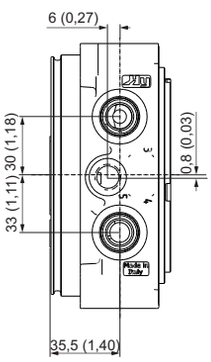
The Manifold contains a 3rd way pre-compensator wich is sensing pressure across the proportional flow regulator. The proportional pressure relief valve is limiting the max pressure allowed on the system. Pressure sensors (rated for 300 bar) sense Delivery line (P) or Load Sensing Line (the other line being plugged); pressure sensor is rated for max 5 bar and senses the return line pressure.
They are installed and electrically connected inside the manifold to the Logic controller. The Electronic Programmable controller drives the proportional valves according to the application software.

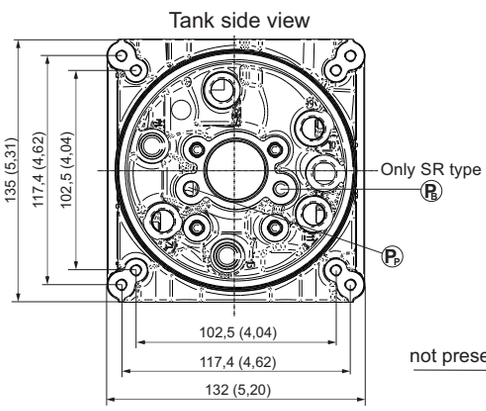
SMART CENTRAL MANIFOLDS - OVERALL DIMENSIONS

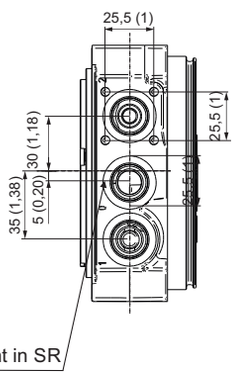
Type	Spare part code
SR	CMABH00003
SR2	CMABH00021
SRD	CMABH00013
SRT	CMABH00014
SRDT	CMABH00015
SB	CMABH00001
SB3	CMABH00002
S4	CMABH00006
S4T	CMABH00016
SX1	
SX2	
SRUS	CMABH00009
SRDUS	CMABH00017
SRDTUS	CMABH00019
SBUS	CMABH00007
SB3US	CMABH00008
S4US	CMABH00012
S4TUS	CMABH00020
SX1US	
SX2US	



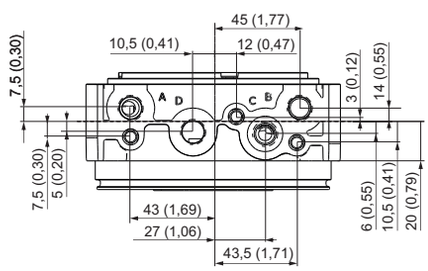
Weight: 1,25 kg (2,75 lb)

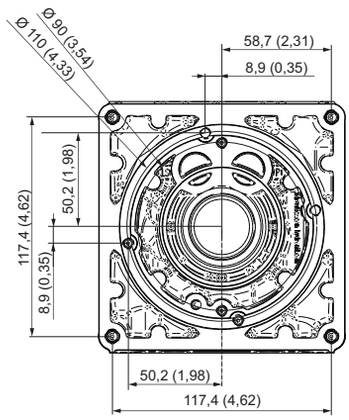






Cavity	Thread
0, 1, 2, 3, 4	3/4-16 UNF (SAE08)
A-B-C-D	1/4 BSP 9/16-18UNF (SAE06 - US type). Presence depends on the body type.
5,6,9,11,12,13,14	1/4 BSP (presence depends on the body type)
External manifolds fixings	3 tie rods M8
Tank fixings	4 screws M6x14
Integral AC motors and B14 flanges fixings	4 screws M8x25
DC motors fixings	2 screws M6x14 or tie rods M6
Pumps fixings	2 screws M8 (see pump lenghts on the relevant tables). Only right pumps.
Mounting Foot fixings	2 screws M10x18 3/8-16 UNC US type
PMC hand pump and CM lever valve fixings	4 screws M5x45





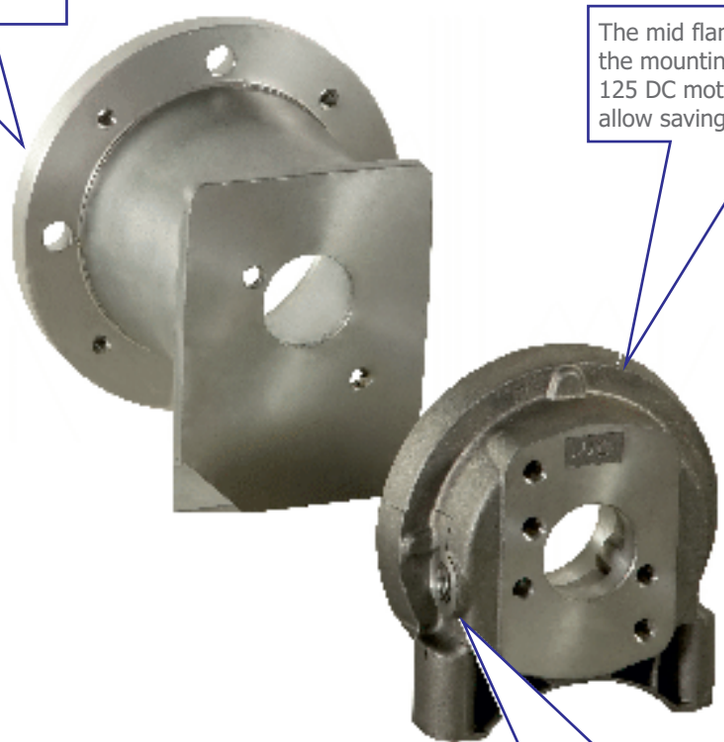
Motor side view

Notes:
- codes ending with **US** are according American standards, machined with 9/16-18 UNF (SAE06) P-T exit ports.- all dimensions in mm (inches)

CENTRAL FLANGES for ELCTROPUMPS

Two flanges to cover all DC motors Hydronit range, from frame 80 up to frame 151mm.

The mid flange E10103010 allows the mounting of frame 80, 114 and 125 DC motors. Less parts in stock allow savings and flexibility.



Standard gear pumps, as mounted in the power packs PPC and PPM ranges, can be mounted here too, thanks to the lateral P port on the flange. **Double pumps**, including those with an integral **HI-LO circuit**, are also available.

Q & A

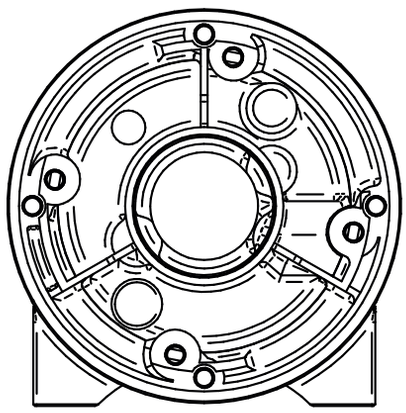
Which gear pump / central flange combination should I choose?
Depending on the motor frame you have multiple options:
• for frame 80 DC motors (power up to 1200W) you have only the choice of group 0 pumps. these are the same used in PPM and PPC power packs (front flange P port and rear flange suction port). Lateral ports group 0 KL series pumps can be fit too.
• for frame 114 and 125 DC motors (1600W up to 4000W), the same central flange can accomodate standard power pack pumps, either group 0 (with an adapter) or group 1, with the front flange P port, connected to the lateral 1/4 BSPP exit port. As alternative, the classical group 1 KL series pumps with lateral ports are available. These can be fitted with P and T ports which can be rotated 180°, when configuring the power pack, in order to allow ports positioning flexibility.
• for frame 125 (DC motors 2500W, 3000W and 4000W), a standard B14 bell housing and coupling is used. Only KL lateral ports pumps are usable.

Is the central flange available as a loose component?
Yes. We can supply either fully assembled and tested electropumps 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.

DC MOTORS Ø80 -Ø114 - Ø125 CENTRAL FLANGE - OVERALL DIMENSIONS

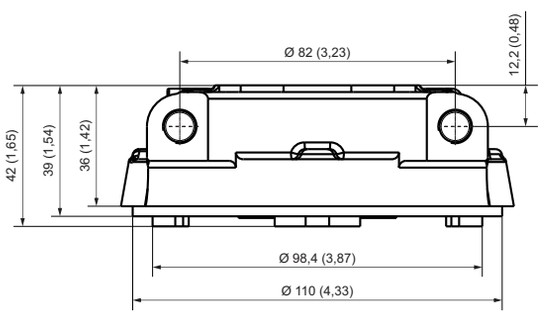
Spare part code	
E10103010	
Cavity	**Threads**
P	1/4 BSPP
DC motors attachment	tie rods M6
Pumps attachment	2 bolts M8x** (see pump lenghts on the relevant tables)
Mounting Foot attachment	2 bolts M10x18

Motor side

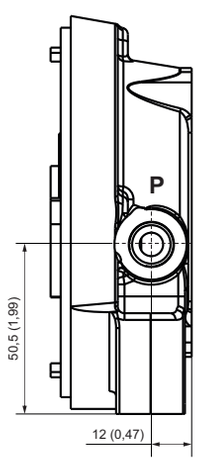


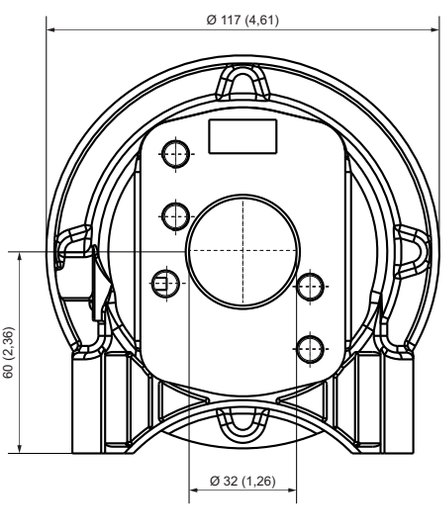
Notes:
- all dimensions in mm + (inches)

Weight:
0,357 kg (0,79 lb)



Pump side





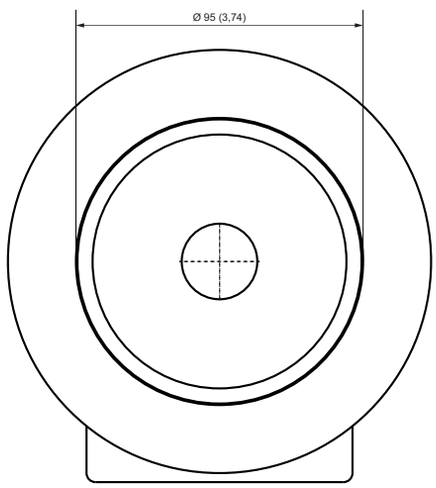
DC MOTORS Ø151 CENTRAL FLANGE - OVERALL DIMENSIONS

Spare part code	
E10105010	
Cavity	**Threads**
DC motors attachment	tie rods M6
Pumps attachment	2 bolts M8x** (see pump lenghts on the relevant tables)

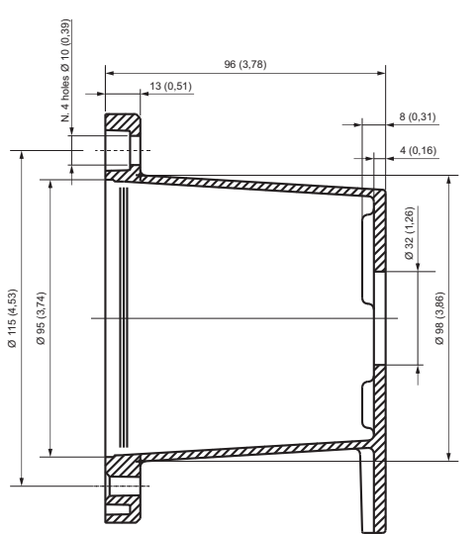
Notes:
- all dimensions in mm + (inches)

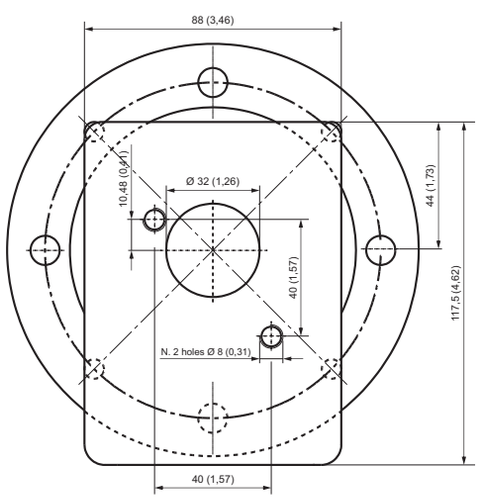
Weight:
0,448 kg (0,99 lb)

Motor side



Pump side

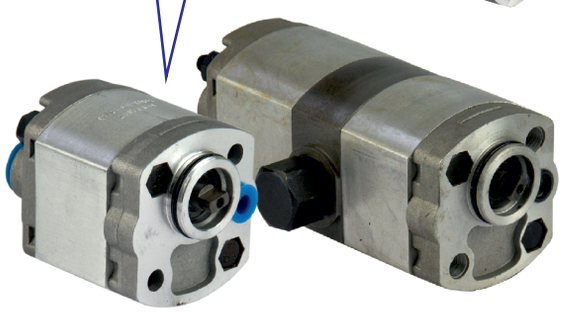




NOTES

GEAR PUMPS

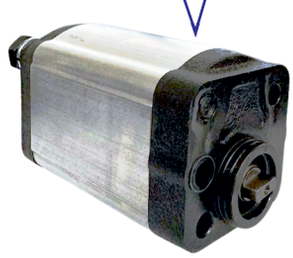
K series. The standard pressure balanced gear pump with front or lateral ports. Also available as a double pump with or without HI-LO circuit integrated within the pump itself.

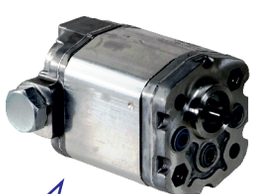


G series. The lightweight, pressure balanced, low noise and high efficiency pump specifically designed for mini power packs.

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

VH series. The highest peak pressure external gear pump available on the market, up to 360 bar, with cast iron covers.





R*series. Bidirectional pumps with integrated suction check valves and two front outlet ports. Group 0 and 1. Choose SR / MR central manifold.

S series. Helicoidal gears for extremely low noise, low pulsations and high pressure.

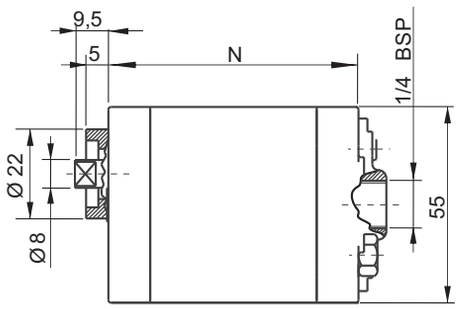
Q & A

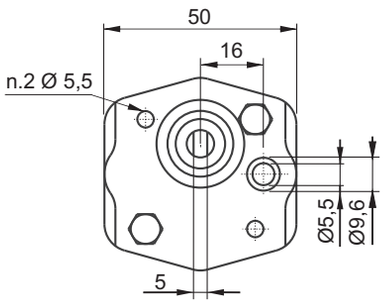
Why are pressure balanced gear pumps better than fixed clearance gear pumps used by many competitors?
Pressure balanced gear pumps are built with lateral pressure plates which reduce the mechanical clearance on the gears with the increase of the pressure on the outlet, thus greatly improving the volumetric efficiency, reducing energy consumption. This means more flow at high pressure without heat generation. 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 the adaptor plate E60513025, which adapts the gr.0 pump front flange 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: it can be allowed for maximum 2 seconds. 2-Intermittent: it can be applied on the pump for maximum 20 seconds; 3-Continuous: it can be applied to the pump at all times.

K TYPE GEAR PUMPS GROUP 0



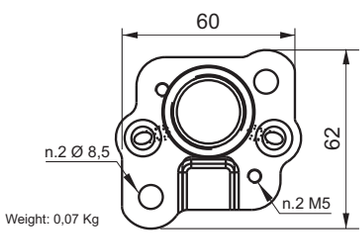


Main features

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 limits definition	Peak pressure: cycle 2 s ON Intermittent pressure: cycle 20 s ON Continuous pressure: cycle always ON

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

Aluminium adapter flange to use group 0 pump on PPC, SPU, PPL and EPB group 1 manifold
Code: E60513025



Spare part code

E60 50 40 **

Pump type:
50 = Group 0

Series:
40 = K

Nominal size:
see table

PPM assembly code

KM — **Pump series:**
KM = K series

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

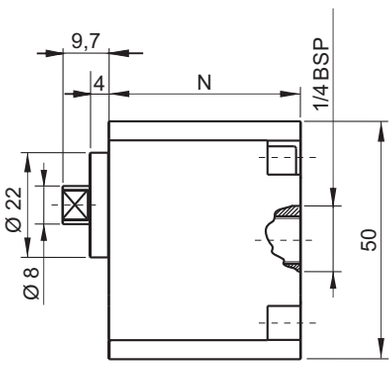
Available range

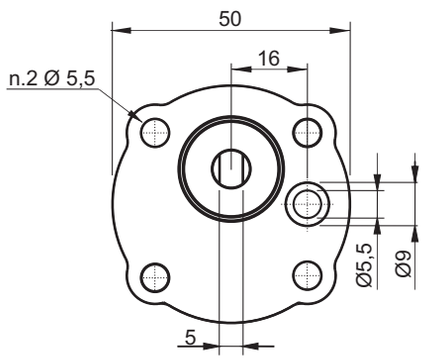
Nominal displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Spare part code	Weight [Kg]
0,2	200	180	160	6000	45,5	M5x65	E60504002	0,33
0,4	200	180	160	6000	47,5	M5x65	E60504004	0,35
0,6	200	180	160	6000	51,5	M5x65	E60504006	0,40
0,8	200	180	160	5000	52,5	M5x70	E60504009	0,44
1,3	200	180	160	3900	55,5	M5x70	E60504013	0,49
1,5	200	180	160	3900	57,5	M5x75	E60504015	0,51
1,9	200	180	160	3900	58,5	M5x80	E60504019	0,53

Other gear pumps with different pressure and speed available upon request.

* Washers may be fitted to adapt bolt lenght

H TYPE HIGH PRESSURE GEAR PUMPS, GROUP 0



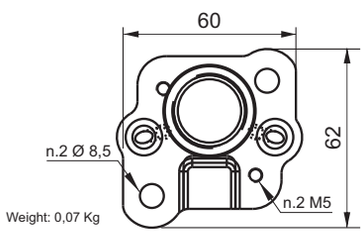


Main features

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 limits definition	Peak pressure: cycle 2 s ON Intermittent pressure: cycle 20 s ON Continuous pressure: cycle always ON

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

Aluminium adapter flange to use group 0 pump on PPC, SPU, PPL and EPB group 1 manifold
Code: E60513025



Spare part code

E60 50 50 **

Pump type:
50 = Group 0

Series:
50 = H

Nominal size:
see spare part code on table

PPM assembly code

HM — **Pump series:**
HM = H series

0,8 — **Nominal displacement**
cc/rev **(**see below table)

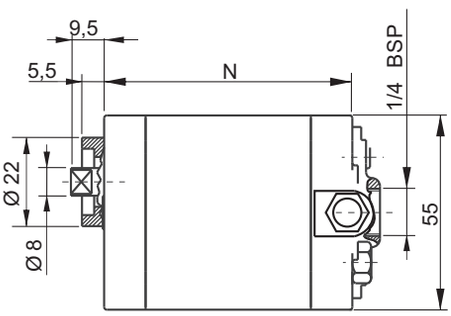
Available range

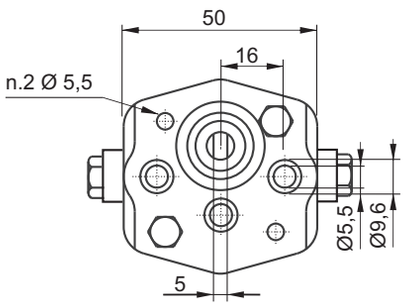
Nominal displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Spare part code	Weight [Kg]
0,1	280	270	250	7000	36,4	5x50	E60505001	0,26
0,2	280	270	250	7000	36,7	5x50	E60505002	0,27
0,4	280	270	250	7000	37,8	5x50	E60505004	0,27
0,6	280	270	250	7000	39,5	5x50	E60505006	0,28
0,8	280	270	250	7000	40,7	5x50	E60505008	0,29
1,2	280	270	250	5000	43,4	5x55	E60505012	0,31
1,5	280	270	250	5000	45,0	5x55	E60505015	0,32

Other gear pumps with different pressure and speed available upon request.

* Washers may be fitted to adapt bolt lenght

RKM TYPE BIDIRECTIONAL GEAR PUMPS, GROUP 0

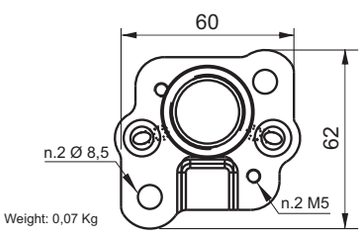




Main features

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: 4,9 ÷ 5,9 Nm
Pressure limits definition	Peak pressure: cycle 2 s ON Intermittent pressure: cycle 20 s ON Continuous pressure: cycle always ON

Aluminium adapter flange to use group 0 pump on PPC, SPU, PPL and EPB group 1 manifold
Code: E60513025



Spare part code

PCPAH ***

Nominal size:
see table

PPM assembly code

RKM — **Pump type:**
RKM = reversible K series

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

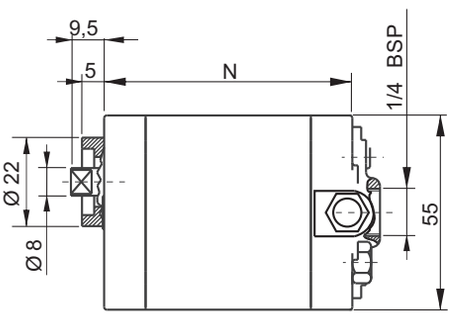
Available range

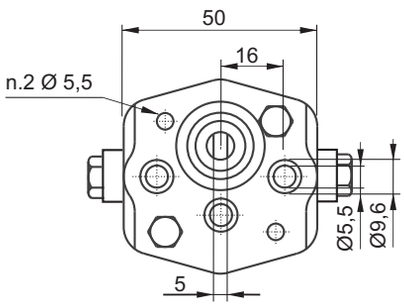
Nominal size	Nominal displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	Min speed [rpm]	N [mm]	Bolts* [mm]	Spare part code	Weight [Kg]
RKM0,2	0,26	190	170	150	7000	1000	51,5	M5x60	PCPAH00015	0,45
RKM0,3	0,32	190	170	150	7000	1000	52	M5x65	PCPAH00016	0,45
RKM0,4	0,38	190	170	150	7000	1000	52,5	M5x65	PCPAH00017	0,45
RKM0,5	0,50	190	170	150	7000	1000	53,5	M5x65	PCPAH00018	0,45
RKM0,7	0,65	190	170	150	7000	1000	54,5	M5x65	PCPAH00019	0,46
RKM0,9	0,88	190	170	150	6000	850	56,5	M5x70	PCPAH00020	0,48
RKM1,3	1,25	190	170	150	5000	700	59,5	M5x70	PCPAH00021	0,49
RKM1,5	1,5	190	170	150	4000	600	61,5	M5x75	PCPAH00022	0,53
RKM1,75	1,75	190	170	150	4000	600	63,5	M5x75	PCPAH00023	0,56
RKM2	2,0	190	170	150	3000	500	65,5	M5x75	PCPAH00024	0,58

Other gear pumps with different pressure and speed available upon request.

* Washers may be fitted to adapt bolt lenght

RGM TYPE BIDIRECTIONAL GEAR PUMPS, GROUP 0

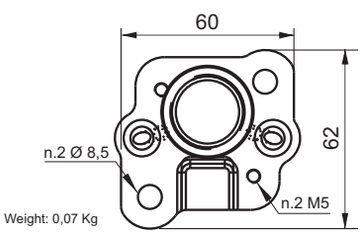




Main features

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 limits definition	Peak pressure: cycle 2 s ON Intermittent pressure: cycle 20 s ON Continuous pressure: cycle always ON

Aluminium adapter flange to use group 0 pump on PPC, SPU, PPL and EPB group 1 manifold
Code: E60513025



Spare part code

E60 50 35 **

Pump type:
50 = Group 0

Series:
35 = R

Nominal size:
see table

PPM assembly code

RGM — **Pump type:**
RGM = reversible G series

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

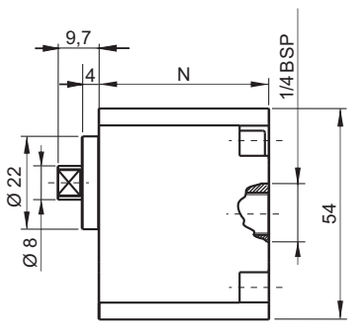
Available range

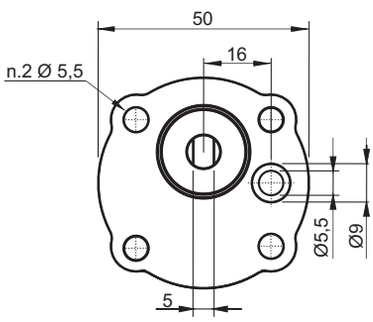
Nominal size	Displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Code marked on pump	Spare part code	Weight [Kg]
RGM0,1	0,19	190	170	150	7000	44,5	M5x55	U0.25R18GVNKX	E60503501	0,38
RGM0,2	0,26	190	170	150	7000	45,6	M5x55	U0.25R24GVNKX	E60503502	0,39
RGM0,3	0,32	190	170	150	7000	46,5	M5x60	U0.25R30GVNKX	E60503503	0,42
RGM0,4	0,38	190	170	150	7000	47,7	M5x60	U0.25R36GVNKX	E60503504	0,43
RGM0,5	0,51	190	170	150	7000	49,6	M5x60	U0.25R48GVNKX	E60503505	0,44
RGM0,7	0,64	190	170	150	7000	55,6	M5x65	U0.5R0,75GVNKX	E60503506	0,46
RGM0,9	0,88	190	170	150	7000	56,6	M5x70	U0.5R1,00GVNKX	E60503509	0,48
RGM1,3	1,25	190	170	150	5000	59,6	M5x70	U0.5R1,60GVNKX	E60503513	0,49
RGM1,5	1,5	190	170	150	4000	61,6	M5x75	U0.5R2,00GVNKX	E60503515	0,58

Other gear pumps with different pressure and speed available upon request.

* Washers may be fitted to adapt bolt lenght

SM SERIES HELICOIDAL GEAR SILENT PUMPS, GROUP 0



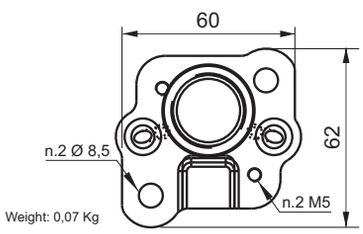


Main features

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 to use group 0 pump on PPC, SPU, PPL and EPB group 1 manifold
Code: E60513025



Spare part code

PCPAH ***

Nominal size:
see table

Assembly code

SM — **Series:**
SM = Group 0 S series

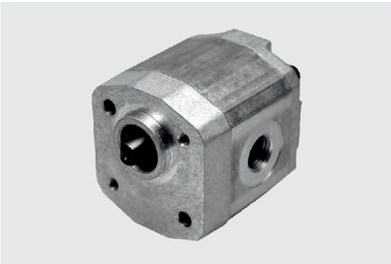
0,3 — **Size**

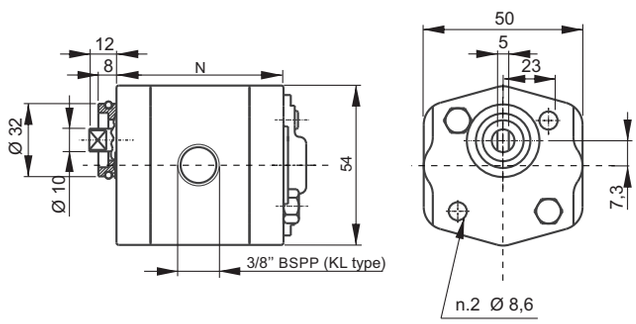
Available range

Nominal size	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]
SM0,3	0,3	200	180	160	3500	55,7	M5x65	50	PCPAH00025	0,33
SM0,5	0,5	200	180	160	3500	57,5	M5x70	50	PCPAH00026	0,35
SM0,75	0,75	200	180	160	3500	59,8	M5x70	50	PCPAH00027	0,40
SM 1	1	200	180	160	3500	62	M5x75	50	PCPAH00028	0,44
SM1,25	1,25	200	180	160	3000	64,2	M5x75	50	PCPAH00029	0,49
SM1,5	1,5	175	155	135	2500	66,5	M5x80	50	PCPAH00030	0,51
SM1,75	1,75	160	140	120	2500	68,7	M5x80	50	PCPAH00031	0,53
SM 2	2	160	140	120	2500	70,9	M5x80	50	PCPAH00032	0,56

* One or more washers are always fitted to secure the bolt engagement

KL SERIES LATERAL PORTS GEAR PUMPS, GROUP 0



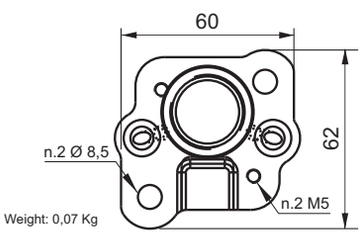


Main features

Oil temperature	
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 to use group 0 pump on PPC, SPU, PPL and EPB group 1 manifold
Code: E60513025



Spare part code

PCPAH ***

Nominal size:
see table

Assembly code

KLM — **Pump type:**
KLM = Group 0 KL series

0,3 — **Nominal displacement:**
(cc/rev) see below table

V** — **Optional relief valve:**
where ** = (bar max)

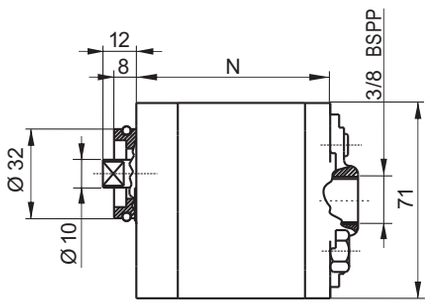
Available range

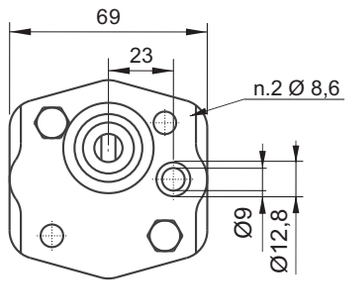
Nominal size	Displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Spare part code	Weight [Kg]
KLM0,3	0,3	200	180	160	3500	55,7	M5x65	PCPAH00035	0,26
KLM0,5	0,5	200	180	160	3500	57,5	M5x65	PCPAH00036	0,26
KLM0,75	0,75	200	180	160	3500	59,8	M5x65	PCPAH00037	0,27
KLM 1,0	1,0	200	180	160	3500	62	M5x70	PCPAH00038	0,30
KLM1,25	1,25	200	180	160	3000	64,2	M5x70	PCPAH00039	0,32
KLM1,5	1,5	175	155	135	2500	66,5	M5x70	PCPAH00040	0,35
KLM1,75	1,75	160	140	120	2500	68,7	M5x75	PCPAH00041	0,37
KLM 2,0	2,0	160	140	120	2000	70,9	M5x75	PCPAH00042	0,39

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

* A proper washer is to be forecast to adapt bolt lenght

K SERIES 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 **

Type:
60 = Group 1

Series:
40 = K

Reference code:
see below table

Assembly code

K — **Series:** K = Group 1 K series

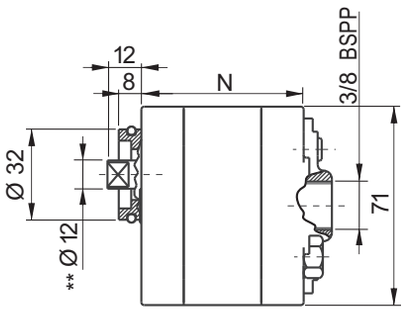
1,2 — **Size**

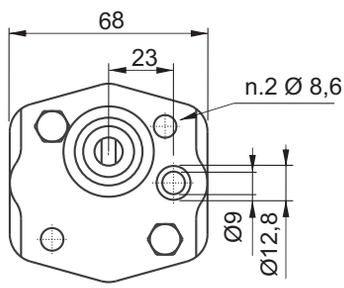
Available range

Nominal size	Displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Spare part code	Weight [Kg]
K0,9	0,87	250	230	200	4000	61,6	M8x80	E60604001	0,73
K1,2	1,27	250	230	200	4000	63,1	M8x80	E60604002	0,75
K1,6	1,66	250	230	200	4000	64,6	M8x80	E60604035	0,77
K2,1	2,11	250	230	200	4000	66,3	M8x85	E60604004	0,79
K2,7	2,8	250	230	200	4000	68,8	M8x85	E60604005	0,82
K3,2	3,17	250	230	200	4000	70,4	M8x85	E60604006	0,86
K3,7	3,7	230	210	180	3600	72,5	M8x90	E60604007	0,88
K4,2	4,2	230	210	180	3600	74,3	M8x90	E60604008	0,90
K5,0	5,0	210	180	140	3000	77,3	M8x95	E60604009	0,94
K6,0	6,0	210	180	140	3000	81,3	M8x100	E60604010	0,98
K7,9	8,0	180	140	100	3000	88,9	M8x105	E60604012	1,10

* One or more washers are always fitted to secure the bolt engagement

G SERIES 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 **

Type:
60 = Group 1

Series:
30 = G

Reference code:
see below table

Assembly code

G — **Series:** G = Group 1 G series

1,1 — **Size**

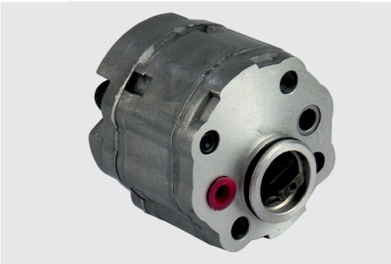
Available range

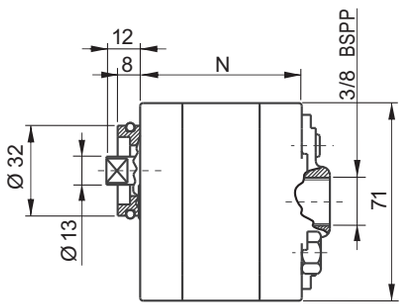
Nominal size	Displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Code marked on pump	Spare part code	Weight [Kg]
G0,8	0,9	250	230	210	6000	36,3	M8x55	EK1PD1.3G	E60603001	0,49
G1,1	1,15	250	230	210	6000	36,7	M8x55	EK1PD1.6G	E60603002	0,50
G1,3	1,3	250	230	210	6000	37,7	M8x55	EK1PD2G	E60603003	0,51
G1,6	1,6	250	230	210	6000	38,7	M8x55	EK1PD2.5G	E60603035	0,52
G2,1	2,1	250	230	210	6000	40,2	M8x55	EK1PD3.3G	E60603004	0,54
G2,6	2,6	250	230	210	6000	42,2	M8x60	EK1PD4.2G	E60603005	0,56
G3,2	3,2	230	210	190	5000	43,7	M8x60	EK1PD5G	E60603006	0,58
G3,7	3,7	230	210	190	4500	45,7	M8x60	EK1PD5.8G	E60603007	0,61
G4,2	4,2	230	210	190	4000	47,1	M8x65	EK1PD6.7G	E60603008	0,63
G4,9	4,9	210	190	170	3500	49,2	M8x65	EK1PD7.5G	E60603009	0,65
G6,0	5,8	210	190	170	3000	52,8	M8x70	EK1PD9.2G	E60603010	1,01
G7,9	8,0	200	180	160	2100	88,2	M8x105	K1PD11.5G	E60603012	1,12
G9,8	9,8	170	150	130	1700	95,1	M8x110	K1PD15G	E60603014	1,27

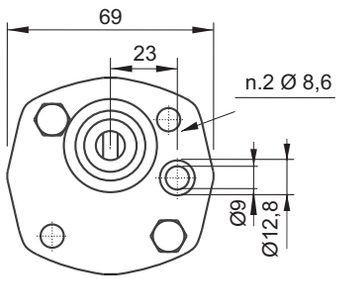
* One or more washers are always fitted to secure the bolt engagement

** Applies to all pumps except the pump code: JE60603012. For pumps code JE60603012 the shaft is Ø 10 mm.

H SERIES HIGH PRESSURE 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 12.9 class steel tightening torque: 30 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 **

Type:
60 = Group 1

Series:
50 = H

Reference code:
see below table

Assembly code

H — **Series:** H = Group 1 H series

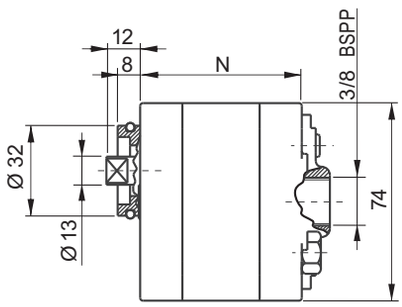
6,0 — **Size**

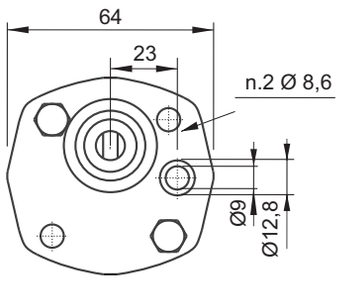
Available range

Nominal size	Displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Min speed [rpm]	Max speed [rpm]	N [mm]	Bolts* [mm]	Spare part code	Weight [Kg]
H1,2	1,2	290	270	250	1000	6000	39,8	M8x55	E60605002	0,50
H1,7	1,7	280	270	250	1000	6000	41,5	M8x60	E60605035	0,52
H2,2	2,2	290	270	250	800	5500	44,4	M8x60	E60605004	0,54
H2,6	2,6	290	270	250	800	5500	45,8	M8x60	E60605005	0,56
H3,2	3,2	320	270	250	600	5000	52,2	M8x70	E60605006	0,58
H3,8	3,8	320	270	250	600	5000	54,2	M8x70	E60605007	0,61
H4,2	4,2	320	270	250	600	4500	54,7	M8x70	E60605008	1,05
H4,7	5,0	280	270	250	600	3200	84,0	M8x100	E60605009	1,12
H6,0	6,0	230	270	250	600	3000	87,3	M8x105	E60605010	1,22
H7,4	7,4	230	210	190	600	2500	97,4	M8x115	E60605012	1,80

* One or more washers are always fitted to secure the bolt engagement

VH SERIES VERY HIGH PRESSURE 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 12.9 class steel tightening torque: 30 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

PCPAH ***

Nominal size:
see table

Assembly code

VH — **Series:**
VH = Group 1 H series

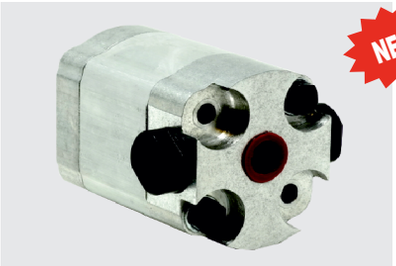
1,2 — **Size**

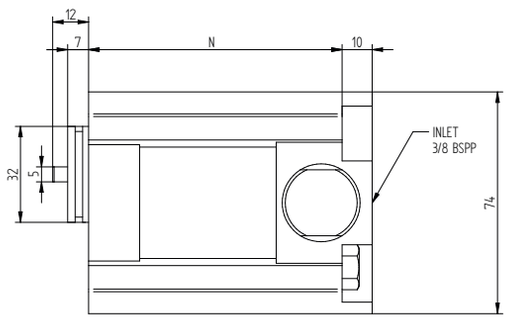
Available range

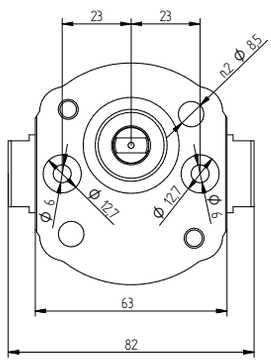
Nominal size	Displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Min speed [rpm]	Max speed [rpm]	N [mm]	Bolts* [mm]	Spare part code	Weight [Kg]
VH 1,2	1,19	370	350	320	1200	6000	71	M8x90	PCPAH00043	1,43
VH 1,7	1,67	370	350	320	1200	6000	73	M8x90	PCPAH00044	1,45
VH2,2	2,17	370	350	320	1000	5500	75	M8x90	PCPAH00046	1,48
VH 2,6	2,57	370	350	320	800	5000	78	M8x95	PCPAH00047	1,52
VH 3,2	3,16	370	350	320	800	4500	79	M8x95	PCPAH00048	1,53
VH 3,8	3,63	370	350	320	800	4000	81	M8x95	PCPAH00049	1,55
VH 4,3	4,14	370	350	320	700	3600	88	M8x105	PCPAH00050	1,68
VH 5,0	4,72	370	350	320	700	3400	90	M8x105	PCPAH00051	1,72
VH 6,0	5,62	370	350	320	700	3200	93	M8x110	PCPAH00052	1,74
VH 7,8	7,3	340	330	310	600	3000	99	M8x115	PCPAH00053	1,77
VH 8,0	7,8	320	310	290	600	2800	101	M8x115	PCPAH00054	1,79
VH 10	9,8	255	240	230	600	2600	108	M8x125	PCPAH00055	1,96
VH 11	10,6	235	220	210	600	2400	111	M8x130	PCPAH00056	1,98

* One or more washers are always fitted to secure the bolt engagement

RH SERIES BIDIRECTIONAL GEAR PUMPS, GROUP 1







Main features

Oil temperature	-15 ÷ +80 °C
Inlet pressure	-0,5 < P > 2,0 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

PCPAH0000X

Reference code:
see below table

Assembly code

RH — **Series:**
RH = reversible H series

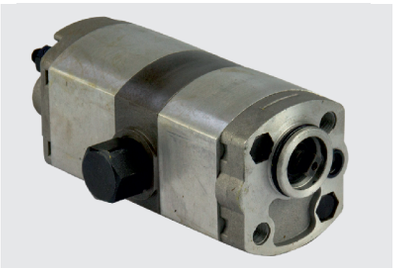
3,2 — **Size**

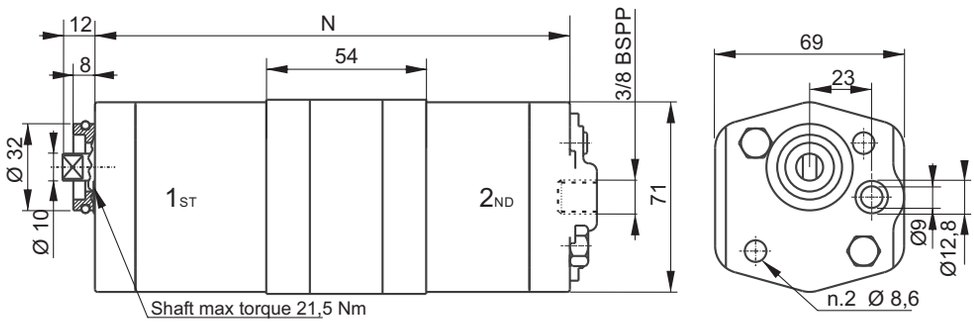
Available range

Nominal size	Displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Spare part code	Weight [Kg]
R2,1	2,2	280	270	250	3600	77,2	M8x95	PCPAH00004	0,93
R2,6	2,6	280	270	250	3000	78,7	M8x95	PCPAH00005	0,96
R3,2	3,2	280	270	250	2500	80,9	M8x95	PCPAH00006	1,03
R4,3	4,2	280	270	250	1900	84,6	M8x100	PCPAH00007	1,13
R6,0	5,6	210	200	190	1500	90,2	M8x105	PCPAH00008	1,24

Recommended oil viscosity for continuous use: 25 - 100 mm2/s
Other pumps with different displacement/pressure/speed are available on request.

K SERIES TANDEM 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
- Tandem pump maximum rotation speed is determined by the lowest speed between 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

Type:
60 = Group 1

Reference code:
see below table

Series:
HL = Hi-Lo

Assembly code

K — **Series:** K = Group 1 K series

1,2 — **Size 1st section**

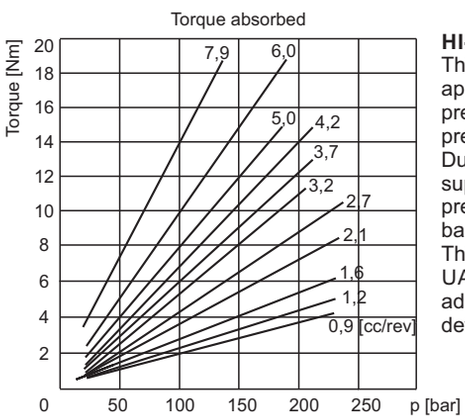
+

5 — **Size 2nd section**

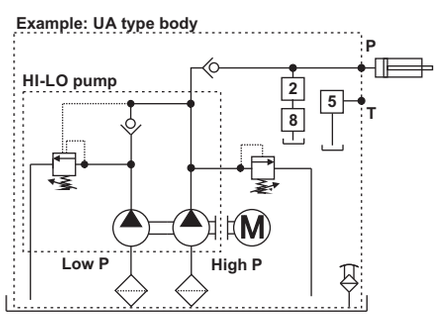
HL — **Option:** Hi - Lo execution

Available range

Nominal size	Displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Preset unloading pressure* [bar]	Max speed [rpm]	N [mm]	Bolts** [mm]	Spare part code	Weight [Kg]
K0,9+3,2HL	0,89 + 3,3	250	230	210	42±5	1750	133,2	M8x150	E60600932HL	2,12
K1,2+5,0HL	1,27 + 5,1	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.

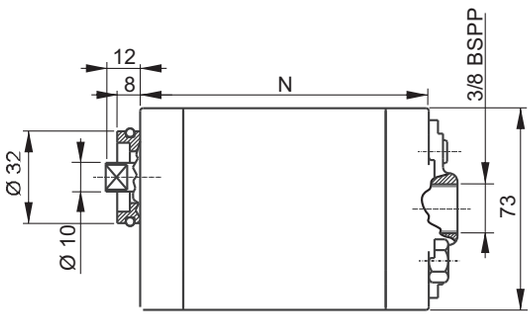


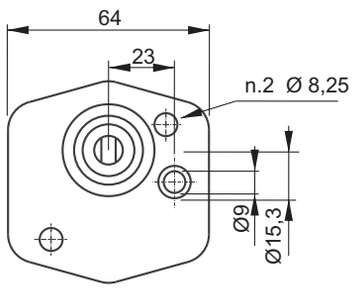
* One or more washers are always fitted to secure the bolt engagement

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

* Preset value of the unloading valve can be adjusted between 15 - 60 bar.

S SERIES HELICOIDAL GEAR SILENT 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

S60 60 30 **

Series:
S = Silent

Type:
60 = Group 1

Reference code:
see below table

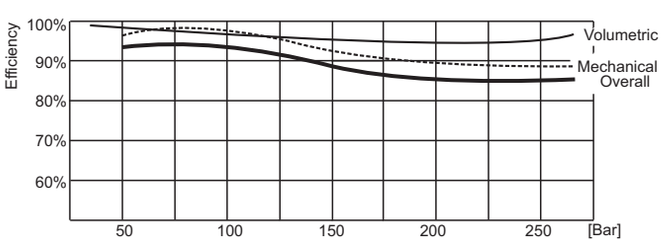
Assembly code

S — **Series:** S = Group 1 S series

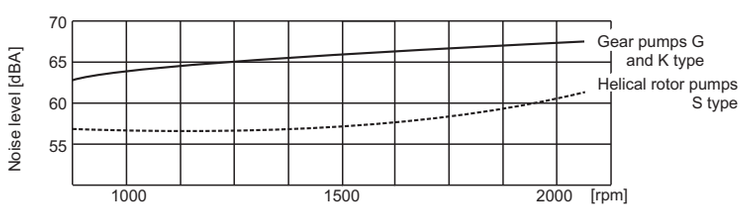
5,0 — **Size**

Available range

Nominal size	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]
S2,2	2,2	280	250	210	3500	66,4	M8x85	50	S60603004	0,85
S3,2	3,2	280	250	210	3200	70,2	M8x85	51	S60603006	0,9
S4,3	4,3	280	250	210	2800	81,8	M8x100	52	S60603008	0,95
S5,0	5,0	260	235	210	2000	83,8	M8x100	52	S60603009	1,1
S6,0	6,0	210	190	180	2000	87	M8x105	57	S60603010	2,03
S8,5	8,5	150	130	110	2000	111,7	M8x130	57	PCPAH00033	2,1
S9,8	9,8	120	110	100	2000	117	M8x130	57	PCPAH00034	2,13



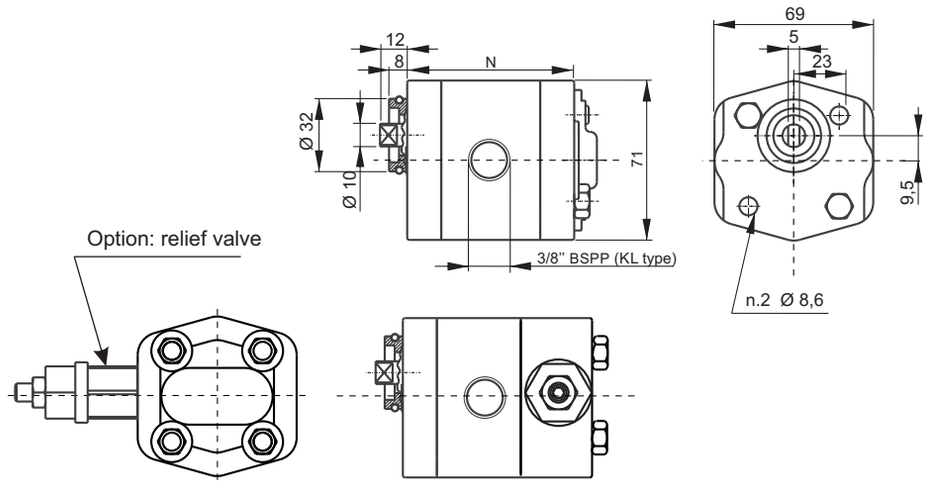
Note: reference values measured at 1500rpm with oil ISO VG 46 cSt at 40 ° C.



