



Many series and form factors for the greatest flexibility.
The classics for metalworking and automotive

MECHANICAL CAM SWITCHES

The cam switches from Balluff are used on machine tools, presses, in flexible manufacturing centers, robots, assembly and conveying devices, and in machine and equipment construction. They serve as command transmitters for automatic controls, for positioning and for end-of-travel switching.

The design principle of the devices, their variety of possible switching actions, as well as consistent quality inspection, guarantee consistently high quality and reliability.

At Balluff you can choose from nine different series and five plunger types each: Chisel, ball, roller, roller bearing and chisel with wiper plate. A large number of connection varieties is also available.

The most important benefits

- Reliable and rugged, even in harsh environments
- Flawless functionality in the event of vibrations, shock loads, temperature swings, aggressive cooling lubricants and heavy chip accumulation
- Maintenance-free, self-lubricating ram guide with plain bearing bush
- High-quality Viton seals
- Protection class IP67
- Also available with inductive switching points



| | |
|---------------------------------------|--|
| Single position switch | SERIES F 60 COMPLIANT WITH DIN 43693 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M16 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 724 |

Ordering example:

BNS 819-F **-60-101-**

Plunger style

- D Chisel
- K Ball
- R Roller
- L Roller bearing
- E Chisel with wiper plate

**Optional
Function indicator**

- FD 6...60 V AC/DC
- FE 90...250 V AC/DC

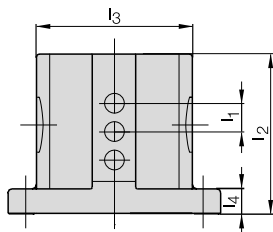
**Optional
Male**

- S80R 5-pin, right
- S80L 5-pin, left



| | |
|---------------------------------------|--|
| Multiple position switches | SERIES 100 COMPLIANT WITH DIN 43697 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M25 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 725 |

Available sizes

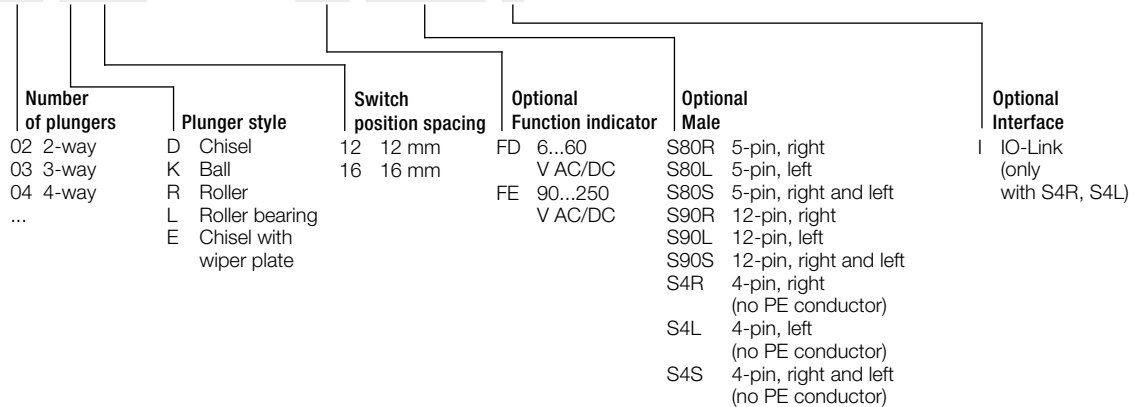


| Number of plungers | | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
|---|----------------------------------|----|----|-----|-----|-----|-----|-----|-----|
| Dimension l ₂ with | Dimension l ₁ = 12 mm | 70 | 80 | 90 | 105 | 120 | 140 | 170 | 200 |
| | Dimension l ₃ | 88 | 88 | 88 | 88 | 88 | 80 | 80 | 80 |
| | Dimension l ₄ | 14 | 14 | 14 | 14 | 14 | 20 | 20 | 20 |
| | Dimension l ₁ = 16 mm | 70 | 90 | 105 | 120 | 140 | 170 | 200 | 240 |
| Number of connectors required for standard wiring | Dimension l ₃ | 88 | 88 | 88 | 88 | 80 | 80 | 80 | 80 |
| | Dimension l ₄ | 14 | 14 | 14 | 14 | 20 | 20 | 20 | 20 |
| | S80 or S4 without FD/FE | 1 | 1 | 2 | 2 | 2 | | | |
| | S80 or S4 with FD/FE | 1 | 2 | 2 | 3 | 3 | | | |
| S90 without FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | |
| | S90 with FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 |

Dimensions in mm

Ordering example:

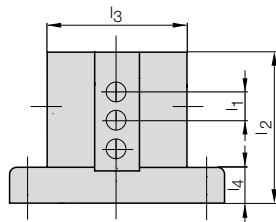
BNS 819-D [] - [] - 100 - 10 - [] - [] - []





| | |
|---------------------------------------|--|
| Multiple position switches | SERIES 62 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M20 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 725 |

Available sizes

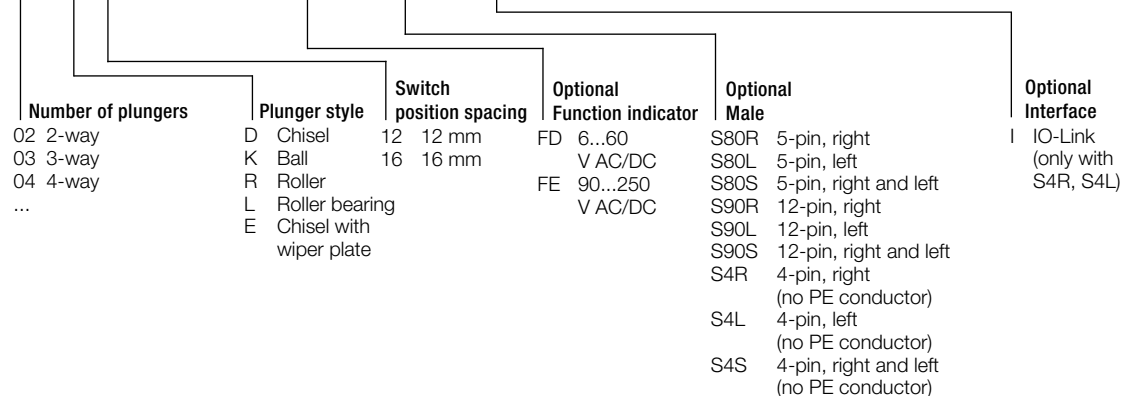


| Number of plungers | | 2 | 3 | 4 | 5 | 6 | 8 | 10 |
|-------------------------------|----------------------------------|----|----|----|-----|-----|-----|-----|
| Dimension l ₂ with | Dimension l ₁ = 12 mm | 64 | 72 | 84 | 96 | 112 | 130 | 160 |
| | Dimension l ₃ | 88 | 88 | 88 | 88 | 88 | 80 | 80 |
| | Dimension l ₄ | 14 | 14 | 14 | 14 | 14 | 20 | 20 |
| | Dimension l ₁ = 16 mm | 64 | 84 | 96 | 112 | 130 | 160 | 192 |
| | Dimension l ₃ | 88 | 88 | 88 | 88 | 80 | 80 | 80 |
| | Dimension l ₄ | 14 | 14 | 14 | 14 | 20 | 20 | 20 |
| Number of connectors | S80 or S4 without FD/FE | 1 | 1 | 2 | 2 | 2 | | |
| | S80 or S4 with FD/FE | 1 | 2 | 2 | 3 | 3 | | |
| | S90 without FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | S90 with FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 2 |

Dimensions in mm

Ordering example:

BNS 819-D - - - - - **-62-10-** - - - - -

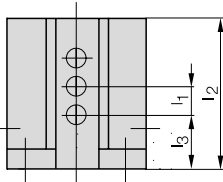




| | |
|---------------------------------------|--|
| Multiple position switches | SERIES 61 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M20 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 726 |

Available sizes

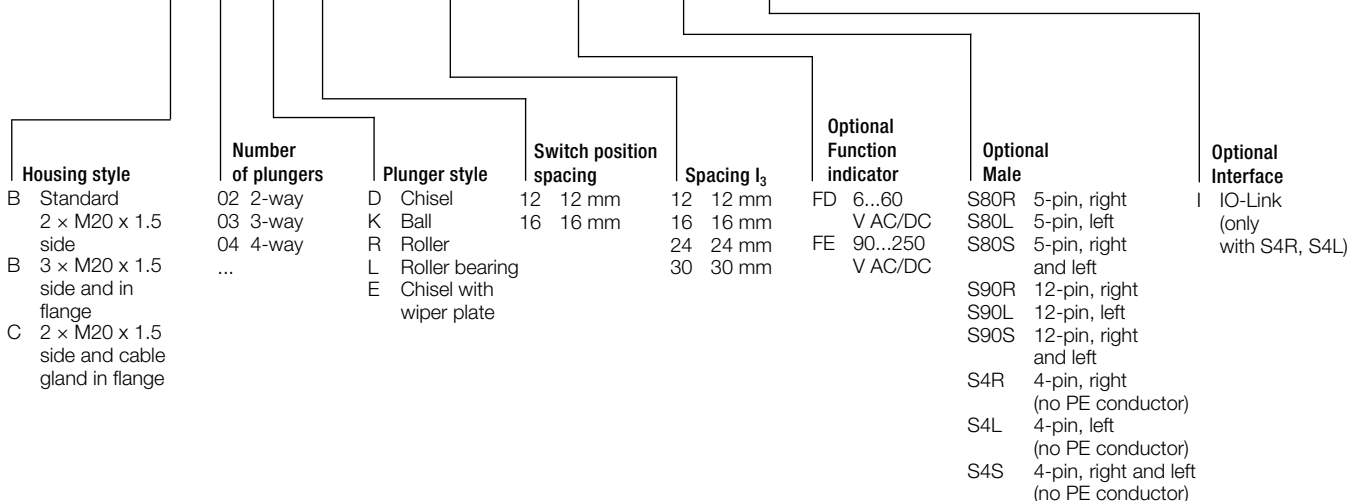
| Number of plungers | Plunger-spacing Dimension | Housing B Standard | | Housing B | | Housing C | | Number of connectors S80 or S4 without FD/FE | No. of connectors S80 or S4 with FD/FE | No. of connectors S90 without FD/FE | Number of connectors S90 with FD/FE |
|--------------------|------------------------------|--------------------|-----------|-----------|-----------|-----------|-----------|--|--|-------------------------------------|-------------------------------------|
| | | Dimension | Dimension | Dimension | Dimension | Dimension | Dimension | | | | |
| 2 | 12 | 36 | 12 | 60 | 30 | 48 | 24 | 1 | 1 | 1 | 1 |
| 3 | 12 | 48 | 12 | 60 | 24 | 60 | 24 | 1 | 2 | 1 | 1 |
| 4 | 12 | 60 | 12 | | | | | 2 | 2 | 1 | 1 |
| 5 | 12 | 72 | 12 | | | | | 2 | 3 | 1 | 1 |
| 6 | 12 | 84 | 12 | | | | | 2 | 3 | 1 | 1 |
| 2 | 16 | 48 | 16 | 60 | 30 | 60 | 30 | 1 | 1 | 1 | 1 |
| 3 | 16 | 72 | 16 | | | | | 1 | 2 | 1 | 1 |
| 4 | 16 | 84 | 16 | | | | | 2 | 2 | 1 | 1 |



Dimensions in mm

Ordering example:

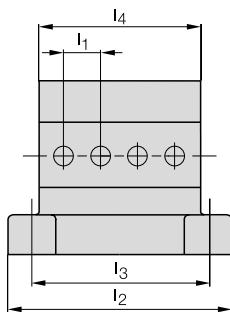
BNS 819 - - - - 61 - - - - 10 - - - - - Optional





| Multiple position switches | SERIES 72 |
|---------------------------------------|--|
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M25 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 726 |

Available sizes

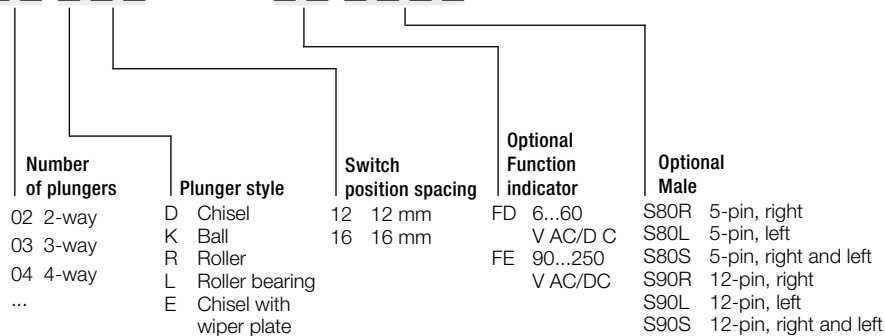


| Number of plungers | | 2 | 3 | 4 | 5 | 6 | 8 | 10 |
|--|-------------------|----|-----|-----|-----|-----|-----|-----|
| Dimension I ₂ with Dimension I ₁ = 12 mm | | 84 | 84 | 100 | 116 | 132 | 164 | 180 |
| Dimension I ₃ with Dimension I ₁ = 12 mm | | 66 | 66 | 82 | 98 | 114 | 146 | 162 |
| Dimension I ₄ with Dimension I ₁ = 12 mm | | 54 | 54 | 68 | 84 | 100 | 132 | 148 |
| Dimension I ₂ with Dimension I ₁ = 16 mm | | 84 | 100 | 116 | 132 | 148 | 180 | 212 |
| Dimension I ₃ with Dimension I ₁ = 16 mm | | 66 | 82 | 98 | 114 | 130 | 162 | 194 |
| Dimension I ₄ with Dimension I ₁ = 16 mm | | 54 | 68 | 84 | 100 | 116 | 148 | 180 |
| Number of connectors | S80 without FD/FE | 1 | 1 | 2 | 2 | 2 | | |
| | S80 with FD/FE | 1 | 2 | 2 | 3 | 3 | | |
| | S90 without FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| | S90 with FD/FE | 1 | 1 | 1 | 1 | 1 | 2 | 2 |

Dimensions in mm

Ordering example:

BNS 819-B - - - - - **-72-10-** - - - - -

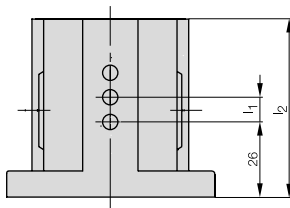




| | |
|---------------------------------------|--|
| Multiple position switches | SERIES 46 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M16 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 727 |

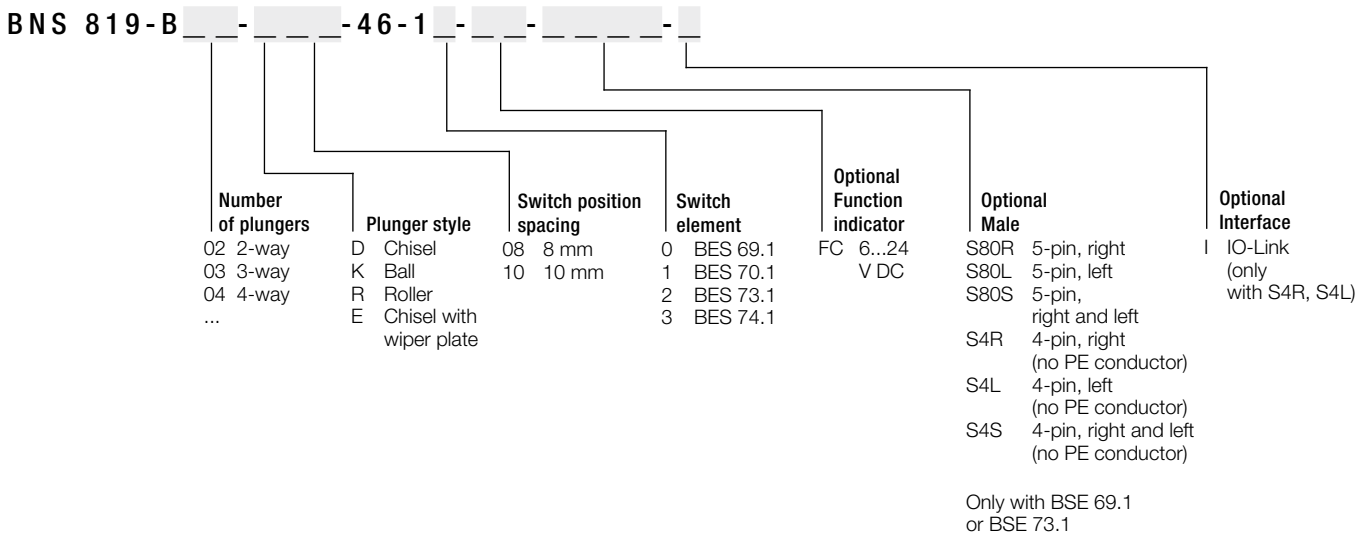
Available sizes

| Number of plungers | | 2 | 3 | 4 | 5 | 6 | 8 | 10 |
|-------------------------|-------------------------|----|----|----|----|----|-----|-----|
| Dimension l_2 with | Dimension $l_1 = 8$ mm | 49 | 59 | 64 | 72 | 80 | 96 | 112 |
| | Dimension l_3 | 54 | 54 | 54 | 54 | 54 | 50 | 50 |
| | Dimension $l_1 = 10$ mm | 49 | 59 | 72 | 80 | 89 | 112 | 129 |
| | Dimension l_3 | 54 | 54 | 54 | 54 | 50 | 50 | 50 |
| Number of connectors | S80 without FC or S4 | 1 | 1 | 2 | 2 | 2 | | |
| | S80 with FC or S4 | 1 | 2 | 2 | 3 | 3 | | |
| | S4 without FC (IO-Link) | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | S4 with FC (IO-Link) | 1 | 1 | 1 | 1 | 1 | 1 | 1 |



