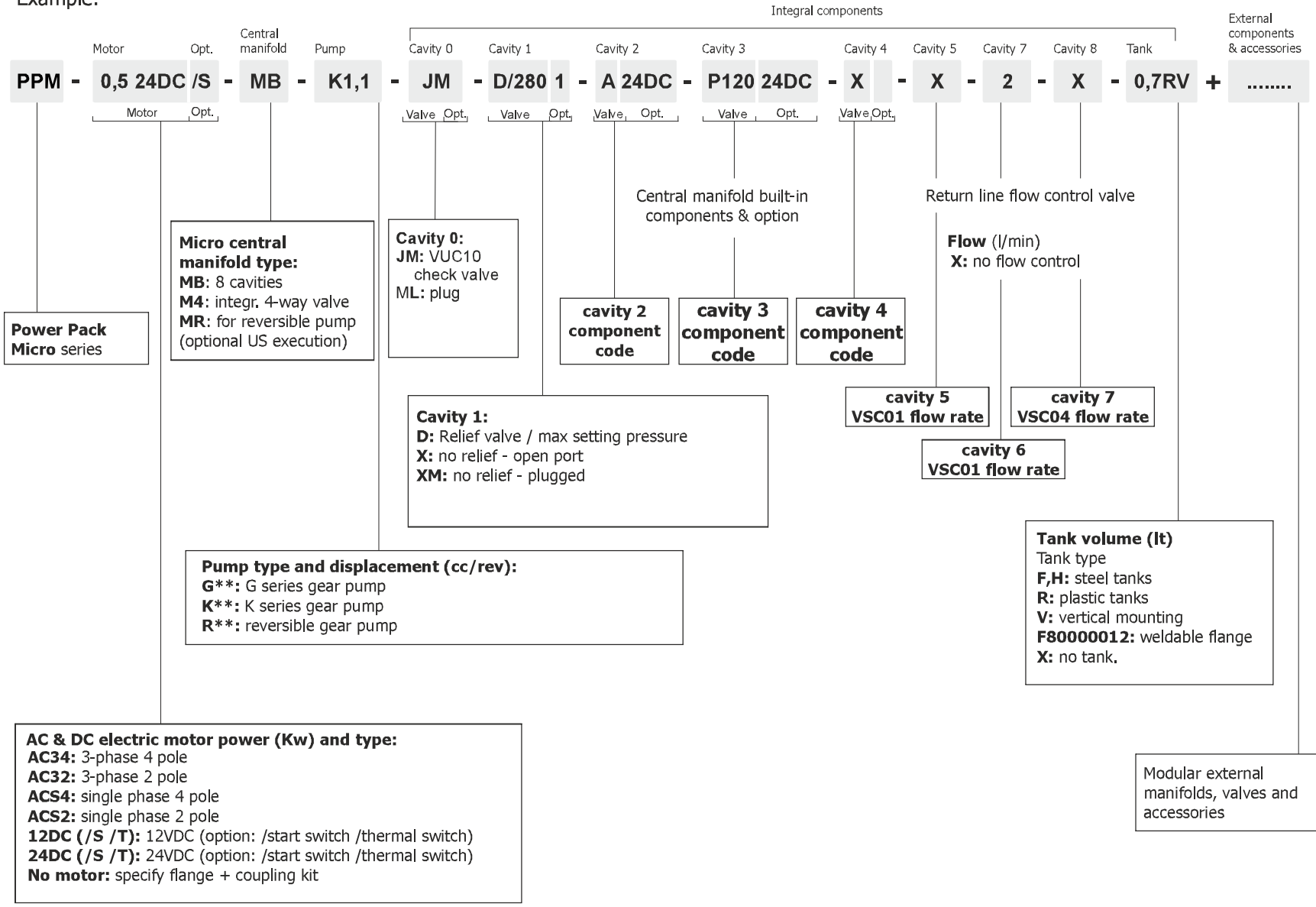
Hydronit

2011
AC & DC Hydraulic Power Packs Micro

MODEL CODE

Example:



sales@hydronit.com - +39 0362 1841 210

AC & DC electric motors

Section A

DC motors

0,15 12DC_T	12VDC motor - 150W - Ø 80 + thermal switch
0,15 24DC_T	24VDC motor - 150W - Ø 80 + thermal switch
0,5 12DC	12VDC motor - 500W - Ø 80
0,5 24DC	24VDC motor - 500W - Ø 80
0,5 12DC_T	12VDC motor - 500W - Ø 80 + thermal switch
0,5 24DC_T	24VDC motor - 500W - Ø 80 + thermal switch
0,8 12DC	12VDC motor - 800W - Ø 80
0,8 24DC	24VDC motor - 800W - Ø 80
0,8 12DC_T	12VDC motor - 800W - Ø 80 + thermal switch
0,8 24DC_T	24VDC motor - 800W - Ø 80 + thermal switch
1,6 12DC_T	12VDC motor - 1600W - Ø 114 + thermal switch
2,1 12DC_T	12VDC motor - 2100W - Ø 114 + thermal switch
2,2 24DC_T	24VDC motor - 2200W - Ø 114 + thermal switch

AC motors: three-phase 4 poles (~1450 rpm at 50Hz)

N037AC341S3	integral motor 0,37kW 3-ph 4-pole 220/380V 50/60Hz frame 71
N055AC341S3	integral motor 0,55kW 3-ph 4-pole 220/380V 50/60Hz frame 71
N075AC341S3	integral motor 0,75kW 3-ph 4-pole 220/380V 50/60Hz frame 71

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

N037ACS41S3	integral motor 0,37kW 1-ph 4-pole 220V 50Hz frame 71
N055ACS41S3	integral motor 0,55kW 1-ph 4-pole 220V 50Hz frame 71

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

No motor: B14 Flange + coupling kit

NB14 63	mounting kit for B14 motors frame 63
NB14 71	mounting kit for B14 motors frame 71

Electric motors options

DC motor options

S150 12DC 80	starting relay 12VDC 150A with mounting kit for Ø 80 motors
S150 24DC 80	starting relay 24VDC 150A with mounting kit for Ø 80 motors
S150 12DC 112	starting relay 12VDC 150A with mounting kit for Ø 112-114 motors
S150 24DC 112	starting relay 24VDC 150A with mounting kit for Ø 112-114 motors

Micro central manifold

Section B

International execution (1/4" BSP exit ports)

MB	Micro PPM B type body with 4 lateral cavities
MR	Micro PPM R type body for reversible circuits
M4	Micro PPM 4-way type body for 4 way cartridge valves

USA execution (SAE 06 exit ports)

MBUS	Micro PPM B type body with 4 lateral cavities US execution
MRUS	Micro PPM R type body for reversible circuits US execution
M4US	Micro PPM 4-way type body for 4 way cartridge valves US execution

Gear Pumps

Section C

Standard gear pumps

GM0,1	gear pump group 0 – 0,19 cc/rev
KM0,2	gear pump group 0 – 0,26 cc/rev
KM0,4	gear pump group 0 – 0,38 cc/rev
KM0,6	gear pump group 0 – 0,64 cc/rev
KM0,9	gear pump group 0 – 0,88 cc/rev
KM1,3	gear pump group 0 – 1,25 cc/rev
KM1,5	gear pump group 0 – 1,54 cc/rev
KM1,9	gear pump group 0 – 1,9 cc/rev

Bi-directional gear pumps

RM0,1	reversible gear pump group 0 - 0,19 cc/rev
RM0,2	Reversible gear pump group 0 - 0,26 cc/rev
RM0,4	reversible gear pump - 0,38cc/rev
RM0,6	reversible gear pump - 0,63 cc/rev
RM0,9	reversible gear pump - 0,88cc/rev
RM1,3	reversible gear pump - 1,25cc/rev
RM1,5	reversible gear pump - 1,5cc/rev

Integral components: Cavity 0

Section D

Components in central manifold cavity 0

JM	check valve ball type 5/8-18 UNF
ML	plug 5/8-18UNF basic

Integral components: Cavity 1

Components in central manifold cavity 1

DM_60	relief valve M14 - 10÷60 bar - socket screw adjustment
DM_180	relief valve M14 - 20÷180 bar - socket screw adjustment
DM_280	relief valve M14 - 35÷280 bar - socket screw adjustment
XM	plug for relief valve cavity M14

Integral components: Cavity 2

Components in central manifold cavity 2

X	open cavity – no valve
A	NC solenoid 2/2 way 3/4-16UNF poppet valve
B	NC solenoid 2/2 way 3/4-16UNF poppet valve with emergency
C	NO solenoid 2/2 way 3/4-16UNF poppet valve with emergency
D	NC solenoid 2/2 way 3/4-16UNF double poppet valve with emergency
E	lever operated 2/2 way valve without micro-switch
EM	lever operated 2/2 way valve with micro-switch
Z	2 way emergency button valve
S	flow control valve 3/4-16UNF with screw
T12DC	proportional flow control valve poppet type 15l/min 315 bar + coil 12VDC ED100%
T24DC	proportional flow control valve poppet type 15l/min 315 bar + coil 24VDC ED100%
U	hand pump 3/4-16UNF 2 cc/stroke + suction/return line pipe 1/4"BSP 370mm
G	closed plug 3/4-16UNF
H	plug 3/4-16UNF with 1/4"BSPP exit port
N	plug 3/4-16UNF open passage with 1/4"BSPP exit port
P	plug 3/4-16UNF passing through 1/4"BSPP
L	plug 3/4-16UNF basic
J	check valve ball type 3/4-16UNF
4VA11C	4/2 way solenoid directional valve, closed center transient (only for M4 manifolds)
4VA2	4/3 way solenoid directional valve, center P to T (only for M4 manifolds)
4VB2	4/3 way solenoid directional valve, closed center (only for M4 manifolds)
4VC2	4/3 way solenoid directional valve, H center (only for M4 manifolds)
4VE2	4/3 way solenoid directional valve, center A-B to T (only for M4 manifolds)
JP	check valve poppet type 5/8-18 UNF (only for MR central manifolds)
MG	Closed plug 5/8-18UNF (only for MR central manifolds)

Cavity 2 option

V-CSB	handwheel for CSB/CSU
EM9001C	pressure gauge shut-off valve 90° F-F + nipples M 1/4" BSPP – M 1/4" BSPP
EMIL01C	pressure gauge shut-off valve F-F + nipples M 1/4" BSPP – M 1/4" BSPP
F401**	pressure switch 1/4" BSPP where ** = max setting pressure (050-100-200-400 bar)
MIR63EM**	pressure gauge Ø63 where ** = max press. (60-160-250-315 bar) + shut-off valve 90°

Cavity 2 valve coil

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

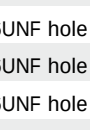
Cavity 2 valve coil

12DC_M140	Coil 12V DC 22W ED100% for MSV-MDV + Electric connector DIN 43650-A
24DC_M140	Coil 24V DC 22W ED100% for MSV-MDV + Electric connector DIN 43650-A
24RAC_M140	Coil 24V DC 22W ED100% for MSV-MDV + El. connector with rectifier 12-24 V
110RAC_M140	Coil 110V RAC 22W ED100% for MSV-MDV + El. connector with rectifier 115 V
220RAC_M140	Coil 220V RAC 22W ED100% for MSV-MDV + El. connector with rectifier 230 V
12DC_M630	coil 12V DC ED100% for cartridge valves + Electric connector DIN 43650-A
24DC_M630	coil 24V DC ED100% for cartridge valves + Electric connector DIN 43650-A
24AC_M631	coil 24V AC ED100% for cartridge valves + integrated rectifier + Electric connector
115AC_M631	coil 115V AC ED100% for cartridge valves + integrated rectifier + Electric connector
230AC_M631	coil 230V AC ED100% for cartridge valves + integrated rectifier + Electric connector

Integral components: Cavity 3

Components in central manifold cavity 3

F02	fixed pressure compensated flow control valve 3/4-16UNF hole 0,8mm
F03	fixed pressure compensated flow control valve 3/4-16UNF hole 1mm
F04	fixed pressure compensated flow control valve 3/4-16UNF hole 1,25mm
F05	fixed pressure compensated flow control valve 3/4-16UNF hole 1,5mm
F06	fixed pressure compensated flow control valve 3/4-16UNF hole 1,75mm
F07	fixed pressure compensated flow control valve 3/4-16UNF hole 2mm
F09	fixed pressure compensated flow control valve 3/4-16UNF hole 2,5mm
F11	fixed pressure compensated flow control valve 3/4-16UNF hole 3mm
F13	fixed pressure compensated flow control valve 3/4-16UNF hole 3,5mm
F15	fixed pressure compensated flow control valve 3/4-16UNF hole 4mm
R2	compensated flow control valve 3/4-16UNF with screw 1 ÷ 2,2 l/min
R3	compensated flow control valve 3/4-16UNF with screw 1,6 ÷ 4 l/min
R4	compensated flow control valve 3/4-16UNF with screw 2,5 ÷ 5 l/min
R5	compensated flow control valve 3/4-16UNF with screw 3÷ 7 l/min
R6	compensated flow control valve 3/4-16UNF with screw 4,9 ÷ 10,8 l/min
R7	compensated flow control valve 3/4-16UNF with screw 8 ÷ 18,5 l/min
S	flow control valve 3/4-16UNF with screw
Z	2 way emergency button valve
AR	NC solenoid 2/2 way 3/4-16UNF poppet valve, reversible flow
BR	NC solenoid 2/2 way 3/4-16UNF poppet valve with emergency, reversible flow
CR	NO solenoid 2/2 way 3/4-16UNF poppet valve with emergency, reversible flow
D	NC solenoid 2/2 way 3/4-16UNF double poppet valve with emergency
J	check valve ball type 3/4-16UNF
G	closed plug 3/4-16UNF
H	plug 3/4-16UNF with 1/4"BSPP exit port
N	plug 3/4-16UNF open passage with 1/4"BSPP exit port
P	plug 3/4-16UNF passing through 1/4"BSPP
L	plug 3/4-16UNF basic
P12DC**	proportional relief valve 3/4-16UNF 12VDC where ** = max pressure (60-210 bar)
P24DC**	proportional relief valve 3/4-16UNF 24VDC where ** = max pressure (60-210 bar)
V**	relief valve 3/4-16UNF where ** = max pressure (40-110-250-350 bar) - socket screw
JP	check valve poppet type 5/8-18 UNF (only for MR central manifolds)
MG	Closed plug 5/8-18UNF (only for MR central manifolds)



Cavity 3 option

V-CSB	handwheel for CSB/CSU
2	handwheel M8 for VMDC35/VMDC20/VCF6 valves
EM9001C	pressure gauge shut-off valve 90° F-F + nipples M 1/4" BSPP – M 1/4" BSPP
EMIL01C	pressure gauge shut-off valve F-F + nipples M 1/4" BSPP – M 1/4" BSPP
F401**	pressure switch 1/4" BSPP where ** = max setting pressure (050-100-200-400 bar)
MIR63EM**	pressure gauge Ø63 where ** = max press. (60-160-250-315 bar) + shut-off valve 90°

Cavity 3 valve coil voltage

12DC_M130	Coil 12V DC 18W ED75% for MSV30-31 + Electric connector DIN 43650-A
24DC_M130	Coil 24V DC 18W ED75% for MSV30-31 + Electric connector DIN 43650-A
24RAC_M130	Coil 24V DC 18W ED75% for MSV30-31 + El. connector with rectifier 12-24 V
115_50AC_M130	Coil 115V/50Hz AC 28VA ED75% only for MSV30 + Electric connector DIN 43650-A
230_50AC_M130	Coil 230V/50Hz AC 28VA ED75% only for MSV30 + Electric connector DIN 43650-A
110RAC_M130	Coil 110V RAC 18W ED75% for MSV30-31 + El. connector with rectifier 115 V
220RAC_M130	Coil 220V RAC 18W ED75% for MSV30-31 + El. connector with rectifier 230 V
12DC_M140	Coil 12V DC 22W ED100% for MSV-MDV + Electric connector DIN 43650-A
24DC_M140	Coil 24V DC 22W ED100% for MSV-MDV + Electric connector DIN 43650-A
24RAC_M140	Coil 24V DC 22W ED100% for MSV-MDV + El. connector with rectifier 12-24 V
110RAC_M140	Coil 110V RAC 22W ED100% for MSV-MDV + El. connector with rectifier 115 V
220RAC_M140	Coil 220V RAC 22W ED100% for MSV-MDV + El. connector with rectifier 230 V

Integral components: Cavity 4

Component in central manifold cavity 4 (only for MR central manifold)

DM_60	relief valve M14 - 10÷60 bar - socket screw adjustment
DM_180	relief valve M14 - 20÷180 bar - socket screw adjustment
DM_280	relief valve M14 - 35÷280 bar - socket screw adjustment
XM	plug for relief valve cavity M14

Flow restrictor in central manifold cavity 5

Flow restrictor in central manifold cavity 5

PLUGTCE01	1/4" BSPP plug with copper washer
PP01370	suction/return line pipe 1/4"BSP 370mm
RETURN-KIT	1/4" BSP holder for SF12 + flexible plastic pipe 12 mm for return line / price per meter
C34200001	return line tank immersed filter
1(01)	fixed pressure compensated flow control valve 1/4"BSP 1l/min
2(01)	fixed pressure compensated flow control valve 1/4"BSP 2l/min
3(01)	fixed pressure compensated flow control valve 1/4"BSP 3l/min
4(01)	fixed pressure compensated flow control valve 1/4"BSP 4l/min
5(01)	fixed pressure compensated flow control valve 1/4"BSP 5l/min
6(01)	fixed pressure compensated flow control valve 1/4"BSP 6l/min
8(01)	fixed pressure compensated flow control valve 1/4"BSP 8l/min
10(01)	fixed pressure compensated flow control valve 1/4"BSP 10l/min
12(01)	fixed pressure compensated flow control valve 1/4"BSP 12l/min
15(01)	fixed pressure compensated flow control valve 1/4"BSP 15l/min

Flow restrictor in central manifold cavity 7

Flow restrictor in central manifold cavity 7

0(04)	closed plug for cavity 7
1(01)	fixed pressure compensated flow control valve 1/4"BSP 1l/min
2(01)	fixed pressure compensated flow control valve 1/4"BSP 2l/min
3(01)	fixed pressure compensated flow control valve 1/4"BSP 3l/min
4(01)	fixed pressure compensated flow control valve 1/4"BSP 4l/min
5(01)	fixed pressure compensated flow control valve 1/4"BSP 5l/min
6(01)	fixed pressure compensated flow control valve 1/4"BSP 6l/min
8(01)	fixed pressure compensated flow control valve 1/4"BSP 8l/min
10(01)	fixed pressure compensated flow control valve 1/4"BSP 10l/min
12(01)	fixed pressure compensated flow control valve 1/4"BSP 12l/min
15(01)	fixed pressure compensated flow control valve 1/4"BSP 15l/min
PIL5818	pilot for PO check valve 5/8-18UNF VUC10C
PIL5818DIF	pilot for PO check valve 5/8-18UNF VUC10C + valve for differential cylinders

Flow restrictor in central manifold cavity 8

Flow restrictor in central manifold cavity 8

PLUGTCE01	1/4” BSPP plug with copper washer
PP01370	suction/return line pipe 1/4”BSP 370mm
RETURN-KIT	1/4” BSP holder for SF12 + flexible plastic pipe 12 mm for return line / price per meter
C34200001	return line tank immersed filter
1(01)	fixed pressure compensated flow control valve 1/4"BSP 1l/min
2(01)	fixed pressure compensated flow control valve 1/4"BSP 2l/min
3(01)	fixed pressure compensated flow control valve 1/4"BSP 3l/min
4(01)	fixed pressure compensated flow control valve 1/4"BSP 4l/min
5(01)	fixed pressure compensated flow control valve 1/4"BSP 5l/min
6(01)	fixed pressure compensated flow control valve 1/4"BSP 6l/min
8(01)	fixed pressure compensated flow control valve 1/4"BSP 8l/min
10(01)	fixed pressure compensated flow control valve 1/4"BSP 10l/min
12(01)	fixed pressure compensated flow control valve 1/4"BSP 12l/min
15(01)	fixed pressure compensated flow control valve 1/4"BSP 15l/min

Tanks

Section E

Steel tanks

0,7F	0,7l cylindrical steel horizontal mounting tank + 3/8"BSPP std filler & breather plug
0,7FV	0,7l cylindrical steel vertical mounting tank + 3/8"BSPP std filler & breather plug
1,2F	1,2l cylindrical steel horizontal mounting tank + 3/8"BSPP std filler & breather plug
1,2FV	1,2l cylindrical steel vertical mounting tank + 3/8"BSPP std filler & breather plug
1,7H	1,7l cylindrical steel horizontal mounting tank + 3/8"BSPP std filler & breather plug
1,7HV	1,7l cylindrical steel vertical mounting tank + 3/8"BSPP std filler & breather plug
2,4H	2,4l cylindrical steel horizontal mounting tank + 3/8"BSPP std filler & breather plug
2,4HV	2,4l cylindrical steel vertical mounting tank + 3/8"BSPP std filler & breather plug
F80000012	steel tank adapter for PPM - to be welded on custom made tanks

Plastic tanks

0,4R	0,4l plastic horizontal mounting tank + 1/4"BSPP std filler & breather plug
0,4RV	0,4l plastic vertical mounting tank + 1/4"BSPP std filler & breather plug
0,7R	0,7l plastic horizontal mounting tank + 1/4"BSPP std filler & breather plug
0,7RV	0,7l plastic vertical mounting tank + 1/4"BSPP std filler & breather plug
1,2R	1,2l plastic horizontal mounting tank + 1/4"BSPP std filler & breather plug
1,2RV	1,2l plastic vertical mounting tank + 1/4"BSPP std filler & breather plug

Accessories

Section F

Accessories

E60543003	foot mounting support (45mm height)
MIR63**	pressure gauge Ø63 where ** = max press. (60-160-250-315 bar)
EM9001C	pressure gauge shut-off valve 90° F-F + nipples M 1/4" BSPP – M 1/4" BSPP
EMIL01C	pressure gauge shut-off valve F-F + nipples M 1/4" BSPP – M 1/4" BSPP
F16000001	plastic Ø112-114 DC motor protection cover
F401**	pressure switch 1/4" BSPP where ** = max setting pressure (050-100-200-400 bar)
P0201	remote up/down control with 3m flying cable for single/double acting cylinder
P0202	Remote 4 buttons control with 3m flying cable for 2 double acting cylinders
VPC00	electronic PWM driver for proportional valves 12/24VDC
BFCSAE0801	in-line manifolds for 3/4-16UNF valves 1/4" BSPP ports
BFCSAE0802	in-line manifolds for 3/4-16UNF valves 3/8" BSPP ports

External manifolds

External manifolds

M60403004	23mm spacer subplate
M60403005	90° rotation manifold
M60403010(US)	NG3 MICRO parallel block - 1/4" BSPP lateral ports (opt. US execution with SAE ports)
M60413002	NG3 MICRO manifold with piloted check valve on A
M60413001	NG3 MICRO manifold with piloted check valve on A and B
M60413003	NG3 MICRO manifold with piloted check valve on B
M50403007	PPM to SD01 stackable valves converter manifold
PM09M	hand pump 8,8 cc/stroke – cartridge only + base modular manifold

External valves

Section G

External valves

SD00A11C	NG3 MICRO solenoid directional valve 4 way, 2 positions
SD00A2	NG3 MICRO solenoid directional valve 4 way, 3 pos. center P to T
SD00B2	NG3 MICRO solenoid directional valve 4 way, 3 pos. closed center
SD00C2	NG3 MICRO solenoid directional valve 4 way, 3 pos. H center
SD00E2	NG3 MICRO solenoid directional valve 4 way, 3 pos. center A-B to T
SD01A11C	Stackable solenoid directional valve 4 way, 2 positions
SD01A2	Stackable solenoid directional valve 4 way, 3 pos. center P to T
SD01B2	Stackable solenoid directional valve 4 way, 3 pos. closed center
SD01C2	Stackable solenoid directional valve 4 way, 3 pos. H center
SD01E2	Stackable solenoid directional valve 4 way, 3 pos. center A-B to T
SD01A11CC	Stackable solenoid directional valve 4 way, 2 positions, stack top closed
SD01A2C	Stackable solenoid directional valve 4 way, 3 pos. center P to T, stack top closed
SD01B2C	Stackable solenoid directional valve 4 way, 3 pos. closed center, stack top closed
SD01C2C	Stackable solenoid directional valve 4 way, 3 pos. H center, stack top closed
SD01E2C	Stackable solenoid directional valve 4 way, 3 pos. center A-B to T, stack top closed

External SD00 valves coils

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

External SD01 valves coils

12DC_M120	coil 12V DC 22W ED100% + Electric connector DIN 43650-A
24DC_M120	coil 24V DC 22W ED100% + Electric connector DIN 43650-A
24RAC_M120	coil 24V DC 22W ED100% + El. conn. with rectifier 12-24 V black pg11
220RAC_M120	coil 220V RAC 26W ED100% + El. conn. with rectifier 230 V black pg11

AC & DC ELECTRIC MOTORS

Integral AC motors: the engineered solution for compact and optimised power units from 0,25 to 1,8 kW, single or three phase. The AC motors are **directly flanged** on the central manifold for extra compactness. A **single coupling** can suit all powers. We suggest to adopt these advanced motors because of their peculiar advantages over standard B14 IEC AC motors and because they are **designed specifically** for use on our micro power packs, offering an **higher power density** and **high starting torque** (in HT models) than market standard motors. These motors are intendend for intermittent use (S3 40%), which is the case for most micro-power packs applications. They can be used in emergency situations continuously at a reduced rated power (about 30% less than S3 nominal power).
Single phase motors should not run in any case without load for long time to avoid overheating.

