



Choose one component from each of the coloured sections to assemble a complete switch.

## Product Profile

The Series 04 is a high quality switch range that includes pushbuttons, indicators, selectors, mushroom headed switches, key switches, and Emergency-stops.

Options include self cleaning, slow-make and snap-action switching elements.

Technical data see pages 40-42  
Technical drawings see pages 43-47

- IP65 Protection
- Switch Rating:  
Maximum Voltage, 500VAC  
Maximum Thermal Current,  $I_{th} = 10A$   
230VAC/6A, 24VDC/10A
- Raised Mounting into 22.5mm cut out
- Flush Mounting into 30.5mm cut out
- Illumination using Ba9s Lamps or LED's
- All standard lenses are transparent with translucent diffuser
- Screw terminal or plug-in connections

## Indicator



Indicator, round, full face, 22.5mm mounting

Colour	Part No.
Red	704.000.2
Yellow	704.000.4
Green	704.000.5
Blue	704.000.6
Clear	704.000.7



Indicator, flush mount, aluminium bezel, 30.5mm mounting

Colour	Part No.
Red	704.006.218*
Yellow	704.006.418*
Green	704.006.518*
Blue	704.006.618*
Clear	704.006.718*

\*Add suffix 'B' for non captive screw with flat washer and spring washer option

For complete switch also order

For complete switch also order

## Indicator



Indicator, flush mount, silver bezel, 30 x 30mm mounting

Colour	Part No.
Red	704.202.208
Yellow	704.202.408
Green	704.202.508
Blue	704.202.608
Clear	704.202.708

For complete switch also order

## Non Illuminated pushbutton



Non illuminated raised pushbutton, grey plastic bezel, 22.5mm mounting

Colour	Part No., Momentary	Part No., Maintained
Red	704.010.2	704.040.2
Yellow	704.010.4	704.040.4
Green	704.010.5	704.040.5
Blue	704.010.6	704.040.6
Clear	704.010.7	704.040.7
Black	704.010.0	704.040.0

For complete switch also order **A**



Non illuminated raised pushbutton, aluminium bezel, 22.5mm mounting

Colour	Part No., Momentary	Part No., Maintained
Red	704.012.2	704.042.2
Yellow	704.012.4	704.042.4
Green	704.012.5	704.042.5
Blue	704.012.6	704.042.6
Clear	704.012.7	704.042.7
Black	704.012.0	704.042.0

For complete switch also order **A**

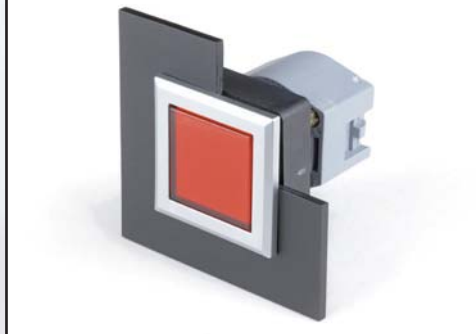
Choose one component from each of the coloured sections to assemble a complete switch.  
For other options or further information please contact your local sales office.



**Non Illuminated pushbutton**



Non illuminated flush mount pushbutton, aluminium bezel, 30.5mm mounting



Non illuminated flush mount pushbutton, silver bezel, 30 x 30mm mounting

Colour	Part No., Momentary	Part No., Maintained
Red	704.012.218	704.042.218
Yellow	704.012.418	704.042.418
Green	704.012.518	704.042.518
Blue	704.012.618	704.042.618
Clear	704.012.718	704.042.718
Black	704.012.018	704.042.018

For complete switch also order **A**

**Illuminated pushbutton**



Illuminated raised pushbutton, grey plastic bezel, 22.5mm mounting

Colour	Part No., Momentary	Part No., Maintained
Red	704.030.2	704.060.2
Yellow	704.030.4	704.060.4
Green	704.030.5	704.060.5
Blue	704.030.6	704.060.6
Clear	704.030.7	704.060.7

For complete switch also order **A**

**Illuminated pushbutton**



Illuminated raised pushbutton, aluminium bezel, 22.5mm mounting



Illuminated flush mount pushbutton, aluminium bezel, 30.5mm mounting



Illuminated flush mount pushbutton, silver bezel, 30 x 30mm mounting

Colour	Part No., Momentary	Part No., Maintained
Red	704.032.2	704.062.2
Yellow	704.032.4	704.062.4
Green	704.032.5	704.062.5
Blue	704.032.6	704.062.6
Clear	704.032.7	704.062.7

