

Balluff accessories for opto sensors provide you with a way of greatly enlarging the application possibilities. The broad selection of reflectors lets you adapt to virtually any application with respect to range and reflector size.

Accessories for the BOS 18M series range from supplementary lenses to cover caps to aperture diaphragms. And finally, brackets and clamps are available for virtually any housing style so that you can adapt the sensors to your application instead of the other way around.

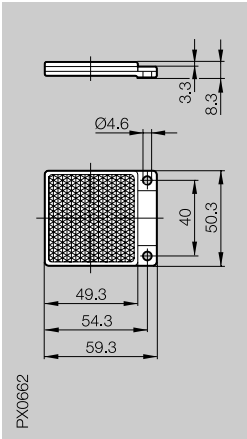
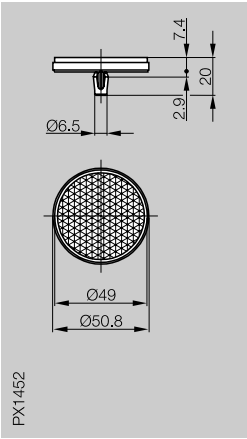
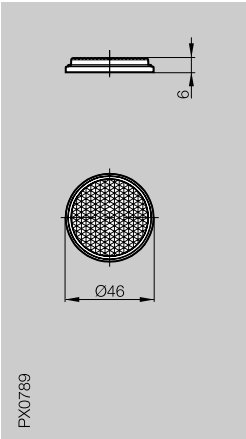
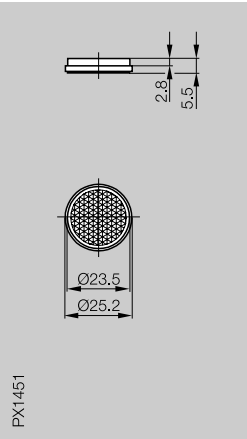
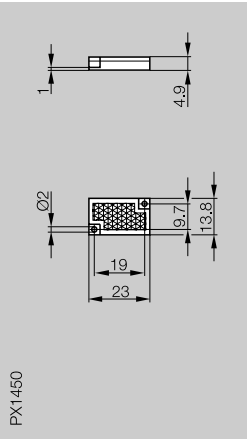
- 2.3.2 Reflectors
- 2.3.4 Reflectors, reflective tape
- 2.3.5 Apertures
- 2.3.6 Plano-convex lens, lens, polarizing filter, air shield
- 2.3.7 Neutral filter, protective end caps
- 2.3.8 Mounting brackets, holder
- 2.3.10 Clamping cuff, mounting clamps
- 2.3.11 Rotatable heads, diagonal mirror
- 2.3.12 Adapters, cutting tool

