

The P2E-•V solenoid operator range

The P2E-•V range of operators are normally closed (NC) 3/2 solenoid valves, with exceedingly compact dimensions in relation to their capacity.

International standard

The port connection pattern complies with a new French CNOMO standard (in process of drafting), with cable plug connections in accordance with Form C/ISO15217.

Compact design

Overall dimensions of the P2E-•V operators are substantially less than those of earlier generations of solenoid operators.

High flow capacity

High flow capacity relative to the electrical operating power as a result of optimised internal flow paths.

Corrosion-resistant design

The valve is made of thermoplastic material and stainless steel, with Viton™ and nitrile rubber seals for excellent corrosion resistance.

Clean lines suitable for food industry applications, P2E-QV

The valve has been designed in conjunction with several machine manufacturers and organisations in the food processing industry, with corrosion-resistant materials and smooth lines being important starting points. The valve and its accessories have been designed so that there are no gaps or crevices in which dirt could collect.

High reliability

Few moving parts result in high reliability, rapid changeover and very long life.

Low power demand

The solenoids have a power demand of 1.2 W at 24 V DC and 1.6 VA at 24 V AC, 115 V AC and 230 V AC.

High protection class

The protection class is IP 65 when connected using the cable plug with a moulded cable. When using the standard cable plug for fitting by the user, the protection class is IP65, the bare valve, with Fast-on connectors, has an encapsulation class of IP 20.

Insensitive to dirty air

The use of generously sized flow paths (1.0 mm diameter) means that the valve can be used in normal industrial environments without problems of blocking.

Manual override as option

The operators can be supplied with or without manual override. The manual override device is available as a screwdriver groove or with a control arm, and is either spring return (blue) or lockable (yellow).

Order key, solenoid operators (15mm)

P	2	E	-	Q	V	3	2	C	3	
Valve family						Type of current		Voltage		Overrides
P2E Solenoid operator						1 AC 50 Hz 2 DC 4 AC 50/60 Hz 5 Mobile and wide band only		B 12 V C 24 V D 48 V F 115 V* J 230 V* W 37,5 V** T 72 V** Y 78 V** V 96 V** E 110 V**		0 Without 1 Non locking (blue) 2 Locking (yellow) 3 Extended non locking (blue) 4 Extended locking (yellow)
Subfamily						Valvetype/Function				
Solenoid operator, 15 mm wide Electric connection acc. to ISO 15217 Form C EI/supply connection on opposite side						3  3/2 valve, normally closed (NC)				
K Standard version										
M Mobile version										
Q Food industry version										

* For standard and food type only
** For mobile "M" version only

Technical data

	NC, Standard	NC, Food¹⁾	NC, Mobile²⁾
Working pressure	0 to 10 bar	0 to 10 bar	0 to 10 bar
Working temperature	-15 °C to +60 °C	-15 °C to +60 °C	-40 °C to +70 °C
Orifice	1,0 mm	1,0 mm	1,0 mm
Flow Q _{max}	33 Nl/min	33 Nl/min	22 Nl/min
Power, hold	DC 1,2 W / AC 1,6 VA *	DC 1,2 W / AC 1,6 VA *	DC 1,4 W
Power, surge	DC 1,2 W / AC 3,5 VA *	DC 1,2 W / AC 3,5 VA *	DC 1,4 W
Connection time	100%	100%	100%
Voltage tolerance	+10%/-15%	+10%/-15%	+25%/-30%
Electric connection:	Form C/ISO15217		
Port pattern:	To future CNOMO standard		
Protection:	IP 65		
Approval:	Some valves are UL 429 recognised and marked with the following symbol 		
Working media:	All neutral media, such as compressed air, water, hydraulic oil and many gases.		
1) Design:	Completely smooth exterior, suitable for food industry.		
2) Mobile standard	According to European standard EN 50 155.		

* Power, hold for 230VAC 2.4VA
Power, surge for 230VAC 5.5VA

Transients

Interrupting the current through the solenoid coil produces momentary voltage peaks which, under unfavourable conditions, can amount to several hundred times the rated operating voltage. Normally, these transients do not cause problems, but to achieve the maximum life of relays in the circuit (and particularly of transistors, thyristors and integrated circuits) it is desirable to provide protection by means of voltage-dependent resistors (varistors). All cable plugs with a yellow LED also incorporate such protection.

