# Balanced spool electro-pneumatic microvalves - K Series

Connections: 1/8"

**K SERIES**



- Balanced spool valves with dynamic sealing
- Fast switching times
- Small footprint
- Anodised aluminium body and bases
- Electro-pneumatically operated with internal piloting
- Possibility of series assembly

| TECHNICAL FEATURES | | |
|---|---|---|
| **Function** | | 5/2 |
| **Operation** | | Electropneumatic: Internal servopiloting - Monostable pneumatic, bistable spring return |
| **Materials** | | Body, base and cover in anodised aluminium alloy - Internal components in steel - aluminium - brass NBR gaskets |
| **Note on materials** | | Compliant with REACH (1907/2006/EC and subsequent amendments) |
| **Connections** | | 1/8" Gas |
| **Threads** | | Cylindrical gases (BSPP) |
| **Operating temperature** | | 0°C ÷ 80°C (-20°C with dry air, to avoid ice formation) |
| **Operating pressure** | | 1.5 ÷ 7 bar |
| **Pilot actuation pressure** | | 1.5 bar |
| **Air flow rate** | | 1/8" |
| Nominal diameter | | 4mm |
| Supply pressure | 5 bar | 320 Nl/min |
| (with ΔP 1 bar) | 6 bar | 350 Nl/min |
| | 7 bar | 400 Nl/min |
| | | See flow diagram page 3.1.05.6 |
| **Fluid** | | Filtered air, lubrication-free, compliant with ISO 8573-1:2010 [7:4:4] |
| **Lubrication** | | Not required (if required in the pneumatic circuit, it must be continuous) |

| COILS ELECTRICAL CHARACTERISTICS | | | | |
|---|---|---|---|---|
| **Coil type** | "ES" Type | | "F" Type | |
| **Operating voltage** | 12, 24 Vdc | 24, 48, 110, 220 Vac | 24 Vdc | 24, 110, 220 Vac |
| **Power (max.)** | 2.5 W | 3.6 VA | 2.5 W | 3.0 VA |
| **Voltage tolerance** | ± 10% | | ± 10% | |
| **Protection class** | IP65 | | IP65 | |
| **Other features** | See from p. 3.1.05.10 | | See from p. 3.1.05.10 | |