For complete switch also order **A**

Colour	Part No., Momentary	Part No., Maintained
Red	704.032.218*	704.062.218*
Yellow	704.032.418*	704.062.418*
Green	704.032.518*	704.062.518*
Blue	704.032.618*	704.062.618*
Clear	704.032.718*	704.062.718*

\*Add suffix 'B' for non captive screw with flat washer and spring washer option

For complete switch also order **A**

Colour	Part No., Momentary	Part No., Maintained
Red	704.230.208*	704.260.208*
Yellow	704.230.408*	704.260.408*
Green	704.230.508*	704.260.508*
Blue	704.230.608*	704.260.608*
Clear	704.230.708*	704.260.708*

\*Add suffix 'B' for improved shock and vibration performance option

For complete switch also order **A**



Choose one component from each of the coloured sections to assemble a complete switch.

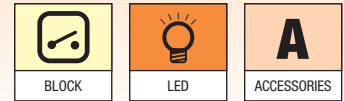
Emergency-stop switch		Mushroom headed pushbutton					
<p>Emergency-stop, twist release, 37mm diameter, foolproof to EN 60947-5-1 and EN 418, use slow-make switching elements</p>		<p>Emergency-stop, key release, 37mm diameter, foolproof to EN 60947-5-1 and EN 418, use slow-make switching elements</p>			<p>Mushroom headed pushbutton, plastic bezel and aluminium bezel, 22.5mm mounting, function momentary</p>		
Part No.	Part No.	Colour	Part No., Plastic	Part No., Aluminium			
704.064.2	704.066.2	● Red	704.070.2	704.071.2			
		● Yellow	704.070.4	704.071.4			
		● Green	704.070.5	704.071.5			
		● Black	704.070.0	704.071.0			
For complete switch also order <input checked="" type="checkbox"/> <b>A</b>		For complete switch also order <input checked="" type="checkbox"/> <b>A</b>			For complete switch also order <input checked="" type="checkbox"/> <b>A</b>		

### Complete switch

**Features**

- IP65 protection
- Renowned in the transportation sector for guaranteed reliability
- Modular switching system
- Intensive LED illumination
- Good snap action tactile feel
- Self cleaning contacts
- Stackable contact blocks
- Flush mount aluminium protective cover (to prevent accidental operation, damage)
- Spring return to close
- Worldwide approvals

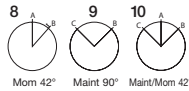
Choose one component from each of the coloured sections to assemble a complete switch.  
For other options or further information please contact your local sales office.



**Key insert switch**



Crew insert switch, stainless steel front ring, flush mount, 30.5mm mounting



Drawing	Part No.	Momentary/Maintained
8	704.103.0.*28	Momentary
9	704.101.0.*28	Maintained
10	704.093.0.*18	Maintained/Maintained
10	704.095.0.*18	Momentary/Momentary
10	704.097.0.*18	Maintained/Momentary

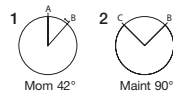
\*Customised key shape will be given a specified letter by EAO. When ordering please include dimensional drawing and sample key

For complete switch also order  **A**

**Keylock switch**



Keylock switch 2 position, raised, 22.5mm mounting

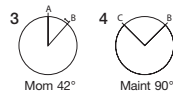


Drawing	Part No.	Momentary/Maintained	Key rem.
1	704.123.0	Momentary	A
2	704.121.0	Maintained	C
2	704.122.0	Maintained	C + B

For complete switch also order  **A**



Keylock switch 2 position, flush mount, 30.5mm mounting



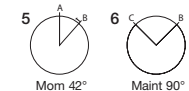
Drawing	Part No.	Momentary/Maintained	Key rem.
3	704.123.018	Momentary	A
4	704.121.018	Maintained	C
4	704.122.018	Maintained	C + B

For complete switch also order  **A**

**Keylock switch**



Keylock switch 2 position, flush mount, 30 x 30mm mounting

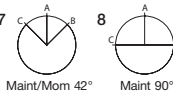


Drawing	Part No.	Momentary/Maintained	Key rem.
5	704.343.008	Momentary	A
6	704.341.008	Maintained	C
6	704.342.008	Maintained	C + B

