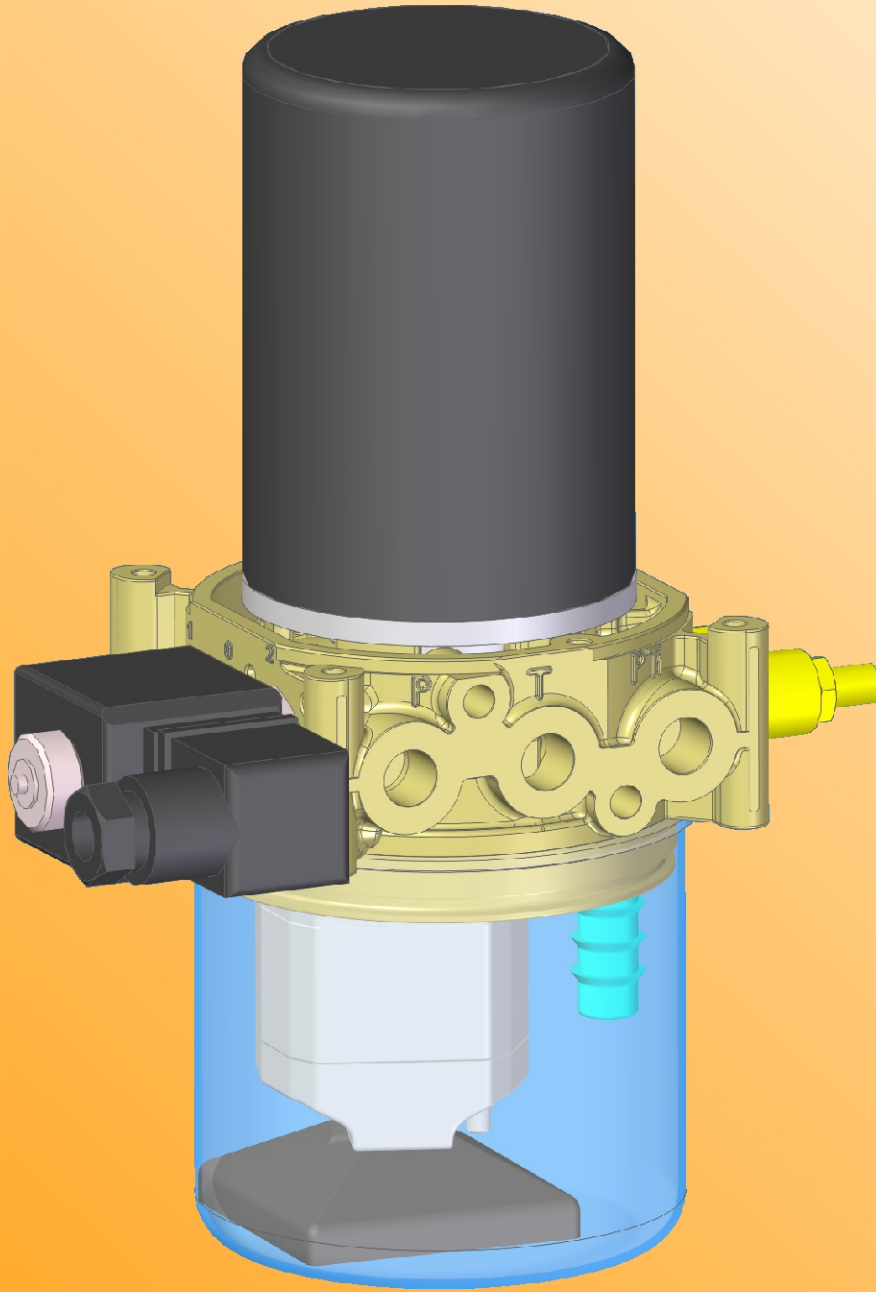


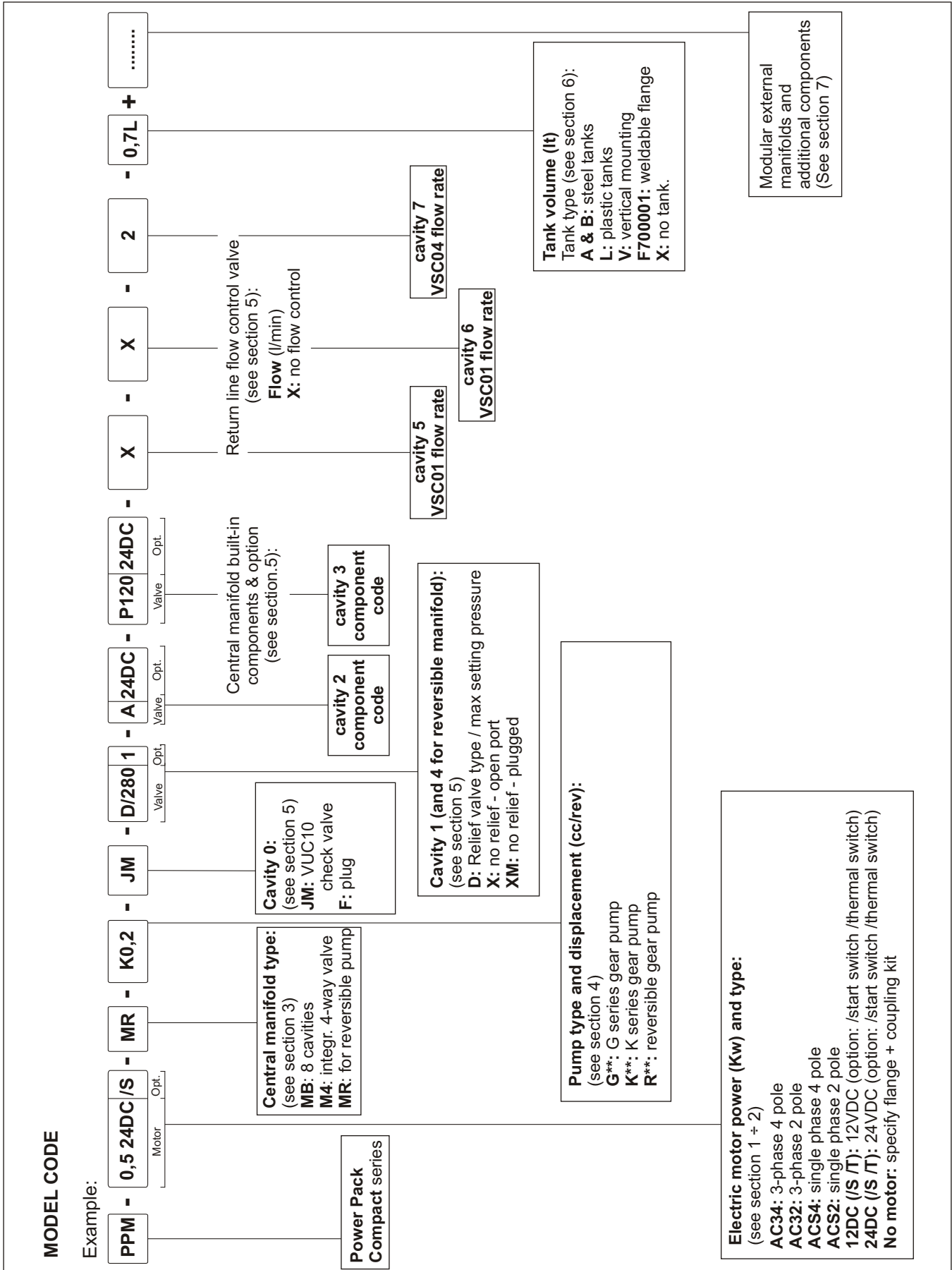
Hydronit



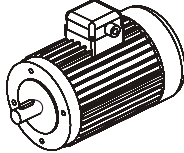
**AC & DC Hydraulic
Micro Power Packs**

Hydronit

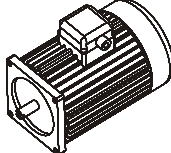
POWER PACKS MICRO series ordering code



QUICK SELECTION

1: AC motors					
1.1: B14 AC motors (See table M010.40.05)					
B14 AC motor frame size	Typical power range [kW]	Spare flange code	Spare coupling code	Mounting kit code (to be indicated in PPC code)	
71	0,25 ÷ 0,37	F25030003	E36100001+E36100000M	NB1471	

PPM for B14 motors are normally supplied with mounting kit only. The motor is at customer care.

1.2: AC integral motors three-phase (See tables M010.40.04)						
Integral AC motor frame size	Maximum Power (S3 40%)		Rated Power (S1 continuous duty)			Spare motor code
	kW	HP	kW	HP		
Three-phase 4 poles (~1450 rpm at 50Hz)						
71	-	-	0,25	0,35	N025AC341	E36200003
	-	-	0,37	0,5	N037AC341	
	-	-	0,55	0,75	N055AC341	
	0,75	1	-	-	N075AC341S3	

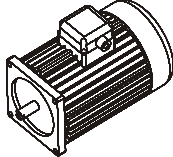
Three-phase 2 poles (~2900 rpm at 50Hz)						
71	-	-	0,37	0,5	N037AC321	E36200003
	-	-	0,55	0,75	N055AC321	

Other power / frame sizes and special motor types are available on request. Motors with codes ending with "S3" 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. These motors can be applied to a continuous duty (S1) at a reduced power. See above table.

Ask to our technical office: we will offer optimised solutions for either intermittent or heavy duty applications.

In PPM code ordering code just specify the motor power and type and the pump type; the relevant coupling is provided as standard.

When ordering spare motors the coupling is not included and must be ordered separately.

1.3: AC integral motors single-phase (See tables M010.40.04)							
Integral AC motor frame size	Maximum Power (S3 40%)		Rated Power (S1 continuous duty)		Spare motor code	Spare coupling code (only for spare parts orders)	
	kW	HP	kW	HP			
Single-phase 4 poles (~1450 rpm at 50Hz)							
71	-	-	0,25	0,35	N025ACS41	E36200003	
	-	-	0,37	0,5	N037ACS41		

Single-phase 2 poles (~2900 rpm at 50Hz)							
71	-	-	0,37	0,5	N037ACS21	E36200003	
	-	-	0,55	0,75	N055ACS21		


Other power / frame sizes and special motor types are available on request. Ask to our technical office: we will offer optimised solutions for either intermittent or heavy duty applications.

Motors with codes ending with "S3" are for intermittent duty. S3 40% duty cycle means up to 6 switching on and off in an hour with the motor ON for 4 min. and OFF for 6 min.

*: these motors are available in "HT" high starting torque version too. See table M010.40.07.

In PPM code ordering code just specify the motor power and type and the pump type; the relevant coupling is provided as standard.

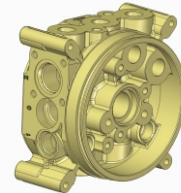
When ordering spare motors the coupling is not included and must be ordered separately.

2: DC motors (See tables M010.40.01 ÷ M010.40.03)									
DC motor frame size	Power kW	Voltage V DC	PPC Assembly code	PPC assembly code (with thermal protection)	Spare motor code	Spare motor code (with thermal protection)	Spare mounting kit code (only for spare parts orders)		
ø80	0,15	12	0,15 12DC	0,15 12DC/T	M46C1S001	M46C1ST01	E36200003		
	0,15	24	0,15 24DC	0,15 24DC/T	M46C2S001	M46C2ST01			
	0,5	12	0,5 12DC	0,5 12DC/T	M46C1S005	M46C1ST05			
	0,5	24	0,5 24DC	0,5 24DC/T	M46C2S005	M46C2ST05			
	0,8	12	0,8 12DC	0,8 12DC/T	M46C1S008	M46C1ST08			
	0,8	24	0,8 24DC	0,8 24DC/T	M46C2S008	M46C2ST08			
ø114	1,6	12	-	1,6 12DC/T	-	M46C1ST16	E36200002		
	2,1	12	-	2,1 12DC/T	-	M46C1ST21			
	2,2	24	-	2,2 24DC/T	-	M46C2ST22			

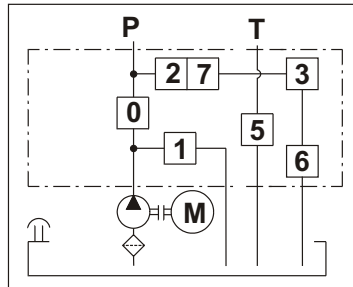
2.1: DC motor options

PPC code	Description	Spare part code	Mounting advise
/S150 12DC 80 /S150 24DC 80	Starting switch 150A 12 or 24V DC	M47SC0001+M47SK0801 M47SC0002+M47SK0801	For ø78 and ø80 motors
/S150 12DC 112 /S150 24DC 112	Starting switch 150A 12 or 24V DC	M47SC0001+M47SK1121 M47SC0002+M47SK1121	For ø114 motors
P0201	Remote wired control with two buttons and 3m cable	P0201	For single acting cylinders
P0202	Remote wired control with two buttons and 3m cable	P0202	For double acting cylinders
F16000001	DC motors plastic cover	F16000001	For ø114 motors

3: Micro Central manifold (See section M010.10)



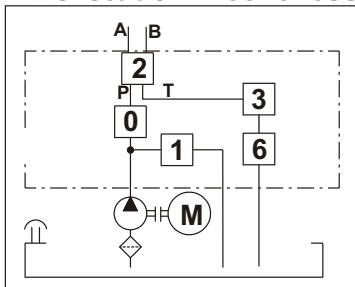
MB execution E60102031



Typical applications:

- single acting circuits and double acting circuits (with external valves, bancable solenoid valve);
- integral emergency hand pump, adjustable flow control valve on return line and/or complex controls.

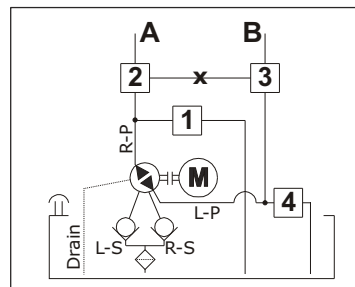
M4 execution E60102033



Typical application:

- double acting circuit with integrated 4-way solenoid cartridge valve

MR execution E60102032

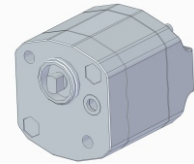


Typical application:

- double acting cylinder with reversible pump to the use avoid directional valve.

Central manifold codes do not include valves and other components.

4: Pumps (See tables M010.20.18 ÷ M010.20.21)



Gear pumps

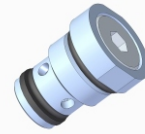
PPM code	Displacement (cc/rev)	Spare part code
GM0,1	0,19	E60503001
KM0,2	0,26	E60504002
KM0,4	0,38	E60504004
KM0,6	0,63	E60504006
KM0,9	0,88	E60504009
KM1,3	1,25	E60504013
KM1,5	1,54	E60504015

Bidirectional gear pumps

PPC code	Displacement (cc/rev)	Spare part code
RM0,1	0,19	E60503501
RM0,2	0,26	E60504502
RM0,4	0,38	E60504504
RM0,6	0,63	E60504506
RM0,9	0,88	E60504509
RM1,3	1,25	E60504513
RM1,5	1,50	E60504515

See functional characteristics on tables M010.20.18 ÷ M010.20.21
 The actual pump displacements can change $\pm 5\%$ of nominal values.

5: Integral components (See section M010.20)

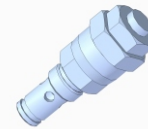


5.1: Built-in valve for cavity 0:

VUC10 is the basic check valve and it's normally mounted in cavity 0.
If the check valve is not required choose L plug.

PPC code	Description	Max flow (l/min)	Max pressure (bar)	Hydraulic symbol	Spare valve code
JM	5/8-18 UNF check valve	15	350		VUC10
ML	Plug L 5/8-18 UNF	-	-		N70200008

5.2: Relief valves code / setting for cavity 1 / 4:



Relief valves are of direct acting type and normally supplied with screw adjustment. Hand wheel and sealing devices are available on request, too.

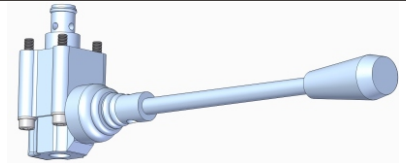
PPC code	Description	Max flow (l/min)	Working range (bar)	Spare valve code
DM/60	Direct acting relief valve	20	5 ÷ 60	VMDC15L1
DM/180	Direct acting relief valve	20	10 ÷ 180	VMDC15A1
DM/280	Direct acting relief valve	20	35 ÷ 280	VMDC15B1
XM	No relief valve, plug	-	-	N70200010

5.3: Built-in plugs for cavities 2 / 3 in MB and M4 central manifolds:



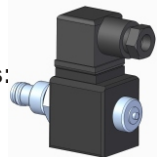
PPC code	Description	Max flow (l/min)	Max pressure (bar)	Hydraulic symbol	Mounting cavity	Spare plug code
G	Plug G	-	-		2 - 3 - 4	E70100005
H	Plug H: 1/4" BSPP outlet port	-	-		2 - 3 - 4	E70100003
L	Plug L	-	-		0 - 2 - 3 - 4	E70100004
P	Plug P	-	-		0 - 2 - 3 - 4	E70100006
N	Plug N	-	-		0 - 2 - 3 - 4	E70100002

5.3: Built-in components for cavities 2 / 3 in MB and M4 central manifolds:








PPC code	Description	Max flow (l/min)	Max pressure (bar)	Hydraulic symbol	Mounting cavity
E	CM04L: lever operated valve	25	300		2
EM	CM04M: lever operated valve with micro-switch	25	300		2
J	VUC10: 5/8-18 UNF check valve	15	300		0 - 2 - 3
R*	VCF6: 3/4-16 UNF adjustable pressure compensated uni-directional flow control	1÷18,5	350		3
S	CSB04C: 3/4-16 UNF adjustable not compensated bi-directional flow control	15	300		2 - 3
U	PMC02L: 3/4-16 UNF 2cc/stroke single acting hand pump	-	200		2
V***	VMDC20/***: 3/4-16 UNF relief valve (where *** is the max settable pressure)	20	350		3
Z	CPE04P: 2 way / 2 position hand operated NC double locking valve	25	300		2 - 3

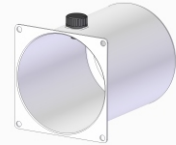
5.4: Built-in solenoid and proportional valves for cavities 2 / 3 in MB and M4 central manifolds:



PPC code	Description	Flow (l/min)	Pressure (bar)	Standard coils and voltages	Hydraulic symbol	Mounting cavity
A	MSV30: 2 way / 2 position solenoid normally closed valve	20	210	12, 24 DC 115/50, 230/50AC		2
B	MSV30E: 2 way / 2 position solenoid normally closed valve with emergency	20	210	12, 24 DC 115/50 AC, 230/50 AC		2
C	MSV31E: 2 way / 2 position solenoid normally open valve with emergency	20	210	12, 24 DC 115/50 AC, 230/50 AC		2
D	MDV30E: 2 way / 2 position solenoid normally closed double locking valve	20	210	12, 24 DC 115/50 AC, 230/50 AC		2 - 3
P***	VMPC2: direct acting proportional relief valve	2	350	12, 24DC		3
T***	CSPC15: proportional flow control valve	15	210	12, 24DC		2
4V**	MSV4V: direct operated 4/3 or 4/2 directional spool solenoid valve	20	210	12, 24 DC 115/50 AC, 230/50 AC		2

5.5: Built-in valve for cavity 2/3 for MR central manifold:					
					
PPC code	Description	Max flow (l/min)	Max pressure (bar)	Hydraulic symbol	Spare valve code
JP	5/8-18 UNF P.O. check valve	15	350		VUC10C
JPD	5/8-18 UNF P.O. check valve with valve for differential area cylinder	15	350		VUC10C+VUPD
MG	Plug G 5/8-18 UNF	-	-		N70200007

5.6: Return line pressure compensated fixed flow control valves for cavities 5 / 6 / 7:				
				
Please specify for each cavity the required nominal flow control adjustment: (l/min). Effective flow can be different depending on working conditions. See tables M010.20.05 and M010.20.06.				
PPC code	Description	Spare valve code	Max flow (l/min)/ pressure (bar)	Mounting cavity
0 / 1 / 2 / 3 / 4 / 5 / 6 / 8 / 10 / 12 / 15	BSPP 1/4"	VSC01*	15 / 250	5 - 6
0 / 1 / 2 / 3 / 4 / 5 / 6 / 8 / 10 / 12 / 15	Ø12,7 with o-ring	VSC04**	15 / 250	7
X	No flow control	-	-	-

6: Oil tanks (See section M010.50)	
	

Choose tank volume, type and mounting style.

PPC code	Description	Spare tank code, inclusive of plugs and filler/breather
Steel tanks		
1,2A / 1,2AV	1,2l, cylindrical, horizontal / vertical mounting	E50403002
1,7B / 1,7BV	1,7l, cylindrical, horizontal / vertical mounting	E50404004

Plastic tanks		
0,4L / 0,4LV	0,4l, cylindrical, horizontal / vertical mounting	H50403001
0,7L / 0,7LV	0,7l, cylindrical, horizontal / vertical mounting	H50403002
1,2L / 1,2LV	1,2l, cylindrical, horizontal / vertical mounting	H50403003

Filler / breather port and drain plug, standard suction filter, inlet pipe, outlet pipe, stainless steel clamp, depending on code, are included in the standard assembly when ordering assembled PPM.

When ordering spare tanks, only basic plugs and filler / breather are included;

fixing kits, piping and filters are to be ordered separately. When choosing units without tank, specify X in PPM code. In this case the inlet - outlet piping kit and filter are not supplied. A steel tank adapter to be welded on custom made reservoirs can be supplied; in this case specify code F80000012 in place of tank code.

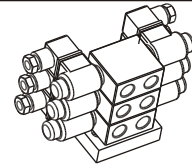
7: External manifolds and additional components

Many options and additional components are available to customise PPC units for any application. They must be added at the end of PPC code. The three different manifold fixing systems (2xM8, 3xM6) cannot be mixed among them.


