

# Inductive Sensors

## Accessories for inductive sensors

We offer special accessories for our inductive sensors. With products optimally suited to each other. Alongside switching devices, there are also assembly aids and protective equipment for the most varied inductive sensors.





# Accessories for Inductive Sensors

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# Accessories for Inductive Sensors

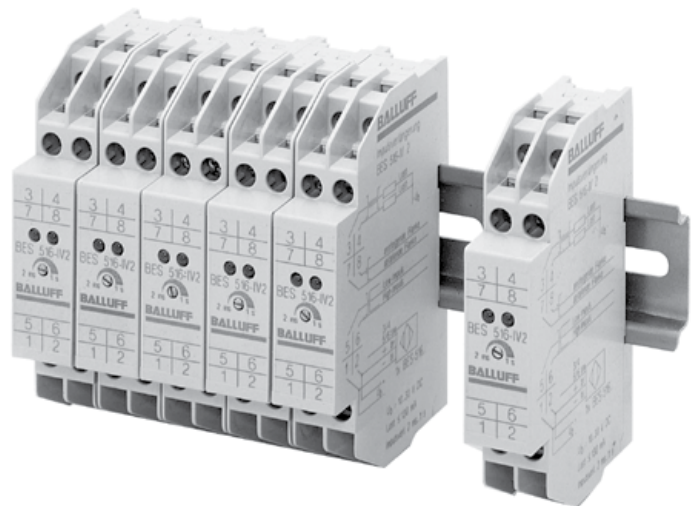
## Pulse stretching

### Detecting fast motion

Rapid motions on machines mean that the sensors are only actuated for a short time. Therefore, the sensor pulse can be too short to guarantee a secure evaluation. Due to its cycle time, the controller does not detect the output signal, with the consequence that important information in the controller sequence is lost. This can pose a risk to your machine!

The solution is the Balluff pulse extender **BES 516-IV 2**.

For controlling this device, the rising or falling edge of the sensor output signal is sufficient to generate a pulse that your controller can recognize. The length is adjustable from 2 ms to 1 sec. Small and space-saving, the device can be snapped onto a rail in accordance with EN 50022-35.



# Accessories for Inductive Sensors

## Pulse stretching



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

**Pulse Extension**

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomact sensors

Protective covering for Unicomact sensors

Protective nuts

Positive stop

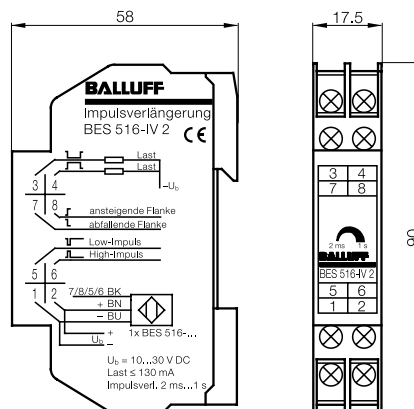
Tube switch

Banking screw

Cushioned mounts

Clamping holder overview

Description	<b>Pulse stretching</b>
Use	Ensures secure output signals from inductive, capacitive or optoelectronic sensors to the controller
<b>Ordering code</b>	<b>BAE0073</b>
Part number	BES 516-IV 2
Output (display by LEDs)	Positive-switching (PNP), complementary
Adjustable pulse stretching	2 ms...1 s
Set value	200 ms (+50 ms)
Input 7/8	Referenced to the respective edge of the input signal
Input 5/6	Referenced to the pulse end of the input signal
Repeatability	< 10 %
Input	1 PNP or 1 NPN - NO or NC
Min. input pulse length	1.5 ms
Supply voltage $U_S$	10...30 V DC (input voltage = output voltage)
Residual ripple	$\leq 15$ %
No-load current	Approx. 20 mA
Output current	$\leq 130$ mA
Permissible load capacity	$\leq 0.5 \mu\text{F}/24 \text{ V}$
Ambient temperature $T_a$	0...60 °C
Housing attachment	DIN rail EN 50022-35
Max. conductor cross-section	2x2.5 mm <sup>2</sup>
Polarity reversal protected	Yes
Short-circuit protected	Yes
Degree of protection as per IEC 60529	Housing IP 40/terminals IP 20
Output	3 Low-pulse, extended
	4 High-pulse, extended
Input	7 Falling edge
	8 Rising edge
	5 Low pulse
	6 High pulse
	1 $-U_S$
	2 $+U_S$
Falling edge	Output signal is triggered by rising edge
Rising edge	Output signal is triggered by rising edge
Low pulse	PNP-NC/NPN-NO short damped PNP-NO/NPN-NC short undamped
High pulse	PNP-NC/NPN-NO short damped PNP-NO/NPN-NC short undamped



# Accessories for Inductive Sensors

## Sensor tester, testing and setting device

### Testers BES 576-3

Balluff sensor testers are flat, handy, and visually appealing. The testing device is a simple manual testing device for PNP/NPN, normally open and normally closed sensors.

#### Benefits

- Integrated steel measuring plate for testing sensors
- Automatic shut-off after 30 s of non-use
- Power provided by a 9V battery
- Visual and acoustic signal

### Testing and setting device BES 516-4

With this programming device, the following testing and setting functions can be carried out on the sensors:

- Programming the switching distance of analog sensors.
- Sensors with teachable switching points can also be programmed.
- Testing 3-wire sensors.
- Testing 2-wire sensors.



# Accessories for Inductive Sensors

## Sensor tester, testing and setting device



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomact sensors

Protective covering for Unicomact sensors

Protective nuts

Positive stop

Tube switch

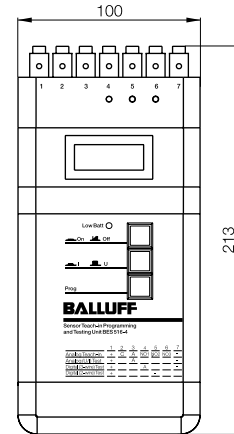
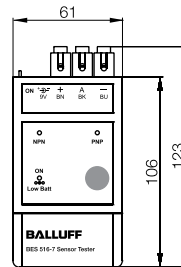
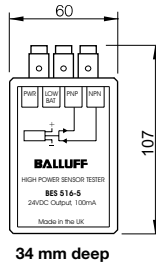
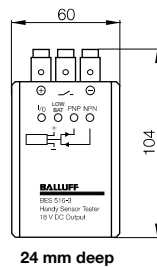
Banking screw

Cushioned mounts

Clamping holder overview

Description	Sensor tester	High Sensor tester	Sensor tester	Testing and setting device
Use	For DC PNP/NPN 3-wire sensors	For DC PNP/NPN 3-wire sensors	For DC PNP/NPN 3-wire sensors	For DC PNP/NPN 2/3-wire sensors and analog sensors
<b>Ordering code</b>	<b>BAE000M</b>	<b>BAE002A</b>	<b>BAE002C</b>	<b>BAE0029</b>
Part number	BES 516-3	BES 516-5	BES 516-7	BES 516-4
Output voltage	18 V DC	20-24 V DC	18 V DC	18 V DC
LED indicators	1 operating indicator	1 operating indicator	1 operating indicator	3 function indicators, 1 operating indicator
Battery type	2x 9 V battery	6 - 1.5 VAA (not included)	1x 9 V battery	2x 9 V batteries
Sensor connection	3 spring-loaded terminals	3 spring-loaded terminals	3 spring-loaded terminals	7 spring-loaded terminals
Degree of protection as per IEC 60529	IP 21	IP 21	IP 40	IP 40
Housing material	Plastic	Plastic	Plastic	Plastic

Acoustic and visual signal, built-in steel measuring plate



# Accessories for Inductive Sensors

## Analog switching device for onsite assembly for inductive distance sensors BAW

### Analog switching device for onsite assembly

This switching device allows you to easily program sensors which have an analog output signal, such as the BOD family, with three switching thresholds, onsite.

In this, the sensor connected to the switching device is brought into the desired switching distance from the object. Then connecting the control line to the (+) side of the supply voltage enables a "Teach-in" mode; in other words, the set distance is assigned to the signal level present and these values are stored in the evaluation device. This procedure is supported with LEDs. During operation, these LEDs are available as switching state indicators.

For sensors with a temperature output, the analog temperature signal is made available in unchanged form on the device output.

### Connection example

#### Analog sensors

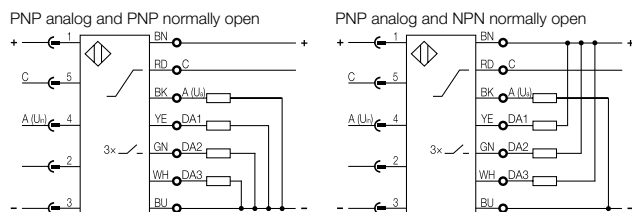
#### Analog switching amplifier



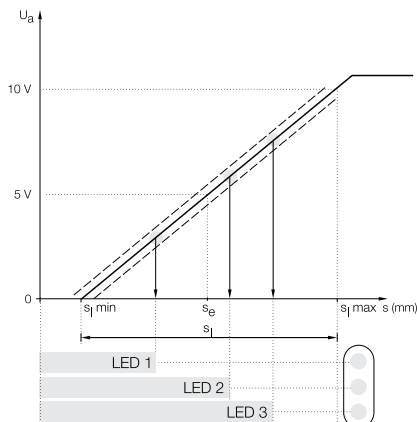
e.g. BOD...