** 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.

* One or more washers are always fitted to secure the bolt engagement

KL SERIES 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 42 **

Pump type:
60 = Group 1

Size:
see below table

Assembly code

KL — **Pump type:**
KL = KL series

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

V** — **Optional relief valve:**
where ** = (bar max)

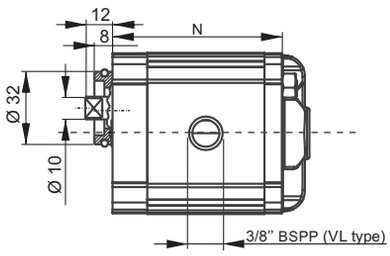
Available range

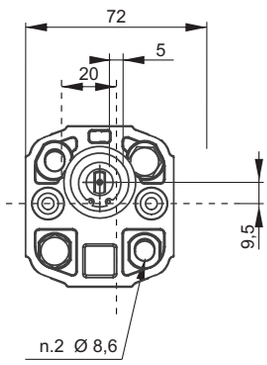
Nominal Displacement (cc/rev)	Peak pressure (bar)	Intermittent pressure (bar)	Continuous pressure (bar)	Max speed (rpm)	N (mm)	Bolts* (mm)	Spare part code	Weight
0,9	250	230	200	4500	60	M8x75	E60604201	0,73 Kg
1,2	250	230	200	4500	61	M8x75	E60604202	0,75 Kg
1,6	250	230	200	4500	63	M8x80	E60604235	0,77 Kg
2,1	250	230	200	4500	65	M8x80	E60604204	0,79 Kg
2,7	250	230	200	4500	66	M8x80	E60604205	0,82 Kg
3,2	250	230	200	4500	70	M8x85	E60604206	0,86 Kg
3,7	230	210	180	3600	72	M8x85	E60604207	0,88 Kg
4,2	230	210	180	3600	74	M8x90	E60604208	0,90 Kg
5,0	210	180	140	3000	76	M8x90	E60604209	0,94 Kg
6,0	210	180	140	3000	80	M8x100	E60604210	0,98 Kg
7,9	180	140	100	3000	90	M8x110	E60604212	1,10 Kg

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

* A proper washer is to be forecast to adapt bolt lenght

VL SERIES GEAR PUMPS, GROUP 1

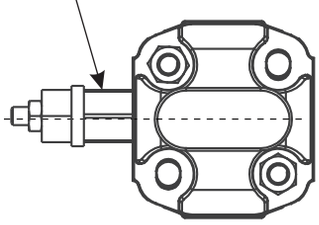




Main features

Oil temperature	-15 ÷ +80 °C
Fixing bolts	2 x M8 8.8 class steel tightening torque: 25 ÷ 29 Nm
Pressure definition	Peak pressure: cycle 2 s ON Intermittent pressure: cycle 20 s ON Continuous pressure: cycle always ON

Option: relief valve



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

Spare part code

PCPAH0000*

Size:
see below table

Assembly code

VL — **Pump type:**
VL = VL series

9,8 — **Nominal displacement:**
(cc/rev) see below table

V** — **Optional relief valve:**
where ** = (bar max)

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
9,8	230	210	190	4000	99,5	M8x115	PCPAH00001	1,5 Kg

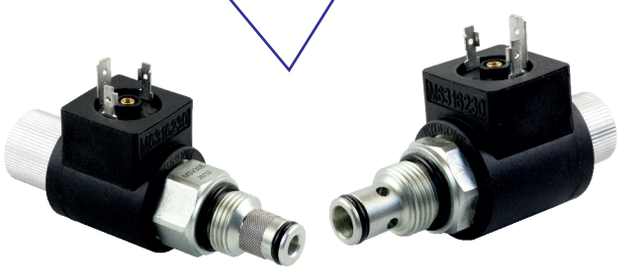
Other pumps executions with different pressure/speed ratings are available on request.

* A proper washer is to be forecast to adapt bolt lenght

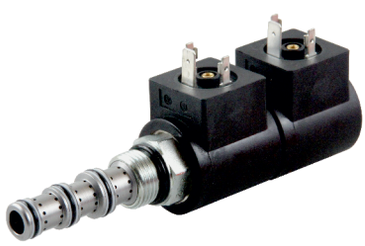
INTEGRAL COMPONENTS

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

Two way **poppet 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** screw-in valves, easily fitted with no loose parts.

The **main relief valve** is fitted in a SAE08 (3/4-16UNF) cavity for PPC/SPU (M14) for PPM. It is designed to improve pressure setting, stability whilst avoiding the noisy operation typical of lower cost alternatives.

The **main check valve** fits in a SAE08 (3/4-16UNF) standard cavity for PPC and (5/8-18UNF) for PPM and can be **easily removed** from the outside for easy cleaning and servicing

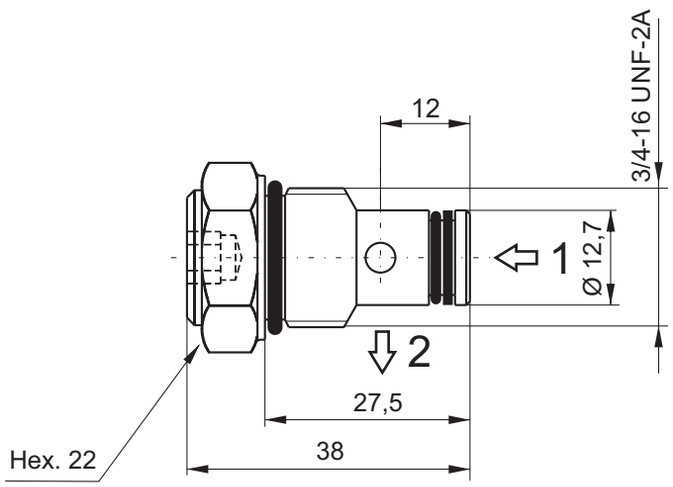
Q & A

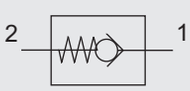
How does the coding of the power pack works?
The power packs are coded with a «speaking» code, which is basically the list of sub-assemblies which make up the power pack (motor, pump, valves, tank,...). Integral components are those mounted inside central manifold cavities. Each component has an assembly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

There are several different coils and connectors for the cartridge solenoid valves. How do I choose the proper ones?
Thanks to Hydronit range consistency, most integral solenoid valves (and some external valves too - see section G in this catalog) fit the same M63* series coils. M630 are for DC supply voltage, while M631 are rectified coils with integral rectifying circuit to be supplied with AC current, not requiring external rectifying bridge connectors. The M63* coils are availble with DIN 43650 / ISO 4400 standard connectors (KA13200000) and Deutsch connectors too. On table 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 or minimess. L type plug fits cavity 3 of U4 and UB manifolds when this cavity is not used.

SAE08 MAIN CHECK VALVE





Main features

Max pressure	350 bar
Weight	0.052 Kg
Max flow	25 l/min
Tightening torque	25 Nm
Fluid temperature	-30°C ÷ +80°C
Cracking pressure	0,5 bar
Filtration	ISO 4406
Max current	10A - 400A

Spare part code

VUC — **Check valve**

20 — **Nominal size:** 20

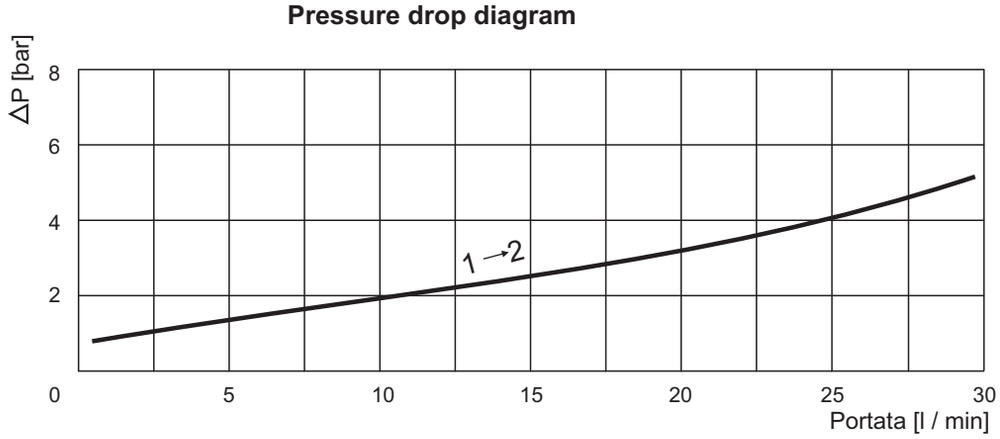
***** — **Options:**
- = no options
F = pressure port F 1/4 BSP
FP = pressure port closed with a 1/4 BSP plug
C= poppet type

Assembly code

J *

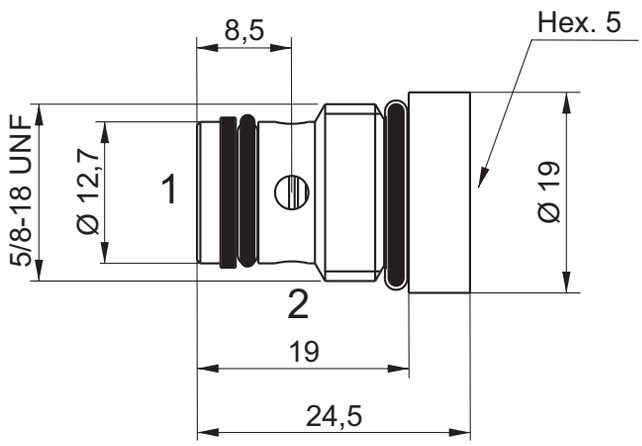
where * is the option

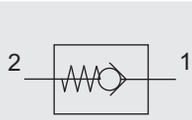
Pressure drop diagram



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

5/8-18 UNF MAIN CHECK VALVE





Main features

Max pressure	350 bar
Weight	0.045 Kg
Max flow	15 l/min
Tightening torque	25 Nm
Fluid temperature	-30°C ÷ +80°C
Cracking pressure	1 bar
Filtration	ISO 4406
Max current	10A - 400A

Spare part code

VUC — **Check valve**

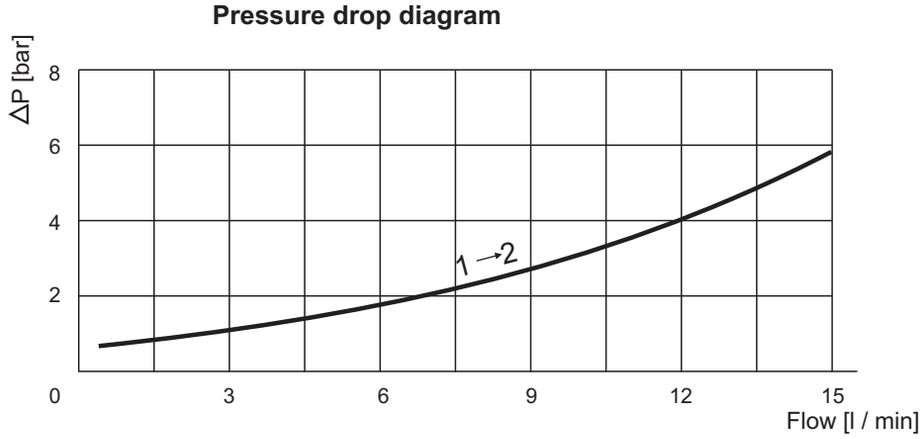
10 — **Nominal size:** 10

- — **Options:**
- = ball type
C = poppet type

Assembly code

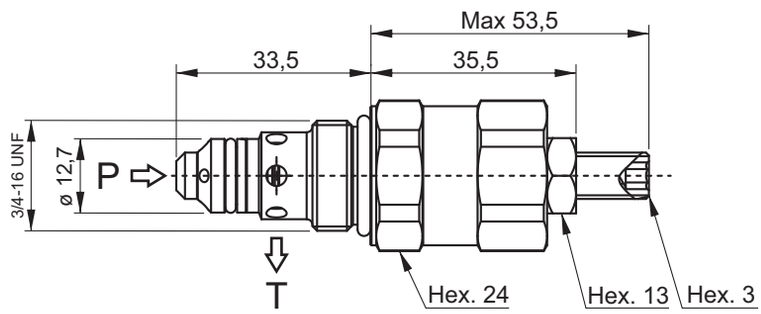
JM (VUC10)
JP (VUC10C)

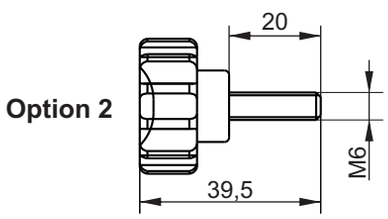
Pressure drop diagram

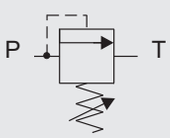


Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

SAE08 DIRECT ACTING MAIN RELIEF VALVE







Main features

Max pressure	350 bar
Weight	0.14 Kg
Max flow	20 l/min
Tightening torque	40 Nm
Fluid temperature	-30°C ÷ +80°C
Filtration	ISO 4406
Cavity	SAE08-2

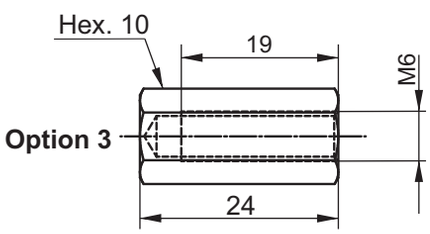
Spare part code

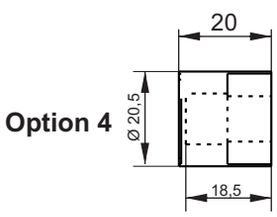
VMDC — **Relief valve**

20 — **Nominal size:**
20 = 20 l/min

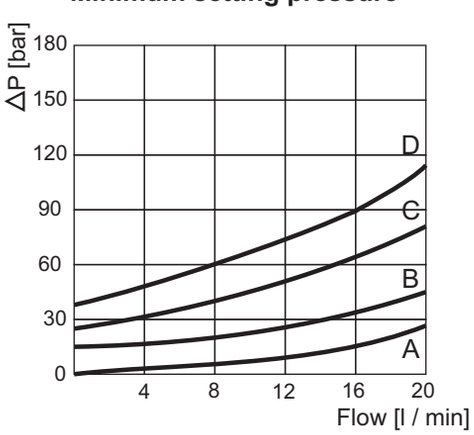
B — **Working range:**
A = 3 ÷ 60 bar
B = 40 ÷ 120 bar
C = 80 ÷ 250 bar
D = 150 ÷ 350 bar

1 — **Option:**
1 = M6 screw (std)
2 = handwheel
3 = with cap
4 = plastic seal





Minimum setting pressure



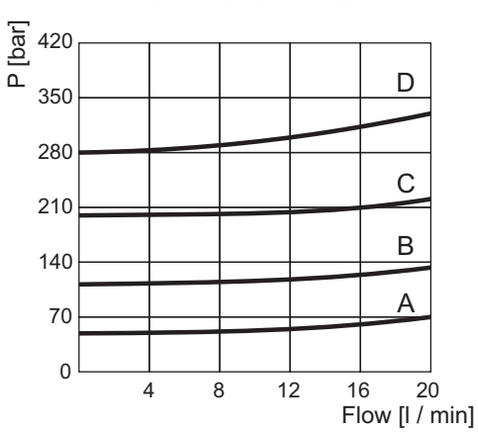
Assembly code

V* ♦**

where *** stands for max setting pressure [bar]. Ex. V200

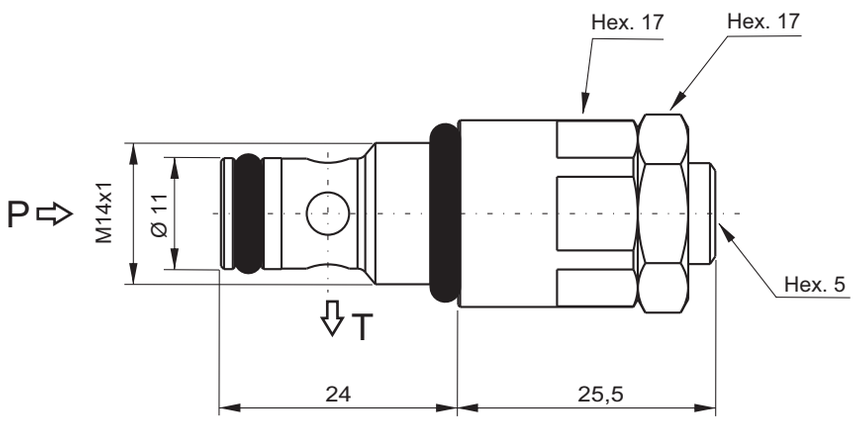
where ♦ is the option

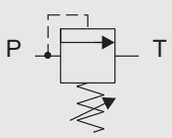
Pressure vs Flow



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

M14 DIRECT ACTING MAIN RELIEF VALVE FOR M MANIFOLDS





Main features

Max pressure	280 bar
Weight	0.06 Kg
Max flow	15 l/min
Tightening torque	25 Nm
Fluid temperature	-30°C ÷ +80°C
Filtration	ISO 4406

Spare part code

VMDC — **Direct acting main relief valve**

15 — **Nominal size:**
15 = 15 l/min

B — **Working range:**
L = 10 ÷ 60 bar
A = 30 ÷ 180 bar
B = 50 ÷ 280 bar

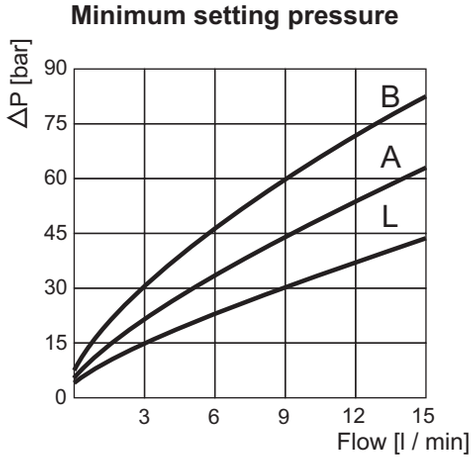
1 — **Options:**
1 = screw (std)

Assembly code

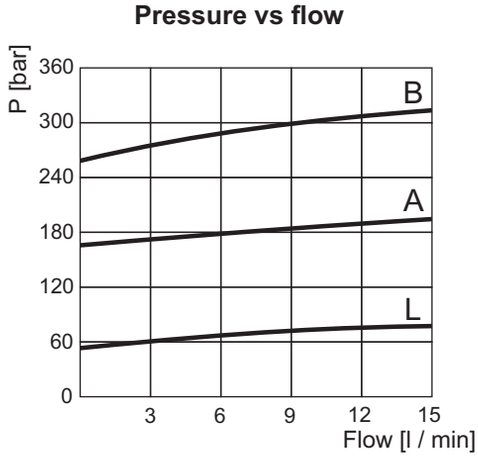
DM_*

where *** stands for max setting pressure [bar]. Ex. DM_280

Minimum setting pressure

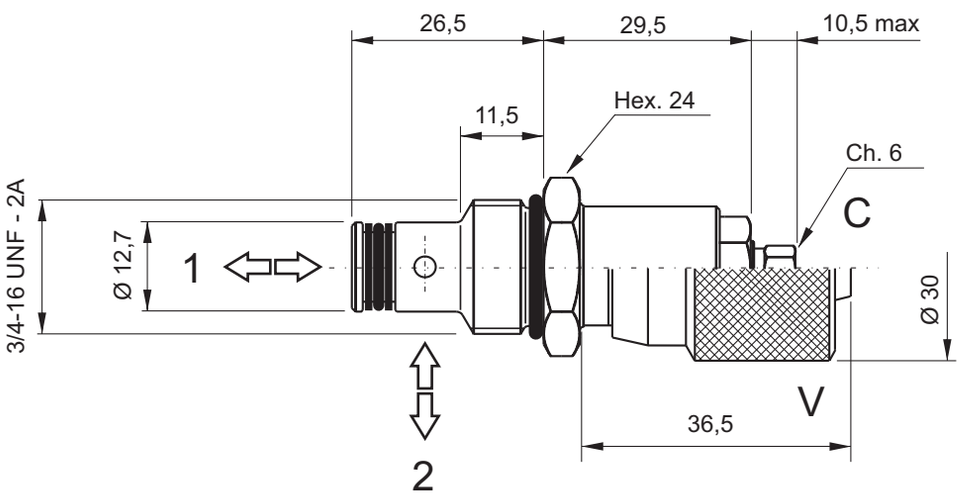


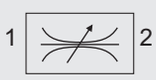
Pressure vs flow



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

SAE08 BIDIRECTIONAL ADJUSTABLE FLOW CONTROL VALVE





Main features

Max pressure	300 bar
Weight	0.08 Kg
Max flow	15 l/min
Tightening torque	25 Nm
Fluid temperature	-30°C ÷ +80°C
Filtration	ISO 4406
Cavity	SAE08-2

Spare part code

CSB — **Flow control valve**

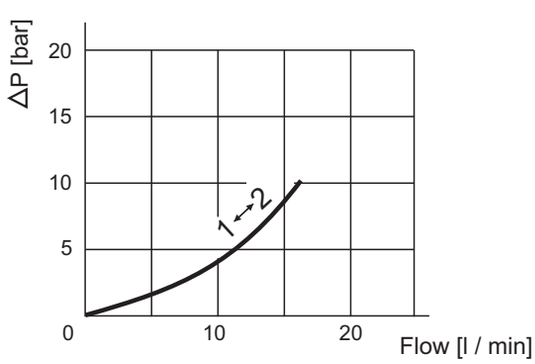
04 — **Nominal size:**
04 = SAE08

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

Assembly code

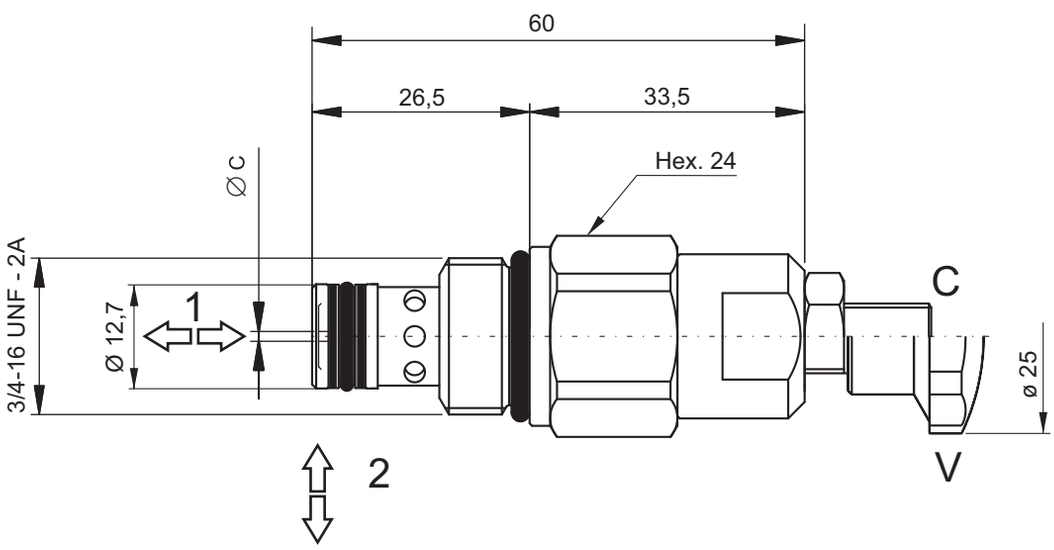
S

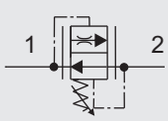
Pressure drop diagram



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

SAE08 PRESSURE COMPENSATED ADJUSTABLE FLOW CONTROL VALVE





Main features

Max pressure	350 bar
Weight	0.11 Kg
Max flow	18 l/min
Tightening torque	25 Nm
Fluid temperature	-20°C ÷ +80°C
Filtration	ISO 4406
Cavity	SAE08-2

Spare part code

VCF6 — **Adjustable pressure compensated flow control valve**

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

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

Assembly code

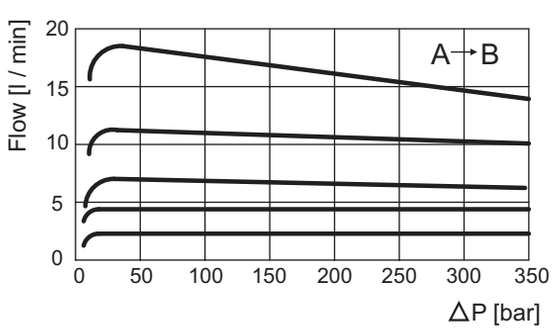
R *

Where * stands for nominal dimension

Range available

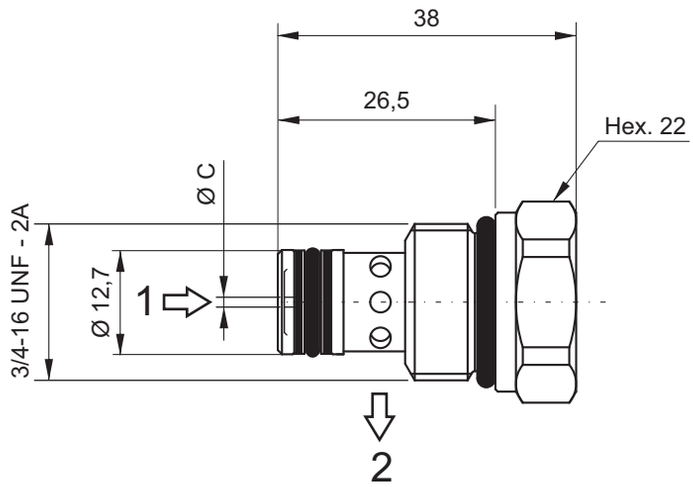
Nominal dimension	∅ C	Controlled flow at 100 bar ± 10% l/min
2	1	0,8 ÷ 3,0
3	1,3	1,3 ÷ 5,1
4	1,5	1,9 ÷ 6,8
5	1,7	2,6 ÷ 9,1
6	2,2	4,0 ÷ 14,4
7	2,8	7,2 ÷ 18,0

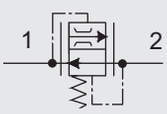
Pressure drop diagram



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

SAE08 PRESSURE COMPENSATED FIXED FLOW CONTROL VALVE





Main features

Max pressure	350 bar
Weight	0.06 Kg
Max flow	22 l/min
Tightening torque	25 Nm
Fluid temperature	-30°C ÷ +80°C
Filtration	ISO 4406
Cavity	SAE08-2

Spare part code

VSC — **Pressure compensated flow control valve**

6 — **Nominal size:** 6 = SAE08

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

Assembly code

F*

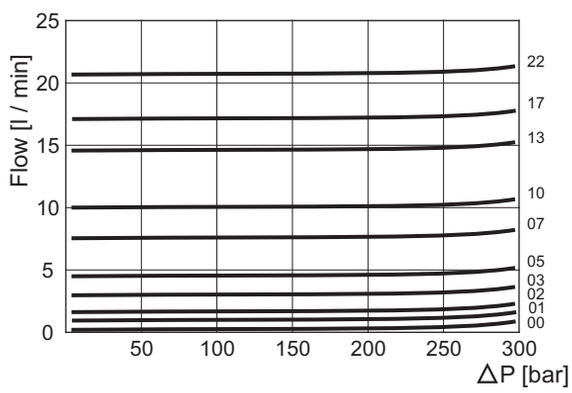
Where * stands for controlled flow [l/min]

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

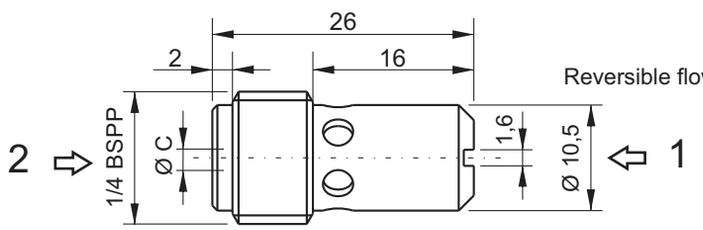
Note: nominal controlled flows, measured at 100 bar with an oil viscosity of 46 cSt at 50 °C, are to be taken as general reference values and must be tested in the field.

Pressure drop diagram

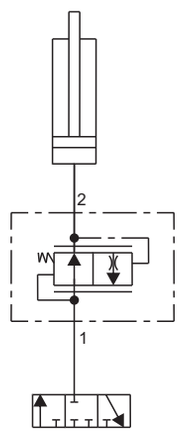


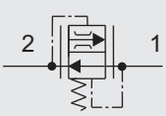
Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

1/4 BSPP PRESSURE COMPENSATED FIXED FLOW CONTROL VALVE



Typical application





Main features

Max pressure	300 bar
Weight	0.012 Kg
Max flow	22 l/min
Tightening torque	15 Nm
Fluid temperature	-30°C ÷ +80°C
Filtration	ISO 4406

Spare part code

VSC — **Flow control valve pressure compensated**

01 — **Nominal size:** 01

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

Assembly code

***(01)**

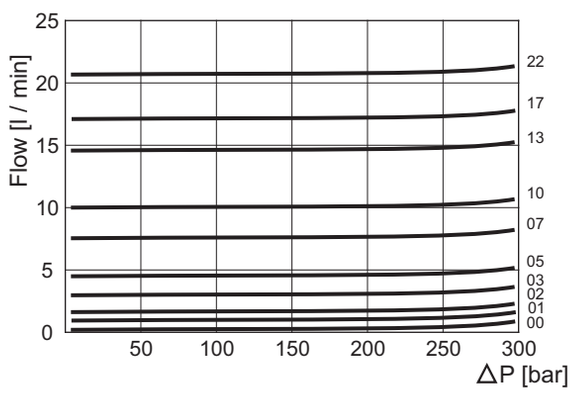
Where * stands for controlled flow [l/min]

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

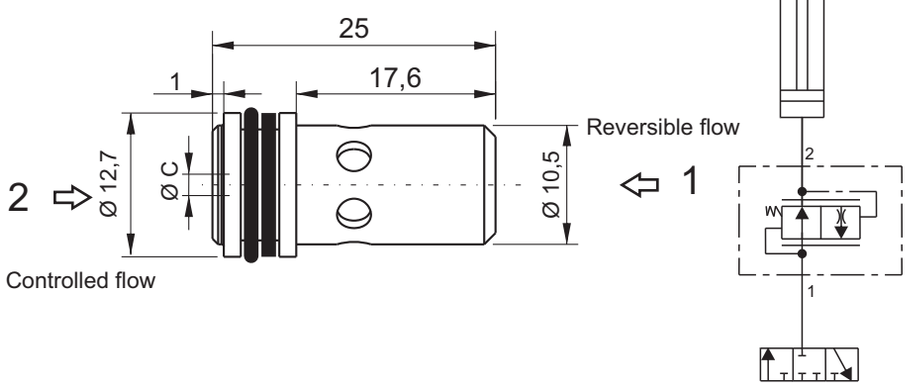
Note: nominal controlled flows, measured at 100 bar with an oil viscosity of 46 cSt at 50 °C, are to be taken as general reference values and must be tested in the field.

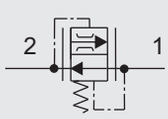
Pressure drop diagram



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

SLIP-IN PRESSURE COMPENSATED FIXED FLOW CONTROL VALVE





Main features

Max pressure	300 bar
Weight	0.012 Kg
Max flow	22 l/min
Fluid temperature	-30°C ÷ +80°C
Filtration	ISO 4406

Spare part code

VSC — **Flow control valve pressure compensated**

04 — **Nominal size:** 04

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

Assembly code

***(04)**

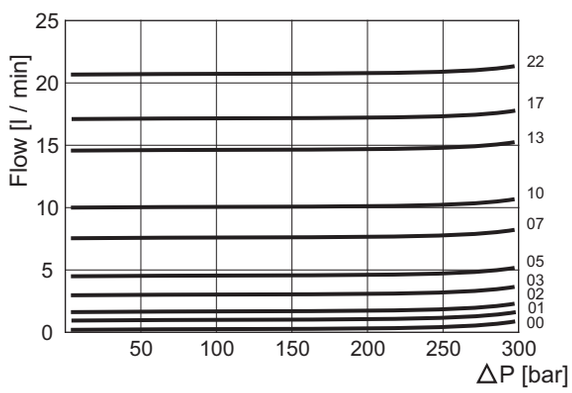
Where * stands for controlled flow [l/min]

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

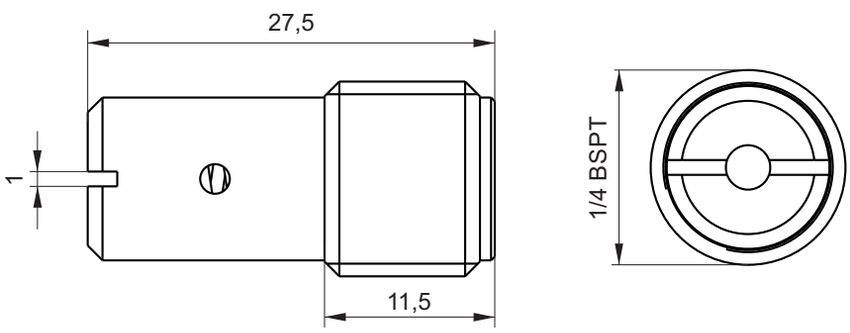
Note: nominal controlled flows, measured at 100 bar with an oil viscosity of 46 cSt at 50 °C, are to be taken as general reference values and must be tested in the field.

Pressure drop diagram

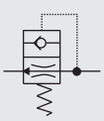


Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

1/4 BSPP START-UP VALVE FOR SINGLE PHASE ELECTRIC MOTORS



SUV01 valve is to be mounted in cavity 9 of U type and cavity 13 of S type central maindfold, after its proper machining (drilling and threading). The function of this valve is to discharge the pressure inside the central manifold line between the pump and the check valve in , when the power pack is off. It is typically used with single-phase motor starting under load, overcoming the inherent low torque at start-up of single phase AC induction motors.



Main features

Max pressure	300 bar
Weight	0.0025 Kg
Max flow	22 l/min
Min flow	2 l/min
Tightening torque	15 Nm
Fluid temperature	-10°C ÷ +80°C
Filtration	ISO 4406

Spare part code

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

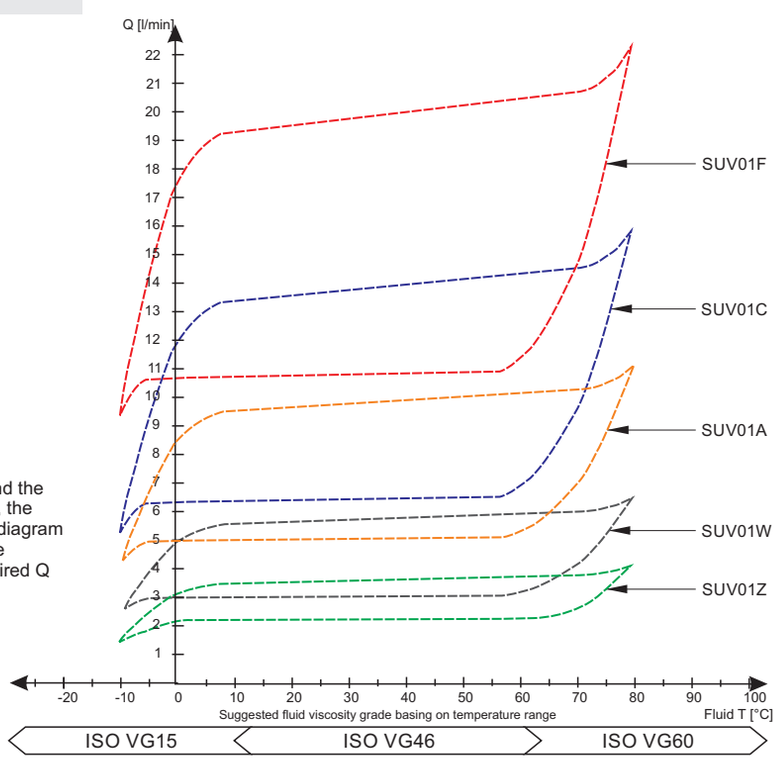
01 — **Nominal size:** 01 = 1/4 BSPT

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

Assembly code

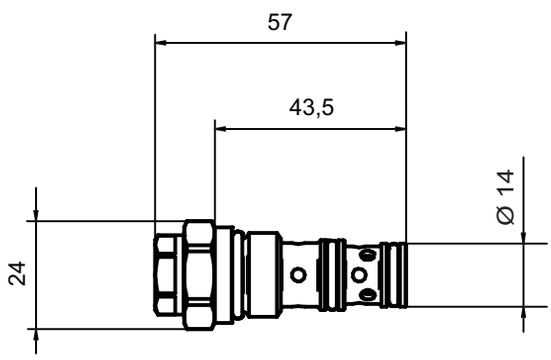
S01*

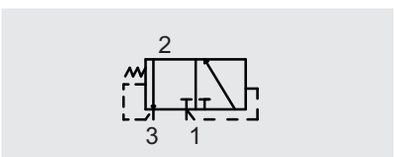
Where * stands for the setting



Working limits diagram
Once the required power pack flow and the fluid working temperature are defined, the proper valve can be chosen from the diagram aside. Try to choose the valve with the working area most centered with required Q and T.

SAE08 3/2 HYDRAULICALLY PILOTED DIRECTIONAL VALVE FOR SB3 MAINFOLD





Main features

Max pressure	200 bar
Max flow	20 l/min
Weight	0,09 kg
Cavity	SAE08-3

Recommended tightening torque: 40-45 Nm
Oil temperature: -30 ÷ + 110 °C
Max leakage: 200 cm³/min - 200 bar

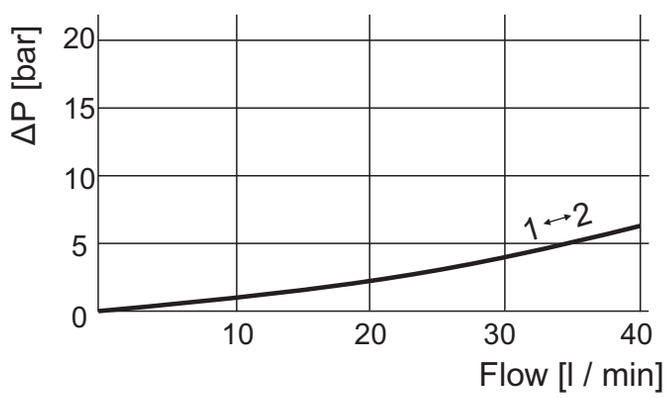
Spare part code

SVDCH00004 — **3/2 directional valve piloted 3/4-16 UNF**

Assembly code

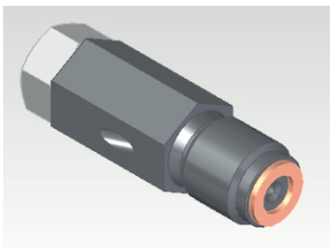
O

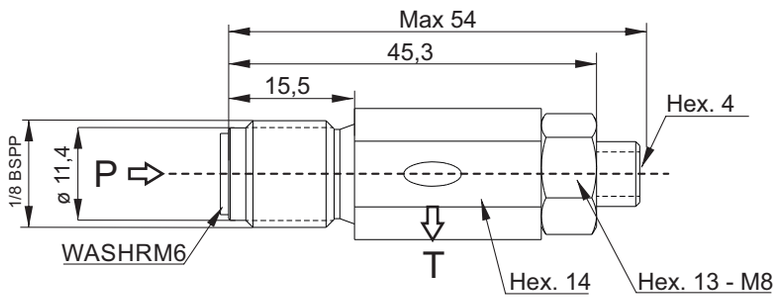
Performance diagram

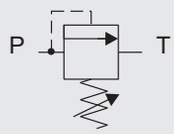


Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

1/8 BSPP ANTI-SHOCK THERMAL ADJUSTABLE RELIEF VALVE







Main features

Max pressure	350 bar
Weight	0,14 kg

Recommended tightening torque: 15 ÷20 Nm
Recommended filtration: 25 ÷ 50 µ
Oil temperature: -30 ÷ + 80 °C

Spare part code

SVRFH0000* — **Anti-shock / Thermal Relief valve**

* — 1 = 50 ÷ 175 bar
2 = 100 ÷ 300 bar

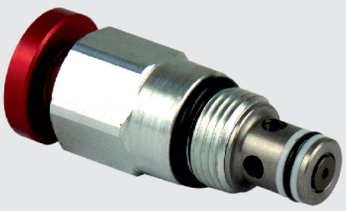
Assembly code

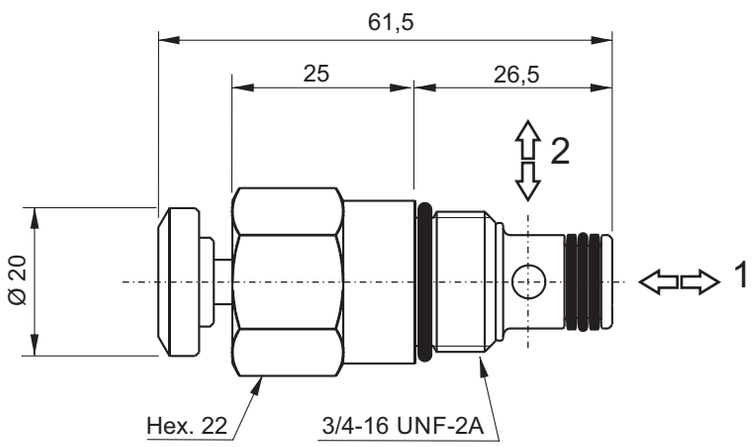
ATR*

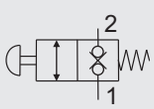
* — - = 100 ÷ 300 bar
L = 50 ÷ 175 bar

Note: the thermal relief valve protects the circuit from hydraulic fluid thermal expansion high pressures, by automatically relieving a few drops of fluid and resetting itself as soon as the trapped pressure decreases.
It must be mounted on the actuator circuit side when the same is exposed at consistent variations of temperatures over timechange depending on fluid viscosity and temperature.