B14 IEC standard AC motors: the standard solution easily available on every market from 0,12 to 0,55 kW, single or three phase. These motors are normally procured by the customer itself. Hydronit provides adaptor flanges and double piece coupling for frame size: 63 and 71.

Frame 80 DC motors: with or without thermal protector and running time up to 6 min. Power from 0,15kW up to 0,8kW 12 or 24VDC.
The permanent magnet construction allow their use in bidirectional units.

Frame 114 DC motors: power up to 2,2kW 24VDC for high performances. All motors have thermal protector switch as standard.

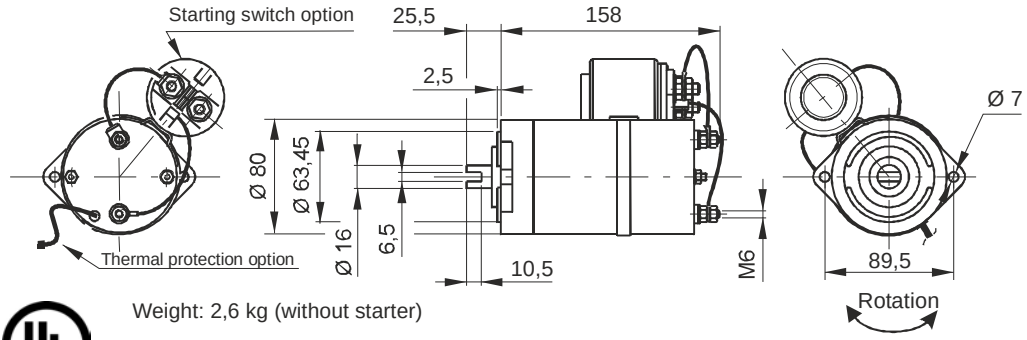
Are AC motors compliant with the European Union Minimum Energy Performance Standards?
Hydronit AC motors are manufactured in Italy with the best technologies nowadays available and are specifically designed for mini power packs duties, which are typically intermittent. Hydronit motors have an higher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

Are there special requirements to mount IEC B14 motors?
No special toolings are required. Please strictly follow motor side coupling mounting dimension tolerance as per the relevant drawings. Failing in doing so may cause malfunctioning of the power pack and even the break 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 intrinsecal design. Normally this ranges 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 dimensioning must be done and test on field must be preliminary performed. High starting torque «HT» motors are available. Ask our technical office.

How do I dimension a DC motor?
These motors are normally for intermittent duty. It is important to know required flow in l/min, working pressure in bar and the duty charge. Then following A040 table instructions a proper motor/pump combination can be selected.

INTEGRAL DC MOTORS Ø 80



Permanent magnets
Protection degree: IP54
Insulation class: F

Weight: 2,6 kg (without starter)

Code

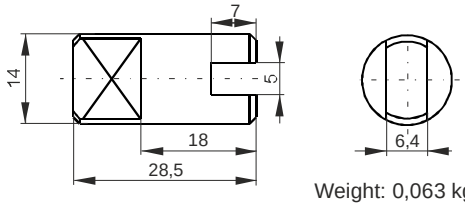
Description	PPC assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current
150W 12V DC + thermal protector	**0,15 12DC/T**	**M46C1ST01**	S2: 10 min S3: 15% ED	1400 rpm	30 A
150W 24V DC + thermal protector	**0,15 24DC/T**	**M46C2ST01**	S2: 10 min S3: 15% ED	1400 rpm	15 A
500W 12V DC motor	**0,5 12DC**	**M46C1S005**	S2: 6 min S3: 10% ED	2800 rpm	90 A
500W 24V DC motor	**0,5 24DC**	**M46C2S005**	S2: 6 min S3: 10% ED	2800 rpm	50 A
500W 12V DC + thermal protector	**0,5 12DC/T**	**M46C1ST05**	S2: 6 min S3: 10% ED	2800 rpm	90 A
500W 24V DC + thermal protector	**0,5 24DC/T**	**M46C2ST05**	S2: 6 min S3: 10% ED	2800 rpm	50 A
800W 12V DC motor	**0,8 12DC**	**M46C1S008**	S2: 3 min S3: 10% ED	4000 rpm	130 A
800W 24V DC motor	**0,8 24DC**	**M46C2S008**	S2: 4 min S3: 10% ED	4000 rpm	80 A
800W 12V DC + thermal protector	**0,8 12DC/T**	**M46C1ST08**	S2: 3 min S3: 10% ED	4000 rpm	130 A
800W 24V DC + thermal protector	**0,8 24DC/T**	**M46C2ST08**	S2: 4 min S3: 10% ED	4000 rpm	80 A

Options & coupling

Description	PPC assembly code	Spare part code
12V DC 150 Amp start switch + mounting kit	**S150 12DC 80**	**M47SC0001 + M47SK0801**
24V DC 150 Amp start switch + mounting kit	**S150 24DC 80**	**M47SC0002 + M47SK0801**
Remote wired control with 2 buttons and 3m cable	**P0201** (single acting)	
Remote wired control with 4 buttons and 3m cable	**P0202** (double acting)	
Coupling for Ø 80 DC motors	**E36200003**	

Notes: the starting switch mounting kit is provided when specifying the **/S150** as motor option in PPM assembly code.
When ordering spare starting switches, it must be ordered separately (code: M47SK0801).

E36200003

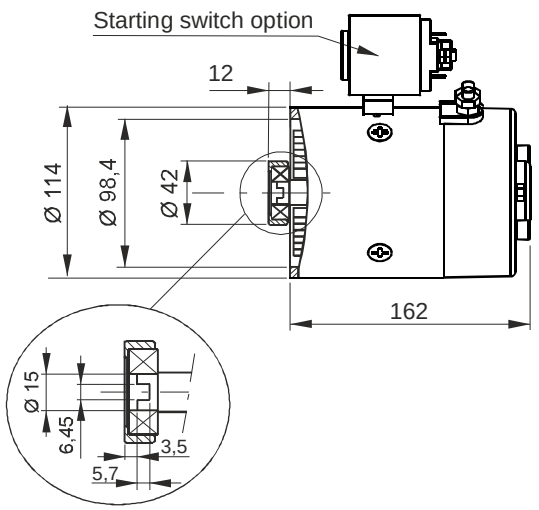


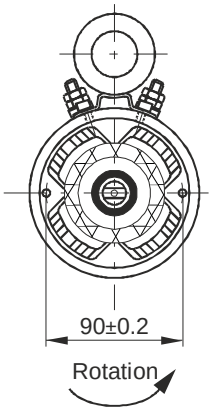
Weight: 0,063 kg

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

INTEGRAL DC MOTORS Ø 114

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





Code

Description	PPC assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current
1600W 12V DC + thermal protector	**1,6 12DC/T**	**M46C1ST16**	S2: 2 min S3: 12% ED	2600 rpm	230 A
2100W 12V DC + thermal protector	**2,1 12DC/T**	**M46C1ST21**	S2: 1,2 min S3: 7,5% ED	2300 rpm	330 A
2200W 24V DC + thermal protector	**2,2 24DC/T**	**M46C2ST22**	S2: 2 min S3: 12% ED	2600 rpm	140 A

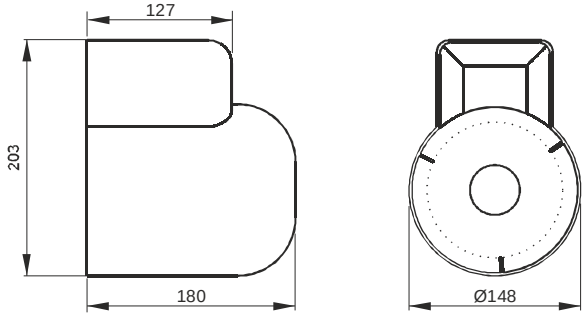
Options & coupling

Description	PPC assembly code	Spare part code
12V DC 150 Amp start switch + mounting kit	**S150 12DC 112**	**M47SC0001 + M47SK1121**
24V DC 150 Amp start switch + mounting kit	**S150 24DC 112**	**M47SC0002 + M47SK1121**
Remote wired control with 2 buttons and 3m cable	**P0201** (single acting)	
Remote wired control with 4 buttons and 3m cable	**P0202** (double acting)	
DC motor plastic cover	**F16000001**	
Coupling for Ø114 motors	**E36200002**	

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

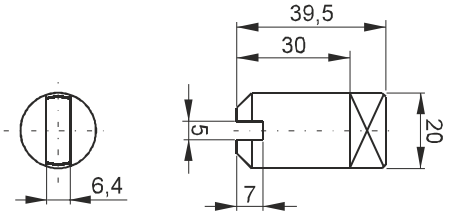
The coupling is already included when specifying the motor in PPM assembly code.
It is to be indicated only when ordering PPM with no motor but with coupling.

Motor plastic cover F16000001



Weight: 0,27 kg

Coupling E36200002

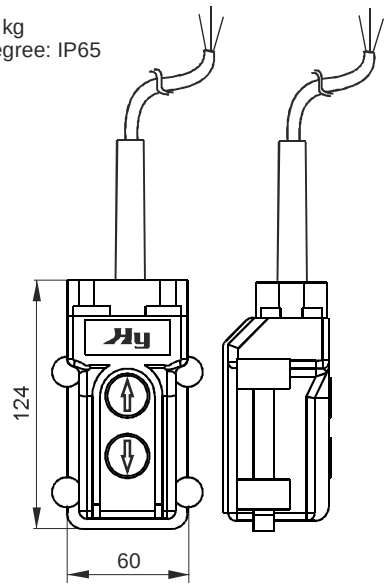


Weight: 0,075 kg

DC MOTORS OPTIONS

Remote control P0201
for one single or double acting cylinder

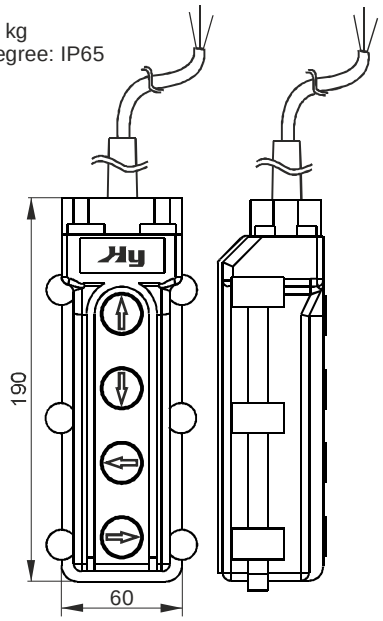
Weight: 0,58 kg
Protection degree: IP65



Spare part code
P0201

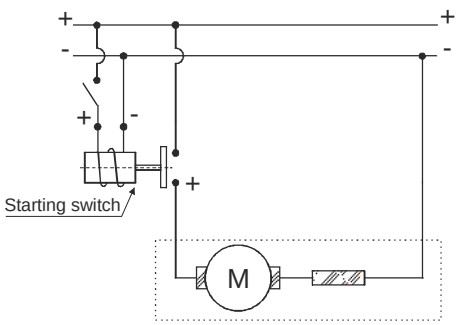
Remote control P0202
for two double acting cylinders

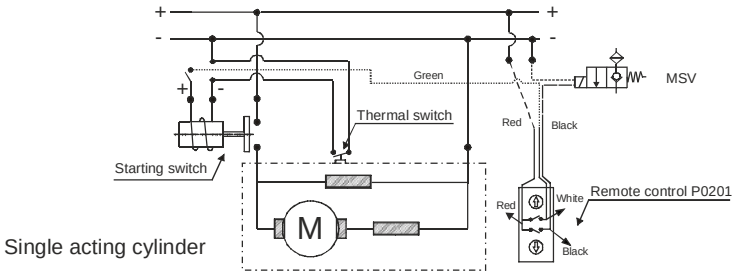
Weight: 0,60 kg
Protection degree: IP65

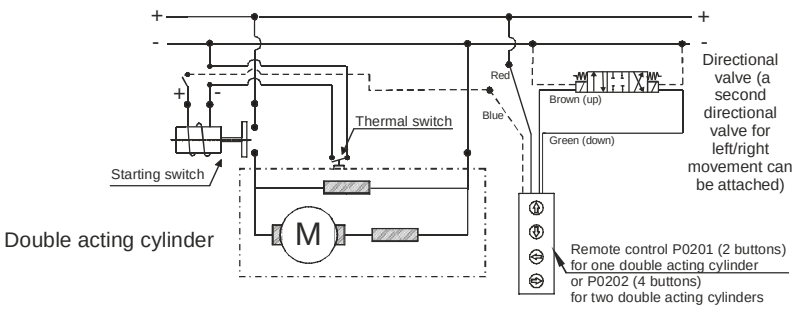


Spare part code
P0202

Electric connection schemes







DC MOTORS CHOICE AND ELECTRIC CONNECTION SCHEMES

DC motors choice

Once required pressure and flow and available voltage (12 or 24V DC) are known, you can select the motor checking on each provided diagram if a pump displacement is available at the intersection of pressure and flow values. On the relevant “I” curve you obtain the absorbed current. When the intersection point is not exactly on a pump curve, choose the closer pump.

On the right hand diagram, from the current value, you can easily obtain the maximum allowed S2 (min) and S3 (%) values. S2 gives the allowable motor continuous running time in minutes, S3 gives the allowable running time in % of the total cycle.

If obtained S2 and S3 values are not enough for required duty cycle, choose a bigger motor and repeat the calculation on the new motor curves.

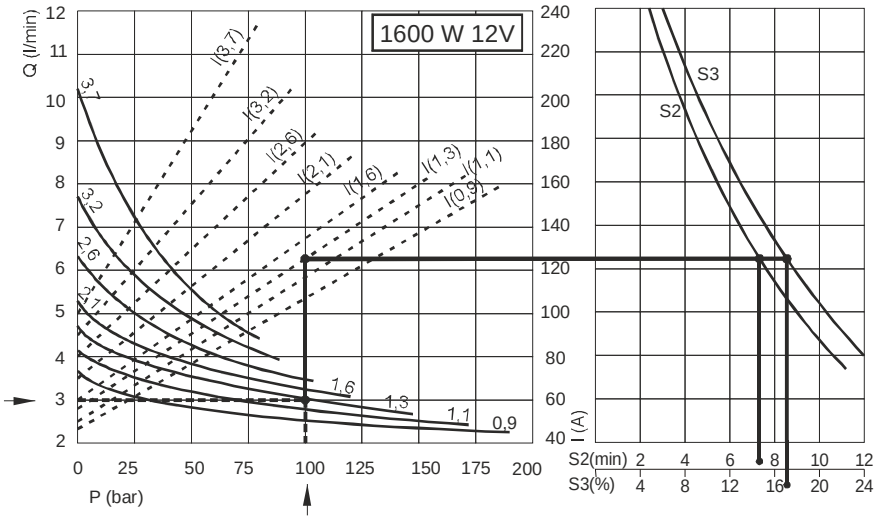
Example:

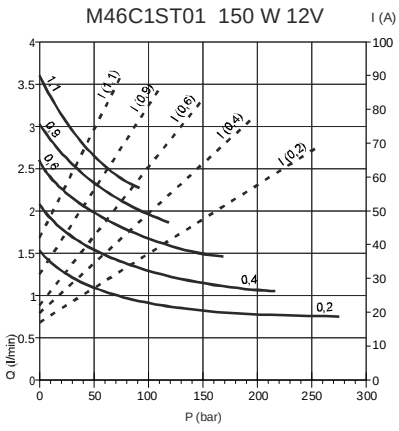
For our application we have following data:
flow = 3 l/min, max pressure = 100 bar, not clearly defined duty cycle.

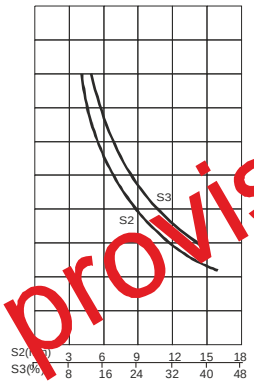
-We check on 1,6 Kw 12V DC motor diagram and see there is a pump available.

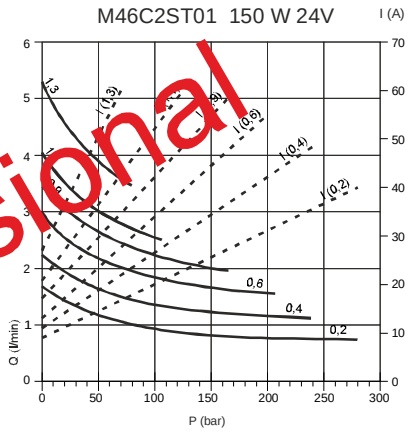
-We choose from curves 1,3 pump: a 1,3 cm^3/rev pump. On the corresponding “I” curve we read 125 A absorbed current. In these conditions on the S2 / S3 diagram we read that the DC motor can work for maximum 7 min (S2), that is 17% (S3) of the total cycle, i.e. after 7 min working, the motor should cool down for at least 34 min.

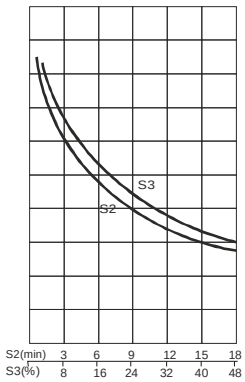
-The total cycle time is calculated adding the working time and the idle time (17% working time plus 83% idle time), in this case 41 min. If this duty cycle is not adequate for our application, we must choose a higher power DC motor and check the relevant diagram again.







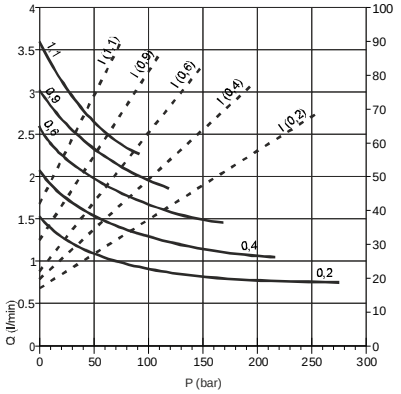


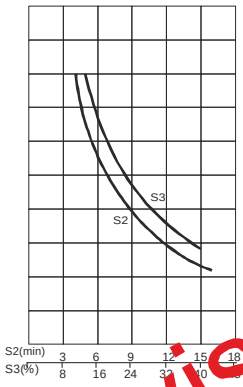


Tests made with rectified current supplied at nominal motor voltage (measured at the motor connection terminals) and oil ISO VG46 at 40°C

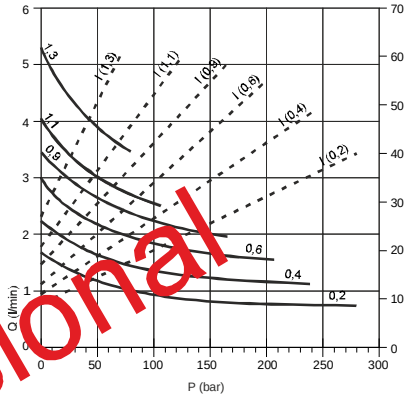
DC MOTORS DIAGRAMS

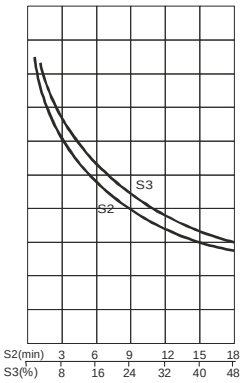
M46C1S005 500 W 12V



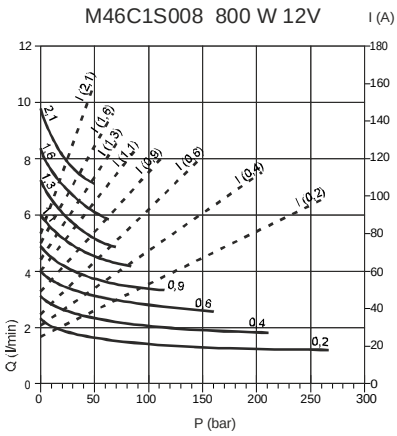


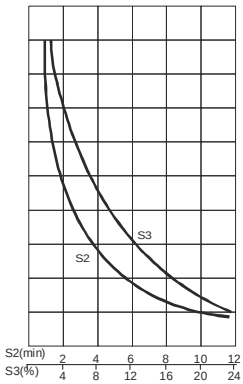
M46C2S005 500 W 24V



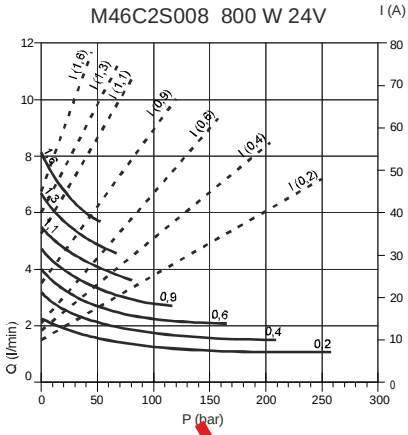


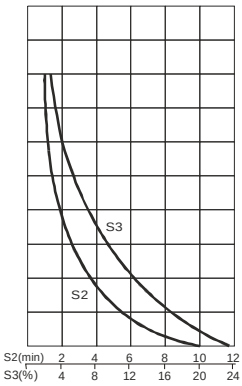
M46C1S008 800 W 12V



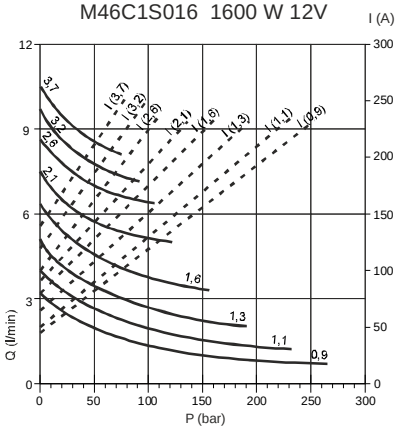


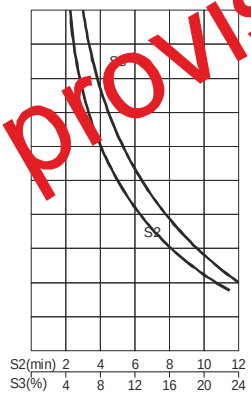
M46C2S008 800 W 24V



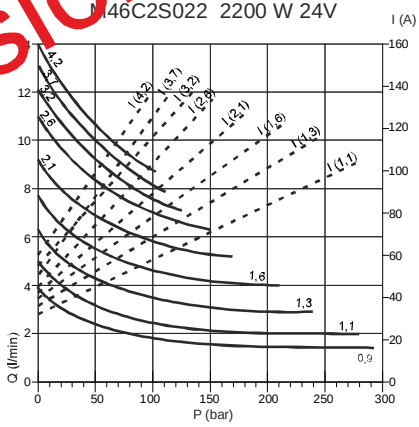


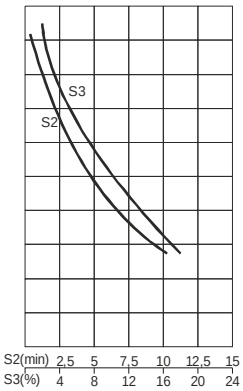
M46C1S016 1600 W 12V





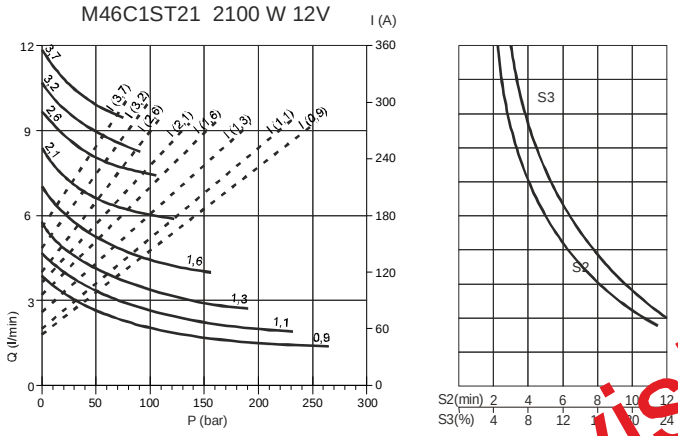
M46C2S022 2200 W 24V





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 DIAGRAMS



Test made with battery 135Ah 50% charged at 15°C and mineral oil ISO VG46 at 40°C