Dimensions in mm

Ordering example:



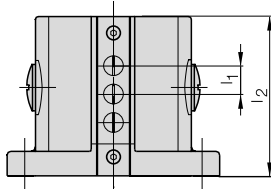


| | |
|--|--|
| Multiple position switches with quick-change plunger block | SERIES 100 COMPLIANT WITH DIN 43697 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M25 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 728 |

Available sizes

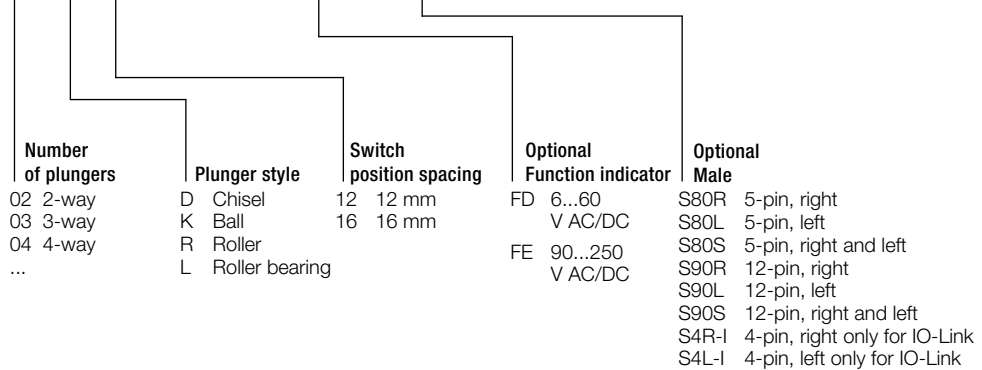
| Number of plungers | | 2 | 3 | 4 | 5 | 6 |
|-------------------------|-------------------------|----|----|-----|-----|-----|
| Dimension l_2 with | $l_1 = 12 \text{ mm}$ | 70 | 80 | 90 | 105 | 120 |
| | $l_1 = 16 \text{ mm}$ | 70 | 90 | 105 | 120 | |
| Number of connectors | S80 without FD/FE | 1 | 1 | 2 | 2 | 2 |
| | S80 with FD/FE | 1 | 2 | 2 | 3 | 3 |
| | S90 without FD/FE | 1 | 1 | 1 | 1 | 1 |
| | S90 with FD/FE | 1 | 1 | 1 | 1 | 1 |
| | S4 without FD (IO-Link) | 1 | 1 | 1 | 1 | 1 |
| | S4 with FD (IO-Link) | 1 | 1 | 1 | 1 | 1 |

Dimensions in mm



Ordering example:

BNS 829-D [] - [] - 100-10 - [] - []

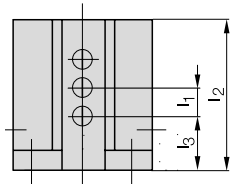




| Multiple position switches with quick-change plunger block | SERIES 61 |
|--|--|
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M20 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 728 |

Available sizes

| Number of Plunger | Plunger-spacing Dimension | | Housing B Standard Dimension | | Housing B Dimension | | Housing C Dimension | | Number of connectors S80 without FD/FE | No. of connectors S80 with FD/FE | No. of connectors S90 with or without FD/FE | No. of connectors S4 with or without FD (IO-Link) |
|-------------------|---------------------------|----------------|------------------------------|----------------|---------------------|----------------|---------------------|----|--|----------------------------------|---|---|
| | l ₁ | l ₂ | l ₃ | l ₂ | l ₃ | l ₂ | l ₃ | | | | | |
| 2 | 12 | 36 | 12 | 60 | 30 | 48 | 24 | 60 | 30 | 1 | 1 | 1 |
| 3 | 12 | 48 | 12 | 60 | 24 | 60 | 24 | | | 1 | 2 | 1 |
| 4 | 12 | 60 | 12 | | | | | | | 2 | 2 | 1 |
| 5 | 12 | 72 | 12 | | | | | | | 2 | 3 | 1 |
| 6 | 12 | 84 | 12 | | | | | | | 2 | 3 | 1 |
| 2 | 16 | 48 | 16 | 60 | 30 | 60 | 30 | | | 1 | 1 | 1 |
| 3 | 16 | 72 | 16 | | | | | | | 1 | 2 | 1 |
| 4 | 16 | 84 | 16 | | | | | | | 2 | 2 | 1 |



Dimensions in mm

Ordering example:

BNS 829- - - - -61- - - -10- - - - -

Housing style

- B Standard
2 × M20 x 1.5 side
- B 3 × M20 x 1.5
side and in flange
- C 2 × M20 x 1.5
side and cable gland in flange

Number of plungers

- 02 2-way
- 03 3-way
- 04 4-way
- ...

Plunger style

- D Chisel
- K Ball
- R Roller
- L Roller bearing

Switch position spacing

- 12 12 mm
- 16 16 mm

Spacing l₃

- 12 12 mm
- 16 16 mm
- 24 24 mm
- 30 30 mm

Optional Function indicator

- FD 6...60
V AC/DC
- FE 90...250
V AC/DC

Optional Male

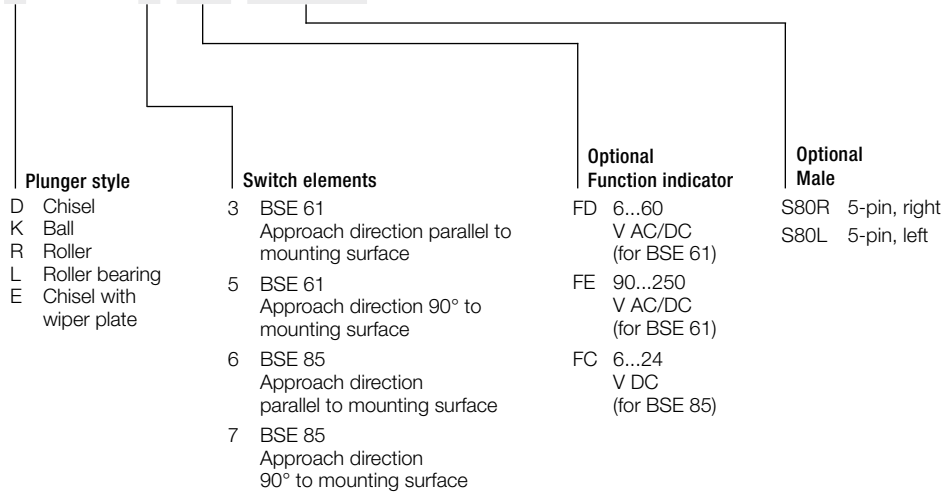
- S80R 5-pin, right
- S80L 5-pin, left
- S80S 5-pin, right and left
- S90R 12-pin, right
- S90L 12-pin, left
- S90S 12-pin, right and left
- S4R-I 4-pin, right only for IO-Link
- S4L-I 4-pin, left only for IO-Link



| | |
|--|--|
| Position switches with safety switch positions | SERIES F 60 COMPLIANT WITH DIN 43693 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M16 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 732 |

Ordering example:

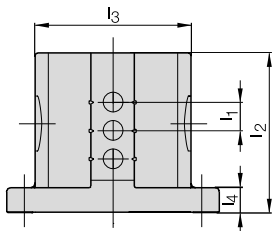
BNS 813-F - 60 - 18 - - - -





| | |
|---|--|
| Multiple position limit switches with safety switch positions | SERIES 100 COMPLIANT WITH DIN 43697 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M25 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 729 |

Available sizes



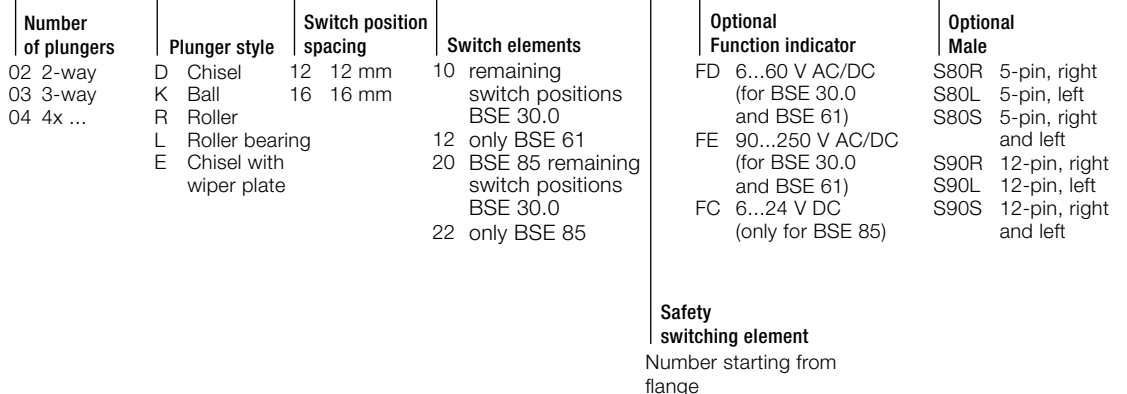
| Number of plungers | | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
|----------------------|-------------------------|----|----|-----|-----|-----|-----|-----|-----|
| Dimension l_2 with | Dimension $l_1 = 12$ mm | 70 | 80 | 90 | 105 | 120 | 140 | 170 | 200 |
| | Dimension l_3 | 88 | 88 | 88 | 88 | 88 | 80 | 80 | 80 |
| | Dimension l_4 | 14 | 14 | 14 | 14 | 14 | 20 | 20 | 20 |
| | Dimension $l_1 = 16$ mm | 70 | 90 | 105 | 120 | 140 | 170 | 200 | 240 |
| | Dimension l_3 | 88 | 88 | 88 | 88 | 80 | 80 | 80 | 80 |
| No. of connectors * | Dimension l_4 | 14 | 14 | 14 | 14 | 20 | 20 | 20 | 20 |
| | S80 without FD/FE | 1 | 1 | 2 | 2 | 2 | | | |
| | S80 with FD/FE | 1 | 2 | 2 | 3 | 3 | | | |
| | S90 without FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| | S90 with FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 |

Dimensions in mm

* No. of connectors with BSE 85 on request.

Ordering example:

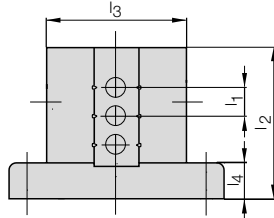
BNS 813-D - - - - **100** - - - - -





| Multiple position limit switches with safety switch positions | SERIES 62 |
|---|--|
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M20 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 730 |

Available sizes



| Number of plungers | | 2 | 3 | 4 | 5 | 6 | 8 | 10 |
|-------------------------------|----------------------------------|----|----|----|-----|-----|-----|-----|
| Dimension l ₂ with | Dimension l ₁ = 12 mm | 64 | 72 | 84 | 96 | 112 | 130 | 160 |
| | Dimension l ₃ | 88 | 88 | 88 | 88 | 88 | 80 | 80 |
| | Dimension l ₄ | 14 | 14 | 14 | 14 | 14 | 20 | 20 |
| | Dimension l ₁ = 16 mm | 64 | 84 | 96 | 112 | 130 | 160 | 192 |
| | Dimension l ₃ | 88 | 88 | 88 | 88 | 80 | 80 | 80 |
| No. of connectors * | Dimension l ₄ | 14 | 14 | 14 | 14 | 20 | 20 | 20 |
| | S80 without FD/FE | 1 | 1 | 2 | 2 | 2 | | |
| | S80 with FD/FE | 1 | 2 | 2 | 3 | 3 | | |
| | S90 without FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| | S90 with FD/FE | 1 | 1 | 1 | 1 | 1 | 2 | 2 |

Dimensions in mm

* No. of connectors with BSE 85 on request.

Ordering example:

BNS 813-D _____ - **62** - _____ - _____ - _____ - _____

Number of plungers
02 2-way
03 3-way
04 4x ...

Plunger style
D Chisel
K Ball
R Roller
L Roller bearing
E Chisel with wiper plate

Switch position spacing
12 12 mm
16 16 mm

Switch elements
10 BSE 61 remaining switch positions BSE 30.0
12 only BSE 61
20 BSE 85 remaining switch positions BSE 30.0
22 only BSE 85

Safety switch element
Number starting from flange

Optional Function indicator
FD 6...60 V AC/DC (for BSE 30.0 and BSE 61)
FE 90...250 V AC/DC (for BSE 30.0 and BSE 61)
FC 6...24 V DC (only for BSE 85)

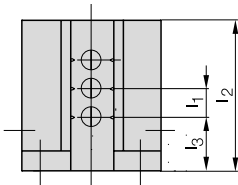
Optional Male
S80R 5-pin, right
S80L 5-pin, left
S80S 5-pin, right and left
S90R 12-pin, right
S90L 12-pin, left
S90S 12-pin, right and left



| Multiple position limit switches with safety switch positions | SERIES 61 |
|---|--|
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M20 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 730 |

Available sizes

| Number of Plunger | Plunger-spacing Dimension | Housing B Standard Dimension | | Housing B Dimension | | Housing C Dimension | | No. of connectors * S80 without FD/FE | No. of connectors * S80 with FD/FE | No. of connectors * S90 without FD/FE | No. of connectors * S90 with FD/FE |
|-------------------|---------------------------|------------------------------|----------------|---------------------|----------------|---------------------|----------------|---------------------------------------|------------------------------------|---------------------------------------|------------------------------------|
| | | l ₂ | l ₃ | l ₂ | l ₃ | l ₂ | l ₃ | | | | |
| 2 | 12 | 36 | 12 | 60 | 30 | 48 | 24 | 1 | 1 | 1 | 1 |
| 3 | 12 | 48 | 12 | 60 | 24 | 60 | 24 | 1 | 2 | 1 | 1 |
| 4 | 12 | 60 | 12 | | | | | 2 | 2 | 1 | 1 |
| 5 | 12 | 72 | 12 | | | | | 2 | 3 | 1 | 1 |
| 6 | 12 | 84 | 12 | | | | | 2 | 3 | 1 | 1 |
| 2 | 16 | 48 | 16 | 60 | 30 | 60 | 30 | 1 | 1 | 1 | 1 |
| 3 | 16 | 72 | 16 | | | | | 1 | 2 | 1 | 1 |
| 4 | 16 | 84 | 16 | | | | | 2 | 2 | 1 | 1 |

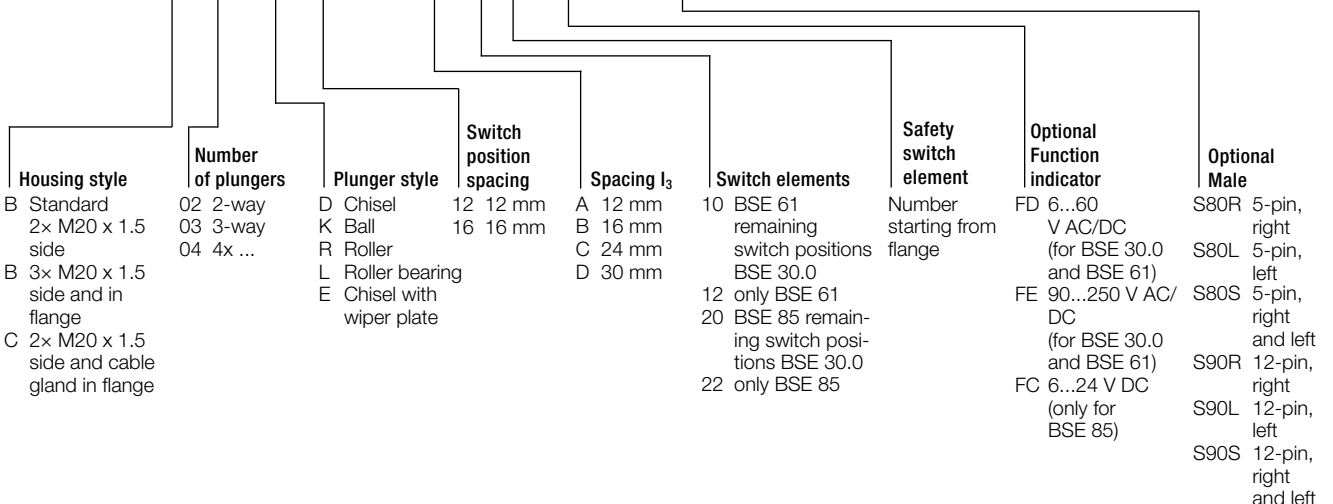


Dimensions in mm

* No. of connectors with BSE 85 on request.