Service life

With compressed air at 6 bar, 20 °C and complying with the requirements for compressed air quality as set out in ISO8573-1 norm (class 4 for dry and class 5 for filtered air), the valves should have a life of at least 50 million cycles.

Materials

Operator

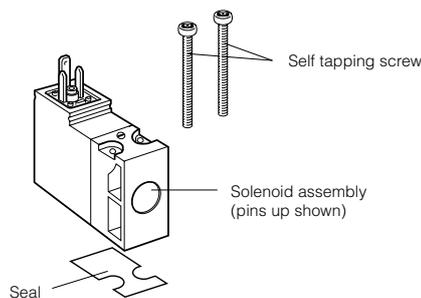
Body, coil casing	Thermoplastic
Internal metal parts	Steel
Screws	Stainless steel
Bottom plug	Thermoplastic
Sealing materials	FPM (Viton™) and nitrile rubber

Cable head

Sheath	Thermoplastic
Retaining screw	Stainless steel, zinc-plated steel

15mm Solenoid Operators

Electrical connection EN175301-803 C/ISO15217 (Ex DIN 43650C)



Solenoids 15 mm NC, standard

	Voltage	Weight Kg	Order code Without manual override	Weight Kg	Order code Override, blue, non locking flush	Weight Kg	Order code Override, yellow, locking flush
	12 VDC	0,038	P2E-KV32B0	0,038	P2E-KV32B1	0,038	P2E-KV32B2
	24 VDC	0,038	P2E-KV32C0	0,038	P2E-KV32C1	0,038	P2E-KV32C2
	48 VDC	0,038	P2E-KV32D0	0,038	P2E-KV32D1	0,038	P2E-KV32D2
	24 VAC 50Hz	0,038	P2E-KV31C0	0,038	P2E-KV31C1	0,038	P2E-KV31C2
	48 VAC 50/60Hz	0,038	P2E-KV34D0	0,038	P2E-KV34D1	0,038	P2E-KV34D2
	115 VAC 50Hz/ 120 VAC 60Hz	0,038	P2E-KV31F0	0,038	P2E-KV31F1	0,038	P2E-KV31F2
	230 VAC 50Hz/ 240 VAC 60Hz	0,038	P2E-KV31J0	0,038	P2E-KV31J1	0,038	P2E-KV31J2
	Voltage	Weight Kg	Order code Override extended, non locking flush	Weight Kg	Order code Override extended, locking flush		
	24 VDC	0,038	P2E-KV32C3	0,038	P2E-KV32C4		
	24 VAC 50Hz	0,038	P2E-KV31C3	0,038	P2E-KV31C4		

Solenoids 15 mm NC, mobile

(Note! Mounting screws included in basic valve)

	Voltage	Weight Kg	Order code Without manual override	Weight Kg	Order code Override, blue, non locking flush
	12 VDC	0,038	P2E-MV35B0	0,038	P2E-MV35B1
	24 VDC	0,038	P2E-MV35C0	0,038	P2E-MV35C1
	37,5 VDC	0,038	P2E-MV35W0	0,038	P2E-MV35W1
	48 VDC	0,038	P2E-MV35D0	0,038	P2E-MV35D1
	72 VDC	0,038	P2E-MV35T0	0,038	P2E-MV35T1
	78 VDC	0,038	P2E-MV35Y0	0,038	P2E-MV35Y1
	96 VDC	0,038	P2E-MV35V0	0,038	P2E-MV35V1
110 VDC	0,038	P2E-MV35E0	0,038	P2E-MV35E1	

Solenoids 15 mm NC, food industry version

(Note! Mounting screws included in basic valve)

