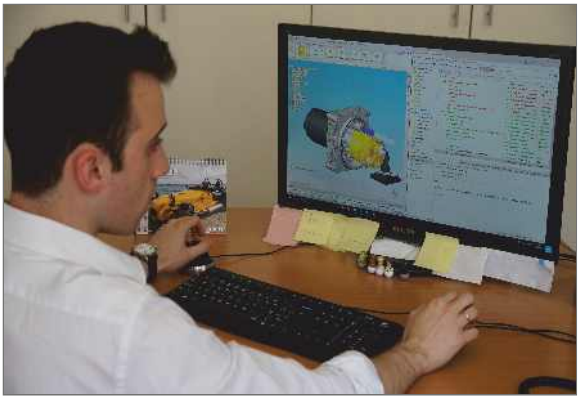
Hydronit

2017
AC & DC COMPACT
Hydraulic Power Packs

Why choose Hydronit?

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




DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

Si certifica che il sistema di gestione di/This is to certify that the management system of

HYDRONIT S.r.l.

Via Pastrengo, 62 - 20814 Varedo (MB) - Italy

È conforme ai requisiti della norma per il Sistema di Gestione/ Has been found to conform to the Management System standard:

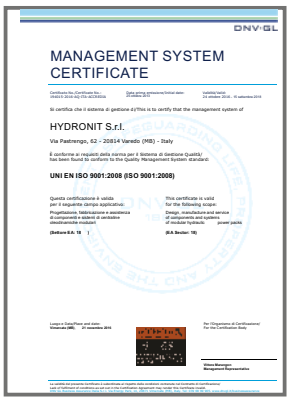
ISO 50001:2011

Valutato secondo le prescrizioni del Regolamento Tecnico RT-32/ Evaluated according to the requirements of Technical Regulations RT-32

Questa certificazione è valida per il seguente campo applicativo: / This certificate is valid for the following scope:

Progettazione, fabbricazione e assistenza di componenti e sistemi di centraline oleodinamiche modulari / Design, manufacture and service of components and systems of modular hydraulic power packs

(Settore Civile/Industriale: 18) / (Civil/Industrial Sector: 18)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UNI EN ISO 9001:2008 (ISO 9001:2008)

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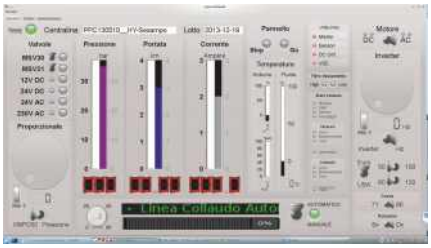
(Settore EA: 18) (EA Sector: 18)

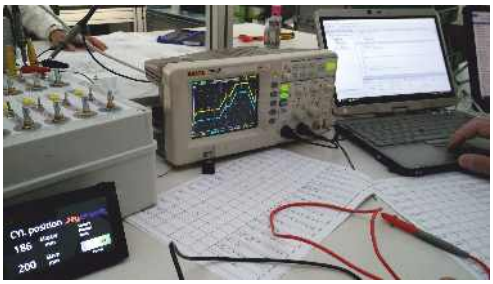
Hydronit - The sustainable factory

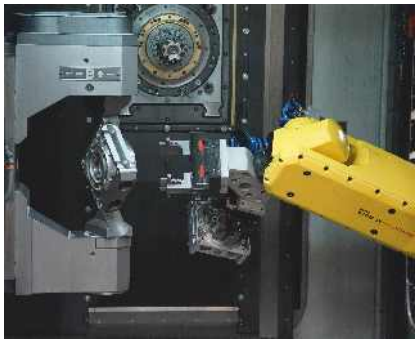
- Production is carried out in a building of 13000 m^3 **requiring almost no use of fossil fuels** to operate

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

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





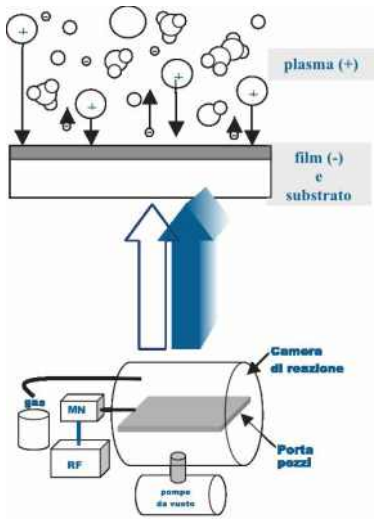


Countinuous innovation

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

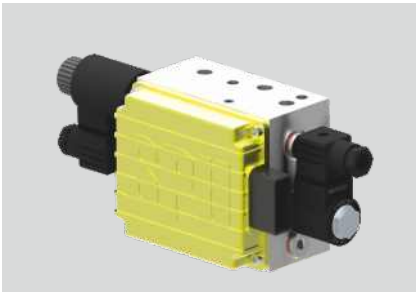
Hydronit Srl has developed over the years a smart **Product Configurator** which allows the user, from a PC or mobile device web browser:
- to simply and quickly create the **speaking code** of the unit starting from the customer's specific requirements
- to **limit the possible mistakes** in the product 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.

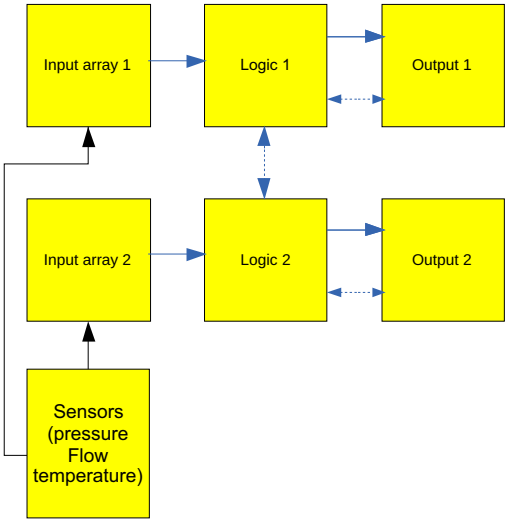
The access to the web configurator is offered free of charge to official partners of Hydronit Srl.

The Smart power unit (SPU)

The **SPU** is the first generation of **Programmable Modular 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.**



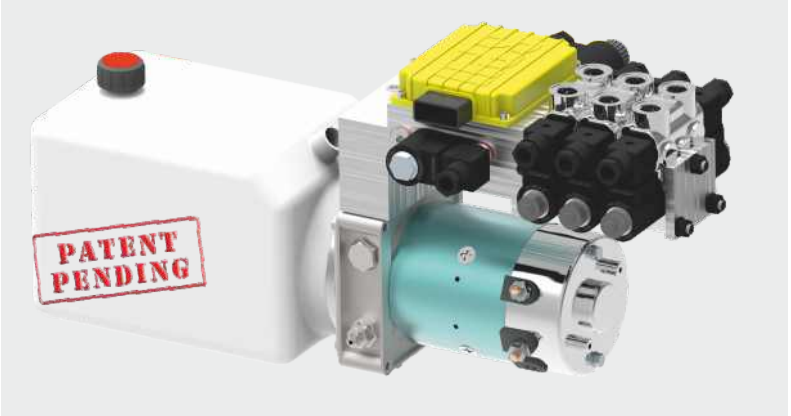


Features

The core of the Smart Power Unit is the **HPC (Hydraulic Process Controller)**: a programmable computer with SAFETY Architecture. It integrates Input ports, sensors, double processors + an additional watchdog CPU to enable SAFETY features, power Output in order to directly drive, for example, solenoid operated proportional or on-off valves without the need of external controllers.
The **Hydraulic Process Computer** is laying on an Aluminium Hydraulic Manifold which integrates fluid pressure and temperature sensors and optional P/Q proportional control valves and LS functionality.

Hydraulic Integration

The **HPC** is perfectly integrated with the standard **Hydronit Compact Power Pack** range.
Hydraulic circuits are availble with redundant valves in order to match mechanics to electronics and offer a SAFETY RELATED mechatronic power pack, ready for **Industry 4.0** and **Smart Manufacturing**.



Built in Sensors

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

A second ceramic **Pressure sensor**, with reading up to 5 bar, is applied to the fluid Return line. An oil temperature sensor completes the fluid monitoring.

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

SEAL OF EXCELLENCE

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

The **Smart Power Unit**, 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.**

The **Smart Power Unit** is patent pending.

Hydronit hydraulic range

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

AC & DC MICRO hydraulic power packs

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

AC & DC COMPACT hydraulic power packs

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

DC electropumps

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

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.

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.

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

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

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

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"BSPP exit port
N	open plug with 1/4"BSPP exit port
P	plug passing through 1/4"BSPP 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"BSPP exit port
N	open plug with 1/4"BSPP exit port
P	plug passing through 1/4"BSPP 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

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

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
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

Some typical applications

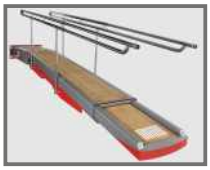
The **high level of modularity** and **circuit flexibility** of Hydronit hydraulic power packs and electropumps allow their use in the most varied applications: in addition to typical applications of **lifting equipment** and hydraulic **vehicles** (dump trucks, tail lifts, ...) and in the **industrial** 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










BASIC INSTRUCTIONS

General application

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 . M5 for pumps gr.0,5: 8÷9,5 Nm . M6: 8÷10 Nm . M8: 16÷20 Nm . M8 for pumps gr.1: 21÷25 Nm . M10: 30÷40 Nm . 3/8-16 UNC: 30÷40 Nm . 5/16-18 UNC: 16÷20 Nm . Valves and plugs 1/4 BSP (ISO 228): 15÷20 Nm . Valves and plugs 3/4-16 UNF: 20÷40 Nm . Relief valves M20x1,5: 50 Nm . Tank's plugs 1/2 BSP (ISO 228): max 10 Nm . Relief valves M14x1: 15÷25 Nm . Valves and plugs 9/16-18 UNF: 6÷20 Nm . Valves and plugs 5/8-18 UNF: 15÷25 Nm . Valves 7/8-14 UNF: 45÷55 Nm . Relay's electric poles 5/16-24 UNF: 5 Nm
Fluid contamination	Must be better than class 20/18/15 ISO 4406

AC & DC ELECTRIC MOTORS

Integral AC motors: the engineered solution for compact and optimised power units from 0,25 to 4 kW, single or three phase, 4 or 2 poles. These AC motors are **directly flanged** on the central manifold for extra compactness. A **single tang drive coupling** can suit all frame sizes and powers.
We suggest you to adopt these advanced motors because of their advantages over standard B14 AC motors and because they are **designed specifically** for our hydraulic mini power packs, offering a **higher power density** and **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).

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

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

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

Q & A

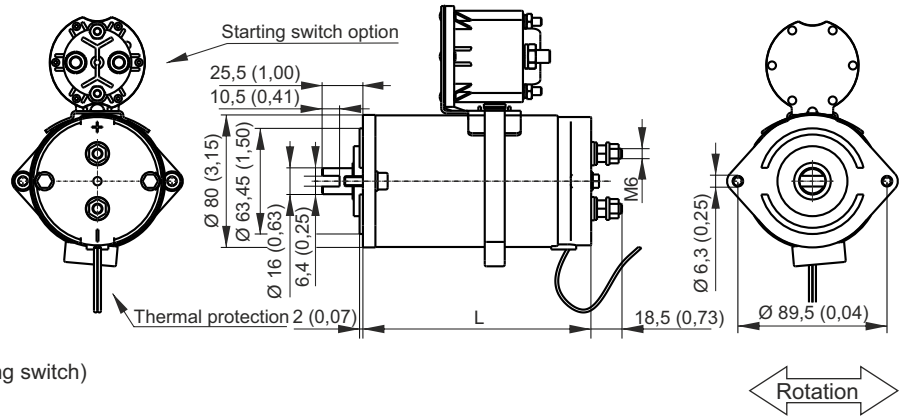
Are Integral AC motors compliant with the European Union Minimum Energy Performance Standards?
Hydronit AC integral motors are manufactured using the best technologies currently available and are specifically designed for mini power pack duties, typically intermittent ones. Hydronit motors have higher 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, IE3 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.

INTEGRAL DC MOTORS Ø80



Permanent magnets
Protection degree: IP54
Insulation class: F
Weight 300W/500W/800W: 2,6 kg (without starting switch)
Weight 150W: 2 kg (without starting switch)

Code

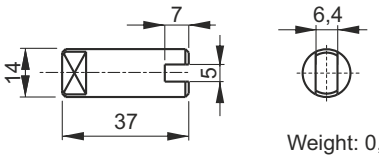
Description	Assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current	L
150W 12V DC + thermal protection	**0,15 12DC_T**	**M46C1ST01**	S2: 20 min S3: 30% ED	1200 rpm	28 A	108 mm
150W 24V DC + thermal protection	**0,15 24DC_T**	**M46C2ST01**	S2: 20 min S3: 30% ED	1650 rpm	12 A	108 mm
300W 12V DC + thermal protection	**0,3 12DC_T**	**M46C1ST03**	S2: 9 min S3: 18% ED	1800 rpm	39 A	137 mm
300W 24V DC + thermal protection	**0,3 24DC_T**	**M46C2ST03**	S2: 9 min S3: 18% ED	1800 rpm	20 A	137 mm
500W 12V DC + 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
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

Options & couplings

Description	Assembly code	Spare part code
12V DC 150 Amp start relay + mounting kit	**S150T 12DC 80**	**M47TC0001+M47SK0801**
24V DC 150 Amp start relay + mounting kit	**S150T 24DC 80**	**M47TC0002+M47SK0801**
12VDC 100 Amp start relay (reversible)	**R100 12DC***	**M47NB0001**
24VDC 100 Amp start relay (reversible)	**R100 24DC***	**M47NB0002**
Coupling for Ø 80 DC motors and gr.1 pump	**E36200002**	
Coupling for Ø 80 DC motors and gr.0 pump	**E36200006**	
Wired remote control with 2 buttons and 3m cable	**P0201** (single acting)	
Wired remote control with 4 buttons and 3m cable	**P0202** (double acting)	

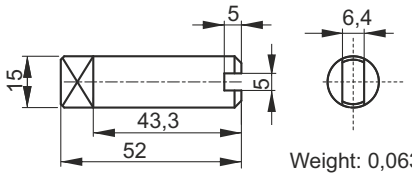
Notes:
The starting switch mounting kit is provided when specifying the **/S150** as motor option in the PPC assembly code.
When ordering spare starting switches, they must be ordered separately (code: M47SK0801).
The coupling is already included when specifying the motor in the PPC assembly code.
It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

Coupling E36200002



Weight: 0,041 kg

Coupling E36200006

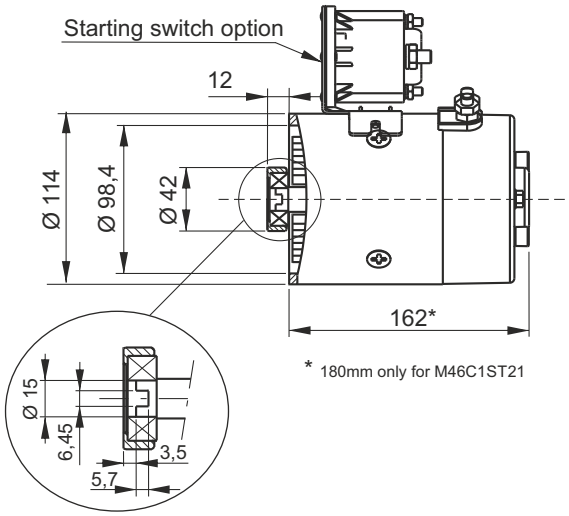


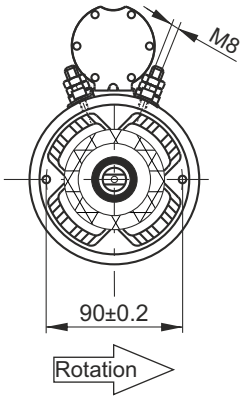
Weight: 0,063 kg

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

INTEGRAL DC MOTORS Ø114

Compound wound
Protection degree: IP54
Insulation class: F
Weight: 7,05 kg (without starting switch)





Code

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

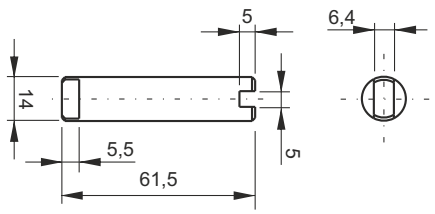
Options & couplings

Description	Assembly code	Spare part
12V DC 150 Amp start switch + mounting kit	**S150T 12DC 112**	**M47TC0001 + M47SK1121**
24V DC 150 Amp start switch + mounting kit	**S150T 24DC 112**	**M47TC0002 + M47SK1121**
Plastic protection cover for Ø114 motors	**MC**	**F16000001**
Coupling for Ø114 motors and gr.0 pump	**E36200005**	
Coupling forØ114 motors-Ø125DC motors and gr.1pump	**E36200001**	
Remote wired control with 2 buttons and 3m cable	**P0201** (single acting)	
Remote wired control with 4 buttons and 3m cable	**P0202** (double acting)	

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

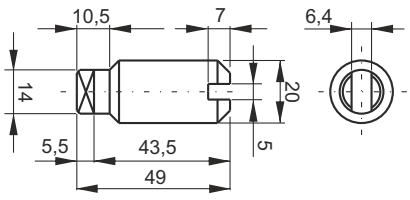
The coupling is already included when specifying the motor in PPC assembly code.
It is to be indicated only when ordering PPC with no motor but with coupling.

Coupling E36200005



Weight: 0,068 kg

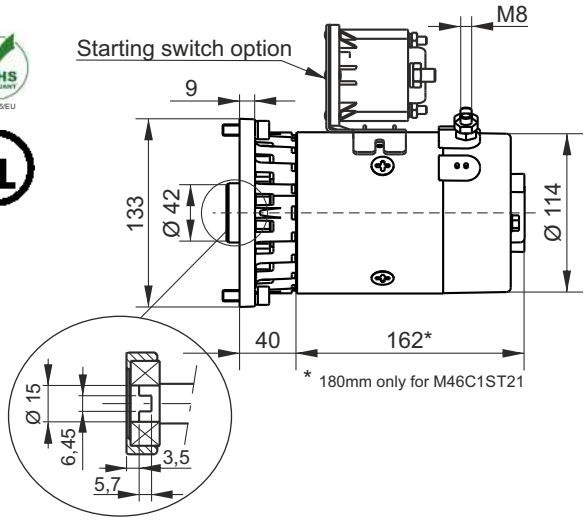
Coupling E36200001

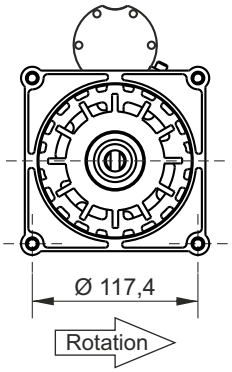


Weight: 0,094 kg

INTEGRAL DC MOTORS Ø114 WITH COOLING FAN

Compound wound
Protection degree: IP20
Insulation class: F
Weight: 8,0 kg (without starting switch)





Code

Description	Assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current
1600W 12V DC with cooling fan + thermal protection	**1,6 12DC_TF**	**M46C1SF16**	S2: 4 min S3: 10% ED	2800 rpm	210 A
2100W 12V DC with cooling fan + thermal protection	**2,1 12DC_TF**	**M46C1SF21**	S2: 3,5 min S3: 10% ED	2400 rpm	300 A
2200W 24V DC with cooling fan + thermal protection	**2,2 24DC_TF**	**M46C2SF22**	S2: 4,5 min S3: 15% ED	2400 rpm	130 A

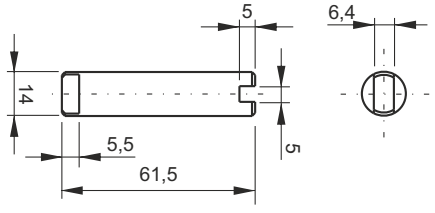
Options & couplings

Description	Assembly code	Spare part
12V DC 150 Amp start switch + mounting kit	**S150T 12DC 112**	**M47TC0001 + M47SK1121**
24V DC 150 Amp start switch + mounting kit	**S150T 24DC 112**	**M47TC0002 + M47SK1121**
Plastic protection cover for Ø114 motors	**MC**	**F16000001**
Coupling for Ø114 motors and gr.0 pump	**E36200005**	
Coupling forØ114 motors-Ø125DC motors and gr.1pump	**E36200001**	
Remote wired control with 2 buttons and 3m cable	**P0201** (single acting)	
Remote wired control with 4 buttons and 3m cable	**P0202** (double acting)	

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

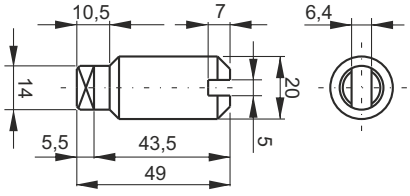
The coupling is already included when specifying the motor in PPC assembly code.
It is to be indicated only when ordering PPC with no motor but with coupling.

Coupling E36200005



Weight: 0,068 kg

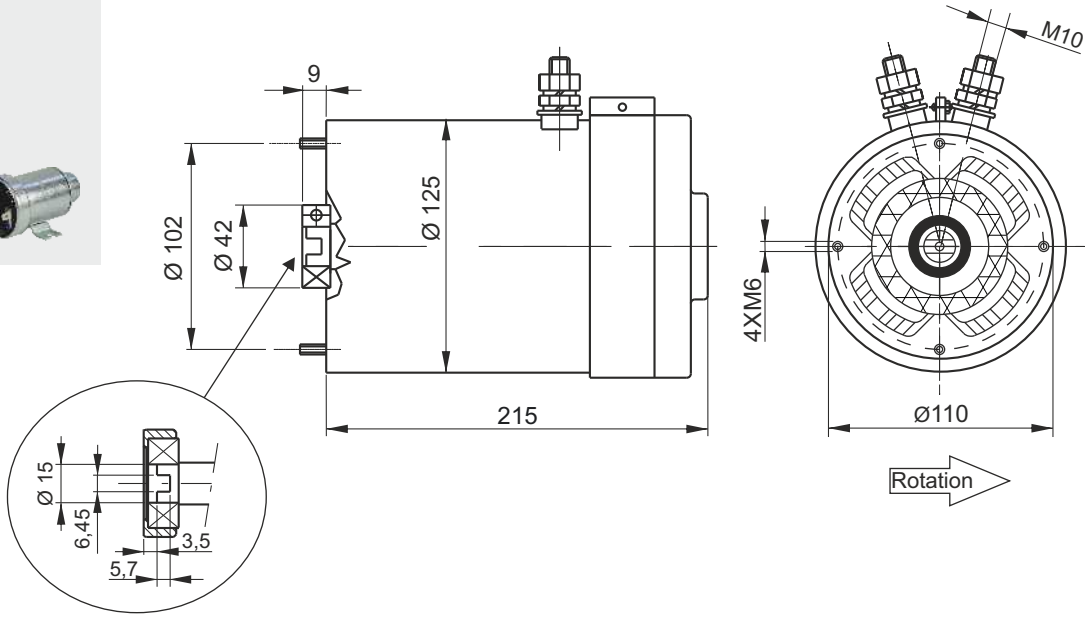
Coupling E36200001



Weight: 0,094 kg

INTEGRAL DC MOTORS Ø125

Compound wound
Protection degree: IP42
Insulation class: F
Weight: 11kg (without starter)



Code

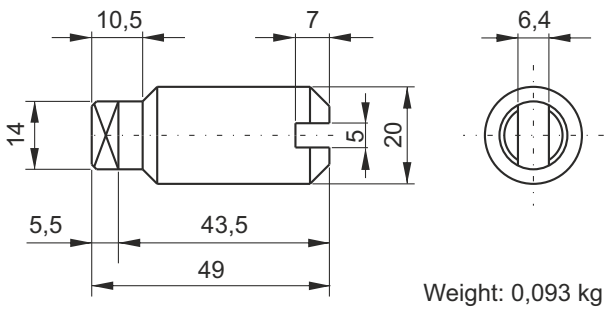
Description	Assembly code	Spare part code	Nomional duty cycle	Nominal speed	Nominal current
3000W 24 V DC + thermal protection	**3 24DC_T**	**M46C2ST30**	S2: 4min S3: 8% ED	2600 rpm	180 A
4000W 24 V DC + thermal protection	**4 24DC_T**	**M46C2ST40**	S2: 3min S3: 6% ED	3500 rpm	230 A

Options & couplings

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

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

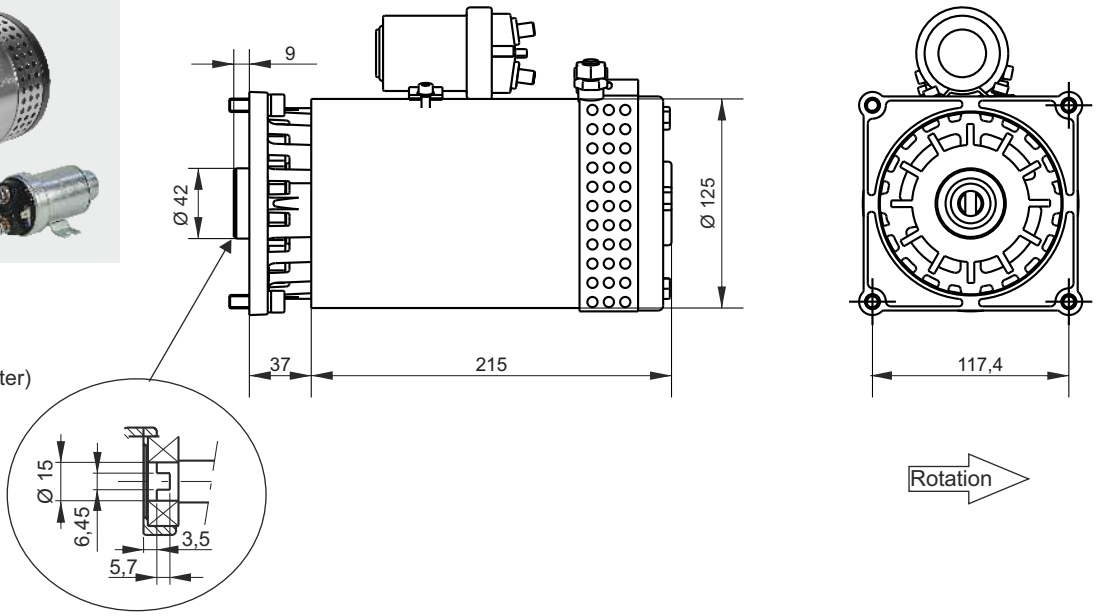
Coupling E36200001



Weight: 0,093 kg

INTEGRAL DC MOTORS Ø125 WITH COOLING FAN

Compound wound (3kW)
Series wound (4kW)
Protection degree: IP20
Insulation class: F
Weight: 11,45kg (without starter)



Code

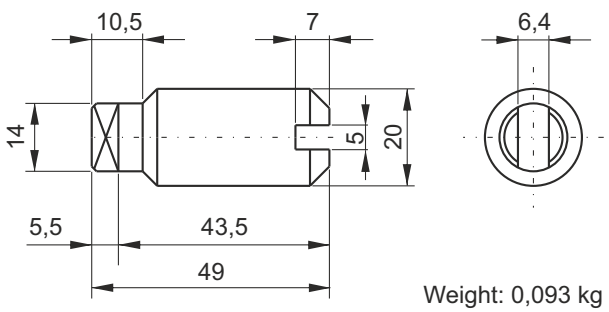
Description	Assembly code	Spare part code	Nomional duty cycle	Nominal speed	Nominal current
3000W 24 V DC with cooling fan + thermal protection	**3 24DC_TF**	**M46C2SF30**	S2: 5min S3: 8% ED	2600 rpm	180 A
4000W 24 V DC with cooling fan + thermal protection	**4 24DC_TF**	**M46C2SF40**	S2: 4min S3: 6% ED	3500 rpm	230 A

Options & couplings

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

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

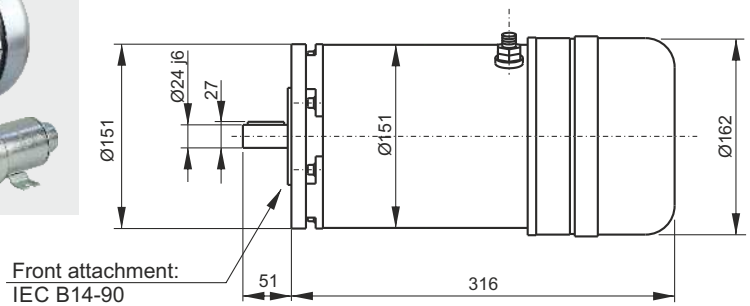
Coupling E36200001

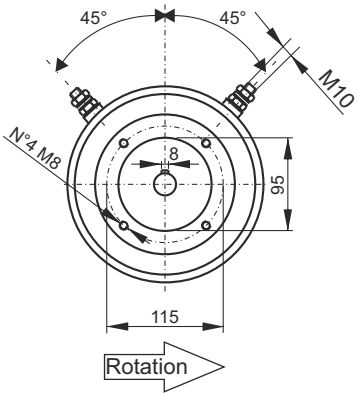


Weight: 0,093 kg

HEAVY DUTY DC MOTORS Ø 151 WITH COOLING FAN

Series wound
Protection degree: IP20
Insulation class: F
Weight: 21,5 kg





Code

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

Mounting kit & options

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

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

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

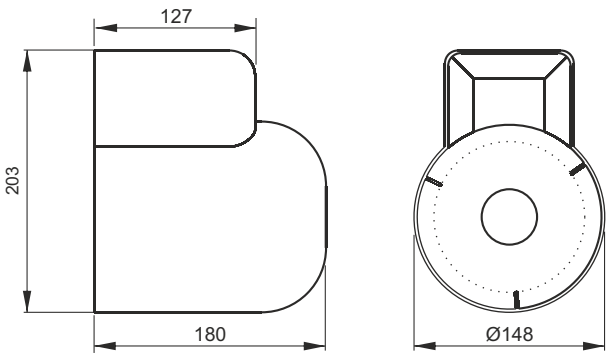
Other B14 DC motors for heavy duty or special applications

They are available in sizes Ø125, Ø151 or Ø191 in multiple executions, engineered to perform heavy duty cycles and tailor made to suit each specific application, with or without 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.

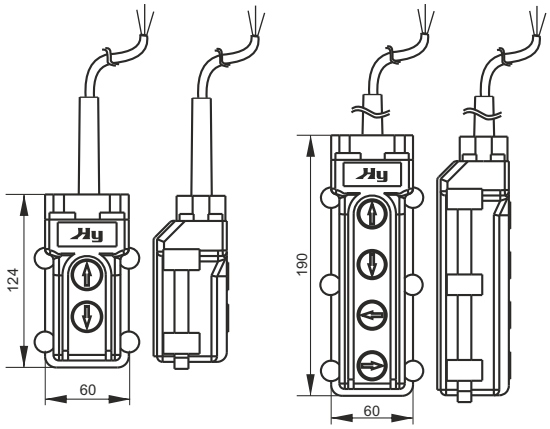
DC MOTOR OPTIONS

Plastic cover for DC motors Ø 114
Weight: 0,27 kg

Wired remote control
Weight: 0,60 kg
Protection degree: IP65
Max Current @ Voltage:
2A@400VAC; 5A@220VAC/24VDC/12VDC



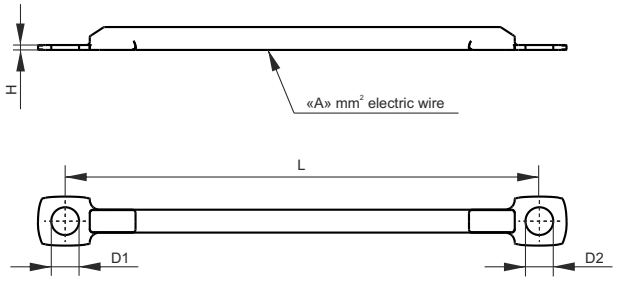
Assembly code	Spare part code
MC	F16000001



Description	Spare part code
Wired remote control with 2 buttons single/double acting	P0201
Wired remote control with 4 buttons double acting	P0202

Mounting kit for DC motors

Motor Type	Mounting Kit code	Mounting kit sub-parts	
		Power cable	Fixing system
Ø 80	M47SK0801	M47SK000A	Clamp band E60513080
Ø 114	M47SK1121	M47SK000C	Screws TCEIM5X10 + washer WASHL05
Ø 125 - 151	M47SK1251	M47SK000E	Screws TCEIM5X10 + washer WASHL05



Power Cables

Spare part	L (mm)	A (mm²)	D1 (mm)	D2 (mm)	H (mm)
M47SK000A	130	10	6	8	1,5
M47SK000B	130	2	6	5	1,5
M47SK000C	130	16	8	8	2
M47SK000D	130	2	8	5	1,5
M47SK000E	130	25	10	8	2
M47SK000F	130	2	10	Faston 6,3 mm	1,5

DC MOTOR OPTIONS

Starting relay 150A
for motors Ø80 - Ø114

Weight: 0,38kg
Protection degree: IP67
Max current draw: 2,07A@12VDC - 0,99A@24VDC (20°C)
Standard temperature range: -40°C to +82°C

Nominal current	Peak Current (3ms)	Spare part code
150A	800A	**M47TC0001 (12V DC)** **M47TC0002 (24V DC)**

Coils	M47TC0001 12V DC	M47TC0002 24V DC
Max Sustained Duty Cycle	25%	25%
Max On-Time at nominal current	6 min	6 min
Pull In Voltage	7,6 V	15,5 V
Hold minimum Voltage	3,5 V	7,0 V
Coil Resistance [Ohms]	5,7 Ω	20,1 Ω

Starting relay 200A
for motors Ø125 and 151

Weight: 0,5kg 12V - 0,7kg 24V
Protection degree: IP54
Max current draw: 1,6A@12VDC - 0,7A@24VDC
Max environment temperature: 60°C

Nominal current	Peak Current (5s)	Spare part code
200A	800A	**M47ZC0001 (12V DC)** **M47ZC0002 (24V DC)**

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

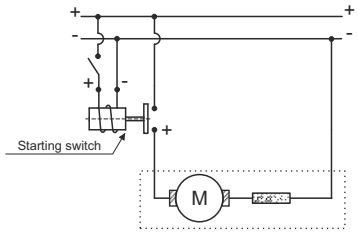
Nominal current	Peak Current (40ms)	Spare part code
100A	400A	**M47NB0001 (12V DC)** **M47NB0002 (24V DC)**

Recommended working position: either horizontal or vertical with poles set upwards.

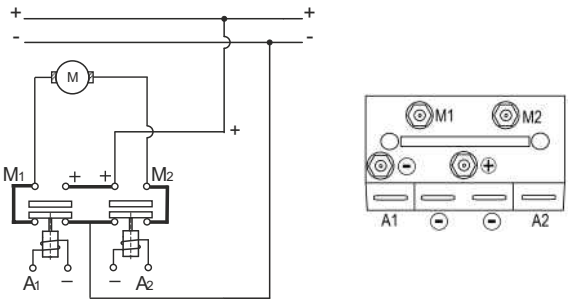
DC MOTOR CHOICE AND ELECTRIC CONNECTION SCHEME

Electrical connection scheme

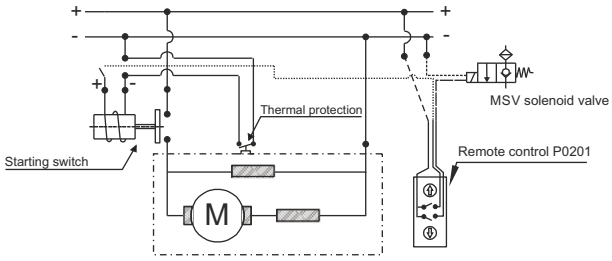
M47*C000*



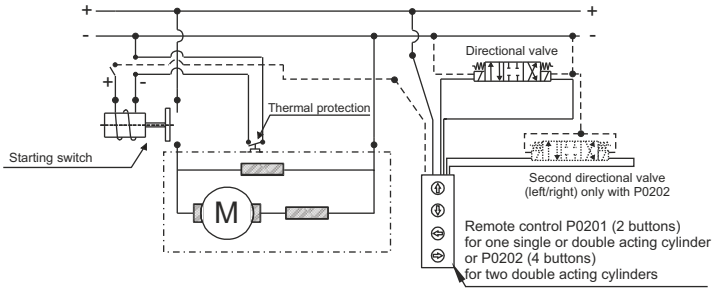
M47NB000*



Single acting cylinder



Double acting cylinder



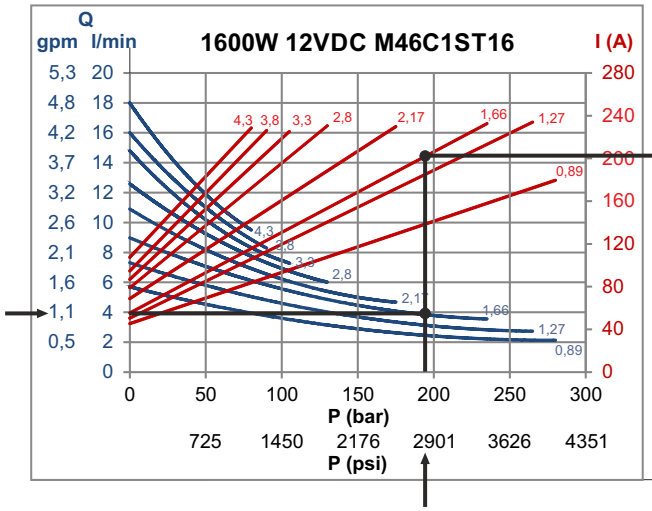
DC motors selection

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.

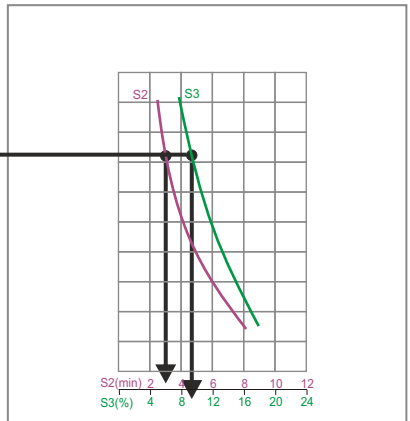
Example:

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.

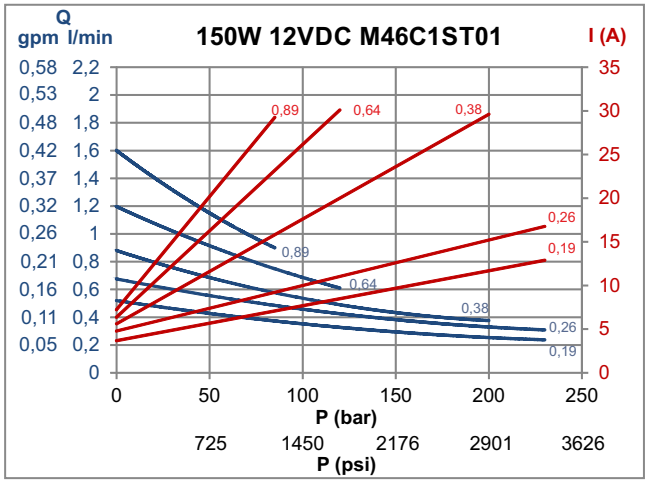
Motor-Pump Performances

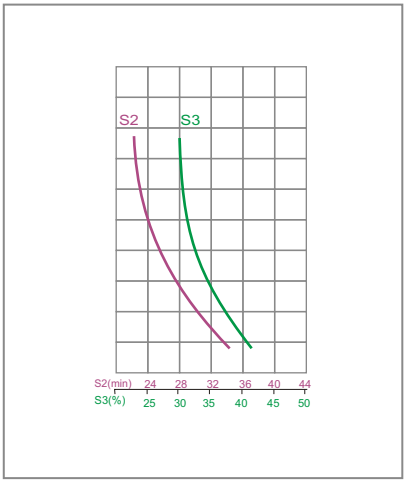


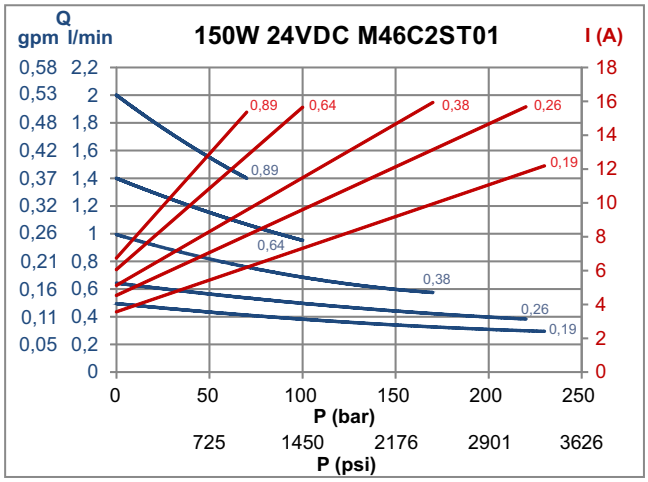
Motor Ratings

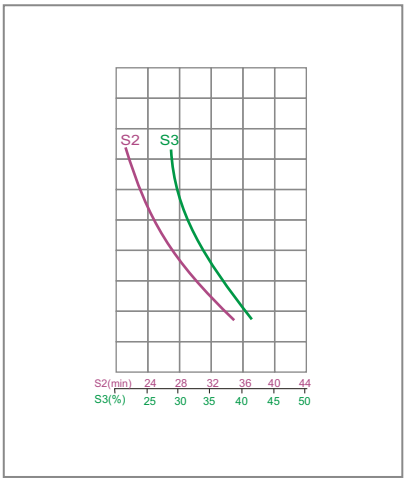


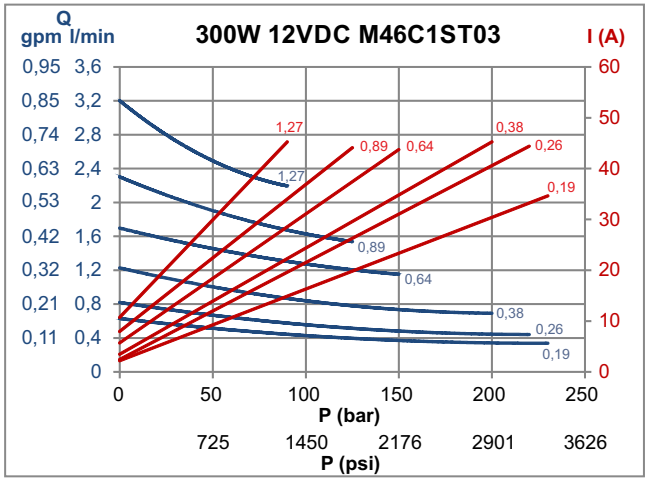
DC MOTORS Ø80 DIAGRAMS

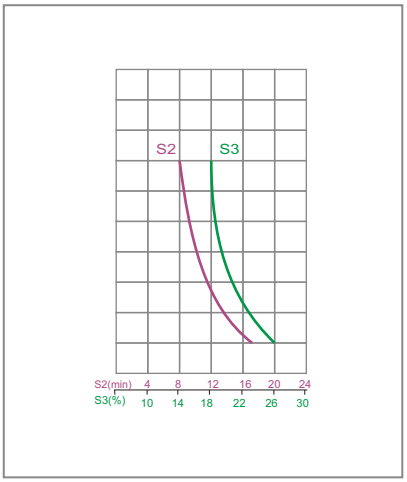






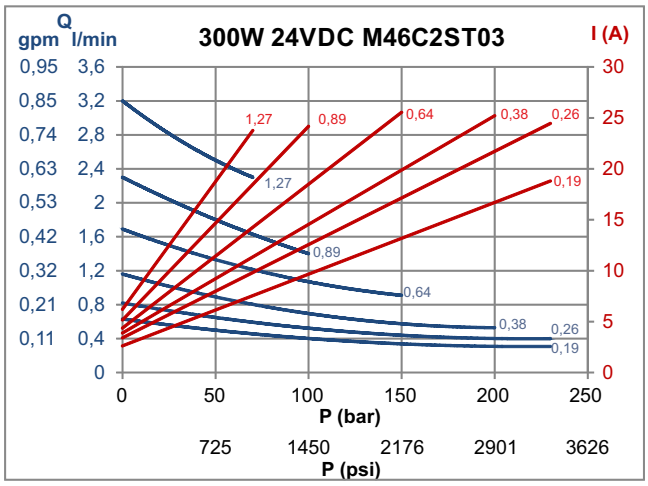


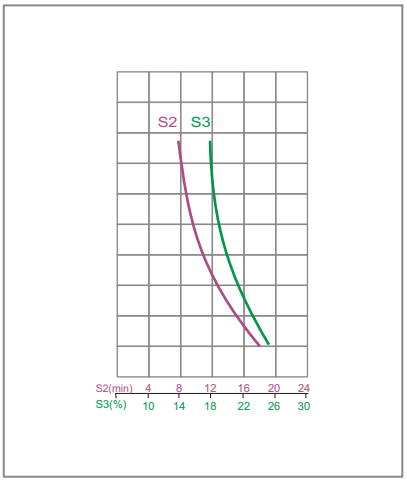


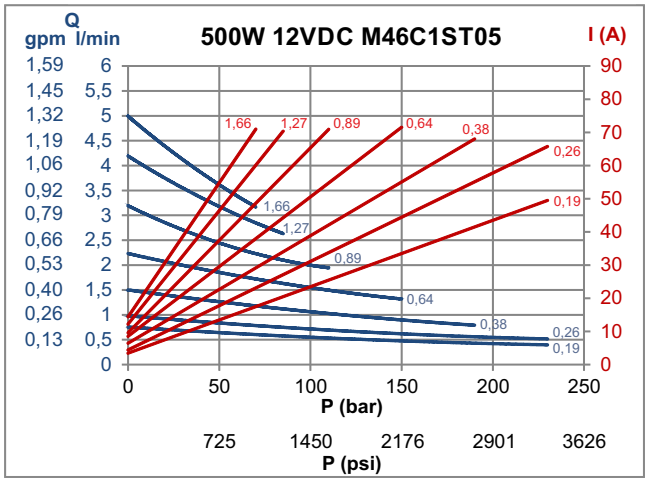


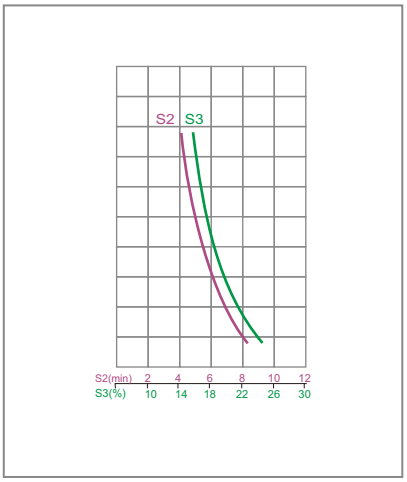
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

