

# Precision multiple position switch BNS 819-... Models 100, 62, 61



EU Directive 2004/108/EC (EMC Directive) and EMC Law  
2006/95/EC Low-Voltage Directive  
Low-voltage switching devices: EN 61947-5-1:2004

## Scope

This guide is valid for the following products:

- BNS 819-D-...-100-10-... (model 100)
- BNS 819-D-...-62-10-... (model 62)
- BNS 819-D-...-61-...-10-... (model 61)

## Downloading other User's Guides

Other User's Guides can be found on the Internet at **www.balluff.com/downloads**.



**Model 100 to DIN 43697**  
Example BNS 819-D06-100-10-...



**Model 62**  
Example BNS 819-D04-62-10-...



**Model 61**  
Example BNS 819-D04-61-12-10-...

## Intended Use

Precision multiple position switches are designed to transmit commands to automatic controllers for positioning and switching off machines and industrial plants.

Ignoring the instructions in this guide, especially those related to assembly, as well as improper use and incorrectly performed functional checks will forfeit any warranty and liability claims made against the manufacturer.

## General safety notes

**Installation** and startup are only to be performed by trained specialists.

The **operator** is responsible for ensuring that local safety regulations are observed. In particular, the operator must take measures to ensure that a defect in the devices will not result in hazards to persons or equipment.

If defects and persistent faults occur in the devices, take them out of service and secure against unauthorized use.

## Improper Use

Multiple position switches BNS 819-... with the BS 30.0 switch element (without forced opening) must not be installed in safety circuits.

Multiple position switches may not be used as limit stops.

## Construction and Function

Multiple position switches are fitted with 2 to 16 switch devices arranged in series. The switch elements are actuated by plungers, which are triggered by cams attached to the machine.

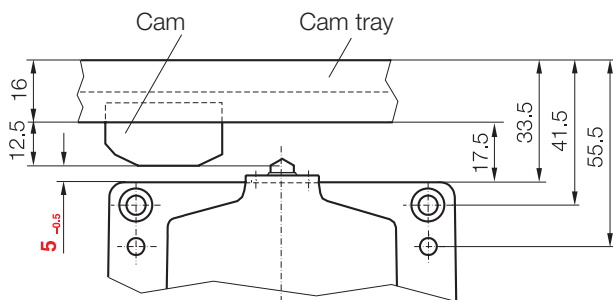
The plungers and cams may vary depending on the operating conditions.

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## Installation

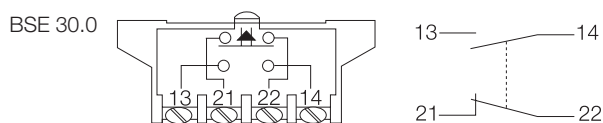
- Install multiple position switches in such a way that
- moving machine parts do not damage connecting cables and connectors,
  - the seal on the multiple position switch is tight when the cable is inserted.

**Note: To ensure the switching function, the dimension 5<sub>-0.5</sub> is especially critical.**



## Electrical connection

1. Open the switch cover.
2. Connect the cable to the switch elements as indicated on the circuit diagram.  
Use a suitable cable gland or connector with O-ring.  
The seal must be adapted to the diameter of the cable in order to seal the cable properly.  
Tighten the connecting screws on the switch element to max. 0.5 Nm.
3. Place the switch cover in position and tighten the cover screws with 1.5 Nm.



## Function check

- Check the switch function by actuating the plunger axially.
- Test the wiring and electrical functions using appropriate testing equipment.

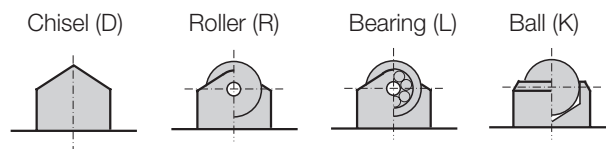
## Maintenance and checks

- No maintenance work required. Perform the following checks regularly to ensure correct functioning:
- Switch function of the elements
  - Correct seating of all components and connections
  - Tight seal on cable gland
  - Deposits on switch
  - Wear on plunger and cam
  - Precise adjustment of cam in relation to multiple limit switch

## Technical Data

Mechanical Data	
Housing material	Anodized aluminum
Mounting type	any
Connection type	M25x1.5
Ambient temperature	-5...+85 °C
Degree of protection as per IEC 60529	IP 67
Function indicator, type FD	6...60 V AC/DC
Function indicator, type FE	90...250 V AC/DC
Switch element	
Switch element	BSE 30.0
Contact system	Dual changeover, one normally open and one normally closed, galvanically isolated.
Wire cross-section	2x1.5 mm <sup>2</sup>
Nominal voltage	240 V AC
Conv. thermic current I <sub>th</sub>	6 A
Rated impulse dielectric strength	2.5 kV
Assured separation after plunger travel	No
Connection type	M3 screw connection
Switching actuating force	min. 20 N
Switching point to reference surface	6 mm
Plunger point to reference surface	8 mm
Switching frequency	max. 300 rpm
Switching operations	30x10 <sup>6</sup>
plungers	
Plunger style	Chisel (D), ball (K), roller (R), roller bearing (L), chisel with wiper plate (E)
Plunger material	Steel, stainless, hardened
Max. plunger travel with BSE 30.0	depending on plunger type
Plunger type D, K, R, L	5.5 mm
Plunger type E	4 mm
Operating speed with BSE 30.0	depending on plunger type
Plunger D	40 m/min
Plunger E	30 m/min
Plunger K	10 m/min
Plunger R	60 m/min
Plunger L	120 m/min