For complete switch also order  **A**



Keylock switch 3 position, raised, 22.5mm mounting

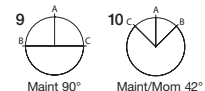


Drawing	Part No.	Momentary/Maintained	Key rem.
7	704.115.0	Momentary	A
7	704.114.0	Maintained	A
7	704.116.0	Maintained	C + B
8	704.113.0	Maintained	C + A + B

For complete switch also order  **A**



Keylock switch 3 position, flush mount, 30.5mm mounting




Drawing	Part No.	Momentary/Maintained	Key rem.
9	704.113.018	Maintained	C + A + B
10	704.115.018	Momentary	A
10	704.114.018	Maintained	A
10	704.116.018	Maintained	C + B

For complete switch also order  **A**

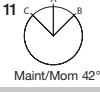


Choose one component from each of the coloured sections to assemble a complete switch.


### Keylock switch





Keylock switch  
3 position, flush mount,  
30 x 30mm mounting




### Selector switch





Selector switch short lever  
2 position, raised,  
22.5mm mounting



Selector switch short lever  
2 position, flush mount,  
30.5mm mounting


Drawing	Part No.	Momentary/Maintained	Key rem.	Drawing	Part No.	Momentary/Maintained	Bezel	Drawing	Part No.	Momentary/Maintained	Bezel
11	704.335.008	Momentary	A	12	704.412.0	Momentary	Grey plastic	14	704.413.018	Momentary	Aluminium
11	704.334.008	Maintained	A	12	704.413.0	Momentary	Aluminium	15	704.411.018	Maintained	Aluminium
11	704.336.008	Maintained	C + B	13	704.410.0	Maintained	Grey plastic				
11	704.333.008	Maintained	C + A + B	13	704.411.0	Maintained	Aluminium				

For complete switch also order **A**



For complete switch also order **A**


For complete switch also order **A**

### Selector switch





Selector switch short lever  
2 position, flush mount,  
30 x 30mm mounting

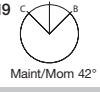


Selector switch short lever  
3 position, raised,  
22.5mm mounting





Selector switch short lever  
3 position, flush mount,  
30.5mm mounting



Drawing	Part No.	Momentary/Maintained	Bezel	Drawing	Part No.	Momentary/Maintained	Bezel	Drawing	Part No.	Momentary/Maintained	Bezel
16	704.512.008	Momentary	Black plastic	18	704.404.0	Momentary	Grey plastic	19	704.405.018	Momentary	Aluminium
17	704.510.008	Maintained	Black plastic	18	704.405.0	Momentary	Aluminium	19	704.403.018	Maintained	Aluminium
				18	704.402.0	Maintained	Grey plastic				
				18	704.403.0	Maintained	Aluminium				

For complete switch also order **A**

For complete switch also order **A**

For complete switch also order **A**



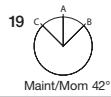
Choose one component from each of the coloured sections to assemble a complete switch.  
For other options or further information please contact your local sales office.

		<b>A</b>
BLOCK	LED	ACCESSORIES

 Selector switch



Selector switch short lever  
3 position, flush mount,  
30 x 30mm mounting

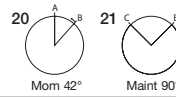


Drawing	Part No.	Momentary/Maintained	Bezel
19	704.504.008	Momentary	Black plastic
19	704.502.008	Maintained	Black plastic

For complete switch also order  **A**

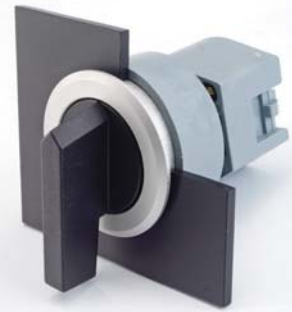


Selector switch long lever 2 position, raised,  
22.5mm mounting

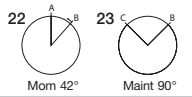


Drawing	Part No.	Momentary/Maintained	Bezel
20	704.102.0	Momentary	Grey plastic
20	704.103.0	Momentary	Aluminium
21	704.100.0	Maintained	Grey plastic
21	704.101.0	Maintained	Aluminium

For complete switch also order  **A**



Selector switch long lever 2 position, flush mount,  
30.5mm mounting



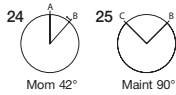
Drawing	Part No.	Momentary/Maintained	Bezel
22	704.103.018	Momentary	Aluminium
23	704.101.018	Maintained	Aluminium

