



**THE DATASHEET OF**  
**45-2844.2C40.006**



## Series 45

*Innovative and comprehensive. Modular.*

<https://eao.com/45>



## Key advantages

- Comprehensive and modular series
- Rugged in use (up to IP69K)
- Easy to assemble and use
- Modern design with many options

## Typical application areas

Various operating and control functions in machinery and equipment, such as:

- Start and stop
- Reset
- On and off
- Function control

## Functions

- Pushbutton
- Illuminated pushbutton
- Double pushbutton
- Mushroom-head pushbutton
- Palm Switch
- Selector switch
- Keylock switch
- ID keylock switch
- Toggle stick
- Toggle switch
- Indicator
- Buzzer
- Potentiometer
- Stop switch
- Emergency stop switch

## Design

- Flush
- Raised

## IP front protection

- IP40
- IP65
- IP66
- IP67
- IP69K

## Ratings

- 500 VAC (10 A)

## Mounting cut-outs

- Ø 22.3 mm
- Ø 30.5 mm

## Terminal

- Screw terminal
- PCB
- Spring-loaded terminal

## Lens Material

- Plastic

## Markings

- Laser marking

## Approvals

- CCC
- CSA
- UL

## Conformities

- CE
- UKCA
- 2014/30/EU (EMC)
- 2014/35/EU (LVD)
- 2011/65/EU (RoHS)



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# 45 Product overview

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## Functions

- Indicator
- Buzzer
- Pushbutton
- Double pushbutton
- Illuminated pushbutton
- Emergency stop switch
- Stop switch
- Palm switch
- Mushroom-head pushbutton
- Keylock switch
- ID keylock switch
- Selector switch
- Potentiometer
- Toggle stick
- Toggle switch

Holder

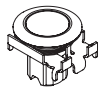
## Switching elements

- 1 Switching element 1 NC/1 NO
- 2 Switching elements 2 NC or 2 NO

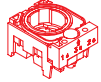
Lamp element

## Pushbutton, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)

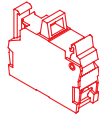


Actuator



Holder

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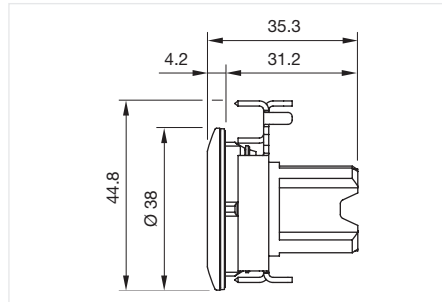


Switching element

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

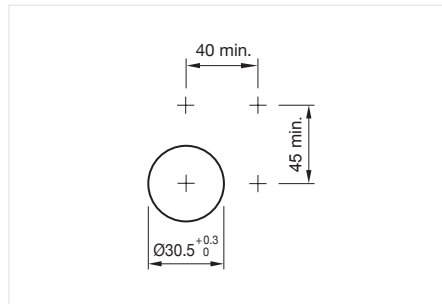
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

- Front panel thickness 1 ... 6 mm



Actuator, Front dimension Ø 38 mm

Switching action	Lens colour	Lens shape	Front bezel colour	Front bezel material	Housing colour	Housing material	Part No.	Wiring diagram
Momentary	Black	flush	Sand grey	Metal	Silver	Metal	45-2131.4F10.000	72
	Red	flush	Sand grey	Metal	Silver	Metal	45-2131.4F20.000	72
	Yellow	flush	Sand grey	Metal	Silver	Metal	45-2131.4F40.000	72
	Green	flush	Sand grey	Metal	Silver	Metal	45-2131.4F50.000	72
	Blue	flush	Sand grey	Metal	Silver	Metal	45-2131.4F60.000	72
	White	flush	Sand grey	Metal	Silver	Metal	45-2131.4F90.000	72
Maintained	Black	flush	Sand grey	Metal	Silver	Metal	45-2134.4F10.000	73
	Red	flush	Sand grey	Metal	Silver	Metal	45-2134.4F20.000	73
	Yellow	flush	Sand grey	Metal	Silver	Metal	45-2134.4F40.000	73
	Green	flush	Sand grey	Metal	Silver	Metal	45-2134.4F50.000	73
	Blue	flush	Sand grey	Metal	Silver	Metal	45-2134.4F60.000	73
	White	flush	Sand grey	Metal	Silver	Metal	45-2134.4F90.000	73

### Wiring diagrams

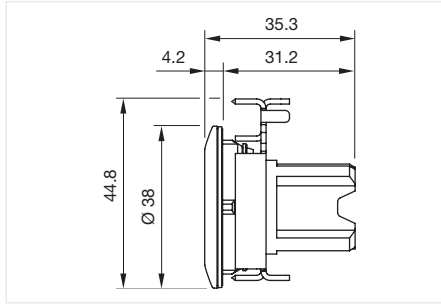
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Wiring diagram 72	Wiring diagram 73

# 45 Flush design

## Illuminated pushbutton, IP66, IP67, IP69K

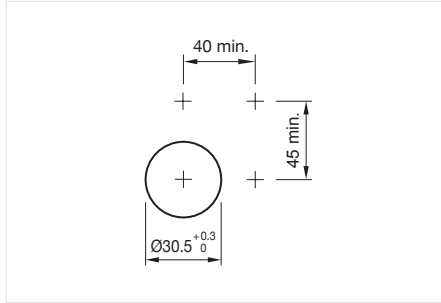


Product can differ from the current configuration.



### General information

- Front panel thickness 1 ... 6 mm



### Equipment consisting of (schematic overview)

	Actuator	
	Holder	Page 57
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Each Part Number listed below includes all the black components shown in the 3D-drawing.

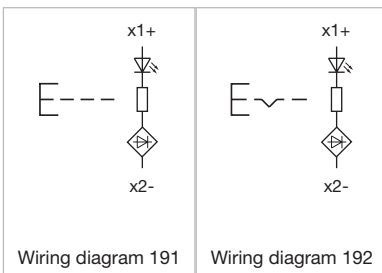
To obtain a complete unit, please select the red components from the pages shown.



Actuator, Front dimension Ø 38 mm

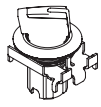
Switching action	Lens colour	Lens shape	Front bezel colour	Front bezel material	Housing colour	Housing material	Part No.	Wiring diagram
Momentary	Red	flush	Sand grey	Metal	Silver	Metal	45-2231.4FE0.000	191
	Yellow	flush	Sand grey	Metal	Silver	Metal	45-2231.4FG0.000	191
	Green	flush	Sand grey	Metal	Silver	Metal	45-2231.4FH0.000	191
	Blue	flush	Sand grey	Metal	Silver	Metal	45-2231.4FJ0.000	191
	Colourless	flush	Sand grey	Metal	Silver	Metal	45-2231.4FK0.000	191
Maintained	Red	flush	Sand grey	Metal	Silver	Metal	45-2234.4FE0.000	192
	Yellow	flush	Sand grey	Metal	Silver	Metal	45-2234.4FG0.000	192
	Green	flush	Sand grey	Metal	Silver	Metal	45-2234.4FH0.000	192
	Blue	flush	Sand grey	Metal	Silver	Metal	45-2234.4FJ0.000	192
	Colourless	flush	Sand grey	Metal	Silver	Metal	45-2234.4FK0.000	192

## Wiring diagrams

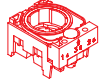


## Selector switch 2 positions short lever, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)

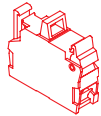


Actuator



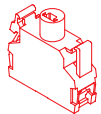
Holder

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Switching element

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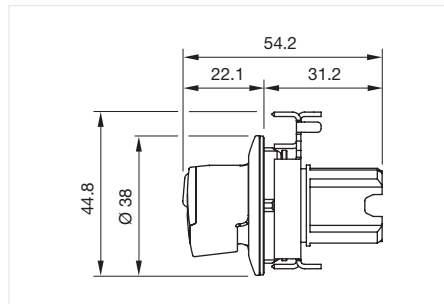


Illumination element

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

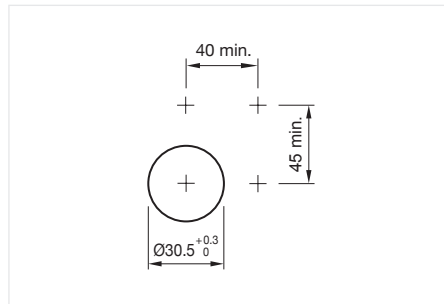
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



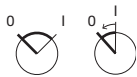
Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

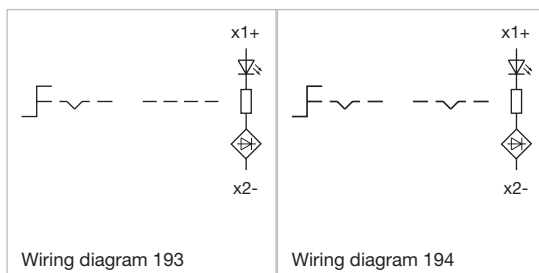
- Front panel thickness 1 ... 6 mm
- It is advisable to choose a white illumination



Actuator, Front dimension Ø 38 mm

Switching action	Switching angle	Lever colour	Front bezel colour	Front bezel material	Housing material	Part No.	Wiring diagram
Rest - Maintained	45° left / 90° right / -45° ... +45°	Red	Sand grey	Metal	Metal	45-2828.4C20.001	194
	90° right / -45° ... +45°	Green	Sand grey	Metal	Metal	45-2828.4C50.001	194
	90° right / -45° ... +45°	White	Sand grey	Metal	Metal	45-2828.4C90.001	194
Rest - Momentary	45° right	Red	Sand grey	Metal	Metal	45-2844.4C20.006	193
	45° right	Green	Sand grey	Metal	Metal	45-2844.4C50.006	193
	45° right	White	Sand grey	Metal	Metal	45-2844.4C90.006	193

### Wiring diagrams



Wiring diagram 193

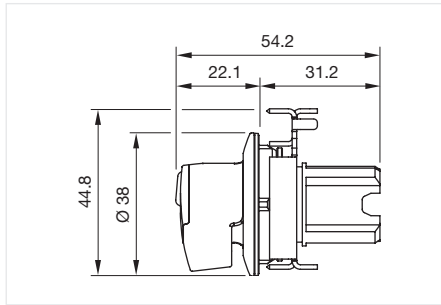
Wiring diagram 194

# 45 Flush design

## Selector switch 2 positions long lever, IP66, IP67, IP69K



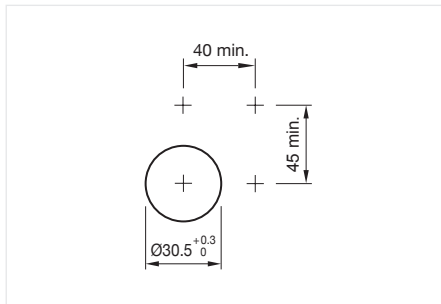
Product can differ from the current configuration.



Dimensions [mm]

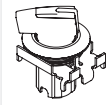
### General information

- Front panel thickness 1 ... 6 mm
- It is advisable to choose a white illumination

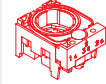


Mounting cut-outs [mm]

### Equipment consisting of (schematic overview)

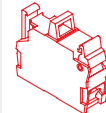


Actuator



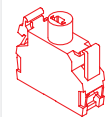
Holder

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Switching element

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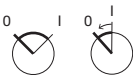


Illumination element

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

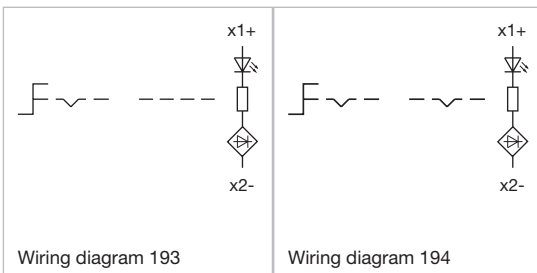
To obtain a complete unit, please select the red components from the pages shown.



Actuator, Front dimension Ø 38 mm

Switching action	Switching angle	Lever colour	Front bezel colour	Front bezel material	Housing material	Part No.	Wiring diagram
Rest - Maintained	90° right / -45° ... +45°	Red	Sand grey	Metal	Metal	45-2828.4D20.001	194
	90° right / -45° ... +45°	Green	Sand grey	Metal	Metal	45-2828.4D50.001	194
	90° right / -45° ... +45°	White	Sand grey	Metal	Metal	45-2828.4D90.001	194
Rest - Momentary	45° right	Green	Sand grey	Metal	Metal	45-2844.4D50.006	193
	45° right	White	Sand grey	Metal	Metal	45-2844.4D90.006	193

## Wiring diagrams

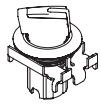


Wiring diagram 193

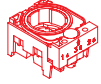
Wiring diagram 194

## Selector switch 3 positions short lever, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)

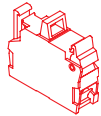


Actuator



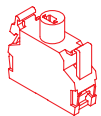
Holder

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Switching element

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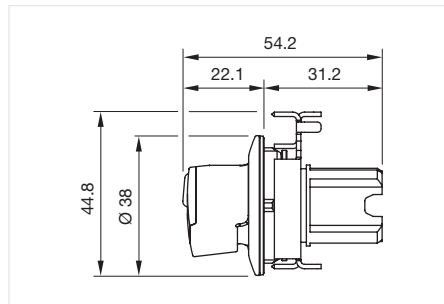


Illumination element

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

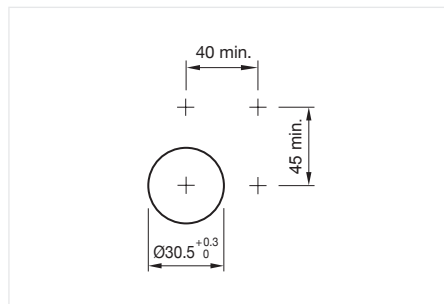
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



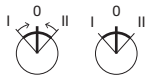
Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

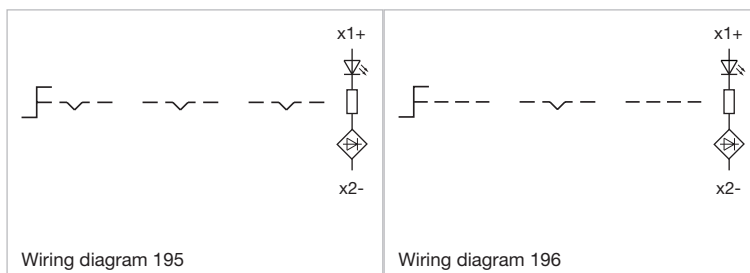
- Front panel thickness 1 ... 6 mm
- It is advisable to choose a white illumination



Actuator, Front dimension Ø 38 mm

Switching action	Switching angle	Lever colour	Front bezel colour	Front bezel material	Housing material	Part No.	Wiring diagram
Momentary - Rest - Momentary	45° left / 45° right	Red	Sand grey	Metal	Metal	45-280S.4C20.003	196
	45° left / 45° right	White	Sand grey	Metal	Metal	45-280S.4C90.003	196
Maintained - Rest - Maintained	45° left / 45° right	Red	Sand grey	Metal	Metal	45-2819.4C20.003	195
	45° left / 45° right	Green	Sand grey	Metal	Metal	45-2819.4C50.003	195
	45° left / 45° right	White	Sand grey	Metal	Metal	45-2819.4C90.003	195

### Wiring diagrams

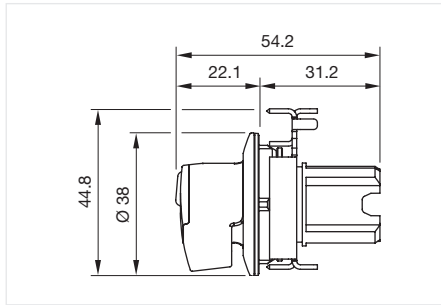


# 45 Flush design

## Selector switch 3 positions long lever, IP66, IP67, IP69K



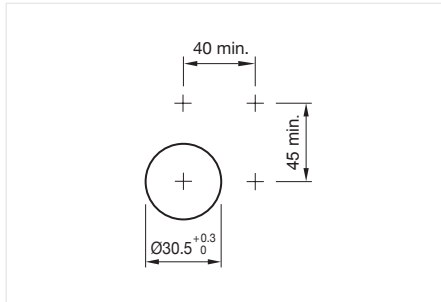
Product can differ from the current configuration.



Dimensions [mm]

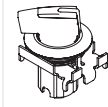
### General information

- Front panel thickness 1 ... 6 mm
- It is advisable to choose a white illumination

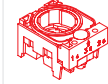


Mounting cut-outs [mm]

### Equipment consisting of (schematic overview)

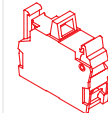


Actuator



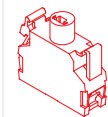
Holder

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Switching element

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Illumination element

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

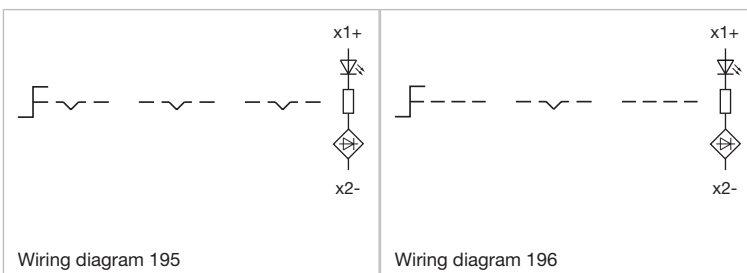
To obtain a complete unit, please select the red components from the pages shown.



Actuator, Front dimension  $\varnothing$  38 mm

Switching action	Switching angle	Lever colour	Front bezel colour	Front bezel material	Housing material	Part No.	Wiring diagram
Momentary - Rest - Momentary	45° left / 45° right	Red	Sand grey	Metal	Metal	45-280S.4D20.003	196
	45° left / 45° right	Green	Sand grey	Metal	Metal	45-280S.4D50.003	196
	45° left / 45° right	White	Sand grey	Metal	Metal	45-280S.4D90.003	196
Maintained - Rest - Maintained	45° left / 45° right	Red	Sand grey	Metal	Metal	45-2819.4D20.003	195
	45° left / 45° right	Green	Sand grey	Metal	Metal	45-2819.4D50.003	195
	45° left / 45° right	White	Sand grey	Metal	Metal	45-2819.4D90.003	195

## Wiring diagrams

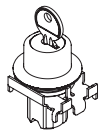


Wiring diagram 195

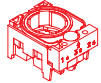
Wiring diagram 196

## Keylock switch 2 and 3 positions, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)

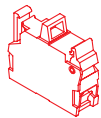


Actuator



Holder

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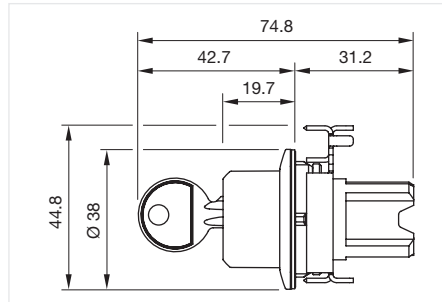


Switching element

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

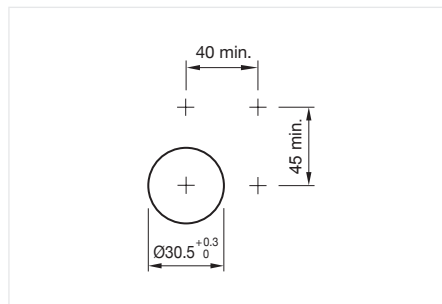
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

- Front panel thickness 1 ... 6 mm
- The standard lock: RONIS, T254

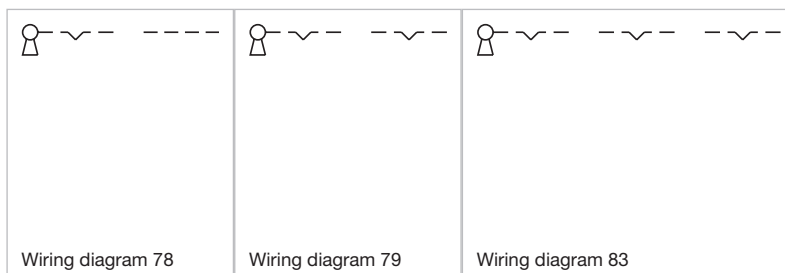


Actuator, Front dimension Ø 38 mm

Switching action	Switching angle	Front bezel colour	Front bezel material	Housing material	Part No.	Wiring diagram
Maintained (a) - Rest (a) - Maintained (a)	45° left / 45° right / -45° ... +45°	Sand grey	Metal	Metal	45-290F.4F00.113	83
Rest (a) - Maintained (a)	90° right / -45° ... +45°	Sand grey	Metal	Metal	45-290H.4F00.111	79
Rest - Maintained (a)	90° right / -45° ... +45°	Sand grey	Metal	Metal	45-290J.4F00.111	79
Rest (a) - Momentary	45° right	Sand grey	Metal	Metal	45-290J.4F00.116	78

a = Key remove

### Wiring diagrams

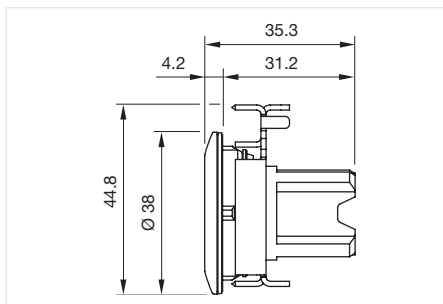


# 45 Flush design

## Indicator, IP66, IP67, IP69K



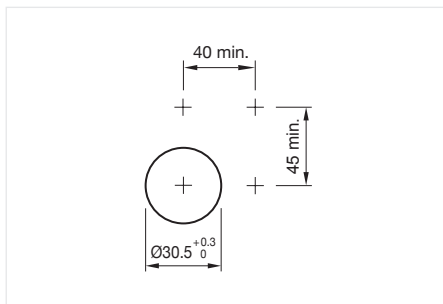
Product can differ from the current configuration.



Dimensions [mm]

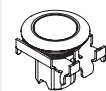
### General information

- Front panel thickness 1 ... 6 mm

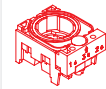


Mounting cut-outs [mm]

### Equipment consisting of (schematic overview)

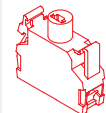


Actuator



Holder

Page 57



Illumination element

Page 63

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

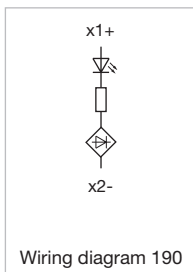
To obtain a complete unit, please select the red components from the pages shown.



Actuator, Front dimension Ø 38 mm

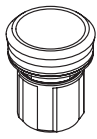
Front bezel colour	Front bezel material	Lens cap colour	Housing material	Part No.	Wiring diagram
Sand grey	Metal	Red	Metal	45-2T07.4FE0.000	190
	Metal	Yellow	Metal	45-2T07.4FG0.000	190
	Metal	Green	Metal	45-2T07.4FH0.000	190
	Metal	Colourless	Metal	45-2T07.4FK0.000	190

## Wiring diagrams



## Pushbutton, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)

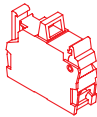


Actuator



Holder

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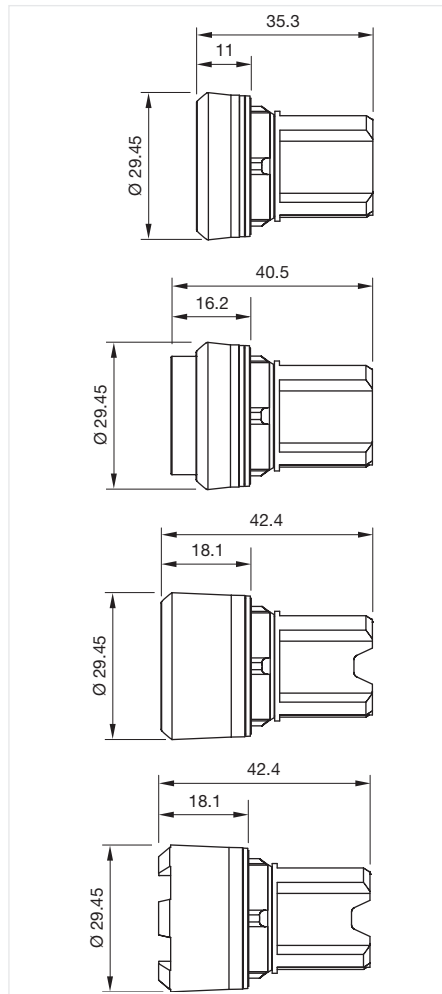


Switching element

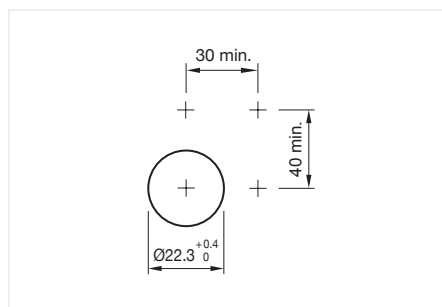
Page 59

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 [mm]



Mounting cut-outs [mm]



Product can differ from the current configuration.

### General information

- Mounting depth, incl. front plate, see chapter drawings



### Actuator, Front dimension Ø 29,5 mm

Switching action	Lens colour	Lens shape	Lens type	Front bezel colour	Front bezel material	Housing colour	Housing material	Part No.	Wiring diagram
Momentary	Black	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2131.1110.000	72
	Red	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2131.1120.000	72
	Yellow	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2131.1140.000	72
	Green	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2131.1150.000	72

# 45 Raised design

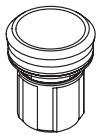
Switching action	Lens colour	Lens shape	Lens type	Front bezel colour	Front bezel material	Housing colour	Housing material	Part No.	Wiring diagram
Momentary	Blue	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2131.1160.000	72
	Grey	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2131.1180.000	72
	White	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2131.1190.000	72
	Black	flush	raised above front bezel	Black	Plastic	Black	Plastic	45-2131.1210.000	72
	Red	flush	raised above front bezel	Black	Plastic	Black	Plastic	45-2131.1220.000	72
	Green	flush	raised above front bezel	Black	Plastic	Black	Plastic	45-2131.1250.000	72
	Black	flush	level with front bezel	Silver	Metal	Silver	Metal	45-2131.2110.000	72
	Red	flush	level with front bezel	Silver	Metal	Silver	Metal	45-2131.2120.000	72
	Yellow	flush	level with front bezel	Silver	Metal	Silver	Metal	45-2131.2140.000	72
	Green	flush	level with front bezel	Silver	Metal	Silver	Metal	45-2131.2150.000	72
	Blue	flush	level with front bezel	Silver	Metal	Silver	Metal	45-2131.2160.000	72
	White	flush	level with front bezel	Silver	Metal	Silver	Metal	45-2131.2190.000	72
	Colourless	flush	level with front bezel	Silver	Metal	Silver	Metal	45-2131.21K0.000	72
	Black	flush	raised above front bezel	Silver	Metal	Silver	Metal	45-2131.2210.000	72
	Red	flush	raised above front bezel	Silver	Metal	Silver	Metal	45-2131.2220.000	72
	Green	flush	raised above front bezel	Silver	Metal	Silver	Metal	45-2131.2250.000	72
	Blue	flush	raised above front bezel	Silver	Metal	Silver	Metal	45-2131.2260.000	72
	Maintained	Black	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2134.1110.000
Red		flush	level with front bezel	Black	Plastic	Black	Plastic	45-2134.1120.000	73
Yellow		flush	level with front bezel	Black	Plastic	Black	Plastic	45-2134.1140.000	73
Green		flush	level with front bezel	Black	Plastic	Black	Plastic	45-2134.1150.000	73
Black		flush	level with front bezel	Silver	Metal	Silver	Metal	45-2134.2110.000	73
Red		flush	level with front bezel	Silver	Metal	Silver	Metal	45-2134.2120.000	73
Momentary	Red	flush	lower than front bezel	Black	Plastic	Black	Plastic	45-2131.1320.000	72
	Blue	flush	lower than front bezel	Black	Plastic	Black	Plastic	45-2131.1360.000	72
	Green	flush	lower than front bezel	Silver	Metal	Silver	Metal	45-2131.2350.000	72

## Wiring diagrams

E---	E~--
Wiring diagram 72	Wiring diagram 73

## Illuminated pushbutton, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)

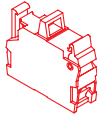


Actuator



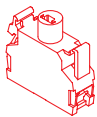
Holder

Page 57



Switching element

Page 59

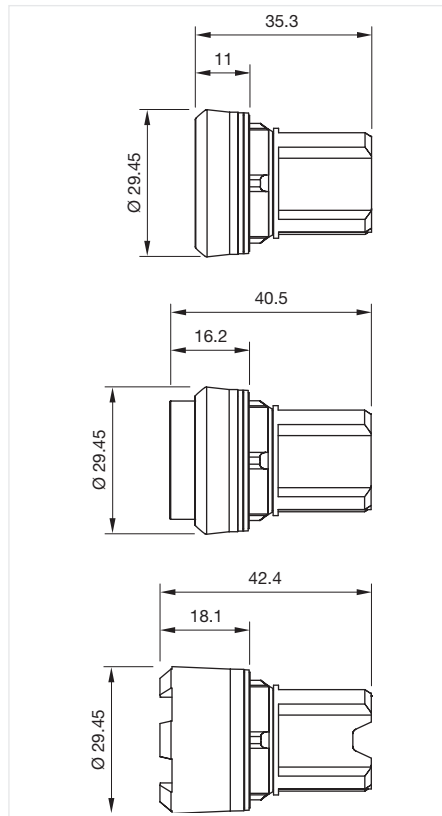


Illumination element

Page 63

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

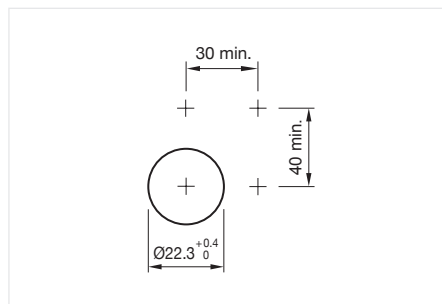
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