## Plunger types



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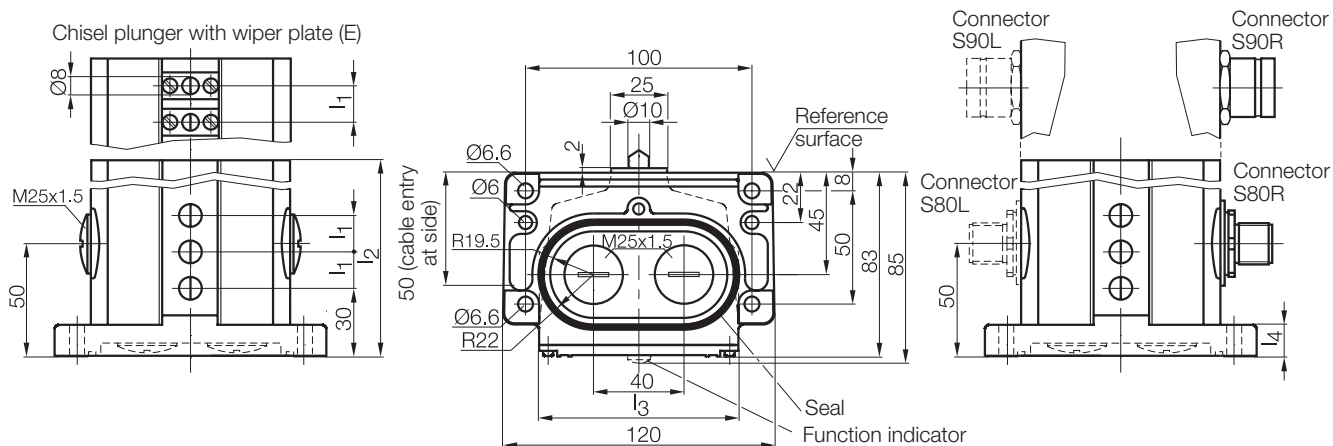
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## BNS 819-...-100-...

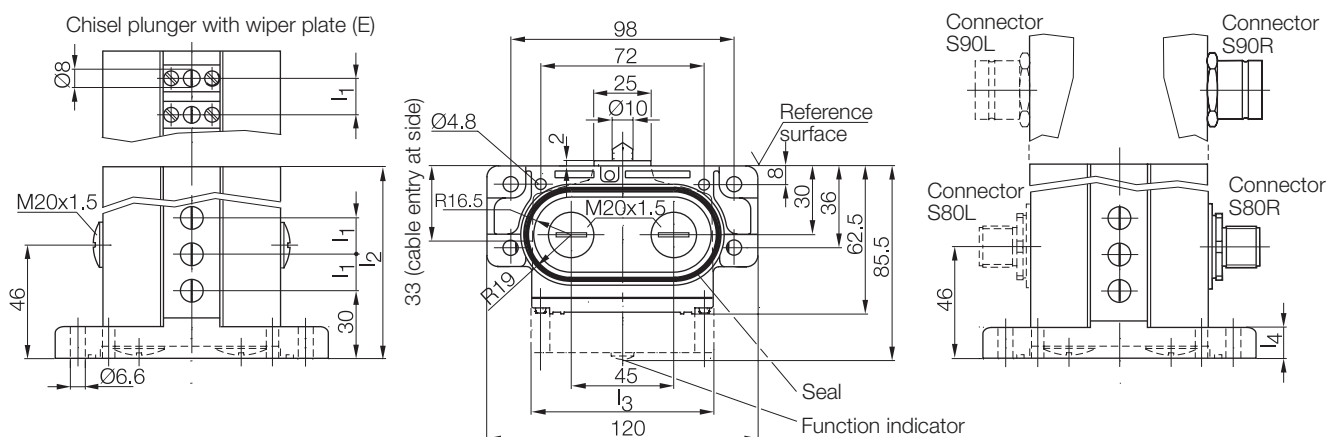
### BNS 819-...-100-...



Number of plungers		2	3	4	5	6	8	10	12
If dimension $I_1 = 12$ mm	Dimension $I_2$	70	80	90	105	120	140	170	200
	Dimension $I_3$	88	88	88	88	88	80	80	80
	Dimension $I_4$	14	14	14	14	14	20	20	20
If dimension $I_1 = 16$ mm	Dimension $I_2$	70	90	105	120	140	170	200	240
	Dimension $I_3$	88	88	88	88	80	80	80	80
	Dimension $I_4$	14	14	14	14	20	20	20	20

## BNS 819-...-62-...

### BNS 819-...-62-...



Number of plungers		2	3	4	5	6	8	10
If dimension $I_1 = 12$ mm	Dimension $I_2$	64	72	84	96	112	130	160
	Dimension $I_3$	88	88	88	88	88	80	80
	Dimension $I_4$	14	14	14	14	14	20	20
If dimension $I_1 = 16$ mm	Dimension $I_2$	64	84	96	112	130	160	192
	Dimension $I_3$	88	88	88	88	88	80	80
	Dimension $I_4$	14	14	14	14	14	20	20