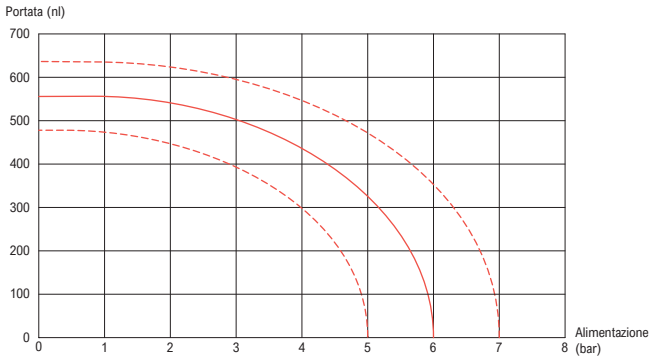




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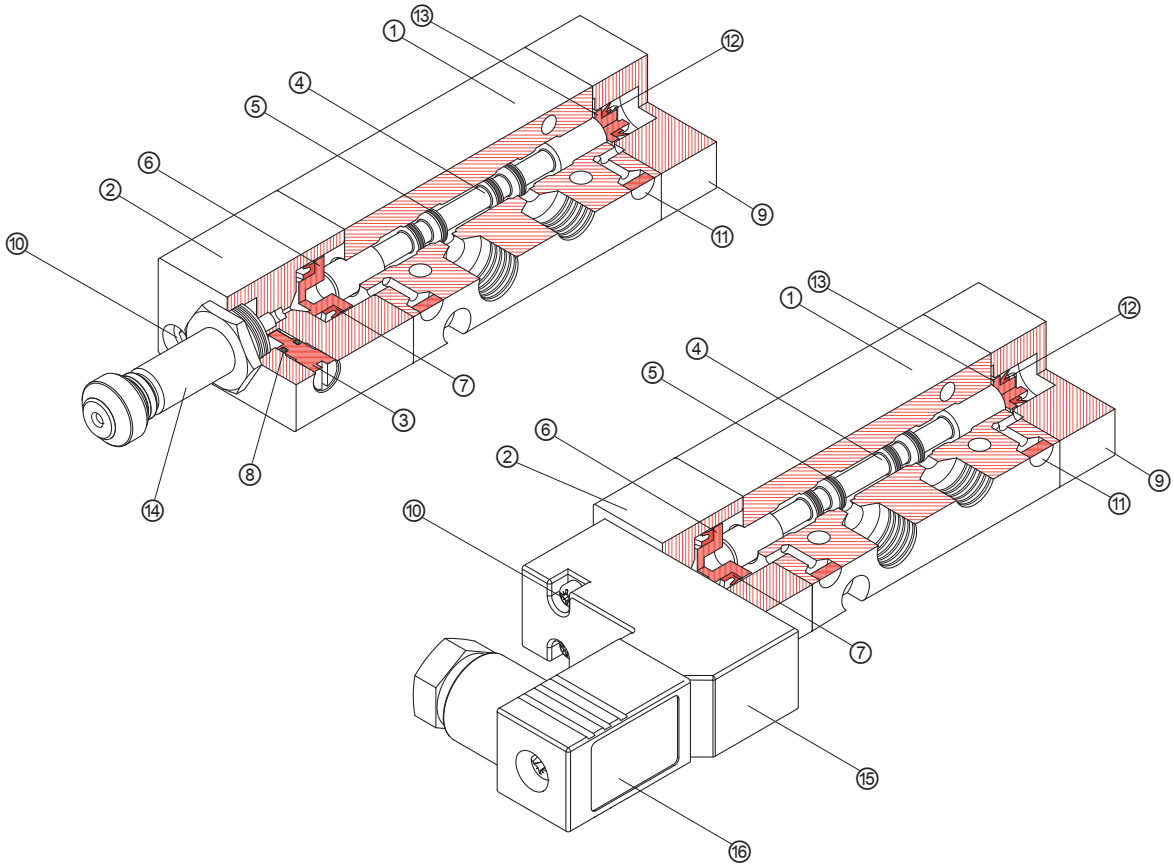
## FLOW DIAGRAMS - ELECTRO-PNEUMATICALLY OPERATED VALVES

### FLOW RATE DIAGRAM - 1/8" MICROVALVE




## MATERIALS - ELECTRO-PNEUMATICALLY OPERATED VALVES

| POS | DESCRIPTION | MATERIALS | POS | DESCRIPTION | MATERIALS |
|---|---|---|---|---|---|
| ① | Body | Anodised drawn aluminium | ⑨ | Base | Anodised aluminium |
| ② | Cover | Anodised drawn aluminium | ⑩ | Screw | Galvanised steel |
| ③ | Manual control | OT58 brass | ⑪ | Silencer | Sintered bronze |
| ④ | Spool | Anodised aluminium | ⑫ | Sealing gasket | Nitrile rubber (NBR) |
| ⑤ | Sealing gasket | Nitrile rubber (BUNA-N) | ⑬ | Piston | Galvanised aluminium |
| ⑥ | Piston | Nylon | ⑭ | Electropilot | Brass - Magnetic stainless steel |
| ⑦ | Piston gasket | PUR 90 ShA | ⑮ | Coil | NYLON + Fibreglass coating |
| ⑧ | O-ring | Nitrile rubber (NBR) | ⑯ | Connector | Nylon PA6 GF |








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## CODING KEY - ELECTRO-PNEUMATICALLY OPERATED VALVES

| Operation | Function | Size | Version | Piloting |
|---|---|---|---|---|
| **EK** | **13** | **80** | **10** | □ |
| **EK** = Electropneumatic internal servo-pilot  | **13** = 5/2 Monostable 5/2 Bistable  | **80** = 1/8" Gas | **10** = Monostable Pneumatic spring return <br>**20** = Pneumatic bistable  | **NULL** = Pneumatic<br>**/ES** = Electric for BOB ES coil...<br>**/F024DC** = Electric with BOB F024DC coil<br>**/F024AC** = Electric with BOB F024AC coil<br>**/F110AC** = Electric with BOB F110AC coil<br>**/F220AC** = Electric with BOB F220AC coil |