	Voltage	Weight Kg	Order code Without manual override	Weight Kg	Order code Override, blue, non locking flush	Weight Kg	Order code Override, yellow, locking flush
	24 VDC	0,038	P2E-QV32C0	0,038	P2E-QV32C1	0,038	P2E-QV32C2
	48 VDC	0,038	P2E-QV32D0	0,038	P2E-QV32D1	0,038	P2E-QV32D2
	24 VAC 50Hz	0,038	P2E-QV31C0	0,038	P2E-QV31C1	0,038	P2E-QV31C2
	48 VAC 50/60Hz	0,038	P2E-QV34D0	0,038	P2E-QV34D1	0,038	P2E-QV34D2
	115 V 50Hz/ 120 V 60Hz	0,038	P2E-QV31F0	0,038	P2E-QV31F1	0,038	P2E-QV31F2
	230 VAC 50Hz/ 240 VAC 60Hz	0,038	P2E-QV31J0	0,038	P2E-QV31J1	0,038	P2E-QV31J2
		Voltage	Weight Kg	Order code Override extended, non locking flush	Weight Kg	Order code Override extended, locking flush	
24 VDC		0,038	P2E-QV32C3	0,038	P2E-QV32C4		
24 VAC 50Hz		0,038	P2E-QV31C3	0,038	P2E-QV31C4		
115 VAC 50 Hz		0,038	P2E-QV31F3	0,038	P2E-QV31F4		
230 VAC 50 Hz		0,038	P2E-QV31J3	0,038	P2E-QV31J4		

In accordance with the EU Machine Directive, EN 983, solenoid valves with manual override should have spring-return operating arms for safety.



22mm Solenoid pilot options

The P2F P13*4* (NC) 3/2 solenoid pilot operators are designed for piloting pneumatic control valves with compressed air or other inert gases.

The P2F P operator is available for Normal operating pressures up to 10 bar having an outlet orifice 1.3mm and exhaust orifice 1.5 mm. An alternative operator is also available having an outlet orifice of 0.8mm and exhaust orifice of 1.0mm for Xtreme maximum operating pressure of 16 bar and wide band voltage tolerances required for mobile applications.

For hard environment, a metal operator (anodised aluminium) with brass manual override is available with a 1.2 mm outlet orifice and 1.3mm exhaust orifice. Different temperature range is covering inside, outside application.

Corrosion resistant design

The pilot operator body is manufactured in thermoplastic PA 6 material and the core tube brass/stainless steel. The plunger/core is made from stainless steel and the valve seats from FKM.

Mobile Applications

Viking Xtreme valves are tested to +5g shock and vibration. Solenoid operated valves are designed to operate with wide voltage tolerance bands within the ambient temperature ranges stated in the technical section.

Solenoid Pilot Exhaust

These operators all exhaust out of the top of the core tube which is tapped M5. The standard solenoid nut fitted to the core tube is the Diffuser nut which allows the exhaust to escape to atmosphere. This nut also minimises ingress of dirt into the valve through this port. The alternative plastic knurled nut can be specified (refer to part number system) if the exhaust air needs to be captured and piped away using the M5 tapped port.

Manual Override options

The pilot operators can be supplied with or without manual override. The standard manual override is the monostable (spring return) extended brass override. Alternatively the bistable (locking) override can be specified as an alternative for the Normal duty 10bar option.