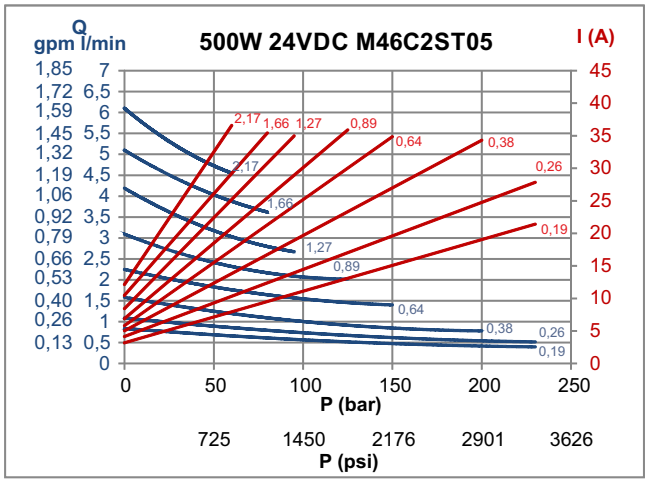
DC MOTORS Ø80 DIAGRAMS

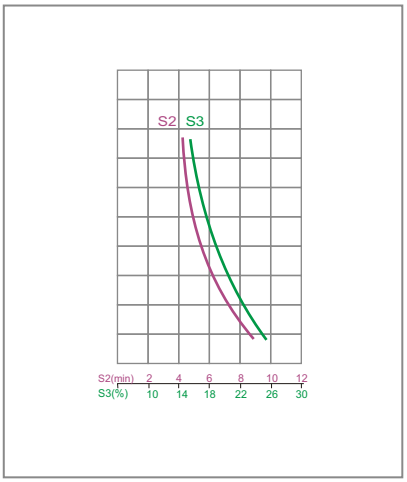






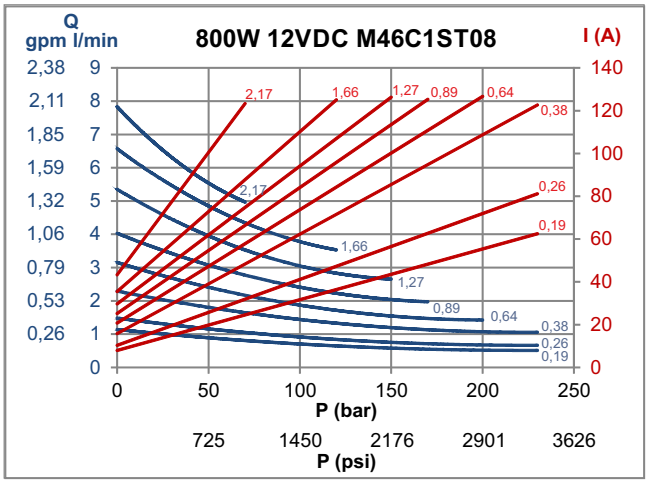


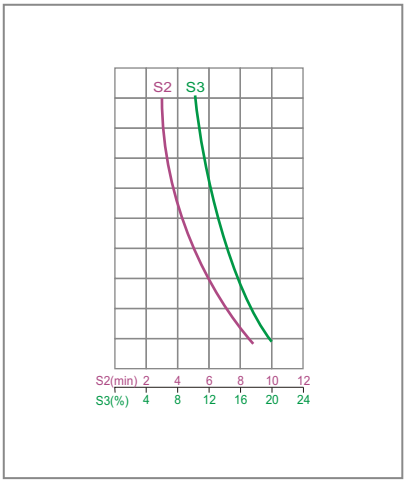


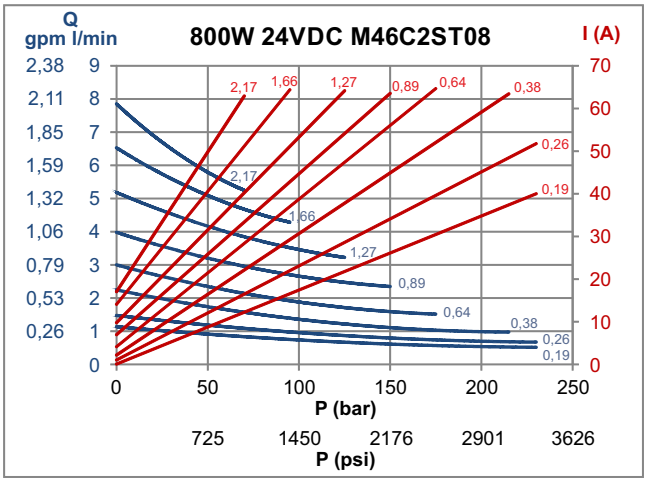


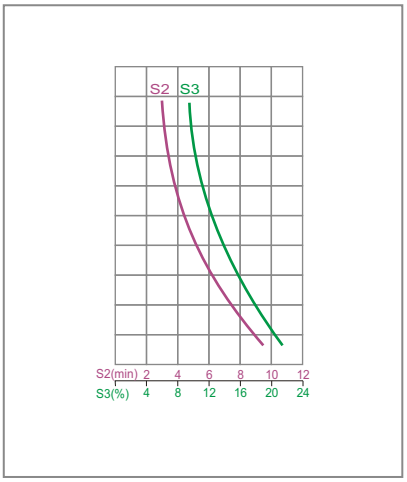
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

DC MOTORS Ø80 DIAGRAMS



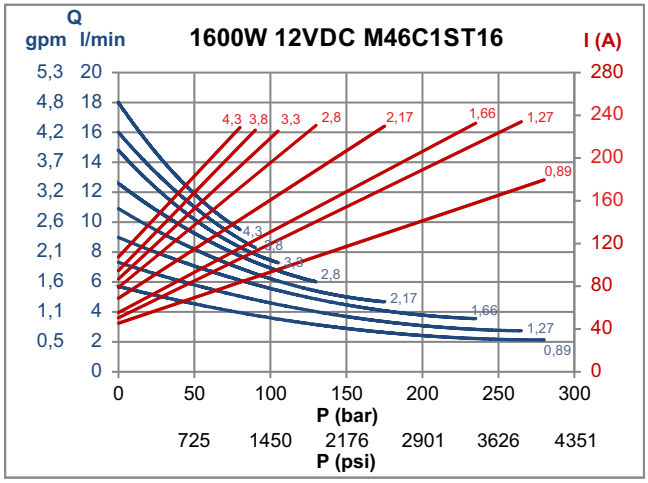


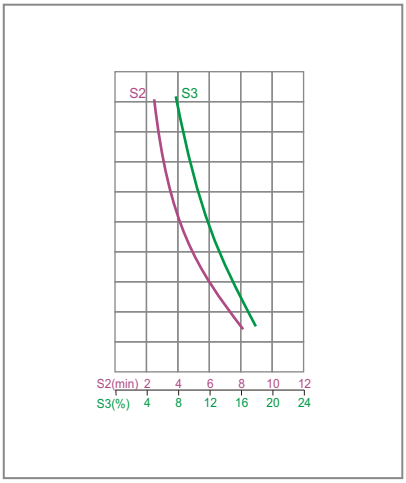


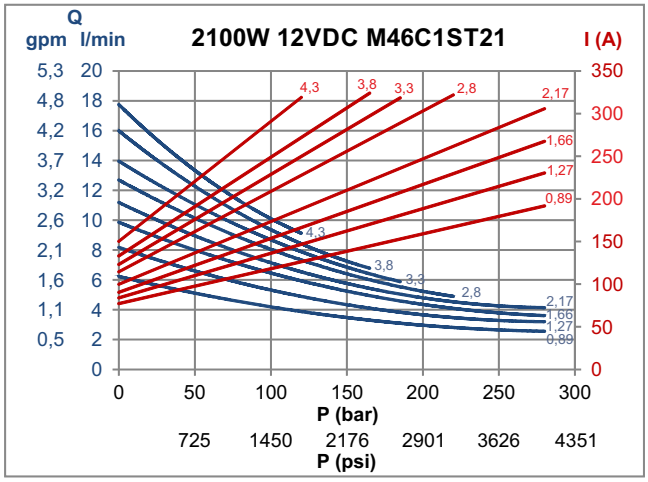


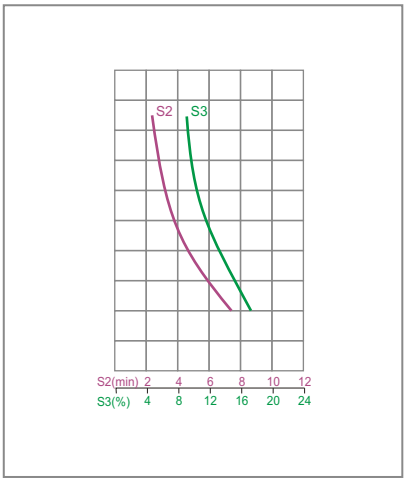
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

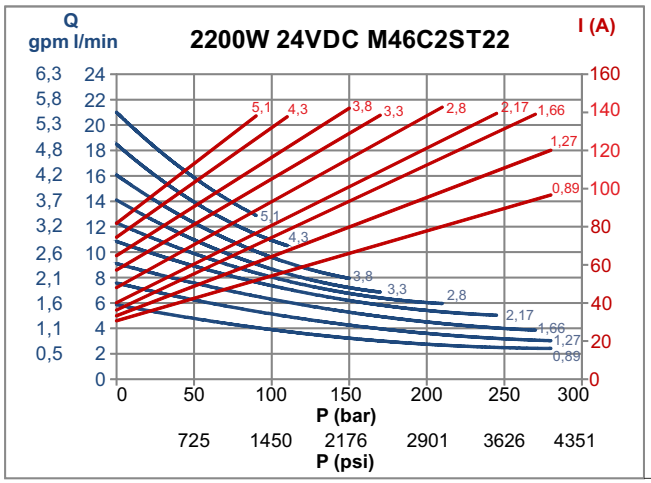
DC MOTORS Ø114 DIAGRAMS

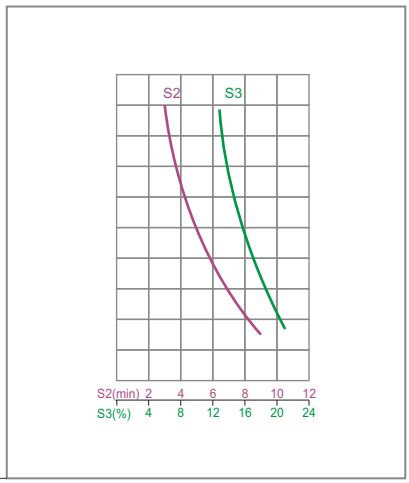






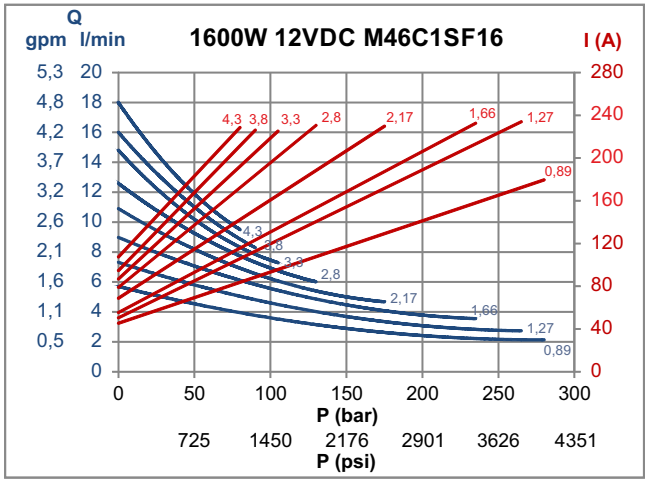


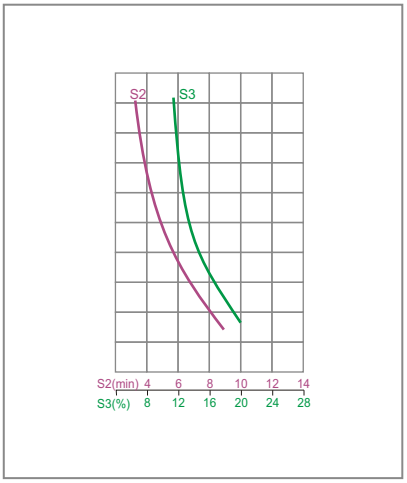


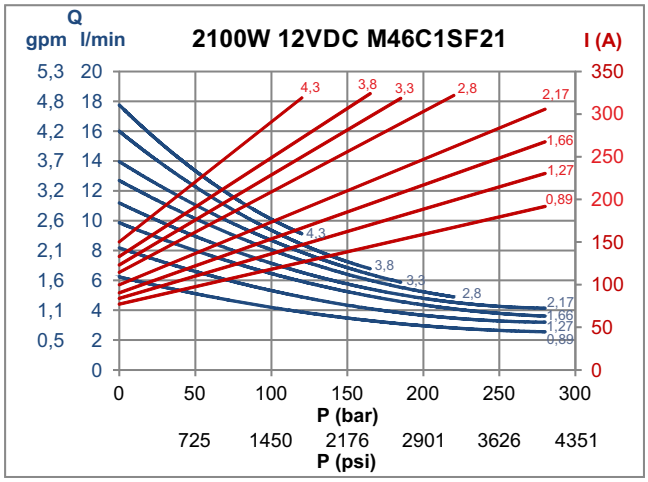


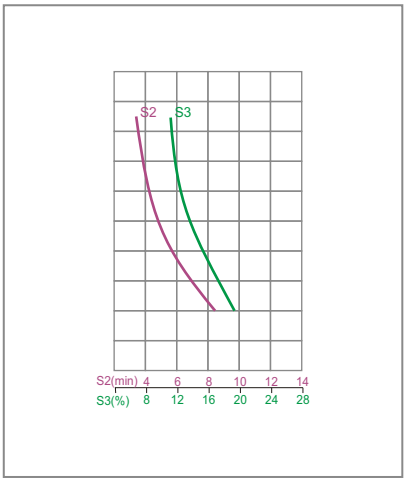
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

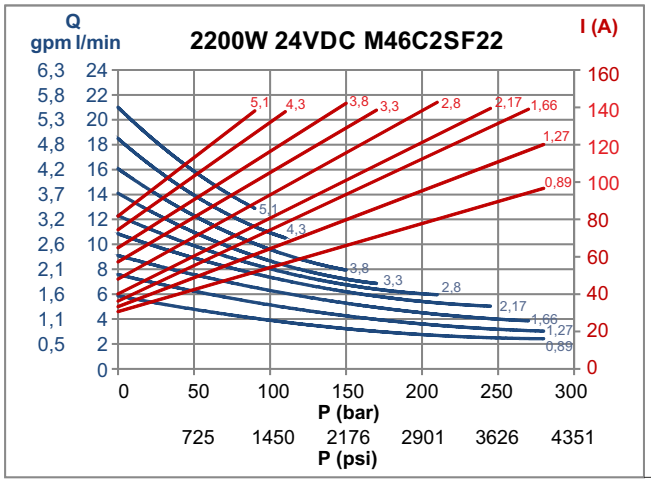
DC MOTORS Ø114 DIAGRAMS

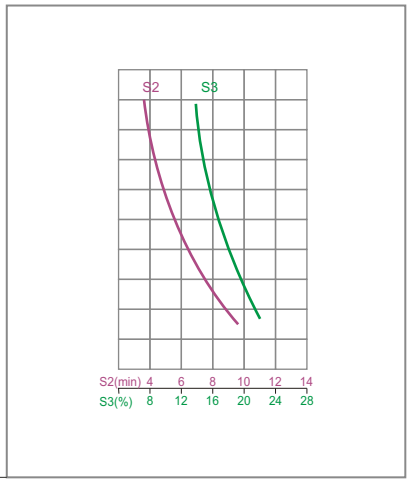






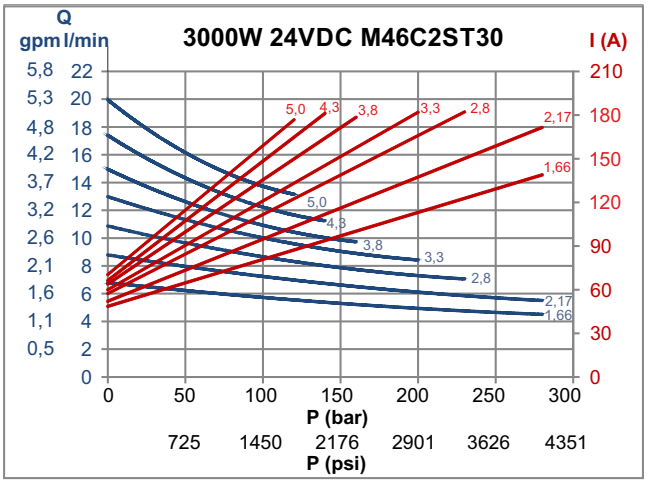


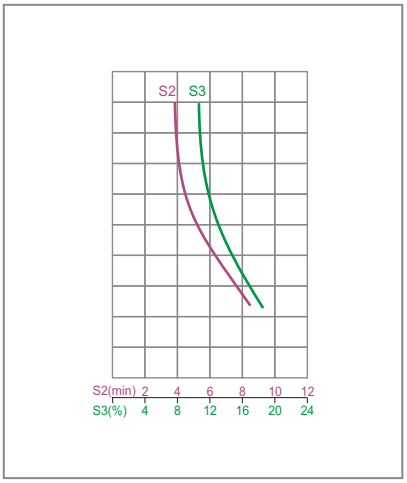


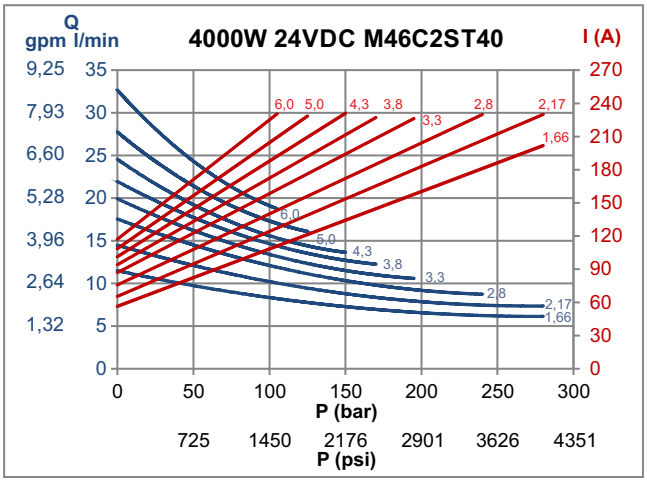


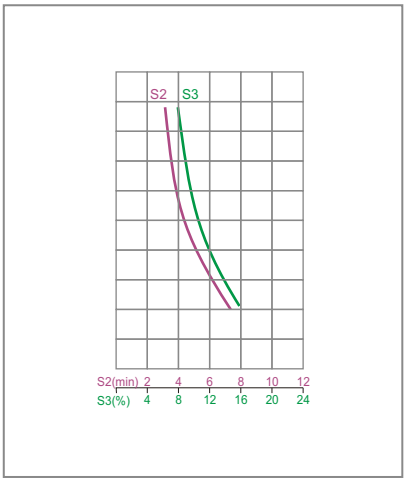
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

DC MOTORS Ø125 DIAGRAMS



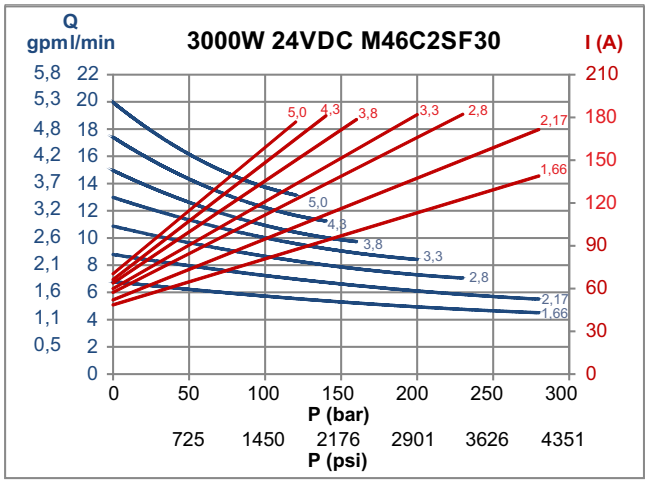


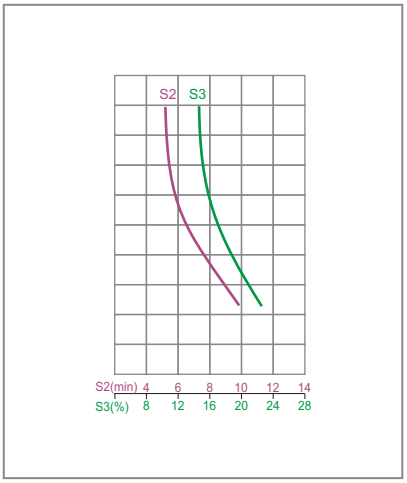


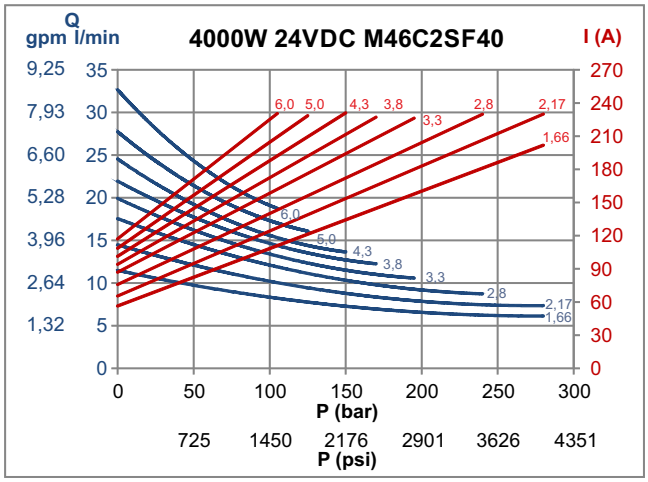


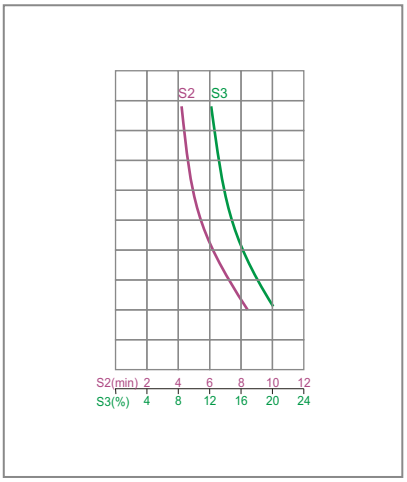
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

DC MOTORS Ø125 DIAGRAMS



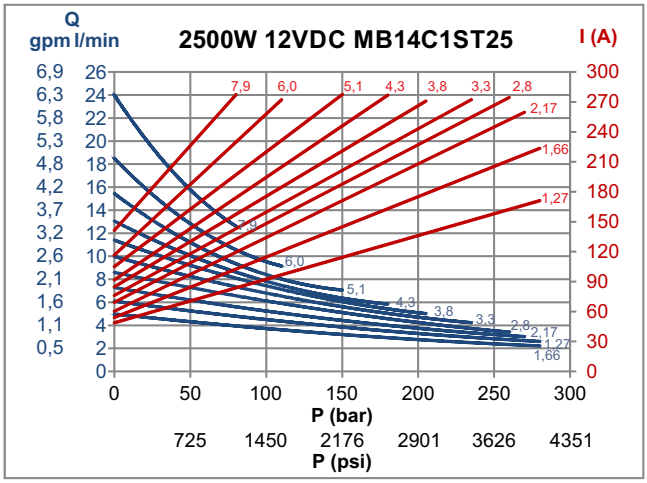


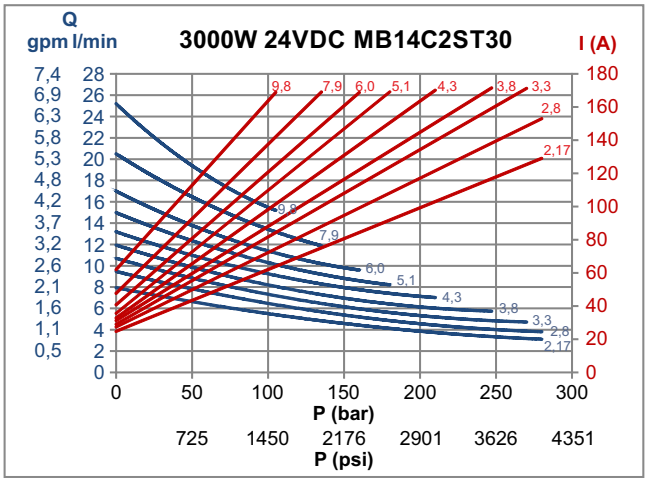


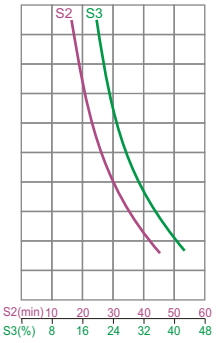


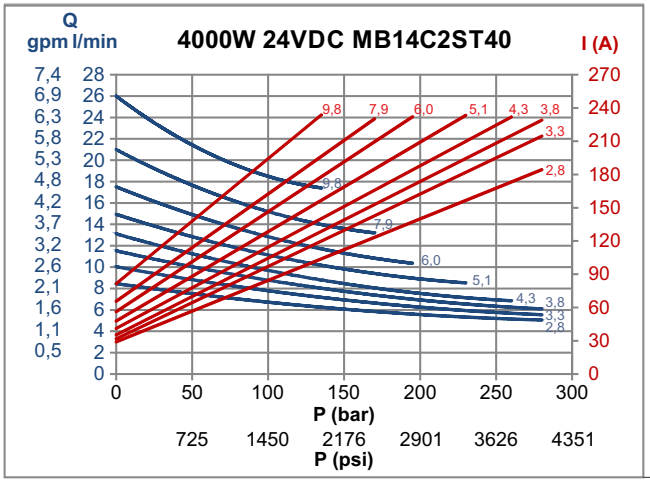
Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

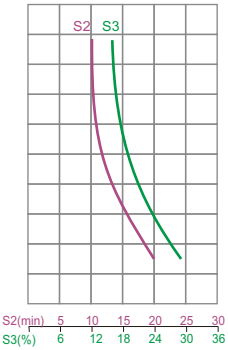
DC MOTORS Ø151 DIAGRAMS











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

INTEGRAL AC MOTORS

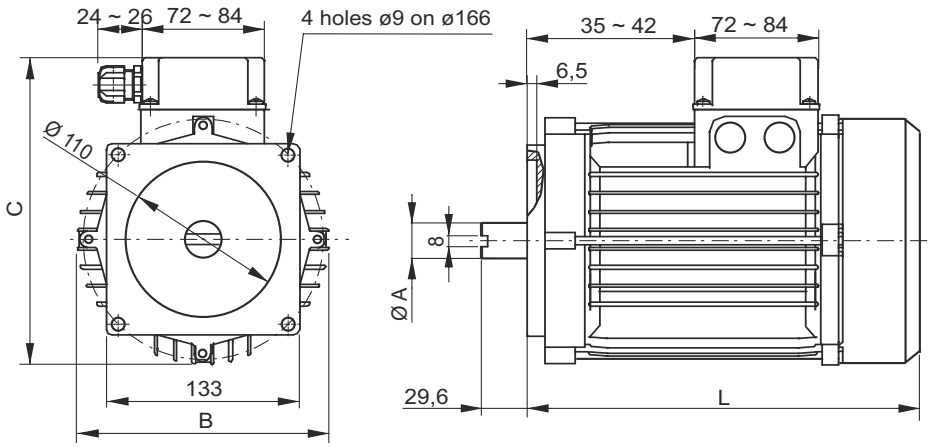
CE

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



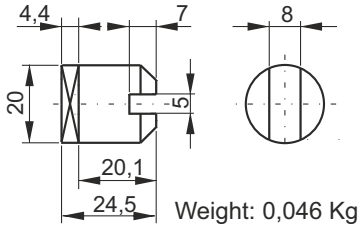
PPC motor assembly code

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**

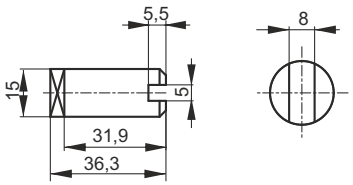
See a table of available motors on next page

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)

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

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

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

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

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

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

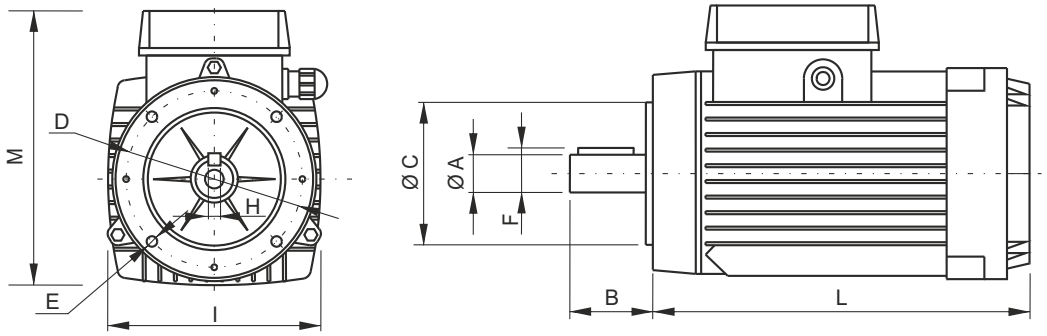
Frame size	Maximum Power (S3 40%)	Assembly code	Spare part code	Ø A	B	C	L	Weight kg
71	0,55kW (0,75HP)	**E0,55AC S2 71**	**E055ACS21S3**	17	138	180	214	6
	0,75kW (1HP)	**E0,75AC S2 71**	**E075ACS21S3**	17	138	180	214	6,5
80	1,1kW (1,5HP)	**E1,1AC S2 80**	**E110ACS22S3**	19	156	202	251	10
	1,5kW (2HP)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

B14 IEC AC MOTORS

B14 IEC motors: for market compatibility, any IEC standard B14 AC motor with frame 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)
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)

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)

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

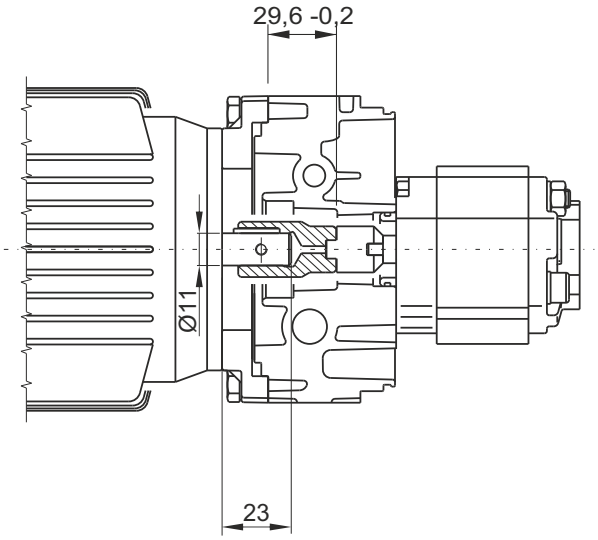
Mounting kits - spare parts

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.

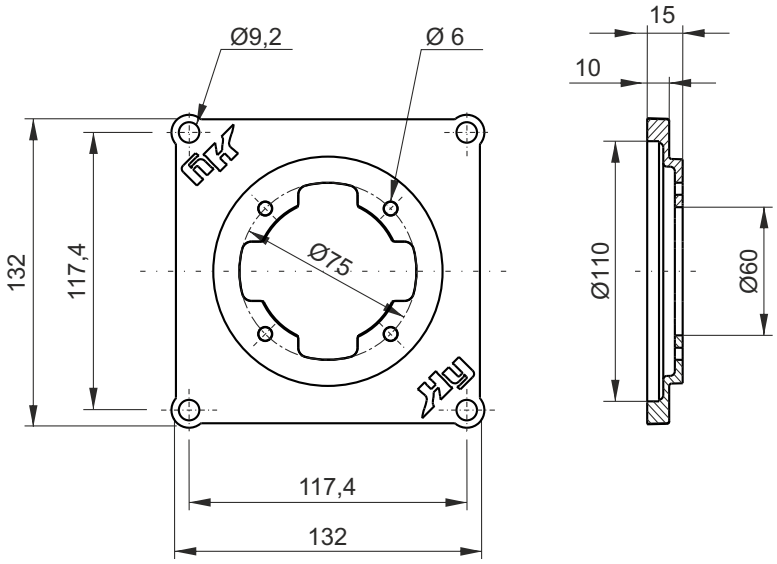
MOUNTING KIT FOR FRAME 63 B14 IEC MOTORS

Kit weight: 0,26 Kg



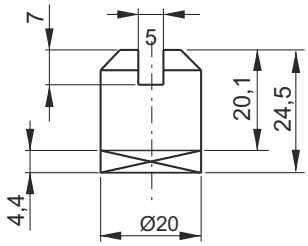
Adaptor flange

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

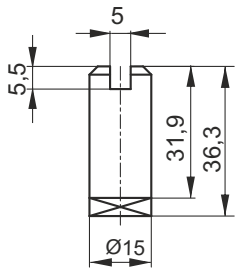


Couplings

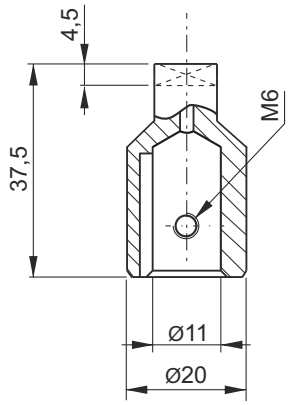
Pump side (group1) **E36100000** Weight: 0,05 Kg



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**

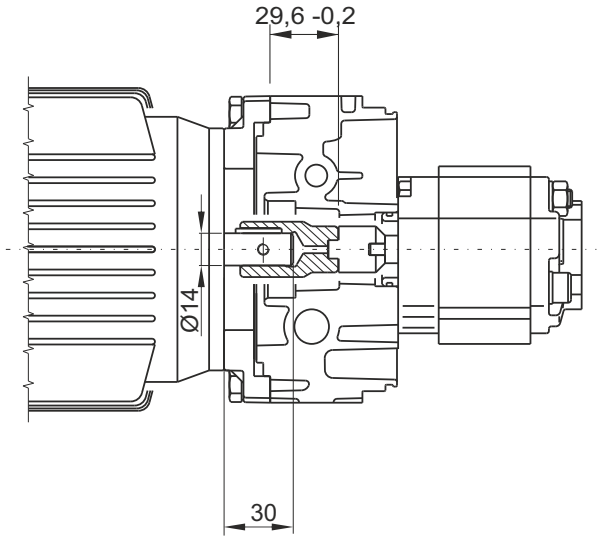
* Note: The coupling+flange kit is already included when specifying a B14 motor in PPC assembly code. XB14 63 code has to be indicated only when ordering PPC with no motor but with coupling+flange kit.

For increased IP protection degree with B14 flanges you can add the optional bracket code MP001.

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

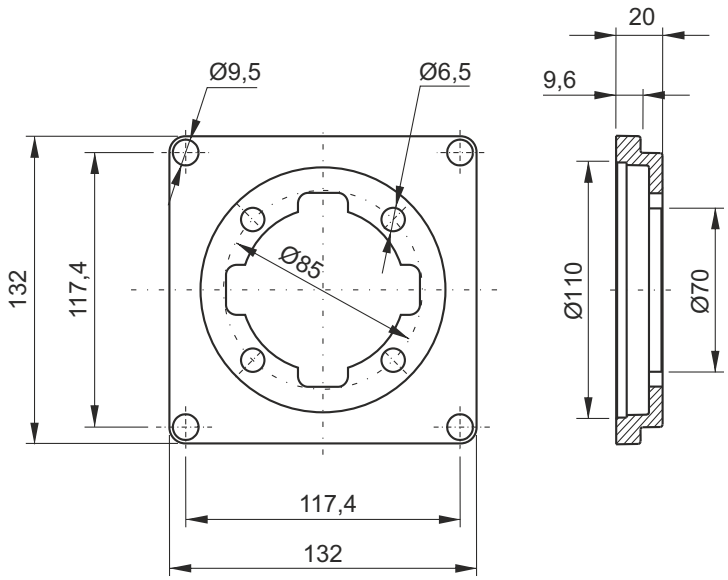
MOUNTING KIT FOR FRAME 71 B14 IEC MOTORS

Kit weight: 0,32 Kg



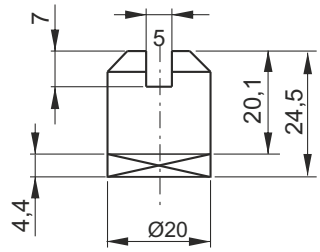
Adaptor flange

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

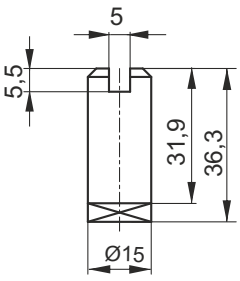


Couplings

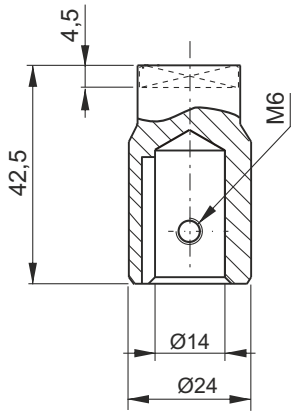
Pump side (group1) **E36100000** Weight: 0,05 Kg



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



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

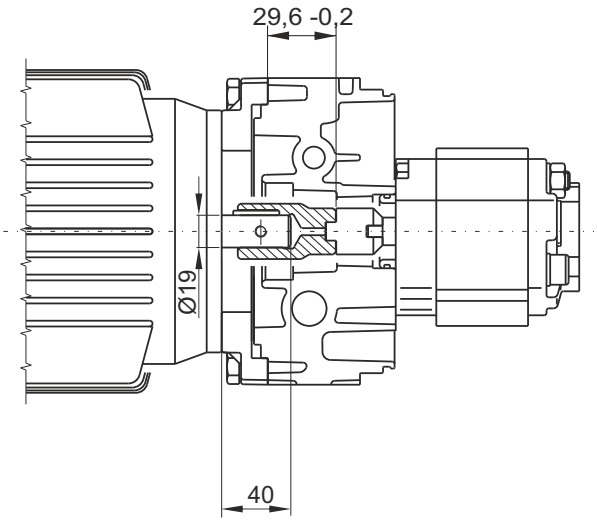
* Note: The coupling+flange kit is already included when specifying a B14 motor in PPC assembly code. XB14 71 code has to be indicated only when ordering PPC with no motor but with coupling+flange kit.

For increased IP protection degree with B14 flanges you can add the optional bracket code MP001.

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

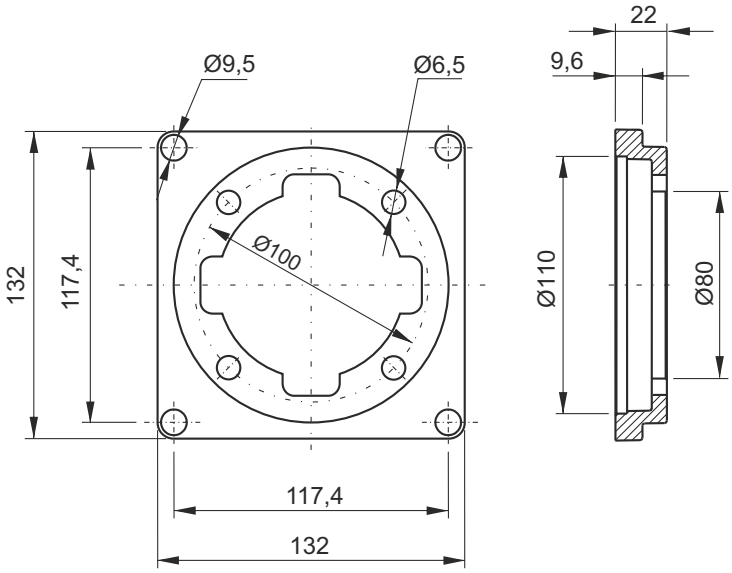
MOUNTING KIT FOR FRAME 80 B14 IEC MOTORS

Kit weight: 0,36 Kg



Adaptor flange

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



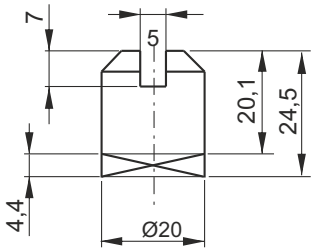
Description	Assembly code*	Spare part code
B14 80 motor side half-coupling	XB14 80 **-0** (gr.0) **-1** (gr.1)	**E36100002**
B14 pump side half-coupling		**E36100006 (gr.0)** **E36100000 (gr.1)**
B14 80 adaptor flange		**F27010002**

* 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.

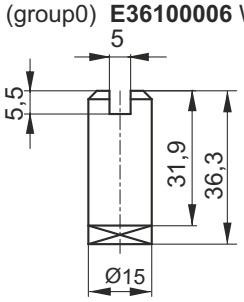
For increased IP protection degree with B14 flanges you can add the optional bracket code MP001.

Couplings

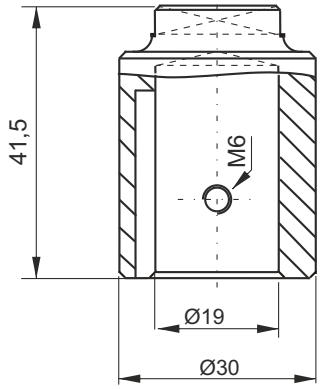
Pump side (group1) **E36100000** Weight: 0,05 Kg



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



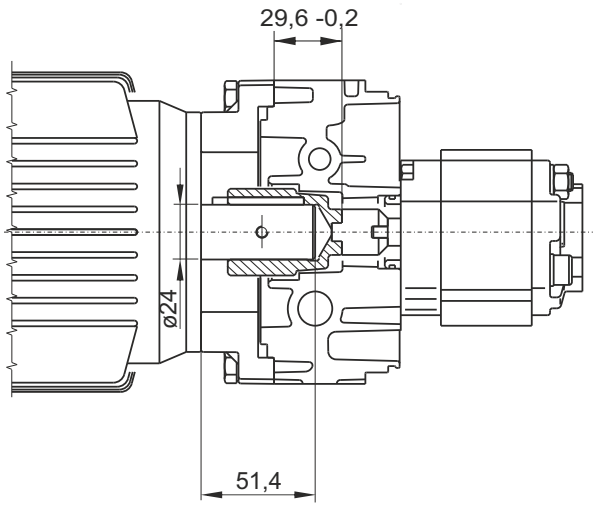
Motor side **E36100002** Weight: 0,12 Kg



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

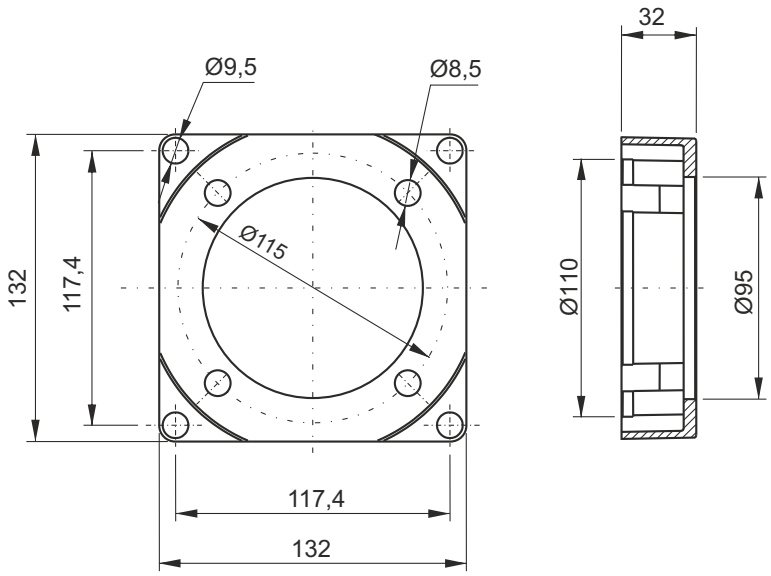
MOUNTING KIT FOR FRAME 90 B14 IEC MOTORS

Kit weight: 0,59 Kg



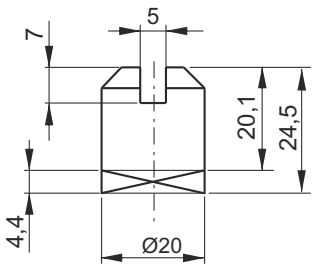
Adaptor flange

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

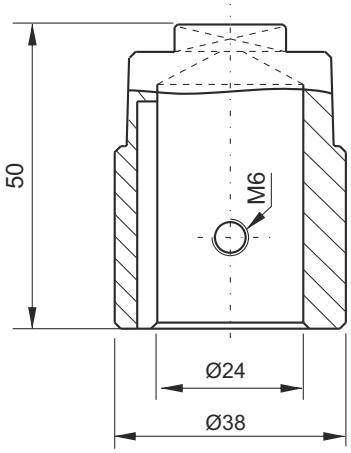


Couplings

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**

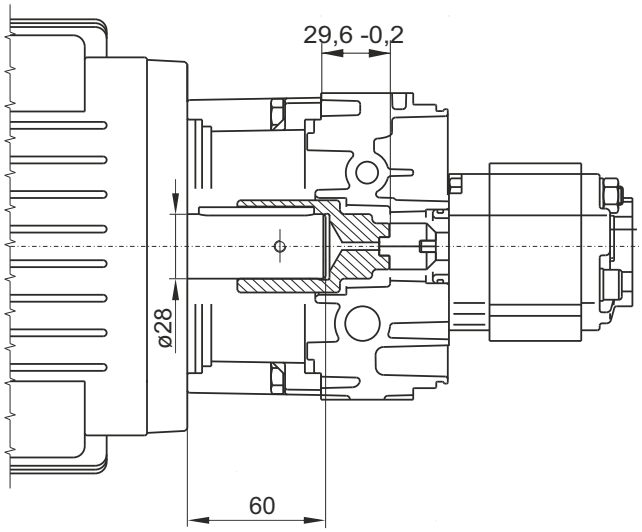
* Note: The coupling+flange kit is already included when specifying a B14 motor in PPC assembly code. XB14 90 code has to be indicated only when ordering PPC with no motor but with coupling+flange kit.

For increased IP protection degree with B14 flanges you can add the optional bracket code MP001.