## POSSIBLE CONFIGURATIONS

| Operation | Function | Size | Version | Piloting |
|---|---|---|---|---|
| **EK**<br>Electropneumatic external servo pilot | **13**<br>5/2 | **80**<br>1/8" Gas | **10**<br>Monostable Pneumatic return<br>**20**<br>Pneumatic bistable | **/ES**<br>ES Coil<br>See p.....<br>**/F024DC**<br>F Coil<br>24 Vdc - 2.5 W<br>**/F024AC**<br>F Coil<br>24 Vac - 3.0 VA<br>**/F110AC**<br>F Coil<br>110 Vac - 3.0 VA<br>**/F220AC**<br>F Coil<br>220 Vac - 3.0 VA |

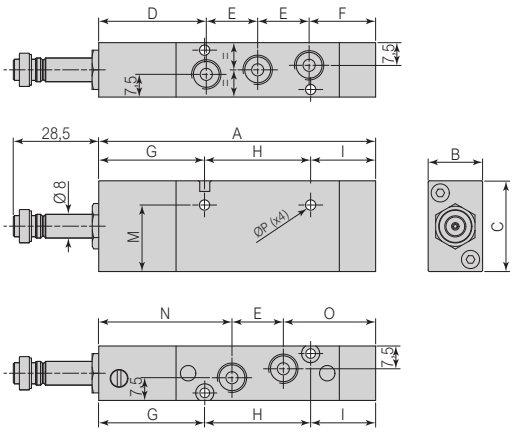




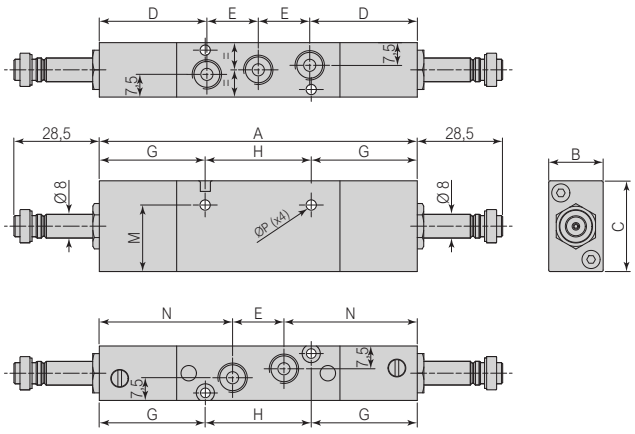
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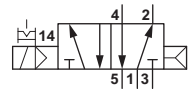
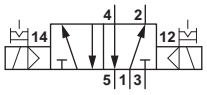
## DIMENSIONS - 5/2 VALVES ELECTRO-PNEUMATICALLY OPERATED TYPE /ES