Ordering example:

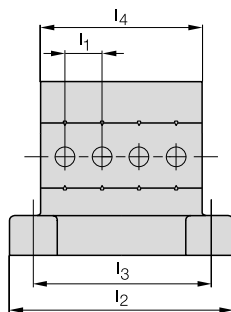
BNS 813- - - - 61 - - - - -





| Multiple position limit switches with safety switch positions | SERIES 72 |
|---|--|
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M25 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 731 |

Available sizes



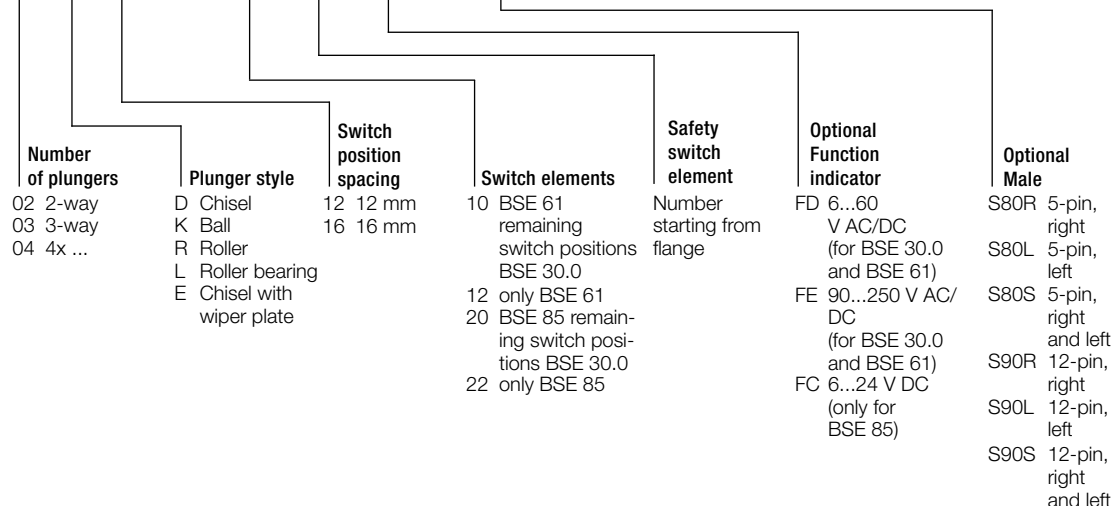
| Number of plungers | | 2 | 3 | 4 | 5 | 6 | 8 | 10 |
|--|-------------------|----|-----|-----|-----|-----|-----|-----|
| Dimension I ₂ with I ₁ = 12 mm | | 84 | 84 | 100 | 116 | 132 | 164 | 180 |
| Dimension I ₃ with I ₁ = 12 mm | | 66 | 66 | 82 | 98 | 114 | 146 | 162 |
| Dimension I ₄ with I ₁ = 12 mm | | 54 | 54 | 68 | 84 | 100 | 132 | 148 |
| Dimension I ₂ with I ₁ = 16 mm | | 84 | 100 | 116 | 132 | 148 | 180 | 212 |
| Dimension I ₃ with I ₁ = 16 mm | | 66 | 82 | 98 | 114 | 130 | 162 | 194 |
| Dimension I ₄ with I ₁ = 16 mm | | 54 | 68 | 84 | 100 | 116 | 148 | 180 |
| No. of connectors * | S80 without FD/FE | 1 | 1 | 2 | 2 | 2 | | |
| | S80 with FD/FE | 1 | 2 | 2 | 3 | 3 | | |
| | S90 without FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | S90 with FD/FE | 1 | 1 | 1 | 1 | 1 | 1 | 2 |

Dimensions in mm

* No. of connectors with BSE 85 on request.

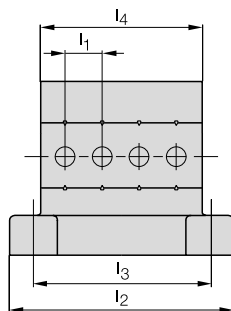
Ordering example:

BNS 813-B - - - - **72** - - - - -





| | |
|--|--|
| Multiple position limit switches with safety switch positions and quick-change plunger block | SERIES 100 COMPLIANT WITH DIN 43697 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M25 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 731 |



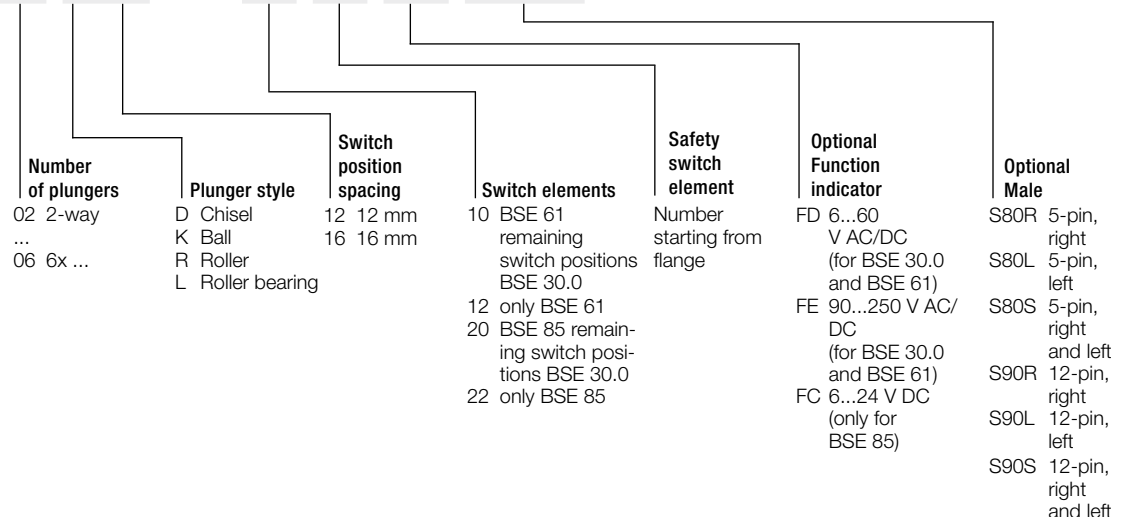
Available sizes

| Number of plungers | | 2 | 3 | 4 | 5 | 6 |
|----------------------|-------------------|----|----|-----|-----|-----|
| Dimension l_2 with | $l_1 = 12$ mm | 70 | 80 | 90 | 105 | 120 |
| | $l_1 = 16$ mm | 70 | 90 | 105 | 120 | |
| No. of connectors * | S80 without FD/FE | 1 | 1 | 2 | 2 | 2 |
| | S80 with FD/FE | 1 | 2 | 2 | 3 | 3 |
| | S90 without FD/FE | 1 | 1 | 1 | 1 | 1 |
| | S90 with FD/FE | 1 | 1 | 1 | 1 | 1 |

Dimensions in mm
 * No. of connectors with BSE 85 on request.

Ordering example:

BNS 823-D [] - [] - **100** - [] - [] - [] - []

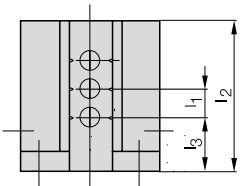




| Multiple position limit switches with safety switch positions | SERIES 61 |
|---|--|
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M20 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 732 |

Available sizes

| Number of Plunger | Plunger-spacing Dimension | Housing B Standard | | Housing B | | Housing C | | No. of connectors * S80 without FD/FE | No. of connectors * S80 with FD/FE | No. of connectors * S90 without FD/FE | No. of connectors * S90 with FD/FE |
|-------------------|------------------------------|--------------------|-----------|-----------|-----------|-----------|-----------|--|---------------------------------------|--|---------------------------------------|
| | | Dimension | Dimension | Dimension | Dimension | Dimension | Dimension | | | | |
| 2 | 12 | 36 | 12 | 60 | 30 | 48 | 24 | 1 | 1 | 1 | 1 |
| | | | | | | 60 | 30 | | | | |
| 3 | 12 | 48 | 12 | 60 | 24 | 60 | 24 | 1 | 2 | 1 | 1 |
| 4 | 12 | 60 | 12 | | | | | 2 | 2 | 1 | 1 |
| 5 | 12 | 72 | 12 | | | | | 2 | 3 | 1 | 1 |
| 6 | 12 | 84 | 12 | | | | | 2 | 3 | 1 | 1 |
| 2 | 16 | 48 | 16 | 60 | 30 | 60 | 30 | 1 | 1 | 1 | 1 |
| | | | | | | | | | | | |
| 3 | 16 | 72 | 16 | | | | | 1 | 2 | 1 | 1 |
| 4 | 16 | 84 | 16 | | | | | 2 | 2 | 1 | 1 |

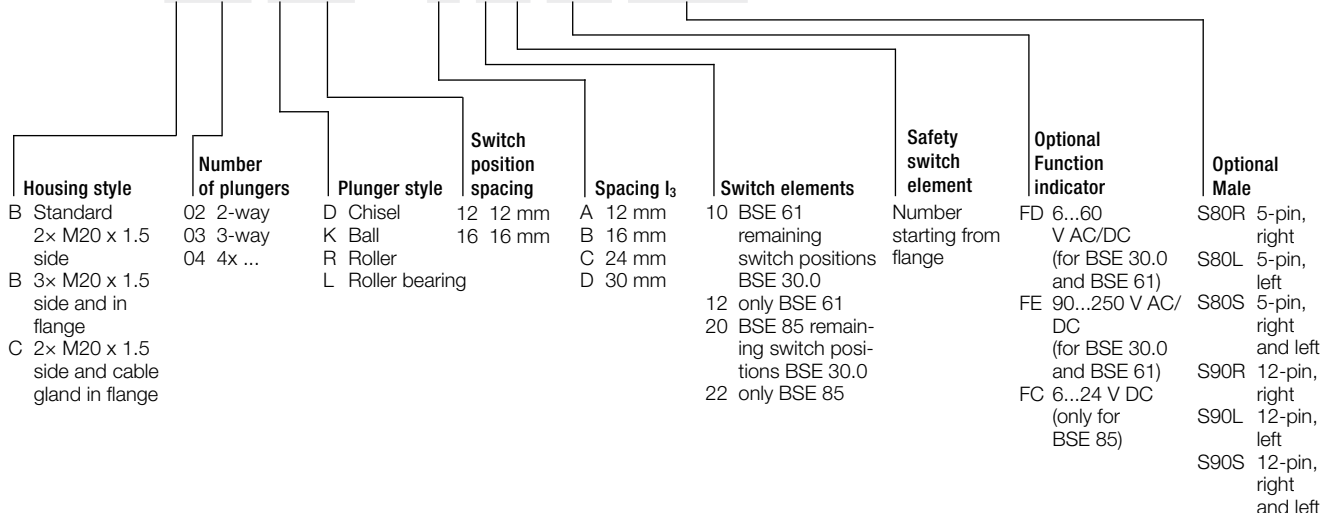


Dimensions in mm

* No. of connectors with BSE 85 on request.

Ordering example:

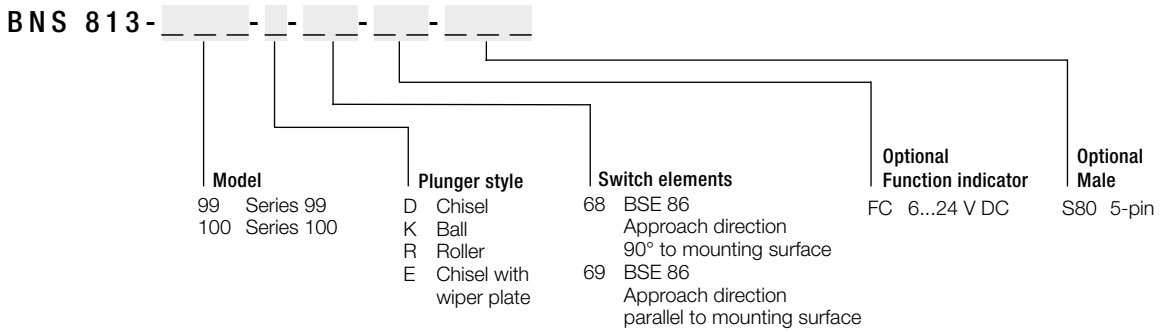
BNS 823 - - - - 61 - - - - -





| | |
|---|--|
| Position switches with positive opening | SERIES 99 AND 100 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | Cable gland (M12 x 1.5 Series 99, M16 x 1.5 Series 100) or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 732 |

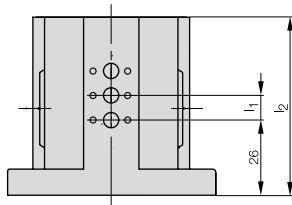
Ordering example:





| | |
|--|--|
| Multiple position limit switches with positive opening | SERIES 46 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M16 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 733 |

Available sizes

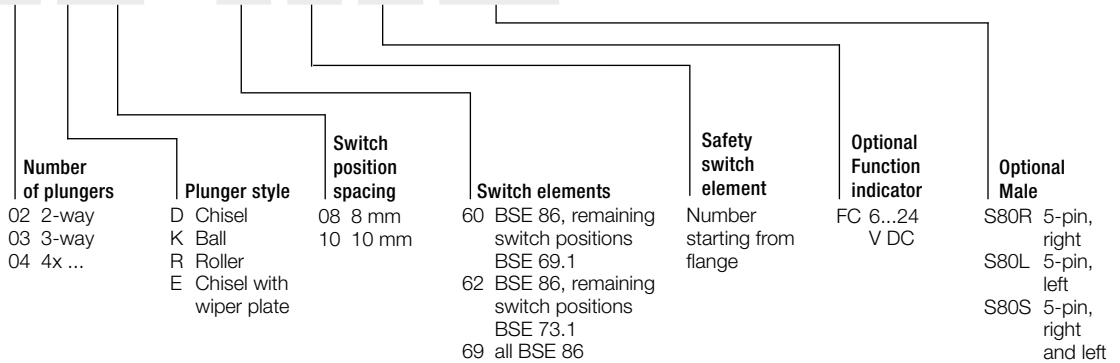


| Number of plungers | | 2 | 3 | 4 | 5 | 6 | 8 | 10 |
|-------------------------------|----------------------------------|----|----|----|----|----|-----|-----|
| Dimension l ₂ with | Dimension l ₁ = 8 mm | 49 | 59 | 64 | 72 | 80 | 96 | 112 |
| | Dimension l ₃ | 54 | 54 | 54 | 54 | 54 | 50 | 50 |
| | Dimension l ₁ = 10 mm | 49 | 59 | 72 | 80 | 89 | 112 | 129 |
| | Dimension l ₃ | 54 | 54 | 54 | 54 | 50 | 50 | 50 |
| Number of connectors | S80 without FC | 1 | 1 | 2 | 2 | 2 | 3 | 3 |
| | S80 with FC | 1 | 2 | 2 | 3 | 3 | | |

Dimensions in mm
Size 12-x with 8 mm spacing on request.