SAE08 MANUAL 2/2 DOUBLE LOCKING NC EMERGENCY VALVE







Main features

Max pressure	300 bar
Weight	0.12 Kg
Max flow	25 l/min
Tightening torque	25 Nm
Fluid temperature	-30°C ÷ +80°C
Filtration	ISO 4406
Cavity	SAE08-2

Spare part code

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

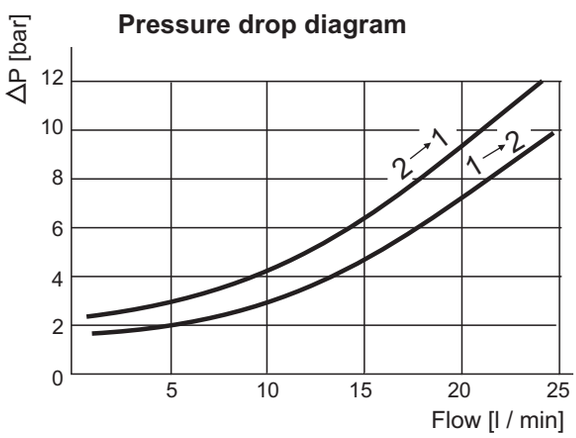
04 — **Nominal size:** 04 = 3/4-16 UNF

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

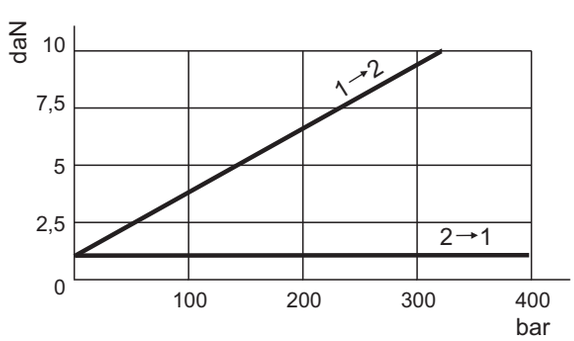
Assembly code

Z

Pressure drop diagram

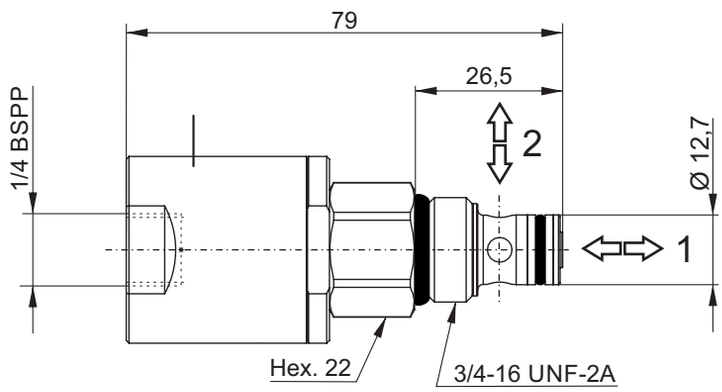


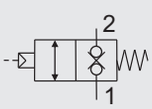
Operating force (daN) on the button



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

SAE08 PNEUMATIC 2/2 DOUBLE LOCKING NC VALVE





Main features

Max pressure	350 bar
Weight	0.16 Kg
Max flow	40 l/min
Tightening torque	25 Nm
Fluid temperature	-20°C ÷ +80°C
Pilot pressure	4/15 bar 58218PSI
Filtration	ISO 4406
Max leakage	0,25cm³/min
Cavity	SAE08-2

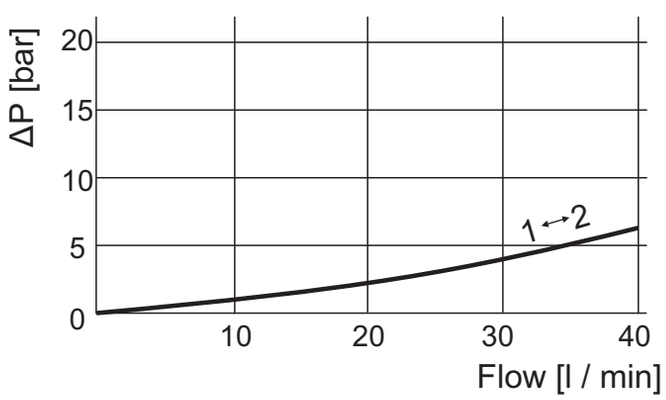
Spare part code

SVDCH00001 — **Two-way pneumatic valve 3/4-16 UNF**

Assembly code

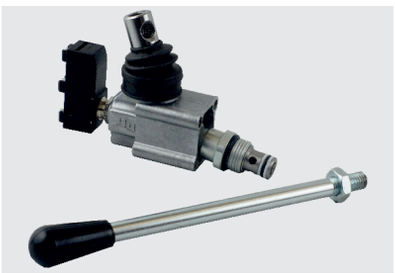
W

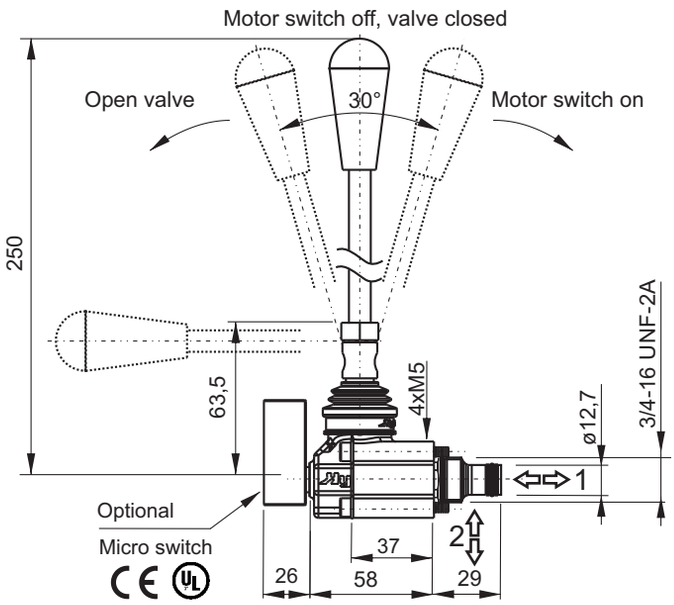
Performance diagram

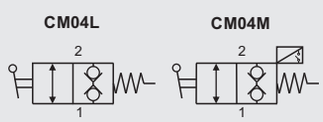


Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

SAE08 2/2 DOUBLE LOCKING NC MANUAL LEVER VALVE







Main features

Max pressure	300 bar
Weight	0.34 Kg
Max flow	25 l/min
Tightening torque	25 Nm
Fluid temperature	-30°C ÷ +80°C
Fixing bolts	4xM5x45
Filtration	ISO 4406
Max current	10A - 400A
Cavity	SAE08-2

Spare part code

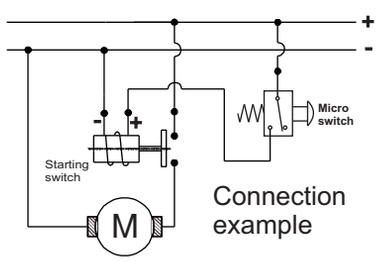
CM — **Two-way manual lever valve**

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

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

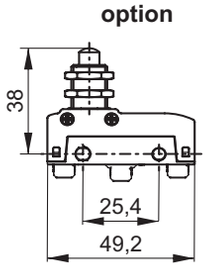
Assembly code

E (CM04L)
EM (CM04M)



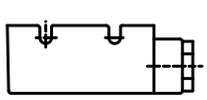
Connection example

Micro switch option



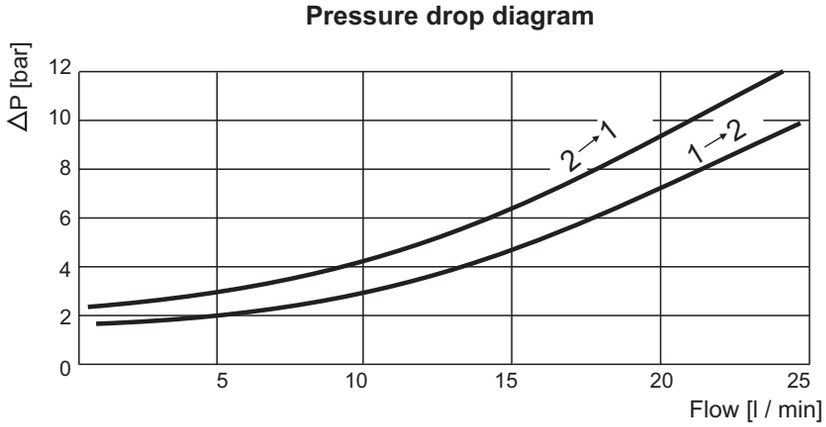
Spare part code
MCR1222

Plastic terminal cover protection



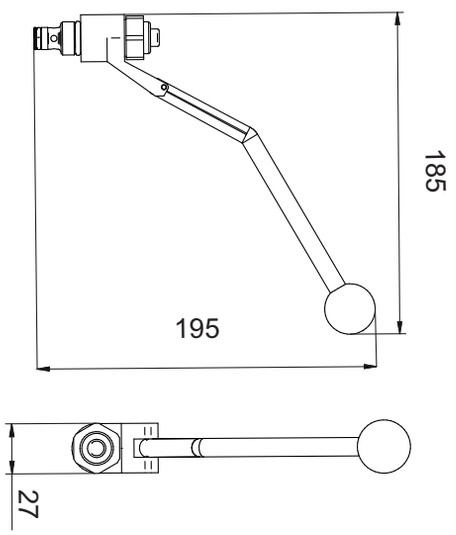
Spare part code
VFC02

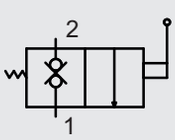
Pressure drop diagram



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

SAE08 2/2 DOUBLE LOCKING NC MANUAL LEVER VALVE (PUSH OPERATION)





Main features

Max pressure	315 bar
Max flow	30 l/min
Weight	0,05 kg
Pilot pressure	4/15 bar 58/218 PSI
Cavity	SAE08-2

Recommended tightening torque: 25-27.2 Nm
Recommended filtration: 25 µ
Oil temperature: -30 ÷ + 100 °C

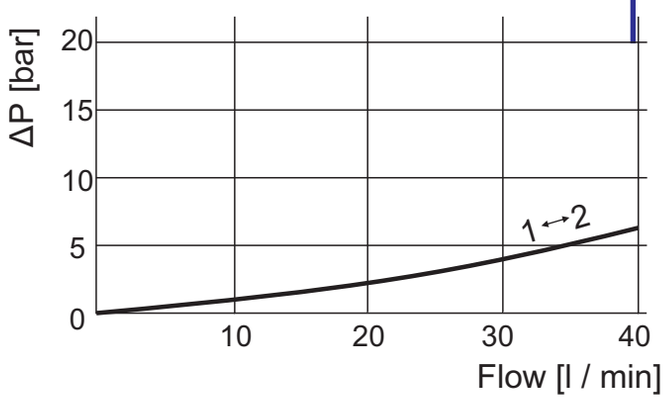
Spare part code

SVDCH00005 — **Two-seal pneumatic valve 2/2NF 3/4-16 UNF**

Assembly code

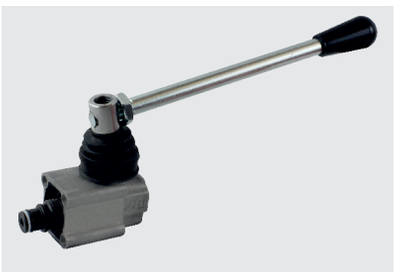
EN

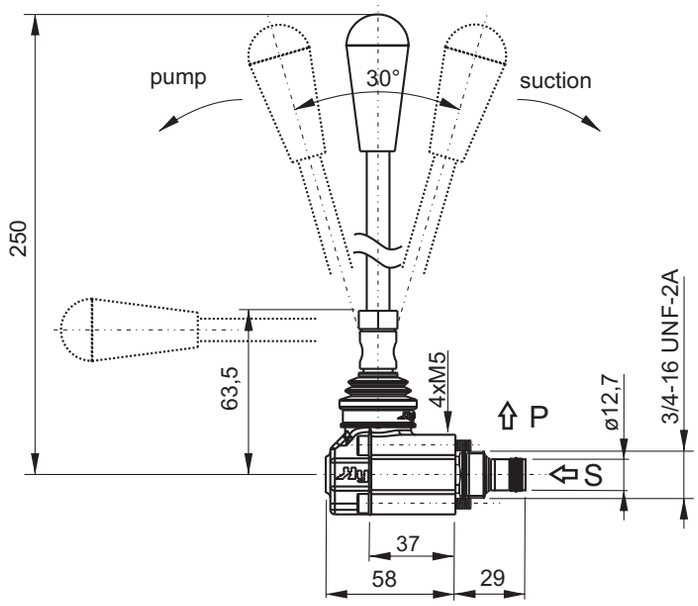
Performance diagram



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

SAE08 2CC HAND PUMP





Main features

Max pressure	180 bar
Weight	0.34 Kg
Fixing bolts	M5x45
Tightening torque	25 Nm
Fluid temperature	-25°C ÷ +85°C
Filtration	ISO 4406
Cavity	SAE08-2

Spare part code

PMC — **Hand pump**

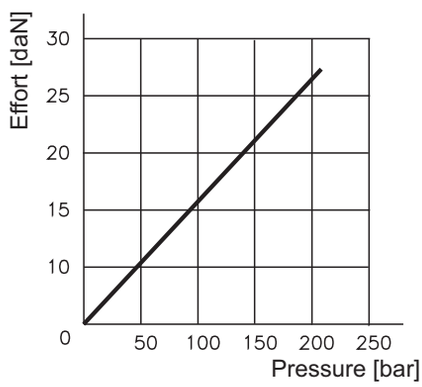
02 — **Nominal size:**
02 = 2 cc/stroke

L — **Type:**
L = lever (std)

Assembly code

U

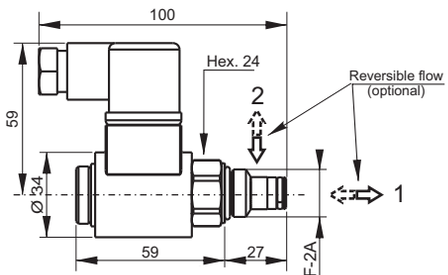
Effort (daN)
operating on the lever end



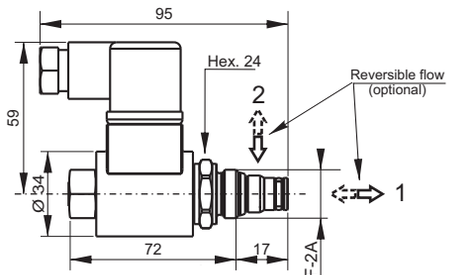
Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

SAE08 PILOT OPERATED 2/2 SINGLE LOCKING POPPET SOLENOID VALVES

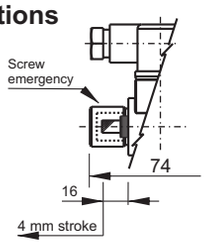
Normally closed

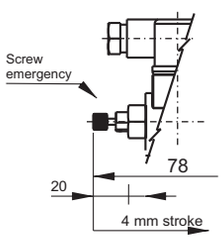


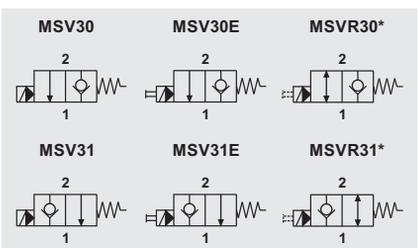
Normally open



Options







Main features

Max press.	up to 350 bar
Max flow	up to 30 l/min
Weight	0,11 Kg (without coil)
Internal leakage	5 drops/min at 350 bar
Response time	30 ms (energizing) 50ms (de-energizing)
Duty cycle	ED 100%
Voltage	+/- 10% nominal voltage
Environment temperature	-15 ÷ +50°C
Fluid temperature	-30 - +80°C
Filtration	ISO 4406
Tightening torque	25Nm
Cavity	SAE08-2

Spare part code

MSV	**Pilot Operated 2-way Single Locking Valve**
-	**Options:** R = with reversible flow
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 coils table

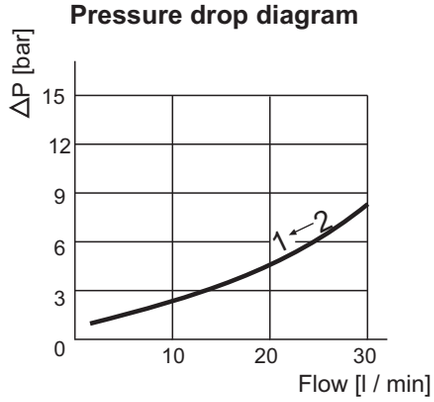
Assembly code

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

Ex: A12DC

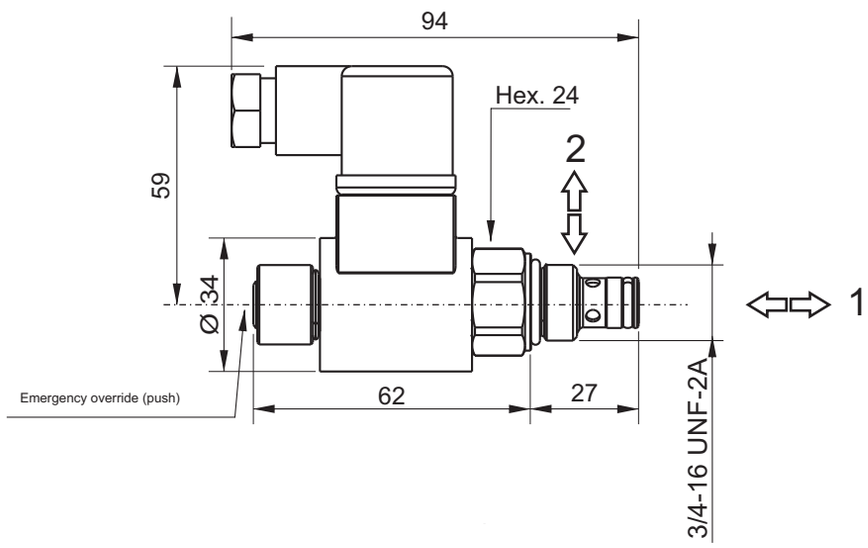
Supply Voltage	Coils Coil code	Connector code
12DC	M6306012	KA132000B1
24DC	M6306024	KA132000B1
48DC	M6306048	KA132000B1
24AC	M6316024	KA132000B1
115AC	M63160115	KA132000B1
230AC	M63160230	KA132000B1

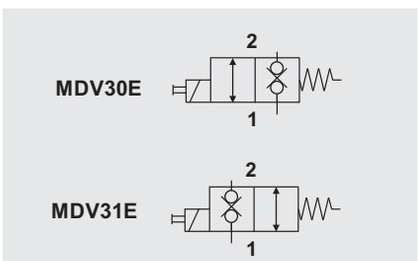
Pressure drop diagram



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

SAE08 DIRECT OPERATED 2/2 DOUBLE LOCKING POPPET SOLENOID VALVES





Main features

Max press.	up to 250 bar
Max flow	up to 40 l/min
Weight	0,11 Kg
Internal leakage	5 drops/min at 350 bar
Response time	30 ms (energizing) 50ms (de-energizing)
Duty cycle	ED 100%
Voltage	+/- 10% nominal voltage
Environment temperature	-15 ÷ +50°C
Fluid temperature	-30 - +80°C
Filtration	ISO 4406
Tightening torque	25Nm
Cavity	SAE08-2

Spare part code

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

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

E — **Option:**
E = emergency (std)

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

Assembly code

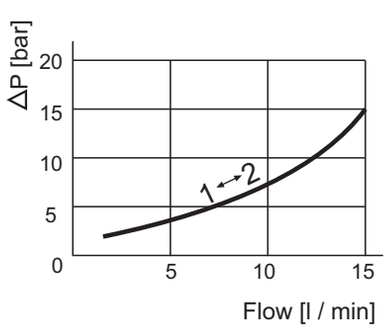
D (MDV30E) **Voltage**
M (MDV31E) **Voltage**

Ex: D12DC

Coils

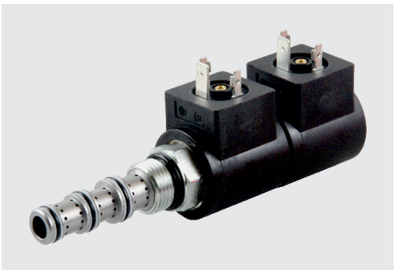
Supply Voltage	Coil code	Connector code
12DC	M6306012	KA132000B1
24DC	M6306024	KA132000B1
24AC	M6316024	KA132000B1
115AC	M63160115	KA132000B1
230AC	M63160230	KA132000B1

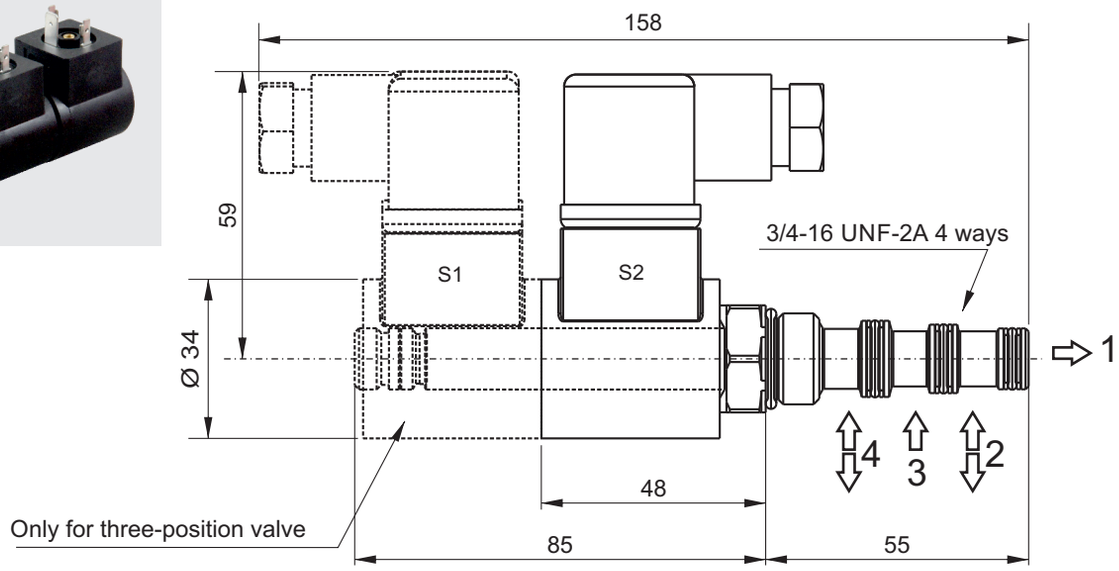
Pressure drop diagram



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

SAE08-4 DIRECT OPERATED 4/3 OR 4/2 DIRECTIONAL SPOOL SOLENOID VALVES





Main features

Max press.	210 bar
Max flow	11,5 l/min
Weight	0,37 Kg (1 solenoid) 0,64 Kg (2 solenoids)
Internal leakage	278 cc/min at 210 bar
Minimum pull-in voltage	85% of nominal
Duty cycle	ED 100%
Voltage	+/- 10% nominal voltage
Environment temperature	-15 ÷ +50°C
Fluid temperature	-30 - +80°C
Filtration	ISO 4406
Tightening torque	25Nm
Cavity	SAE08-4

Spare part code

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

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

00 — **Option:** 00 = std

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

Assembly code

4VA2 Voltage

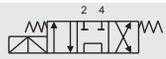
Ex: 4VA2 24DC

Coils

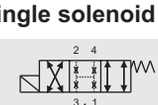
Supply Voltage	Coil code	Connector code
12DC	M6306012	KA132000B1
24DC	M6306024	KA132000B1
24AC	M6316024	KA132000B1
115AC	M63160115	KA132000B1
230AC	M63160230	KA132000B1

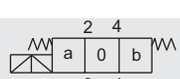
Spools

Double solenoid

A2	
B2	
C2	
E2	

Single solenoid

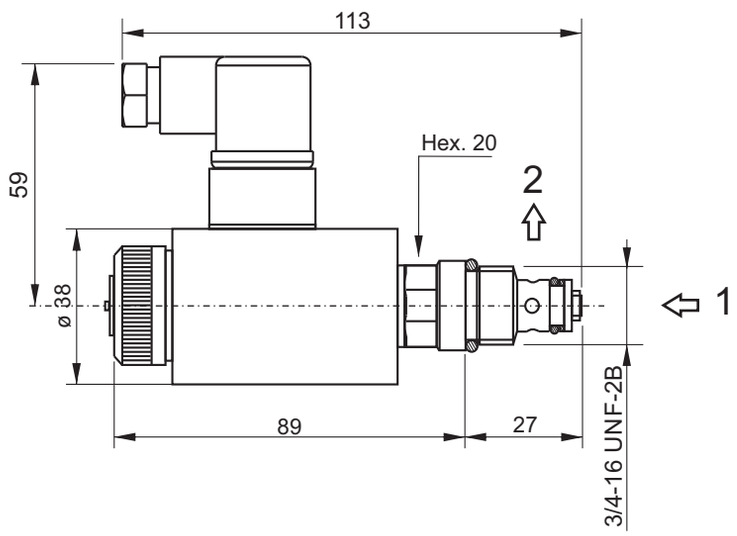
A11C	 transition

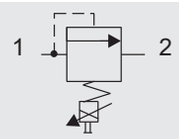
Code	

Valve code	Code marked on solenoid head
A2	**A**
B2	**C**
C2	**B**
E2	**D**

SAE08 PROPORTIONAL PRESSURE RELIEF VALVE

CE





Main features

Max press.	350 bar
Max flow	2 l/min
Weight	0,46 Kg
PWM	120Hz
Hysteresis	5%
Duty cycle	ED 100%
Voltage	+/- 10% nominal voltage
Environment temperature	-15 ÷ +50°C
Fluid temperature	-30 - +80°C
Filtration	ISO 4406
Tightening torque	25Nm
Cavity	SAE08-2

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

Spare part code

VMPC — **Direct acting proportional relief valve**

2 — **Nominal size:**
2 = 2 l/min

C — **Working range:**
A = 10 ÷ 80 bar
C = 40 ÷ 250 bar

E — **Options:**
E = emergency (std)

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

see coils table

Assembly code

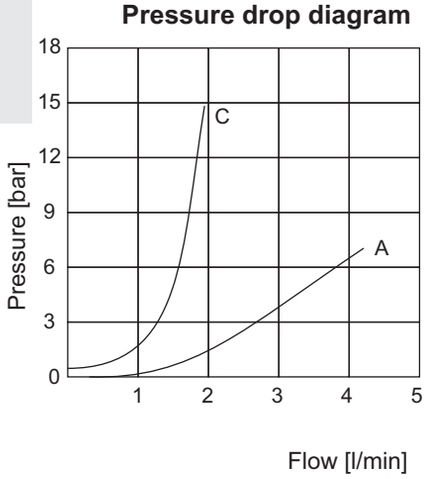
P* Voltage**

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

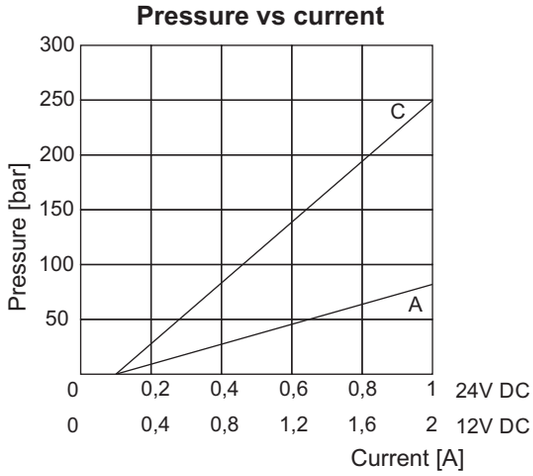
Coils

Supply Voltage	Coil code	Connector code
12DC	98001190	KA132000B1
24DC	98002190	KA132000B1

Pressure drop diagram

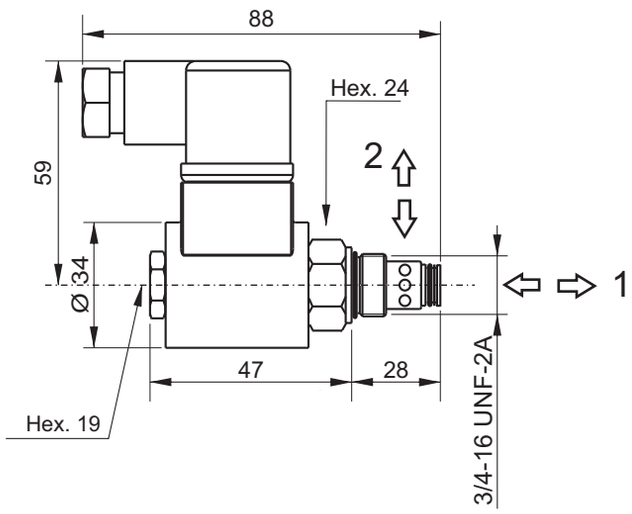


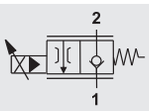
Pressure vs current



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.

SAE08 2/2 SINGLE LOCKING POPPET PROPORTIONAL FLOW CONTROL VALVE





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
Environment temperature	-15 ÷ +50°C
Fluid temperature	-40 - +120°C
Filtration	ISO 4406
Tightening torque	30Nm
Cavity	SAE08-2

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 (std)
- 12DC
- 24DC

see coils table

Assembly code

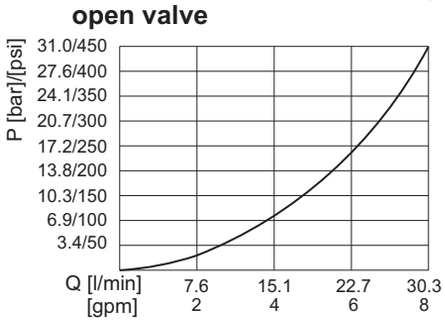
T* Voltage**

eg: T12DC

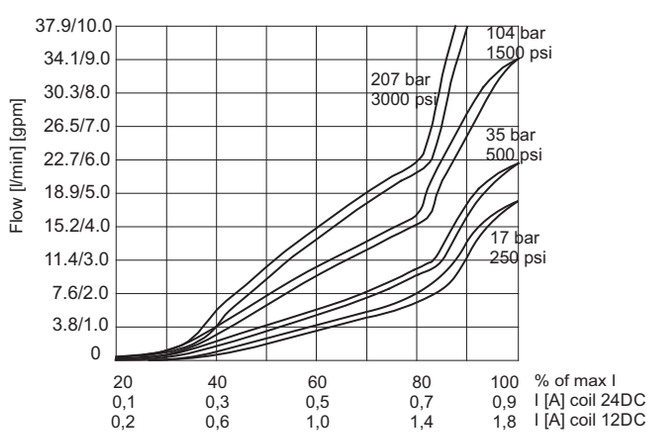
Coils

Supply voltage	Coil code	Connector code
12DC	M6306012	KA132000B1
24DC	M6306024	KA132000B1

Pressure Drop 2 > 1 with fully open valve

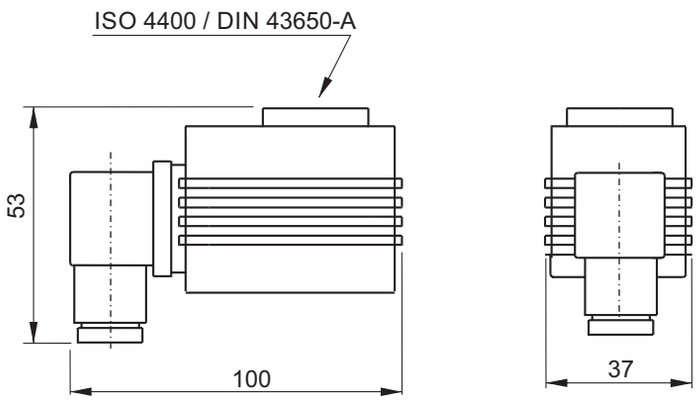


Flow vs current at different pressure drops

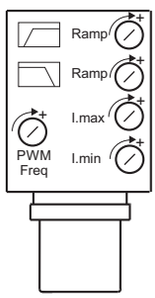


Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C.
Pressure drop may change depending on fluid viscosity and temperature.

VPC - PLUG IN ELECTRONIC AMPLIFIER FOR PROPORTIONAL SOLENOID VALVES



CE



Main features

Supply voltage	12 / 24V DC
Voltage input signal range	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)
Notes	Closed current loop included (does not change with temperature)

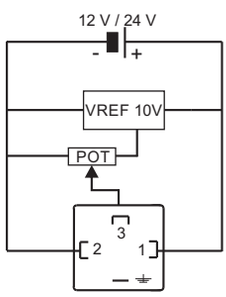
Spare part code

VPC — **Electronic amplifier for solenoid valves**

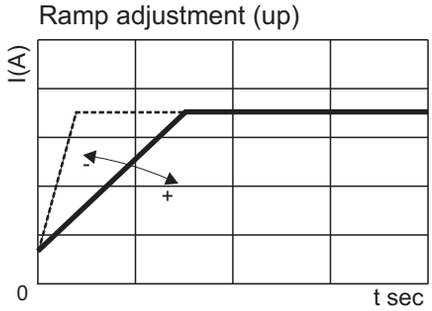
00 — **Options**

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

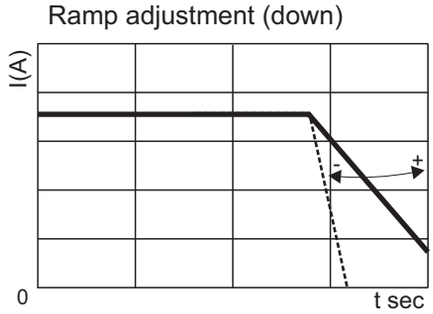
Electric circuit



Ramp adjustment (up)



Ramp adjustment (down)



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.
Independent current to temperature variations.

COILS FOR SOLENOID VALVES

M630* / M631*

M630DT*

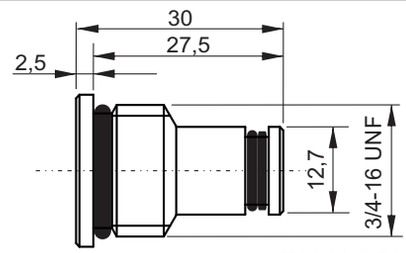
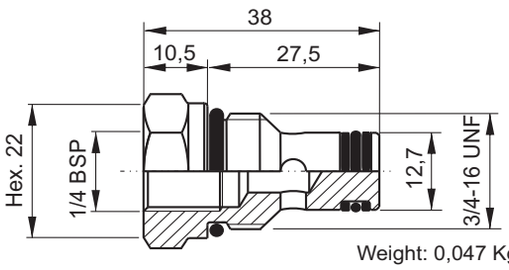
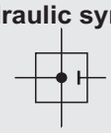
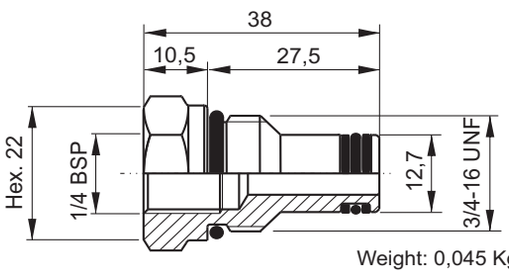
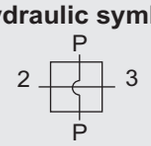
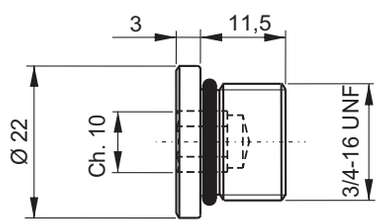
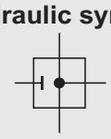
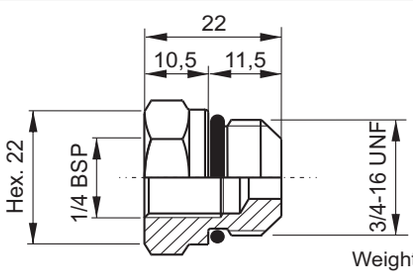
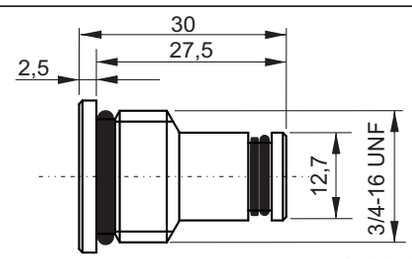
M140

9800*

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 DIN43650/ISO4400	18W	100	H	130	MSV30 MSV4V CSPC15
24DC	24DC_M630	DC	**M6306024**	KA132000B1 DIN43650/ISO4400	18W	100	H	130	MSV30 MSV4V CSPC15
48DC	48DC_M630	DC	**M6306048**	KA132000B1 DIN43650/ISO4400	18W	100	H	130	MSV3V MSV30 SD02
24AC	24AC_M631	RC with integrated rectifying bridge	**M6316024**	KA132000B1 DIN43650/ISO4400	18W	100	H	130	MSV30 MSV4V
115AC	115AC_M631	RC with integrated rectifying bridge	**M6316115**	KA132000B1 DIN43650/ISO4400	18W	100	H	130	MSV30 MSV4V
230AC	230AC_M631	RC with integrated rectifying bridge	**M6316230**	KA132000B1 DIN43650/ISO4400	18W	100	H	130	MSV30 MSV4V
12DC	12DC_M630DT	DC, Deutsch	**M6306012DT**	DT06-4S Deutsch	17W	100	H	117	MSV30 SD00
24DC	24DC_M630DT	DC, Deutsch	**M6306024DT**	DT06-4S Deutsch	17W	100	H	117	MSV30 Sd00
12DC	12DC_M630HP	DC	**M6306012HP**	KA132000B1 DIN43650/ISO4400	21W	100	H	130	MSV30 MSV4V CSPC15
24DC	24DC_M630HP	DC	**M6306024HP**	KA132000B1 DIN43650/ISO4400	21W	100	H	130	MSV30 MSV4V CSPC15
48DC	48DC_M630HP	DC	**M6306048HP**	KA132000B1 DIN43650/ISO4400	21W	100	H	130	MSV3V MSV30 SD02
12DC	Embedded in the VMPC2 proportional valve code	DC	**98001190**	KA132000B1 DIN43650/ISO4400	36W	100	H	257	VMPC2
24DC	Embedded in the VMPC2 proportional valve code	DC	**98002190**	KA132000B1 DIN43650/ISO4400	36W	100	H	247	VMPC2
12DC	12DC_M140	DC	**M14040001**	KA132000B1 DIN43650/ISO4400	22W	100	H	202	MDV30 MDV31 MSV31
24DC	24DC_M140	DC	**M14040002**	KA132000B1 DIN43650/ISO4400	22W	100	H	202	MDV30 MDV31 MSV31
48DC	48DC_M140	DC	**M14040003**	KA132000B1 DIN43650/ISO4400	22W	100	H	202	MDV30 MDV31 MSV31
24AC	24RAC_M140	RC - needs external rectifying connector	**M14040002**	KA132R11B1 DIN43650/ISO4400	22W	100	H	202	MDV30 MDV31 MSV31
115AC	110RAC_M140	RC - needs external rectifying connector	**M14040004**	KA132R12B1 DIN43650/ISO4400	22W	100	H	202	MDV30 MDV31 MSV31
230AC	220RAC_M140	RC - needs external rectifying connector	**M14040005**	KA132R13B1 DIN43650/ISO4400	22W	100	H	202	MDV30 MDV31 MSV31

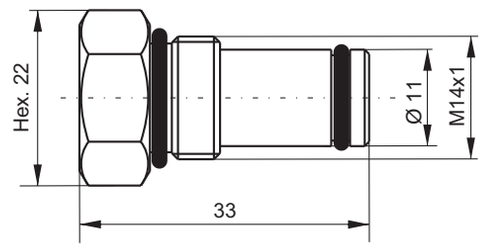
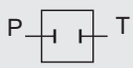
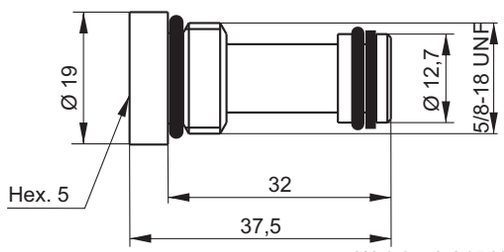
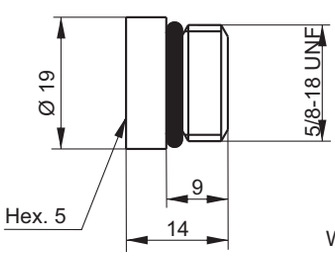
Other voltages and electric connector types (flying leads,...) available on request.
Inrush power consumption can be up to 3,5 times higher than holding power.
Coil thermal insulation Class H. Electric connection DIN43650-A / ISO 4400. Coil protection degree IP65
The tests were carried out at the nominal voltage and an environmental temperature of 25°C

PLUGS

 Weight: 0,041 Kg	**Hydraulic symbol**  **Spare part code** **E70100005**	**Assembly code** **G**
 Weight: 0,047 Kg	**Hydraulic symbol**  **Spare part code** **E70100003**	**Assembly code** **H**
 Weight: 0,045 Kg	**Hydraulic symbol**  **Spare part code** **E70100006**	**Assembly code** **P**
 Weight: 0,027 Kg	**Hydraulic symbol**  **Spare part code** **E70100004**	**Assembly code** **L**
 Weight: 0,042 Kg	**Hydraulic symbol**  **Spare part code** **E70100002**	**Assembly code** **N**
 Weight: 0,041 Kg	**Hydraulic symbol**  **Spare part code** **E70200010**	**Assembly code** **XP**

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

PLUGS

 Weight: 0,110 Kg	**Hydraulic symbol**  **Spare part code** **N70200010**	**Assembly code** **XM**
 Weight: 0,045 Kg	**Hydraulic symbol**  **Spare part code** **N70200007**	**Assembly code** **MG**
 Weight: 0,027 Kg	**Hydraulic symbol**  **Spare part code** **N70200008**	**Assembly code** **ML**

Note: cavities 2 and 3 are machined SAE08 (3/4-16UNF) in central manifold MB and 5/8-18UNF in central manifold MR.
Cavity 2 is machined SAE08-4way in central manifold M4.
Cavity 4 is machined only in reversible central manifold MR.

NOTES

TANKS

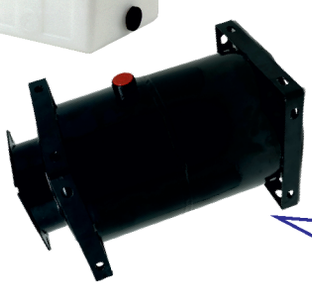
Heavy duty square aluminium tanks **10** or **25 l**, for vertical mounting

Cylindrical steel tanks from **0,7** to **12 l**, for horizontal and vertical mounting

Square steel tanks from **3** to **30 l**, vertical mounting

Square plastic tanks, from **1** to **15 l**, for horizontal or vertical mounting

Round plastic tanks from **0,4** to **11 l** volume, for horizontal or vertical mounting.



Braketed round tanks, from **10** to **22 l**, for horizontal or vertical mounting

Q & A

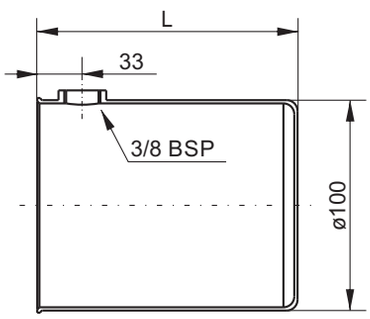
Plastic or steel tanks?
Plastic tanks have various advatanges: they do not develop rust, the oil level is visible and they do not damage easily if bumped or exposed to vibrations. On the other hand steel tanks are preferable in case of ultra high or ultra low temperatures.

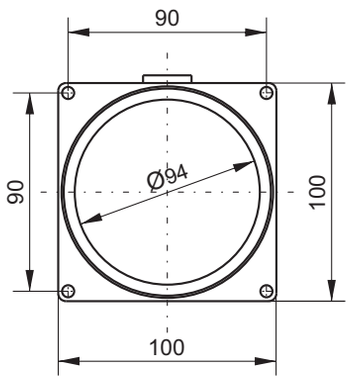
Is it possible to use custom made tanks?
Yes. We can provide an adaptor flange (F80000001) for PPC and PPM which can be welded on a custom made tank.
We can even design special tanks depending on application and quantities.

How do I order spare tanks?
Spare 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,... depending on the kind of tank. Tanks specified in PPC speaking code (e.g. 5BV) include all relevant accessories.

ROUND STEEL TANKS F & H SERIES

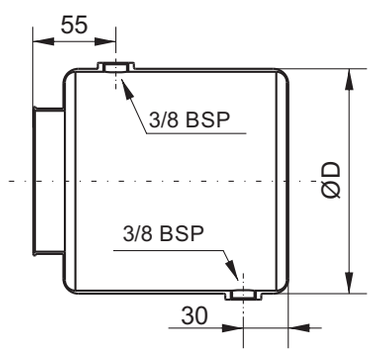
Recommended tightening torque for 3/8" BSPP: 10 Nm

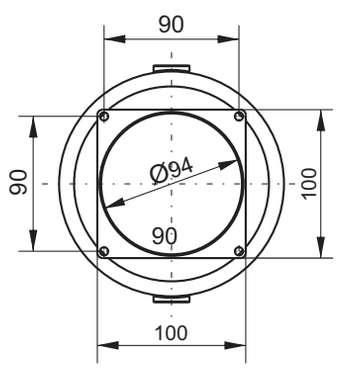




Description	Spare part code	Assembly code	L (mm)	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
0,7 l cylindrical horizontal / vertical mounting	**E50403001**	**0,7F / 0,7FV**	120	0,26 Kg	0,75	0,52
1,2 l cylindrical horizontal / vertical mounting	**E50403002**	**1,2F / 1,2FV**	186	0,38 Kg	1,1	0,9

Recommended tightening torque for 3/8" BSPP: 10 Nm



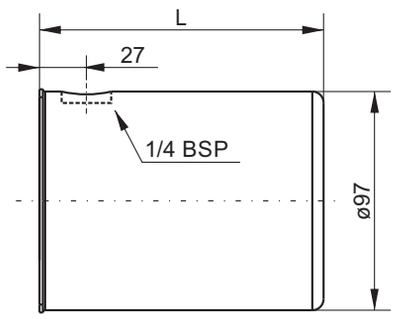


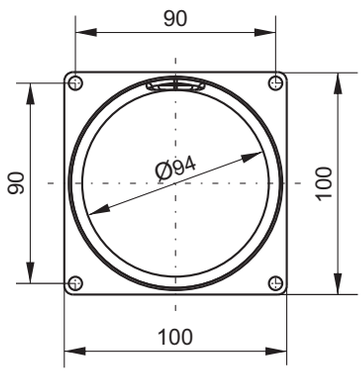
Description	Spare part code	Assembly code	L (mm)	ØD (mm)	Weight	Actual filling volume (lt)	
						Horizon.	Vert.
1,7 l cylindrical horizontal / vertical mounting	**E50404004**	**1,7H / 1,7HV**	170	120	0,64 Kg	1,5	1,2
2,4 l cylindrical horizontal / vertical mounting	**E50404006**	**2,4H / 2,4HV**	170	150	0,8 Kg	2,4	1,8

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

Note: the piping kit, standard suction filter, filler/breather and discharge plug are included when specifying the tank in PPM assembly code
When ordering spare parts, only the discharge plug and filler/breather are included

ROUND PLASTIC TANKS R SERIES



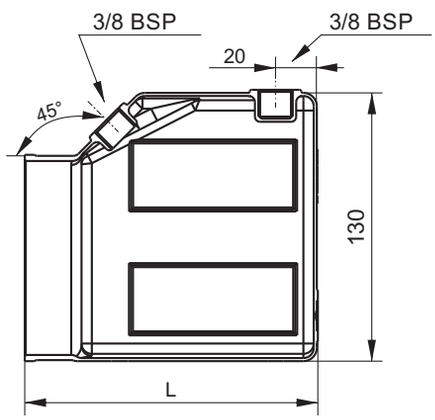


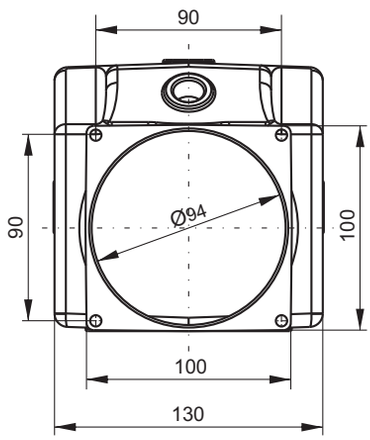
Description	Spare part code	Assembly code	L (mm)	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
0,4 l round horizontal / vertical mounting	**H50403001**	**0,4R / 0,4RV**	90	0,07 Kg	0,45	0,35
0,7 l round horizontal / vertical mounting	**H50403002**	**0,7R / 0,7RV**	124	0,09 Kg	0,75	0,62
1,2 l round horizontal / vertical mounting	**H50403003**	**1,2R / 1,2RV**	186	0,14 Kg	1,17	1,05

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

Note: the piping kit, standard suction filter, filler/breather and discharge plug are included when specifying the tank in PPM assembly code
When ordering spare parts, only the discharge plug and filler/breather are included

SQUARE PLASTIC TANKS T SERIES



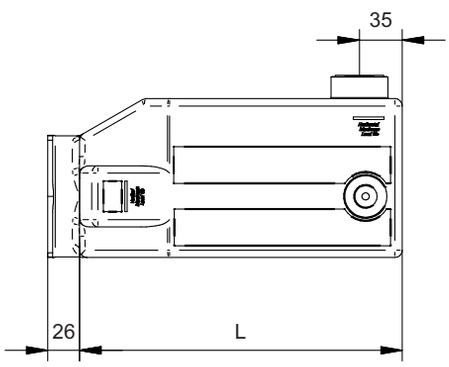


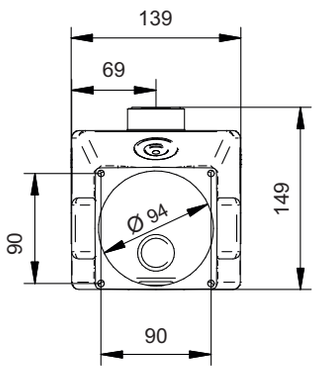
Description	Spare part code	Assembly code	L (mm)	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
1 l square horizontal / vertical mounting	**H50403005**	**1T / 1TV**	125	0,23 Kg	1,0	0,8
1,5 l square horizontal / vertical mounting	**H50403007**	**1,5T / 1,5TV**	150	0,24 Kg	1,4	1,2
2 l square horizontal / vertical mounting	**H50403009**	**2T / 2TV**	211	0,34 Kg	2,2	2,0
2,7 l square horizontal / vertical mounting	**H50403011**	**2,7T / 2,7TV**	261	0,40 Kg	2,7	2,7
3,5 l square horizontal / vertical mounting	**H50403013**	**3,5T / 3,5TV**	326	0,49 Kg	3,7	3,9

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

Note: the piping kit, standard suction filter, filler/breather and discharge plug are included when specifying the tank in PPM assembly code
When ordering spare parts, only the discharge plug and filler/breather are included

SQUARE PLASTIC TANKS K SERIES





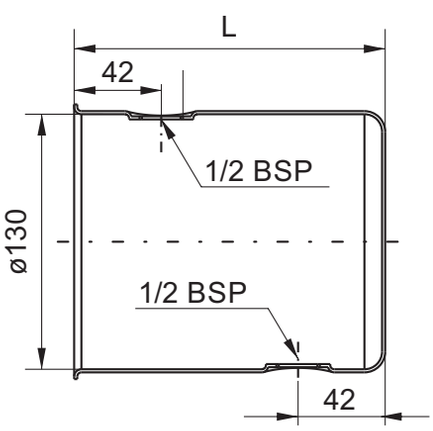
Description	Spare part code	Assembly code	L (mm)	Weight	Actual filling volume lt (gal)	
					Horizontal	Vertical
1,5 l square horizontal / vertical mounting	**TCTAH00012**	**1,5K / 1,5KV**	144	0,39 Kg	1,8 (0,48)	1,4 (0,37)
2 l square horizontal / vertical mounting	**TCTAH00013**	**2K / 2KV**	194	0,45 Kg	2,45 (0,65)	2,35 (0,62)
3 l square horizontal / vertical mounting	**TCTAH00014**	**3K / 3KV**	264	0,68 Kg	3,5 (0,92)	3,3 (0,87)
4 l square horizontal / vertical mounting	**TCTAH00015**	**4K / 4KV**	324	0,75 Kg	4,4 (1,16)	4,45 (1,18)
5 l square horizontal / vertical mounting	**TCTAH00016**	**5K / 5KV**	404	0,79 Kg	5,7 (1,51)	5,9 (1,56)
6 l square horizontal / vertical mounting	**TCTAH00018**	**6K / 6KV**	474	0,88 Kg	6,2 (1,64)	6,6 (1,74)

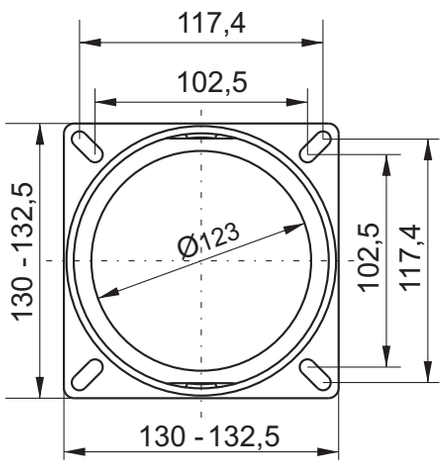
Material	PE-HD neutral / transparent colour (DO NOT EXPOSE TO DIRECT SUNLIGHT)
Fluid	Mineral based oil ISO/DIN 6743/4
Working temperature	-15 / +70°C

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 and clamp band are included. Discharge ports are normally moulded blind.

CYLINDRICAL STEEL TANKS A SERIES

Recommended tightening
torque for Filler Cap: 5 Nm





Description	Spare part code	Assembly code	L (mm)	Weight	Actual filling volume lt (gal)	
					Horizontal	Vertical
1,5 l cylindrical horizontal / vertical mounting	**E60303001**	**1,5A / 1,5AV**	150	0,78 Kg	1,5 (0,40)	1,0 (0,26)
2,5 l cylindrical horizontal / vertical mounting	**E60303004**	**2,5A / 2,5AV**	235	1,04 Kg	2,5 (0,66)	2,0 (0,53)

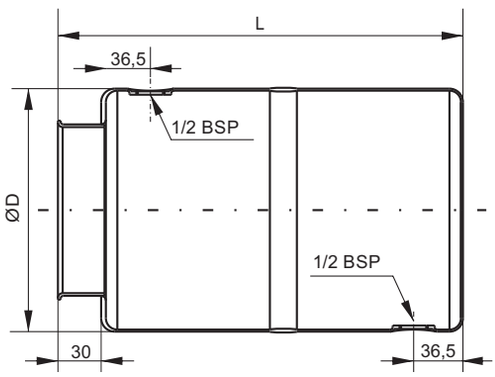
All dimensions are in mm

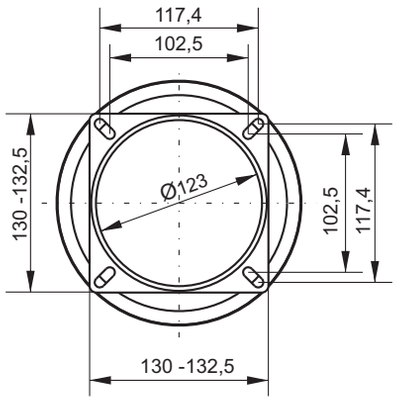
Material	Fe P04-EN10130 steel sheet 1,5mm thickness, 2,5mm thickness flange
Fluid	Mineral based oil ISO/DIN 6743/4
Working temperature	-15 / +70°C

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.