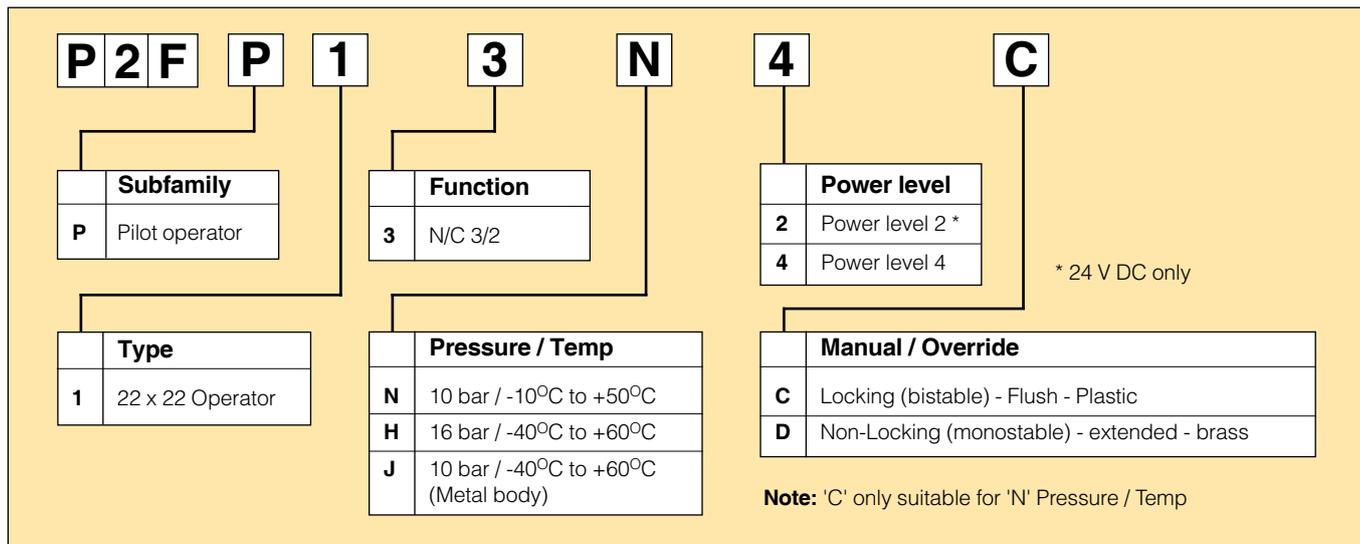
Coils

Coils are wound with enameled copper wire, having temperature index 180°C with class F insulation (155°C) and are encapsulated in Thermoplastic resin. When fitted with suitable connector and correct gasket they give protection to IP65.

Spares

Solenoid operators are available as spares complete with mounting screws and seals. Coils and connectors should be ordered separately.

Order key, solenoid operators (22mm)



Technical data

	NC Normal	NC Xtreme	NC 22mm Xtreme (Mobile)	NC 30mm Xtreme (Mobile)	NC 30 mm Metal (Mobile)
Working pressure	0 to 10 bar	0 to 16 bar	0 to 10 bar	0 to 16 bar	0 to 10 bar
Ambient temperature	-10 °C to +50 °C	-40 °C to +60 °C	-40 °C to +60 °C	-40 °C to +60 °C	-40 °C to +60 °C
Orifice	1.3/1.5mm	0.8/1.0mm	0.8/1.0mm	0.8/1.0mm	1,2 mm / 1,3mm
Flow Qn @ 6 bar input					
1 bar press drop. 1-2 l/m	55	20	20	20	60
Flow Qn @ 6 bar input					
1 bar press drop. 2-3 l/m	70	30	30	30	70
Power (DC)	4.8W (2W Low power)	4.8W	6.0W	6.8W	6.8W
Power (AC)	8.5VA	8.5VA			
Voltage tolerance (Standard)	+/- 10%	+/- 10%			
Voltage tolerance (Mobile)			-10 to +30%	+/- 30%	+/- 30%
Duty cycle	100%	100%	100%	100%	100%
Insulation class	F	F	F	F	F
Electric connection	Ind Form B	Ind Form B	Ind Form B	Form A	Form A
Protection	IP65	IP65	IP65	IP65	IP65
Shock & Vibration	-	0 to +5g	0 to +5g	0 to +5g	0 to 5g
Approval	UL coil version available on request				
Working media	All neutral media such as compressed air and inert gases.				

Mobile applications

Solenoid operated Viking Xtreme duty valves for Mobile applications are fitted with the P2FP13H4D solenoid pilot operator. It has a 22mm footprint with 0.8/1.0mm orifice and will accept 22mm or 30mm coil options. The choice of coil option will depend on the voltage tolerance, operating ambient temperature range and maximum operating pressure. Use the technical data in the table above before selecting the coil type required, or contact our technical department.

Transients

Interrupting the current through the solenoid coil produces momentary voltage peaks which, under unfavourable conditions, can amount to several hundred times the rated operating voltage. Normally, these transients do not cause problems, but to achieve the maximum life of relays in the circuit (and particularly of transistors, thyristors and integrated circuits) it is desirable to provide protection by means of voltage-dependent resistors (varistors). All connectors/ cable plugs with LED's listed on page 54 include this type of circuit protection.

Materials

Pilot Valve

Body:	Polyamide
Body:	Anodised aluminium for J type
Armature tube:	Brass (Normal) Stainless Steel 16 bar mobile
Plunger & core:	Corrosion resistant Cr-Ni steel
Seals:	FKM (Viton™)
Screws:	Stainless steel

Coil

Encapsulation material:	Thermoplastic
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22mm solenoid operator part numbers and spares