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

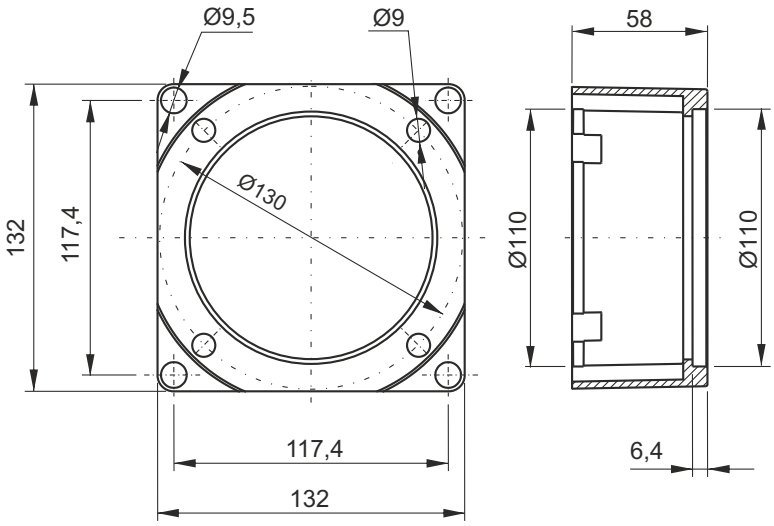
MOUNTING KIT FOR FRAME 100/112 B14 IEC MOTORS

Kit weight: 0,99 Kg



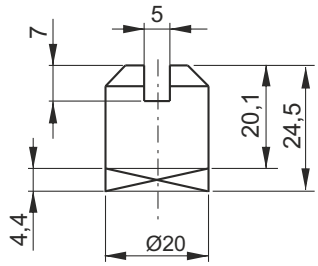
Adaptor flange

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

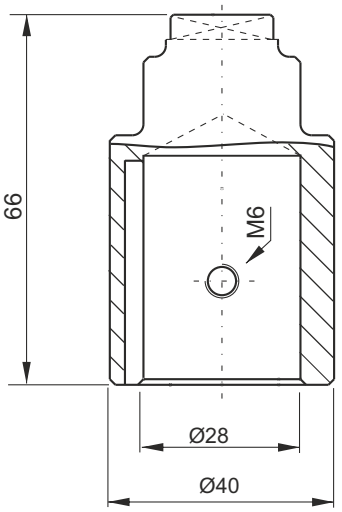


Couplings

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.

For increased IP protection degree with B14 flanges you can add the optional bracket code MP001.

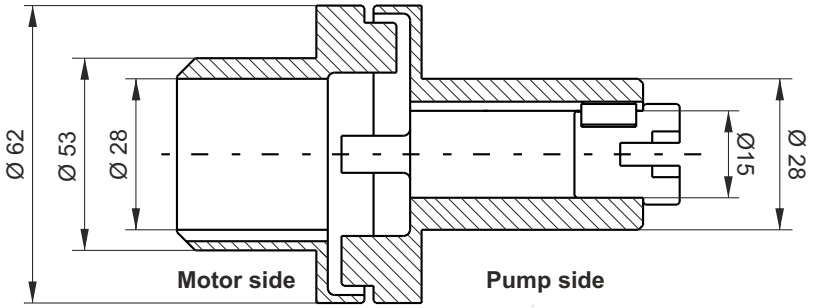
Attention! When assembling frame 100 B14 motors with XB14 flange+coupling kit, please respect positioning tolerances as per top drawing. Failure to do so can cause malfunctioning or component failure.

ELASTIC MOUNTING KIT FOR FRAME 100 B14 IEC MOTORS

Kit weight: 1,9 Kg

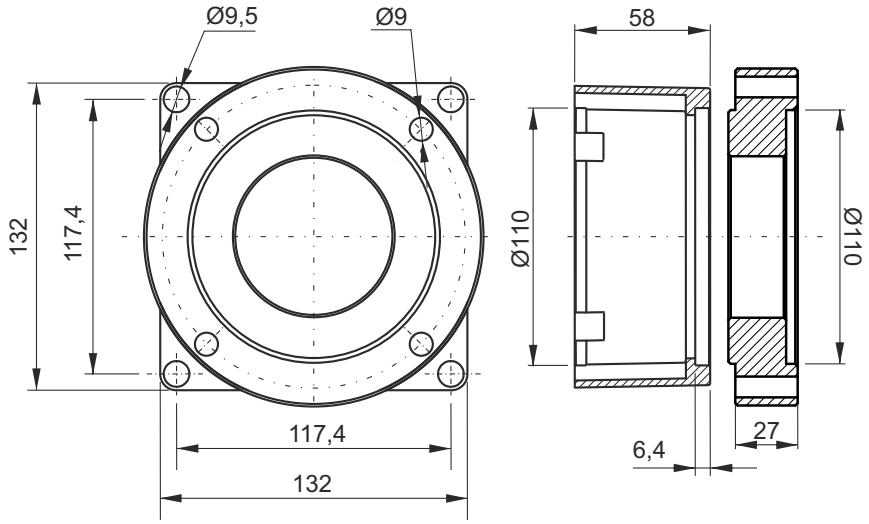
Elastic coupling

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



Adaptor flange

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



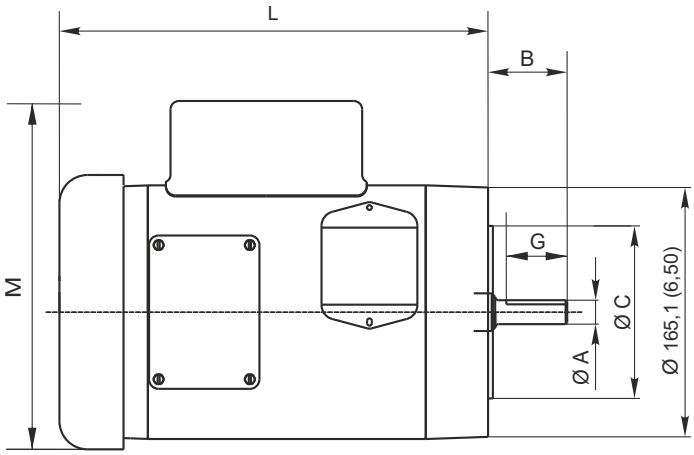
Description	Assembly code*	Spare part code
Elastic coupling	XB14E 100	T54001100
B14 mounting flanges		FTE270100

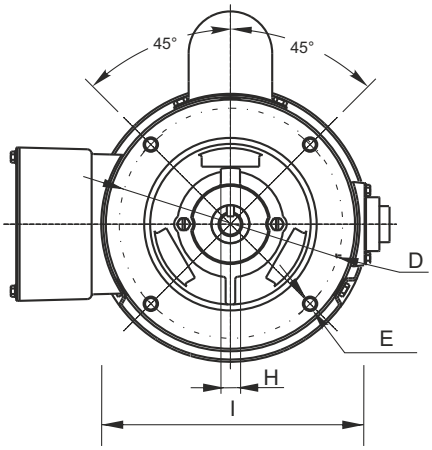
* Note: The coupling+flange kit is already included when specifying a B14 motor in PPC assembly code. XB14E 100 code has to be indicated only when ordering PPC with no motor but with coupling+flange kit. For increased IP protection degree with B14 flanges you can add the optional bracket code MP001. Other couplings for different motor sides are available on request.

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.

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.





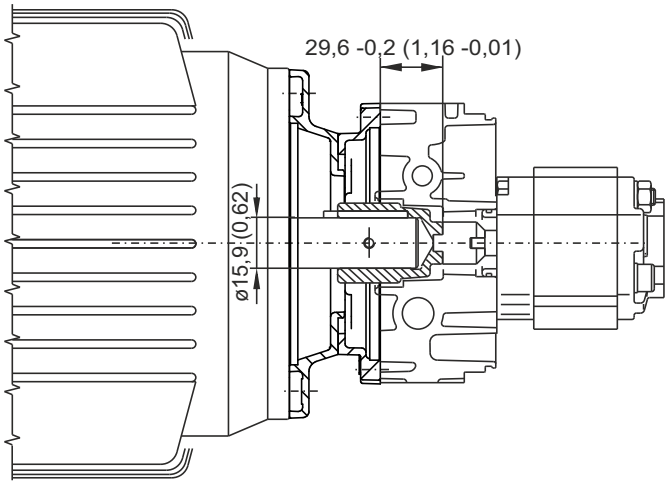
NEMA standard dimensions in mm (inches)

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)

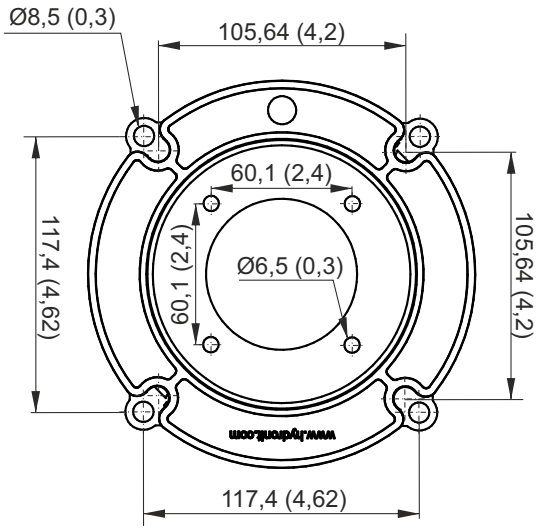
Motor overall dimensions can vary substantially depending on the motor brand.
These dimensions are given only as general indicative references.

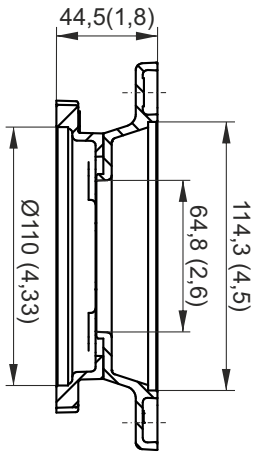
MOUNTING KIT FOR NEMA 56C AC MOTORS

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



Adaptor flange





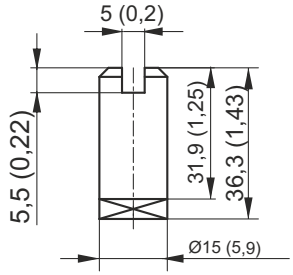
Weight: 0,41kg (0,9 lbs)

Description	Assembly code*	Spare part code
Nema 56C motor side half-coupling	X56C -0 (pumps gr.0) -1 (pumps gr.1)	E36156C01
Pump side half-coupling		E36100009 (gr.0) E36100006 (gr.1)
Nema 56C adaptor flange		F27056C03

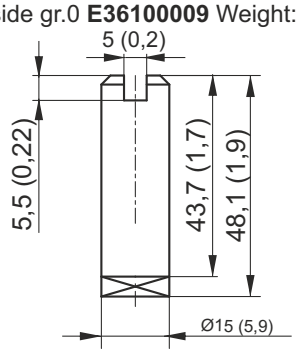
* Note: The coupling+flange kit is already included when specifying a Nema 56C motor in PPC assembly code. Nema 56C flange assembly code has to be indicated only when ordering PPC with no motor but with coupling+flange kit.

Couplings

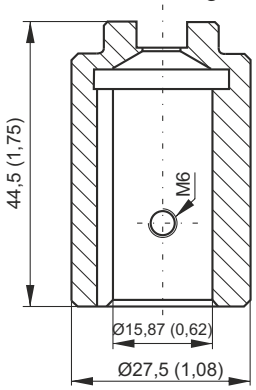
Pump side gr.1 side **E36100006** Weight: 0,04 kg



Pump side gr.0 **E36100009** Weight: 0,05 kg



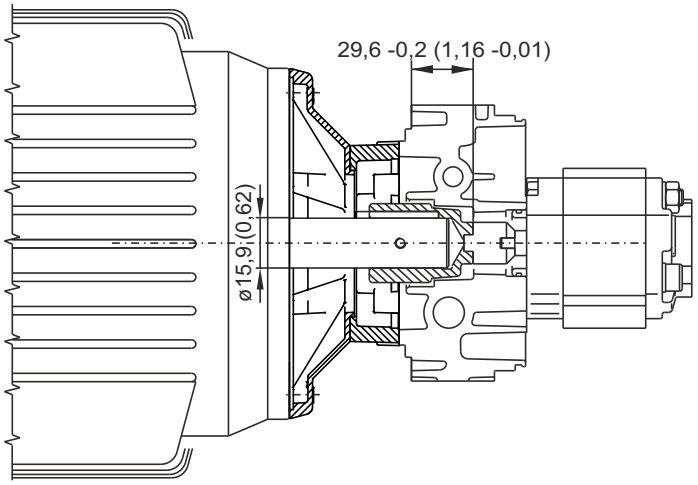
Motor side **E36156C01** Weight: 0,36 kg



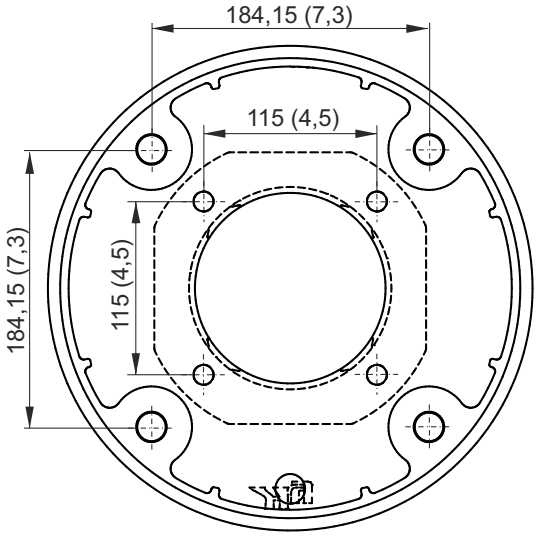
Attention! When assembling Nema 56C-face motors with XB56C-1 flange+couplings kit, please respect positioning tolerances as per top drawing. Failure to do so can cause malfunctioning or component failure.

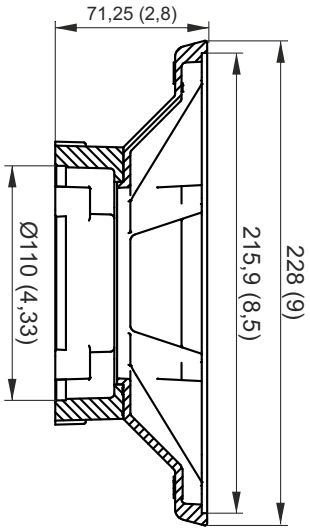
MOUNTING KIT FOR NEMA 184TC AC MOTORS

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



Adaptor flange





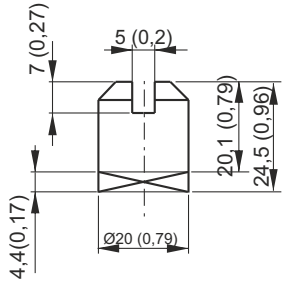
Weight: 1,4 kg (3,1 lbs)

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**

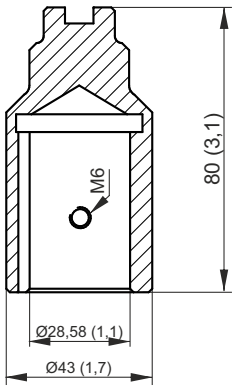
* Note: The coupling+flange kit is already included when specifying a Nema 184TC motor in PPC assembly code. Nema 184TC flange assembly code has to be indicated only when ordering PPC with no motor but with coupling+flange kit.

Couplings

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



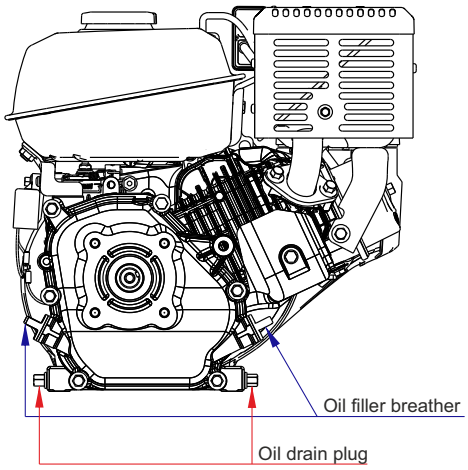
Motor side **C184TC** Weight: 0,36 kg

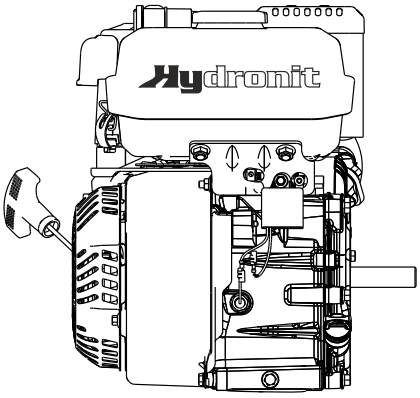


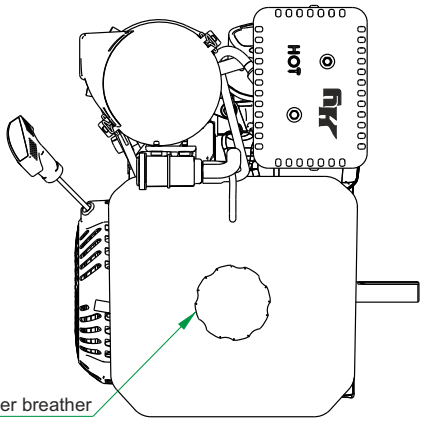
Attention! When assembling Nema 184TC-face motors with XB184TC-1 flange+couplings kit, please respect positioning tolerances as per top drawing. Failure to do so can cause malfunctioning or component failure.

GASOLINE ENGINE

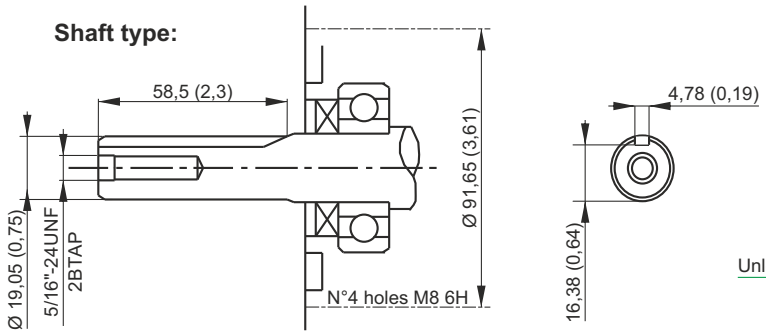
Engine type: single-cylinder, air-cooled, 4 stroke.
Power: 5 kW
Displacement: 208 cc
Nominal speed: 3600 rpm
Compression ratio: 8,2:1
Recoil start
Fuel: unleaded gasoline
Fuel capacity: 3 l
Oil: SAE 10W-40
Oil capacity: 0,5 l
Oil alert system
Dry air filter
Dry weight: 16 Kg
Max angle of operation: 25°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







Shaft type:

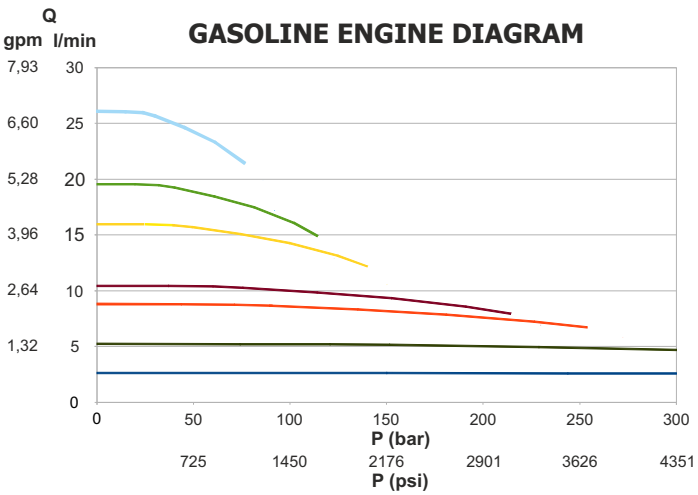


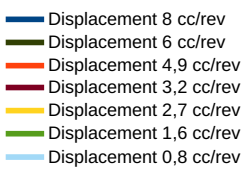
The gasoline engine is sold with no oil. Attention! FILL oil before operating the engine.
With gasoline engines we suggest to use plastic tanks.

Code

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

GASOLINE ENGINE DIAGRAM





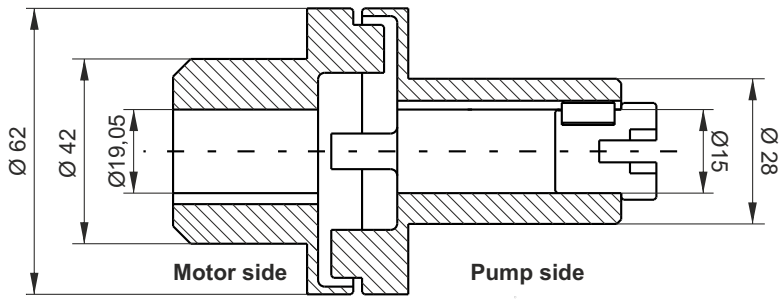
Flow-pressure curves parameterized on the pump displacement.
Choose the correct motor-pump coupling according to the hydraulics required pressure value.
Diagrams made using ISO VG46 fluid at 10°C environmental temperature.

ELASTIC MOUNTING KIT FOR GASOLINE ENGINE

Kit weight: 1,9 Kg

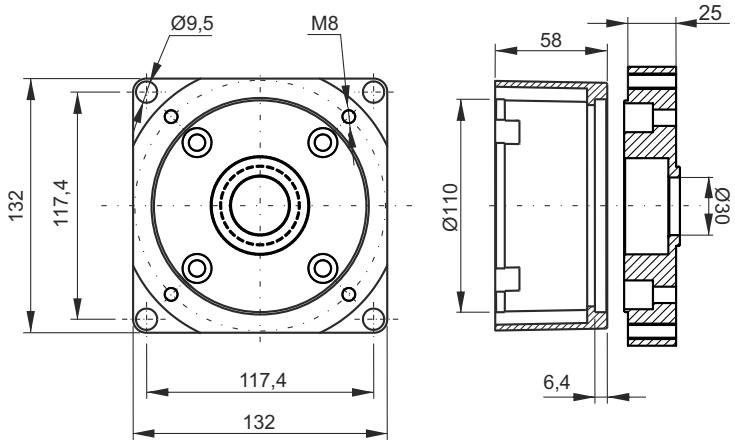
Elastic coupling

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

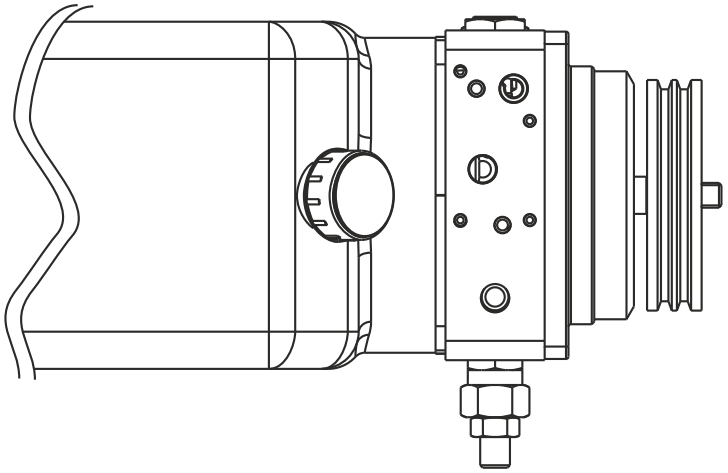
* Note: The coupling+flange kit is already included when specifying a B14 motor in PPC assembly code. XB14GE code has to be indicated only when ordering PPC with no motor but with coupling+flange kit. For increase IP protection degree with B14 flanges you can add the optional bracket code MP001.

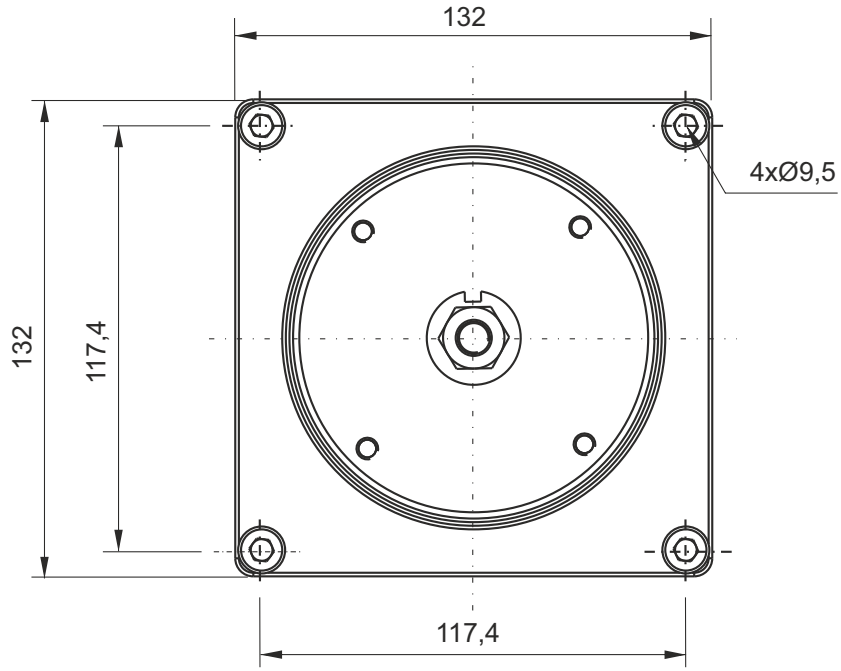
Attention! When assembling frame B14 motors with XB14 flange+coupling kit, please respect positioning tolerances as per top drawing. Failure to do so can cause malfunctioning or component failure.

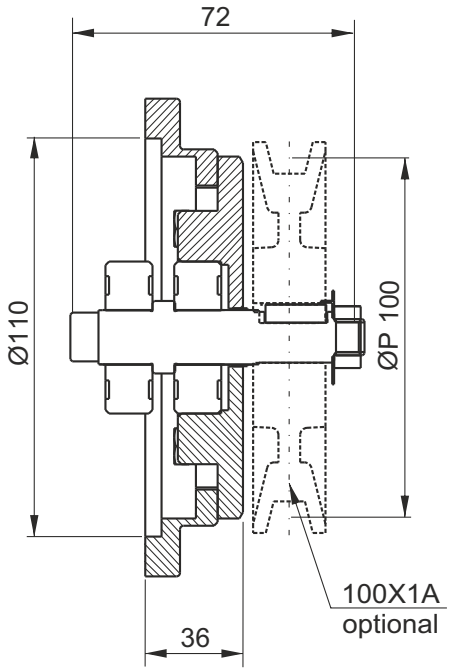
PULLEY DRIVE

For pulleys mounted on shaft
Ø14mm with 5mm key

Weight: 0,70 Kg





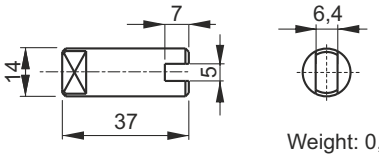


Description	Assembly code	Spare part code
Kit shaft and flange for mounting pulley	**XPU1401-0 (pompa gr.0)** **XPU1401-1 (pompa gr.1)**	**P46FP1401**
B14 pump side half-coupling		**E36200006 (gr. 0)** **E36200002 (gr. 1)**
B14 71 adaptor flange		**F27010001**

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

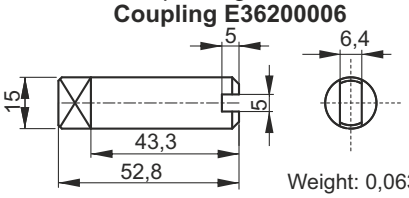
Couplings

Pump side gr. 1
Coupling E36200002



Weight: 0,041 kg

Pump side gr. 0
Coupling E36200006



Weight: 0,063 kg

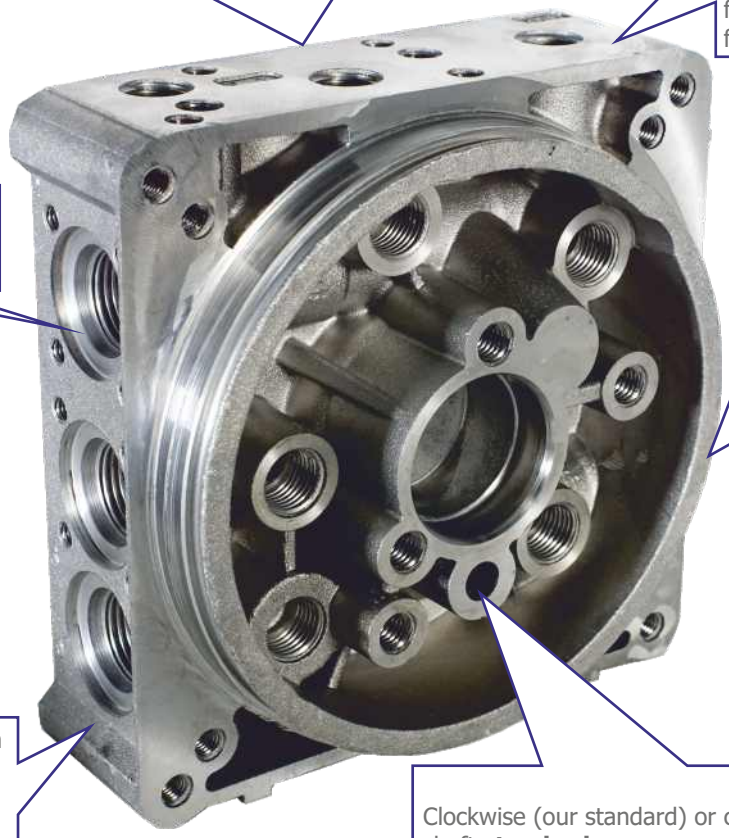
SUMMARY TABLE - PUMP/MOTOR COUPLING KITS

Motor \ Pump	Group 0 pump	Group 1 pump
DC Ø 80	E36200006	E36200002
DC Ø 114	E36200005	E36200001
DC Ø 125	E36200005	E36200001
DC Ø 151	n/a	XB1490-1
INTEGRAL AC	E36100006	E36100000
AC B14 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	XB1480-0 (E36100002+E36100006+F27010002)	XB1480-1 (E36100002+E36100000+F27010002)
AC B14 90	n/a	XB1490-1 (E36100003+E36100000+F27010003)
AC B14 100/112	n/a	XB14100-1 (E36100004+E36100000+F27010004)
XB14E 100	n/a	XB14E 100 (T54001100+FTE2700100)
AC NEMA 56C	X56C-0 (E36156C01+E36100009+F27056C03)	X56C-1 (E36156C01+E36100006+F27056C03)
AC NEMA 184TC	n/a	X184TC-1 (C184TC+E36100000+X184TC03)
XB14E GE	n/a	XB14E GE (T54001010+FTE270000)
PULLEY	XPU1401-0 (P46FP1401+E36100006+F27010001)	XPU1401-1 (P46FP1401+E36100000+F27010001)

UNIVERSAL CENTRAL MANIFOLDS

A single **universal die-cast aluminium central manifold** in four different executions is the core part of all power units for all industrial, mobile and marine applications. It features the **highest integration and flexibility** on the market, with up to **nine devices** which can be fitted in the cavities plus a wide selection of manifold blocks and valves which can be attached externally

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



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

The **interfaces** to tanks and motors are **standardised**. All plastic and steel tanks have the same interface and can be easily interchanged. All AC or DC motors can be fitted easily either directly to the central manifold or through adaptor flanges (B14 IEC or NEMA 56C and 184TC standard motors)

Maximum flow is **25 l/min** (6,5 GPM), with a **low pressure drop**. Maximum motor power is 7,5kW, well above the average of other alternative products on the market

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

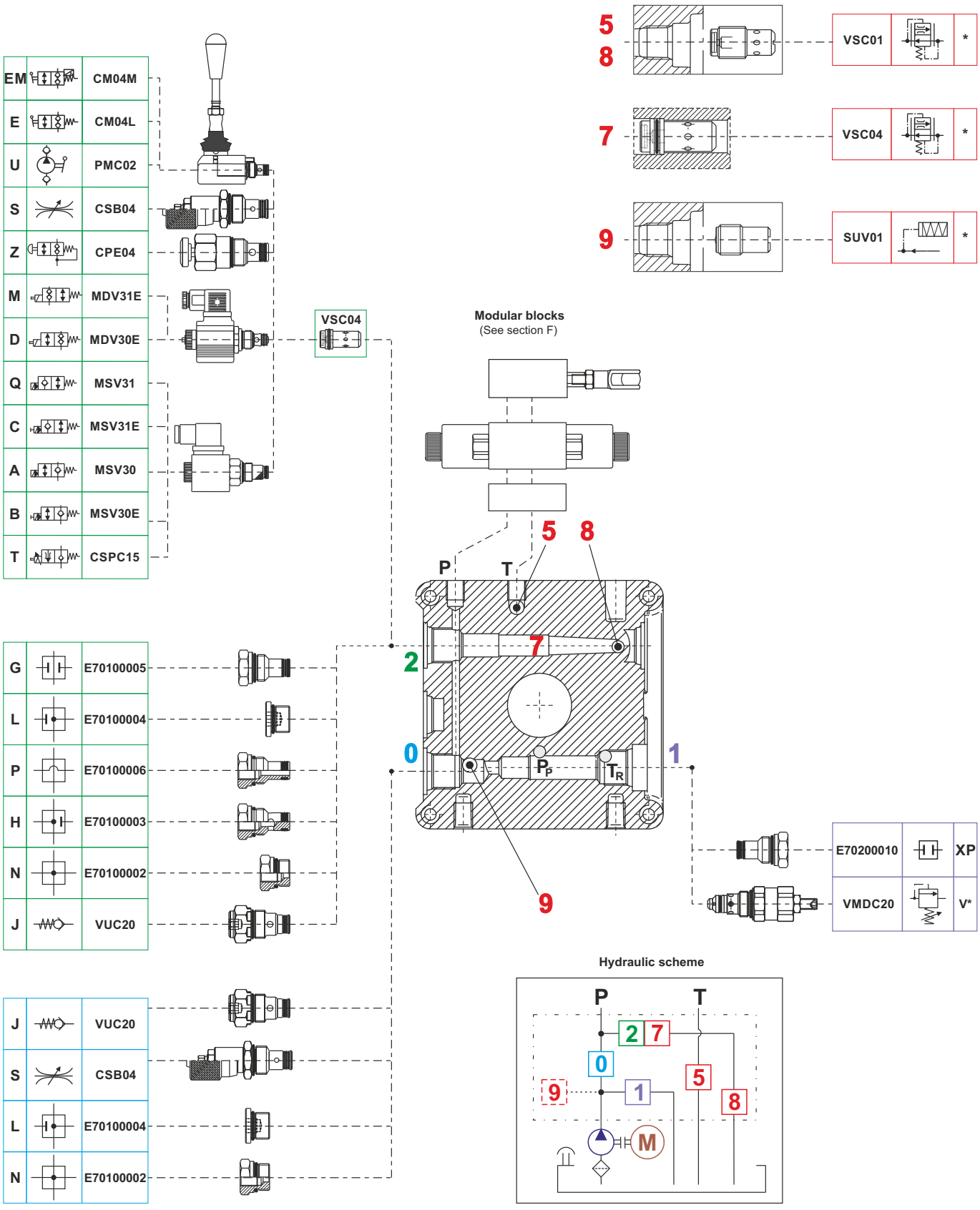
Q & A

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

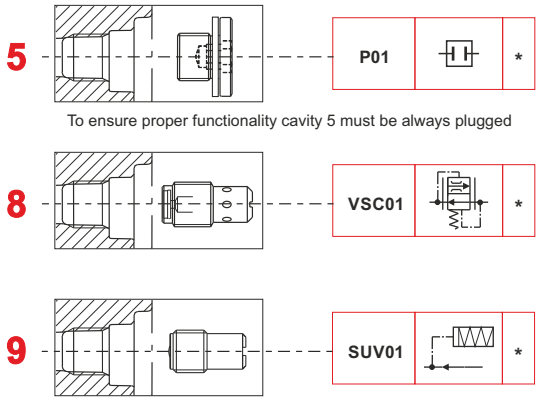
Do I need special tools to assemble the components within the central manifold?
No. All the valves are screw-in type in a single piece construction (no loose nuts, washers, springs; nothing difficult to assemble or fall apart). The components can be easily assembled with simple hand tools and hexagon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

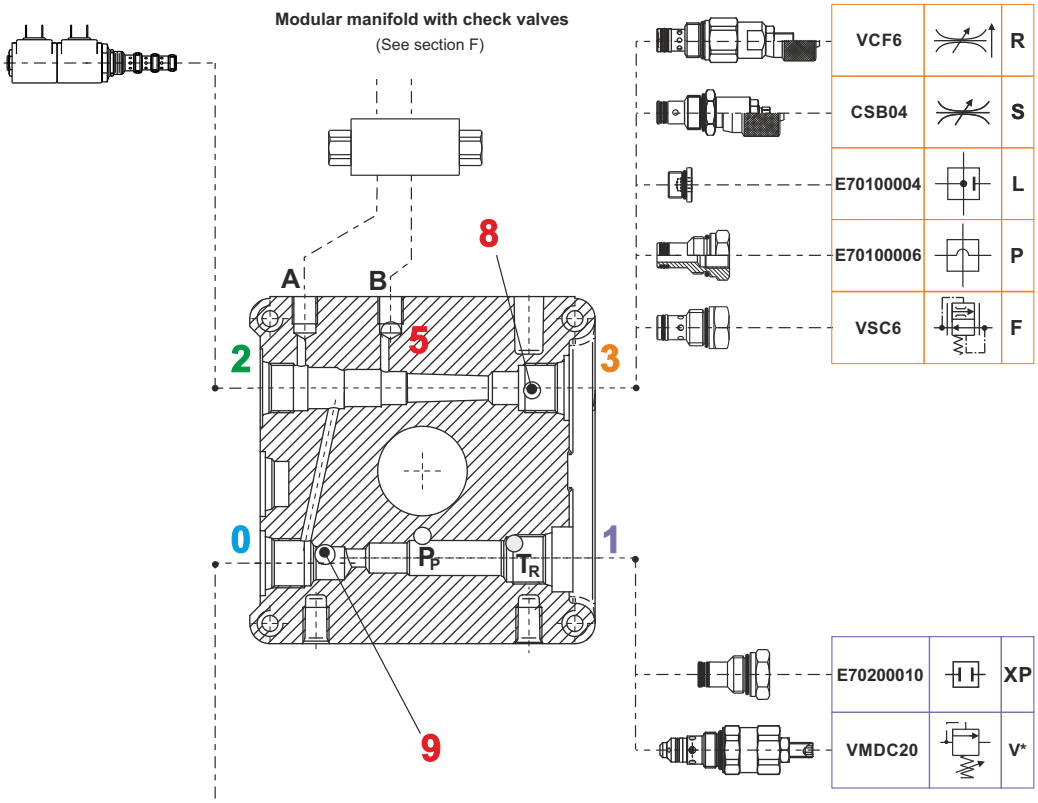
UNIVERSAL CENTRAL MANIFOLDS «UA» - CAVITIES & INTEGRAL COMPONENTS



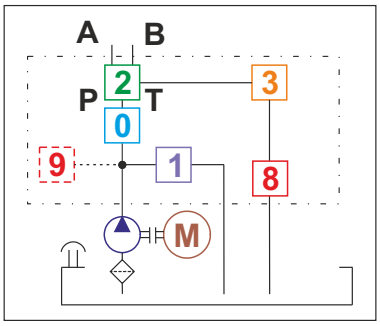
UNIVERSAL CENTRAL MANIFOLDS «U4» - CAVITIES & INTEGRAL COMPONENTS



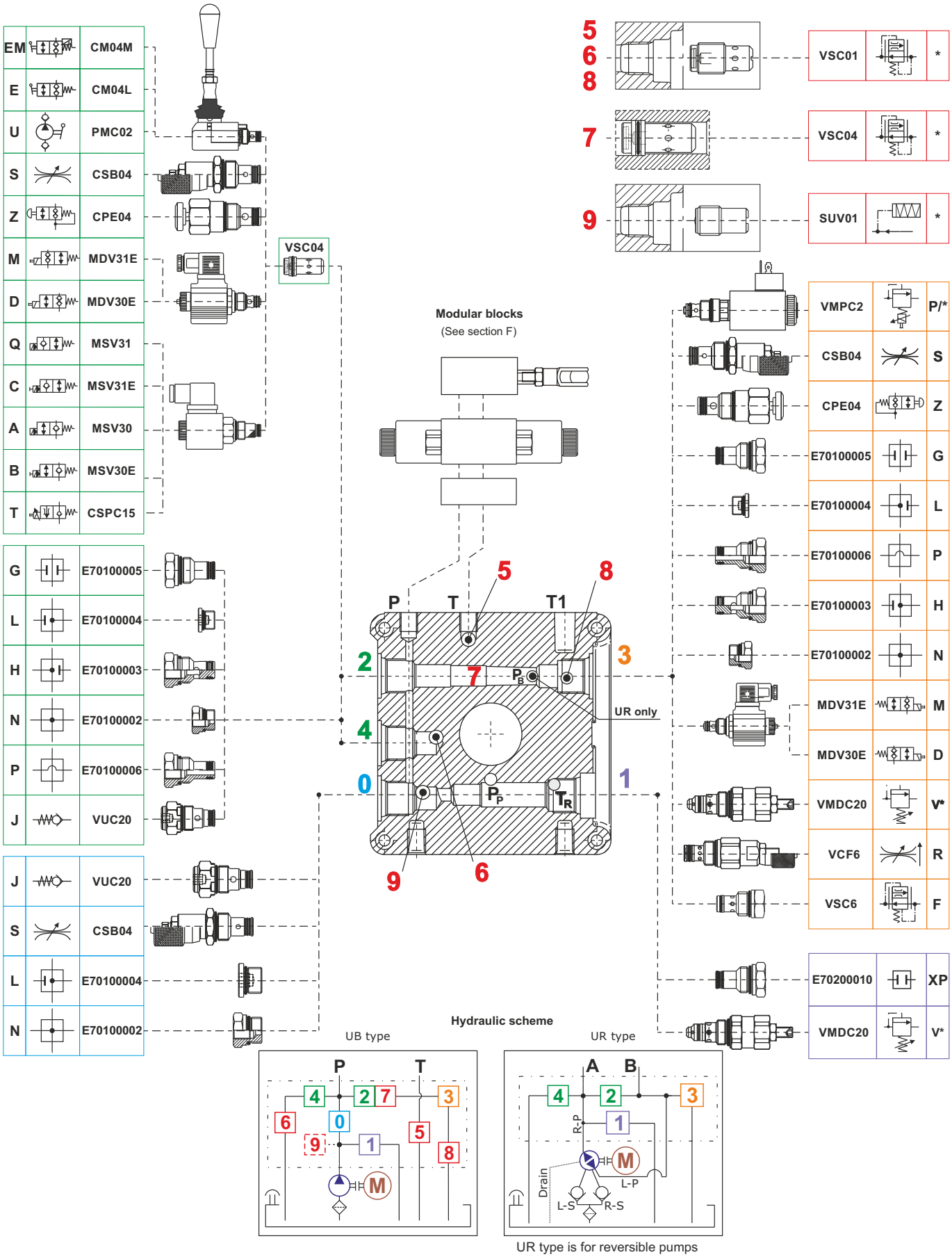
4VA2		MSV4VA2
4VB2		MSV4VB2
4VC2		MSV4VC2
4VE2		MSV4VE2
4VA11C		MSV4VA11C



J		VUC20
S		CSB04
L		E70100004
N		E70100002



UNIVERSAL CENTRAL MANIFOLDS «UB» - «UR» - CAVITIES & INTEGRAL COMPONENTS

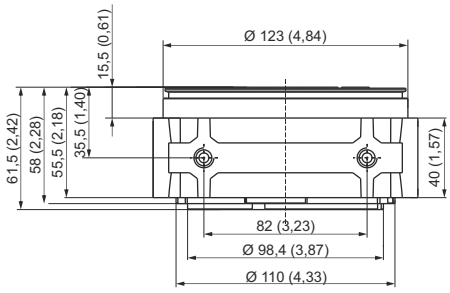


UR type is for reversible pumps

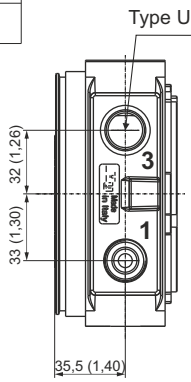
UNIVERSAL CENTRAL MANIFOLDS - OVERALL DIMENSIONS

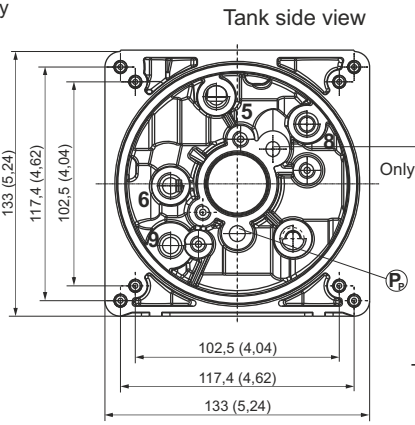
Type	Spare part code
UA	C30401000
UB	C30402000
U4	C30404000
UR	C30405000
UAUS	C30401010
UBUS	C30402010
U4US	C30404010
URUS	C30405010

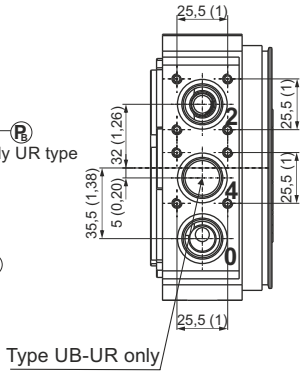
Notes:
- codes ending with **US** are according American standards, machined with 9/16-18 UNF (SAE06) P-T exit ports.
- all dimensions in mm (inches)



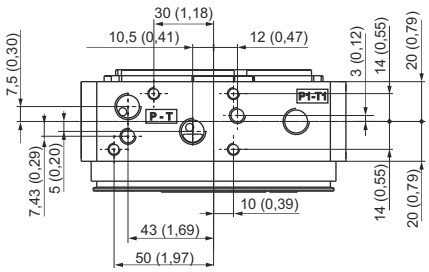
Weight: 1,1 kg (2,42 lb)

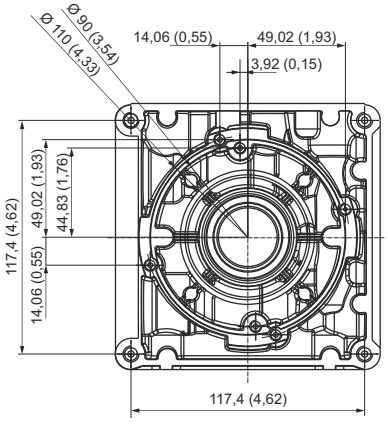






Cavity	Thread
0, 1, 2, 3, 4	3/4-16 UNF (SAE08)
P-T	1/4 BSP 9/16-18UNF (SAE06 - US type)
P_1-T_1	1/4 BSP (threaded on request only)
5, 6, 8, 9	1/4 BSP (cavity 9 threaded on request only)
External manifolds fixings	2 tie rods M8 4 tie rods M6 (UB type only)
Tank fixings	4 screws M6x14
Integral AC motors 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

GEAR PUMPS

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

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

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

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

R series. Bidirectional pumps with integrated suction check valves and two front outlet ports. Choose UR type central manifold.