### MONOSTABLE WITH PNEUMATIC BISTABLE




### SPRING RETURN

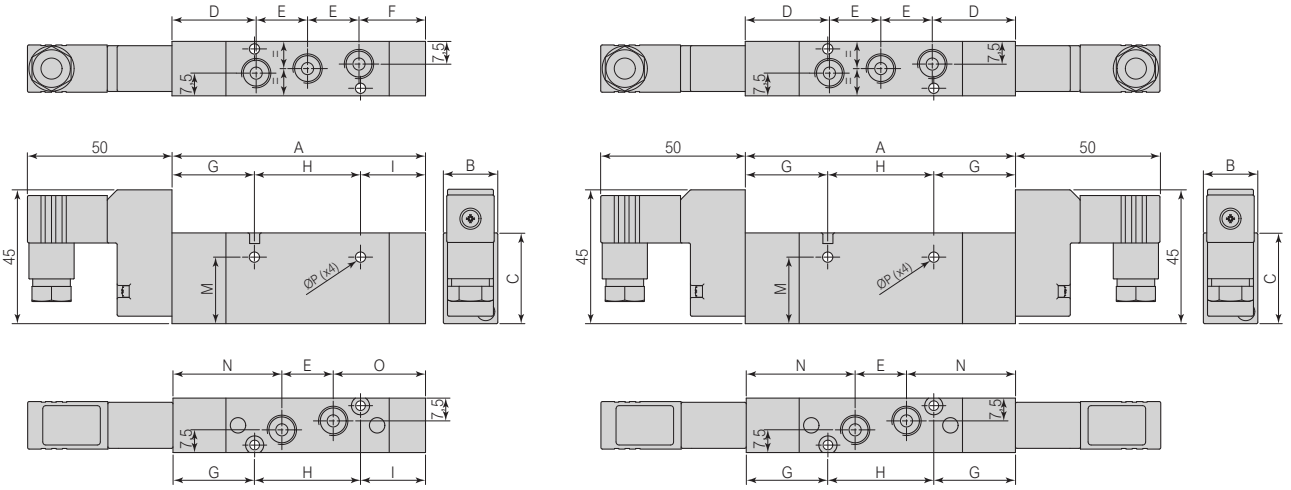


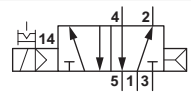
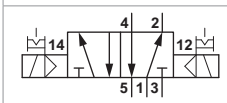

| Symbol | Connections | Code | A | B | C | D | E | F | G | H | I | M | N | O | Ø P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | Gas 1/8" | EK138010/ES | 91.5 | 18 | 30 | 35.5 | 17 | 22 | 35 | 35 | 21.5 | 22 | 44 | 30.5 | 3.2 |
|  | Gas 1/8" | EK138020/ES | 105 | 18 | 30 | 29.5 | 17 | - | 35 | 35 | - | 22 | 44 | - | 3.2 |