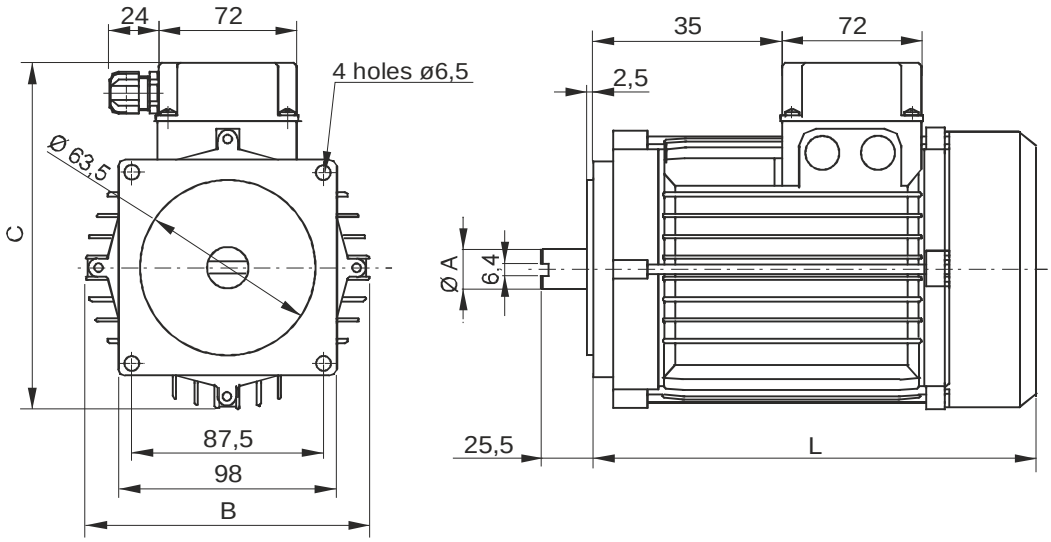
Test made with battery 135Ah 50% charged at 15°C and mineral oil ISO VG46 at 40°C

INTEGRAL AC MOTORS

Integral motors: single phase or three phase in frame 71, with square flange for direct connection to PPM central manifold and tang drive shaft. High starting torque single phase «HT» executions available.

CE

Drawings show typical three phase motors. Single phase motors electric have different cable wiring box (including capacitors).



Protection degree: IP54
Insulation class: F

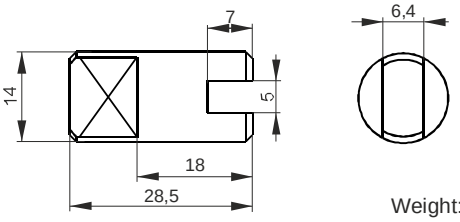
PPC motor assembly code

N	**AC integral motor**
075	**Maximum Power [kW]** i.e. 075 = 0,75kW
AC	**Alternate current**
3	**Phase: 3** = three phase **S** = single phase
4	**Poles: 4** = four poles **2** = two poles
1	**Frame size:** 0 = 63 1 = 71
S3	**Type of Duty: S3** = intermittent duty **HT** = high torque

See a table of available codes on next table page

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

Coupling spare part code
E36200003



Weight: 0,063 kg

INTEGRAL AC MOTORS

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

Integral AC motor frame size	Maximum Power (S3 40%)	Spare motor code	Ø A	B	C	L	Weight [kg]
71	0,37kW (0,5HP)	**N037AC341S3**	15	138	180	210	5,5
	0,55kW (0,75HP)	**N055AC341S3**	15	138	180	210	5,5
	0,75kW (1HP)	**N075AC341S3**	15	138	180	210	5,6

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

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

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

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

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

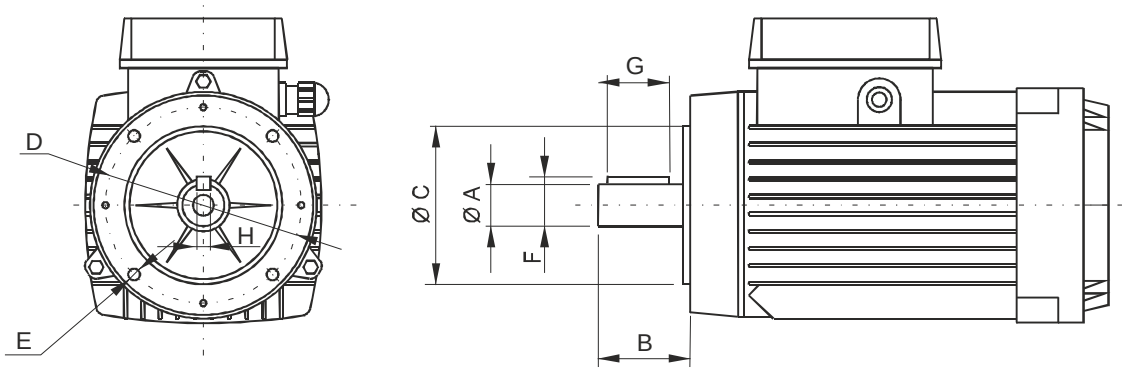
Integral AC motor frame size	Maximum Power (S3 40%)	Spare motor code	Ø A	B	C	L	Weight [kg]
71	0,55kW (0,75HP)	**N055ACS21S3**	15	138	180	210	6
	0,75kW (1HP)	**N075ACS21S3**	15	138	180	210	6,5

Other power / frame sizes and special motor types are available on request. Standard motors are for intermittent duty: **S3 40%** duty cycle means up to 6 switching on and off in an hour, i.e. the motors is ON for 4 min. and OFF for 6 min. They can be used in emergency situations continuously at a reduced rated power (30% less than S3 nominal power). «**HT» option**: available for motor spare codes marked with *.

B14 IEC AC MOTORS

B14 IEC motors: for market compatibility, any IEC standard B14 AC motor with frame 63 and 71 can be mounted. In this case two-pieces couplings and additional adaptor flanges as per next pages tables A090 and A100 must be mounted.

CE



Motors overall dimensions are not indicated since they can vary substantially depending on the motor manufacturer

B14 IEC standard dimensions

Motor frame	Typical power range	ØA	B	ØC	D	E	F	G	H	Mounting kit
63	0,12 ~ 0,25 kW 0,16 ~ 0,35 HP	11 j6	23	60	75	M5	12,5	18	4	**NB1463**
71	0,25 ~ 0,55 kW 0,37 ~ 0,75 HP	14 j6	30	70	85	M6	16	25	5	**NB1471**

PPC B14 motor assembly code

0,25	**Power [kW]**
AC	**Alternate current**
3	**Phase: 3** = three phase **S** = single phase
4	**Poles: 4** = four pole **2** = two pole
0	**Frame size: 0** = 63 **1** = 71
-	**Duty factor: -** = ED 100% (S1) **S3** = intermittent duty

Mounting kits spare parts

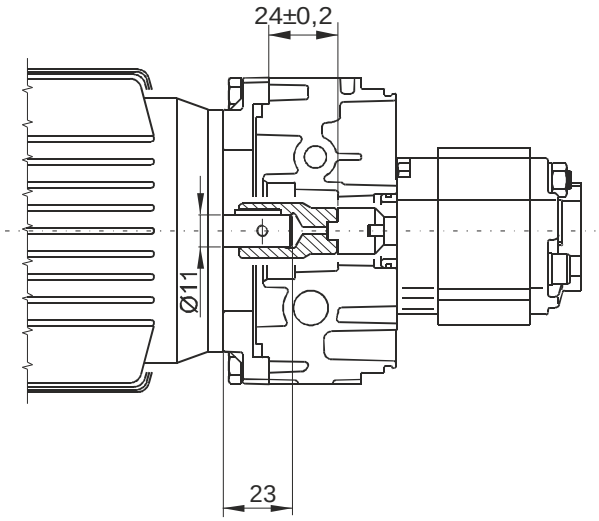
The B14 mounting kits are made of:
- a semi-coupling E36200003 (the same used for frame 80 DC motors) on pump shaft side
- a semi-coupling on motor shaft side, which is different for any frame size
- an adaptor flange to suit the central manifold, which is also different for any frame size.

For detailed dimensions and codes see next pages tables.

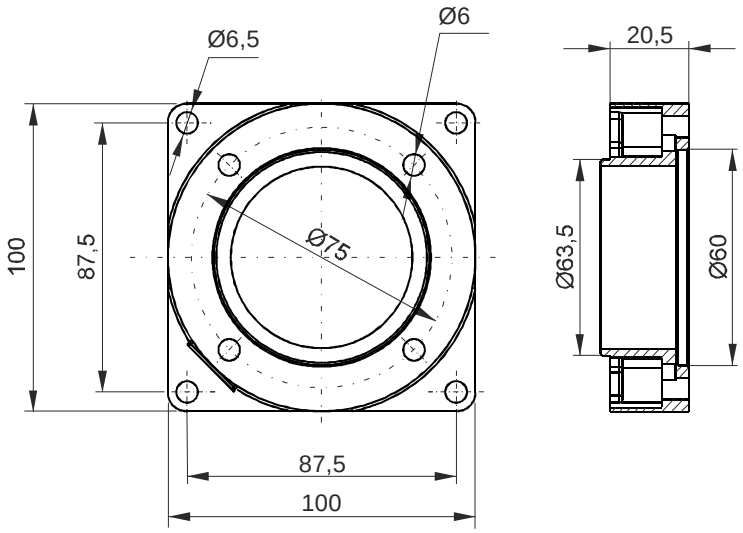
The mounting kit is already included when specifying a B14 AC motor in PPM assembly code. When ordering spare motors, the relevant mounting kit is not included and must be ordered separately.

MOUNTING KIT FOR FRAME 63 B14 IEC MOTORS

Kit weight: 0,18 Kg

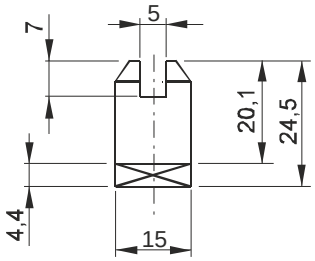


Adaptor flange

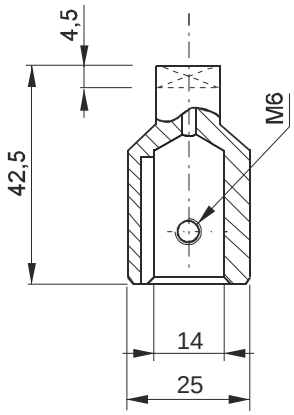


Coupling

Pump group side **E36100000M**



Motor side **M36100011**



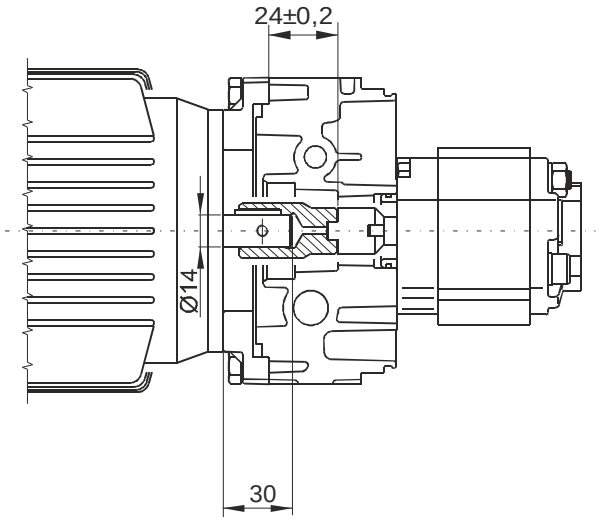
Description	PPC assembly code*	Spare part code
B14 63 motor side semi-coupling	NB1463	**M36100011**
B14 pump side semi-coupling		**E36100000M**
B14 63 adaptor flange		**F25030002**

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

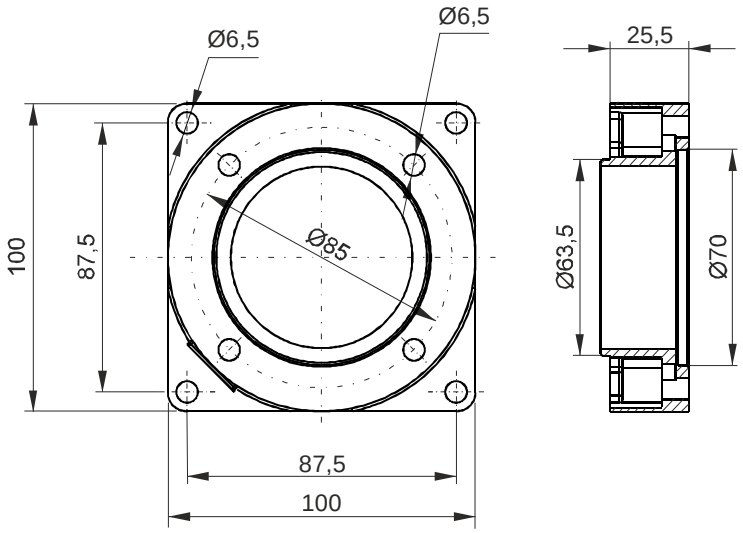
Attention! When assembling B14 IEC motors with NB14 flange + couplings kit, please respect positioning tolerances as shown in top page drawing. Failing in doing so can cause malfunctioning or components failure.

MOUNTING KIT FOR FRAME 71 B14 IEC MOTORS

Kit weight: 0,18 Kg

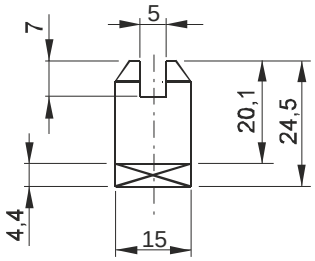


Adaptor flange

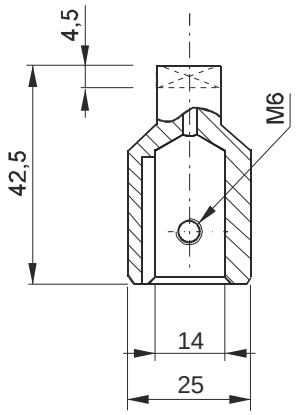


Coupling

Pump group side **E36100000M**



Motor side **E36100001**



Description	PPC assembly code*	Spare part code
B14 71 motor side semi-coupling	NB1471	**E36100001**
B14 pump side semi-coupling		**E36100000M**
B14 71 adaptor flange		**F25030003**

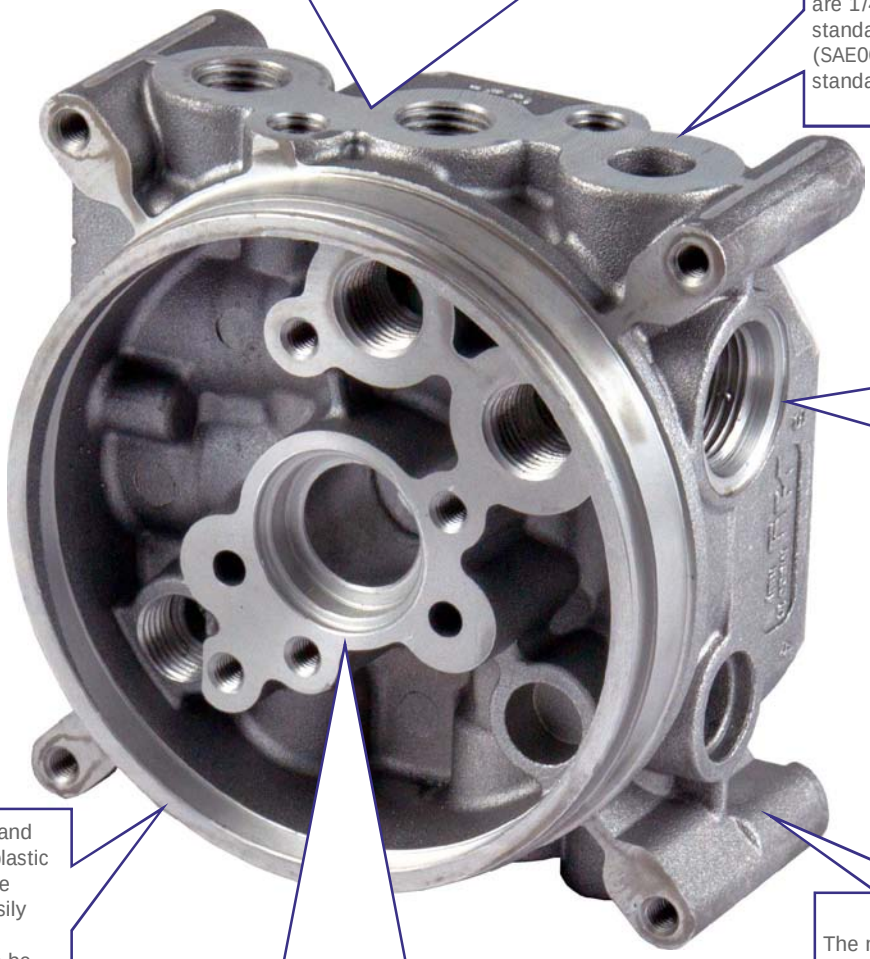
* Note: the coupling+ flange kit is already included when specifying a B14 motor in PPM assembly code. NB1471 code to be indicated only when ordering PPM with no motor but with coupling + flange kit.

Attention! When assembling B14 IEC motors with NB14 flange + couplings kit, please respect positioning tolerances as shown in top page drawing. Failing in doing so can cause malfunctioning or components failure.

MICRO CENTRAL MANIFOLD

A single universal die-cast aluminium central manifold in 3 different executions is the core part to realize all power units in industrial, mobile and marine fields where extreme compactness and high power density is required. It features the highest integration and flexibility on the market, with up to seven devices which can be fitted inside, plus a wide selction of manifold blocks which can be connected externally to suit spool or cartridge type valves

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



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

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

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

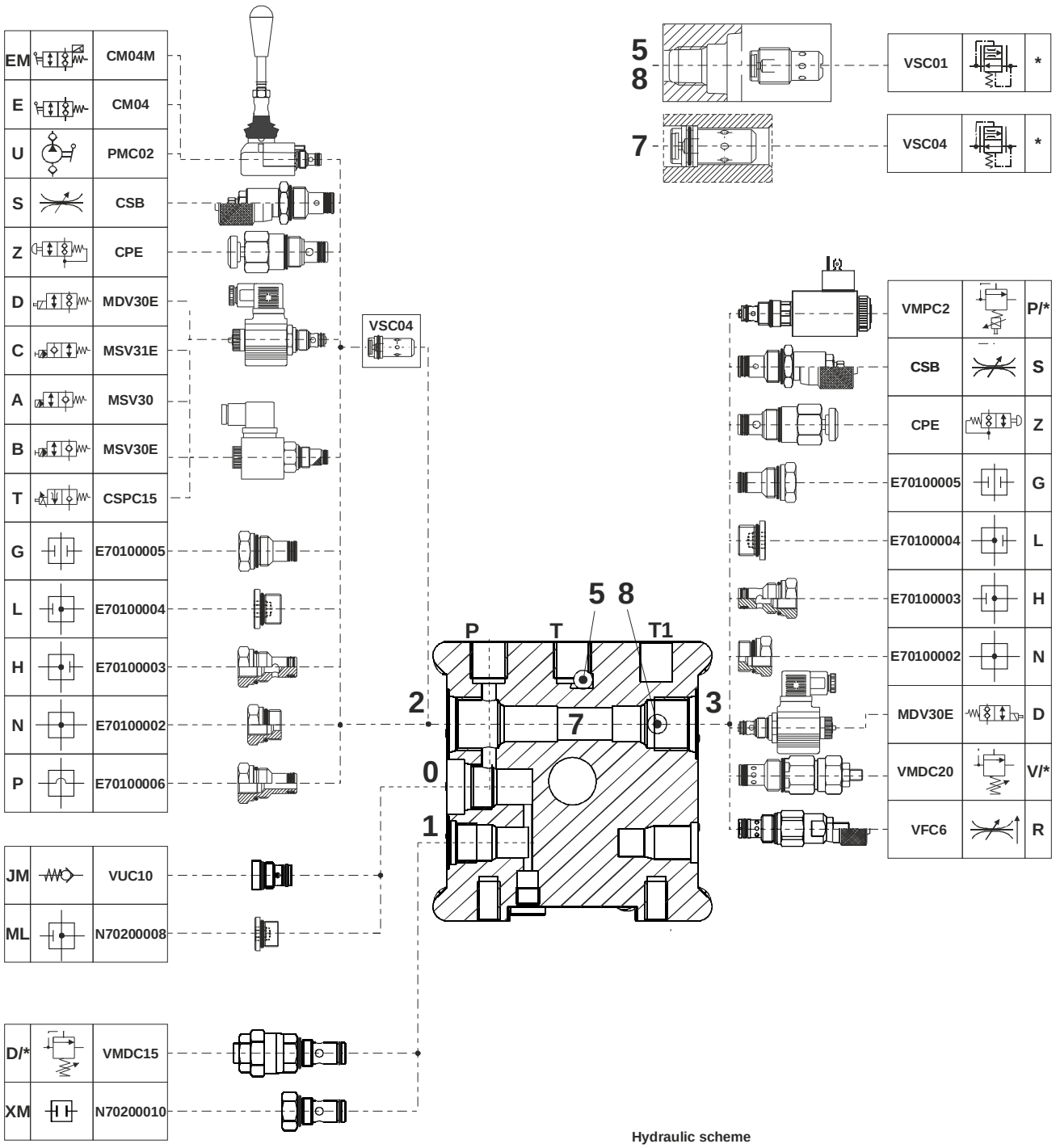
The maximum flow is 6 l/min, with a low pressure drop, and maximum motor power is 2,2kW, well above the average of other alternative products on the market

Which micro central manifold execution should I choose?
MB type is the most widely applied for single acting or double acting circuits. M4 execution is recommended for compact and cost effective double acting circuits with a single cylinder while MR is for bidirectional pump schemes and integrates double relief valve and double pilot operated check valves and also an extra pilote operated check valve for differential cylinders circuits proper functionality (this extra valve discharges return flow in excess from the piston side of the cylinder).