7.1: Modular external manifolds (See section M010.30) 2 x M8 tie-rods fixing system

PPC & spare parts code	Description	See technical table
PM09M	Hand pump modular manifold	M010.30.03

7.2: Stackable external directional control valves (See section M010.30) 3 x M6 tie-rods fixing system



PPC & spare parts code	Description	See technical table
M50403007	Mounting manifold for stackable directional directional valves	M010.30.01
SD01****	Stackable directional solenoid valves	

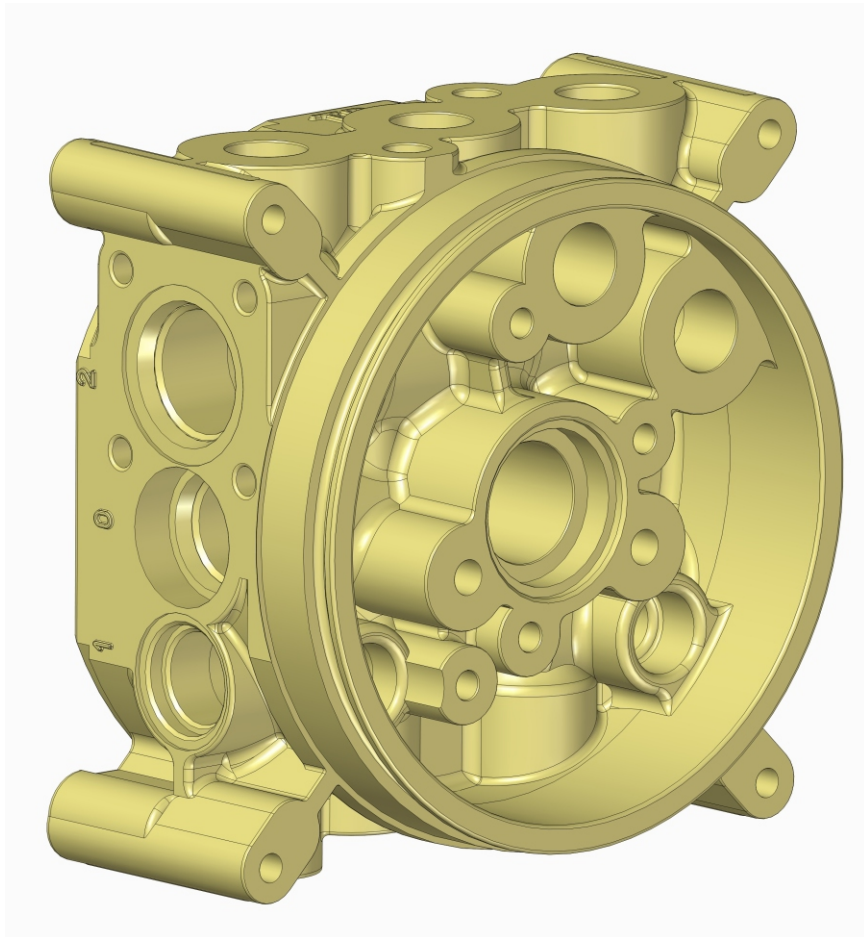
7.4: Additional components and accessories (See section M010.30)		
		
PPC & spare parts code	Description	See technical table
E60543003	Steel foot mounting support	M010.30.14
EM9001C	90° gauge isolator F-F	M010.30.14
EMIL01C	In line gauge isolator F-F	
MIR63***	Pressure gauge Ø 63	
F401***	Pressure switch 1/4"BSPP	
BFCSAE0802	In line mounting 3/4-16 UNF manifold 3/8"BSPP	
BFCSAE0801	In line mounting 3/4-16 UNF manifold 1/4"BSPP	

COMMISSIONING BRIEF INFORMATION

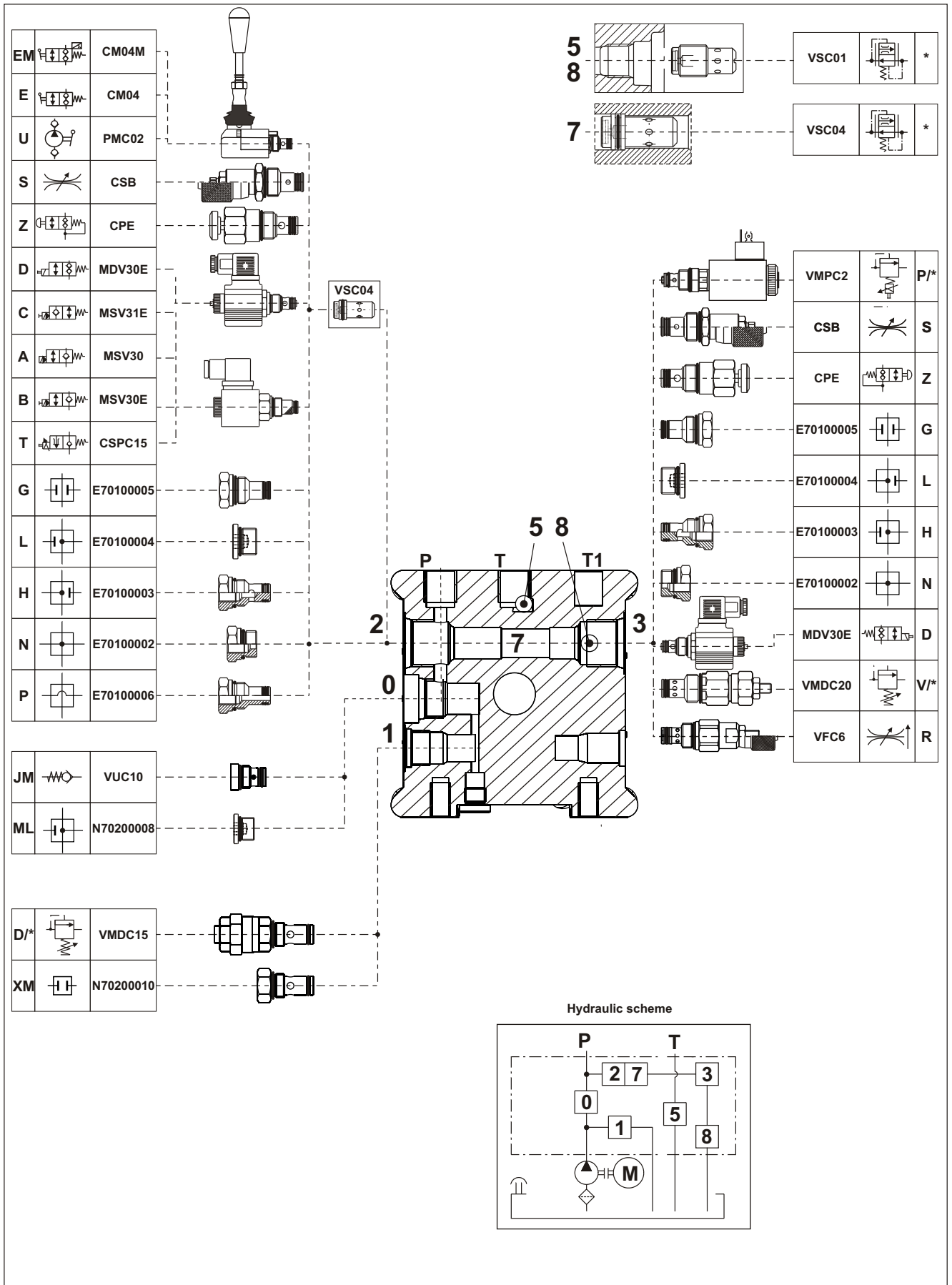
Installation position	Any
Ambient temperature	-15 ÷ +50°C
Hydraulic fluid	Hydraulic oil ISO 6743/4 / DIN 51519, viscosity 15 ÷ 100 mm ² /s ISO 3448 (recommended viscosity 22÷46 mm ² /s)
Fluid temperature	-10° ÷ +70°C unless otherwise stated
Contamination degree	Must be higher than class 18/14 ISO 4406
Instructions	<ul style="list-style-type: none"> - After having connected the electric motor and the hydraulic piping, check the pump rotation with short bursts of 1÷2 sec. For standard pumps motor rotation must be clockwise looking from motor fan side. Never reverse rotation. - Bleed the hydraulic installation and flush the circuit in order to remove eventual impurities - Check the hydraulic fluid level and, if necessary, fill-up to maximum. - To ensure proper working and long life, check the hydraulic fluid and replace it after first 100h and then every 3000h operation and/or at least every year.
Threads recommended tightening torque	M5: 4÷5,5 Nm, M6: 8÷10 Nm, M8: 16÷20 Nm, M8 pump: 21÷25 Nm, 1/4" BSPP: 6÷20 Nm, 3/4-16 UNF valves: 15÷40 Nm, 5/8-18 UNF valves: 10÷30 Nm, M14x1 relief valve: 20 Nm, 1/4" BSPP plugs for tanks: 3Nm, 3/8" BSPP plugs for tanks: 4Nm.

Section 10

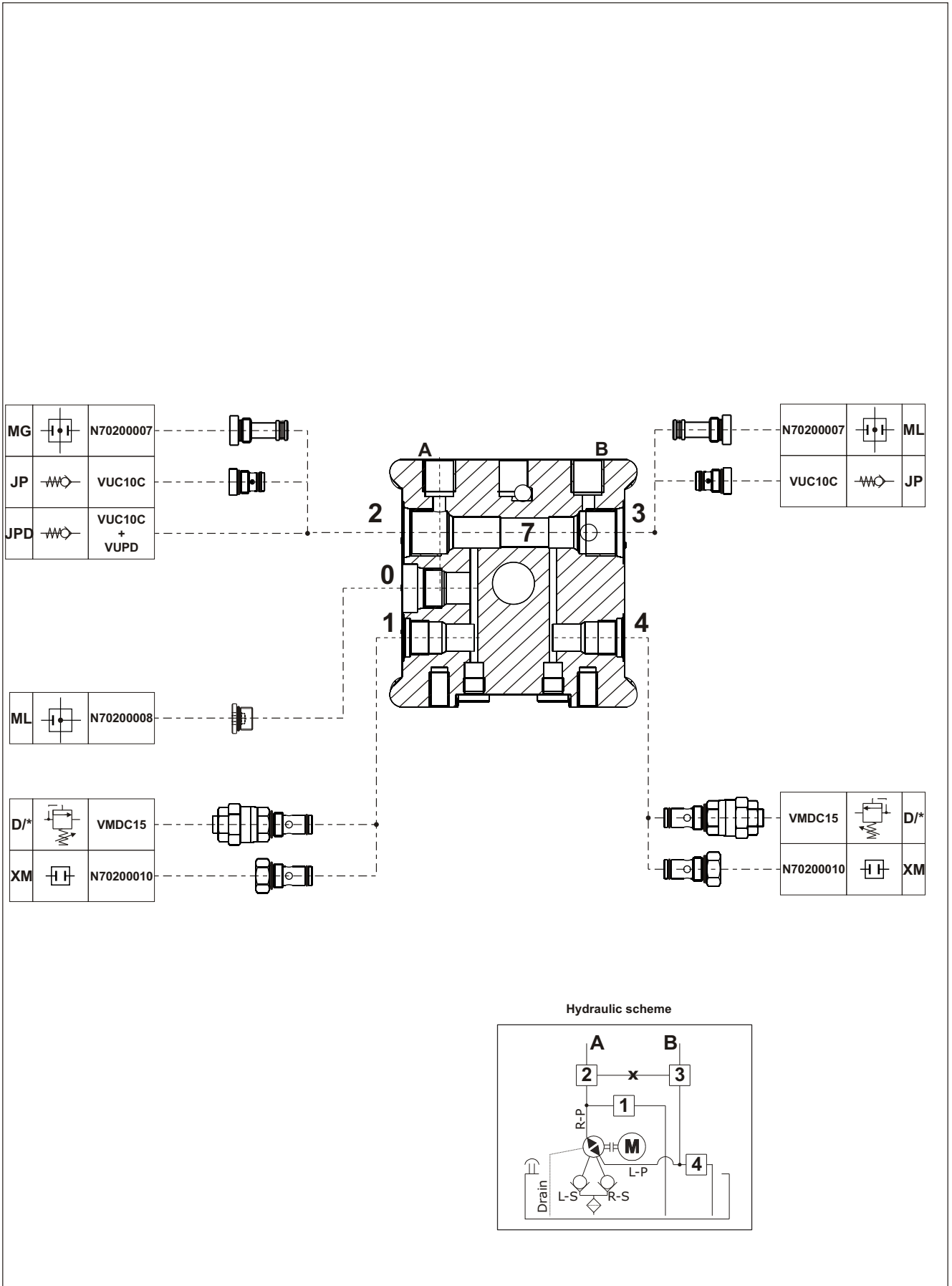
UNIVERSAL CENTRAL MANIFOLD



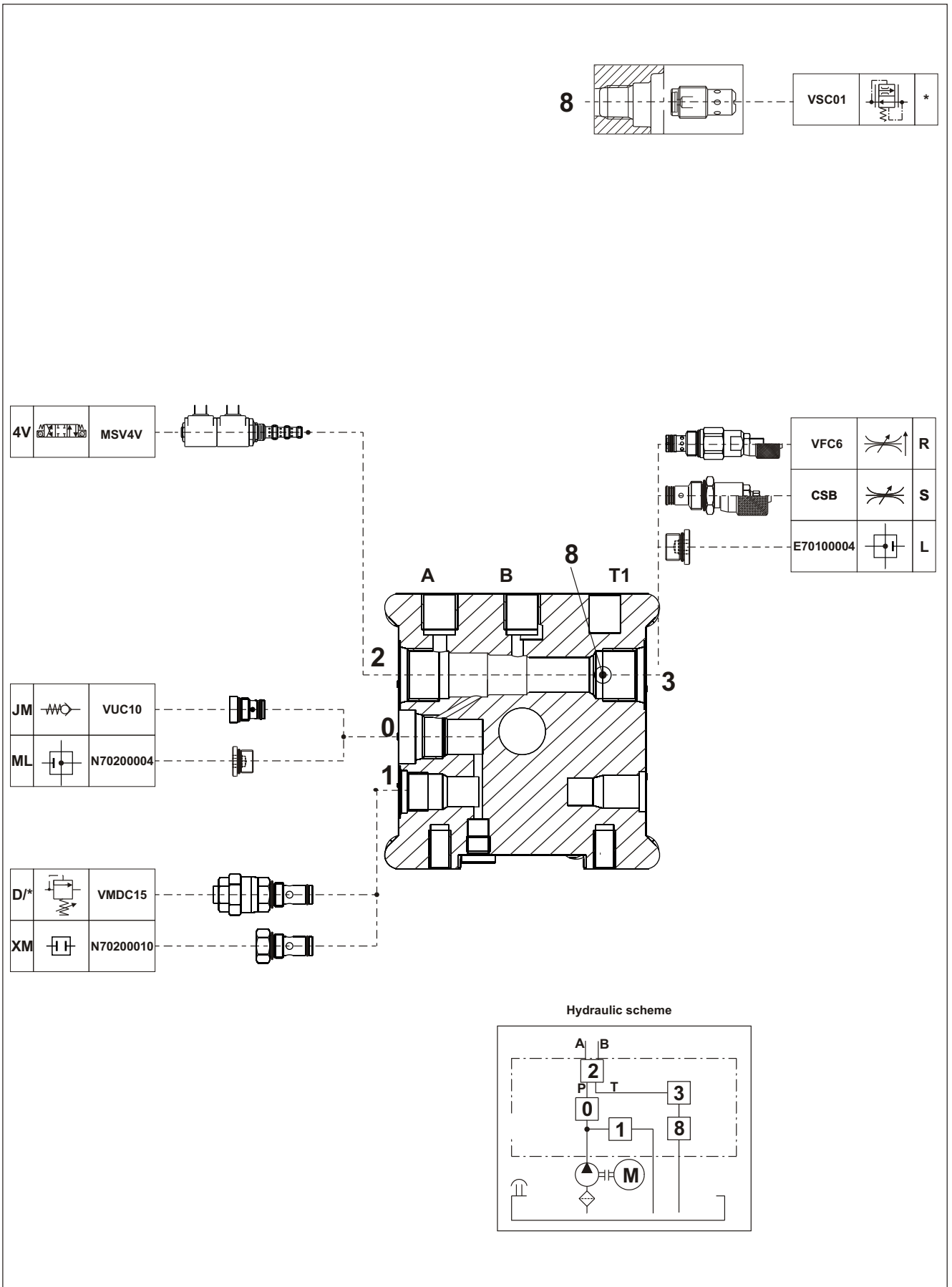
Micro central manifold "MB" execution valve combinations



Micro central manifold "MR" execution valve combinations

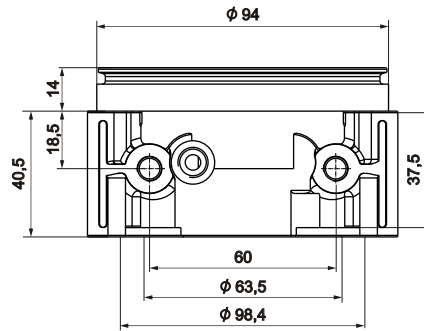


Micro central manifold "M4" execution valve combinations

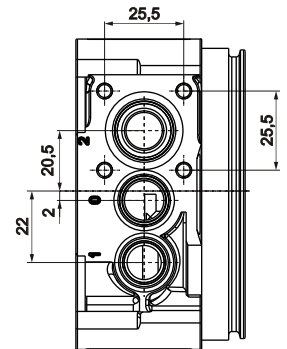
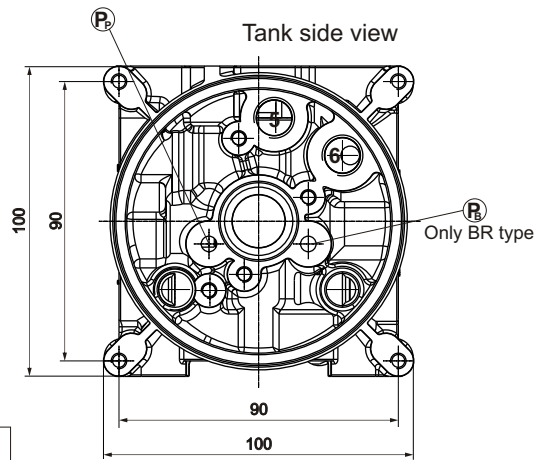
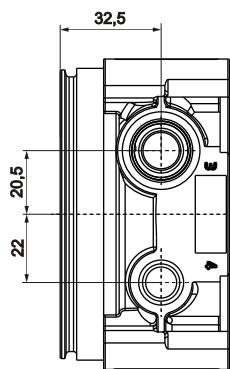


Micro central manifolds overall dimensions

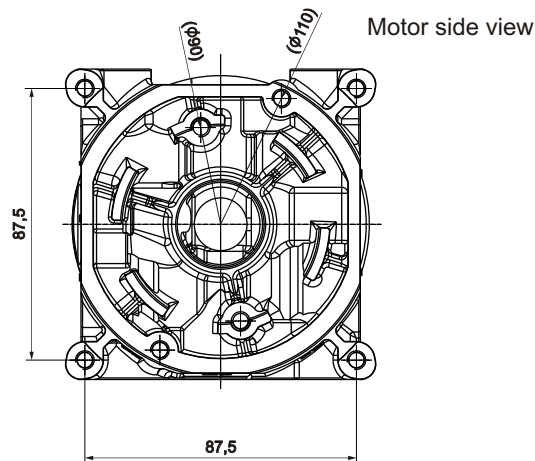
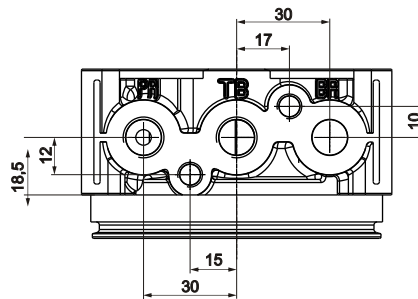
Type	Spare part code
MB	E60102031
MR	E60102032
M4	E60102033



Weight: 0,60 kg

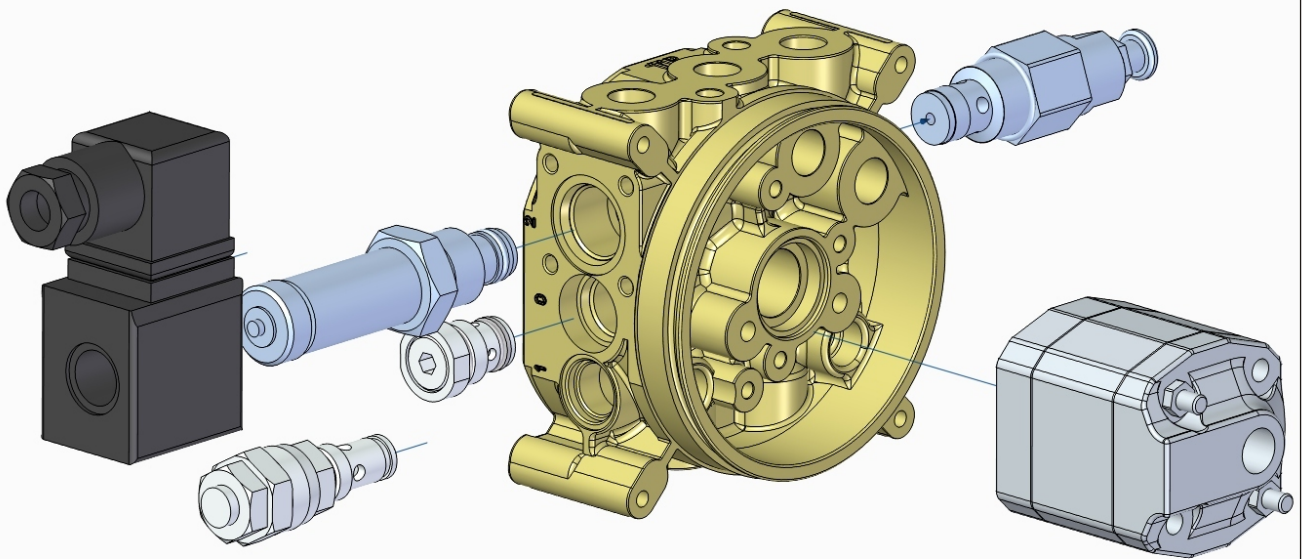


Cavity	Threads
1, 4 (MR type)	M14x1 (relief valve)
0	5/8-18 UNF
2, 3	3/4-16 UNF 5/8-18 UNF (MR type)
P-T, A-B, T1 (threaded on request only)	1/4" BSPP
5, 6	1/4" BSPP
External manifold attachment	2 pcs M8 tie-rods
Tanks attachment	4 pcs M5x10
Integral AC Motors attachment	4 pcs M6x20
DC Motors attachment	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