- Mounting depth, incl. front plate, see chapter drawings



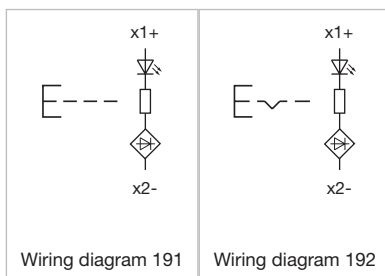
### Actuator, Front dimension Ø 29,5 mm

Switching action	Lens colour	Lens shape	Lens type	Front bezel colour	Front bezel material	Housing colour	Housing material	Part No.	Wiring diagram
Momentary	Red	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2231.11E0.000	191
	Yellow	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2231.11G0.000	191
	Green	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2231.11H0.000	191
	Blue	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2231.11J0.000	191
	White	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2231.11N0.000	191
	Red	flush	raised above front bezel	Black	Plastic	Black	Plastic	45-2231.12E0.000	191
	Yellow	flush	raised above front bezel	Black	Plastic	Black	Plastic	45-2231.12G0.000	191

# 45 Raised design

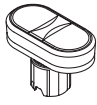
Switching action	Lens colour	Lens shape	Lens type	Front bezel colour	Front bezel material	Housing colour	Housing material	Part No.	Wiring diagram
Momentary	Green	flush	raised above front bezel	Black	Plastic	Black	Plastic	45-2231.12H0.000	191
	Blue	flush	raised above front bezel	Black	Plastic	Black	Plastic	45-2231.12J0.000	191
	Colourless	flush	raised above front bezel	Black	Plastic	Black	Plastic	45-2231.12K0.000	191
	Red	flush	level with front bezel	Silver	Metal	Silver	Metal	45-2231.21E0.000	191
	Yellow	flush	level with front bezel	Silver	Metal	Silver	Metal	45-2231.21G0.000	191
	Green	flush	level with front bezel	Silver	Metal	Silver	Metal	45-2231.21H0.000	191
	Blue	flush	level with front bezel	Silver	Metal	Silver	Metal	45-2231.21J0.000	191
	White	flush	level with front bezel	Silver	Metal	Silver	Metal	45-2231.21N0.000	191
	Red	flush	raised above front bezel	Silver	Metal	Silver	Metal	45-2231.22E0.000	191
Green	flush	raised above front bezel	Silver	Metal	Silver	Metal	45-2231.22H0.000	191	
Maintained	Red	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2234.11E0.000	192
	Green	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2234.11H0.000	192
	Blue	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2234.11J0.000	192
	Colourless	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2234.11K0.000	192
	Red	flush	level with front bezel	Silver	Metal	Silver	Metal	45-2234.21E0.000	192
	Yellow	flush	level with front bezel	Silver	Metal	Silver	Metal	45-2234.21G0.000	192
	Green	flush	level with front bezel	Silver	Metal	Silver	Metal	45-2234.21H0.000	192
	Blue	flush	level with front bezel	Silver	Metal	Silver	Metal	45-2234.21J0.000	192

## Wiring diagrams



## Double pushbutton, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)

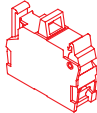


Actuator



Holder

Page 57

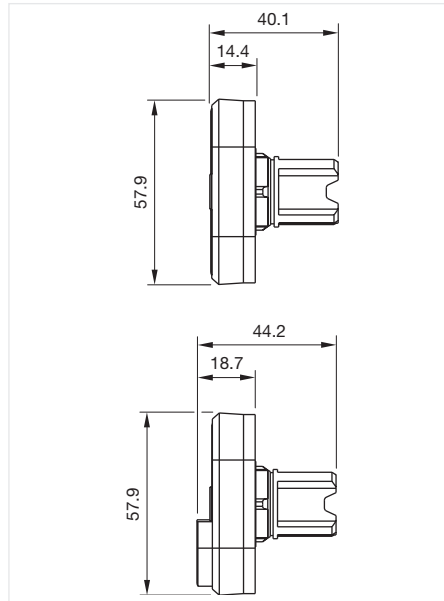


Switching element

Page 59

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

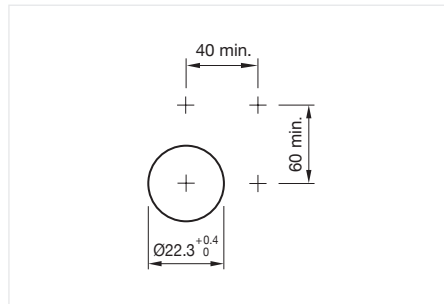
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

- Mounting depth, incl. front plate, see chapter drawings

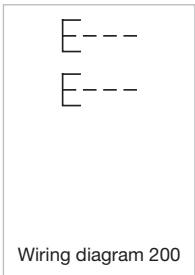


### Actuator, Front dimension 58 mm x 30 mm

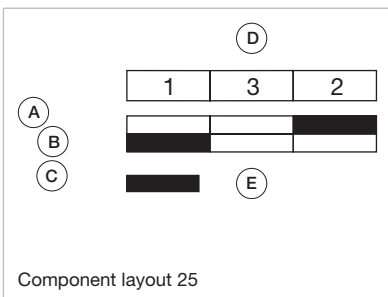
Switching action	Lens colour	Lens shape	Lens type	Front bezel colour	Front bezel material	Housing colour	Housing material	Part No.	Wiring diagram	Component Layout
Momentary	White-Black	flush	raised above front bezel	Black	Plastic	Black	Plastic	45-2J31.15V0.000	200	25
	Green-red	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2J31.16T0.000	200	25
	Green-red	flush	raised above front bezel	Silver	Metal	Silver	Metal	45-2J31.25T0.000	200	25
	Green-red	flush	level with front bezel	Silver	Metal	Silver	Metal	45-2J31.26T0.000	200	25

# 45 Raised design

## Wiring diagrams



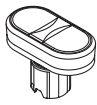
## Component layouts



- A = Switching action
- B = green (white) button pressed
- C = red (black) button pressed
- D = Arrangement switching element corresponds to designation of front adaptor
- E = Switching element actuated

## Illuminated double pushbutton, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)

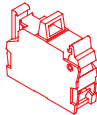


Actuator



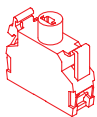
Holder

Page 57



Switching element

Page 59

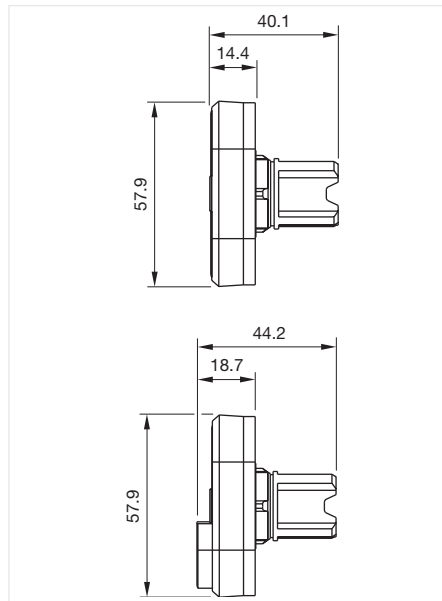


Illumination element

Page 63

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

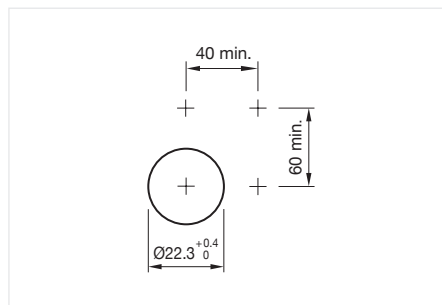
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

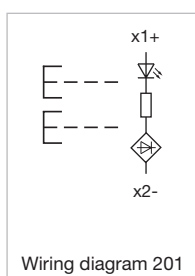
- With illuminative centre window
- Mounting depth, incl. front plate, see chapter drawings



Actuator, Front dimension 58 mm x 30 mm

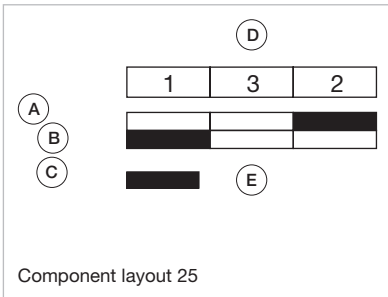
Switching action	Lens colour	Lens shape	Lens type	Front bezel colour	Front bezel material	Housing colour	Housing material	Part No.	Wiring diagram	Component Layout
Momentary	Green-red	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2K31.16T0.000	201	25
	White-Black	flush	level with front bezel	Black	Plastic	Black	Plastic	45-2K31.16V0.000	201	25

## Wiring diagrams



# 45 Raised design

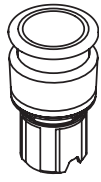
## Component layouts



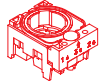
- A = Switching action
- B = green (white) button pressed
- C = red (black) button pressed
- D = Arrangement switching element corresponds to designation of front adaptor
- E = Switching element actuated

## Mushroom-head pushbutton Ø 30 mm, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)

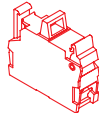


Actuator



Holder

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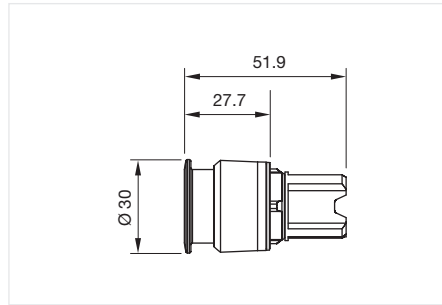


Switching element

Page 59

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

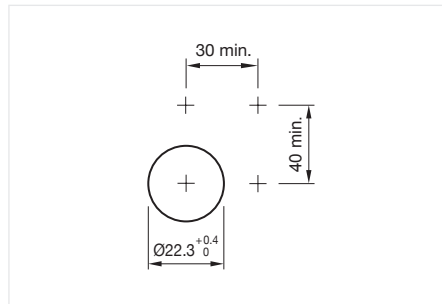
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

- Mounting depth, incl. front plate, see chapter drawings



Actuator, Front dimension Ø 30 mm

Switching action	Lens colour	Front bezel colour	Front bezel material	Housing colour	Housing material	Part No.	Wiring diagram
Maintained	Black	Black	Plastic	Black	Plastic	45-2530.1810.000	73
	Red	Silver	Metal	Silver	Metal	45-2530.2820.000	73
Momentary	Black	Black	Plastic	Black	Plastic	45-2531.1810.000	72
	Black	Silver	Metal	Silver	Metal	45-2531.2810.000	72
	Red	Silver	Metal	Silver	Metal	45-2531.2820.000	72
	Green	Silver	Metal	Silver	Metal	45-2531.2850.000	72

### Wiring diagrams

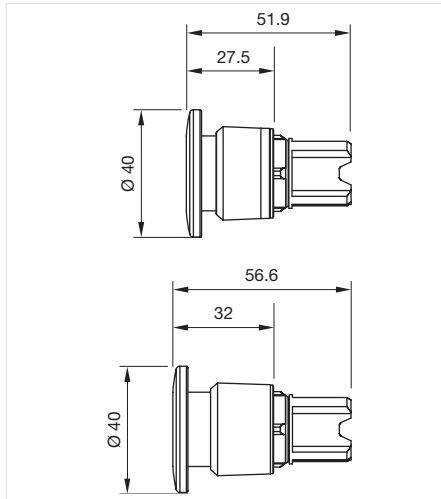
E---	E~--
Wiring diagram 72	Wiring diagram 73

# 45 Raised design

## Mushroom-head pushbutton Ø 40 mm, IP66, IP67, IP69K

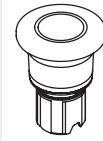


Product can differ from the current configuration.

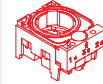


Dimensions [mm]

### Equipment consisting of (schematic overview)

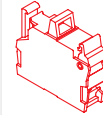


Actuator



Holder

Page 57



Switching element

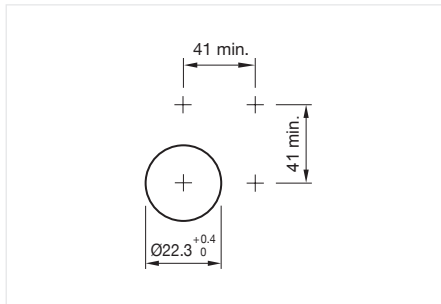
Page 59

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.

### General information

- Mounting depth, incl. front plate, see chapter drawings





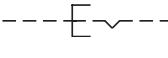
Mounting cut-outs [mm]



### Actuator, Front dimension Ø 40 mm

Switching action	Lens colour	Front bezel colour	Front bezel material	Housing colour	Housing material	Part No.	Wiring diagram
Maintained	Black	Black	Plastic	Black	Plastic	45-2530.1910.000	73
	Red	Black	Plastic	Black	Plastic	45-2530.1920.000	73
	Yellow	Black	Plastic	Black	Plastic	45-2530.1940.000	73
	Green	Black	Plastic	Black	Plastic	45-2530.1950.000	73
	Black	Silver	Metal	Silver	Metal	45-2530.2910.000	73
	Red	Silver	Metal	Silver	Metal	45-2530.2920.000	73
Momentary	Black	Black	Plastic	Black	Plastic	45-2531.1910.000	72
	Red	Black	Plastic	Black	Plastic	45-2531.1920.000	72
	Black	Silver	Metal	Silver	Metal	45-2531.2910.000	72
	Red	Silver	Metal	Silver	Metal	45-2531.2920.000	72
	Green	Silver	Metal	Silver	Metal	45-2531.2950.000	72
Momentary / maintained	Red	Silver	Metal	Silver	Metal	45-2532.2920.000	208

Wiring diagrams

 <p>Wiring diagram 72</p>	 <p>Wiring diagram 73</p>	 <p>Wiring diagram 208</p>
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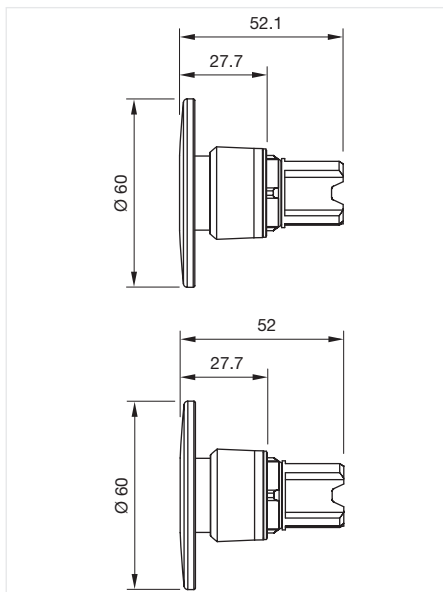
- 01
- 02
- 03
- 04
- 14
- 17
- 18
- 19
- 22
- 31
- 41
- 45**
- 51
- 61
- 70
- 71
- 82
- 84
- 92
- 96

# 45 Raised design

## Mushroom-head pushbutton Ø 60 mm, IP66, IP67, IP69K

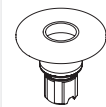


Product can differ from the current configuration.

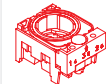


Dimensions [mm]

### Equipment consisting of (schematic overview)

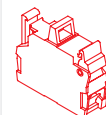


Actuator



Holder

Page 57



Switching element

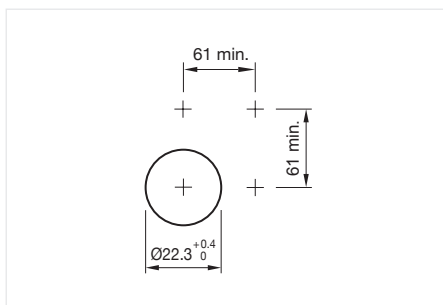
Page 59

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.

### General information

- Mounting depth, incl. front plate, see chapter drawings



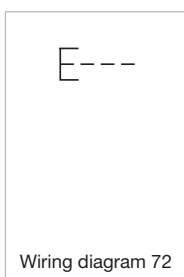
Mounting cut-outs [mm]



### Actuator, Front dimension Ø 60 mm

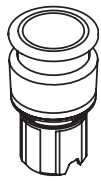
Switching action	Lens colour	Front bezel colour	Front bezel material	Housing colour	Housing material	Part No.	Wiring diagram
Momentary	Red	Black	Plastic	Black	Plastic	45-2531.1A20.000	72
	Green	Black	Plastic	Black	Plastic	45-2531.1A50.000	72
	Black	Silver	Metal	Silver	Metal	45-2531.2A10.000	72

## Wiring diagrams

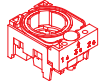


## Mushroom-head pushbutton illuminated Ø 30 mm, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)

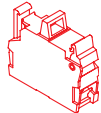


Actuator



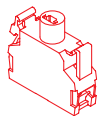
Holder

Page 57



Switching element

Page 59

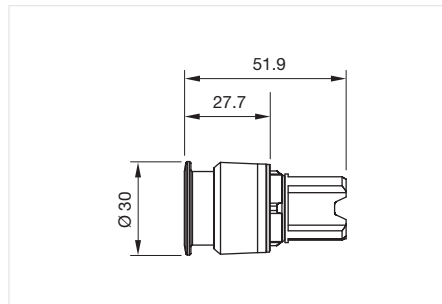


Illumination element

Page 63

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

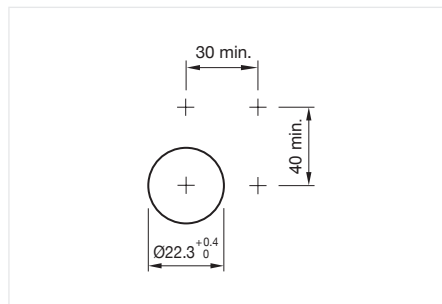
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

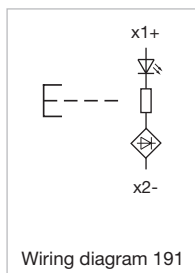
- Mounting depth, incl. front plate, see chapter drawings



Actuator, Front dimension Ø 30 mm

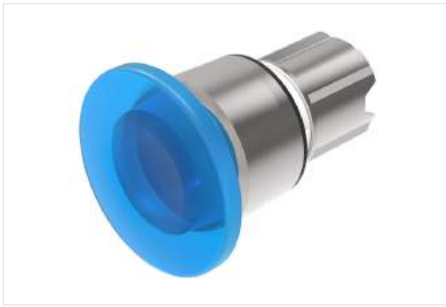
Switching action	Lens colour	Front bezel colour	Front bezel material	Housing colour	Housing material	Part No.	Wiring diagram
Momentary	Green	Black	Plastic	Black	Plastic	45-2631.18H0.000	191
	Blue	Black	Plastic	Black	Plastic	45-2631.18J0.000	191

### Wiring diagrams

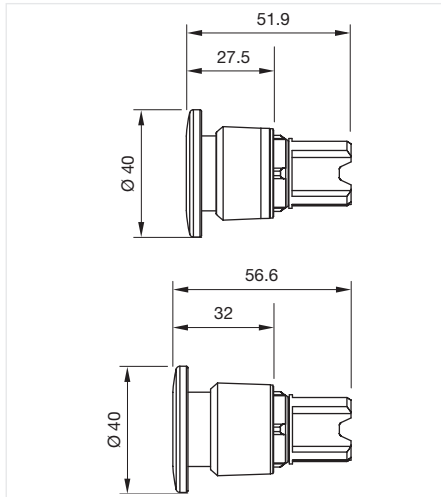


# 45 Raised design

## Mushroom-head pushbutton illuminated Ø 40 mm, IP66, IP67, IP69K

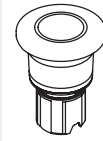


Product can differ from the current configuration.

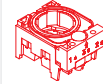


Dimensions [mm]

### Equipment consisting of (schematic overview)

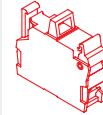


Actuator



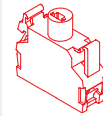
Holder

Page 57



Switching element

Page 59



Illumination element

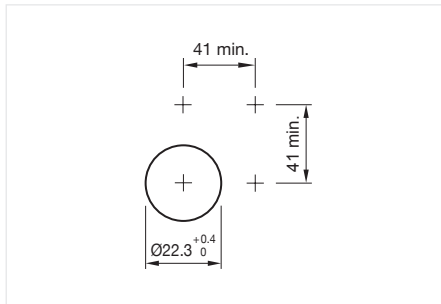
Page 63

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.

### General information

- Mounting depth, incl. front plate, see chapter drawings



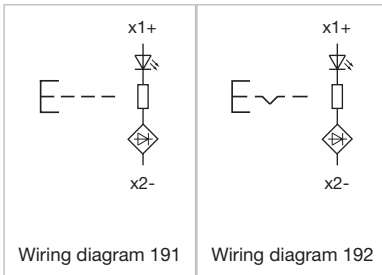
Mounting cut-outs [mm]



### Actuator, Front dimension Ø 40 mm

Switching action	Lens colour	Front bezel colour	Front bezel material	Housing colour	Housing material	Part No.	Wiring diagram
Maintained	Red	Black	Plastic	Black	Plastic	45-2630.19E0.000	192
	Blue	Black	Plastic	Black	Plastic	45-2630.19J0.000	192
	Red	Silver	Metal	Silver	Metal	45-2630.29E0.000	192
	Colourless	Silver	Metal	Silver	Metal	45-2630.29K0.000	192
Momentary	Yellow	Black	Plastic	Black	Plastic	45-2631.19G0.000	191
	Green	Black	Plastic	Black	Plastic	45-2631.19H0.000	191
	Colourless	Black	Plastic	Black	Plastic	45-2631.19K0.000	191
	White	Black	Plastic	Black	Plastic	45-2631.19N0.000	191
	Yellow	Silver	Metal	Silver	Metal	45-2631.29G0.000	191
	Green	Silver	Metal	Silver	Metal	45-2631.29H0.000	191
	White	Silver	Metal	Silver	Metal	45-2631.29N0.000	191

## Wiring diagrams



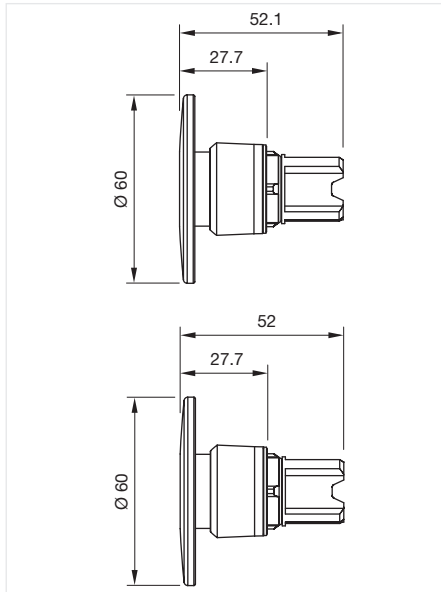
- 01
- 02
- 03
- 04
- 14
- 17
- 18
- 19
- 22
- 31
- 41
- 45**
- 51
- 61
- 70
- 71
- 82
- 84
- 92
- 96

# 45 Raised design

## Mushroom-head pushbutton illuminated Ø 60 mm, IP66, IP67, IP69K



Product can differ from the current configuration.



Dimensions [mm]

### Equipment consisting of (schematic overview)

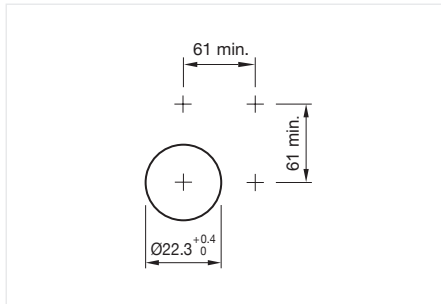
	Actuator	
	Holder	Page 57
	Switching element	Page 59
	Illumination element	Page 63

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.

### General information

- Mounting depth, incl. front plate, see chapter drawings



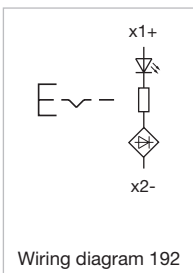
Mounting cut-outs [mm]



Actuator, Front dimension Ø 60 mm

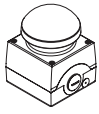
Switching action	Lens colour	Front bezel colour	Front bezel material	Housing colour	Housing material	Part No.	Wiring diagram
Maintained	Red	Silver	Metal	Silver	Metal	45-2630.2AE0.000	192
	Colourless	Silver	Metal	Silver	Metal	45-2630.2AK0.000	192
Momentary	Yellow	Silver	Metal	Silver	Metal	45-2631.2AG0.000	191
	Green	Silver	Metal	Silver	Metal	45-2631.2AH0.000	191
	White	Silver	Metal	Silver	Metal	45-2631.2AN0.000	191

## Wiring diagrams

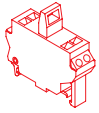


## Palm switch, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)



Actuator

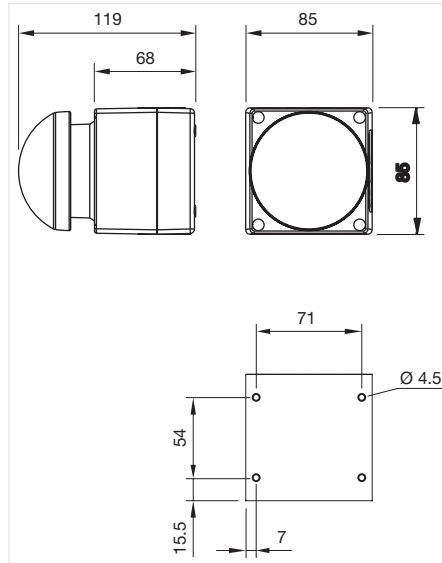


Switching element

Page 61

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 [mm]



Product can differ from the current configuration.

### General information

- Mounting depth, incl. front plate, see chapter drawings



Actuator, Front dimension 85 mm x 85 mm

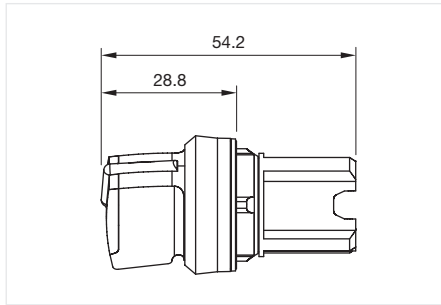
Switching action	Lens colour	Housing colour	Housing material	Part No.
Momentary	Black	Grey	Plastic	45-481.1810
	Black	Grey	Metal	45-481.2810
Maintained	Red	Yellow	Plastic	45-482.1810
	Red	Yellow	Metal	45-482.2810

# 45 Raised design

## Selector switch 2 positions short lever, IP66, IP67, IP69K



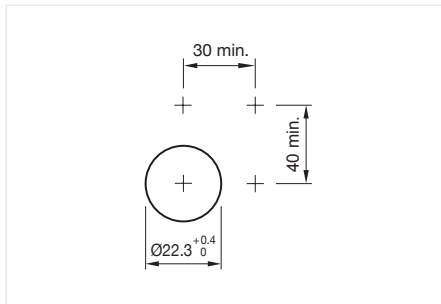
Product can differ from the current configuration.



Dimensions [mm]

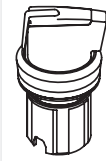
### General information

- External diameter of the short lever 32.3 mm
- Mounting depth, incl. front plate, see chapter drawings

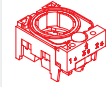


Mounting cut-outs [mm]

### Equipment consisting of (schematic overview)

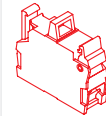


Actuator



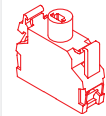
Holder

Page 57



Switching element

Page 59

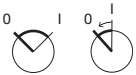


Illumination element

Page 63

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

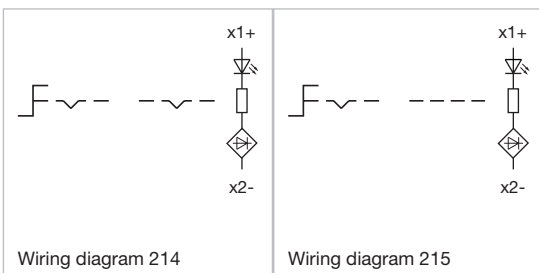
To obtain a complete unit, please select the red components from the pages shown.