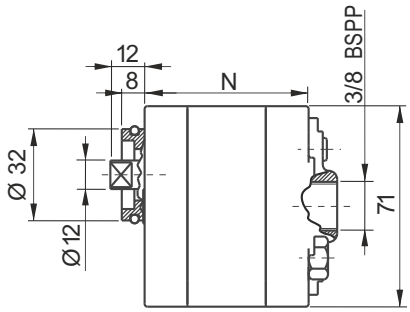
Q & A

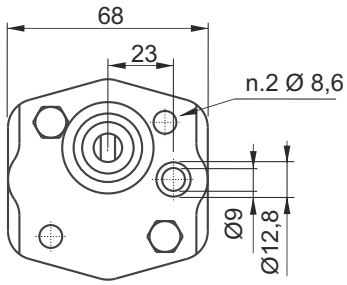
Why are pressure balanced gear pumps better than fixed clearance gear pumps used by many competitors?
Pressure balanced gear pumps are built with lateral pressure plates which reduce the mechanical clearance on the gears with the increase of the pressure on the outlet, thus greatly improving the volumetric 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.

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

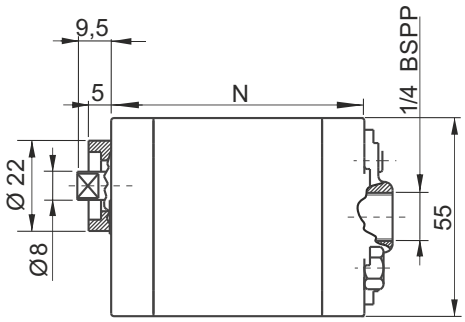
1,1 — **Size**

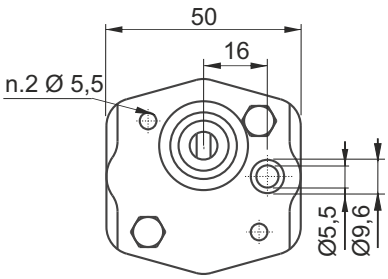
Available range

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	0,85	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	6,0	210	190	170	3000	52,8	M8x70	EK1PD9.2G	E60603010	1,01
G7,9	7,9	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

G SERIES GEAR PUMPS, GROUP 0



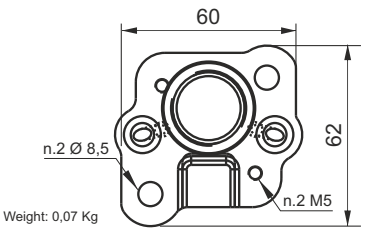


Main features

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

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

Aluminium adapter flange for group 0
Code: E60513025



Weight: 0,07 Kg

Spare part code

E60 50 30 **

Type:
50 = Group 0

Series:
30 = G

Reference code:
see below table

Assembly code

G — **Series:** G = Group 0 G series

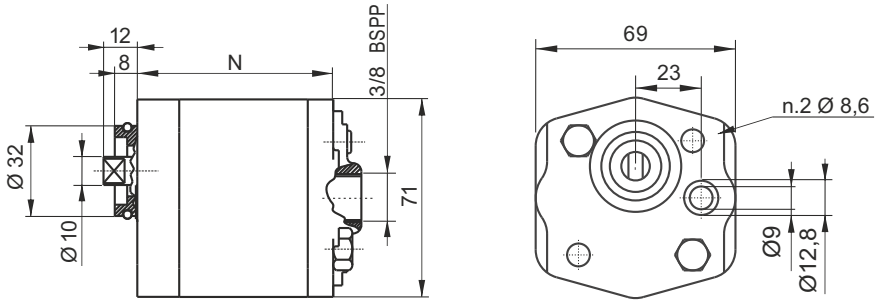
0,4 — **Size**

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]
G0,1	0,19	230	210	190	7000	43,6	M5x55	UK0,25D18G	E60503001	0,49
G0,2	0,26	230	210	190	7000	44,6	M5x55	UK0,25D24G	E60503002	0,50
G0,4	0,38	230	210	190	7000	46,6	M5x60	UK0,25D36G	E60503004	0,51
G0,6	0,64	230	210	190	7000	53,5	M5x65	UK0,5D0,75G	E60503006	0,52

* One or more washers are always fitted to secure the bolt engagement
Other pumps with different displacement/pressure/speed are available on request.

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

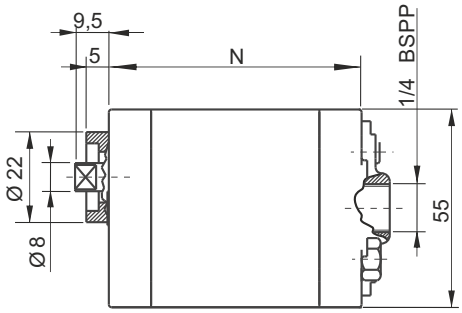
1,2 — **Size**

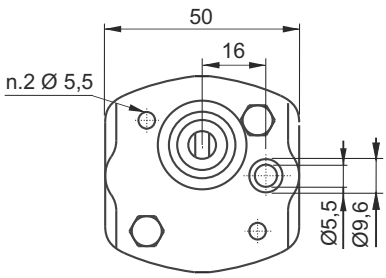
Available range

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	0,89	250	230	210	4500	61,6	M8x80	E60604001	0,73
K1,2	1,27	250	230	210	4500	63,1	M8x80	E60604002	0,75
K1,6	1,66	250	230	210	4500	64,6	M8x80	E60604035	0,77
K2,1	2,17	250	230	210	4500	66,3	M8x85	E60604004	0,79
K2,7	2,8	250	230	210	4500	68,8	M8x85	E60604005	0,82
K3,2	3,3	250	230	210	4500	70,4	M8x85	E60604006	0,86
K3,7	3,8	230	210	180	3600	72,5	M8x90	E60604007	0,88
K4,2	4,3	230	210	180	3600	74,3	M8x90	E60604008	0,90
K5,0	5,1	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	7,9	180	140	100	2800	88,9	M8x105	E60604012	1,10

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

K SERIES GEAR PUMPS, GROUP 0



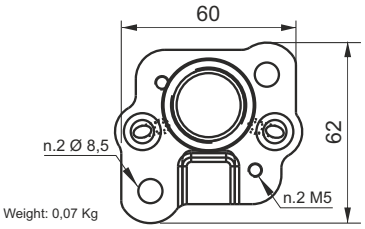


Main features

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

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

Aluminium adapter flange for group 0
Code: E60513025



Weight: 0,07 Kg

Spare part code

E60 50 40 **

Type:
50 = Group 0

Series:
40 = K

Reference code:
see below table

Assembly code

K — **Series:** K = Group 0 K series

0,4 — **Size**

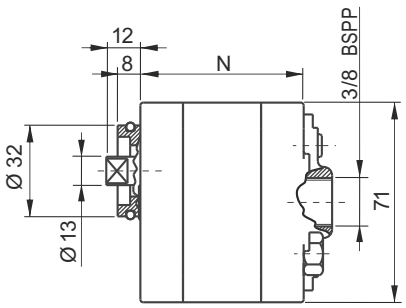
Available range

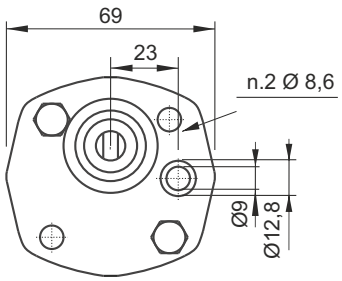
Nominal size	Displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Spare part code	Weight [Kg]
K0,2	0,26	200	180	160	6000	51,9	M5x65	E60504002	0,33
K0,4	0,38	200	180	160	6000	52,9	M5x65	E60504004	0,35
K0,6	0,64	200	180	160	6000	54,9	M5x65	E60504006	0,40

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

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

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 8.8 class steel tightening torque: 21 ÷ 25 Nm
Pressure definition	Peak pressure: cycle 2 s ON Intermittent pressure: cycle 20 s ON Continuous pressure: cycle always ON

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

Spare part code

E60 60 50 **

Type:
60 = Group 1

Series:
50 = H

Reference code:
see below table

Assembly code

H — **Series:** H = Group 1 H series

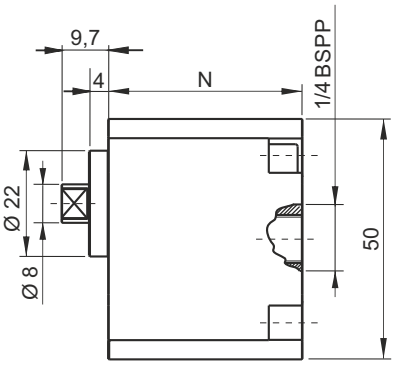
6,0 — **Size**

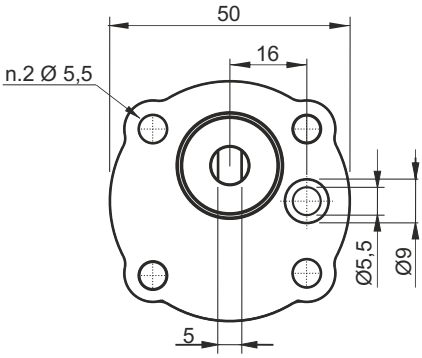
Available range

Nominal size	Displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Spare part code	Weight [Kg]
H1,2	1,2	280	270	250	5000	39,8	M8x55	E60605002	0,50
H1,7	1,7	210	200	190	4500	41,5	M8x60	E60605035	0,52
H2,2	2,2	280	270	250	4500	44,4	M8x60	E60605004	0,54
H2,6	2,6	280	270	250	4500	45,8	M8x60	E60605005	0,56
H3,2	3,2	280	270	250	4000	52,2	M8x70	E60605006	0,58
H3,8	3,8	280	270	250	3800	54,2	M8x70	E60605007	0,61
H4,2	4,3	280	270	250	3500	54,7	M8x70	E60605008	1,05
H4,7	4,7	320	310	300	3200	84,0	M8x100	E60605009	1,12
H6,0	6,0	280	270	250	3000	87,3	M8x105	E60605010	1,22
H7,4	7,4	230	210	190	2000	97,4	M8x115	E60605012	1,80

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

H SERIES HIGH PRESSURE GEAR PUMPS, GROUP 0



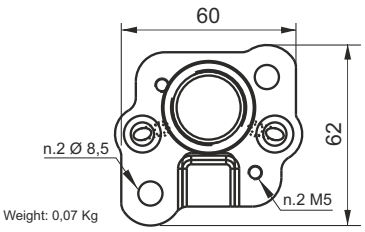


Main features

Oil temperature	-15 ÷ +80 °C
Inlet pressure	0,7 < P < 3,0 bar
Fixing bolts	2 x M5 8.8 steel class tightening torque: 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 rotation (from shaft side).
Counterclockwise rotation pumps can be mounted on request.
Ask our sales department.

Aluminium adapter flange for group 0
Code: E60513025



Weight: 0,07 Kg

Spare part code

E60 50 50 **

Type:
50 = Group 0

Series:
50 = H

Reference code:
see below table

Assembly code

H — **Series:** H = Group 0 H series

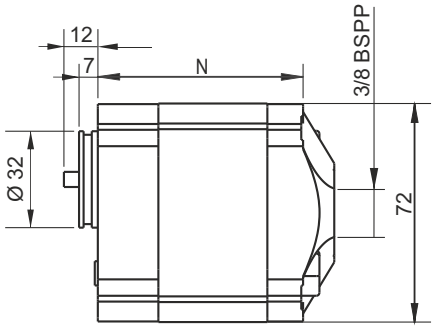
0,6 — **Size**

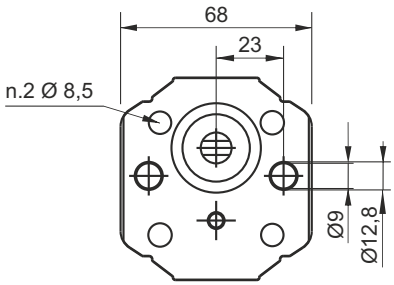
Available range

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]
H0,1	0,2	280	270	250	7000	36,4	M5x50	E60505001	0,26
H0,2	0,26	280	270	250	7000	36,8	M5x50	E60505002	0,27
H0,4	0,38	280	270	250	7000	37,8	M5x50	E60505004	0,27
H0,6	0,64	280	270	250	7000	39,5	M5x50	E60505006	0,28

* One or more washers are always fitted to secure the bolt engagement
Other pumps with different displacement/pressure/speed are available on request.

R SERIES BIDIRECTIONAL GEAR PUMPS, GROUP 1





Main features

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

Spare part code

E60 60 35 **

Type:
60 = Group 1

Series:
35 = R

Reference code:
see below table

Assembly code

R — **Series:**
R = Group 1 R series

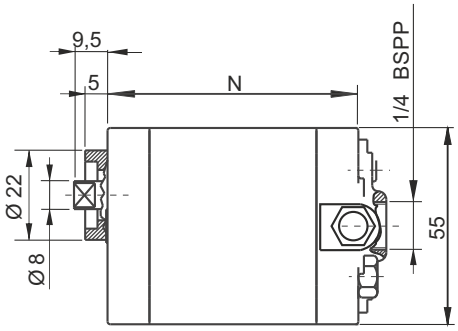
3,2 — **Size**

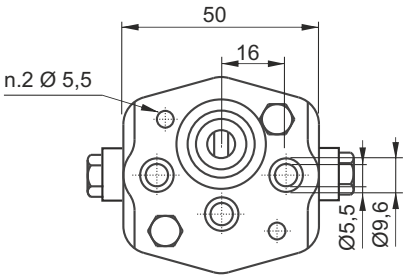
Available range

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	270	260	250	4000	68,7	M8x85	E60603504	0,92
R2,6	2,6	270	260	250	4000	70,5	M8x85	E60603505	0,95
R3,2	3,2	240	230	220	4000	72,8	M8x90	E60603506	0,98
R4,3	4,3	150	140	130	4000	76,4	M8x95	E60603508	1,05
R6,5	6,5	120	110	100	3500	83,2	M8x100	E60603510	1,32

* One or more washers are always fitted to secure the bolt engagement
Other pumps with different displacement/pressure/speed are available on request.

R SERIES BIDIRECTIONAL GEAR PUMPS, GROUP 0



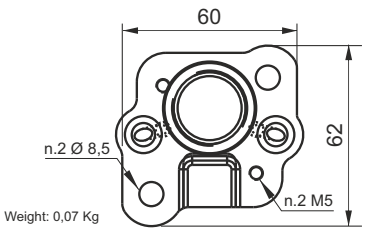


Main features

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

Aluminium adapter flange for group 0

Code: E60513025



Weight: 0,07 Kg

Spare part code

E60 50 35 **

Type:
50 = Group 0

Series:
35 = R

Reference code:
see below table

Assembly code

R — **Series:**
R = Group 0 R series

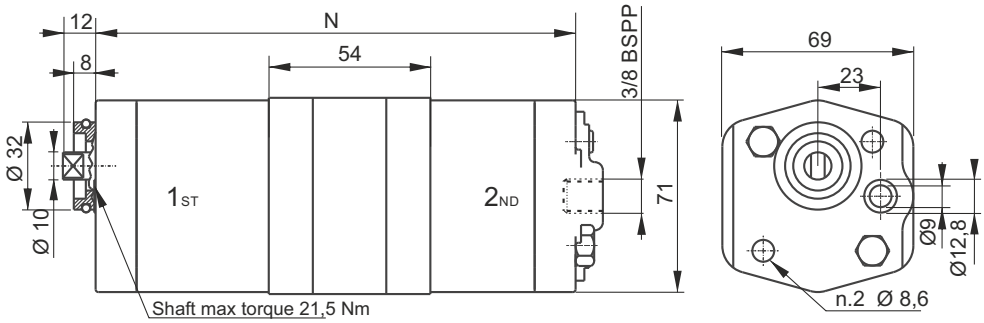
1,3 — **Size**

Available range

Nominal size	Displacement [cc/rev]	Peak pressure [bar]	Intermittent pressure [bar]	Continuous pressure [bar]	Max speed [rpm]	N [mm]	Bolts* [mm]	Spare part code	Weight [Kg]
R0,1	0,19	190	170	150	7000	44,5	M5x55	E60503501	038
R0,2	0,26	190	170	150	7000	45,6	M5x55	E60503502	0,39
R0,3	0,32	190	170	150	7000	46,5	M5x60	E60503503	0,42
R0,4	0,38	190	170	150	7000	47,7	M5x60	E60503504	0,43
R0,5	0,51	190	170	150	7000	49,6	M5x60	E60503505	0,44
R0,7	0,64	190	170	150	7000	55,6	M5x65	E60503506	0,46
R0,9	0,88	190	170	150	7000	56,6	M5x70	E60503509	0,48
R1,3	1,25	190	170	150	5000	59,6	M5x70	E60503513	0,49
R1,5	1,5	190	170	150	4000	61,6	M5x75	E60503515	0,58

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

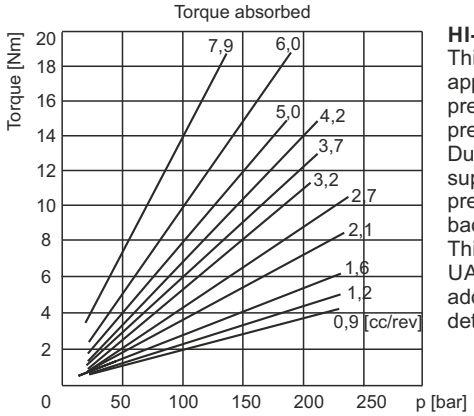
+

5 — **Size 2nd section**

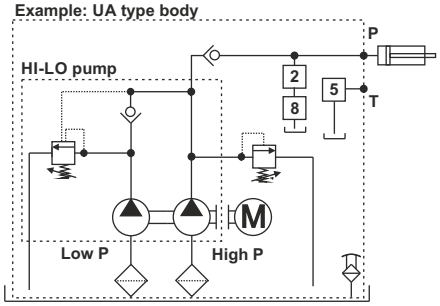
HL — **Option:** Hi - Lo execution

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.

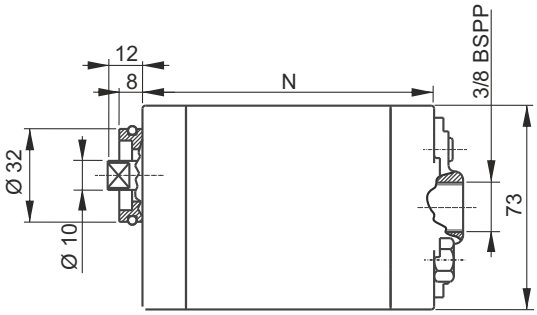


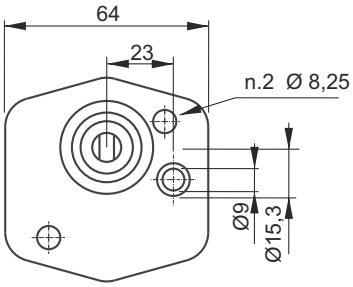
* One or more washers are always fitted to secure the bolt engagement

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

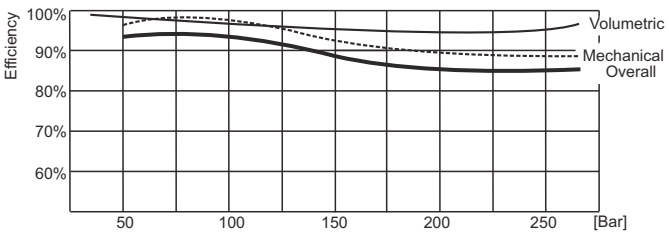
Assembly code

S — **Series:** S = Group 1 S series

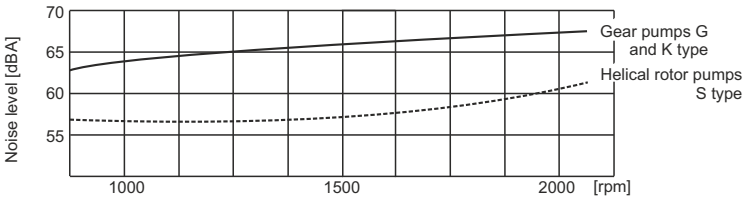
5,0 — **Size**

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	6,4	210	190	180	2000	87	M8x105	57	S60603010	2,03
S8,3	8,3	210	190	150	3600	98,0	M8x115	57	S60603012	2,08
S10	10,2	190	170	126	3600	103,0	M8x120	57	S60603014	2,12
S13	12,9	160	140	99	3600	108,9	M8x125	57	S60603016	2,15



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



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

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

INTEGRAL COMPONENTS

The PMC02 **cartridge hand pump** SAE08 (3/4-16UNF), 2 cc/stroke is an affordable and easy way to add an emergency 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. 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 and can be **easily removed** from the outside for easy cleaning and servicing

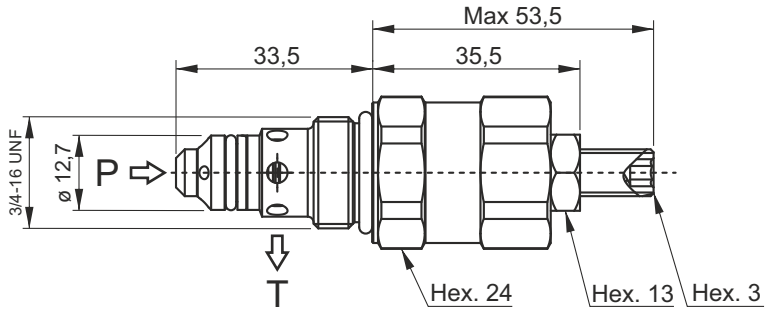
Q & A

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, which are numbered from 0 to 9. 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.

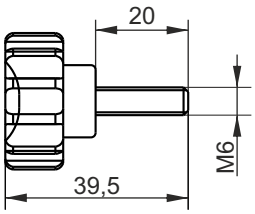
There are several different coils and connectors for the cartridge solenoid valves. How do I choose the proper ones?
Thanks to Hydronit range consistency, most integral solenoid valves (and some external valves too - see section G in this catalog) fit the same M63* series coils. M630 are for DC supply 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.

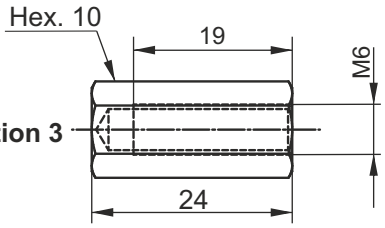
VMDC20 - DIRECT ACTING MAIN RELIEF VALVE



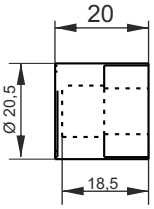
Option 2

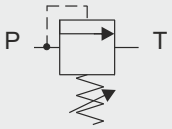


Option 3



Option 4





Main features

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

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

Spare part code

VMDC — **Relief valve**

20 — **Nominal size:**
20 = 20 l/min

B — **Working range:**
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

Assembly code

V* ¨**

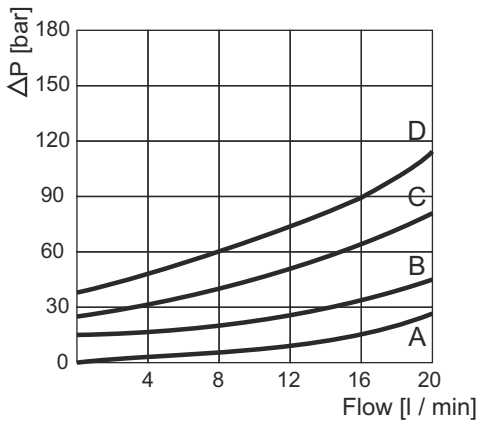
where *** stands for max setting pressure [bar]. Ex. V200
where ¨ is the option

Mounting cavities

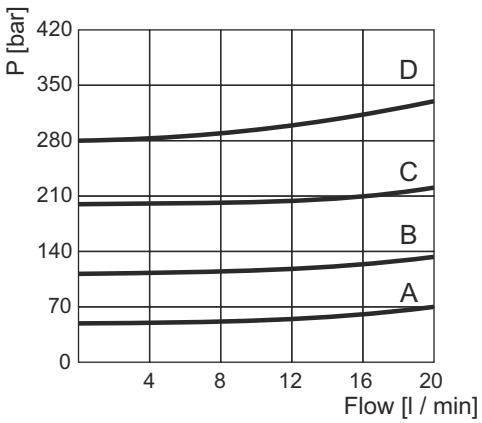
0	**1**		
2	**3**	4	
5	6	7	8

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

Minimum setting pressure

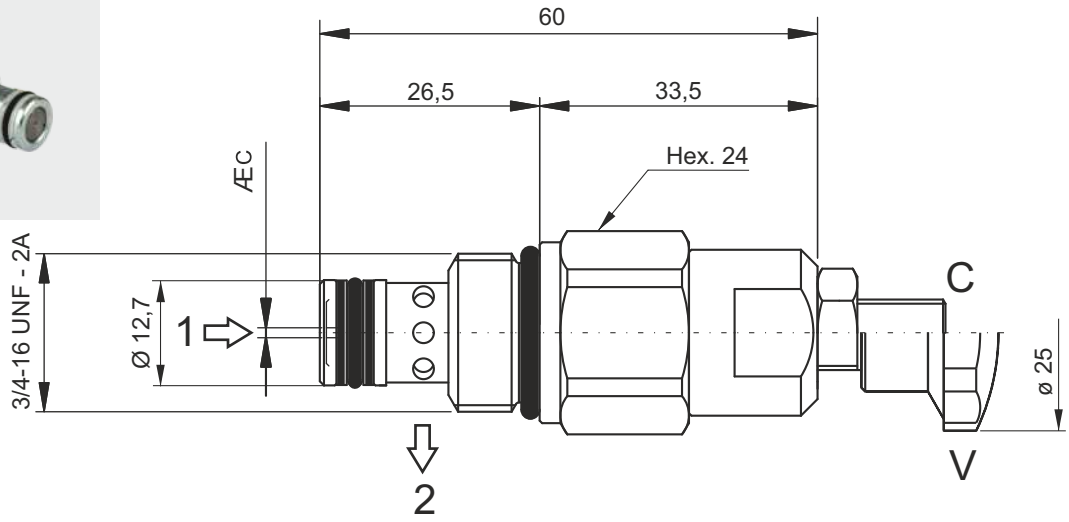


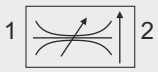
Pressure vs Flow



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

VCF6 - PRESSURE COMPENSATED FLOW CONTROL VALVE





Main features

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

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

Spare part code

VCF6 — **Flow control valve pressure compensated**

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

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

Assembly code

R *

Where * stands for nominal dimension

Mounting cavities

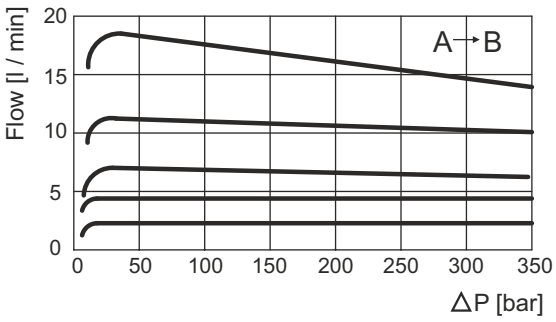
0	1		
2	**3**	4	
5	6	7	8

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

Range available

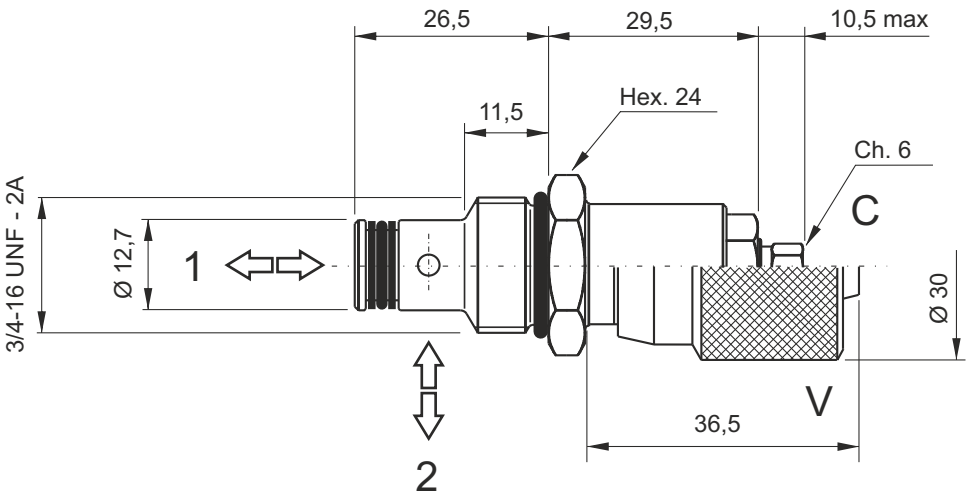
Nominal dimension	ÆC	Controlled flow at 100 bar ± 10% l/min
2	0,6	1,0 ÷ 2,2
3	1,0	1,6 ÷ 4,0
4	1,2	2,5 ÷ 5,0
5	1,8	3,0 ÷ 7,0
6	2,8	4,9 ÷ 10,8
7	4,8	8,0 ÷ 18,5

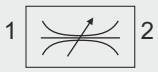
Pressure drop diagram



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

CSB - BIDIRECTIONAL FLOW CONTROL VALVE





Main features

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

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

Spare part code

CSB — **Flow control valve**

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

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

Assembly code

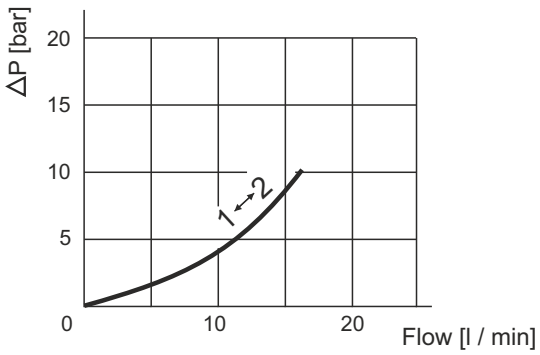
S

Mounting cavities

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

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

Pressure drop diagram

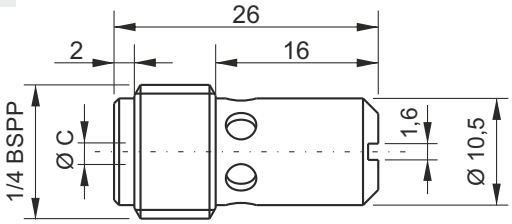


Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

VSC01 - PRESSURE COMPENSATED FIXED FLOW CONTROL VALVE

Controlled flow

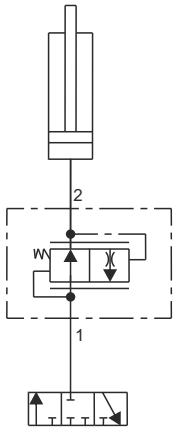
2 ⇨

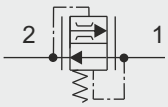


Free flow

⇦ 1

Typical application





Main features

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

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

Spare part code

VSC — **Flow control valve pressure compensated**

01 — **Nominal size:** 01

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

Assembly code

***(01)**

Where * stands for controlled flow [l/min]

Mounting cavities

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

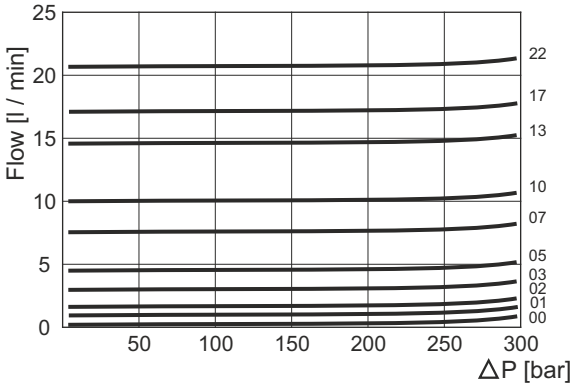
Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Controlled flow

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

Note: nominal controlled 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

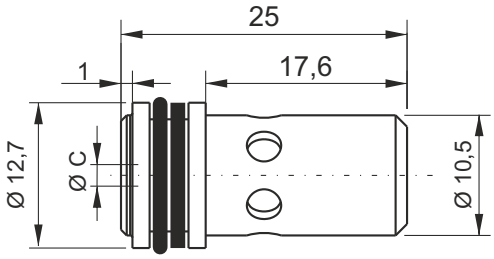


Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

VSC04 - PRESSURE COMPENSATED FIXED FLOW CONTROL VALVE

Controlled flow

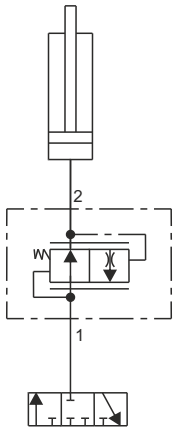
2 ⇨

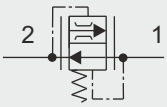


Free flow

⇦ 1

Typical application





Main features

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

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

Spare part code

VSC — **Flow control valve pressure compensated**

04 — **Nominal size:** 04

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

Assembly code

***(04)**

Where * stands for controlled flow [l/min]

Mounting cavities

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

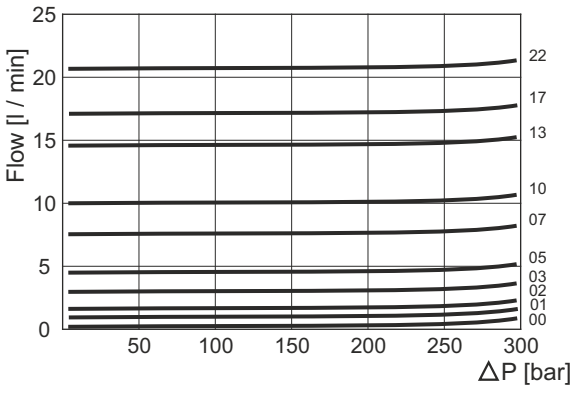
Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Controlled flow

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

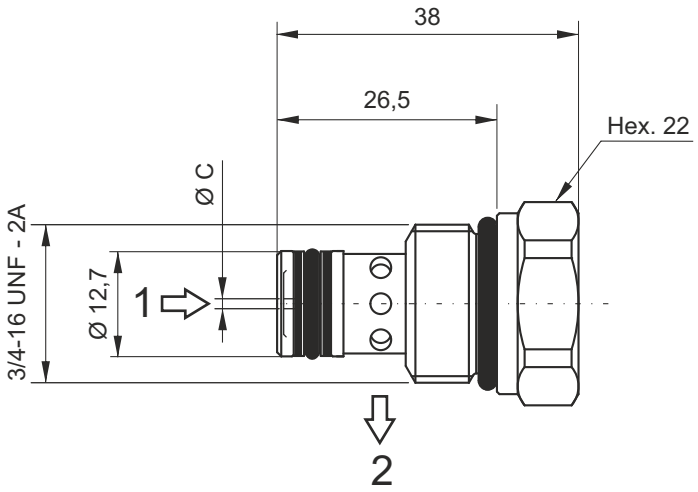
Note: nominal controlled flows, measured at 100 bar with an oil viscosity of 46 cSt at 50 °C, are to be taken as general reference values and must be tested in the field.

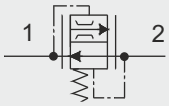
Pressure drop diagram



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

VSC6 - PRESSURE COMPENSATED FIXED FLOW CONTROL VALVE





Main features

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

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

Spare part code

VSC — **Flow control valve pressure compensated**

6 — **Nominal size:** 6

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

Assembly code

F*

Where * stands for controlled flow [l/min]

Mounting cavities

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

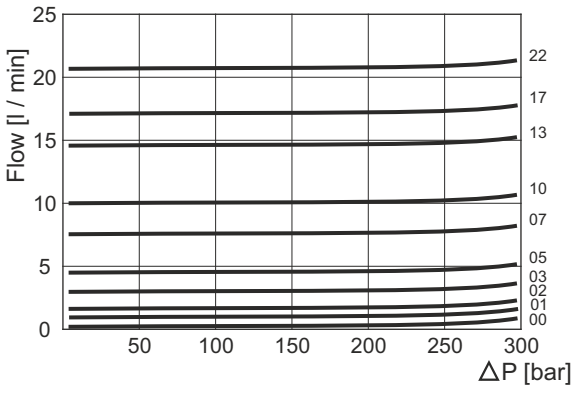
Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Controlled flow

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

Note: nominal controlled 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.

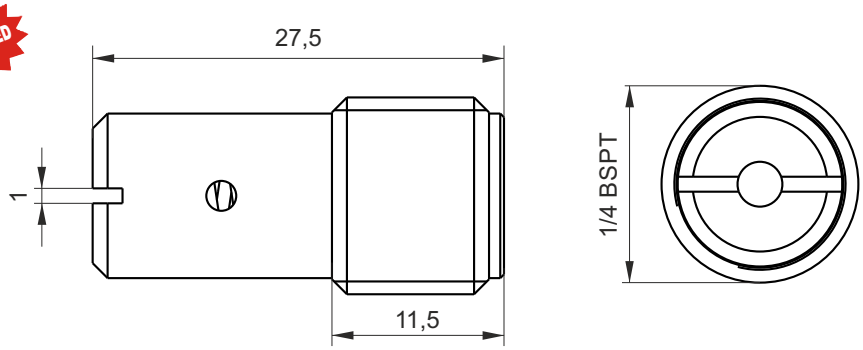
Pressure drop diagram



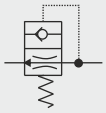
Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

SUV01 - START-UP VALVE FOR SINGLE PHASE ELECTRIC MOTORS

IMPROVED



SUV01 valve is to be mounted in cavity 9 of the central manifold, 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 cavity 0, when the power pack is off. It is typically used with single-phase motor starting under load, overcoming the inherent limitation of single phase AC induction motors.



Main features

Max pressure	300 bar
Max flow	22 l/min
Min flow	2 l/min
Weight	0,0025 kg

Recommended tightening torque: 15 Nm
Recommended filtration: 25 ÷ 50 µ
Oil temperature: -10 ÷ + 80 °C

Spare part code

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

01 — **Nominal size:** 01 = 1/4 BSPP

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

Assembly code

S01*

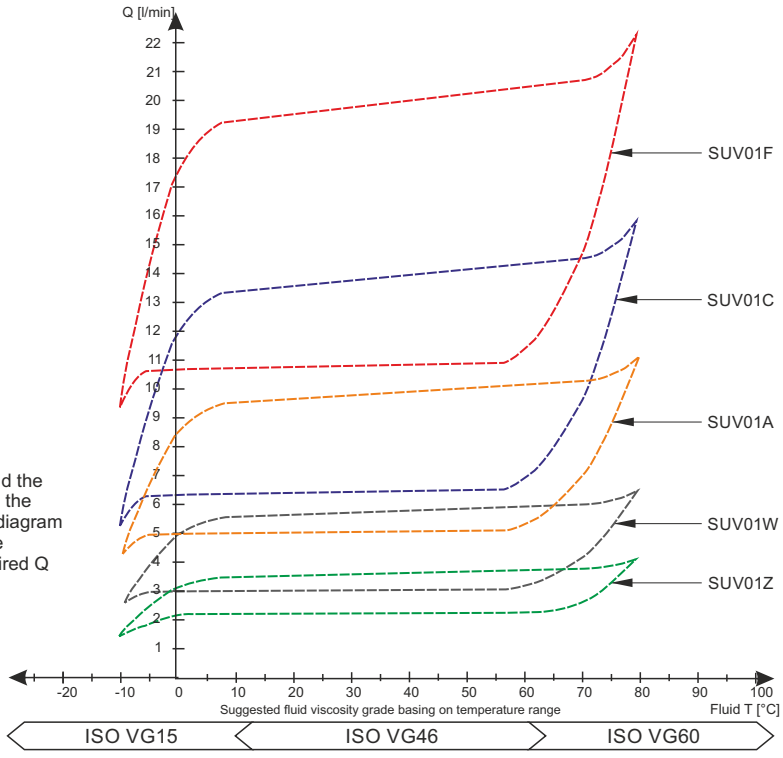
Where * stands for the setting

Mounting cavities

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

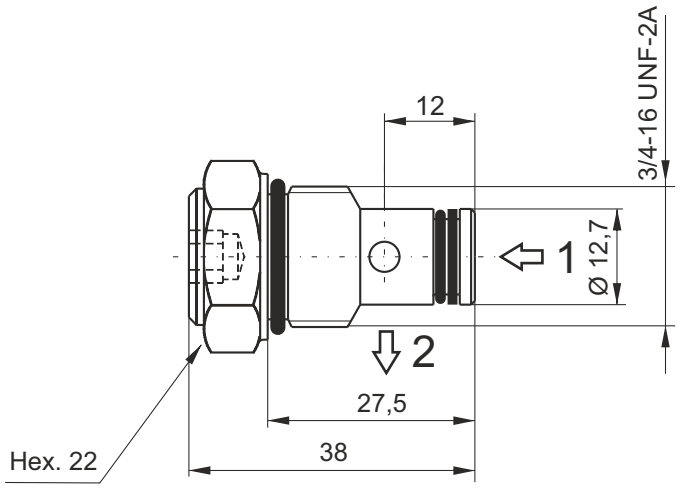
Note: cavities 3, 4 and 6 are present on central manifold type UB only.

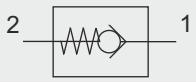
Working limits diagram
Once the required power pack flow and the fluid working temperature are defined, the proper valve can be chosen from the diagram aside. Try to choose the valve with the working area most centered with required Q and T.



VUC20 - MAIN CHECK VALVE

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





Main features

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

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

Spare part code

VUC — **Check valve**

20 — **Nominal size:** 20

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

Assembly code

J *

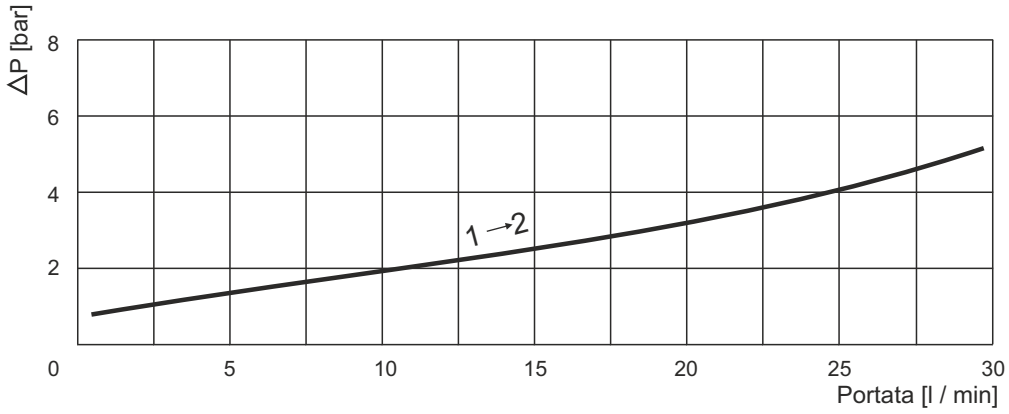
where * is the option

Mounting cavities

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

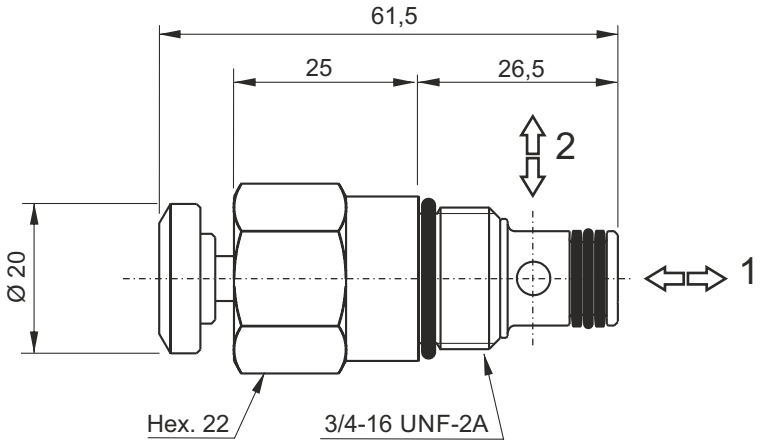
Note: cavities 3, 4 and 6 are present on central manifold type UB only.