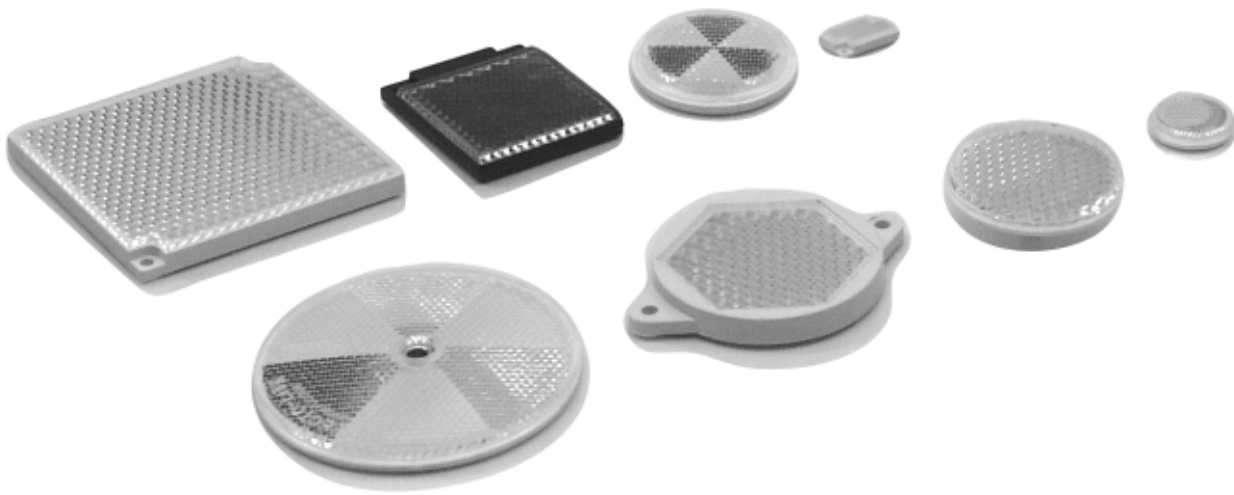
2.3

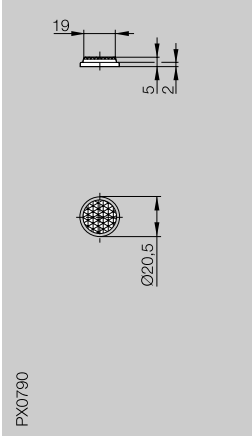
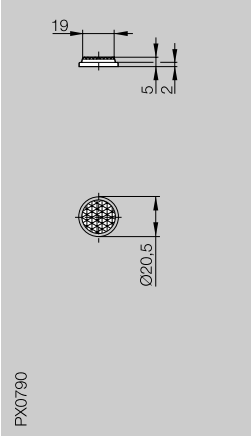
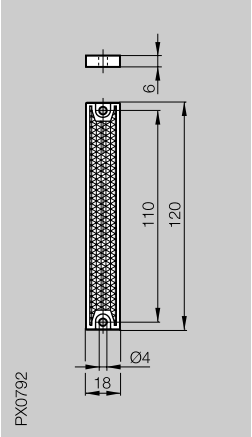
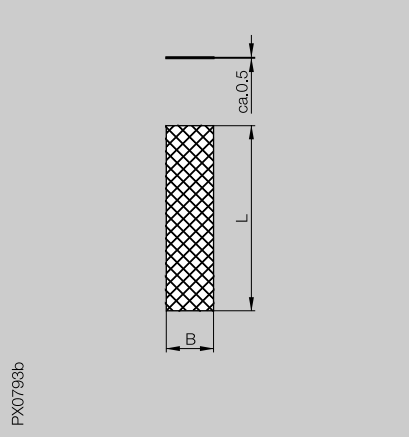
	Reflector $\varnothing$ 84 mm standard reflector	Reflector 84 × 84 mm high performance reflector	Reflector $\varnothing$ 63
Mounting	M5 screw	two M4 screws	two M4 screws
Ordering code	BOS R-1	BOS R-11	BOS R-10
Range in %	100 %	125 %	60 %
Ranges depending on retroreflector model	1 m	1.2 m	0.6 m
	2 m	2.5 m	1.2 m
	4 m	5 m	2.4 m
	8 m	10 m	4.8 m

**All switching distances for retroreflective sensors are referenced to our BOS R-1 reflector.**

If the sensor is used with different reflectors, the range will increase or decrease accordingly (see table).

Reflector 60 × 50 mm	Reflector Ø 50.8 mm chemical resistant temperature resistant to 110 °C rivet with expanding wing	Reflector Ø 46 mm	Reflector Ø 25.2 mm miniature reflector for laser retroreflective adhesive	Reflector 13.8 × 23 mm miniature reflector for laser retroreflective two M2 screws
two M4 screws		adhesive	adhesive	
				
<b>BOS R-9</b>	<b>BOS R-14</b>	<b>BOS R-2</b>	<b>BOS R-13</b>	<b>BOS R-12</b>
100 %	60 %	60 %	40 %	30 %
1 m	0.6 m	0.6 m	0.4 m	0.3 m
2 m	1.2 m	1.2 m	0.8 m	0.6 m
4 m	2.4 m	2.4 m	1.6 m	1.2 m
8 m	4.8 m	4.8 m	3.2 m	2.4 m