CYLINDRICAL STEEL TANKS A & B SERIES

Recommended tightening torque for Filler Cap: 5 Nm





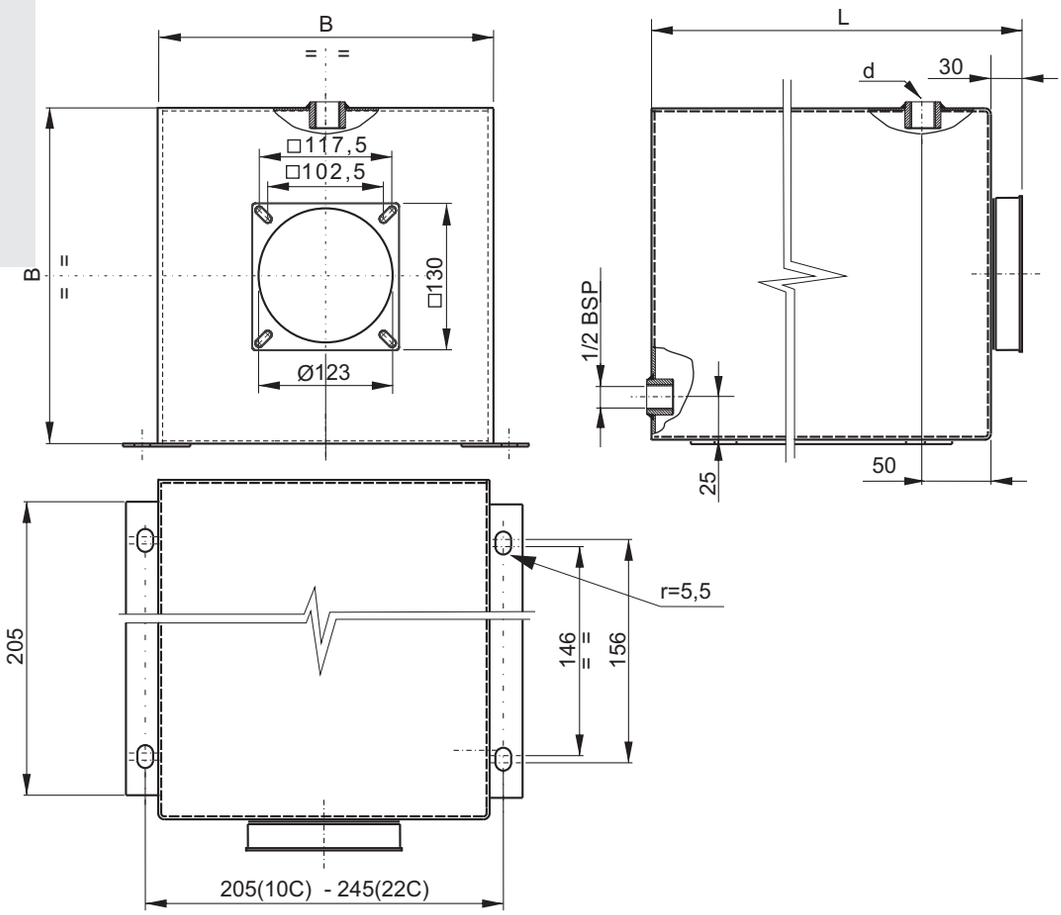
Description	Spare part code	Assembly code	L (mm)	ØD (mm)	Weight	Actual filling volume lt (gal)	
						Horiz.	Vert.
5 l cylindrical horizontal / vertical mounting	**E60303006**	**5B / 5BV**	300	180	1,82 Kg	6,3 (1,66)	5,1 (1,35)
10 l cylindrical horizontal / vertical mounting	**E60303011**	**10B / 10BV**	262	220	2,01 Kg	8,3 (2,19)	6,3 (1,66)
12 l cylindrical horizontal / vertical mounting	**E60303012**	**12B / 12BV**	380	220	2,47 Kg	12,5 (3,30)	10,9 (2,88)
5 l cylindrical horizontal / vertical mounting	**S60303006**	**5BRP / 5BVRP**	215	200	2,08 Kg	6,2 (1,64)	5,0 (1,32)

All dimensions are in mm

Material	Fe P04-EN10130 steel sheet 1,5mm thickness, 2,5mm thickness flange
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



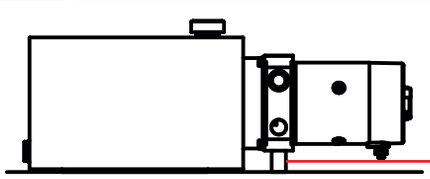
Description	Spare part code	Assembly code	L (mm)	B (mm)	ØD (mm)	Weight	Actual filling volume lt (gal)	
							Horiz.	Vertical
10 l square horiz. / vert. mounting	**E60303042**	**10C / 10CV**	330	185	1/2 BSP	5,50 Kg	9,6 (2,54)	8,1 (2,14)
22 l square horiz. / vert. mounting	**E60303044**	**22C / 22CV**	470	223	3/4 BSP	6,80 Kg	20,6 (5,44)	18,5 (4,89)

All dimensions are in mm

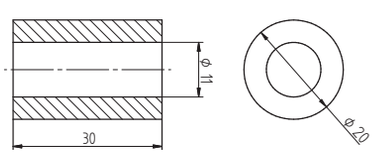
Material	Fe P04-EN10130 steel sheet 1,5mm thickness, 2,5mm thickness flange	**Fluid**	Mineral based oil ISO/DIN 6743/4	**Working temperature**	-15 / +70°C

Accessories

Tanks central manifold supports:

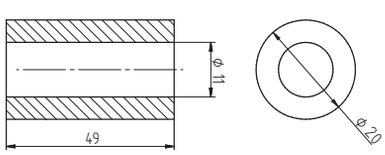


XXFTH00004



Use for E60303042 tanks

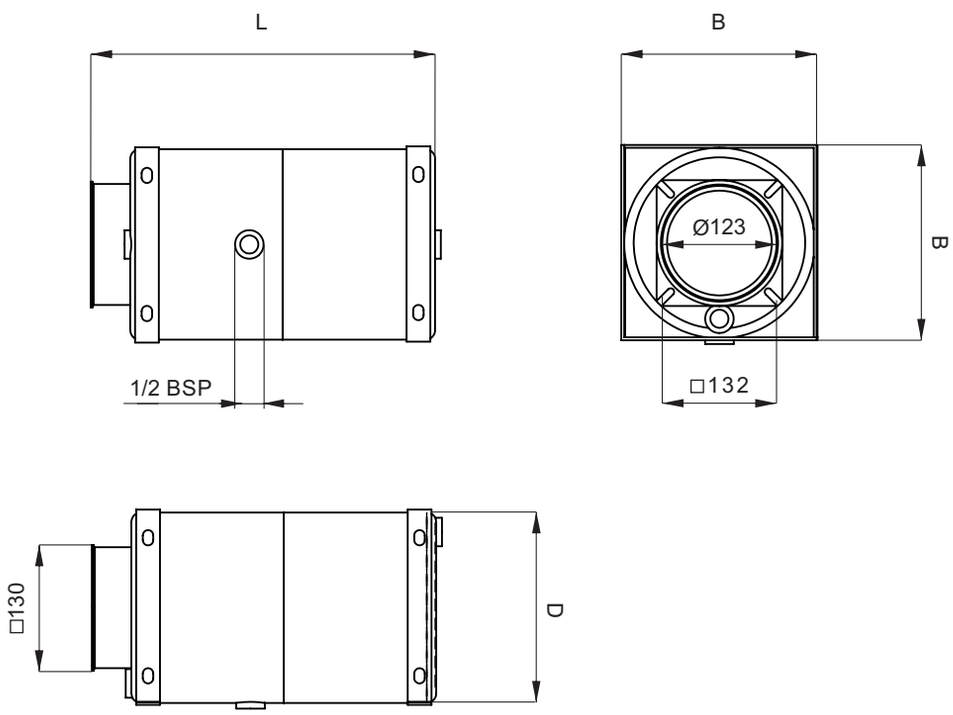
XXFTH00005



Use for E60303044 tanks

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.

HORIZONTAL/VERTICAL SQUARE WELDED STEEL TANKS C SERIES



All holes for plugs are 1/2BSP

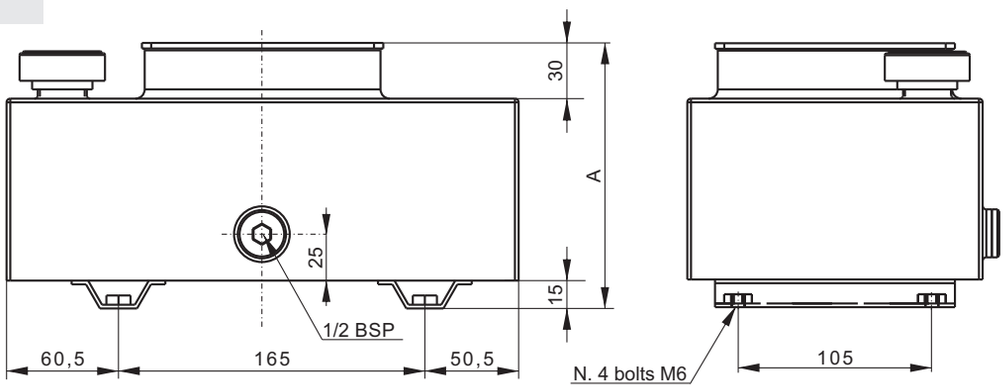
Description	Spare part code	Assembly code	L (mm)	B (mm)	ØD (mm)	Weight	Actual filling volume lt (gal)	
							Horiz.	Vertical
10 l square horiz. / vert. mounting	**TCTAH00019**	**10 / 10V**	361	206	200	5,50 Kg	9,6 (2,54)	8,1 (2,14)
22 l square horiz. / vert. mounting	**TCTAH00020**	**22 / 22V**	510	286	280	6,80 Kg	20,6 (5,44)	18,5 (4,89)

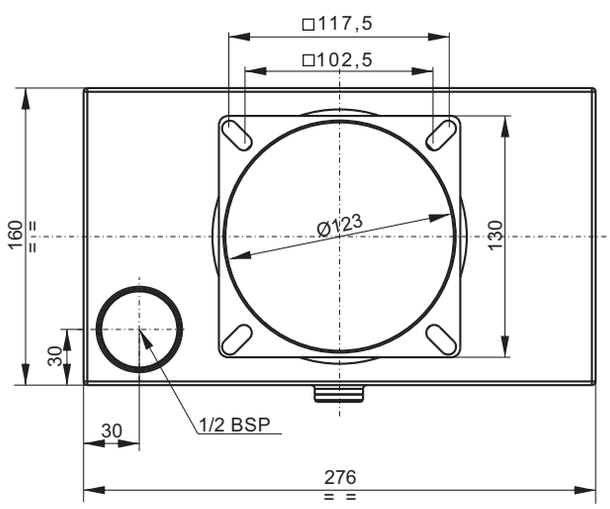
All dimensions are in mm

Material	Fe P04-EN10130 steel sheet 1,5mm thickness, 2,5mm thickness flange
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.

SMALL SIZE SQUARE WELDED STEEL TANKS E SERIES





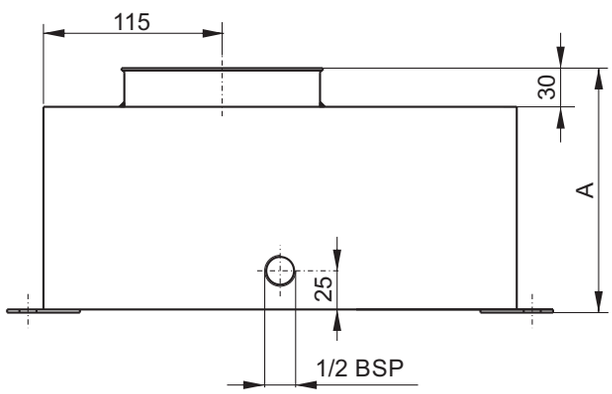
Description	Spare part code	Assembly code	A (mm)	Weight	Actual filling volume lt (gal)	
					Horizontal	Vertical
3 l square vertical mounting	**E60303053**	**3EV**	128	3,09 Kg	-	4,2 (1,11)
7 l square vertical mounting	**E60303057**	**7EV**	235	4,32 Kg	-	8,3 (2,19)

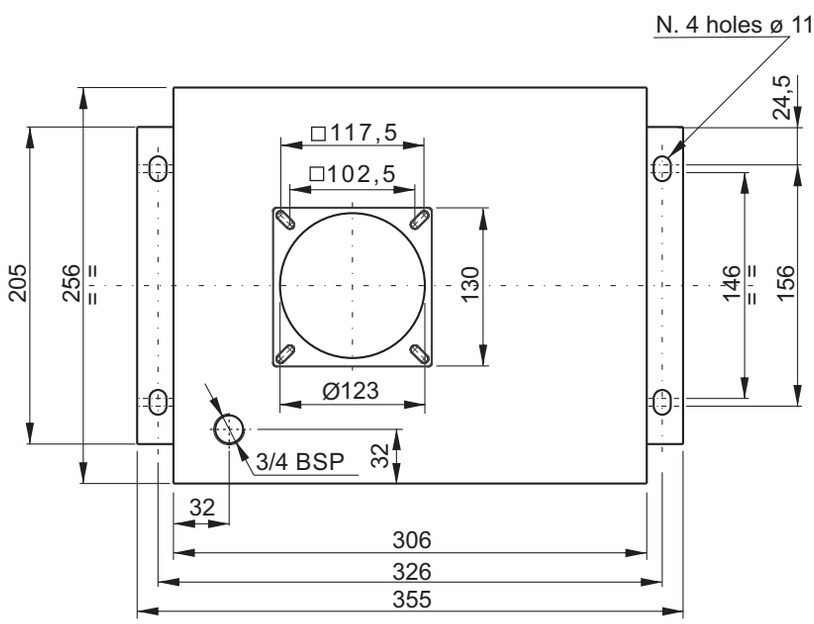
All dimensions are in mm

Material	Fe P04-EN10130 steel sheet 1,5mm thickness, 2,5mm thickness flange
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





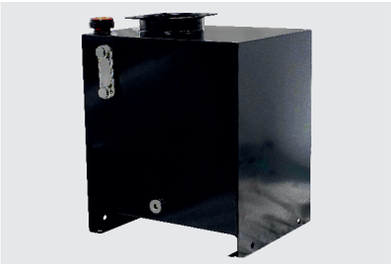
Description	Spare part code	Assembly code	A (mm)	Weight	Actual filling volume lt (gal)	
					Horizontal	Vertical
8 l square vertical mounting	**E60303041**	**8EV**	156	4,50 Kg	-	10,4 (2,75)
15 l square vertical mounting	**E60303014**	**15EV**	260	5,20 Kg	-	18,5 (4,89)

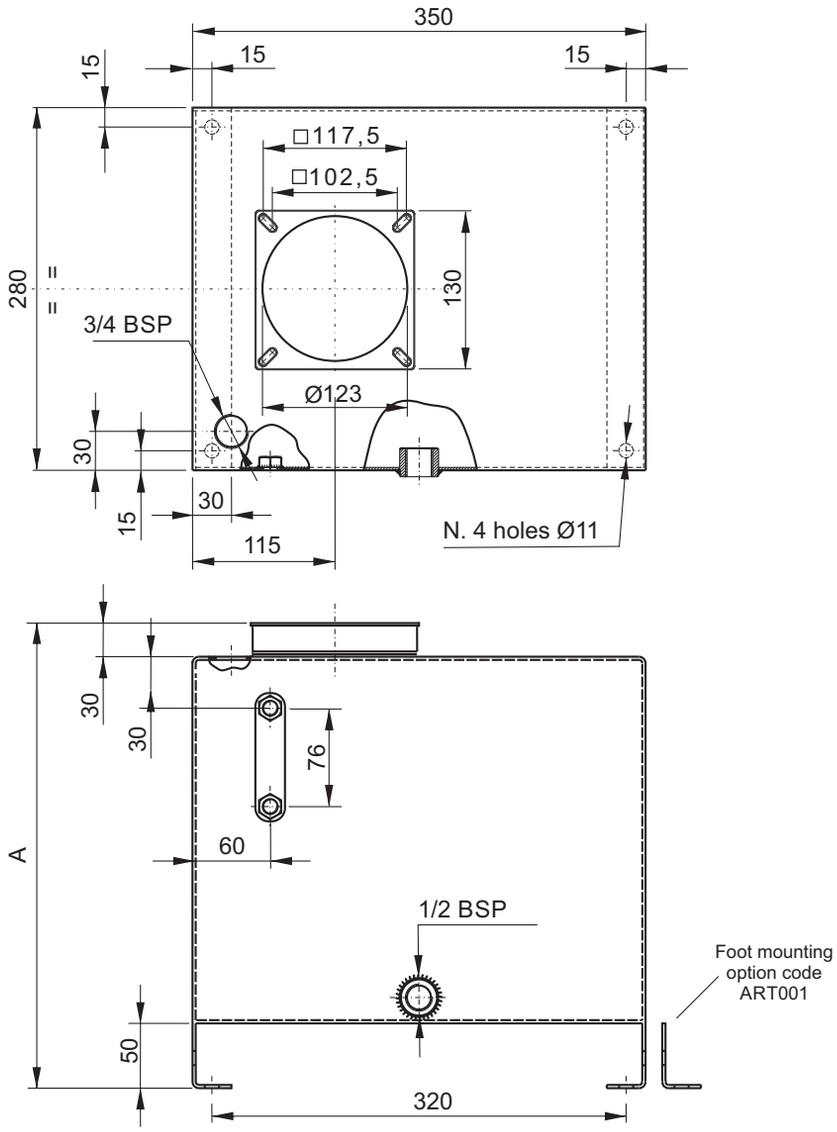
All dimensions are in mm

Material	Fe P04-EN10130 steel sheet 1,5mm thickness, 2,5mm thickness flange
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.

SQUARE WELDED STEEL TANKS E SERIES





Description	Spare part code	Assembly code	A (mm)	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
20 l square vertical mounting	**E60303015**	**20EV**	293	6,50 Kg	-	20,8 (5,49)
30 l square vertical mounting	**E60303048**	**30EV**	423	8,50 Kg	-	33,5 (8,85)

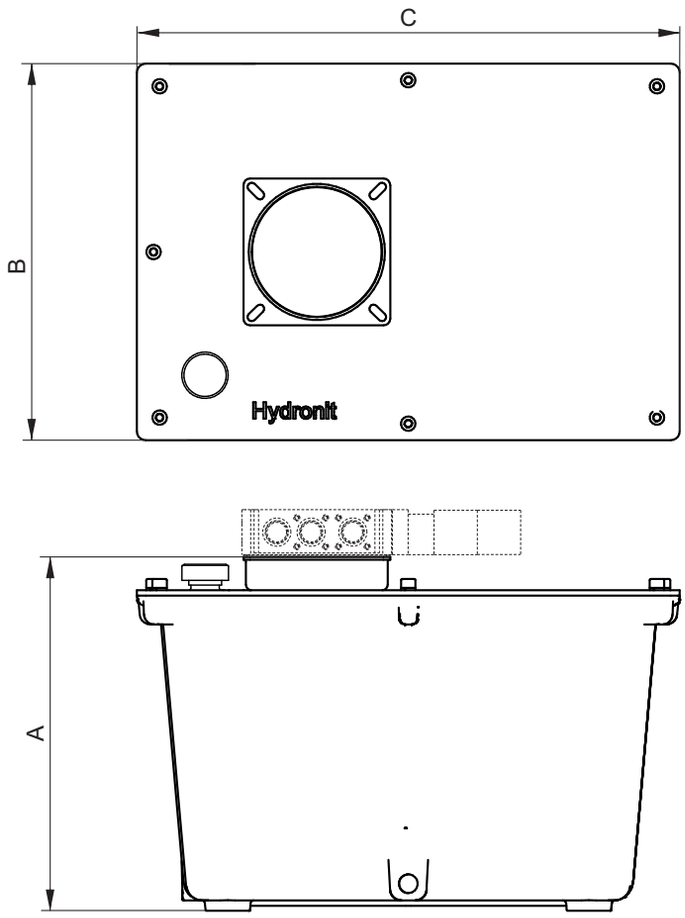
All dimensions are in mm

Material	Fe P04-EN10130 steel sheet 2,5mm thickness on top and side, 1,5mm thickness front and rear, 2,5mm thickness flange
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.

HEAVY DUTY SQUARE ALUMINIUM TANK

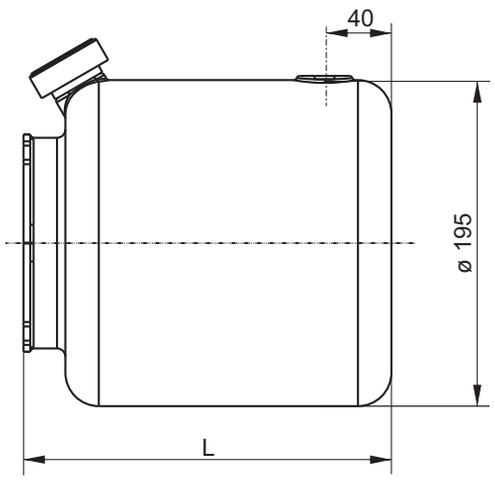


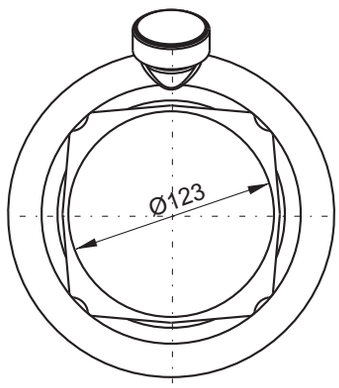
Description	Spare part code	Assembly code	A [mm]	B [mm]	C [mm]	Weight [kg]	Actual filling volume l (gal)
10 l square aluminium vertical mounting tank	**S602010HD**	**10HD**	255	250	340	4	8,5 (2,25)
25 l square aluminium vertical mounting tank	**S602025HD**	**25HD**	315	340	490	13	21 (5,55)

Material	Die cast alluminium, tank top lid 3 mm steel sheet
Fluid	Mineral based oil ISO/DIN 6743/4
Working temperature	-15 / +70°C

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

CYLINDRICAL PLASTIC TANKS P SERIES



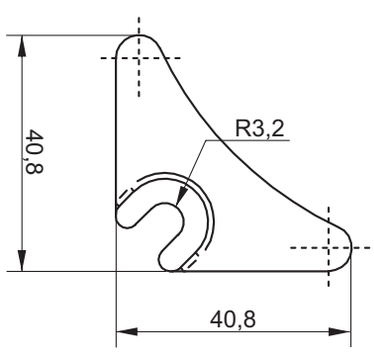


Description	Spare part code	Assembly code	L (mm)	Weight	Actual filling volume lt (gal)	
					Horizontal	Vertical
5 l cylindrical horizontal / vertical mounting	**H60303028**	**5P / 5PV**	219	0,60 Kg	5,0 (1,32)	4,2 (1,11)
7 l cylindrical horizontal / vertical mounting	**H60303030**	**7P / 7PV**	271	0,61 Kg	6,0 (1,59)	5,5 (1,45)
9 l cylindrical horizontal / vertical mounting	**H60303032**	**9P / 9PV**	323	0,76 Kg	7,2 (1,9)0	6,5 (1,72)
11 l cylindrical horizontal / vertical mounting	**H60303035**	**11P / 11PV**	453	1,06 Kg	9,0 (2,38)	10,5 (2,77)

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

Clamping brakets

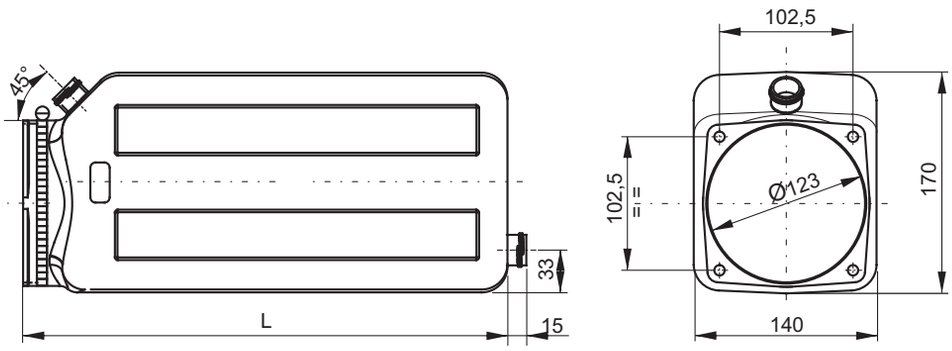
Clamp code
E60513022



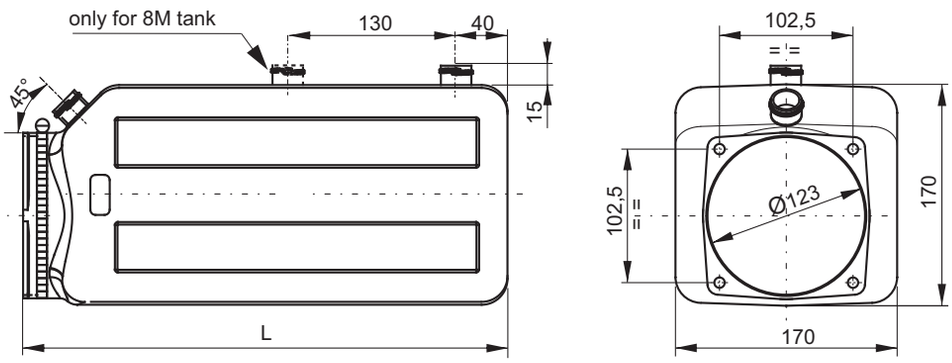
Notes: 4 x E60513022 mounting clamp brakets and a clamp band are required to fix P series cylindrical plastic tanks.

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 C86100001, E60513022 plate and clamp band are included.
Discharge ports are normally moulded blind. On request these tanks are available with an offset collar. Ask for details.

SQUARE PLASTIC TANKS L & M SERIES



Description	Spare part code	Assembly code	L (mm)	Weight	Actual filling volume lt (gal)	
					Horizontal	Vertical
1,5 l square horizontal / vertical mounting	**H60303016**	**1,5L / 1,5LV**	135	0,32 Kg	2,4 (0,63)	1,5 (0,40)
3 l square horizontal / vertical mounting	**H60303018**	**3L / 3LV**	250	0,42 Kg	4,4 (1,16)	4,2 (1,11)
6 l square horizontal / vertical mounting	**H60303020**	**6L / 6LV**	350	0,63 Kg	6,2 (1,64)	6,6 (1,74)

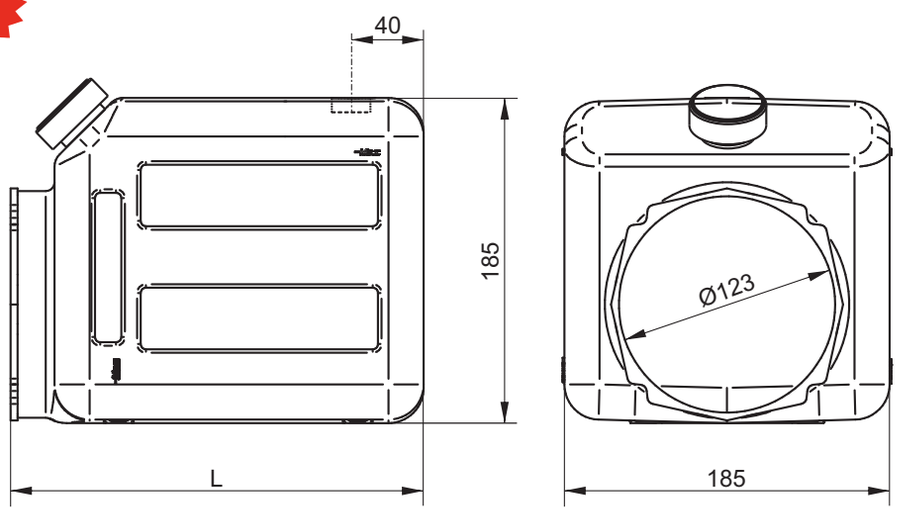


Description	Spare part code	Assembly code	L (mm)	Weight	Actual filling volume lt (gal)	
					Horizontal	Vertical
5 l square horizontal / vertical mounting	**H60303025**	**5M / 5MV**	270	0,60 Kg	5,8 (1,53)	5,7 (1,51)
8 l square horizontal / vertical mounting	**H60303033**	**8M / 8MV**	375	0,76 Kg	8,1 (2,11)	8,8 (2,32)

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 and clamp band are included. Discharge ports are normally moulded blind.

SQUARE PLASTIC TANKS Q SERIES

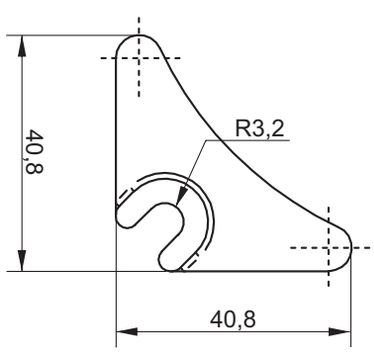


Description	Spare part code	Assembly code	L (mm)	Weight	Actual filling volume lt (gal)	
					Horizontal	Vertical
5 l square horizontal / vertical mounting	**TCTAH00002**	**5Q / 5QV**	235	0,53 Kg	5,4 (1,43)	5,7 (1,51)
12 l square horizontal / vertical mounting	**TCTAH00005**	**12Q / 12QV**	528	1,04 Kg	13,0 (3,43)	14,7 (3,88)

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

Clamping brakets

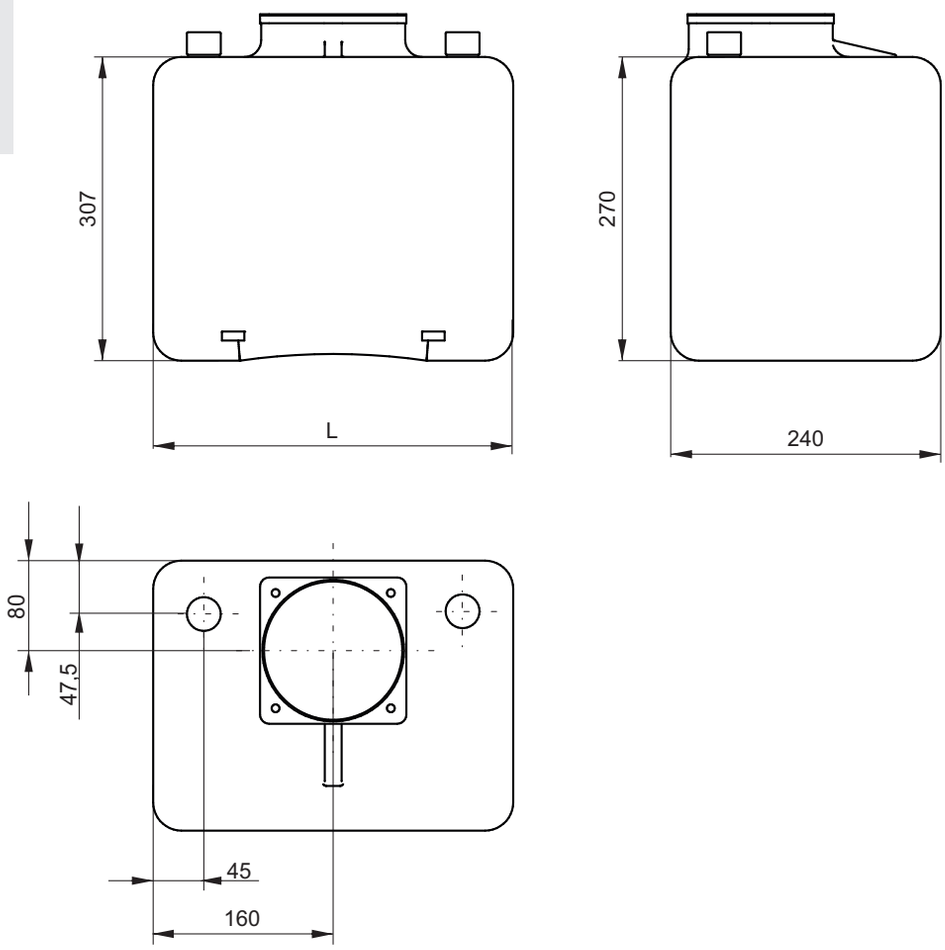
Clamp code
E60513022



Notes: 4 x E60513022 mounting clamp brakets and a clamp band are required to fix Q series square plastic tanks.

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 C86100001, E60513022 plate and clamp band are included.
Discharge ports are normally moulded blind. Available on request with other filling volume. Ask for details.

SQUARE PLASTIC TANKS N SERIES



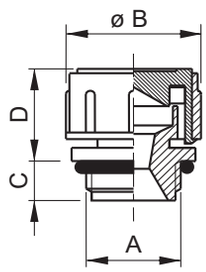
Description	Spare part code	Assembly code	L (mm)	Weight	Actual filling volume lt (gal)	
					Horizontal	Vertical
15 l plastic square vertical mounting	**E20201800**	**15NV**	307	1,53 Kg	-	16,8 (4,44)

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 and drain plug are included. Enquire for more details.
Plugs: Thread M14, hole dimension 12.5 mm.

TANKS PLUGS

Filler breather 1/2” - 3/4” BSP



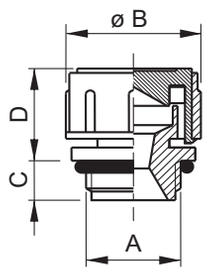
	1/2”	3/4”
A	1/2”	3/4”
B	30	47
C	10	17
D	21	17

Weight: 0,02 Kg

Suitable for B/BV type tanks (1/2” BSP)
Suitable for EV type tanks (3/4” BSP)

Spare part code
C86100001 (1/2 BSP) **C86100002** (3/4 BSP)

Filler breather with check valve 1/2” BSP



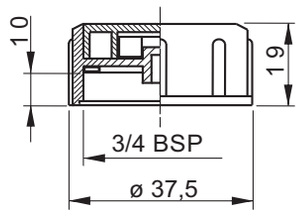
	1/2”
A	1/2”
B	30
C	10
D	21

Weight: 0,02 Kg

Suitable for B/BV type tanks (1/2” BSP)

Spare part code
C86100001CV

Filler breather 3/4” BSP female

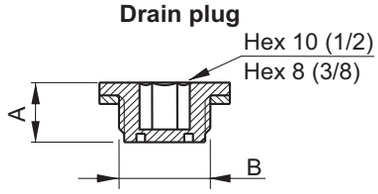


Suitable for all series plastic tanks

Weight: 0,01 Kg

Spare part code
C86100003

Drain plug

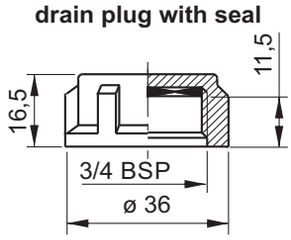


	A	B	Material
TB050801	19	1/2 BSPP	steel
TCNB0800	15	1/2 BSPP	plastic
TCNB0702	14	3/8 BSPP	plastic

Weight: 0,04 Kg (steel) 0,01Kg (plastic)

Spare part code
Tb050801 / TCNB0800 / TCNB0702

3/4” BSP female drain plug with seal

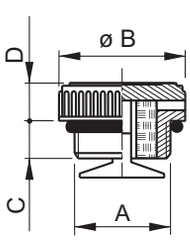


Suitable for all series plastic tanks

Weight: 0,01 Kg

Spare part code
E60513005

Knurled filler breather with vane 1/4” - 3/8” BSP



	1/4”	3/8”
A	1/4”	3/8”
B	21,5	21,5
C	11	13
D	16	16

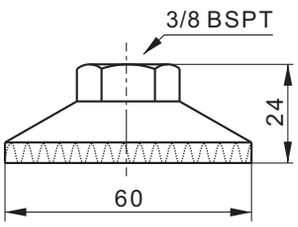
Weight: 0,01 Kg

Suitable for R type tanks (1/4” BSPP)
Suitable for F/H/T type tanks (3/8” BSPP)

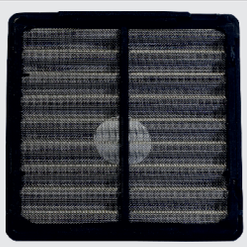
Spare part code
C75100001 (1/4 BSPP) **C75100002** (3/8 BSPP)

TANK ACCESSORIES

Standard inlet strainer filter
Filtration degree: 90 micron

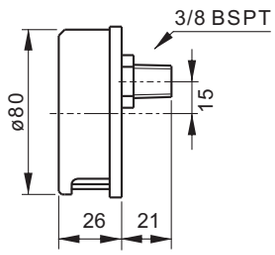


Weight: 0,01 Kg



Spare part code
C34100005

Inlet eccentric filter
Filtration degree: 90 micron

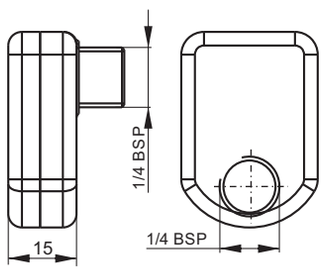


Recommended for 1,5 l tanks
horizontal mounting

Weight: 0,13 Kg

Spare part code
C34100001

Micro inlet filter
Filtration degree: 90 micron

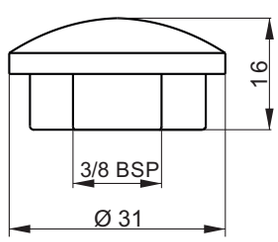


Recommended for pumps gr. 0

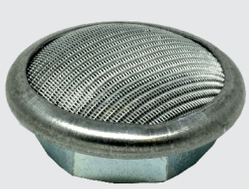
Weight: 0,01 Kg

Spare part code
C34100100

Micro inlet strainer filter
Filtration degree: 90 micron

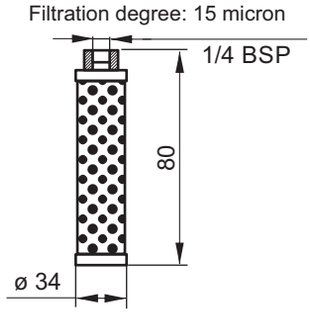


Weight: 0,02 Kg



Spare part code
C34100006

In-tank return filter
Filtration degree: 15 micron



Weight: 0,07 Kg

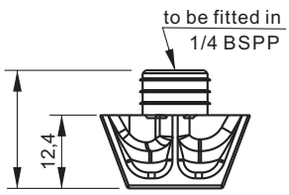
Spare part code
TAFTH00002

Notes: Max torque for plastic pipe 5 Nm

TANK ACCESSORIES

Relief valve diffuser

To be mounted in cavity Tr

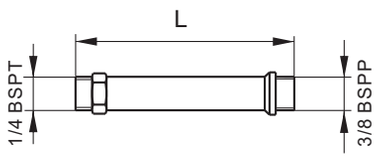


It reduces foam and noise when relief valve is working
Recommended for all vertical mounted tanks.

Weight: 0,01 Kg

Spare part code
SFEP01D

1/4” suction pipe



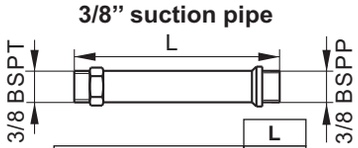
	L
PP0130	30
PP0180	80
PP01120	120

To fit inlet strainers C34100005 to Gr.0 pumps

Weight: 0,01 Kg (average)

Spare part code
PP01*

3/8” suction pipe



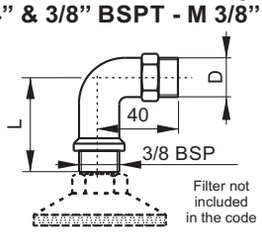
	L
PP0242	42
PP0268	68
PP02105	105
PP02125	125
PP02142	142
PP02165	165
PP02180	180
PP02190	190
PP02237	240
PP02320	320
PP02370	370

To fit inlet strainers C34100005 to Gr.1 pumps

Weight: 0,02 Kg (average)

Spare part code
PP02**

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



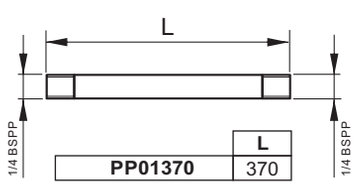
	L	D
PP01E40	40	1/4 BSPT
PP01E77	77	1/4 BSPT
PP02E40	40	3/8 BSPT
PP02E77	70	3/8 BSPT

Recommended for horizontal tanks

Weight: 0,01 Kg

Spare part code
PP0*E**

1/4” suction/return pipe



	L
PP01370	370

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

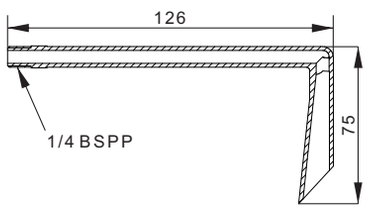
Weight: 0,04 Kg

Spare part code
PP01370

Notes: Max torque for plastic pipe 5 Nm

TANK ACCESSORIES

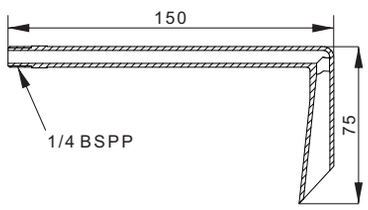
Return plastic 90° elbow 1/4 BSPP



Weight: 0,02 Kg

Spare part code
TADPH00001

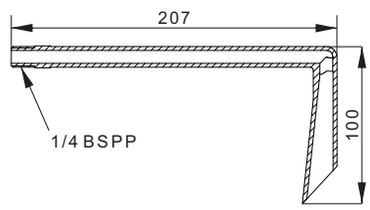
Return plastic 90° elbow 1/4 BSPP



Weight: 0,02 Kg

Spare part code
TADPH00002

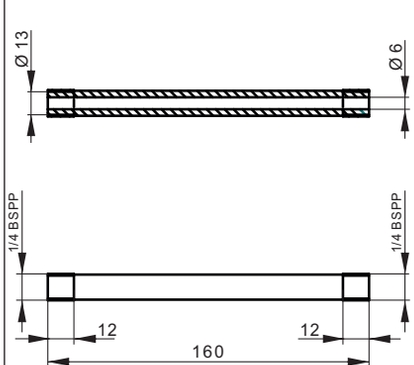
Return plastic 90° elbow 1/4 BSPP



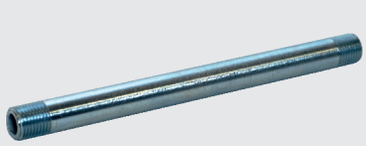
Weight: 0,03 Kg

Spare part code
TADPH00003

1/4" suction/return 160mm steel pipe

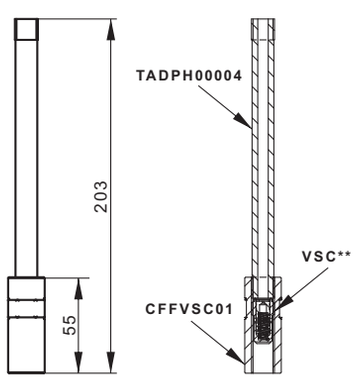


Weight: 0,10 Kg

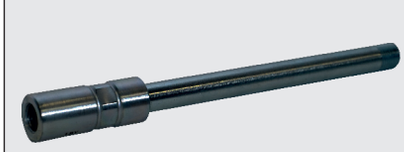


Spare part code
TADPH00004

Steel 1/4" return steel pipe for VSC01 valves

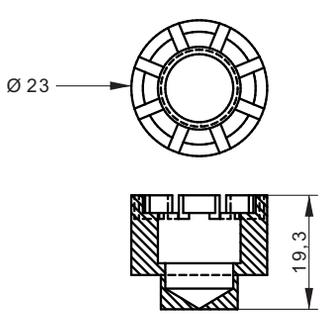


Weight: 0,22 Kg



Spare part code
TAKTH000**

Anti-foam cap for VSC01 valve (flow 0÷5 l/min) - 1/4" return cavity



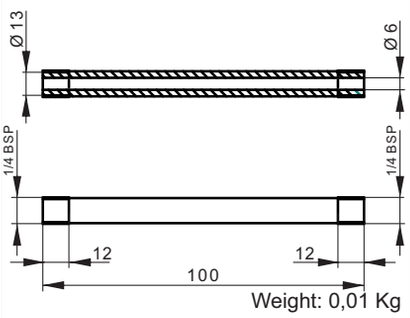
Weight: 0,01 Kg

Spare part code
BRC0601

Notes: Max torque for plastic pipe 5 Nm

TANK ACCESSORIES

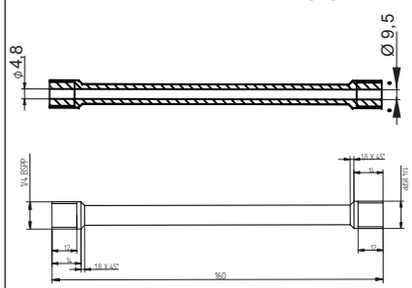
1/4" suction/return 100mm steel pipe



Weight: 0,01 Kg

Spare part code
TADPH00008

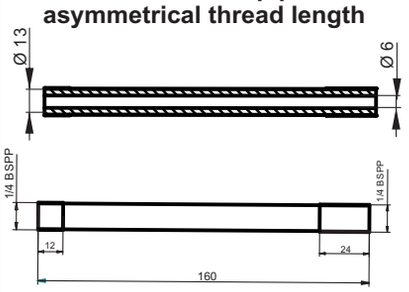
1/4" suction/return 160mm narrow steel pipe



Weight: 0,12 Kg

Spare part code
TADPH00005

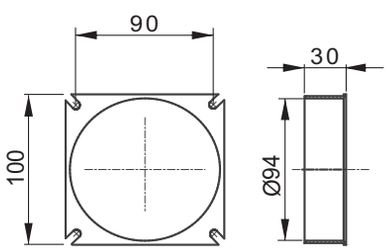
1/4" suction/return 160mm steel pipe asymmetrical thread length



Weight: 0,12 Kg

Spare part code
TADPH00007

PPM steel tank adapter

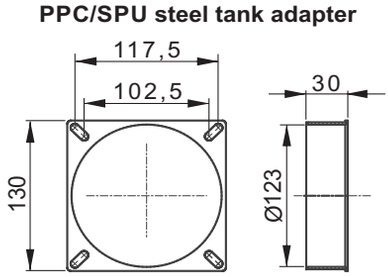


Unpainted, to be welded on custom made tanks

Weight: 0,12 Kg

Spare part code
F80000012

PPC/SPU steel tank adapter



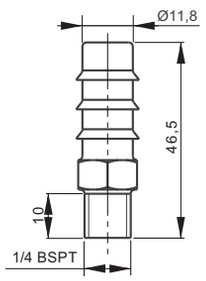
Unpainted, to be welded on custom made tanks

Weight: 0,18 Kg

Spare part code
F80000001

TANK ACCESSORIES

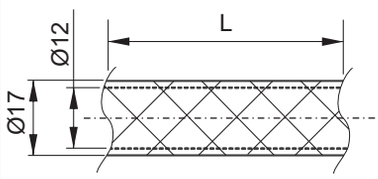
Flexible plastic pipe holder for return line 1/4" BSPT



Weight: 0,01 Kg

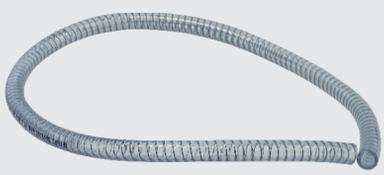
Spare part code
TR0112

Flexible plastic pipe



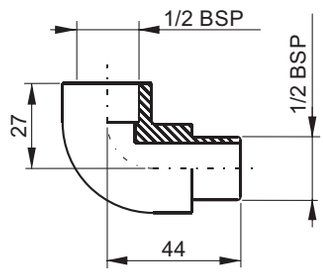
Recommended as standard return pipe. To be fixed with TR01-12 and cut to correct length. To be ordered in meters.