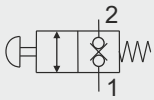
Pressure drop diagram



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

CPE - MANUAL EMERGENCY VALVE





Main features

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

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

Spare part code

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

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

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

Assembly code

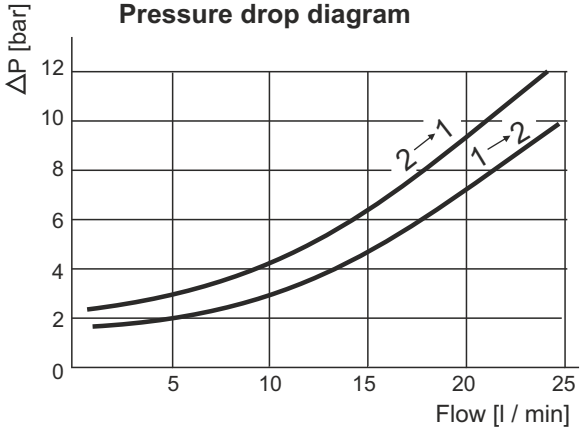
Z

Mounting cavities

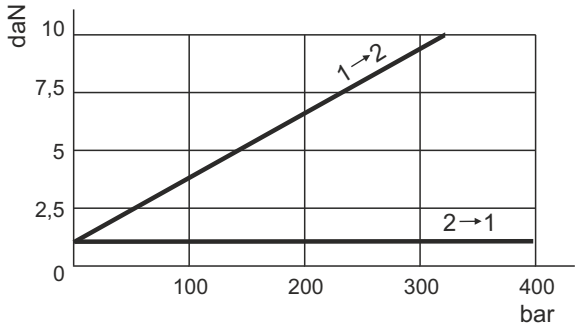
0	1		
2	**3**	**4**	
5	6	7	8

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

Pressure drop diagram

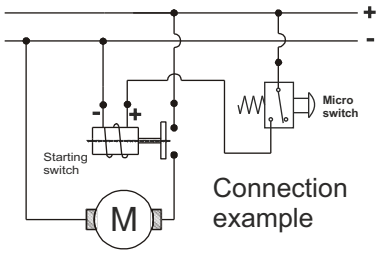


Operating force (daN) on the button

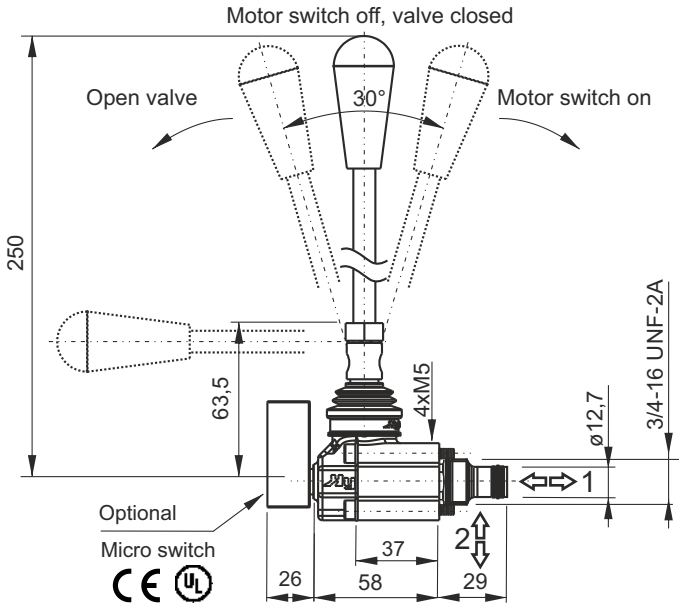


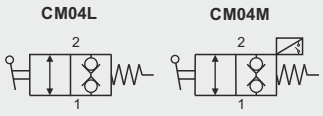
Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

CM - MANUAL LEVER VALVE



Connection example





Main features

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

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

Spare part code

CM — **Two-way manual lever valve**

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

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

Assembly code

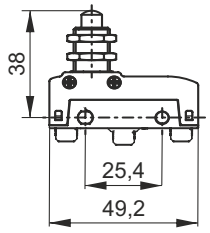
E (CM04L)
EM (CM04M)

Mounting cavities

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

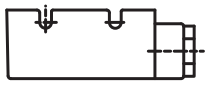
Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Micro switch option



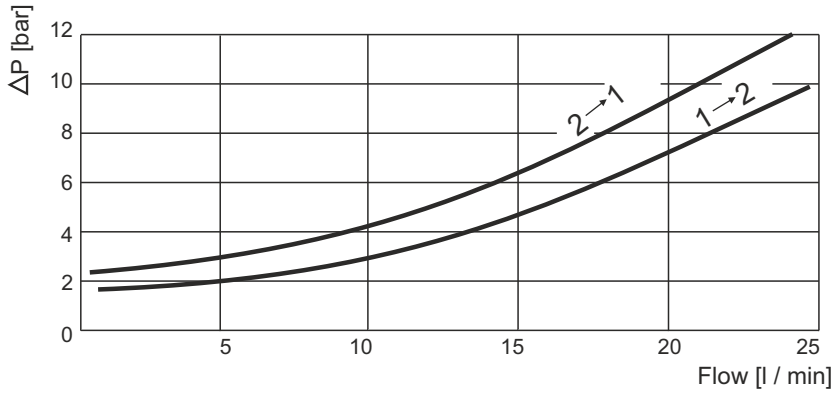
Spare part code
MCR1222

Plastic terminal cover protection



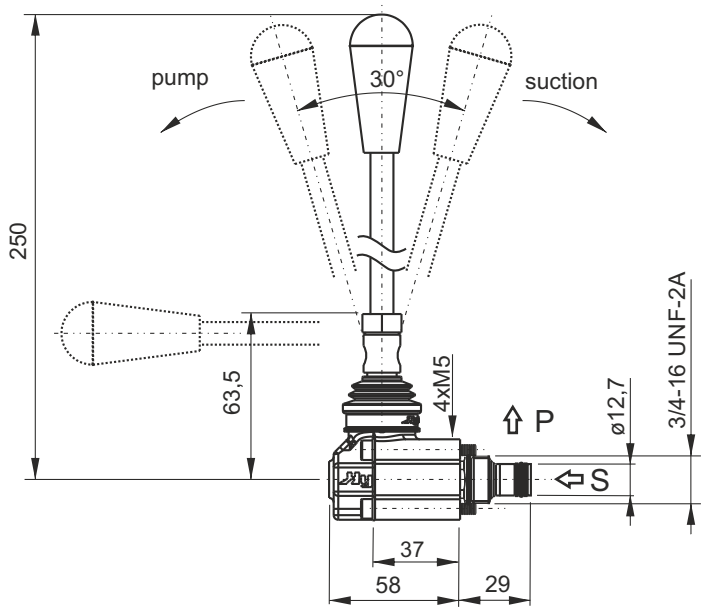
Spare part code
VFC02

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

PMC - CARTRIDGE HAND PUMP



Main features

Max pressure	180 bar
Max flow	-
Weight	0,34 kg

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

Spare part code

PMC — **Hand pump**

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

L — **Type:**
L = lever (std)

Assembly code

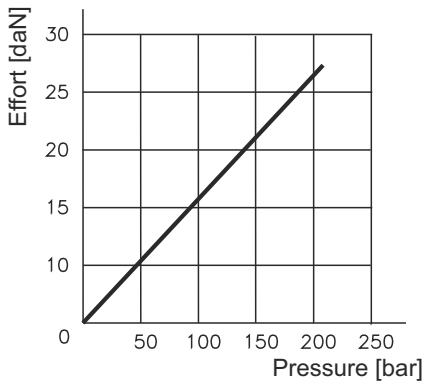
U

Mounting cavities

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

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

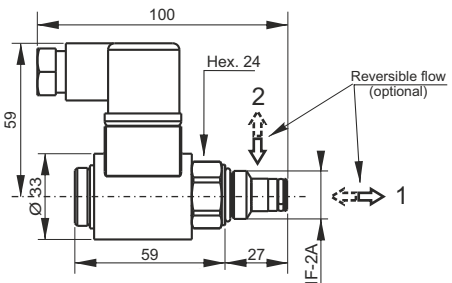
Effort (daN)
operating on the lever end



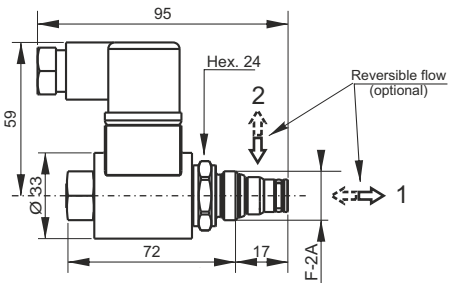
Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

MSV - PILOT OPERATED TWO-WAY SINGLE LOCKING SOLENOID VALVES

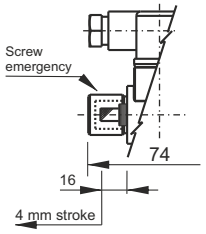
Normally closed

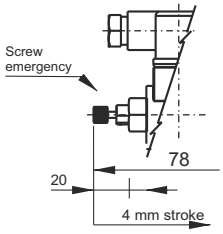


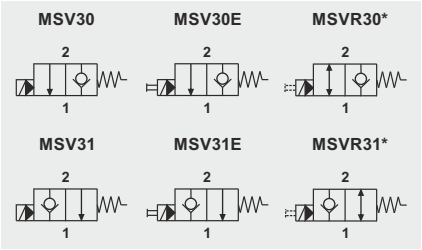
Normally open



Options







Main features

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

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

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

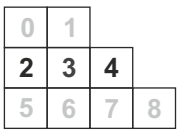
0000 — **Supply voltage:**
0000 = no coil (std)
see coils table

Assembly code

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

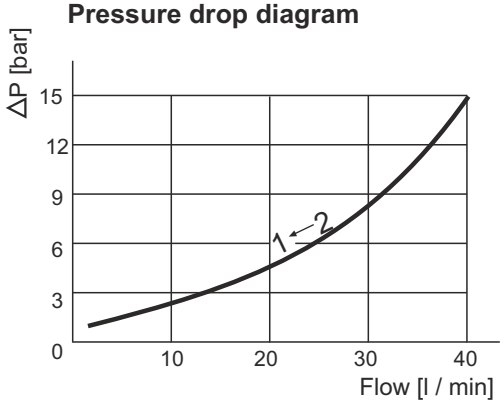
Ex: A12DC

Mounting cavities



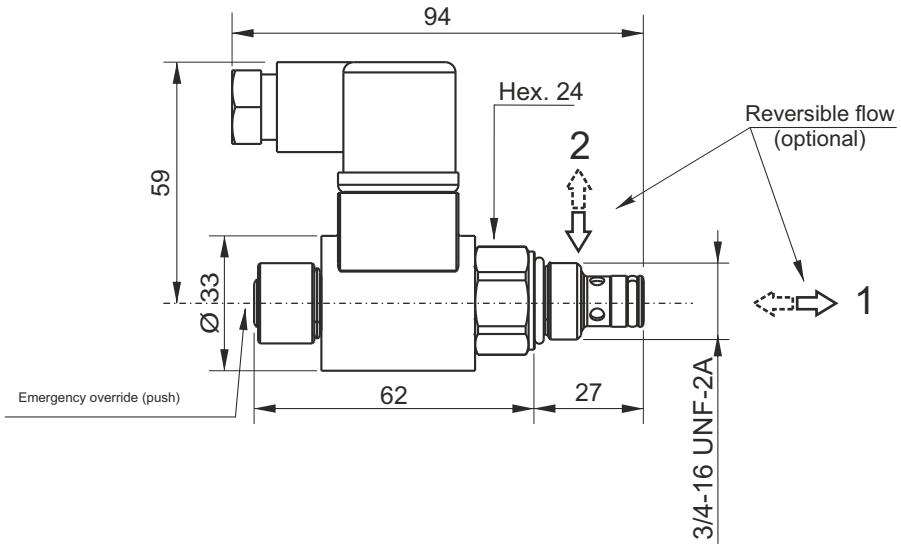
Note: cavities 3, 4 and 6 are present on central manifold type UB only.

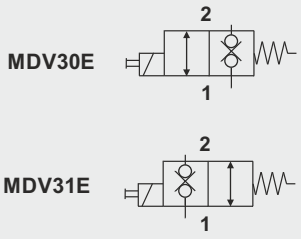
Pressure drop diagram



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

MDV - DIRECT OPERATED TWO-WAY DOUBLE LOCKING SOLENOID VALVES





Main features

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

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

Spare part code

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

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

E — **Option:**
E = emergency (std)

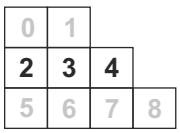
0000 — **Supply voltage:**
0000 = no coil (std)
see coils table

Assembly code

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

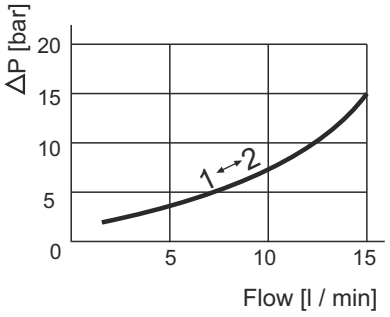
Ex: D12DC

Mounting cavities



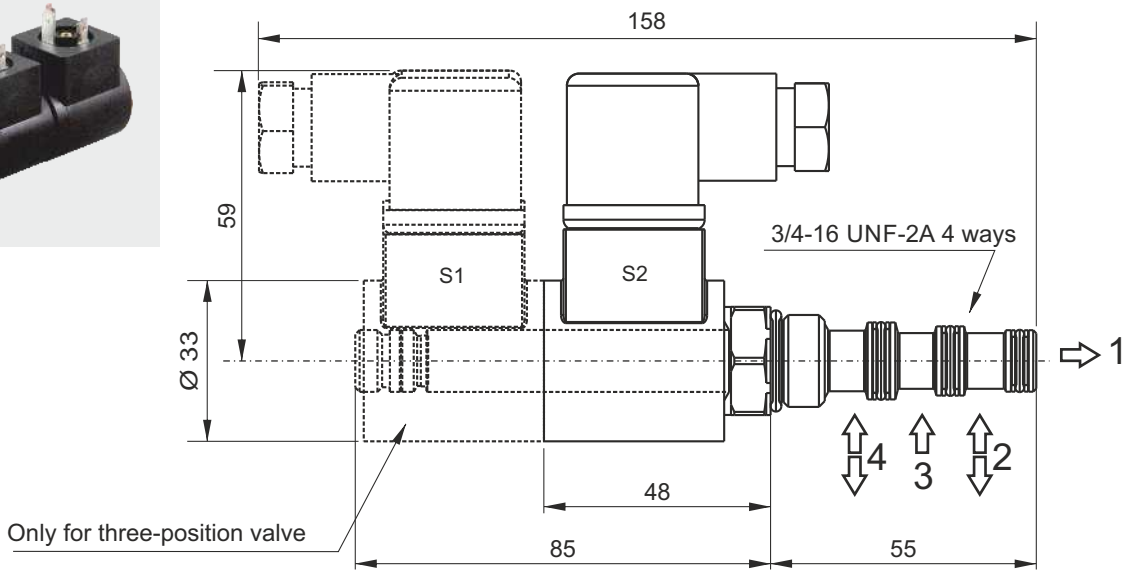
Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Pressure drop diagram



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

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



Main features

Max pressure	210 bar
Max flow	11,5 l/min
Weight	0,37 Kg (1 solenoid) 0,64 Kg (2 solenoid)
Internal leakage	278 cc/min at 210 bar
Minimum pull-in voltage	85% of nominal
Available voltage	12VDC 24VDC 24VAC 110RAC 220RAC
Coils (see page D190)	M630 series M631 series
Normatives	EN50081-1/EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

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

Spare part code

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

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

00 — **Option:** 00 = std

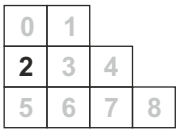
0000 — **Supply voltage:** 0000 = no coil (std) see coils table

Assembly code

4VA2 Voltage

Ex: 4VA2 24DC

Mounting cavities

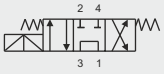
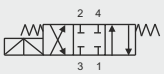
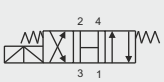


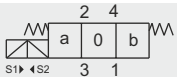
Note: MS4V may only be fitted to type U4 central manifold

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

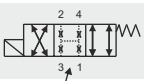
Spools

Double solenoid

A2	
B2	
C2	
E2	

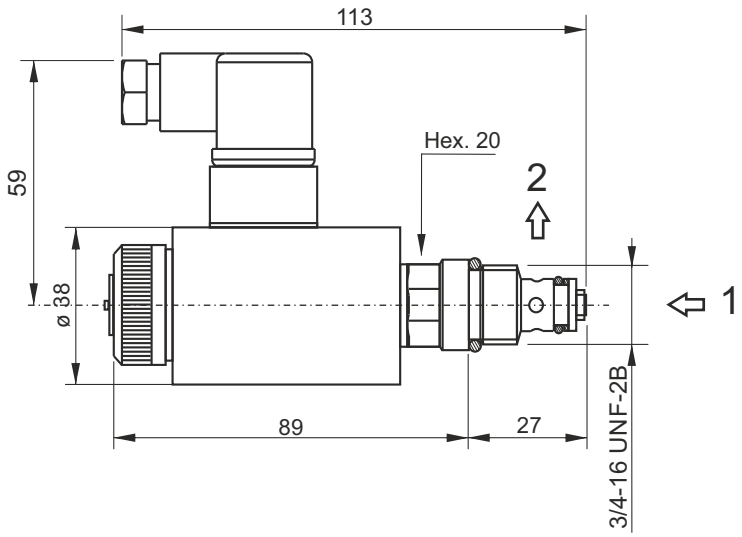
Code 

Single solenoid

A11C 

transition

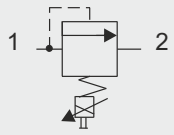
VMPC2 - PROPORTIONAL PRESSURE RELIEF VALVE



Coils

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

For the controller see the VPC table in D section



Main features

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

Spare part code

VMPC — **Direct acting proportional relief valve**

2 — **Nominal size:**
2 = 2 l/min

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

E — **Options:**
E = emergency (std)

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

see coils table

Assembly code

P* Voltage**

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

Mounting cavities

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

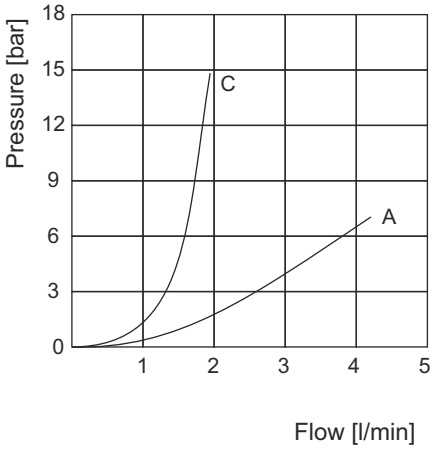
Note: cavities 3, 4 and 6 are present on central manifold type UB only.

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

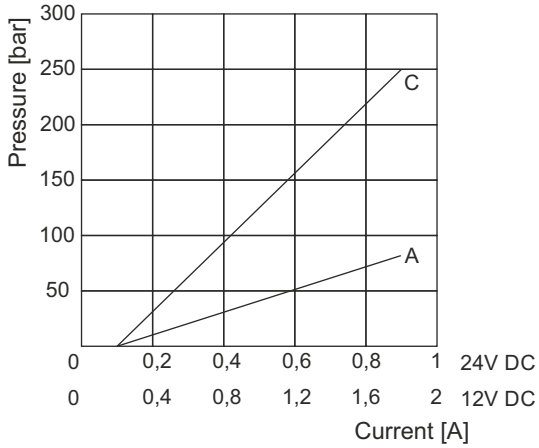
For the controller see table D170

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

Pressure drop diagram



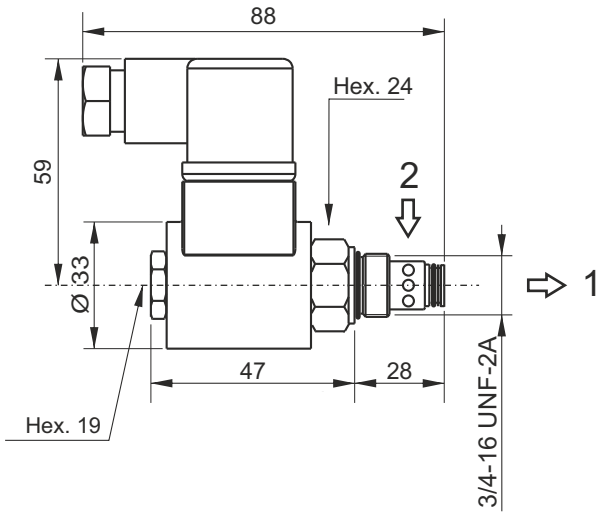
Pressure vs current



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

CSPC15 - PROPORTIONAL FLOW CONTROL VALVE

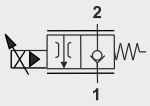
CE



Coils

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

For the controller see the VPC table in D section



Main features

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

Spare part code

CSPC — **Proportional flow control valve**

15 — **Nominal size:** 15 = 15 l/min

0 — **Option:** 0 = no option

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

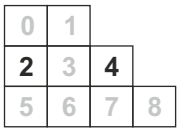
see coils table

Assembly code

T* Voltage**

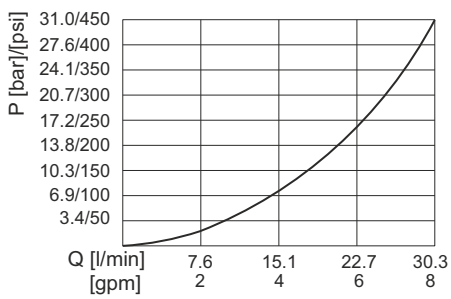
eg: T12DC

Mounting cavities

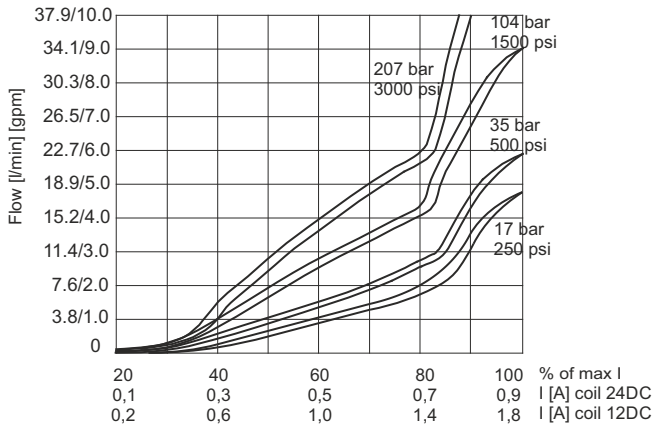


Note: cavities 3, 4 and 6 are present on central manifold type UB only.

Pressure Drop 2 > 1 with fully open valve

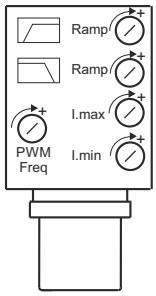


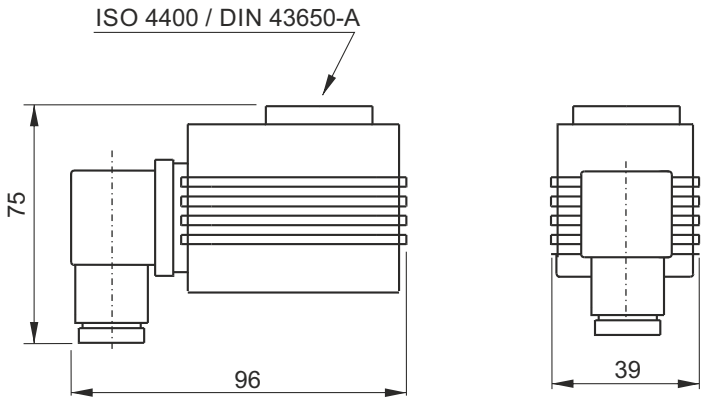
Flow vs current at different pressure drops



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

VPC - ELECTRONIC AMPLIFIER FOR PROPORTIONAL SOLENOID VALVES





Main features

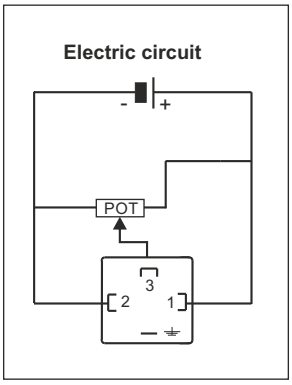
Supply voltage	12 / 24V DC
Voltage input signal range	0 ~ 10 V
Max current range	2,5A
PWM (optionally adjustable)	120 Hz (50 ÷ 400 Hz)
Ramp adjustment (independent)	5%
Input impedance	100 kohm
Voltage	+/- 10% nominal voltage
Weight	0,11 kg
Normatives	EN50081-1/EN50082-2 (89/336 CEE electromagnetic comp.)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

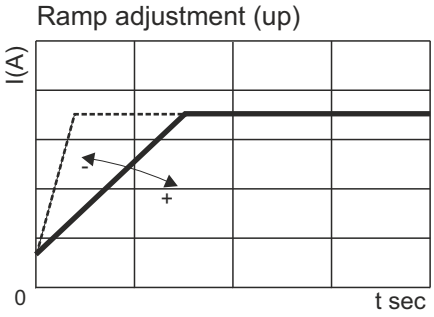
Spare part code

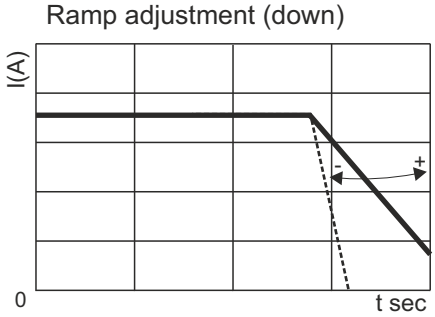
VPC — **Electronic amplifier for solenoid valves**

00 — **Options**

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







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.

COILS FOR SOLENOID VALVES

M630* / M631*

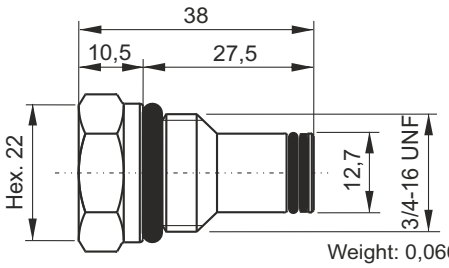
9800*

M630DT*

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	MSV30/31 MDV MSV4V CSPC15
24DC	24DC_M630	DC	**M6306024**	KA132000B1 DIN43650/ISO4400	18W	100	H	130	MSV30/31 MDV MSV4V CSPC15
24AC	24AC_M631	RC with integrated rectifying bridge	**M6316024**	KA132000B1 DIN43650/ISO4400	18W	100	H	130	MSV30/31 MDV MSV4V
115AC	115AC_M631	RC with integrated rectifying bridge	**M6316115**	KA132000B1 DIN43650/ISO4400	18W	100	H	130	MSV30/31 MDV MSV4V
230AC	230AC_M631	RC with integrated rectifying bridge	**M6316230**	KA132000B1 DIN43650/ISO4400	18W	100	H	130	MSV30/31 MDV MSV4V
12DC	12DC_M630DT	DC, Deutsch	**M6306012DT**	DT06-4S Deutsch	16W	100	H	117	MSV30/31 MDV30/31 SD00
24DC	24DC_M630DT	DC, Deutsch	**M6306024DT**	DT06-4S Deutsch	16W	100	H	117	MSV30/30 MDV30/31 SD00
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

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

PLUGS



Weight: 0,066 Kg

Hydraulic symbol

Spare part code

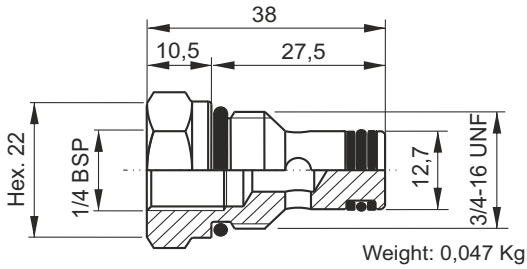
E70100005

Assembly code

G

Mounting cavities

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



Weight: 0,047 Kg

Hydraulic symbol

Spare part code

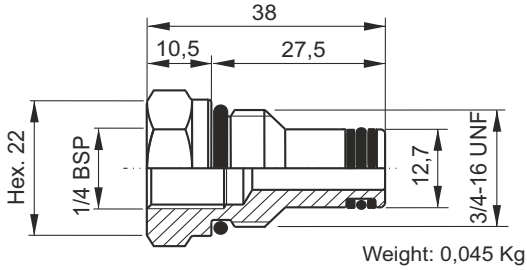
E70100003

Assembly code

H

Mounting cavities

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



Weight: 0,045 Kg

Hydraulic symbol

P
2 3
P

Spare part code

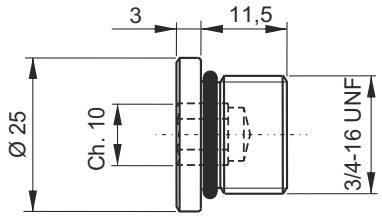
E70100006

Assembly code

P

Mounting cavities

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



Weight: 0,027 Kg

Hydraulic symbol

Spare part code

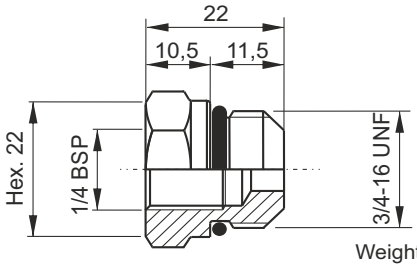
E70100004

Assembly code

L

Mounting cavities

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



Weight: 0,042 Kg

Hydraulic symbol

Spare part code

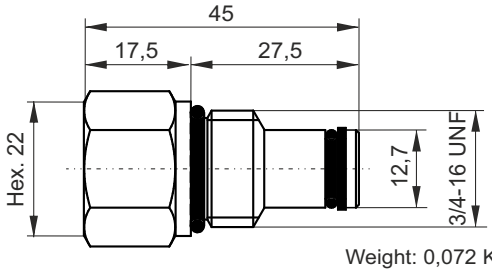
E70100002

Assembly code

N

Mounting cavities

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



Weight: 0,072 Kg

Hydraulic symbol

Spare part code

E70200010

Assembly code

XP

Mounting cavities

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

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

TANKS

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

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

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

Square plastic tanks, from **1,5** to **25 l**, for horizontal or vertical mounting

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

Q & A

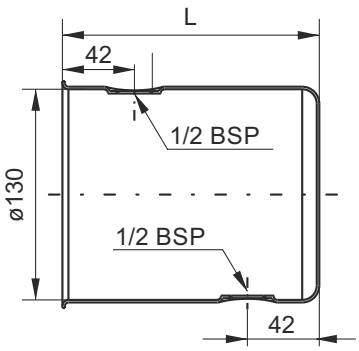
Plastic or steel tanks?
Plastic tanks have various advatanges: they do not rust, the oil level is visible and they do not damage easily if bumped or exposed to vibrations. On the other hand steel tanks are preferable in case of ultra high or ultra low temperatures.

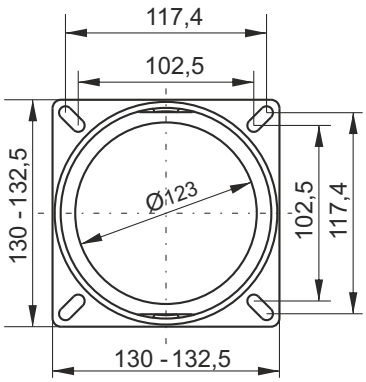
Is it possible to use custom made tanks?
Yes. We can provide an adaptor flange (F80000001) which can be welded on a custom made tank.
We can even design special tanks depending on application and quantities.

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.

CYLINDRICAL STEEL TANKS A & B SERIES

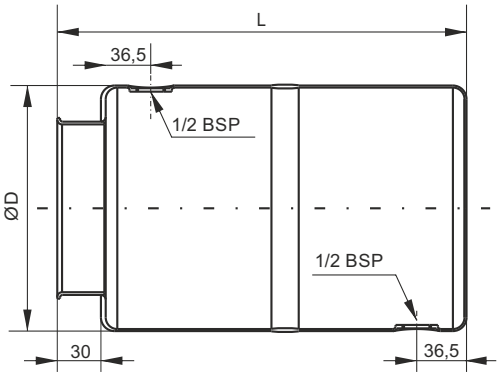
Recommended tightening torque for Filler Cap: 5 Nm

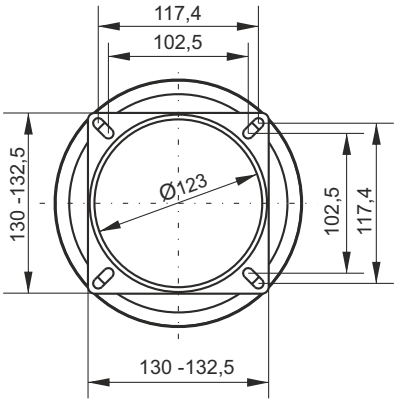




Description	Spare part code	Assembly code	L (mm)	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
1,5 l cylindrical horizontal / vertical mounting	**E60303001**	**1,5A / 1,5AV**	150	0,78 Kg	1,5	1,0
2,5 l cylindrical horizontal / vertical mounting	**E60303004**	**2,5A / 2,5AV**	235	1,04 Kg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

Recommended tightening torque for Filler Cap: 5 Nm





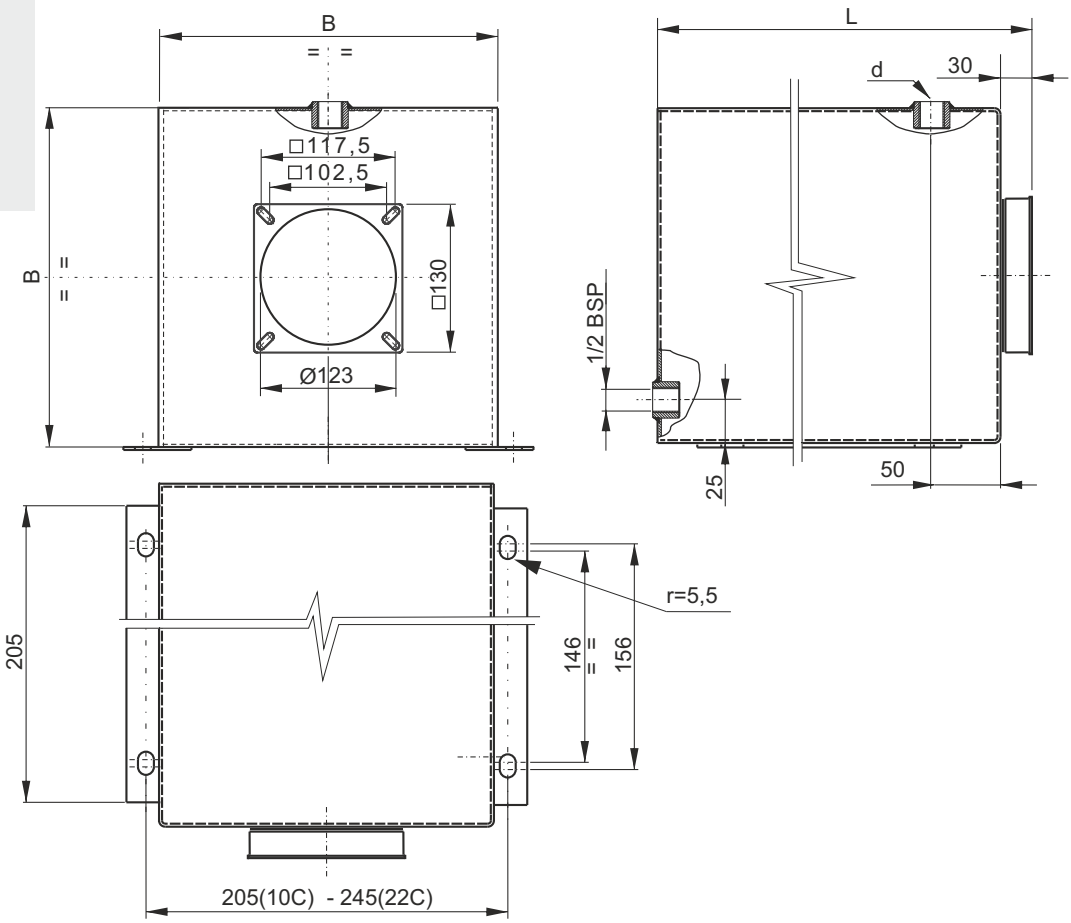
Description	Spare part code	Assembly code	L (mm)	ØD (mm)	Weight	Actual filling volume (lt)	
						Horiz.	Vert.
5 l cylindrical horizontal / vertical mounting	**E60303006**	**5B / 5BV**	300	180	1,82 Kg	6,3	5,1
10 l cylindrical horizontal / vertical mounting	**E60303011**	**10B / 10BV**	262	220	2,01 Kg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

All dimensions are in mm

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

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

HORIZONTAL/VERTICAL SQUARE WELDED STEEL TANKS C SERIES



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

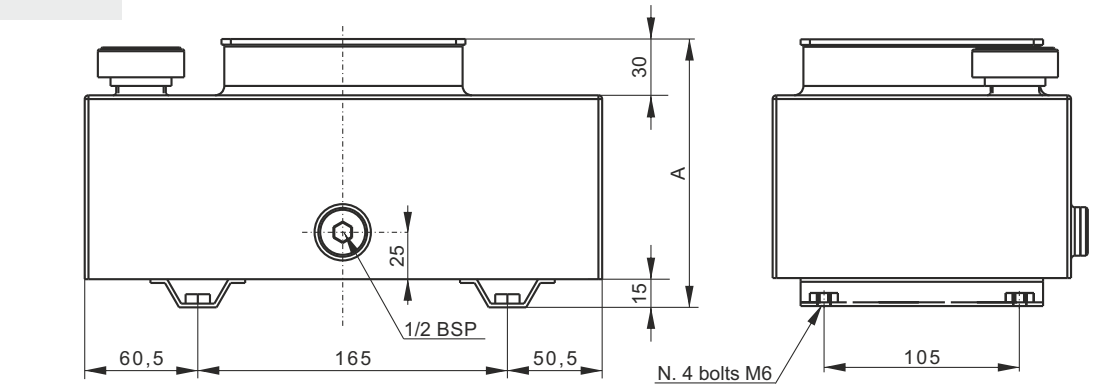
All dimensions are in mm

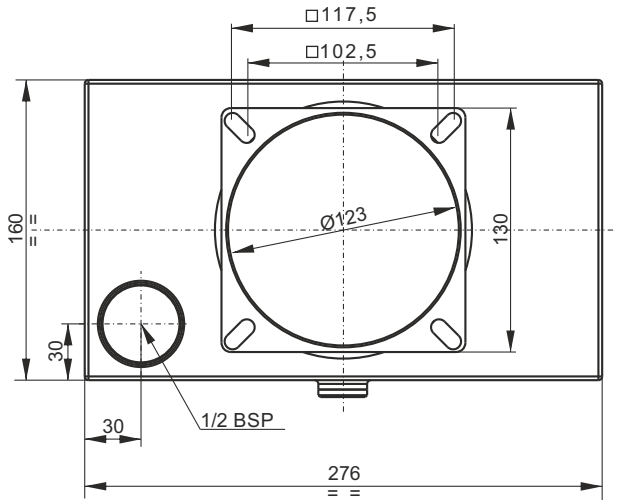
Material	Fe P04-EN10130 steel sheet 1,5mm thickness
Fluid	Mineral based oil ISO/DIN 6743/4
Working temperature	-15 / +70°C

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

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

SMALL SIZE SQUARE WELDED STEEL TANKS E SERIES





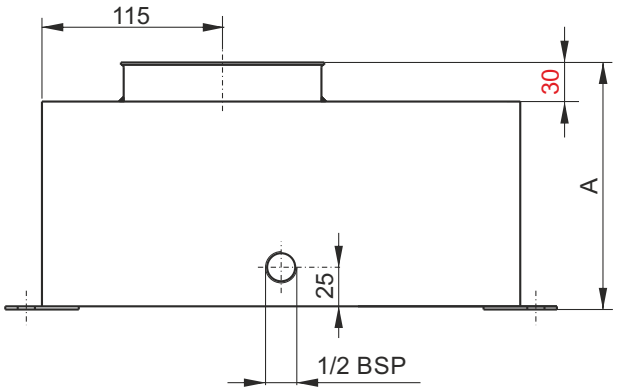
Description	Spare part code	Assembly code	A (mm)	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
3 l square vertical mounting	**E60303053**	**3EV**	128	3,09 Kg	-	4,2
7 l square vertical mounting	**E60303057**	**7EV**	220	4,32 Kg	-	8,3

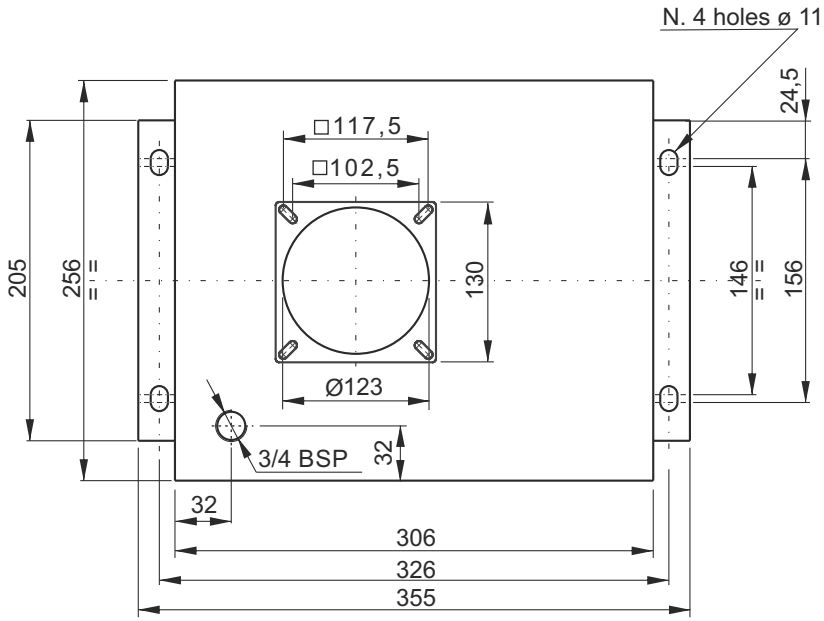
All dimensions are in mm

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

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

SMALL SIZE SQUARE WELDED STEEL TANKS E SERIES





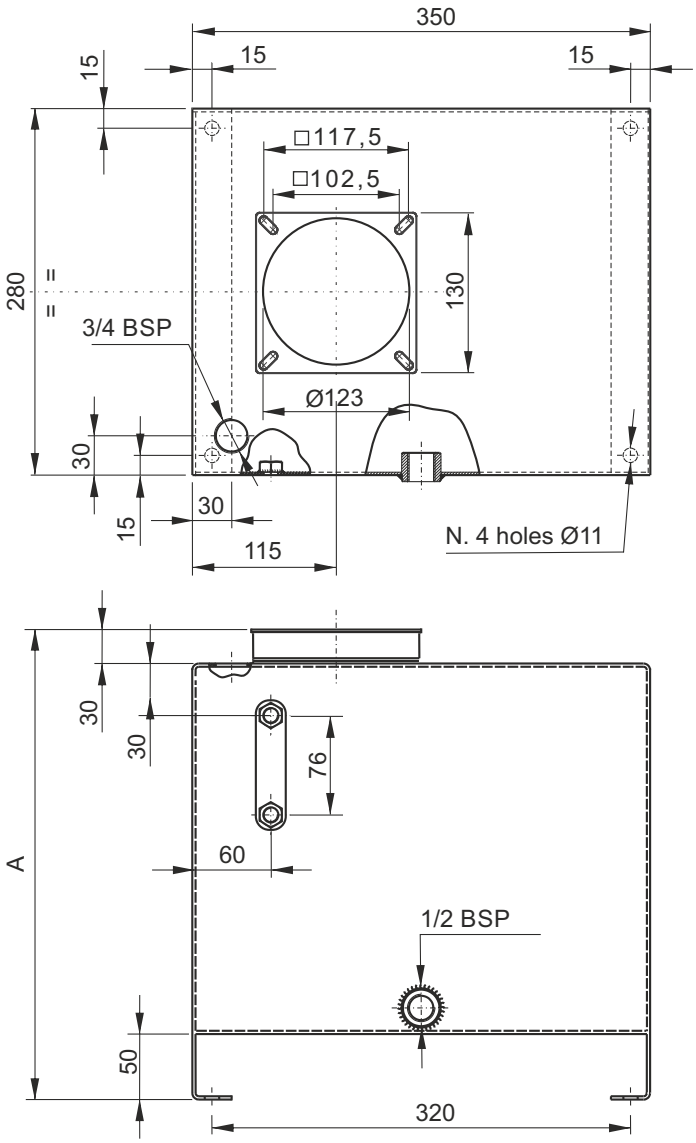
Description	Spare part code	Assembly code	A (mm)	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
8 l square vertical mounting	**E60303041**	**8EV**	156	4,50 Kg	-	10,4
15 l square vertical mounting	**E60303014**	**15EV**	260	5,20 Kg	-	18,5

All dimensions are in mm

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

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

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
30 l square vertical mounting	**E60303048**	**30EV**	423	8,50 Kg	-	33,5

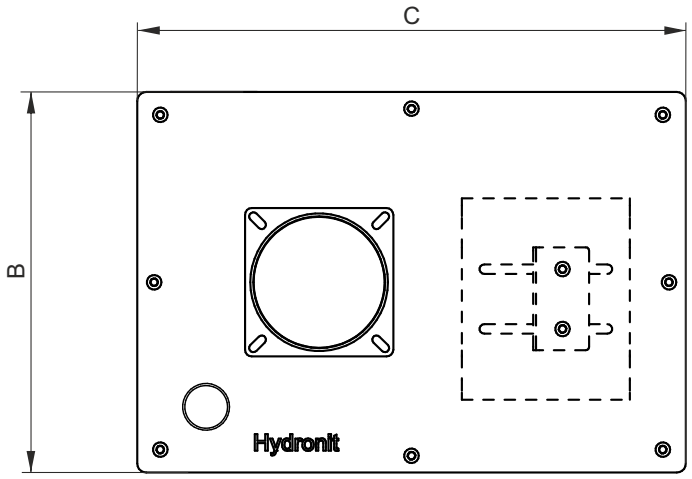
All dimensions are in mm

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

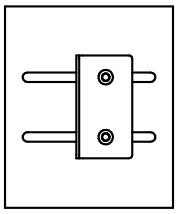
Notes: the piping kit, standard suction strainer, filler/breather, level gauge and drain plug are included when specifying the tank in PPC assembly code.
When ordering spare tanks, only the drain plug, filler/breather and level gauge are included.

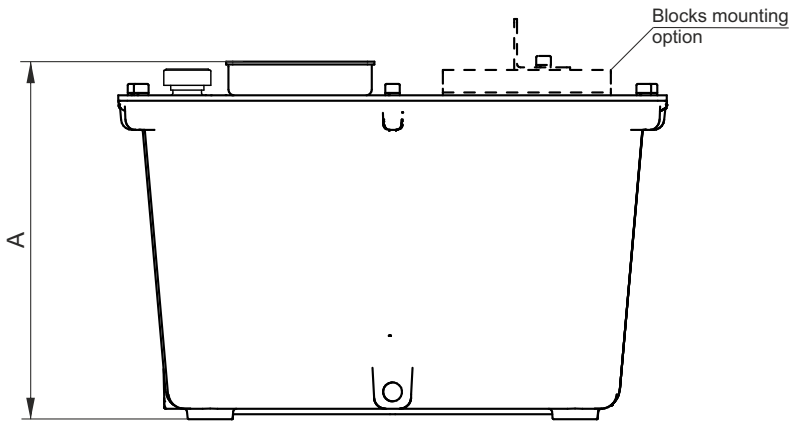
On request special square welded tanks can be manufactured. An inquiry must be sent to our technical department with indication of quantities.

