

**Characteristics / Ordering Code**

The 2/2-way seat valves series C10C\*E are equipped with an inductive switch to monitor the closed position. The poppet has a 60/40 area ratio (AA = 0.6 AC, AB = 0.4 AC) and is capable for flow in both directions.

The safety overlap of the poppet avoids opening of the valve before the signal of the inductive switch has changed.

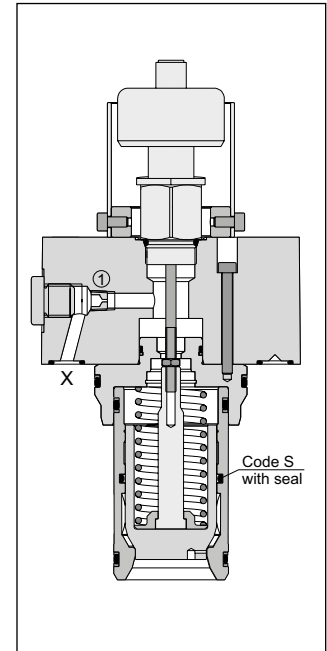
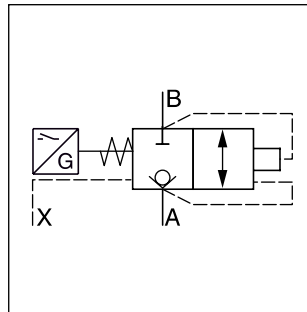
For sizes NG80 and NG100 a proximity switch is used.

**Features**

- 8 sizes, NG16 up to NG100
- Cover to mount a directional control valve (on the side) for cover 3 (for NG16 to NG63)
- Cavity and mounting pattern acc. to ISO 7368
- Monitored closed position
- Inductive switch CE conform
- Optional with poppet sealing between pilot flow C and port B

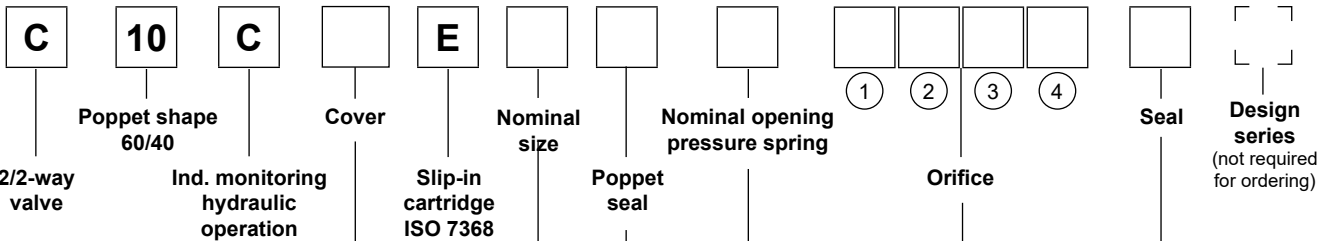


C10C3E



C10C1E

**Ordering code**



| Code | Cover                         |
|------|-------------------------------|
| 1    | without pilot valve interface |
| 3 1) | with pilot valve interface    |

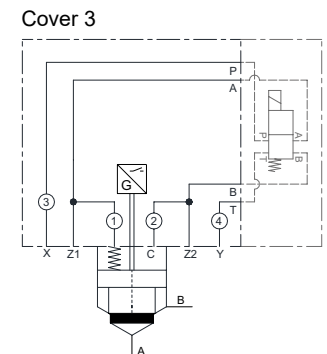
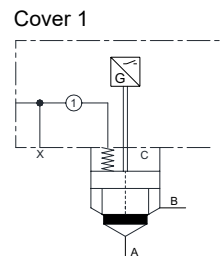
| Code | Nominal size |
|------|--------------|
| 016  | NG16         |
| 025  | NG25         |
| 032  | NG32         |
| 040  | NG40         |
| 050  | NG50         |
| 063  | NG63         |
| 080  | NG80         |
| 100  | NG100        |

| Code | Poppet seal |
|------|-------------|
| C    | without     |
| S 2) | with        |

| Code | Nominal opening pressure spring |
|------|---------------------------------|
| L    | 0.1 bar                         |
| N    | 0.5 bar                         |
| S    | 1.6 bar                         |
| T    | 2.5 bar                         |
| U    | 4.0 bar                         |

| Code | Seal |
|------|------|
| N    | NBR  |
| V    | FPM  |

| Code | Orifice                  |
|------|--------------------------|
| ohne | no orifice (2-4 cover 1) |
| 00   | Plug                     |
| 99   | open, without orifice    |