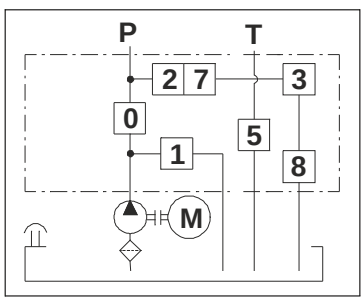
Do I need special tools to assemble the components within the central manifold?
No. All valves are screw-in type in a single piece construction (no loose nuts, washers, springs,... difficult to assemble and falling apart). The components are easily assemblable with simple hand tools and hexagon keys.

Is the central manifold available as 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.

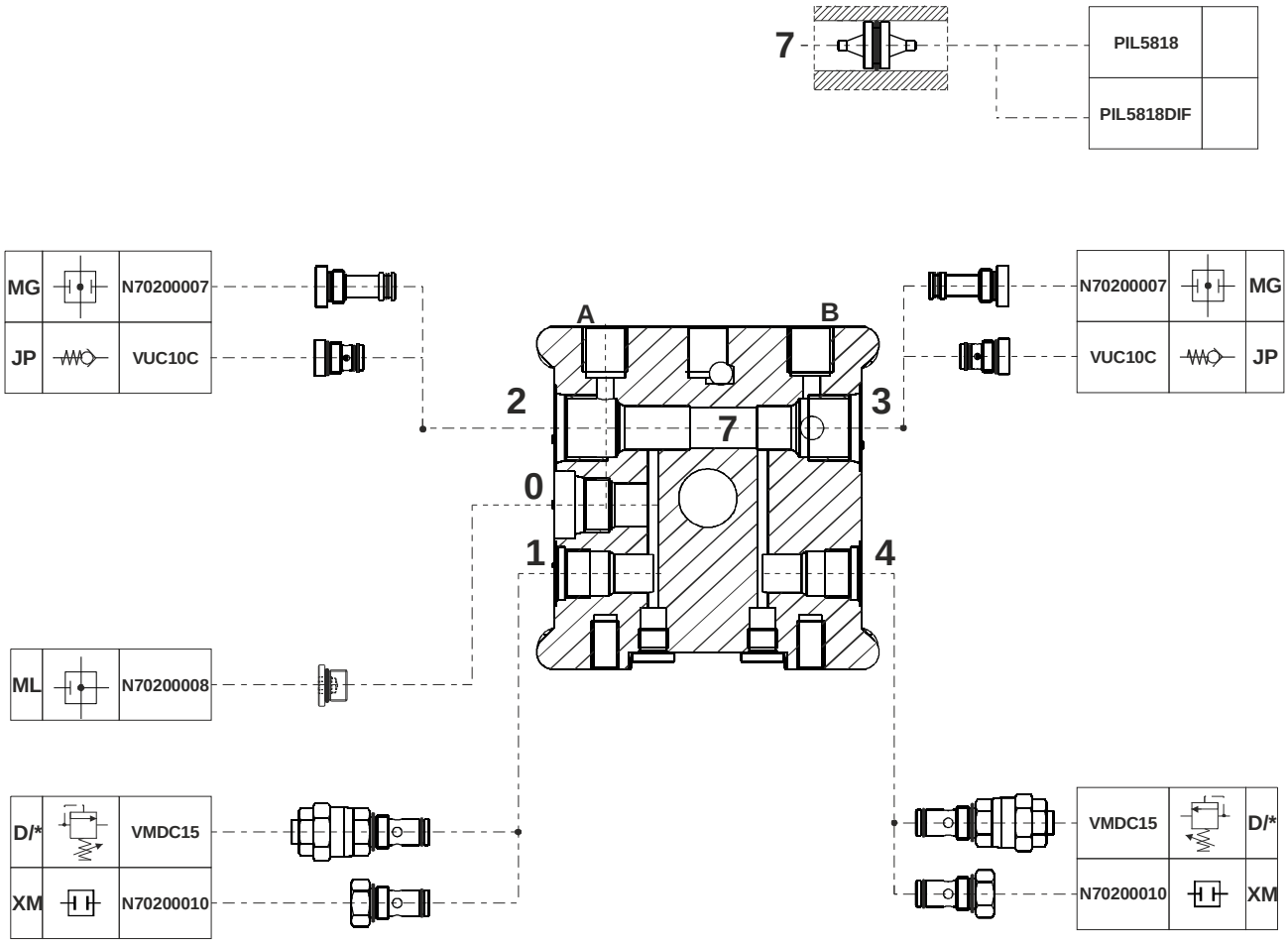
MICRO CENTRAL MANIFOLD «MB» EXECUTION VALVE COMBINATIONS



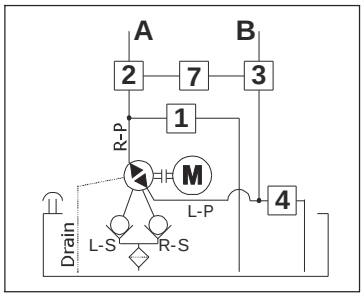
Hydraulic scheme



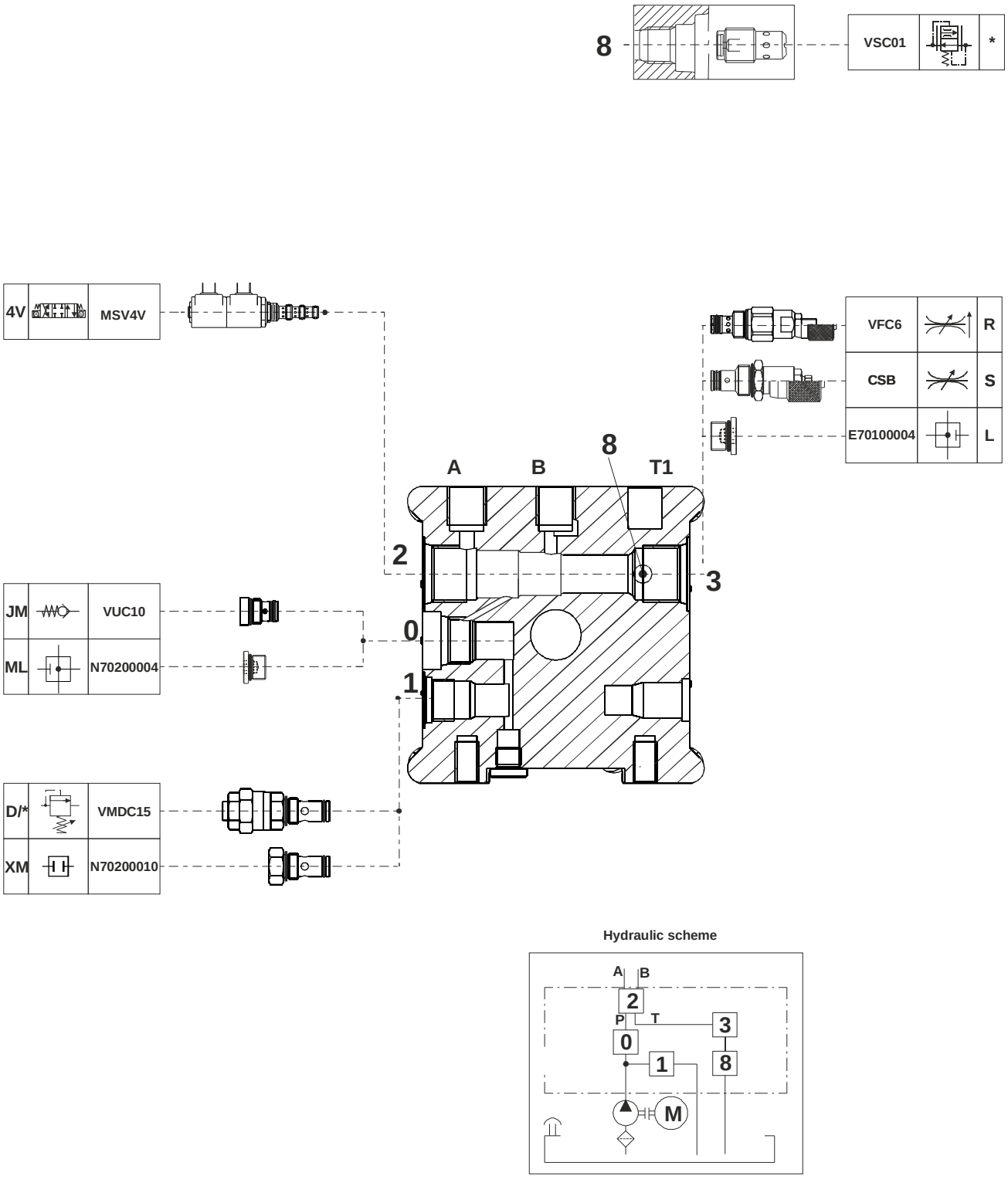
MICRO CENTRAL MANIFOLD «MR» EXECUTION VALVE COMBINATIONS



Hydraulic scheme

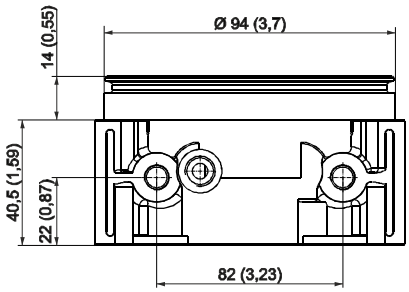


MICRO CENTRAL MANIFOLD «M4» EXECUTION VALVE COMBINATIONS

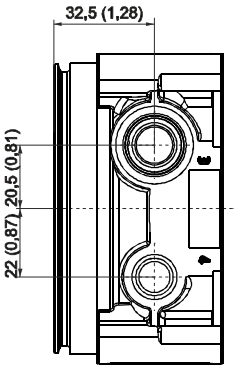


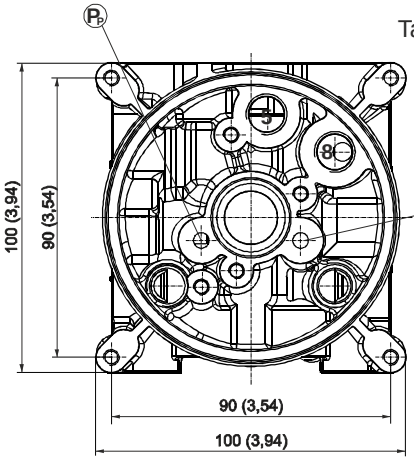
MICRO CENTRAL MANIFOLD OVERALL DIMENSIONS

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



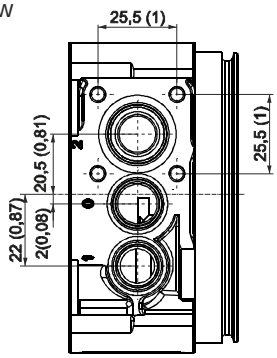
Weight: 0,60 kg (1,32 lb)



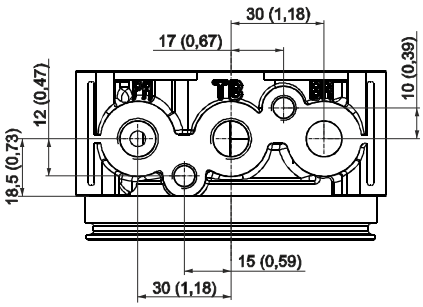


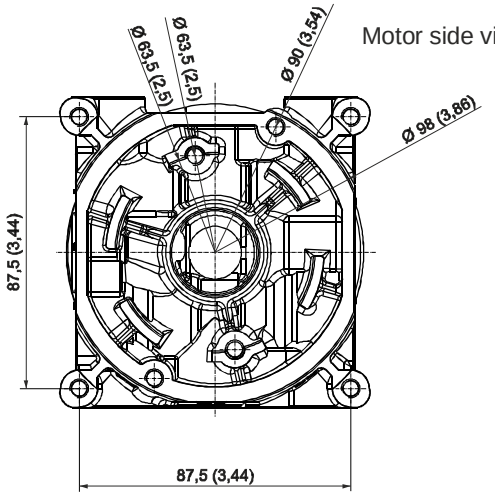
Tank side view

Only MR type



Cavity	Threads
1, 4 (MR type)	M14x1 (relief valve)
0	5/8-18 UNF
2, 3	3/4-16 UNF (SAE 08) 5/8-18 UNF (MR type)
P-T, A-B, T1 (threaded on request only)	1/4'' BSPP 9/16-18 UNF (US type)
5, 8	1/4'' BSPP
External manifold attachment	2 pcs M8 tie-rods
Tanks attachment	4 pcs M5x10
Integral AC Motors attachment	4 pcs M6x20
DC Motors attachment	2 pcs M6x14 or M6 tie rods
Pump attachments	2 pcs M5 (see pump lenght on the relevant tables)
Foot mounting support attachments	2 pcs M8x16
PMC hand pump / CM lever valve cap attachments	4 pcs M5x45





Motor side view

PUMPS

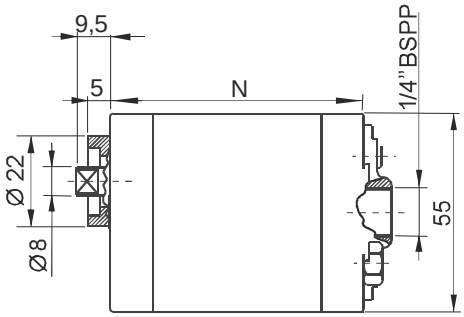
Group 0 with tang drive shaft and pressure balanced design for high volumetric efficiency, specifically designed for micro power packs.

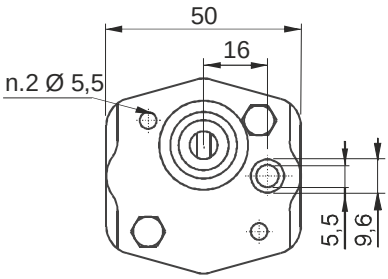
R series: bidirectional pumps with integrated suction check valves and two front outlet ports. They can be fitted on MR type central manifold.

Why are pressure balanced gear pumps better than fixed clearings gear pumps?
Pressure balanced gear pumps are built with lateral pressure plates which reduce the mechanical clearings on the gears with the increase of the pressure on the outlet, thus greatly improving the fluidodynamic efficiency, reducing heat generation and energy consumption. The mechanical efficiency is kept at optimal levels too.

Why are the pump technical specifications showing three maximum pressure levels?
Our pumps have three ratings for the maximum allowable pressure: 1-Peak: is the maximum one and can be allowed for a maximum cycle of 2 seconds. 2-Intermittent: it can be applied on the pump for a maximum cycle of 20 seconds; 3-Continuous: it can be applied on the pump continuously.

STANDARD 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: 5 Nm
Pressure definition	Peak pressure: cycle 2 s ON Intermittent pressure: cycle 20 s ON Continuous pressure: cycle always ON
Filtration setting	25 ÷ 50 µ

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

Spare part code

**E6050 ** **

Pump type:
50 = Group 0

Nominal size:
see below table

Type:
30 = G type
40 = K type

PPM assembly code field

KM — **Pump type:**
GM = G type
KM = K type

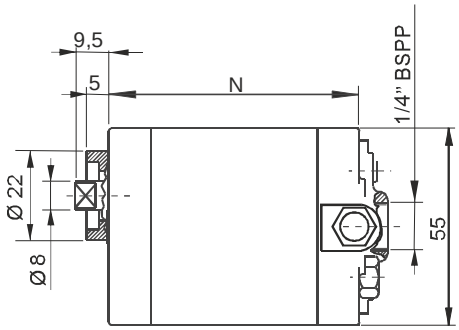
0,6 — **Nominal displacement:**
cc/rev
(see below table)

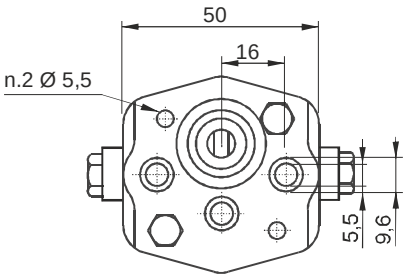
Available range

Nominal displacement (cc/rev)	Peak pressure (bar)	Intermittent pressure (bar)	Continuous pressure (bar)	Max speed (rpm)	N (mm)	Bolts* (mm)	Spare parts code	Weight (kg)
0,1	230	210	190	7000	45,5	M5x55	E60503001	0,31
0,2	200	180	160	6000	45,5	M5x55	E60504002	0,33
0,4	200	180	160	6000	47,5	M5x55	E60504004	0,35
0,6	200	180	160	6000	51,5	M5x60	E60504006	0,40
0,9	200	180	160	5000	52,5	M5x65	E60504009	0,44
1,3	200	180	160	3900	55,5	M5x65	E60504013	0,49
1,5	200	180	160	3900	57,8	M5x70	E60504015	0,51
1,9	150	130	110	3000			E60504017	0,55

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

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: 5 Nm
Pressure definition	Peak pressure: cycle 2 s ON Intermittent pressure: cycle 20 s ON Continuous pressure: cycle always ON
Filtration setting	25 ÷ 50 µ

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

Spare part code

**E6050 ** **

Pump type:
50 = Group 0

Nominal size:
see below table

Type:
35 = G type
45 = K type

PPM assembly code field

RM — **Pump type:**
RM = reversible type

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

Available range

Nominal displacement (cc/rev)	Peak pressure (bar)	Intermittent pressure (bar)	Continuous pressure (bar)	Max speed (rpm)	N (mm)	Bolts* (mm)	Spare parts code	Weight (kg)
0,1	200	180	160	6000	45,5	M5x55	E60503501	0,44
0,2	200	180	160	6000	45,5	M5x55	E60504502	0,46
0,4	200	180	160	6000	47,5	M5x55	E60504504	0,48
0,6	200	180	160	6000	54,5	M5x65	E60504506	0,49
0,9	200	180	160	5000	62,4	M5x70	E60504509	0,50
1,3	200	180	160	3900	63,2	M5x70	E60504513	0,51
1,5	200	180	160	3900	64,5	M5x70	E60504515	0,52

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

INTEGRAL COMPONENTS

Two way no leakage solenoid valves SAE08 (3/4-16UNF) are available in Normally Closed, Normally Open, single and double locking executions. Manual override also available.

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

VSC flow control valves are pressure compensated to keep a stable lowering speed of single acting cylinders undependently of the load

All cartridges are supplied in single piece, easily screwable

The main relief valve is fitted in a M14 cavity and is designed to improve pressure setting stability and avoid the typical noise of lower cost alternative valves

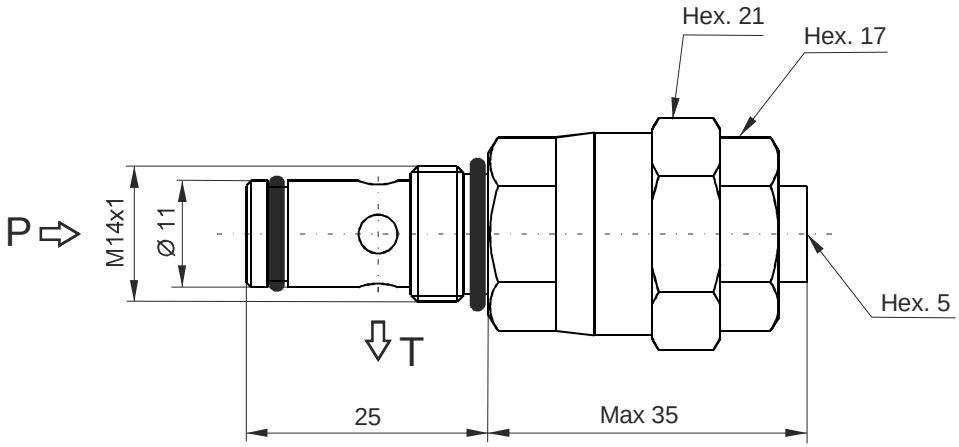
The main check valve fits in a 5/8-18UNF standard cavity and can be easily unmounted from the outside for easy cleaning and servicing

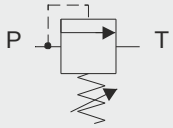
How does the coding of the power pack works?
The power packs are coded with a speaking code, which is basically the list of subassemblies which make up the power pack (motor, pump, valves, tank,...). Integral components are those fitting inside central manifold cavities, which are numbered from 0 to 8. Each component has an assembly code, normally a single letter which compose the speaking code, and a spare part code in case they are ordered as loose components. The numbered cavities are indicated in the hydraulic scheme, so that it is easy to draw it starting from the speaking code itself, and on the central manifold casting too, to simplify assembling.

There are several different coils and connectors for the cartridge solenoid valves. How do I choose the proper ones?
Normally closed 2-way solenoid valves (MSV30*) use M130 series of coils either DC or directly AC. Normally open 2-way solenoid valves (MSV31E) can only use DC or RAC (rectified current) coils due tho their constructive principle. Both can use M140 series of coils for enhanced performances. When choosing a RAC coil, a rectifying bridge connector must be chosen (KA132R***).
MSV4V 4-way cartridge valves use M63 series coils. M630 are for DC supply, while M631 are rectified coils with integrated rectifying bridge. A standard KA13200000 connector must be always used with these coils.

Which are the most used plugs?
G or H plugs are normally fitted in cavity 2 of MB central manifold when this cavity is not used for functional valves. L type plug goes in cavity 3 of MB manifolds, when this cavity is not used. MR central manifold cavities 2 and 3 are machined according to 5/8-18UNF shape to allow the mounting of piloted operated check valves. MG plugs must be used there if P.O. check valves are not needed.

VMDC15 - DIRECT ACTING MAIN RELIEF VALVE





Main features

Max pressure	350 bar
Max flow	15 l/min
Weight	0,06 kg

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

PPM assembly code field

DM/*

where *** stands for max setting pressure [bar]. Ex. D/280

where stands for option other than the standard one.

Mounting cavities

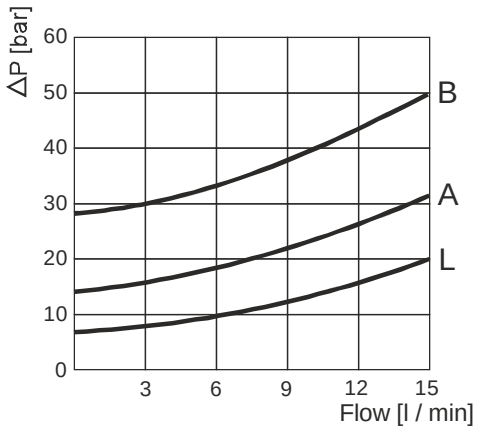
0	**1**			
2	3	**4**		
5		7	8	

Note: cavity 4 only for MR type.