BES 516-615-PS-1-PU-05

### Wiring diagrams



### Approach curve



# Accessories for Inductive Sensors

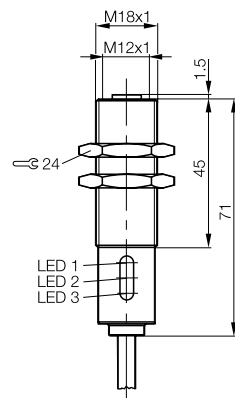
## Analog switching device for onsite assembly for inductive distance sensors BAW



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties
- Analog distance measurement

- Accessories
- Pulse Extension
- Sensor tester, testing and setting device
- Analog switching device**
- Assembly aids for Uni and Unicomact sensors
- Protective covering for Unicomact sensors
- Protective nuts
- Positive stop
- Tube switch
- Banking screw
- Cushioned mounts
- Clamping holder overview

Size	<b>M18x1</b>	
Use	For analog sensors	
PNP analog and PNP NO	<b>Ordering code</b>	<b>BAE0070</b>
	Part number	BES 516-615-PS-1-PU-05
PNP analog and NPN NO	<b>Ordering code</b>	<b>BAE006Z</b>
	Part number	BES 516-615-NS-1-PU-05
Rated operating voltage $U_e$	15...30 V DC	
Supply voltage $U_S$	15...30 V DC	
Residual ripple	$\leq 15\%$ of $U_e$	
Rated insulation voltage $U_i$	75 V DC	
Rated operating current $I_e$ per output	100 mA	
No-load supply current $I_0$ max.	$\leq 20$ mA	
Residual current $I_r$	$\leq 10$ $\mu$ A	
Polarity reversal protected	Only against $\pm$ -reversal	
Short-circuit protected	Yes	
Ambient temperature $T_a$	$-10...+70$ °C	
Switching frequency $f$	2 kHz	
Utilization category	DC 13	
Function indicator for each output	Yes	
<b>Analog input</b>		
Input voltage $U_{in}$	0...10 V (implemented to output A)	
Input impedance	4.2 k $\Omega$	
<b>Switching outputs</b>		
Freely programmable switching outputs	3	
Hysteresis H	500 mV	
Temperature drift	$\leq 2\%$ of $U_{in}$ max.	
Degree of protection as per IEC 60529	IP 67	
Housing material	CuZn coated	
Connection	Input	M12 connector, 5-pin
	Output	5 m PUR cable, 7x0.25 mm <sup>2</sup>





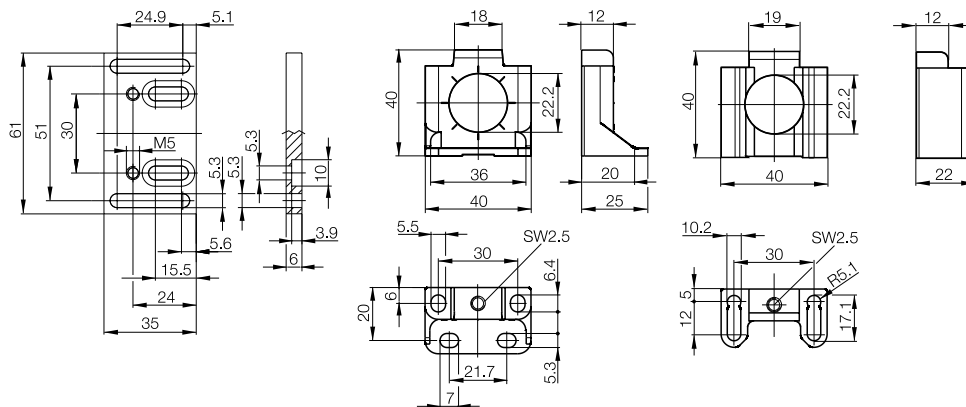
# Accessories for Inductive Sensors

## Assembly aids for Unicomact sensors

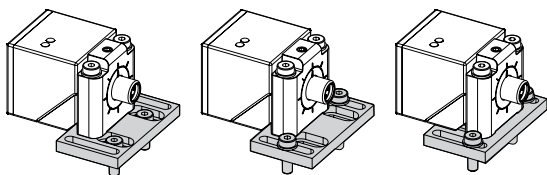


Description	Unicomact mounting bracket	Unicomact mounting base	Unicomact mounting base
Use	for BES Q40KFU-... Unicomact sensors (40x40 mm)	for BES Q40KFU-... Unicomact sensors (40x40 mm)	for BES Q40KFU-... Unicomact sensors (40x40 mm)
<b>Ordering code</b>	<b>BAM00JW</b>	<b>BAM00JY</b>	<b>BAM00JZ</b>
Part number	BES Q40-HW-1	BES Q40-HW-2	BES Q40-HW-3
Material	Anodized aluminum	Anodized aluminum	Anodized aluminum

Please note permissible installation options!



### 3 different mounting options



# Accessories for Inductive Sensors

## Assembly aids for Unicomcompact sensors



Description	<b>Unicomcompact holding system</b>	<b>Unicomcompact holding system</b>
Use	Unicomcompact sensors for fastening to profile rails (groove width: 8 mm)	Unicomcompact sensors for fastening to profile rails (groove width: 16 mm)
<b>Ordering code</b>	<b>BAM00JU</b>	<b>BAM00JT</b>
Part number	BES HS-01-P1-C8/Q40	BES HS-01-P1-C16/Q40
Material	Al anodized, CuZn	Al anodized, CuZn



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse

Extension

Sensor tester, testing and setting device

Analog switching device

**Assembly aids for Uni and Unicomcompact sensors**

Protective covering for Unicomcompact sensors

Protective nuts

Positive stop

Tube switch

Banking screw

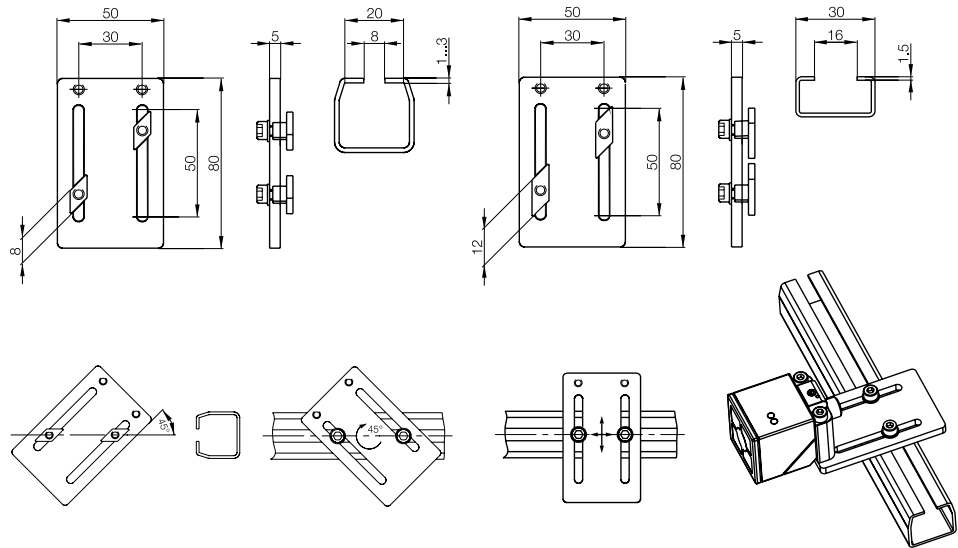
Cushioned mounts

Clamping holder overview

**This holding system is used to attach Unicomcompact sensors to extruded rails.**

**The mounting set consists of:**

- 1 mounting plate
- 2 tenon blocks
- 2 M5×10 cheese head screws DIN 912 galvanized
- 2 washers Ø 5.3 DIN 533
- 2 M5×40 cheese head screws ISO 4762

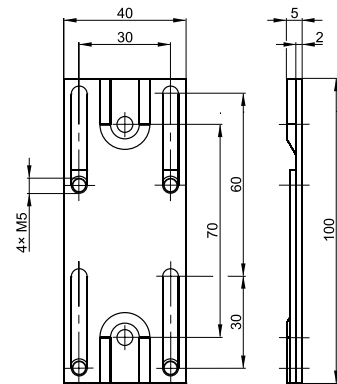


# Accessories for Inductive Sensors

## Assembly aid for Uni sensors and Unicomact sensors

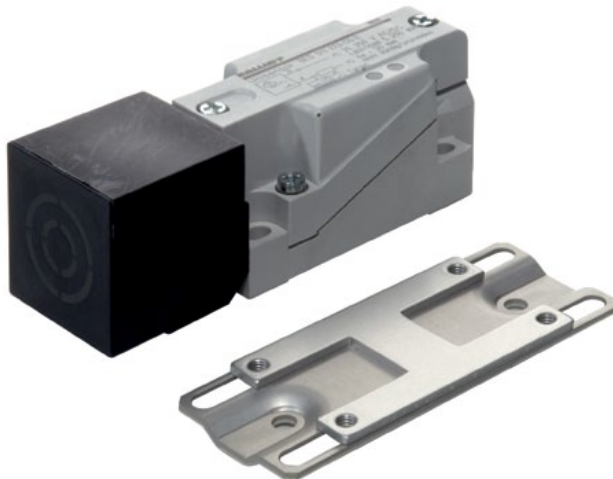


Description	<b>Mounting plate - Unisensor and Unicomact</b>
Use	For Unisensor and Unicomact sensors (40x40 mm)
<b>Ordering code</b>	
Part number	Montageplatte B 4 - 2057
Material	Anodized aluminum



Unisensors can be adjusted up to 30 mm on this mounting plate while wired.

Loosening the sensor mounting screws (M5x25; included in set) allows the Unisensor to be easily repositioned to the desired location. Then simply tighten the screws.