For complete switch also order  **A**

 Selector switch



Selector switch long lever 2 position, flush mount,  
30 x 30mm mounting



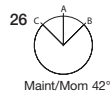
Drawing	Part No.	Momentary/Maintained	Bezel
24	704.302.008	Momentary	Black plastic
25	704.300.008	Maintained	Black plastic

For complete switch also order  **A**

 Selector switch

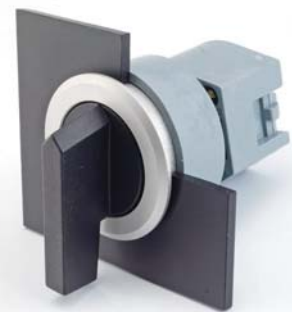


Selector switch long lever 3 position, raised,  
22.5mm mounting

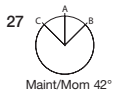


Drawing	Part No.	Momentary/Maintained	Bezel
26	704.094.0	Momentary	Grey plastic
26	704.095.0	Momentary	Aluminium
26	704.092.0	Maintained	Grey plastic
26	704.093.0	Maintained	Aluminium

For complete switch also order  **A**



Selector switch long lever 3 position, flush mount,  
30.5mm mounting



Drawing	Part No.	Momentary/Maintained	Bezel
27	704.095.018	Momentary	Aluminium
27	704.093.018	Maintained	Aluminium

For complete switch also order  **A**



For other options or further information please contact your local sales office.

## Product Profile

A range of lever switches to compliment the EAO Series 04 and are available with a choice of lever styles and switching action.

Options include momentary and maintained positions with 4 connection method types.

- IP54 Protection
- Switch Rating, 10A, 250VAC
- Flush Mounting into 33.5mm dia. cut out
- Up to 5 switching Positions
- Different handle shapes available
- LED Illumination Option
- Mechanical Life of minimum 5 Million Operations
- Connection types: Screw Terminal, Plug-in, JST Connector, Fast-on 6.3mm, cage clamp®

## Lever switch



Lever switch, 2-5 positions, cage clamp®, aluminium bezel, silver contacts, 33.5mm mounting

Colour	Range	Momentary/ Maintained	Contact type	Voltage
● Black	S 41*	Momentary/ Maintained	max. 5 contacts (NC/NO)	max.250VAC/DC, 1.5A
*Part number will be supplied by EAO once schematic diagram has been defined including specification of lever style and switching action. For further information please contact your local sales office.				



Lever switch, 2-5 positions, JST pin header, aluminium bezel, silver contacts, 33.5mm mounting

Colour	Range	Momentary/ Maintained	Contact type	Voltage
● Black	S 42*	Momentary/ Maintained	max. 5 contacts (NC/NO)	max.250VAC/DC, 1.5A
*Part number will be supplied by EAO once schematic diagram has been defined including specification of lever style and switching action. For further information please contact your local sales office.				

## Lever switch



Lever switch, 2-5 positions, plug-in terminal, aluminium bezel, silver contacts, 33.5mm mounting

Colour	Range	Momentary/ Maintained	Contact type	Voltage
● Black	S 43*	Momentary/ Maintained	max. 5 contacts (NC/NO)	max.250VAC/DC, 1.5A
*Part number will be supplied by EAO once schematic diagram has been defined including specification of lever style and switching action. For further information please contact your local sales office.				



Lever switch, 2-5 positions, cage clamp®, aluminium bezel, silver contacts with positive opening, 33.5mm mounting

Colour	Range	Momentary/ Maintained	Contact type	Voltage
● Black	S 44*	Momentary/ Maintained	max. 4 contacts (NC/NO)	max.250VAC/DC, 10A
*Part number will be supplied by EAO once schematic diagram has been defined including specification of lever style and switching action. For further information please contact your local sales office.				



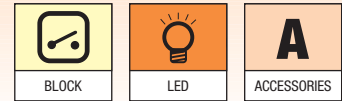
Lever switch, 2-5 positions, plug-in or screw terminals, aluminium bezel, silver contacts with positive opening, 33.5mm mounting

Colour	Range	Momentary/ Maintained	Contact type	Voltage
● Black	S 45*	Momentary/ Maintained	max. 4 contacts (NC/NO)	max.250VAC/DC, 10A
*Part number will be supplied by EAO once schematic diagram has been defined including specification of lever style and switching action. For further information please contact your local sales office.				





Choose one component from each of the coloured sections to assemble a complete switch.  
For other options or further information please contact your local sales office.