## DIMENSIONS - 5/2 VALVES ELECTRO-PNEUMATICALLY OPERATED TYPE /F...

### MONOSTABLE WITH PNEUMATIC BISTABLE

### SPRING RETURN



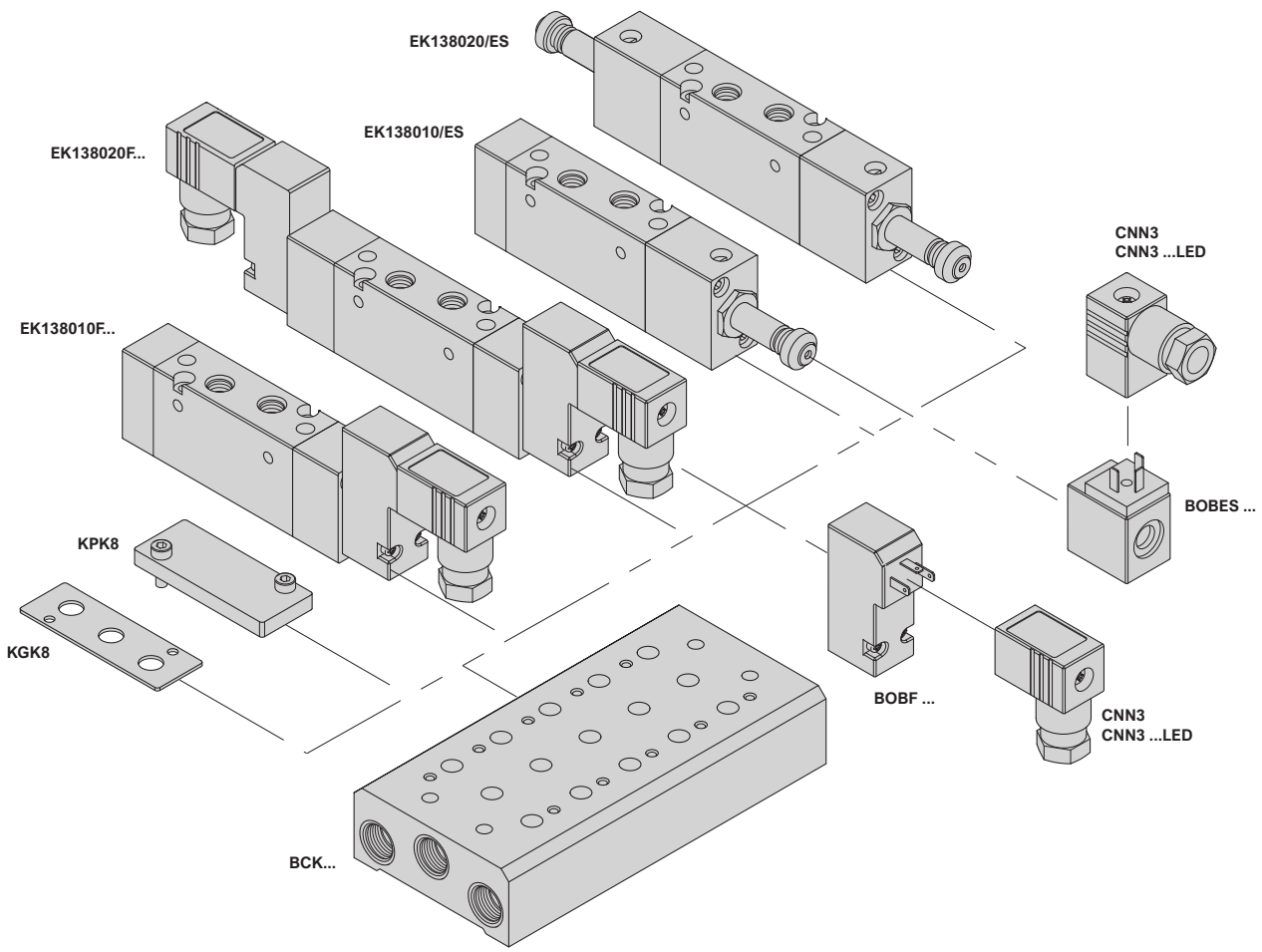

| Symbol | Connections | Code | A | B | C | D | E | F | G | H | I | M | N | O | Ø P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | Gas 1/8" | EK138010/F... | 83.5 | 18 | 30 | 27.5 | 17 | 22 | 27 | 35 | 21.5 | 21.5 | 36 | 30.5 | 3.2 |
|  | Gas 1/8" | EK138020/F... | 89 | 18 | 30 | 27.5 | 17 | - | 27 | 35 | - | 21.5 | 36 | - | 3.2 |

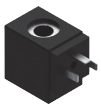


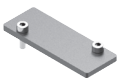


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## K SERIES ACCESSORIES




| **BOBES ...**<br>"ES" type coils<br>AC / DC | | **BOBF ...**<br>"F" type coils<br>AC / DC | | **CNN3**<br>Connectors for<br>"F" type coils | | **CNN3 ... LED**<br>LED connectors for<br>"F" type coils | |
|---|---|---|---|---|---|---|---|
|  | |  | |  | |  | |
| Page 3.1.05.10 | | Page 3.1.05.10 | | Page 3.1.05.11 | | Page 3.1.05.11 | |
| 12 Vdc | BOBES012DC | 24 Vdc | BOBF024DC | 0÷250 V ac/dc | CNN3 | 12 V ac/dc | CNN3 2 LED |
| 24 Vdc | BOBES024DC | 24 Vac | BOBF024AC | | | 24 V ac/dc | CNN3 2 LED |
| 24 Vac | BOBES024AC | 110 Vac | BOBF110AC | | | 115 V ac/dc | CNN3 4 LED |
| 110 Vac | BOBES110AC | 220 Vac | BOBF220AC | | | 230 V ac/dc | CNN3 5 LED |
| 220 Vac | BOBES220AC | | | | | | |
| Coating in<br>NYLON + FIBREGLASS | | RESIN body<br>NBR gasket | | PA6 GF | | PA6 GF - PA12 | |

| **SUB-BASES**<br>BCK... | | | | | | | | | **GASKET**<br>For BCK sub-base... | **EXCLUSION PLATE**<br>For BCK sub-base... |
|---|---|---|---|---|---|---|---|---|---|---|
|  | | | | | | | | |  |  |
| Page 3.1.05.11 | | | | | | | | | | Page 3.1.05.11 |
| 2 seats | 3 seats | 4 seats | 5 seats | 6 seats | 7 seats | 8 seats | 9 seats | 10 seats | | |
| BCK82 | BCK83 | BCK84 | BCK85 | BCK86 | BCK87 | BCK88 | BCK89 | BCK810 | KGK8 | KPK8 |
| Anodised aluminium sub-base<br>Zinc-plated steel fixing screws - NBR gaskets | | | | | | | | | NBR gasket | Anodised aluminium plate<br>Zinc-plated steel screws |