Solenoids coil standard 22mm

Voltage	Voltage tolerance	Temperature	Order code Form B	Power	Weight (Kg)	Use with Operator type
12V 50Hz	+/-10%	-10°C / 50°C	P2FCB440	8,5VA	0.053	P2FP13N4
24V 50/60Hz	+/-10%	-10°C / 50°C	P2FCB442	8,5VA	0.053	P2FP13N4
48V 50/60Hz	+/-10%	-10°C / 50°C	P2FCB449	8,5VA	0.053	P2FP13N4
120V/50Hz, 120V/60Hz	+/-10%	-10°C / 50°C	P2FCB453	8,5VA	0.053	P2FP13N4
230V/50Hz, 230V/60Hz	+/-10%	-10°C / 50°C	P2FCB457	8,5VA	0.053	P2FP13N4
12V DC	+/-10%	-10°C / 50°C	P2FCB445	4,8W	0.053	P2FP13N4
24V DC	+/-10%	-10°C / 50°C	P2FCB449	4,8W	0.053	P2FP13N4
48V DC	+/-10%	-10°C / 50°C	P2FCB451	4,8W	0.053	P2FP13N4

For pressure 0 to 10 bar

Solenoids coil low power 22mm

Voltage	Order code Form B	Power	Weight (Kg)	Use with Operator type
24V DC Low power	P2FCB249	2W	0.093	P2FP13N2

For pressure 0 to 10 bar

Solenoids coil 22mm Xtreme

Voltage	Voltage tolerance	Temperature	Order code Form B	Power	Weight (Kg)	Use with Operator type
12V 50Hz	+/-10%	-40°C / 60°C	P2FCB440	8,5VA	0.053	P2FP13NH4D
24V 50/60Hz	+/-10%	-40°C / 60°C	P2FCB442	8,5VA	0.053	P2FP13NH4D
48V 50/60Hz	+/-10%	-40°C / 60°C	P2FCB449	8,5VA	0.053	P2FP13NH4D
120V/50Hz, 120V/60Hz	+/-10%	-40°C / 60°C	P2FCB453	8,5VA	0.053	P2FP13NH4D
230V/50Hz, 230V/60Hz	+/-10%	-40°C / 60°C	P2FCB457	8,5VA	0.053	P2FP13NH4D
12V DC	+/-10%	-40°C / 60°C	P2FCB445	4,8W	0.053	P2FP13NH4D
24V DC	+/-10%	-40°C / 60°C	P2FCB449	4,8W	0.053	P2FP13NH4D
48V DC	+/-10%	-40°C / 60°C	P2FCB451	4,8W	0.053	P2FP13NH4D

For pressure 0 to 16 bar for A+B & 12 bar for C+D

Solenoids coil mobile voltage 22mm

Voltage	Voltage tolerance	Temperature	Order code Form B	Power	Weight (Kg)	Use with Operator type
12V DC	-10% / +30%	-40°C / + 60°C	P2FCB447	6W	0.053	P2FP13H4D
24V DC	-10% / +30%	-40°C / + 60°C	P2FCB448	6W	0.053	P2FP13H4D

For pressure 0 to 16 bar for A+B & 12 bar for C+D

Solenoids coil Mobile voltage 30mm

Voltage	Voltage tolerance	Temperature	Order code Form A	Power	Weight (Kg)	Use with Operator type
12V DC	+/- 30%	-40°C / +60°C	P2FCA447	6,8W	0.09	P2FP13H4D
24V DC	+/- 30%	-40°C / +60°C	P2FCA448	6,8W	0.09	P2FP13H4D
48V DC	+/- 30%	-40°C / +60°C	P2FCA474	6,8W	0.09	P2FP13H4D
72V DC	+/- 30%	-40°C / +60°C	P2FCA470	6,8W	0.09	P2FP13H4D
96V DC	+/- 30%	-40°C / +60°C	P2FCA471	6,8W	0.09	P2FP13H4D
110V DC	+/- 30%	-40°C / +60°C	P2FCA472	6,8W	0.09	P2FP13H4D

For pressure 0 to 16 bar for A+B & 12 bar for C+D

Solenoids coil Mobile voltage 30mm

Voltage	Voltage tolerance	Temperature	Order code Form A	Power	Weight (Kg)	Use with Operator type
12V DC	+/- 30%	-40°C / +60°C	P2FCA447	6,8W	0.09	P2FP13J4
24V DC	+/- 30%	-40°C / +60°C	P2FCA448	6,8W	0.09	P2FP13J4
48V DC	+/- 30%	-40°C / +60°C	P2FCA474	6,8W	0.09	P2FP13J4
72V DC	+/- 30%	-40°C / +60°C	P2FCA470	6,8W	0.09	P2FP13J4
96V DC	+/- 30%	-40°C / +60°C	P2FCA471	6,8W	0.09	P2FP13J4
110V DC	+/- 30%	-40°C / +60°C	P2FCA472	6,8W	0.09	P2FP13J4