Weight: 0,18 Kg/meter



Spare part code
SF12

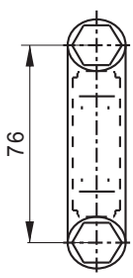
90° adapter for vertical tanks filling plug



Weight: 0,02 Kg

Spare part code
E60513004

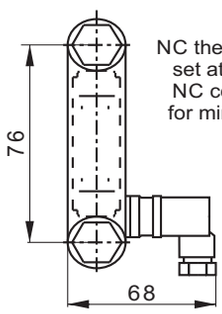
Basic fluid level gauge



Fixing holes Ø 10,5 mm Weight: 0,10 Kg

Spare part code
SLV76

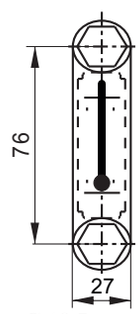
Electric thermostatic level gauge



Fixing holes Ø 10,5 mm Weight: 0,16 Kg

Spare part code
GTL76TE

Fluid level gauge with thermometer



Fixing holes Ø 10,5 mm Weight: 0,10 Kg

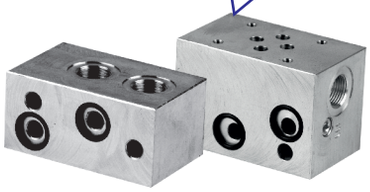
Spare part code
SLVT76

Notes: Max torque for plastic pipe 5 Nm

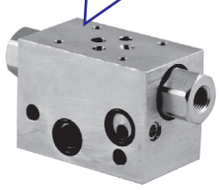
NOTES

EXTERNAL MANIFOLDS & ACCESSORIES

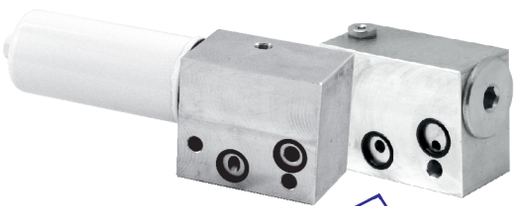
Standard NG6 (Cetop 3) base modular manifold blocks with parallel or series connections, rear or lateral ports. They can be stacked one upon the other. Top manifold P and T ports can be plugged with simple 1/4" or 1/8" BSP plugs



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

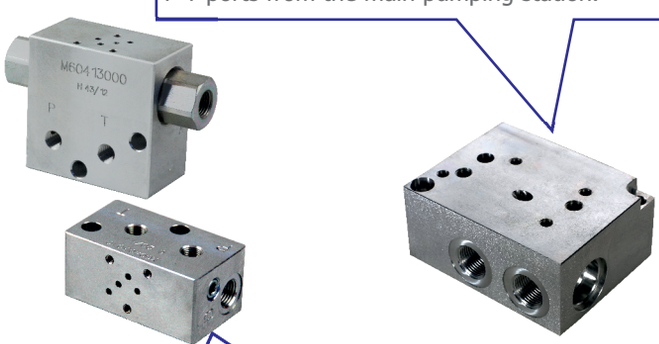


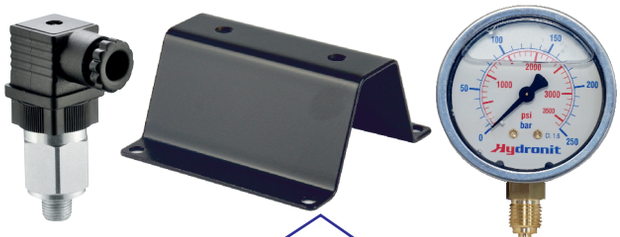
External hand pumps with 4 cc or 8,8 cc/stroke can be mounted between the central manifold and the Cetop 3 modular block. The lever may be rotated 360°



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

BMPPC02 base block for stackable manifolds and valves allows you mount our full range of **modular stackable valves** on your conventional units, by connecting the threaded P-T ports from the main pumping station.





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

Q & A

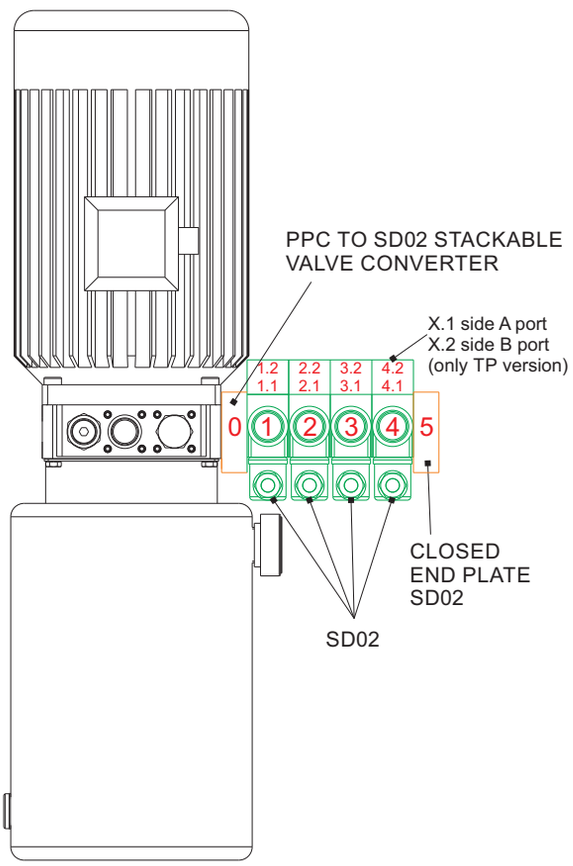
How many types of external manifold blocks can be mounted?
The central manifold exit face allows the mounting of two different block systems, fixed by 2x M8 bolts (normally used for NG6 Cetop 3 modular manifolds stacks) or 4x M6 bolts (for additional or special manifolds). The two types of bolt systems cannot be mixed on the same stack. 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 NG6 (Cetop 3) blocks with AC motors with frame 80 or higher and with DC motors frame 125 or higher.

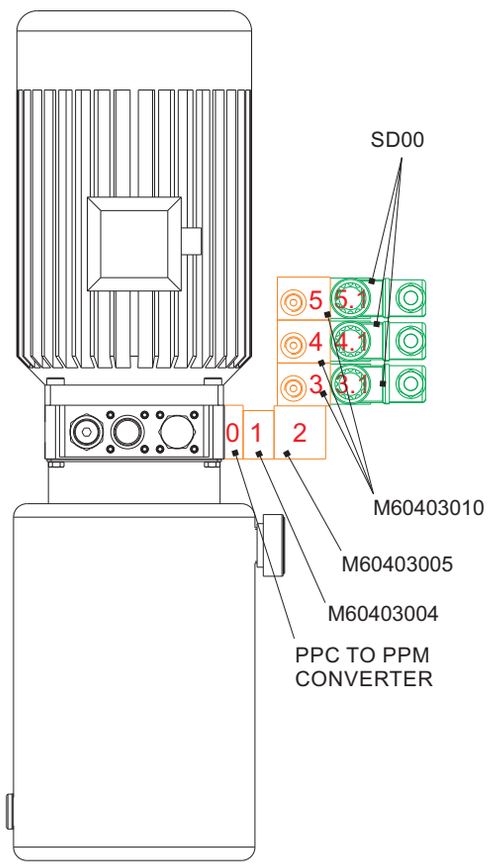
When are the modular manifolds for differential area cylinders used?
With UR (reversible pump circuits) central manifold, the exit ports are directly A and B instead of P and T. With differential area cylinders, when the bidirectional pump flow is outputting to the rod side port (let's say it is B port), there will be more flow returning to A port, connected to the piston side of the cylinder, due to the cylinder differential area ratio. The function of this manifold is to discharge the extra flow to tank at nearly zero pressure, as this cannot be absorbed by the pump itself and should otherwise flow throught the relief valve causing overheating and counterpressures.

EXTERNAL MANIFOLDS & VALVE MOUNTING EXAMPLES PPC MANIFOLDS

PPC + SD02 STACKABLE VALVES

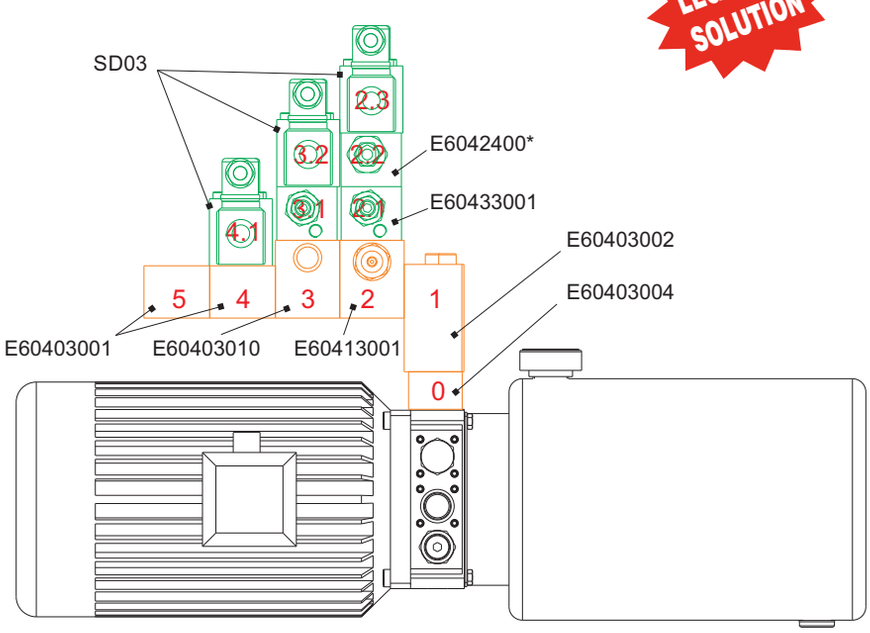


PPC + NG3 MICRO BLOCKS & VALVES



PPC + NG6 (CETOP 3) BLOCKS & VALVES

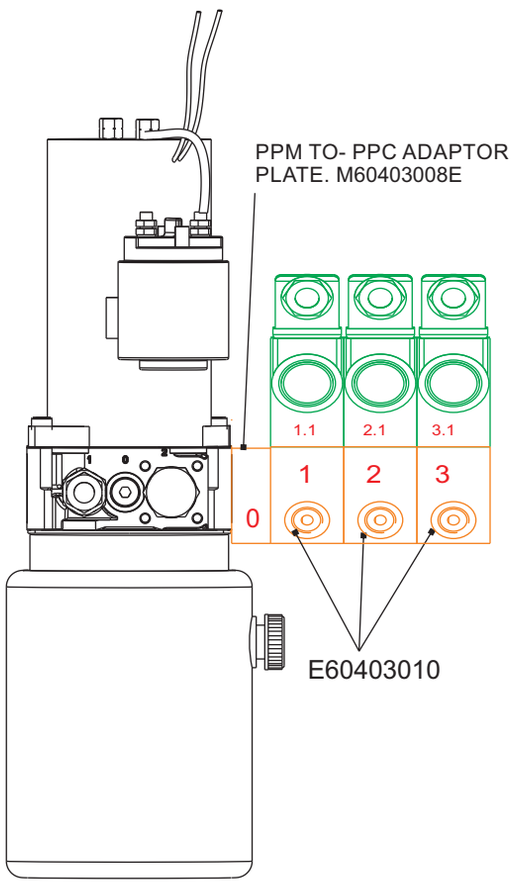
LEGACY SOLUTION



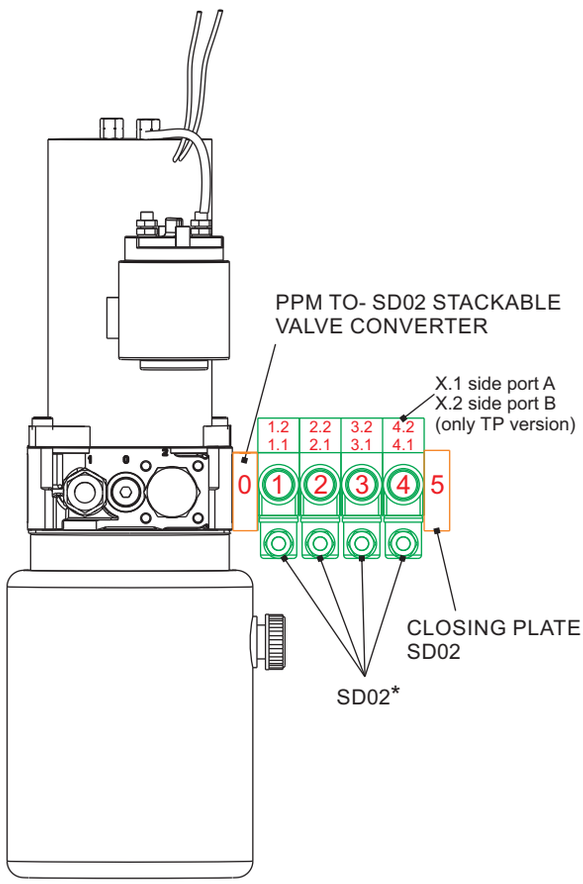
The mini powerpack external manifolds and valves are arranged following a stack level logic. Each stack is numbered eg. n, n.1, n.2, n.3,... where n is the basic manifold stack number, n.1 is the first valve mounted on top of manifold n; n.2 is the second one mounted on top of n.1,... See above self-explanatory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

EXTERNAL MANIFOLDS & VALVE MOUNTING EXAMPLES PPM MANIDOLFS

PPM + PPC MODULAR BLOCKS

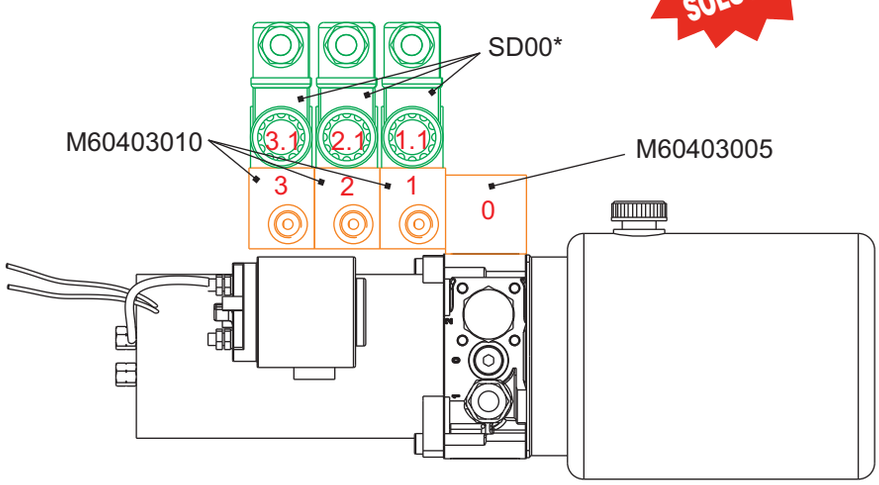


PPM + SD02 STACKABLE VALVES



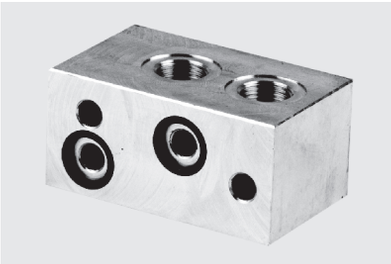
PPM + NG3 MICRO BLOCKS & VALVES

BEST SOLUTION

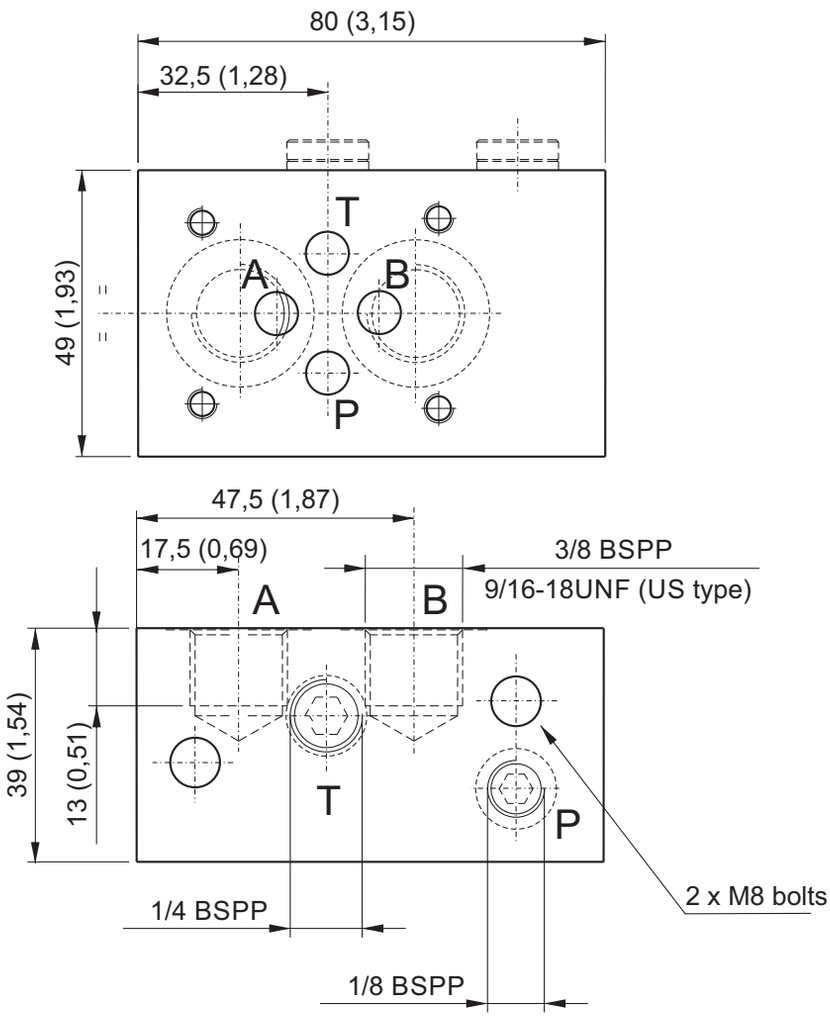


The micro powerpack external manifolds and valves are arranged following a stack level logic. Each stack is numbered as n, n.1, n.2, n.3,... where **n** is the basic manifold stack number, n.1 is the first valve mounted on top of manifold n, n.2 is the second one, mounted on top of n.1 one,...
See above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

MODULAR MANIFOLDS NG6 (CETOP 3), REAR PORTS

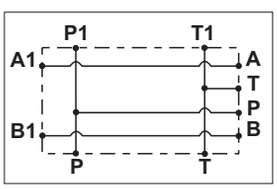


Dimensions in mm (inches)



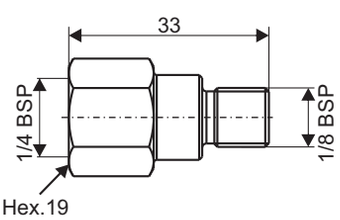
Main features

Max pressure	350 bar
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**

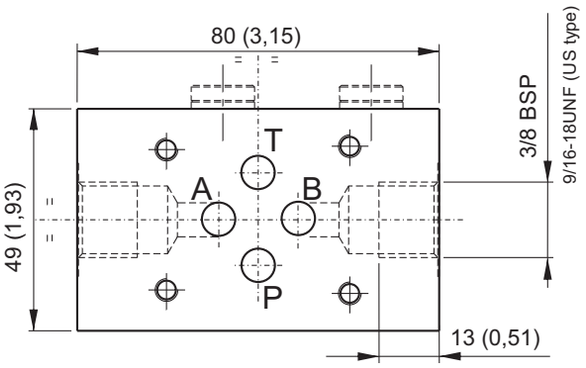
Option 1/4"BSP P port:



Spare part code
PORTMF0001

Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.
*: US execution with 9/16-18UNF SAE06 exit ports
To add external manifolds to a PPC assembly code, just add their spare part codes at the end of the PPC code. eg: PPC-0,8 12DC-MB-J-K0,6-V200-G-RETURN KIT-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 (see E60403004 code in F section) below the Cetop manifold to avoid interference between the valve and the motor.
Code does not include the Cetop solenoid valve. See NG6 (Cetop 3) valves table in section G.

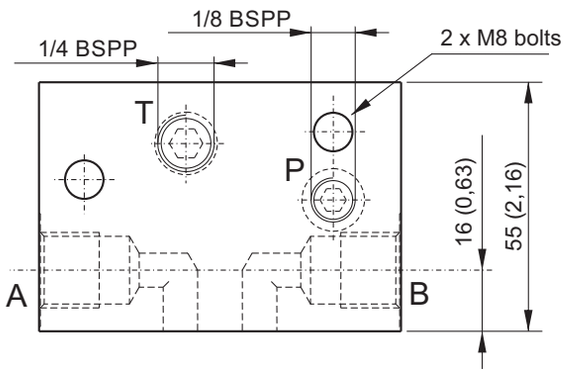
MODULAR MANIFOLDS NG6 (CETOP 3), 3/8 G LATERAL PORTS



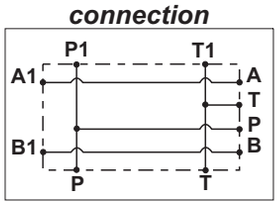
Dimensions in mm (inches)

Main features

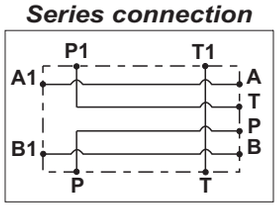
Max pressure	350 bar
Weight	0,56 Kg (1,2lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above



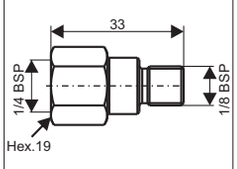
Parallel connection



Series connection



Option 1/4"BSP P port:



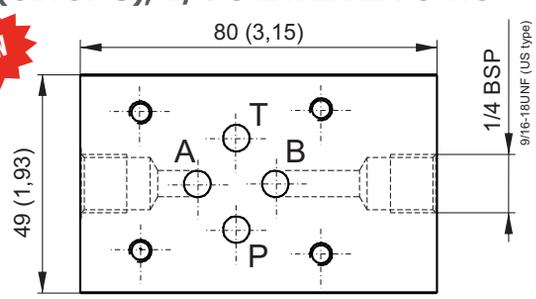
Spare part code
PORTMF0001

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

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

MODULAR MANIFOLDS NG6 (CETOP 3), 1/4 G LATERAL PORTS

NEW

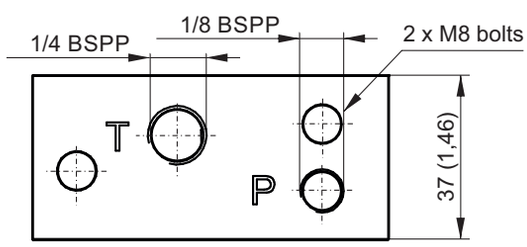


Parallel connection	Spare part code
Lateral ports	E60403012
Lateral port US execution	E60403012US

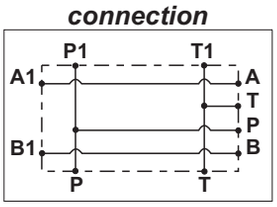
Dimensions in mm (inches)

Main features

Max pressure	350 bar
Weight	0,334 Kg (0,74lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above



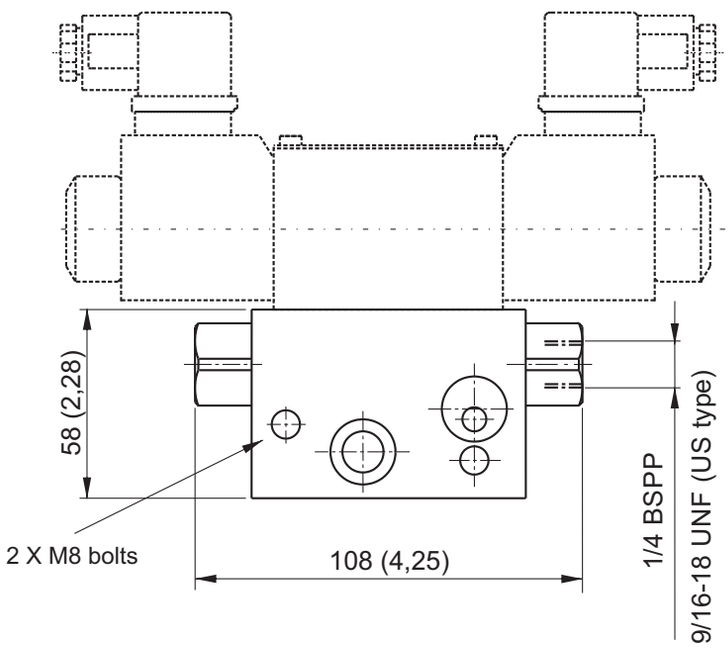
Parallel connection



Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.
*: US execution with 9/16-18UNF SAE06 exit ports
To add external manifolds to a PPC assembly code, just add their spare part codes at the end of the PPC code. eg: PPC-0,8 12DC-MB-J-K0,6-V200-G-RETURN KIT-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 (see E60403004 code in F section) below the Cetop manifold to avoid interference between the valve and the motor.
Code does not include the Cetop solenoid valve. See NG6 (Cetop 3) valves table in section G.

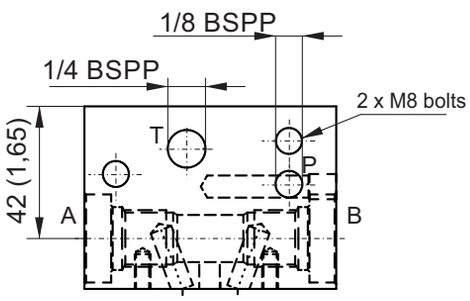
MODULAR MANIFOLDS NG6 (CETOP 3) WITH INTEGRAL PILOT OPERATED CHECK VALVES

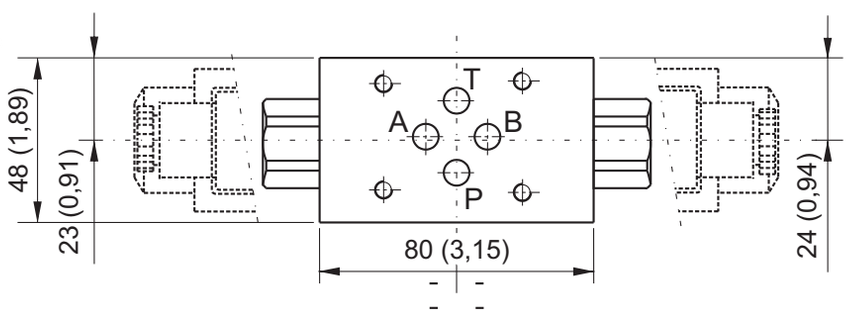
Dimensions in mm (inches)

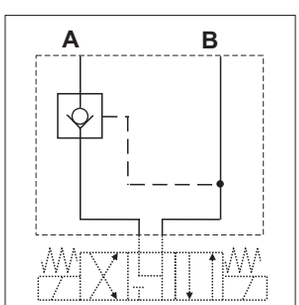


Main features

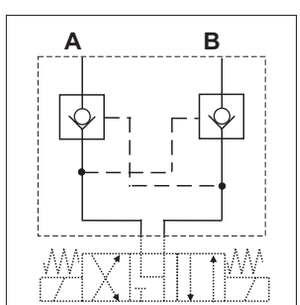
Max pressure	350 bar
Pilot ratio	1:5,6
Weight	0,71 Kg (1,56lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above



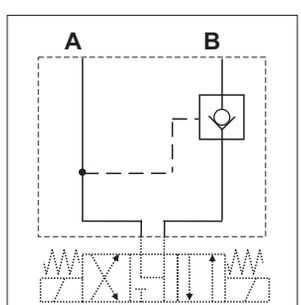




Spare part code
E60413002
E60413002US*

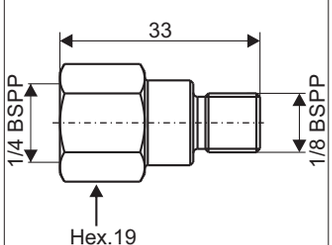


Spare part code
E60413001
E60413001US*



Spare part code
E60413003
E60413003US*

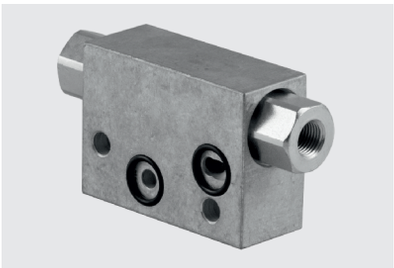
Option 1/4"BSP P port:



Spare part code
PORTMF0001

Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.
*: US execution with 9/16-18UNF SAE06 exit ports
To add external manifolds to a PPC assembly code, just add their spare part codes at the end of the PPC code. eg: PPC-0,8 12DC-MB-J-K0,6-V200-G-RETURN KIT-1,5L+**E60403004**+**E60413001.**
Code does not include the Cetop solenoid valve. See NG6 (Cetop 3) valves table in section G.

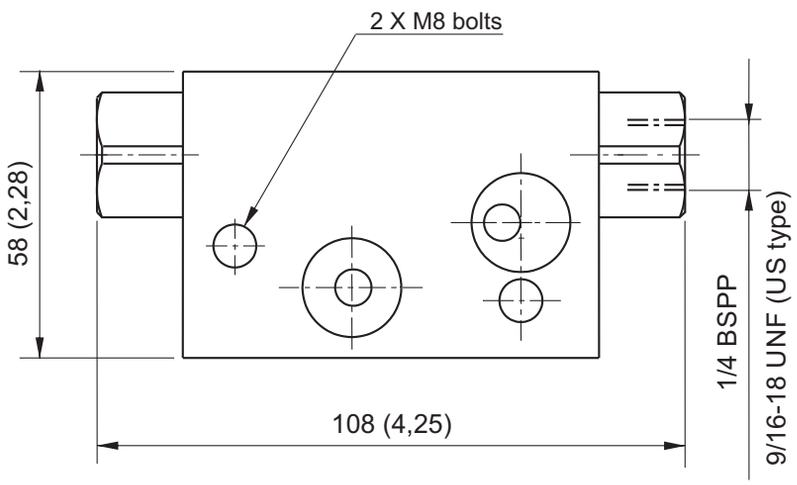
MODULAR MANIFOLDS WITH PILOT OPERATED CHECK VALVES

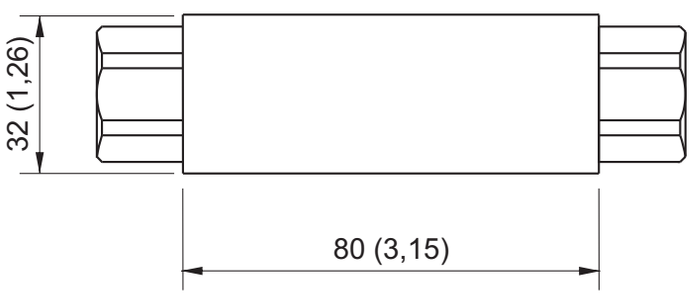


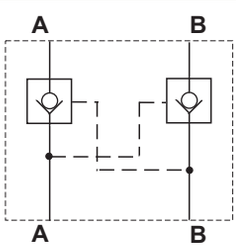
Dimensions in mm (inches)
Suitable for:
- central manifold U4
- central manifold UR

Main features

Max pressure	350 bar
Pilot ratio	1:5,6
Weight	0,5 Kg (1,1lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above



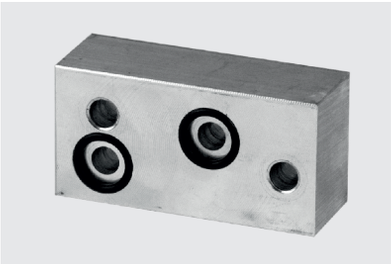




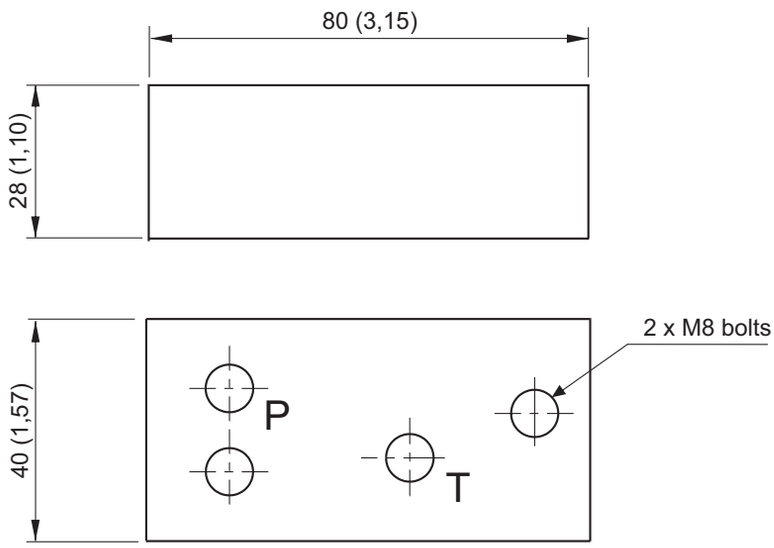
Spare part code
E60403027
E60403027US*

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

SPACER ELEMENTS



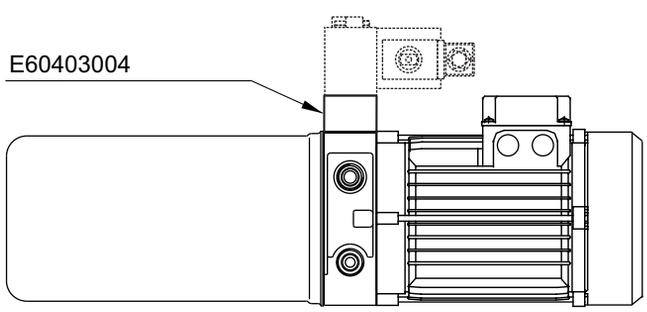
Dimensions in mm (inches)

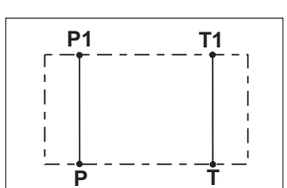


Main features

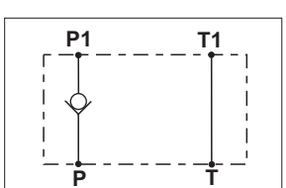
Max pressure	350 bar
Weight	0,23 Kg (0,5lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above

Mounting example





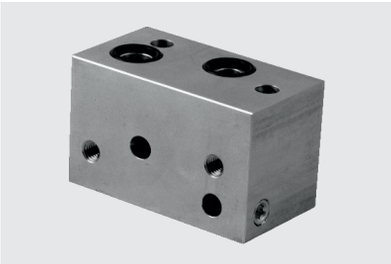
Spare part code
E60403004



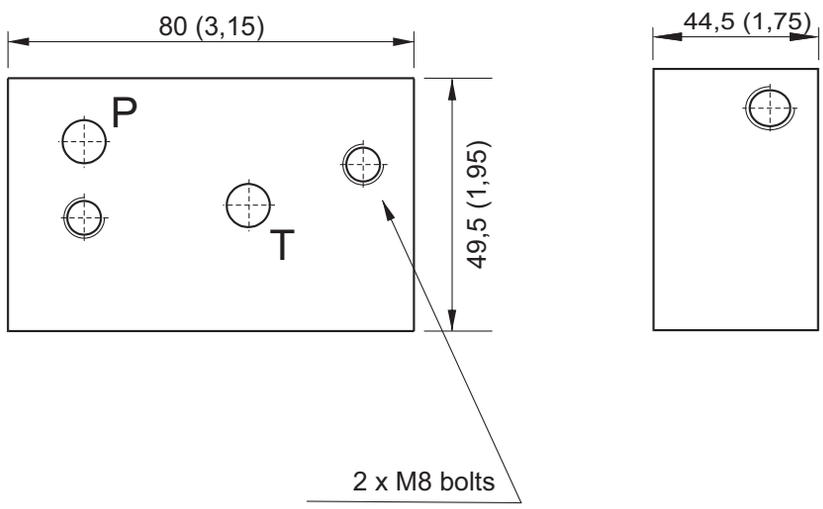
Spare part code
E60403004CV

Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.
Suitable with AC motor frames bigger than 71 and DC motors bigger than dia. 125, to avoid interference between the valves and the motor.

90° ROTATION MANIFOLDS - BLOCKS ON MOTOR SIDE

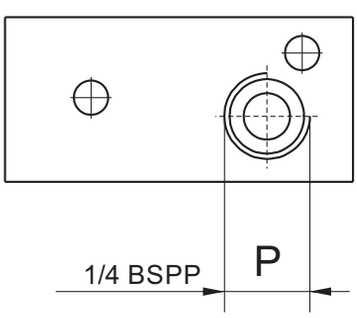


Dimensions in mm (inches)

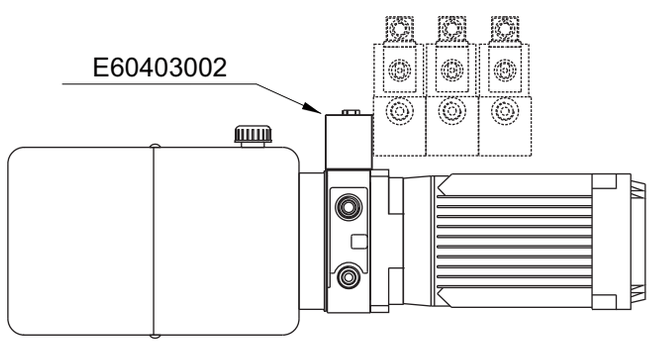


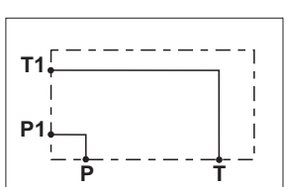
Main features

Max pressure	350 bar
Weight	0,72 Kg (1,59lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above



Mounting example

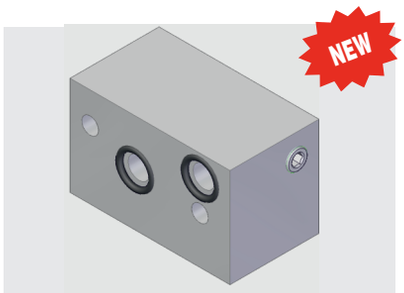


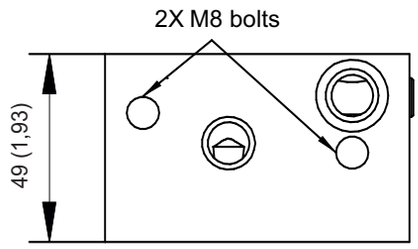


Spare part code
E60403002

Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.
With AC motor frames bigger than 90 and DC motors bigger than dia. 151, always add a spacer manifold (see E60403004 code in F section) below the modular block to avoid interference between the valve and the motor.

90° ROTATION MANIFOLD - BLOCKS ON TANK SIDE

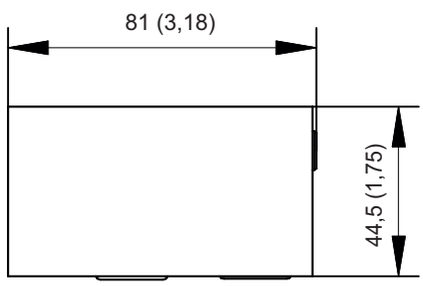




Dimensions in in mm (inches)

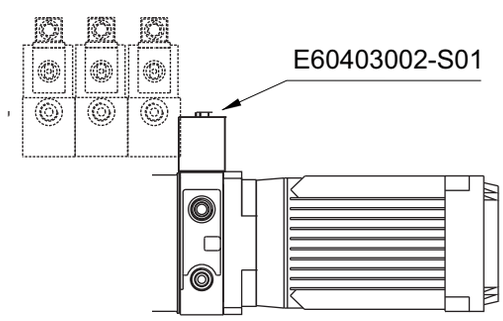
Main features

Max pressure	350 bar
Weight	0,45 Kg (0,99lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above



Spare part code
E60403002-S01

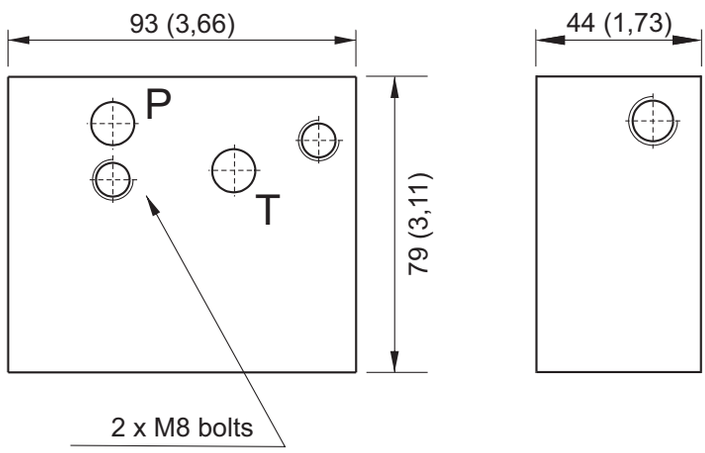
Mounting example



Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.
To add NG3 MICRO external manifolds to a PPC assembly code, just add the converter PPC to PPM first, then the additional manifolds spare part codes at the end of the PPC code. eg: PPC-0,8 12DC-MB-J-K0,6-V200-G-RETURN KIT-1,5L+**EMASH00001+M60403004+M60403010.**

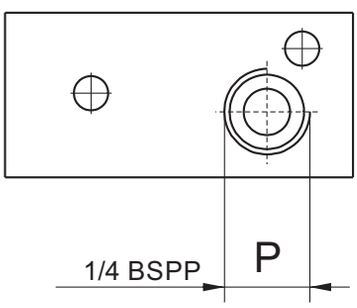
90° ROTATION MANIFOLDS WITH DOUBLE-SIDED ATTACHMENT P & T 79MM

Dimensions in mm (inches)

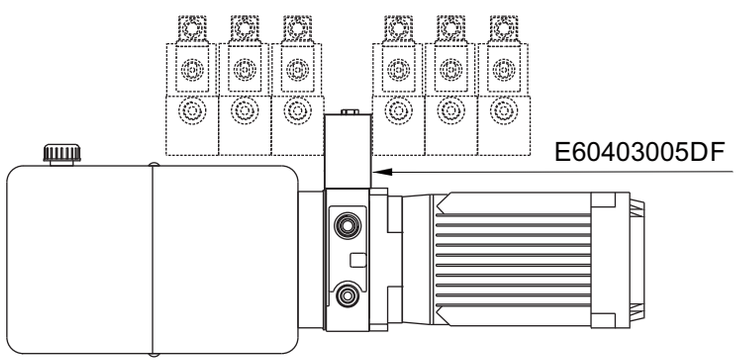


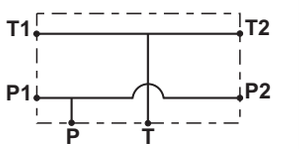
Main features

Max pressure	350 bar
Weight	0,72 Kg (1,59lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above



Mounting example





Spare part code
E60403005DF

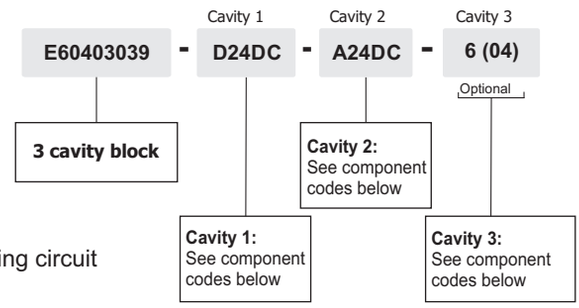
Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.
With AC motor frames bigger than 90 and DC motors bigger than dia. 151, always add a spacer manifold (see E60403004 code in F section) below the modular block to avoid interference between the valve and the motor.

MANIFOLD FOR ADDITIONAL SINGLE ACTING CIRCUIT

Dimensions in mm (inches)

Typically used to create a single acting circuit in parallel with a double acting circuit

ASSEMBLY CODE - example

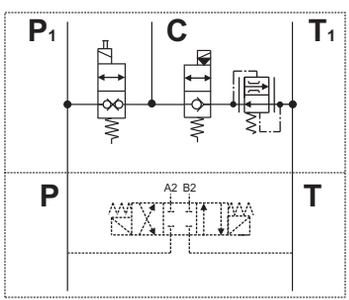


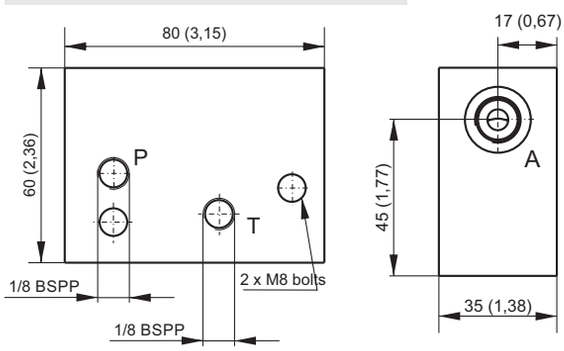
Main features

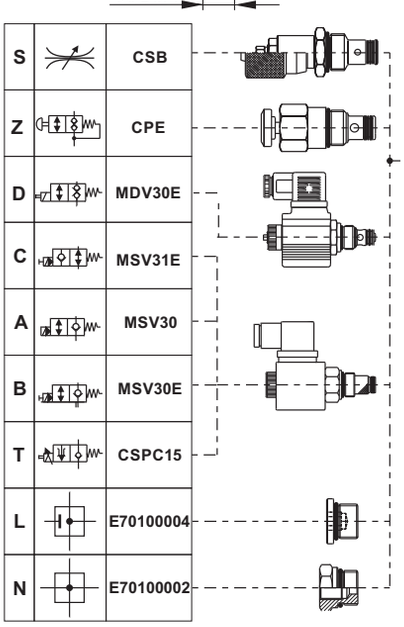
Max pressure	350 bar
Weight	0,39 Kg (0,88lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above

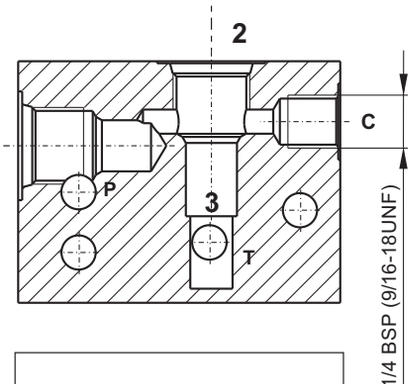
Spare part code
E60403039
E60403039US*

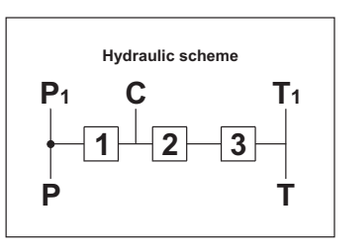
Application example

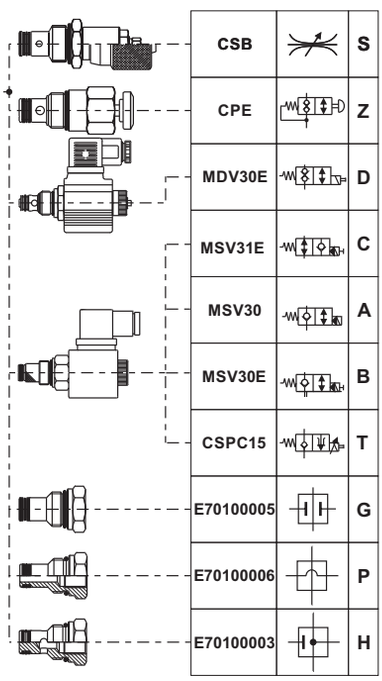










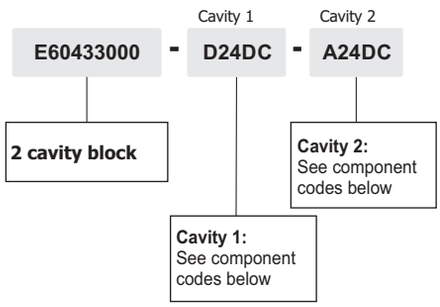


Note: to add external manifolds to PPC assembly code, just add their spare part codes at the end of the PPC code.
Example: PPC-0,8 12DC-UA-J-G1,1-V200-G-RETURN KIT-G-1,5L+**E60403039-D24DC-A24DC-6(04).**
The valve attachment is on the motor side. With AC motor frames bigger than 71 and DC motors bigger than dia. 125, always add a spacer manifold (see E60403004 code in F section) 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.

NG6 (CETOP 3) SANDWICH MODULAR MANIFOLD FOR SAE08 CARTRIDGE VALVES

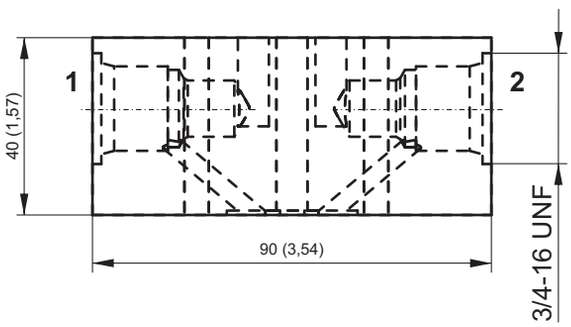
Dimensions in mm (inches)

ASSEMBLY CODE - example



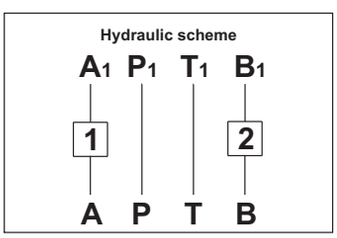
Main features

Max pressure	300 bar
Max flow	up to 40 l/min
Weight	0,4 Kg (0,88lb)
Fixing bolts	4 M5x** bolts. 5Nm torque 10,9 class steel or above
Fluid temperature	-20 ÷ +80°C
Filtration degree	25 ÷ 50 µ

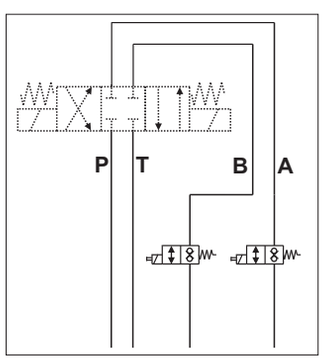


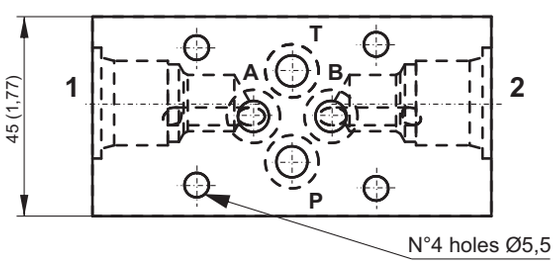
Spare part code

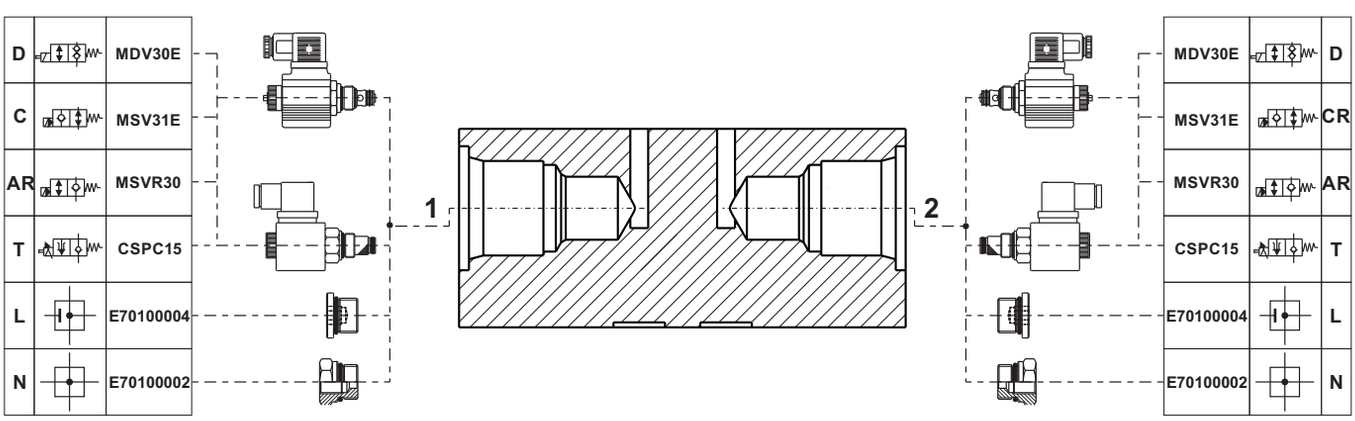
E60433000



Application example







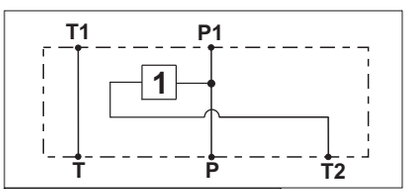
Note: to add external manifolds to PPC assembly code, just add their spare part codes at the end of the PPC code.
Example: PPC-0,8 12DC-UA-G1,1-J-V200-G-RETURN KIT-1,5L+E60403010+**E60433000+MDV30E000+24DC_M630+MSV300000+24DC_M630+SD03C2 +2x24DC_M160.**

For more info and for a mounting example, please see E60433001 code (NG6 CETOP 3 flow control sandwich valve) in G section.
The Cetop 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 (see E60403004 code in F section) below the modular block to avoid interference between the valve and the motor.