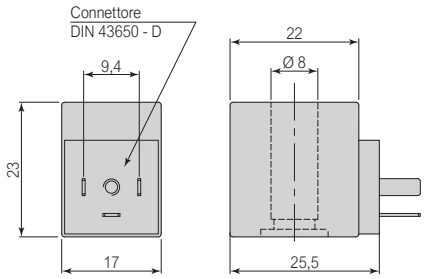




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## "ES" type COILS

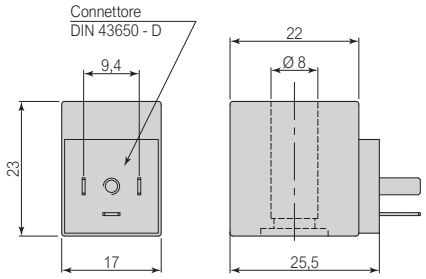
**BOBES ...**
Direct current coils




| Technical features | | |
|---|---|---|
| **Code** | BOBES012DC | BOBES024DC |
| **Operating voltage** | 12 VDC | 24 VDC |
| **Power (max.)** | 2.5 W | |
| **Voltage tolerance** | ±10% (of nominal voltage) | |
| **Insulation class** | 155°C (F) | |
| **Wire insulation class** | 200°C (H) | |
| **Insertion duration** | 100% (at 20°C) | |
| **Electrical connection** | INDUSTRIAL (AMP 6.3 x 0.8) form B | |
| **Protection class** | IP54 (with connector)<br>IP65 (with connector and suitable gaskets) | |
| **Material** | NYLON + Fibreglass coating | |

BOBES... / 1 piece per pack

**BOBES ...**
AC coils

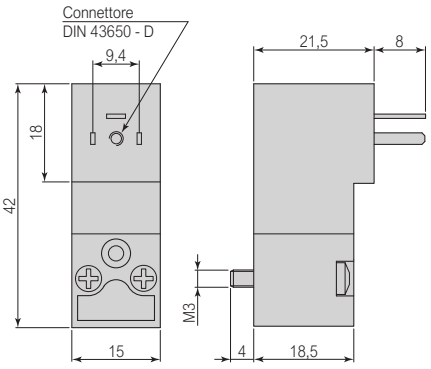



| Technical features | | | |
|---|---|---|---|
| **Code** | BOBE024AC | BOBE110AC | BOBE220AC |
| **Operating voltage** | 24 VAC | 110 VAC | 220 VAC |
| **Power (max.)** | 3.6 VA | | |
| **Voltage tolerance** | ±10% (of nominal voltage) | | |
| **Insulation class** | 155°C (F) | | |
| **Wire insulation class** | 200°C (H) | | |
| **Insertion duration** | 100% (at 20°C) | | |
| **Electrical connection** | INDUSTRIAL (AMP 6.3 x 0.8) form B | | |
| **Protection class** | IP54 (with connector)<br>IP65 (with connector and suitable gaskets) | | |
| **Material** | NYLON + Fibreglass coating | | |

BOBES... / 1 piece per pack

## "F" type COILS (15 mm)

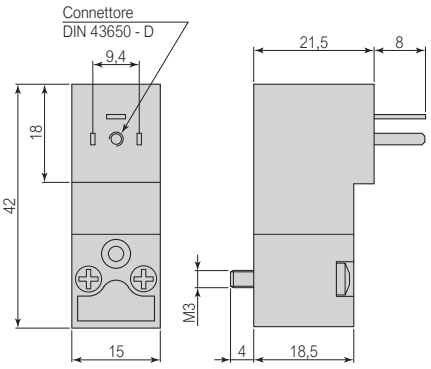
**BOBF ...**
Direct current coils




| Technical features | | |
|---|---|---|
| **Code** | BOBF024DC | |
| **Operating voltage** | 24 VDC | |
| **Power (max.)** | 2.5 W | |
| **Voltage tolerance** | ±10% (of nominal voltage) | |
| **Insulation class** | 200°C (H) | |
| **Insertion duration** | 100% (at 20°C) | |
| **Electrical connection** | DIN 43650 form D | |
| **Version** | 3/2 N.A. | |
| **Work pressure** | 0 ÷ 7 bar | |
| **Protection class** | IP65 (with connector and suitable gaskets) | |
| **Material** | RESIN body, NBR gasket, steel screws | |

