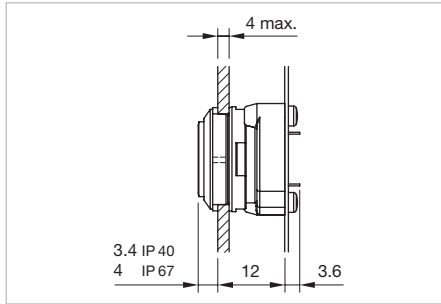


Indicator

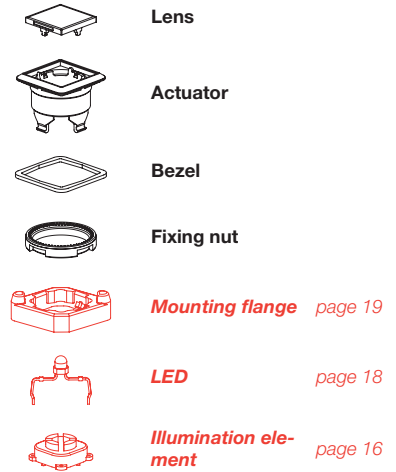


Product can differ from the current configuration.



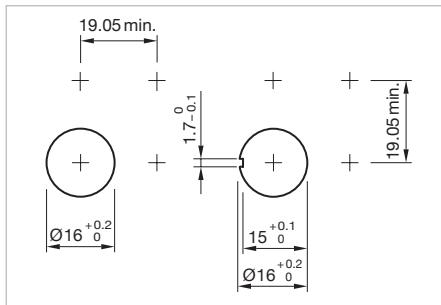
Dimensions

Equipment consisting of (schematic overview)



Additional Information



- Transparent lens and pressure plate
- IP 67 version without bezel



Mounting cut-outs

Each Part Number listed below includes all the black components shown in the 3D-drawing.








To obtain a complete unit, please select the red components from the pages shown.

Front protection	Front	Pressure plate	Lens	Part No.	Weight
 <p>Indicator actuator, Front dimension 18.8 x 18.8 mm</p>					
IP 67	Plastic white	Plastic red		92-043.200	0.003 kg
		Plastic orange		92-043.300	0.003 kg
		Plastic yellow		92-043.400	0.003 kg
		Plastic green		92-043.500	0.003 kg
		Plastic blue		92-043.600	0.003 kg
		Plastic colourless		92-043.700	0.003 kg
	Plastic black	Plastic red		92-143.200	0.003 kg
		Plastic orange		92-143.300	0.003 kg
		Plastic yellow		92-143.400	0.003 kg
		Plastic green		92-143.500	0.003 kg
		Plastic blue		92-143.600	0.003 kg
		Plastic colourless		92-143.700	0.003 kg
 <p>Indicator actuator, Front dimension 18.4 x 18.4 mm</p>					
IP 40	Plastic white		Plastic smoked	92-058.100	0.003 kg
			Plastic red	92-058.200	0.003 kg
			Plastic orange	92-058.300	0.003 kg
			Plastic yellow	92-058.400	0.003 kg
			Plastic green	92-058.500	0.003 kg
			Plastic blue	92-058.600	0.003 kg
			Plastic colourless	92-058.700	0.003 kg

Front protection	Front	Pressure plate	Lens	Part No.	Weight
IP 40	Plastic black		Plastic smoked	92-158.100	0.003 kg
			Plastic red	92-158.200	0.003 kg
			Plastic orange	92-158.300	0.003 kg
			Plastic yellow	92-158.400	0.003 kg
			Plastic green	92-158.500	0.003 kg
			Plastic blue	92-158.600	0.003 kg
			Plastic colourless	92-158.700	0.003 kg

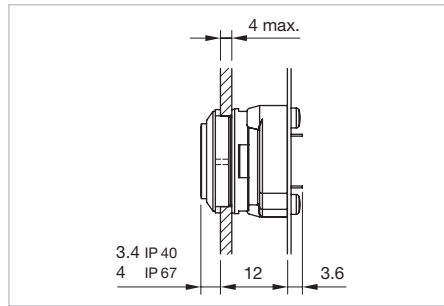
Indicator actuator IP 67

Equipment consisting of (schematic overview)

-  **Pressure plate** *page 14*
-  **Front bezel**
-  **Actuator**
-  **Fixing nut**
-  **Mounting flange** *page 19*
-  **LED** *page 18*
-  **Illumination element** *page 16*

Each Part Number listed below includes all the black components shown in the 3D-drawing.