For pressure 0 to 10 bar

Spare Solenoid Nuts

Valves requiring captured exhaust should be fitted with plastic knurled nut

Order code
P2FNP

Valves with vented exhaust are fitted with diffuser plastic nut

Order Code
P2FND

Spare Solenoid Operators

Solenoid pilot operator 22mm NC, Normal duty (Max Operating pressure 10bar, Temp -10°C to +50°C)

Order code (with locking bi-stable m/o)	weight Kg	Order code (with Non-locking monostable m/o)	weight Kg
P2FP13N4C	0.05kg	P2FP13N4D	0.05kg

Low power pilot operator NC, Normal duty (Max Operating pressure 10bar, Temp -10°C to +50°C)

Order code (with locking bi-stable m/o)	weight Kg	Order code (with Non-locking monostable m/o)	weight Kg
P2FP13N2C	0.05kg	P2FP13N2D	0.05kg

Solenoid pilot operator 22mm NC, Xtreme duty (Max Operating pressure 16bar, Temp -40°C to +60°C)

Order code (with Non-locking monostable m/o)	weight Kg
P2FP13H4D	0.05kg

Solenoid pilot operator 22mm NC Mobile metal (Max Operating pressure 10bar, Temp -40°C to +60°C)

Order code (with brass non locking m/o)	weight Kg	Order code (with brass locking m/o)	weight Kg	Order code No manual override	weight Kg
P2FP13J4B	0.04kg	P2FP13J4C	0.04kg	P2FP13J4A	0.04kg

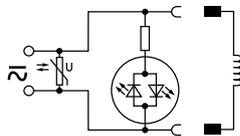
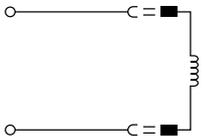
Note.

Solenoid pilot operators are fitted to the Viking valve range. Order the above part numbers for spares. The operators are supplied with mounting screws and interface 'O' rings.

Coils and connectors must be ordered separately.

Solenoid Connectors / Cable Plugs EN175301-803

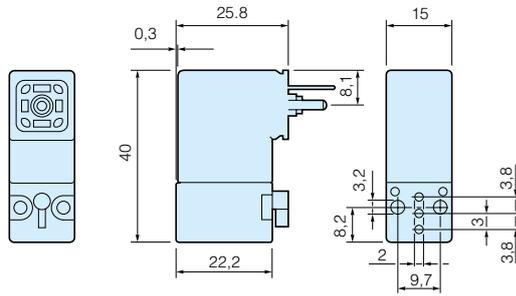
	Description	Order code 15mm Form C/ISO15217	Order code 22mm Industrial Form B	Order code 30mm Form A/ISO4400
With large headed screw suitable for mounting in inaccessible or recess position 	Standard IP65	P8C-C		
	24V DC LED and protection IP65	P8C-C26C		
	110V AC LED and protection IP65	P8C-C21E		
With standard screw 	Standard IP65 without flying lead	P8C-D	3EV10V10	3EV290V10
	With LED and protection 24V AC/DC	P8C-D26C	3EV10V20-24	3EV290V20-24
	With LED and protection 110V AC/DC	P8C-D21E	3EV10V20-110	3EV290V20-110
	With LED and protection 230V AC		3EV10V20-230	
With cable 	Standard with 2m cable IP65	P8L-C2		
	Standard with 5m cable IP65	P8L-C5		
	24V AC/DC, 2m cable LED and protection IP65	P8L-C226C		
	24V AC/DC, 5m cable LED and protection IP65	P8L-C526C	3EV10V20-24L5	3EV290V20-24L5
	24V AC/DC, 10m cable LED and protection IP65	P8L-CA26C		
	110V AC/DC, 2m cable LED and protection IP65	P8L-C221E		
	110V AC/DC, 5m cable LED and protection IP65	P8L-C521E	3EV10V20-110L5	
230V AC, 5m cable LED and protection IP65		3EV10V20-230L5		