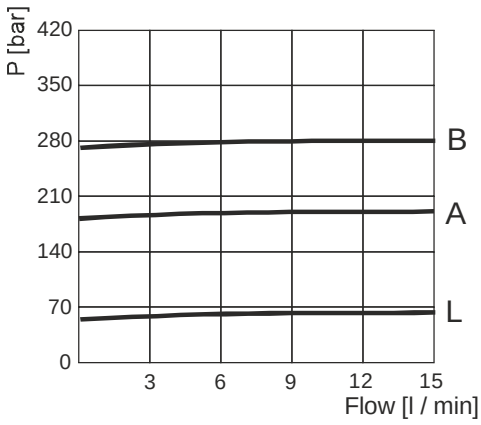
Spare part code

VMDC	**Direct acting main relief valve**
15	**Nominal size:** 15 = 15 l/min
B	**Working range:** L = 10 ÷ 60 bar, A = 20 ÷ 180 bar, B = 35 ÷ 280 bar
1	**Option:** 1 = screw (std)

Minimum setting pressure

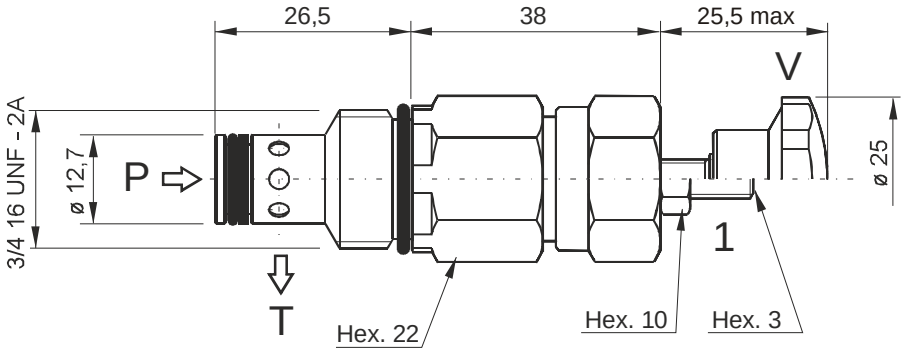


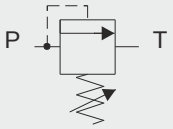
Pressure vs flow



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

VMDC20 - DIRECT ACTING RELIEF VALVE





Main features

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

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

PPM assembly code field

V***

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

where stands for adjustment other than the standard one

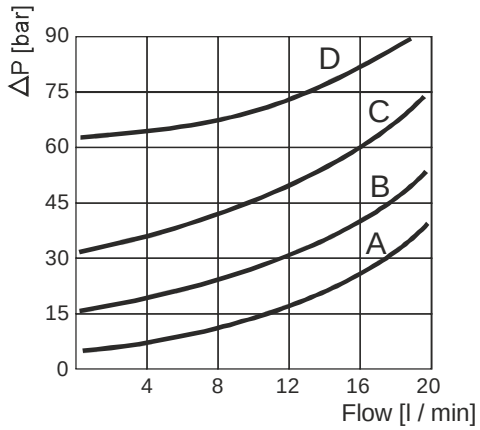
Mounting cavities

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

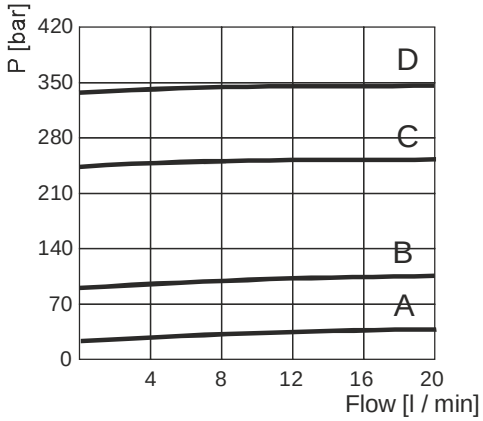
Spare part code

- **VMDC** — **Direct acting relief valve**
- **20** — **Nominal size:** 20 = 20 l/min
- **B** — **Working range:** A = 10 ÷ 40 bar; B = 20 ÷ 110 bar; C = 30 ÷ 250 bar; D = 70 ÷ 350 bar
- **1** — **Adjustment:** 1 = screw (std); V = handwheel

Minimum setting pressure

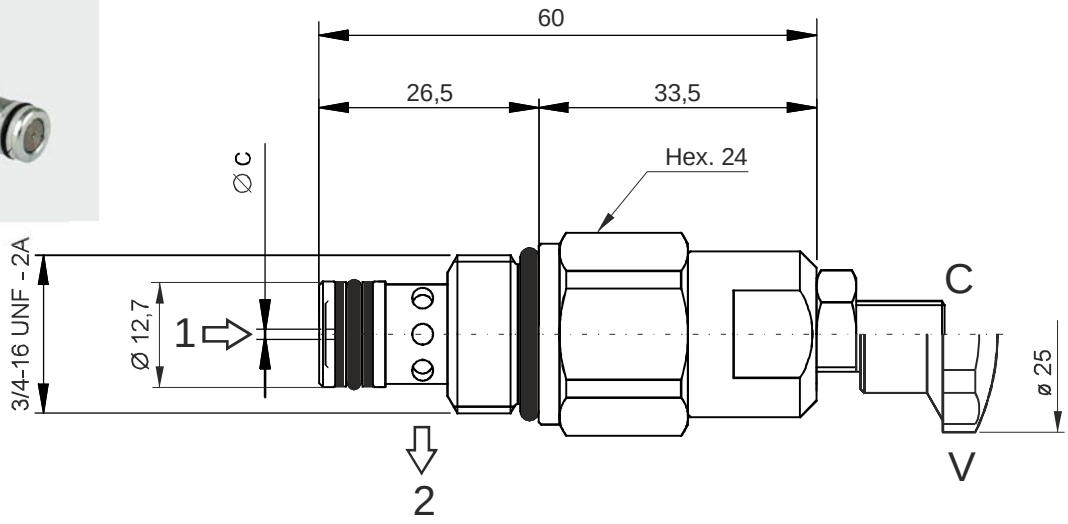


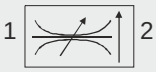
Pressure vs flow



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 settings: 25 ÷ 50 µ
Oil temperature: -30 ÷ + 80 °C

PPM assembly code field

R *

where * stands for nominal dimension

Mounting cavities

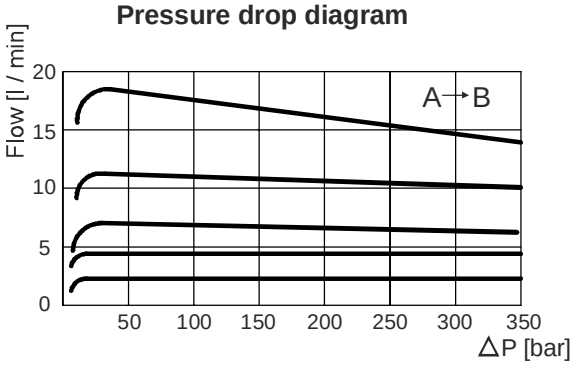
0	1			
2	**3**	4		
5		7	8	

Spare part code

- **VCF6** — **Flow control valve pressure compensated**
- ***** — **Nominal dimension:** See table below
- **C** — **Adjustment:** C = screw (std), V = handwheel

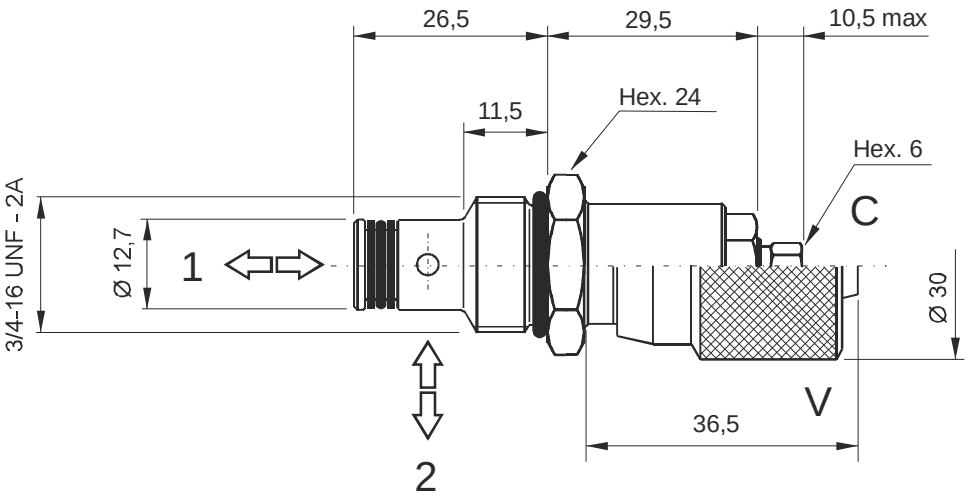
Nominal dimension	C	Controlled flow at 100 bar ± 10% l/min
2	0,6	1,0 - 2,2
3	1,0	1,6 - 4,0
4	1,2	2,5 - 5,0
5	1,8	3,0 - 7,0
6	2,8	4,9 - 10,8
7	4,8	8,0 - 18,5

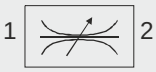
Pressure drop diagram



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 settings: 25 ÷ 50 µ
Oil temperature: -30 ÷ + 80 °C

PPM assembly code field

S

Mounting cavities

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

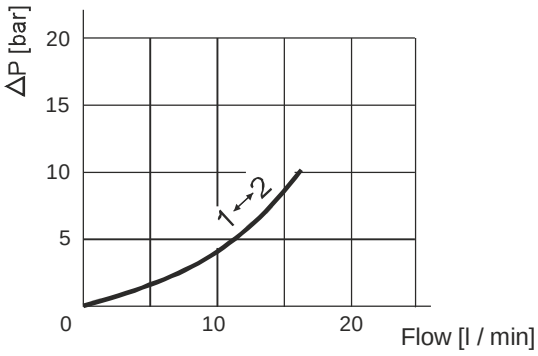
Spare part code

CSB — **Flow control valve**

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

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

Pressure drop diagram

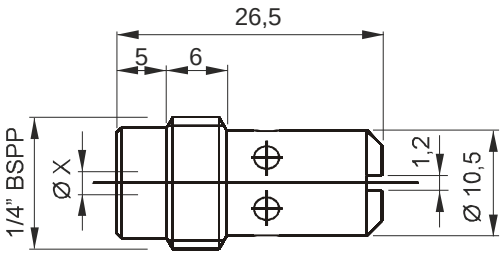


Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

VSC01 - PRESSURE COMPENSATED FIXED FLOW CONTROL VALVE

Controlled flow

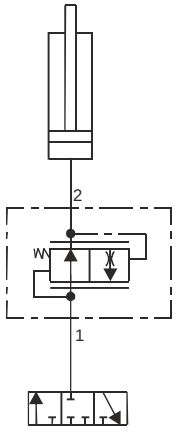
2 ⇨

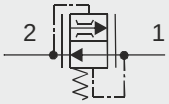


Free flow

⇦ 1

Typical application





Main features

Max pressure	250 bar
Max flow	15 l/min
Weight	0,012 kg

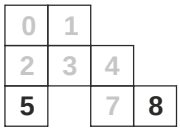
Recommended tightening torque: 6 Nm
Recommended filtration settings: 25 ÷ 50 µ
Oil temperature: -30 ÷ + 80 °C

PPM assembly code field

Nominal controlled flow [l/min]	(01)

Ex. 5(01)

Mounting cavities



Spare part code

VSC — **Flow control valve pressure compensated**

01 — **Nominal size:** 01= 1/4" BSPP

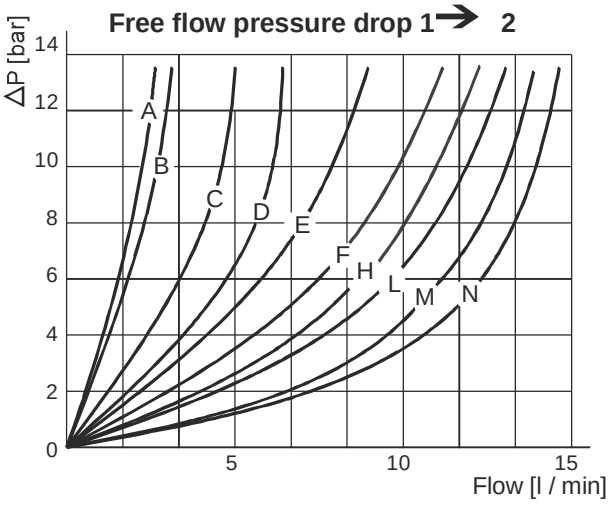
E — **Controlled flow:** A, B, C, D, E, F H, L, M, N

Controlled flow through X port 2 ➔ 1

Spare part code	Ø X [mm]	Nominal controlled flow [l/min]
VSC01A	1	1
VSC01B	1,2	2
VSC01C	1,5	3
VSC01D	1,7	4
VSC01E	1,9	5
VSC01F	2,1	6
VSC01H	2,5	8
VSC01L	2,8	10
VSC01M	3	12
VSC01N	5	15

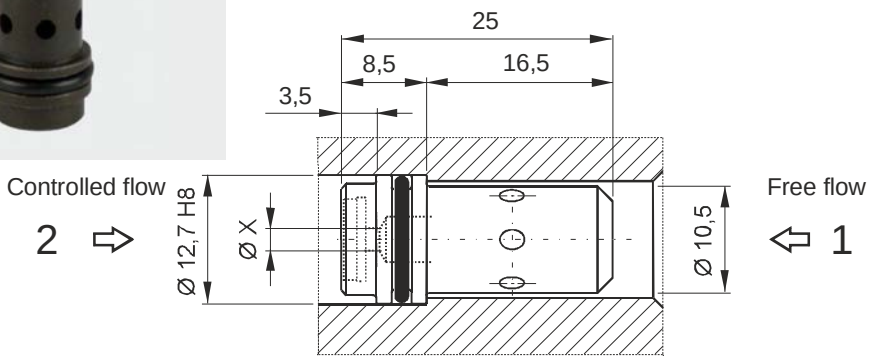
Note: nominal controlled flow, measured at 100 bar with an oil viscosity of 46 cSt at 40 °C, are to be taken as general reference values and must be tested on the field.

Free flow pressure drop 1 ➔ 2

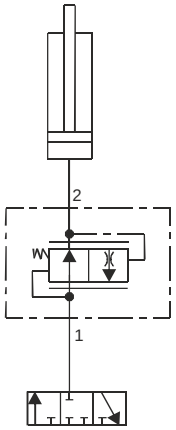


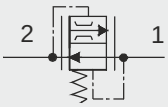
Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 40 °C. Pressure drop may change depending on fluid viscosity and temperature

VSC04 - PRESSURE COMPENSATED FIXED FLOW CONTROL VALVE



Typical application





Main features

Max pressure	250 bar
Max flow	15 l/min
Weight	0,012 kg

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

PPM assembly code field

Nominal controlled flow [l/min]	(04)

Ex. 5(04)

Mounting cavities

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

Spare part code

VSC — **Flow control valve pressure compensated**

04 — **Nominal size:** 04

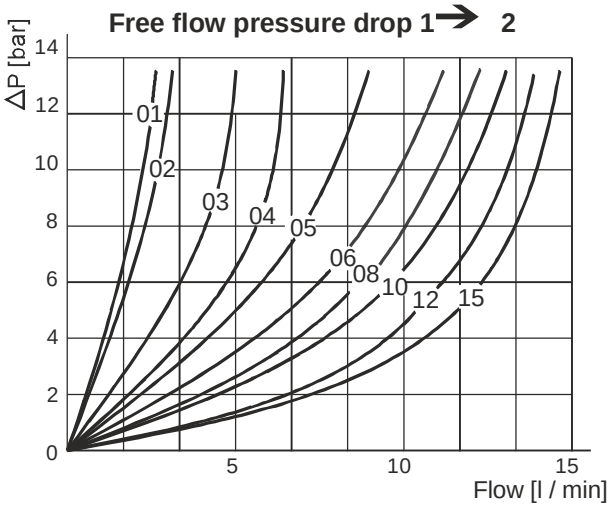
02 — **Controlled flow:** 00, 01, 02, 03, 04, 05 06, 08, 10, 12, 15

Controlled flow through X port 2 → 1

Spare part code	Ø X [mm]	Nominal controlled flow [l/min]
VSC0400	Closed	0
VSC0401	0,8	1
VSC0402	1	2
VSC0403	1,25	3
VSC0404	1,5	4
VSC0405	1,75	5
VSC0406	2	6
VSC0408	2,75	8
VSC0410	3,5	10
VSC0412	4	12
VSC0415	5	15

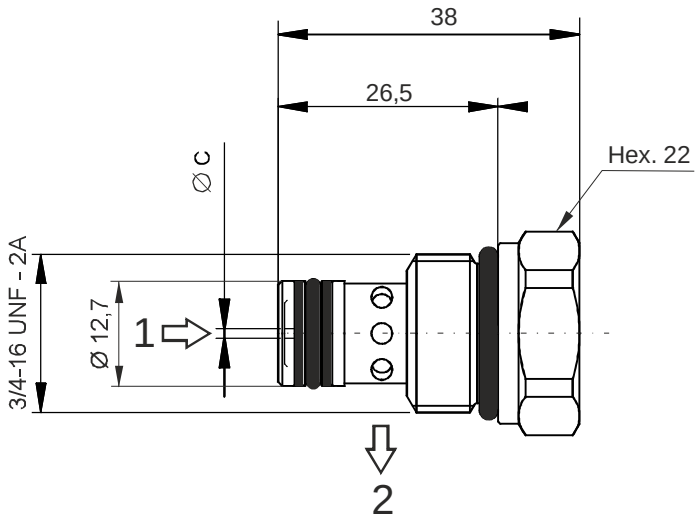
Note: nominal controlled flow, measured at 100 bar with an oil viscosity of 46 cSt at 50 °C, are to be taken as general reference values and must be tested on the field

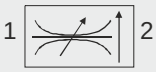
Free flow pressure drop 1 → 2



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	18 l/min
Weight	0,06 kg

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

PPM assembly code field

F *

where * stands for nominal dimension

Mounting cavities

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

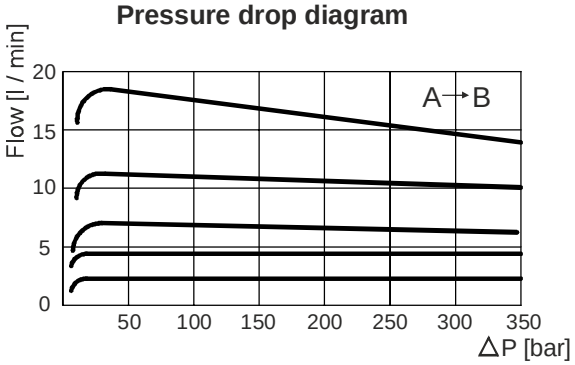
Spare part code

VSC6 — **Flow control valve pressure compensated**

***** — **Nominal dimension:** See table below

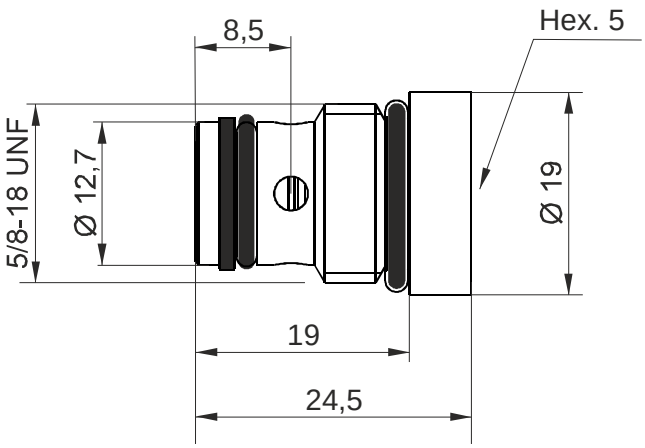
Nominal dimension	C	Controlled flow at 100 bar ± 10% l/min
02	0,8	1
03	1,0	2
04	1,25	3
05	1,5	4
06	1,75	6
07	2	8
09	2,5	11
11	3	14
13	3,5	16
15	4	20

Pressure drop diagram

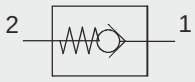


Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

VUC10 - BASIC CHECK VALVE



This part is tipically used to connect a pressure gauge for statical pressure measurement.
It is not suitable for istantaneous pressure measurement.



Main features

Max pressure	350 bar
Max flow	15 l/min
Weight	0,045 kg
Cracking pressure	1 bar

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

PPM assembly code field

JM (VUC10)
JP (VUC10C)

Mounting cavities

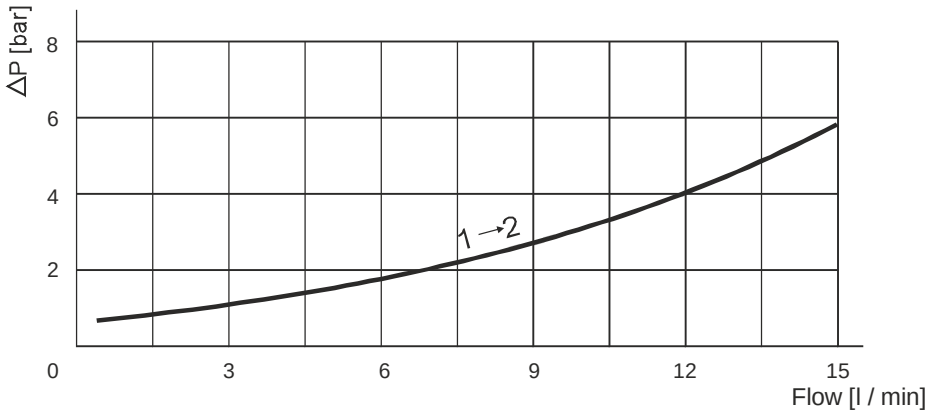
0	1		
2	**3**	4	
5		7	8

Note: cavity 2 and 3 only for MR type.