EXTERNAL MANIFOLD FOR 2/2 SAE08 VALVE PRESSURE LINE TO T2 RETURN LINE

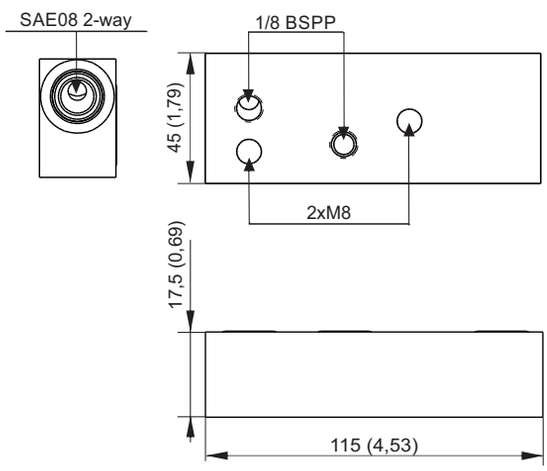
Main features

Max pressure	350 bar
Weight	0,37 kg (0,81 lb)
Fixing bolts	2xM8 tie-rods steel class 8.8 or above

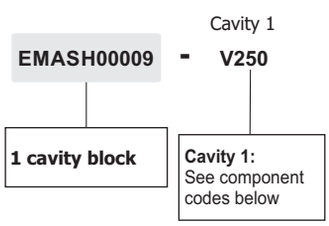


Spare part code
EMASH00009

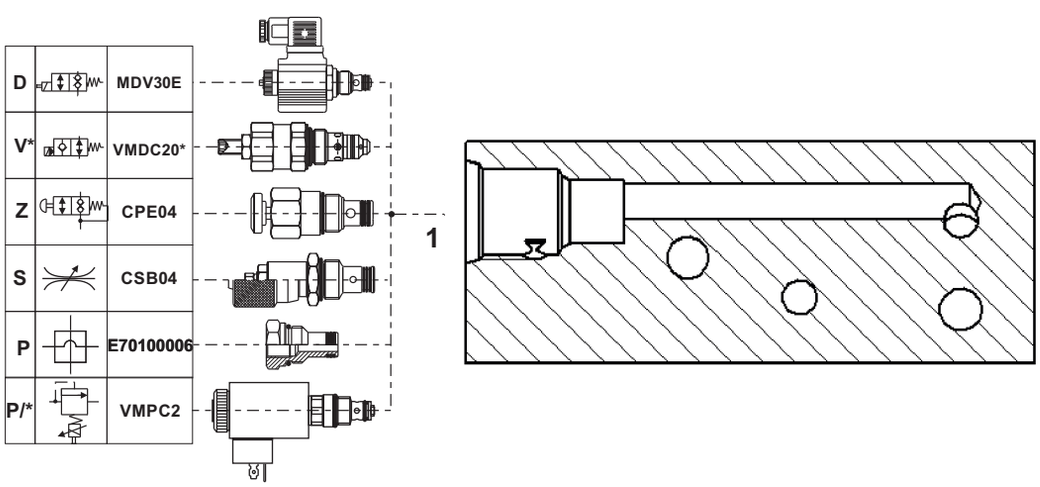
Dimensions in mm (inches)



ASSEMBLY CODE - example

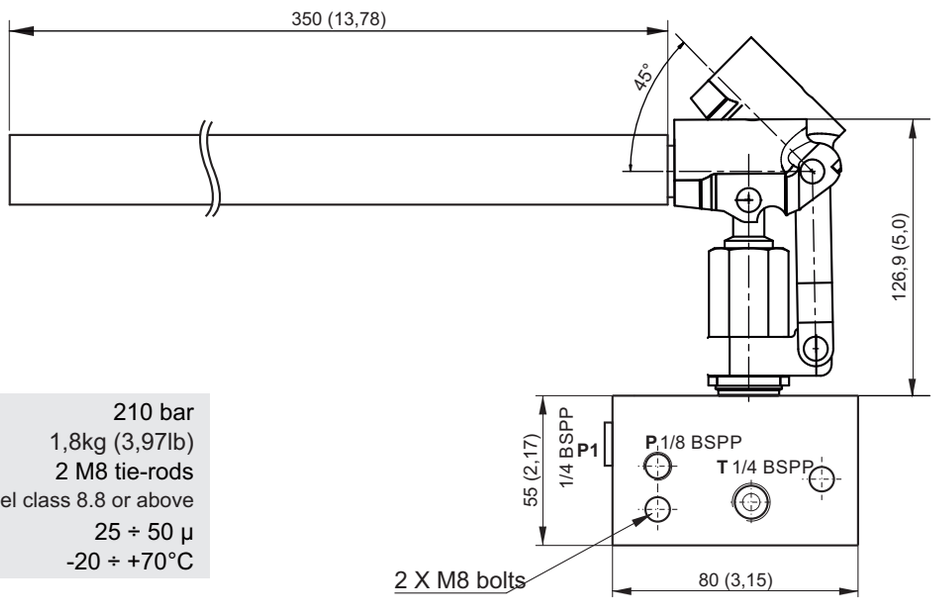


Mounting example



Note: to add external manifolds to PPC assembly code, just add their spare part codes at the end of the PPC code.
Example: PPC-0,8 12DC-UA-G1,1-J-V200-G-RETURN KIT-1,5L+E60403010+**EMASH00009+E60433000+MDV30E000+24DC_M630+MSV300000+24DC_M630+SD03C2 +2x24DC_M160.**
For more info and for a mounting example, please see EMASH00009 code (NG6 CETOP 3 flow control sandwich valve) in G section.
The Cetop 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 (see E60403004 code in F section) below the modular block to avoid interference between the valve and the motor.

HAND PUMP MODULAR MANIFOLD



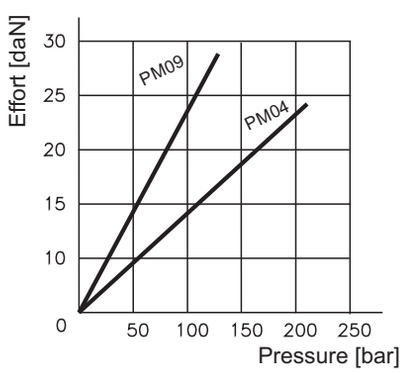
Dimensions in mm (inches)

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
Fluid temperature	-20 ÷ +70°C

Block thickness: 39mm (1,54)

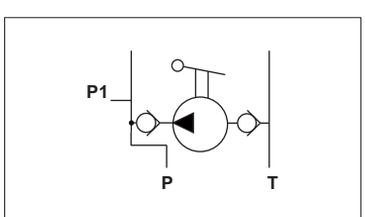
Effort (daN)
operating on the top of the lever



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.

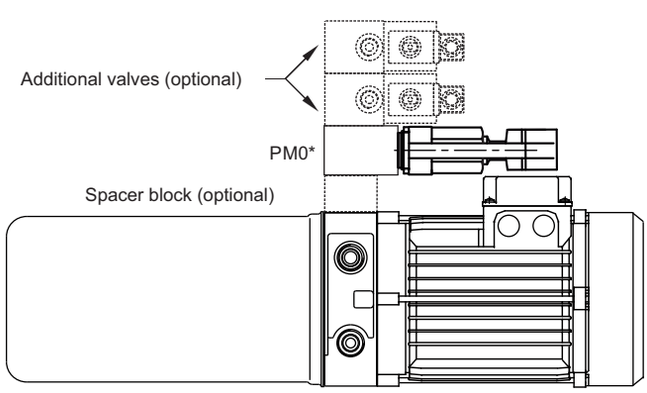
Spare part codes - cartridges only

Description	Spare part code
4cc hand pump 7/8-14UNF cartridge + lever	**CARTPM04L**
8,8cc hand pump 7/8-14UNF cartridge + lever	**CARTPM09L**



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

Mounting example



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

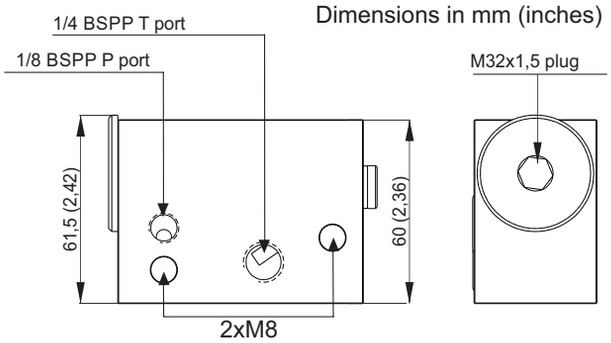
Commissioning: the pump must be bled by opening the plug of the unused pressure port (P or P1), pumping a few times until all air bubbles and then clean oil come out, then tightening the plug again.

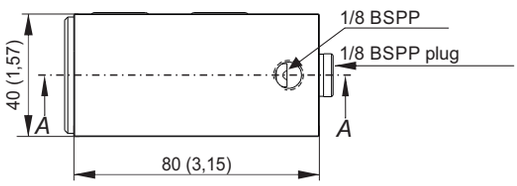
COMPACT RETURN LINE MODULAR MANIFOLD FILTER

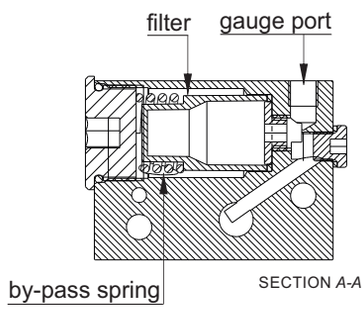
Main features

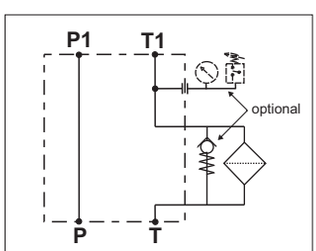
Max pressure	350 bar
Weight	0,55 kg (1,21 lb)
Fixing bolts	2xM8 tie-rods steel class 8.8 or above
Filtration degree	10 micron 25 micron
By-pass option	Opening: ≃10 bar max flow: 6 l/min
Pressure gauge option	full-scale: 25 bar

Dimensions in mm (inches)







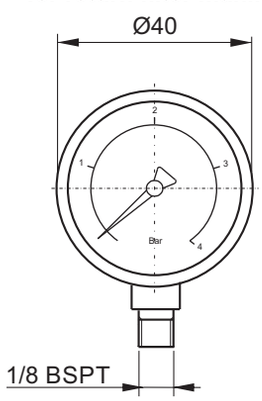


Spare part code
EMASH000**

**	Type:
	13: 10 micron + bypass 14: 25 micron + bypass 18: 10 micron 19: 25 micron

OPTIONS

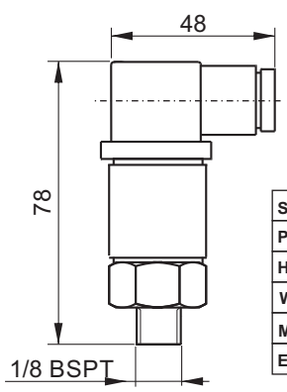
Pressure gauge for return filter manifold



Weight: 0,1 Kg

Spare part code
MIR40025

Pressure switch for return filter manifold



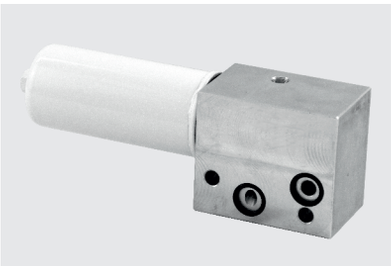
Setting range	0,2 ÷ 2,5 bar
Protection degree	IP 65
Hysteresis	10 ÷ 15 %
Weight	0,05 Kg
Max load	0,5 A a 250 VAC
Electric switch	NO/NC

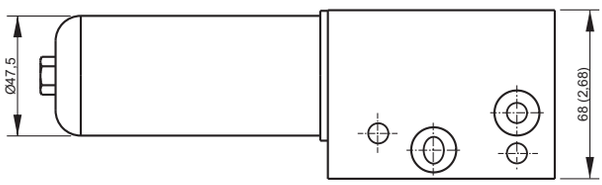
Spare part code
F4R0M3

Spare	Cartridge code
10 micron	EAFTH00001
25 micron	EAFTH00002

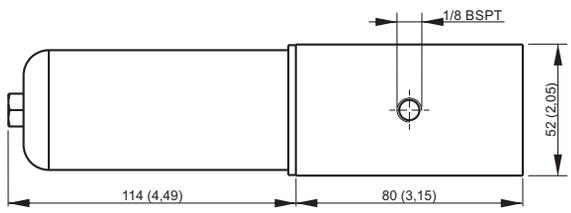
Note: to add external manifolds to PPC assembly code, just add their spare part codes at the end of the PPC code.
Example: PPC-0,8 12DC-UA-G1,1-J-V200-G-RETURN KIT-1,5L+**EMASH000****+E60433000+...**
This block must be mounted as first among the external ones.
For more info and for a mounting example, please see E60433001 code (NG6 CETOP 3 flow control sandwich valve) in G section.
The Cetop 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 (see E60403004 code in F section) below the modular block to avoid interference between the valve and the motor.

RETURN LINE FILTER MODULAR MANIFOLD





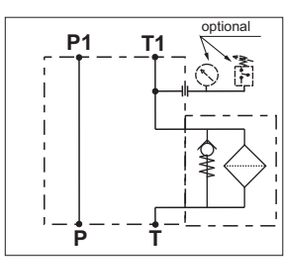
Dimensions in mm (inches)



Main features

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

Hydraulic scheme



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

Spare part code

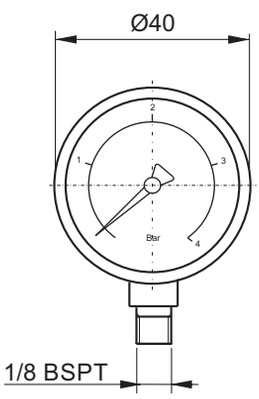
E60403020 — **Modular manifold with return filter on T**

FO201385 — **15 micron replacement cartridge part number**

Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.
Recommended tightening torque for spin on cartridge: 10Nm
This filter cannot be used on U4 and UR manifolds, since both these central manifolds outlet ports are pressurized. You may choose C34200001 in-tank return filter.

OPTIONS

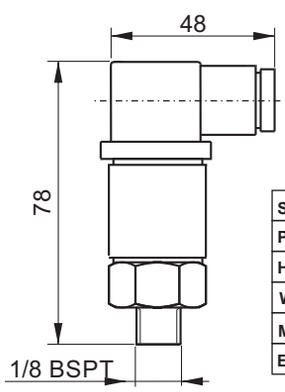
Pressure gauge for return filter manifold



Weight: 0,1 Kg

Spare part code
MIR4004

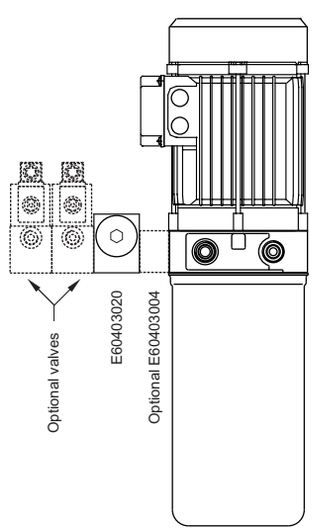
Pressure switch for return filter manifold



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

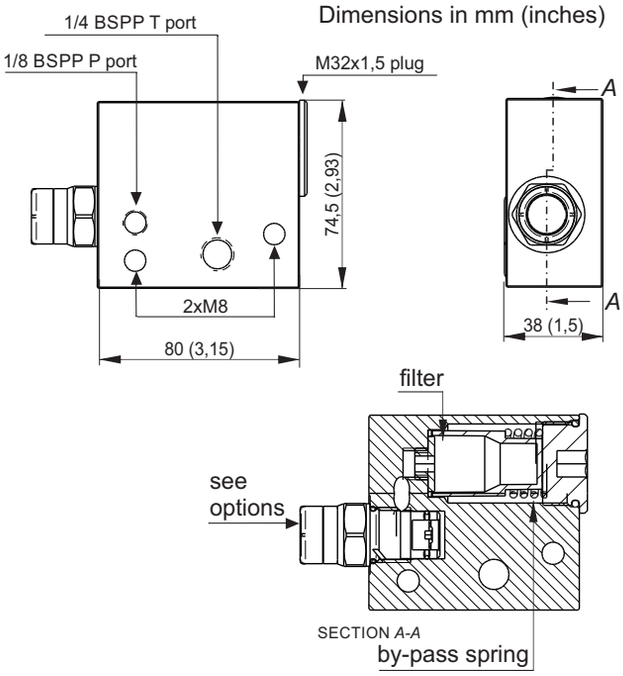


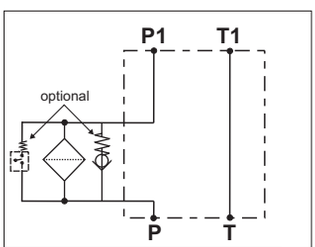
COMPACT PRESSURE LINE MODULAR MANIFOLD FILTER

Main features

Max pressure	350 bar
Weight	0,65 kg (1,42 lb)
Fixing bolts	2xM8 tie-rods steel class 8.8 or above
Filtration degree	10 micron 25 micron
By-pass option	Opening: ≃10 bar max flow: 6 l/min

Dimensions in mm (inches)



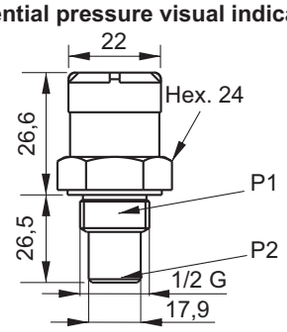


Spare part code
EMASH000**

**

Type:
15: 10 micron + bypass
16: 25 micron + bypass
20: 10 micron
21: 25 micron

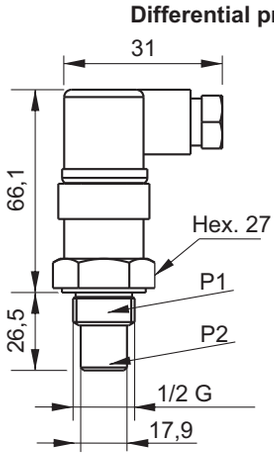
Differential pressure visual indicator



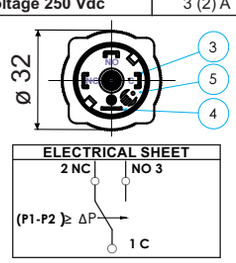
Switching contacts	Red/Green
Ambient temperature	-25 ÷ +80°C
Torque	50 Nm
Proof pressure	675 bar
Max pressure (P1=P2)	400 bar
Pressure rate for set.	10 bar/15 sec
Max different pressure (P1-P2)	200 bar
Diff. pressure setting (horizontal position)	5 bar ± 15%

Spare part code
DPV03400

Differential pressure switch



Diff. pressure setting	5 bar ±15%
Protection degree	IP 65
Switching contacts	SPDT
Weight	0,16 Kg
Max different pressure (P1-P2)	200 bar
Proof pressure	675 bar
Max pressure (P1=P2)	450 bar
Torque	50 Nm
Pressure rate for set.	10 bar/15 sec
Ambient temperature	-25 ÷ +85°C
Voltage 14 Vdc	5 (4) A
Voltage 30 Vdc	4 (3) A
Voltage 125 Vdc	5 (3) A
Voltage 250 Vdc	3 (2) A

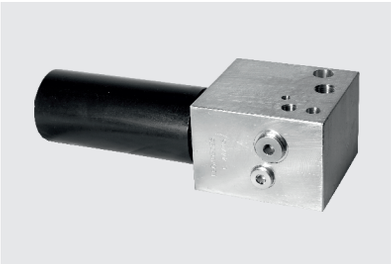


Spare part code
DPE03400

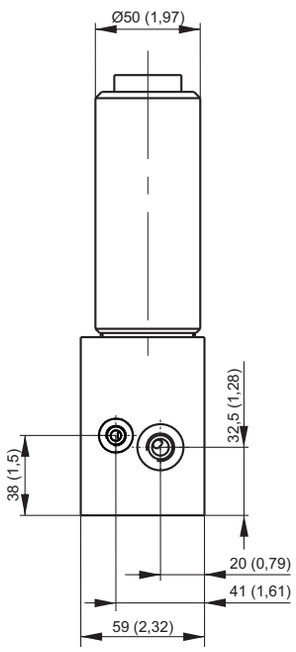
Spare	Cartridge code
10 micron	EAFTH00001
25 micron	EAFTH00002

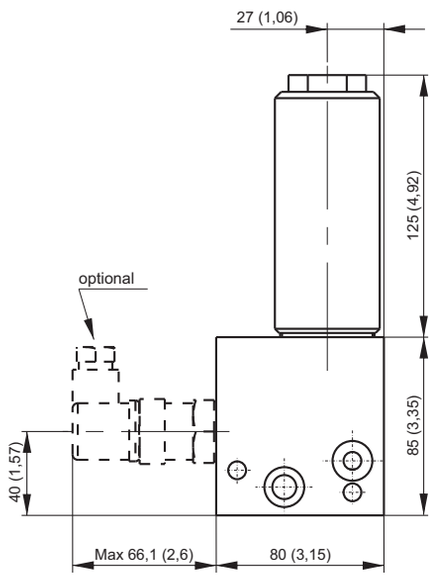
Note: to add external manifolds to PPC assembly code, just add their spare part codes at the end of the PPC code.
Example: PPC-0,8 12DC-UA-G1,1-J-V200-G-RETURN KIT-1,5L+**EMASH000****+E60433000+...**
This block must be mounted as first among the external ones.
For more info and for a mounting example, please see E60433001 code (NG6 CETOP 3 flow control sandwich valve) in G section.
The Cetop 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 (see E60403004 code in F section) below the modular block to avoid interference between the valve and the motor.

PRESSURE LINE MODULAR MANIFOLD FILTER FOR HIGH FLOW



Dimensions in mm (inches)

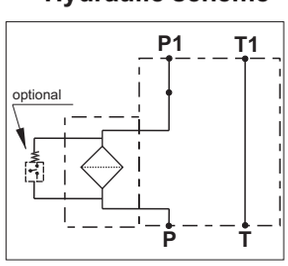




Main features

Backpressure allowable	21 bar
Max pressure	400 bar
Max flow	32 l/min
Filtration grade	5-15-25 µ
Fluid temperature	-30 ÷ + 80 °C
Weight	2,3 kg
Fixing bolts	2xM8 steel 8.8 or better

Hydraulic scheme



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

Spare part code

E60403025* — **Modular manifold with pressure filter**

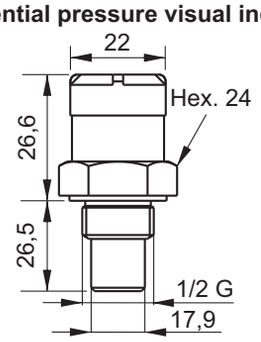
B — **Cartridge filter:**

A = 5 micron fiber reinforced cartridge filter (cartridge spare part code: HPFEHY05)
B = 15 micron fiber reinforced cartridge filter (cartridge spare part code: HPFEHY15)
C = 25 micron fiber reinforced cartridge filter (cartridge spare part code: HPFEHY25)

Note:other filtration grades cartridges available on request
Recommended tightening torque for M8 bolts: 16 Nm.
Attention! Do not use tie-rods less than 8.8
Recommended tightening torque for spin on cartridge: 45Nm

OPTIONS

Differential pressure visual indicator

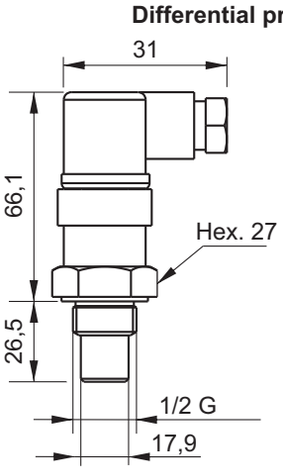


Switching contacts	Red/Green
Ambient temperature	-25 ÷ +80°C
Torque	50 Nm
Proof pressure	675 bar
Max pressure (P1=P2)	400 bar
Pressure rate for set.	10 bar/15 sec
Max different pressure (P1-P2)	200 bar
Diff. pressure setting (horizontal position)	5 bar ± 15%

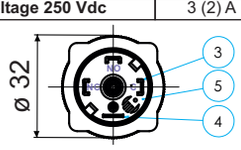
Spare part code

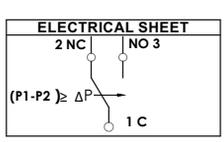
DPV03400

Differential pressure switch



Diff. pressure setting	5 bar ±15%
Protection degree	IP 65
Switching contacts	SPDT
Weight	0,16 Kg
Max different pressure (P1-P2)	200 bar
Proof pressure	675 bar
Max pressure (P1=P2)	450 bar
Torque	50 Nm
Pressure rate for set.	10 bar/15 sec
Ambient temperature	-25 ÷ +85°C
Voltage 14 Vdc	5 (4) A
Voltage 30 Vdc	4 (3) A
Voltage 125 Vdc	5 (3) A
Voltage 250 Vdc	3 (2) A

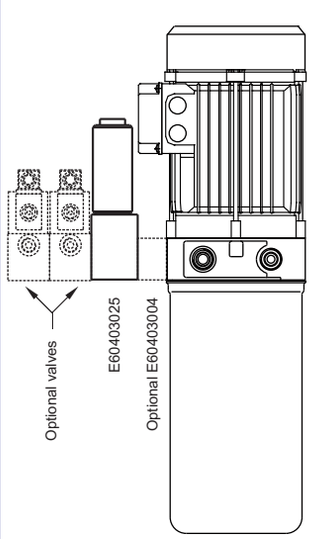




Spare part code

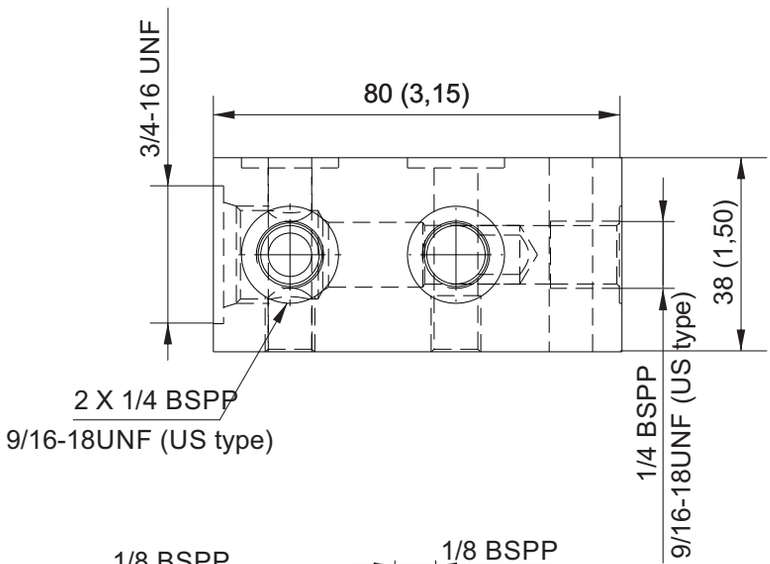
DPVE3400

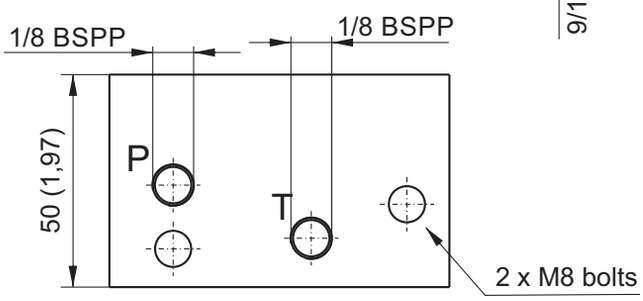
Mounting example



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

Dimensions in mm (inches)

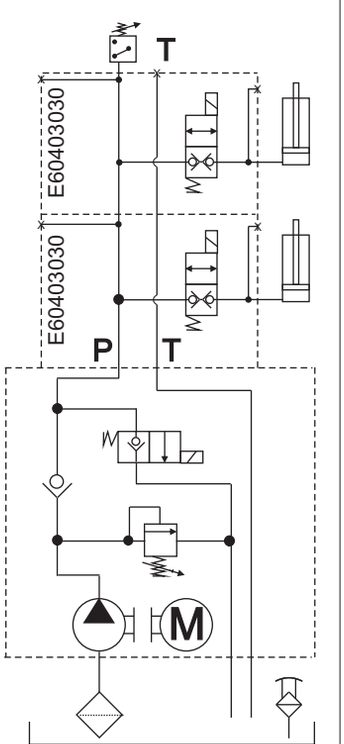


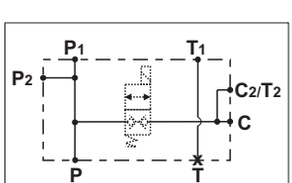


Main features

Max pressure	350 bar
Weight	0,35 Kg (0,78lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above

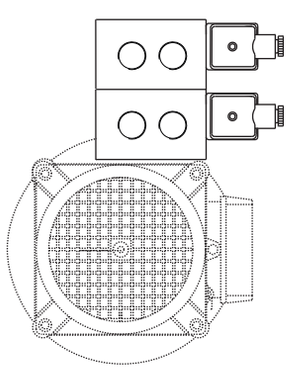
Circuit example





Codice componente
E60403030
E60403030US*

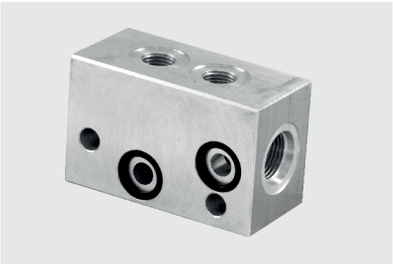
Mounting example



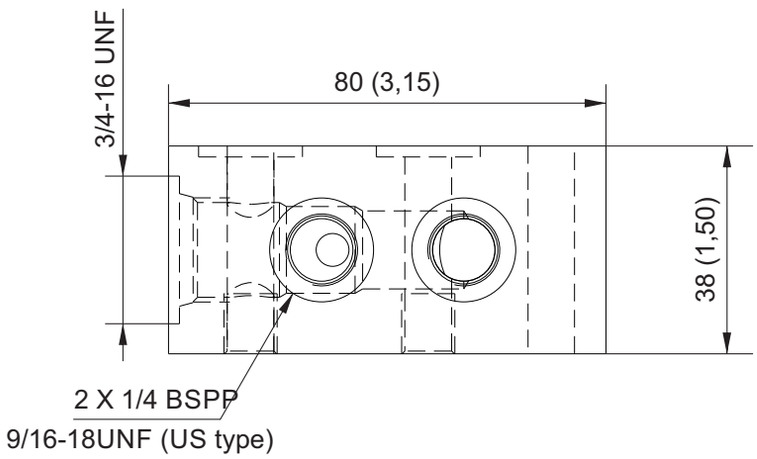
Note: code does not include the MSV or MDV solenoid valves. See valves tables in section D.

Note: 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.
Not for MSVR valves.

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

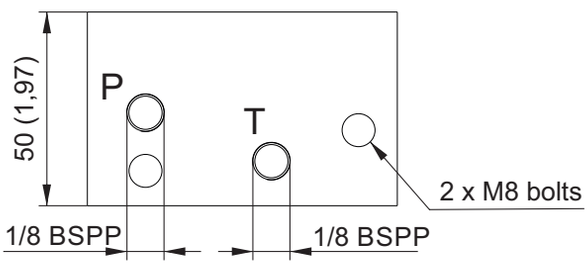


Dimensions in mm (inches)

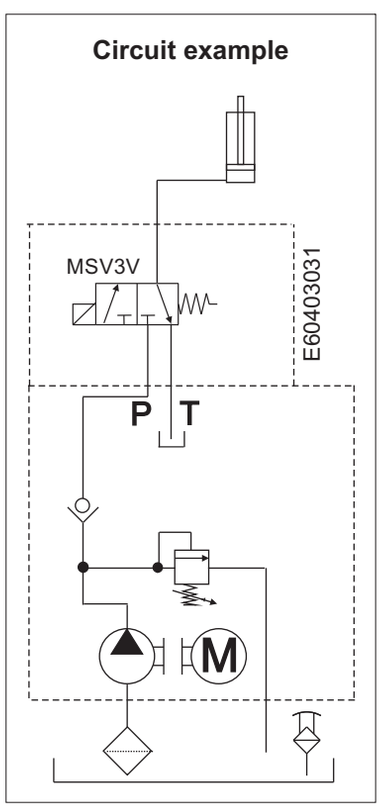


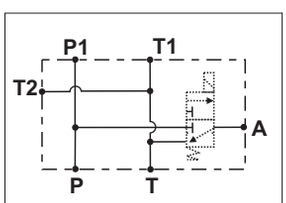
Main features

Max pressure	350 bar
Weight	0,32 Kg (0,7lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above



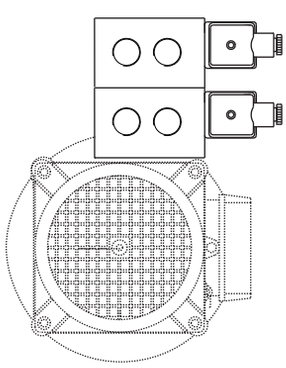
Circuit example





Spare part code
E60403031
E60403031US*

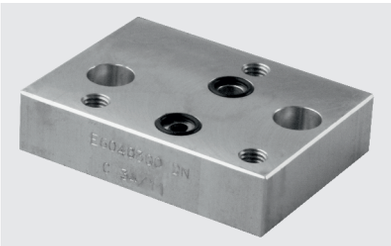
Mounting example



Note: code does not include the MSV3V solenoid valve.
See MSV3V table in section G

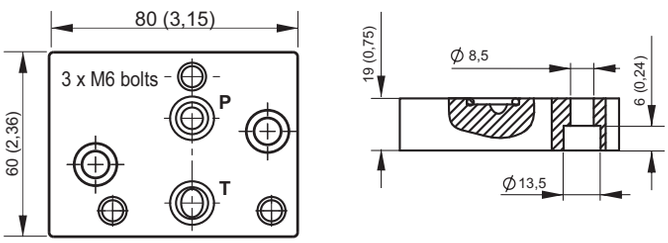
Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.
The three way block is not compatible with square vertical tanks.
*: US execution with 9/16-18 UNF SAE06 exit ports.

BASE MANIFOLD CONVERTERS



Dimensions in mm (inches)

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

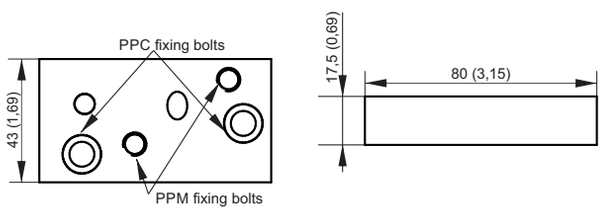


Fixing system: 2 M8x20 bolts steel class 8.8 or above
Weight: 0,22 Kg

Spare part code
E60403006DN

Dimensions in mm (inches)

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



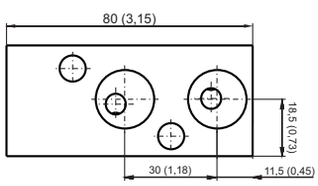
Fixing system: 2 M8x20 bolts steel class 8.8 or above
Weight: 0,175 Kg

Spare part code
EMASH00001

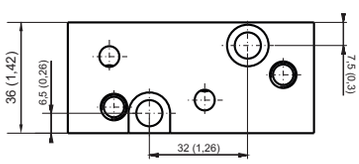
Dimensions in mm (inches)

PPM TO PPC BASE CONVERTER

PPM INTERFACE



PPC INTERFACE



Fixing system: 2 X M8 bolts steel class 8.8 or above
Weight: 0,14 Kg

Spare part code
M60403008E

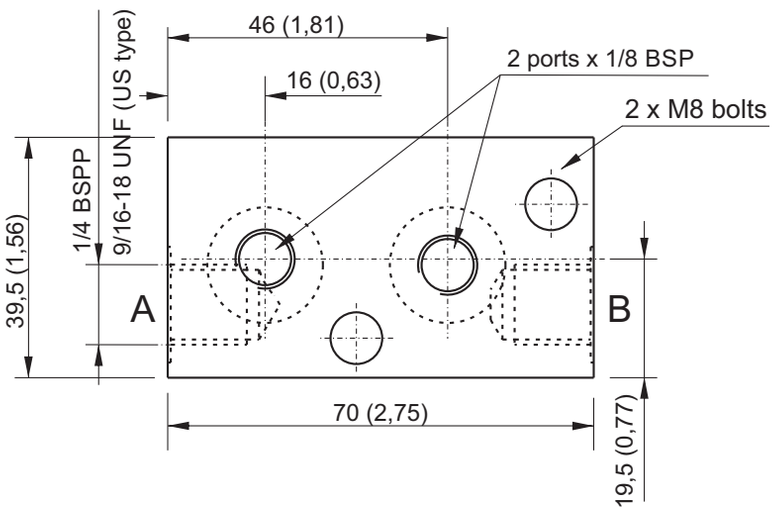
Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.

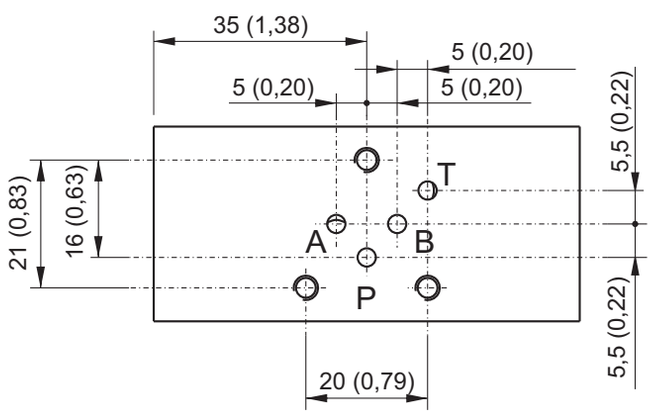
NG3 MICRO MODULAR MANIFOLDS, LATERAL PORTS

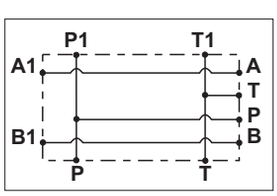
Dimensions in mm (inches)

Main features

Max pressure	350 bar
Weight	0,21 Kg (0,46lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above





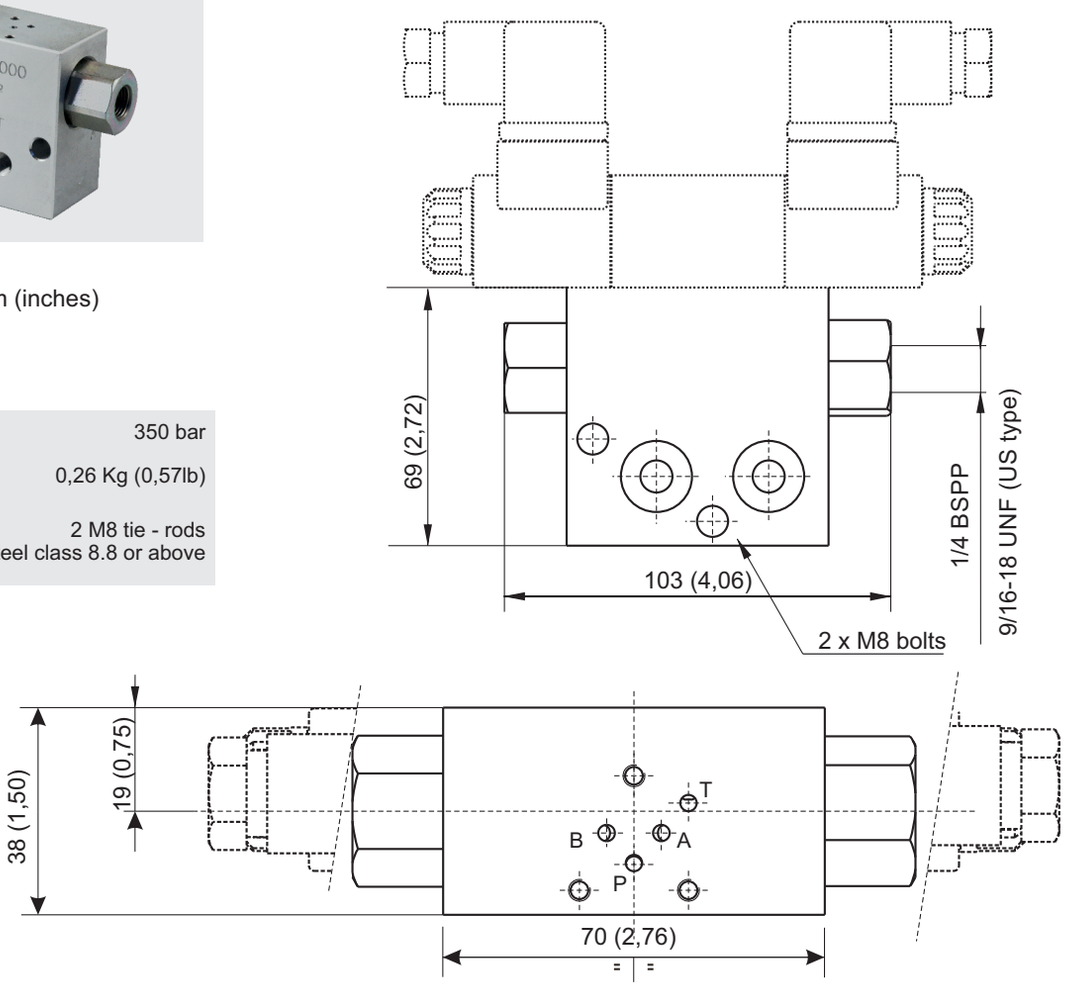


Parallel connection	Spare part code
Lateral ports	M60403010
Lateral ports US execution	M60403010US

Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.
To add NG3 MICRO external manifolds to a PPC assembly code, just add the converter PPC to PPM first, then the additional manifolds spare part codes at the end of the PPC code. eg: PPC-0,8 12DC-MB-J-K0,6-V200-G-RETURN KIT-1,5L+**EMASH00001+M60403004+M60403010.**
The NG3 micro valve attachment is on motor side.

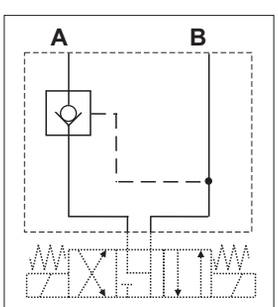
NG3 MODULAR MANIFOLD WITH INTEGRAL PILOT OPERATED CHECK VALVES

Dimensions in mm (inches)

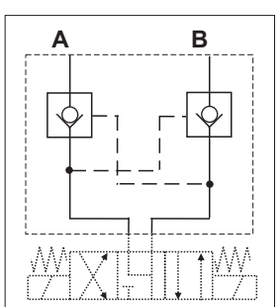


Main features

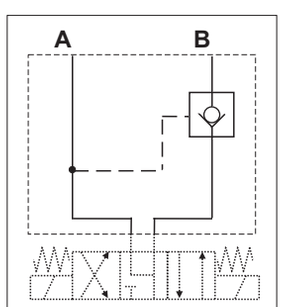
Max pressure	350 bar
Weight	0,26 Kg (0,57lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above



Spare part code
M60413002
M60413002US*



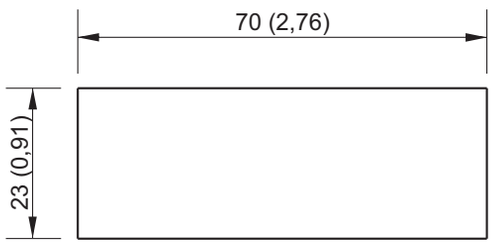
Spare part code
M60413001
M60413001US*



Spare part code
M60413003
M60413003US*

Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.
*: US execution with 9/16-18UNF SAE06 exit ports
To add NG3 MICRO external manifolds to a PPC assembly code, just add the converter PPC to PPM first, then the additional manifolds spare part codes at the end of the PPC code. eg: PPC-0,8 12DC-MB-J-K0,6-V200-G-RETURN KIT-1,5L+**EMASH00001+M60403004+M60403010.**
Code does not include the NG3 valve. See SD00 NG3 valves table in section G.