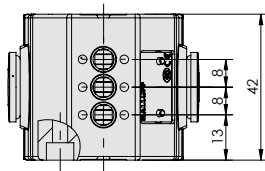
Ordering example:

BNS 813-B [] - [] - **46** - [] - [] - [] - []





| | |
|---------------------------------------|--|
| Position switch with positive opening | SERIES 40 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M16 x 1.5 for cable gland or connector |
| Ambient temperature | -5...+85 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 733 |



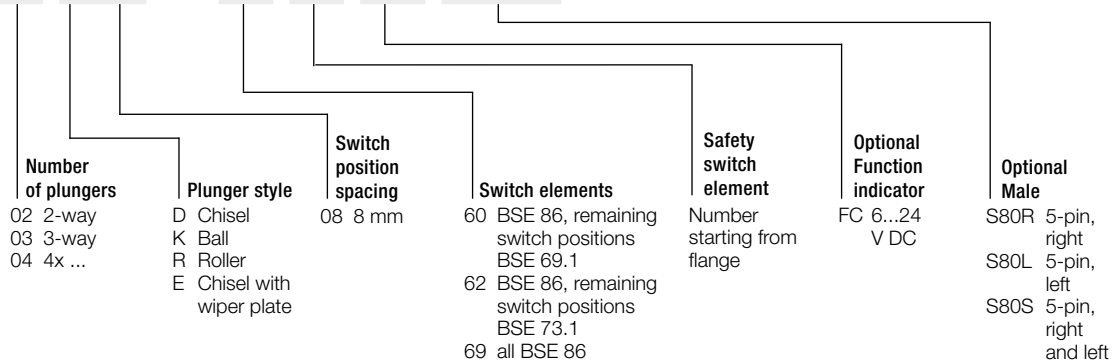
Available sizes

| Number of plungers | 2 | 3 | 4 | 5 | 6 |
|--------------------------|----|----|----|----|----|
| Dimension I ₁ | 34 | 42 | 50 | 58 | 66 |
| S80 without FC | 1 | 1 | 2 | 2 | 2 |
| S80 with FC | 1 | 2 | 2 | | |

Dimensions in mm

Ordering example:

BNS 813-B - - - - **- 40** - - - - -





| | |
|---------------------------------------|--|
| High-temperature position switches | SERIES 99 AND 100 |
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M12 x 1.5 or M16 x 1.5 for cable gland |
| Ambient temperature | -5...+150 °C (-5...+180 °C 10 h/day) |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 734 |

Ordering example:

BNS 819- - - -15

Model

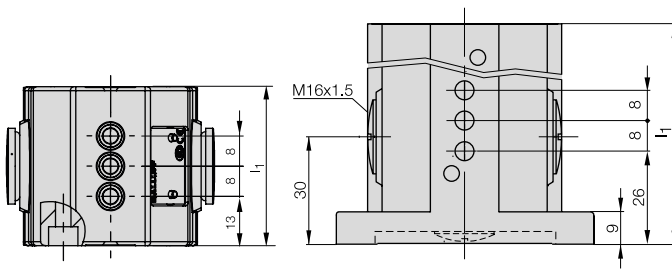
99 Series 99
100 Series 100

Plunger style

D Chisel
K Ball
R Roller



| High-temperature position switches | SERIES 46 AND 40 |
|---------------------------------------|--|
| Plunger material | Stainless steel, contact surfaces induction-hardened |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M12 x 1.5 or M16 x 1.5 for cable gland |
| Ambient temperature | -5...+150 °C (-5...+180 °C 10 h/day) |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 734 |



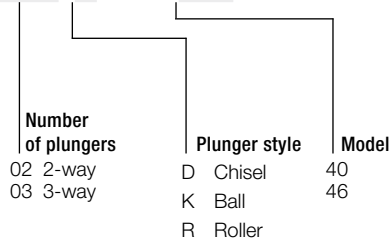
Available sizes

| Number of plungers | 2 | 3 |
|--------------------------|----|----|
| Dimension I ₁ | 49 | 59 |

Dimensions in mm

Ordering example:

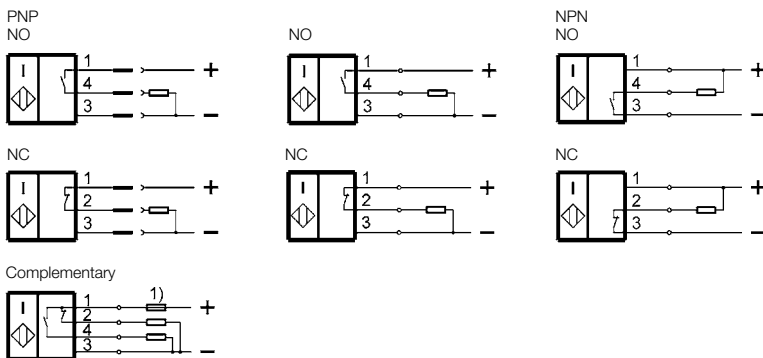
BNS 819-B - 08 - -15

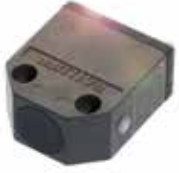




| | | | |
|------------------------------|---------------------------------------|--|--|
| PNP NO | BES01FE BES 516-346-H2-Y-S4 | BES01FF BES 516-346-H2-Y-S49 | |
| PNP NC | BES01EW BES 516-341-H2-Y-S4 | | |
| PNP changeover | | | |
| NPN NO | | | |
| NPN NC | | | |
| Dimension | 54 x 22 x 48 mm | 54 x 22 x 48 mm | |
| Design | block style | block style | |
| Installation | Flush | Flush | |
| Range | 5 mm | 5 mm | |
| Switching frequency | 500 Hz | 500 Hz | |
| Housing material | Aluminum | Aluminum | |
| Sensing surface, material | PA 12 | PA 12 | |
| Connection | Connector, M12x1 connector, 4-pin | Connector, M12x1 connector, 4-pin | |
| Operating voltage U_b | 10...30 VDC | 10...30 VDC | |
| Ambient temperature | -25...+70 °C | -25...+70 °C | |
| Degree of protection | IP67 | IP67 | |
| Approval/Conformity | CE, EAC | CE, EAC | |
| Productview and installation | Page 735 | Page 735 | |

Wiring diagrams



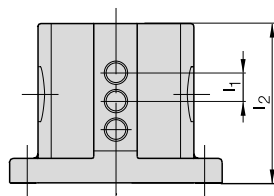


| | | |
|------------------------------------|------------------------------------|--|
| BES01FC BES 516-346-H2-Y | | |
| BES01EU BES 516-341-H2-Y | | |
| | BES017M BES 516-161-H3-L | |
| BES01ZK BES 516-344-H2-Y | | |
| BES01ET BES 516-340-H2-Y | | |
| 54 x 22 x 48 mm | 74 x 28 x 60.5 mm | |
| block style | block style | |
| Flush | Flush | |
| 5 mm | 7 mm | |
| 500 Hz | 300 Hz | |
| Aluminum | Aluminum | |
| PA 12 | PA 12 | |
| Screw terminal | Screw terminal | |
| 10...30 VDC | 10...30 VDC | |
| -25...+70 °C | -25...+70 °C | |
| IP67 | IP67 | |
| CE, EAC | CE, EAC | |
| Page 735 | Page 735 | |



| | |
|---------------------------------------|---|
| Inductive multiple position switches | SERIES 602-11 COMPLIANT WITH DIN 43697 |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M25 x 1.5 for cable gland or connector |
| Ambient temperature | -25...+70 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 735 |

Available sizes



| Number of plungers | | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
|------------------------|--|------------|----|-----|-----|-----|-----|-----|-----|
| Dimension $l_{2,with}$ | Dimension $l_1 = 12$ mm | 70 | 80 | 90 | 105 | 120 | 140 | 170 | 200 |
| | Dimension l_4 | 88 | 88 | 88 | 88 | 88 | 80 | 80 | 80 |
| | Dimension l_5 | 14 | 14 | 14 | 14 | 14 | 20 | 20 | 20 |
| | Dimension $l_1 = 16$ mm | 70 | 90 | 105 | 120 | 140 | 170 | 200 | 240 |
| | Dimension l_4 | 88 | 88 | 88 | 88 | 80 | 80 | 80 | 80 |
| | Dimension l_5 | 14 | 14 | 14 | 14 | 20 | 20 | 20 | 20 |
| Number of connectors | S80 | on request | | | | | | | |
| | S90 | on request | | | | | | | |
| Dimension l_3 | 4 mm for inductive switch elements with sensing head 10 mm | | | | | | | | |
| | 2 mm for inductive switch elements with sensing head 15.5 mm | | | | | | | | |

Dimensions in mm

Ordering example:

BNS 816-B - - - - **602-11-** - - -

Number of plungers
02 2-way
03 3-way
04 4x ...

Code for switch elements
(see table Seite 35)

Switch position spacing
12 12 mm
16 16 mm

Optional Male
S80R 5-pin, right
S80L 5-pin, left
S80S 5-pin, right and left
S90R 12-pin, right
S90L 12-pin, left
S90S 12-pin, right and left



| | |
|---------------------------------------|---|
| Inductive multiple position switches | BNS 816-B - - - - -610/611/612/613-11- - - - |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M20 x 1.5 for cable gland or connector |
| Ambient temperature | -25...+70 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 736 |

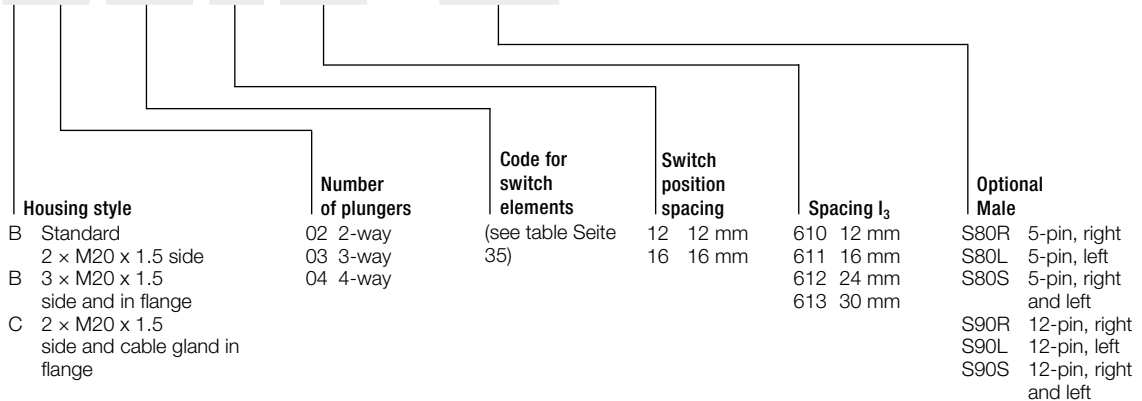
Available sizes

| Number of switch-positions | Number of Male S80/S90 | Switch-position-spacing Dimension | Series 610 Housing B Standard Dimension | | Series 611 Housing B Standard Dimension | | Series 612 Housing B Dimension | | Series 612 Housing C Dimension | | Series 613 Housing B Dimension | | Series 613 Housing C Dimension | |
|----------------------------|------------------------|-----------------------------------|---|-------|---|-------|--------------------------------|-------|--------------------------------|-------|--------------------------------|-------|--------------------------------|-------|
| | | | l_2 | l_3 | l_2 | l_3 | l_2 | l_3 | l_2 | l_3 | l_2 | l_3 | l_2 | l_3 |
| 2 | on request | l_1 | 36 | 12 | | | | | 48 | 24 | 60 | 30 | | |
| 3 | | 12 | 48 | 12 | | | 60 | 24 | 60 | 24 | | | | |
| 4 | | 12 | 60 | 12 | | | | | | | | | | |
| 5 | | 12 | 72 | 12 | | | | | | | | | | |
| 6 | | 12 | 84 | 12 | | | | | | | | | | |
| 2 | | | 16 | | | 48 | 16 | | | | | 60 | 30 | |
| 3 | | 16 | | | 72 | 16 | | | | | | | | |
| 4 | | 16 | | | 84 | 16 | | | | | | | | |

Dimensions in mm
 Dimension l_4 = 4 mm for inductive switch elements with sensing head \varnothing 10 mm
 Dimension l_4 = 2 mm for inductive switch elements with sensing head \varnothing 15.5 mm

Ordering example:

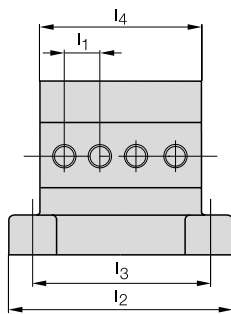
BNS 816- - - - -11- - - -





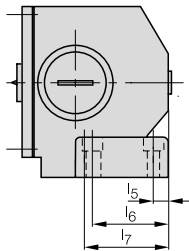
| | |
|---------------------------------------|---|
| Inductive multiple position switches | SERIES 605-11 |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M25 x 1.5 for cable gland or connector |
| Ambient temperature | -25...+70 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 736 |

Available sizes



| Number of switching positions | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 12 |
|-------------------------------|----------------------------------|------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Dimension l ₂ with | Dimension l ₁ = 12 mm | 84 | 84 | 100 | 116 | 132 | 148 | 164 | 180 | |
| Dimension l ₃ with | Dimension l ₁ = 12 mm | 66 | 66 | 82 | 98 | 114 | 130 | 146 | 162 | |
| Dimension l ₄ with | Dimension l ₁ = 12 mm | 54 | 54 | 68 | 84 | 100 | 164 | 132 | 148 | |
| Dimension l ₂ with | Dimension l ₁ = 16 mm | 84 | 100 | 116 | 132 | 148 | 146 | 180 | 212 | 224 |
| Dimension l ₃ with | Dimension l ₁ = 16 mm | 66 | 82 | 98 | 114 | 130 | 132 | 162 | 194 | 226 |
| Dimension l ₄ with | Dimension l ₁ = 16 mm | 54 | 68 | 84 | 100 | 116 | | 148 | 180 | 212 |
| Number of connectors | S80 | on request | | | | | | | | |
| | S90 | on request | | | | | | | | |

Dimensions in mm



| Dimensions when using inductive switch elements with sensing head Ø 10 mm | | Dimensions when using inductive switch elements with sensing head Ø 15.5 mm | |
|---|---------|---|---------|
| Dimension l ₂ | 10 mm | Dimension l ₂ | 8 mm |
| Dimension l ₃ | 40 mm | Dimension l ₃ | 38 mm |
| Dimension l ₄ | 43.5 mm | Dimension l ₄ | 41.5 mm |

Dimensions in mm

Ordering example:

BNS 816-B - - - - **605-11** - - - -

Number of plungers
 02 2-way
 03 3-way
 04 4x ...

Code for switch elements
 (see table 7315)

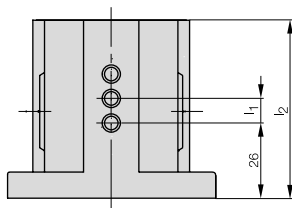
Switch position spacing
 12 12 mm
 16 16 mm

Optional Male
 S80R 5-pin, right
 S80L 5-pin, left
 S80S 5-pin, right and left
 S90R 12-pin, right
 S90L 12-pin, left
 S90S 12-pin, right and left



| Inductive multiple position switches | SERIES 603-11 |
|---------------------------------------|---|
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M16 x 1.5 for cable gland or connector |
| Ambient temperature | -25...+70 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 737 |

Available sizes

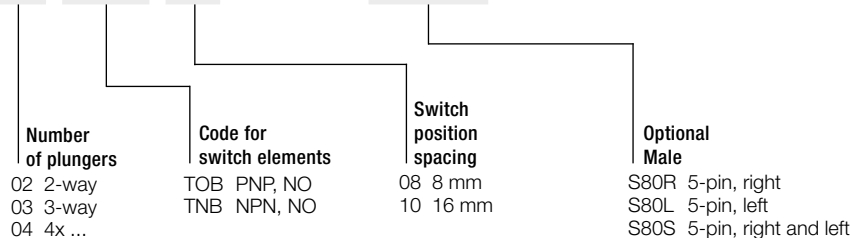


| Number of switching positions | | 2 | 3 | 4 | 5 | 6 | 8 | 10 |
|-------------------------------|-------------------------|----|----|----|----|----|-----|-----|
| Dimension l_2 with | Dimension $l_1 = 8$ mm | 49 | 59 | 64 | 72 | 80 | 96 | 112 |
| | Dimension $l_3 =$ | 54 | 54 | 54 | 54 | 54 | 50 | 50 |
| | Dimension $l_1 = 10$ mm | 49 | 59 | 72 | 80 | 89 | 112 | 129 |
| | Dimension $l_3 =$ | 54 | 54 | 54 | 54 | 50 | 50 | 50 |
| Number of connectors | S80 on request | | | | | | | |

Dimensions in mm
Size 12-x with 8 mm spacing on request.