Actuator, Front dimension  $\varnothing 29,5$  mm

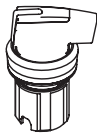
Switching action	Switching angle	Lever colour	Front bezel colour	Front bezel material	Housing material	Part No.	Wiring diagram
Rest - Maintained	90° right / -45° ... +45°	Red	Black	Plastic	Plastic	45-2828.1C20.001	214
	90° right / -45° ... +45°	Yellow	Black	Plastic	Plastic	45-2828.1C40.001	214
	90° right / -45° ... +45°	Blue	Black	Plastic	Plastic	45-2828.1C60.001	214
	90° right / -45° ... +45°	White	Black	Plastic	Plastic	45-2828.1C90.001	214
	90° right / -45° ... +45°	Red	Silver	Metal	Metal	45-2828.2C20.001	214
	90° right / -45° ... +45°	Amber	Silver	Metal	Metal	45-2828.2C30.001	214
	90° right / -45° ... +45°	Green	Silver	Metal	Metal	45-2828.2C50.001	214
	90° right / -45° ... +45°	White	Silver	Metal	Metal	45-2828.2C90.001	214
Rest - Momentary	45° right	White	Black	Plastic	Plastic	45-2844.1C90.006	215

## Wiring diagrams



## Selector switch 2 positions long lever, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)

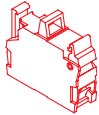


Actuator



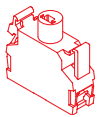
Holder

Page 57



Switching element

Page 59

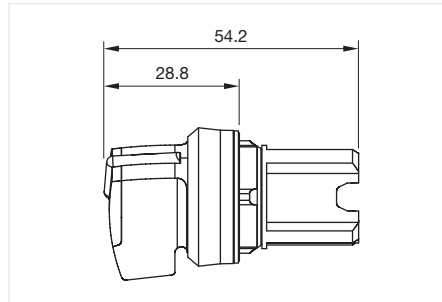


Illumination element

Page 63

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

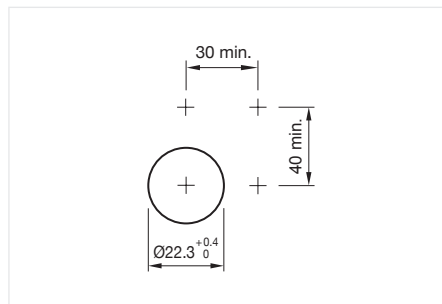
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

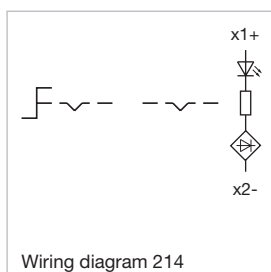
- External diameter of the long lever 44.8 mm
- Mounting depth, incl. front plate, see chapter drawings



Actuator, Front dimension Ø 29,5 mm

Switching action	Switching angle	Lever colour	Front bezel colour	Front bezel material	Housing material	Part No.	Wiring diagram
Rest - Maintained	90° right / -45° ... +45°	White	Black	Plastic	Plastic	45-2828.1D90.001	214
	90° right / -45° ... +45°	Green	Silver	Metal	Metal	45-2828.2D50.001	214
	90° right / -45° ... +45°	Blue	Silver	Metal	Metal	45-2828.2D60.001	214
	90° right / -45° ... +45°	White	Silver	Metal	Metal	45-2828.2D90.001	214

### Wiring diagrams



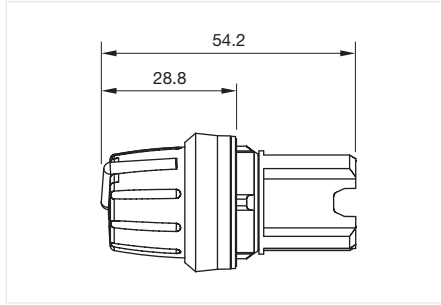
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96

# 45 Raised design

## Selector switch 2 positions round lever, IP66, IP67, IP69K



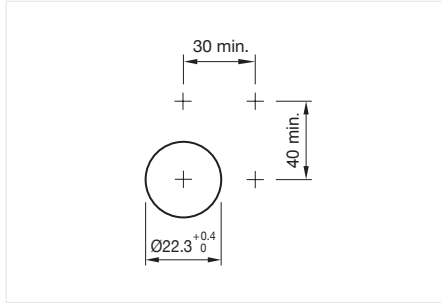
Product can differ from the current configuration.



Dimensions [mm]

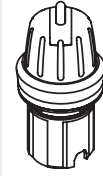
### General information

- Mounting depth, incl. front plate, see chapter drawings

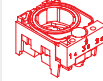


Mounting cut-outs [mm]

### Equipment consisting of (schematic overview)

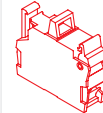


Actuator



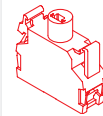
Holder

Page 57



Switching element

Page 59



Illumination element

Page 63

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

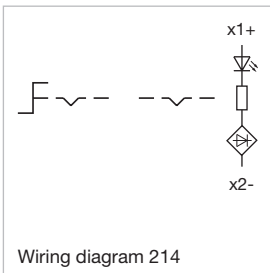
To obtain a complete unit, please select the red components from the pages shown.



Actuator, Front dimension  $\varnothing$  29,5 mm

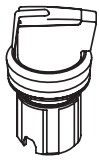
Switching action	Switching angle	Lever colour	Front bezel colour	Front bezel material	Housing material	Part No.	Wiring diagram
Rest - Maintained	90° right / -45° ... +45°	White	Black	Plastic	Plastic	45-2828.1E90.001	214

## Wiring diagrams



## Selector switch 3 positions short lever, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)

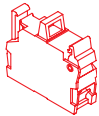


Actuator



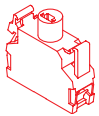
Holder

Page 57



Switching element

Page 59

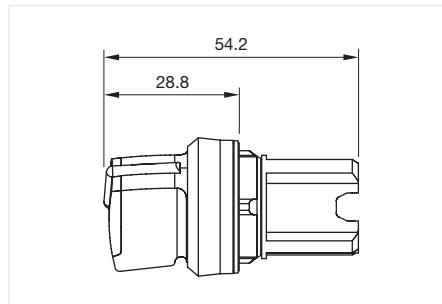


Illumination element

Page 63

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

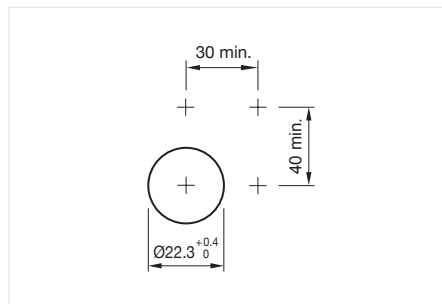
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



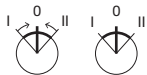
Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

- External diameter of the short lever 32.3 mm
- Mounting depth, incl. front plate, see chapter drawings

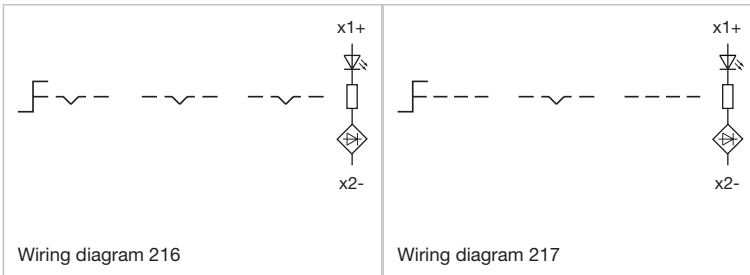


Actuator, Front dimension Ø 29,5 mm

Switching action	Switching angle	Lever colour	Front bezel colour	Front bezel material	Housing material	Part No.	Wiring diagram
Momentary - Rest - Momentary	45° left / 45° right	White	Black	Plastic	Plastic	45-280S.1C90.003	217
	45° left / 45° right / -45° ... +45°	Red	Silver	Metal	Metal	45-280S.2C20.003	217
	45° left / 45° right / -45° ... +45°	Amber	Silver	Metal	Metal	45-280S.2C30.003	217
	45° left / 45° right / -45° ... +45°	Yellow	Silver	Metal	Metal	45-280S.2C40.003	217
	45° left / 45° right / -45° ... +45°	Green	Silver	Metal	Metal	45-280S.2C50.003	217
	45° left / 45° right / -45° ... +45°	Blue	Silver	Metal	Metal	45-280S.2C60.003	217
	45° left / 45° right / -45° ... +45°	White	Silver	Metal	Metal	45-280S.2C90.003	217
Maintained - Rest - Maintained	45° left / 45° right / -45° ... +45°	Red	Black	Plastic	Plastic	45-2819.1C20.003	216
	45° left / 45° right / -45° ... +45°	Blue	Black	Plastic	Plastic	45-2819.1C60.003	216
	45° left / 45° right / -45° ... +45°	White	Black	Plastic	Plastic	45-2819.1C90.003	216
	45° left / 45° right / -45° ... +45°	Red	Silver	Metal	Metal	45-2819.2C20.003	216
	45° left / 45° right / -45° ... +45°	White	Silver	Metal	Metal	45-2819.2C90.003	216

# 45 Raised design

## Wiring diagrams

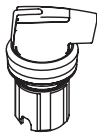


Wiring diagram 216

Wiring diagram 217

## Selector switch 3 positions long lever, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)

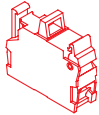


Actuator



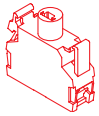
Holder

Page 57



Switching element

Page 59

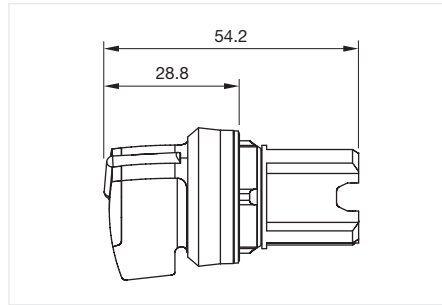


Illumination element

Page 63

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

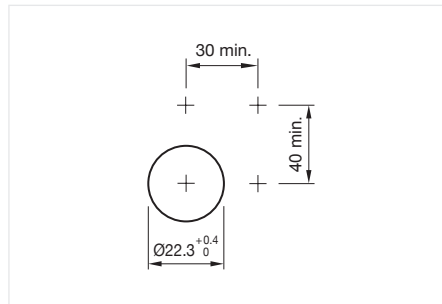
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



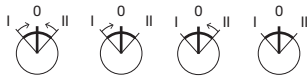
Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

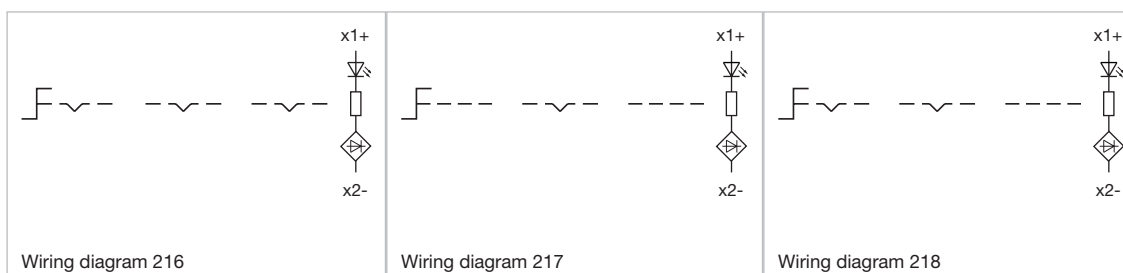
- External diameter of the long lever 44.8 mm
- Mounting depth, incl. front plate, see chapter drawings



Actuator, Front dimension  $\varnothing 29,5$  mm

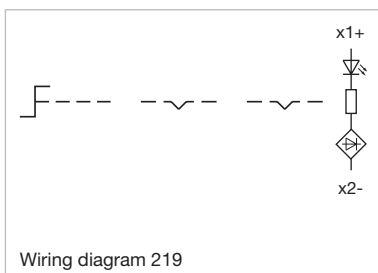
Switching action	Switching angle	Lever colour	Front bezel colour	Front bezel material	Housing material	Part No.	Wiring diagram
Momentary - Rest - Momentary	45° left / 45° right / -45° ... +45°	Red	Silver	Metal	Metal	45-280S.2D20.003	217
	45° left / 45° right / -45° ... +45°	Green	Silver	Metal	Metal	45-280S.2D50.003	217
	45° left / 45° right / -45° ... +45°	White	Silver	Metal	Metal	45-280S.2D90.003	217
Momentary - Rest - Maintained	45° left / 45° right / -45° ... +45°	White	Silver	Metal	Metal	45-280X.2D90.003	219
Maintained - Rest - Momentary	45° left / 45° right / -45° ... +45°	White	Silver	Metal	Metal	45-2816.2D90.003	218
Maintained - Rest - Maintained	45° left / 45° right / -45° ... +45°	Red	Silver	Metal	Metal	45-2819.2D20.003	216
	45° left / 45° right / -45° ... +45°	White	Silver	Metal	Metal	45-2819.2D90.003	216

### Wiring diagrams



# 45 Raised design

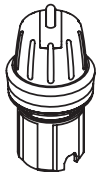
## Wiring diagrams



- 01
- 02
- 03
- 04
- 14
- 17
- 18
- 19
- 22
- 31
- 41
- 45**
- 51
- 61
- 70
- 71
- 82
- 84
- 92
- 96

## Selector switch 4 positions round lever, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)

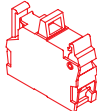


Actuator



Holder

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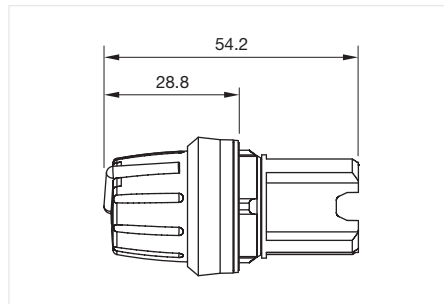


Switching element

Page 59

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

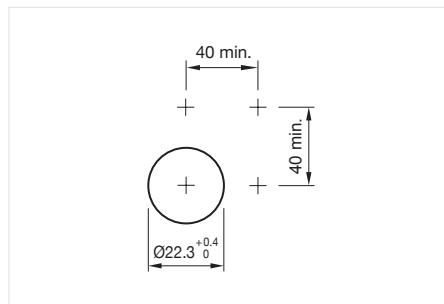
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

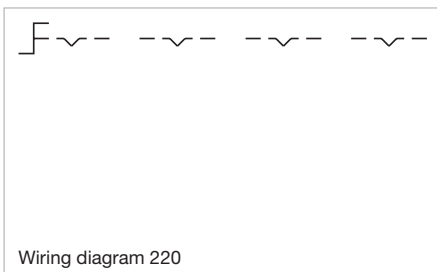
- Use only with holder for 4 elements
- Mounting depth, incl. front plate, see chapter drawings



Actuator, Front dimension  $\varnothing 29,5$  mm

Switching action	Switching angle	Lever colour	Front bezel colour	Front bezel material	Housing material	Part No.	Wiring diagram
Maintained - Maintained - Maintained - Maintained	4 x 90°	White	Black	Plastic	Plastic	45-2845.1E90.002	220
	4 x 90°	White	Silver	Metal	Metal	45-2845.2E90.002	220

### Wiring diagrams



Wiring diagram 220

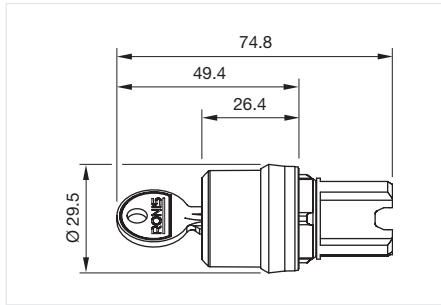
01  
02  
03  
04  
14  
17  
18  
19  
22  
31  
41  
45  
51  
61  
70  
71  
82  
84  
92  
96

# 45 Raised design

## Keylock switch 2 positions, IP66, IP67, IP69K



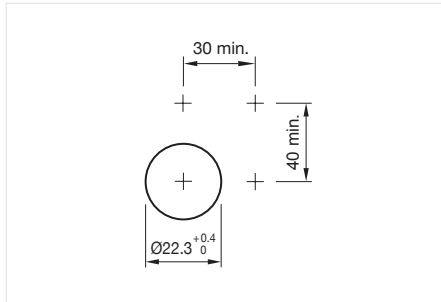
Product can differ from the current configuration.



Dimensions [mm]

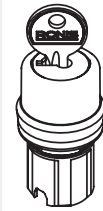
### General information

- The standard lock: RONIS, T254
- Mounting depth, incl. front plate, see chapter drawings

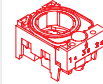


Mounting cut-outs [mm]

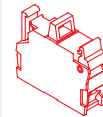
### Equipment consisting of (schematic overview)



Actuator



Holder



Switching element

Page 57

Page 59

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.

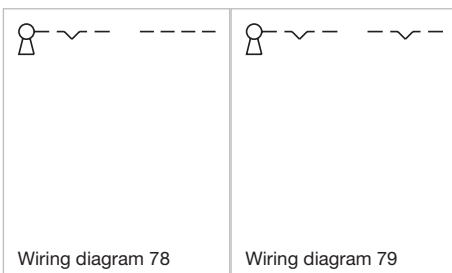


### Actuator, Front dimension Ø 29,5 mm

Switching action	Switching angle	Front bezel colour	Front bezel material	Housing material	Part No.	Wiring diagram
Rest (a) - Maintained (a)	90° right / -45° ... +45°	Black	Plastic	Plastic	45-290H.1000.111	79
	90° right / -45° ... +45°	Silver	Metal	Metal	45-290H.2000.111	79
Rest (a) - Maintained	90° right / -45° ... +45°	Black	Plastic	Plastic	45-290J.1000.111	79
	90° right / -45° ... +45°	Silver	Metal	Metal	45-290J.2000.111	79
Rest (a) - Momentary	45° right	Black	Plastic	Plastic	45-290K.1000.116	78
	45° right	Silver	Metal	Metal	45-290K.2000.116	78
Rest - Maintained (a)	90° right / -45° ... +45°	Black	Plastic	Plastic	45-2925.1000.111	79
	90° right / -45° ... +45°	Silver	Metal	Metal	45-2925.2000.111	79

a = Key remove

## Wiring diagrams

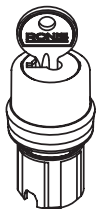


Wiring diagram 78

Wiring diagram 79

## Keylock switch 3 positions, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)

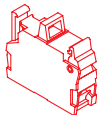


Actuator



Holder

Page 57

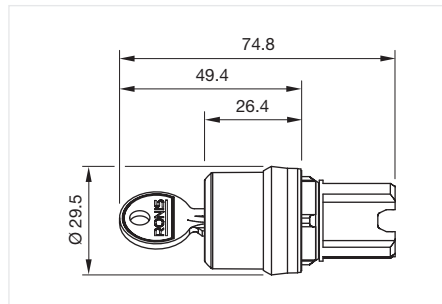


Switching element

Page 59

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

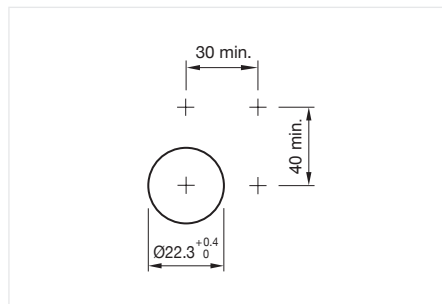
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

- The standard lock: RONIS, T254
- Mounting depth, incl. front plate, see chapter drawings



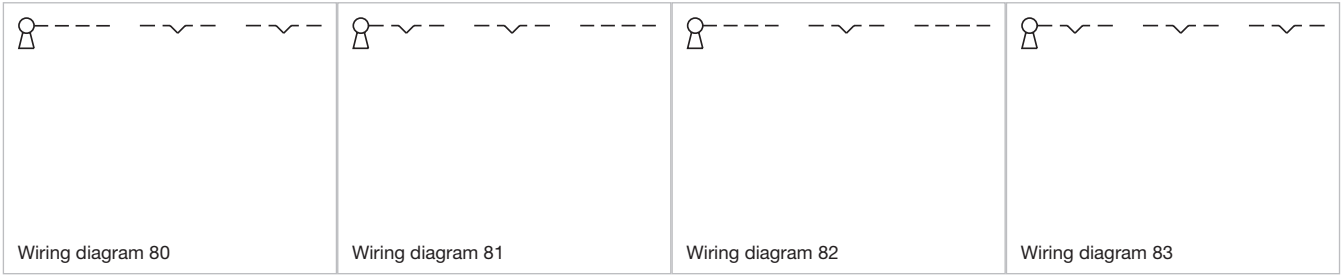
Actuator, Front dimension Ø 29,5 mm

Switching action	Switching angle	Front bezel colour	Front bezel material	Housing material	Part No.	Wiring diagram
Maintained (a) - Rest - Momentary	45° left / 45° right / -45° ... +45°	Black	Plastic	Plastic	45-290A.1000.113	81
	45° left / 45° right / -45° ... +45°	Silver	Metal	Metal	45-290A.2000.113	81
Maintained (a) - Rest - Maintained	45° left / 45° right / -45° ... +45°	Silver	Metal	Metal	45-290D.2000.113	83
Maintained (a) - Rest (a) - Maintained (a)	45° left / 45° right / -45° ... +45°	Black	Plastic	Plastic	45-290F.1000.113	83
	45° left / 45° right / -45° ... +45°	Silver	Metal	Metal	45-290F.2000.113	83
Maintained (a) - Rest (a) - Maintained	45° left / 45° right / -45° ... +45°	Black	Plastic	Plastic	45-290G.1000.113	83
	45° left / 45° right / -45° ... +45°	Silver	Metal	Metal	45-290G.2000.113	83
Momentary - Rest (a) - Momentary	45° left / 45° right / -45° ... +45°	Black	Plastic	Plastic	45-290Z.1000.113	82
	45° left / 45° right / -45° ... +45°	Silver	Metal	Metal	45-290Z.2000.113	82
Momentary - Rest (a) - Maintained	45° left / 45° right / -45° ... +45°	Sand grey	Metal	Plastic	45-2911.3000.113	80
Maintained - Rest (a) - Maintained	45° left / 45° right / -45° ... +45°	Black	Plastic	Plastic	45-2924.1000.113	83
	45° left / 45° right / -45° ... +45°	Silver	Metal	Metal	45-2924.2000.113	83

a = Key remove

# 45 Raised design

## Wiring diagrams

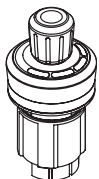


## ID keylock switch, IP65

### Equipment consisting of (schematic overview)



ID key Page {\$|=ID-Schlüssel}



Actuator



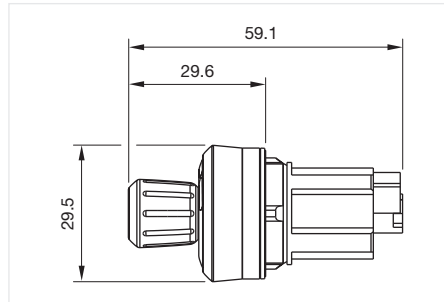
Holder Page 57



Electronics module Page {\$|=Elektronikmodul}

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

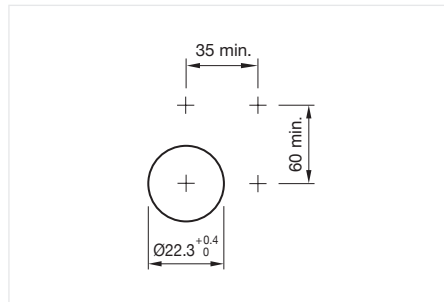
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

- Mounting depth, incl. front plate, see chapter drawings

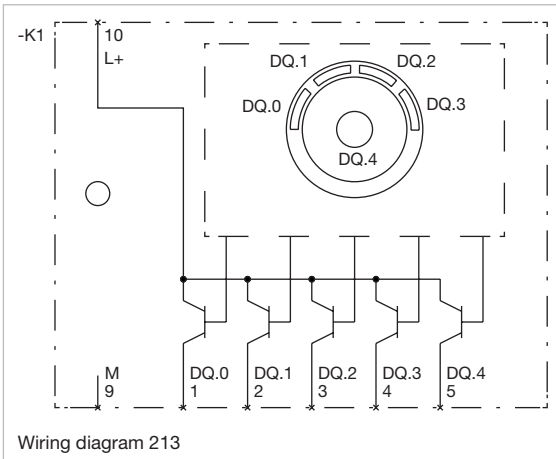


### Actuator, Front dimension Ø 29,5 mm

Operating Voltage/ Current	Switching action	Front bezel colour	Front bezel material	Operating voltage	Housing material	Part No.	Wiring diagram
- 24,00	Maintained - Maintained - Maintained - Maintained	Black	Plastic	24,00 V DC	Plastic	45-2S00.1001.404	213

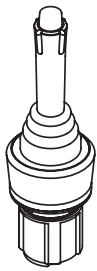
# 45 Raised design

## Wiring diagrams



## Toggle stick, IP65, IP67

### Equipment consisting of (schematic overview)

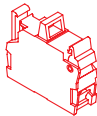


Actuator



Holder

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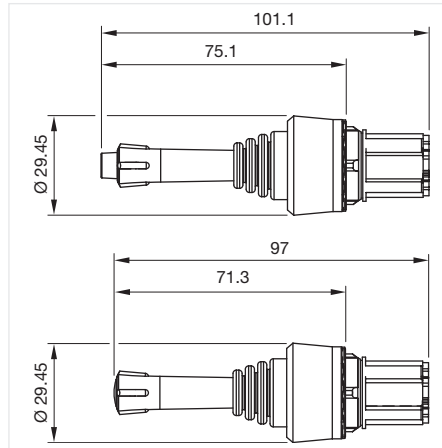


Switching element

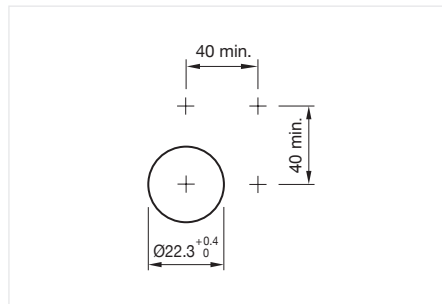
Page 59

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 [mm]



Mounting cut-outs [mm]



Product can differ from the current configuration.

### General information

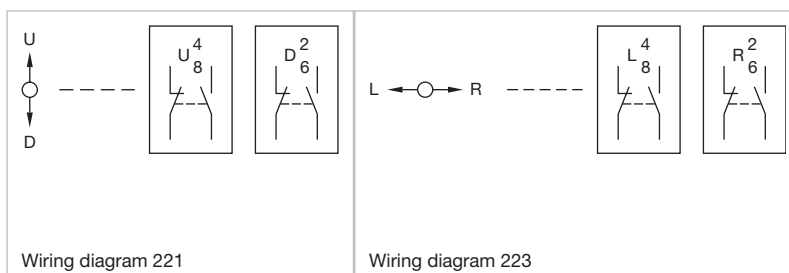
- Use only with holder for 4 elements
- Mounting depth, incl. front plate, see chapter drawings
- Lockable only in center position



### Actuator, Front dimension Ø 29,5 mm

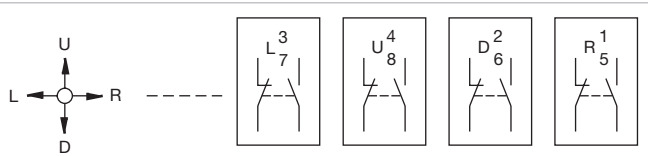
Switching action	Product attributes	Housing material	Front bezel colour	Front bezel material	Part No.	Wiring diagram
Momentary	2 positions (L-R)	Plastic	Black	Plastic	45-2F0T.1010.000	223
	4 positions	Plastic	Black	Plastic	45-2F0V.1010.000	225
	4 positions	Metal	Silver	Metal	45-2F0V.2010.000	225
	4 positions, lockable	Metal	Silver	Metal	45-2F14.2010.000	225
	2 positions (U-D)	Metal	Silver	Metal	45-2F38.2010.000	221
	2 positions (U-D), lockable	Plastic	Black	Black	45-2F40.1010.000	221

### Wiring diagrams



# 45 Raised design

## Wiring diagrams



Wiring diagram 225

## Toggle switch, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)

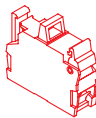


Actuator



Holder

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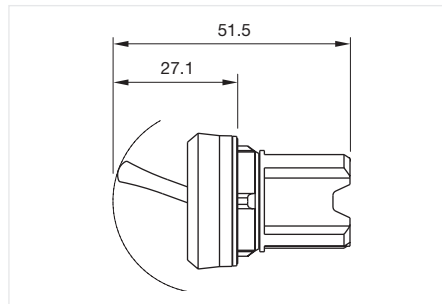


Switching element

Page 59

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

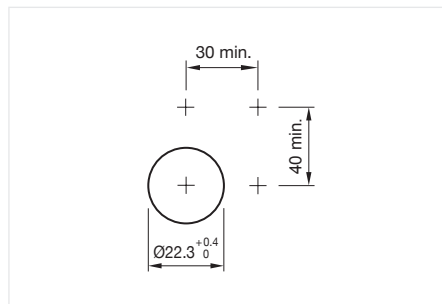
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

- Mounting depth, incl. front plate, see chapter drawings



Actuator, Front dimension  $\varnothing$  29,5 mm

Switching action	Lever colour	Front bezel colour	Front bezel material	Housing material	Part No.	Wiring diagram
Momentary	Black	Black	Plastic	Plastic	45-2N39.1010.000	72
	Black	Silver	Metal	Metal	45-2N39.2010.000	72
Maintained	Black	Black	Plastic	Plastic	45-2N42.1010.000	73
	Black	Silver	Metal	Metal	45-2N42.2010.000	73

## Wiring diagrams

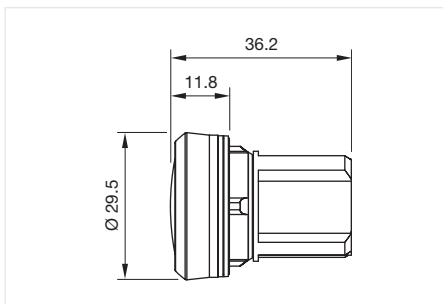
E---	E~--
Wiring diagram 72	Wiring diagram 73

# 45 Raised design

## Indicator full-face illumination, IP66, IP67, IP69K



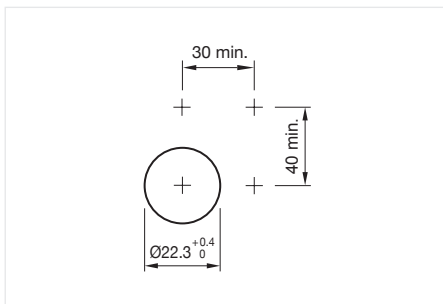
Product can differ from the current configuration.



Dimensions [mm]

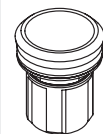
### General information

- Mounting depth, incl. front plate, see chapter drawings

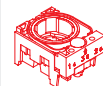


Mounting cut-outs [mm]

### Equipment consisting of (schematic overview)

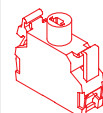


Actuator



Holder

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Illumination element

Page 63

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

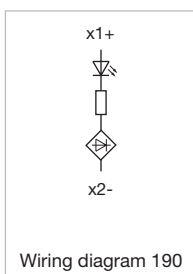
To obtain a complete unit, please select the red components from the pages shown.