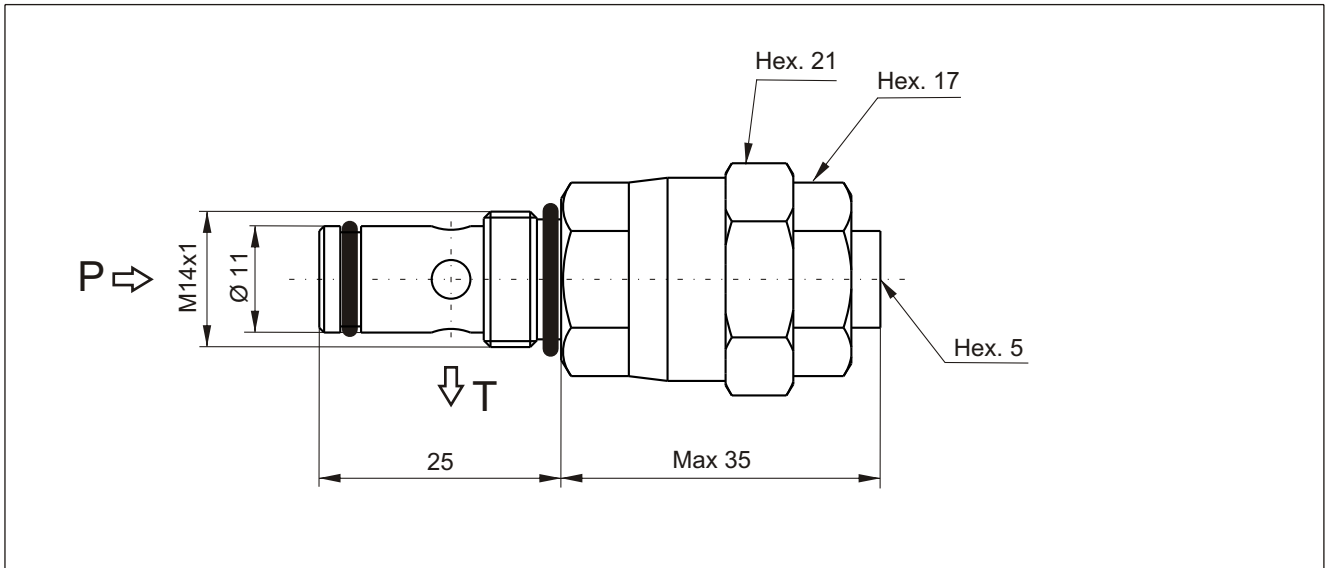


Section 20

INTEGRAL COMPONENTS AND PUMPS



VMDC15 - Direct acting main relief valve



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)

PPC assembly code field

DM/*♦**

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

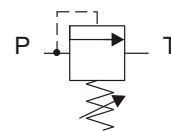
where ♦ stands for option other than the standard one.

Mounting cavities

0	1
2	3 4
5	6 7

Note: cavity 4 only for MR type.

Hydraulic symbol

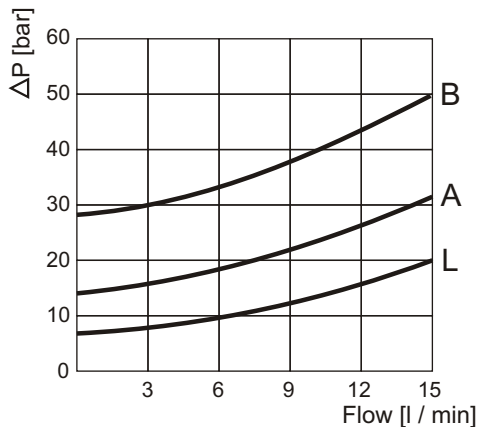


Main features

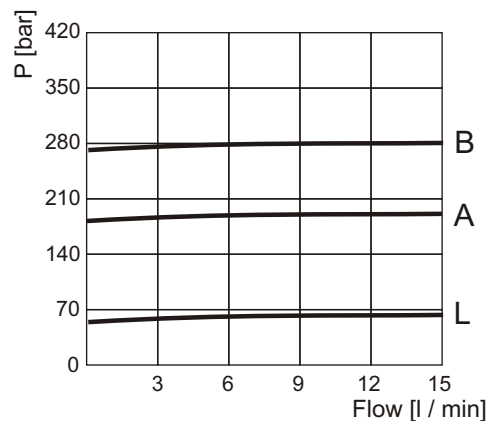
Max pressure	350 bar
Max flow	15 l/min
Weight	0,06 kg

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

Minimum setting pressure

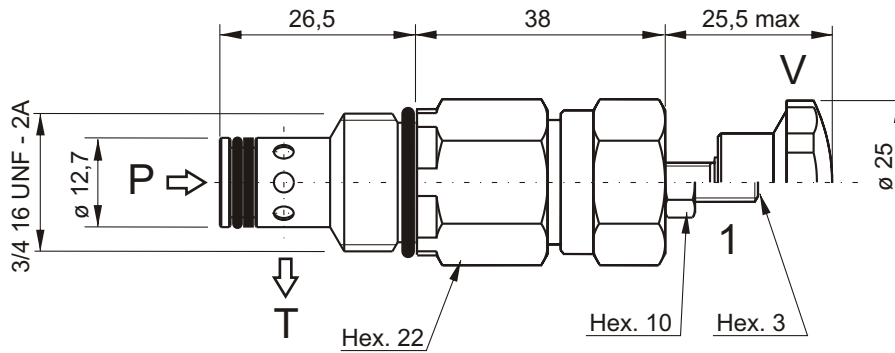


Pressure vs flow



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

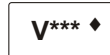
VMDC20 - Direct acting relief valve



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

PPC assembly code field



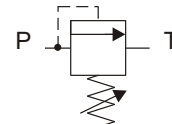
where *** stands for max setting pressure [bar]. Ex. V250

where ♦ stands for adjustment other than the standard one

Mounting cavities

0	1
2	3 4
5	6 7

Hydraulic symbol

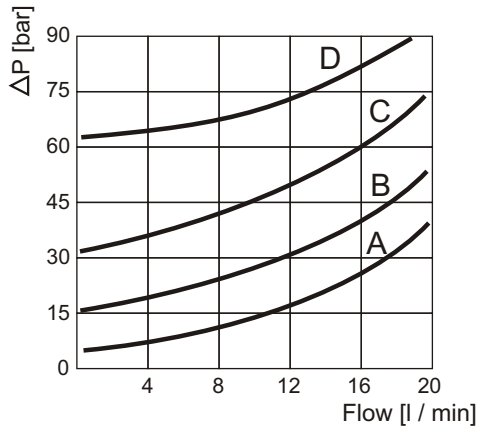


Main features

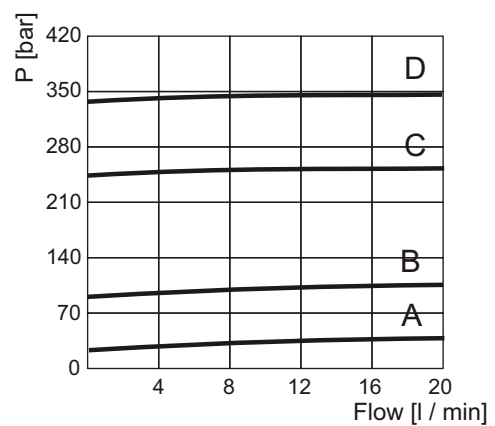
Max pressure	350 bar
Max flow	20 l/min
Weight	0,14 kg

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

Minimum setting pressure

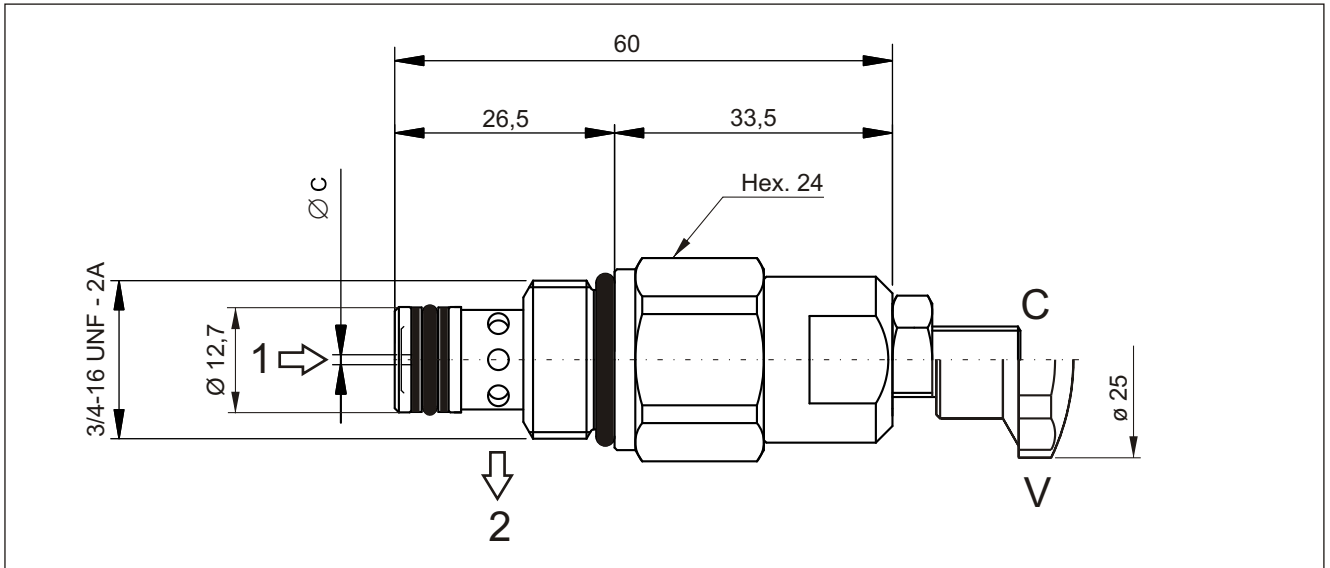


Pressure vs flow



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



Spare part code

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

PPC assembly code field

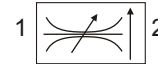
R *

where * stands for nominal dimension

Mounting cavities

0	1
2	3 4
5	6 7

Hydraulic symbol



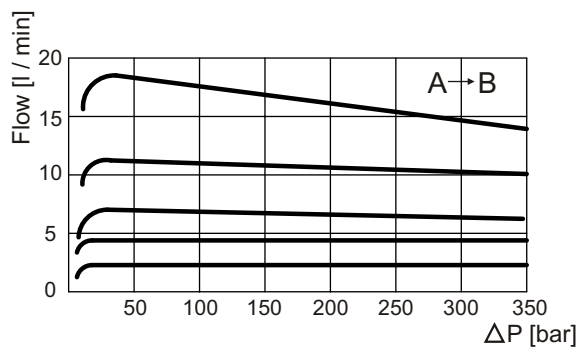
Main features

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

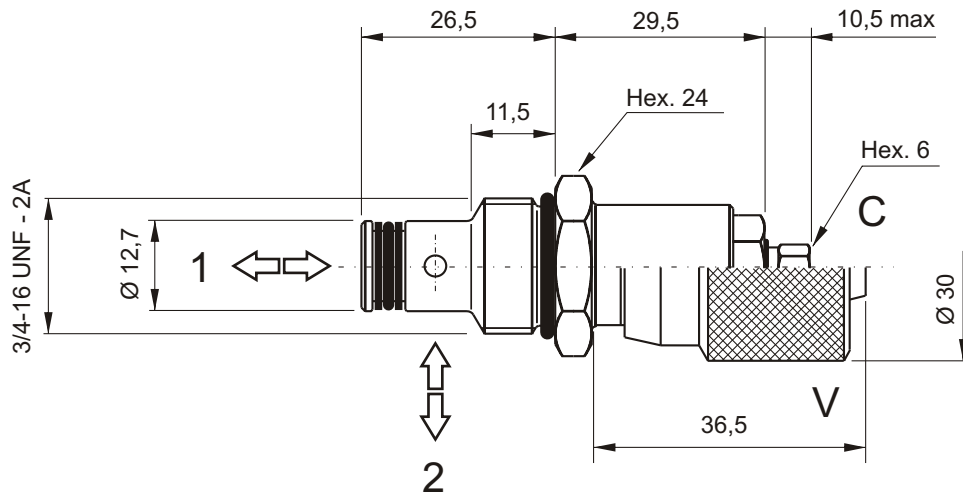
Pressure drop diagram

Nominal dimension	Ø 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



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



Spare part code

CSB	Flow control valve
04	Nominal size: 04 = 3/4-16 UNF
C	Adjustment: C = screw (std) V = handwheel

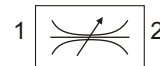
PPC assembly code field

S

Mounting cavities

0	1
2	3 4
5	6 7

Hydraulic symbol

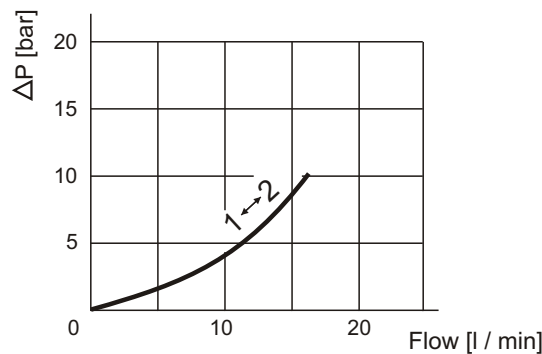


Main features

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

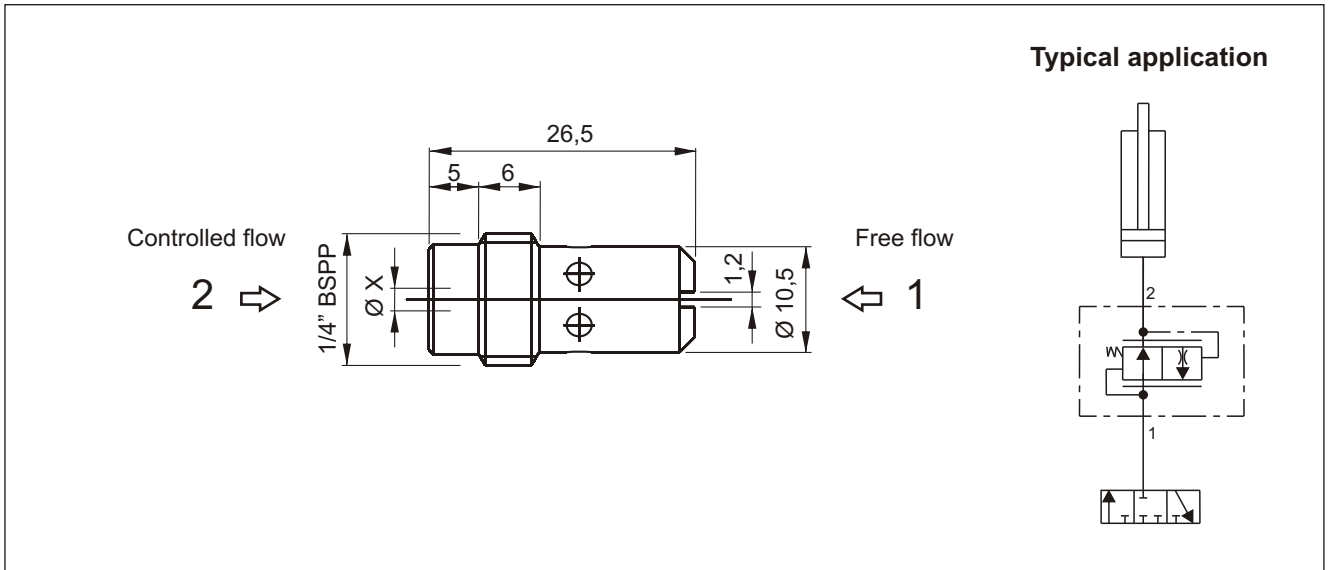
Recommended tightening torque: 25 Nm
 Recommended filtration settings: 25 + 50 μ
 Oil temperature: -30 + + 80 °C

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



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

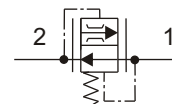
PPC assembly code field

Nominal controlled flow [l/min] (01)
Ex. 5(01)

Mounting cavities

0	1
2	3 4
5	6 7

Hydraulic symbol



Main features

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

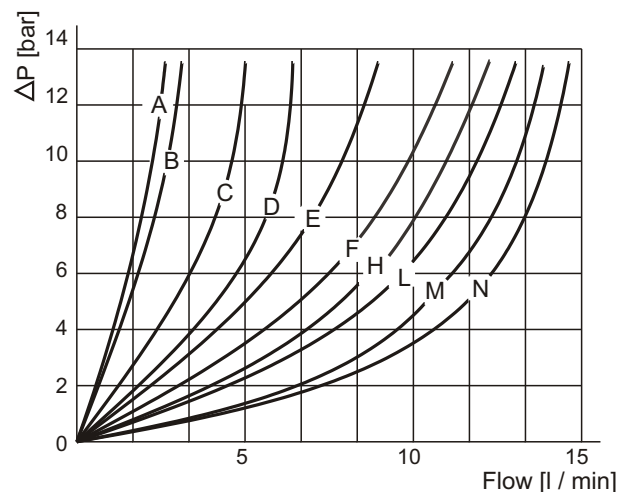
Recommended tightening torque: 6 Nm
Recommended filtration settings: 25 + 50 µ
Oil temperature: -30 + + 80 °C

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

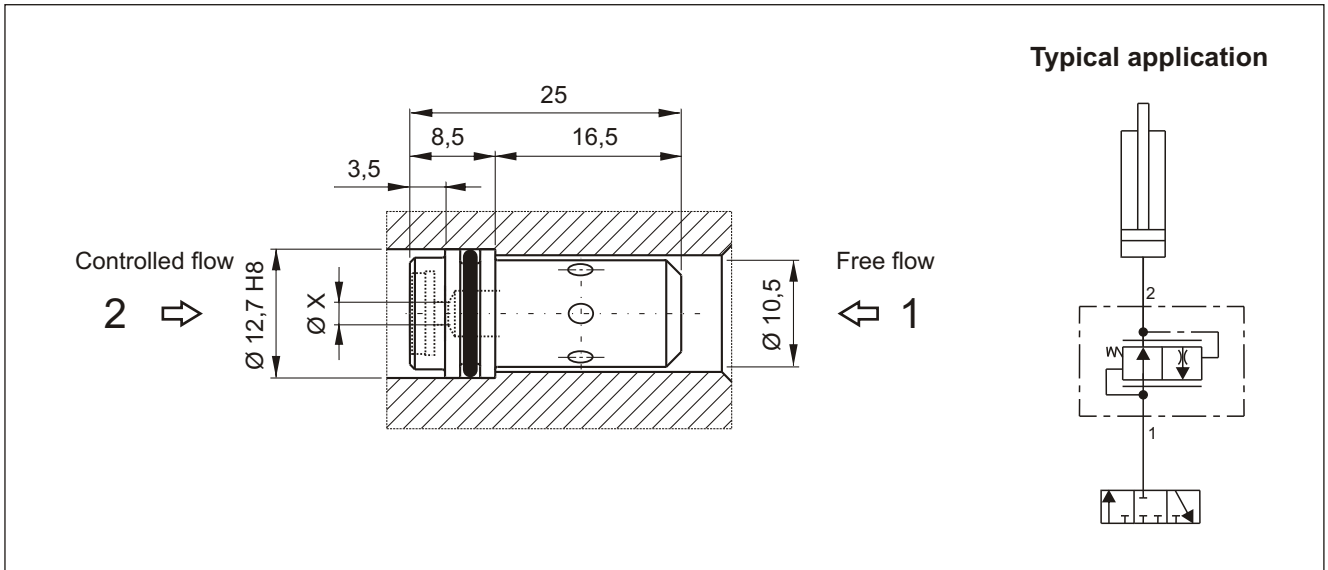
Note: nominal controlled flow, measured at 100 bar with an oil viscosity of 46 cSt at 40 °C, are to be taken as general reference values and must be tested on the field.