HEAVY DUTY SQUARE ALUMINIUM TANK



Blocks mounting option





Option code
ART003

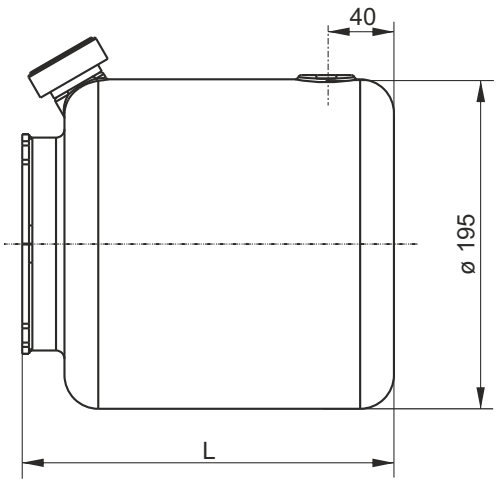
All dimensions are in mm

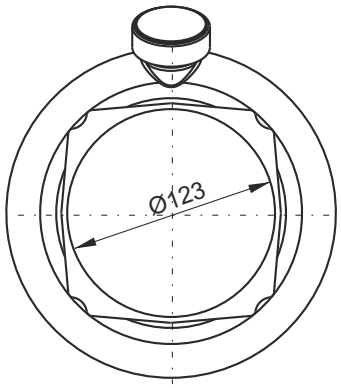
Description	Spare part code	Assembly code	A [mm]	B [mm]	C [mm]	Weight [kg]	Actual filling volume [l]
10 l square aluminium vertical mounting tank	**S602010HD**	**10HD**	255	250	340	4	8,5
10 l square aluminium vertical tank with blocks mounting support ART003	**S602010HDS**	**10HDS**	255	250	340	4,5	8,5
25 l square aluminium vertical mounting tank	**S602025HD**	**25HD**	315	340	490	13	21
25 l square aluminium vertical tank with blocks mounting support ART003	**S602025HDS**	**25HDS**	315	340	490	13,5	21

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



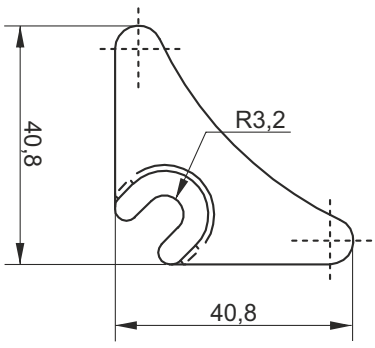


Description	Spare part code	Assembly code	L (mm)	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
5 l cylindrical horizontal / vertical mounting	**H60303028**	**5P / 5PV**	219	0,60 Kg	5,0	4,2
7 l cylindrical horizontal / vertical mounting	**H60303030**	**7P / 7PV**	271	0,61 Kg	6,0	5,5
9 l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

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

Clamping brakets

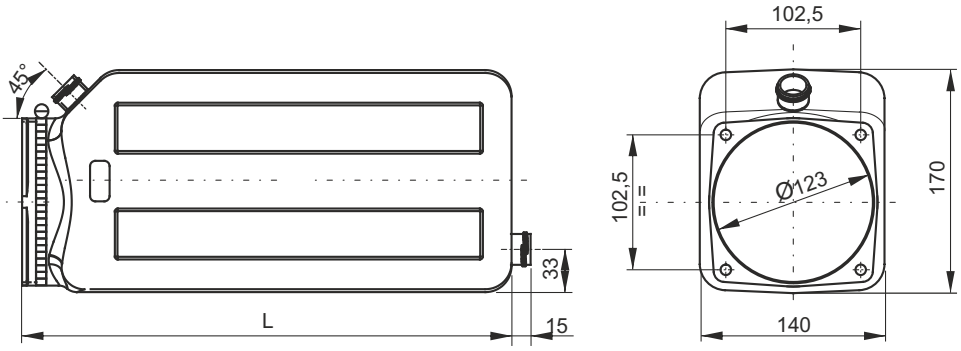
Clamp code
E60513022



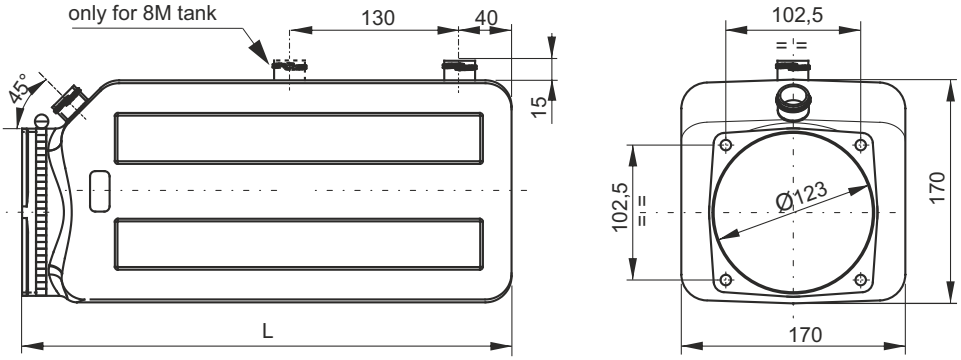
Notes: 4 x E60513022 mounting clamp brakets and a clamp band are required to fix P series cylindrical plastic tanks.

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)	
					Horizontal	Vertical
1,5 l square horizontal / vertical mounting	**H60303016**	**1,5L / 1,5LV**	135	0,32 Kg	2,4	1,5
3 l square horizontal / vertical mounting	**H60303018**	**3L / 3LV**	250	0,42 Kg	4,4	4,2
6 l square horizontal / vertical mounting	**H60303020**	**6L / 6LV**	350	0,63 Kg	6,2	6,6

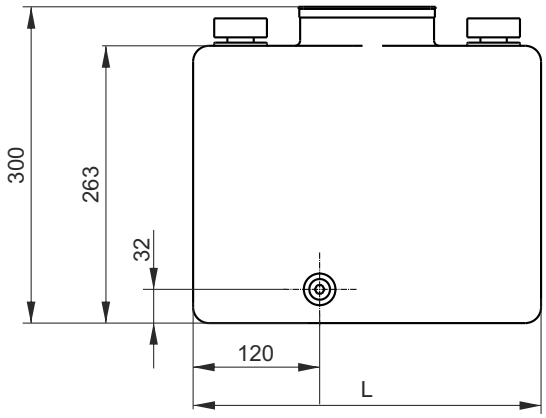


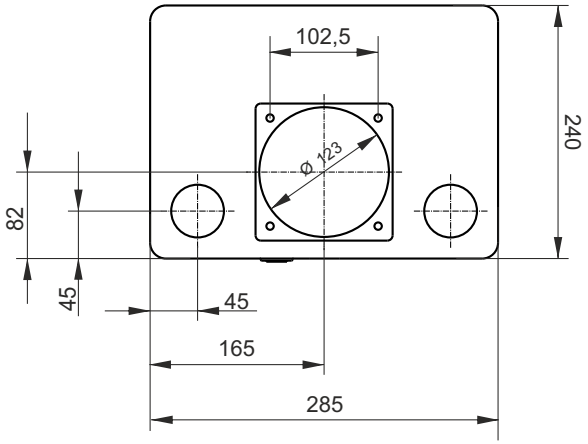
Description	Spare part code	Assembly code	L (mm)	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
5 l square horizontal / vertical mounting	**H60303025**	**5M / 5MV**	270	0,60 Kg	5,8	5,7
8 l square horizontal / vertical mounting	**H60303033**	**8M / 8MV**	375	0,76 Kg	8,1	8,8

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

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

SQUARE PLASTIC TANKS N SERIES





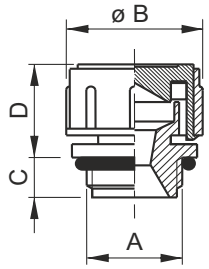
Description	Spare part code	Assembly code	L (mm)	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
15 l plastic square vertical mounting	**E20201800**	**15NV**	330	1,53 Kg	-	16,8

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

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

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

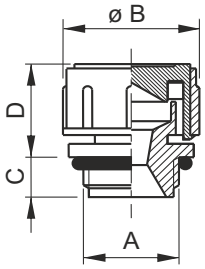
Weight: 0,02 Kg

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

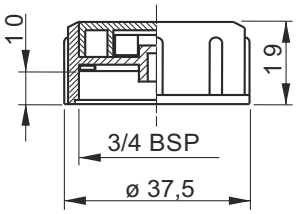
Weight: 0,02 Kg

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

Spare part code

C86100001CV

Filler breather 3/4” BSP female



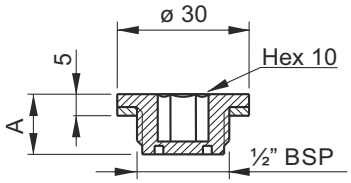
Suitable for all series plastic tanks

Weight: 0,01 Kg

Spare part code

C86100003

Drain plug



	A
TCNB0800	15
TB050801	19

Weight: 0,01 Kg

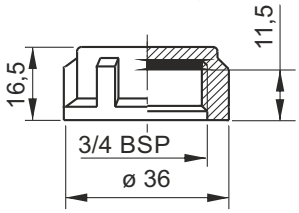
Weight: 0,04 Kg

Suitable for all steel tanks

Spare part code

TCNB0800 (plastic)
TB050801 (steel)

3/4” BSP female drain plug



Suitable for all series plastic tanks

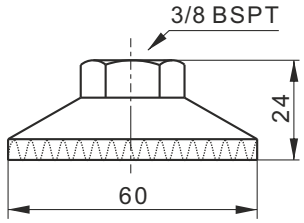
Weight: 0,01 Kg

Spare part code

E60513005

TANK ACCESSORIES

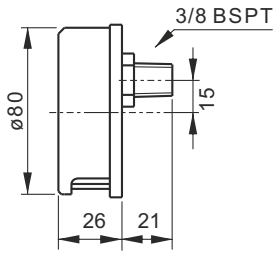
Standard inlet strainer filter
Filtration degree: 90 micron



Weight: 0,01 Kg

Spare part code
C34100005

Inlet eccentric filter
Filtration degree: 90 micron

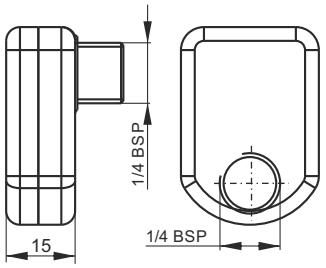


Recommended for 1,5 l tanks horizontal mounting

Weight: 0,13 Kg

Spare part code
C34100001

Micro inlet filter
Filtration degree: 90 micron

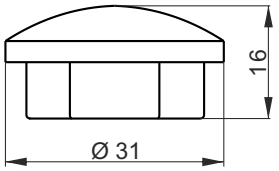


Recommended for pumps gr. 0

Weight: 0,01 Kg

Spare part code
C34100100

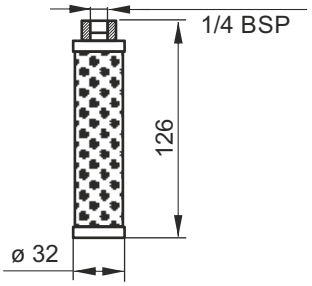
Micro inlet strainer filter
Filtration degree: 90 micron



Weight: 0,02 Kg

Spare part code
C34100006

In-tank return filter
Filtration degree: 90 micron

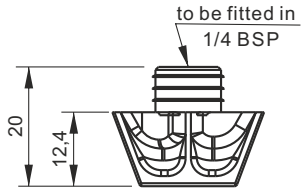


Suitable for all tanks over 3l

Weight: 0,09 Kg

Spare part code
C34200001

Relief valve diffuser
To be mounted in cavity Tr

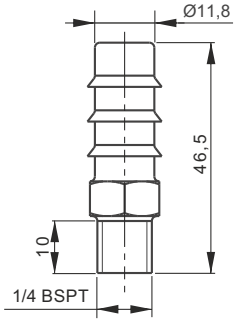


It reduces foam and noise when relief valve is working
Recommended for all vertical mounted tanks.

Weight: 0,01 Kg

Spare part code
SFEP01D

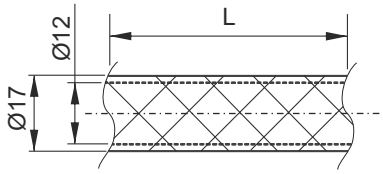
Flexible plastic pipe holder for return line 1/4" BSPT



Weight: 0,01 Kg

Spare part code
TR0112

Flexible plastic pipe

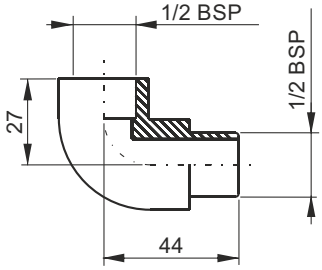


Recommended as standard return pipe. To be fixed with TR01-12 and cut to correct length. To be ordered in meters.

Weight: 0,18 Kg/meter

Spare part code
SF12

90° adapter for vertical tanks

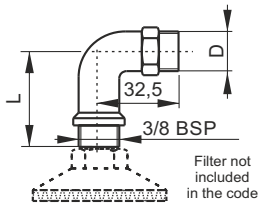


Weight: 0,02 Kg

Spare part code
E60513004

TANK ACCESSORIES

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



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

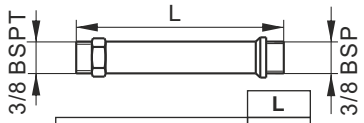
Recommended for horizontal tanks

Weight: 0,01 Kg

Spare part code

PP0*E**

3/8" suction pipe



	L
PP0242	42
PP0268	68
PP02105	105
PP02125	125
PP02142	142
PP02165	165
PP02180	180
PP02190	190
PP02237	237
PP02320	320
PP02370	370

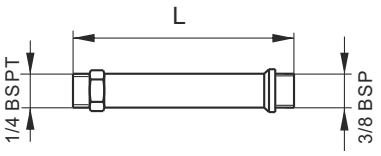
To fit inlet strainers C34100005 to Gr.1 pumps

Weight: 0,02 Kg

Spare part code

PP02**

1/4" - 3/8" suction pipe



	L
PP0130	30
PP0180	80
PP01120	120

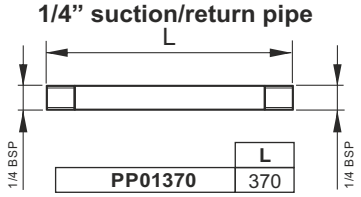
To fit inlet strainers C34100005 to Gr.0 pumps

Weight: 0,01 Kg

Spare part code

PP01**

1/4" suction/return pipe



	L
PP01370	370

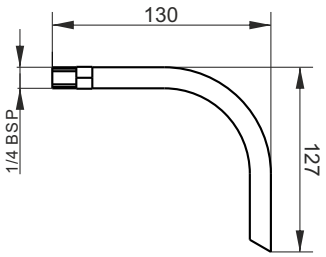
Recommended as suction pipe for PMC02 hand pumps and as return pipe with C3420001 return filter.

Weight: 0,04 Kg

Spare part code

PP01370

90° Plastic pipe for return line

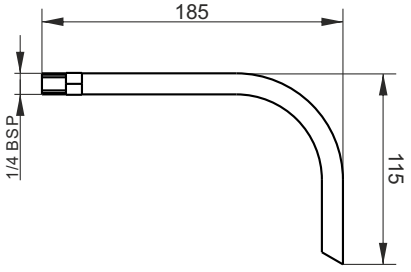


Weight: 0,02 Kg

Spare part code

PP01E130127

90° Plastic pipe for return line

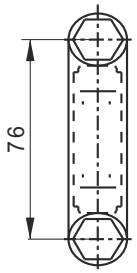


Weight: 0,02 Kg

Spare part code

PP01E185115

Level gauge

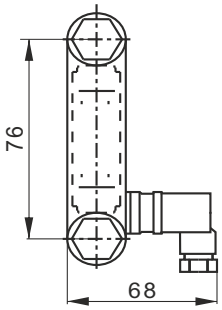


Fixing holes Ø 10,5 mm Weight: 0,10 Kg

Spare part code

SLV76

Electric thermostatic level gauge

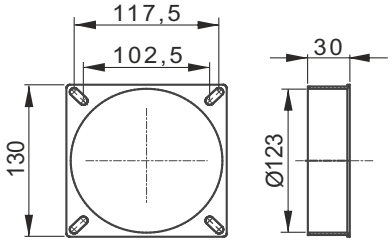


Fixing holes Ø 10,5 mm Weight: 0,16 Kg

Spare part code

GTL76TE

Bare steel tank adapter



Unpainted, to be welded on custom made tanks

Weight: 0,18 Kg

Spare part code

F80000001

EXTERNAL MANIFOLDS & ACCESSORIES

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

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

External hand pumps 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 PPC-to-SD02 stackable valve converter lets you mount our range of **modular stackable valves**. This is an **up-to-date and lightweight alternative** to NG6 (Cetop 3) directional spool valves

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

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

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

Q & A

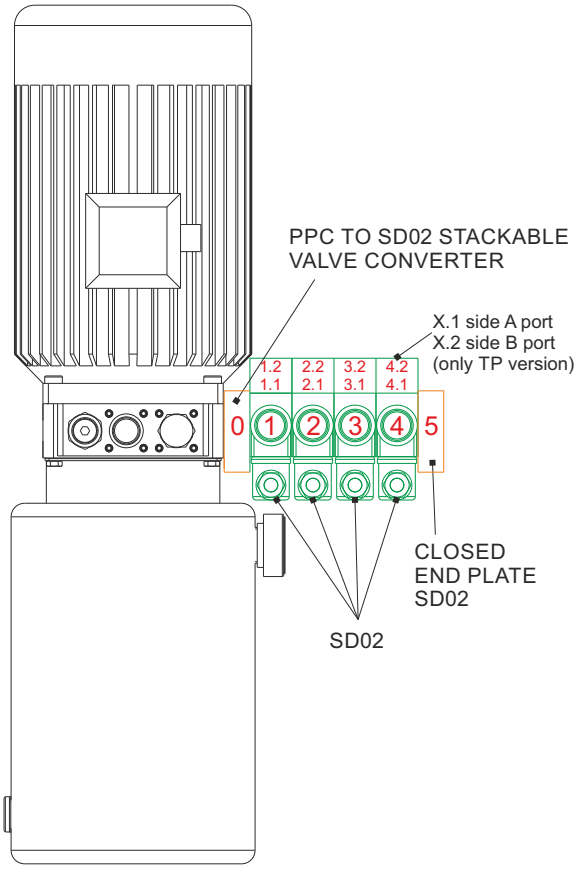
How many types of external manifold blocks can be mounted?
The central manifold exit face allows the mounting of two different block systems, fixed by 2x M8 bolts (normally used for NG6 Cetop 3 modular manifolds stacks) or 4x M6 bolts (for additional or special manifolds). The two types of bolt systems 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.

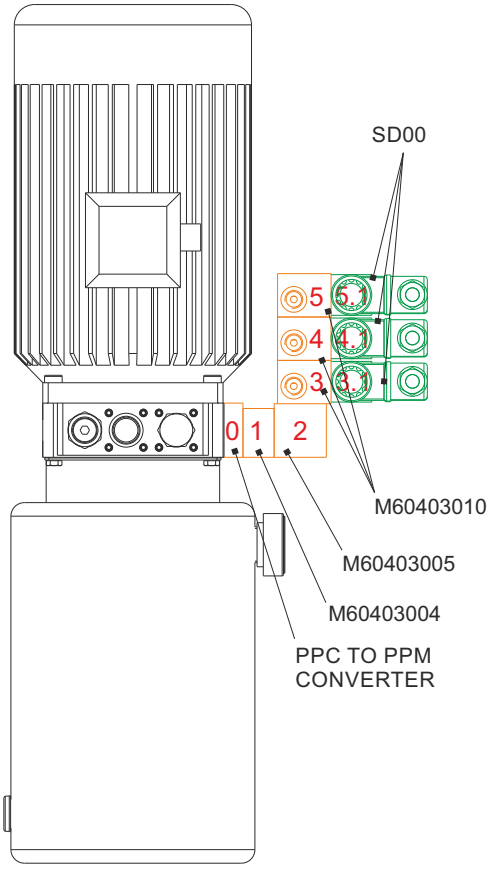
When are the modular manifolds for differential area cylinders used?
With UR (reversible pump circuits) central manifold, the exit ports are directly A and B instead of P and T. With differential area cylinders, when the bidirectional pump flow is outputting to the rod side port (let's say it is B port), 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

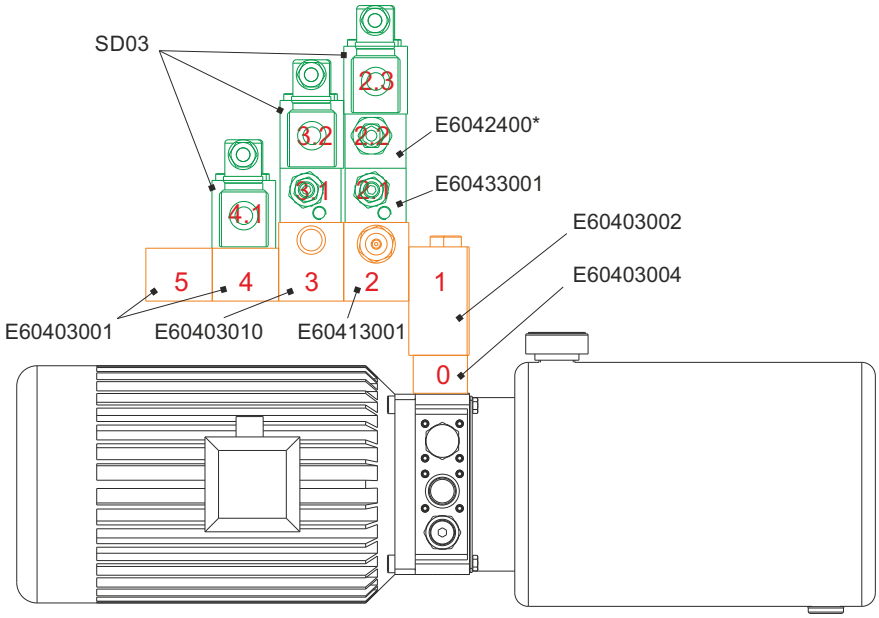
PPC + SD02 STACKABLE VALVES



PPC + NG3 MICRO BLOCKS & VALVES



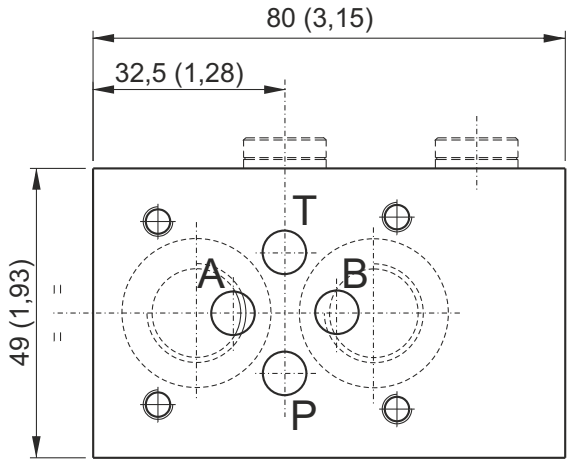
PPC + NG6 (CETOP 3) BLOCKS & VALVES

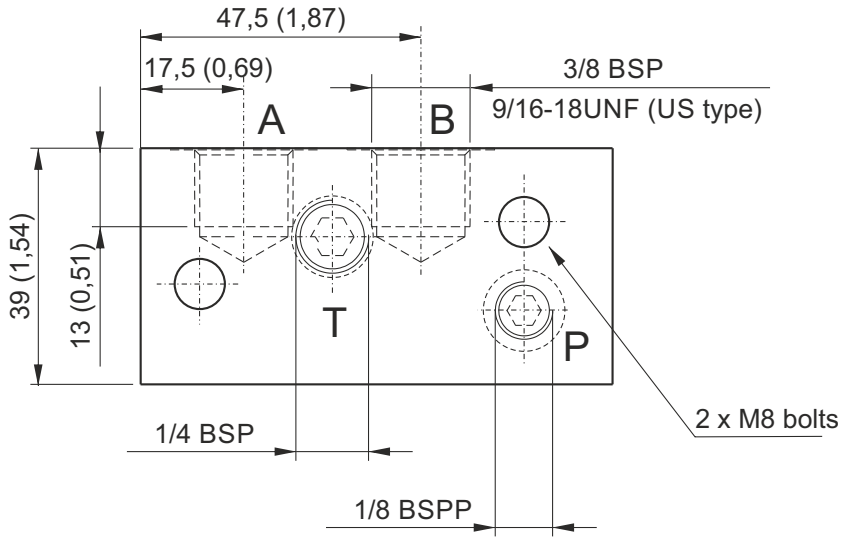


The mini powerpack external manifolds and valves are arranged following a stack level logic. Each stack is numbered eg. n, n.1, n.2, n.3,... where n is the basic manifold stack number, n.1 is the first valve mounted on top of manifold n; n.2 is the second one mounted on top of n.1,... See above self-explanatory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

MODULAR MANIFOLDS NG6 (CETOP 3), REAR PORTS

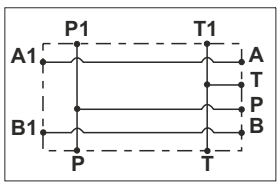
Dimensions in mm (inches)





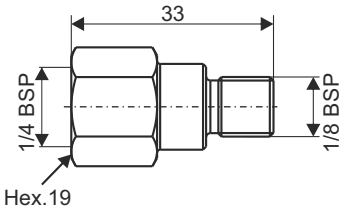
Main features

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

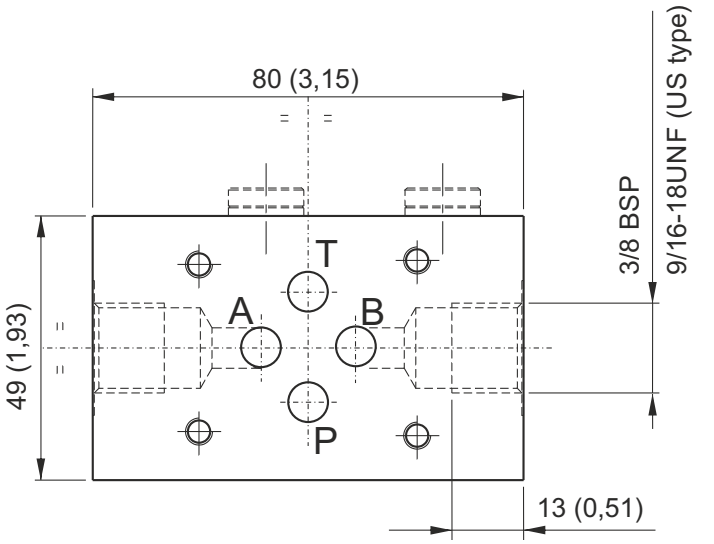
Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.
*: US execution with 9/16-18UNF SAE06 exit ports
To add external manifolds to a PPC assembly code, just add their spare part codes at the end of the PPC code. eg: PPC-0,8 12DC-MB-J-K0,6-V200-G-RETURN 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.

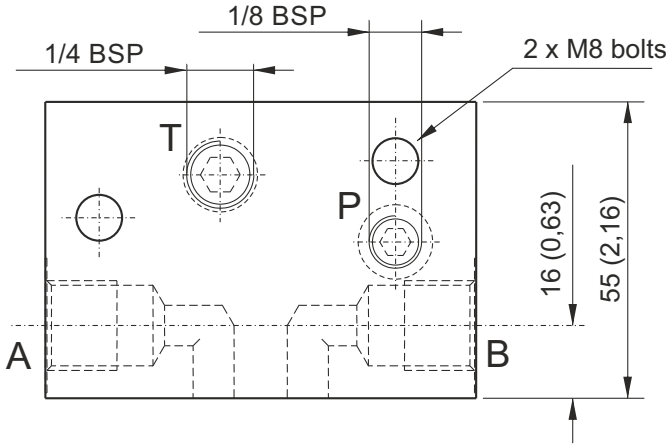
MODULAR MANIFOLDS NG6 (CETOP 3), LATERAL PORTS

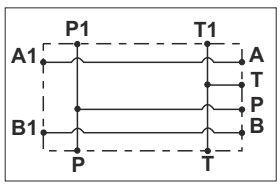
Dimensions in mm (inches)

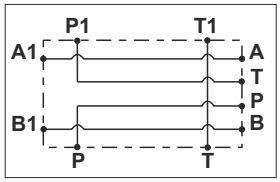
Main features

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





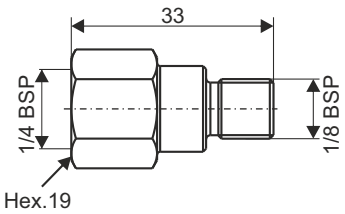




Parallel connection	Spare part code
Rear ports	E60403010
Rear port US execution	E60403010US

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

Option 1/4"BSP P port:



Spare part code
PORTMF0001

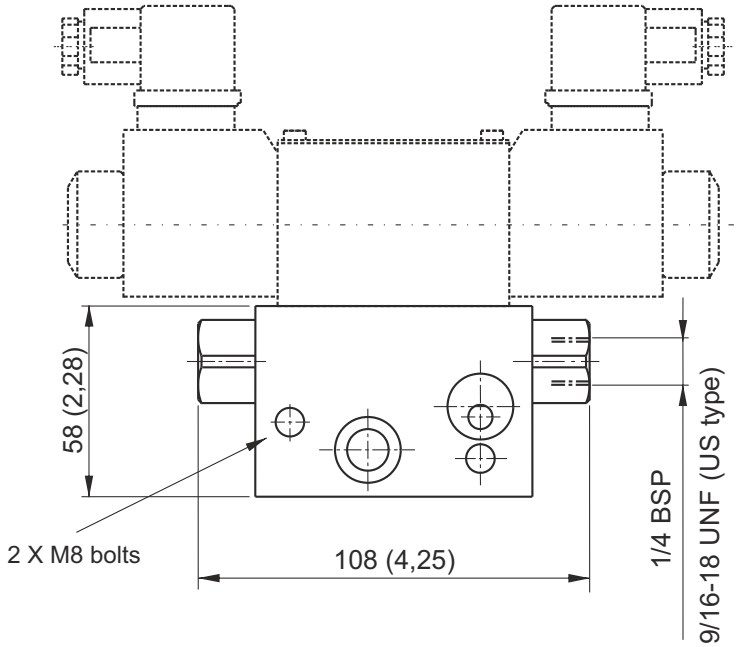
Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.
*: US execution with 9/16-18UNF SAE06 exit ports
To add external manifolds to a PPC assembly code, just add their spare part codes at the end of the PPC code. eg: PPC-0,8 12DC-MB-J-K0,6-V200-G-RETURN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

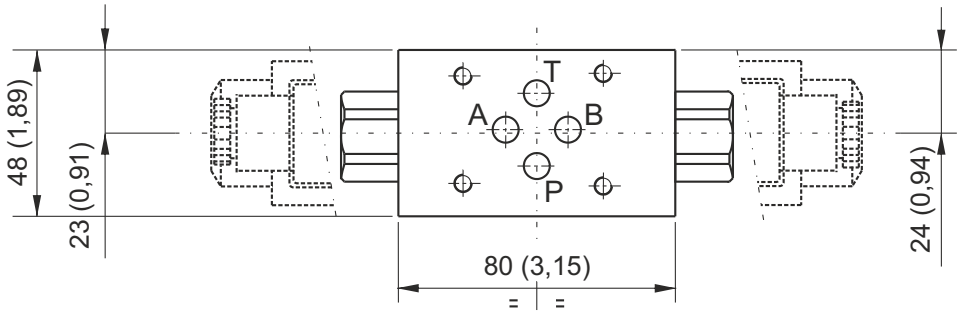
MODULAR MANIFOLDS NG6 (CETOP 3) WITH INTEGRAL PILOT OPERATED CHECK VALVES

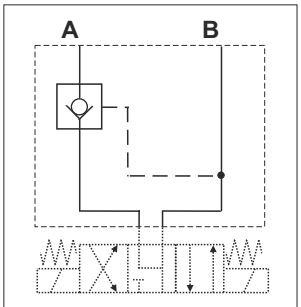
Dimensions in mm (inches)

Main features

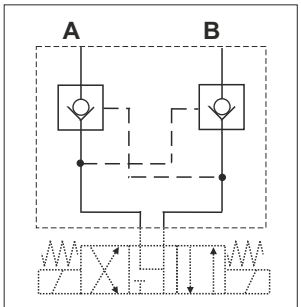
Max pressure	350 bar
Pilot ratio	1:5,6
Weight	0,71 Kg (1,56lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above



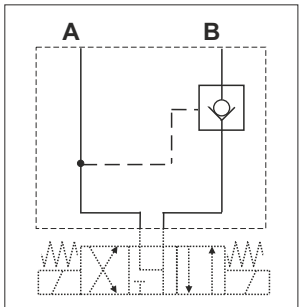




Spare part code
E60413002
E60413002US*



Spare part code
E60413001
E60413001US*



Spare part code
E60413003
E60413003US*

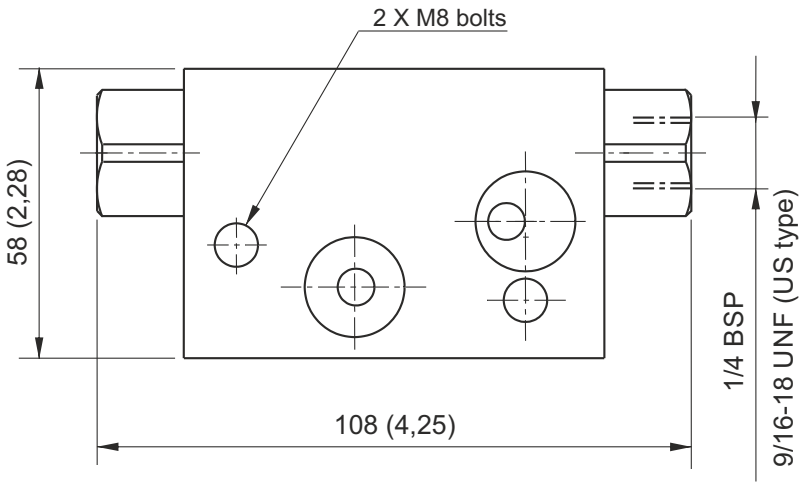
Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.
*: US execution with 9/16-18UNF SAE06 exit ports
To add external manifolds to a PPC assembly code, just add their spare part codes at the end of the PPC code. eg: PPC-0,8 12DC-MB-J-K0,6-V200-G-RETURN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

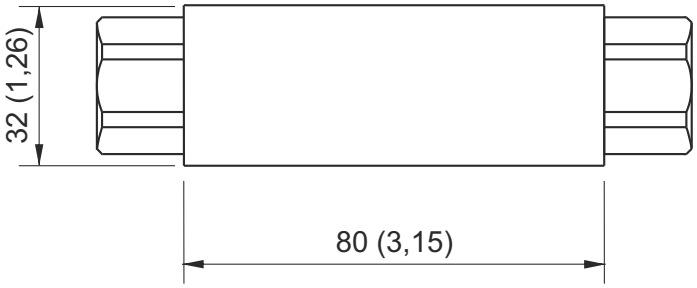
MODULAR MANIFOLDS WITH PILOT OPERATED CHECK VALVES

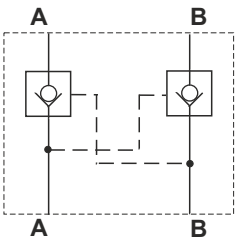
Dimensions in mm (inches)
Suitable for:
- central manifold U4
- central manifold UR

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





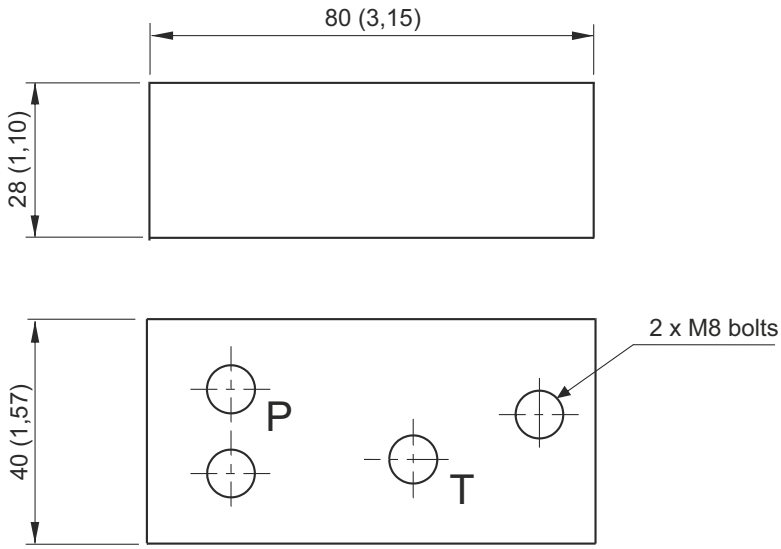


Spare part code
E60403027
E60403027US*

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

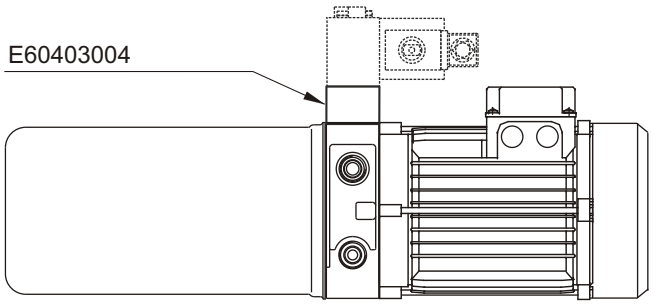
Dimensions in mm (inches)

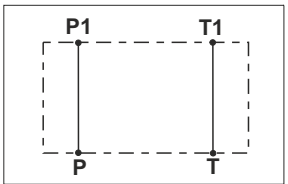


Main features

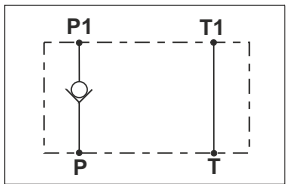
Max pressure	350 bar
Weight	0,23 Kg (0,5lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above

Mounting example





Spare part code
E60403004

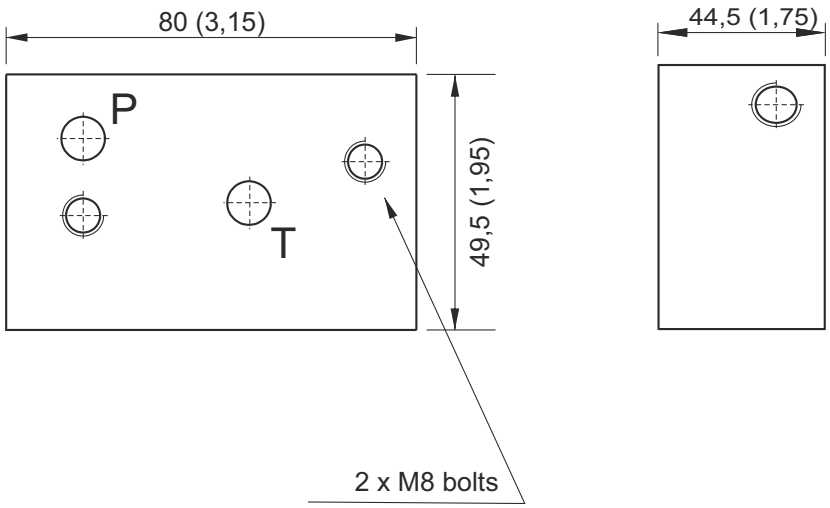


Spare part code
E60403004CV

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.

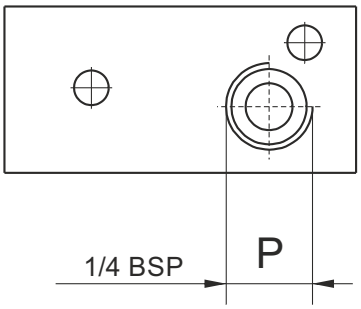
90° ROTATION MANIFOLDS 49MM

Dimensions in mm (inches)

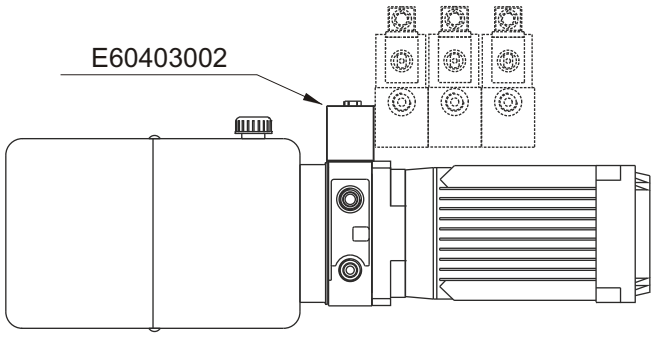


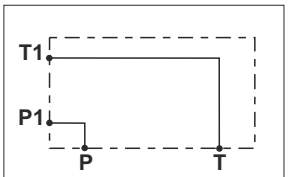
Main features

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



Mounting example



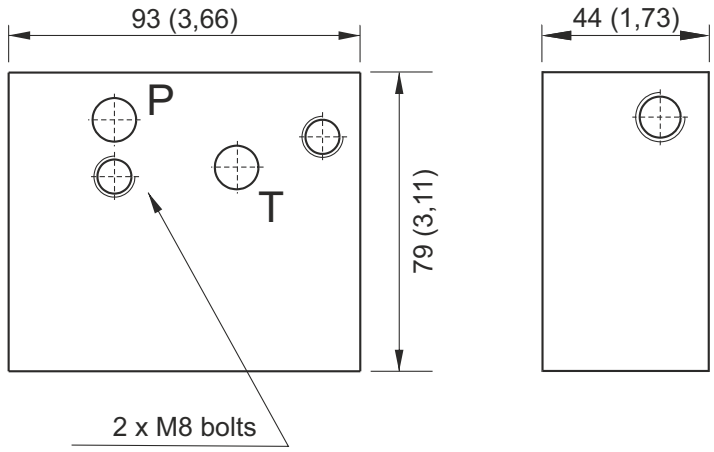


Spare part code
E60403002

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.

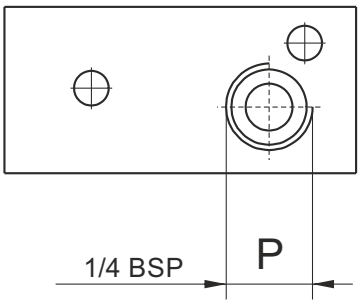
90° ROTATION MANIFOLDS WITH DOUBLE-SIDED ATTACHMENT P & T 79MM

Dimensions in mm (inches)

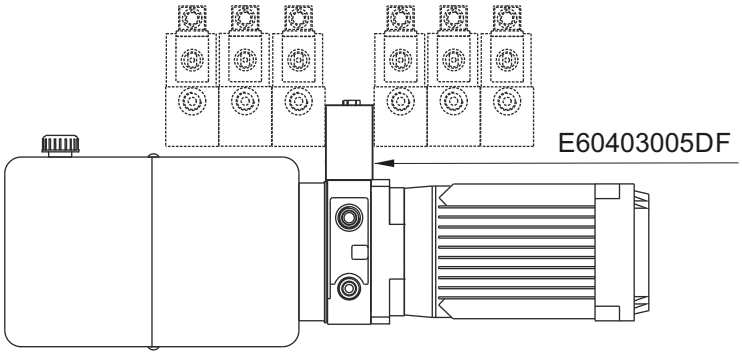


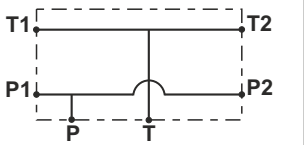
Main features

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



Mounting example



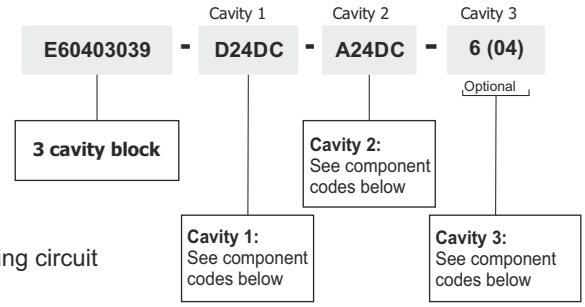


Spare part code
E60403005DF

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

ASSEMBLY CODE - example



Dimensions in mm (inches)

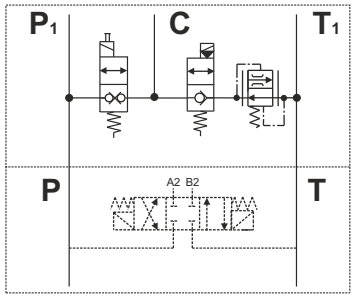
Typically used to create a single acting circuit in parallel with a double acting circuit

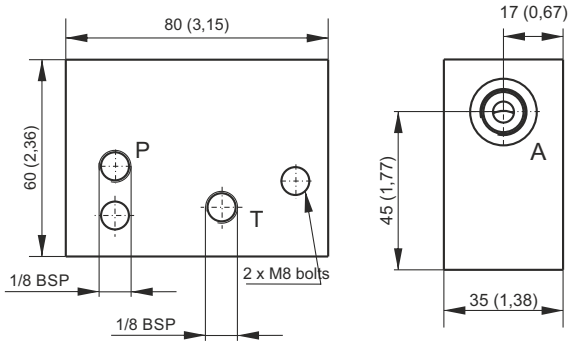
Main features

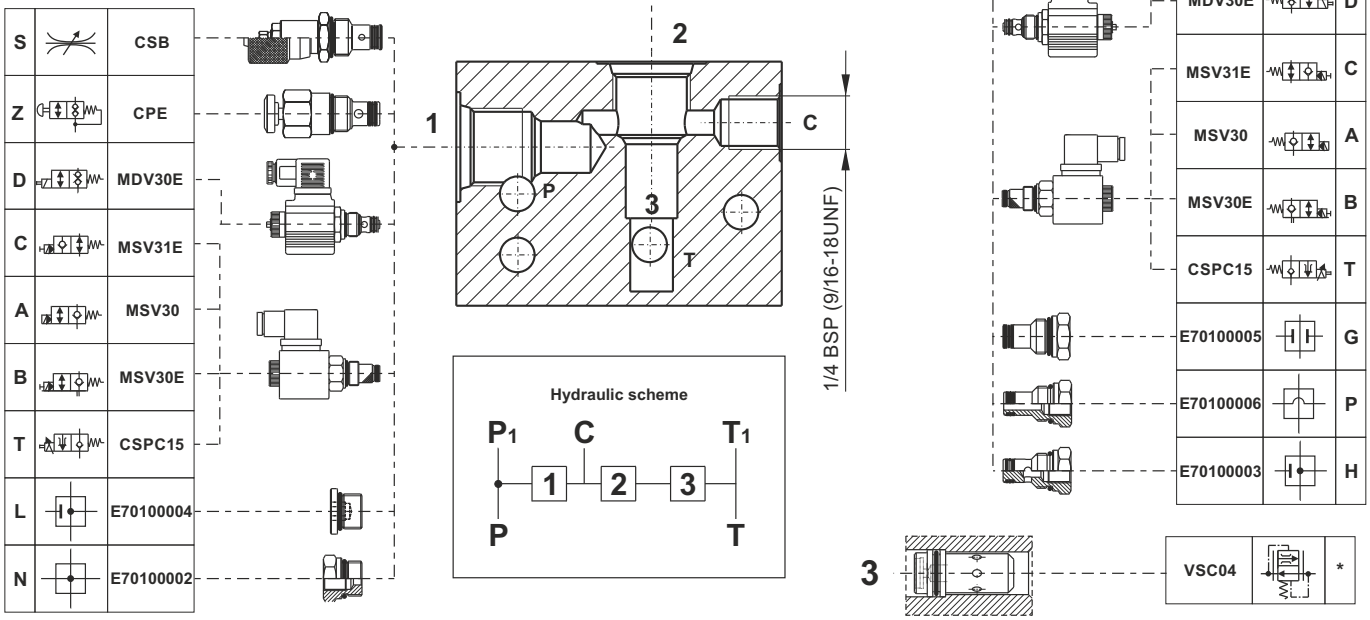
Max pressure	350 bar
Weight	0,39 Kg (0,88lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above

Spare part code
E60403039
E60403039US*

Application example





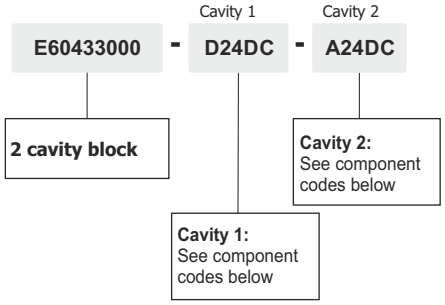


Note: to add external manifolds to PPC assembly code, just add their spare part codes at the end of the PPC code.
Example: PPC-0,8 12DC-UA-J-G1,1-V200-G-RETURN KIT-G-1,5L+**E60403039-D24DC-A24DC-6(04).**
The valve attachment is on the motor side. With AC motor frames bigger than 71 and DC motors bigger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

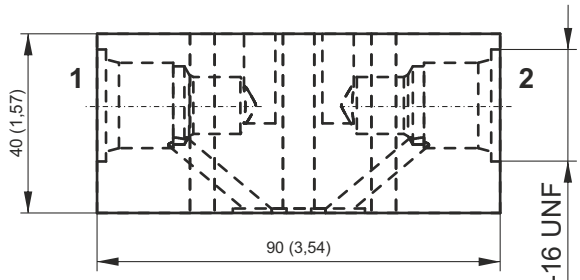
Dimensions in mm (inches)

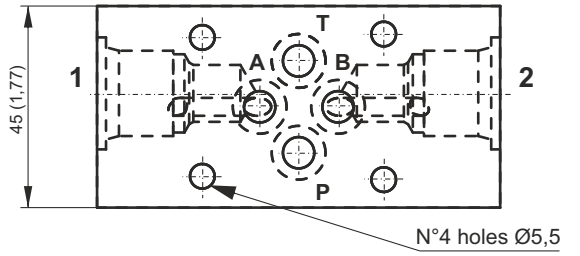
ASSEMBLY CODE - example



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

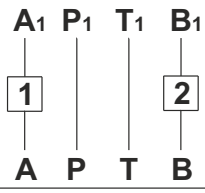




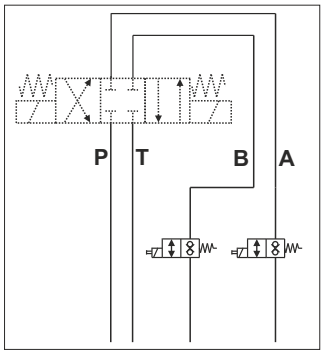
Spare part code

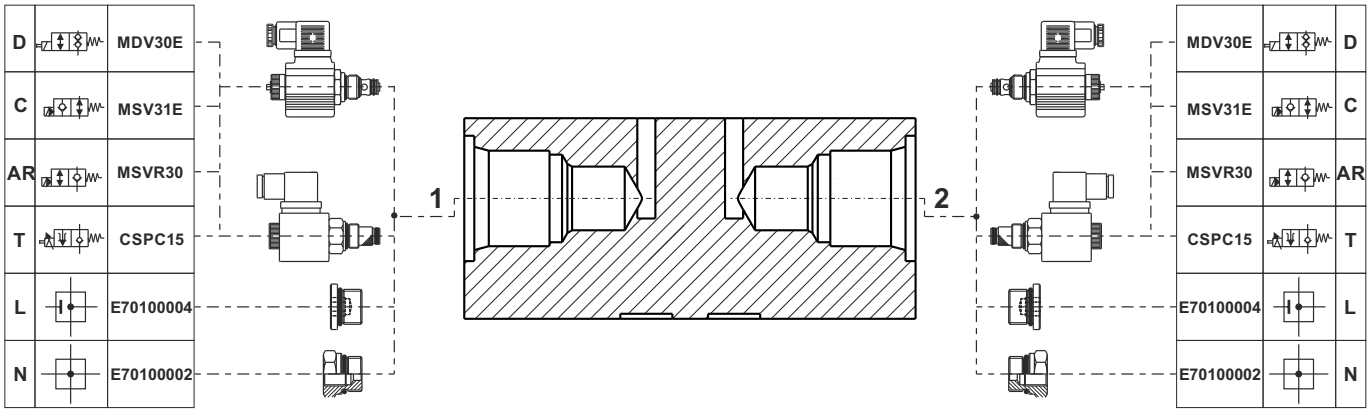
E60433000

Hydraulic scheme



Application example

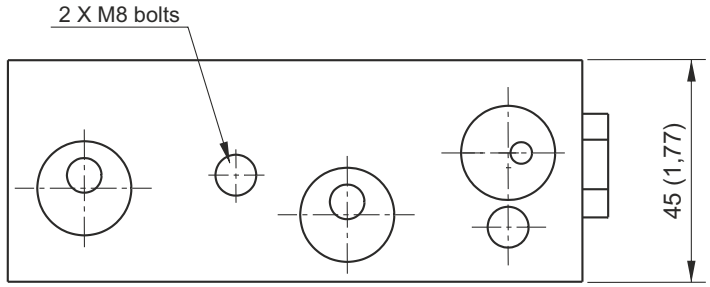


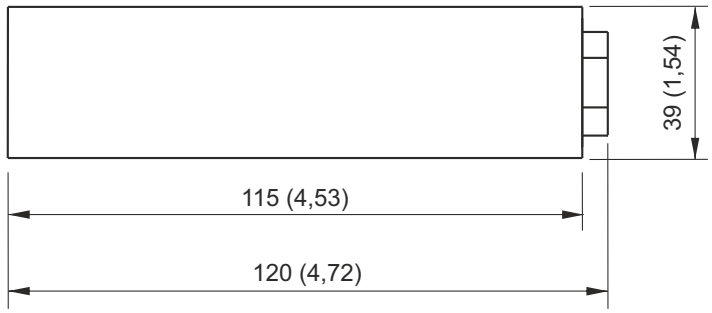


Note: to add external manifolds to PPC assembly code, just add their spare part codes at the end of the PPC code.
Example: PPC-0,8 12DC-UA-G1,1-J-V200-G-RETURN KIT-1,5L+E60403010+**E60433000+MDV30E000+24DC_M630+MSV300000+24DC_M630+SD03C2 +2x24DC_M160.**

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.