**Contact block**



Kraus & Naimer contact block, multi position, screw terminal from 2 - 12 positions

**LED**



LED, Ba9s, single chip, 6 Volt and 12 Volt



LED, Ba9s, single chip, 24 Volt and 28 Volt

	Colour	Part No.	Voltage	Colour	Part No.	Voltage
	Red	10-2506.1082	6VDC, 17mA	Red	10-2512.1142	24VAC/DC, 15mA
	Yellow	10-2506.1084	6VDC, 17mA	Yellow	10-2512.1144	24VAC/DC, 15mA
	Green	10-2506.1085	6VDC, 17mA	Green	10-2512.1145	24VAC/DC, 7mA
	Blue	10-2506.1086	6VDC, 7mA	Blue	10-2512.1146	24VAC/DC, 15mA
	White	10-2506.1089	6VDC, 17mA	White	10-2512.1149	24VAC/DC, 15mA
	Red	10-2509.1142	12VAC/DC, 16mA	Red	10-2513.1142	28VAC/DC, 13mA
	Yellow	10-2509.1144	12VAC/DC, 16mA	Yellow	10-2513.1144	28VAC/DC, 13mA
Customised switching element part number to be supplied by EAO, once schematic diagram has been defined. For further information please contact your local sales office.	Green	10-2509.1145	12VAC/DC, 7mA	Green	10-2513.1145	28VAC/DC, 7mA
	Blue	10-2509.1146	12VAC/DC, 16mA	Blue	10-2513.1146	28VAC/DC, 13mA
	White	10-2509.1149	12VAC/DC, 16mA	White	10-2513.1149	28VAC/DC, 13mA

For complete switch also order

**LED**



LED, Ba9s, single chip, 48 Volt



LED, Ba9s, single chip, 110 Volt with surge and transient protection



LED, Ba9s, single chip, 130 Volt and 230 Volt

Colour	Part No.	Voltage	Colour	Part No.	Voltage	Colour	Part No.	Voltage
Red	10-2519.1052	48VAC/DC, 8mA	Red	10-2422.3052	110VDC, 5.5mA	Red	10-2H24.2052	130VAC / 5mA
Yellow	10-2519.1054	48VAC/DC, 8mA	Yellow	10-2422.3054	110VDC, 5.5mA	Yellow	10-2H24.2054	130VAC / 5mA
Green	10-2519.1055	48VAC/DC, 4mA	Green	10-2422.3055	110VDC, 5.5mA	Green	10-2H24.2055	130VAC / 3mA
Blue	10-2519.1056	48VAC/DC, 8mA	Blue	10-2422.3056	110VDC, 5.5mA	Blue	10-2H24.2056	130VAC / 5mA
White	10-2519.1059	48VAC/DC, 8mA	White	10-2422.3059	110VDC, 5.5mA	White	10-2H24.2059	130VAC / 5mA
						Red	10-2H25.2042	230VAC / 3mA
						Yellow	10-2H25.2044	230VAC / 3mA
						Green	10-2H25.2045	230VAC / 2mA
						Blue	10-2H25.2046	230VAC / 3mA
						White	10-2H25.2049	230VAC / 3mA



Choose one component from each of the coloured sections to assemble a complete switch.

## A Accessories



Lamp / LED block, screw terminal



Lamp / LED block, plug-in terminal, 6.3mm



Lens cap, round, transparent, plastic for raised and flush indicators with bezel and pushbutton actuators

Part No.	Part No.	Colour	Part No.
704.950.0*	704.950.1*	● Red	704.602.2
		● Yellow	704.602.4
		● Green	704.602.5
		● Blue	704.602.6
		○ Clear	704.602.7
*Add suffix 'B' for non captive screw with flat washer and spring washer option	*Add suffix 'D' for double plug-in terminal		For complete lens also order diffuser 704.609.9 (see page 38)

## A Accessories



Lens cap raised, round, transparent, plastic for raised and flush mount pushbutton actuators



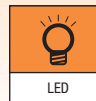
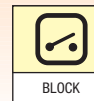
Lens cap, round, aluminium anodised for raised and flush mount pushbutton actuators



Protective cover, raised pushbutton

Part No.	Part No.	Comment	Part No.
● Red 704.611.2	● Red 704.601.2		704.925.0
● Yellow 704.611.4	● Yellow 704.601.4		
● Green 704.611.5	● Blue 704.601.6		
● Blue 704.611.6	● Silver 704.601.8		
○ Clear 704.611.7	● Silver 704.601.81	Window for illumination	
	● Black 704.601.0		
	● Black 704.601.01	Window for illumination	
For complete lens also order diffuser 704.610.9 (see page 38)			

Choose one component from each of the coloured sections to assemble a complete switch.  
For other options or further information please contact your local sales office.