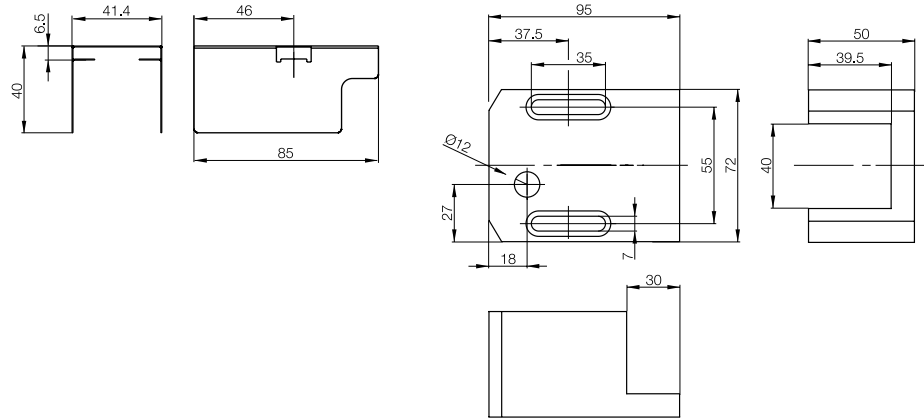


# Accessories for Inductive Sensors

## Protective coverings for Unicomcompact sensors



Description	<b>Protective cover - Unicomcompact</b>	<b>Protective cap - Unicomcompact</b>
Use	For BES Q40KFU-... magnetic field resistant Unicomcompact sensors (40x40 mm)	for BES Q40KFU-... Unicomcompact sensors (40x40 mm)
<b>Ordering code</b>	<b>BAM00K0</b>	<b>BAM00K1</b>
Part number	BES Q40-SH-1	BES Q40-SH-2
Material	Anodized aluminum	PA 6



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomcompact sensors

Protective covering for Unicomcompact sensors

Protective nuts

Positive stop

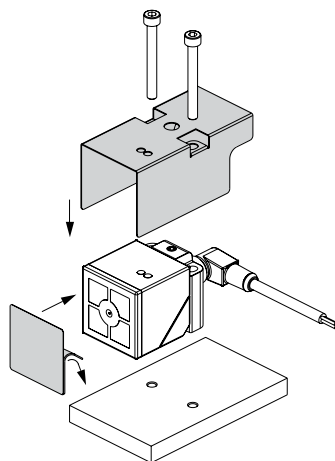
Tube switch

Banking screw

Cushioned mounts

Clamping holder overview

The weld protection consists of a protective cover and a self-adhering PTFE film for protecting the active surface. If the sensor head is replaced, the welding protection must not be removed.



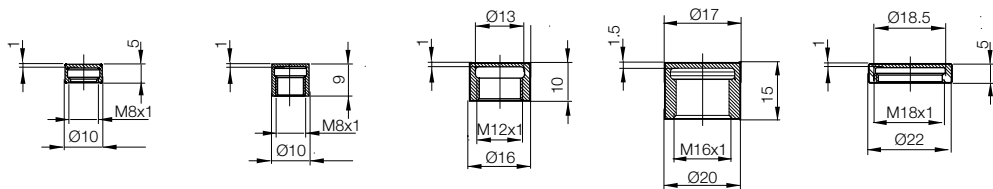
Protective cover  
for use with BES 940  
Material: **Coated Brass**

# Accessories for Inductive Sensors

## Protective nuts



Description	<b>Cover nut</b>	<b>Cover nut</b>	<b>Cover nut</b>	<b>Cover nut</b>	<b>Cover nut</b>	
Use	For M8 sensors	For M8 sensors	For M12 sensors	For M16 sensors	For M18 sensors	
<b>Ordering code</b>	<b>BAM009Z</b>	<b>BAM00A0</b>	<b>BAM00C2</b>	<b>BAM00EP</b>	<b>BAM00EZ</b>	
Part number	BES 08-SM-1	BES 08-SM-1F	BES 12-SM-2	BES 16-SM-2	BES 18-SM-1	
Reduction of the rated switching distance	1 mm	1 mm	1 mm	1.5 mm	1 mm	
Material	PTFE	PTFE	POM	PTFE	PTFE	



Increase the life of a sensor with PTFE, Deirin or ceramic screw on cap.

- Increase life of the sensor by protecting sensor face
- Withstands high temperatures
- Used in welding applications
- Easy installation

Material	POM	PTFE
Ambient temperature $T_a$	-20...+90 °C	-20...+100 °C

### Please note!

The rated switching distance of sensors is reduced to the wall thickness of the nut when the protective nut is installed.

# Accessories for Inductive Sensors

## Protective nuts



Cover nut	Cover nut	Cover nut	Cover nut	Cover nut
For M18 sensors	For M18 sensors	For M30 sensors	For M30 sensors	For M36 sensors
<b>BAM00F0</b>	<b>BAM00H8</b>	<b>BAM00HJ</b>	<b>BAM00HK</b>	<b>BAM00JL</b>
BES 18-SM-2	BES 22-SM-2	BES 30-SM-1	BES 30-SM-2	BES 36-SM-2
1 mm	2 mm	1 mm	2 mm	2 mm
POM	PTFE	POM	POM	POM



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomact sensors

Protective covering for Unicomact sensors

**Protective nuts**

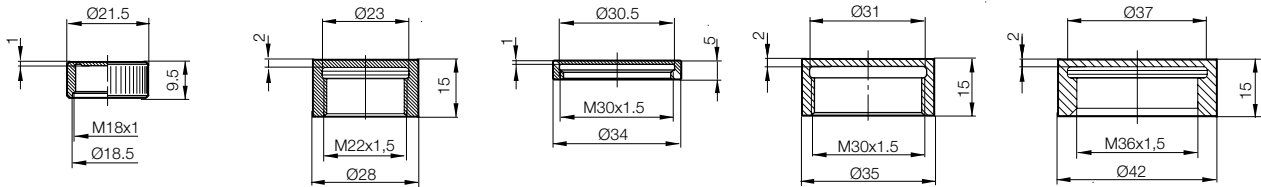
Positive stop

Tube switch

Banking screw

Cushioned mounts

Clamping holder overview



Description	Cover nut	Cover nut	Cover nut		
Use	For M18 sensors	For M18 sensors			
<b>Order code</b>					
Part number	BES 12-CERAMIC-CAP-1	BES 18-CERAMIC-CAP-1	BES 30-CERAMIC-CAP-1		
Reduction of the rated switching distance	2 mm	2 mm	2 mm		
Material	Ceramic	Ceramic	Ceramic		

# Accessories for Inductive Sensors

## Positive stop

### Positive stops for sensors with diameters of 4 mm or 8 mm

A positive stop that is combined with the corresponding mounting cuff can be added to inductive sensors with housing  $\varnothing$  4 mm or  $\varnothing$  8 mm. The desired switching point between the proximity switch and the trigger pin can be set wherever needed.



### Prox Actuator

To avoid sensor damage, Balluff's prox actuators isolate inductive proximity sensors from mechanical contact with targets. They consist of a mounting clamp and a detent holder and are used with either a 4mm or 8mm smooth bore sensor.

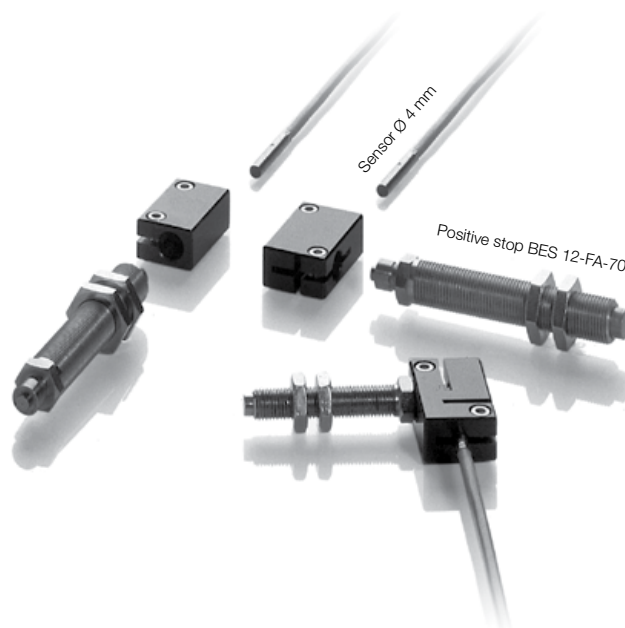
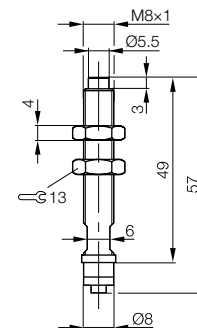
When a target contacts the plunger, the rod moves the detent into the sensing range of the switch, thus activating its output. When the target is removed, the plunger springs back into place and the detent is moved out of the sensing range.

Each prox actuator consists of a threaded barrel, a plunger and rod with spring return and a detent, which is detected by the sensor. The sensor is inserted into one end of the mounting clamp and the detent holder is inserted into the other end. Mounting clamps are available in four configurations:

- Straight and right angle for use with 4mm sensors
- Straight and right angle for 8mm sensors
- Detent holders come in three configurations:
  - M12 x 1, 70mm long
  - M08 x 1, 49mm long
  - M08 x 1, 89mm long

All have a 8mm smooth bore end for insertion into the clamp. Any holder can be used with any clamp. Once the sensor and holder are installed, two allen screws are tightened to hold them in place.