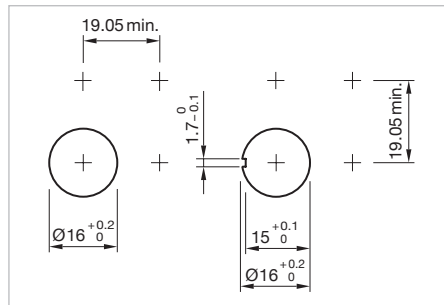
To obtain a complete unit, please select the red components from the pages shown.




Dimensions



Product can differ from the current configuration.



Mounting cut-outs


Front	Part No.	Weight
 <p>Indicator actuator IP 67, Front dimension 18.8 x 18.8 mm</p>		
Plastic black	92-140.000	0.003 kg

Front

Lens plate IP 67

Additional Information


- Material plastic

Product attribute	Dimension	Pressure plate	Part No.	Weight
 <p>Lens plate for pushbutton and indicator IP 67</p>				
non-illuminative	12 x 12 mm	black opaque	92-941.000	0.001 kg
		grey opaque	92-941.800	0.001 kg
illuminative	12 x 12 mm	red transparent	92-941.200	0.001 kg
		orange transparent	92-941.300	0.001 kg
		yellow transparent	92-941.400	0.001 kg
		green transparent	92-941.500	0.001 kg
		blue transparent	92-941.600	0.001 kg
		colourless transparent	92-941.700	0.001 kg


Lens IP 40

Additional Information

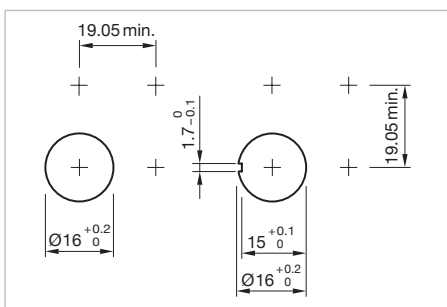
- Material plastic
- With white marking plate

Product attribute	Dimension	Lens	Part No.	Weight
 <p>Lens for pushbutton and indicator IP 40</p>				
non-illuminative	13.2 x 13.2 mm	black opaque	92-956.000	0.001 kg
		grey opaque	92-956.800	0.001 kg
		white opaque	92-956.900	0.001 kg
illuminative	13.2 x 13.2 mm	red translucent	92-956.200	0.001 kg
		orange translucent	92-956.300	0.001 kg
		yellow translucent	92-956.400	0.001 kg
		green translucent	92-956.500	0.001 kg
		blue translucent	92-956.600	0.001 kg
		smoked transparent	92-958.100	0.001 kg
		red transparent	92-958.200	0.001 kg
		orange transparent	92-958.300	0.001 kg
		yellow transparent	92-958.400	0.001 kg
		green transparent	92-958.500	0.001 kg
		blue transparent	92-958.600	0.001 kg
		colourless transparent	92-958.700	0.001 kg


Bezel IP 40

Material	Colour	Part No.	Weight
 <p>Front bezel for pushbutton and indicator IP 40</p>	black	92-912.0	0.001 kg
	white	92-912.9	0.001 kg

Blind plug



Mounting cut-outs

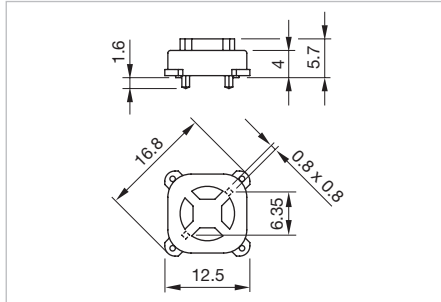
Dimension	Material	Colour	Part No.	Weight
 <p>Blind plug</p>	Plastic	black	51-948.0	0.003 kg

Rear side


Illumination element PCB

Additional Information

- The customer has to decide what series resistor shall be used to the LED



Dimensions

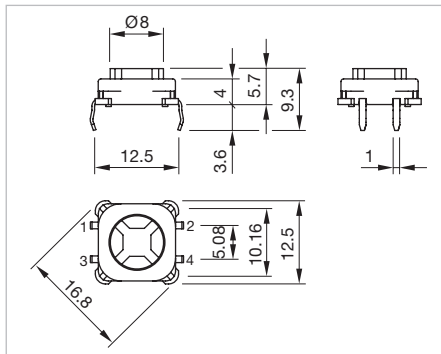
Terminal	Part No.	Component layout	Weight
 <p>Illumination element PCB mounting</p>			
PCB	92-800.042	1	0.001 kg