**A Accessories**



Aluminium protective cover for flush mount pushbutton with fitted spring, closed

Colour	Part No.
● Red	704.928.12
● Yellow	704.928.14
● Blue	704.928.16
○ Natural	704.928.18



Aluminium protective cover for flush mount selector switch short lever with fitted spring, closed

Colour	Part No.
○ Natural	704.928.28



Aluminium protective cover for flush mount selector switch, lockable

Colour	Part No.
○ Natural	704.928.38

**A Accessories**



Protective front ring with silicon membrane for raised or flush mount pushbutton

Part No.	Size
704.600.3	29mm Ø for raised pushbutton
704.955.3	35mm Ø for flush mount pushbutton



Emergency-stop protective shroud, yellow painted aluminium with 22.5mm mounting hole

Part No.
704.927.4



Emergency-stop switch label, 60mm diameter, English, German, French and Dutch

Part No.	Markings
704.963.6	Emergency stop
704.963.5	Not Aus
704.963.7	Arret D'urgence
007.963.6	Noodstop



Choose one component from each of the coloured sections to assemble a complete switch.

## A Accessories



Emergency-stop switch enclosure with 22.5mm mounting hole, 83mm (w) x 83mm (h) x 59mm (d)

	Part No.
1	704.945.0
2	704.945.6



Blanking plate

Part No.	Mounting hole
704.960.7	22.5mm Ø
704.964.8	30.5mm Ø
704.964.9	30 x 30mm



Lens remover for round pushbuttons and indicators. LED and lamp remover for round and square pushbuttons and indicators

Part No.
700.006.0

## A Accessories



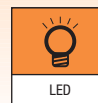
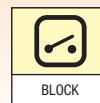
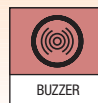
Lens remover for square pushbuttons and indicators

Part No.
98-968





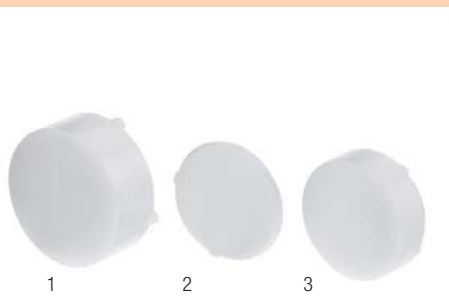
Choose one component from each of the coloured sections to assemble a complete switch.  
For other options or further information please contact your local sales office.



**A Accessories**



Mounting flange



Diffuser for raised indicator, diffuser for flat lens indicator and pushbutton, diffuser for raised pushbutton



Legend plate, adhesive, natural anodised aluminium finish for raised and flush mount pushbuttons

Part No.	Material	Image	Part No.	Product description	Image	Part No.	Mounting hole	Legend plate
704.960.5	Metal	1	704.608.9	Diffuser for raised indicator	1	704.968.0	23.5 x 14.5mm	Aluminium
704.950.5	Plastic	2	704.609.9	Diffuser for flat lens	2	704.968.1	23.5 x 14.5mm	Black
		3	704.610.9	Diffuser for raised pushbutton	3	704.968.2	22.5mm Ø	Black
					4	704.968.3	30.5mm Ø	Black
						704.968.4	35 x 18mm	Aluminium
						704.968.5	35 x 18mm	Black



## Snap-action switching element

### Switching system

The double-break, snap-action switching element is equipped with one or two independent contact systems, acting as normally open or normally closed contact. The snap-action switching element is fitted with self-cleaning contacts. Up to 3 switching elements can be snapped to each actuator.

### Material

#### Material of contacts

hardsilver, gold/silver, silver/palladium (for aggressive atmospheres)

#### Switching element

polycarbonate PC

### Mechanical characteristics

#### Connection method

screw terminals

plug-in terminals 6.3 x 0.8 mm:

max. wire cross-section: 2 x 2.5 mm

max. wire cross-section of stranded cable: 2 x 1.5 mm

For switches with plug-in terminals it is necessary to provide insulation sockets and to maintain a spacing of 65 mm between rows (mounting dimensions).