Description	<b>Positive stop</b>	
Use	For inductive sensors for mechanical protection	
<b>Ordering code</b>	<b>BAM009L</b>	
Part number	BES 08-FA-49	
<b>Ordering code</b>		
Part number		
Temperature resistance	-25...+100 °C	
Spring force	3 N	
Impact force $F_{max.}$ (N)	100	
Spring deflection	2 mm	
Permissible torque	15 Nm	
Material	Stainless steel	

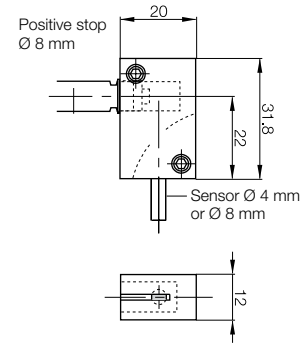
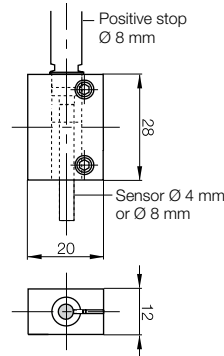
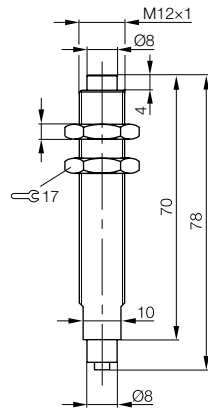
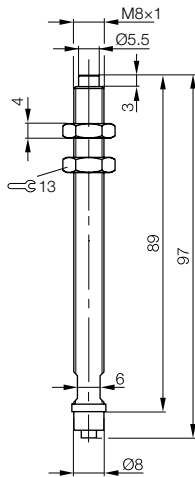


# Accessories for Inductive Sensors

## Positive stop, mounting cuff for positive stop



	<b>Positive stop</b>	<b>Positive stop</b>	<b>Mounting cuff - straight for positive stop</b>	<b>Mounting cuff - angled for positive stop</b>
	For inductive sensors for mechanical protection	For inductive sensors for mechanical protection	For sensors with $\varnothing$ 4 mm or $\varnothing$ 8 mm	For sensors with $\varnothing$ 4 mm or $\varnothing$ 8 mm
	<b>BAM009M</b>	<b>BAM00AZ</b>	<b>BAM009N</b>	<b>BAM009P</b>
	BES 08-FA-89	BES 12-FA-70	BES 08-FA-BS-4.0-G	BES 08-FA-BS-4.0-W
			<b>BAM009R</b>	<b>BAM009T</b>
			BES 08-FA-BS-8.0-G	BES 08-FA-BS-8.0-W
	-25...+100 °C	-25...+100 °C	-25...+100 °C	-25...+100 °C
	3 N	4 N		
	100	100		
	2 mm	32 mm		
	15 Nm	25 Nm	15 Nm	15 Nm
	Stainless steel	Stainless steel	Anodized Al	Anodized Al



Inductive sensors

Global DC 3-wire

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DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

Analog switching device

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Protective covering for Unicomact sensors

Protective nuts

**Positive stop**

Tube switch

Banking screw

Cushioned mounts

Clamping holder overview



# Accessories for Inductive Sensors

## Tube switch

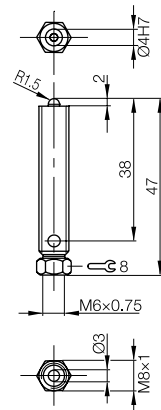
- Mechanical actuation – non-contact switching
- Protects the sensor from mechanical damage
- Plug and safe

### Rapid application – high reliability

The set includes a pre-assembled tube switch, which means you only need to set up the sensor. The tube switch also combines the advantages offered by mechanical and inductive switches. Manufactured from stainless steel, it is extremely robust and very reliable, even under difficult conditions.



Description	<b>Tube switch</b>
Use	For sensors <b>dia. 4 mm</b> for mechanical protection
<b>Ordering code</b>	<b>BAM01C0</b>
Part number	BAM FS-XE-002-D4-4
Spring force F (N)	3
Impact force F <sub>max.</sub> (N)	400
Switching operations min. (with F <sub>max.</sub> )	500000
Housing material	Stainless steel



# Accessories for Inductive Sensors

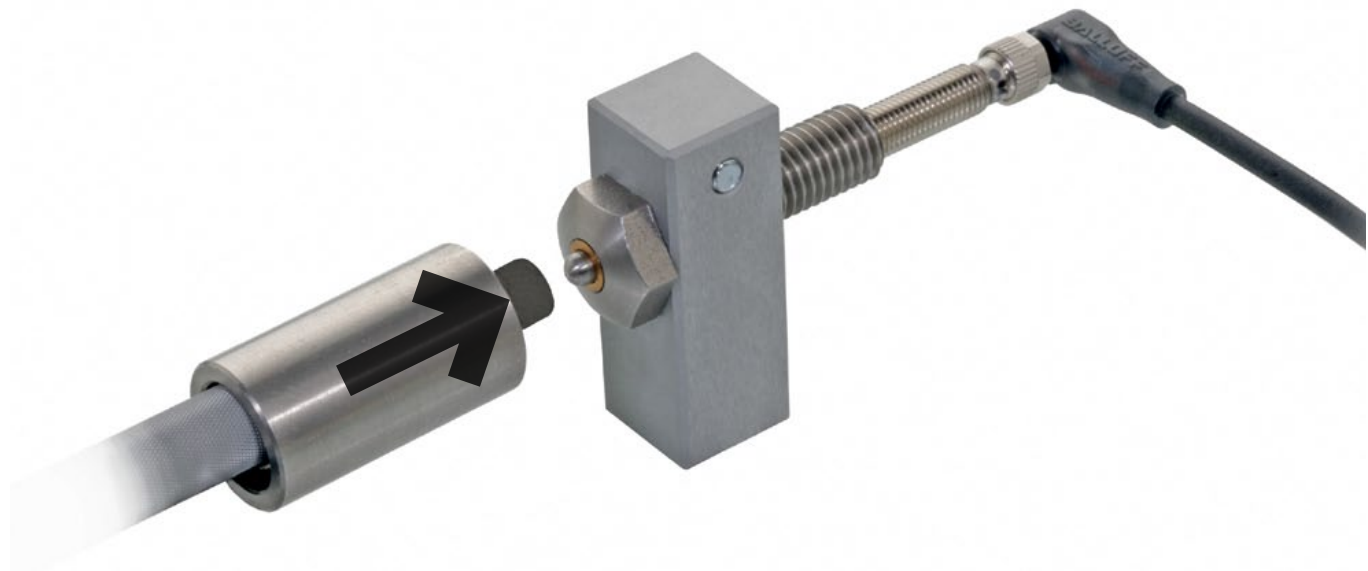
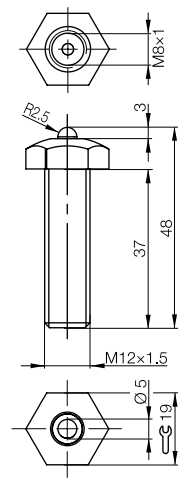
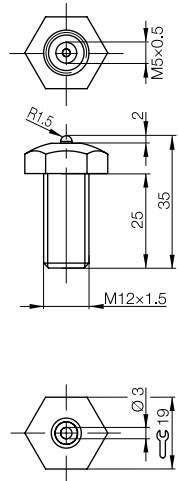
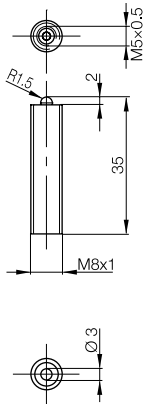
## Tube switch



Tube switch	Tube switch	Tube switch	
For <b>M5</b> sensors for mechanical protection	For <b>M5</b> sensors for mechanical protection	For <b>M8</b> sensors for mechanical protection	
<b>BAM01AZ</b>	<b>BAM019Y</b>	<b>BAM019W</b>	
BAM FS-XE-001-M5-4	BAM FS-XE-003-M5-4	BAM FS-XE-004-M8-4	
3	3	4	
400	400	400	
500000	500000	500000	
Stainless steel	Stainless steel	Stainless steel	



- Inductive sensors
- Global DC 3-wire
- DC 3-/4-wire
- DC 2-wire
- AC/DC 2-wire
- AC 2-wire
- Special properties
- Analog distance measurement
- Accessories
- Pulse Extension
- Sensor tester, testing and setting device
- Analog switching device
- Assembly aids for Uni and Unicomact sensors
- Protective covering for Unicomact sensors
- Protective nuts
- Positive stop
- Tube switch**
- Banking screw
- Cushioned mounts
- Clamping holder overview



# Accessories for Inductive Sensors

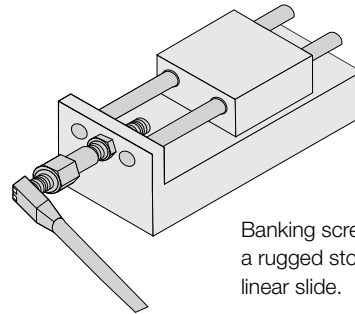
## Banking screw actuators

### Features:

Banking screw actuators are heat treated alloy steel that will accept any standard (1x) M8, M12 or M18 shielded sensor. Not intended for use with extended range models.

### Benefits:

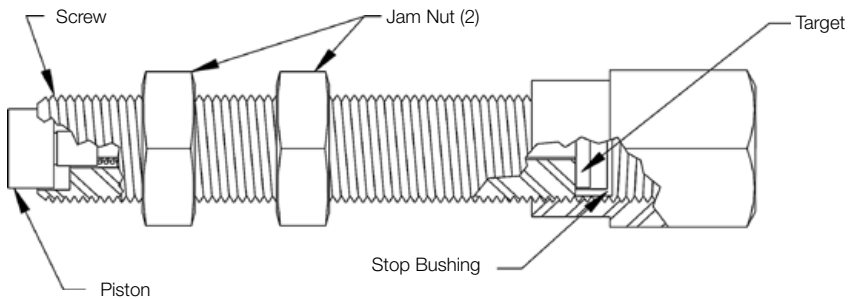
- Solid state output with no mechanical contact with sensor.
- Isolates sensor from impact.
- Allows for positive mechanical contact to plunge without physical contact to sensor.



Banking screw used as a rugged stop for a linear slide.