○ Orifices (see 'Accessories')

Please order female connector M12x1 separately (order no. 5004109)

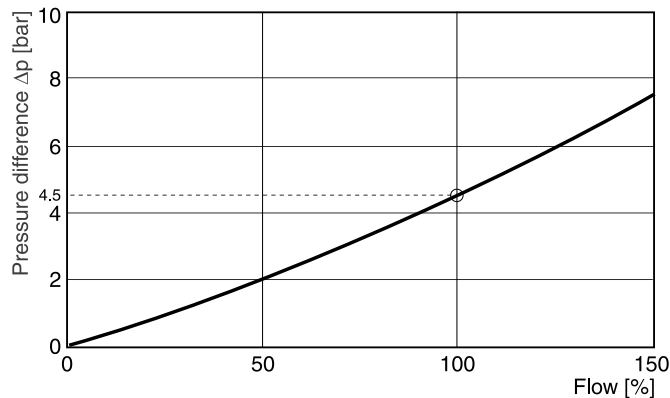
1) NG16 to NG63. The DC valve is not included in the delivery. We recommend the following pilot valves: D1VW020BN\*W or D1VW020HN\*W, depending on the required functionality and plug location.  
2) Only with spring S, T and U.

**Technical data**

| General                                     |  |      |       |       |       |       |      |       |  |
|---|--|------|-------|-------|-------|-------|------|-------|--|
| Design                                      | 2-way slip-in cartridge valves ISO 7368              |      |       |       |       |       |      |       |  |
| Size  | NG16   | NG25 | NG32  | NG40  | NG50  | NG63  | NG80 | NG100 |  |
| Mounting position                           | unrestricted   |      |       |       |       |       |      |       |  |
| Operation                                   | hydraulic  |      |       |       |       |       |      |       |  |
| Ambient temperature [C°]                    | -20...+60  |      |       |       |       |       |      |       |  |
| MTTF <sub>D</sub> value [years]             | 150  |      |       |       |       |       |      |       |  |
| Weight [kg]                                 | 1.5  | 2.7  | 4.3   | 7.4   | 12    | 23    | 53   | 89    |  |
| Hydraulic                                   |  |      |       |       |       |       |      |       |  |
| Max. operating pressure [bar]               | 350  |      |       |       |       |       |      |       |  |
| Nominal flow Δp 5 bar [l/min]               | 230  | 400  | 800   | 1250  | 1625  | 3400  | 5000 | 7500  |  |
| Fluid                                       | Hydraulic oil according to DIN 51524                 |      |       |       |       |       |      |       |  |
| Fluid temperature [C°]                      | -20...+70 (NBR: -25...+70)                           |      |       |       |       |       |      |       |  |
| Viscosity, permitted [cSt] / [mm²/s]        | 20...400   |      |       |       |       |       |      |       |  |
| Viscosity, recommended [cSt] / [mm²/s]      | 30...80  |      |       |       |       |       |      |       |  |
| Filtration                                  | ISO 4406; 18/16/13                                   |      |       |       |       |       |      |       |  |
| Control volume at max. stroke [cm³]         | 2.03   | 6.45 | 12.21 | 20.32 | 39.40 | 94.56 | 218  | 374   |  |
| Control surface (surface C = 100 %) A/B [%] | approx. 60 / 40 related on surface C                 |      |       |       |       |       |      |       |  |
| Opening pressure                            |  |      |       |       |       |       |      |       |  |
| flow direction A→B [bar]                    | Spring: L = 0.2; N = 0.9; S = 2.7; T = 4.0; U = 6.6  |      |       |       |       |       |      |       |  |
| flow direction B→A [bar]                    | Spring: L = 0.3; N = 1.3; S = 4.0; T = 6.3; U = 10.0 |      |       |       |       |       |      |       |  |
| Electrical (Inductive switch)               |  |      |       |       |       |       |      |       |  |
|   | See position control                                 |      |       |       |       |       |      |       |  |

**Δp/Q performance curve**

(without spring and poppet seal, C-chamber unloaded)



Characteristic curve measured with HLP46 at 50 °C.