The component layouts you will find from page { $\$$ |-BR92_KAZE_Zeichnung}


Switching element PCB illuminative

Additional Information

- The customer has to decide what series resistor shall be used to the LED



Dimensions

Contacts	Terminal	Part No.	Component layout	Wiring diagram	Weight
 <p>Switching element PCB mounting illuminative</p>					
1 NO	PCB	92-851.342	2	1	0.001 kg


The component layouts you will find from page { $\$$ |-BR92_KAZE_Zeichnung}

Illumination

Single-LED, T1 Bi-Pin

Additional Information

- The customer has to decide what series resistor shall be used to the LED
- Luminosity and wave length scattering caused by LED manufacturing processes may cause slight variations in the illumination

LED colour	Forward voltage typ.	Lumi. intensity	Dom. wavelength	Part No.	Weight
 <p>Single-LED</p>					
Single-LED red	2.1 VDC @ 20 mA	200 mcd	625 nm	10-2602.3202L	0.001 kg
Single-LED orange	2.1 VDC @ 20 mA	220 mcd	590 nm	10-2602.3203L	0.001 kg
Single-LED yellow	3.3 VDC @ 20 mA	500 mcd	570 nm	10-2602.3204L	0.001 kg
Single-LED green	3.5 VDC @ 20 mA	250 mcd	525 nm	10-2602.3205L	0.001 kg
Single-LED blue	3.5 VDC @ 20 mA	450 mcd	470 nm	10-2602.3206L	0.001 kg
Single-LED white	3.3 VDC @ 20 mA	600 mcd	x=0.29/y=0.31 nm	10-2602.3209L	0.001 kg

Mounting

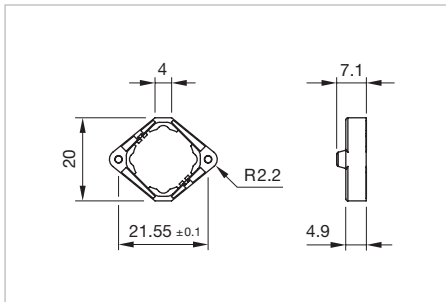
Anti-twist ring

Additional Information


- For front panel thickness max. 2 mm

Mounting cut-out	Part No.	Weight
 <p>Anti-twist ring</p>		
Ø 16 mm	51-910	0.001 kg

Mounting flange




Dimensions

Part No.	Weight
 <p>Mounting flange</p>	
92-960.0	0.001 kg

Lens remover

Additional Information


- For lens IP 40 only

Part No.	Weight
 <p>Lens remover</p>	
18-910	0.002 kg

Mounting tool

Additional Information


- For tightening or loosening of the fixing nut

Part No.	Weight
 Mounting tool	
01-907	0.020 kg

Dismantling tool

Additional Information

- For actuator dismantling of switching element, illumination element and mounting flange

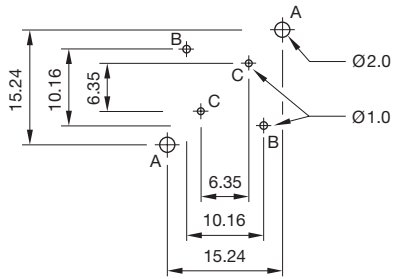
Part No.	Weight
 Dismantling tool	
92-971.0	0.002 kg

Drawings

Single-LED

Drilling plan (element side)

- A Fixing holes for mounting flange (92-960.0)
- B Holes for LED
- C Holes for centering pins

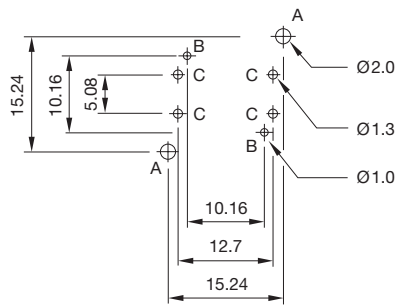


Bauteil layout 1

Single-LED

Drilling plan (element side)

- A Fixing holes for mounting flange (92-960.0)
- B Holes for LED
- C Holes for contact pins
Pad max. Ø 2.5 mm
Through-connection recommended



Bauteil layout 2

92 Application guidelines

Suppressor circuits

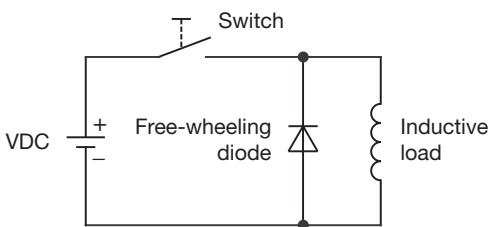
When switching inductive loads such as relays, DC motors, and DC solenoids, it is always important to absorb surges (e.g. with a diode) to protect the contacts. When these inductive loads are switched off, a counter emf can severely damage switch contacts and greatly shorten lifetime.