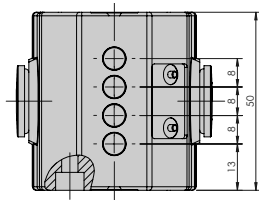
Ordering example:

BNS 816-B - - - - **-603-11-** - - - -





| | |
|---------------------------------------|---|
| Inductive multiple position switches | SERIES 650-11 |
| Housing material | Cast aluminum, corrosion-resistant, anodized finish |
| Connection type | M16 x 1.5 for cable gland or connector |
| Ambient temperature | -25...+70 °C |
| Degree of protection as per IEC 60529 | IP67 |
| Approval/Conformity | CE |
| Productview and installation | Page 737 |



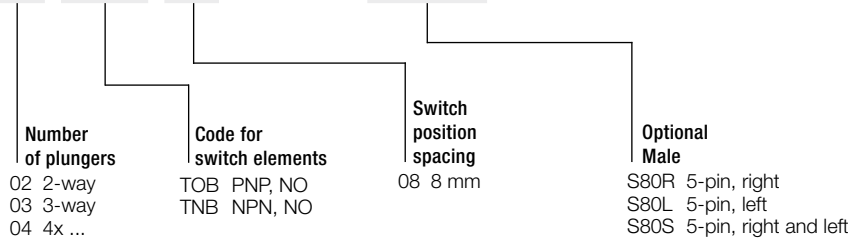
Available sizes

| | | | | | |
|----------------------------------|----|----|----|----|----|
| Number of switching positions | 2 | 3 | 4 | 5 | 6 |
| Dimension I ₁ | 34 | 42 | 50 | 58 | 66 |
| No. of connectors S80 on request | | | | | |

Dimensions in mm

Ordering example:

BNS 816-B - - - - **-650-11-** - - - -



Inductive switch elements with sensing head Ø 10 mm, for use with switch position spacing 12 and 16 mm

| Code | Order code for spare switch elements | Electrical version | Rated-switching distance s_n | Assured switching distance s_a |
|------|--------------------------------------|--|--------------------------------|----------------------------------|
| PA | BES 517-110 | PNP, changeover, 10...60 V DC, short-circuit protected | 2 mm | 0...1.6 mm |
| NA | BES 517-108 | NPN, changeover, 10...60 V DC, short-circuit protected | 2 mm | 0...1.6 mm |
| WS | BES 517-410 | NO, up to 250 V AC | 2 mm | 0...1.6 mm |
| WO | BES 517-421 | NC, up to 250 V AC | 2 mm | 0...1.6 mm |
| KHG | BES 517-560-H | 2-wire, NO, 10...55 V DC, short-circuit protected | 2 mm | 0...1.6 mm |
| KHH | BES 517-561-H | 2-wire, NC, 10...55 V DC, short-circuit protected | 2 mm | 0...1.6 mm |
| NG | BES 516-314-N | 2-wire, NAMUR, 7.7...9 V DC | 2 mm | 0...1.6 mm |

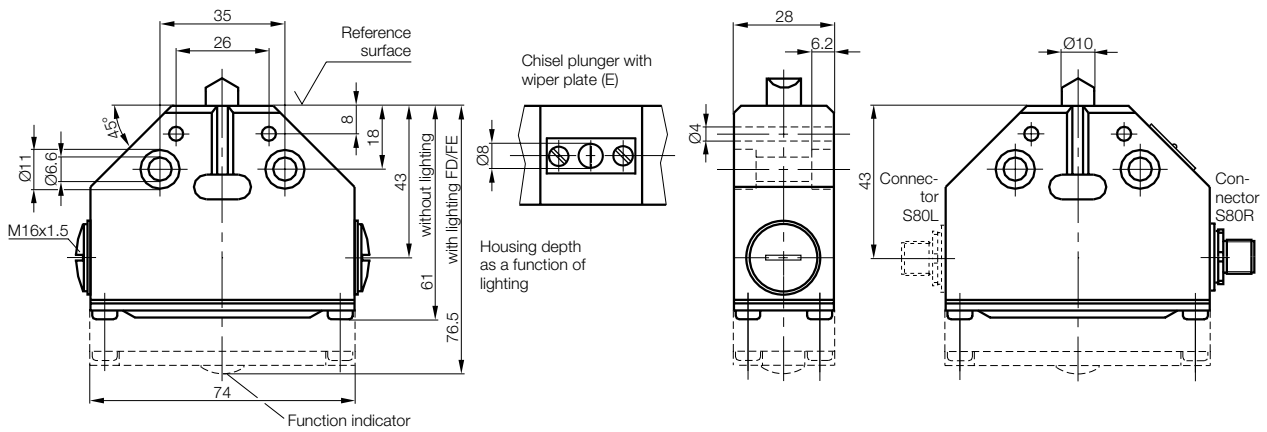
Inductive switch elements with sensing head Ø 15.5 mm, for use with switch position spacing 16 mm

| Code | Order code for spare switch elements | Electrical version | Rated-switching distance s_n | Assured switching distance s_a |
|------|--------------------------------------|--|--------------------------------|----------------------------------|
| THA | BES 517-142-Y | PNP, changeover, 10...30 V DC, short-circuit protected | 5 mm | 0...4 mm |
| EJA | BES 517-463 | NO, up to 250 V AC | 5 mm | 0...4 mm |
| AAA | BES 517-464 | NC, up to 250 V AC | 5 mm | 0...4 mm |

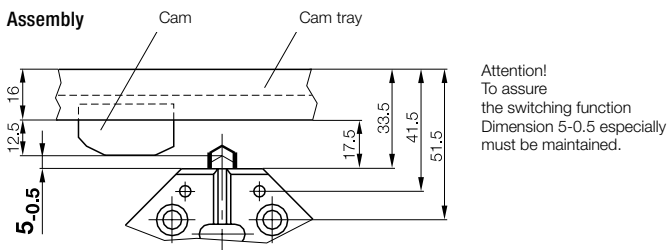
Hybrid switch element with mechanical plunger and inductive processing

| Code | Order code for spare switch elements | Electrical version | Rated-switching distance s_n | Assured switching distance s_a |
|------|--------------------------------------|-------------------------------|--------------------------------|----------------------------------|
| DH | BES 516-110-D | PNP, changeover, 10...30 V DC | More information on request! | |

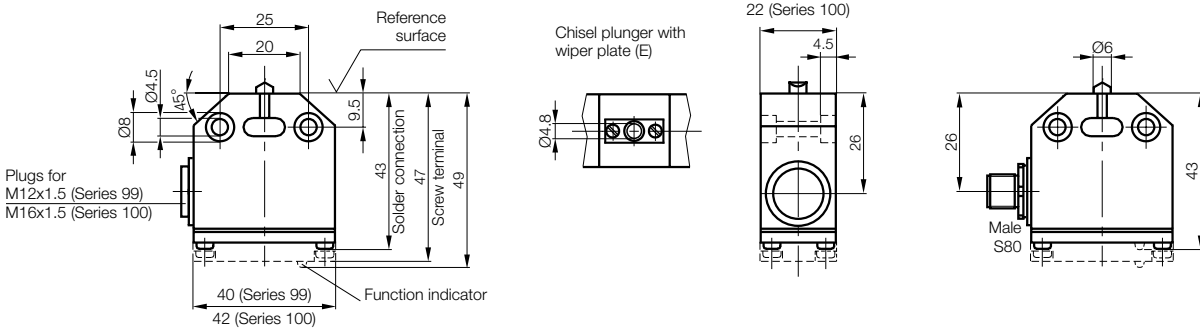
Position switch Series F60 compliant with DIN 43693



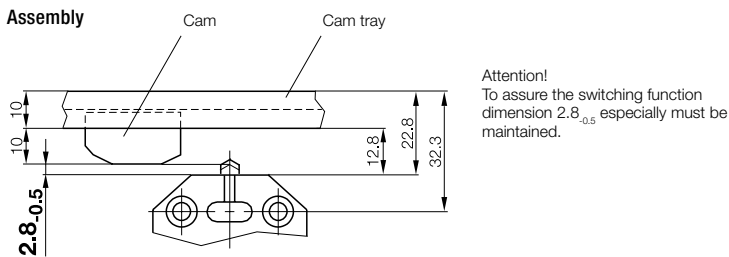
Assembly



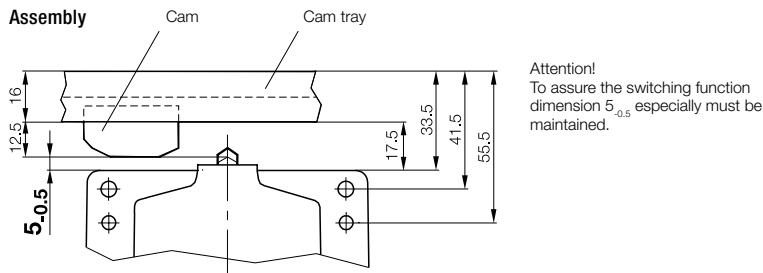
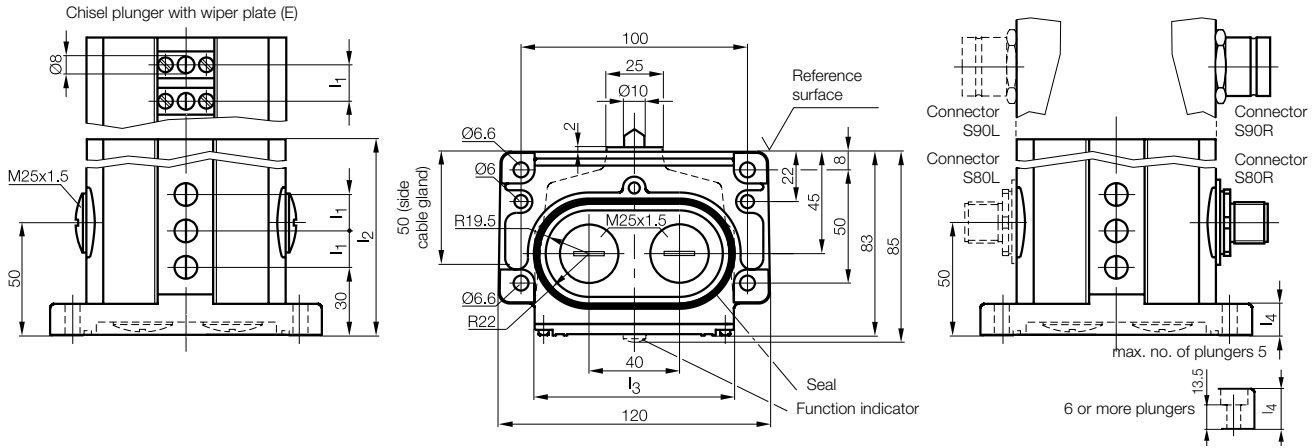
Position switch Series 99 and 100



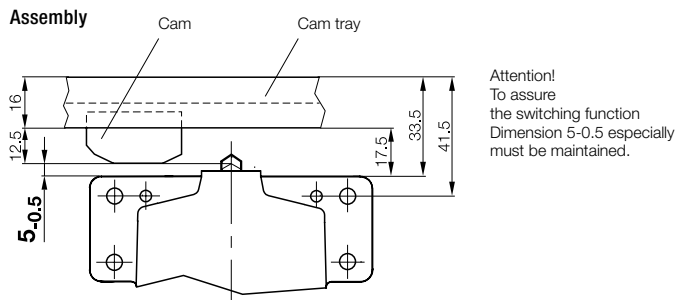
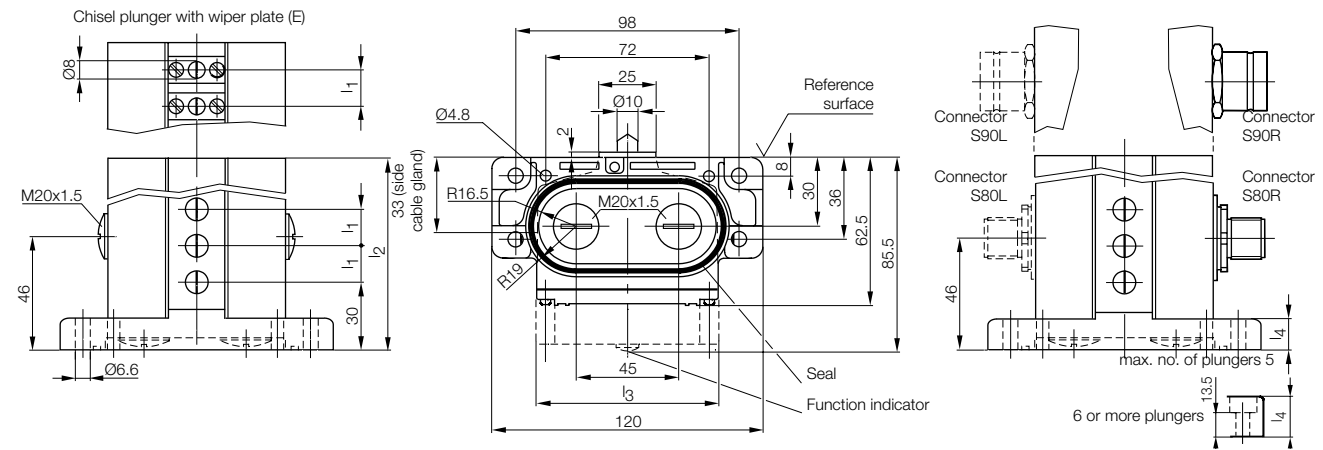
Assembly



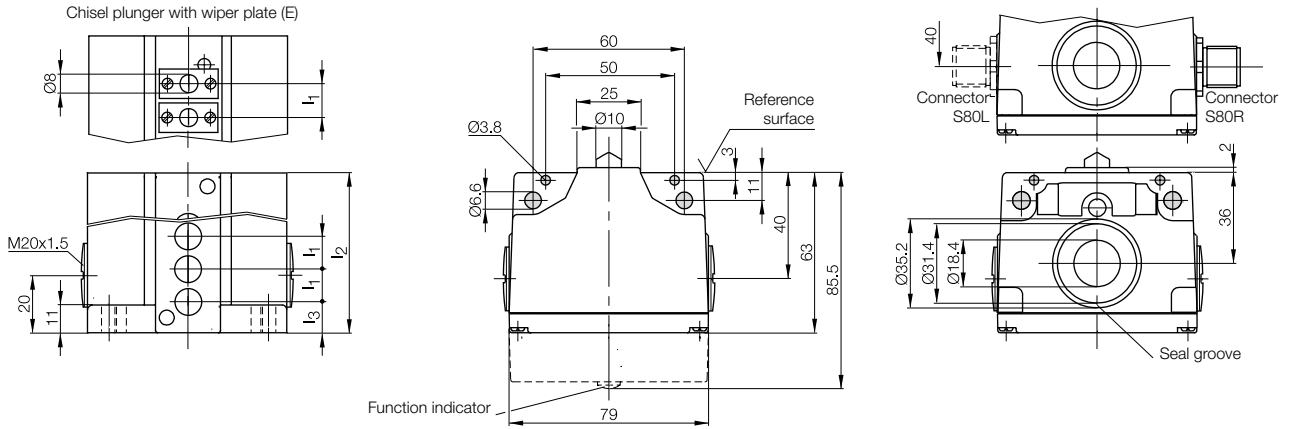
Multiple position switches 100 compliant with DIN 43697