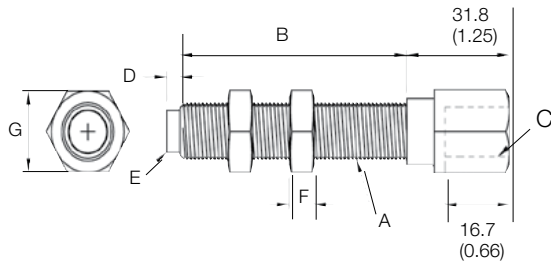
### Construction & Operation

Both the screw and piston are heat-treated to withstand heavy use. A connecting rod ties the spring-loaded piston to the target, which triggers the sensor when the piston is displaced. The sensor is isolated from impact and separated from the target with a plastic bushing.



# Accessories for Inductive Sensors

## Banking screw actuators



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomact sensors

Protective covering for Unicomact sensors

Protective nuts

Positive stop

Tube switch

**Banking screw**

Cushioned mounts

Clamping holder overview

Ordering Code	A	B	C	D	E	G
BESA 08-25-08-BANKING-SCREW	M8 X 1	25 mm	M8 X 1	3.16 mm	5.84 mm	11.0 mm
BESA 08-50-08-BANKING-SCREW	M8 X 1	50 mm	M8 X 1	3.16 mm	5.84 mm	11.0 mm
BESA 12-25-12-BANKING-SCREW	M12 X 1	25 mm	M12 X 1	4.32 mm	9.40 mm	15.7 mm
BESA 12-50-12-BANKING-SCREW	M12 X 1	50 mm	M12 X 1	4.32 mm	9.40 mm	15.7 mm
BESA 12-75-12-BANKING-SCREW	M12 X 1	75 mm	M12 X 1	4.32 mm	9.40 mm	15.7 mm
BESA 12-100-12-BANKING-SCREW	M12 X 1	100 mm	M12 X 1	4.32 mm	9.40 mm	15.7 mm
BESA 18-50-18-BANKING-SCREW	M18 X 1	50 mm	M18 X 1	4.32 mm	14.2 mm	22.1 mm
BESA 18-75-18-BANKING-SCREW	M18 X 1	75 mm	M18 X 1	4.32 mm	14.2 mm	22.1 mm
BESA 18-100-18-BANKING-SCREW	M18 X 1	100 mm	M18 X 1	4.32 mm	14.2 mm	22.1 mm

### Features:

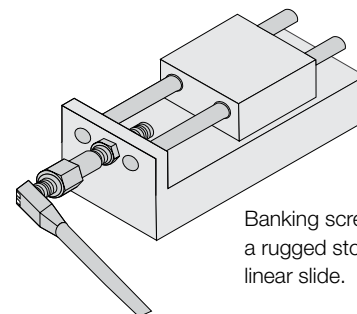
Banking screw actuators are heat treated alloy steel that will accept any standard (1x) M8, M12 or M18 shielded sensor. Not intended for use with extended range models.

### Benefits:

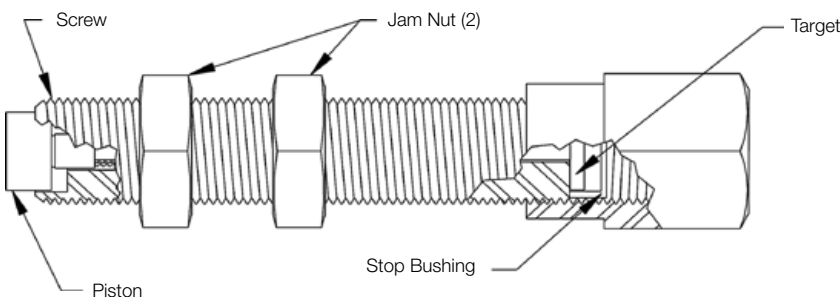
- Solid state output with no mechanical contact with sensor.
- Isolates sensor from impact.
- Allows for positive mechanical contact to plunge without physical contact to sensor.

### Construction & Operation

Both the screw and piston are heat-treated to withstand heavy use. A connecting rod ties the spring-loaded piston to the target, which triggers the sensor when the piston is displaced. The sensor is isolated from impact and separated from the target with a plastic bushing.



Banking screw used as a rugged stop for a linear slide.



# Accessories for Inductive Sensors

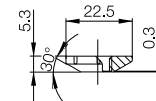
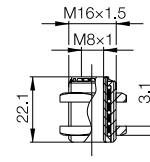
## Cushioned Prox mounts

Protects sensor face from welding spatter and abrasives

- Minimal sensing distance affect (0.3-0.5 mm)
- Held in place with epoxy\*
- Extends life of sensor
- Provides physical and thermal protection to sensor face



Description	<b>Contact protector</b>	
Use	For <b>M8</b> sensors for mechanical protection	
<b>Ordering code</b>	<b>BAM015U</b>	
Part number	BESA-08-CM	
WAF	22	
Ambient temperature	-45...+85 °C	
Material	Anodized Al, POM	



# Accessories for Inductive Sensors

## Cushioned Prox mounts



Contact protector	Contact protector	Contact protector	
For <b>M12</b> sensors for mechanical protection	For <b>M18</b> sensors for mechanical protection	For <b>M30</b> sensors for mechanical protection	
<b>BAM015W</b>	<b>BAM015Y</b>	<b>BAM015Z</b>	
BESA-12-CM	BESA-18-CM	BESA-30-CM	
29	35	51	
-45...+85 °C	-45...+85 °C	-45...+85 °C	
Anodized Al, POM	Anodized Al, POM	Anodized Al, POM	



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomcompact sensors

Protective covering for Unicomcompact sensors

Protective nuts

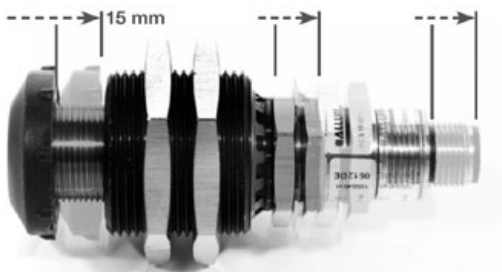
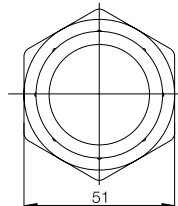
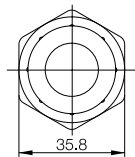
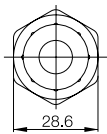
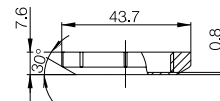
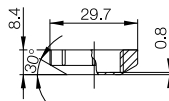
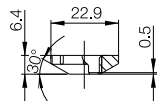
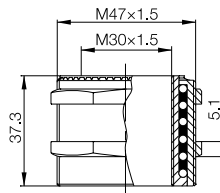
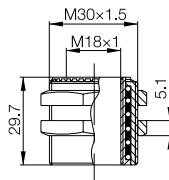
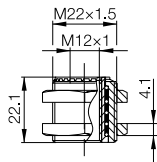
Positive stop

Tube switch

Banking screw

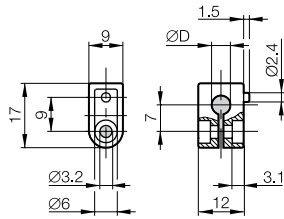
**Cushioned mounts**

Clamping holder overview



# Accessories for Inductive Sensors

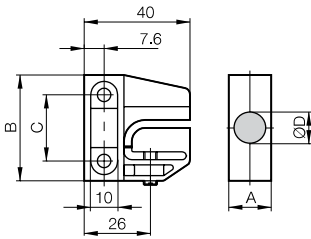
## Mounting clamps for tubular sensors



### Clamp for tubular sensors $\varnothing$ 4 mm and 5 mm

	$\varnothing D$
BES 04-KB-1	4
BES 05-KB-1	5
BES 06.5-KB-1	6.5

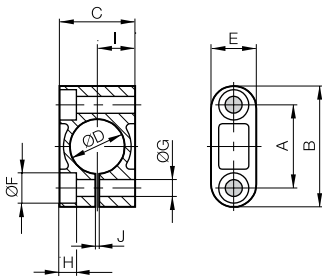
**Material: PA6**



### Clamp for tubular sensors M12 and M18 (stackable)

	A	B	C	$\varnothing D$
BES 12,0-KB-2	16	40	25	12
BES 18,0-KB-2	22	45	30	18

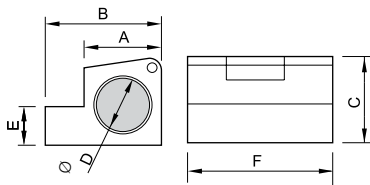
**Material: PA6**



### Clamping cuff

	A	B	C	$\varnothing D$	E	F	G	H	I	J
BES 06.5-BS-1	17	27	16	6.4	12	8	4.5	4.5	8	1
BES 08.0-BS-1	17	27	16	7.9	12	8	4.5	4.5	8	1
BES 12.0-BS-1	22	32	20	11.9	12	8	4.5	4.5	10	1
BES 14.5-BS-1	22	32	20	14.5	12	8	4.5	4.5	10	1
BES 16.0-BS-1	26	36	26	16	12	8	4.5	4.5	13	1
BES 18.0-BS-1	26	36	26	17.9	12	8	4.5	4.5	13	1
BES 20.0-BS-1	32	45	30	20	15	10	5.5	5.5	15	2
BES 22.0-BS-1	32	45	30	21.9	15	10	5.5	5.5	15	2
BES 30.0-BS-1	42	55	38	30	18	10	5.5	5.5	19	1.5
BES 36.0-BS-1	48	61	44	35.9	18	10	5.5	5.5	22	1.5

**Material: PA6**



### Snap clamp with positive stop

	A	B	C	$\varnothing D$	E	F
BES 08.0-KB-5-F	12	20	15	8	7	22
BES 12.0-KB-5-F	16	24	18	12	8	30
BES 18.0-KB-5-F	21	29	24	18	14	30
BES 30.0-KR-5-F	33	41	34.5	30	24	35