**Recommended orifice diameter**

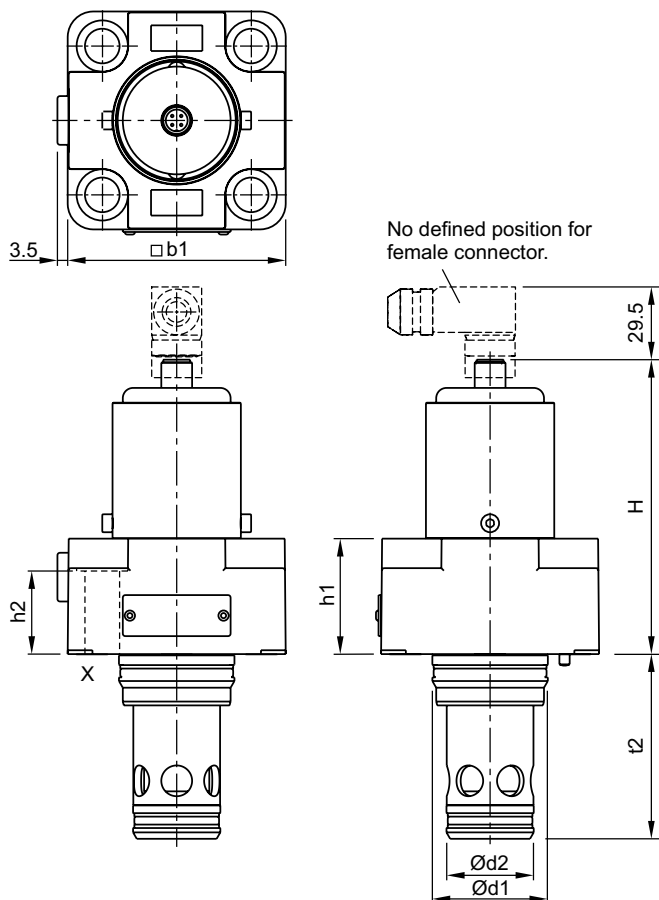
| Cover         | Orifice         | NG16     | NG25     | NG32     | NG40    | NG50    | NG63    | NG80    | NG100   |
|---------------|-----------------|----------|----------|----------|---------|---------|---------|---------|---------|
| C10C1E        | No.: 1          | 1/16 NPT | 1/16 NPT | 1/16 NPT | 1/8 NPT | 1/8 NPT | 1/8 NPT | 1/8 NPT | 1/8 NPT |
| C10C3E        | No.: 1, 2, 3, 4 | M5       | M6       | M6       | M6      | M8      | M8      | n/a     | n/a     |
| Inlet orifice |                 | Ø 0.8    | Ø 1.2    | Ø 1.5    | Ø 2.0   | Ø 2.5   | Ø 3.0   | Ø 3.0   | Ø 3.0   |

Depending on function, plugs must be used (code00).

**Dimensions**

**Dimensions C10C1E**

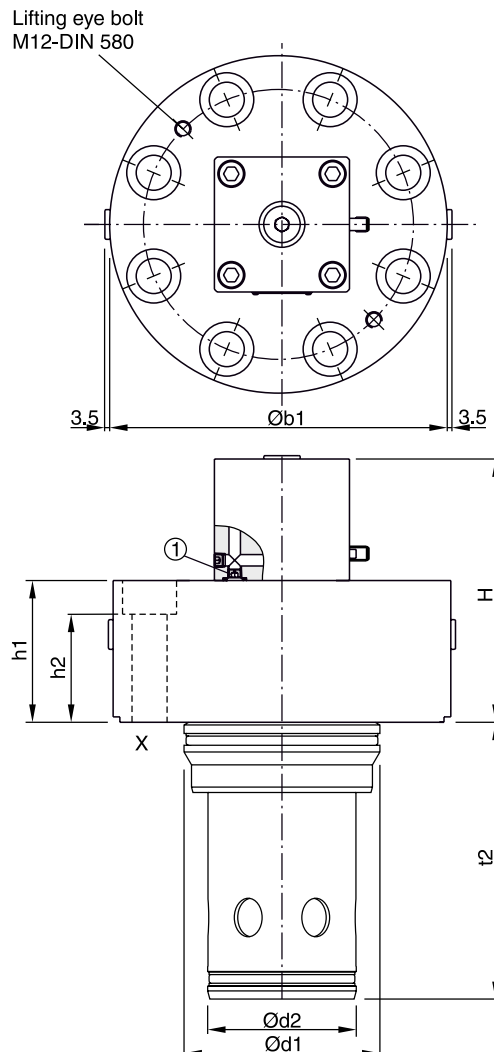
NG16 to NG63 <sup>1)</sup>



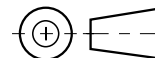
Cavity and mounting pattern acc. to ISO 7368