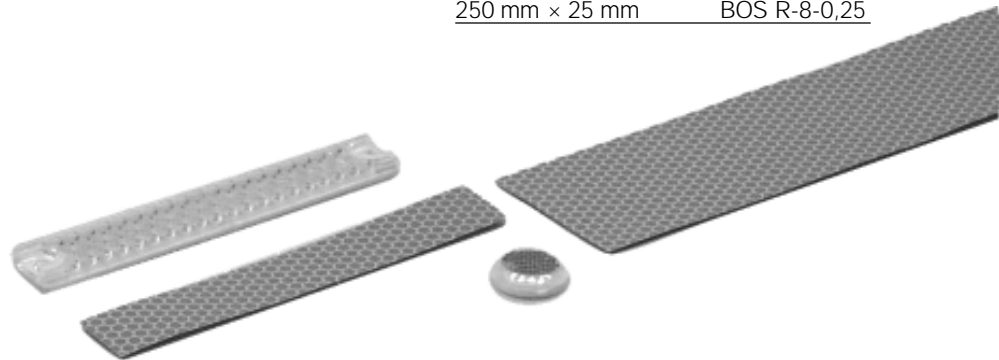


	Reflector Ø 20 mm	Reflector Ø 20 mm chemical resistant temperature resistant to 110 °C	Reflector 18 × 120 mm	Reflective Tape
Mounting	adhesive	adhesive	two M4 screws	self-adhesive
				
Ordering code	BOS R-3	BOS R-15	BOS R-5	BOS R-6-... (not for polarized light) BOS R-7-... (also for polarized light) BOS R-8-... (also for polarized light)
Range in %	25 %	25 %	40 %	40 % (at 100 × 50 mm)
Ranges depending on retroreflector model	0.25 m 0.5 m 1 m 2 m	0.25 m 0.5 m 1 m 2 m	0.4 m 0.8 m 1.6 m 3.2 m	0.4 m 0.8 m 1.6 m 3.2 m

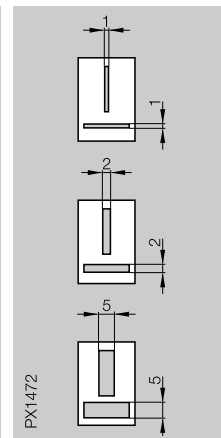
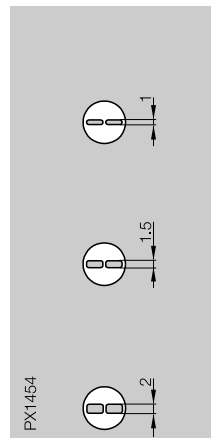
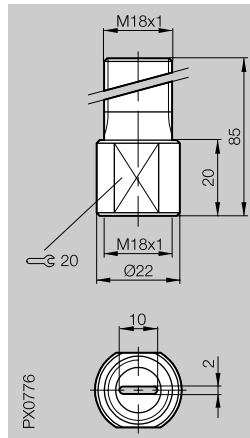
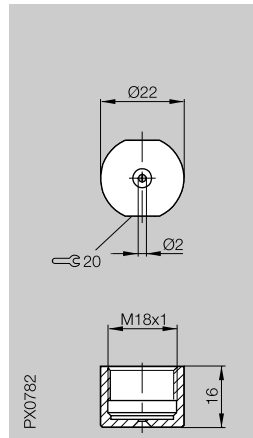
**All switching distances for retroreflective sensors are referenced to our BOS R-1 reflector.**

If the sensor is used with different reflectors, the range will increase or decrease accordingly (see table).

Dimensions L × W	Part no.
45 m × 50 mm	BOS R-6-45
250 mm × 50 mm	BOS R-6-0,25
22 m × 50 mm	BOS R-7-22
250 mm × 50 mm	BOS R-7-0,25
22 m × 25 mm	BOS R-8-22
250 mm × 25 mm	BOS R-8-0,25



	<b>Aperture</b> for BLE/BLS 18	<b>Double Slit Aperture</b> for BLE/BLS 18	<b>Slit Aperture</b> for BLE/BLS 12M	<b>Slit Aperture</b> for BLE/BLS 65K
--	-----------------------------------	---	---	---



Ordering code	BOS 18-BL-1	BOS 18-BL-2	BOS 12-BL-1	BOS 65-BL-1
---------------	-------------	-------------	-------------	-------------

The round and slit apertures limit the beam diameter. Smaller parts can be detected over a large range. Emitter and receiver must be precisely aligned.