Actuator, Front dimension Ø 30 mm

Lens cap colour	Housing material	Part No.	Wiring diagram
Red	Plastic	45-2T00.10E0.000	190
Amber	Plastic	45-2T00.10F0.000	190
Yellow	Plastic	45-2T00.10G0.000	190
Green	Plastic	45-2T00.10H0.000	190
Blue	Plastic	45-2T00.10J0.000	190
Colourless	Plastic	45-2T00.10K0.000	190
White	Plastic	45-2T00.10N0.000	190

## Wiring diagrams



## Indicator front illumination, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)

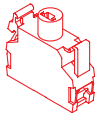


Actuator



Holder

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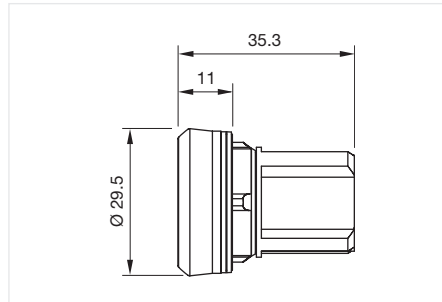


Illumination element

Page 63

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

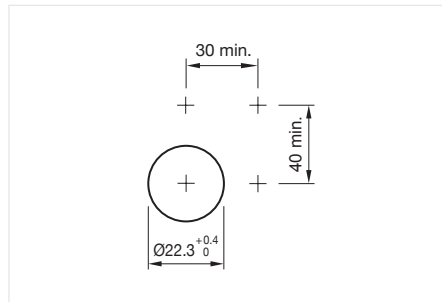
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

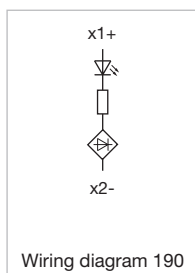
- Mounting depth, incl. front plate, see chapter drawings



Actuator, Front dimension Ø 29,5 mm

Front bezel colour	Front bezel material	Lens cap colour	Housing material	Part No.	Wiring diagram
Black	Plastic	Red	Plastic	45-2T07.10E0.000	190
	Plastic	Yellow	Plastic	45-2T07.10G0.000	190
	Plastic	Green	Plastic	45-2T07.10H0.000	190
	Plastic	Blue	Plastic	45-2T07.10J0.000	190
	Plastic	White	Plastic	45-2T07.10K0.000	190

## Wiring diagrams



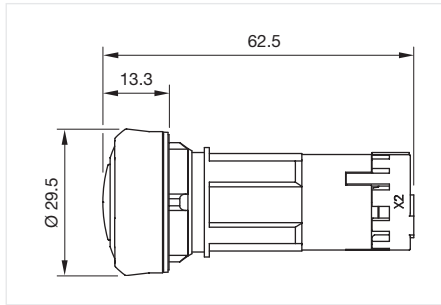
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# 45 Raised design

## Buzzer, IP40



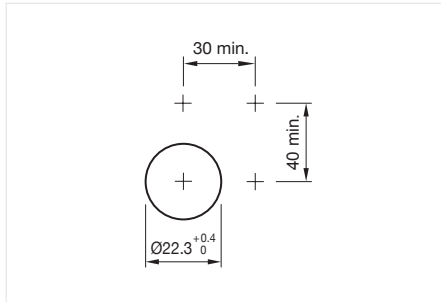
Product can differ from the current configuration.



Dimensions [mm]

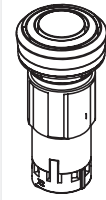
### General information

- Mounting depth, incl. front plate, see chapter drawings

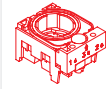


Mounting cut-outs [mm]

### Equipment consisting of (schematic overview)



Actuator



Holder

Page 57

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

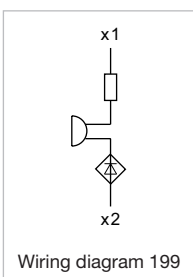
To obtain a complete unit, please select the red components from the pages shown.



Actuator, Front dimension  $\varnothing$  29,5 mm

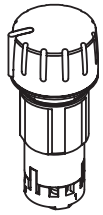
Soundpressure	Tone frequency	Operating Voltage/Current	Operating voltage	Housing material	Part No.	Wiring diagram
95 db (A) $\pm$ 8 dB at a distance of 0.1m	Approx. 2.4 kHz continuous tone only	24 V	24 V AC/DC	Plastic	45-2H00.1016.000	199

## Wiring diagrams

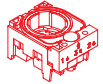


## Potentiometer, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)



Actuator

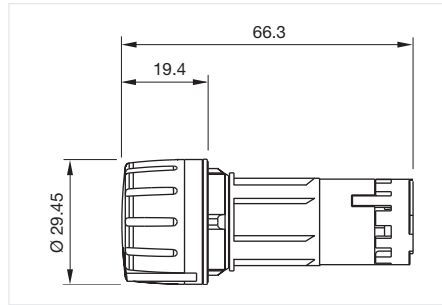


Holder

Page 57

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

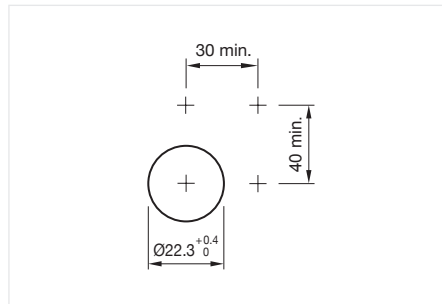
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

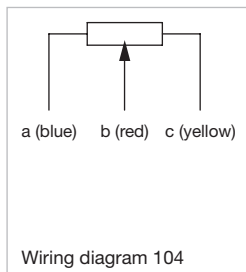
- Power 0.5 W
- Mounting depth, incl. front plate, see chapter drawings



Actuator, Front dimension Ø 30 mm

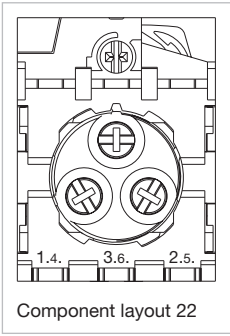
Operating Voltage/ Current	Front bezel colour	Front bezel ma- terial	Operating voltage	Housing ma- terial	Resis- tance	Resistance kind of	Part No.	Wiring diagram	Compo- nent Layout
- 300,00	Black	Plastic	300,00 V DC	Plastic	100 kΩ	linear, row_E3	45-2P01.1E10.000	104	22
	Black	Plastic	300,00 V DC	Plastic	10 kΩ	linear, row_E3	45-2P02.1E10.000	104	22
	Black	Plastic	300,00 V DC	Plastic	1 kΩ	linear, row_E3	45-2P03.1E10.000	104	22
	Black	Plastic	300,00 V DC	Plastic	4.7 kΩ	linear, row_E3	45-2P04.1E10.000	104	22

## Wiring diagrams



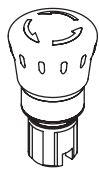
# 45 Raised design

## Component layouts



## Stop switch, IP66, IP67, IP69K

### Equipment consisting of (schematic overview)

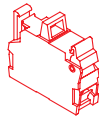


Actuator



Holder

Page 57

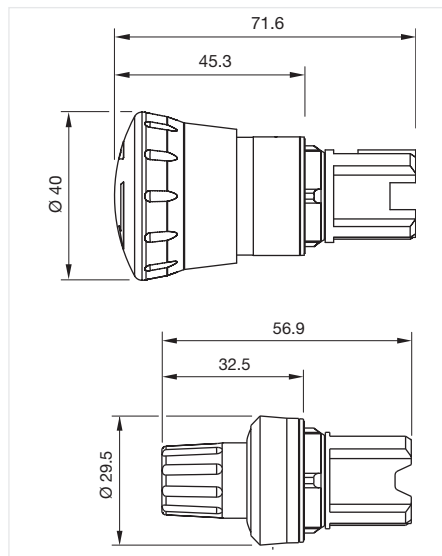


Switching element

Page 59

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

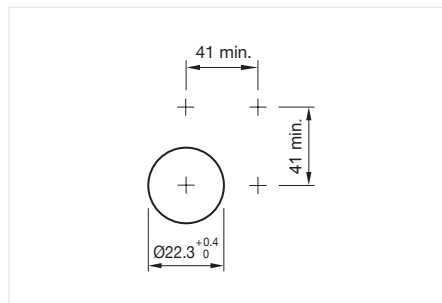
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

- Mounting depth, incl. front plate, see chapter drawings



Actuator

Product attributes	Lens colour	Front bezel colour	Front bezel material	Dimension	Housing material	Part No.	Wiring diagram
Twist to unlock clockwise	Black	Black	Plastic	Ø 40 mm	Plastic	45-2736.1910.000	76
	Blue	Black	Plastic	Ø 40 mm	Plastic	45-2736.1960.000	76
Twist to release, can be latched after pressing by rotating to the right	Black	Black	Plastic	Ø 29 mm	Plastic	45-2729.1010.000	76

## Wiring diagrams



Wiring diagram 76

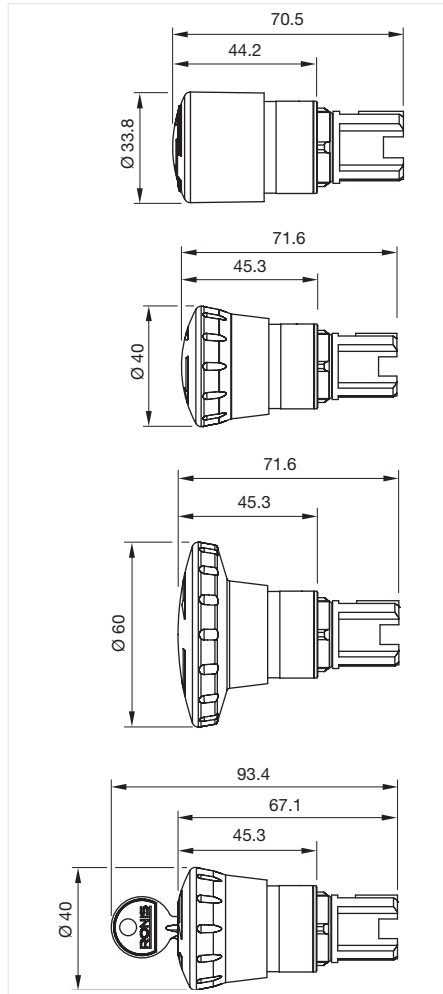
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# 45 Raised design

## Emergency stop switch, IP66, IP67, IP69K

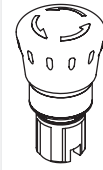


Product can differ from the current configuration.

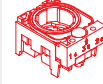


Dimensions [mm]

### Equipment consisting of (schematic overview)

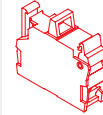


Actuator



Holder

Page 57



Switching element

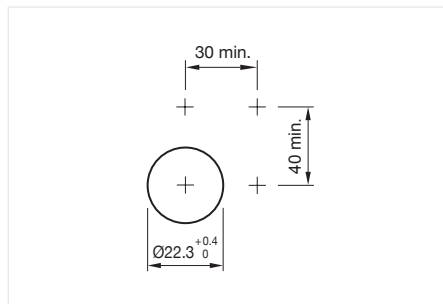
Page 59

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.

### General information

- The standard lock: RONIS, T254
- Mounting depth, incl. front plate, see chapter drawings
- Application as per DIN EN ISO 13850



Mounting cut-outs [mm]


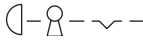


Actuator

Product attributes	Lens colour	Front bezel colour	Front bezel material	Dimension	Housing colour	Housing material	Part No.	Wiring diagram
Key release to unlock anti-clockwise	Red	Black	Plastic	Ø 40 mm	Yellow	Plastic	45-2C35.1920.110	364
	Red	Silver	Metal	Ø 40 mm	Yellow	Metal	45-2C35.2920.110	364
Twist to unlock clockwise	Red	Black	Plastic	Ø 34 mm	Yellow	Plastic	45-2C36.1820.000	76
	Red	Black	Plastic	Ø 40 mm	Yellow	Plastic	45-2C36.1920.000	76
	Red	Black	Plastic	Ø 60 mm	Yellow	Plastic	45-2C36.1A20.000	76
Pull release	Red	Black	Plastic	Ø 40 mm	Yellow	Plastic	45-2C37.1920.000	76
Twist to unlock clockwise	Red	Silver	Metal	Ø 34 mm	Silver	Metal	45-2C36.2820.000	76

Product attributes	Lens colour	Front bezel colour	Front bezel material	Dimension	Housing colour	Housing material	Part No.	Wiring diagram
Twist to unlock clockwise	Red	Silver	Metal	Ø 40 mm	Silver	Metal	45-2C36.2920.000	76

## Wiring diagrams

	
Wiring diagram 76	Wiring diagram 364

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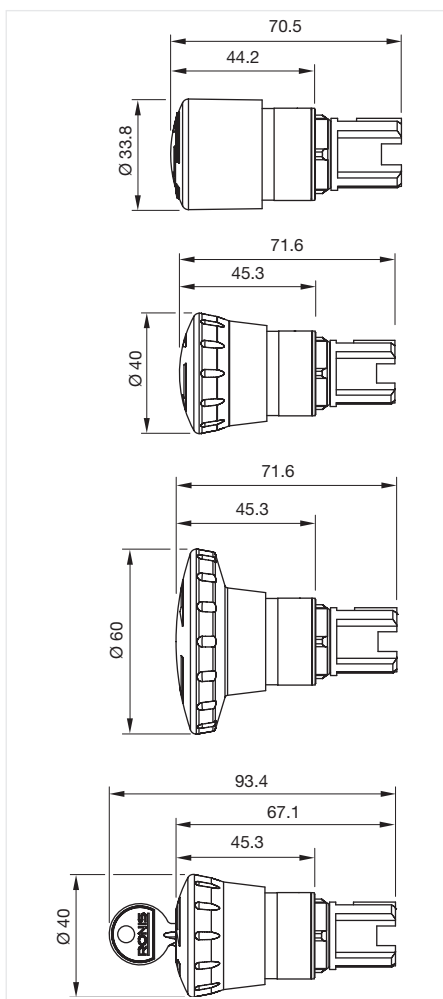
96

# 45 Raised design

## Illuminated emergency stop switch, IP66, IP67, IP69K

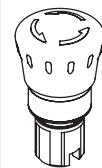


Product can differ from the current configuration.

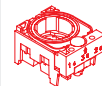


Dimensions [mm]

### Equipment consisting of (schematic overview)

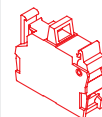


Actuator



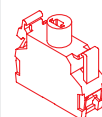
Holder

Page 57



Switching element

Page 59



Illumination element

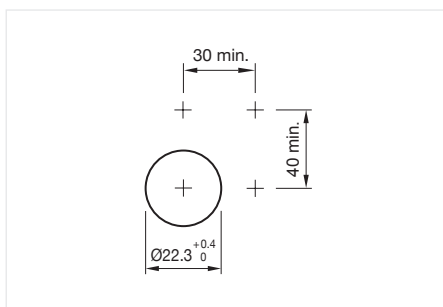
Page 63

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.

### General information

- Mounting depth, incl. front plate, see chapter drawings
- Application as per DIN EN ISO 13850



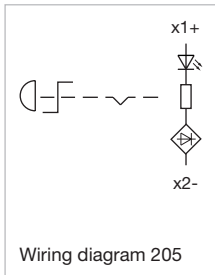
Mounting cut-outs [mm]



### Actuator

Product attributes	Lens colour	Front bezel colour	Front bezel material	Dimension	Housing colour	Housing material	Part No.	Wiring diagram
Twist to unlock anti-clockwise	Red	Black	Plastic	Ø 34 mm	Yellow	Plastic	45-2D36.1820.000	205
Twist to unlock clockwise	Red	Black	Plastic	Ø 40 mm	Yellow	Plastic	45-2D36.1920.000	205
	Red	Black	Plastic	Ø 60 mm	Yellow	Plastic	45-2D36.1A20.000	205
	Red	Silver	Metal	Ø 34 mm	Silver	Metal	45-2D36.2820.000	205
	Red	Silver	Metal	Ø 40 mm	Silver	Metal	45-2D36.2920.000	205
	Red	Silver	Metal	Ø 60 mm	Silver	Metal	45-2D36.2A20.000	205

## Wiring diagrams



01

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# 45 Components



## Lens plastic round increased

Lens material	Lens colour	Lens optics	Lens shape	Lens illumination	Dimension	Part No.
Plastic	Colourless	transparent	flush	illuminative	Ø 23.7 mm	45-552.0K00

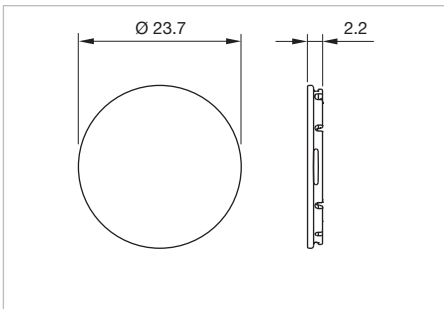


Dimensions [mm]



## Lens plastic round flat

Lens material	Lens colour	Lens optics	Lens shape	Lens illumination	Dimension	Part No.
Plastic	Blue	transparent	flush	illuminative	Ø 23.7 mm	45-553.0J00
	Red	transparent	flush	illuminative	Ø 23.7 mm	45-553.0E00
	Amber	transparent	flush	illuminative	Ø 23.7 mm	45-553.0F00
	Yellow	transparent	flush	illuminative	Ø 23.7 mm	45-553.0G00
	Green	transparent	flush	illuminative	Ø 23.7 mm	45-553.0H00
	Colourless	transparent	flush	illuminative	Ø 23.7 mm	45-553.0K00
	White	transparent	flush	illuminative	Ø 23.7 mm	45-553.0N00

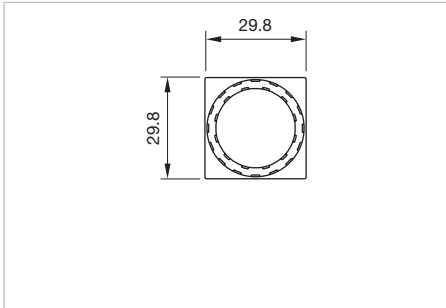


Dimensions [mm]



Single frame

Product attributes	Front bezel material	Front bezel colour	Material	Dimension	Part No.
For design square	Plastic	Black	Plastic	29.8 mm x 29.8 mm	45-558.0000

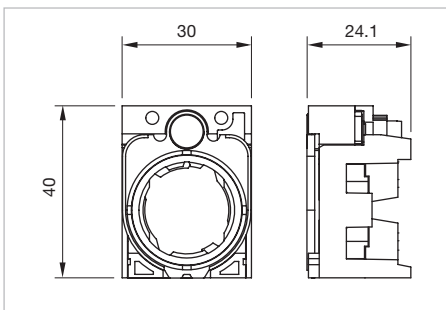


Dimensions [mm]



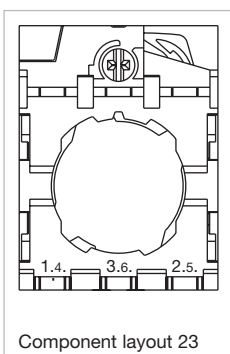
Holder for 3 elements

Material	Part No.	Component Layout
Plastic	45-2300.1000.000	23
Metal	45-2300.2000.000	23
Metal / plastic	45-2300.3000.000	23



Dimensions [mm]

## Component layouts



Component layout 23

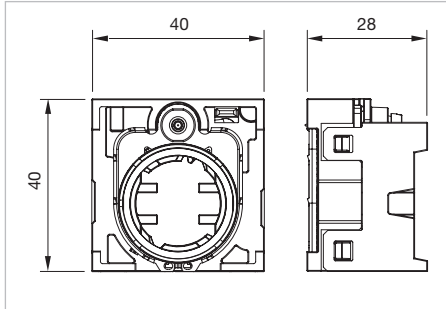
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# 45 Components



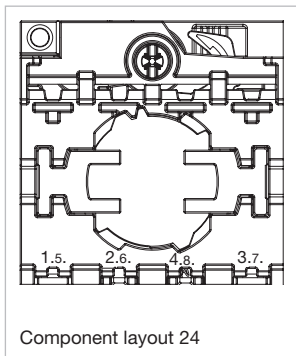
Holder for 4 elements

Product attributes	Material	Part No.	Component Layout
for selector switch 4 positions and toggle stick	Plastic	45-2400.1000.000	24
	Metal	45-2400.2000.000	24



Dimensions [mm]

## Component layouts



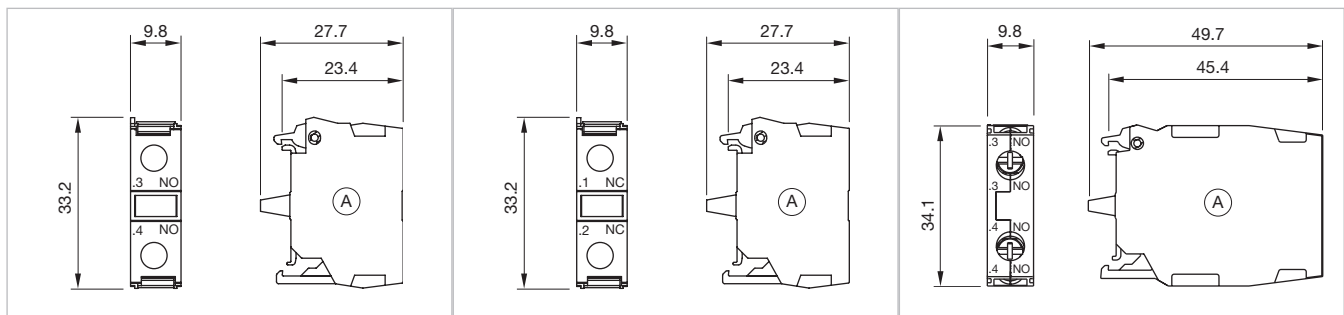
Component layout 24



## Slow-make switching element front mounting with screw terminal

Switching voltage	Switching current	Contacts	Contact material	Terminal	Part No.	Wiring diagram
500.00 V	10.00 A	1 NO	Silver	Screw terminal	45-311.1Z10	227
	10.00 A	1 NC	Silver	Screw terminal	45-312.1Z10	228
	10.00 A	2 NO	Silver	Screw terminal	45-313.1Z10	231
	10.00 A	2 NC	Silver	Screw terminal	45-314.1Z10	234
	10.00 A	1 NC / 1 NO	Silver	Screw terminal	45-315.1Z10	235
	10.00 A	1 NO	Gold	Screw terminal	45-311.1X10	227
	10.00 A	1 NC	Gold	Screw terminal	45-312.1X10	228
	10.00 A	1 NC / 1 FS	Gold	Screw terminal	45-316.1X10	233

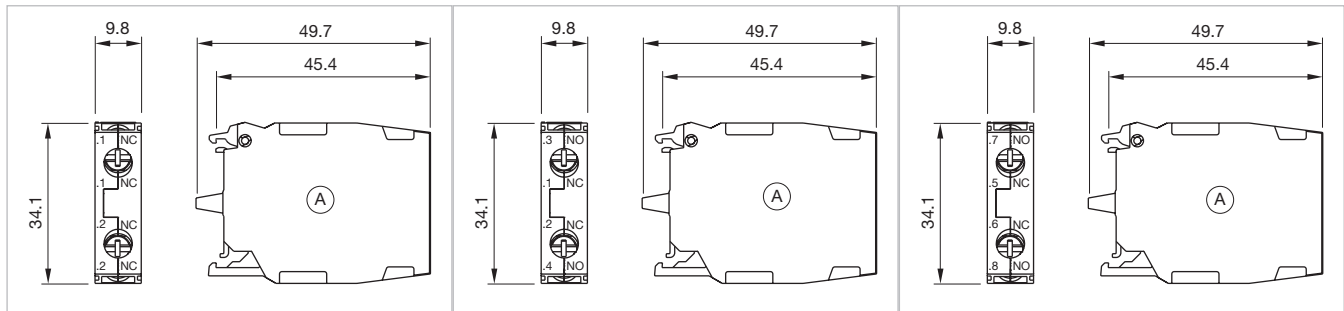
Contacts: NC = Normally closed, NO = Normally open



Dimensions [mm]  
A = Screw terminal  
for Part No. 45-311.1Z10, 45-311.1X10

Dimensions [mm]  
A = Screw terminal  
for Part No. 45-312.1Z10, 45-312.1X10

Dimensions [mm]  
A = Screw terminal  
for Part No. 45-313.1Z10

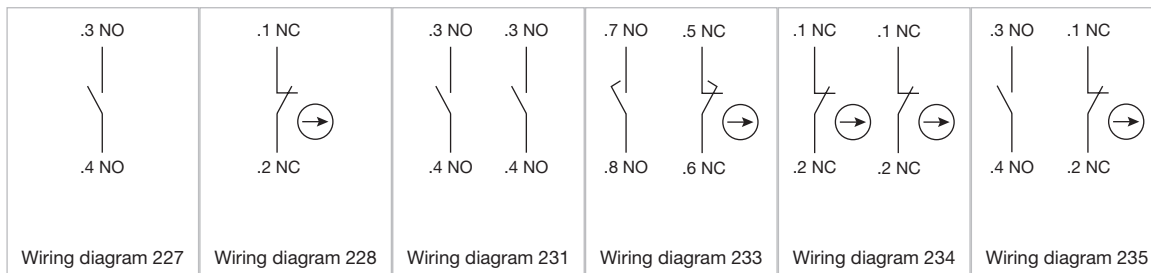


Dimensions [mm]  
A = Screw terminal  
for Part No. 45-314.1Z10

Dimensions [mm]  
A = Screw terminal  
for Part No. 45-315.1Z10

Dimensions [mm]  
A = Screw terminal  
for Part No. 45-316.1X10

## Wiring diagrams



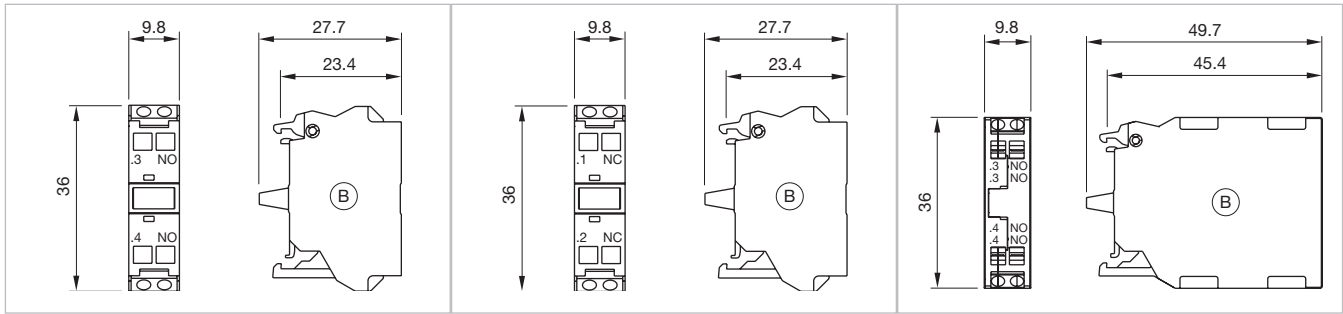
# 45 Components



## Slow-make switching element front mounting with spring-type terminal

Switching voltage	Switching current	Contacts	Contact material	Terminal	Part No.	Wiring diagram
500.00 V	10.00 A	1 NO	Silver	Spring-type terminal	45-311.1Z40	227
	10.00 A	1 NC	Silver	Spring-type terminal	45-312.1Z40	228
	10.00 A	2 NO	Silver	Spring-type terminal	45-313.1Z40	231
	10.00 A	2 NC	Silver	Spring-type terminal	45-314.1Z40	234
	10.00 A	1 NC / 1 NO	Silver	Spring-type terminal	45-315.1Z40	235
	10.00 A	1 NC / 1 MC	Silver	Spring-type terminal	45-317.1Z40	232
	10.00 A	1 NO	Gold	Spring-type terminal	45-311.1X40	227
	10.00 A	1 NC	Gold	Spring-type terminal	45-312.1X40	228
	10.00 A	2 NO	Gold	Spring-type terminal	45-313.1X40	231
	10.00 A	2 NC	Gold	Spring-type terminal	45-314.1X40	234
	10.00 A	1 NC / 1 NO	Gold	Spring-type terminal	45-315.1X40	235
	10.00 A	1 NC / 1 FS	Gold	Spring-type terminal	45-316.1X40	233

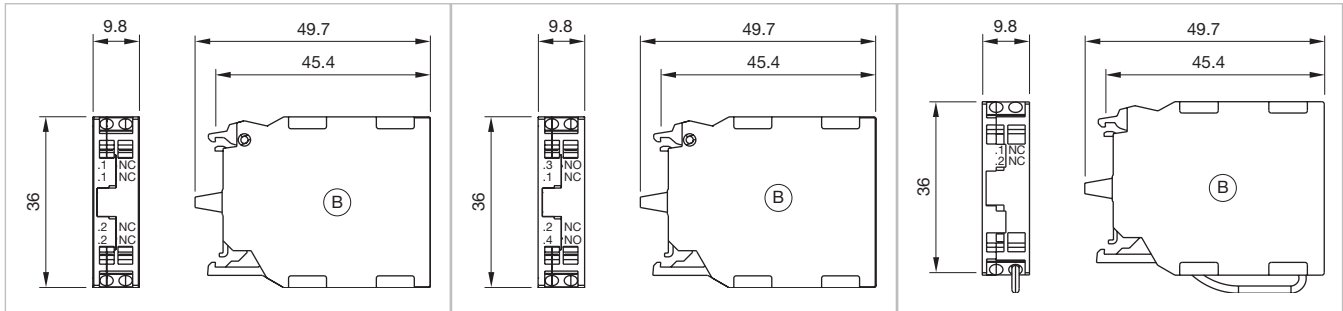
Contacts: NC = Normally closed, NO = Normally open