Spare part code

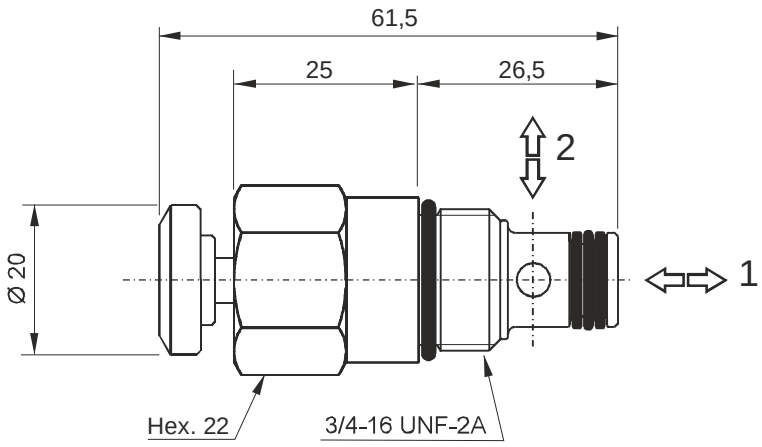
VUC	**Check valve**
10	**Nominal size:** 10
-	**Options:** - = ball type C = poppet type for pilot application

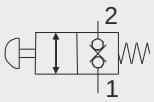
Pressure drop diagram



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 settings: 25 ÷ 50 μ
Oil temperature: -30 ÷ + 80 °C

PPM assembly code field

Z

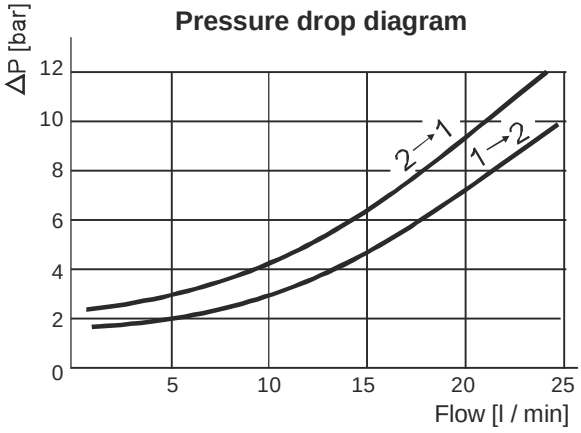
Mounting cavities

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

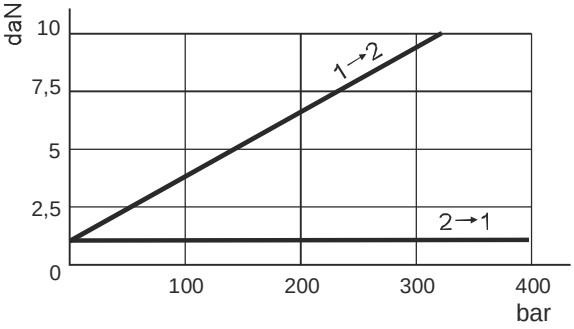
Spare part code

CPE	**Two-way manual emergency valve**
04	**Nominal size:** 04 = 3/4-16 UNF
P	**Operating device:** P = press button

Pressure drop diagram

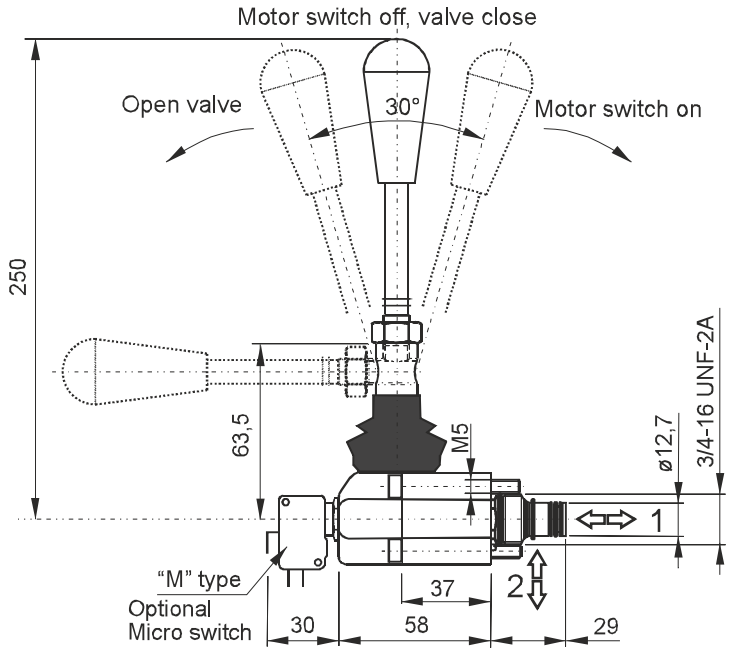


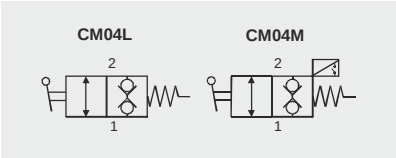
Operating force (daN) on the press button



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





Main features

Max pressure	300 bar
Max flow	25 l/min
Weight	0,34 kg
Micro switch max current	10 A - 400 V 16 A - 250 V

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

PPM assembly code field

E (CM04L)
EM (CM04M)

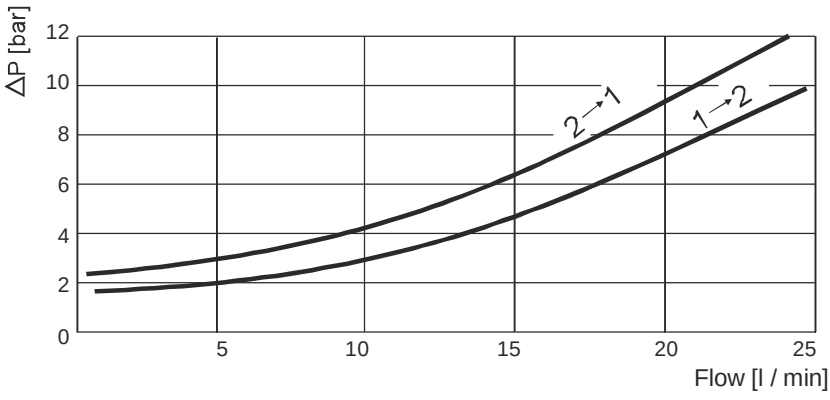
Mounting cavities

0	1			
2	3	4		
5		7	8	

Spare part code

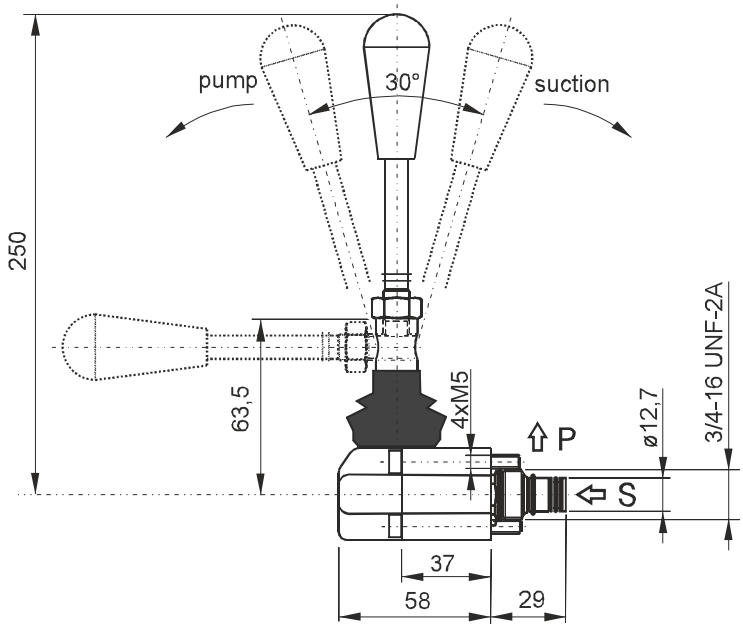
- **CM** — **Two-way manual lever valve**
- **04** — **Nominal size:** 04 = 3/4-16 UNF
- **L** — **Type:** L = lever (std), M = lever + micro switch

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	200 bar
Max flow	-
Weight	0,34 kg

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

PPM assembly code field

U

Mounting cavities

0	1			
2	3	4		
5		7	8	

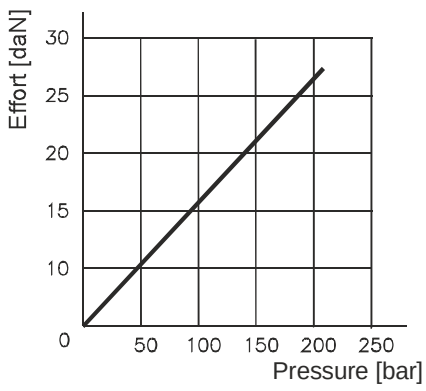
Spare part code

PMC — **Hand pump**

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

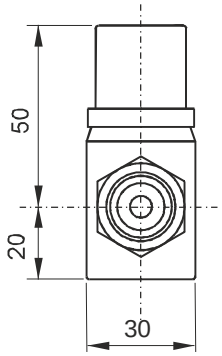
L — **Type:** L = lever (std)

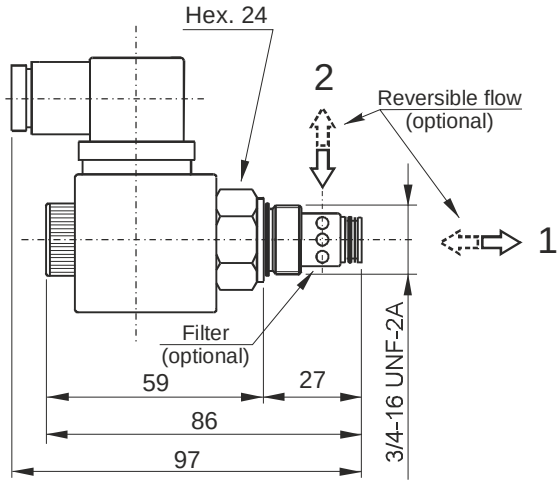
Effort (daN)
operating on the lever end



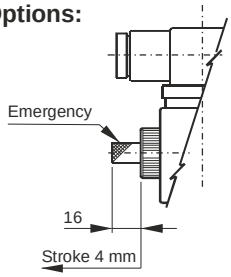
Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

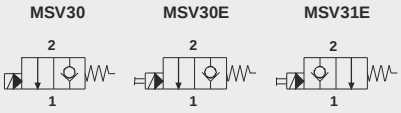
MSV - PILOT OPERATED TWO-WAY SINGLE LOCKING SOLENOID VALVE





Options:





Main features

Max pressure	210 bar (up to 300bar*)
Max flow	25 l/min
Weight	0,27 Kg (with coil)
Coil thermal insulation	Class F (Class H*)
Electric connection	DIN 43650-A / ISO 4400
Coil protection degree	IP 65 / DIN 40050
Duty cycle	ED 75% (ED 100%*)
Voltage required	+/- 10% nominal voltage
Normatives	EN50081-1/EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

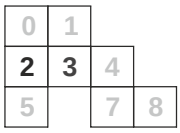
*: with M140 series coils only. See table U040.20.12 coils section. The max flow/max pressure cannot be achieved at the same time.

PPM assembly code field

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

Ex: A12DC

Mounting cavities



Spare part code

MSV — **Two-way pilot operated solenoid valve**

- — **Options:**
R = with reversible flow

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

0 — **Emergency override:**
0 = no emergency (std)
E = emergency

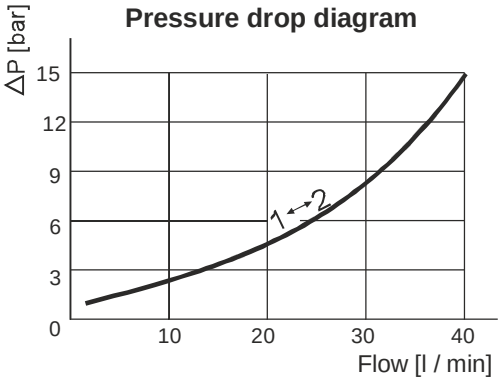
0000 — **Supply voltage:**
0000 = no coil (std)
see below table

Coils section

Supply voltage (V)	Coil type	Spare coil code	Spare connector code	Holding power consumption
12DC	12DC	M13040001	KA132000B1	18W
24DC	24DC	M13040002	KA132000B1	18W
24AC/ 50 Hz 60 Hz	24DC	M13040002	KA132R11B1	18W
115AC/ 50 Hz 60 Hz	110RC	M13040004	KA132R12B1	18W
230AC/ 50 Hz 60 Hz	220RC	M13040005	KA132R13B1	18W
115AC/50Hz*	115/50AC	M13040006	KA132000B1	28VA
230AC/50Hz*	230/50AC	M13040007	KA132000B1	28VA

*Only for MSV30*NC valves.
Other voltages and electric connectors types (Amp Juior, flying leads,...) are available on request.
Inrush power consumption can be up to 3,5 times higher than the holding one.

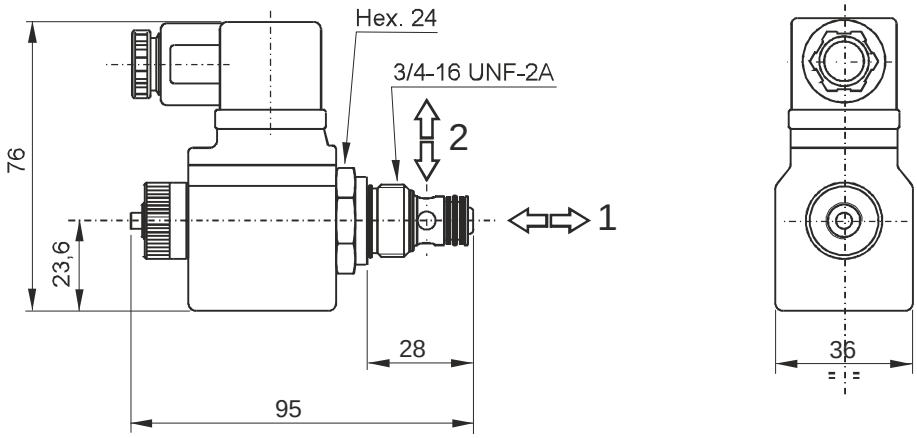
Pressure drop diagram

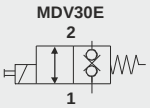


Recommended tightening torque: 45 Nm
Recommended filtration settings: 25 ÷ 50 μ
Oil temperature: -30 ÷ + 80 °C

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

MDV - DIRECT OPERATED TWO-WAY DOUBLE BLOCKING SOLENOID VALVE





Main features

Max pressure	210 bar
Max flow	15 l/min
Weight	0,34 Kg (with coil)
Coil thermal insulation	Class H
Electric connection	DIN 43650-A / ISO 4400
Coil protection degree	IP 65 / DIN 40050
Duty cycle	ED 75% (ED 100%*)
Voltage required	+/- 10% nominal voltage
Normatives	EN50081-1/EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

*: with M140 series coils only. See table U040.20.12 coils section. The max flow/max pressure cannot be achieved at the same time.

PPM assembly code field

D	Voltage

Ex: D24DC

Mounting cavities

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

Spare part code

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

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

E — **Options:** E = emergency (std)

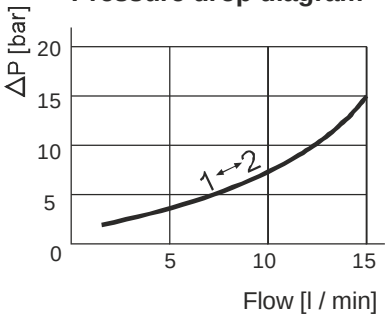
0000 — **Supply voltage:** 0000 = no coil (std) see below table

Coils section

Supply voltage (V)	Coil type	Spare coil code	Spare connector code	Holding power consumption
12DC	12DC	M14040001	KA132000B1	22W
24DC	24DC	M14040002	KA132000B1	22W
24AC/ 50 Hz 60 Hz	24DC	M14040002	KA132R11B1	22W
115AC/ 50 Hz 60 Hz	110RC	M14040004	KA132R12B1	22W
230AC/ 50 Hz 60 Hz	220RC	M14040005	KA132R13B1	22W

Other voltages and electric connectors types (Amp Junior, flying leads,...) available on request.
Inrush power consumption can be up to 3,5 times higher than the holding one.

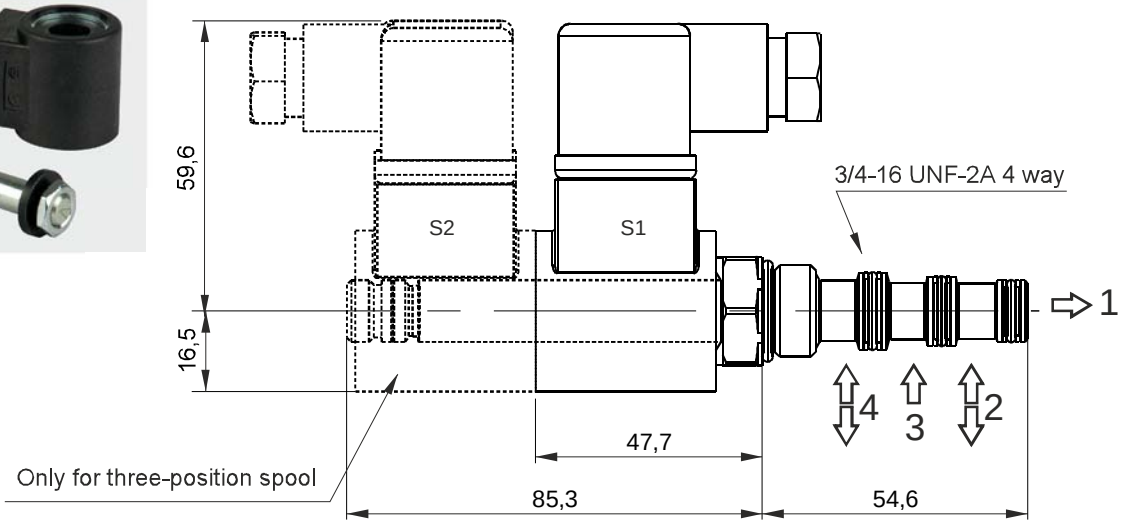
Pressure drop diagram



Recommended tightening torque:45 Nm
Recommended filtration settings: 25 ÷ 50 µ
Oil temperature: -30 ÷ + 80 °C

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

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



Main features

Max pressure	210 bar
Max flow	12 l/min
Weight	0,37 Kg (1 solenoid) 0,64 Kg (2 solenoid)
Coil thermal insulation	Class H)
Electric connection	DIN 43650-A / ISO 4400
Coil protection degree	IP 65 / DIN 40050
Duty cycle	ED 100%
Voltage required	+/- 10% nominal voltage
Recommended tightening torque	30 Nm
Oil temperature	-25 ÷ +70°C

PPM assembly code field

4VA2 Voltage

Ex: 4VA2 24DC

Mounting cavities

0	1			
2	3	4		
5		7	8	

Note: MSV4V can be mounted on central manifold type M4 only.

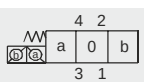
Spare part code

- **MSV4V** — 4/3 or 4/2 directional spool solenoid valve
- **A2** — Spool and scheme: see side table
- **00** — Options: 00 = std
- **24DC** — Supply voltage: see below table

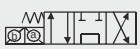
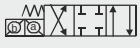
Coils section

Supply voltage (V)	Coil voltage	Spare coil code	Spare connector code	Holding power consumption
12DC	12DC	M6306012	KA132000B1	22W
24DC	24DC	M6306024	KA132000B1	22W
24AC/ 50 Hz 60 Hz	24AC	M6316024	KA132000B1	22W
115AC/ 50 Hz 60 Hz	115AC	M6316115	KA132000B1	22W
230AC/ 50 Hz 60 Hz	230AC	M6316230	KA132000B1	22W

Other voltages and electric connectors types (Amp Junior, flying leads,...) available on request.
Inrush power consumption can be up to 3,5 times higher than the holding one.

Code	
	

Double solenoid

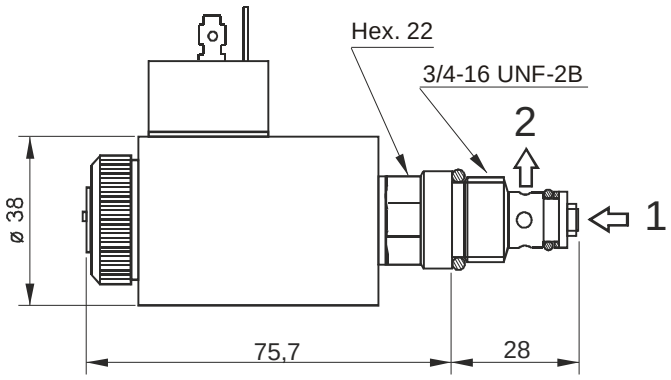
A2*	
B2	
C2	
E2	

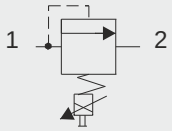
Single solenoid

A11C	

***** = spools with price additional
Other spools are avaiable on request

VMPC2 - PROPORTIONAL RELIEF VALVE





Main features

Max pressure	350 bar
Max flow	2 l/min
Weight	0,46 Kg (with coil)
Coil thermal insulation	Class H
Electric connection	DIN 43650-A / ISO 4400
Coil protection degree	IP 65 / DIN 40050
PWM	120 Hz
Hysteresis	5%
Duty cycle	ED 100%
Voltage required	+/- 10% nominal voltage
Normatives	EN50081-1/EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

Recommended tightening torque: 30 Nm
Recommended filtration settings: 10 ÷ 25 µ
Oil temperature: -40 ÷ + 80 °C

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

For the controller see page U040.20.16

Coils section

Supply voltage	Spare coil code	Spare connector code
12DC	M6306012	KA132000B1
24DC	M6306024	KA132000B1

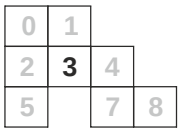
Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

PPM assembly code field

P* Voltage**

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

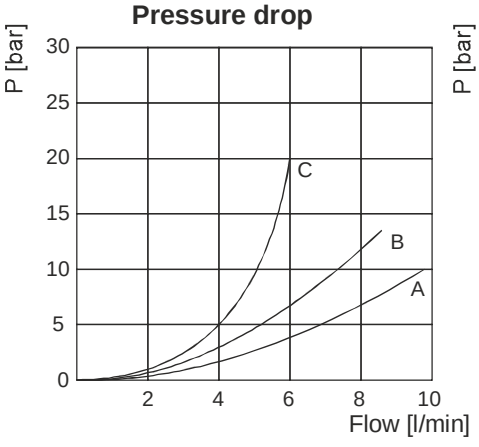
Mounting cavities



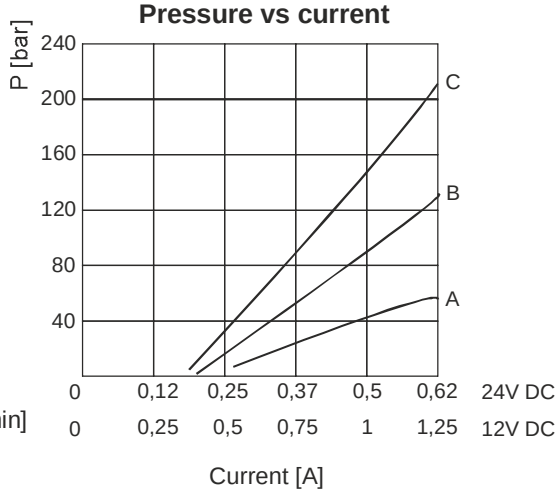
Spare part code

- **VMPC** — Direct acting proportional relief valve
- **2** — Nominal size
- **B** — Working range:
  A = 2 ÷ 60 bar
  B = 3 ÷ 120 bar
  C = 4 ÷ 210 bar
- **-** — Option
- **0000** — Supply voltage:
  - 0000 = no coil
  - 12DC
  - 24DC

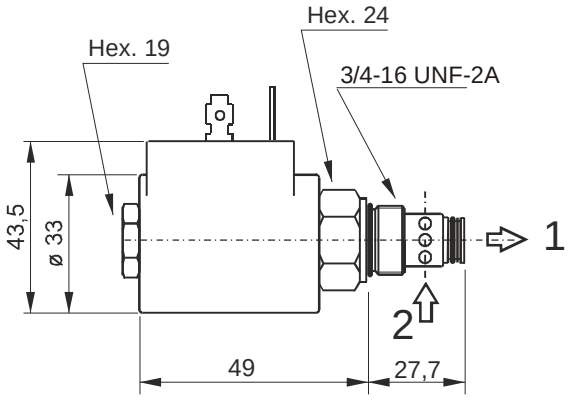
Pressure drop

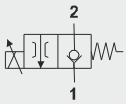


Pressure vs current



CSPC15 - PROPORTIONAL FLOW CONTROL VALVE





Main features

Max pressure	315 bar
Max flow	15 l/min
Weight	0,25 Kg (with coil)
Coil thermal insulation	Class H
Electric connection	DIN 43650-A / ISO 4400
Coil protection degree	IP 65 / DIN 40050
PWM	120 Hz
Hysteresis	5%
Duty cycle	ED 100%
Voltage required	+/- 10% nominal voltage
Normatives	EN50081-1/EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

PPM assembly code field

T	Voltage

Ex: T12DC

Mounting cavities

0	1			
2	3	4		
5		7	8	

Spare part code

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

Recommended tightening torque: 30 Nm
Recommended filtration settings: 10 ÷ 25 µ
Oil temperature: -10 ÷ + 80 °C

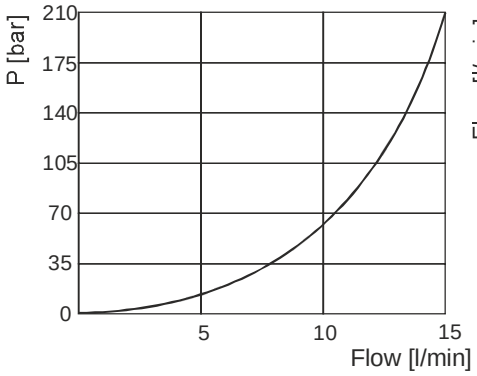
Note: Supplying current to the coil from 0 to I max (see below diagram), a proportional pressure variation is obtained on port P.