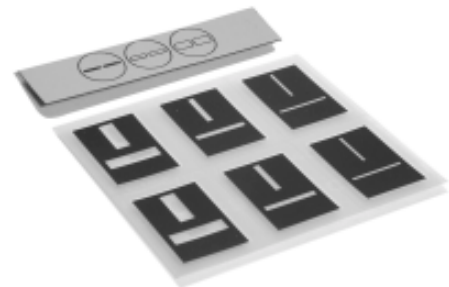
Advantages:

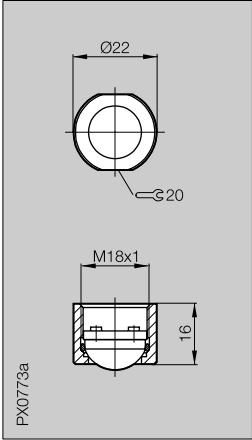
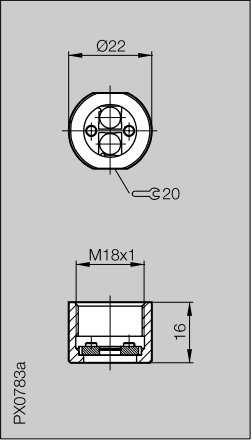
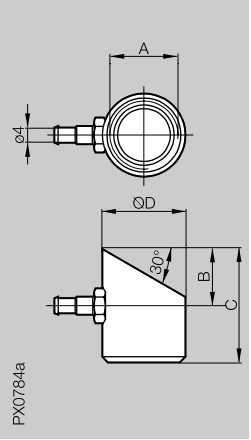
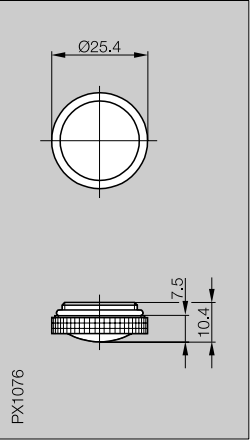
- Small parts detection, e. g. 1 mm drill, aperture only on emitter
- Thru-beam or retro-reflective sensors can be mounted directly adjacent to each other
- Highly reflective parts directly next to the light beam of the non-diffuse type do not interfere

Slit width in mm	Range in m	Object size in mm	Slit width in mm	Range in m	Object size in mm
1	0.5	> 1	1	6	> 1
1.5	1	> 1.5	2	10	> 2
2	2	> 2	5	25	> 5

Aperture on emitter	Aperture on receiver	Range in m
○	○	∞
○	○	∞
○	○	2

Aperture position emitter	Aperture position receiver	Range in m
		3
		2
		2



	<b>Plano-Convex Lens</b>	<b>Polarizing Filter</b>	<b>Air Shield</b>	<b>Lens</b>
Application	for all BOS 18-diffuse for background suppression and small parts detection	only for BOS 18M-...-1RD-...	for BOS 12/BOS 18 for 4 mm I. D. tube	for BKT and BLT for increasing range
				
Ordering code	BOS 18-PK-1	BOS 18-PF-1	BOS 1_-LT-1	BKT M-PK-1

- Advantages:
- Adjustable range 0...40 mm
  - Minimal switch point shift, e. g. when sensing different colors or different surface textures
  - Background suppression for sensing objects in front of reflective background
  - Small parts detection down to 0.05 mm using focussing plano-convex lens at a working range of ca. 0...13 mm.

Housing: PA 6  
Plano-convex lens:  
glass

To reliably sense very shiny objects a polarizing filter is used. This prevents spurious switching. Reflecting or shiny parts will then not cause undesired switching. The polarizing filters ensure that only the light returned from the reflector is detected. This does reduce the effective range by 50 %.

Housing: PA 6  
Polarizing filter:  
IR polarizing filter

The air shield with a compressed air source prevents premature contamination of the optics.