Dimensions [mm]  
B = Spring-type terminal  
for Part No. 45-311.1Z40, 45-311.1X40

Dimensions [mm]  
B = Spring-type terminal  
for Part No. 45-312.1Z40, 45-312.1X40

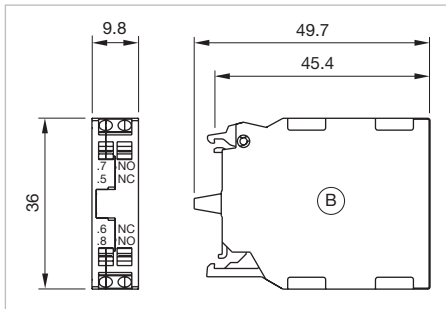
Dimensions [mm]  
B = Spring-type terminal  
for Part No. 45-313.1Z40, 45-313.1X40



Dimensions [mm]  
B = Spring-type terminal  
for Part No. 45-314.1Z40, 45-314.1X40

Dimensions [mm]  
B = Spring-type terminal  
for Part No. 45-315.1Z40, 45-315.1X40

Dimensions [mm]  
B = Spring-type terminal  
for Part No. 45-317.1Z40



Dimensions [mm]  
B = Spring-type terminal  
for Part No. 45-316.1Z40, 45-316.1X40

## Wiring diagrams

<p>Wiring diagram 227</p>	<p>Wiring diagram 228</p>	<p>Wiring diagram 231</p>	<p>Wiring diagram 232</p>	<p>Wiring diagram 233</p>	<p>Wiring diagram 234</p>	<p>Wiring diagram 235</p>
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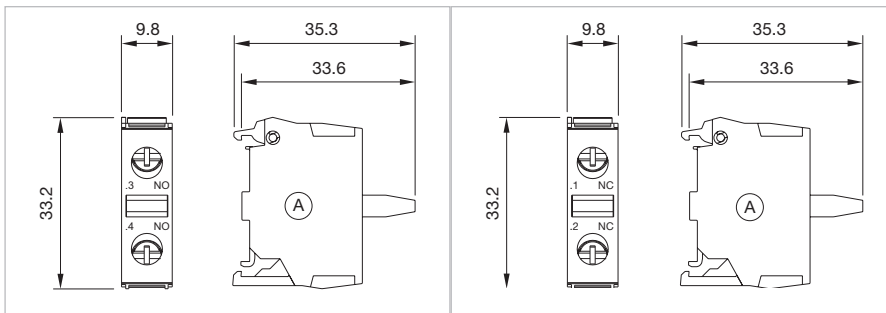
### Slow-make switching element base mounting with screw terminal

Switching voltage	Switching current	Contacts	Contact material	Terminal	Part No.	Wiring diagram
500.00 V	10.00 A	1 NO	Silver	Screw terminal	45-311.2Z10	227
	10.00 A	1 NC	Silver	Screw terminal	45-312.2Z10	228

Contacts: NC = Normally closed, NO = Normally open

#### Additional information

- Switching element base mounting can used only with enclosure



Dimensions [mm]  
A = Screw terminal  
for Part No. 45-311.2Z10

Dimensions [mm]  
A = Screw terminal  
for Part No. 45-312.2Z10

## Wiring diagrams

<p>Wiring diagram 227</p>	<p>Wiring diagram 228</p>
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# 45 Components



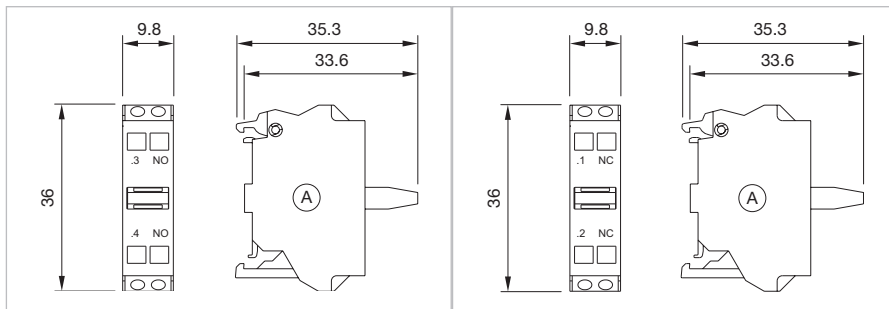
## Slow-make switching element base mounting with spring-type terminal

Switching voltage	Switching current	Contacts	Contact material	Terminal	Part No.	Wiring diagram
500.00 V	10.00 A	1 NO	Silver	Spring-type terminal	45-311.2Z40	227
	10.00 A	1 NC	Silver	Spring-type terminal	45-312.2Z40	228

Contacts: NC = Normally closed, NO = Normally open

### Additional information

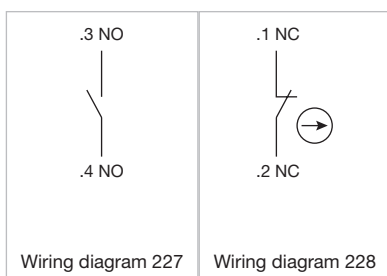
- Switching element base mounting can used only with enclosure



Dimensions [mm]  
B = Spring-type terminal  
for Part No. 45-311.2Z40

Dimensions [mm]  
B = Spring-type terminal  
for Part No. 45-312.2Z40

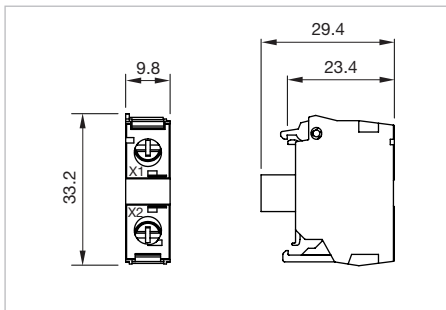
## Wiring diagrams





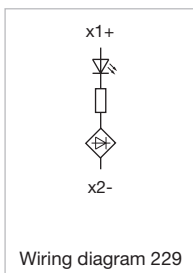
## Illumination element front mounting with screw terminal

Operating voltage	Lumi. Intensity	Illuminative colour	Part No.	Wiring diagram
6 - 24,00 V AC/DC	450 - 1120 mcd	Red	45-320.1E11	229
	450 - 1120 mcd	Amber	45-320.1F11	229
	900 - 1400 mcd	Yellow	45-320.1G11	229
	900 - 1400 mcd	Green	45-320.1H11	229
	280 - 710 mcd	Blue	45-320.1J11	229
	900 - 1400 mcd	White	45-320.1N11	229
24 - 240,00 V AC/DC	450 - 1120 mcd	Red	45-320.1E12	229
	450 - 1120 mcd	Amber	45-320.1F12	229
	900 - 1400 mcd	Yellow	45-320.1G12	229
	900 - 1400 mcd	Green	45-320.1H12	229
	280 - 710 mcd	Blue	45-320.1J12	229
	900 - 1400 mcd	White	45-320.1N12	229
24 V AC/DC	450 - 1120 mcd	Red	45-320.1E16	229
	450 - 1120 mcd	Amber	45-320.1F16	229
	900 - 1400 mcd	Yellow	45-320.1G16	229
	900 - 1400 mcd	Green	45-320.1H16	229
	280 - 710 mcd	Blue	45-320.1J16	229
	900 - 1400 mcd	White	45-320.1N16	229
110 V AC	450 - 1120 mcd	Red	45-320.1E17	229
230 V AC	450 - 1120 mcd	Red	45-320.1E18	229
	900 - 1400 mcd	Yellow	45-320.1G18	229
	900 - 1400 mcd	Green	45-320.1H18	229
	900 - 1400 mcd	White	45-320.1N18	229



Dimensions [mm]

## Wiring diagrams

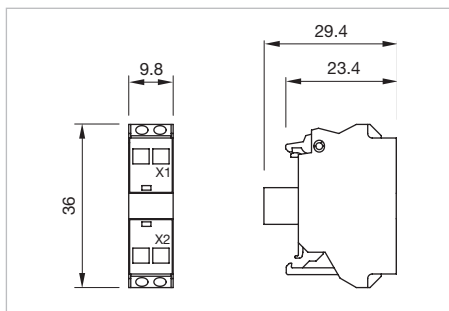


# 45 Components



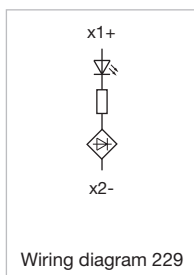
Illumination element front mounting with spring-type terminal

Operating voltage	Lumi. Intensity	Illuminative colour	Part No.	Wiring diagram
6 - 24,00 V AC/DC	450 - 1120 mcd	Red	45-320.1E41	229
	900 - 1400 mcd	Green	45-320.1H41	229
	280 - 710 mcd	Blue	45-320.1J41	229
	900 - 1400 mcd	White	45-320.1N41	229
24 - 240,00 V AC/DC	450 - 1120 mcd	Red	45-320.1E42	229
	450 - 1120 mcd	Amber	45-320.1F42	229
	900 - 1400 mcd	Yellow	45-320.1G42	229
	900 - 1400 mcd	Green	45-320.1H42	229
	280 - 710 mcd	Blue	45-320.1J42	229
	900 - 1400 mcd	White	45-320.1N42	229
24 V AC/DC	450 - 1120 mcd	Red	45-320.1E46	229
	450 - 1120 mcd	Amber	45-320.1F46	229
	900 - 1400 mcd	Yellow	45-320.1G46	229
	900 - 1400 mcd	Green	45-320.1H46	229
	280 - 710 mcd	Blue	45-320.1J46	229
	900 - 1400 mcd	White	45-320.1N46	229
110 V AC	450 - 1120 mcd	Red	45-320.1E47	229
230 V AC	450 - 1120 mcd	Red	45-320.1E48	229
	900 - 1400 mcd	Green	45-320.1H48	229
	280 - 710 mcd	Blue	45-320.1J48	229
	900 - 1400 mcd	White	45-320.1N48	229



Dimensions [mm]

## Wiring diagrams



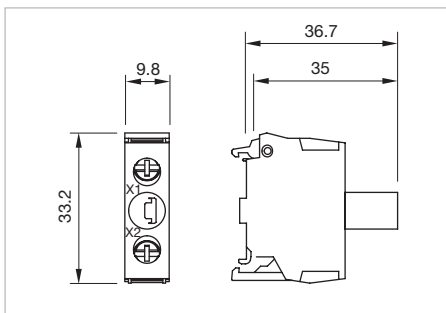


## Illumination element base mounting with screw terminal

Operating voltage	Lumi. Intensity	Illuminative colour	Part No.	Wiring diagram
6 - 24,00 V AC/DC	450 - 1120 mcd	Red	45-320.2E11	229
	450 - 1120 mcd	Amber	45-320.2F11	229
	900 - 1400 mcd	Yellow	45-320.2G11	229
	900 - 1400 mcd	White	45-320.2N11	229
24 - 240,00 V AC/DC	900 - 1400 mcd	Red	45-320.2E12	229
	900 - 1400 mcd	Green	45-320.2H12	229
	900 - 1400 mcd	White	45-320.2N12	229
24 V AC/DC	450 - 1120 mcd	Red	45-320.2E16	229
	900 - 1400 mcd	Yellow	45-320.2G16	229
	900 - 1400 mcd	Green	45-320.2H16	229
	280 - 710 mcd	Blue	45-320.2J16	229
	900 - 1400 mcd	White	45-320.2N16	229
230 V AC	900 - 1400 mcd	Green	45-320.2H18	229

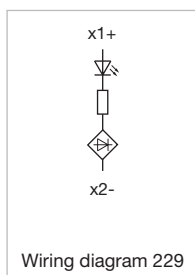
### Additional information

- Illumination element base mounting can used only with enclosure



Dimensions [mm]

### Wiring diagrams



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# 45 Components

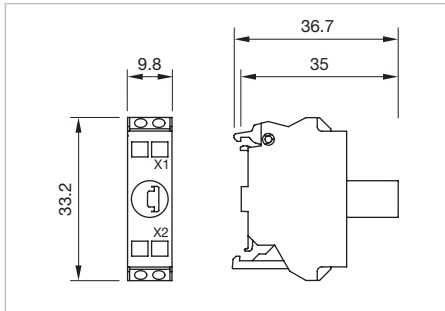


## Illumination element base mounting with spring-type terminal

Operating voltage	Lumi. Intensity	Illuminative colour	Part No.	Wiring diagram
6 - 24,00 V AC/DC	900 - 1400 mcd	Green	45-320.2H41	229
	900 - 1400 mcd	White	45-320.2N41	229

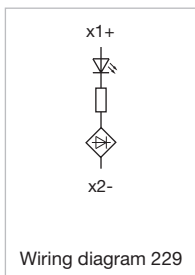
### Additional information

- Illumination element base mounting can used only with enclosure



Dimensions [mm]

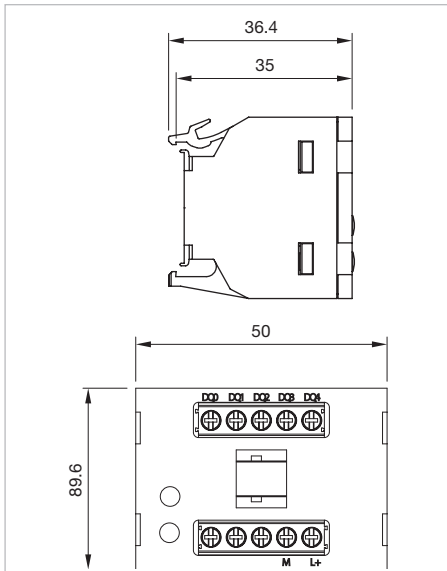
## Wiring diagrams





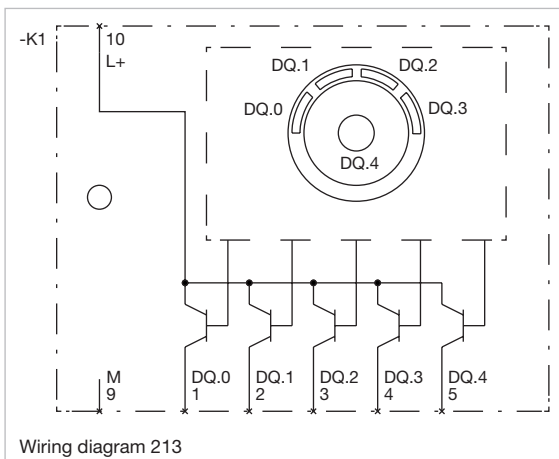
## Electronic module

Product attributes	Operating voltage	Terminal	Part No.	Wiring diagram	Component Layout
Front plate mounting	24 V DC	Screw terminal	45-36F.1114-a	213	26



Dimensions [mm]

## Wiring diagrams

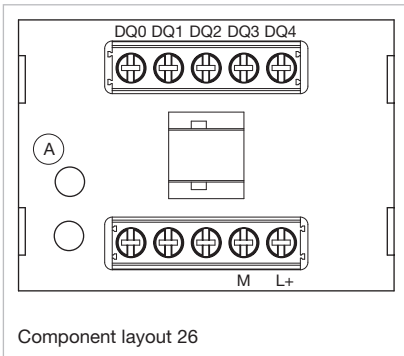


Wiring diagram 213

- 01
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# 45 Components

## Component layouts



A = Device



**ID-Key**

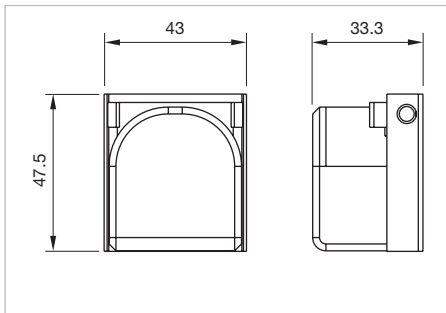
Product attributes	Colour	Part No.
Design of the RFID coding: Step 1	Green	45-50T.0500
Design of the RFID coding: Step 1+2	Yellow	45-50V.0400
Design of the RFID coding: Step 1+2+3	Red	45-50W.0200
Design of the RFID coding: Step 1+2+3+4	Blue	45-574.0600

## Front side



**Cover for locking device**

Product attributes	Material	Colour	Optics	IP Protection	Part No.
For pushbuttons, selector switches with round or short lever	Metal / plastic	Colourless	transparent	IP66, IP67, IP69K	45-529.2100

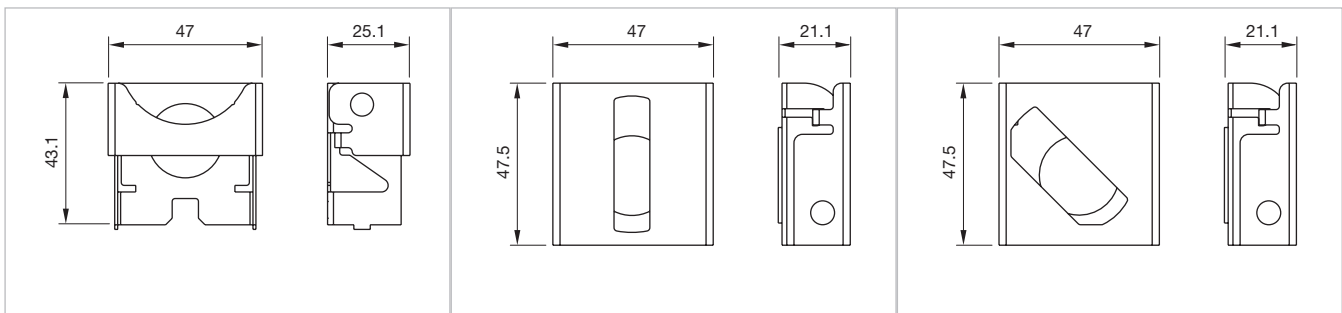


Dimensions [mm]



**Locking device**

Product attributes	Dimension	Material	Colour	Part No.
For mushroom-head pushbutton Ø 30 mm or Ø 40 mm	47 mm x 43.1 mm x 25.1 mm	Metal	Silver	45-530.2100
For selector switch in position center	47 mm x 47.1 mm x 21.1 mm	Metal	Silver	45-533.2100
For selector switch in position left	47 mm x 47.1 mm x 21.1 mm	Metal	Silver	45-534.2100



Dimensions [mm]  
for Part No. 45-532.2100, 45-530.2100

Dimensions [mm]  
for Part No. 45-533.2100

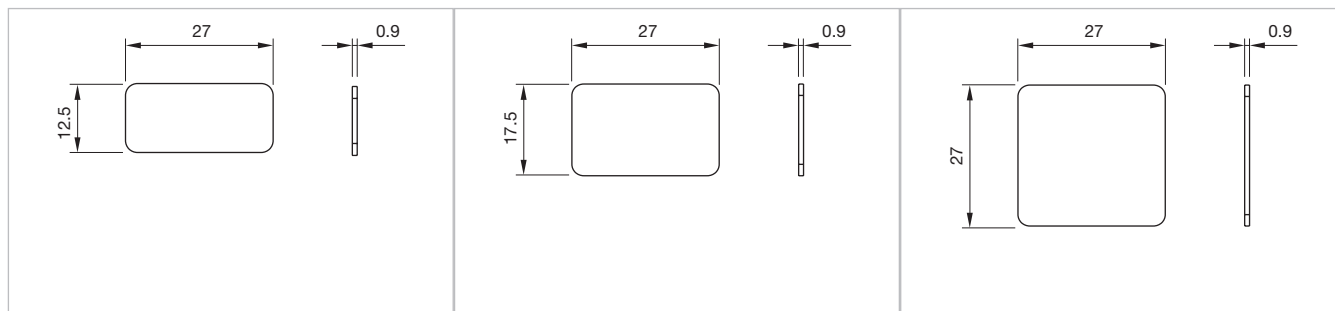
Dimensions [mm]  
for Part No. 45-534.2100

# 45 Accessories



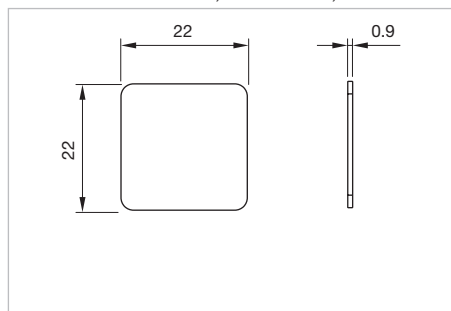
## Legend plate

Product attributes	Dimension	Material	Colour	Mounting type	Part No.
Not to use with emergency stop switch	27 mm x 12.5 mm	Plastic	Black	adhesive	45-573.1102
	27 mm x 17.5 mm	Plastic	Black	adhesive	45-573.1103
	27 mm x 17.5 mm	Plastic	Silver	adhesive	45-573.1A03
	27 mm x 27 mm	Plastic	Black	adhesive	45-573.1105
	22 mm x 22 mm	Plastic	Silver	adhesive	45-573.1A04
	22 mm x 22 mm	Plastic	Black	adhesive	45-573.1104
	27 mm x 12.5 mm	Plastic	Silver	adhesive	45-573.1A02
	27 mm x 27 mm	Plastic	Silver	adhesive	45-573.1A05



Dimensions [mm]  
for Part No. 45-573.1102, 45-573.1202, 45-573.1A02 for Part No. 45-573.1103, 45-573.1A03

Dimensions [mm]  
for Part No. 45-573.1105, 45-573.1A05



Dimensions [mm]  
for Part No. 45-573.1A04, 45-573.1104



## Emergency stop legend

Dimension	Material	Colour	Mounting type	Marking	Part No.
Ø 45 mm	Plastic	Yellow		without marking	45-50K.1407
Ø 75 mm	Plastic	Yellow		without marking	45-50K.1408
	Plastic	Yellow	adhesive	without marking	45-50J.1400
	Plastic	Yellow	adhesive	EMERGENCY STOP	45-50J.140S
	Plastic	Yellow	adhesive	NOT - AUS	45-50J.140P
112 mm x 38 mm	Plastic	Yellow	adhesive	without marking	45-561.1400
Ø 75 mm	Plastic	Yellow	adhesive	NOT - HALT	45-50J.140Q

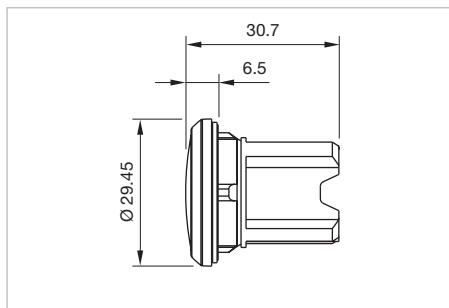
### Additional information

- Front panel thickness 3 mm max.



## Blind plug

Material	Colour	Part No.
Plastic	Black	45-506.1100
Metal	Silver	45-506.2A00



Dimensions [mm]



## Spare key

Product attributes	Part No.
2 spare keys	45-522.0900

### Additional information

- For standard lock RONIS T254

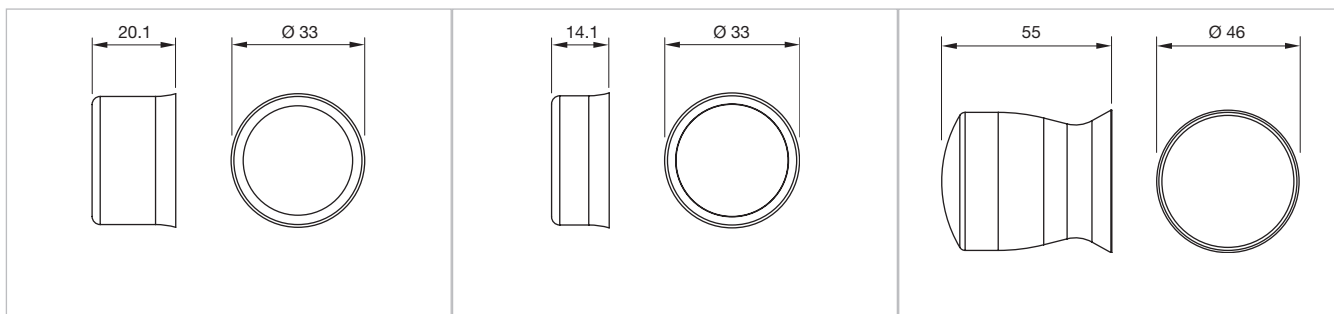
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# 45 Accessories



## Protective cap

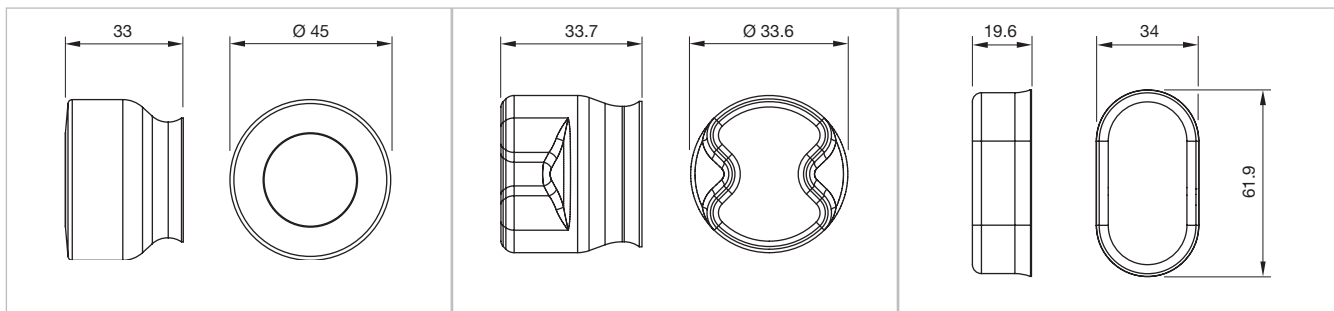
Product attributes	Dimension	Material	Colour	Optics	Part No.
For lens raised above bezel		Silicone	Colourless	transparent	45-544.1K00
For lens flush		Silicone	Colourless	transparent	45-545.1K00
	Ø 40 mm	Silicone	Colourless	transparent	45-542.1K00
For Mushroom-head pushbutton Ø 40 mm	Ø 40 mm	Silicone	Colourless	transparent	45-543.1K00
For lever switch, short lever		Silicone	Colourless	transparent	45-546.1K00
For lens raised above bezel		Silicone	Colourless	transparent	45-548.1K00
For keylock switch		Silicone	Colourless	transparent	45-50F.1100



Dimensions [mm]  
for Part No. 45-544.1K00

Dimensions [mm]  
for Part No. 45-545.1K00

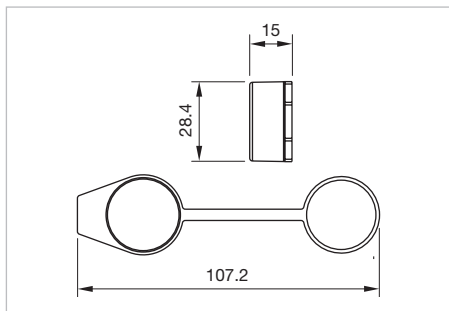
Dimensions [mm]  
for Part No. 45-542.1K00



Dimensions [mm]  
for Part No. 45-543.1K00

Dimensions [mm]  
for Part No. 45-546.1K00

Dimensions [mm]  
for Part No. 45-548.1K00

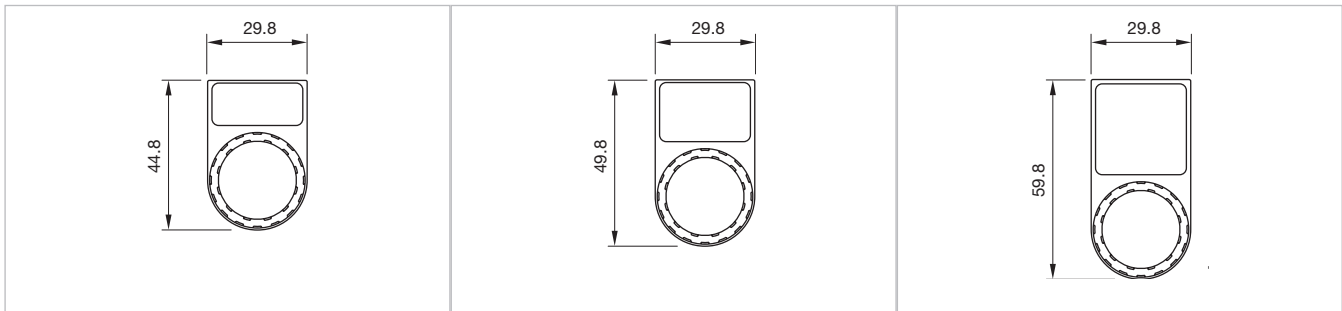


Dimensions [mm]  
for Part No. 45-50F.1100



## Legend support without legend

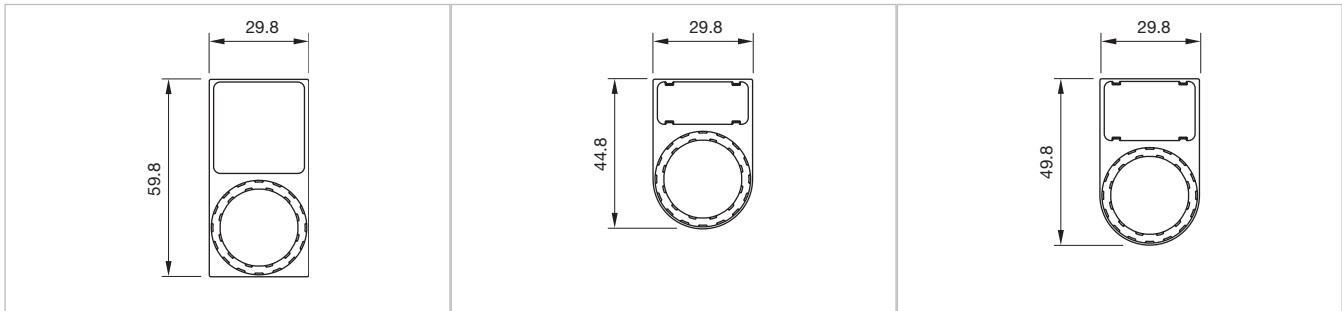
Product attributes	Dimension	Material	Colour	Mounting type	Part No.
For legend 27 mm x 12.5 mm	12.5 mm	Plastic	Black	For sticking or snapping in place	45-564.1102
For legend 27 mm x 17.5 mm	17.5 mm	Plastic	Black	For sticking or snapping in place	45-567.1103
For legend 27 mm x 27 mm	27 mm	Plastic	Black	For sticking or snapping in place	45-569.1105
	27 mm	Plastic	Black	For sticking or snapping in place	45-570.1105
For legend 27 mm x 12.5 mm	12.5 mm	Plastic	Black	For sticking or snapping in place	45-564.1110
For legend 27 mm x 17.5 mm	17.5 mm	Plastic	Black	For sticking or snapping in place	45-567.1111
For legend 27 mm x 27 mm	27 mm	Plastic	Black	For sticking or snapping in place	45-569.1112