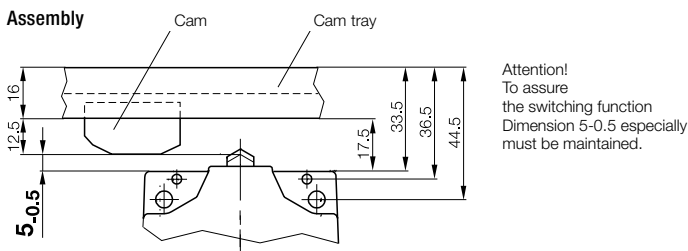
Series 62 multiple position switch



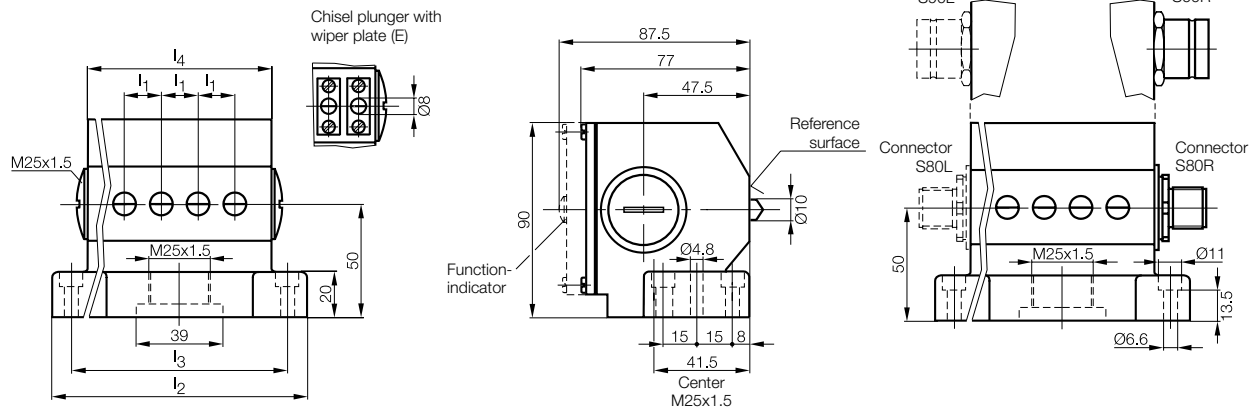
Series 61 multiple position switch



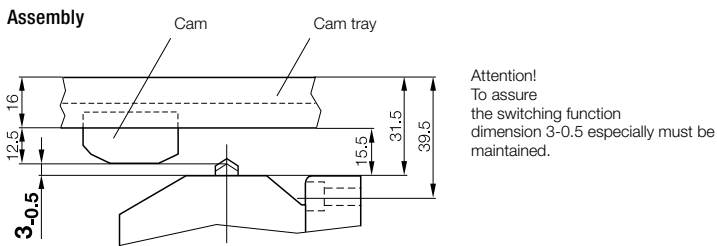
Assembly



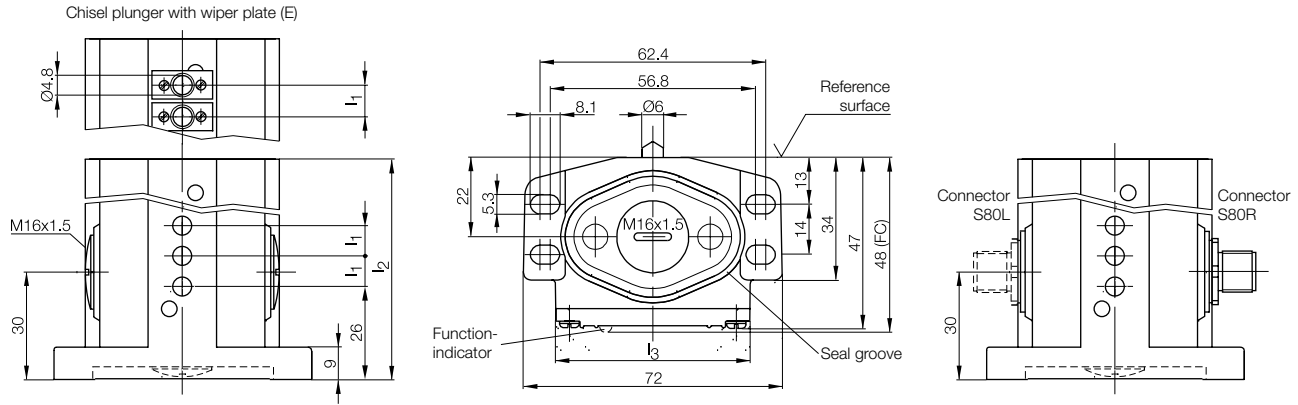
Series 72 multiple position switch



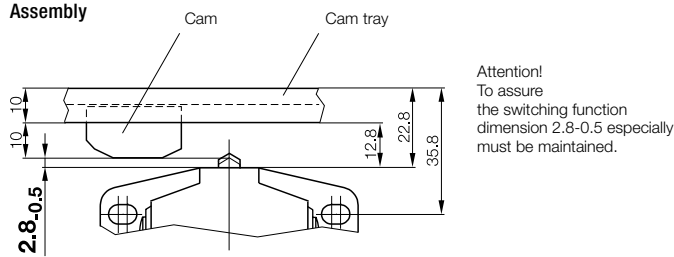
Assembly



Series 46 multiple position switch

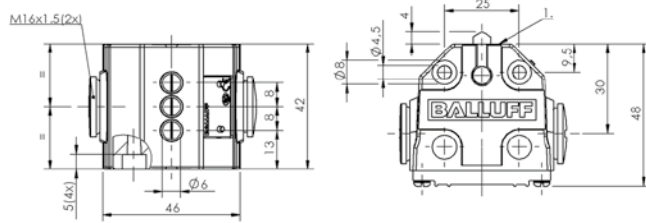


Assembly



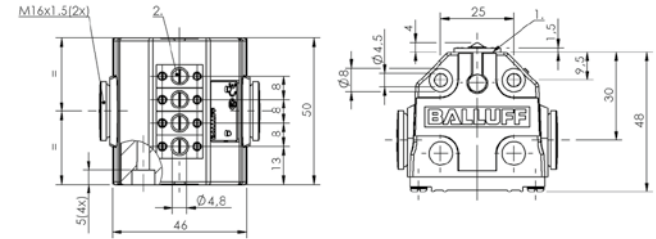
Series 40 multiple position switch

Standard:



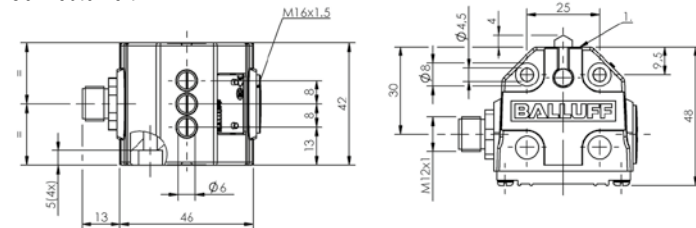
1) Reference edge

Chisel plunger with wiper plate:



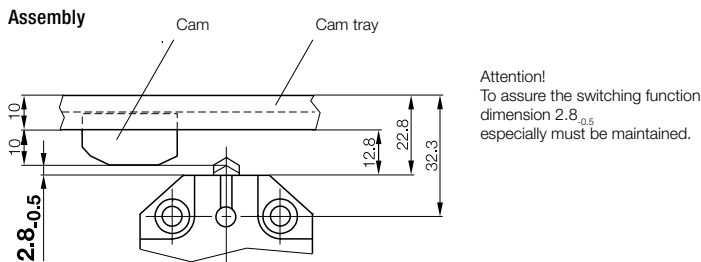
1) Reference edge
2) Anti-crystallization plunger

Connector left:

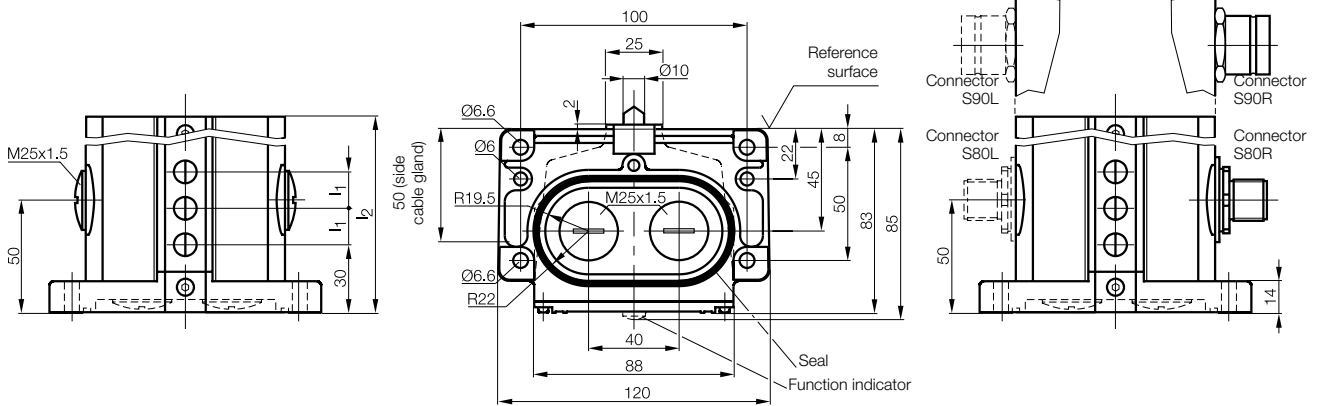


1) Reference edge

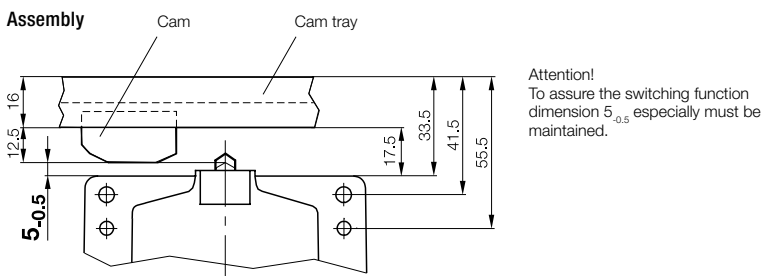
Assembly



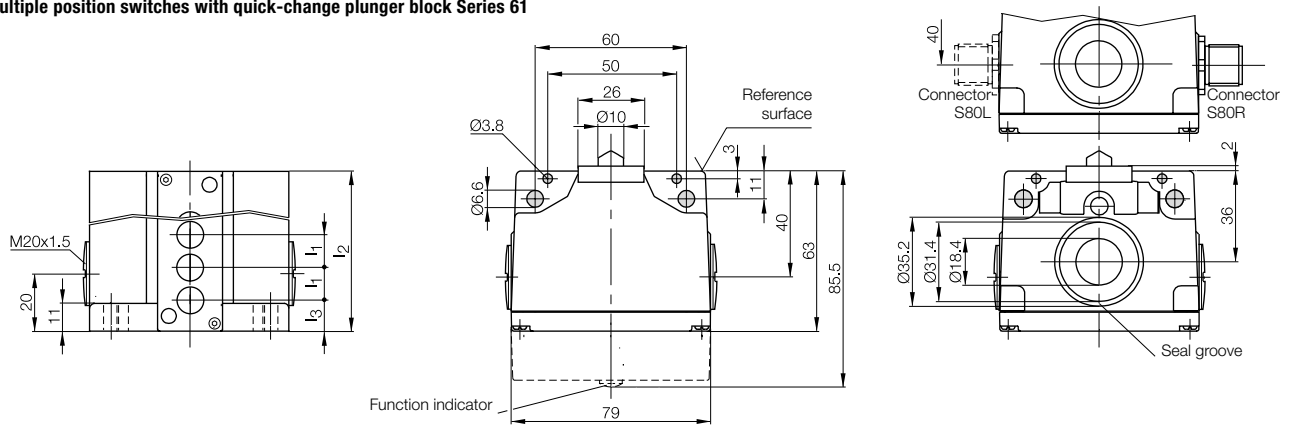
Multiple position switches with quick-change plunger block Series 100 compliant with DIN 43697



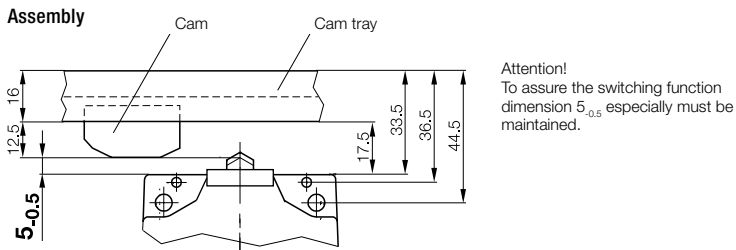
Assembly



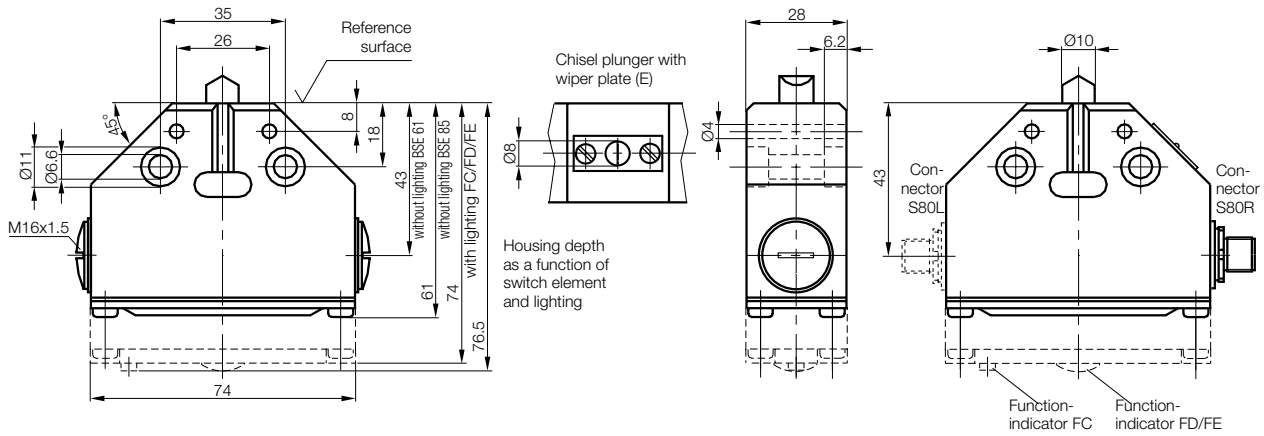
Multiple position switches with quick-change plunger block Series 61



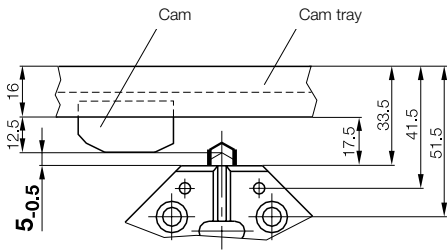
Assembly



Position switch with safety switch positions Series F60 DIN 43693

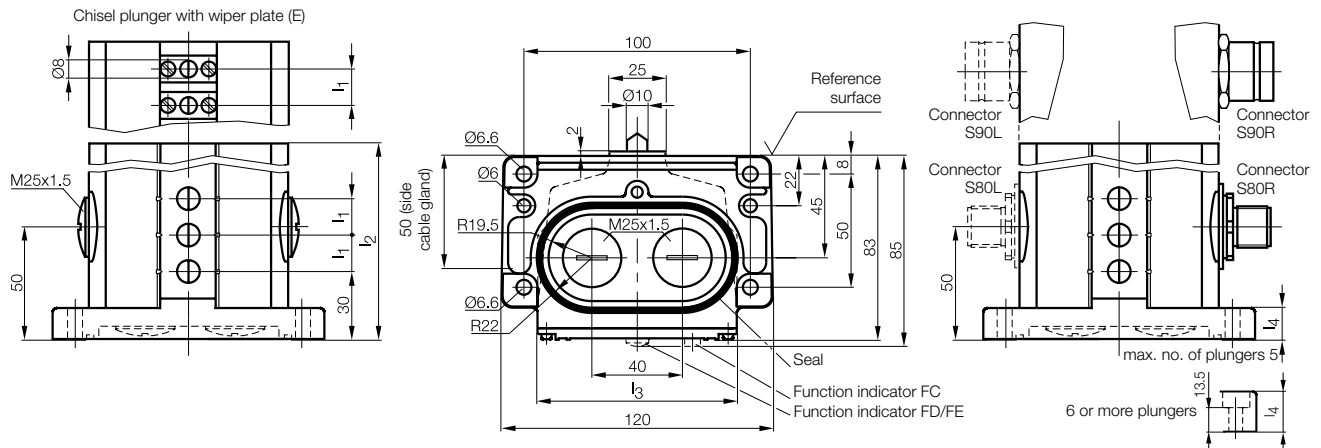


Assembly

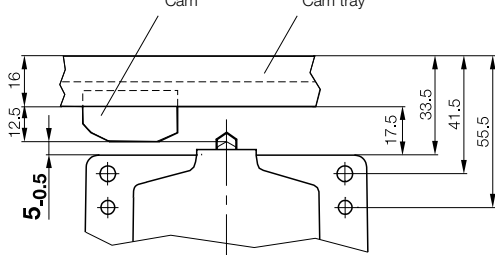


Attention!
To assure the switching function dimension 5_{-0.5} especially must be maintained.