For the controller see page U040.20.16

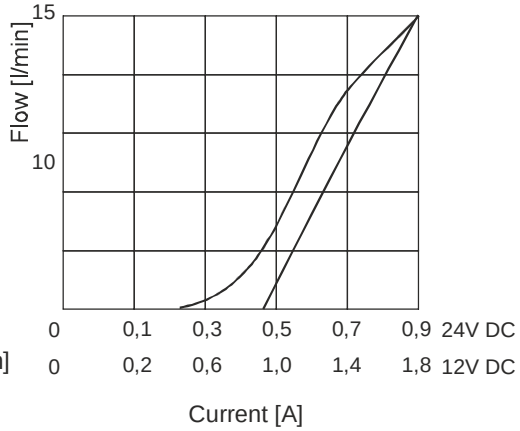
Coils section

Supply voltage	Spare coil code	Spare connector code
12DC	M6306012	KA132000B1
24DC	M6306024	KA132000B1

Pressure vs flow

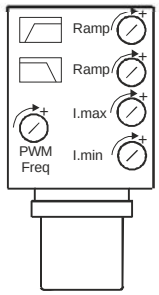


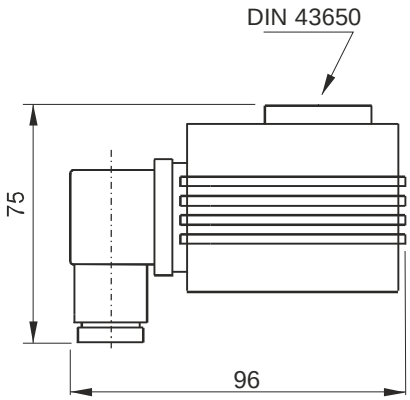
Flow vs current

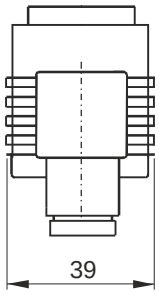


Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

VPC - ELECTRONIC AMPLIFIER FOR PROPORTIONAL SOLENOID VALVES





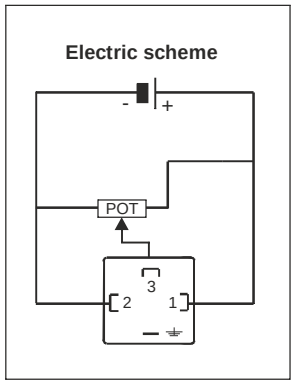


Weight: 0,11 Kg

Main features

Supply voltage	12 / 24VDC
Voltage input signal range	0 - 10 V
Input impedance	100 kohm
Max current range	2,5A
Electric connection	DIN 43650-A / ISO 4400
Ramp adjustment (indipendent)	0 ÷ 3 s
PWM (optionally adjustable)	120 Hz (50 ÷ 400 Hz)
Working temperature	-10 ÷ +50 °C
Normatives	EN50081-1/EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

Electric scheme



Spare part code

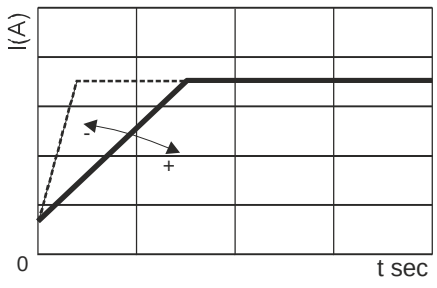
VPC	**Electronic amplifier for solenoid valves**
00	**Options**

Suitable for:
- CSPC15**** (see table U040.20.15.00)
- VMPC2**** (see table U040.20.14.00)

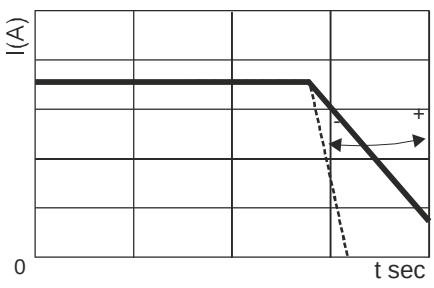
Instruction for use:

1) turn completely “I MIN” trimmer in counterclockwise direction;
2) adjust the external voltage input signal to the initial regulating (flow or pressure) value;
3) turn “I MIN” trimmer in clockwise direction until valve 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.

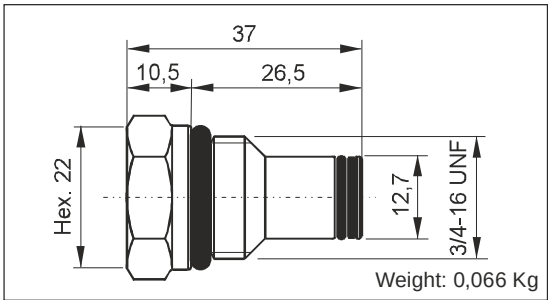
Ramp adjustment (up)



Ramp adjustment (down)



PLUGS



Weight: 0,066 Kg

Hydraulic symbol

Spare part code

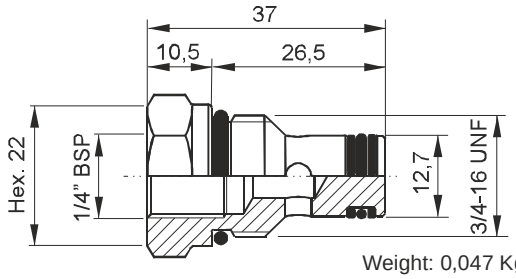
E70100005

PPM assembly code

G

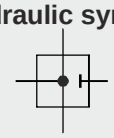
Mounting cavities

0	1		
2	3	4	
5		7	8



Weight: 0,047 Kg

Hydraulic symbol



Spare part code

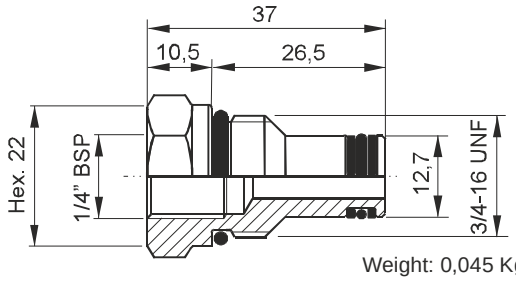
E70100003

PPM assembly code

H

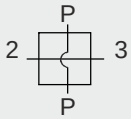
Mounting cavities

0	1		
2	3	4	
5		7	8



Weight: 0,045 Kg

Hydraulic symbol



Spare part code

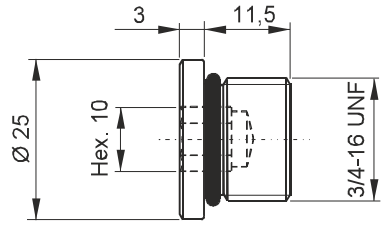
E70100006

PPM assembly code

P

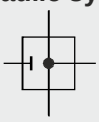
Mounting cavities

0	1		
2	3	4	
5		7	8



Weight: 0,027 Kg

Hydraulic symbol



Spare part code

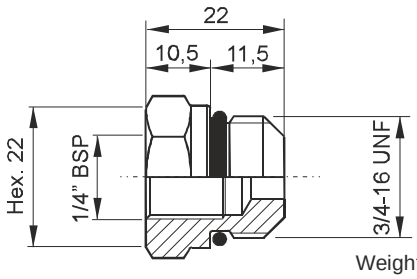
E70100004

PPM assembly code

L

Mounting cavities

0	1		
2	3	4	
5		7	8



Weight: 0,042 Kg

Hydraulic symbol

Spare part code

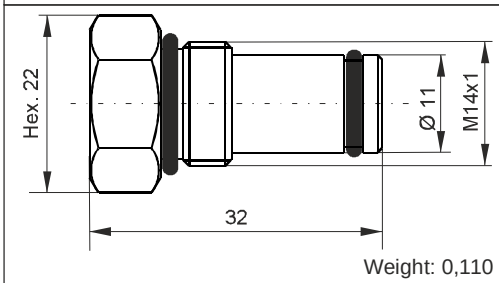
E70100002

PPM assembly code

N

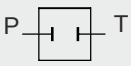
Mounting cavities

0	1		
2	3	4	
5		7	8



Weight: 0,110 Kg

Hydraulic symbol



Spare part code

N70200010

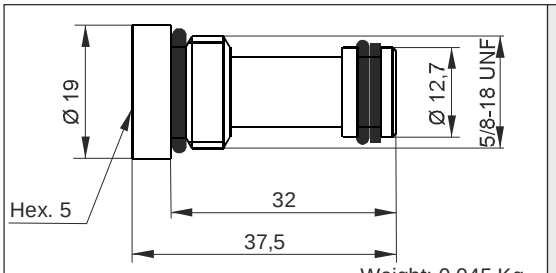
PPM assembly code

XM

Mounting cavities

0	1		
2	3	4	
5		7	8

PLUGS



Weight: 0,045 Kg

Hydraulic symbol

Spare part code

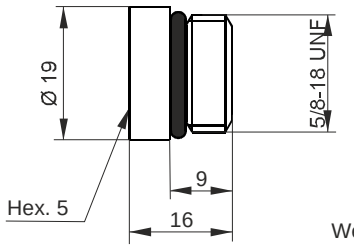
N70200007

PPM assembly code

MG

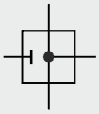
Mounting cavities

0	1			
2	3	4		
5		7	8	



Weight: 0,027 Kg

Hydraulic symbol



Spare part code

N70200008

PPM assembly code

ML

Mounting cavities

0	1			
2	3	4		
5		7	8	

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

TANKS

Round steel tanks from 0,7 to 2,4 l for horizontal and vertical mounting

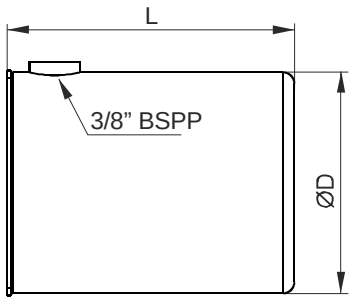
Round plastic tanks from 0,4 to 1,2 l volume, for horizontal or vertical mounting.

Better plastic or steel tanks?
Plastic tanks have several advatanges. Among them: they do not get rust, the oil level is visible, they do not damage if getting bumped,... On the other hand steel tanks are to be preferred in case of ultra high or ultra low temperatures.

Is it possible to realize custom made tanks?
Yes. We can provide an adaptor flange (F80000012) which can welded on custom made tanks, at customer care.

How do I order spare tanks?
Tanks can be ordered without accessories just by adding a J in front of the relevant code (es. JE50404006). When ordered with the normal code (e.g. E50404006) they include all relevant accesories such as: plugs, filler breather, fixing devices,... depending on the kind of tank. Tanks specified in PPM speaking code always include all relevant accessories.

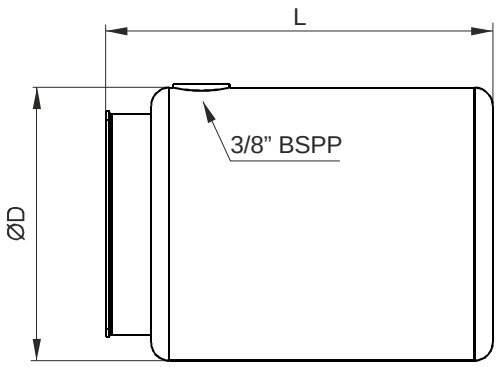
ROUND STEEL TANKS F & H SERIES



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

Description	PPC assembly code	Spare part code	L (mm)	ØD (mm)	Weight	Actual filling volume (lt)	
						Horizontal	Vertical
0,7 l cylindrical horizontal / vertical mounting	**0,7F / 0,7FV**	**E50403001**	120	97	0,26	0,75	0,52
1,2 l cylindrical horizontal / vertical mounting	**1,2F / 1,2FV**	**E50403002**	175	97	0,38	1,1	0,9

All measures are indicative in mm



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

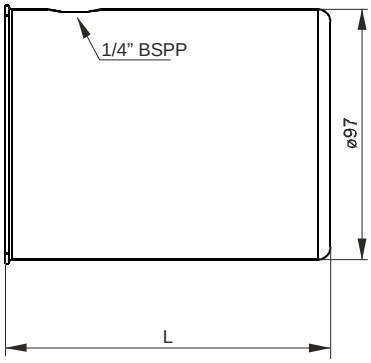
Description	PPC assembly code	Spare part code	L (mm)	ØD (mm)	Weight	Actual filling volume (lt)	
						Horizontal	Vertical
1,7 l cylindrical horizontal / vertical mounting	**1,7H / 1,7HV**	**E50404004**	170	120	0,64	1,5	1,2
2,4 l cylindrical horizontal / vertical mounting	**2,4H / 2,4HV**	**E50404006**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

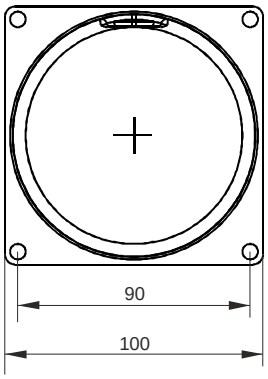
All measures are indicative in mm

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

Note: the piping kit, standard suction filter, filler/breather and discharge plug are included when specifying the tank in PPM assembly code. When ordering spare parts, only the discharge plug and filler/breather are included. If you wish to order only the barebone tanks just add a J in front of the relevant code.
Ex. JE50403002 instead of E50403002.

ROUND PLASTIC TANKS R SERIES





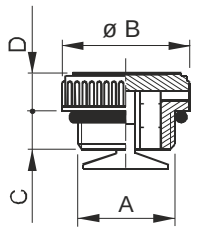
Description	PPC assembly code	Spare part code	L (mm)	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
0,4 l round horizontal / vertical mounting	**0,4R / 0,4RV**	**H50403001**	90	0,07 Kg	0,45	0,35
0,7 l round horizontal / vertical mounting	**0,7R / 0,7RV**	**H50403002**	124	0,09 Kg	0,75	0,62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

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

Notes: the piping kit, standard suction strainer and filler/breather are included when specifying the tank in PPM assembly code. When ordering spare tanks, filler/breather and clamp band are included. If you wish to order only the barebone tanks just add a J in front of the relevant code.
Ex. JH50403002 instead of H50403002.

TANKS PLUGS AND ACCESSORIES

Knurled filler breather with vane 1/4" - 3/8" BSPP



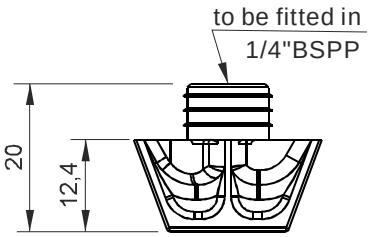
	1/4"	3/8"
A	1/4"	3/8"
ø B	20	
C	7,5	
D	9,5	

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

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

Relief valve return diffuser

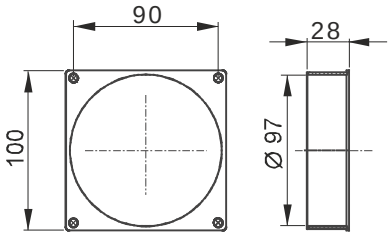
To be mounted in cavity Tr



It reduces foam and noise when relief valve is laminating.
Recommended for all vertical mounting tanks.

Spare part code
SFEP01D

Steel tank adapter



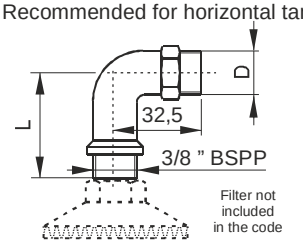
Unpainted, to be welded on custom made tanks

Weight: 0,21 Kg

Spare part code
F80000012

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

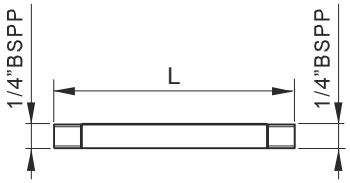
Recommended for horizontal tanks



	L	D
PP01E40	40	1/4"BSPT
PP01E77	77	1/4"BSPT

Spare part code
PP0*E**

1/4" return/suction pipe

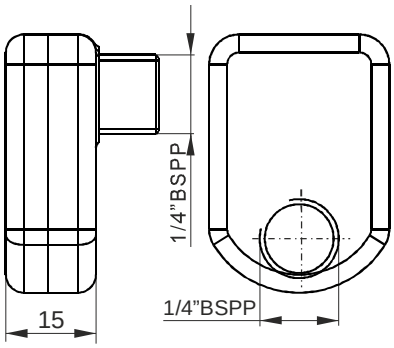


	L
PP0140	40
PP0180	80
PP01120	120

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

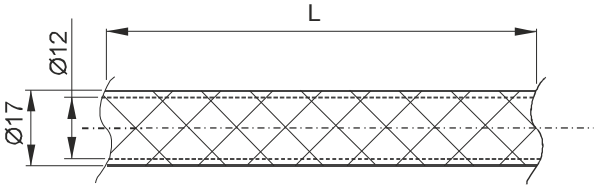
Spare part codes
PP01**

Suction filter



Spare part codes
C34100100

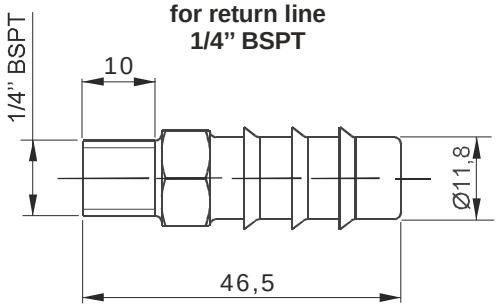
Flexible plastic pipe



Recommended as standard return pipe.
To be fixed with TR01-12 and cut at proper lenght.
To be ordered in meters

Spare part code
SF12

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



Spare part code
TR0112

EXTERNAL MANIFOLDS & ACCESSORIES

Standard NG3 MICRO base modular manifold blocks. They can be staked one upon the other. Top manifold P and T ports can be plugged with simple 1/4" or 1/8" BSP plugs.

The external bulk 8,8 cc/stroke hand pump can be fitted under NG3 modular manifolds. An easy way to add an «emergency» functionality to the power pack. The lever can be rotated 360°.

The PPC to SD01 stackable valves converter lets you mount our range of modular stackable valves, also used in PPC range

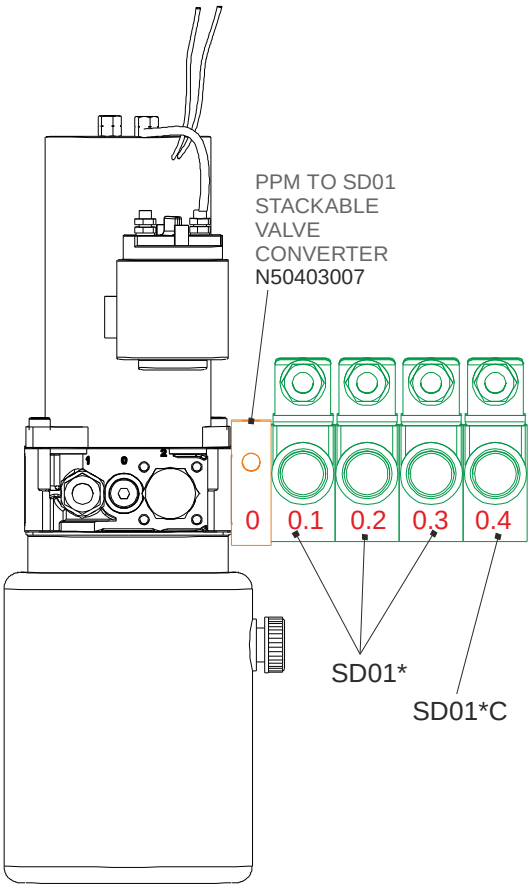
A full set of accessories is available to complete the power pack configuration

Which types of external manifold blocks can be mounted?
The central manifold exit face allows the mounting of manifold blocks fixed by 2x M8 bolts.
The first choice of external blocks is the NG3 MICRO system. Lateral exit ports modular base manifolds, spacer and 90° adaptor are available to modify dimensions and mounting positions for high flexibility.
To mount stackable directional valves the relevant adaptor plate PPM to SD01 (N50403007) is required. See section G technical tables for the relevant valves details.

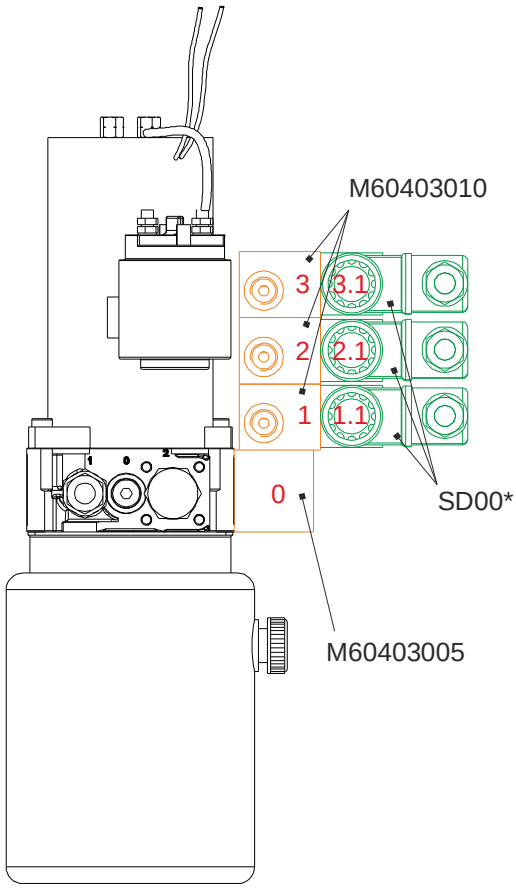
When do I need to mount the spacer block?
Whenever a big motor is mounted on the power pack, to avoid interference between the motor and external blocks and valves.
Normally M60403004 spacer must be mounted below the stack of NG3 MICRO manifolds whenever using any AC motor and with DC motors with frame 114.

EXTERNAL MANIFOLDS & VALVES MOUNTING EXAMPLES

PPM + SD01 STACKABLE VALVES

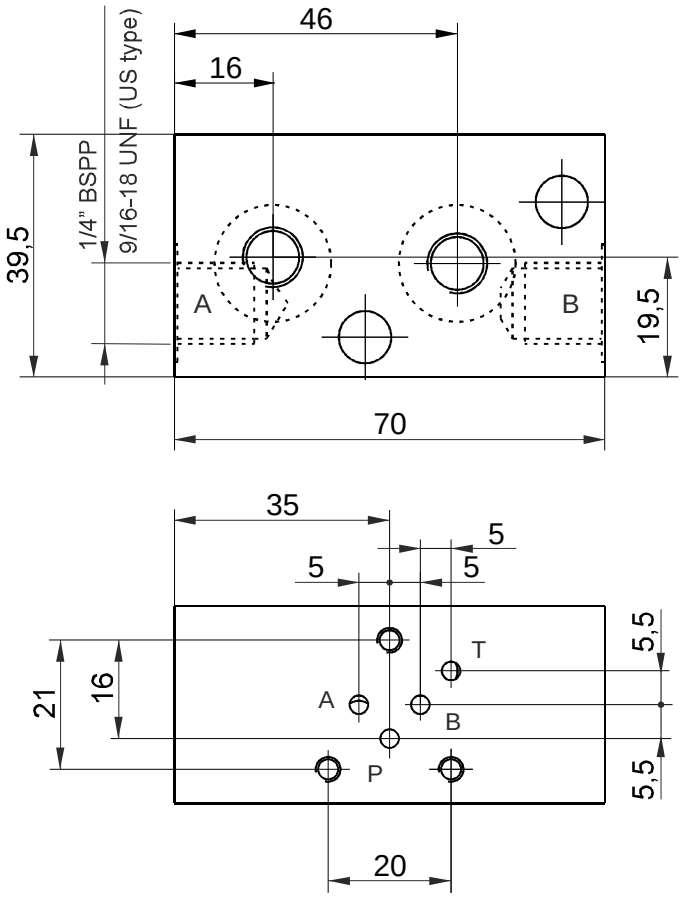


PPM + NG3 MICRO BLOCKS & VALVES



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

NG3 MICRO MODULAR MANIFOLDS. LATERAL PORTS



Weight: 0,21 kg
Fixing system: 2 x M8 tie-rods
steel class 8.8 or above

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

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

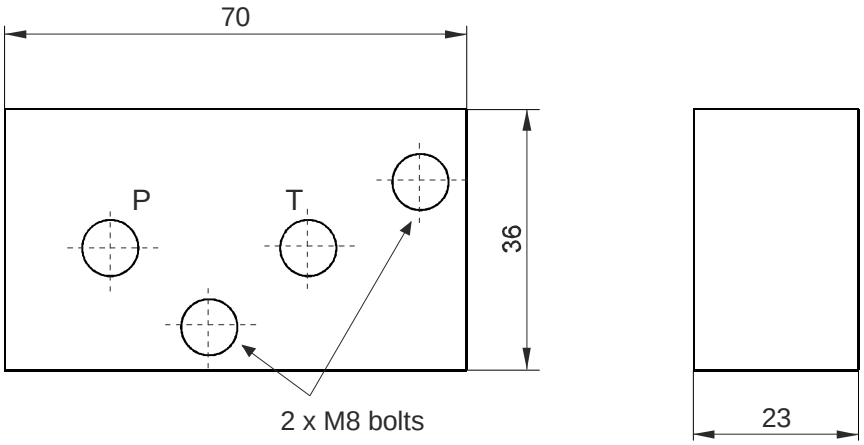
The NG3 micro valve attachment is on motor side.