Dimensions [mm]  
for Part No. 45-564.1102

Dimensions [mm]  
for Part No. 45-567.1103

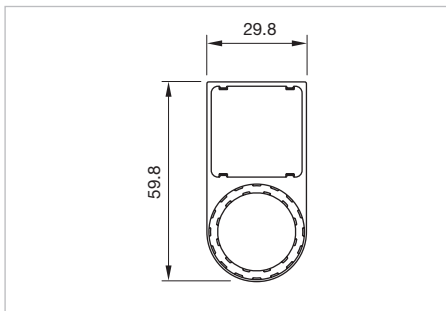
Dimensions [mm]  
for Part No. 45-569.1105



Dimensions [mm]  
for Part No. 45-570.1105

Dimensions [mm]  
for Part No. 45-564.1110

Dimensions [mm]  
for Part No. 45-567.1111



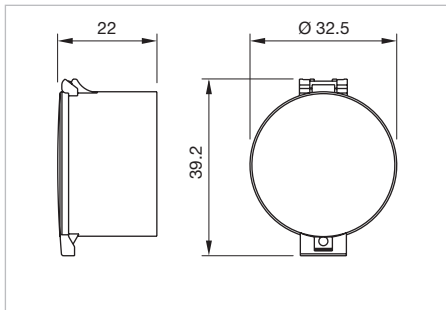
Dimensions [mm]  
for Part No. 45-569.1112

# 45 Accessories



**Protective cover**

Product attributes	Material	Colour	Optics	Part No.
Hinged, with means for sealing	Plastic	Black	opaque	45-555.1100
	Plastic	Colourless	transparent	45-555.1K00

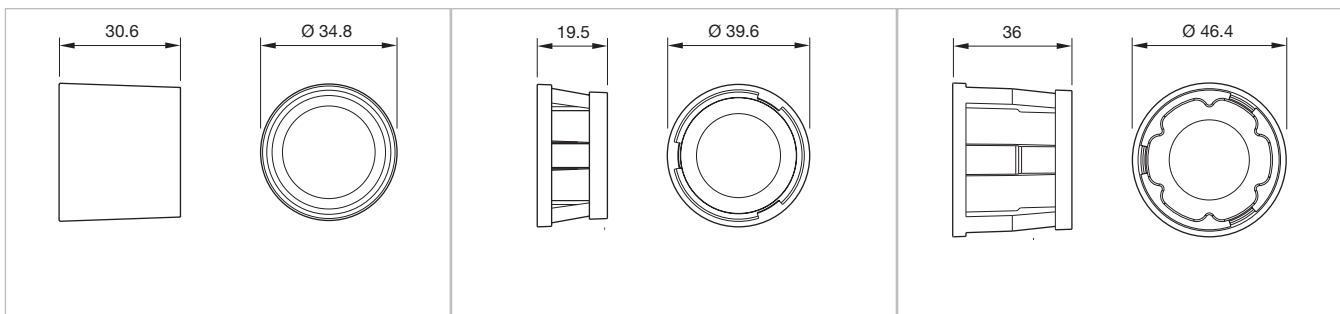


Dimensions [mm]



**Protective shroud**

Dimension	Material	Colour	Part No.
Ø 34.8 mm	Plastic	Black	45-50N.1100
Ø 46.4 mm	Metal	Silver	45-50Q.2100
Ø 39.6 mm	Metal	Silver	45-50P.0100



Dimensions [mm]  
for Part No. 45-50N.1100

Dimensions [mm]  
for Part No. 45-50Q.2100

Dimensions [mm]  
for Part No. 45-50P.0100

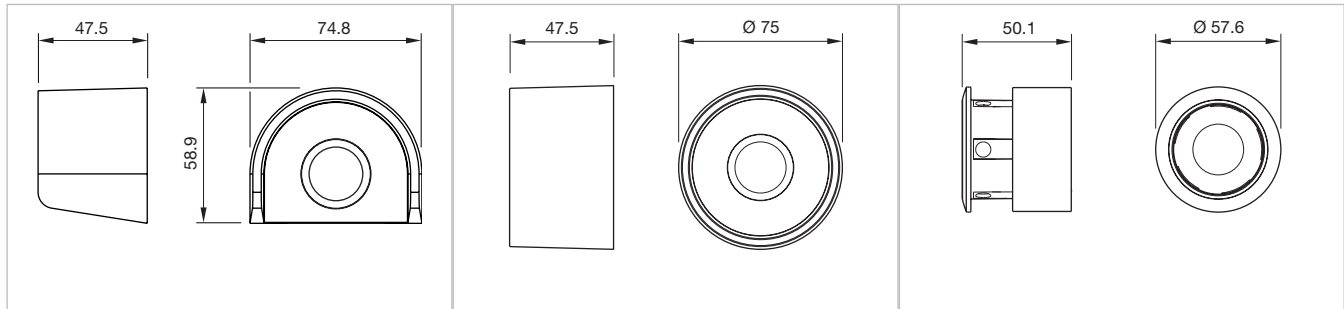


## E stop protective shroud

Product attributes	Material	Colour	Part No.
	Plastic	Yellow	45-549.1400
	Plastic	Yellow	45-550.1400
For Emergency stop switch Ø 40 mm, for 5 padlocks	Metal	Yellow	45-539.2400

### Additional information

- The protection shroud is not suitable for a proper use of emergency stop. It can obstruct a spontaneous operation of the emergency stop



Dimensions [mm]  
for Part No. 45-549.1400

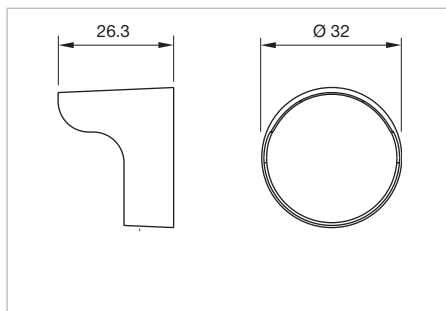
Dimensions [mm]  
for Part No. 45-550.1400

Dimensions [mm]  
for Part No. 45-539.2400, 45-539.2800



## Sun collar

Product attributes	Material	Colour	Part No.
For pushbutton illuminated	Plastic	Black	45-560.1100



Dimensions [mm]

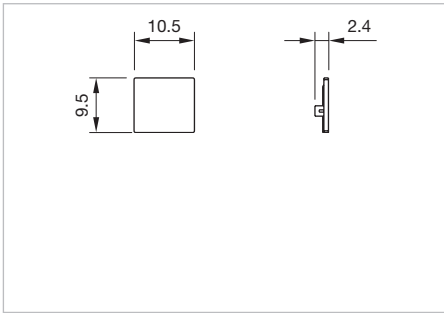
# 45 Accessories

## Rear side



Legend plate for switching elements

Dimension	Material	Colour	Mounting type	Part No.
10.5 mm x 9.5 mm	Plastic	White	for snapping in place	45-523.1900

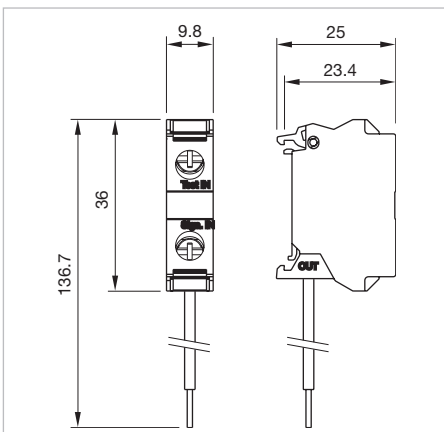


Dimensions [mm]



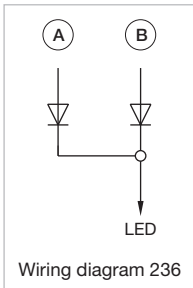
Test module

Product attributes	Operating voltage	Terminal	Part No.	Wiring diagram
Front plate mounting	12 - 240,00 V AC/DC	Screw terminal	45-330.1115	236
Base mounting	12 - 240,00 V AC/DC	Screw terminal	45-330.2115	236



Dimensions [mm]

**Wiring diagrams**



**Extension plungers**

Product attributes	Material	Colour	Terminal	Part No.
For pushbutton with extended stroke	Plastic	Black	null	45-50M.1900

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# 45 Accessories

## Mounting



Adapter for reduction of 30.5 mm to 22.3 mm

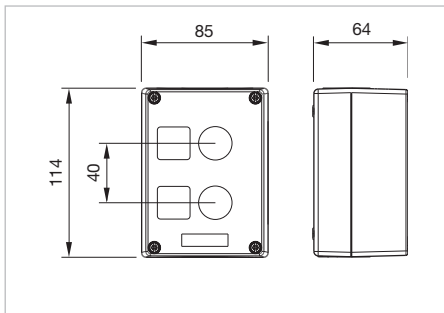
Product attributes	Material	IP front protection	Part No.
With seal	Metal	IP66, IP67, IP69K	45-501.2000



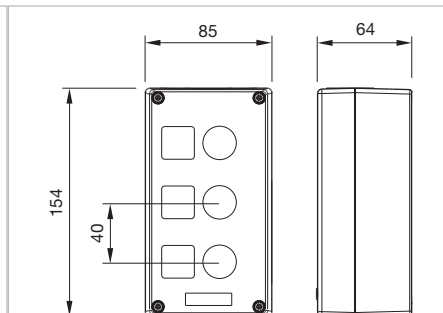
Enclosure

Product attributes	Dimension	Material	Colour	IP Protection	Part No.
2 mounting holes Ø 22.3 mm, top and bottom 1 x M20	114 mm x 85 mm x 64 mm	Plastic	Grey	IP66, IP67, IP69K	45-440.1801
	118 mm x 85 mm x 64 mm	Metal	Grey	IP66, IP67, IP69K	45-440.2803
3 mounting holes Ø 22.3 mm, top and bottom 1 x M20	154 mm x 85 mm x 64 mm	Plastic	Grey	IP66, IP67, IP69K	45-450.1801
	158 mm x 85 mm x 64 mm	Metal	Grey	IP66, IP67, IP69K	45-450.2803
4 mounting holes Ø 22.3 mm, top and bottom 1 x M25	194 mm x 85 mm x 64 mm	Plastic	Grey	IP66, IP67, IP69K	45-460.1802
	199 mm x 85 mm x 64 mm	Metal	Grey	IP66, IP67, IP69K	45-460.2804
6 mounting holes Ø 22.3 mm, top and bottom 1 x M25	280 mm x 85 mm x 64 mm	Plastic	Grey	IP66, IP67, IP69K	45-470.1802
	285 mm x 85 mm x 64 mm	Metal	Grey	IP66, IP67, IP69K	45-470.2804
1 mounting hole Ø 22.3 mm 1 x M20	85 mm x 85 mm x 64 mm	Plastic	Yellow	IP66, IP67, IP69K	45-410.1401
1 mounting hole Ø 22.3 mm, top and bottom each 1 x M20	89.4 mm x 85 mm x 64 mm	Metal	Yellow	IP66, IP67, IP69K	45-410.2403
1 mounting hole Ø 22.3 mm 1 x M20, with protective shroud	85 mm x 85 mm x 64 mm	Plastic	Yellow	IP66, IP67, IP69K	45-420.1401
	85 mm x 85 mm x 64 mm	Metal	Yellow	IP66, IP67, IP69K	45-420.2403
1 mounting hole Ø 22.3 mm, with protective shroud, top and bottom 1 x M20	89.4 mm x 85 mm x 64 mm	Metal	Grey	IP66, IP67, IP69K	45-420.2803
1 mounting hole Ø 22.3 mm 1 x M20	85 mm x 85 mm x 64 mm	Plastic	Grey	IP66, IP67, IP69K	45-430.1801
1 mounting hole Ø 22.3 mm, top and bottom each 1 x M20	89.4 mm x 85 mm x 64 mm	Metal	Grey	IP66, IP67, IP69K	45-430.2803

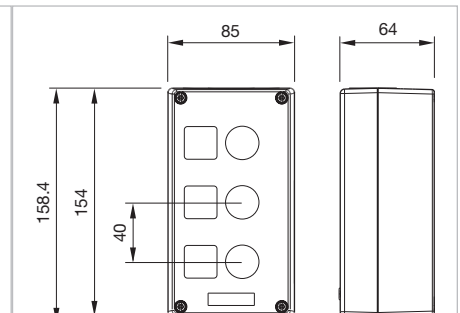
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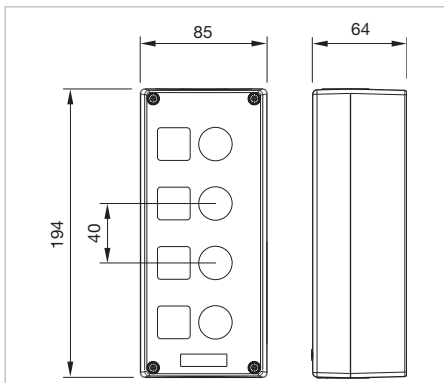
Dimensions [mm]  
for Part No. 45-440.1801, 45-440.2803



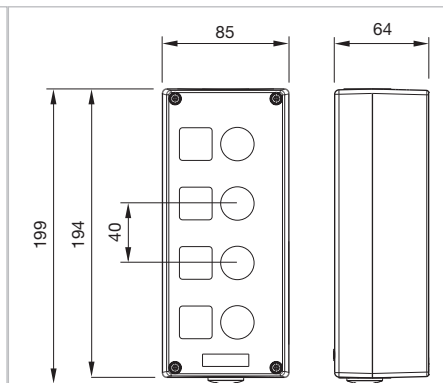
Dimensions [mm]  
for Part No. 45-450.1801



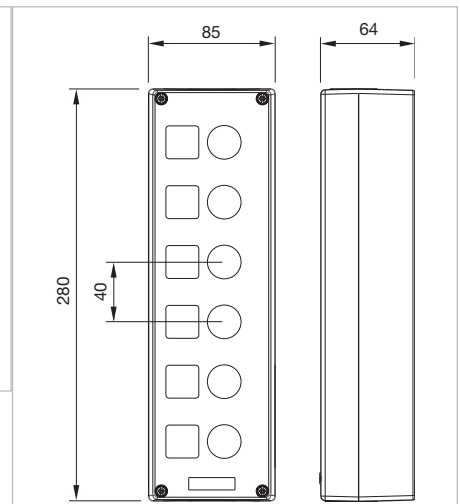
Dimensions [mm]  
for Part No. 45-450.2803



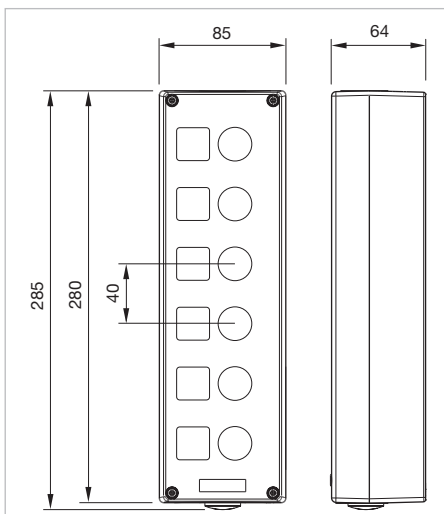
Dimensions [mm]  
for Part No. 45-460.1802



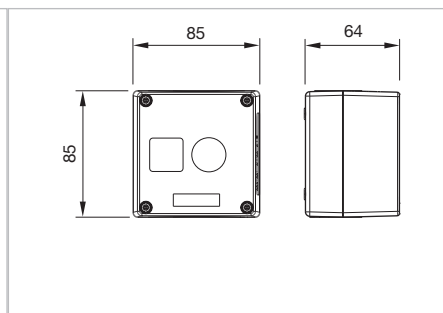
Dimensions [mm]  
for Part No. 45-460.2804



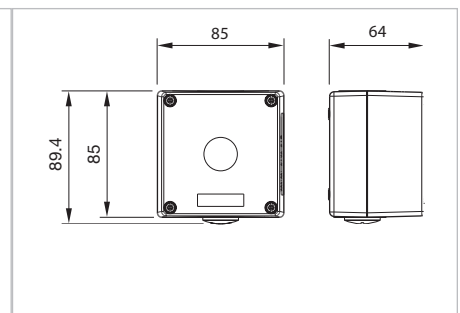
Dimensions [mm]  
for Part No. 45-470.1802



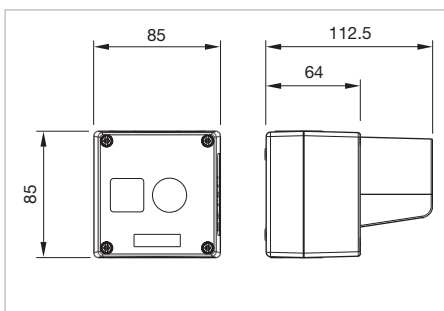
Dimensions [mm]  
for Part No. 45-470.2804



Dimensions [mm]  
for Part No. 45-430.1801, 45-410.1401



Dimensions [mm]  
for Part No. 45-410.2403, 45-430.2803, 45-420.2803



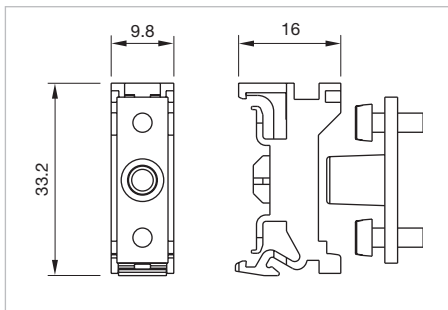
Dimensions [mm]  
for Part No. 45-420.1401, 45-420.2403

# 45 Accessories



## Enclosure cover monitoring

Product attributes	Material	Colour	Part No.
With extension plungers	Plastic	Black	45-50G.0900

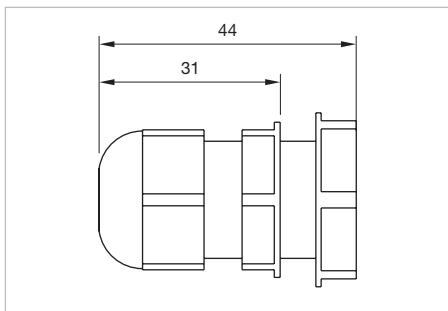


Dimensions [mm]



## Cable gland

Material	Colour	IP Protection	Thread	Part No.
Plastic	Black	IP66, IP67, IP69K	M20	45-507.1100
	Black	IP66, IP67, IP69K	M25	45-509.1100

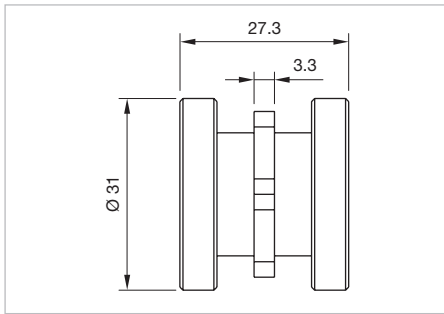


Dimensions [mm]

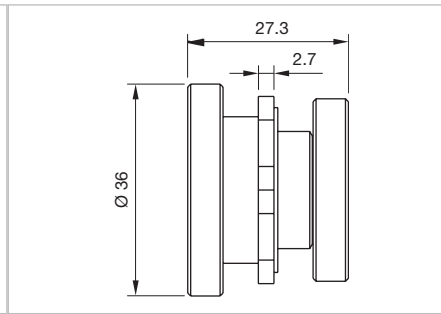


## Connection piece

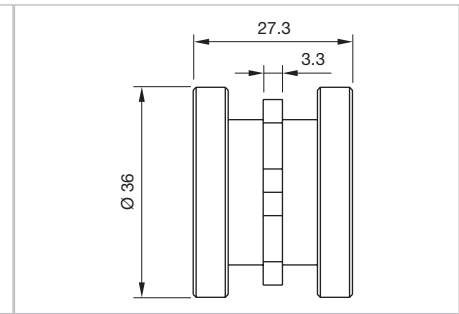
Product attributes	Material	Colour	IP Protection	Thread	Part No.
For connecting 2 enclosures, with hexagonal nut	Plastic	Black	IP66, IP67, IP69K	M20 / M20	45-50C.1900
	Plastic	Black	IP66, IP67, IP69K	M20 / M25	45-50D.1900
	Plastic	Black	IP66, IP67, IP69K	M25 / M26	45-50E.1900
	Metal	Silver	IP66, IP67, IP69K	M20 / M20	45-50C.2900
	Metal	Silver	IP66, IP67, IP69K	M20 / M25	45-50D.2900
	Metal	Silver	IP66, IP67, IP69K	M25 / M26	45-50E.2900
	Plastic	Black	IP66, IP67, IP69K	M20 / M25	45-50F.2900



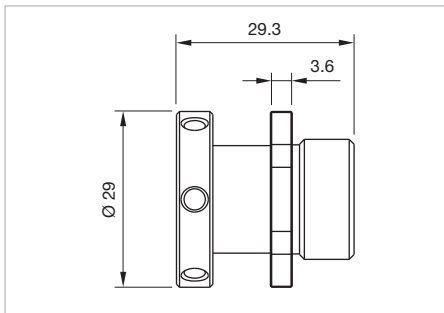
Dimensions [mm]  
for Part No. 45-50C.1900



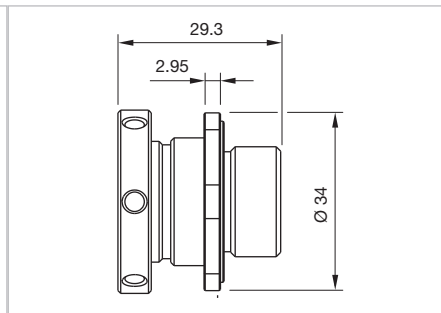
Dimensions [mm]  
for Part No. 45-50D.1900



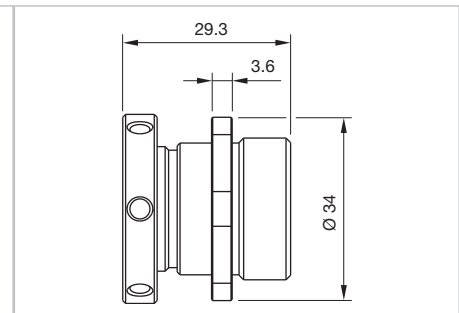
Dimensions [mm]  
for Part No. 45-50E.1900



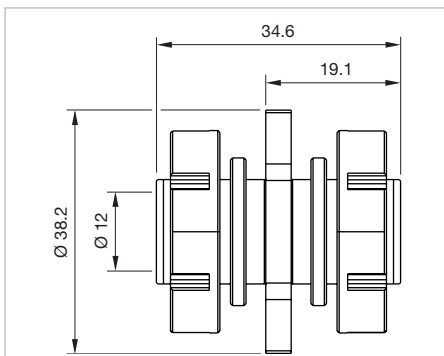
Dimensions [mm]  
for Part No. 45-50C.2900



Dimensions [mm]  
for Part No. 45-50D.2900



Dimensions [mm]  
for Part No. 45-50E.2900

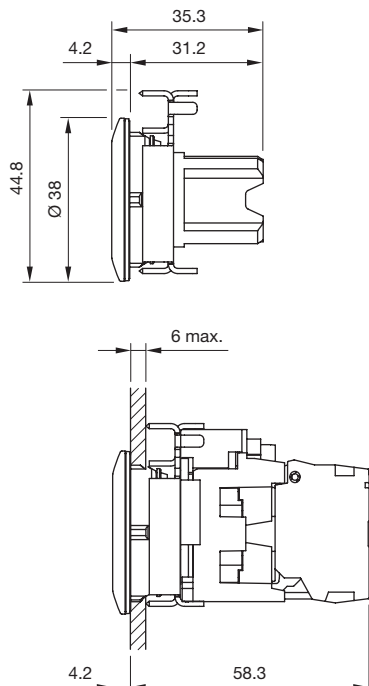


Dimensions [mm]  
for Part No. 45-50F.2900

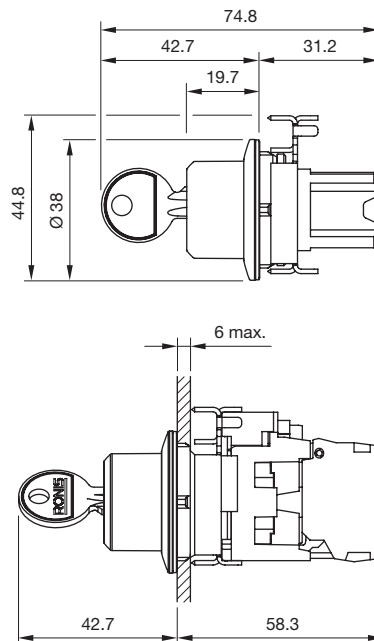
# 45 Drawings

Dimensions incl. mounting depth of 3 or 4 elements

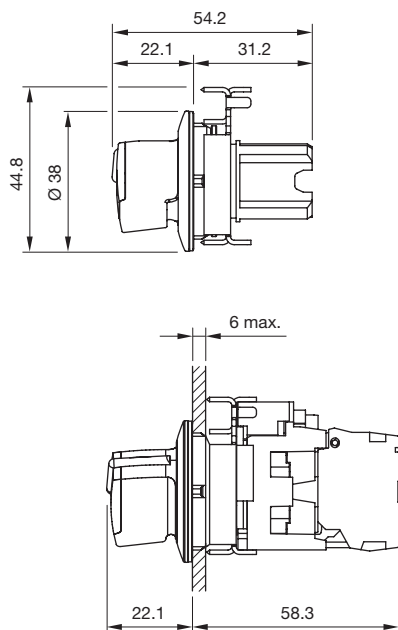
Indicator, Pushbutton, Illuminated pushbutton (flush design)



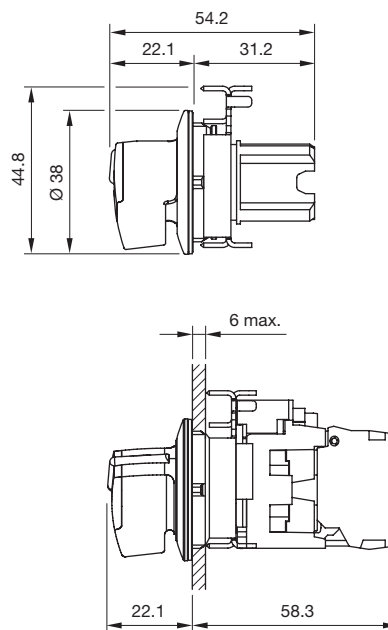
Keylock switch (flush design)



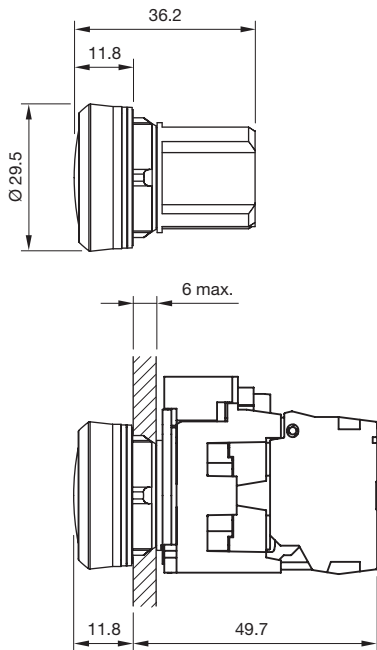
Selector switch short lever (flush design)



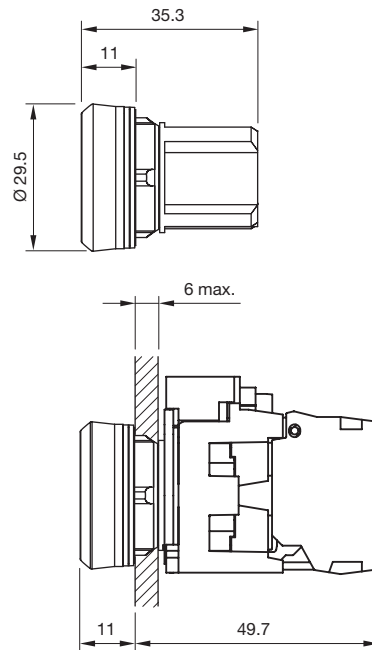
Selector switch long lever (flush design)



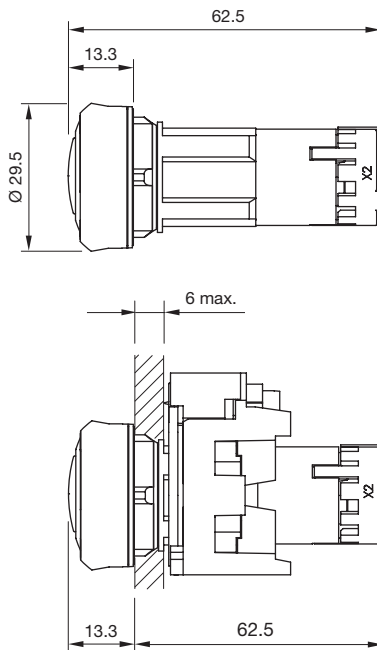
Indicator full face illumination (raised design)