Multiple position limit switches with safety switch positions Series 100 DIN 43697

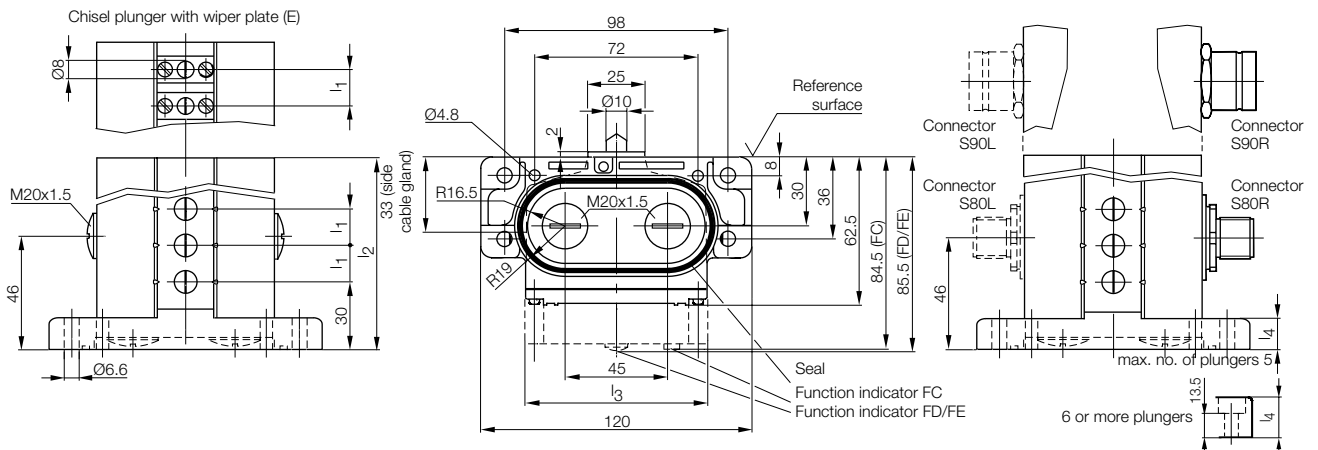


Assembly

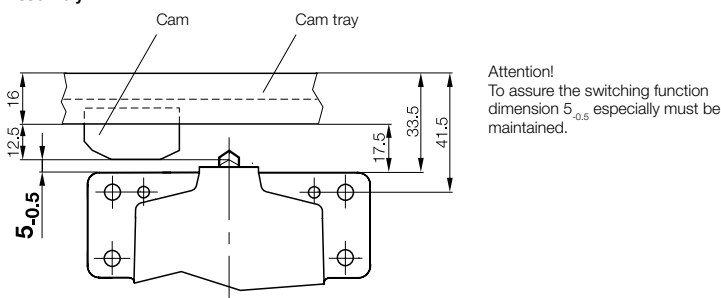


Attention!
To assure the switching function dimension 5_{-0.5} especially must be maintained.

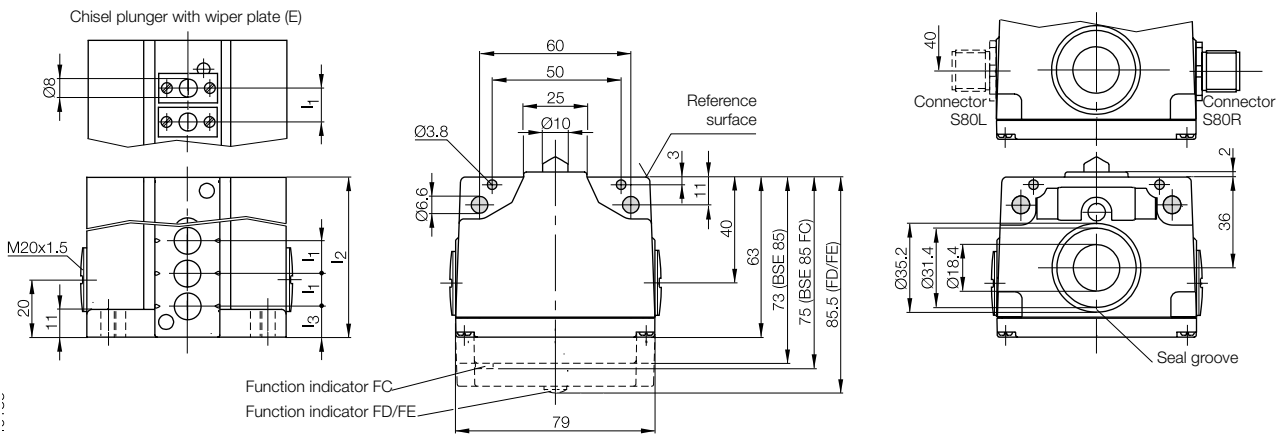
Multiple position limit switches with safety switch positions Series 62



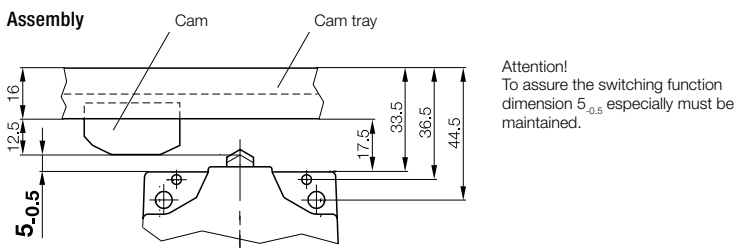
Assembly



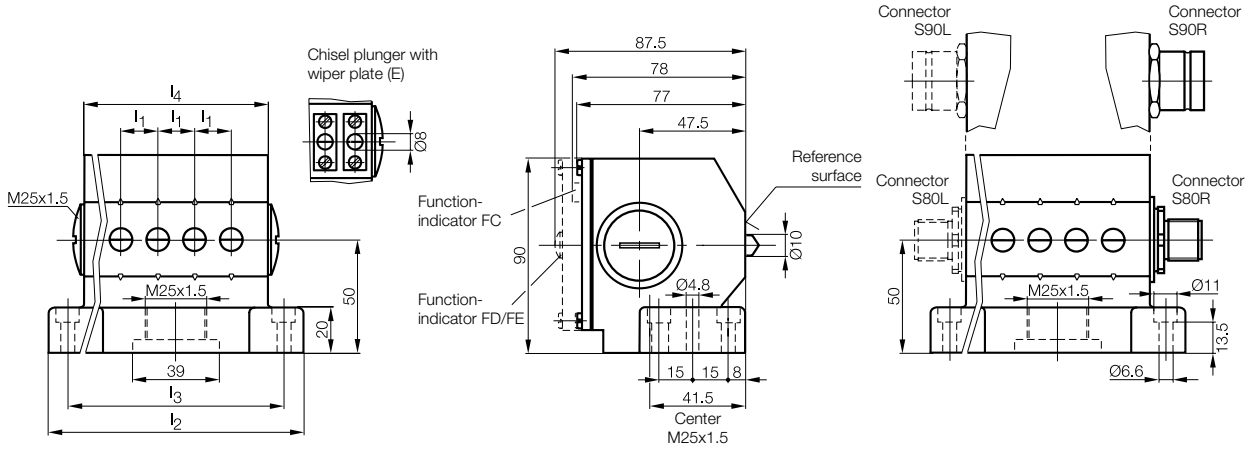
Multiple position limit switches with safety switch positions Series 61



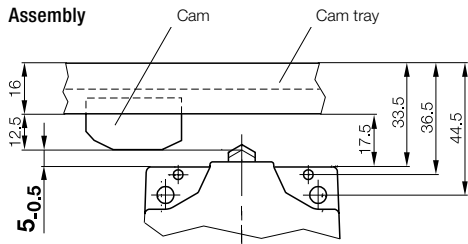
Assembly



Multiple position limit switches with safety switch positions Series 72

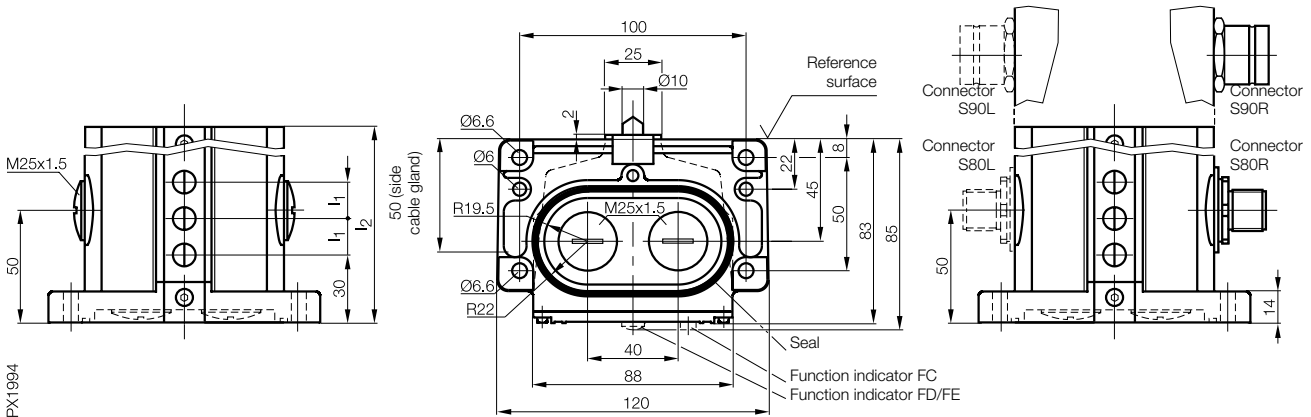


Assembly



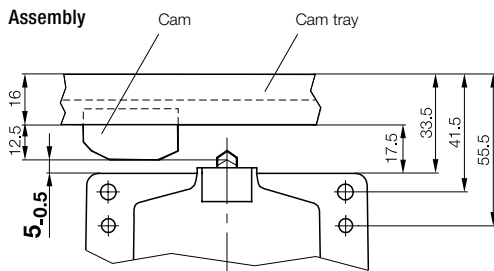
Attention!
To assure the switching function dimension 5_{0.5} especially must be maintained.

Multiple position limit switches with safety switch positions and quick-change plunger block Series 100



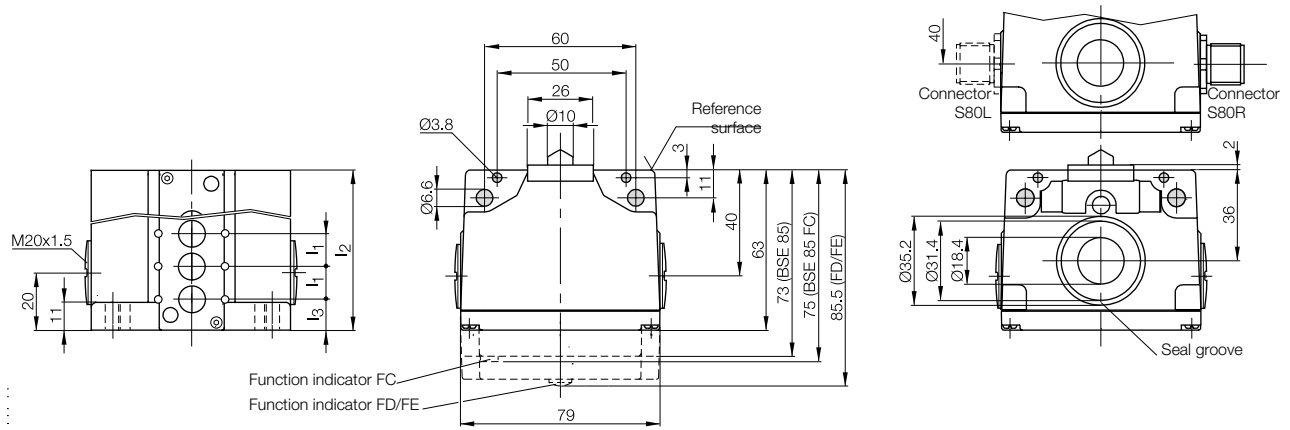
PX1994

Assembly

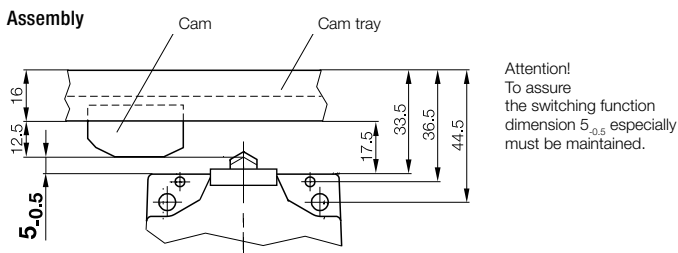


Attention!
To assure the switching function dimension 5_{0.5} especially must be maintained.

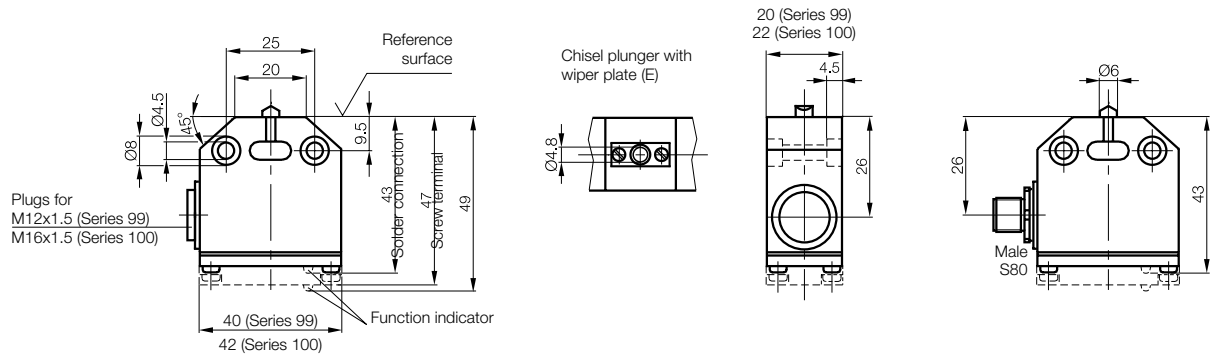
Multiple position limit switches with safety switch positions and quick-change plunger block Series 61