| NG  | H   | h   | h2   | b1  | d1  | d2  | t <sup>+0.1</sup> |
|-----|-----|-----|------|-----|-----|-----|-------------------|
| 16  | 107 | 36  | 28   | 65  | 32  | 25  | 56                |
| 25  | 116 | 45  | 32.5 | 85  | 45  | 34  | 72                |
| 32  | 122 | 50  | 32   | 102 | 60  | 45  | 85                |
| 40  | 131 | 60  | 40   | 125 | 75  | 55  | 105               |
| 50  | 141 | 70  | 45   | 140 | 90  | 68  | 122               |
| 63  | 156 | 85  | 55   | 180 | 120 | 90  | 155               |
| 80  | 195 | 105 | 80   | 250 | 145 | 110 | 205               |
| 100 | 210 | 120 | 89   | 300 | 180 | 135 | 245               |

NG80 to NG100 <sup>1)</sup>



The space necessary to remove the M12x1 female connector is at least 22 mm.



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**Seal and bolt kits**

| Nominal size             |     | 16                | 25                 | 32                 | 40                 | 50                 | 63                  | 80                  | 100                 |
|--------------------------|-----|-------------------|--------------------|--------------------|--------------------|--------------------|---------------------|---------------------|---------------------|
| Seal kit                 | FPM | SK-C10C1E16V      | SK-C10C1E25V       | SK-C10C1E32V       | SK-C10C1E40V       | SK-C10C1E50V       | SK-C10C1E60V        | SK-C10C1E80V        | SK-C10C1E100V       |
|                          | NBR | SK-C10C1E16N      | SK-C10C1E25N       | SK-C10C1E32N       | SK-C10C1E40N       | SK-C10C1E50N       | SK-C10C1E60N        | SK-C10C1E80N        | SK-C10C1E100N       |
| Bolt kit [ISO 4762-12.9] |     | BK414<br>4x M8x40 | BK391<br>4x M12x50 | BK415<br>4x M16x55 | BK416<br>4x M20x70 | BK417<br>4x M20x75 | BK418<br>4x M30x100 | BK419<br>8x M24x120 | BK420<br>8x M30x140 |
| Recommended torque [Nm]  |     | 31.8              | 108                | 264                | 517                | 517                | 1775                | 890                 | 1775                |

**Attention!**

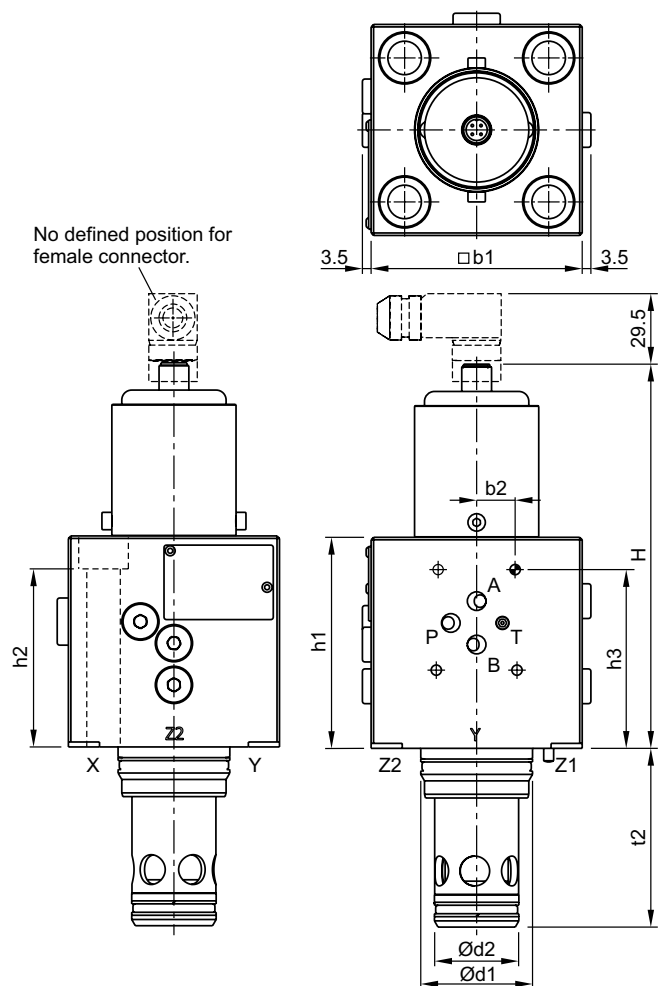
The switch may only be adjusted by the valve manufacturer. The exchange of individual modules is not permitted.