	BOS 12-LT-1	BOS 18-LT-1
A	M12x1	M18x1
B	14	15
C	25	30
D	14	22

Using the supplementary lens increases the range of the BKT from 9 mm to 18 mm. This corresponds to a working range of 15...30 mm when using with the BLT.

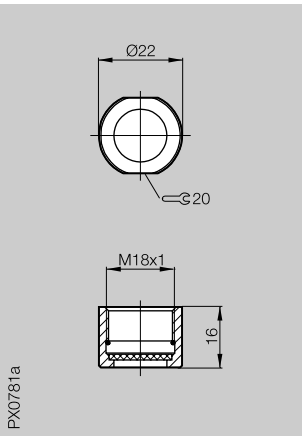


**Neutral Filter**  
for BOS 18

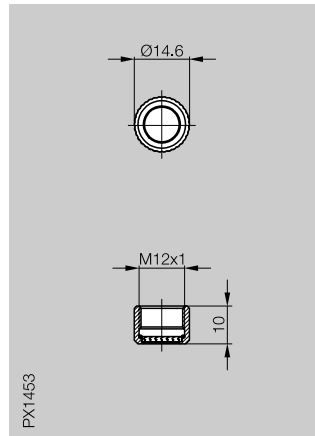
**Protective End Cap**  
for BOS 12

**Protective End Cap**  
for BOS 18

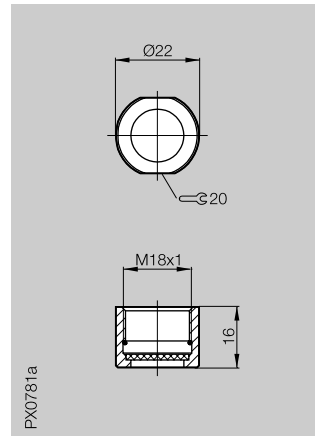
**Protective End Cap**  
for BOS 18  
with flat front surface



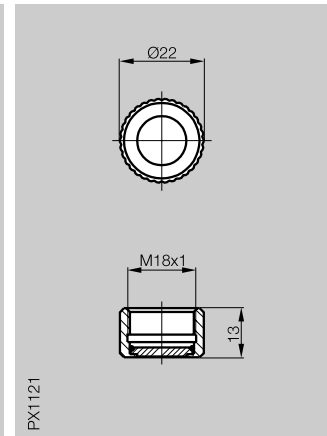
BOS 18-NF-\_\*



BOS 12-SM-1



BOS 18-SM-1



BOS 18-SM-2

\* 1 = 50 % transmission  
2 = 75 % transmission

Neutral filters weaken the in-falling light, without changing its spectral characteristics. The neutral filter is made of glass with a vacuum coated material layer. This is hard, non-peeling and resistant to aging. Clean the filter using standard commercial optical cleaners.

Housing: PA 6

The protective end cap is made with tempered glass and can be used with all M12 opto switches. These caps are used to protect the optics from mechanical or thermal damage. Sparks from welding will not damage the hardened glass lens.

The protective end cap is made with tempered glass and can be used with all M18 opto switches. These caps are used to protect the optics from mechanical or thermal damage. Sparks from welding will not damage the hardened glass lens.

The protective cap can be used in combination with all BOS 18M and BOS 18K sensors. It protects the optics from the effects of welding sparks for example. For increased protection the BOS 18-SM-2 is made of metal, providing even better protection for the sensor optics. The heat-resistant glass closes flush with the front surface of the protective cap, preventing dust deposits to accumulate and degrade the range. A ring between the sensor and protective glass makes sure the system is sealed.