**Material: Plastic PC**



# Accessories for Inductive Sensors

## Mounting clamps for tubular sensors



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomact sensors

Protective covering for Unicomact sensors

Protective nuts

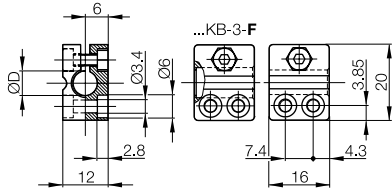
Positive stop

Tube switch

Banking screw

Cushioned mounts

Clamping holder overview



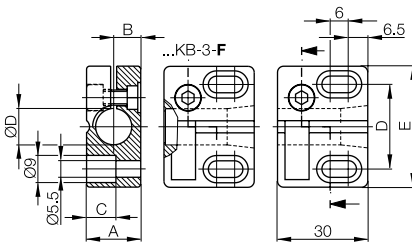
### Clamp without positive stop for sensors $\varnothing$ 3 mm to M8

	$\varnothing$ D
BES 03.0-KB-3	3
BES 04.0-KB-3	4
BES 05.0-KB-3	5
BES 06.5-KB-3	6.5
BES 08.0-KB-3	8

### Clamp with positive stop for sensors $\varnothing$ 3 mm to M8

BES 08.0-KB-3-F	8
-----------------	---

Material: PA6



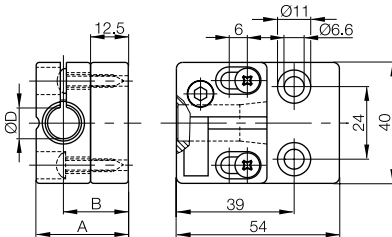
### Clamp without positive stop for sensors M12 or M18 non-flush

	$\varnothing$ D	A	B	C	D	E
BES 12.0-KB-3	12	18	9	9.7	28	40
BES 18.0-KB-3	18	24	12	13.5	28	40

### Clamp with positive stop for sensors M12, M18 or M30 flush

BES 12.0-KB-3-F	12	18	9	9.7	28	40
BES 18.0-KB-3-F	18	24	12	13.5	28	40
BES 30.0-KB-3-F	30	36	18	19.5	42	54

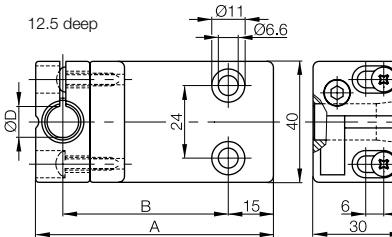
Material: PA6



### Clamp with positive stop for vertical insertion of sensors for M12 or M18 flush, with mounting plate

	$\varnothing$ D	A	B
BES 12.0-KB-3-F-SA 1	12	30.5	21.5
BES 18.0-KB-3-F-SA 1	18	36.5	24.5

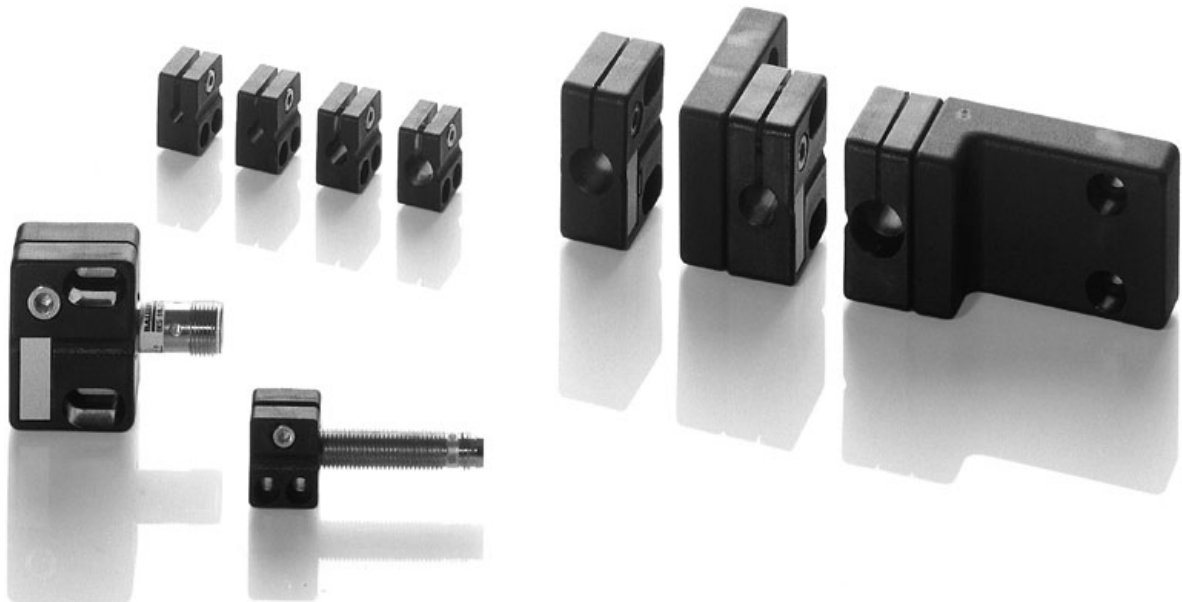
Material: PA6



### Clamp with positive stop for horizontal insertion of sensors for M12 or M18 flush, with mounting plate

	$\varnothing$ D	A	B
BES 12.0-KB-3-F-SA 2	12	79	55
BES 18.0-KB-3-F-SA 2	18	85	58

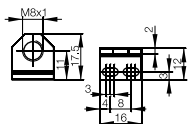
Material: PA6





# Accessories for Inductive Sensors

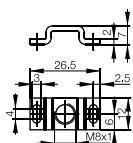
## Mounting brackets for tubular sensors



### SuperShorties™ "L" mounting bracket

BES 08-HW-4    12x17.5x16 mm

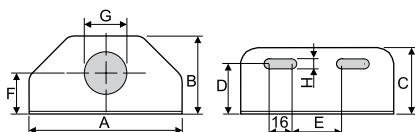
Material: Stainless steel



### SuperShorties™ offset mounting bracket

BES 08-HW-5    26.5x7x12 mm

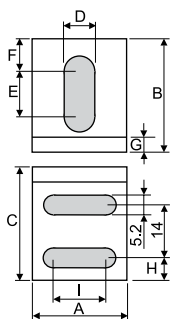
Material: Stainless steel



### Universal "L" mounting bracket

	A	B	C	D	E	F	G	H
BES 516-MB-08	76	34	29	17	31	19	8	6
BES 516-MB-12	76	34	29	17	31	19	12	6
BES 516-MB-18	76	34	29	17	31	19	18	6
BES 516-MB-30	108	55	45	25	51	29	30	7

Material: Carbon steel

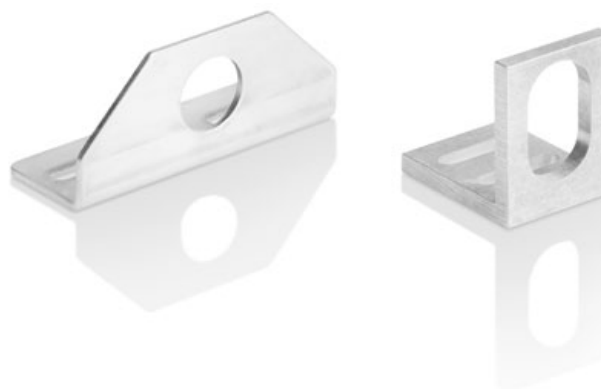


### Slotted angle bracket (screws and washers included)

	A	B	C	D	E	F	G	H	I
BES 08-HW-1	25	30	30	8.1	12	7	4	6	14
BES 12-HW-1	25	30	30	12.1	9	8.5	4	6	14
BES 16-HW-1	30	40	40	16.1	12	12	5	10	18
BES 18-HW-1	30	40	40	18.1	11	12	5	10	18
BES 24-HW-1	35	50	40	24.1	13	16	5	10	23
BES 30-HW-1	40	60	40	30.1	18	19	5	10	30
BES 36-HW-1	50	60	40	36.1	13	21	5	10	40

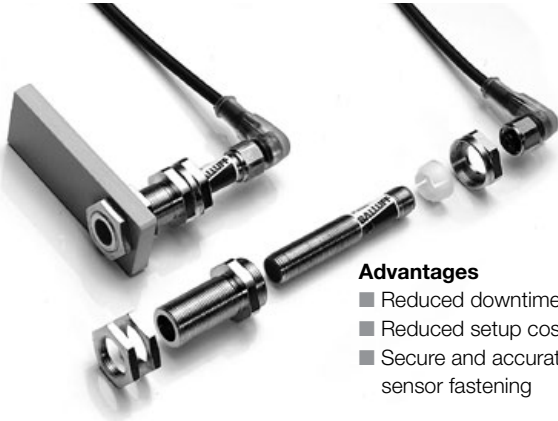
Material: Aluminum

**Note:** All units are in mm



# Accessories for Inductive Sensors

## Prox mounts for tubular sensors



Balluff provides a range of mounting solutions to decrease the need to adjust sensors for correct sensing range to reduce downtime and setup costs when sensors are replaced.

### Initial Sensor Installation

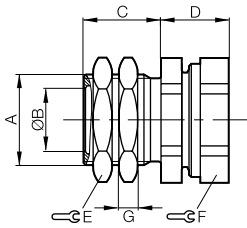
Sensor is assembled into the Prox Mount tube and locked into place with a plastic compression ring and metal nut. The Prox Mount and sensor assembly is then mounted and adjusted as with any tubular sensor, but the Prox Mount will remain in place on future sensor replacement tasks.

### Advantages

- Reduced downtime
- Reduced setup costs
- Secure and accurate sensor fastening

### Quick Sensor Replacement

Simply loosen the metal nut, allowing the sensor to be quickly removed. Install the new sensor into the Prox Mount mounting tube and lock into place with the compression ring and nut. A positive stop designed into the Prox Mount tube ensures effortless repeatable sensor positioning.