<sup>1)</sup> Please order female connector M12x1 separately (see accessories directional control valves, female connector M12x1 (order no.: 5004109).

**Dimensions C10C3E**

NG16 to NG50 <sup>1)</sup>

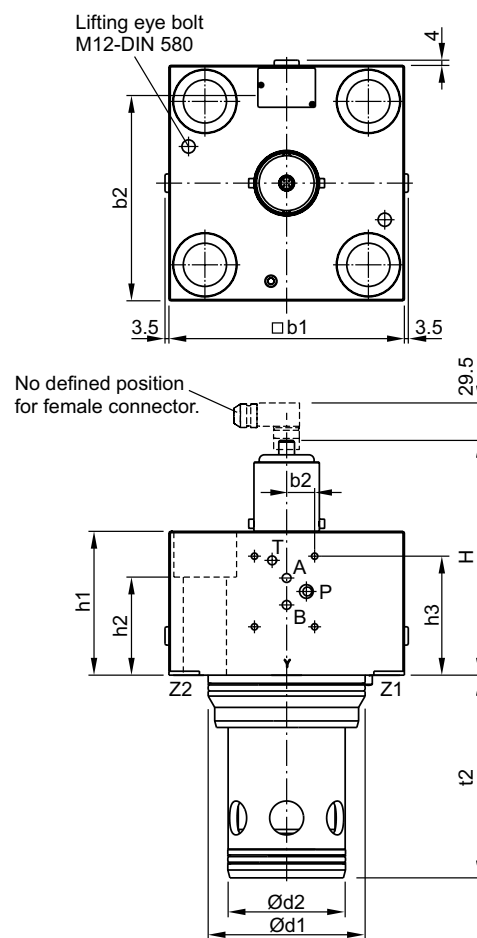
Pilot valve interface NG06.



Cavity and mounting pattern acc. to ISO 7368

NG63 <sup>1)</sup>

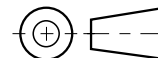
Pilot valve interface NG10.



Cavity and mounting pattern acc. to ISO 7368

| NG | H   | h1  | h2 | h3 | b1  | b2   | d1  | d2 | t2  |
|----|-----|-----|----|----|-----|------|-----|----|-----|
| 16 | 156 | 85  | 76 | 72 | 65  | 15.5 | 31  | 25 | 56  |
| 25 | 156 | 85  | 70 | 72 | 85  | 15.5 | 45  | 34 | 72  |
| 32 | 156 | 85  | 56 | 72 | 102 | 15.5 | 60  | 45 | 85  |
| 40 | 156 | 85  | 50 | 72 | 125 | 15.5 | 75  | 55 | 105 |
| 50 | 156 | 85  | 60 | 72 | 140 | 15.5 | 90  | 68 | 122 |
| 63 | 181 | 110 | 75 | 91 | 180 | 21.5 | 120 | 90 | 155 |

The space necessary to remove the M12x1 female connector is at least 22 mm.



**Seal and bolt kits**

| Nominal size                |      | 16           | 25           | 32           | 40           | 50           | 63           |
|-----------------------------|------|--------------|--------------|--------------|--------------|--------------|--------------|
| Seal kit                    | FPM  | SK-C10C3E16V | SK-C10C3E25V | SK-C10C3E32V | SK-C10C3E40V | SK-C10C3E50V | SK-C10C3E63V |
|                             | NBR  | SK-C10C3E16N | SK-C10C3E25N | SK-C10C3E32N | SK-C10C3E40N | SK-C10C3E50N | SK-C10C3E63N |
| Bolt kit<br>[ISO 4762-12.9] |      | BK533        | BK532        | BK526        | BK527        | BK534        | BK536        |
|                             |      | 4x M8x90     | 4x M12x90    | 4x M16x80    | 4x M20x80    | 4x M20x90    | 4x M30x120   |
| Recommended torque<br>± 15% | [Nm] | 31.8         | 108          | 264          | 517          | 517          | 1775         |

**Attention!**

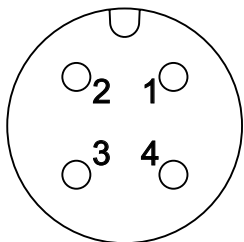
The switch may only be adjusted by the valve manufacturer. The exchange of individual modules is not permitted.