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



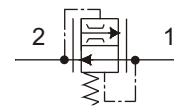
Spare part code

- VSC** — Flow control valve pressure compensated
- 04** — Nominal size: 04
- 02** — Controlled flow: 00, 01, 02, 03, 04, 05, 06, 08, 10, 12, 15

PPC assembly code field

- Nominal controlled flow [l/min] (04)**
 Ex. 5(04)
- Mounting cavities**
- | | | |
|---|---|---|
| 0 | 1 | |
| 2 | 3 | 4 |
| 5 | 6 | 7 |

Hydraulic symbol



Main features

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

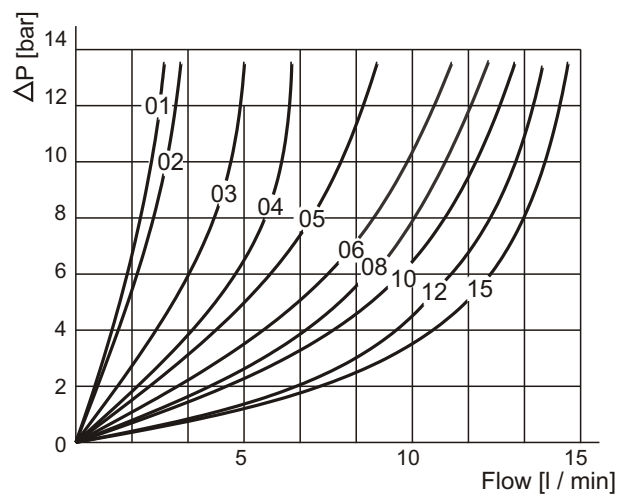
Recommended filtration settings: 25 + 50 μ
 Oil temperature: -30 + + 80 °C

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

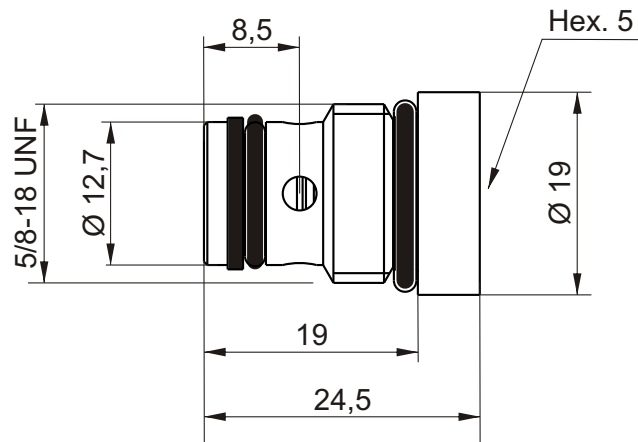
Note: nominal controlled flow, measured at 100 bar with an oil viscosity of 46 cSt at 50 °C, are to be taken as general reference values and must be tested on the field

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

VUC10 - Basic check valve



Spare part code

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

PPC assembly code field

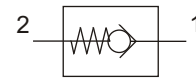
JM *

where * stands for optional pressure port

Mounting cavities

0	1
2	3 4
5	6 7

Hydraulic symbol

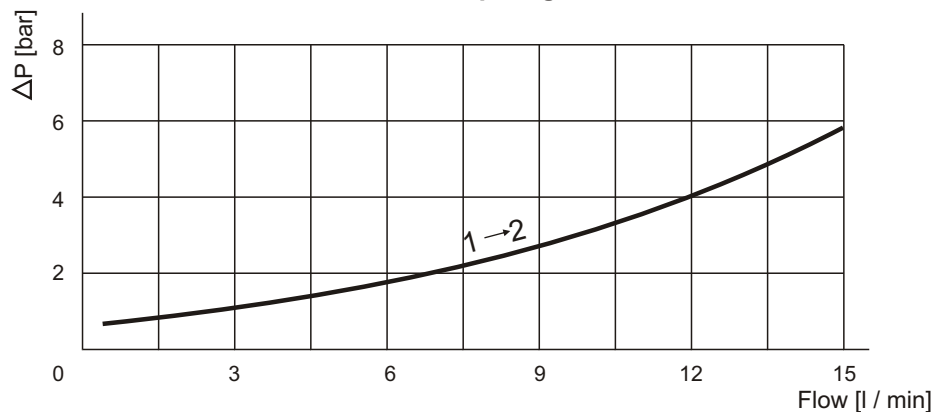


Main features

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

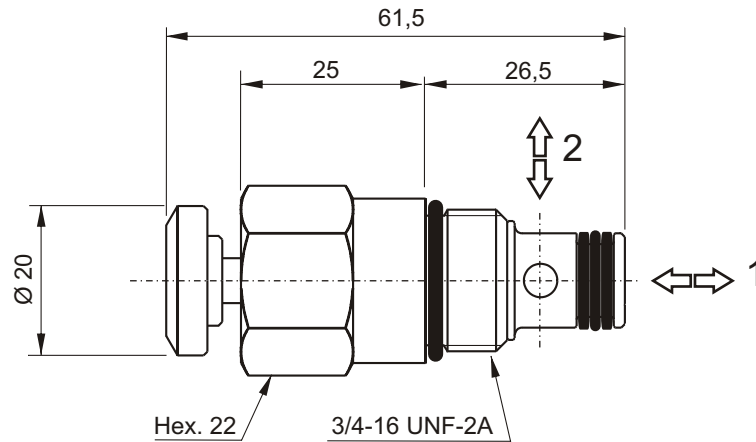
Recommended tightening torque: 25 Nm
 Recommended filtration settings: 25 ÷ 50 µ
 Oil temperature: -30 ÷ + 80 °C

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



Spare part code

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

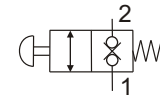
PPC assembly code field

Z

Mounting cavities

0	1
2	3 4
5	6 7

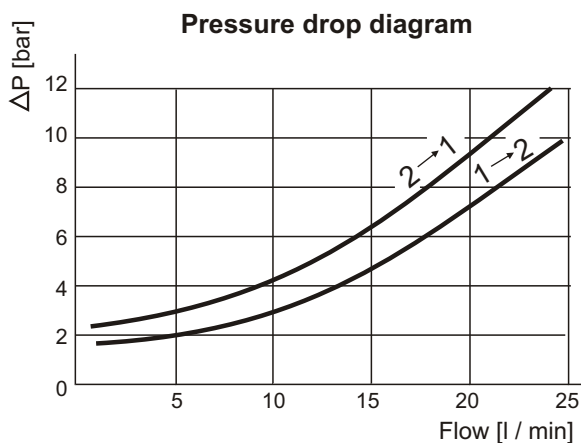
Hydraulic symbol



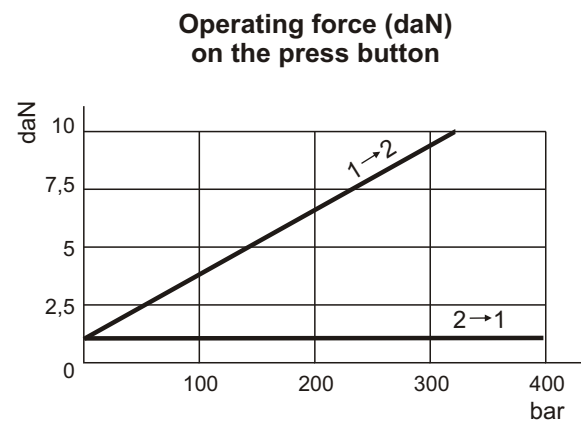
Main features

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

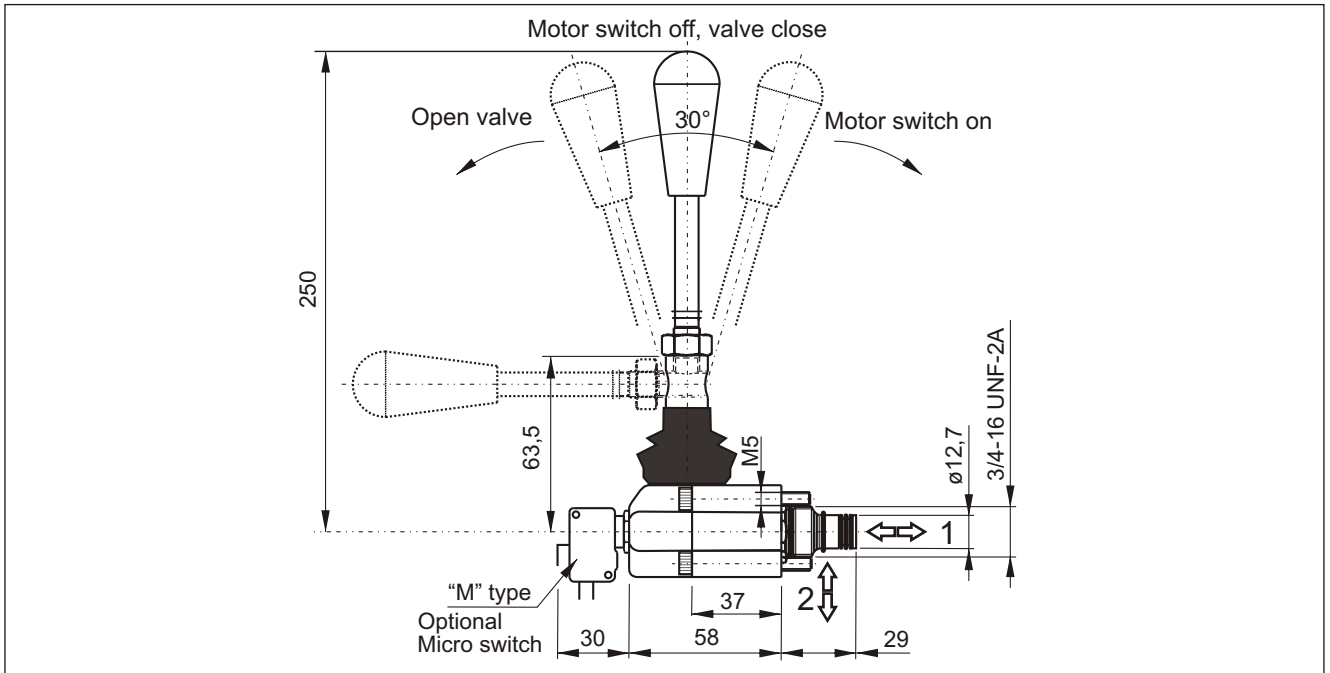
Recommended tightening torque: 25 Nm
 Recommended filtration settings: 25 \pm 50 μ
 Oil temperature: -30 \pm + 80 $^{\circ}$ C



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



CM - Manual lever valve



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

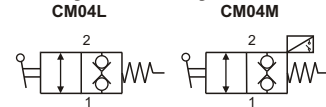
PPC assembly code field

E (CM04L)
EM (CM04M)

Mounting cavities

0	1
2	3 4
5	6 7

Hydraulic symbol

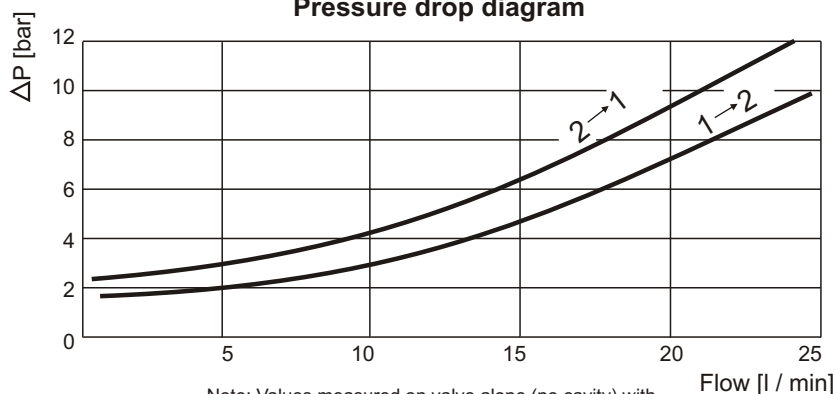


Main features

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

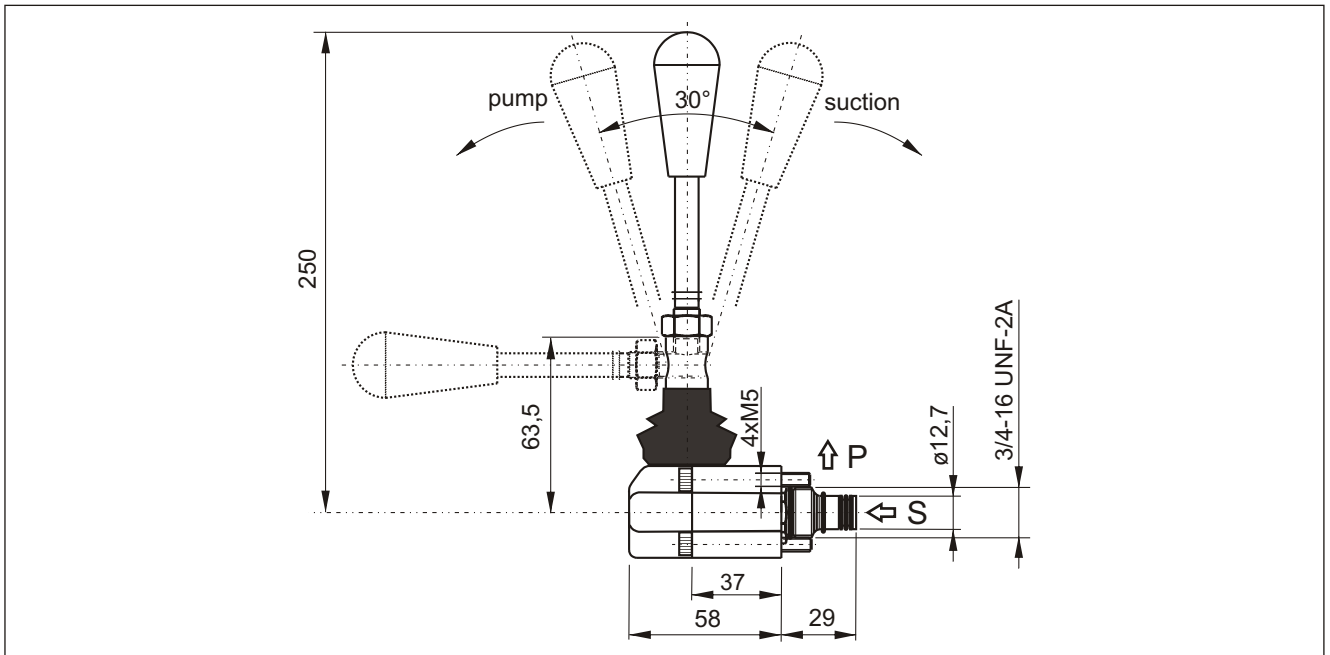
Fixing bolts: 4x M5x45 (tightening torque: 5 Nm)
 Recommended cartridge tightening torque: 20 Nm
 Recommended filtration settings: 25 ± 50 μ
 Oil temperature: -30 ± + 80 °C

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



Spare part code

- PMC** — Hand pump
- 02** — Nominal size:
02 = 2 cc/stroke
- L** — Type:
L = lever (std)

PPC assembly code field

U

Mounting cavities

0	1
2	3 4
5	6 7

Hydraulic symbol

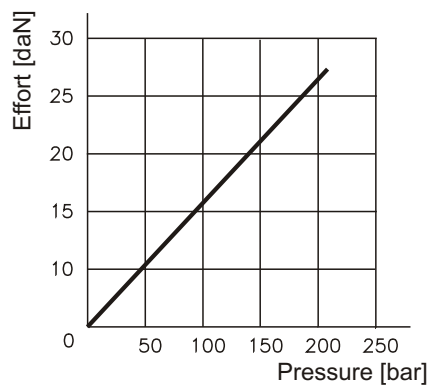


Main features

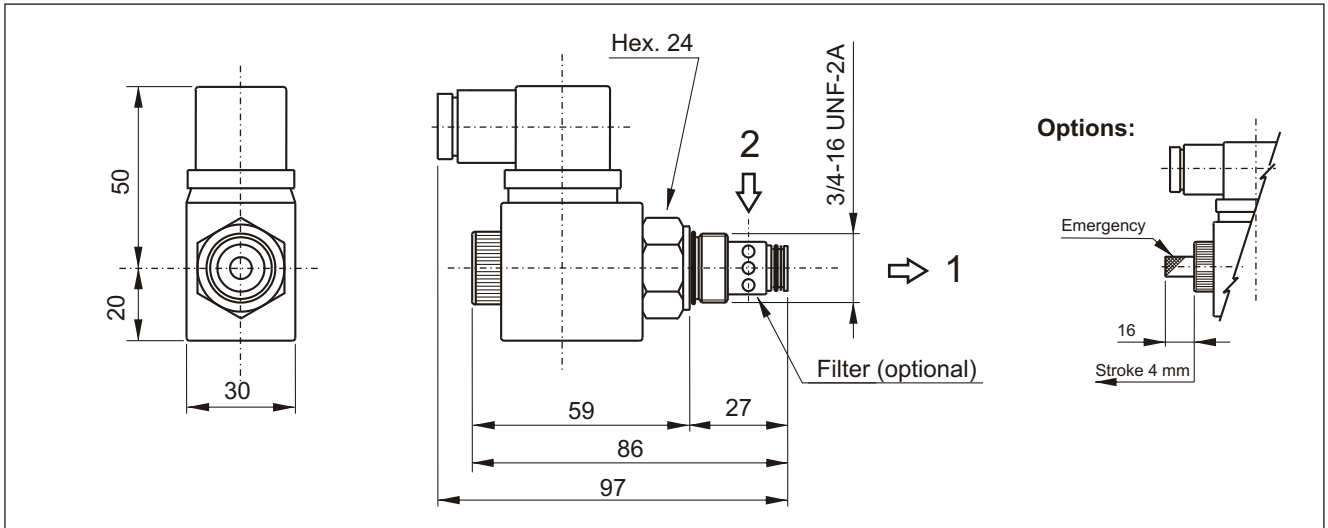
Max pressure	200 bar
Max flow	-
Weight	0,34 Kg

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

Effort (daN) operating on the lever end



MSV - Pilot operated two-way single locking solenoid valve



Spare part code

- MSV** — Two-way pilot operated solenoid valve
- 30** — Operation:
30 = normally closed
31 = normally open
- 0** — Options:
0 = no options (std)
E = emergency
- 0000** — Supply voltage:
0000 = no coil (std)
see below table

PPC assembly code field

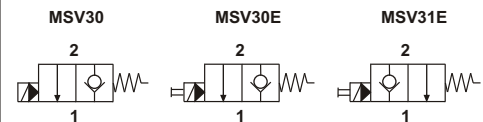
- A** (MSV30) Voltage
- B** (MSV30E) Voltage
- C** (MSV31E) Voltage

Ex: A12DC

Mounting cavities

0	1
2	3 4
5	6 7

Hydraulic symbol



Main features

Max pressure	210 bar (up to 300bar*)
Max flow	20 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)

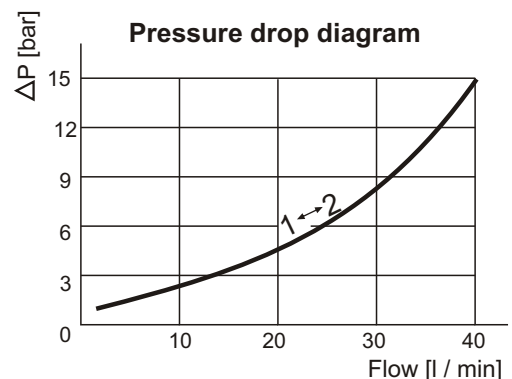
*: with M140 series coils only. See table U040.20.12 coils selection. The max flow/max pressure cannot be achieved at the same time.

Coils selection

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

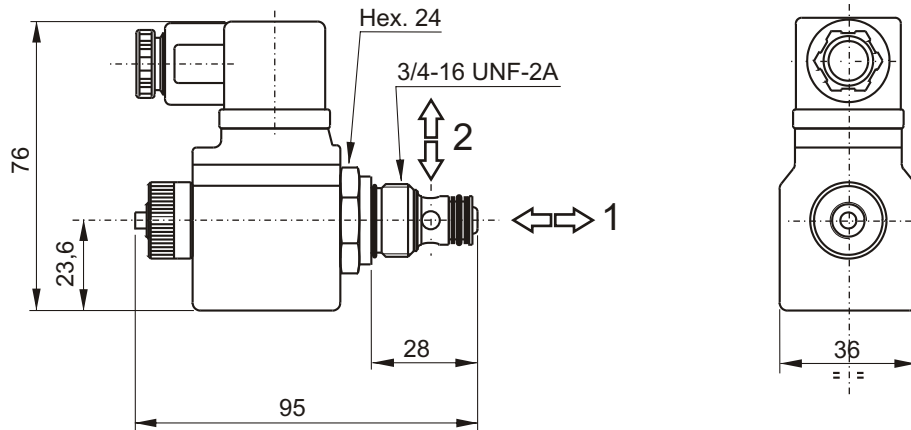
*Only for MSV30*NC valves.
Other voltages and electric connectors types (Amp Juor, flying leads,...) are available on request.
Inrush power consumption can be up to 3,5 times higher than the holding one.

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



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

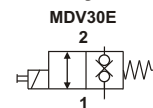
PPC assembly code field

D Voltage
Ex: D24DC

Mounting cavities

0	1
2	3 4
5	6 7

Hydraulic symbol



Main features

Max pressure	250 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 100%
Voltage required	+/- 10% nominal voltage
Normatives	EN50081-1/EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

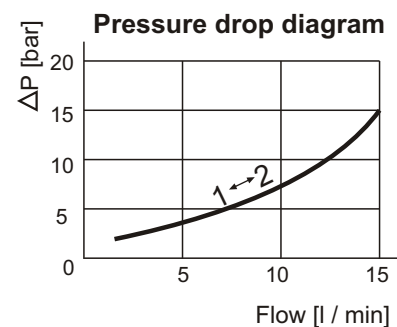
Note: On request version with max flow 25 l/min and max pressure 210 bar is available.