	Mounting Bracket for BOS 6K	Mounting Bracket for BOS 26K	Mounting Bracket for BOS 36K
Ordering code	BOS 6-HW-1	BOS 26-HW-1	BOS 36-HW-1

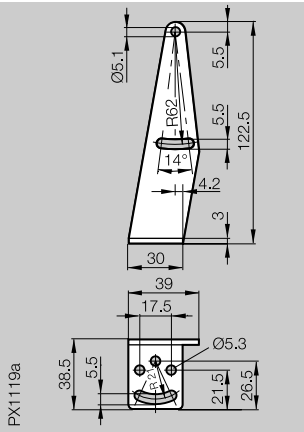




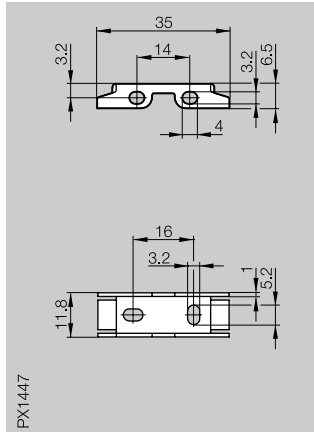
Mounting Bracket  
for BOS 65K

Mounting Bracket  
for BOS 74K

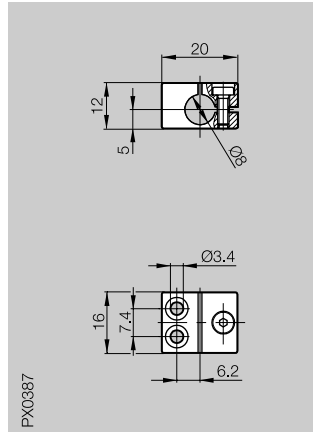
Holder  
for fiber optics



BOS 65-HW-1



BOS 74-HW-1



BFO 08,0-KB-1



	<b>Clamping Cuff</b> for diffuse, retroreflective and thru-beam BOS 12	<b>Mounting Clamp with Ball Joint</b> for diffuse, retroreflective and thru-beam BOS 18	<b>Mounting Clamp with Ball Joint</b> for diffuse, retroreflective and thru-beam BOS 30
Ordering code	BOS 12,0-BS-1	BOS 18,0-KB-1	BOS 30,0-KB-1

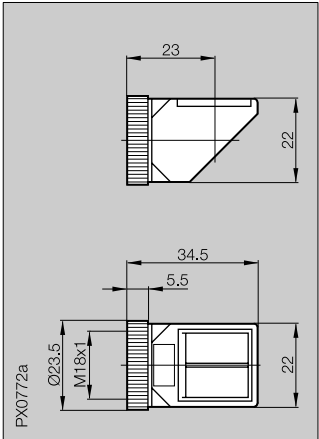
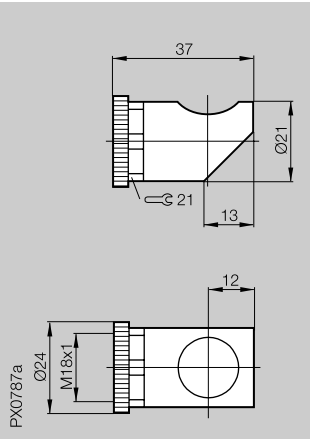
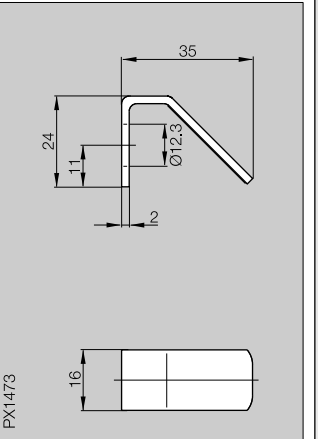


The BOS 12 clamping cuff is the little brother of the BOS 18,0-KB-1. With this mounting set you can use the slivel mounting element to align all M12 switches as required by the application.

The mounting clamp with ball joint is used for holding tubular products having an external thread. It permits axial adjustment by 360° and an inclination of 10°. The ball joint is clamped using 2 screws having a Phillips/straight combination head and self-locking nuts.

Material:  
 plastic, fiberglass reinforced,  
 screws and nuts of stainless steel.



	<b>90° Rotatable Head</b> for diffuse, retroreflective and thru-beam BOS 18 (except laser)	<b>90° Rotatable Head</b> for diffuse, retroreflective and thru-beam BOS 18	<b>Diagonal Mirror</b> for diffuse and retroreflective BOS 12
			
Ordering code	BOS 18-UK-_*	BOS 18-UK-10	BOS 12-WS-1

\*1 = see table  
2 = see table



When using the diagonal mirror the range is reduced by 30 % for the M12 diffuse sensors and M12 thru-beam sensors. Not appropriate for retroreflective sensors.