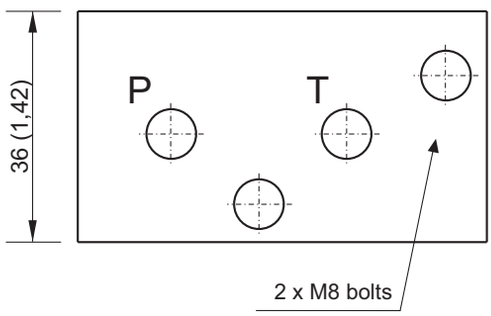
PPM SPACER ELEMENT 23MM

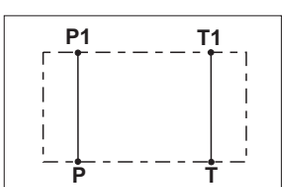


Dimensions in mm (inches)

Main features

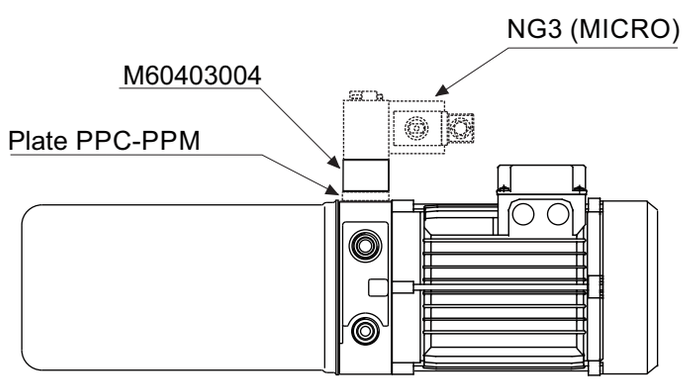
Max pressure	350 bar
Weight	0,14 Kg (0,3lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above





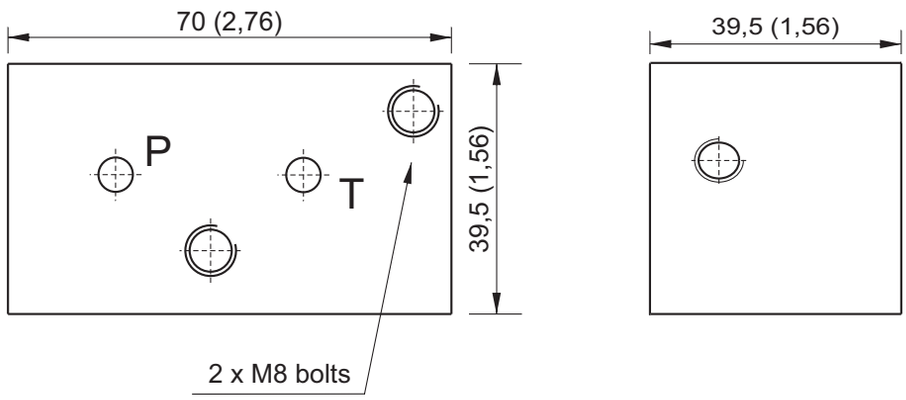
Spare part code
M60403004

Mounting example



Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.
To add NG3 MICRO external manifolds to a PPC assembly code, just add the converter PPC to PPM first, then the additional manifolds spare part codes at the end of the PPC code. eg: PPC-0,8 12DC-MB-J-K0,6-V200-G-RETURN KIT-1,5L+**EMASH00001+M60403004+M60403010.**

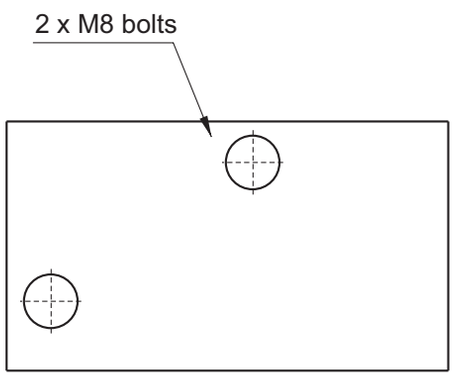
PPM 90° ROTATION MANIFOLD



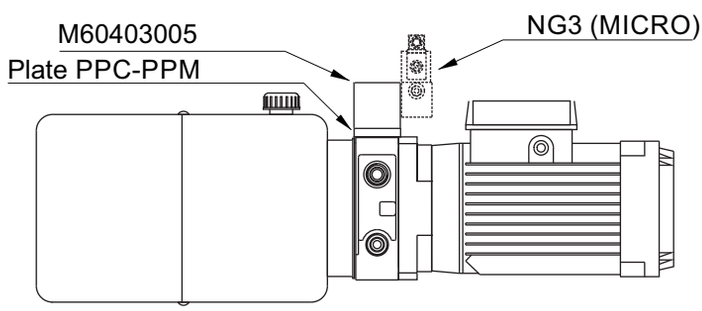
Dimensions in in mm (inches)

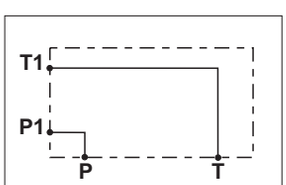
Main features

Max pressure	350 bar
Weight	0,26 Kg (0,57lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above



Mounting example





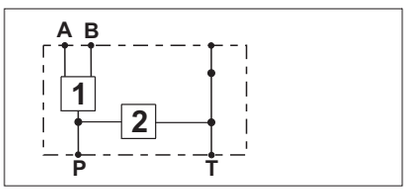
Spare part code
M60403005

Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.
To add NG3 MICRO external manifolds to a PPC assembly code, just add the converter PPC to PPM first, then the additional manifolds spare part codes at the end of the PPC code. eg: PPC-0,8 12DC-MB-J-K0,6-V200-G-RETURN KIT-1,5L+**EMASH00001+M60403004+M60403010.**

PPM - DIVERTER BLOCK WITH LOWERING OPTION

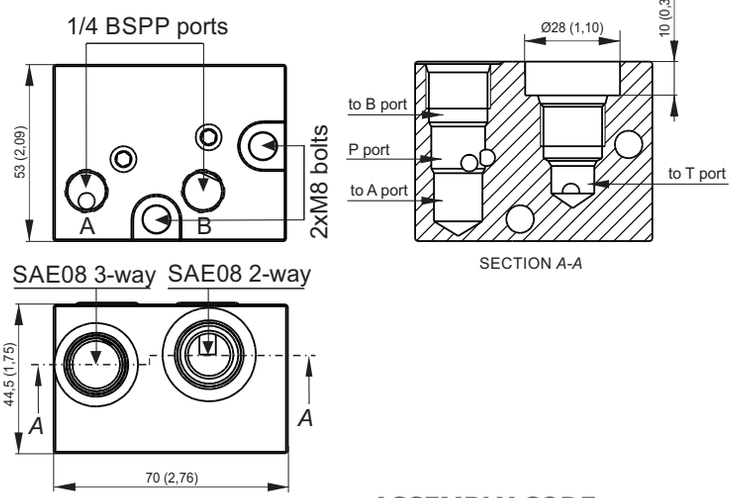
Main features

Max pressure	350 bar
Weight	0,39 kg (0,86 lb)
Fixing bolts	2xM8 tie-rods steel class 8.8 or above

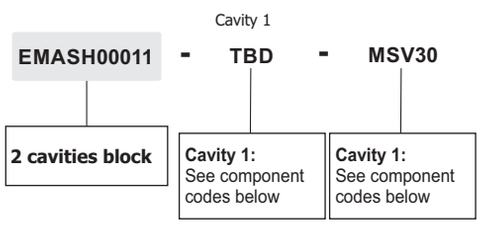


Spare part code
EMASH00012

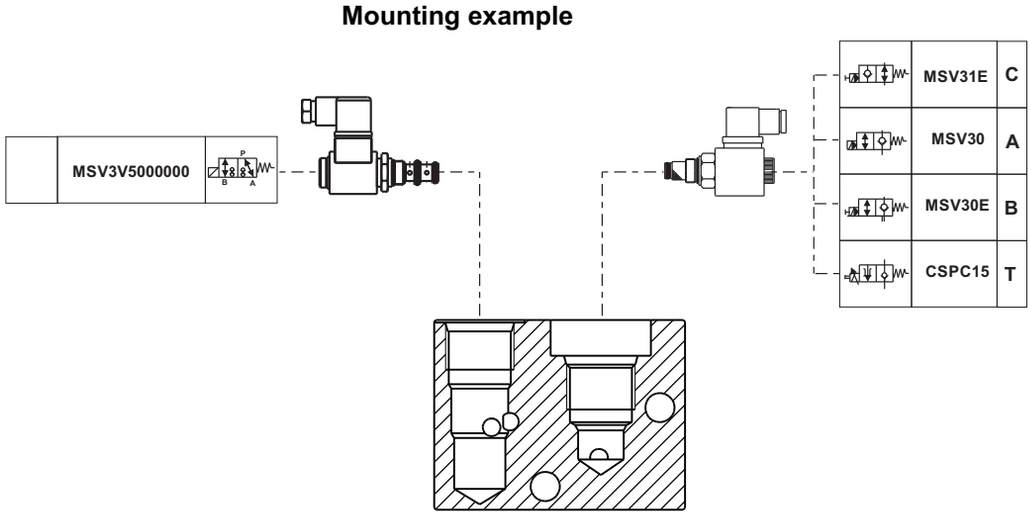
Dimensions in mm (inches)



ASSEMBLY CODE - example



Mounting example



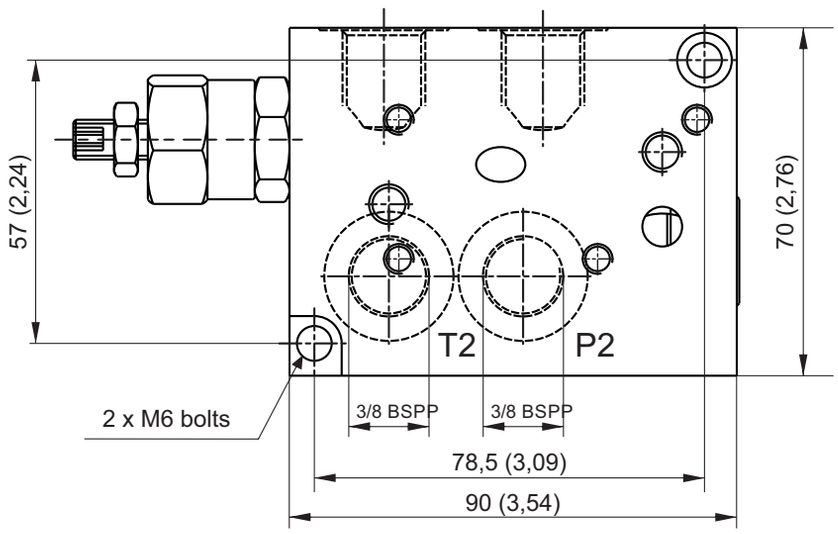
Note: to add external manifolds to PPM assembly code, just add their spare part codes at the end of the PPM code.
Example: PPM-0,8 12DC-MB-GM1,1-JM-D280-G-L-RETURN KIT-1,5L+M60403010+**...+EMASH00011**
This block must be mounted as last among the external ones.

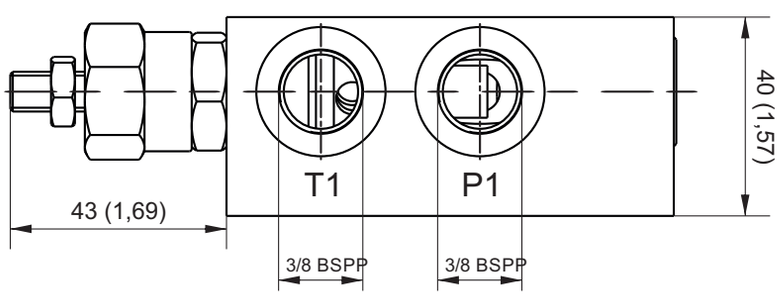
IN-LINE MOUNTING BASE PLATE FOR MODULAR BLOCKS

Dimensions in mm (inches)

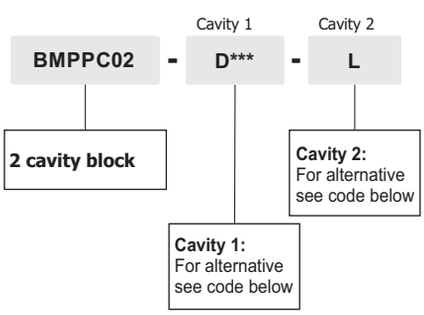
Main features

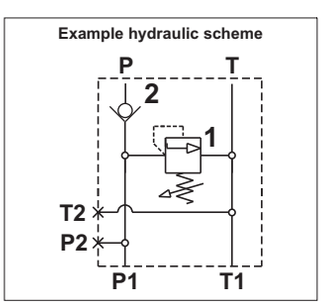
Max flow	40 l/min
Max pressure	350 bar
Weight	0,58 Kg (1,28 lb)
Fixing bolts	2 M8 or 4xM6 tie - rods steel class 8.8 or above



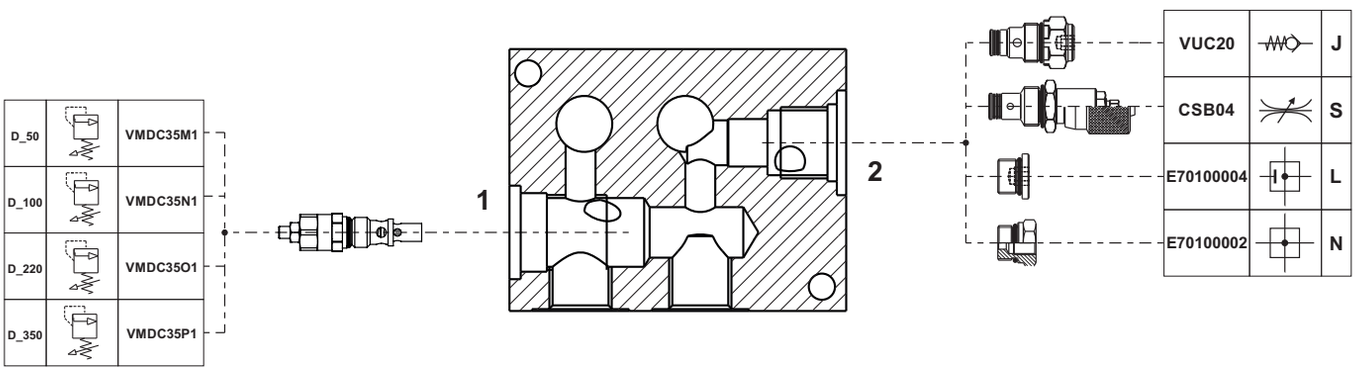


ASSEMBLY CODE - example



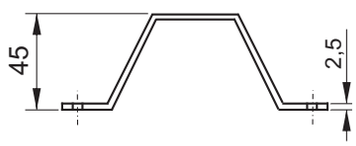


BMPPC02 allows you to mount off-line the entire system of Hydronit modular blocks and valves.
A typical application is to use it on a conventional powerpack, where the control block and the valve are separated from the engine driven pump.
P1 and T1 ports are closed by 3/8" BSP plugs in standard configuration.
You can use these ports dismounting the plugs and using the same to close P2 and T2 ports.
See cavity 1 VMDC35 table in section G.
See cavity 2 components and plugs tables in section D.

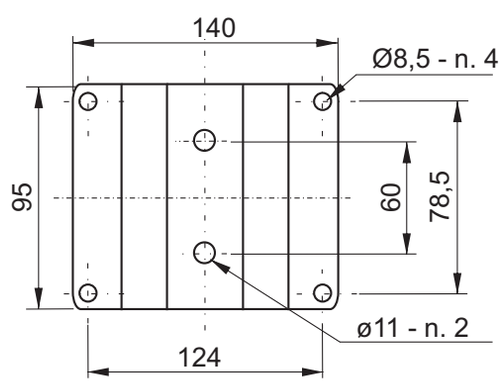


FOOT MOUNTING SUPPORT

Foot mounting support PPM MANIFOLDS

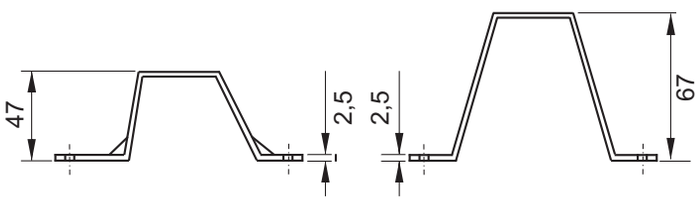


Weight: 0,35 Kg
Color: Black



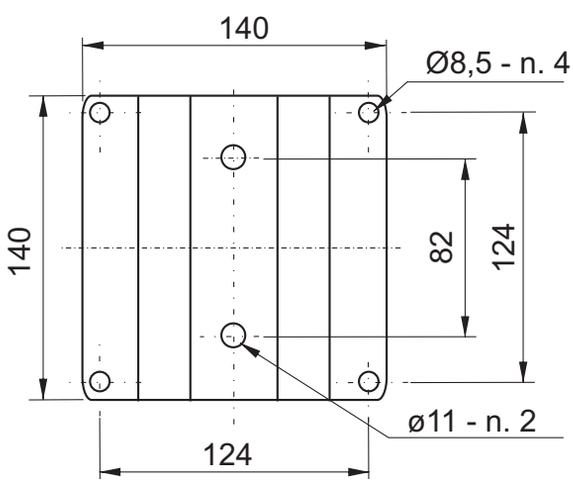
Spare part code
E60543003

Foot mounting support PPC MANIFOLDS



E60543006
Weight: 0,5 Kg
Color: Black

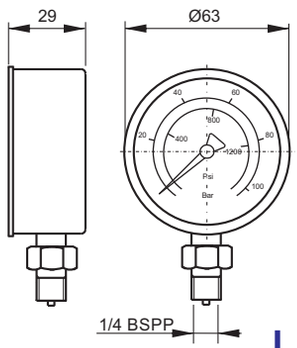
E60543007
Weight: 0,6 Kg
Color: Grey



E60543006: suitable for all tanks except for E60303044

Spare part code	
E60543006	E60543007
E60543006US	E60543007US

ACCESSORIES

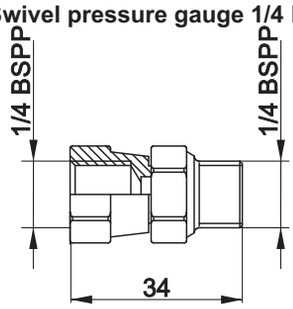


Pressure gauge

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
Fluid temperature	-10 ÷ +60°C
Precision class	cl. 1.6 EN837-1

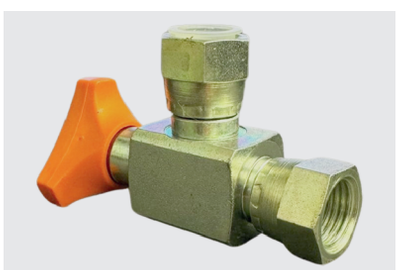
Spare part code
MIR63* ***: max pressure in bar (60, 160, 250, 315 bar)**

Swivel pressure gauge 1/4 BSP



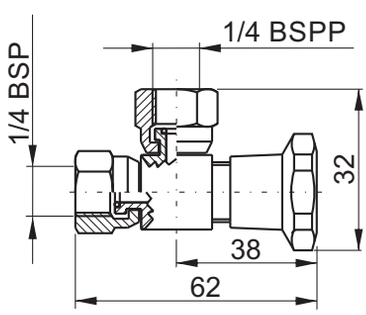
Weight: 0,04 Kg. Max working pressure: 400 bar

Spare part code
RACMIL01



Gauge isolator 90° F-F

EM9001C

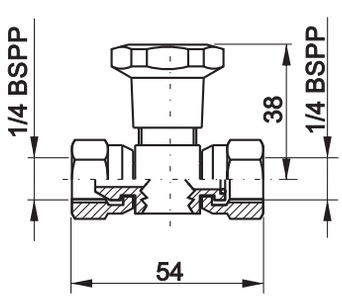


Weight: 0,14 Kg. Max working pressure: 400 bar

Spare part code
EM9001C

Gauge isolator F-F

EMIL01C

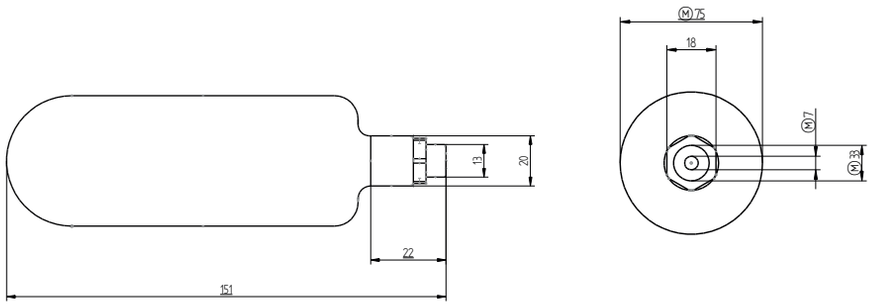


Weight: 0,14 Kg. Max working pressure: 400 bar

Spare part code
EMIL01C

Note: Pressure equalizing membrane. Shut off valve recommended for high cycle applications.

ACCUMULATOR



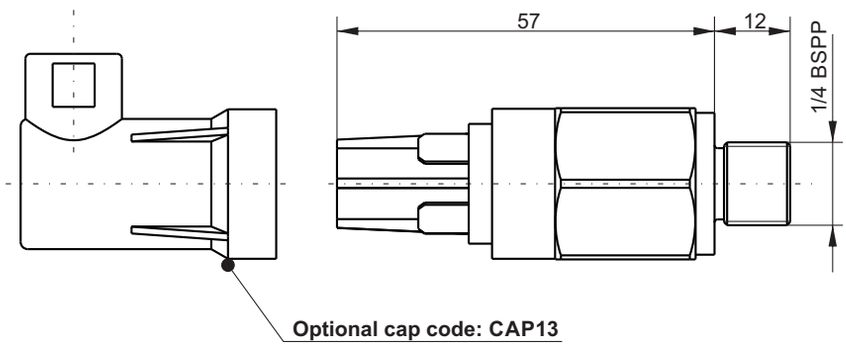
Main features

Max. pressure	300 bar
Material	carbon steel
Max. flow	45 Lt/min
Max. N2 precharge	210 bar
Working temperature	-20°C ÷ +80°C
Weight	1,9 Kg

Spare part code	Hydraulic connect
EAACH00001	M18X1.5-F

PRESSURE SWITCHES

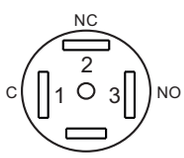
Dimensions in mm (inches)



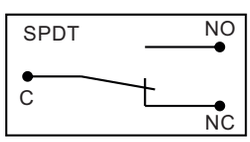
Main features

Switch rating resistive	6A / 250 Vca
Switch rating resistive	2A / 24 Vdc
Switch rating inductive	2A / 250 Vca
Switch rating inductive	1A / 24 Vdc
Fluid temperature	-25°C ÷ +80°C
Weight	0,1 Kg
Tightening torque	20 Nm
Hysteresis	~ 15%
Max. pressure	300 bar
Contact	SPDT C/O
Protection (terminals)	IP 00
Protection with connector	IP 65

Pin out scheme

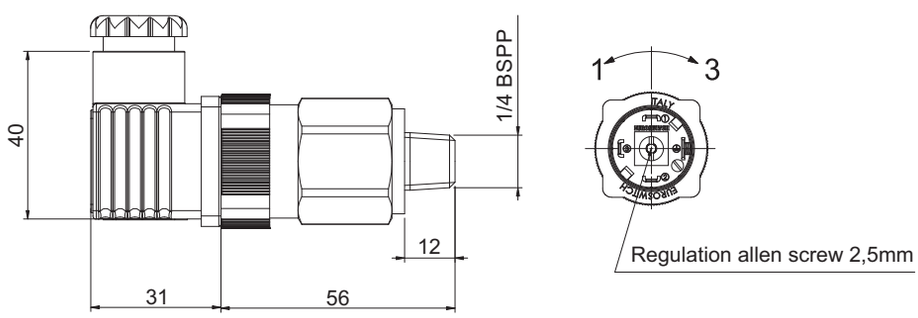


Electrical scheme



Assembly code (including cap)	Spare part code	Pressure (bar)	Tolerance (bar)
PSL01100W	PSL01S0100	10÷100	±3
PSL01300W	PSL01S0300	50÷300	±15

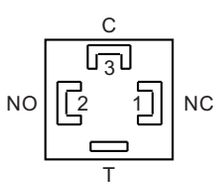
Dimensions in mm (inches)



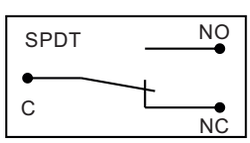
Main features

Max. voltage	250 Vca
Current resistive load	6 A
Current inductive load	2 A
Fluid temperature	-25°C ÷ +80°C
Weight	0,1 Kg
Tightening torque	20 Nm
Hysteresis	adjustable 10% ÷ 30%
Max. pressure	300 bar
Contact	SPDT C/O
Protection with connector	IP 65

Pin out scheme



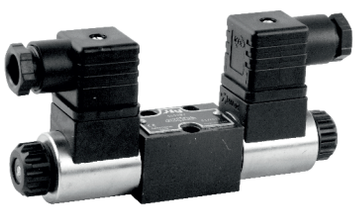
Electrical scheme



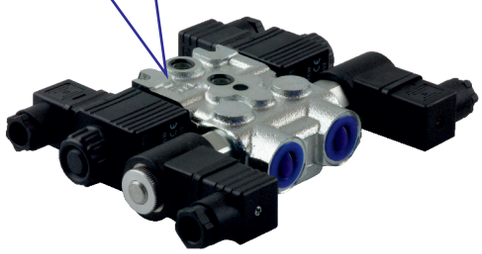
Spare part code	Pressure (bar)	Tolerance (bar)
EAPSH00001	10 ÷ 100	±3
EAPSH00002	100 ÷ 400	±15

EXTERNAL VALVES

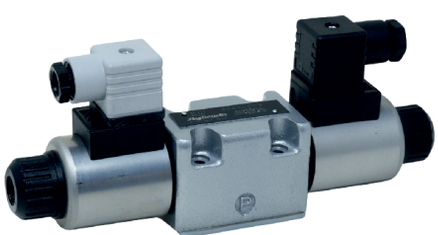
NG3 MICRO directional valves: the optimized solution for **top performance** with **ultra compact dimensions**. Each valve requires a base modular manifold



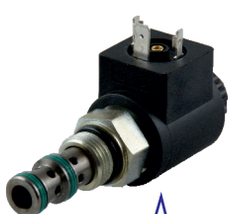
STACKABLE directional valves: the advanced solution to conventional spool valves, to reduce power pack dimensions and weight. A and B threaded ports are directly machined in to the valve body. Additional cavities allow extra flexibility in the hydraulic circuit design



NG6 (Cetop 3) modular **sandwich valves** for flow and pressure control, and overcentre. 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.



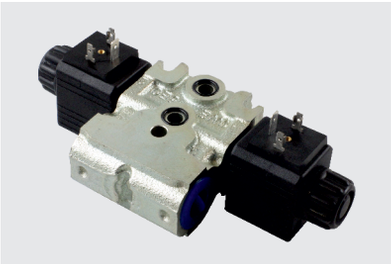
Cartridge valves in external blocks: the cost effective and lightweight solution

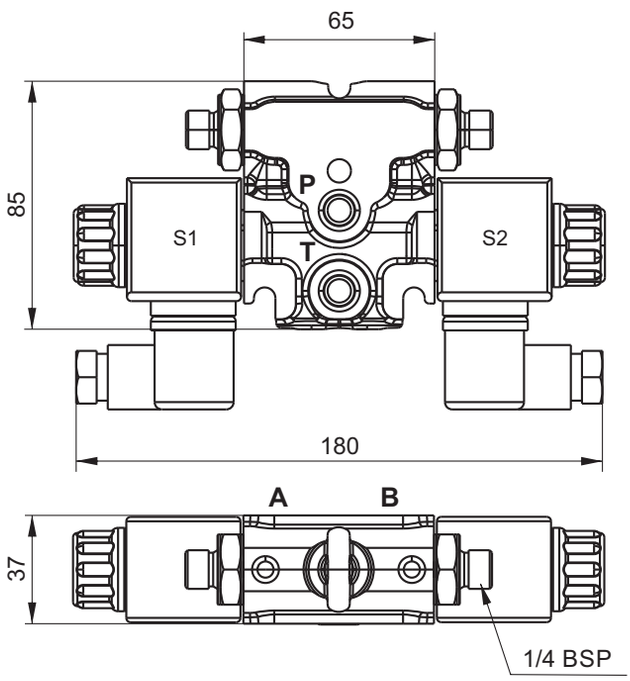
What are the advantages of NG3 MICRO directional valves and stackable directional valves compared to NG6 (Cetop 3) valves?
Lower weight, smaller dimensions, lower cost. Each stackable valve height of just 31mm allows you build a stack of, for example, 7 valves in 217mm. A similar stack made with cetop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

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. SD02* bankable vales share the same M630/M631 coils series of the integral solenoid valves. NG6 (Cetop 3) 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***), except for M631 coils series which have an integral rectifying bridge. See coils table at the end of section G.

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	50 l/min
Weight	1,37 Kg (1 solenoid) 1,67 Kg (2 solenoid)
Internal leakage	0,02÷0,06 l/min at 100bar, 21 cSt
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)
Fluid temperature	-20°C +80°C

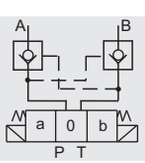
Spare part code

SD02 — **Stackable modular directional solenoid valve**

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

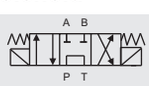
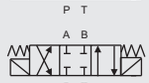
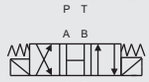
RP — **Standard:**
F = free outputs
Option:
RP = outputs with piloted check valves (only spool E2 and C2)

24DC — **Supply voltage:**
see coils table section G

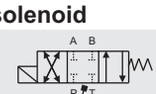
Option RP	
Code RP	

Spool

Double solenoid

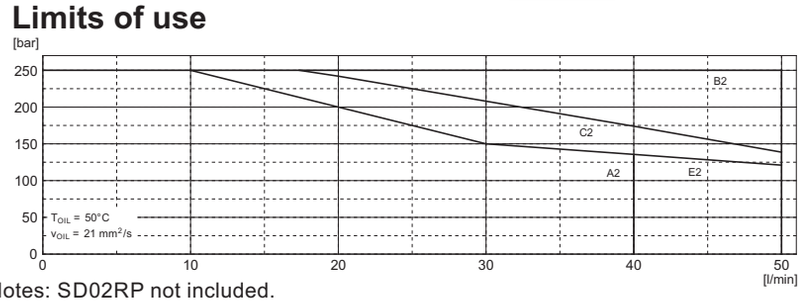
A2	
B2	
C2	
E2	

Single solenoid

A11C	

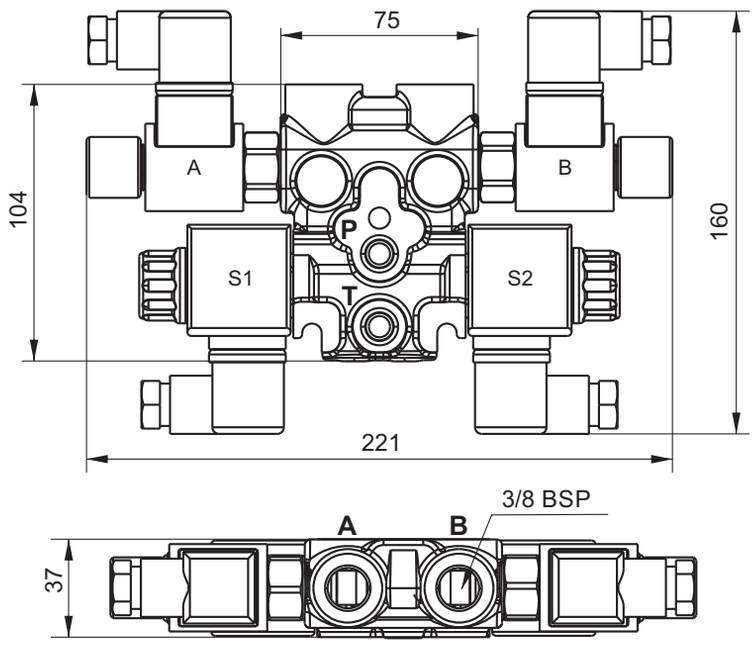
transitory

Limits of use



Notes: SD02RP not included.

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**

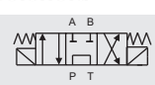
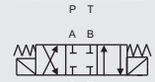
Main features

Max pressure	250 bar
Max pressure on T port	50 bar
Max flow	50 l/min
Weight	2,08 Kg (1 solenoid) 2,38 Kg (2 solenoid)
Internal leakage	0,02÷0,06 l/min at 100bar, 21 cSt
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)
Fluid temperature	-20°C +80°C

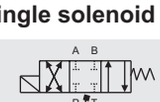
Note: For limits of use see diagram page G020

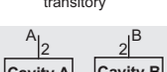
Spool

Double solenoid

A2	
B2	
C2	
E2	

Single solenoid

A11C	

Cavity option	
Code	

Spare part code

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

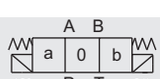
E2 — **Spool configuration:**
see table below

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

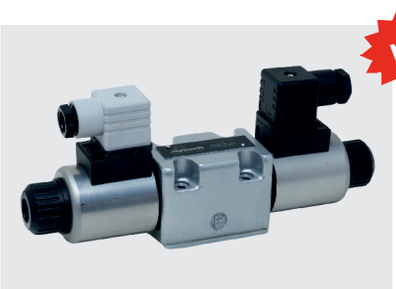
24DC — **Supply voltage:**
see coils table section G

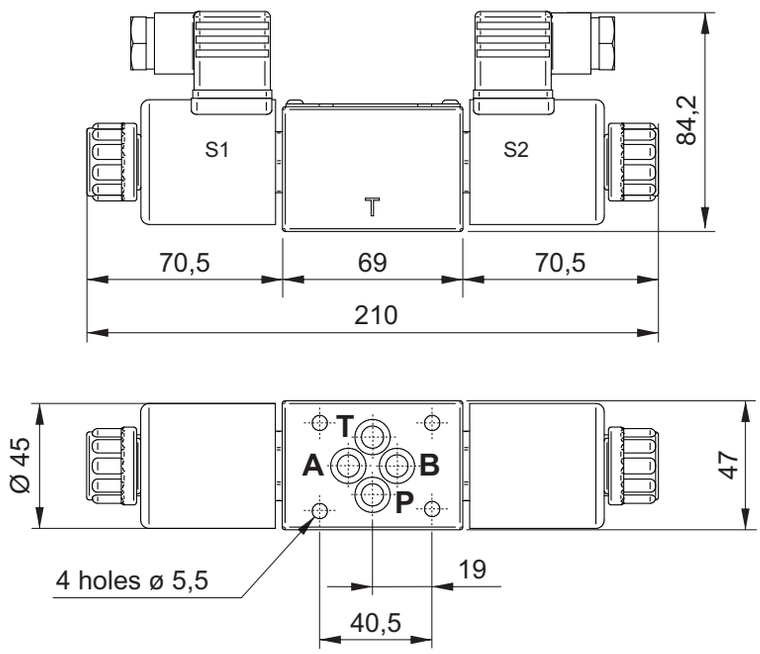
AR24DC — **Cavity A:**
X = open cavity
L = closed plug
ARxx = valve 2/2 NC (xx = voltage)
S = check flow bidirectional valve

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

Code	

NG6 (CETOP 3) DIRECTIONAL SOLENOID VALVES





Main features

Max pressure	315 bar
Max pressure on T port	210 bar static, 180 bar dinamic
Max flow	40 l/min
Weight	1,95 kg (2 solenoid) 1,45 kg (1 solenoid)
Fixing bolts	4 M5x45 bolts. 5Nm torque 10,9 class steel or above
Coil insulation	Class B
Electric connection	DIN 43650-A / ISO 4400
Protection class	IP 65 / DIN 40050
Duty cycle	ED 100%
Voltage required	+ 10%;-15% nominal voltage
Manual Overide	included as standard

Spare part code

SD03LC — **Cetop 3 directional solenoid valve**

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

24DC — **Supply voltage:** see coils table section G

- — **Options:** - = std

Spool

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

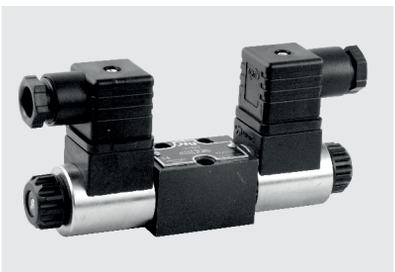
Double solenoid

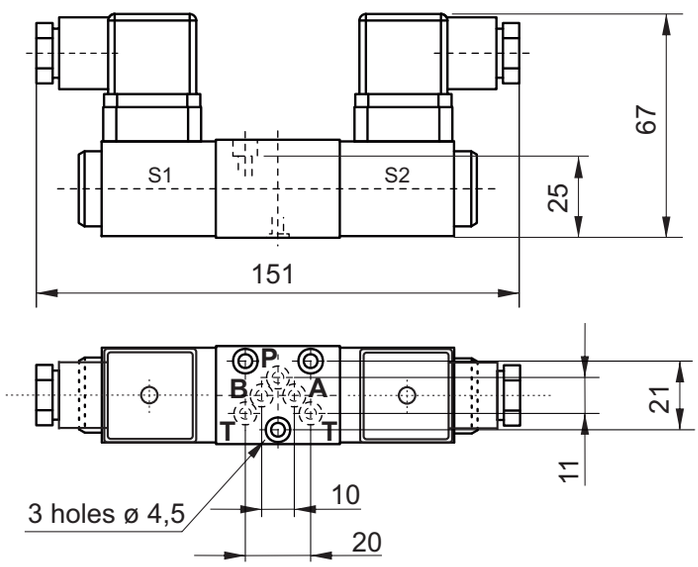
A2	A B / P T
B2	A B / P T
C2	A B / P T
E2	A B / P T

Single solenoid

A11C	A B / P T — transitory

NG3 MICRO DIRECTIONAL SOLENOID VALVES





Main 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 M4x35 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**

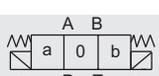
A2 — **Spool configuration:** see table below

24DC — **Supply voltage:** see coils table section G

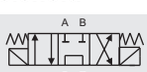
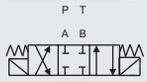
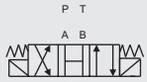
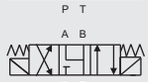
- — **Options:** - = std

Spool

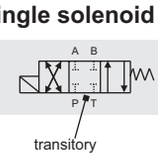
Code



Double solenoid

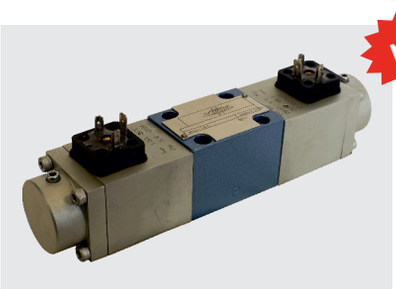
A2	
B2	
C2	
E2	

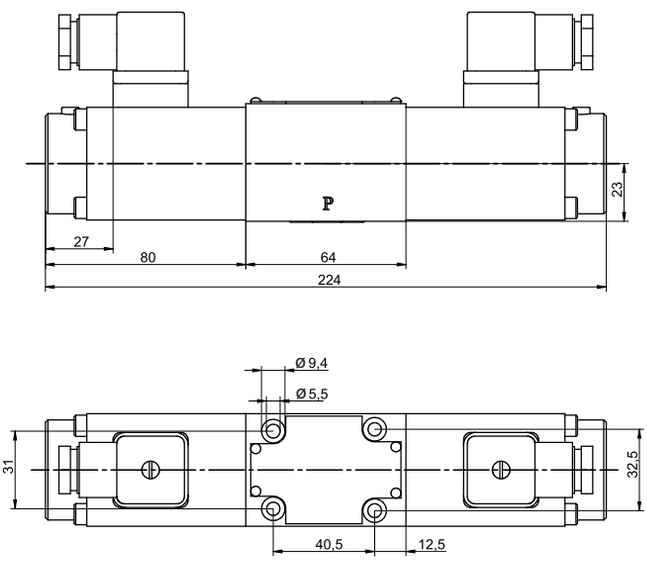
Single solenoid

A11C	

Notes: To use these valves, it is necessary to insert a filter of at least 15 microns in the hydraulic circuit.

CETOP3 (NG6) PROPORTIONAL DIRECTIONAL VALVE





Main features

Max pressure	315 bar
Max pressure on T port	160 bar
Max flow	up to 10 l/min
Weight 2 solenoids	2,5 Kg
Weight 1 solenoid	1,8 Kg
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	push
Standards	EN50081-1 / EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

Code

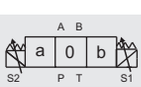
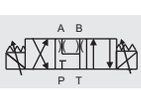
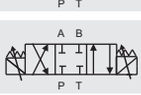
SPD03 — **CETOP3 (NG6) proportional valve**

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

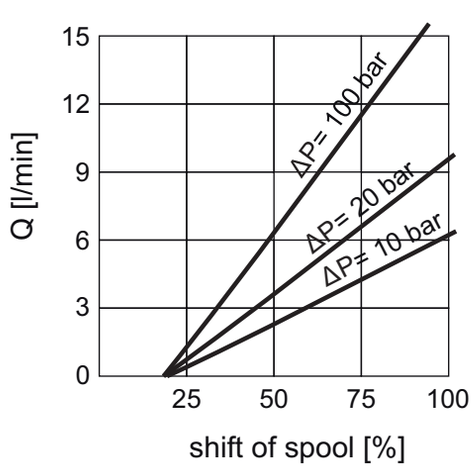
10 — **Flow [lpm]**

- — **Options:** - = std

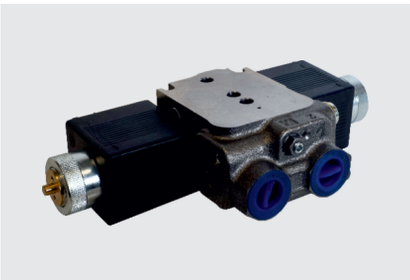
Spool

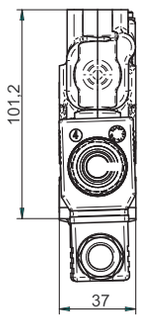
Code	
	
E2	
B2	

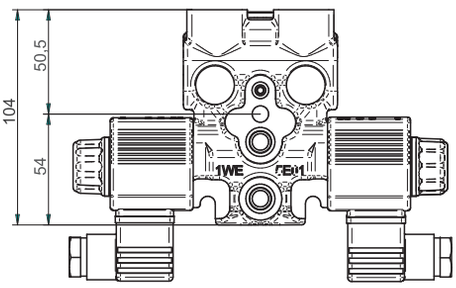
Flow vs current

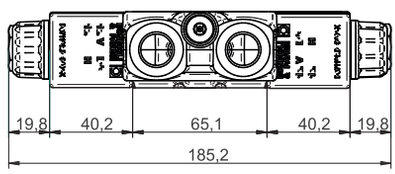


STACKABLE ON-OFF ELECTROVALVE with LOAD SENSING









Main features

Max pressure	250 bar
Max pressure on T port	50 bar
Max flow	up to 40 l/min
Weight	1,6 Kg
Internal leakage	0,04 l/min at 100bar
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	push
Standards	EN50081-1 / EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

Code

SD02 — **Stackable directional on-o ffvalve**

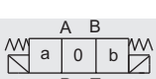
E2 — **Spool configuration** see table below

TP — **Top Port**

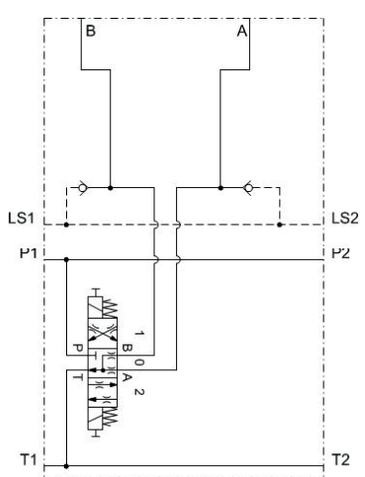
LS — **Load Sensing**

24DC — **Supply voltage 12VDC** or **24VDC**

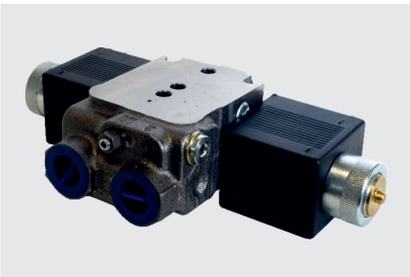
Spool

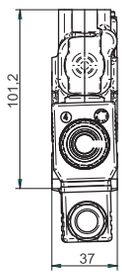
Code	
	
E2	

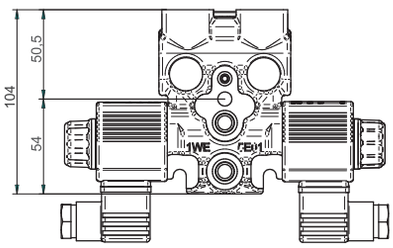
Hydraulic scheme

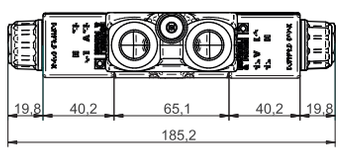


STACKABLE PROPORTIONAL ELECTROVALVE with LOAD SENSING









Main features

Max pressure	250 bar
Max pressure on T port	50 bar
Max flow	up to 40 l/min
Weight	1,6 Kg
Internal leakage	0,04 l/min at 100bar
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	push
Standards	EN50081-1 / EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

Code

SPD02 — **Stackable directional proportional valve**

E2 — **Spool configuration** see table below

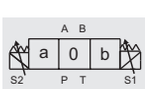
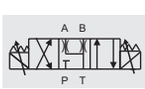
0D — **Spool throttling type** see table Flow vs Current below

TP — **Top Port**

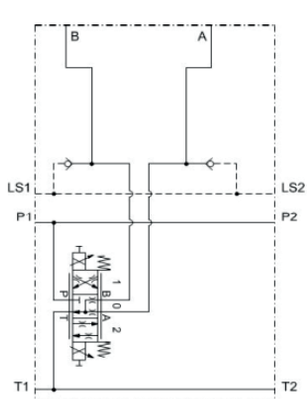
LS — **Load Sensing**

24DC — **Supply voltage 12VDC** or **24VDC**

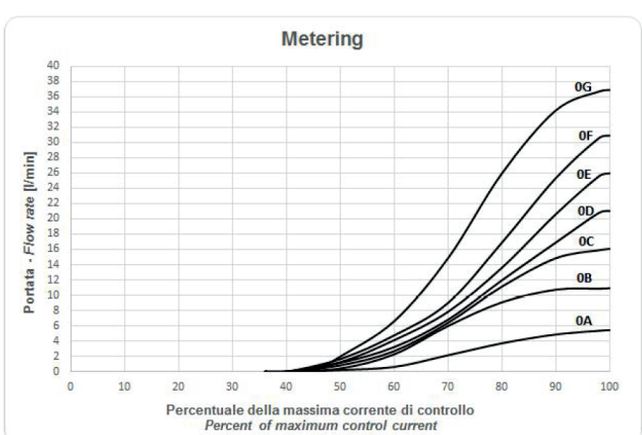
Spool

Code	
	
E2	

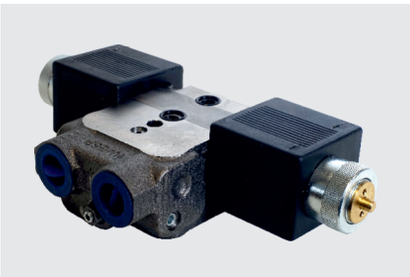
Hydraulic scheme

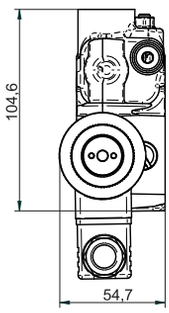


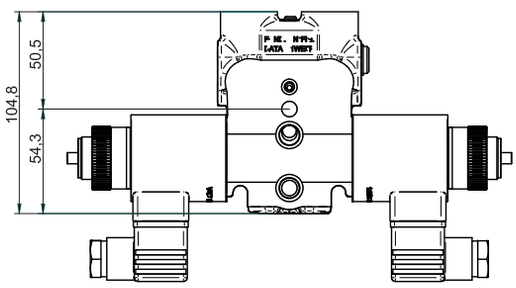
Flow Vs Current @ 18bar

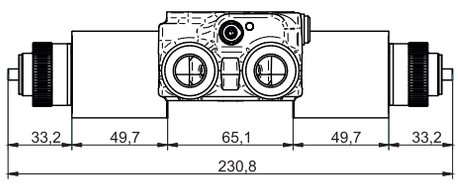


STACKABLE PROPORTIONAL ELECTROVALVE with LS & PRESSURE COMPENSATOR









Main features

Max pressure	250 bar
Max pressure on T port	50 bar
Max flow	up to 32 l/min
Weight	1,6 Kg
Internal leakage	0,04 l/min at 100bar
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	push
Standards	EN50081-1 / EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

Code

SPD02 — **Stackable directional proportional valve**

E2 — **Spool configuration**
see table below

0D — **Spool throttling type**
see table Flow vs Current below

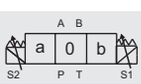
TP — **Top Port**

LSCP — **Load Sensing & Pressure Compensator**

24DC — **Supply voltage**
12VDC or **24VDC**

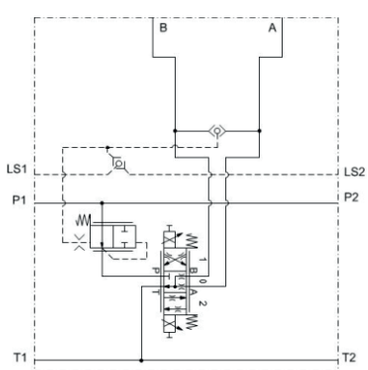
Spool

Code

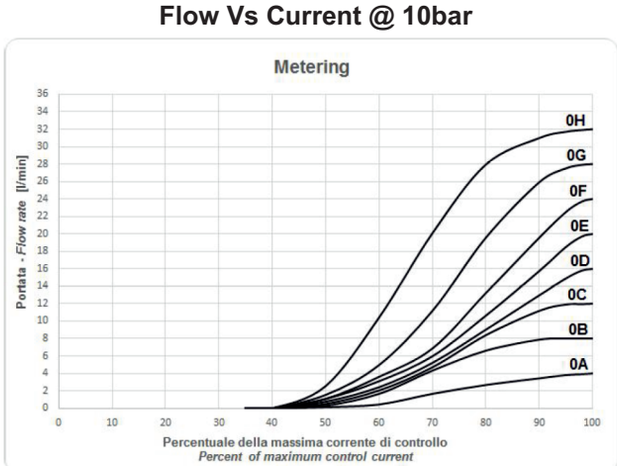


E2

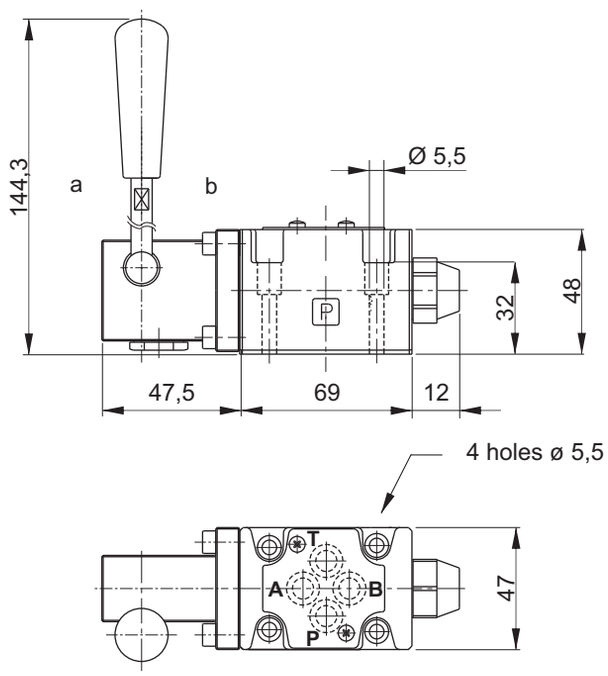
Hydraulic scheme



Flow Vs Current @ 10bar



NG6 (CETOP 3) MANUAL DIRECTIONAL CONTROL VALVES LC SERIES



Main features

Max pressure	310 bar
Max pressure on T port	210 bar
Max flow	25 l/min
Weight	0,8 kg
Fixing bolts	4 M5x30 bolts 5Nm torque 10,9 class steel or above
Fluid temperature	-20 ÷ +80°C
Filtration degree	25 ÷ 50 µ

Spare part code

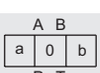
HD03LC — **Cetop 3 manual directional control valve LC series**

A — **Spool control:** see table below

1 — **Spool configuration** see table below

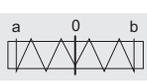
- — **Options:** - = std

Code

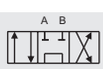
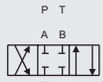
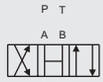


Spool control

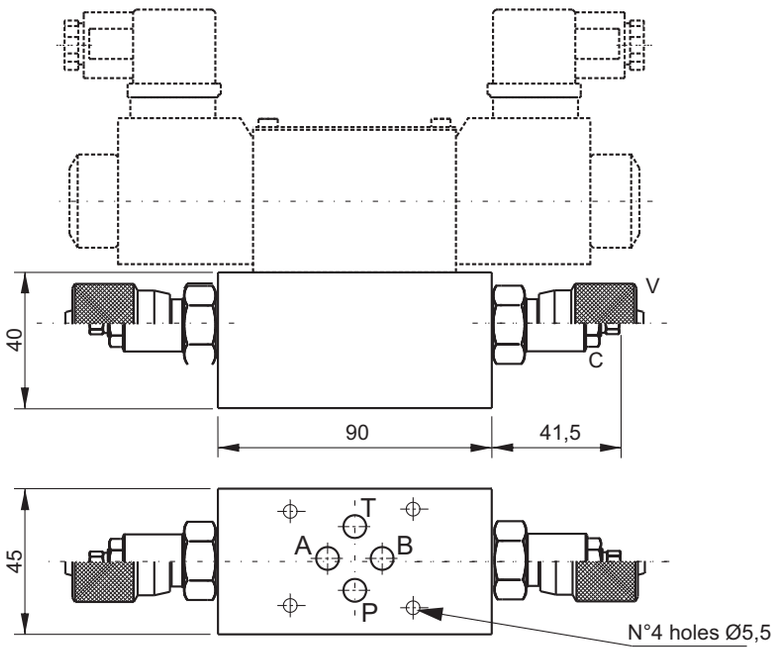
Spring centered **A**



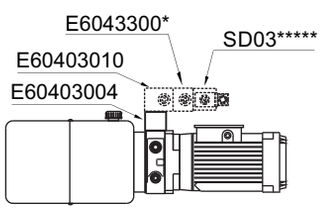
Spool

1	
2	
3	
4	

NG6 (CETOP 3) SANDWICH FLOW CONTROL VALVE METER OUT



Mounting example



Main features

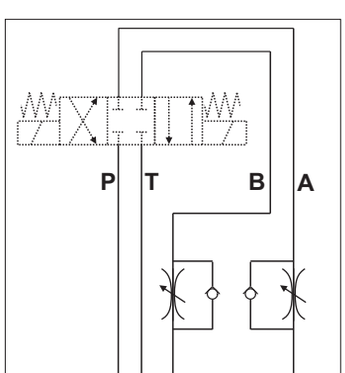
Max pressure	300 bar
Max flow	15 l/min
Weight	Single valve: 0,52 kg Double valve: 0,64 kg
Fixing bolts	4 M5x° bolts. 5Nm torque 10,9 class steel or above
Fluid temperature	-20 ÷ +80°C
Filtration degree	25 ÷ 50 µ

Spare part code

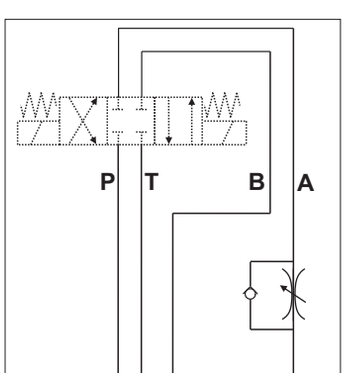
E6043300** — **NG6 (Cetop 3) sandwich meter-out flow control valve**

1 — **Type:**
1 = on A and B
2 = on A
3 = on B

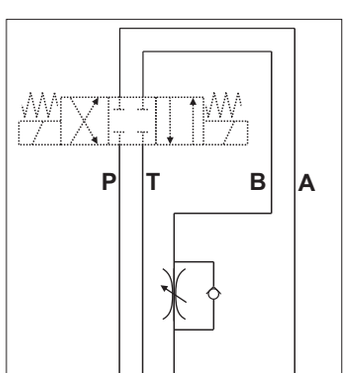
- — **Adjusting device:**
- = screw (std)
V = handwheel



Spare part code
E60433001*



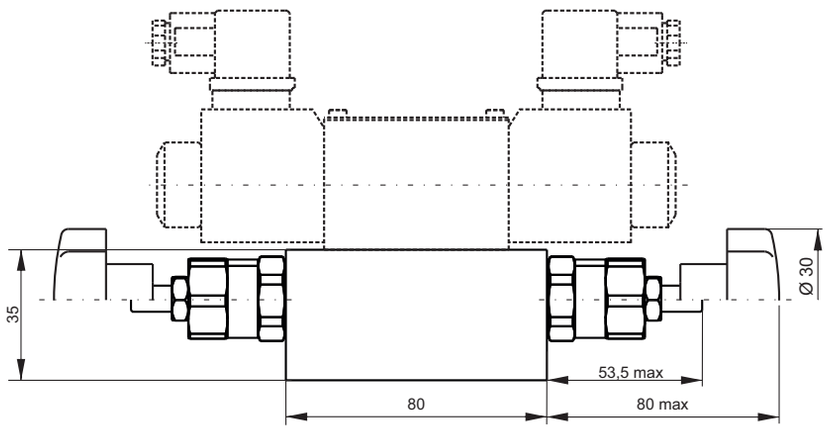
Spare part code
E60433002*



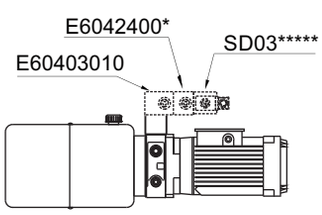
Spare part code
E60433003*

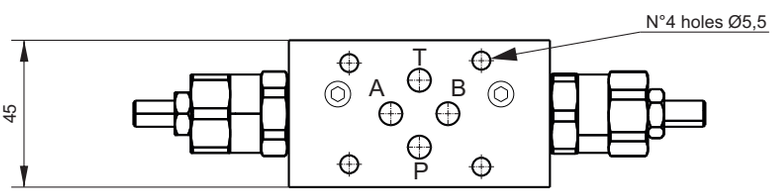
Notes: code does not include the Cetop solenoid valve.
° Bolt length depends on number of modular blocks and type of valve.