MODULAR MANIFOLD WITH DISCHARGE VALVE FOR DIFFERENTIAL AREA CYLINDER



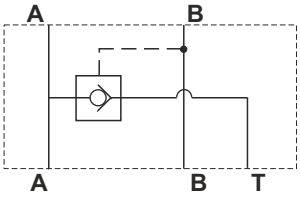


Dimensions in mm (inches)

Suitable for reversible power packs with UR manifold and differential area cylinders. T1 port must be drilled before mounting E60403028 manifold.

Main features

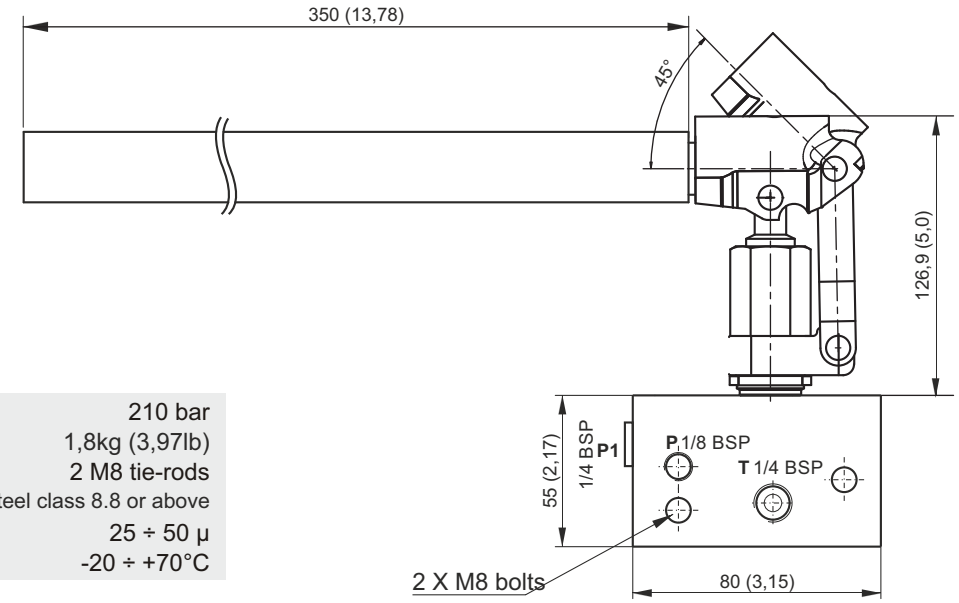
Max pressure	350 bar
Pilot ratio	1:5,3
Weight	0,23 Kg (0,5lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above



Spare part code
E60403028

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

HAND PUMP MODULAR MANIFOLD



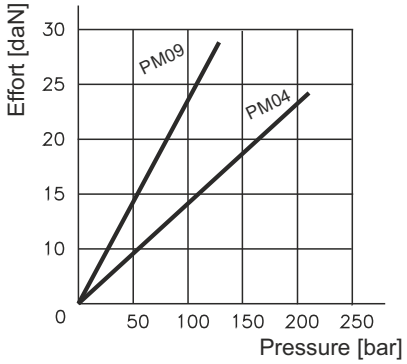
Dimensions in mm (inches)

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)

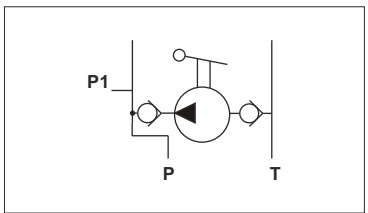
Effort (daN)
operating on the top of the lever



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.

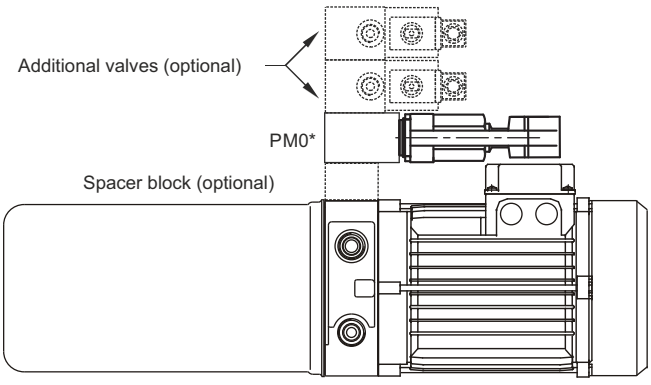
Spare part codes - cartridges only

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**

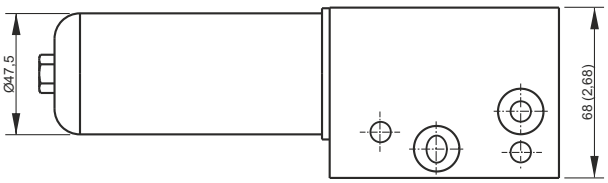
Mounting example



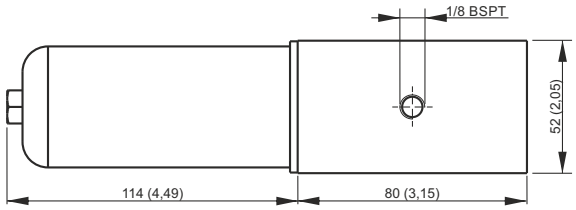
Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.

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.

RETURN LINE FILTER MODULAR MANIFOLD



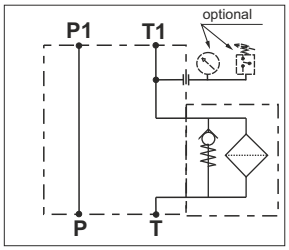
Dimensions in mm (inches)



Main features

Open by-pass valve press.	1 bar
Max flow	20 l/min
Filtration grade	15 µ
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

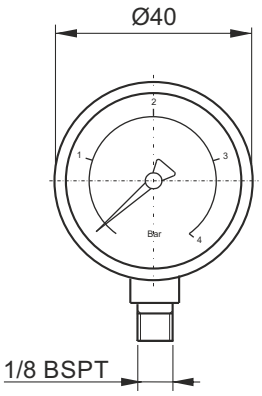
Spare part code

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

OPTIONS

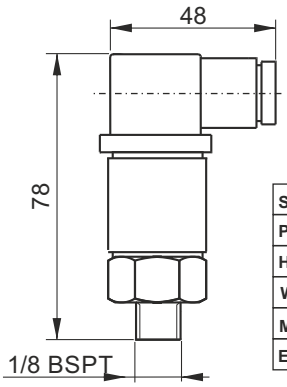
Pressure gauge for return filter manifold



Weight: 0,1 Kg

Spare part code
MIR4004

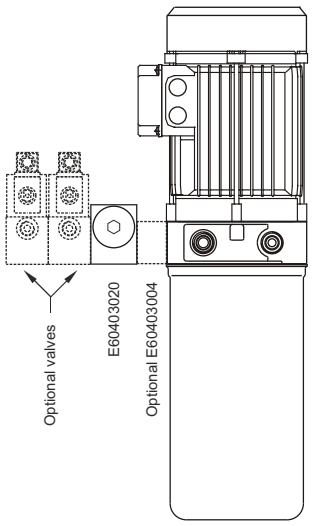
Pressure switch for return filter manifold



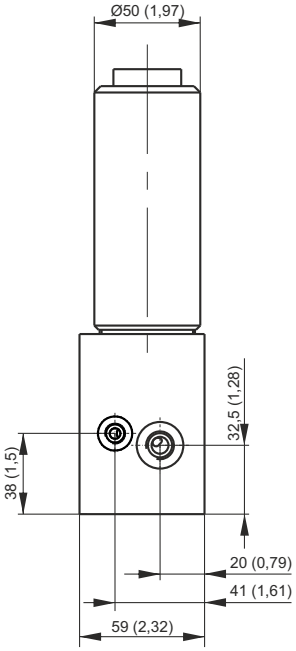
Setting range	0,2 ÷ 2,5 bar
Protection degree	IP 65
Hysteresis	10 ÷ 15 %
Weight	0,05 Kg
Max load	0,5 A a 250 VAC
Electric switch	NO/NC

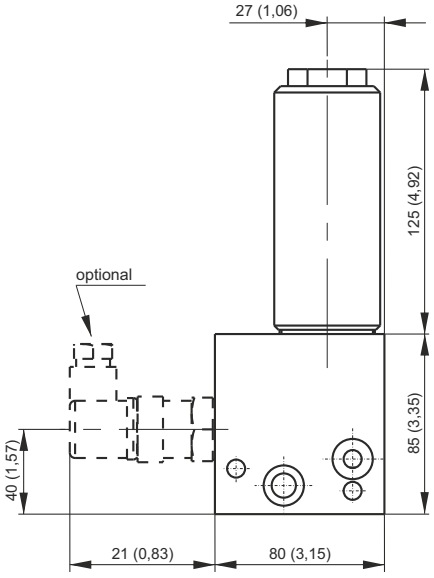
Spare part code
F4R0M3

Mounting example



MODULAR BLOCK WITH PRESSURE FILTER



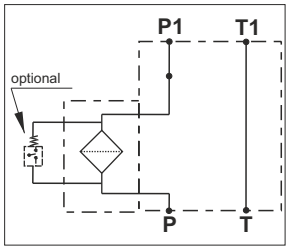


Dimensions in mm (inches)

Main features

Backpressure allowable	21 bar
Max pressure	400 bar
Max flow	32 l/min
Filtration grade	15 µ
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

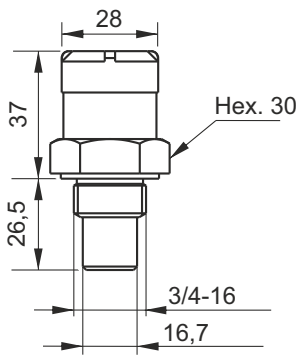
Spare part code

E60403025	**Modular manifold with pressure filter**
HPFEHY15	**15 micron fiber reinforced cartridge filter not included. To be ordered separately.**

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

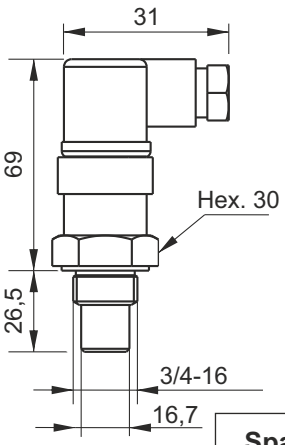
OPTIONS

Differential pressure visual indicator



Spare part code
DPV04400

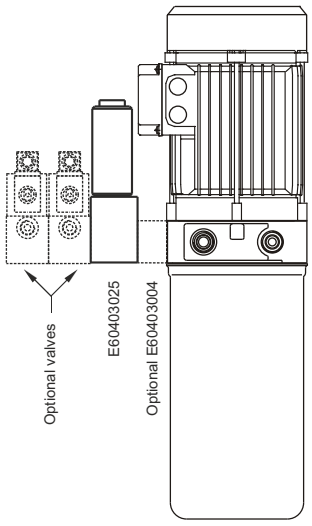
Differential pressure switch



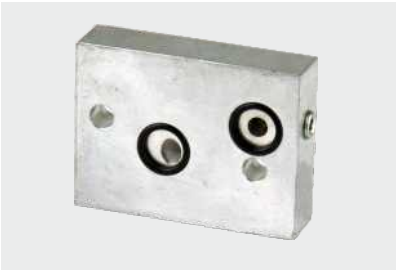
Setting range	1,3 ÷ 8 bar
Protection degree	IP 65
Tollerance	10 %
Weight	0,16 Kg
Max load	0,5 A a 250 VAC
Electric switch	NO/NC

Spare part code
DPE04400

Mounting example

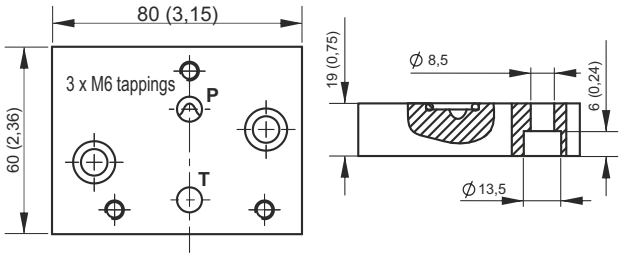


BASE MANIFOLD CONVERTERS



Dimensions in mm (inches)

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

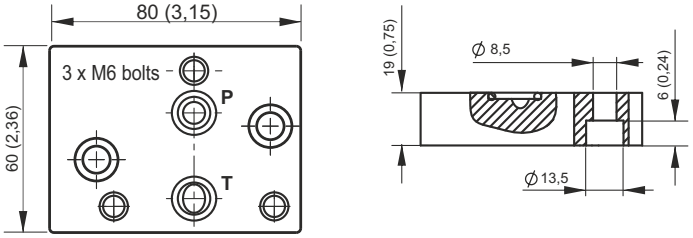


Fixing system: 2 M8x20 bolts steel class 8.8 or above
Weight: 0,22 Kg

Spare part code
E60403006

Dimensions in mm (inches)

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



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

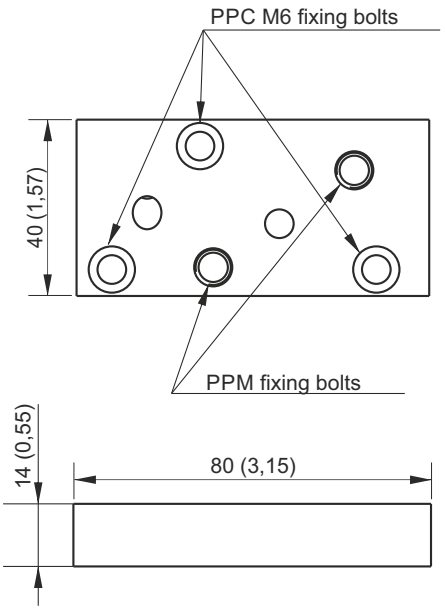
Spare part code
E60403006DN

Dimensions in mm (inches)

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

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

Spare part code
E60403008M



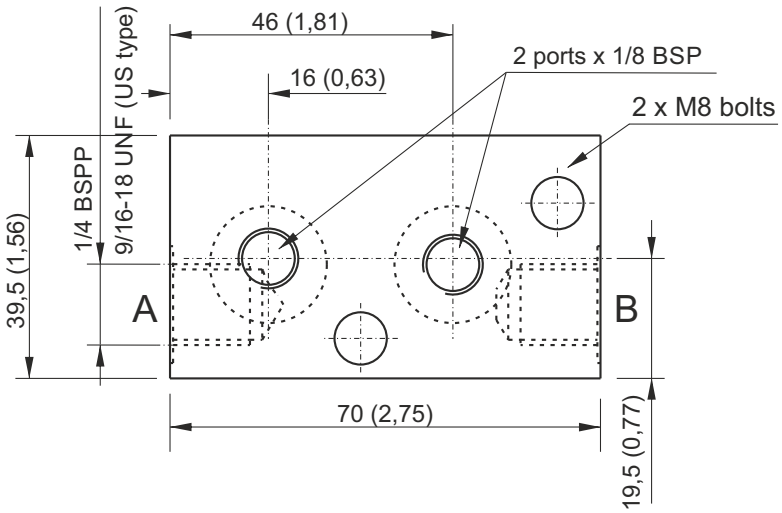
Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.

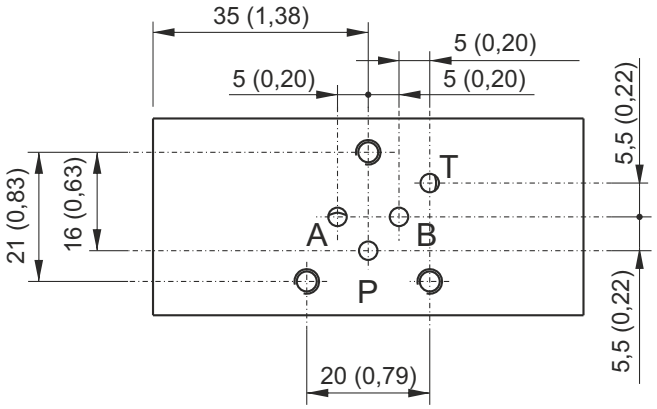
NG3 MICRO MODULAR MANIFOLDS, LATERAL PORTS

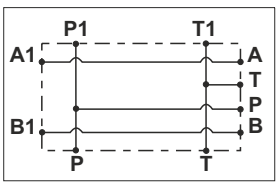
Dimensions in mm (inches)

Main features

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





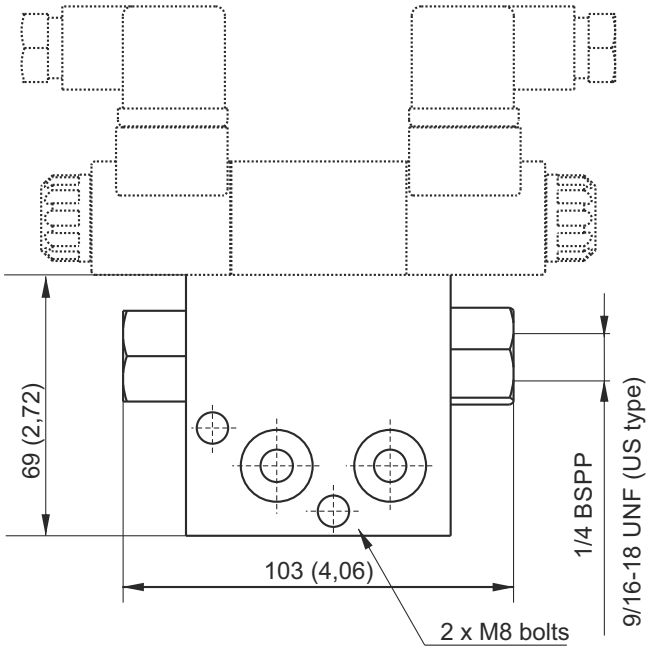


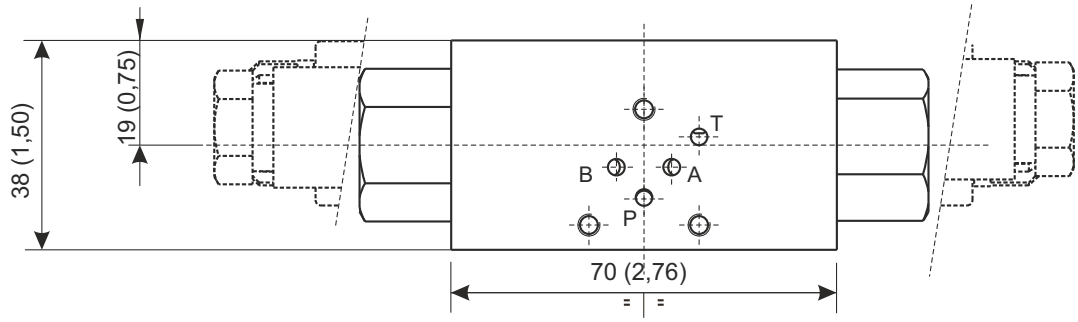
Parallel connection	Spare part code
Lateral ports	**M60403010**
Lateral ports US execution	**M60403010US**

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+**E60403008M+M60403004+M60403010.**
The NG3 micro valve attachment is on motor side.

NG3 MODULAR MANIFOLD WITH INTEGRAL PILOT OPERATED CHECK VALVES

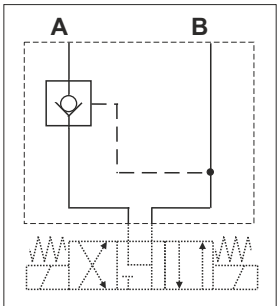
Dimensions in mm (inches)



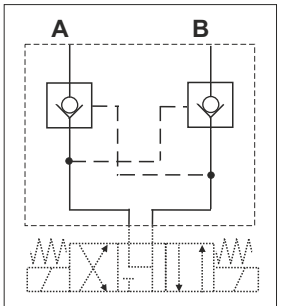


Main features

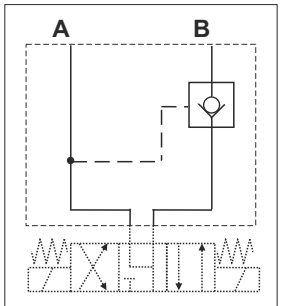
Max pressure	350 bar
Weight	0,26 Kg (0,57lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above



Spare part code
M60413002
M60413002US*



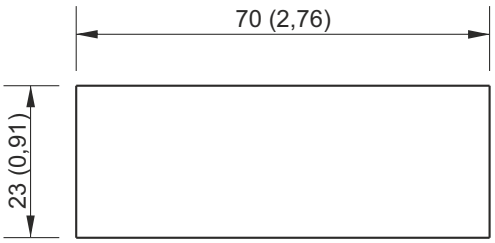
Spare part code
M60413001
M60413001US*



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+**E60403008M+M60403004+M60403010.**
Code does not include the NG3 valve. See SD00 NG3 valves table in section G.

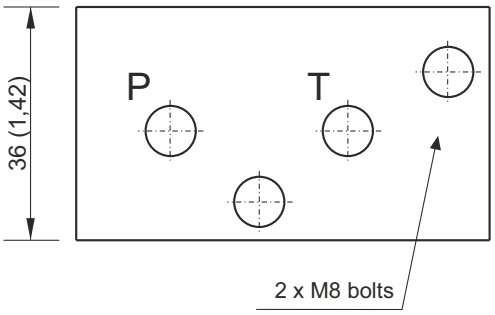
PPM SPACER ELEMENT 23MM

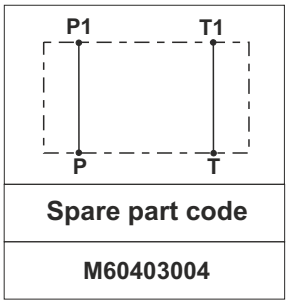


Dimensions in mm (inches)

Main features

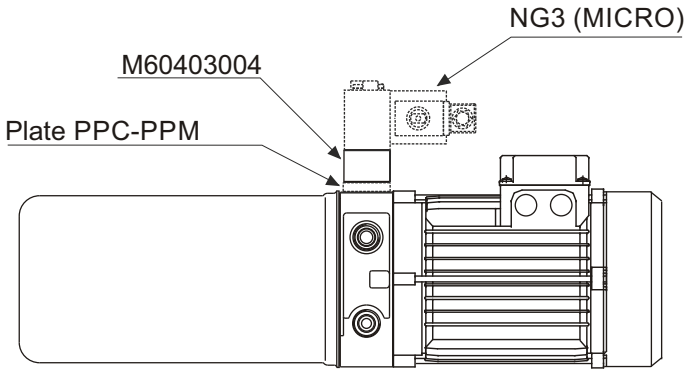
Max pressure	350 bar
Weight	0,14 Kg (0,3lb)
Fixing bolts	2 M8 tie - rods steel class 8.8 or above





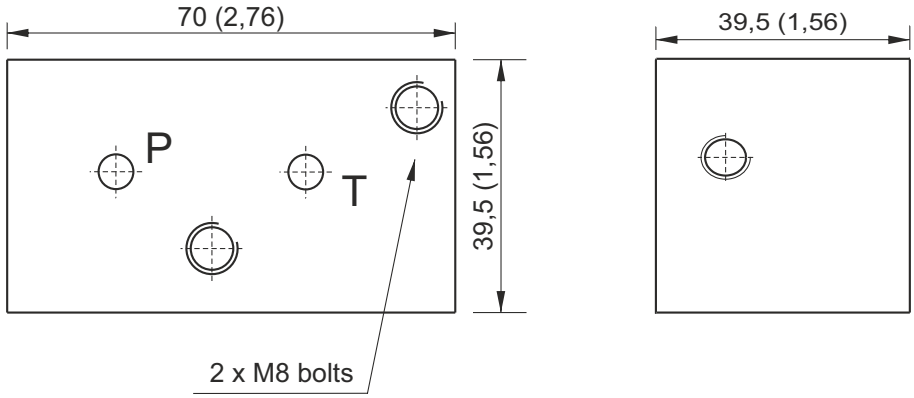
Spare part code
M60403004

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+**E60403008M+M60403004+M60403010.**

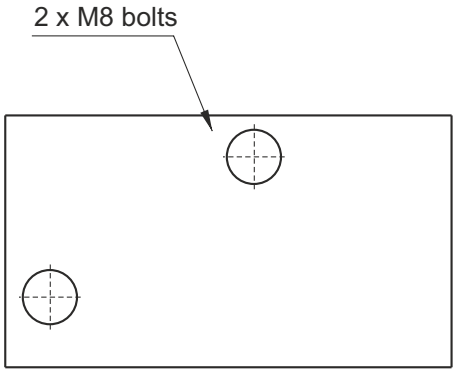
PPM 90° ROTATION MANIFOLD



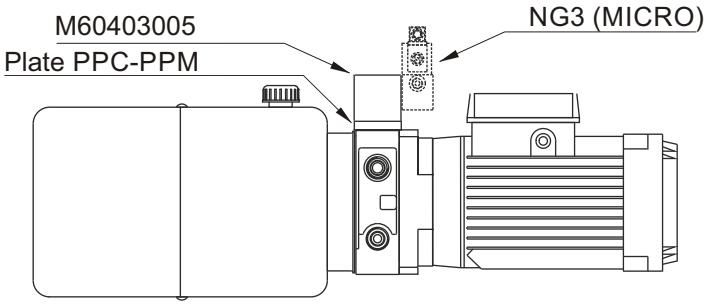
Dimensions in in mm (inches)

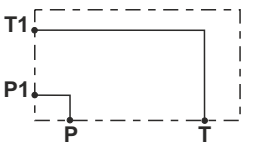
Main features

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



Mounting example



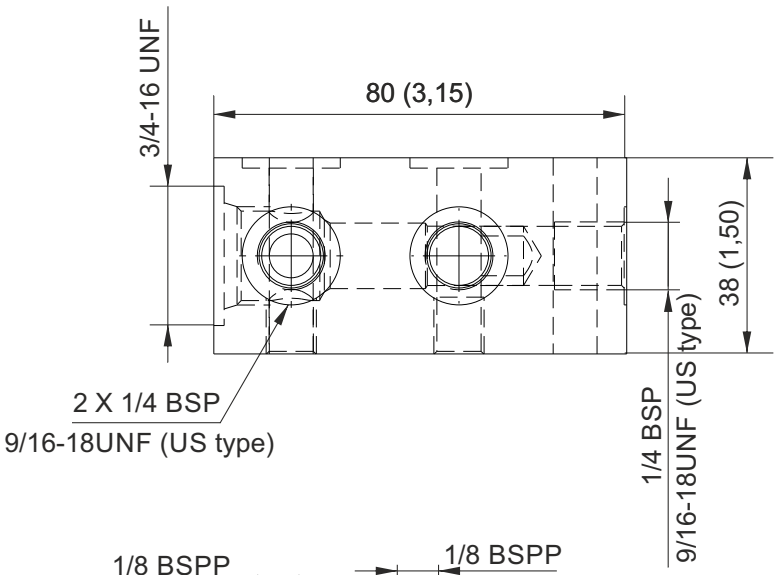


Spare part code
M60403005

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+**E60403008M+M60403004+M60403010.**

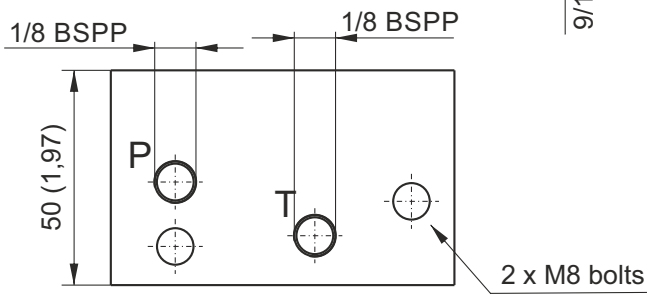
MODULAR MANIFOLD FOR 3/4-16 UNF CARTRIDGES, TWO WAY

Dimensions in mm (inches)

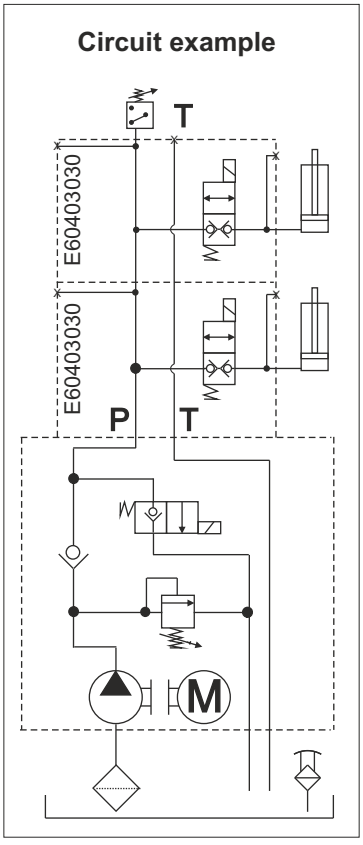


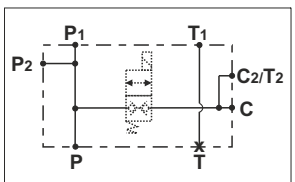
Main features

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



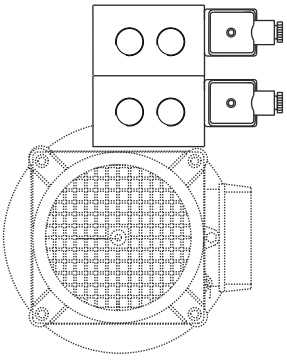
Circuit example





Codice componente
E60403030
E60403030US*

Mounting example

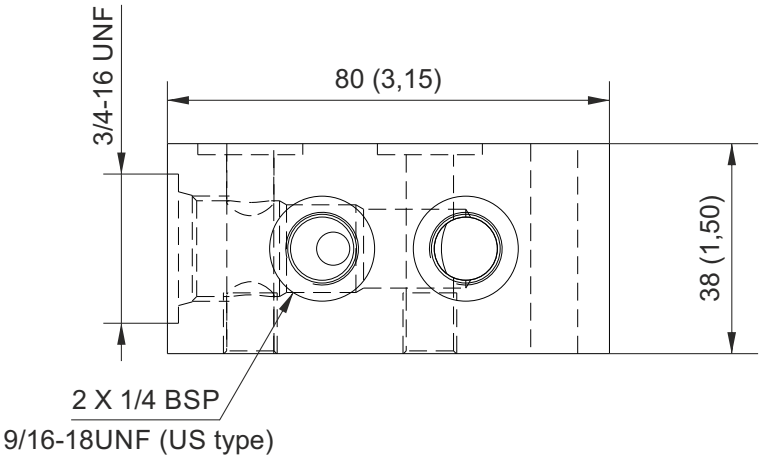


Note: code does not include the MSV or MDV solenoid valves. See valves tables in section D.

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.

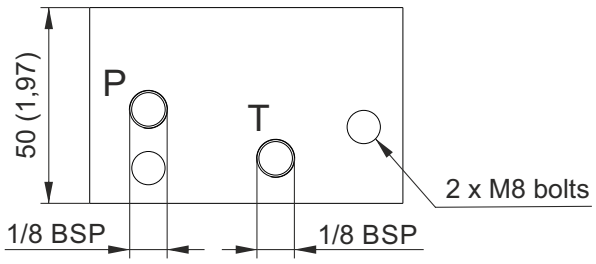
MODULAR MANIFOLD FOR 3/4-16 UNF CARTRIDGES, THREE WAY

Dimensions in mm (inches)

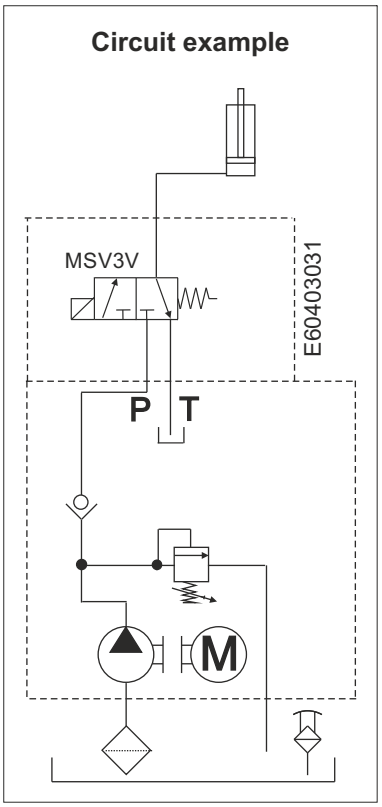


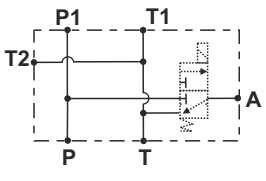
Main features

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



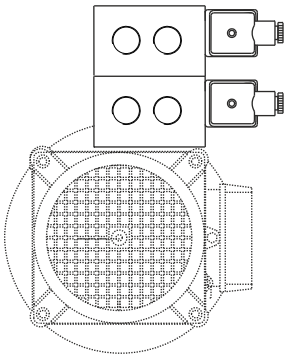
Circuit example





Spare part code
E60403031
E60403031US*

Mounting example



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

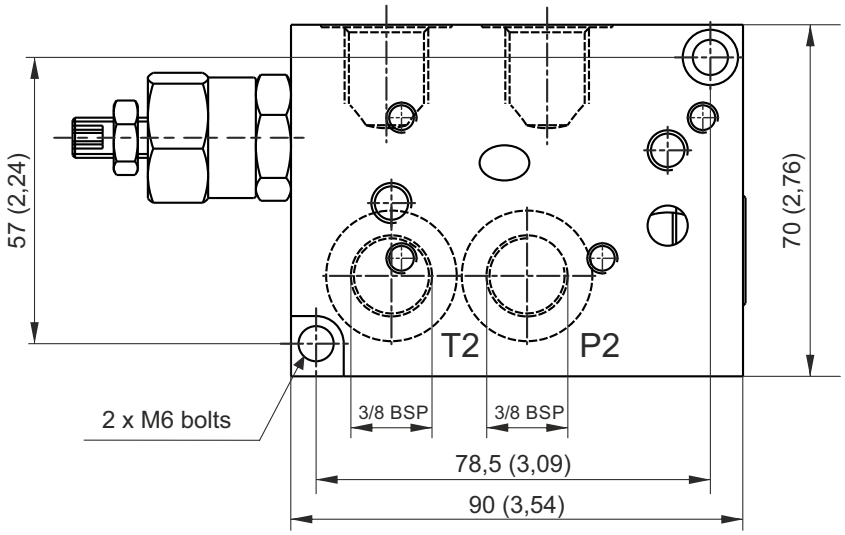
Note: Recommended tightening torque for M8 bolts: 16 Nm. Attention! Do not use tie-rods less than 8.8.
The three way block is not compatible with square vertical tanks.
*: US execution with 9/16-18 UNF SAE06 exit ports.

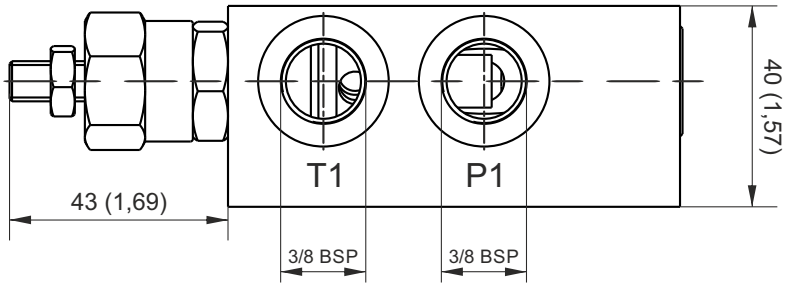
IN-LINE MOUNTING BASE PLATE FOR MODULAR BLOCKS

Dimensions in mm (inches)

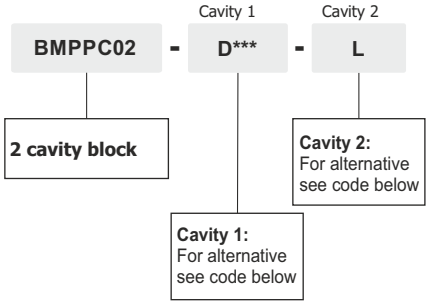
Main features

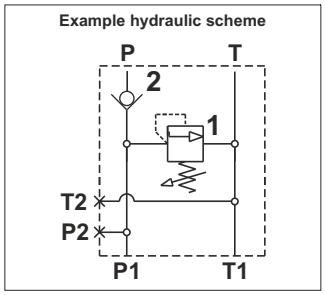
Max flow	40 l/min
Max pressure	350 bar
Weight	0,58 Kg (1,28 lb)
Fixing bolts	2 M8 or 4xM6 tie - rods steel class 8.8 or above



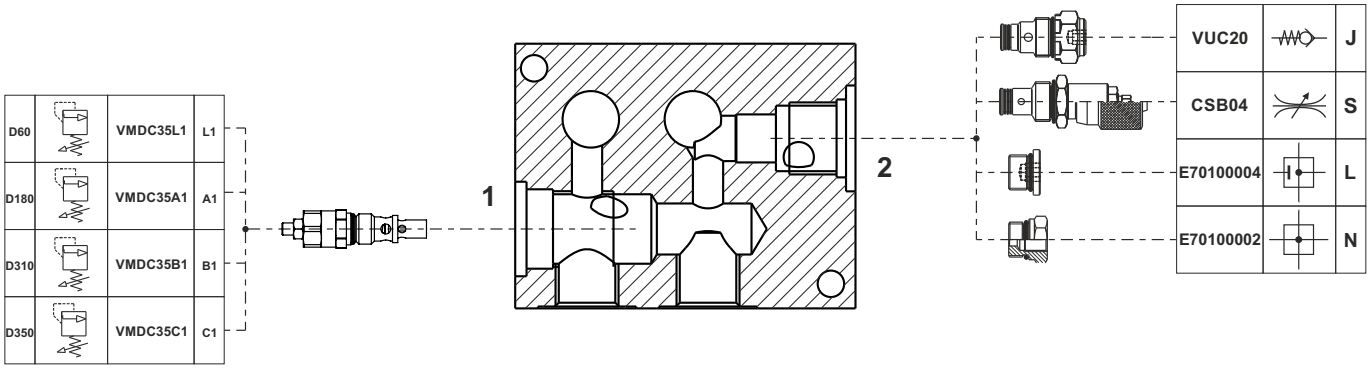


ASSEMBLY CODE - example





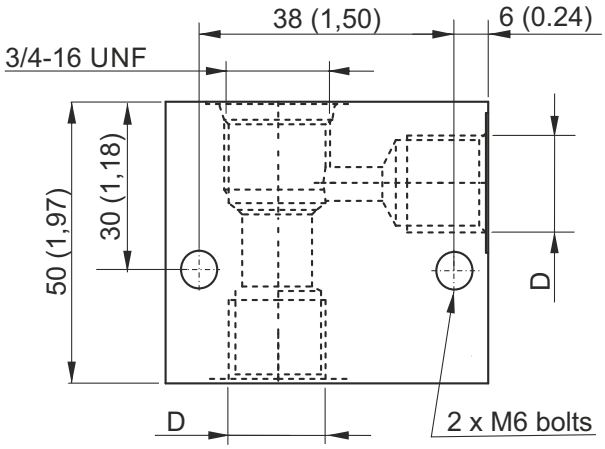
BMPPC02 allows you to mount off-line the entire system of Hydronit modular blocks and valves.
A typical application is to use it on a conventional powerpack, where the control block and the valve are separated from the engine driven pump.
P1 and T1 ports are closed by 3/8" BSP plugs in standard configuration.
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.