Coils selection

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

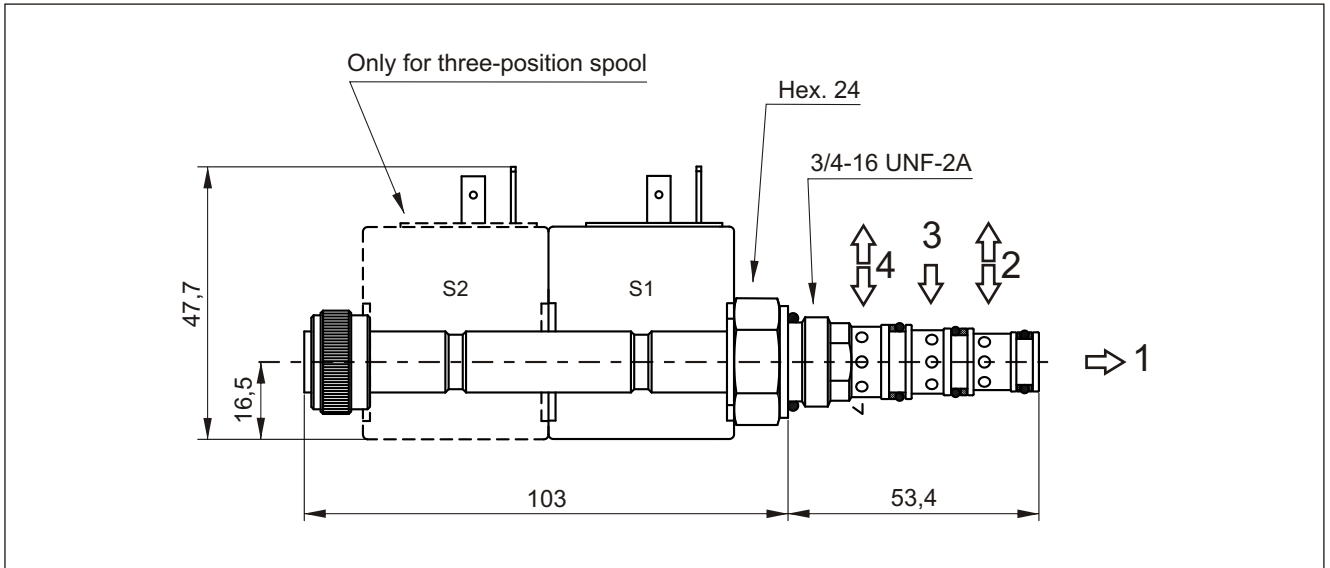
Other voltages and electric connectors types (Amp Junior, flying leads,...) available on request.
Inrush power consumption can be up to 3,5 times higher than the holding one.

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



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

PPC assembly code field

4VA2 Voltage

Ex: 4VA2 24DC

Mounting cavities

0	1	
2	3	4
5	6	7

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

Code	4 2
	a 0 b
	3 1

Double solenoid

A2*	
B2	
C2	
E2	

Single solenoid

A11C	
-------------	--

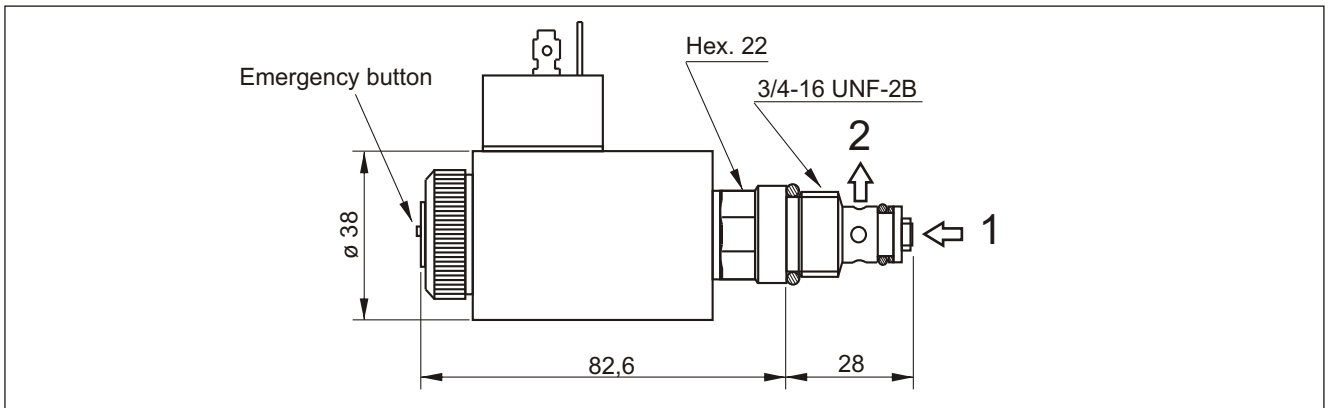
* = spools with price additional
Other spools are available on request

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.

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

VMPC2 - Proportional relief valve



Spare part code

VMPC	Direct acting proportional relief valve
2	Nominal size: 2 = 2 l/min
B	Working range: A = 2 ÷ 80 bar B = 3 ÷ 150 bar C = 4 ÷ 250 bar D = 7 ÷ 350 bar
E	Option: E = emerg. (std)
0000	Supply voltage: - 0000 = no coil - 12DC - 24DC

PPC assembly code field

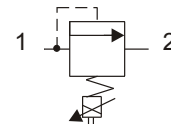
P* Voltage**

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

Mounting cavities

0	1	
2	3	4
5	6	7

Hydraulic symbol



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%
Normatives	EN50081-1/EN50082-2 (89/336 CEE electromagnetic comp.) 73/23/CEE / 96/68/CEE (low voltage)

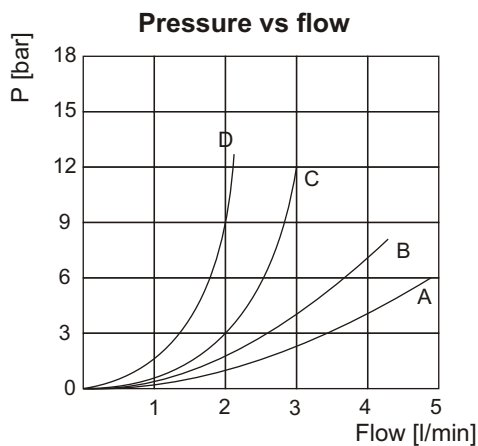
Coils selection

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

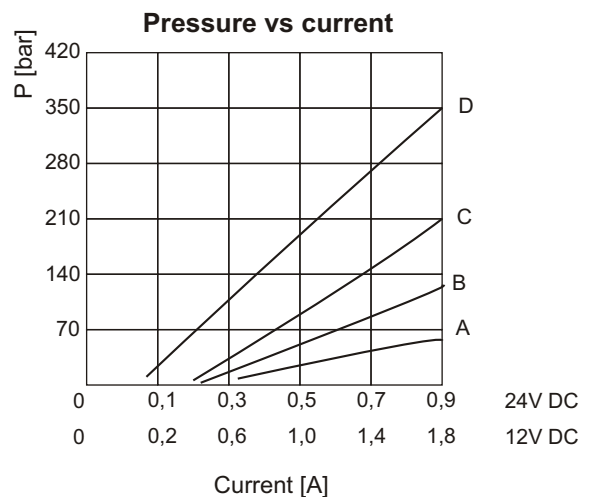
Recommended tightening torque: 30 Nm
Recommended filtration settings: 10 ÷ 25 µm
Oil temperature: -10 ÷ + 80 °C

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

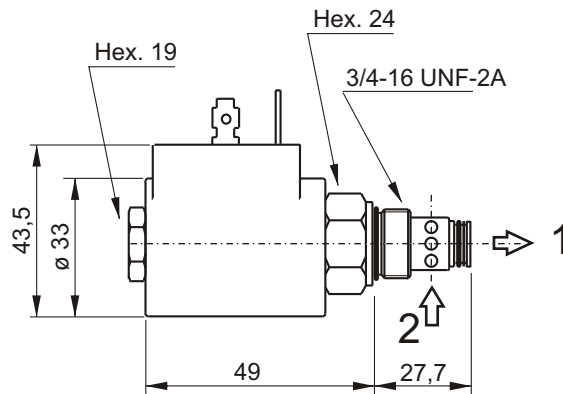
For the controller see page U040.20.16



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



CSPC15 - Proportional flow control valve



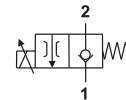
Spare part code

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

PPC assembly code field

T Voltage						
Ex: T12DC						
<table border="1"> <tr> <td>0</td> <td>1</td> </tr> <tr> <td>2</td> <td>3</td> </tr> <tr> <td>5</td> <td>6</td> </tr> </table>	0	1	2	3	5	6
0	1					
2	3					
5	6					

Hydraulic symbol



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%
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: -10 + + 80 °C

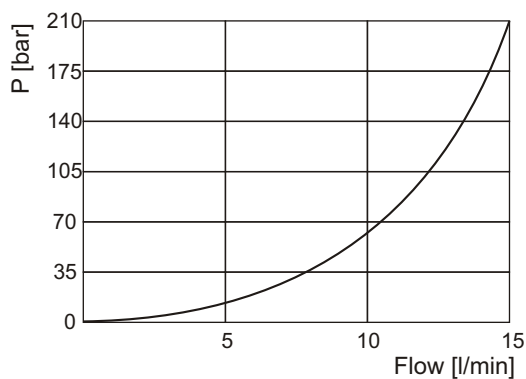
Note: Supplying current to the coil from 0 to I max (see below diagram), a proportional flow variation is obtained on port P.

For the controller see page U040.20.16

Coils selection

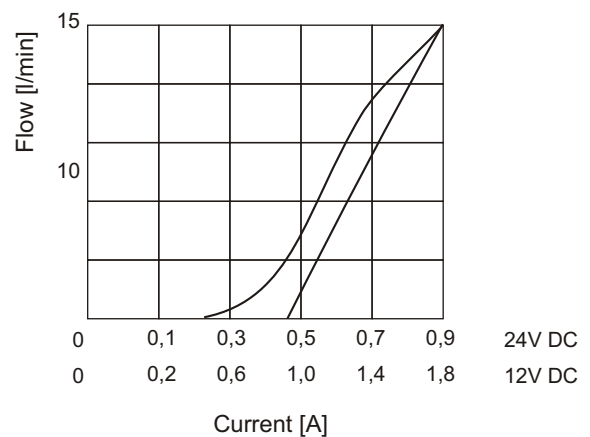
Supply voltage	Spare coil code	Spare connector code
12DC	M6306012	KA132000B1
24DC	M6306024	KA132000B1

Pressure vs flow

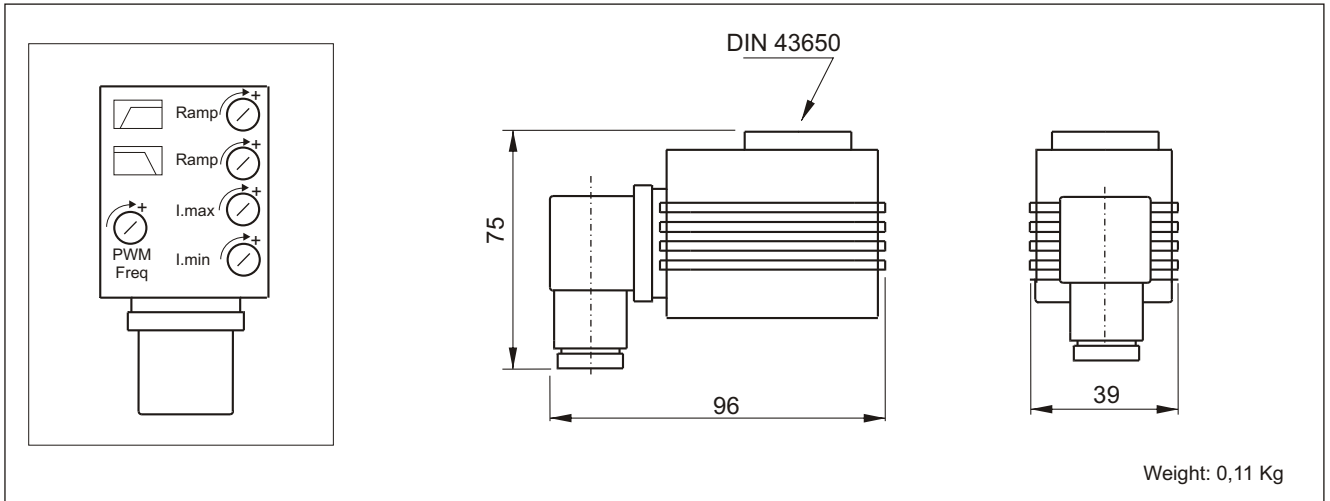


Note: Values measured on valve alone (no cavity) with an oil viscosity of 46 cSt at 50 °C. Pressure drop may change depending on fluid viscosity and temperature

Flow vs current



VPC - Electronic amplifier for proportional solenoid valves



Spare part code

VPC — Electronic amplifier for solenoid valves

00 — Options

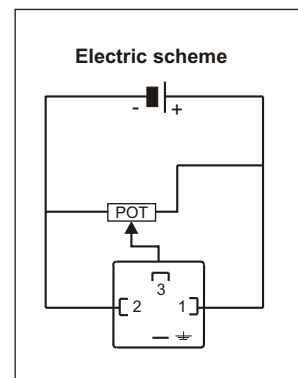
Suitable for:
 - CSPC15**** (see table U040.20.15.00)
 - VMPC2**** (see table U040.20.14.00)

Main features

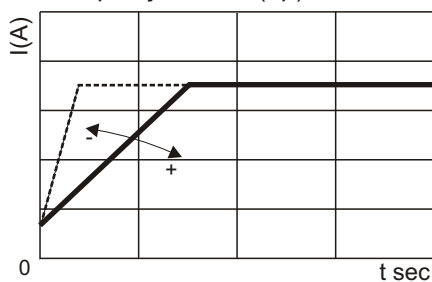
Supply voltage	12 / 24VDC
Voltage input signal range	0 - 10 V
Input impedance	100 kohm
Max current range	2,5A
Electric connection	DIN 43650-A / ISO 4400
Ramp adjustment (independent)	0 ÷ 3 s
PWM (optionally adjustable)	120 Hz (50 ÷ 400 Hz)
Working temperature	-10 ÷ +50 °C
Normatives	EN50081-1/EN50082-2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

Instruction for use:

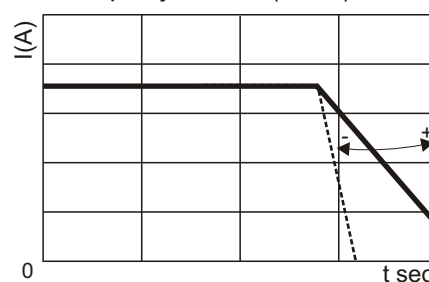
- 1) turn completely "I MIN" trimmer in counterclockwise direction;
- 2) adjust the external voltage input signal to the initial regulating (flow or pressure) value;
- 3) turn "I MIN" trimmer in clockwise direction until valve starts regulating;
- 4) adjust the external voltage input signal to the max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



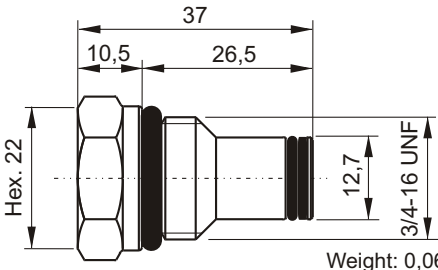

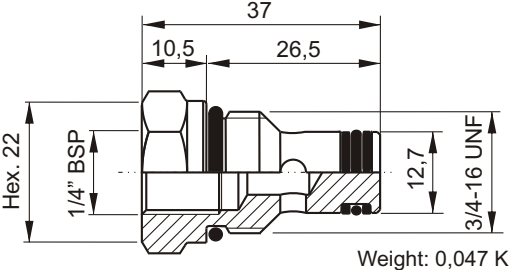
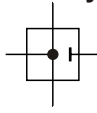
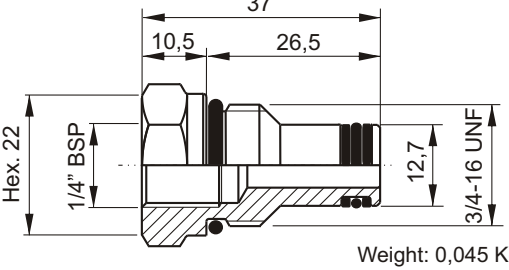
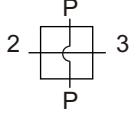
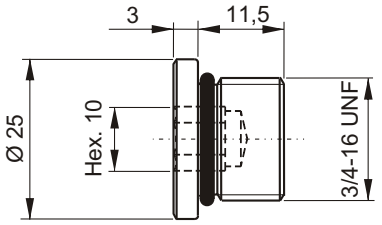
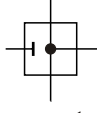
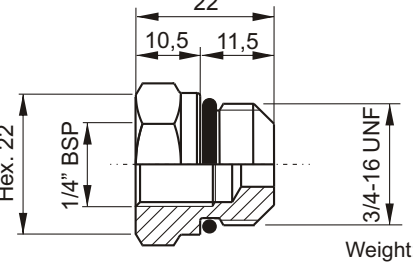
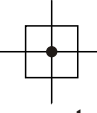
Ramp adjustment (up)



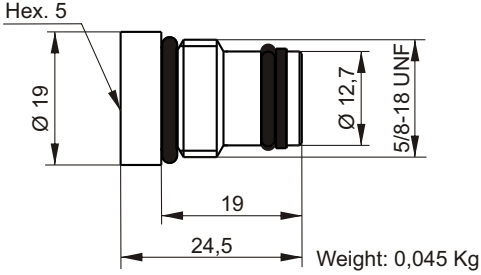

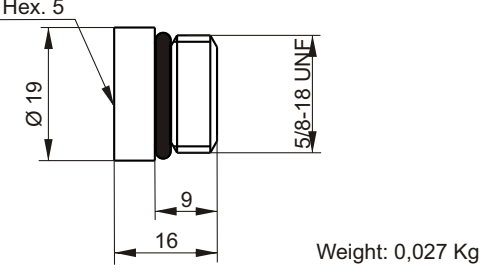
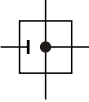
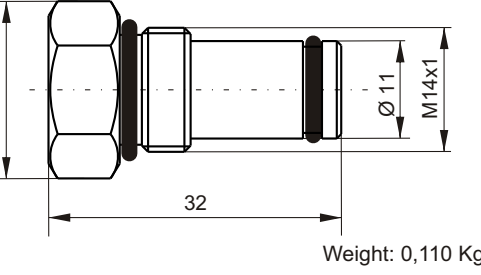
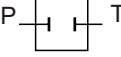
Ramp adjustment (down)



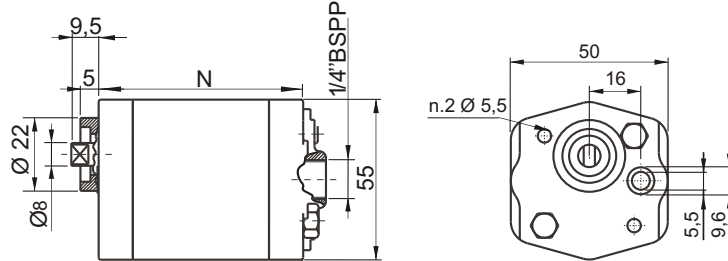
Plugs

 <p>Weight: 0,066 Kg</p>	<p>Hydraulic symbol</p>  <p>Spare part code</p> <p>E70100005</p>	<p>PPC assembly code</p> <p>G</p> <p>Mounting cavities</p> <table border="1" data-bbox="1189 504 1316 638"> <tr><td>0</td><td>1</td></tr> <tr><td>2</td><td>3</td><td>4</td></tr> <tr><td>5</td><td>6</td><td>7</td></tr> </table>	0	1	2	3	4	5	6	7
0	1									
2	3	4								
5	6	7								
 <p>Weight: 0,047 Kg</p>	<p>Hydraulic symbol</p>  <p>Spare part code</p> <p>E70100003</p>	<p>PPC assembly code</p> <p>H</p> <p>Mounting cavities</p> <table border="1" data-bbox="1189 862 1316 996"> <tr><td>0</td><td>1</td></tr> <tr><td>2</td><td>3</td><td>4</td></tr> <tr><td>5</td><td>6</td><td>7</td></tr> </table>	0	1	2	3	4	5	6	7
0	1									
2	3	4								
5	6	7								
 <p>Weight: 0,045 Kg</p>	<p>Hydraulic symbol</p>  <p>Spare part code</p> <p>E70100006</p>	<p>PPC assembly code</p> <p>P</p> <p>Mounting cavities</p> <table border="1" data-bbox="1189 1220 1316 1355"> <tr><td>0</td><td>1</td></tr> <tr><td>2</td><td>3</td><td>4</td></tr> <tr><td>5</td><td>6</td><td>7</td></tr> </table>	0	1	2	3	4	5	6	7
0	1									
2	3	4								
5	6	7								
 <p>Weight: 0,027 Kg</p>	<p>Hydraulic symbol</p>  <p>Spare part code</p> <p>E70100004</p>	<p>PPC assembly code</p> <p>L</p> <p>Mounting cavities</p> <table border="1" data-bbox="1189 1579 1316 1713"> <tr><td>0</td><td>1</td></tr> <tr><td>2</td><td>3</td><td>4</td></tr> <tr><td>5</td><td>6</td><td>7</td></tr> </table>	0	1	2	3	4	5	6	7
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2	3	4								
5	6	7								
 <p>Weight: 0,042 Kg</p>	<p>Hydraulic symbol</p>  <p>Spare part code</p> <p>E70100002</p>	<p>PPC assembly code</p> <p>N</p> <p>Mounting cavities</p> <table border="1" data-bbox="1189 1937 1316 2072"> <tr><td>0</td><td>1</td></tr> <tr><td>2</td><td>3</td><td>4</td></tr> <tr><td>5</td><td>6</td><td>7</td></tr> </table>	0	1	2	3	4	5	6	7
0	1									
2	3	4								
5	6	7								