NG6 (CETOP 3) SANDWICH RELIEF VALVE-ANTI SHOCK VALVE



Mounting example





Main features

Max pressure	350 bar
Max flow	20 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
Fluid temperature	-20 ÷ +80°C
Filtration	25 ÷ 50 µ

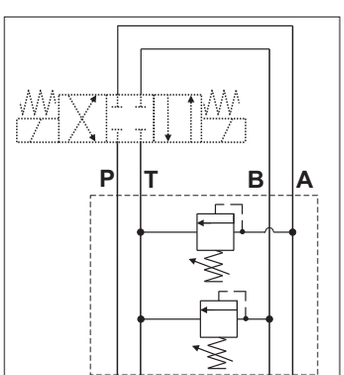
Spare part code

E6042400** — **NG6 (Cetop 3) sandwich relief v.**

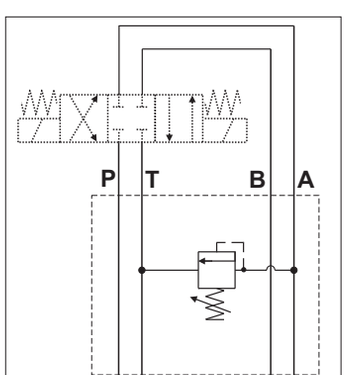
1 — **Type:**
1 = on A and B
2 = on A
3 = on B

B — **Pressure range settings:**
A = 3 ÷ 60 bar
B = 40 ÷ 120 bar
C = 80 ÷ 250 bar
D = 150 ÷ 350 bar

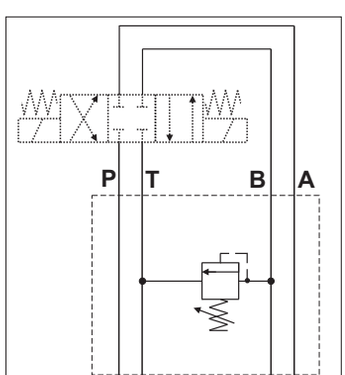
***** — **Option:**
see VMDC20 table in section D



Spare Part Code
E60424001**



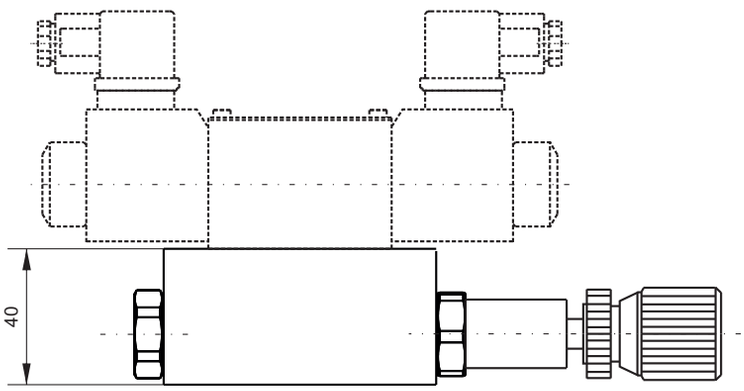
Spare Part Code
E60424002**



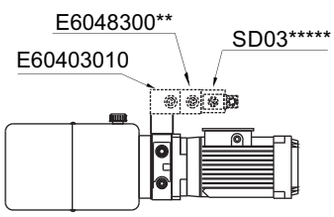
Spare Part Code
E60424003**

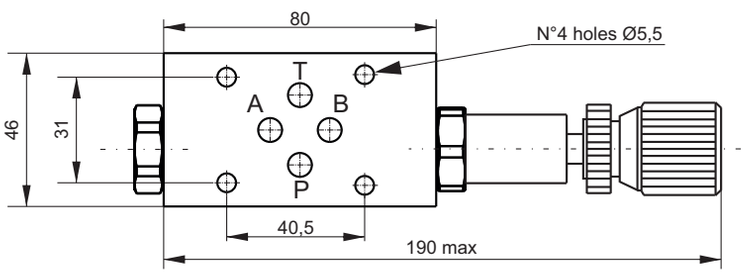
Notes: code does not include the Cetop solenoid valve. When E60423001 relief valves have different pressure ranges, please specify them separately.
eg: E60424001AB=60 bar max for valve on A port, 120bar max for valve on B port.
° Bolt length depends on number of modular blocks and type of valve.

NG6 (CETOP 3) SANDWICH PRESSURE REDUCING VALVE



Mounting example





Main features

Max pressure	210 bar
Max flow	35 l/min
Weight	1,3 kg
Fixing bolts	4 M5x** bolts. 5Nm torque 10,9 class steel or above
Fluid temperature	-20 ÷ +80°C
Filtration	25 ÷ 50 µ

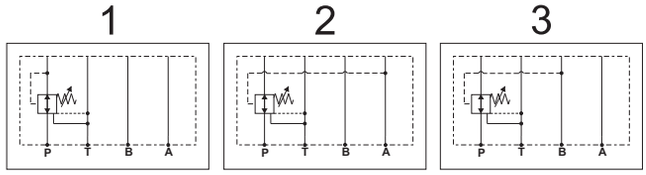
Spare part code

E6048300* — **NG6 (Cetop 3) pressure reducing valve**

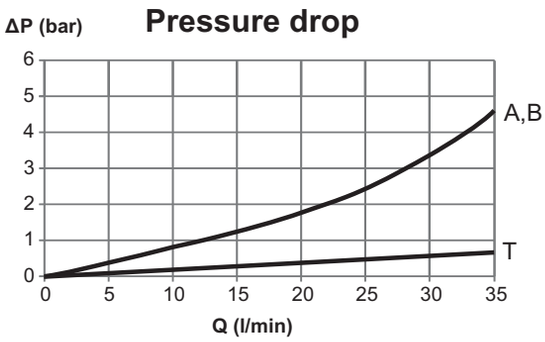
1 — **Hydraulic scheme (see below):**
1: reducing on P
2: reducing on A
3: reducing on B

B — Spring range:
B: 7-70 bar
D: 70-210 bar

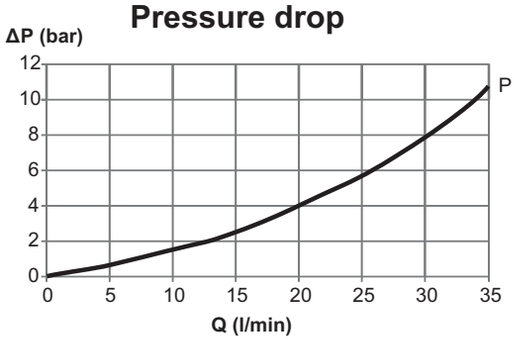
1 2 3



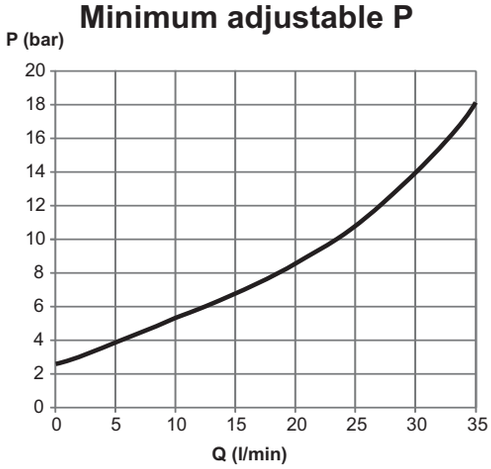
Pressure drop



Pressure drop

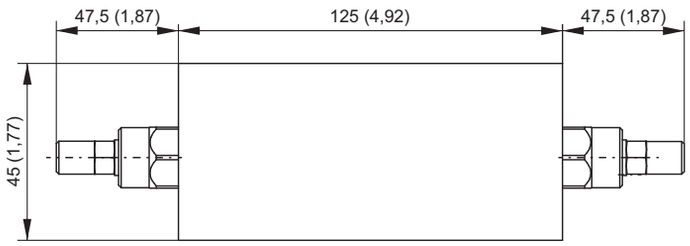


Minimum adjustable P



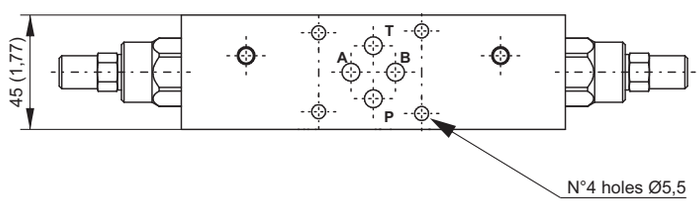
NG6 (CETOP 3) SANDWICH MODULAR OVERCENTER VALVE SINGLE AND DOUBLE ACTING

Dimensions in mm (inches)



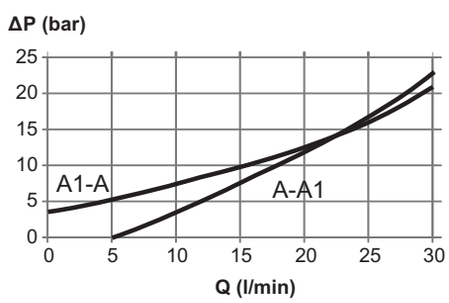
Main features

Max pressure	350 bar
Max flow	up to 50 l/min
Fixing bolts	4 M5x** bolts. 5Nm torque 10,9 class steel or above
Fluid temperature	-30 ÷ +80°C
Filtration degree	25 ÷ 50 µ
Pilot ratios	4.25:1



Setting pressure must be at least 1,3 times the maximum load induced pressure.

Pressure drop

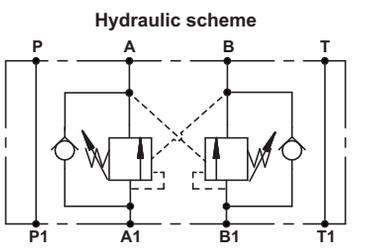


Spare part code

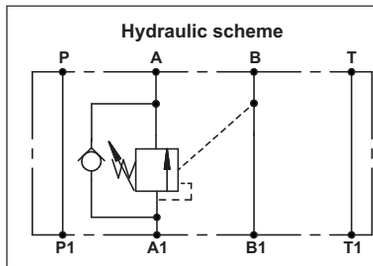
E6045300** — **Ng6 (Cetop 3) sandwich overcenter valve**

1 — **Type:**
1: on A and B
2: on A
3: on B

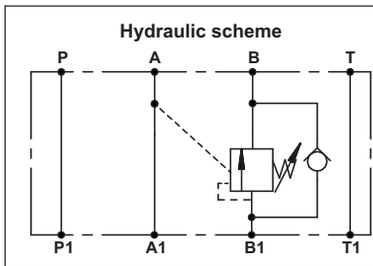
A — **Pressure range settings:**
A = 60 ÷ 220 bar
B = 100 ÷ 350 bar



Spare Part Code
E60453001*



Spare Part Code
E60453002*

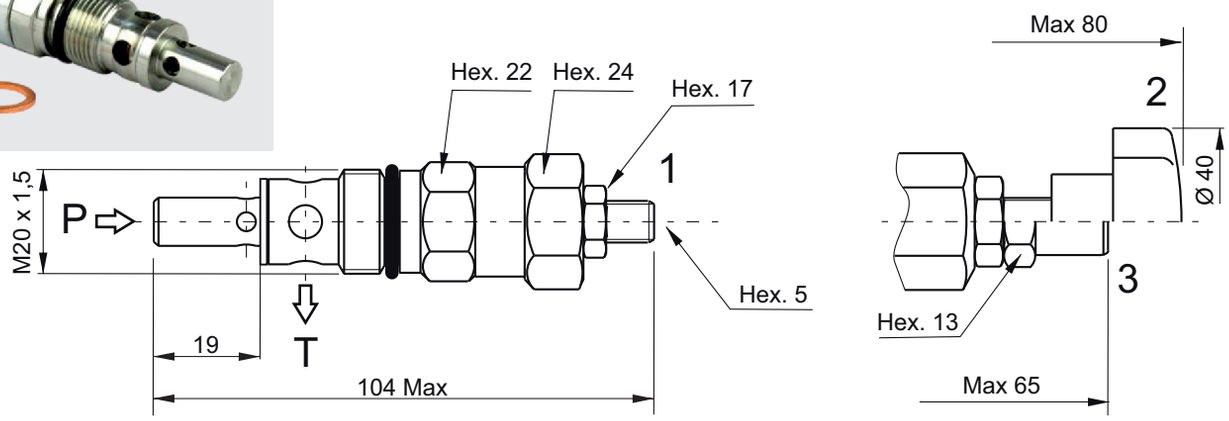


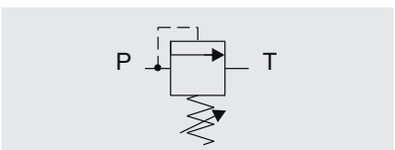
Spare Part Code
E60453003*

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-V200-G-RETURN KIT-1,5L+**E60403004-E60403010-E60453001+SD03C2 12DC.**

The Cetop 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 (see E60403004 code in F section) below the modular block to avoid interference between the valve and the motor.
For open center directional valve.
Only use with SD02C2 and SD02E2 valves.

VMDC35 - DIRECT ACTING RELIEF VALVE





Main features

Max pressure	350 bar
Max flow	40 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 — **Relief valve**

35 — **Nominal size:**
35 = 35 l/min

M — **Working range:**
M = 5 ÷ 50 bar
N = 30 ÷ 100 bar
O= 50 ÷ 220 bar
P= 80 ÷ 350 bar

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

Assembly code

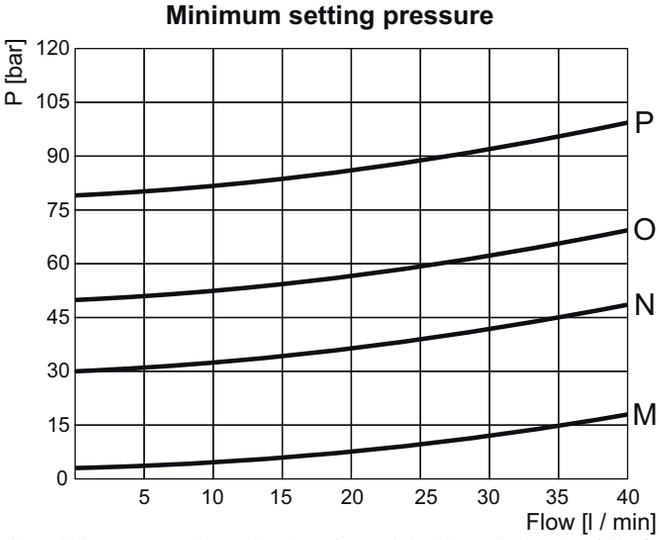
D_* ♦**

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

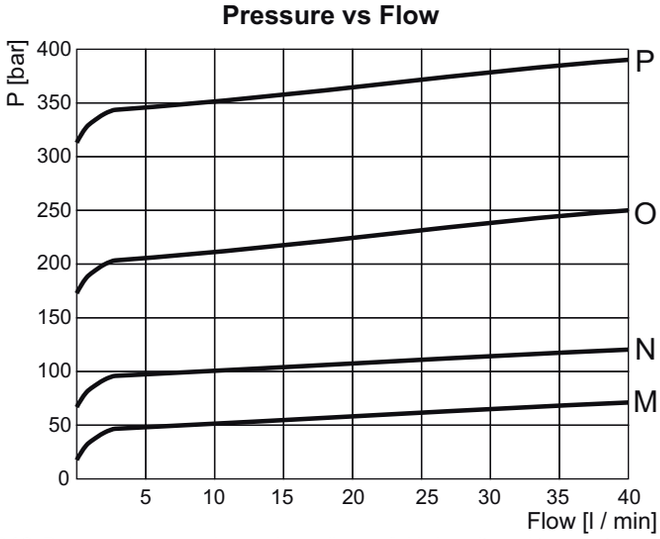
Mounting:

Only in BMPPC02 block, see F section

Minimum setting pressure

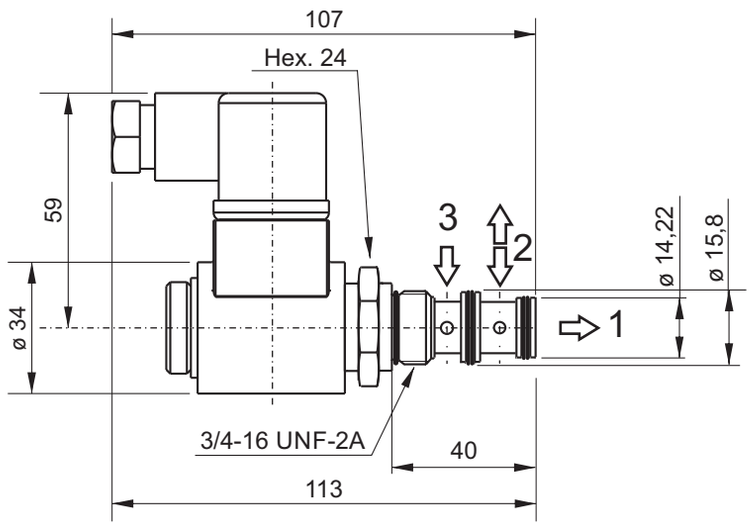


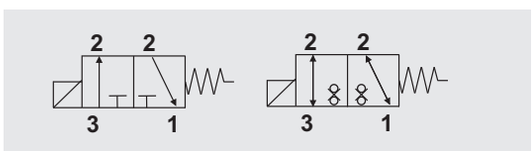
Pressure vs Flow



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.

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





Main 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
Fluid temperature	-25 ÷ +70°C

Spare part code

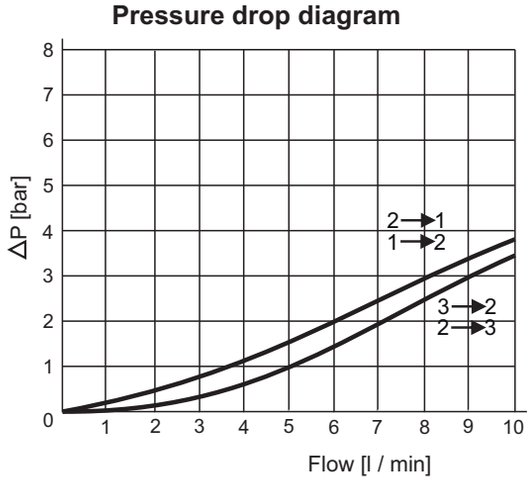
MSV3V — **Three-way direct acting solenoid valve**

40 — **Spool type:**
40 = std
50 = no leakage poppet

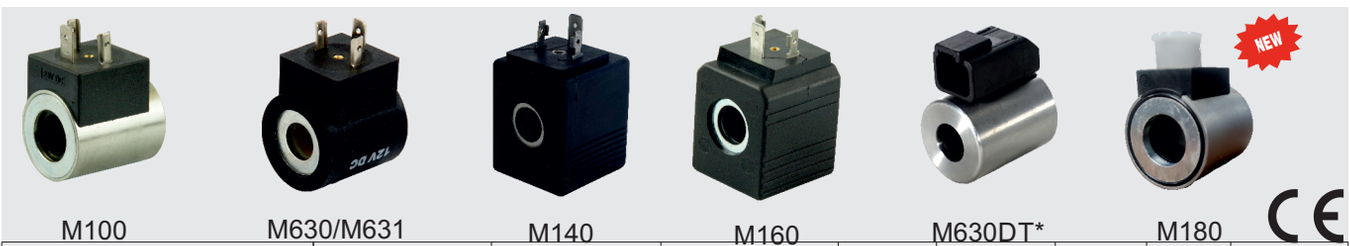
0 — **Options:**
0 = no options (std)

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

Pressure drop diagram



VALVES COILS



M100 M630/M631 M140 M160 M630DT* M180

Supply voltage [V]	Coil type	Spare part code	Spare connector code/type	Holding power [W]	Duty cycle ED [%]	Coil insulation	Weight [g]	Suitable for valves
12DC	DC	**M10040001**	KA132000B1 DIN43650/ISO4400	16W	100	H	121	SD00
24DC	DC	**M10040002**	KA132000B1 DIN43650/ISO4400	16W	100	H	121	SD00
24AC	RC - needs external rectifying connector	**M10040002**	KA132R11B1 DIN43650/ISO4400	16W	100	H	121	SD00
12DC	DC	**M6306012**	KA132000B1 DIN43650/ISO4400	18W	100	H	130	MSV3V/MSV30 /SD02
24DC	DC	**M6306024**	KA132000B1 DIN43650/ISO4400	18W	100	H	130	MSV3V/MSV30 /SD02
24AC	RC with integrated rectifying bridge	**M6316024**	KA132000B1 DIN43650/ISO4400	18VA	100	H	130	MSV3V/MSV30 /SD02
115AC	RC with integrated rectifying bridge	**M6316115**	KA132000B1 DIN43650/ISO4400	18VA	100	H	130	MSV3V/MSV30 /SD02
230AC	RC with integrated rectifying bridge	**M6316230**	KA132000B1 DIN43650/ISO4400	18W	100	H	130	MSV3V/MSV30 /SD02
12DC	DC, Deutsch	**M6306012DT**	DT06_2S Deutsch	16W	100	H	117	MDV30/MSV30 /SD00
24DC	DC, Deutsch	**M6306024DT**	DT06-2S Deutsch	16W	100	H	117	MDV30/MSV30 /SD00
12DC	DC	**M14040001**	KA132000B1 DIN43650/ISO4400	22W	100	H	202	MDV30/MDV31 /MSV31
24DC	DC	**M14040002**	KA132000B1 DIN43650/ISO4400	22W	100	H	202	MDV30/MDV31 /MSV31
48DC	DC	**M14040003**	KA132000B1 DIN43650/ISO4400	22W	100	H	202	MDV30/MDV31 /MSV31
24AC	RC - needs external rectifying connector	**M14040002**	KA132R11B1 DIN43650/ISO4400	22W	100	H	202	MDV30/MDV31 /MSV31
115AC	RC - needs external rectifying connector	**M14040004**	KA132R12B1 DIN43650/ISO4400	22W	100	H	202	MDV30/MDV31 /MSV31
230AC	RC - needs external rectifying connector	**M14040005**	KA132R13B1 DIN43650/ISO4400	22W	100	H	202	MDV30/MDV31 /MSV31
12DC	DC	**M18040001**	KA132000B1 DIN43650/ISO4400	31W	100	H	202	SD03LC
24DC	DC	**M18040002**	KA132000B1 DIN43650/ISO4400	31W	100	H	202	SD03LC
48DC	DC	**M18040003**	KA132000B1 DIN43650/ISO4400	31W	100	H	202	SD03LC
115AC	RC - with integrated rectifying bridge	**M18140004**	KA132000B1 DIN43650/ISO4400	31VA	100	H	202	SD03LC
230AC	RC - with entegrated rectifying bridge	**M18140005**	KA132000B1 DIN43650/ISO4400	31VA	100	H	202	SD03LC

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. Coil protection class: IP65. M160* coils supplied with AC current need and external rectifying connector. The tests were carried out at the nominal current ± 5%, at an environmental temperature of 25°C.

NOTES

SMART POWER UNIT ACCESSORIES

EASNH00001 is a SIL 2 safe Roll / Pitch sensor with CAN-BUS connection.

DISPLAY 4", 7", 10" with resistive touchscreen function.

CAN-BUS KEYBOARD with four or eight toggle switches, packed in a ruggerized IP65 enclosure.

M8 AND M12 connectors: the standar connectors which also carry the supply voltage to power the external sensors and solenoid valves.

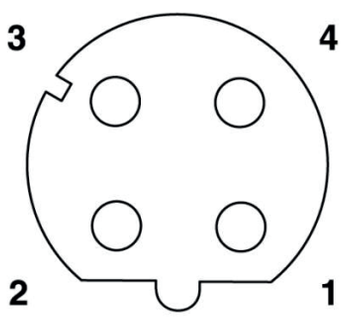
REMOTE CONTROL is equipped with a robust transmitter and four or six keys.

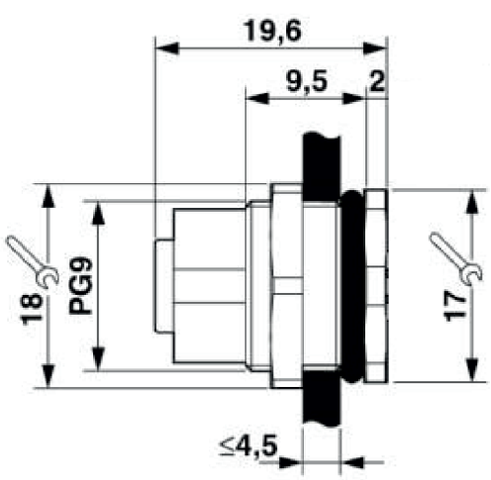
Which accessories can be mounted on the SPU?
The Smart Power Unit is rich in connectivity. Every device whit a CanOpen connectivity may communicate with our HPC-02 electronic board, provided they have an IDS file. Other options include sensors with analogic output and wi-fi devices.
Hydronit offers accessories which have been proved and validated to be added to a Smart Power Unit system.
The remote button can be customized with specific icons and programmed to meet customer needs.
The display is available in 7" and 10" format and is programmable via Codesys.

How do I connect the accessories to the HPC-02 board?
The HPC-02 offers all input and output connectors on the aluminum die-cast housing. They are M8 or M12 standard connectors which also carry the supply voltage to power the external sensors and solenoid valves, making the SPU a true «plug & play» device.

HPC02 CABLE AND CONNECTOR M12 TYPE

HPC02 electronic controller is equipped with a M12 D code Connector in order to connect the HPC02 electronic controller to a ethernet.





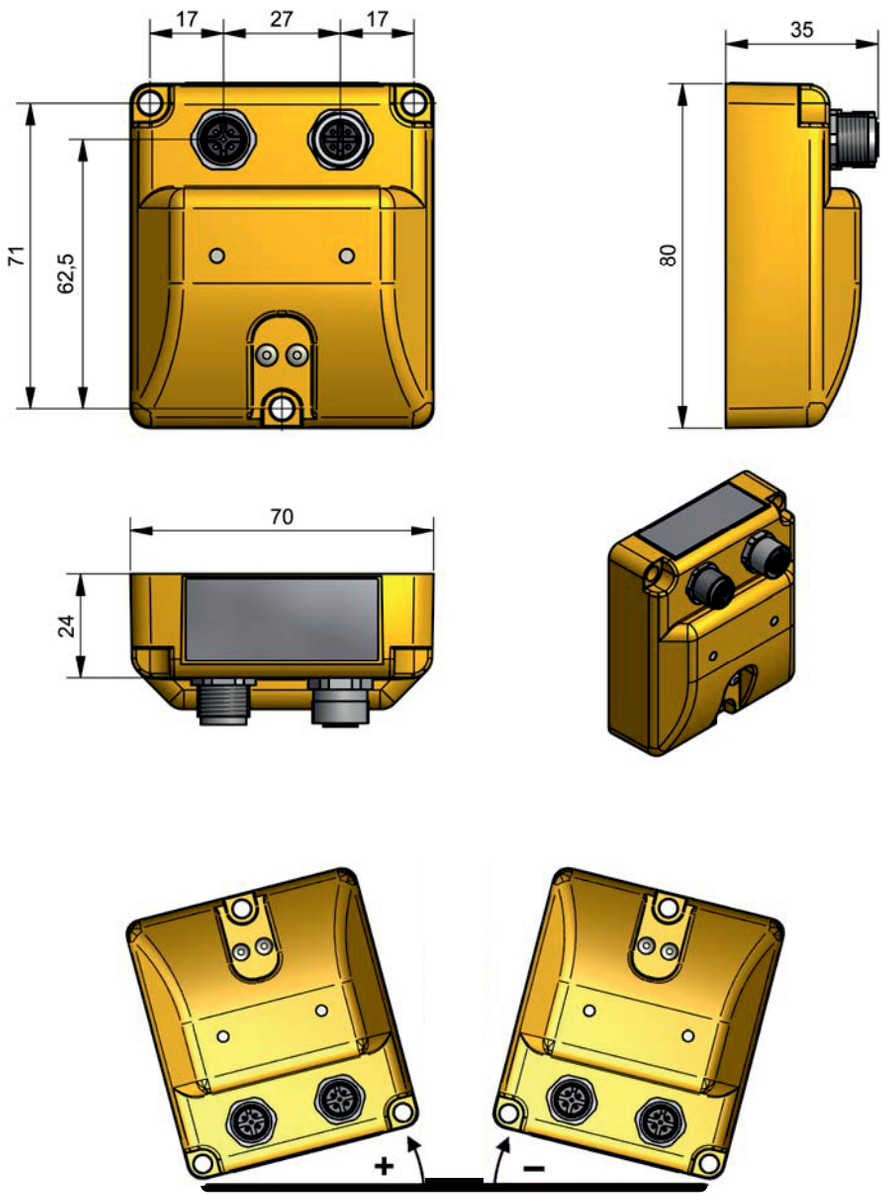
PIN	Signal
1	TxD+
2	RxD+
3	TxD-
4	RxD-

EASNH00001

EASNH00001 is a Roll / Pitch sensor with CAN-BUS connection.
It uses a temperature compensated accelerometric angle sensor, with high accuracy and repeatability. The sensor is equipped with a built in microprocessor that grants compensation and connectivity.
An armoured body is ideal for rough hydraulic application such as levelling systems for trucks.
The device is fully potted of resin and it is connected through a M12 connector.
The device can be used for SIL safety applications.

Main features

Power Supply	8 - 32 VDC
Operating temperature	-40°C / +85 °C
Ingress Protection	IP67
Connector	M12x1 5poles male A
Sensing Range	+/- 180° on X and Y
Accuracy	0,1°
Max Thermal Drift	+/- 0,006 °/K
Cut off frequency	0,9 Hz
Insulation voltage	3 kV

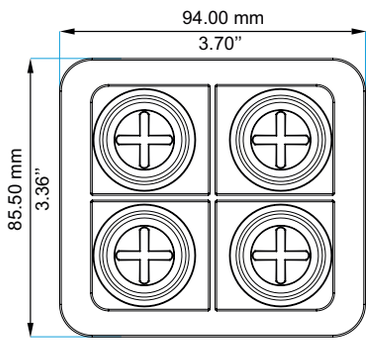


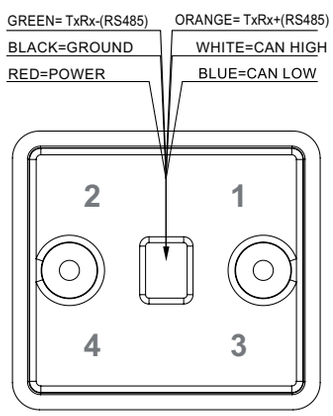
PinOut	Function
1	NC
2	+VB
3	-VB
4	CAN H
5	CAN L

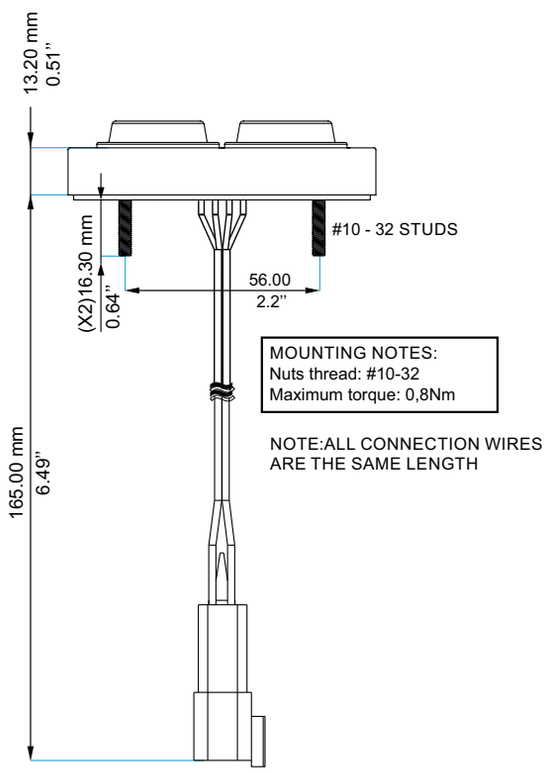
HMI-304 CAN-BUS KEYBOARD

HMI-304 is a CANBUS keyboard with four toggle switches, packed in a ruggerized enclosure. It is developed for OUTDOOR environment, with extended water and temperature resistance.

Big keys allow a reliable pressure sensation even with working gloves. Each key can be customised with a plastic insert wich allow a perfect match with the machine features driven by Hydronit SMART POWER UNIT. More than 200 symbols are available in order to control the machine. If a symbol is not present in our database, we can produce it on request. The keys are backlit and multiple colours can be driven by the main controller.







Main features

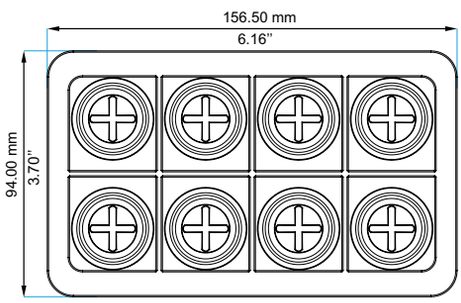
Power Supply	8-32 VDC
Operating temperature	-40°C / +85 °C
Ingress Protection	IP67
Connector	DT04-4P
Communication	CAN OPEN RS485

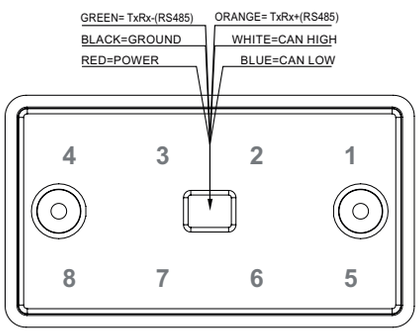
PinOut	Function
1	CAN L
2	CAN H
3	-VB
4	+VB
green cable	TxRx(RS485)
orange cable	TxRx(RS485)

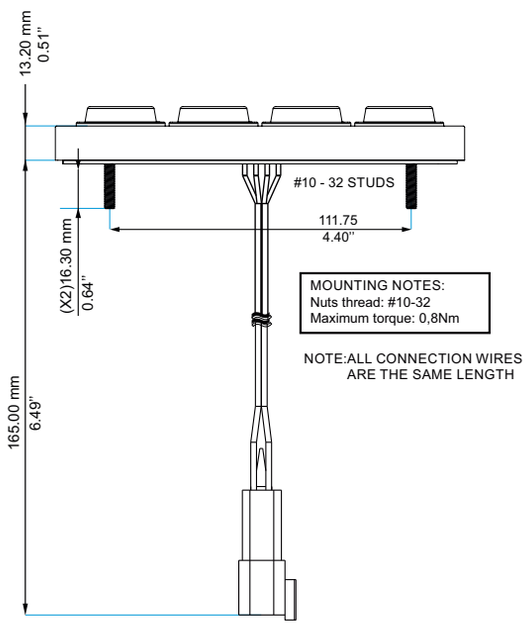
HMI-308 CAN-BUS KEYBOARD

HMI-308 is a CAN BUS keyboard with 8 toggle switches, packed in a ruggerized enclosure. It is developed for OUTDOOR environment, with extended water and temperature resistance.

Big keys allow a reliable pressure sensation even with working gloves. Each key can be customised with a plastic insert wich allow a perfect match with the machine features driven by Hydronit SMART POWER UNIT. More than 200 symbols are available in order to control the machine. If a symbol is not present in our database, we can produce it on request. The keys are backlit and multiple colours can be driven by the main controller.





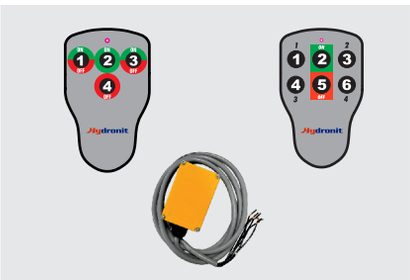


Main features

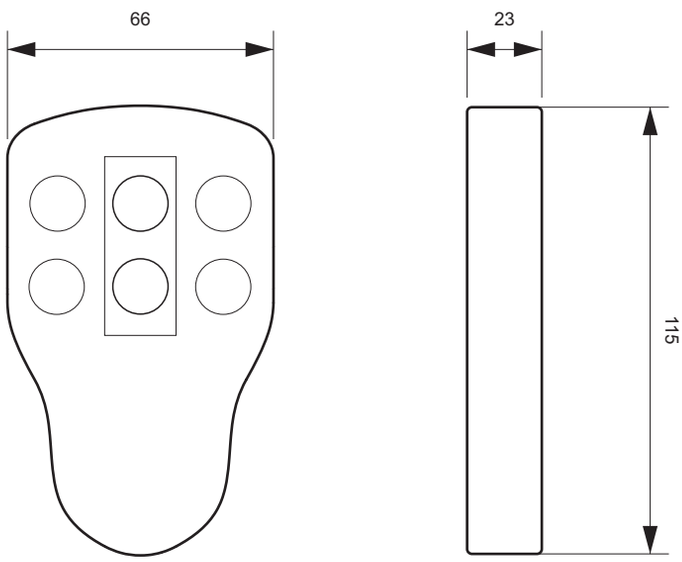
Power Supply	8-32 VDC
Operating temperature	-40°C / +85 °C
Ingress Protection	IP67
Connector	DT04-4P
Communication	CAN OPEN RS485

PinOut	Function
1	CAN L
2	CAN H
3	-VB
4	+VB
green cable	TxRx(RS485)
orange cable	TxRx(RS485)

REMOTE CONTROL (4 or 6 Keys)



the remote control is equipped with a robust transmitter and 4 or 6 keys and works on 2.4 Ghz international frequency.
The receiver, of small size, is supplied prewired and provides 4 power outputs up to 3A continuous (10A peak) to directly power solenoids or digital PLC inputs.
The symbols on buttons and their logic are customizable*.
* Minimum batch quantities apply.



Main features (Transponder)

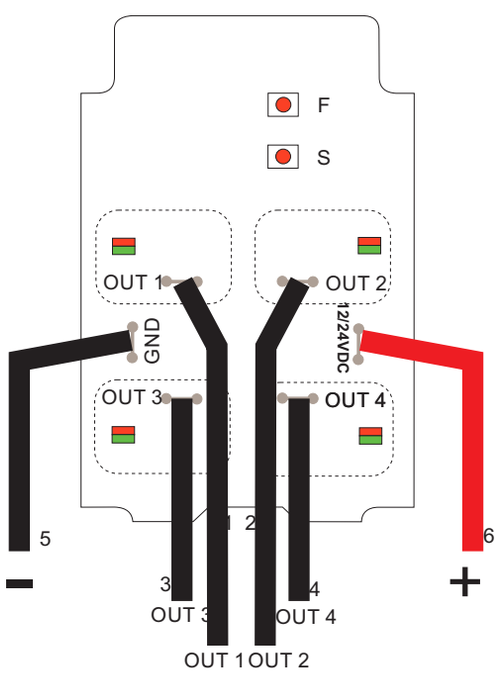
Operating temperature	-20°C / +55 °C
Ingress Protection	IP67
Communication	Digital signal/CAN OPEN

Main features (Receiver)

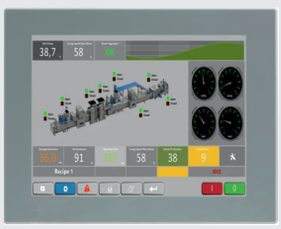
Power Supply	12-24 VDC
Operating temperature	-20°C / +55 °C
Ingress Protection	Ip65
Communication	Digital signal/CAN OPEN

Spare part code
EAELH00017
EAELH00018
EAELH00019
EAELH00020

PinOut	Function
1	OUT 1
2	OUT 2
3	OUT 3
4	OUT 4
5	V-
6	V+



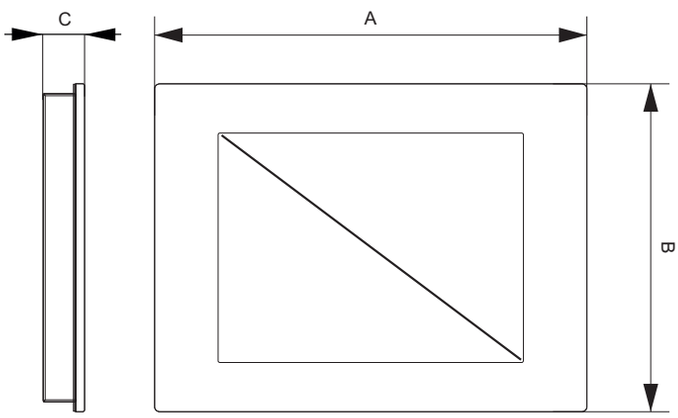
HMI WITH SOFT PLC



The displays are a colour display with resistive touchscreen function.
These displays are equipped an ARM CORTEX-A8 processor and it is pGrorammable with MOVICON.
The display area is xVGA, with high contrast for good visibility undre direct sunlight.
Is the ideal interface of the Hydronit Smart Power Unit, with possibility to show a big variety of machine information.
Connection is granted through CANopen line and USB.
The dislays are equipped with Ethernet port for IoT applications as DataLogging etc.

Main features

- Programming tool standard IEC61131-3
- Vectorial graphics
- Optional analogue - digital I/O board plug-in
- CPU 1GHz - Integrated graphics accelerator
- Rugged alluminium case
- Dual Ethernet Port - distinct networks



EADSH00002

EADSH00001

EADSH00003

DISPLAY	4.3" 16/9 TFT 480 x 272	7" 16/9 TFT 800 x 480	10" 4/3 TFT 800 X 600
TOUCH-SCREEN	Resistive	Resistive	Resistive
DIMENSIONS (MM)	140 x 100 x 29	204 x 160 x 35	274 x 216 x 35
PANEL CUT-OUT (MM)	132 x 90	181 x 144	259 x 202
POWER SUPPLY	12..24 V AC / DC - 5,5 W	24 V DC - 6,5 W	24 V DC - 7,5 W
SERIAL (PORTS)	RS485 - CAN	RS485 - CAN	RS485 - CAN
USB (PORTS)	● (1x)	● (2x)	● (2x)
ETHERNET	1x 10 / 100 Mbit/s	2x 10 / 100 Mbit/s	2x 10 / 100 Mbit/s
EXPANSION I/O SLOT 1	EAELH00014	EAELH00014	EAELH00014
EXPANSION I/O SLOT 2	○	EAELH00014	EAELH00014
SOFT-PLC	●	●	●

Hardware features

OPERATING SYSTEM	Windows® Embedded Compact 7 (WEC 7)
CPU	CORTEX-A8 @1.0GHz
RAM	512 MB DDR3
FLASH MEMORY / STORAGE	4GB

Software protocols

PROTOCOLS	Modbus RTU - Modbus TCP/IP - OPC-UA client - ADS Twin CAT - B+R System 2000 PVI - S7/TCP - FINS Serial - FINS Ethernet - NJ Ethernet/IP - MELSEC Serial - MELSEC Ethernet - DF1 Protocol - Ethernet/IP

NOTES