Fig. 1 shows an inductive load with a free-wheeling diode connected in parallel. This free-wheeling diode provides a path for the inductor current to flow when the current is interrupted by the switch. Without this free-wheeling diode, the voltage across the coil will be limited only by dielectric breakdown voltages of the circuit or parasitic elements of the coil. This voltage can be kilovolts in amplitude even when nominal circuit voltages are low (e.g. 12VDC) see Fig. 2.

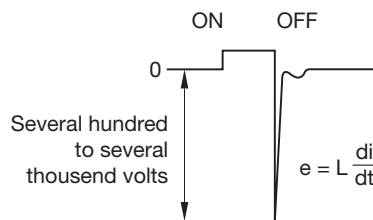
The free-wheeling diode should be chosen so that the reverse breakdown voltage is greater than the voltage driving the inductive load. The DC blocking voltage (V_R) of the free-wheeling diode can be found in the datasheet of a diode. The forward current should be equal or greater than the maximum current flowing through the load.

To get an efficient protection, the free-wheeling diode must be connected as close as possible to the inductive load!

Switching with inductive load
Fig. 1



Counter EMF
over load without free-wheeling diode
Fig. 2

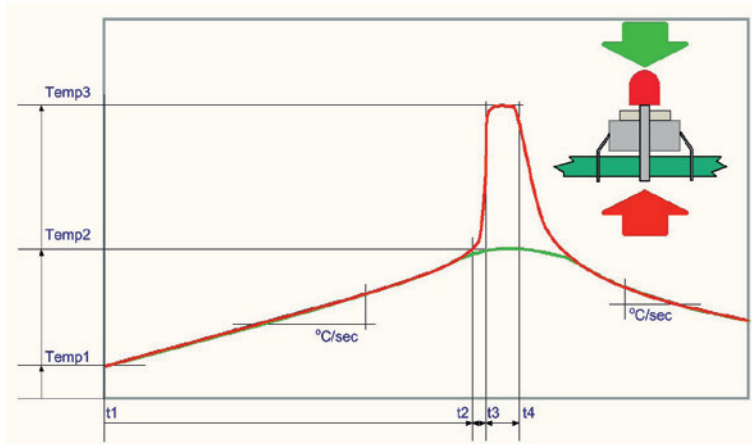


Note for soldering

Process parameter for wave soldering

Basic specification for wave soldering J-STD 75 W4C

Maximum temperature on the component side of the pcb (Temperature must not exceed during the entire processing)	120 °C
Preheating phase (t1 ... t2) Ramp up	70 ... 120 sec typ. + 1°C/sec
Ramp up to maximum temperature (t2 ... t3)	not defined
Maximum temperature on the soldering side (Temp 3) Maximum time of soldering process (t3 ... t4)	250 °C 3 sec
Ramp down at 170 °C:	typ. -2 °C/sec

Temperature curve wave soldering

Green curve: Temperature on the component side of the pcb
 Red curve: Temperature on the soldering side of the pcb

Room temperature: Temp 1

Preheating: Temperature process = Temp 1 ... Temp 2
 Process time = t1 ... t2

Ramp up to soldering temperature: Process time = t2 ... t3

Soldering phase: Temperature process = Temp 3
 Process time = t3 ... t4

Iron soldering

Basic specification for iron soldering IEC 60068-2-20

Maximum temperature at tip of iron: 320 °C

Maximum soldering time: 3 sec

Cleaning/Lacquering

The switching elements are not sealed. Cleaning up the PCB may damage the contacts in the switching elements. For this reason, the following points should be noted:

- When soldering make sure that the flux does not pass on the upper side of the PCB.
- When cleaning the PCB with detergents ensure that no dust or other debris may get inside of the switching elements.
- Ensure that no lacquer penetrates into the interior of the switching element when lacquering the PCB.

Storage of components

To obtain the optimum solderability of the components, the following points should be noted during storage:

- Do not store components in locations with high temperature or humidity.
- Do not expose components to corrosive gases.
- Avoid direct sunlight for a long period.