Recommended tightening torque for M8 bolts: 16 Nm

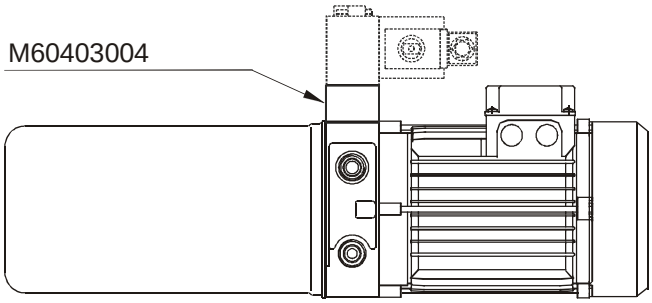
SPACER ELEMENT

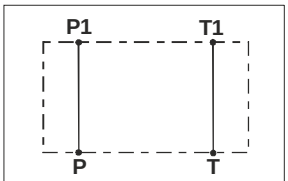
Weight: 0,14 kg

Fixing system: 2 x M8 tie-rods steel class 8.8 or above



Mounting example



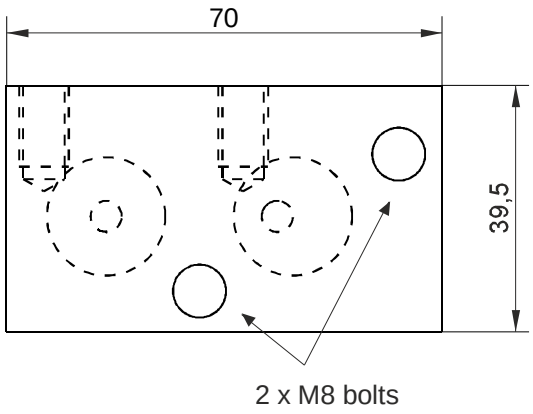


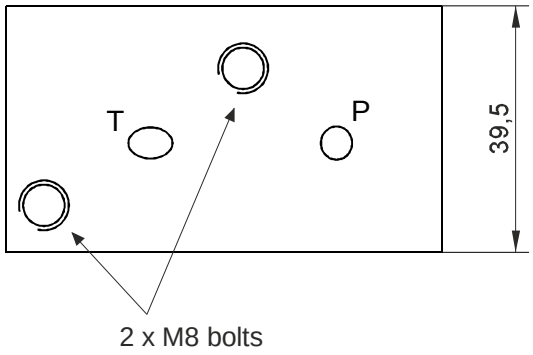
Spare part code
M60403004

90° ROTATION MANIFOLD

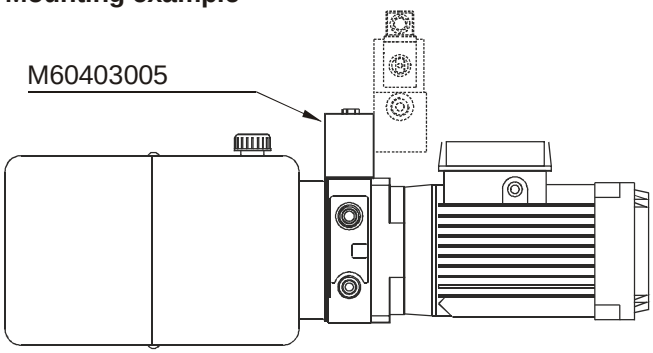
Weight: 0,26 kg

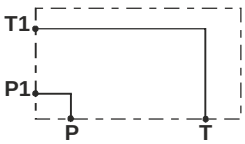
Fixing system: 2 x M8 tie-rods
steel class 8.8 or above





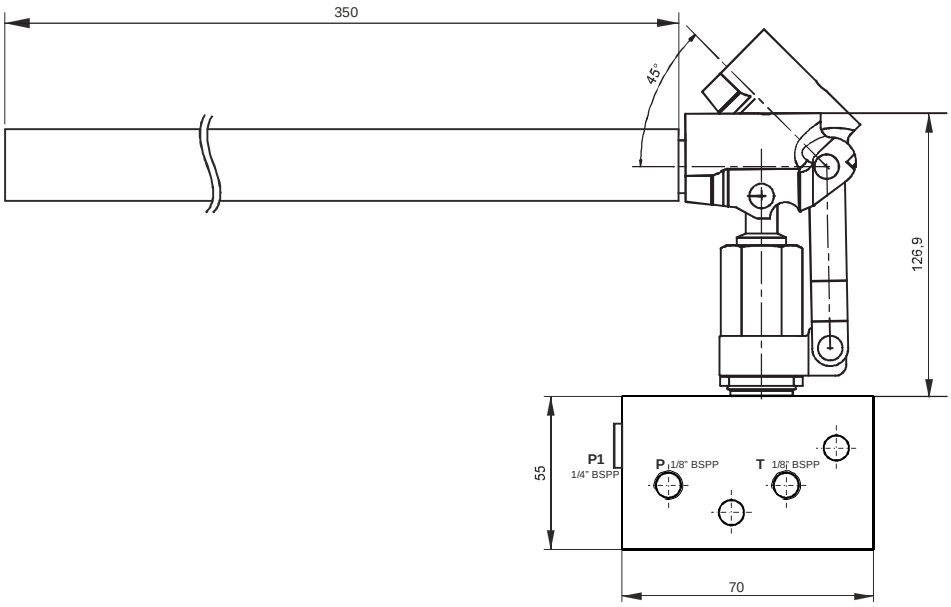
Mounting example





Spare part code
M60403005

PM09 HAND PUMP MODULAR MANIFOLD



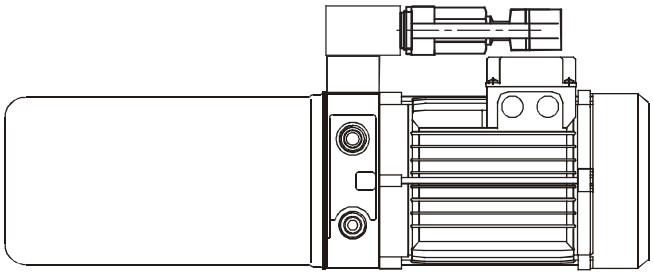
Fixing system: 2 x M8 tie-rods
Material class: min. 8.8 or equivalent

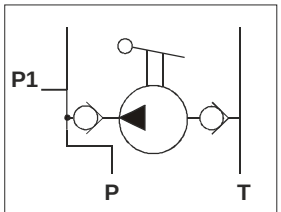
Block height: 39mm
Weight: 1,8 kg

Main features

Max pressure	210 bar
Displacement	8,8 cc/stroke
Fixing bolts	2 x M8 (8.8 class steel)
Filtration grade	25 ÷ 50 µ
Temperature range	-20 ÷ +70°C

Mounting example





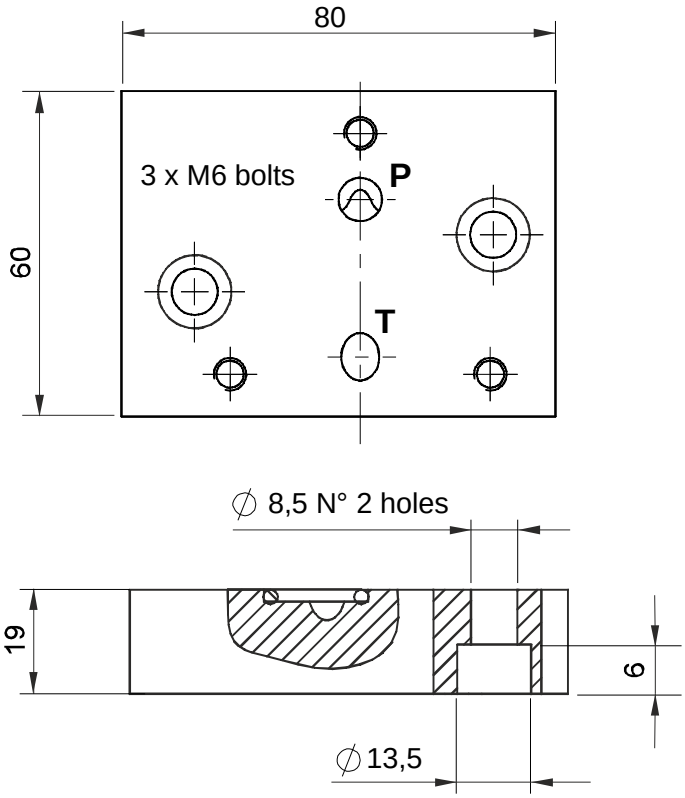
Spare part code
PM09

Recommended tightening torque for M8 bolts: 16 Nm.

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

PPM TO SD01 STACKABLE VALVE CONVERTER

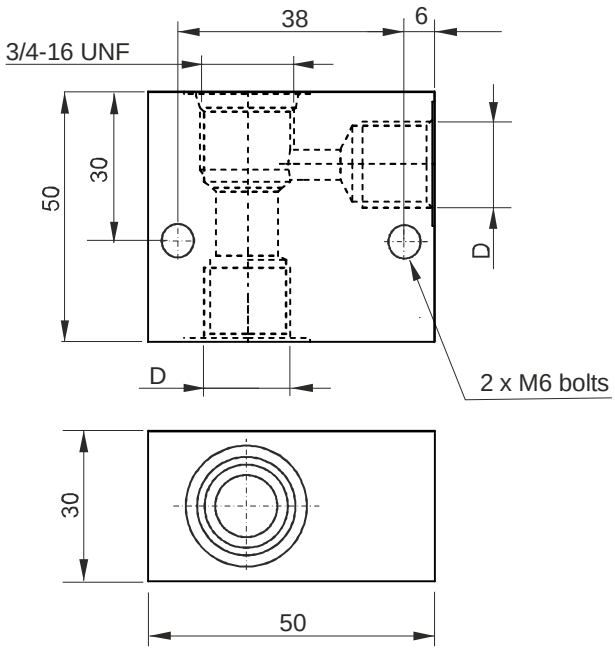
Fixing system: 2 x M8x20 steel class 8.8 or above
Weight: 0,22 Kg



Spare part code
M50403006

ACCESSORIES

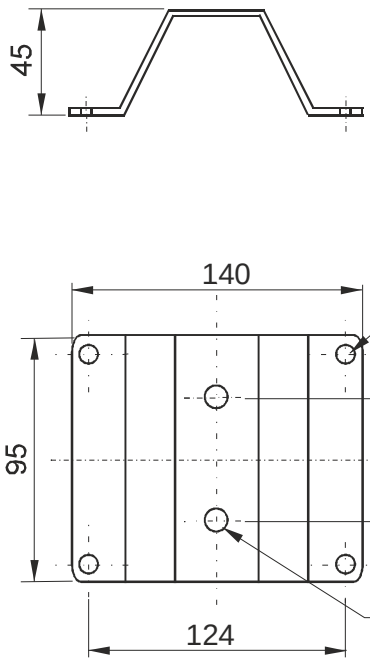
In line mounting 3/4-16 UNF manifolds



	D	Weight
BFCSAE0802	3/8” BSPP	0,16 Kg
BFCSAE0801	1/4” BSPP	0,48 Kg

Spare part codes	
BFCSAE0802	**BFCSAE0801**

Foot mounting support

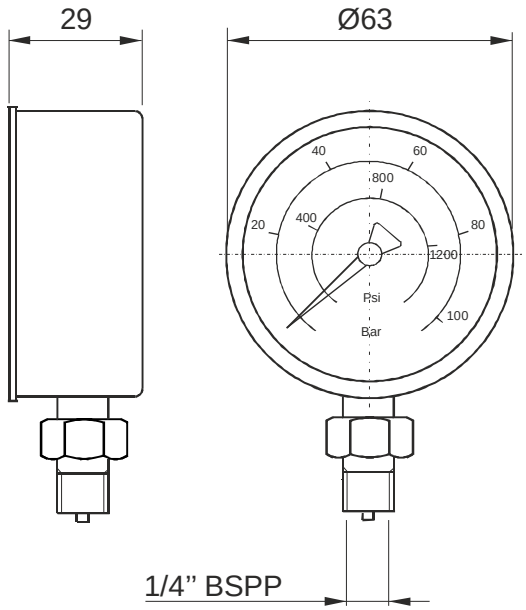


Spare part code
E60543003

ACCESSORIES

Pressure gauge

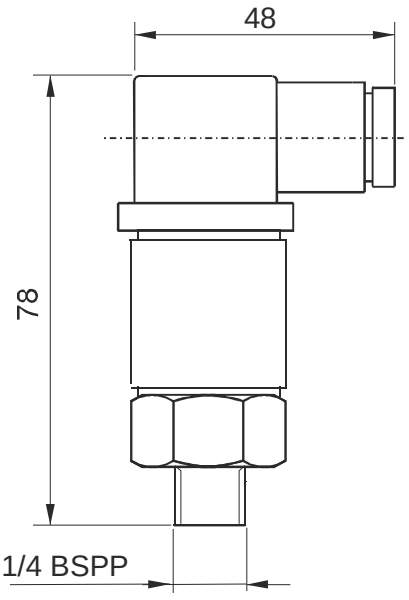
Protection degree	IP 65
Thermal drift	±0,04%/1K from 20°C
Weight	0,206 Kg
Static working pressure	75% end of scale
Peak working pressure	end of scale
Working temperature	-10 ÷ +60°C
Precision class	cl. 1.6 EN837-1



Spare part code	
MIR63* **	***:pressure max in bar (60, 100, 160, 250, 315 bar)

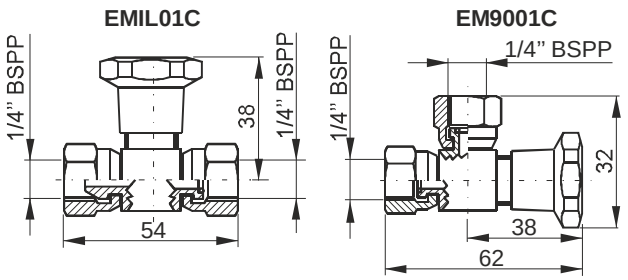
Pressure switch

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



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

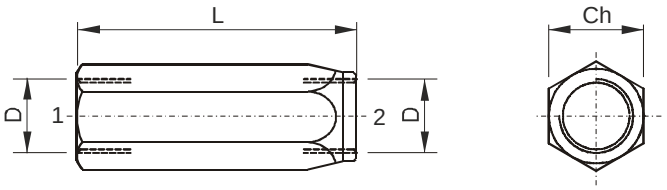
Gauge isolator F-F



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

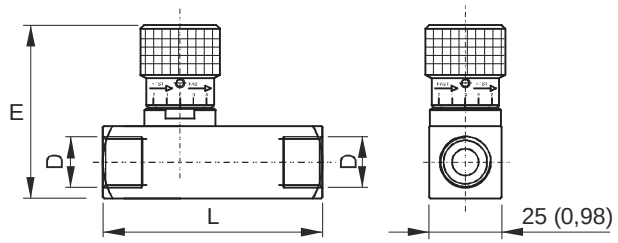
Spare part code
EM9001C / EMIL01C

In-line check valve



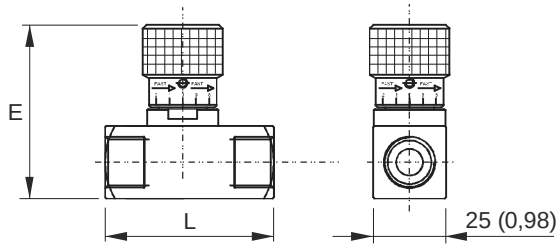
Spare part code	D	Ch	L	Weight
VUR01	1/4" BSPP	19	55	0,10 kg
VURSAE06	9/16-18UNF	19 (0,75)	58 (2,28)	0,10 kg (0,22 lb)

In-line unidirectional flow control valve



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

In-line bidirectional flow control valve



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

EXTERNAL VALVES

NG3 MICRO valves are the standard extra-compact spool valve solution for PPM micro power packs. Each valve requires a base NG3 MICRO modular manifold.

Bancable valves: the «new» solution to reduce power pack dimensions and weight. A and B threaded ports are machined directly on the valve body

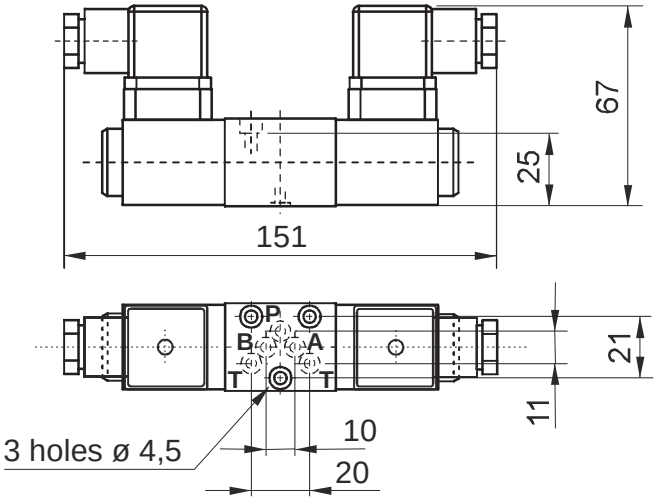
Why aren't NG6 (cetop 3) valves available)?
The micro power pack range has been designed for ultra light, high power density, extra small enhanced applications, all in one package. NG6 (cetop 3) valves have been designed for flows which are currently more then 10 times that of the micro power units and, notwithstanding their enormous diffusion worldwide, they are superceded today by smaller factor, high power, energy saving spool valves, like our stackable valves or NG3 MICRO series which offer best dimension/performance ratio.

Is it possible to manufacture special manifold blocks with special valves 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 valves?
NG3 MICRO valves SD00* series are planned to be driven by DC coils only. Stackable valves SD01* series use DC or RAC M120 series coils. When choosing a RAC coil, a rectifying bridge connector must be chosen (KA132**R*****). A standard KA13200000 connector must be always used with DC coils.

NG3 MICRO DIRECTIONAL SOLENOID VALVES

Weight: 0,7 kg (2 sol), 0,55 kg (1 sol)



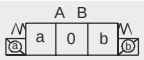
Main features

Max pressure	315 bar
Max p on T port	100 bar
Max flow	15 l/min
Fixing bolts	3 TCEI M4x30. 2,8Nm torque 10.9 class steel or better
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 override	included as standard
Normatives	EN50081-1 / EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

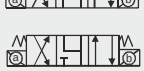
Spare part code

SD00	**NG3 micro directional solenoid valve**
A2	**Spool and scheme:** see side table
24DC	**Supply voltage:** see below table
-	**Options:** - = std

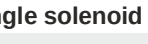
Supply voltage (V)	Coil voltage	Spare coil code	Spare connector code	Holding power consumption
12DC	12DC	M10040001	KA132000B1	16W
24DC	24DC	M10040002	KA132000B1	16W
24AC/50 Hz 60 Hz	24DC	M10040002	KA132R11B1	16W

Code	
	

Double solenoid

A2*	
B2	
C2	
E2	

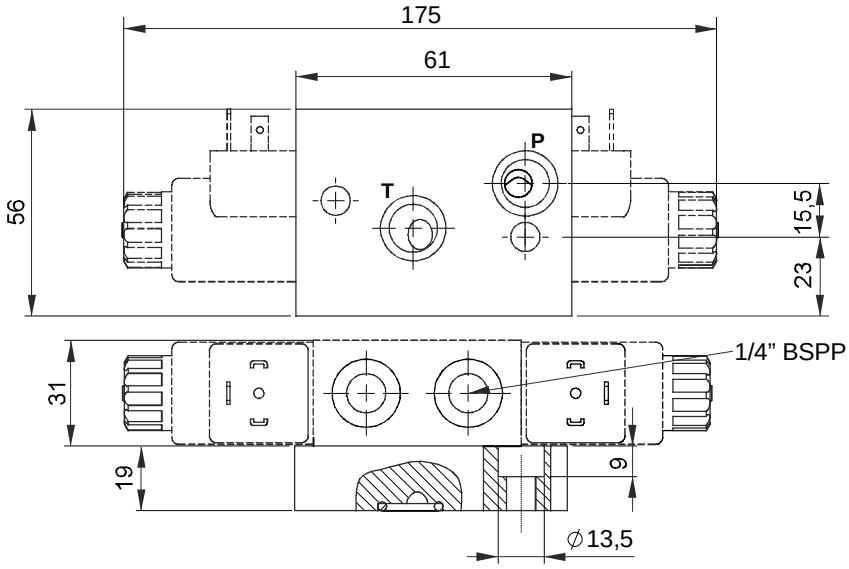
Single solenoid

A11C	

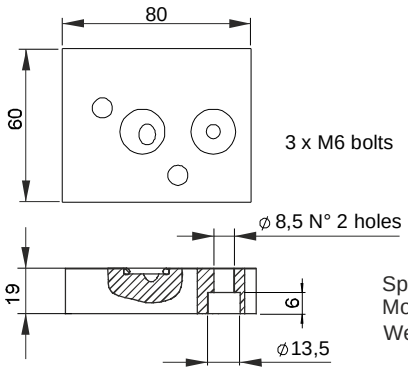
Other voltages and electric connectors types (Amp Junior, flying leads,...) available on request.
Inrush power consumption can be up to 3,5 times higher than the holding one.

* = spools with price addition. Other spools are avaiable on request

STACKABLE DIRECTIONAL SOLENOID VALVES



Mounting manifold



Spare part code: **N50403007**
Mounting bolts 2 x M8x20
Weight: 0,22 Kg

Weight: 0,89 Kg (1 sol.)
1,09 Kg (2 sol.)
Fixing system: 3xM6 tie-rods

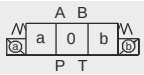
Main features

Max pressure	250 bar
Max p on T port	210 bar static, 140 bar dynamic
Max flow	20 l/min
Fixing bolts	3 TCEI M6 x 6Nm torque. 10.9 class steel
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 override	included as standard
Normatives	EN50081-1 / EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

Spare part code

SD01	**Stackable directional solenoid valve**
A2	**Spool and scheme:** see side table
24DC	**Supply voltage:** see below table
-	**Position type:** - = intermediate C = top closed

Supply voltage (V)	Coil voltage	Spare coil code	Spare connector code	Holding power consumption
12DC	12DC	M12040001	KA132000B1	22W
24DC	24DC	M12040002	KA132000B1	22W
24AC/50 Hz 60 Hz	24DC	M12040002	KA132R11B1	22W
230AC/50 Hz 60 Hz	220RC	M12040005	KA132R13B1	22W

Code	
	

Double solenoid

A2*	
B2	
C2	
E2	

Single solenoid

A11C	

Other voltages and electric connectors types (Amp Junior, flying leads,...) available on request.
Inrush power consumption can be up to 3,5 times higher than the holding one.

* = spools with price additional. Other spools available on request