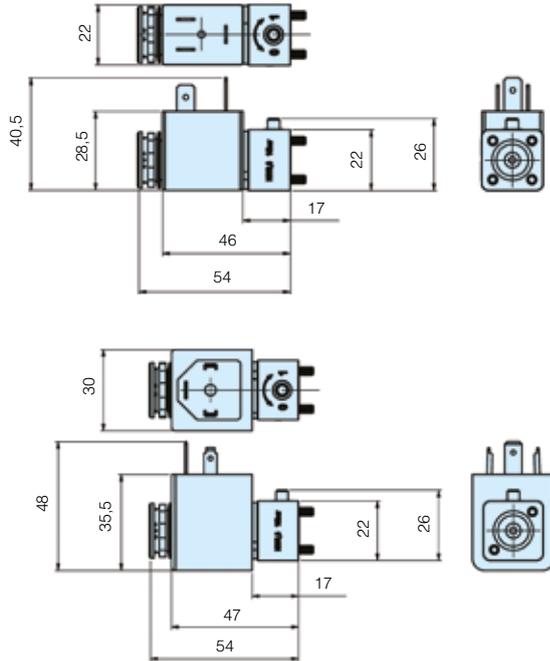
P8C-C	P8C-D26C	P8L-C226C
P8C-D	P8C-D21E	P8L-C526C
P8L-C2	P8C-C26C	P8L-CA26C
P8L-C5	P8C-C21E	P8L-C221E
3EV10V10		P8L-C521E
3EV290V10	3EV10V20-24	3EV10V20-24L5
	3EV10V20-110	3EV10V20-110L5
	3EV10V20-230	3EV10V20-230L5

Cable Plug Dimensions (mm)

Solenoid operators P2E-•V...

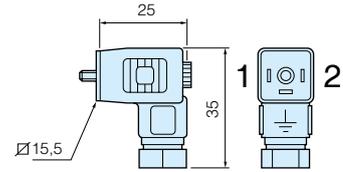


Solenoid operators P2FP...



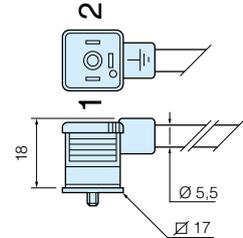
Cable plugs

- P8C-C
- P8C-C26C
- P8C-C21E
- P8C-D
- P8C-D26C
- P8C-D21E



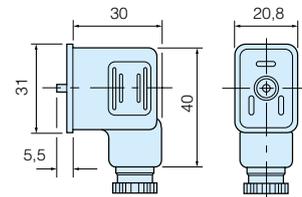
Cable plugs with cables

- P8L-C2
- P8LC5
- P8L-C226C
- P8L-C526C
- P8L-CA26C
- P8L-C221E
- P8L-C521E



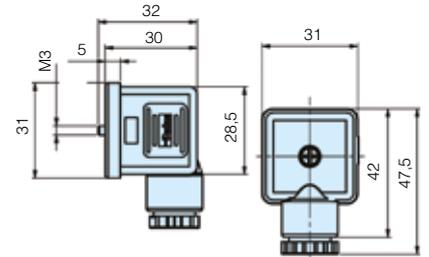
Cable plugs Form B

- 3EV10V10
- 3EV10V20-24
- 3EV10V20-110
- 3EV10V20-230
- 3EV10V20-24L5
- 3EV10V20-110L5
- 3EV10V20-230L5



Cable plugs Form A

- 3EV290V10
- 3EV290V20-24
- 3EV290V20-24L5



Accessories

Sintered bronze series

Port	Order code	Pack Qty
M5	9721900005	1
G1/8	9090050700	1
G1/4	P6M-BAA2	1
G3/8	9090050900	1
G1/2	9090051000	1

Male straight connectors - Parallel thread

Tube Ø1	Thread B	Order code	Box Qty
4	1/8	F4PMB4-1/8	20
6	1/8	F4PMB6-1/8	30
6	1/4	F4PMB6-1/4	30
8	1/8	F4PB8-1/8	40
8	1/4	F4PB8-1/4	30
8	3/8	F4PB8-3/8	20
10	1/4	F4PB10-1/4	20
10	3/8	F4PB10-3/8	20
10	1/2	F4PB10-1/2	10
12	1/4	F4PB12-1/4	10
12	3/8	F4PB12-3/8	10
12	1/2	F4PB12-1/2	10
14	3/8	F4PB14-3/8	10
14	1/2	F4PB14-1/2	10