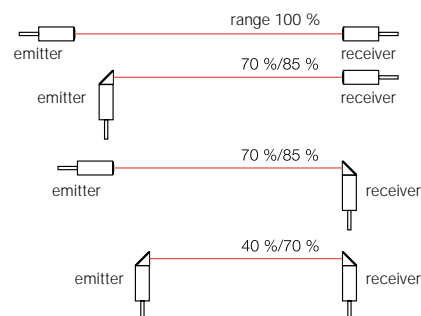
### Rotatable heads suitable combinations

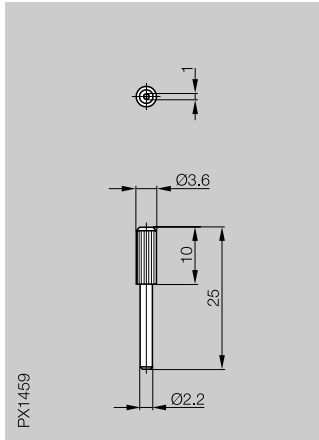
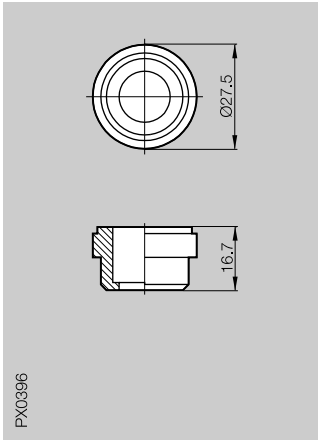
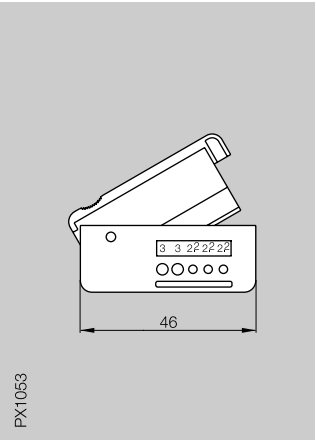
All BOS 18 optosensors can be fitted with a 90° rotatable head.

The table shows the appropriate rotatable head for each switch type, and indicates the corresponding reduction factor (RF) for the range.

With thru-beam types, both the emitter and the receiver can be fitted with a 90° rotatable head. Each head reduces the range by ca. 15%/30%.

	<b>Diffuse</b>	<b>BOS 18-UK-1</b>	<b>BOS 18-UK-2</b>	<b>BOS 18-UK-10</b>
BOS 18...-XA-...	100 mm	RF = 45 %		RF = 50 %
BOS 18...-XB-...	200 mm	RF = 25 %		RF = 50 %
BOS 18...-PB-...	200 mm	RF = 25 %		RF = 50 %
BOS 18...-XD-...	400 mm		RF = 25 %	RF = 30 %
BOS 18...-PD-...	400 mm		RF = 25 %	RF = 30 %
<b>Retroreflective</b>				
BOS 18...-RB-...	2 m		RF = 20 %	RF = 20 %
BOS 18...-RD-...	4 m		RF = 20 %	RF = 20 %
<b>Thru-beam</b>				
BLE 18...-P-...	16 m		RF = 15 %	RF = 30 %
BLS 18...-XX-...	16 m		RF = 15 %	RF = 30 %



	<b>Adapter</b> for plastic fiber optics Ø 1.0 mm to Ø 2.2 mm	<b>Adapter</b> fiber optics BFO 18V to BOS 30	<b>Cutting Tool</b> for shortening plastic fiber optics Ø 2.2 mm or Ø 3 mm
	 <p>PX1459</p>	 <p>PX0396</p>	 <p>PX1053</p>
Ordering code	BFO D10-LA-DC-10	BFO 30-A1	BFO CT

Adapter for Ø 1 mm plastic fibers to increase diameter to 2.2 mm for connecting to base units.

For attaching glass fiber optics BFO 18-V to M30 diffuse sensors. First remove the M18 adapter adhered to the glass fiber optics.