BOBF... / 1 piece per pack

**BOBF ...**
AC coils




| Technical features | | | |
|---|---|---|---|
| **Code** | BOBF024AC | BOBF110AC | BOBF220AC |
| **Operating voltage** | 24 VAC | 110 VAC | 220 VAC |
| **Power (max.)** | 3.0 VA | | |
| **Voltage tolerance** | ±10% (of nominal voltage) | | |
| **Insulation class** | 200°C (H) | | |
| **Insertion duration** | 100% (at 20°C) | | |
| **Electrical connection** | DIN 43650 form D | | |
| **Version** | 3/2 N.A. | | |
| **Work pressure** | 0 ÷ 7 bar | | |
| **Protection class** | IP65 (with connector and suitable gaskets) | | |
| **Material** | RESIN body, NBR gasket, steel screws | | |

BOBF... / 1 piece per pack

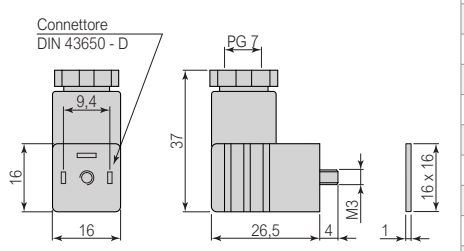




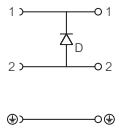
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## CONNECTORS for "ES" and "F" type coils

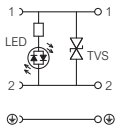
**CNN3...**
Connector for "ES" type coils




CNN3




CNN3...LED

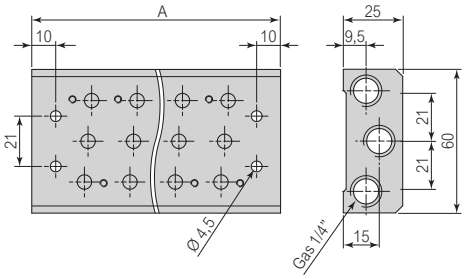



| Technical features | | | | |
|---|---|---|---|---|
| **Code** | CNN3 | CNN3 2 LED | CNN3 4 LED | CNN3 5 LED |
| **Voltage** | 0÷250 V AC/DC | 24 V AC/DC | 115 V AC/DC | 230 V AC/DC |
| **Current (max.)** | 4 A | 4 A | 5 A | 5 A |
| **Contact resistance (max.)** | 15 mΩ | | | |
| **Overvoltage category** | III | | | |
| **Conductor cross-section (max.)** | 1.5 mm² (without terminals) | | | |
| **Cable clamp thread** | PG7 | | | |
| **Operating temperature** | -40°C ÷ +100°C | -20°C ÷ +80°C | -20°C ÷ +80°C | -20°C ÷ +80°C |
| **Electrical connection** | DIN 43650 form D | | | |
| **Protection class** | IP65 (properly assembled) | | | |
| **Insert and case materials** | PA6 GF - PA6 GF | PA6 GF - PA12 | PA6 GF - PA12 | PA6 GF - PA12 |
| **Visual indicator** | None | Yellow LED diode | Yellow LED diode | Yellow LED diode |
| **Colour** | Black | Clear | Clear | Clear |
| **Electrical circuit protection** | Diode | TVS Circuit | TVS Circuit | TVS Circuit |
| **Fixing type** | Central screw M3x27,5 | | | |

CNN3... / Insert, case, gasket and fixing screw - 1 piece per pack

## ACCESSORIES

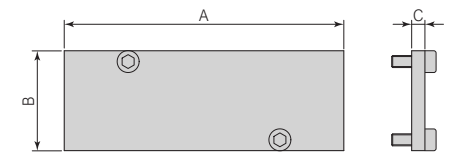
**BCK ..**
Sub-base




| | A | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | BCK82 | BCK83 | BCK84 | BCK85 | BCK86 | BCK87 | BCK88 | BCK89 | BCK810 |
| | 2 seats | 3 seats | 4 seats | 5 seats | 6 seats | 7 seats | 8 seats | 9 seats | 10 seats |
| | 66 | 85 | 104 | 123 | 142 | 161 | 180 | 199 | 218 |

Anodised aluminium sub-base - Zinc-plated steel fixing screws - NBR gaskets / 1 piece per pack

**EXCLUSION PLATE**
For BCK sub-bases...




| Code | A | B | C |
|---|---|---|---|
| KPK8 | 54 | 20 | 3 |

Anodised aluminium plate - Zinc-plated steel fixing screws / 1 piece per pack





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