Plugs

 <p>Hex. 5 $\varnothing 19$ $\varnothing 12,7$ $5/8-18 \text{ UNF}$ 19 24,5 Weight: 0,045 Kg</p>	<p>Hydraulic symbol</p>  <p>Spare part code</p> <p>N70200007</p>	<p>PPC assembly code</p> <p>MG</p> <p>Mounting cavities</p> <table border="1" data-bbox="1189 510 1321 633"> <tr><td>0</td><td>1</td></tr> <tr><td>2</td><td>3 4</td></tr> <tr><td>5</td><td>6 7</td></tr> </table>	0	1	2	3 4	5	6 7
0	1							
2	3 4							
5	6 7							
 <p>Hex. 5 $\varnothing 19$ $5/8-18 \text{ UNF}$ 9 16 Weight: 0,027 Kg</p>	<p>Hydraulic symbol</p>  <p>Spare part code</p> <p>N70200008</p>	<p>PPC assembly code</p> <p>ML</p> <p>Mounting cavities</p> <table border="1" data-bbox="1189 842 1321 965"> <tr><td>0</td><td>1</td></tr> <tr><td>2</td><td>3 4</td></tr> <tr><td>5</td><td>6 7</td></tr> </table>	0	1	2	3 4	5	6 7
0	1							
2	3 4							
5	6 7							
 <p>Hex. 22 $\varnothing 11$ $M14 \times 1$ 32 Weight: 0,110 Kg</p>	<p>Hydraulic symbol</p>  <p>Spare part code</p> <p>N70200010</p>	<p>PPC assembly code</p> <p>XM</p> <p>Mounting cavities</p> <table border="1" data-bbox="1189 1182 1321 1305"> <tr><td>0</td><td>1</td></tr> <tr><td>2</td><td>3 4</td></tr> <tr><td>5</td><td>6 7</td></tr> </table>	0	1	2	3 4	5	6 7
0	1							
2	3 4							
5	6 7							

Gear pumps



Spare part code

E60 50 ** **

Size:
see spare part code
on below table

Type:
30 = G type
40 = K type

PPC 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 part code	Weight
GM0,1	230	210	190	7000	45,5	M5x55	E60503001	0,31 Kg
KM0,2	200	180	160	6000	45,5	M5x55	E60504002	0,33 Kg
KM0,4	200	180	160	6000	47,5	M5x55	E60504004	0,35 Kg
KM0,6	200	180	160	6000	51,5	M5x60	E60504006	0,40 Kg
KM0,9	200	180	160	5000	52,5	M5x65	E60504009	0,44 Kg
KM1,3	200	180	160	3900	55,5	M5x65	E60504013	0,49 Kg
KM1,5	200	180	160	3900	57,8	M5x70	E60504015	0,51 Kg

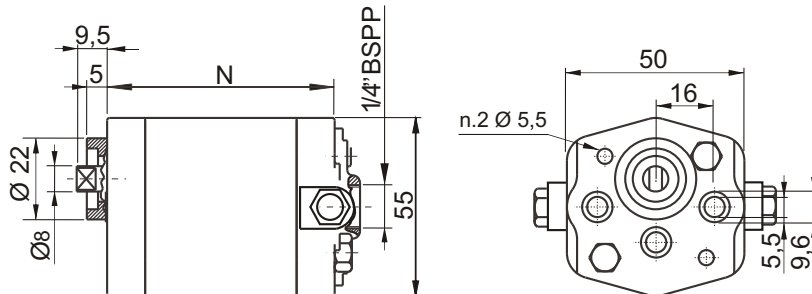
Other pumps executions with different pressure/speed ratings are available on request.

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

Main features

Oil temperature	-15 ÷ +80 °C
Inlet pressure	0,7 < P < 3,0 bar (absolute pressure)
Fixing bolts	2 x M8 8.8 class steel tightening torque: 25 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.	

Bidirectional gear pumps



Spare part code

E605045 **

Size:
see spare part code
on below table

PPC assembly code field

RM

Pump type:
RM = Reversible type

1,3

Nominal displacement:
(cc/rev) see below table

Available range

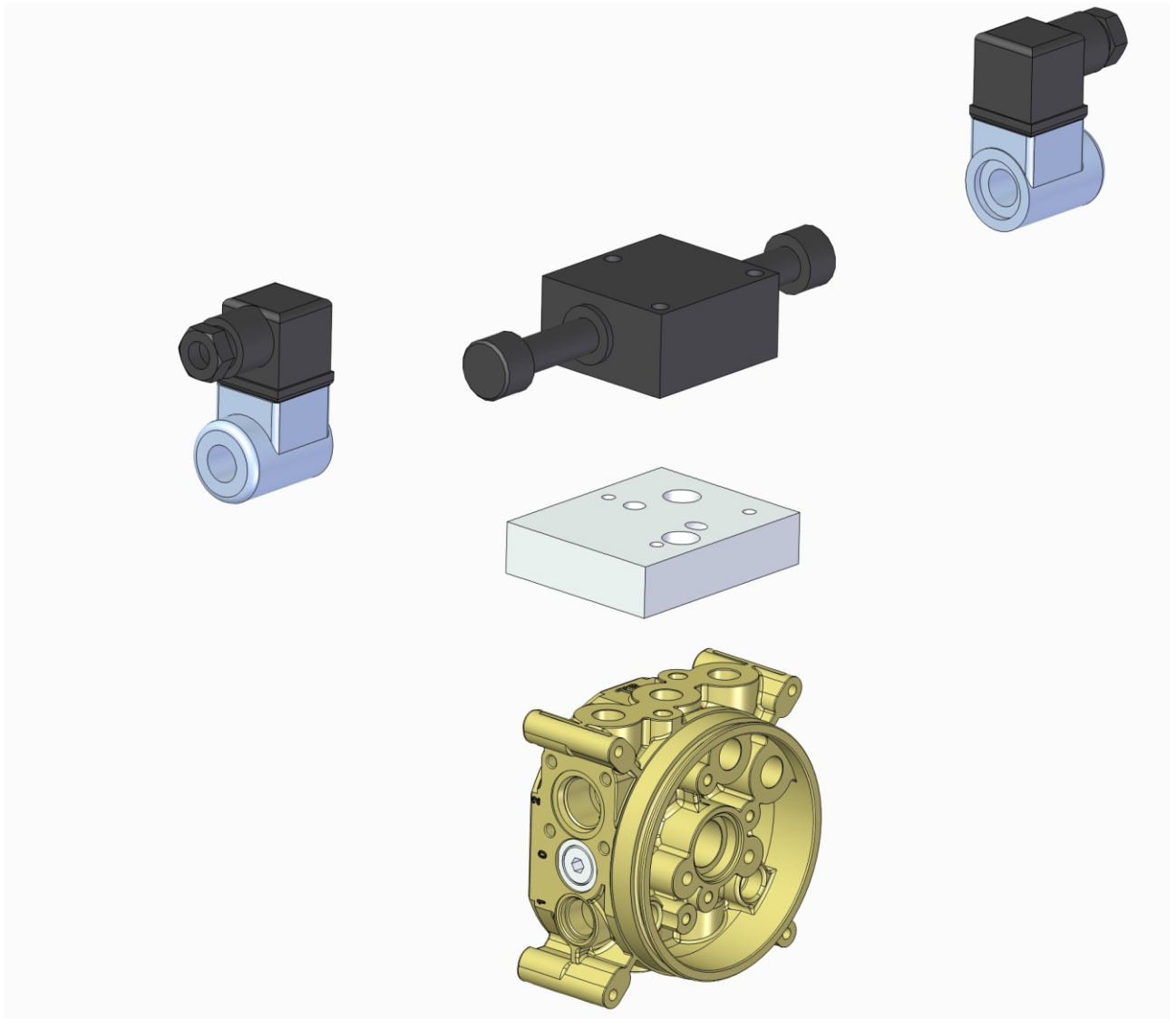
Nominal Displacement (cc/rev)	Peak pressure (bar)	Intermittent pressure (bar)	Continuous pressure (bar)	Max speed (rpm)	N (mm)	Bolts* (mm)	Spare part code	Weight
0,1	190	170	150	6000	45,5	M5x55	E60503501	0,44 Kg
0,2	200	180	160	6000	45,5	M5x55	E60504502	0,46 Kg
0,4	200	180	160	6000	47,5	M5x55	E60504504	0,48 Kg
0,6	200	180	160	6000	54,5	M5x60	E60504506	0,49 Kg
0,9	200	180	160	5000	62,4	M5x60	E60504509	0,50 Kg
1,3	200	180	160	3900	63,2	M5x65	E60504513	0,51 Kg
1,5	200	180	160	3900	64,5	M5x65	E60504515	0,52 Kg

* A proper washer is to be forecast to adapt bolt length
For higher displacement please ask to our technical department

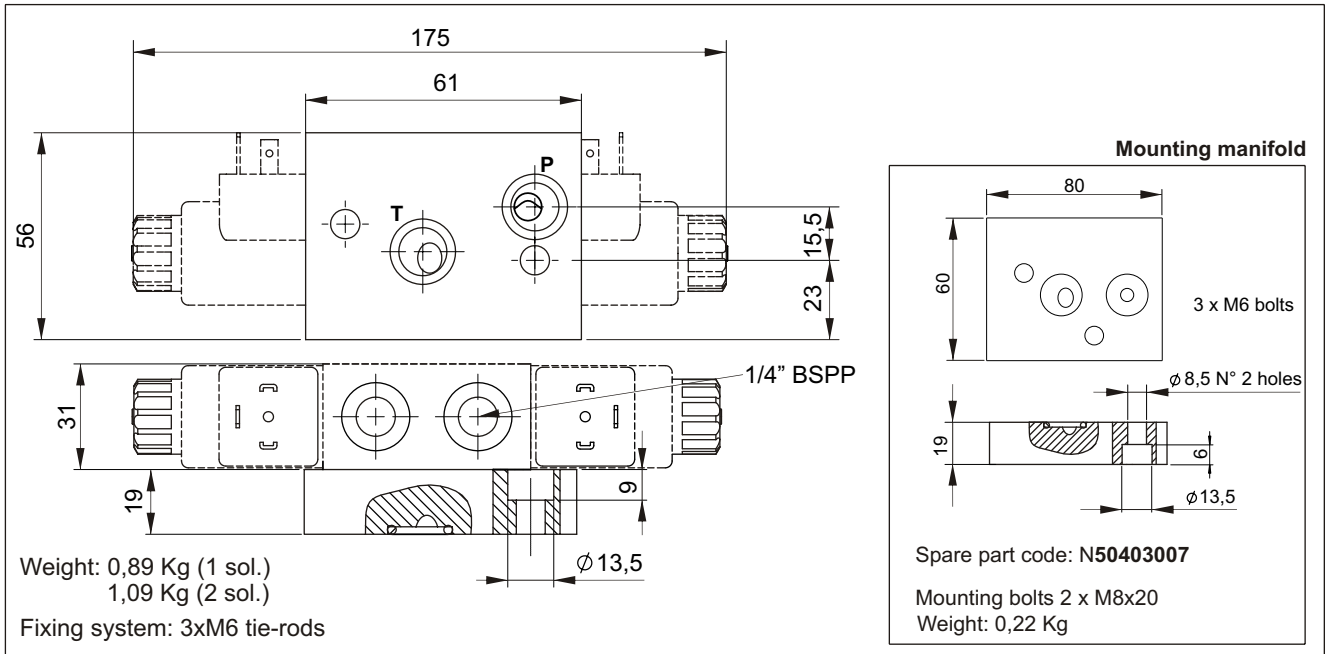
Main features

Oil temperature	-15 ÷ +80 °C
Inlet pressure	0,7 < P < 3,0 bar (absolute pressure)
Fixing bolts	2 x M8 8.8 class steel tightening torque: 25 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

Section 30 ADDITIONAL MANIFOLDS AND COMPONENTS

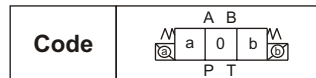


Stackable directional solenoid valves



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



Double solenoid

A2*	
B2	
C2	
E2	

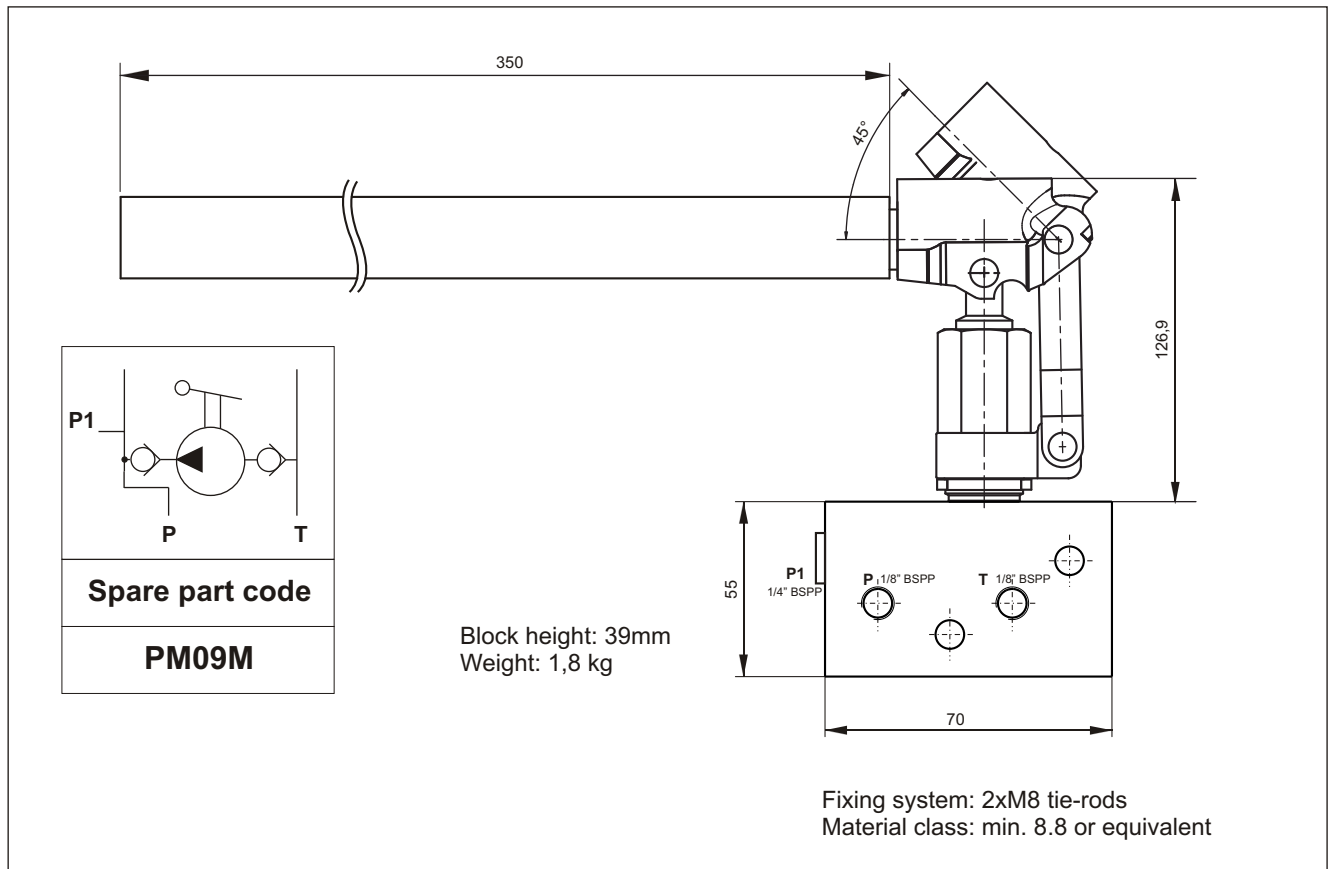
Single solenoid

A11C	
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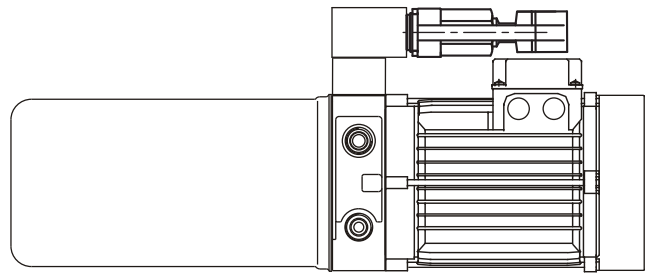
* = spools with price additional
Other spools available on request

Supply voltage (V)	Coil voltage	Spare coil code	Spare connector code	Holding power consumption	Max pressure	250 bar
12DC	12DC	M12040001	KA132000B1	22W	Max p on T port	210 bar static, 140 bar dynamic
24DC	24DC	M12040002	KA132000B1	22W	Max flow	20 l/min
24AC ^{50 Hz} _{60 Hz}	24DC	M12040002	KA132R11B1	22W	Fixing bolts	3 TCEI M6 x 6Nm torque. 10.9 class steel
230AC ^{50 Hz} _{60 Hz}	220RC	M12040005	KA132R13B1	22W	Coil insulation	Class H
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.					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)

PM09M hand pump modular manifold



Mounting example

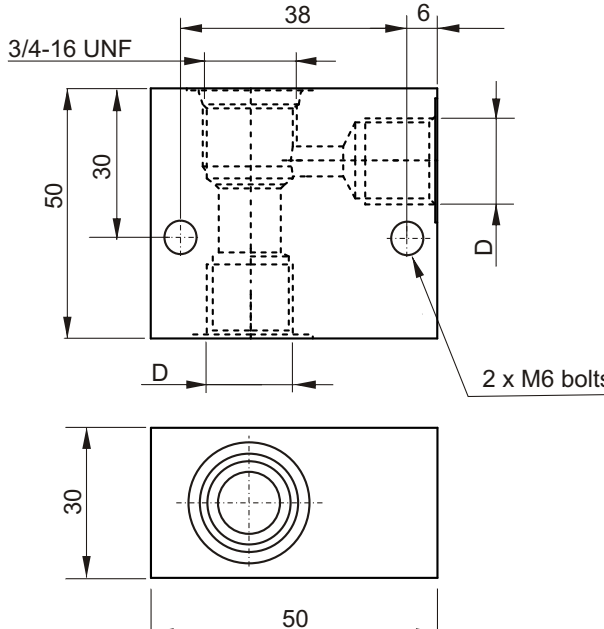
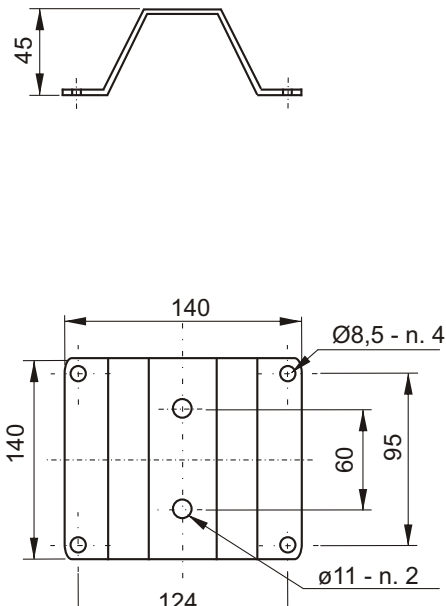
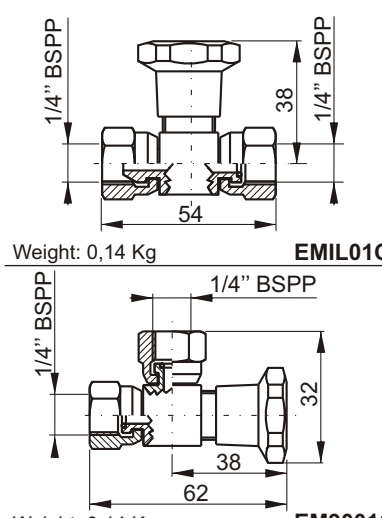
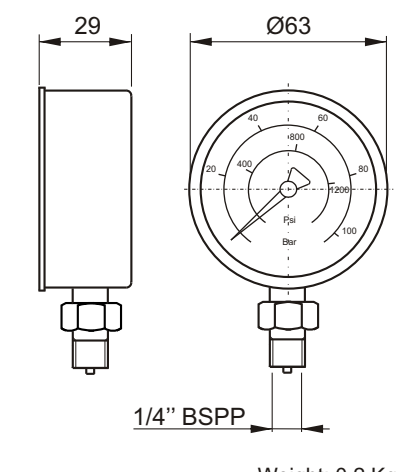
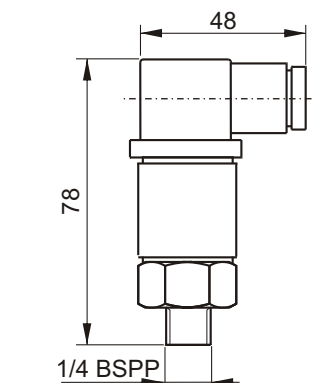


Max pressure	210 bar
Displacement	8,8 cc/stroke
Fixing bolts	2 x M8 (8.8 class steel)
Filtration grade	25 ÷ 50 µ
Temperature range	-20 ÷ +70°C

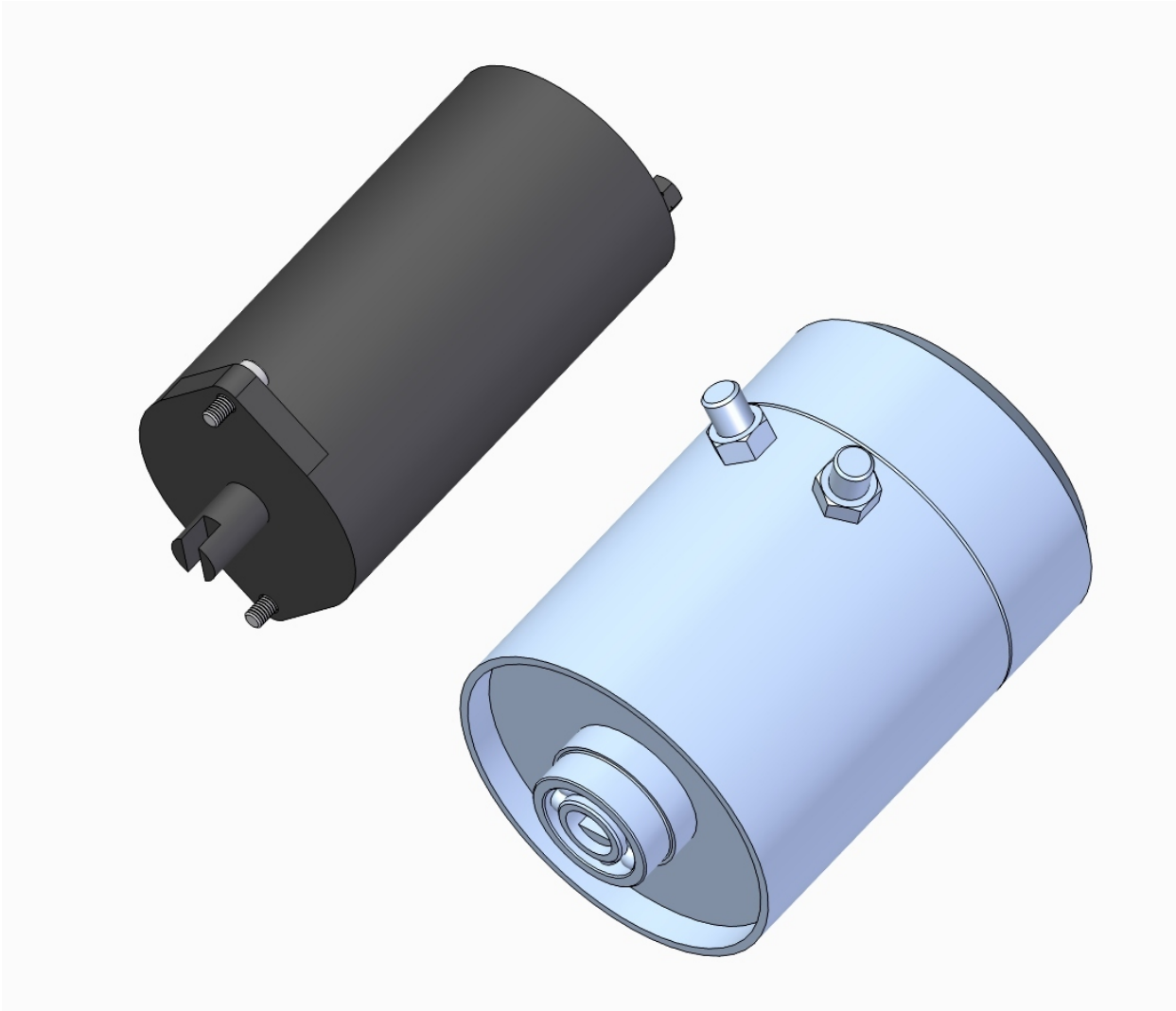
Recommended tightening torque for M8 bolts: 16 Nm.