### Prox Mounts with positive stop for sensors with thread length 30 mm

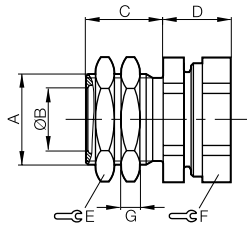
	A	Ø B	C	D max.	E	F	G
BES 05.0-KH-2S*	M5x0.5	5	13	11	13	13	4
BES 08.0-KH-2S*	M12x1 <sup>†</sup>	8	17.5	14.5	17	17	4
BES 12.0-KH-2S*	M16x1	12	19.5	14.5	22	22	4
BES 12.0-KH-2S-M18	M18x1 <sup>†</sup>	12	19.5	14.5	22	22	4
BES 18.0-KH-2S*	M24x1.5	18	20.5	15.5	30	30	5
BES 30.0-KH-2S*	M36x1.5	30	20.5	15.5	41	41	6

### Material: CuZn, nickel plated

\* Also available for welding environments (PTFE coated). Add /W to ordering code.

Ordering example: BES 12.0-KH-2S/W or BES 12.0-KH-2S/W-M18

<sup>†</sup> Allows smaller diameter sensor to replace larger when installed in this prox mount.



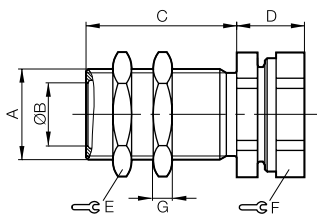
### Prox Mounts with positive stop for sensors with thread length 30 mm

	A	Ø B	C	D max.	E	F	G
BES 08.0-KH-11S/W	M12x1 <sup>†</sup>	8	17.5	15.5	17	17	4
BES 12.0-KH-11S/W	M16x1	12	21	15.5	22	22	4
BES 18.0-KH-11S/W	M24x1.5	18	21.5	15.5	30	30	5

### Material: Steel, black PTFE coated

<sup>†</sup> Allows smaller diameter sensor to replace larger when installed in this prox mount.

Note: Used with 2X Steelface sensors.



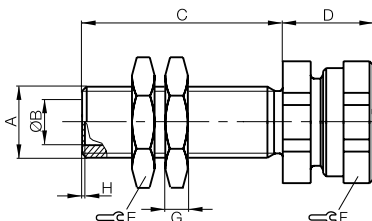
### Prox Mounts with positive stop for sensors with thread length 40 mm or longer

	A	Ø B	C	D max.	E	F	G
BES 08.0-KH-2L*	M12x1	8	34	14.5	17	17	4
BES 12.0-KH-2L*	M16x1	12	30	14.5	22	22	4
BES 18.0-KH-2L*	M24x1.5	18	40	18	30	30	5
BES 30.0-KH-2L*	M36x1.5	30	40	18	41	41	6

### Material: CuZn, nickel plated

\* Also available for welding environments (PTFE coated). Add /W to end of ordering code.

Ordering example: BES 12.0-KH-2L/W



### Prox Mounts with enclosed end for sensors in sealed installation

	A	Ø B	C	D max.	E	F	G	H
BES 08.0-KH-3L	M12x1	8	34	14.5	17	17	4	0.5
BES 12.0-KH-3L	M16x1	12	30	14.5	22	22	4	1
BES 18.0-KH-3L	M24x1.5	18	40	19.5	30	30	5	1

### Material: PBT fiberglass reinforced



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse

Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomact sensors

Protective covering for Unicomact sensors

Protective nuts

Positive stop

Tube switch

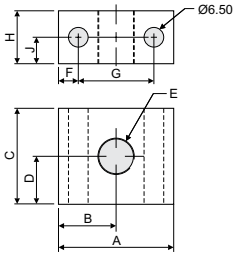
Banking screw

Cushioned mounts

Clamping holder overview

# Accessories for Inductive Sensors

## Bunker Blocks®



### Bunker Block®

Bunker Block®	Prox Mount Required	A	B	C	D	E	F	G	H	J
BES 12.0-KB-9L	BES 08,0-KH-2L/W	38.1	19.05	31.75	15.88	M12	6.55	25	34	17
BES 16.0-KB-9L	BES 12,0-KH-2L/W	38.1	19.05	31.75	15.88	M16	6.55	25	30	15
BES 24.0-KB-9L	BES 18,0-KH-2L/W	50.8	25.4	38.1	19.05	M24	7.9	35	40	20
BES 36.0-KB-9L	BES 30,0-KH-2L/W	63.5	31.75	50.8	25.4	M36	7.75	48	40	20
BES 12.0-KB-9S	BES 08,0-KH-2S/W	38.1	19.05	31.75	15.88	M12	6.55	25	17.5	8.75
BES 16.0-KB-9S	BES 12,0-KH-2S/W	38.1	19.05	31.75	15.88	M16	6.55	25	19.5	9.75
BES 24.0-KB-9S	BES 18,0-KH-2S/W	50.8	25.4	38.1	19.05	M24	7.9	35	20.5	10.25
BES 36.0-KB-9S	BES 30,0-KH-2S/W	63.5	31.75	50.8	25.4	M36	7.75	48	20.5	10.25

**Material: Aluminum**

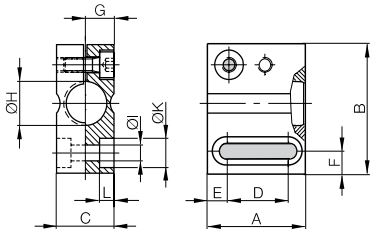
### Sensor clamp with positive stop

	A	B	C	D	E	F	G	ØH	ØI	ØK	L
BES 08.0-KB-4-F	28	30	12	20	4	5	6	8	3.4	6	3.4
BES 12.0-KB-4-F	28	35	16	17	5.5	6	8	12	4.3	8	4
BES 18.0-KB-4-F	28	40	22	17	5.5	6	11	18	4.3	8	4
BES 30.0-KB-4-F	34	56	34	22	6	7	17	30	6.4	10	6

**Material: Aluminum**

### Note for aluminum clamps with positive stop:

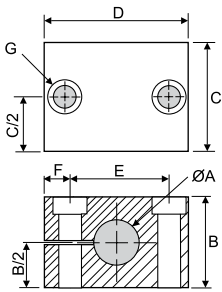
The switching distance of the proximity sensor may be reduced by use of these clamps. Note this when using this clamping system.



### Slotted clamp mount without positive stop

	A	B	C	D	E	F	G
BES 08.0-KB-6	8	16.0	19.2	25.4	18.4	3.5	4-40 SHCS
BES 12.0-KB-6	12	25.4	19.2	38.1	25.0	6.6	10-32 SHCS
BES 18.0-KB-6	18	31.8	25.4	38.1	30.7	3.7	8-32 SHCS
BES 30.0-KB-6	30	50.8	33.1	63.5	51.6	6.0	1/4 SHCS

**Material: Aluminum**



### Bunker Block®II without positive stop

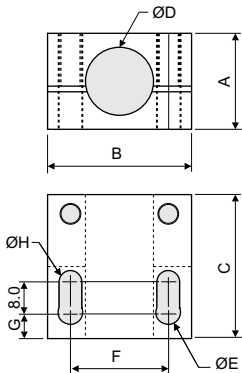
	A	B	C	ØD	ØE	F	G	ØH
BES 08.0-KB-10*	12.7	28.58	35	8	5.5	17	6.45	4.5
BES 12.0-KB-10*	19.05	34.92	38.1	12	5.5	22	7	4.5
BES 18.0-KB-10*	25.4	38.1	38.1	18	6.5	26	7	5.5
BES 30.0-KB-10*	38.1	60	44.45	30	8.5	42	6.45	6.5

**Material: Steel, black zinc chromate coated**

\* Also available for welding environments (copper plated steel). Add /W to end of ordering code.

Ordering example: BES 12.0-KB-10/W.

**Note:** No Prox Mount is required. Sensor mounts directly in Bunker Block®II.



### Bunker Block® for R01Z block sensors

BES R01-SH-4-A

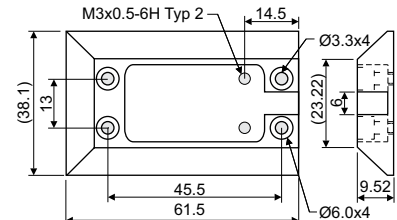
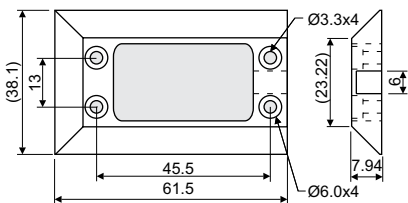
**Material: Aluminum**

Overtop for retro-fit installations

BES R01-SH-4-B

**Material: Aluminum**

Socket-style for new installations



# Accessories for Inductive Sensors

## Weld Repel™



### Weld Repel™

Weld cells are a hot and abusive environment where sensor cable failure can be a daily occurrence. Extend the life of your sensor cables and other equipment by using Balluff's Weld Repel™ line of accessories. Weld Repel™ Jacket, Wrap and Sheets will provide comprehensive protection for your vulnerable weld cell components.