<sup>1)</sup> Please order female connector M12x1 separately (see accessories directional control valves, female connector M12x1 (order no.: 5004109).

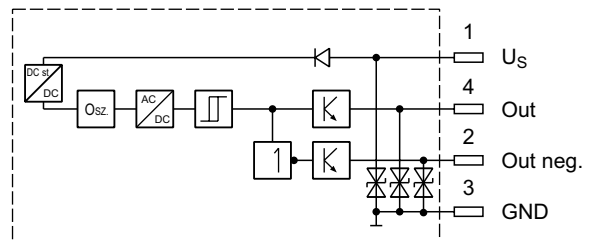
**Electrical characteristics of position control M12x1 as per IEC 61076-2-101, NG16 to NG63**

|  |       |   |
|--|-------|---|
| Supply voltage                         | [VDC] | 24  |
| Tolerance supply voltage               | [%]   | ±20   |
| Ripple supply voltage                  | [%]   | ≤10   |
| Polarity protection                    | [V]   | 300   |
| Current consumption without load       | [mA]  | ≤20   |
| Switching hysteresis                   | [mm]  | <0.06   |
| Max. output current per channel, ohmic | [mA]  | 250   |
| Ambient temperature                    | [°C]  | -20 ... +60   |
| Protection                             |       | IP65 acc. EN 60529  |
| CE conform <sup>1)</sup>               |       | EN 61000-4-2 / EN 61000-4-4 / EN 61000-4-6 1) / ENV 50140 / ENV 50204 |
| Min. distance to next AC solenoid      | [m]   | 0.1   |
| Interface                              |       | M12x1 to IEC 61076-2-101  |

**M12 pin assignment**



- 1 + U<sub>S</sub> 19.2...28.8 V
- 2 Out B: normally open
- 3 0V
- 4 Out A: normally closed



Outputs: Open collector

**8**

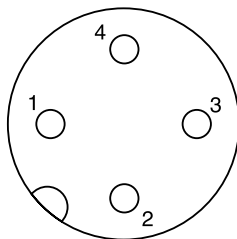
Please order plug M12x1 separately (see accessories directional control valves, plug M12x1; order no.: 5004109)

<sup>1)</sup> Only guaranteed with screened cable and female connector

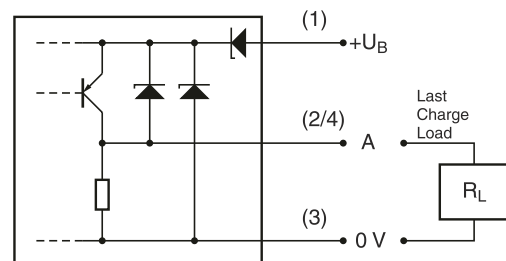
**Electrical characteristics of position control M12x1 as per IEC 61076-2-101, NG80 to NG100**

|  |                    |   |
|--|--------------------|---|
| Protection class                       |                    | IP65 in accordance with EN 60529 (with correctly mounted plug-in connector) |
| Ambient temperature                    | [°C]               | -20...+60   |
| Supply voltage $U_S$ / ripple          | [V]                | 10...30 / 10 %  |
| Current consumption without load       | [mA]               | $\leq 10$   |
| Max. output current per channel, ohmic | [mA]               | 200   |
| Min. output load per channel, ohmic    | [kOhm]             | 100   |
| Max. output drop at 0.2 A              | [V]                | $\leq 2$  |
| EMC                                    |                    | EN61000-6-4 / EN61000-6-2   |
| Min. distance to next AC solenoid      | [m]                | >0.1  |
| Interface                              |                    | M12x1   |
| Wiring min.                            | [mm <sup>2</sup> ] | 3 x 0.14 braid shield recommended   |
| Wiring length max.                     | [m]                | 50 recommended  |

**M12 pin assignment**



- 1 +  $U_S$  10...30 V
- 2 Out A: not connected
- 3 0V
- 4 Out A: normally closed



Please order plug M12x1 separately. Straight plug recommended – no defined position possible for angled plug.



**Definition**

Start position monitored:

The switching point of the inductive switch is within the overlap of the poppet.

After the signal of the inductive switch has changed, the poppet leaves the safety overlapping position.