Indicator front illumination, Pushbutton, Illuminated pushbutton, Lens level with front ring (raised design)



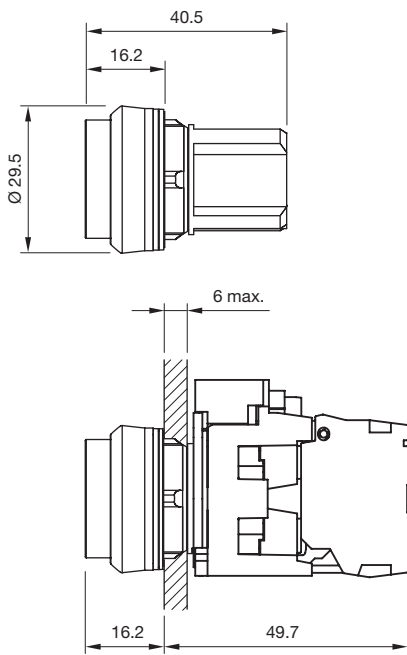
Buzzer



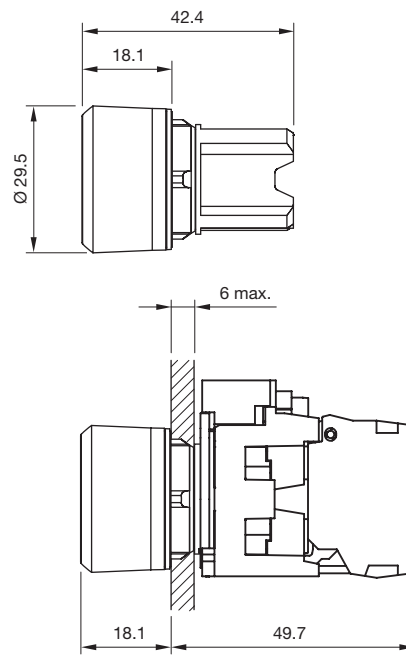
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# 45 Drawings

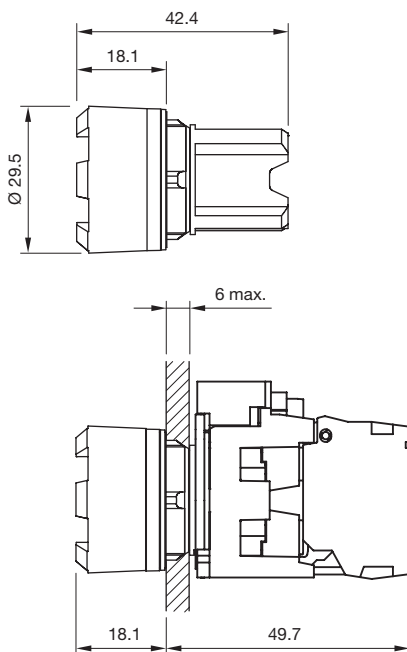
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Pushbutton, Illuminated pushbutton, lens raised above front ring (raised design)



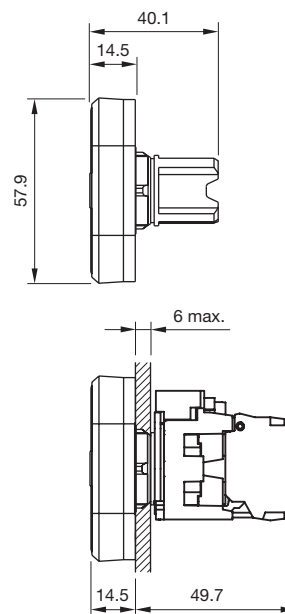
Pushbutton, lens lower than front ring (raised design)



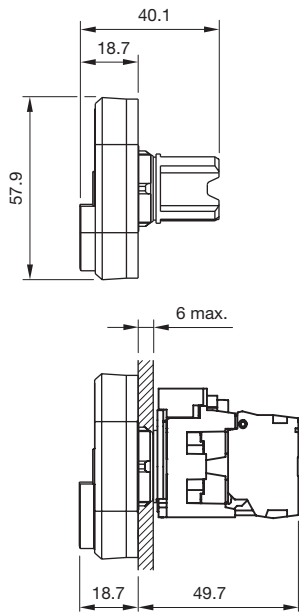
Pushbutton, Illuminated pushbutton, lens lower than front ring, with castellation (raised design)



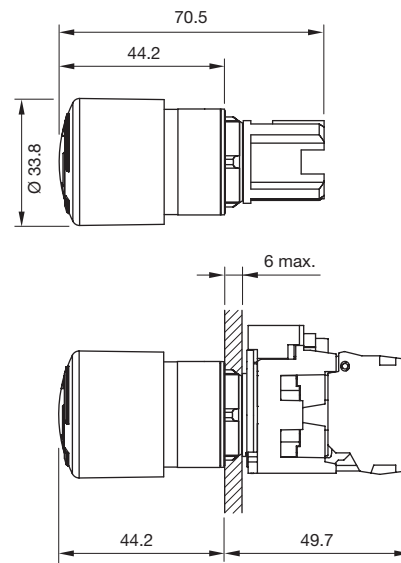
Double pushbutton, Lens level with front ring (raised design)



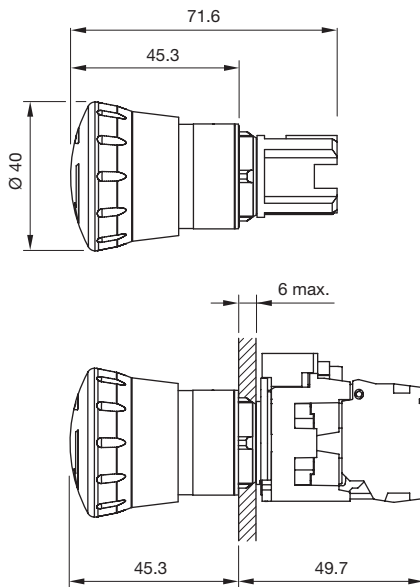
Double pushbutton, level with/raised above front ring (raised design)



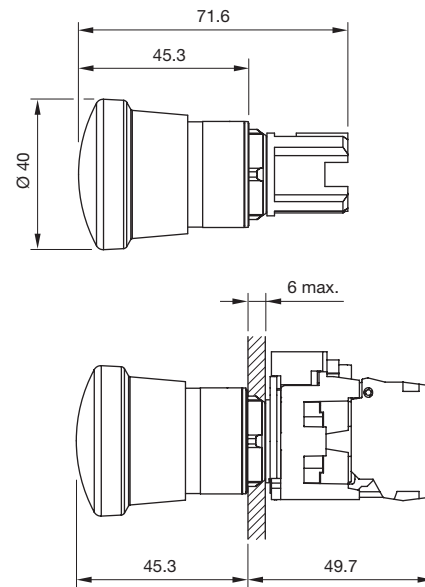
Emergency stop switch Ø 33.8 mm (raised design)



Emergency stop switch, Stop switch Ø 40 mm (raised design)



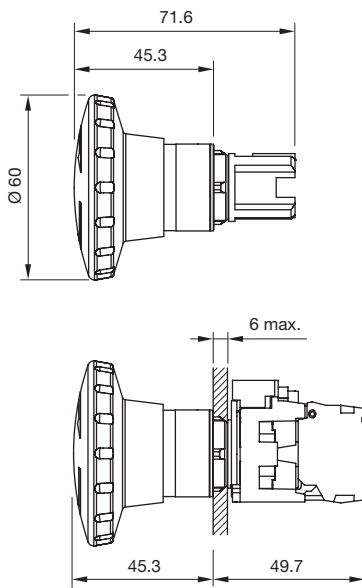
Emergency stop switch, Stop switch Ø 40 mm (raised design)



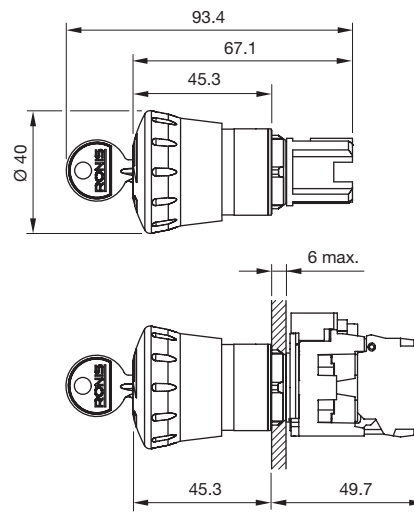
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# 45 Drawings

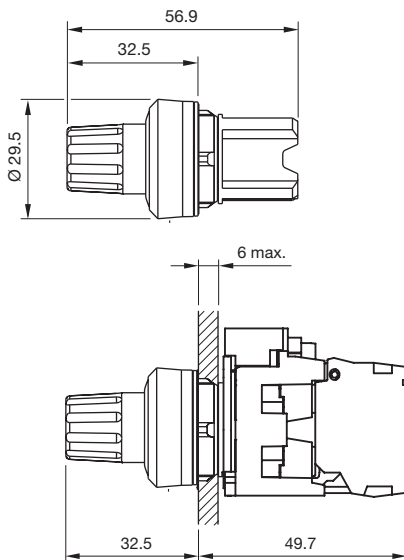
Emergency stop switch  $\varnothing$  60 mm (raised design)



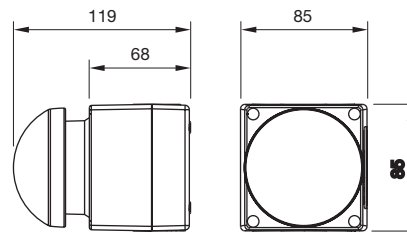
Emergency stop switch with key  $\varnothing$  40 mm (raised design)



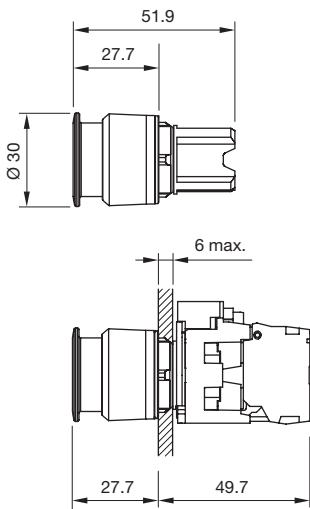
Stop switch  $\varnothing$  29.5 mm (raised design)



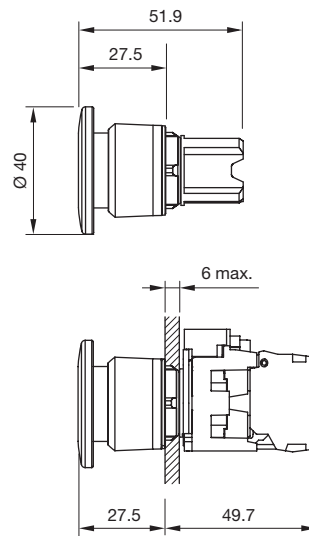
Palm switch



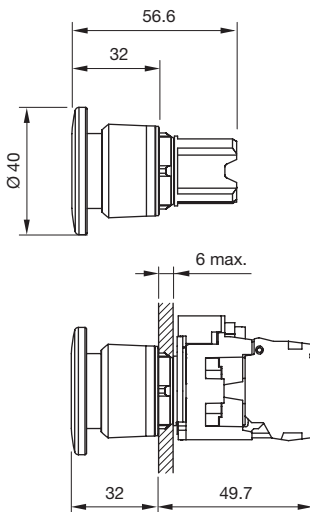
Mushroom-head pushbutton Ø 30 mm (raised design)



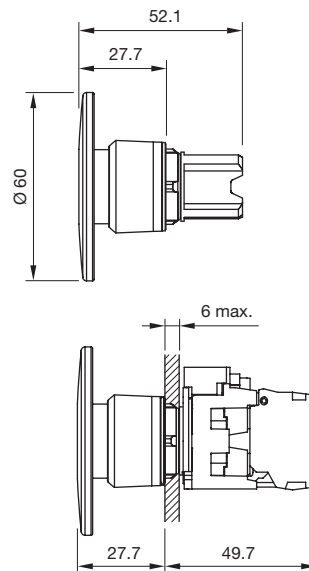
Mushroom-head pushbutton Momentary, Maintain, Ø 40 mm (raised design)



Mushroom-head pushbutton Momentary/Maintain, Momentary/Momentary, Ø 40 mm (raised design)



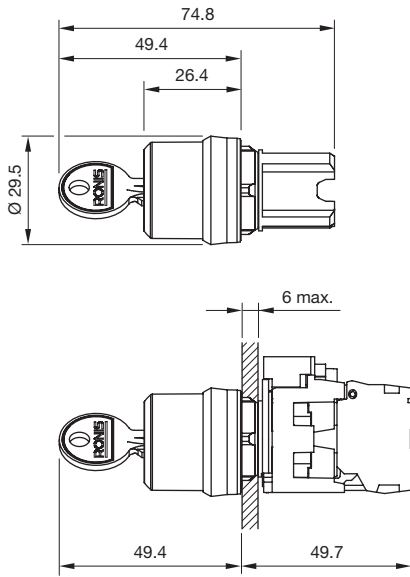
Mushroom-head pushbutton Ø 60 mm (raised design)



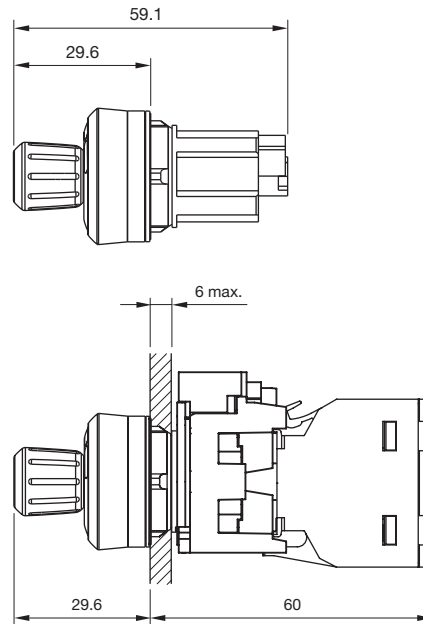
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# 45 Drawings

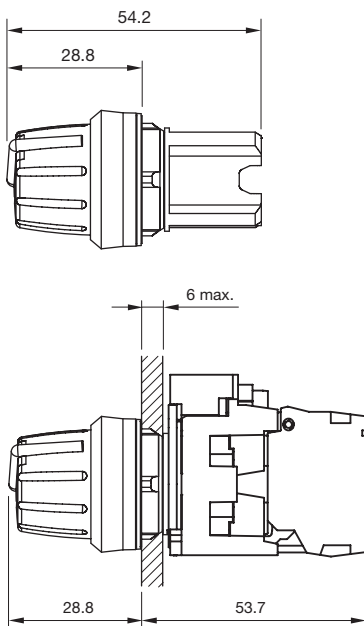
Keylock switch (raised design)



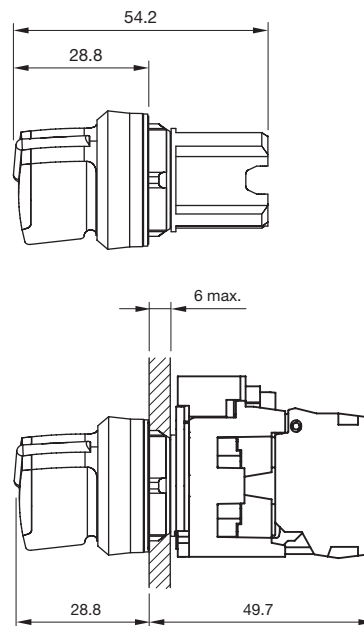
ID keylock switch (raised design)



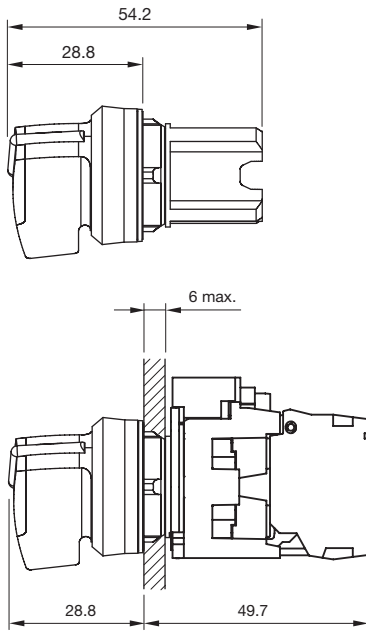
Selector switch, round lever (raised design)



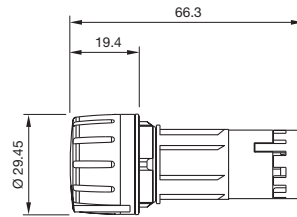
Selector switch, short lever (raised design)



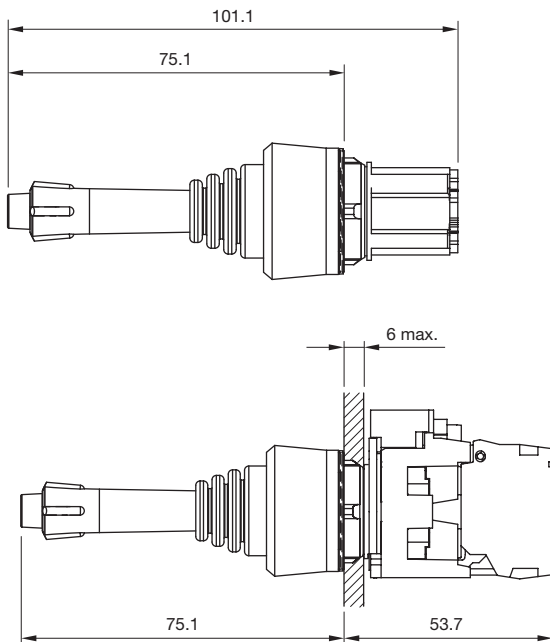
Selector switch, long lever (raised design)



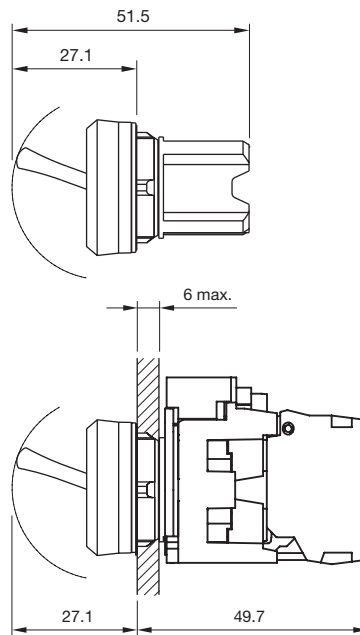
Potentiometer (raised design)



Toggle stick (raised design)



Toggle switch (raised design)



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# 45 Technical data

## Indicator actuator

### Material

Actuator element  
Plastic

Front ring  
Plastic or metal

Actuator housing  
Plastic or metal

### Ambient conditions

Operating temperature  
-25 °C ... +70 °C

Storage temperature  
-40 °C ... +80 °C

Protection degree  
IP66, IP67, IP69K

Vibration resistance  
According to IEC 60068-2-6  
2 ... 500 Hz: 5g

Shock resistance  
According to IEC 60068-2-27  
Sinusoidal half-wave 50g/11ms

Climatic ambient conditions  
During operation according to IEC 60721:  
3K6, 3C3, 3S2, 3M6

## Buzzer

### Material

Actuator element  
Plastic

Front bezel  
Plastic or metal

Actuator housing  
Plastic or metal

### Mechanical characteristics

Terminal  
Screw terminal  
- Solid without end sleeves 2 x (1.0 ... 1.5 mm<sup>2</sup>)  
- Solid with end sleeves 2 x (0.5 ... 0.75 mm<sup>2</sup>)  
- Finely stranded without end sleeves 2 x (0.5 ... 0.75 mm<sup>2</sup>)  
- Finely stranded with end sleeves 2 x (0.5 ... 1.5 mm<sup>2</sup>)  
- For AWG cables for auxiliary contacts 2 x (18 ... 14)

Tightening torque  
Screw terminal 0.8 ... 1 Nm

### Electrical characteristics

Frequency (tone)  
Approx. 2.4 kHz continuous tone only

Sound pressure  
95 db (A) ±8 dB at a distance of 0.1 m

Insulation voltage  
Rated value 320 V

Pollution degree  
3

Surge voltage resistance  
Rated value 4 kV

Operating voltage  
at AC  
- Rated value 24 ... 24 V  
  
at DC  
- Rated value 24 ... 24 V

## Ambient conditions

**Operating temperature**  
-25 °C ... +70 °C

**Storage temperature**  
-40 °C ... +80 °C

**Protection degree**  
IP40

## Vibration resistance

According to IEC 60068-2-6  
10 ... 500 Hz: 5 g

## Shock resistance

According to IEC 60068-2-27  
Sinusoidal half-wave 50 g/11 ms

## Climatic ambient conditions

During operation according to IEC 60721:  
3B2, 3K6, 3S2, 3M6

## Pushbutton actuator

### Material

**Actuator element**  
Plastic

**Front ring**  
Plastic or metal

**Actuator housing**  
Plastic or metal

### Mechanical characteristics

**Operating frequency**  
- Momentary max. 3 600/h  
- Maintain max. 1 800/h

**Mechanical lifetime**  
- Momentary 500 000 cycles of operation  
- Maintain 10 000 000 cycles of operation

### Ambient conditions

**Operating temperature**  
-25 °C ... +70 °C

**Storage temperature**  
-40 °C ... +80 °C

**Protection degree**  
IP66, IP67, IP69K

**Vibration resistance**  
According to IEC 60068-2-6  
20 ... 500 Hz: 5 g

**Shock resistance**  
According to IEC 60068-2-27  
Sinusoidal half-wave 50 g / 11 ms

**Climatic ambient conditions**  
During operation according to IEC 60721:  
3K6, 3C3, 3S2, 3M6

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# 45 Technical data

## Double pushbutton actuator, Double pushbutton actuator illuminated

### Material

Actuator element  
Plastic

Front ring  
Plastic or metal

Actuator housing  
Plastic or metal

### Mechanical characteristics

Operating frequency  
max. 3 600/h

Mechanical lifetime  
2 000 000 cycles of operation

### Ambient conditions

Operating temperature  
−25 °C ... +70 °C

Storage temperature  
−40 °C ... +80 °C

Protection degree  
IP66, IP67, IP69K

Vibration resistance  
According to IEC 60068-2-6  
10 ... 500 Hz: 5g

Shock resistance  
According to IEC 60068-2-27  
Sinusoidal half-wave 50g / 11 ms

Climatic ambient conditions  
During operation according to IEC 60721:  
3K6, 3C3, 3S2, 3M6, 3B2

## Illuminated pushbuton actuator

### Material

Actuator element  
Plastic

Front ring  
Plastic or metal

Actuator housing  
Plastic or metal

### Mechanical characteristics

Operating frequency  
- Momentary max. 3 600/h  
- Maintain max. 1 800/h

Mechanical lifetime  
- Momentary 3 000 000 cycles of operation  
- Maintain 500 000 cycles of operation

### Ambient conditions

Operating temperature  
−25 °C ... +70 °C

Storage temperature  
−40 °C ... +80 °C

Protection degree  
IP66, IP67, IP69K

Vibration resistance  
According to IEC 60068-2-6  
20 ... 500 Hz: 5g

Shock resistance  
According to IEC 60068-2-27  
Sinusoidal half-wave 50g / 11 ms

Climatic ambient conditions  
During operation according to IEC 60721:  
3K6, 3C3, 3S2, 3M6

## Emergency stop switch actuator

### Material

**Actuator element**  
Plastic red

**Actuator housing**  
Plastic or metal

### Mechanical characteristics

**Type of unlocking device**  
Twist to release, pull release or key to release

**Operating frequency**  
Max. 600/h

**Mechanical lifetime**  
300 000 cycles of operation

### Ambient conditions

**Operating temperature**  
-25 °C ... +70 °C

**Storage temperature**  
-40 °C ... +80 °C

**Protection degree**  
IP66, IP67, IP69K

**Vibration resistance**  
According to IEC 60068-2-6  
2 ... 500 Hz: 5 g

**Shock resistance**  
According to IEC 60068-2-27  
Sinusoidal half-wave 50 g/11 ms

**Climatic ambient conditions**  
During operation according to IEC 60721:  
3K6, 3C3, 3S2, 3M6

## Stop switch actuator

### Material

**Actuator element**  
Plastic red

**Actuator housing**  
Plastic or metal

### Mechanical characteristics

**Type of unlocking device**  
Twist to release

**Operating frequency**  
Max. 600/h

**Mechanical lifetime**  
300 000 cycles of operation

### Ambient conditions

**Operating temperature**  
-25 °C ... +70 °C

**Storage temperature**  
-40 °C ... +80 °C

**Protection degree**  
IP66, IP67, IP69K

**Vibration resistance**  
According to IEC 60068-2-6  
2 ... 500 Hz: 5 g

**Shock resistance**  
According to IEC 60068-2-27  
Sinusoidal half-wave 50 g/11 ms

**Climatic ambient conditions**  
During operation according to IEC 60721:  
3K6, 3C3, 3S2, 3M6

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# 45 Technical data

## Palm switch

### Material

**Actuator element**  
Plastic or metal, red or black

**Actuator housing**  
Plastic or metal

### Mechanical characteristics

**Type of unlocking device**  
Pull to release

### Electrical characteristics

**Operating voltage**  
at AC  
- Rated value 5 ... 500V

at DC  
- Rated value 5 ... 500V

### Ambient conditions

**Operating temperature**  
-25 °C ... +70 °C

**Storage temperature**  
-40 °C ... +80 °C

**Protection degree**  
IP66, IP67, IP69K

**Vibration resistance**  
According to IEC 60068-2-6  
10 ... 500 Hz: 5g

**Shock resistance**  
According to IEC 60068-2-27  
Sinusoidal half-wave 50g/11ms

**Climatic ambient conditions**  
During operation according to IEC 60721:  
3K6, 3C3, 3S2, 3M6, 3B2

## Mushroom-head pushbutton actuator

### Material

**Actuator element**  
Plastic

**Front ring**  
Plastic or metal

**Actuator housing**  
Plastic or metal

### Mechanical characteristics

**Type of unlocking device**  
Pull release

**Operating frequency**  
- Momentary max. 3600/h  
- Maintain max. 1800/h

**Mechanical lifetime**  
- Momentary 10 000 000 cycles of operation  
- Maintain 500 000 cycles of operation

### Ambient conditions

**Operating temperature**  
-25 °C ... +70 °C

**Storage temperature**  
-40 °C ... +80 °C

**Vibration resistance**  
According to IEC 60068-2-6  
20 ... 500 Hz: 5g

**Shock resistance**  
According to IEC 60068-2-27  
Sinusoidal half-wave 50g/11ms

**Protection degree**  
IP66, IP67, IP69K

**Climatic ambient conditions**  
During operation according to IEC 60721:  
3K6, 3C3, 3S2, 3M6

## Keylock switch actuator

### Material

**Actuator element**  
Metal

**Front ring**  
Plastic or metal

**Actuator housing**  
Plastic or metal

### Mechanical characteristics

**Operating frequency**  
Max. 1800/h

**Mechanical lifetime**  
1 000 000 cycles of operation

### Ambient conditions

**Operating temperature**  
-25 °C ... +70 °C

**Storage temperature**  
-40 °C ... +80 °C

**Protection degree**  
IP66, IP67, IP69K

**Vibration resistance**  
According to IEC 60068-2-6  
10 ... 500 Hz: 5g

**Shock resistance**  
According to IEC 60068-2-27  
Sinusoidal half-wave 50 g/11 ms

**Climatic ambient conditions**  
During operation according to IEC 60721:  
3K6, 3C3, 3S2, 3M6

## ID keylock switch

### Material

**Actuator element**  
Plastic

**Front ring**  
Plastic or metal

**Actuator housing**  
Plastic

### Mechanical characteristics

**Terminals**  
Screw terminal front mounting

- Solid with end sleeves  
1 x (0.2 ... 2.5 mm<sup>2</sup>), 2 x (0.2 ... 0.75 mm<sup>2</sup>)
- Solid without end sleeves  
1 x (0.2 ... 2.5 mm<sup>2</sup>), 2 x (0.2 ... 0.75 mm<sup>2</sup>)
- Finely stranded with end sleeves  
1 x (0.2 ... 2.5 mm<sup>2</sup>), 2 x (0.25 ... 0.75 mm<sup>2</sup>)
- Finely stranded with end sleeves  
1 x (0.2 ... 2.5 mm<sup>2</sup>), 2 x (0.2 ... 0.75 mm<sup>2</sup>)
- For AWG cables  
1 x (24 ... 14), (24 ... 19)

**Tightening torque**  
Screw terminal  
0.35 ... 0.4 Nm

**Mechanical lifetime**  
100 000 cycles of operation

**Number of NO contacts**  
5

**ID-Key**

Authorization level	Key colour
1	green
1+2	yellow
1+2+3	red
1+2+3+4	blue

### Electrical characteristics

**Operating voltage**  
24 VDC

# 45 Technical data

## Ambient conditions

Operating temperature  
-25 °C ... +70 °C

Storage temperature  
-40 °C ... +80 °C

Protection degree  
IP65

Climatic ambient conditions  
During operation according to IEC 60721:  
3M6, 3S2, 3B2, 3C3, 3K6 (with relative air humidity  
of 10 ... 95 %)

## Selector switch actuator

### Material

Actuator element  
Round lever, plastic, illuminable  
Short lever, plastic, illuminable  
Long lever, plastic, illuminable

Front ring  
Plastic or metal

Actuator housing  
Plastic or metal

### Mechanical characteristics

Operating frequency  
Max. 1 800/h

Mechanical lifetime  
1 000 000 cycles of operation

### Ambient conditions

Operating temperature  
-25 °C ... +70 °C

Storage temperature  
-40 °C ... +80 °C

Protection degree  
IP66, IP67, IP69K

Vibration resistance  
According to IEC 60068-2-6  
10 ... 500 Hz: 5g

Shock resistance  
According to IEC 60068-2-27  
Sinusoidal half-wave 50g/11 ms

Climatic ambient conditions  
During operation according to IEC 60721:  
3K6, 3C3, 3S2, 3M6

## Potentiometer

### Material

Actuator element  
Round lever, plastic

Front ring  
Plastic or metal

Actuator housing  
Plastic or metal

### Mechanical characteristics

Terminals  
Screw terminal  
- Solid 2 x (1.0 ... 1.5 mm<sup>2</sup>)  
- With end sleeves 2 x (0.5 ... 0.75 mm<sup>2</sup>)  
- Finely stranded  
- Without end sleeves 2 x (0.5 ... 0.75 mm<sup>2</sup>)  
- With end sleeves 2 x (0.5 ... 1.5 mm<sup>2</sup>)  
- For AWG cables for auxiliary contacts 2 x (18 ... 14)

Tightening torque  
0.8 ... 1 Nm

Turning frequency  
Max. 1 800/h

**Mechanical lifetime**  
25000 turning cycles

**Slewing range**  
300°

## Electrical characteristics

**Active power consumption**  
0.5 W

**Insulation voltage**  
Rated value 500 V

## Ambient conditions

**Operating temperature**  
-25°C ... +70°C

**Storage temperature**  
-40°C ... +80°C

**Protection degree**  
IP66, IP67, IP69K

**Vibration resistance**  
according to IEC 60068-2-6  
10 ... 500 Hz: 5g

**Shock resistance**  
according to IEC 60068-2-27  
Sinusoidal half-wave 50g/11 ms

**Climatic ambient conditions**  
During operation according to IEC 60721:  
3K6, 3C3, 3S2, 3M6

## Toggle stick actuator

### Material

**Actuator element**  
Plastic

**Front ring**  
Plastic or metal

**Actuator housing**  
Plastic or metal

### Mechanical characteristics

**Operating frequency**  
3600/h

**Mechanical lifetime**  
Momentary: 250 000 cycles of operation per direction of actuation  
Maintain: 100 000 cycles of operation per direction of actuation

**Deflection angle**  
Max. 30°

### Ambient conditions

**Operating temperature**  
-25°C ... +70°C

**Storage temperature**  
-40°C ... +80°C

**Protection degree**  
IP65, IP67

**Vibration resistance**  
According to IEC 60068-2-6  
10 ... 500 Hz: 5g

**Shock resistance**  
According to IEC 60068-2-27  
Sinusoidal half-wave 50g/11 ms

**Climatic ambient conditions**  
During operation according to IEC 60721:  
3K6, 3C3, 3S2, 3M6

# 45 Technical data

## Toggle switch actuator

### Material

**Actuator element**  
Plastic

**Front ring**  
Plastic or metal

**Actuator housing**  
Plastic or metal

### Mechanical characteristics

**Operating frequency**  
Max. 1 800/h

**Mechanical lifetime**  
1 000 000 cycles of operation

### Ambient conditions

**Operating temperature**  
-25 °C ... +70 °C

**Storage temperature**  
-40 °C ... +80 °C

**Protection degree**  
IP66, IP67, IP69K

**Vibration resistance**  
According to IEC 60068-2-6  
10 ... 500 Hz: 5g

**Shock resistance**  
According to IEC 60068-2-27  
Sinusoidal half-wave 50 g/11 ms

**Climatic ambient conditions**  
During operation according to IEC 60721:  
3K6, 3C3, 3S2, 3M6

## Slow-make switching element

### Switching system

The double-break, slow-make switching element is equipped with normally open or normally closed contact. The normally closed contact has forced opening. Slow-make contacts with forced action are ideal for high switch ratings. Up to six switching elements can be snapped to each holder.