Commissioning: 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.

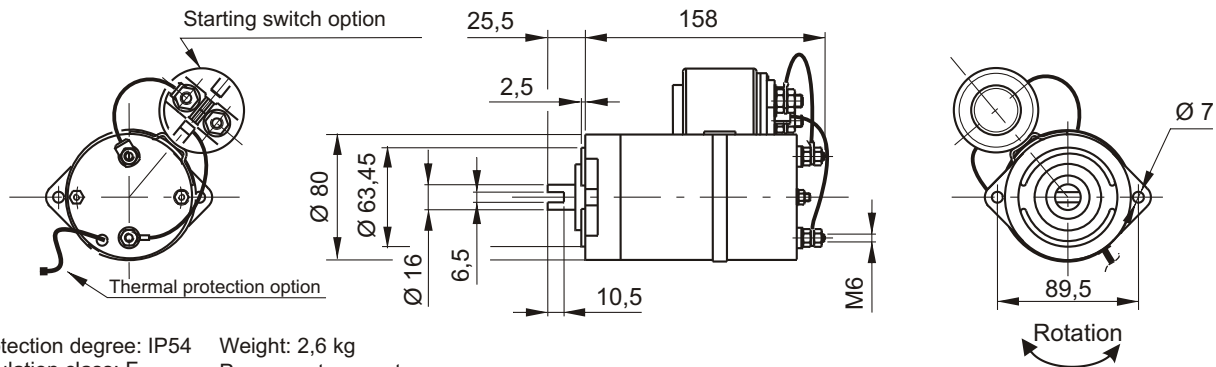
Accessories

<p style="text-align: center;">In line mounting 3/4-16 UNF manifolds</p>  <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th></th> <th>D</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td>BFCSAE0802</td> <td>3/8" BSPP</td> <td>0,16 Kg</td> </tr> <tr> <td>BFCSAE0801</td> <td>1/4" BSPP</td> <td>0,48 Kg</td> </tr> </tbody> </table> <p style="text-align: center;">Spare part codes</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">BFCSAE0802</td> <td style="width: 50%; text-align: center;">BFCSAE0801</td> </tr> </table>		D	Weight	BFCSAE0802	3/8" BSPP	0,16 Kg	BFCSAE0801	1/4" BSPP	0,48 Kg	BFCSAE0802	BFCSAE0801	<p style="text-align: center;">Foot mounting support</p>  <p style="text-align: center;">Spare part codes</p> <p style="text-align: center;">E60543003</p>
	D	Weight										
BFCSAE0802	3/8" BSPP	0,16 Kg										
BFCSAE0801	1/4" BSPP	0,48 Kg										
BFCSAE0802	BFCSAE0801											
<p style="text-align: center;">Gauge isolator F-F Max working pressure: 350 bar</p>  <p style="text-align: center;">Weight: 0,14 Kg</p> <p style="text-align: center;">EMIL01C</p> <p style="text-align: center;">EM9001C</p> <p style="text-align: center;">Weight: 0,14 Kg</p> <p style="text-align: center;">Spare part code</p> <p style="text-align: center;">EM9001C / EMIL01C</p>	<p style="text-align: center;">Pressure gauge</p>  <p style="text-align: center;">Weight: 0,2 Kg</p> <p style="text-align: center;">Spare part code</p> <p style="text-align: center;">MIR63*** ***: pressure max in bar (060, 100, 160, 250, 315 bar)</p>	<p style="text-align: center;">Pressure switch</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Protection degree</td> <td>IP 65</td> </tr> <tr> <td>Hysteresis</td> <td>10 ± 15 %</td> </tr> <tr> <td>Weight</td> <td>0,05 Kg</td> </tr> <tr> <td>Max load</td> <td>0,5 A at 250 VAC</td> </tr> <tr> <td>Electric switch</td> <td>NO/NC</td> </tr> </table>  <p style="text-align: center;">Weight: 0,05 Kg</p> <p style="text-align: center;">Spare part code</p> <p style="text-align: center;">F401*** ***: pressure max in bar (050, 100, 200, 400 bar)</p>	Protection degree	IP 65	Hysteresis	10 ± 15 %	Weight	0,05 Kg	Max load	0,5 A at 250 VAC	Electric switch	NO/NC
Protection degree	IP 65											
Hysteresis	10 ± 15 %											
Weight	0,05 Kg											
Max load	0,5 A at 250 VAC											
Electric switch	NO/NC											

Section 40
MOTORS



Integral DC motors Ø 80



Protection degree: IP54 Weight: 2,6 kg
Insulation class: F Permanent magnets

Code

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

Options

Description	PPC assembly code	Spare part code
12 or 24V DC 150 Amp start switch + mounting kit	S150 12DC 80 S150 24DC 80	M47SC0001 + M47SK0801 (12V DC) M47SC0002 + M47SK0801 (24V DC)
Remote wired control with two buttons and 3m cable (see U040.40.03)	P0201 P0202	P0201 (single acting) P0202 (double acting)

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

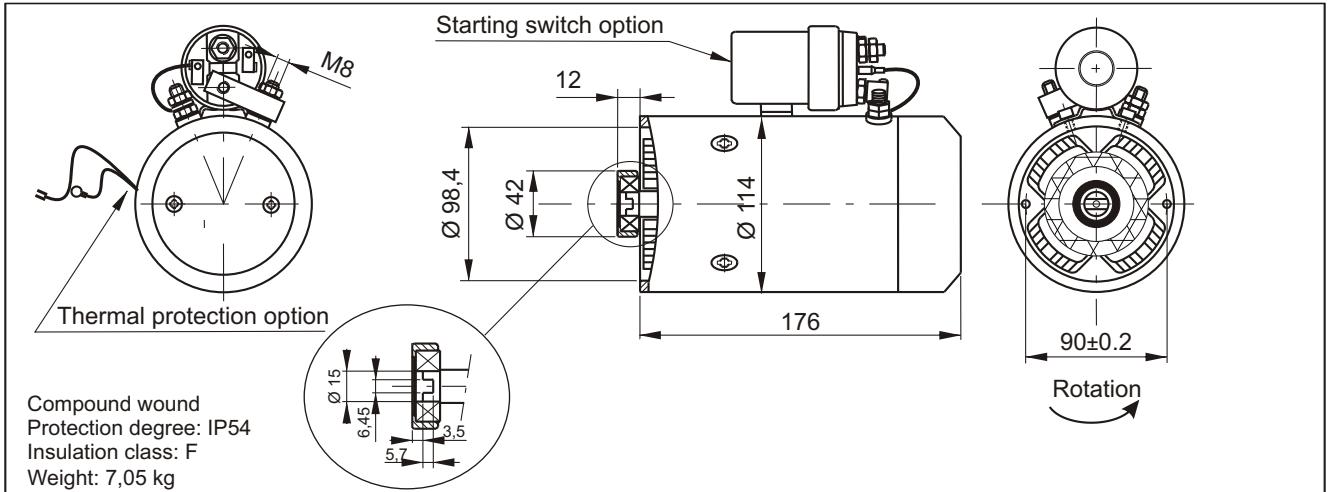
Coupling

Description	PPC assembly code / Spare part code
Shaft coupling for Ø 80 DC motors and gr.0 pump	E36200003

Weight: 0,063 kg

Note: 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.

Integral DC motors Ø 114



Code

Description	PPC assembly code	Spare part code	Nominal duty cycle	Nominal speed	Nominal current
1600W 12V DC motor	1,6 12DC	M46C1S016	S2: 2min S3: 7,5% ED	2600 rpm	230 A
2200W 24V DC motor	2,2 24DC	M46C2S022	S2: 1,2min S3: 4,5% ED	2600 rpm	140 A
1600W 12V DC motor with thermal protection	1,6 12DC/T	M46C1ST16	S2: 2min S3: 7,5% ED	2600 rpm	230 A
2100W 12V DC motor with thermal protection	2,1 12DC/T	M46C1ST21	S2: 1,2min S3: 7,5% ED	2300 rpm	330 A
2200W 24V DC motor with thermal protection	2,2 24DC/T	M46C2ST22	S2: 1,2min S3: 4,5% ED	2600 rpm	140 A

Options

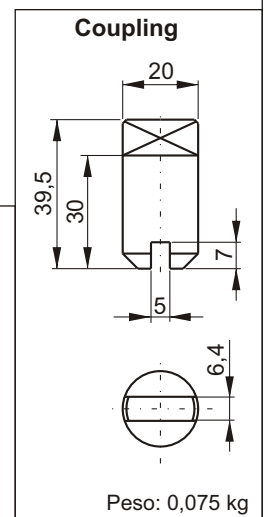
Description	PPC assembly code	Spare part code
Starting switch 150A 12 or 24V DC + mounting kit	S150 12DC 112 S150 24DC 112	M47SC0001 + M47SK1121 (12V DC) M47SC0002 + M47SK1121 (24V DC)
Remote wired control with two buttons and 3m cable (see U040.40.03)	P0201 P0202	P0201 (single acting) P0202 (double acting)
DC motors plastic cover	F16000001	F16000001

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

Coupling

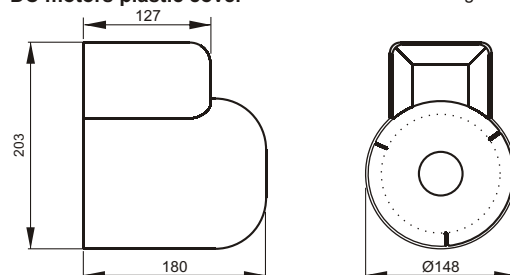
Description	PPC assembly code / Spare part code
Shaft coupling for Ø114 motors	E36200002

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



DC motors plastic cover

Weight: 0,27 kg



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:

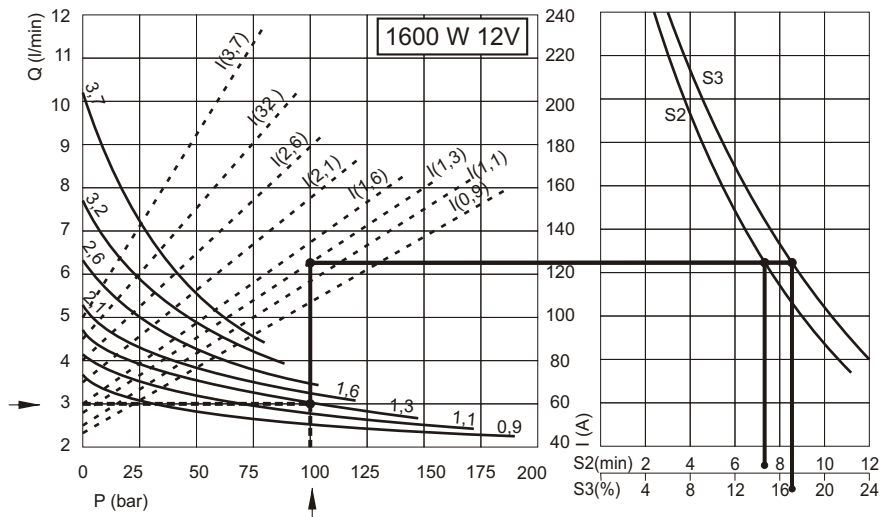
flow = 3 l/min, max pressure = 100 bar, not clearly defined duty cycle.

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

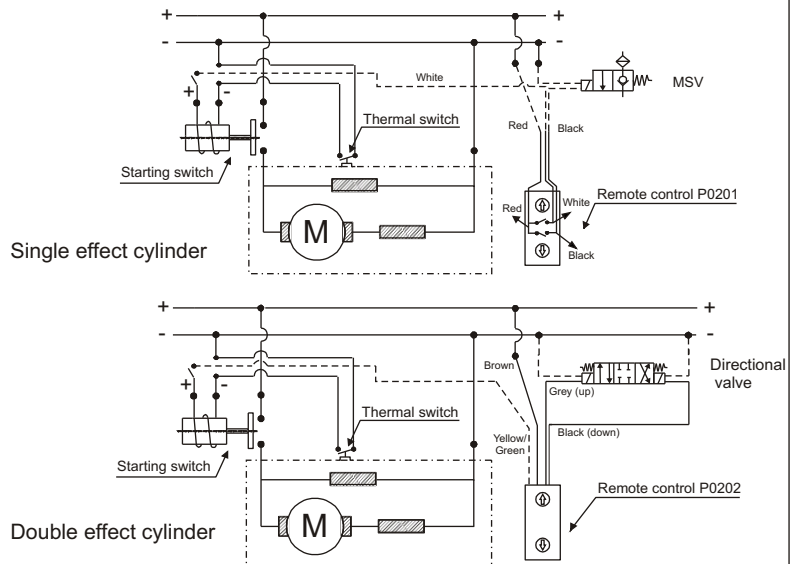
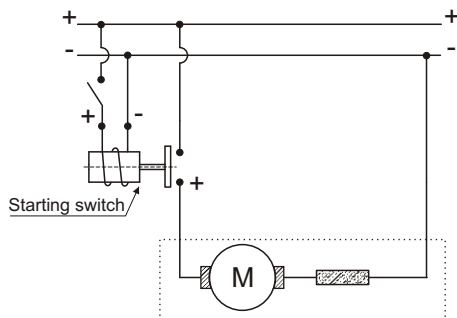
-We choose from curves 1,3 pump: a 1,3 cm³/rev pump. On the corresponding "I" curve we read 125 A absorbed current.

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.

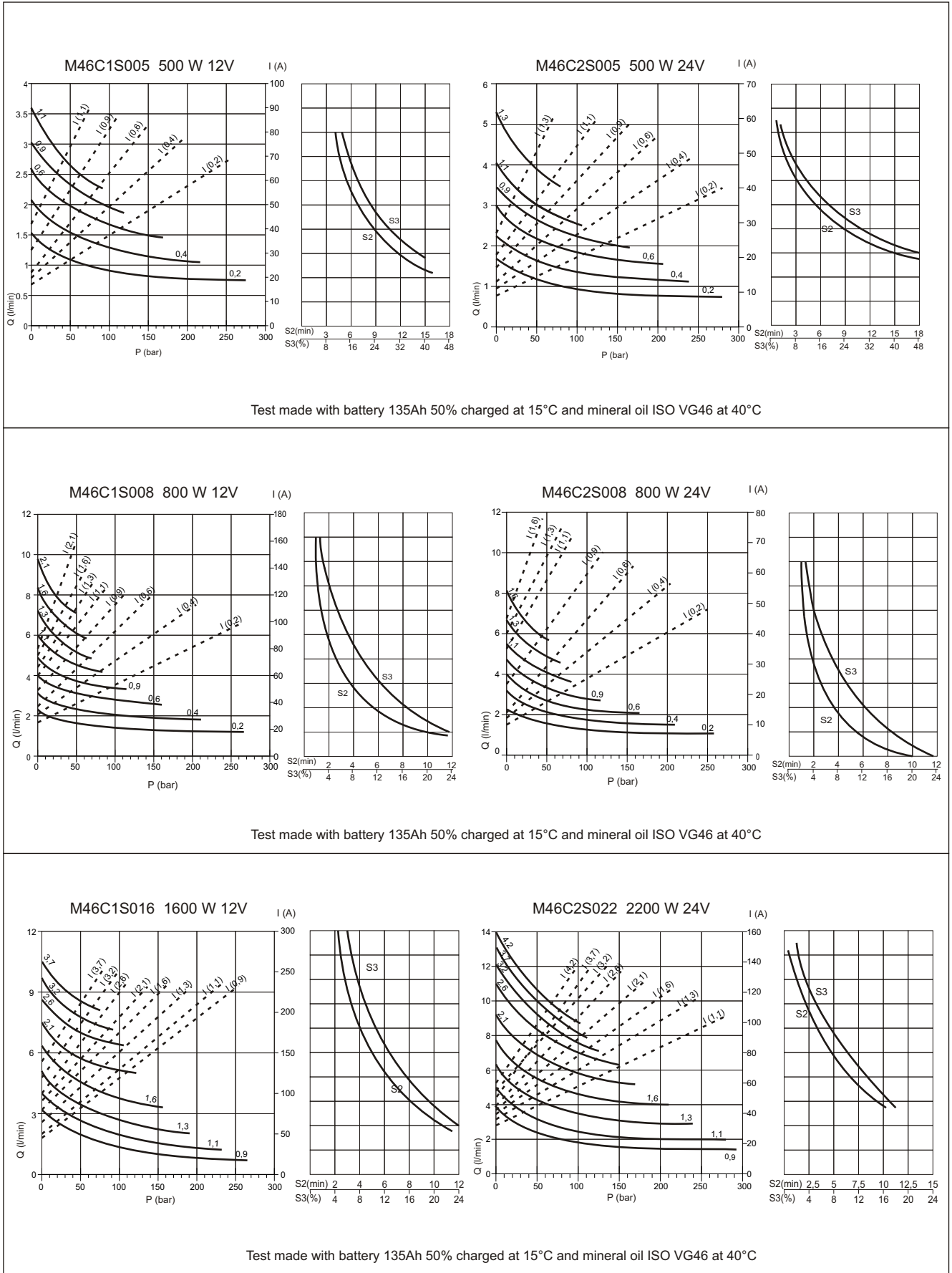
-The total cycle time is calculated adding the working time and the idle time (17% working time plus 83% idle time), in this case 41 min. If this duty cycle is not adequate for our application, we must choose a higher power DC motor and check the relevant diagram again.