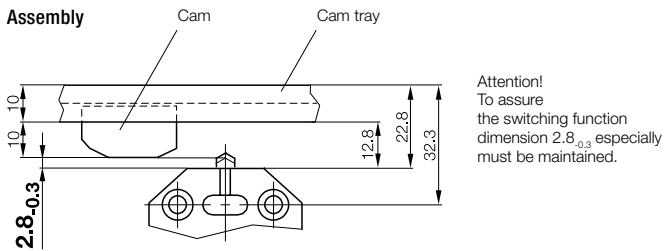
Assembly



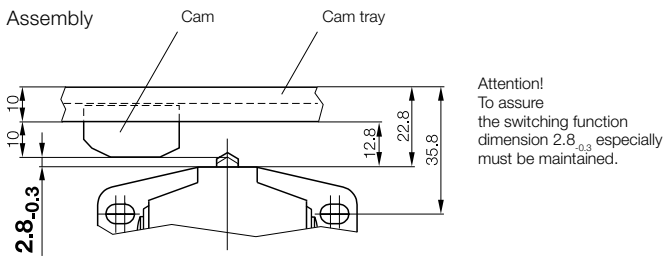
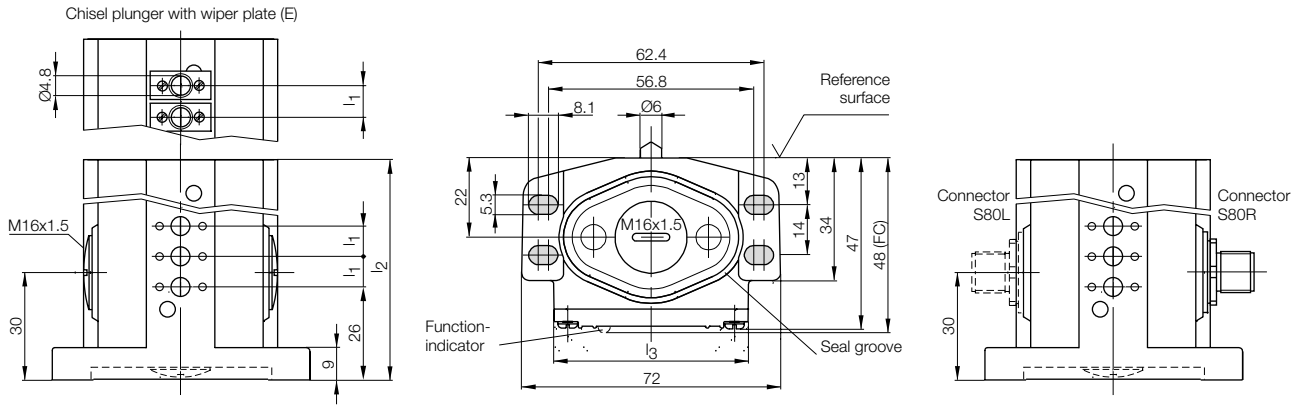
Position switch with positive opening Series 99 and 100



Assembly



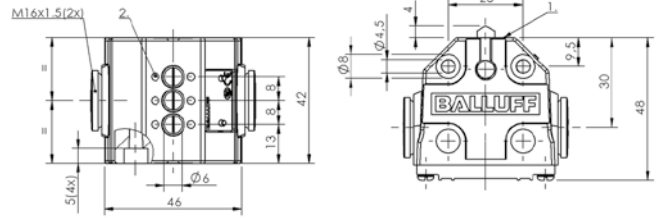
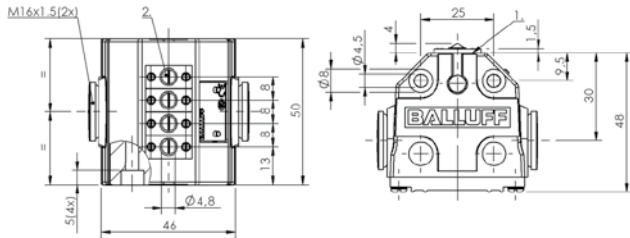
Multiple position limit switches with positive opening Series 46



Multiple position limit switches with positive opening Series 40

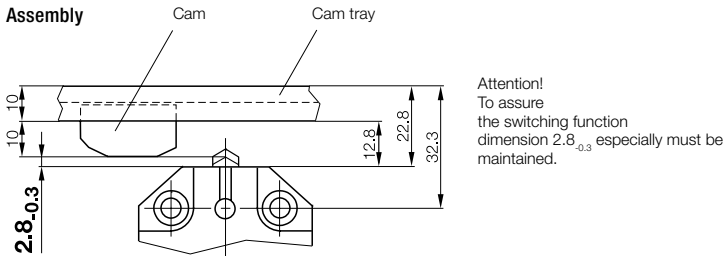
Chisel plunger with wiper plate:

Standard:

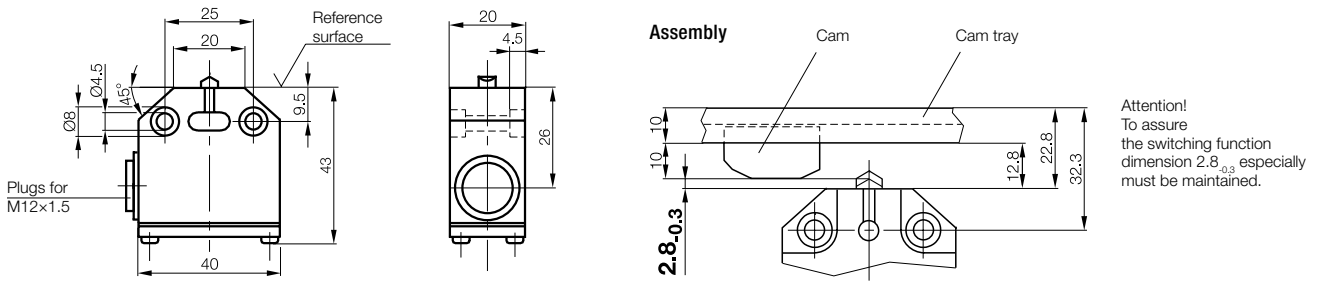


- 1) Reference edge
- 2) Anti-crystallization plunger

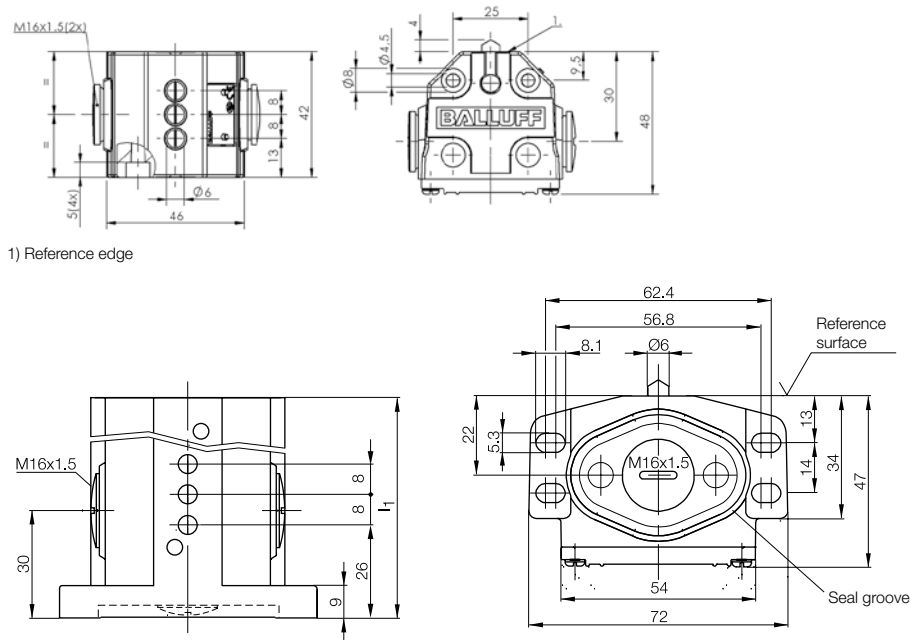
- 1) Reference edge
- 2) Mark. Safety switch position



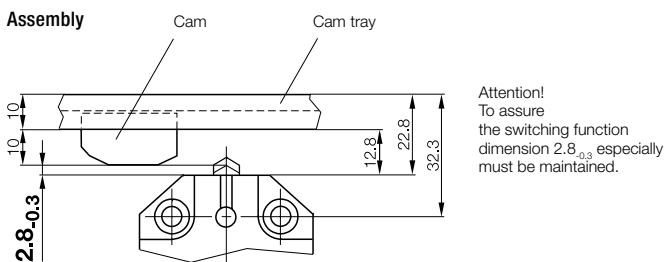
High-temperature position switch Series 99 and 100



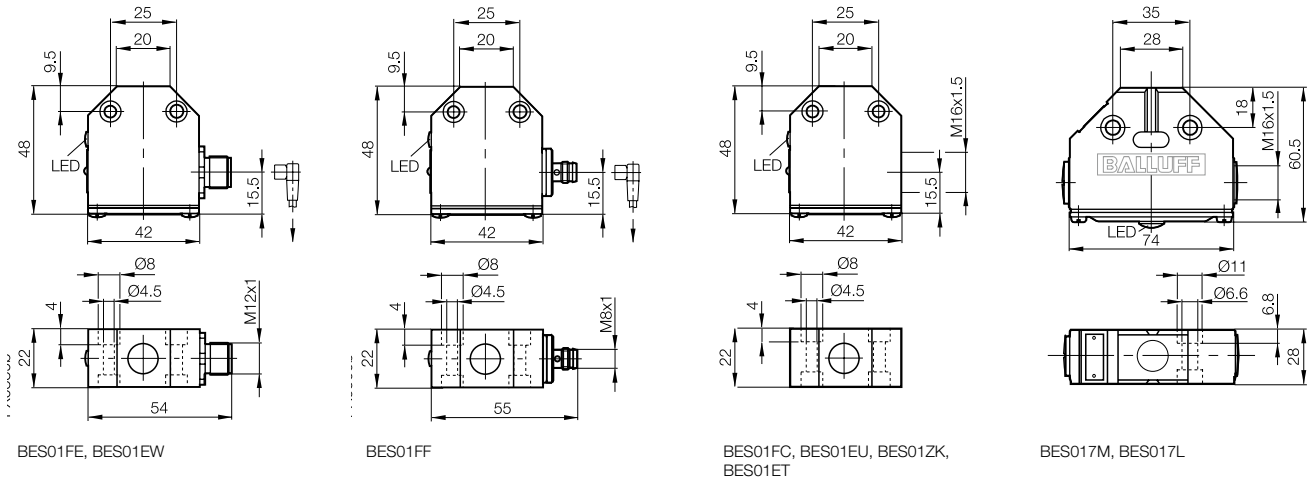
High-temperature multiple position switches Series 46 and 40



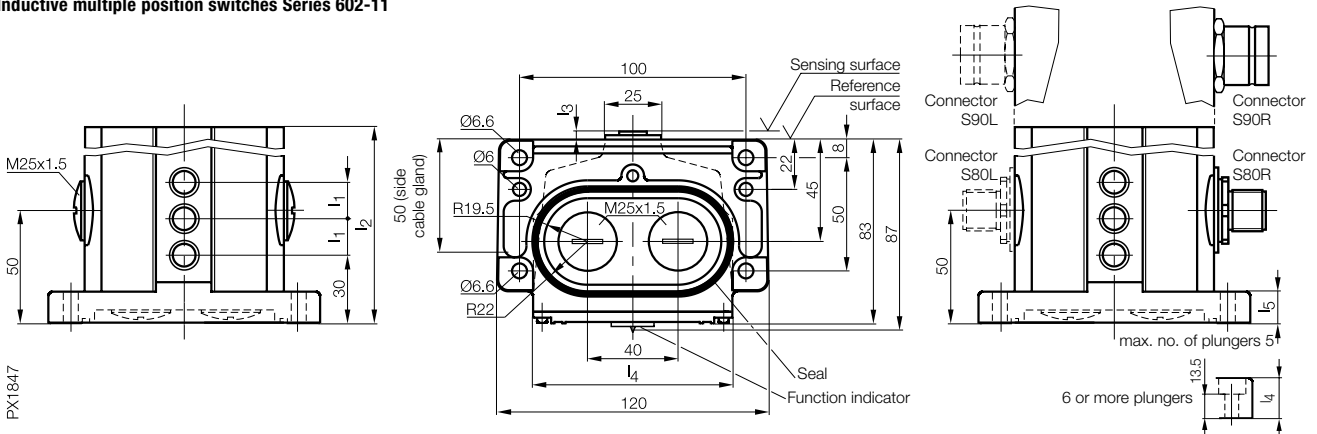
1) Reference edge



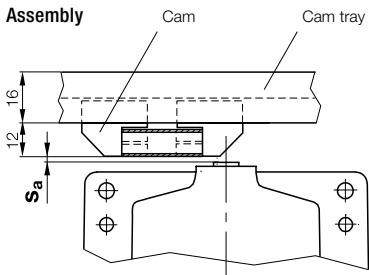
Inductive Position Switches Series H2 and H3



Inductive multiple position switches Series 602-11

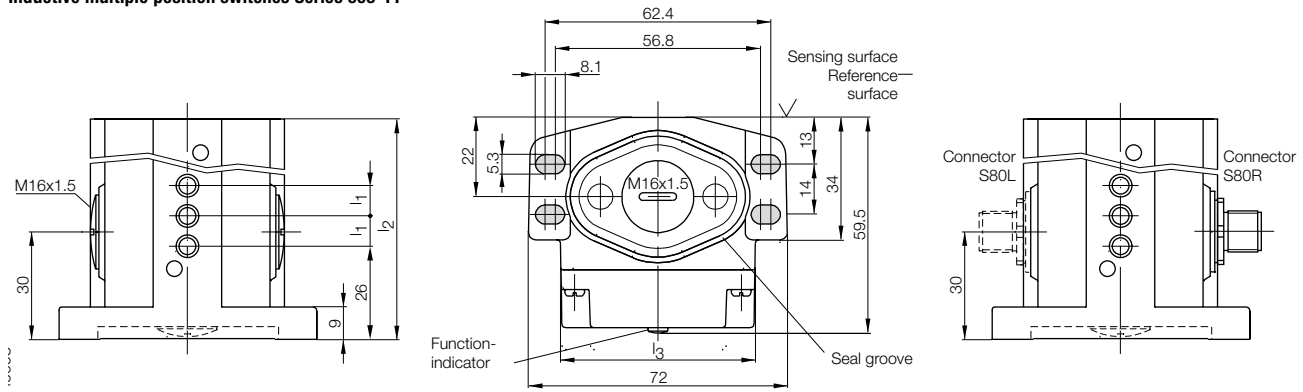


Assembly

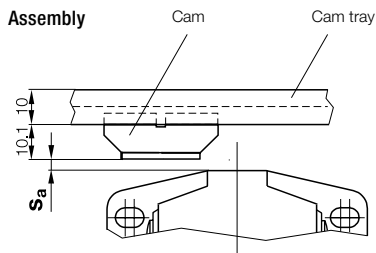


Attention!
To assure the switching function s_a must lie within $0 < s_a \leq 0.81 s_n$.

Inductive multiple position switches Series 603-11



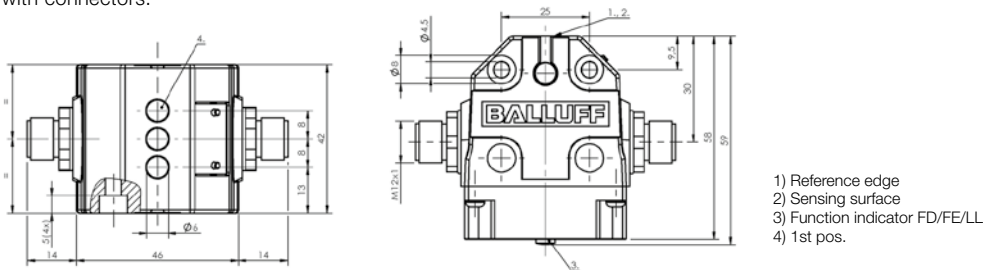
Assembly



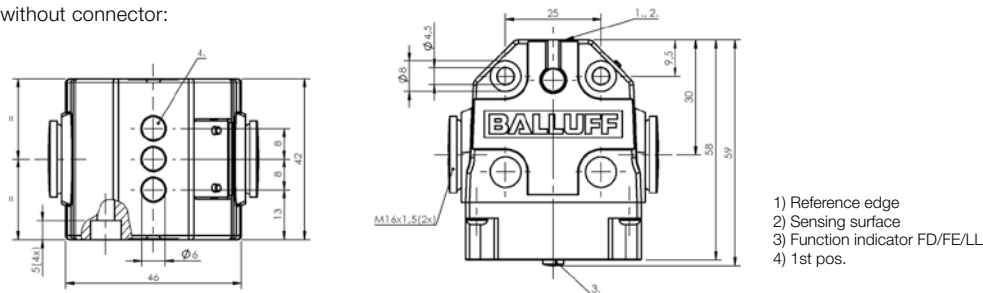
Attention!
To assure
the switching function
 s_a must lie within
 $0 < s_a \leq 0.81 s_{p1}$

Inductive multiple position switches Series 650-11

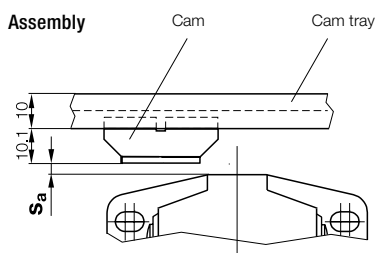
with connectors:



without connector:



Assembly



Attention!
To assure
the switching function
 s_a must lie within
 $0 < s_a \leq 0.81 s_{p1}$