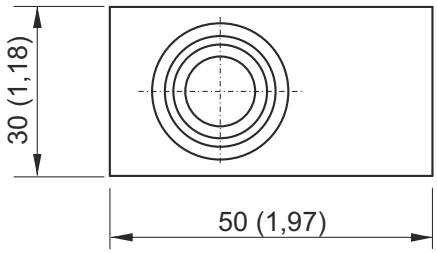


ACCESSORIES

Dimensions in mm (inches)

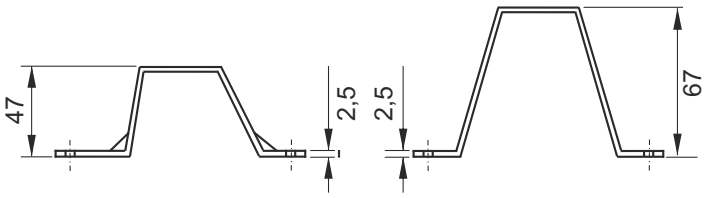
In line mounting SAE 8 manifold





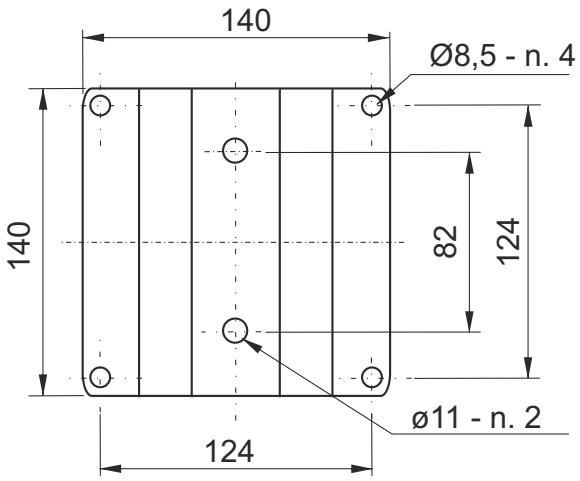
Spare part code	D	Peso
BFCSAE0801	1/4 BSP	0,16 Kg
BFCSAE0802	3/8 BSP	0,16 Kg

Foot mounting support



E60543006
Weight: 0,5 Kg

E60543007
Weight: 0,6 Kg



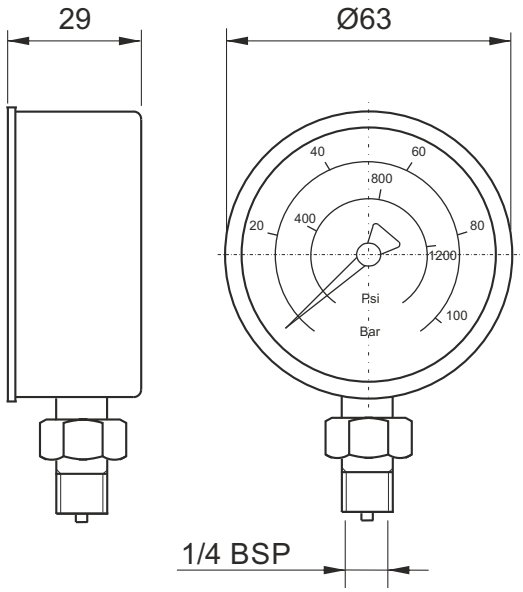
E60543006: suitable for all tanks except for E60303044

Spare part code	
E60543006	**E60543007**

ACCESSORIES

Pressure gauge

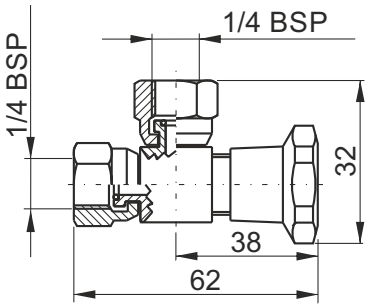
Protection degree	IP 65
Thermal drift	±0,04%/1K a 20°C
Weight	0,206 Kg
Static working pressure	75% end of scale
Peak working pressure	end of scale
Fluid temperature	-10 ÷ +60°C
Precision class	cl. 1.6 EN837-1



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

Gauge isolator 90° F-F

EM9001C

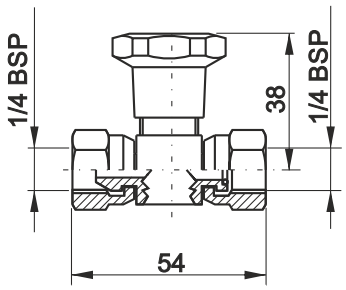


Weight: 0,14 Kg. Max working pressure: 400 bar

Spare part code
EM9001C

Gauge isolator F-F

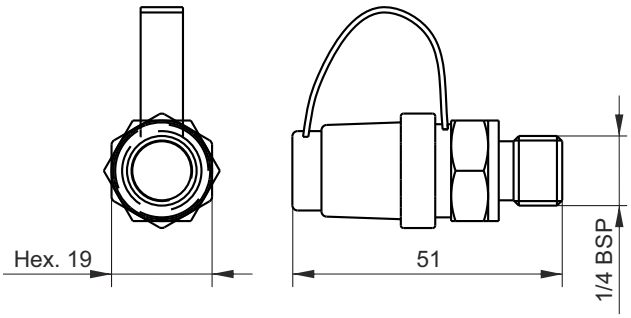
EMIL01C



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

Spare part code
EMIL01C

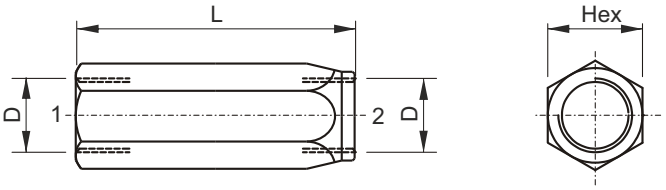
ACCESSORIES



Weight: 0,05 Kg. Max working pressure: 350 bar

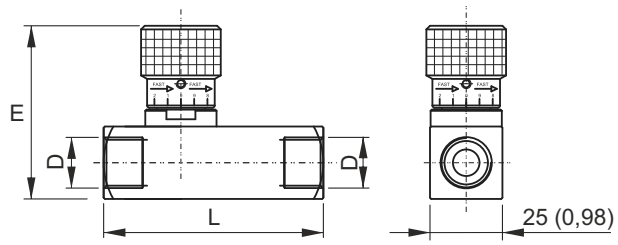
Spare part code
MINIMESS01

In-line check valve



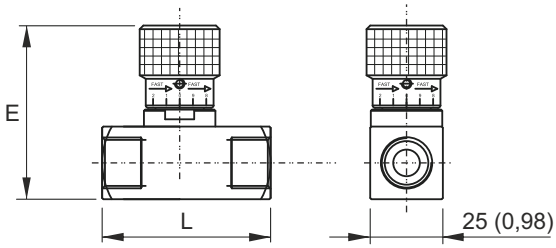
Spare part code	D	Ch	L	Weight
VUR01C	1/4 BSP	19	55	0,10 kg
VUR02C	3/8 BSP	24	65	0,18 kg
VURSAE06C	9/16-18UNF	19 (0,75)	58 (2,28)	0,10 kg (0,22 lb)

In-line unidirectional flow control valve



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

In-line bidirectional flow control valve



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

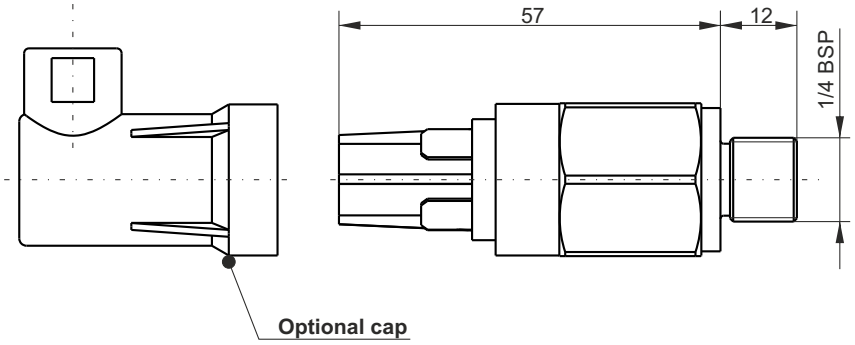
PRESSURE SWITCHES

IMPROVED

Dimensions in mm (inches)

Main features

Switch rating	6(2)A / 250 Vca
Switch rating	2(1)A / 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



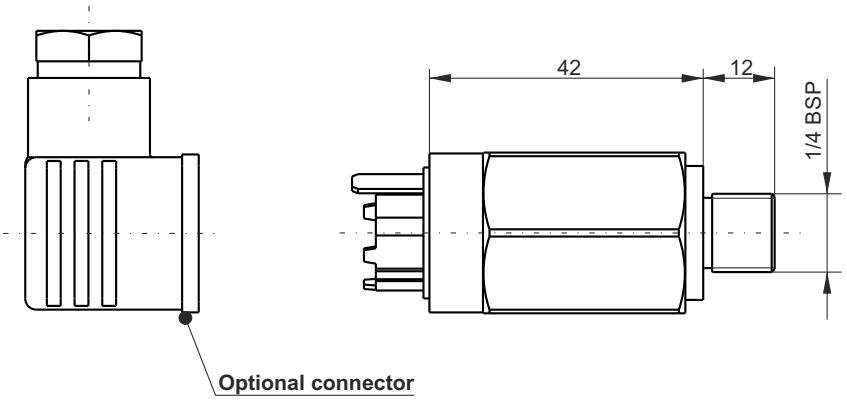
Spare part code	Pressure (bar)	Tolerance (bar)
PSL01S0100	10 ÷ 100	±3
PSL01S0300	50 ÷ 300	±15

IMPROVED

Dimensions in mm (inches)

Main features

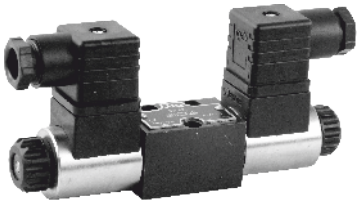
Max. voltage	250 Vca
Current	6 (2) A
Fluid temperature	-25°C ÷ +80°C
Weight	0,1 Kg
Tightening torque	20 Nm
Hysteresis	adjustable 10% ÷ 30%
Max. pressure	300 bar
Contact	SPDT C/O
Protection with connector	IP 65



Spare part code	Pressure (bar)	Tolerance (bar)
PSH01S0100	10 ÷ 100	±3
PSH01S0300	50 ÷ 300	±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

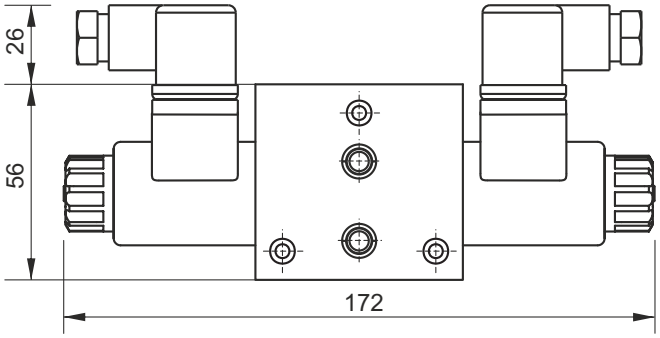
What are the advantages of NG3 MICRO directional valves and stackable directional valves compared to NG6 (Cetop 3) valves?
Lower weight, smaller dimensions, lower cost. Each stackable valve height of just 31mm allows you build a stack of, for example, 7 valves in 217mm. A similar stack made with cetop 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.

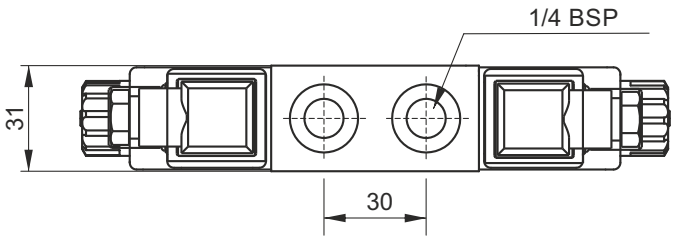
Is it possible to manufacture special manifold blocks with customized valve combinations for specific applications?
Yes. Whenever quantities justify the investment in design and manufacturing. Ask our sales department first.

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 DIRECTIONAL SOLENOID VALVES

Dimensions in mm (inches)



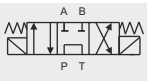
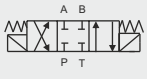
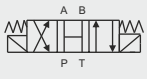
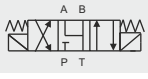


Main features

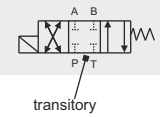
Max pressure	250 bar
Press. max port T	210 bar static, 140 bar dynamic
Max flow	20 l/min
Weight	0,89 Kg (1 solenoid) 1,09 Kg (2 solenoid)
Fixing bolts	3 x M6 tie-rods 6 Nm torque. 10.9 class steel or above
Coil insulation	Class H
Electric connection	DIN 43650-A / ISO 4400
Protection class	IP 65 / DIN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

Spool

Double solenoid

A2	
B2	
C2	
E2	

Single solenoid

A11C	

Spare part code

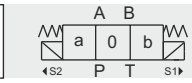
SD01 — **Stackable directional solenoid valve**

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

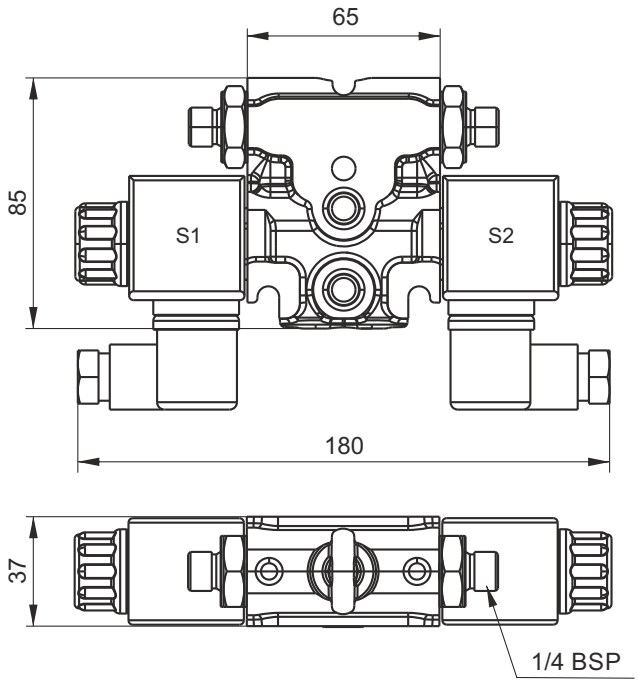
24DC — **Supply voltage:**
see coils table section G

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

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

Code	

STACKABLE MODULAR DIRECTIONAL SOLENOID VALVES WITH REAR PORTS



Options

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

Main features

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

Spare part code

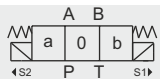
SD02 — **Stackable modular directional solenoid valve**

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

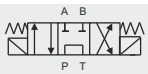
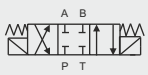
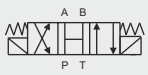
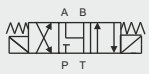
RP — **Option:**
- = free outputs
RP = outputs with piloted check valves (only spool E2 and C2)

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

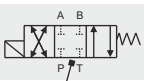
Spool

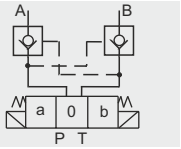
Code	
	

Double solenoid

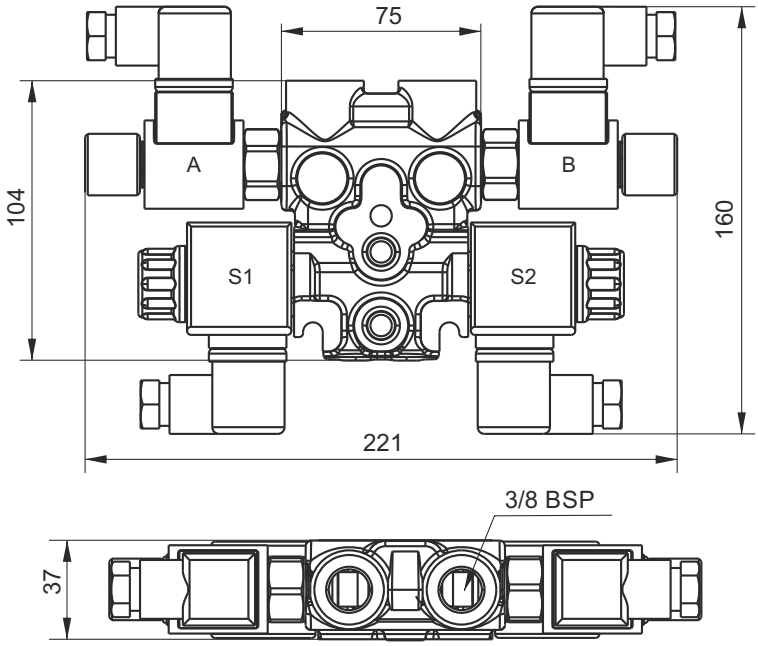
A2	
B2	
C2	
E2	

Single solenoid

A11C	

Option RP	
Code RP	

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



Options

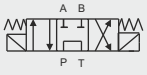
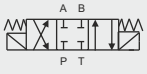
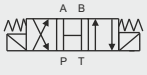
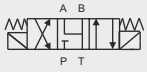
Description	Spare part code
Closure plate, to be used as the last element	**SD02TOP**
Kit 3 tie rods + nut M8 8.8 (x = number of element)	**SD020x**

Main features

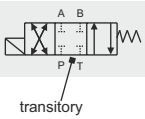
Max pressure	250 bar
Max pressure on T port	50 bar
Max flow	25 l/min
Weight	2,08 Kg (1 solenoid) 2,38 Kg (2 solenoid)
Internal leakage	0,02 l/min at 200bar
Fixing bolts	3 x M8 tie-rods 15 Nm torque. 8.8 class steel or above
Coil insulation	Class H
Electric connection	DIN 43650-A / ISO 4400
Protection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

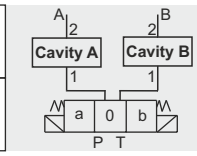
Spool

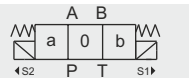
Double solenoid

A2	
B2	
C2	
E2	

Single solenoid

A11C	

Cavity option	
Code	

Code	

Spare part code

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

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

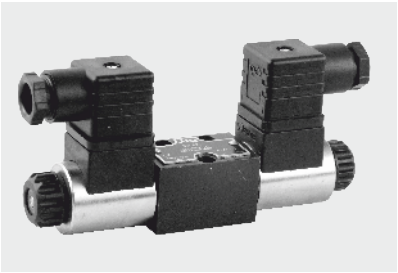
TP — **Version:**
TP = parallel ports
with 3/4-16 UNF cavity

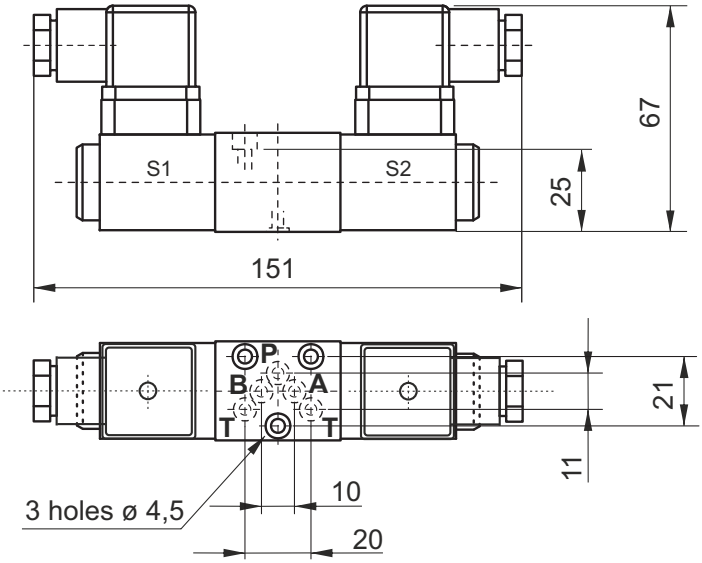
24DC — **Supply voltage:**
see coils table section G

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

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 M4x30 bolts 2,8 Nm torque. 10,9 class steel or above
Coil insulation	Class H
Electric connection	DIN 43650-A / ISO 4400
Protection class	IP 65 / DIN 40050
Duty cycle	ED 100%
Voltage required	+/- 10% nominal voltage
Manual Overide	included as standard
Standards	EN50081-1 / EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

Spare part code

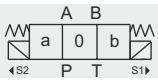
SD00 — **NG3 micro directional solenoid valve**

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

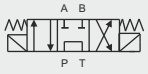
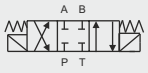
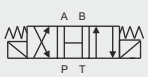
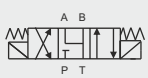
24DC — **Supply voltage:** see coils table section G

- — **Options:** - = std

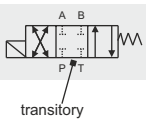
Spool

Code	
	

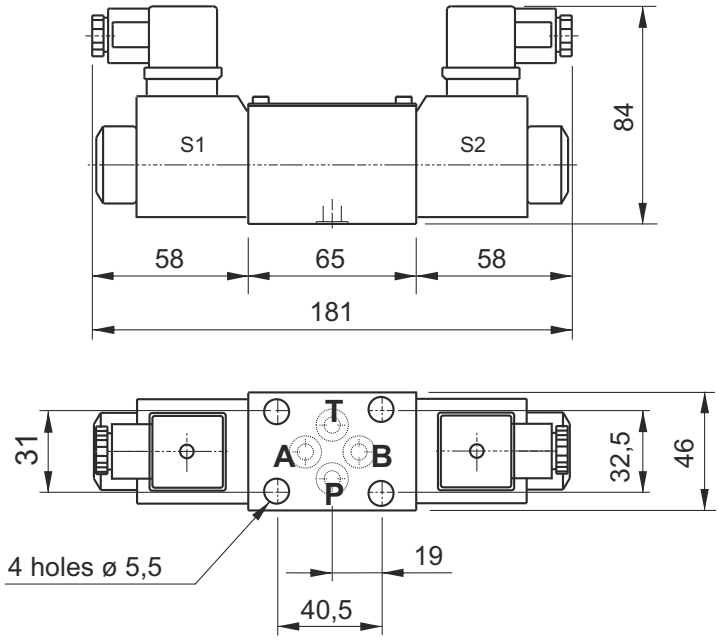
Double solenoid

A2	
B2	
C2	
E2	

Single solenoid

A11C	

NG6 (CETOP 3) DIRECTIONAL SOLENOID VALVES



Main features

Max pressure	280 bar
Max pressure on T port	210 bar static, 180 bar dinamic
Max flow	40 l/min
Weight	1,43 kg (2 solenoid) 1,16 kg (1 solenoid)
Internal leakage	0,04 l/min at 200bar
Fixing bolts	4 M5x30 bolts. 5Nm torque 10,9 class steel or above
Coil insulation	Class H
Electric connection	DIN 43650-A / ISO 4400
Protection class	IP 65 / DIN 40050
Duty cycle	ED 100%
Voltage required	+/- 10% 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

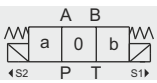
SD03 — **Cetop 3 directional solenoid valve**

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

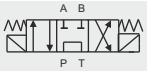
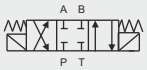
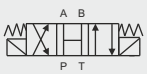
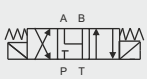
24DC — **Supply voltage:** see coils table section G

- — **Options:** - = std

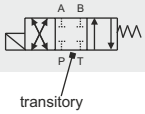
Spool

Code	
	

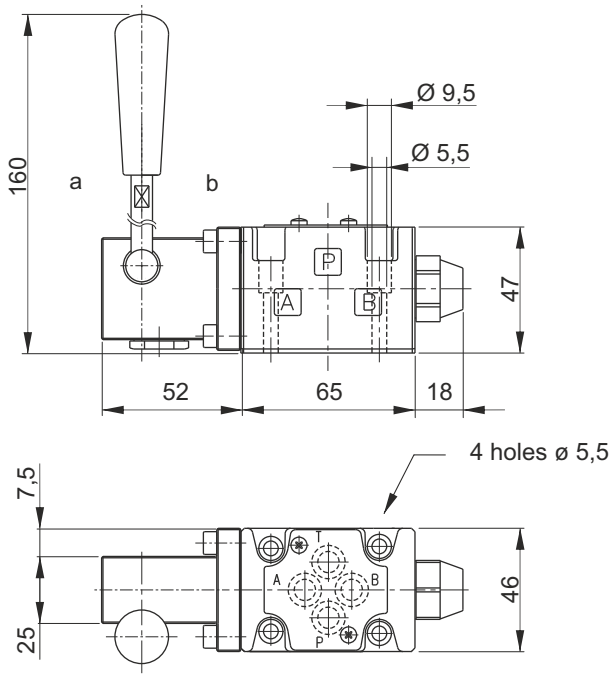
Double solenoid

A2	
B2	
C2	
E2	

Single solenoid

A11C	

NG6 (CETOP 3) MANUAL DIRECTIONAL CONTROL VALVES



Main features

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

Spare part code

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

Code	A B / a 0 b / P T

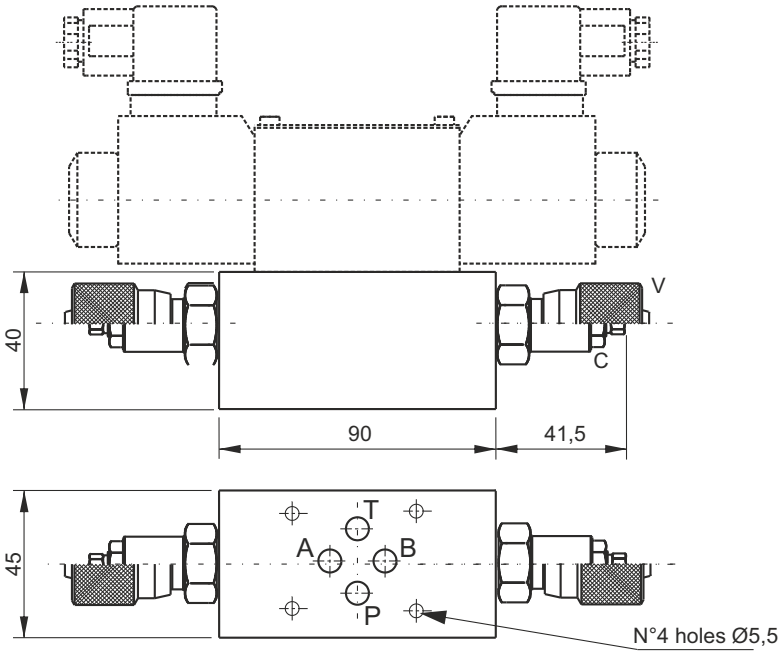
Spool control

Spring centered	**A**	a 0 b
Detented	**D**	a 0 b

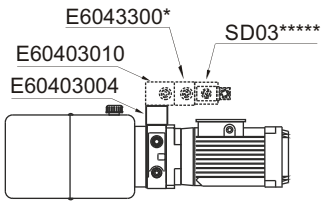
Spool

1	A B / P T
2	A B / P T
3	A B / P T
4	A B / P T

NG6 (CETOP 3) SANDWICH FLOW CONTROL VALVE



Mounting example



Main features

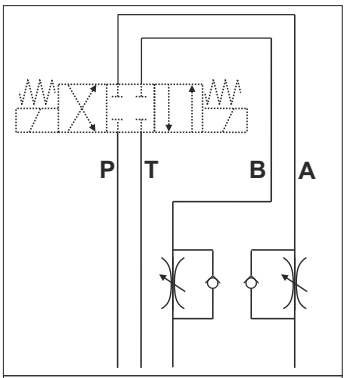
Max pressure	300 bar
Max flow	15 l/min
Weight	Single valve: 0,52 kg Double valve: 0,64 kg
Fixing bolts	4 M5x° bolts. 5Nm torque 10,9 class steel or above
Fluid temperature	-20 ÷ +80°C
Filtration degree	25 ÷ 50 µ

Spare part code

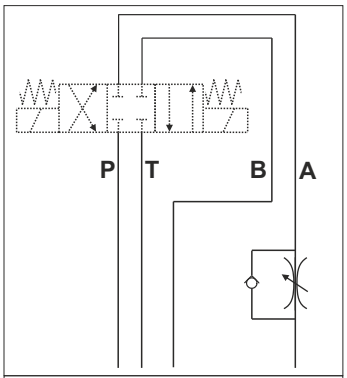
E6043300** — **NG6 (Cetop 3) sandwich meter-out flow control valve**

1 — **Type:**
1 = on A and B
2 = on A
3 = on B

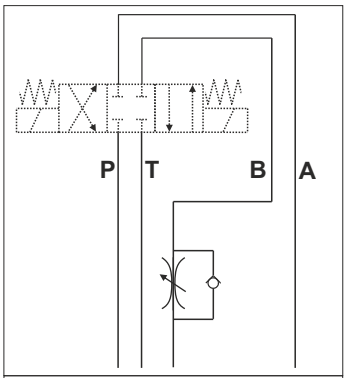
- — **Adjusting device:**
- = screw (std)
V = handwheel



Spare part code
E60433001*



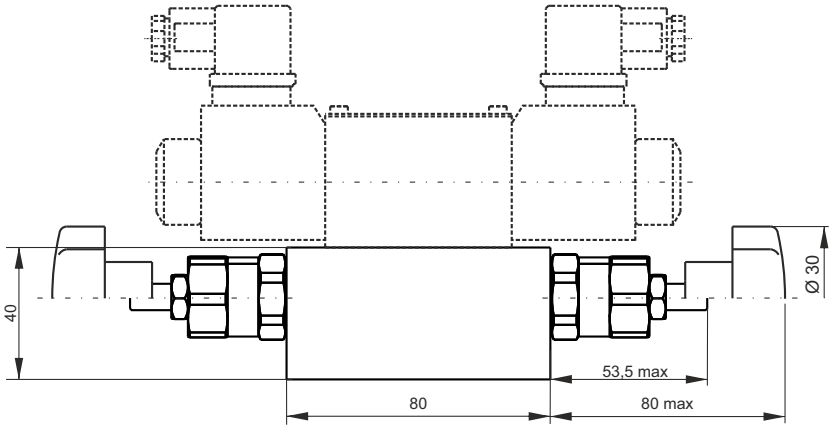
Spare part code
E60433002*



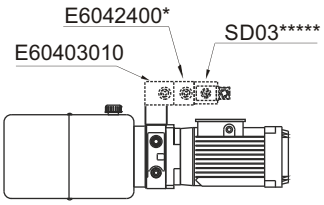
Spare part code
E60433003*

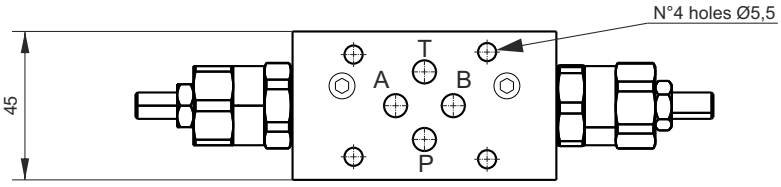
Notes: code does not include the Cetop solenoid valve.
° Bolt length depends on number of modular blocks and type of valve.

NG6 (CETOP 3) SANDWICH RELIEF VALVE



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

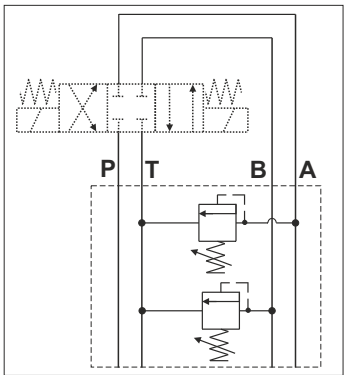
Spare part code

E6042400** — **NG6 (Cetop 3) sandwich relief v.**

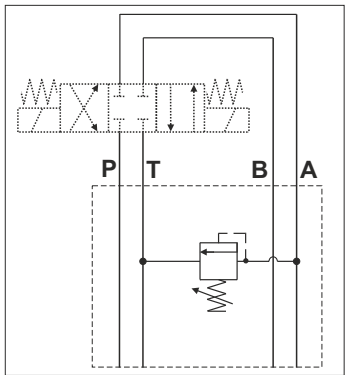
1 — **Type:**
1 = on A and B
2 = on A
3 = on B

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

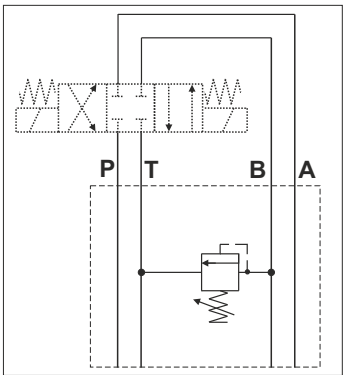
***** — **Option:**
see VMDC20 table in section D



Spare Part Code
E60424001**



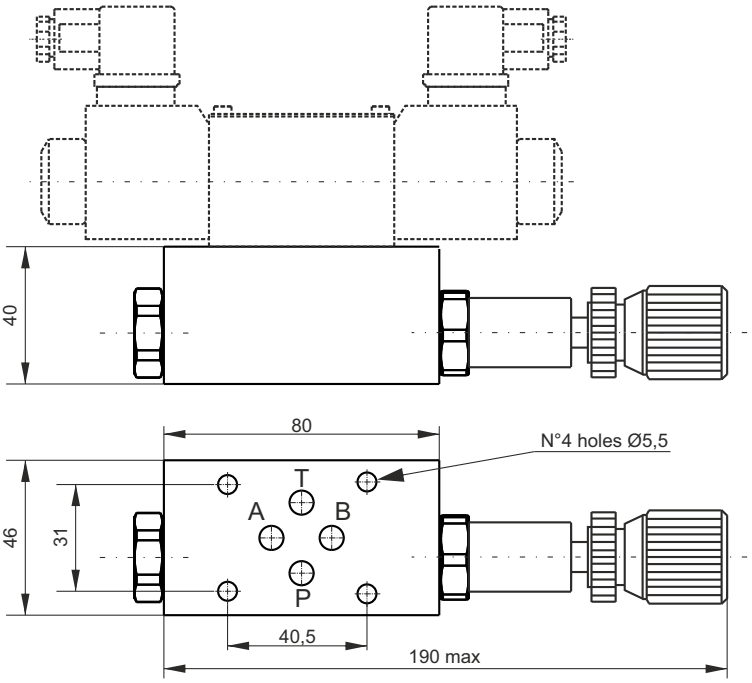
Spare Part Code
E60424002**



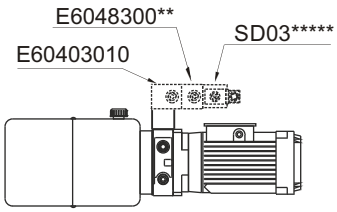
Spare Part Code
E60424003**

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

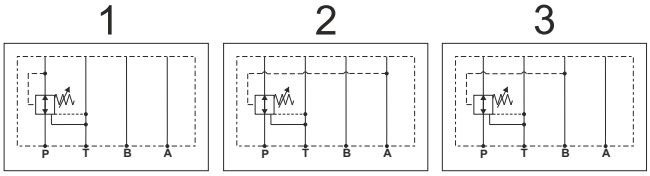
Max pressure	210 bar
Max flow	35 l/min
Weight	1,3 kg
Fixing bolts	4 M5x** bolts. 5Nm torque 10,9 class steel or above
Fluid temperature	-20 ÷ +80°C
Filtration	25 ÷ 50 µ

Spare part code

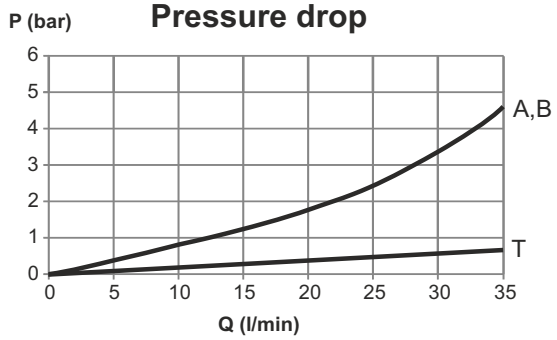
E6048300* — **NG6 (Cetop 3) pressure reducing valve**

1 — **Hydraulic scheme (see below):**
1: reducing on P
2: reducing on A
3: reducing on B

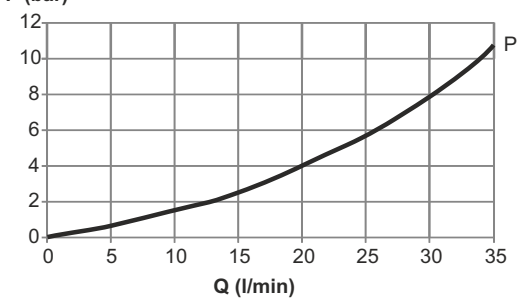
B — Spring range:
B: 7-70 bar
D: 70-210 bar



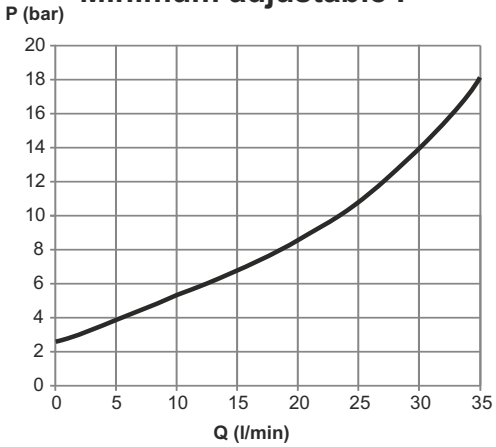
Pressure drop



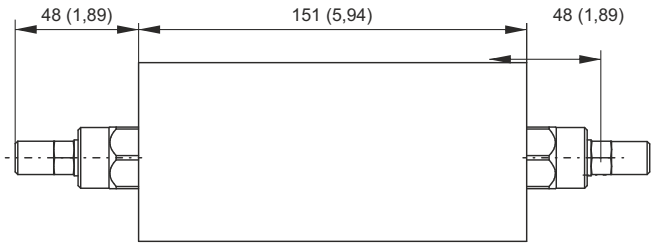
Pressure drop



Minimum adjustable P



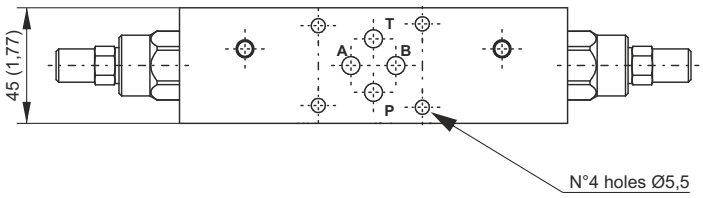
NG6 (CETOP 3) SANDWICH MODULAR OVERCENTRE VALVE



Dimensions in mm (inches)

Main features

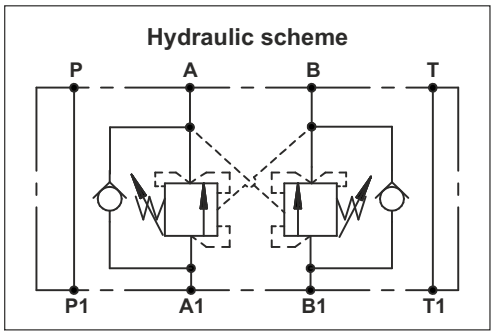
Max pressure	350 bar
Max flow	up to 60 l/min
Fixing bolts	4 M5x** bolts. 5Nm torque 10,9 class steel or above
Fluid temperature	-20 ÷ +80°C
Filtration degree	25 ÷ 50 µ



Spare part code

E60453001* — **NG6 (Cetop 3) sandwich overcentre valve**

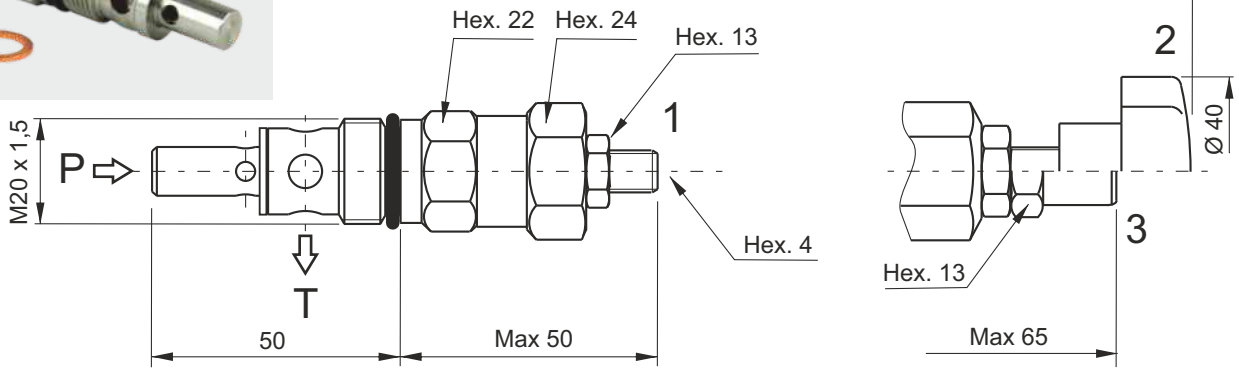
A — **Pressure range settings:**
A = 120 ÷ 230 bar
B = 230 ÷ 350 bar

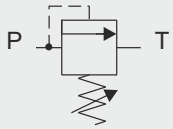


Note: to add external manifolds to PPC assembly code, just add their spare part codes at the end of the PPC code.
eg: PPC-0,8 12DC-UA-J-G1,1-V200-G-RETURN KIT-1,5L+**E60403004-E60403010-E60453001+SD03A2 12DC.**

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.

VMDC35 - DIRECT ACTING RELIEF VALVE





Main features

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

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

Spare part code

VMDC — **Relief valve**

35 — **Nominal size:**
35 = 35 l/min

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

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

Assembly code

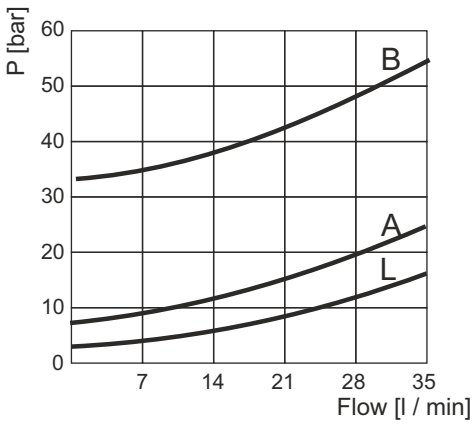
D_* ¨**

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

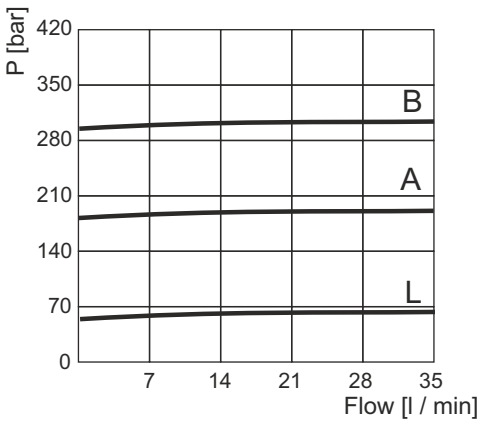
Mounting:

Only in BMPPC02 block, see F section

Minimum setting pressure

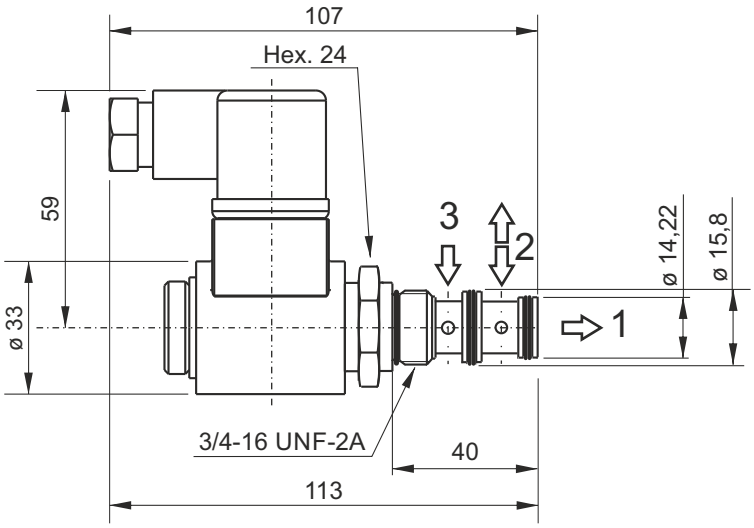


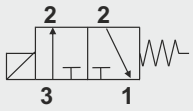
Pressure vs Flow



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

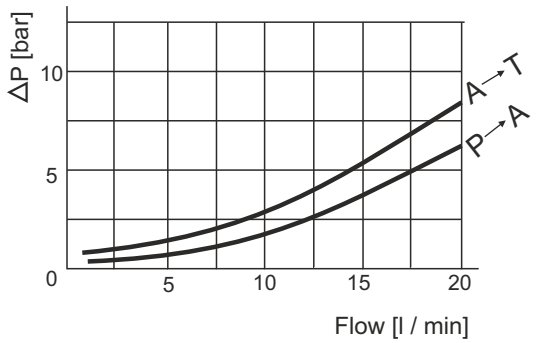
MSV3V — **Three-way direct acting solenoid valve**

40 — **Spool type:**
40 = std

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

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

Pressure drop diagram



VALVES COILS

Supply voltage [V]	Assembly code	Coil type	Spare part code	Spare connector code/type	Holding power [W]	Duty cycle ED [%]	Coil insulation	Weight [g]	Suitable for valves
12DC	12DC_M100	DC	**M10040001**	KA132000B1 DIN43650/ISO4400	16W	100	H	121	SD00
24DC	24DC_M100	DC	**M10040002**	KA132000B1 DIN43650/ISO4400	16W	100	H	121	SD00
24AC	24RAC_M100	RC - needs external rectifying connector	**M10040002**	KA132R11B1 DIN43650/ISO4400	16W	100	H	121	SD00
12DC	12DC_M120	DC	**M12040001**	KA132000B1 DIN43650/ISO4400	22W	100	H	134	SD01
24DC	24DC_M120	DC	**M12040002**	KA132000B1 DIN43650/ISO4400	22W	100	H	134	SD01
24AC	24RAC_M120	RC - needs external rectifying connector	**M12040002**	KA132R11B1 DIN43650/ISO4400	22W	100	H	134	SD01
230AC	220RAC_M120	RC - needs external rectifying connector	**M12040005**	KA132R13B1 DIN43650/ISO4400	22W	100	H	134	SD01
12DC	12DC_M160	DC	**M16040001**	KA132000B1 DIN43650/ISO4400	26W	100	H	190	SD03
24DC	24DC_M160	DC	**M16040002**	KA132000B1 DIN43650/ISO4400	26W	100	H	190	SD03
24AC	24RAC_M160	RC - needs external rectifying connector	**M16040002**	KA132R11B1 DIN43650/ISO4400	26W	100	H	190	SD03
115AC	110RAC_M160	RC - needs external rectifying connector	**M16040004**	KA132R12B1 DIN43650/ISO4400	26W	100	H	190	SD03
230AC	220RAC_M160	RC - needs external rectifying connector	**M16040005**	KA132R13B1 DIN43650/ISO4400	26W	100	H	190	SD03
12DC	12DC_M630	DC	**M6306012**	KA132000B1 DIN43650/ISO4400	18W	100	H	130	MSV3V MSV30/31 SD02
24DC	24DC_M630	DC	**M6306024**	KA132000B1 DIN43650/ISO4400	18W	100	H	130	MSV3V MSV30/31 SD02
24AC	24AC_M631	RC with integrated rectifying bridge	**M6316024**	KA132000B1 DIN43650/ISO4400	18W	100	H	130	MSV3V MSV30/31 SD02
115AC	115AC_M631	RC with integrated rectifying bridge	**M6316115**	KA132000B1 DIN43650/ISO4400	18W	100	H	130	MSV3V MSV30/31 SD02
230AC	230AC_M631	RC with integrated rectifying bridge	**M6316230**	KA132000B1 DIN43650/ISO4400	18W	100	H	130	MSV3V MSV30/31 SD02
12DC	12DC_M630DT	DC, Deutsch	**M6306012DT**	DT06_4S Deutsch	16W	100	H	117	MDV30/31 MSV30/31 SD00
24DC	24DC_M630DT	DC, Deutsch	**M6306024DT**	DT06-4S Deutsch	16W	100	H	117	MDV30/31 MSV30/31 SD00

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.

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