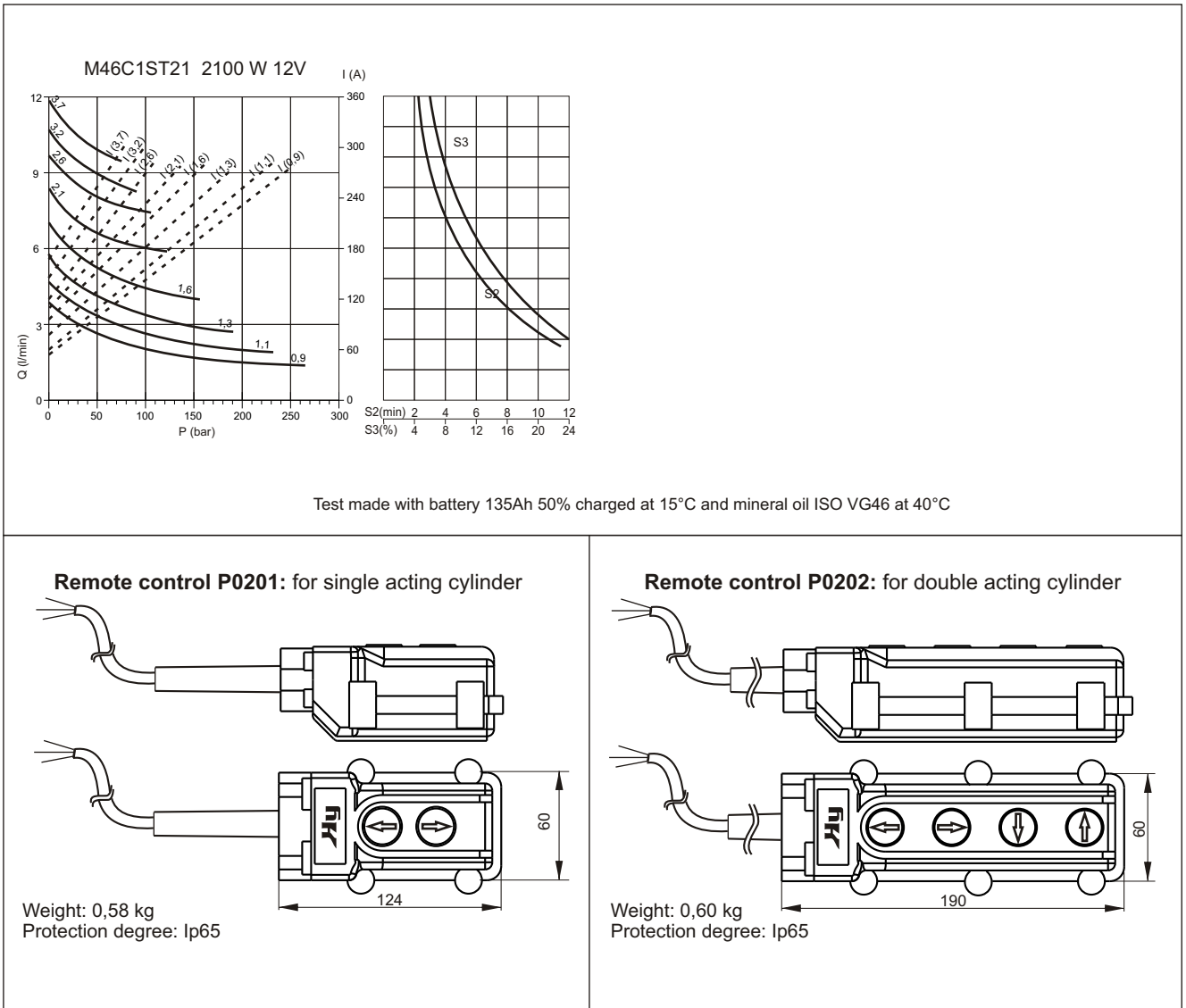
Electric connection schemes



DC motors diagrams



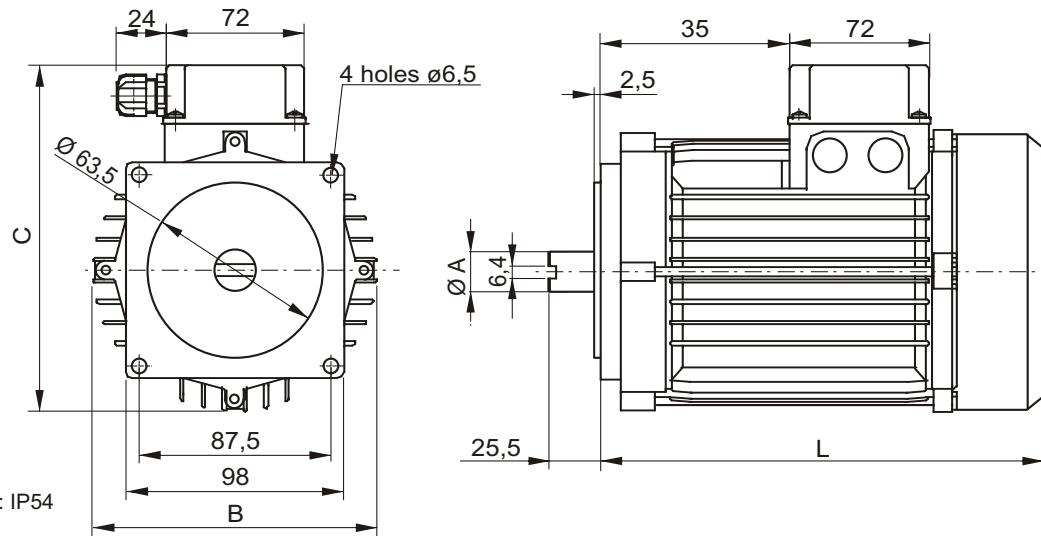
DC motors diagrams



Integral AC motors

Integral AC motors: the engineered solution for compact and optimised power units from 0,25 to 0,75 kW. The AC motors are directly flanged on the central manifold. A single coupling -see below- can suit all frame sizes and powers. We suggest to adopt these advanced motors because of these peculiar advantages over standard B14 AC motors and because they are designed specifically for use on our mini power packs, offering an higher power density and high starting torque (in HT models) than market standard motors. Motors have a double power rating: the maximum power is for intermittent duty charge (S3 40%), which is typical for mini-power packs applications; if the application is continuative please consider the rated power as the maximum output to guarantee a proper cooling of the motor. In any case single phase motors should not run with no load to avoid the overheating.

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



Protection degree: IP54
 Insulation class: F

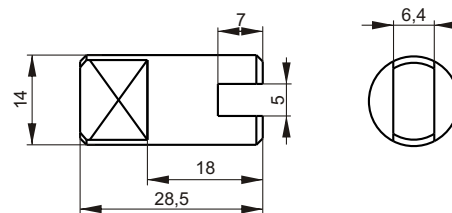
PPC motor assembly code

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: 1 = 71
S3	Type of Duty: - = ED 100% (S1) 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

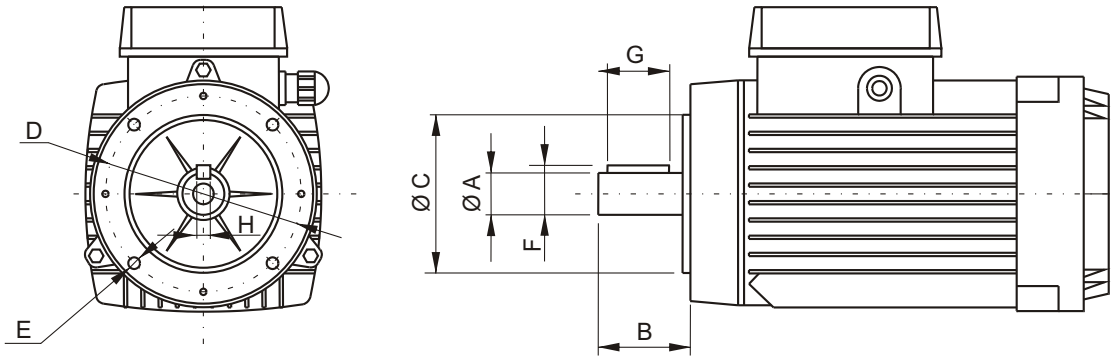
Integral AC motor frame size	Maximum Power (S3 40%)	Rated Power (S1 continuous duty)	Spare motor code	Ø A	B	C	L	Weight Kg
	kW (HP)	kW (HP)						
Three-phase 4 poles (~1450 rpm at 50Hz)								
71	-	0,25 (0,35)	N025AC341	15	138	180	210	5,5
	-	0,37 (0,5)	N037AC341	15	138	180	210	5,5
	-	0,55 (0,75)	N055AC341	15	138	180	210	5,6
	0,75 (1)	-	N075AC341S3	15	138	180	210	5,6
Three-phase 2 poles (~2900 rpm at 50Hz)								
71	-	0,37 (0,5)	N037AC321	15	138	180	210	5
	-	0,55 (0,75)	N055AC321	15	138	180	210	5
Integral AC motor frame size								
Integral AC motor frame size	Maximum Power (S3 40%)	Rated Power (S1 continuous duty)	Spare motor code	Ø A	B	C	L	Weight Kg
	kW (HP)	kW (HP)						
Single-phase 4 poles (~1450 rpm at 50Hz)								
71	-	0,25 (0,35)	N025ACS41	15	138	180	210	6,5
	-	0,37 (0,5)	N037ACS41	15	138	180	210	7,2
Single-phase 2 poles (~2900 rpm at 50Hz)								
71	-	0,37 (0,5)	N037ACS21	15	138	180	210	6
	-	0,55 (0,75)	N055ACS21	15	138	180	210	6,5

Other power / frame sizes and special motor types are available on request. Motors with codes ending with "S3" 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. These motors can be applied to a continuous duty (S1) at a reduced rated power. See above table.

*: these motors are available in "HT" high starting torque version too.

B14 AC motors

B14 motors: for market compatibility, any standard B14 AC motor with frame 71, 80, 90 or 100/112 can be mounted. In this case two-pieces couplings and additional adaptor flanges as per tables U040.40.10, .11, .12 and .13 must be mounted.



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

B14 standard dimensions

MOTOR FRAME SIZE	Typically power range	ØA	B	ØC	D	E	F	G	H	Mounting kit
71	0,25 ~ 0,37 kW 0,37 ~ 0,5 HP	14 j6	30	70	85	M6	16	30	5	NB1471

PPC B14 motor assembly code

7,5	Power [kW]
AC	Alternate current
3	Phase: 3 = three phase S = single phase
4P	Poles: 4P = four pole 2P = two pole
112	Frame size: 71, 80, 90, 100, 112
-	Duty factor: - = ED 100% (S1) S3 = intermittent duty

Mounting kits spare parts

The B14 mounting kits are made of:

- a semi-coupling E36100000 (the same used for integral AC 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 tables U040.40.09, .10, .11 and .12.

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

Mounting kit for frame 71 B14 motors

Adaptor flange

Weight: 0,18 Kg

Coupling

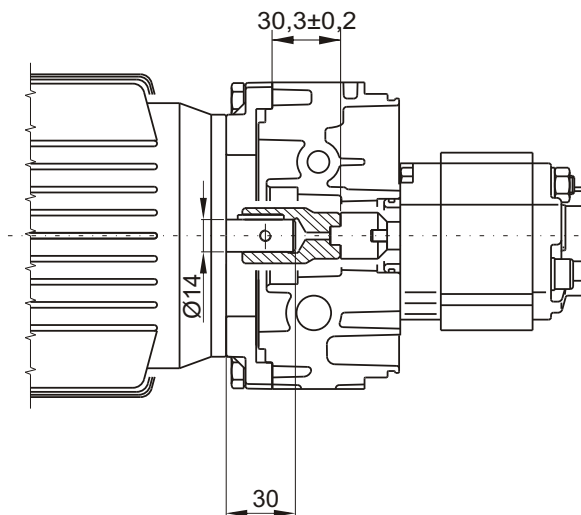
Pump group side **E3610000M**

Motor side **E36100001**

Description	PPC assembly code*	Spare part code
B14 71 motor side semi-coupling	NB1471	E36100001
B14 pump side semi-coupling		E3610000M
B14 71 adaptor flange		F25030003

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

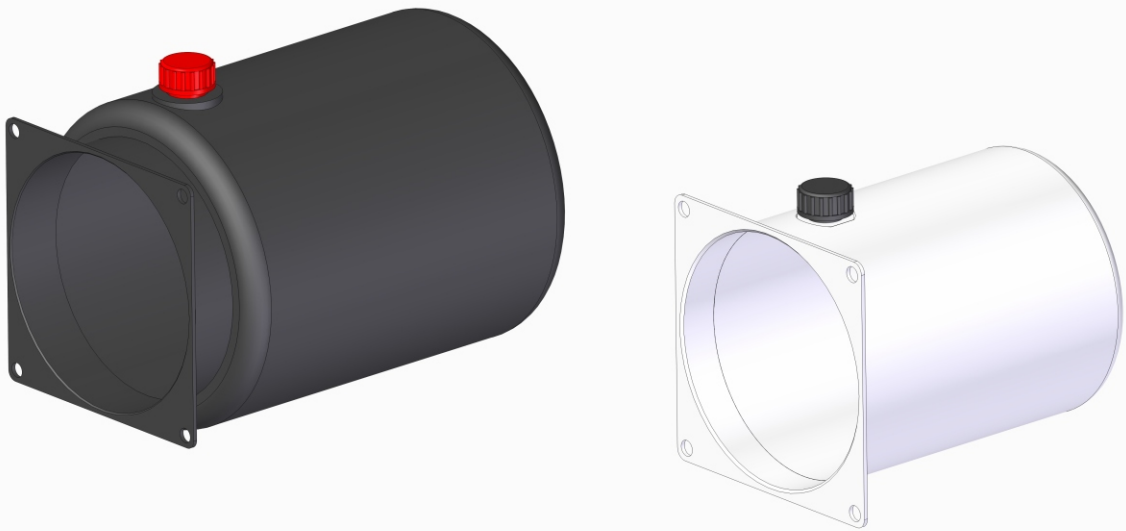
Attention! When assembling frame 71 B14 motors with NB14 flange + couplings kit, please respect following positioning measures. Failing to do so can cause malfunctioning or components failure.



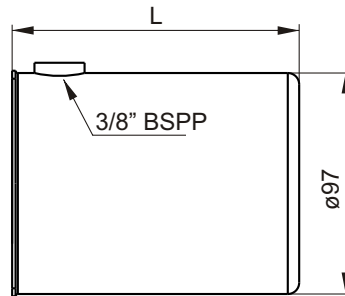
Kit weight: 0,32 Kg

Section 50

TANKS AND ACCESSORIES

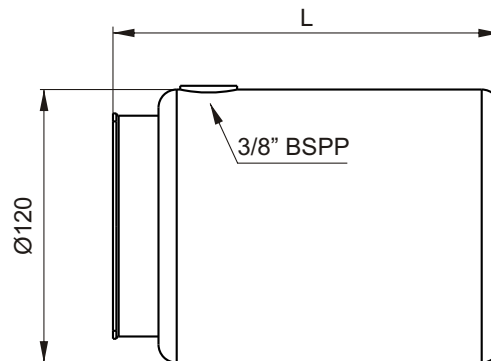


Round steel tanks A & B series



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

Description	PPC assembly code	Spare part code	L (mm)	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
1,2 l cylindrical horizontal / vertical mounting	1,2A / 1,2AV	E50403002	175	0,68 Kg	1,2	1,0



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

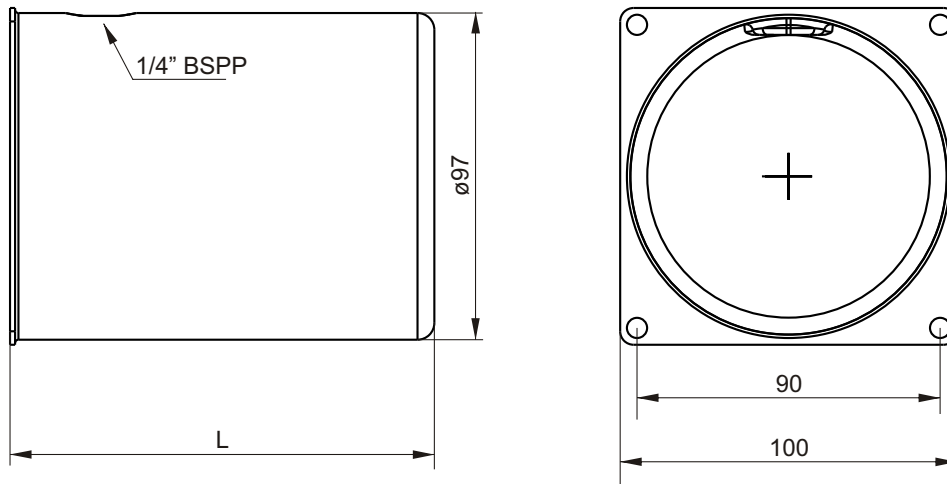
Description	PPC assembly code	Spare part code	L (mm)	ØD (mm)	Weight	Actual filling volume (lt)	
						Horiz.	Vert.
1,7 l cylindrical horizontal / vertical mounting	1,7B / 1,7BV	E50404004	170	180	1,12 Kg	1,7	1,5

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. See accessories tables M010.50.03-04

Round plastic tanks L

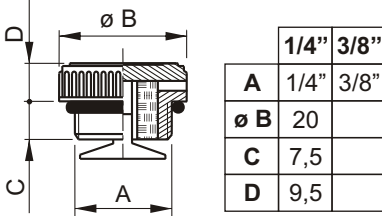
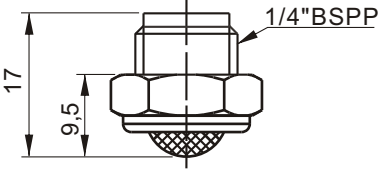
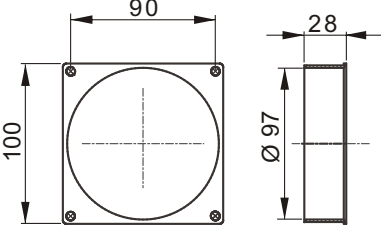
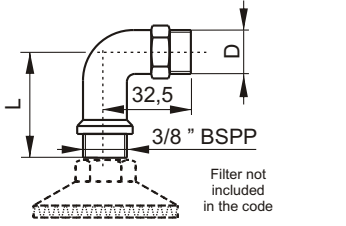
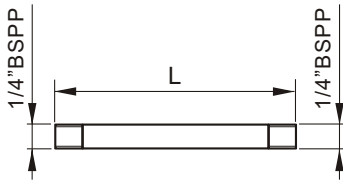
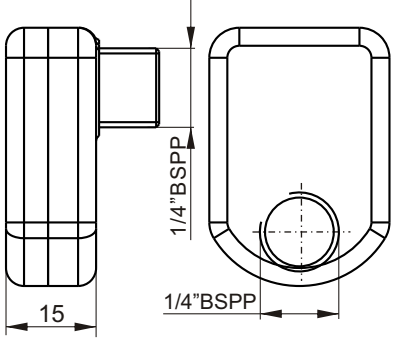
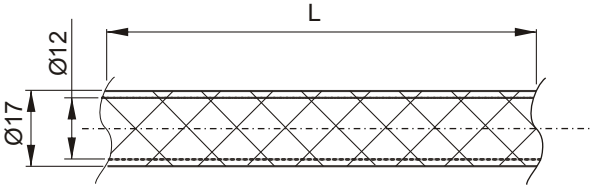
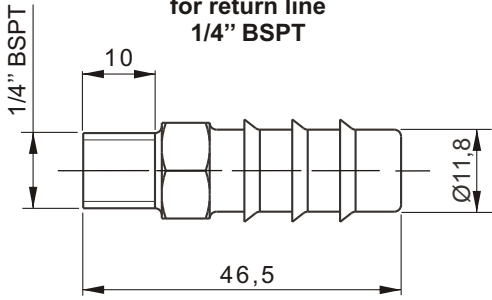


Description	PPC assembly code	Spare part code	L (mm)	Weight	Actual filling volume (lt)	
					Horizontal	Vertical
0,4 l round horizontal / vertical mounting	0,4L / 0,4LV	H50403001	90	0,07 Kg	0,52	0,41
0,7 l round horizontal / vertical mounting	0,7L / 0,7LV	H50403002	124	0,09 Kg	0,76	0,65
1,2 l round horizontal / vertical mounting	1,2L / 1,2LV	H50403003	186	0,14 Kg	1,32	1,23

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, only the filler/breather and clamp band are included.
 See accessories table M010.50.03-04

Tanks plugs and accessories

<p>Knurled filler breather with vane 1/4" - 3/8" BSPP</p>  <p>Suitable for L/LV type tanks (1/4" BSPP) Suitable for A/B type tanks (3/8" BSPP)</p>	<p>Relief valve return filter To be mounted in cavity Tr</p>  <p>It reduces foam and noise when relief valve is laminating. Recommended for all vertical mounting tanks.</p>	<p>Steel tank adapter</p>  <p>Unpainted, to be welded on custom made tanks Weight: 0,21 Kg</p>																	
<p>Spare part code</p>	<p>Spare part code</p>	<p>Spare part code</p>																	
<p>C75100001 (1/4" BSPP) C75100002 (3/8" BSPP)</p>	<p>SFEP14N</p>	<p>F80000012</p>																	
<p>90° elbow for suction pipe M 1/4" BSPT - M 3/8" BSPP Recommended for horizontal tanks</p>  <p>Filter not included in the code</p> <table border="1" data-bbox="212 1229 571 1323"> <thead> <tr> <th></th> <th>L</th> <th>D</th> </tr> </thead> <tbody> <tr> <td>PP01E40</td> <td>40</td> <td>1/4"BSPT</td> </tr> <tr> <td>PP01E77</td> <td>77</td> <td>1/4"BSPT</td> </tr> </tbody> </table>		L	D	PP01E40	40	1/4"BSPT	PP01E77	77	1/4"BSPT	<p>1/4" return/suction pipe</p>  <table border="1" data-bbox="671 1173 963 1296"> <thead> <tr> <th></th> <th>L</th> </tr> </thead> <tbody> <tr> <td>PP0140</td> <td>40</td> </tr> <tr> <td>PP0180</td> <td>80</td> </tr> <tr> <td>PP01120</td> <td>120</td> </tr> </tbody> </table> <p>Recommended as suction pipe for PMC02 hand pumps and as return pipe with C3420001 return filter.</p>		L	PP0140	40	PP0180	80	PP01120	120	<p>Suction filter</p> 
	L	D																	
PP01E40	40	1/4"BSPT																	
PP01E77	77	1/4"BSPT																	
	L																		
PP0140	40																		
PP0180	80																		
PP01120	120																		
<p>Spare part code</p>	<p>Spare part codes</p>	<p>Spare part codes</p>																	
<p>PP0*E**</p>	<p>PP01**</p>	<p>C34100100</p>																	
<p>Flexible plastic pipe</p>  <p>Recommended as standard return pipe. To be fixed with TR01-12 and cut at proper length. To be ordered in meters</p>	<p>Flexible plastic pipe holder for return line 1/4" BSPT</p> 																		
<p>Spare part code</p>	<p>Spare part code</p>																		
<p>SF12</p>	<p>TR0112</p>																		

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