The NC contact opens automatically upon disconnection of the actuator. On delivery, the contact is open (= safe state). Activation (= NC contacts on the non-actuated commanding device are closed) takes place upon first-time actuation after the contact block is snapped onto the actuator.

### Material

**Material of contact**  
Silver alloy

**Housing**  
Plastic

### Mechanical characteristics

**Terminals**  
Screw terminal  
- Solid 2 x (1.0 ... 1.5 mm<sup>2</sup>)  
- With end sleeves 2 x (0.5 ... 0.75 mm<sup>2</sup>)  
- Finely stranded  
- Without end sleeves 2 x (0.5 ... 0.75 mm<sup>2</sup>)  
- With end sleeves 2 x (0.5 ... 1.5 mm<sup>2</sup>)  
- For AWG cables for auxiliary contacts 2 x (18 ... 14)

Spring-type terminal (SP)  
- Solid 2 x (0.25 ... 1.5 mm<sup>2</sup>)  
- Finely stranded  
- Without end sleeves 2 x (0.5 ... 1.5 mm<sup>2</sup>)  
- With end sleeves 2 x (0.5 ... 0.75 mm<sup>2</sup>)  
- For AWG cables for auxiliary contacts 2 x (24 ... 16)

**Tightening torque**  
Screw terminal, spring-type terminal 0.8 ... 0.9 Nm

**Operating frequency**  
Max. 3 600/h

**Mechanical lifetime**  
10 000 000 cycles of operation

## Electrical characteristics

### Standards

The switches comply with the “Standards for low-voltage switching devices” EN IEC 60947-5-1

**Thermal current  $I_{th}$**   
10A

**Insulation voltage**  
Rated value 500V

**Pollution degree**  
3

**Surge voltage resistance**  
Rated value 6kV

**Contact reliability**  
One contact failure per 100 million switching operations (17 V, 5 mA)  
One contact failure per 10 million switching operations (5 V, 1 mA)

**Operating voltage**  
at AC  
- Rated value 5 ... 500V

at DC  
- Rated value 5 ... 500V

### Switching voltage and switching current

at AC-12

Voltage	24V	230V	500V
Current	10A	10A	10A

at AC-15

Voltage	24V	230V	400V	500V
Current	6A	6A	3A	1.4A

at DC-12

Voltage	24V	48V	110V	230V	400V	500V
Current	10A	5A	2.5A	1A	0.3A	0.2A

at DC-13

Voltage	24V	48V	110V	230V	400V	500V
Current	3A	1.5A	0.7A	0.3A	0.1A	0.07A

## Ambient conditions

**Operating temperature**  
-25°C ... +70°C

**Storage temperature**  
-40°C ... +80°C

**Protection degree**  
IP40 housing  
IP20 terminal

**Vibration resistance**  
According to IEC 60068-2-6  
2 ... 500 Hz: 5g

**Shock resistance**  
According to IEC 60068-2-27  
Sinusoidal half-wave 50 g/11 ms

**Climatic ambient conditions**  
During operation according to IEC 60721:  
3K6, 3C3, 3S2, 3M6

## Approvals

### Approbations

CCC  
CSA  
UL

### Declaration of conformity

CE

01

02

03

04

14

17

18

19

22

31

41

45

51

61

70

71

82

84

92

96

# 45 Technical data

## Illumination element

### Material

**Housing**  
Plastic

### Mechanical characteristics

#### Terminals

- Screw terminal
- Solid 2 x (1.0 ... 1.5 mm<sup>2</sup>)
  - With end sleeves 2 x (0.5 ... 0.75 mm<sup>2</sup>)
  - Finely stranded
  - Without end sleeves 2 x (0.5 ... 0.75 mm<sup>2</sup>)
  - With end sleeves 2 x (0.5 ... 1.5 mm<sup>2</sup>)
  - For AWG cables for auxiliary contacts 2 x (18 ... 14)

#### Spring-type terminal (SP)

- Solid 2 x (0.25 ... 1.5 mm<sup>2</sup>)
- Finely stranded
- Without end sleeves 2 x (0.5 ... 1.5 mm<sup>2</sup>)
- With end sleeves 2 x (0.5 ... 0.75 mm<sup>2</sup>)
- For AWG cables for auxiliary contacts 2 x (24 ... 16)

#### Tightening torque

Screw terminal, spring-type terminal 0.8 ... 0.9Nm

### Electrical characteristics

#### Standards

The switches comply with the "Standards for low-voltage switching devices" EN IEC 60947-5-1

#### Electrical life

100 000 h

#### Insulation voltage

Rated value 320 V

#### Surge voltage resistance

Rated value 4 kV

EAO reserves the right to alter specifications without further notice.

### Ambient conditions

**Operating temperature**  
-25 °C ... +70 °C

**Storage temperature**  
-40 °C ... +80 °C

**Protection degree**  
IP20 terminal

**Shock resistance**  
According to IEC 60068-2-27  
Sinusoidal half-wave 50 g/11 ms

**Vibration resistance**  
According to IEC 60068-2-6  
2 ... 500 Hz: 5 g

**Climatic ambient conditions**  
During operation according to IEC 60721:  
3K6, 3C3, 3S2, 3M6

### Optical characteristics

#### Luminous intensity

Red	450 ... 1120 mcd
Amber	450 ... 1120 mcd
Yellow	900 ... 1400 mcd
Green	900 ... 1400 mcd
Blue	280 ... 710 mcd
White	900 ... 1400 mcd

### Approvals

#### Approbations

CCC  
CSA  
UL


#### Declaration of conformity

CE

## Inscription marking plates and legend plates

Labels can be inserted for identification purposes in illuminated pushbuttons and pushbuttons with a flat lens. This marking plates are made of translucent plastic with a black inscription, which can be fitted in any 90° angle.

## Standard texts for marking plates






























<b>Example</b>		Part No. 45-563.0K00.T00029
----------------	---	-----------------------------

Standard texts German		Standard texts English	
Ein	Part No. 45-563.0K00.T00001	On	Part No. 45-563.0K00.T00020
Aus	Part No. 45-563.0K00.T00002	Off	Part No. 45-563.0K00.T00021
Auf	Part No. 45-563.0K00.T00003	Up	Part No. 45-563.0K00.T00022
Ab	Part No. 45-563.0K00.T00004	Down	Part No. 45-563.0K00.T00023
Vor	Part No. 45-563.0K00.T00005	Forward	Part No. 45-563.0K00.T00024
Zurück	Part No. 45-563.0K00.T00006	Right	Part No. 45-563.0K00.T00026
Rechts	Part No. 45-563.0K00.T00007	Left	Part No. 45-563.0K00.T00027
Links	Part No. 45-563.0K00.T00008	Stop	Part No. 45-563.0K00.T00028
Halt	Part No. 45-563.0K00.T00009	Start	Part No. 45-563.0K00.T00029
Zu	Part No. 45-563.0K00.T00010	Reset	Part No. 45-563.0K00.T00030
Schnell	Part No. 45-563.0K00.T00011	Test	Part No. 45-563.0K00.T00031
Langsam	Part No. 45-563.0K00.T00012	Open	Part No. 45-563.0K00.T00032
Betrieb	Part No. 45-563.0K00.T00013	Close	Part No. 45-563.0K00.T00033
Störung	Part No. 45-563.0K00.T00014	Running	Part No. 45-563.0K00.T00035
Einrichten	Part No. 45-563.0K00.T00018	Fast	Part No. 45-563.0K00.T00044
		Slow	Part No. 45-563.0K00.T00045

# 45 Marking

## Symbols for marking plates

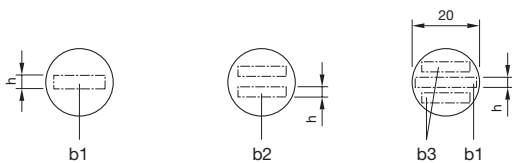
Graphic symbols are according to ISO 7000 or IEC 60417.

 Part No. 45-563.0K00.S00001	 Part No. 45-563.0K00.S00012 Decrease, Minus	 Part No. 45-563.0K00.S00023 Unlock
 Part No. 45-563.0K00.S00002	 Part No. 45-563.0K00.S00013 Electric motor	 Part No. 45-563.0K00.S00024 Setting
 Part No. 45-563.0K00.S00003	 Part No. 45-563.0K00.S00014 Horn	 Part No. 45-563.0K00.S00025 On-Off momentary contact type
 Part No. 45-563.0K00.S00004	 Part No. 45-563.0K00.S00015 Water tap	 Part No. 45-563.0K00.S00026 Manual operating
 Part No. 45-563.0K00.S00005 Arrow direction to right	 Part No. 45-563.0K00.S00016 Pump	 Part No. 45-563.0K00.S00027 Automatic cycle
 Part No. 45-563.0K00.S00006 Arrow direction up	 Part No. 45-563.0K00.S00017 Coolant pump	 Part No. 45-563.0K00.S00028 Suction
 Part No. 45-563.0K00.S00007 Clockwise rotation	 Part No. 45-563.0K00.S00018 Lock, tighten	 Part No. 45-563.0K00.S00029 Blowing
 Part No. 45-563.0K00.S00008 Counterclockwise rotation	 Part No. 45-563.0K00.S00019 Unlock, unclamp	
 Part No. 45-563.0K00.S00009 Rapid traverse	 Part No. 45-563.0K00.S00020 Brake	
 Part No. 45-563.0K00.S00010 Feed	 Part No. 45-563.0K00.S00021 Release brake	
 Part No. 45-563.0K00.S00011 Increase, Plus	 Part No. 45-563.0K00.S00022 Interlock	

## Customised inscription for marking plates

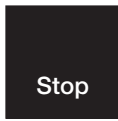
All dimensions in mm

Height of letters	Number of lines	Number of letters per line (target value)		
		b1	b2	b3
h				
4	1	10	–	–
3	2	–	8	–
	3	10	–	6



The gap between two words results in each case a letter less.



## Standard texts for legend plates black, 27 x 27 mm

<b>Example</b>		Part No. 45-573.1103.T00028
----------------	---	-----------------------------

Standard texts German		Standard texts English		Standard texts French	
Ein	Part No. 45-573.1105.T00001	On	Part No. 45-573.1105.T00020	Marche	Part No. 45-573.1105.T00048
Aus	Part No. 45-573.1105.T00002	Off	Part No. 45-573.1105.T00021	Arrêt	Part No. 45-573.1105.T00049
Auf	Part No. 45-573.1105.T00003	Up	Part No. 45-573.1105.T00022	Montée	Part No. 45-573.1105.T00050
Ab	Part No. 45-573.1105.T00004	Down	Part No. 45-573.1105.T00023	Descente	Part No. 45-573.1105.T00051
Vor	Part No. 45-573.1105.T00005	Forward	Part No. 45-573.1105.T00024	En Service	Part No. 45-573.1105.T00059
Zurück	Part No. 45-573.1105.T00006	Reverse	Part No. 45-573.1105.T00025	Default	Part No. 45-573.1105.T00060
Rechts	Part No. 45-573.1105.T00007	Stop	Part No. 45-573.1105.T00028	Sous tension	Part No. 45-573.1105.T00064
Links	Part No. 45-573.1105.T00008	Start	Part No. 45-573.1105.T00029	Manu Auto	Part No. 45-573.1105.T00065
Halt	Part No. 45-573.1105.T00009	Stop Start	Part No. 45-573.1105.T00038	Marche Arrêt	Part No. 45-573.1105.T00066
Zu	Part No. 45-573.1105.T00010	EMERGENCY STOP	Part No. 45-573.1105.T00046		
Betrieb	Part No. 45-573.1105.T00013				
Störung	Part No. 45-573.1105.T00014				
Hand Auto	Part No. 45-573.1105.T00015				

## Symbols for legend plates black, 27 x 27 mm

Graphic symbols are according to ISO 7000 or IEC 60417.

	Part No. 45-573.1105.S00003
	Part No. 45-573.1105.S00008 Arrow/Direction right

## Customized inscription for legend plates

All dimensionen in mm

Size of legend plates	Height of letters	Number of lines
27 x 12.5	4	1
	3.5	2
	2.5	3
27 x 17.5	4	1 – 2
	3	3
27 x 27	4	1 – 5

Up to 11 characters per line are possible.

# 45 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.

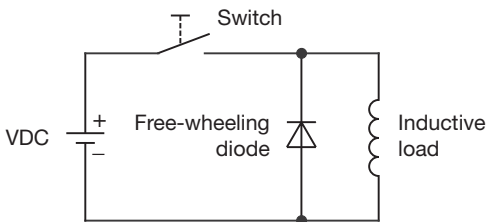
Fig. 1 shows an inductive load with a free-wheeling diode connected in parallel. This free-wheeling diode provides a path for the inductor current to flow when the current is interrupted by the switch. Without this free-wheeling diode, the voltage across the coil will be limited only by dielectric breakdown voltages of the circuit or parasitic elements of the coil. This voltage can be kilo-

volts in amplitude even when nominal circuit voltages are low (e.g. 12VDC) see Fig. 2.

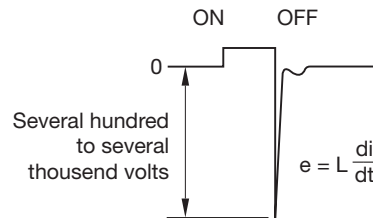
The free-wheeling diode should be chosen so that the reverse breakdown voltage is greater than the voltage driving the inductive load. The DC blocking voltage ( $V_R$ ) of the free-wheeling diode can be found in the datasheet of a diode. The forward current should be equal or greater than the maximum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









Part No.	Page	Part No.	Page	Part No.	Page	Part No.	Page	Part No.	Page	Part No.	Page
45-2131.1110.000	13	45-2300.1000.000	57	45-2828.1C20.001	30	45-2K31.16V0.000	19	45-320.1H12	63	45-50K.1407	70
45-2131.1120.000	13	45-2300.2000.000	57	45-2828.1C40.001	30	45-2N39.1010.000	45	45-320.1H16	63	45-50K.1408	70
45-2131.1140.000	13	45-2300.3000.000	57	45-2828.1C60.001	30	45-2N39.2010.000	45	45-320.1H18	63	45-50M.1900	77
45-2131.1150.000	13	45-2400.1000.000	58	45-2828.1C90.001	30	45-2N42.1010.000	45	45-320.1H41	64	45-50N.1100	74
45-2131.1160.000	14	45-2400.2000.000	58	45-2828.1D90.001	31	45-2N42.2010.000	45	45-320.1H42	64	45-50P.0100	74
45-2131.1180.000	14	45-2530.1810.000	21	45-2828.1E90.001	32	45-2P01.1E10.000	49	45-320.1H46	64	45-50Q.2100	74
45-2131.1190.000	14	45-2530.1910.000	22	45-2828.2C20.001	30	45-2P02.1E10.000	49	45-320.1H48	64	45-50T.0500	68
45-2131.1210.000	14	45-2530.1920.000	22	45-2828.2C30.001	30	45-2P03.1E10.000	49	45-320.1J11	63	45-50V.0400	68
45-2131.1220.000	14	45-2530.1940.000	22	45-2828.2C50.001	30	45-2P04.1E10.000	49	45-320.1J12	63	45-50W.0200	68
45-2131.1250.000	14	45-2530.1950.000	22	45-2828.2C90.001	30	45-2S00.1001.404	41	45-320.1J16	63	45-522.0900	71
45-2131.1320.000	14	45-2530.2820.000	21	45-2828.2D50.001	31	45-2T00.10E0.000	46	45-320.1J41	64	45-523.1900	76
45-2131.1360.000	14	45-2530.2910.000	22	45-2828.2D60.001	31	45-2T00.10F0.000	46	45-320.1J42	64	45-529.2100	69
45-2131.2110.000	14	45-2530.2920.000	22	45-2828.2D90.001	31	45-2T00.10G0.000	46	45-320.1J46	64	45-530.2100	69
45-2131.2120.000	14	45-2530.2910.000	21	45-2828.4C20.001	37	45-2T07.10H0.000	46	45-320.1J48	64	45-543.1K00	69
45-2131.2140.000	14	45-2531.1910.000	22	45-2828.4C50.001	7	45-2T00.10J0.000	46	45-320.1N11	63	45-534.2100	69
45-2131.2150.000	14	45-2531.1920.000	22	45-2828.4C90.001	7	45-2T00.10K0.000	46	45-320.1N12	63	45-539.2400	75
45-2131.2160.000	14	45-2531.1A20.000	24	45-2828.4D20.001	8	45-2T00.10N0.000	46	45-320.1N16	63	45-542.1K00	72
45-2131.2190.000	14	45-2531.1A50.000	24	45-2828.4D50.001	8	45-2T07.10E0.000	47	45-320.1N18	63	45-543.1K00	72
45-2131.21K0.000	14	45-2531.2810.000	21	45-2828.4D90.001	8	45-2T07.10G0.000	47	45-320.1N41	64	45-544.1K00	72
45-2131.2210.000	14	45-2531.2820.000	21	45-2844.1C90.006	30	45-2T07.10H0.000	47	45-320.1N42	64	45-545.1K00	72
45-2131.2220.000	14	45-2531.2850.000	21	45-2844.4C20.006	7	45-2T07.10J0.000	47	45-320.1N46	64	45-546.1K00	72
45-2131.2250.000	14	45-2531.2910.000	22	45-2844.4C50.006	7	45-2T07.30J0.000	47	45-320.1N48	64	45-548.1K00	72
45-2131.2260.000	14	45-2531.2920.000	22	45-2844.4C90.006	7	45-2T07.30E0.000	47	45-320.2E11	65	45-549.1400	75
45-2131.2350.000	14	45-2531.2950.000	22	45-2844.4D50.006	8	45-2T07.30G0.000	47	45-320.2E12	65	45-550.1400	75
45-2131.4F10.000	5	45-2531.2A10.000	24	45-2844.4D90.006	8	45-2T07.30H0.000	47	45-320.2E16	65	45-552.0K00	56
45-2131.4F20.000	5	45-2532.2920.000	22	45-2845.1E90.002	37	45-2T07.30J0.000	47	45-320.2F11	65	45-553.0E00	56
45-2131.4F40.000	5	45-2630.19E0.000	26	45-2845.2E90.002	37	45-2T07.30K0.000	47	45-320.2G11	65	45-553.0F00	56
45-2131.4F50.000	5	45-2630.19J0.000	26	45-290A.1000.113	39	45-2T07.4FE0.000	12	45-320.2G16	65	45-553.0G00	56
45-2131.4F60.000	5	45-2630.29E0.000	26	45-290A.2000.113	39	45-2T07.4FG0.000	12	45-320.2H12	65	45-553.0H00	56
45-2131.4F90.000	5	45-2630.29K0.000	26	45-290D.2000.113	39	45-2T07.4FH0.000	12	45-320.2H16	65	45-553.0J00	56
45-2134.1110.000	14	45-2630.2AE0.000	28	45-290F.1000.113	39	45-2T07.4FK0.000	12	45-320.2H18	65	45-553.0K00	56
45-2134.1120.000	14	45-2630.2AK0.000	28	45-290F.2000.113	39	45-311.1X10	59	45-320.2H41	66	45-553.0N00	56
45-2134.1140.000	14	45-2631.18H0.000	25	45-290G.4F00.113	11	45-311.1X40	60	45-320.2J16	65	45-555.1100	74
45-2134.1150.000	14	45-2631.18J0.000	25	45-290H.1000.113	39	45-311.1Z10	59	45-320.2N11	65	45-555.1K00	74
45-2134.2110.000	14	45-2631.19G0.000	26	45-290G.2000.113	39	45-311.1Z40	60	45-320.2N12	65	45-558.0000	57
45-2134.2120.000	14	45-2631.19H0.000	26	45-290H.1000.111	38	45-311.2Z10	61	45-320.2N16	65	45-560.1100	75
45-2134.4F10.000	5	45-2631.19K0.000	26	45-290H.2000.111	38	45-311.2Z40	62	45-320.2N41	66	45-561.1400	70
45-2134.4F20.000	5	45-2631.19N0.000	26	45-290J.4F00.111	11	45-312.1X10	59	45-330.2115	76	45-564.1102	73
45-2134.4F40.000	5	45-2631.29G0.000	26	45-290J.1000.111	38	45-312.1X40	60	45-330.2115	76	45-564.1110	73
45-2134.4F50.000	5	45-2631.29H0.000	26	45-290J.2000.111	38	45-312.1Z10	59	45-36F.1114-a	67	45-567.1103	73
45-2134.4F60.000	5	45-2631.29N0.000	26	45-290J.4F00.111	11	45-312.1Z40	60	45-410.1401	78	45-567.1111	73
45-2134.4F90.000	5	45-2631.2AG0.000	28	45-290K.4F00.116	11	45-312.2Z10	61	45-410.2403	78	45-569.1105	73
45-2231.11E0.000	15	45-2631.2AH0.000	28	45-290K.1000.116	38	45-312.2Z40	62	45-420.1401	78	45-569.1112	73
45-2231.11G0.000	15	45-2631.2AN0.000	28	45-290K.2000.116	38	45-313.1X40	60	45-420.2403	78	45-570.1105	73
45-2231.11H0.000	15	45-2729.1010.000	51	45-290Z.1000.113	39	45-313.1Z10	59	45-420.2803	78	45-573.1102	70
45-2231.11J0.000	15	45-2736.1910.000	51	45-290Z.2000.113	39	45-313.1Z40	60	45-430.1801	78	45-573.1103	70
45-2231.11N0.000	15	45-2736.1960.000	51	45-2911.3000.113	39	45-314.1X40	60	45-430.2803	78	45-573.1104	70
45-2231.12E0.000	15	45-280S.1C90.003	33	45-2924.1000.113	39	45-314.1Z10	59	45-440.1801	78	45-573.1105	70
45-2231.12G0.000	15	45-280S.2C20.003	33	45-2924.2000.113	39	45-314.1Z40	60	45-440.2803	78	45-573.1A02	70
45-2231.12H0.000	16	45-280S.2C30.003	33	45-2925.1000.111	38	45-315.1X40	60	45-450.1801	78	45-573.1A03	70
45-2231.12J0.000	16	45-280S.2C40.003	33	45-2925.2000.111	38	45-315.1Z10	59	45-450.2803	78	45-573.1A04	70
45-2231.12K0.000	16	45-280S.2C50.003	33	45-2C35.1920.110	52	45-315.1Z40	60	45-460.1802	78	45-573.1A05	70
45-2231.21E0.000	16	45-280S.2C60.003	33	45-2C35.2920.110	52	45-316.1X10	59	45-460.2804	78	45-574.0600	68
45-2231.21G0.000	16	45-280S.2C90.003	33	45-2C36.1820.000	52	45-316.1X40	60	45-470.1802	78		
45-2231.21H0.000	16	45-280S.2D20.003	35	45-2C36.1920.000	52	45-317.1Z40	60	45-470.2804	78		
45-2231.21J0.000	16	45-280S.2D50.003	35	45-2C36.1A20.000	52	45-320.1E11	63	45-481.1810	29		
45-2231.21N0.000	16	45-280S.2D90.003	35	45-2C36.2820.000	52	45-320.1E12	63	45-481.2810	29		
45-2231.22E0.000	16	45-280S.4C20.003	9	45-2C36.2920.000	53	45-320.1E16	63	45-482.1810	29		
45-2231.22H0.000	16	45-280S.4C90.003	9	45-2C37.1920.000	52	45-320.1E17	63	45-482.2810	29		
45-2231.4FE0.000	6	45-280S.4D20.003	10	45-2D36.1820.000	54	45-320.1E18	63	45-501.2000	78		
45-2231.4FG0.000	6	45-280S.4D50.003	10	45-2D36.1920.000	54	45-320.1E41	64	45-506.1100	71		
45-2231.4FH0.000	6	45-280S.4D90.003	10	45-2D36.1A20.000	54	45-320.1E42	64	45-506.2A00	71		
45-2231.4FJ0.000	6	45-280X.2D90.003	35	45-2D36.2820.000	54	45-320.1E46	64	45-507.1100	80		
45-2231.4FK0.000	6	45-2816.2D90.003	35	45-2D36.2920.000	54	45-320.1E47	64	45-509.1100	80		
45-2234.11E0.000	16	45-2819.1C20.003	33	45-2D36.2A20.000	54	45-320.1E48	64	45-50C.1900	81		
45-2234.11H0.000	16	45-2819.1C60.003	33	45-2F0T.1010.000	43	45-320.1F11	63	45-50C.2900	81		
45-2234.11J0.000	16	45-2819.1C90.003	33	45-2F0V.1010.000	43	45-320.1F12	63	45-50D.1900	81		
45-2234.11K0.000	16	45-2819.2C20.003	33	45-2F0V.2010.000	43	45-320.1F16	63	45-50D.2900	81		
45-2234.21E0.000	16	45-2819.2C90.003	33	45-2F14.2010.000	43	45-320.1F42	64	45-50E.1900	81		
45-2234.21G0.000	16	45-2819.2D20.003	35	45-2F38.2010.000	43	45-320.1F46	64	45-50E.2900	81		
45-2234.21H0.000	16	45-2819.2D90.003	35	45-2F40.1010.000	43	45-320.1G11	63	45-50F.1100	72		
45-2234.21J0.000	16	45-2819.4C20.003	9	45-2H00.1016.000	48	45-320.1G12	63	45-50F.2900	81		
45-2234.4FE0.000	6	45-2819.4C50.003	9	45-2J31.15V0.000	17	45-320.1G16	63	45-50G.0900	80		
45-2234.4FG0.000	6	45-2819.4C90.003	9	45-2J31.16T0.000	17	45-320.1G18	63	45-50J.1400	70		
45-2234.4FH0.000	6	45-2819.4D20.003	10	45-2J31.25T0.000	17	45-320.1G42	64	45-50J.140P	70		
45-2234.4FJ0.000	6	45-2819.4D50.003	10	45-2K31.16T0.000	19	45-320.1G46	64	45-50J.140Q	70		
45-2234.4FK0.000	6	45-2819.4D90.003	10			45-320.1H11	63	45-50J.140S	70		

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