### Weld Repel™ Sheets

Part Number	BKS-PS-914/16-SI	BKS-PS-914/16-SI-00,91
Length Info.	3 ft x custom length in ft	3 ft x ft sheet
Thickness	1.58 mm	1.58 mm
Max. Length	165 ft per roll	165 ft per roll
Elongation	600%	600%
Tear Strength	150 PSI	150 PSI
Temperature	-65°C to 233°C (-80°F to 450°F)	-65°C to 233°C (-80°F to 450°F)



### WELD Jacket

WELD-JACKET-1/2"	Silicone & fiberglass 1/2" diameter (by the foot)
WELD-JACKET-3/4"	Silicone & fiberglass 3/4" diameter (by the foot)



### Bunker Block®

Machined AL	Prox Mount Required	Description
BES 12.0-KB-9L	BES 08,0-KH-2L/W	M8 sensors (40 mm+)
BES 16.0-KB-9L	BES 12,0-KH-2L/W	M12 sensors (40 mm+)
BES 24.0-KB-9L	BES 18,0-KH-2L/W	M18 sensors (40 mm+)
BES 36.0-KB-9L	BES 30,0-KH-2L/W	M30 sensors (40 mm+)
BES 12.0-KB-9S	BES 08,0-KH-2S/W	M8 sensors (short)
BES 16.0-KB-9S	BES 12,0-KH-2S/W	M12 sensors (short)
BES 24.0-KB-9S	BES 18,0-KH-2S/W	M18 sensors (short)
BES 36.0-KB-9S	BES 30,0-KH-2S/W	M30 sensors (short)

### Weld Repel™ Wrap

BKS PW-26/20-SI-TR-03,5	1" wide x 12 ft clear silicone wrap
BKS PW-51/30-SI-TR-11	2" wide x 36 ft clear silicone wrap



### Weld Repel™ Jacket (order by the meter)

	ID	ID	Rollsize
BKS-PT-7/16-SI	1/4" dia.	7 mm	15 m
BKS-PT-10/16-SI	3/8" dia.†	10 mm†	15 m†
BKS-PT-13/16-SI	1/2" dia.††	13 mm††	15 m††
BKS-PT-16/16-SI	5/8" dia.**	16 mm**	15 m**
BKS-PT-19/16-SI	3/4" dia.	19 mm	15 m
BKS-PT-38/16-SI	1.5" dia.	38 mm	7.5 m
BKS-PT-50/16-SI	2" dia.	50 mm	7.5 m

\* Recommended for use with M12 (micro) single ended cables  
 \*\* Recommended for use with M12 (micro) double ended cables  
 † Recommended for use with M8 (nano) single ended cables  
 †† Recommended for use with M8 (nano) double ended cables

### Specifications

Temperature Rating	-85°F to 500°F
Electrical Insulation Rating	400 Volts/mil thickness (wrap only)
Tensile Strength	700 PSI (wrap only)
Elongation	300% (wrap only)
Material	Clear Silicone



### Bunker Block® II without positive stop

Copper Plated Steel	Description
BES 08.0-KB-10/W	M8 sensors
BES 12.0-KB-10/W	M12 sensors
BES 18.0-KB-10/W	M18 sensors
BES 30.0-KB-10/W	M30 sensors



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomact sensors

Protective covering for Unicomact sensors

Protective nuts

Positive stop

Tube switch

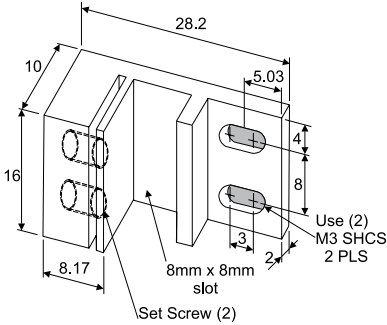
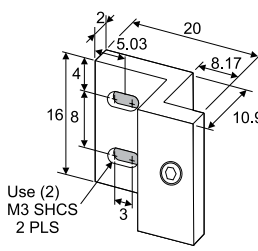
Banking screw

Cushioned mounts

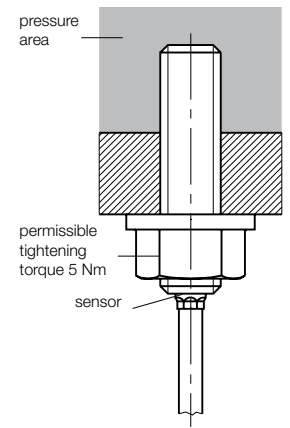
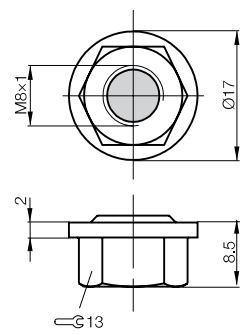
Clamping holder overview

# Accessories for Inductive Sensors

## Mounting brackets for 8x8 block sensors & seal nuts

Description	Compression Block Mount for 8mm x 8mm Sensors	Set Screw Block Mount for 8mm x 8mm Sensors
		
Ordering Code	BES Q08-KH-1	BES Q08-HW-4
Material	Anodized Aluminum	Anodized Aluminum

Description	Pressure Seal Nut
-------------	-------------------



**Fig. 1**

Ordering Code	BES 08-DM-1
Material	This is used to seal pressure rated proximity switches. It seals against both liquids and gases, and can be removed and tightened again up to five times. For use with BES 516-300-S289-B0-D-PU-

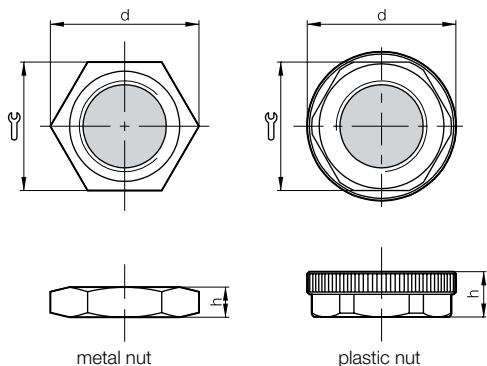
See Fig. 1 for mounting guidelines.

# Accessories for Inductive Sensors

## Nuts

### Mounting Nuts

Description



Ordering Code \_\_\_\_\_ Ordering code = Part no. \_\_\_\_\_

Material	Metal nuts	Part no.	Material	d	wrench	h
	M8×1	500557	steel galvanized	15	13	4
	M12×1	500462	Ms nickel plated	20	17	4
	M18×1	500152	Ms nickel plated	28	24	4
	M30×1.5	500252	Ms nickel plated	42	36	5
	Stainless steel nuts					
	M5×0.5	605313	1.4305 (303)	8.9	8	2.7
	M12×1	636981	1.4305 (303)	20	17	4
	M18×1	636982	1.4301 (304)	28	24	4
	M30×1.5	636983	1.4401 (304)	42	36	5
	Plastic nuts					
	M12×1	507936	PA 6.6	19.7	17	6
	M18×1	606841	PA 6.6	28	24	8
	M30×1.5	610292	PA 6.6	40	36	8

Spring type lockwasher for M5 sensors: part no. 710256  
 Toothed lockwasher for M8 sensors: part no. 500558  
 Toothed lockwasher for M12 sensors: part no. 500552



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse Extension

Sensor tester, testing and setting device

Analog switching device

Assembly aids for Uni and Unicomact sensors

Protective covering for Unicomact sensors

Protective nuts

Positive stop

Tube switch

Banking screw

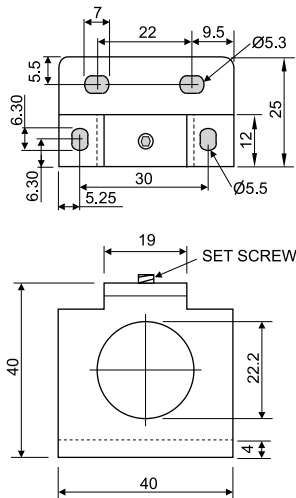
Cushioned mounts

**Clamping holder overview**

# Accessories for Inductive Sensors

## Mounting brackets for block sensors

Description	<b>Q40 Optional Metal Mounting Bracket</b>
Ordering Code	BES Q40-HW-2



Slotted Mounting Bracket  
BES Q40-HW-1\*  
**Material: Aluminum**



Protection Cap  
BES Q40-SH-2\*  
**Material: PA 6**



Protective Cover  
BES Q40-SH-1\*  
For use with  
BES Q40KFU-...A-...  
**Material: Coated brass**

\*Consult factory for dimensions

# Accessories for Inductive Sensors

## Sensor protection devices

### Ceramic Faces



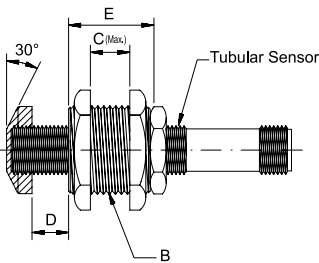
		Diameter (mm)	Thickness (mm)
604094	M8x1	5.8	0.3
619341	M12x1	10.4	0.3
505933	M18x1	15.2	0.5
634036	M30x1.5	27.9	0.5

\* An epoxy similar to Loctite 480-40 is recommended.

Protects sensor face from weld spatter and abrasives.

- Minimal sensing distance affect (0.3-0.5 mm)
- Held in place with epoxy\*
- Extends life of sensor
- Provides physical and thermal protection to sensor face

### Cushioned Prox Mount



		Nut Flats	B	C	D	E
BESA 08-CM*	M8x1	22	M16x1.5	11	10	19
BESA 12-CM*	M12x1	29	M22x1.5	15	10	19
BESA 18-CM*	M18x1	35	M30x1.5	15	10	25
BESA 30-CM*	M30x1.5	51	M47x1.5	25	15	25

\* Above part numbers are for shielded sensors. For unshielded sensors, alter part number in the following manner: BESA ...-N-CM.

For applications where impact to the sensor by the target is inevitable, cushioned Prox Mounts extend the life of the sensor by allowing up to 15mm of target overtravel. D = travel distance. Sensor returns to original location after intrusion is removed.



Inductive sensors

Global DC 3-wire

DC 3-/4-wire

DC 2-wire

AC/DC 2-wire

AC 2-wire

Special properties

Analog distance measurement

Accessories

Pulse

Extension

Sensor tester, testing and setting device

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Clamping holder overview

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