#### Starting torque

screws at the mounting flange: max. 25 Ncm

screws at switching element: max. 50 Ncm

#### Actuating force

11-20 N ± 1 N

depending on the number of switching elements, 1 to 3 elements

#### Storage temperature

-40°C to + 85°C

#### Mechanical life

- pushbuttons:
- maintained action 1.5 million cycles of operation
  - momentary action 3 million cycles of operation
- selector switch:
- maintained action 1.25 million cycles of operation
  - momentary action 2.5 million cycles of operation
- e-stop switch:
- >= 50'000 cycles of operation
- keylock switch:
- maintained action 25'000 cycles of operation
  - momentary action 50'000 cycles of operation

#### Rebound time

<= 3 ms

#### Travel

5.8 ± 0.2 mm

#### Resistance to shock

(single impacts, semi-sinusoidal)

30 g for 11 ms as per EN 60 947-5-1

#### Resistance to vibration

(sinusoidal)

10 g at 10-2000 Hz, amplitude 0,75 mm as per EN 60 947-5-1

#### Ambient air temperature

min. - 25°C (- 40° with restriction)

max. without illumination: + 80°C

max. with neon lamp + 80°C

max. with LED: + 80°C

max. with incandescent lamp: + 40°C

(as per DIN IEC 68-)

## Electrical characteristics

### Rated insulation voltage

500 VAC/600 VDC as per VDE 0100, group C

### Standards

The switches comply with the "Standards for low-voltage switching devices" EN 60 947-5-1

### Contact resistance

starting value <= 50 mΩ as per IEC 512-2-4

### Insulation resistance

>= 10 mΩ between open contacts at 500 VDC, as per IEC 512-2-10

### Continuous thermal current I<sub>th2</sub>

10 A

The maximum current in continuous operation and at ambient temperature must not exceed the quoted maximum values.

### Switch rating max.

at switch rating AC for gold-, silver- and hard silver contacts service category AC-15 as per EN60947-5-1 (cos φ = 0.7)

voltage: 230 VAC 400 VAC 500 VAC

current: 6 A 4 A 2.5 A

at switch rating DC for gold-, silver- and hard silver contacts service category DC as per EN60947-5-1

L/R=100 ms at P>=50 W and

L/R=2 x P ms<50 W

WOP stands for switch rating in watt

voltage: 24 VDC 60 VDC 110 VDC

current: 10 A 3 A 1 A

### Switch rating min.

gold/silver contacts:

voltage: 5 VDC 24 VDC 110 VDC

current: 15 mA 5 mA 2 mA

hard silver contacts:

voltage: 24 VDC 110 VDC

current: 50 mA 10 mA

### Electric strength

5000 VAC, 50 Hz, 1 min. between all terminals and earth.

## Approvals

- SEV 500 VAC/10 A
- CSA 300 VAC
- UL 600 VAC HD
- German Navy
- German Lloyd
- CE (declaration of conformity)
- CB

## Slow-make switching element

### Switching system

The double-break, slow-make switching element is equipped with one or two independent contact systems, acting as normally open or normally closed contact. Slow-make contacts with forced action are ideal for high switch ratings. Up to 3 switching elements can be snapped to each actuator.

### Material

#### Material of contacts

hardsilver, gold/silver, silver/palladium (for aggressive atmospheres)

#### Switching element

polycarbonate PC

## Mechanical characteristics

### Connection method

screw terminals  
 plug-in terminals 6.3 x 0.8 mm:  
 max. wire cross-section: 2 x 2.5 mm  
 max. wire cross-section of stranded cable: 2 x 1.5 mm  
 For switches with plug-in terminals it is necessary to provide insulation sockets and to maintain a spacing of 65 mm between rows (mounting dimensions).

### Starting torque

screws at the mounting flange: max. 25 Ncm  
 screws at switching element: max. 50 Ncm

### Actuating force

13-36 N ± 1 N  
 depending on the number of switching elements, 1 to 3 elements

### Storage temperature

-40°C to + 85°C

### Mechanical life

pushbuttons: - maintained action 1.5 million cycles of operation  
 - momentary action 3 million cycles of operation  
 selector switch: - maintained action 1.25 million cycles of operation  
 - momentary action 2.5 million cycles of operation  
 e-stop switch: - >= 50'000 cycles of operation  
 keylock switch: - maintained action 25'000 cycles of operation  
 - momentary action 50'000 cycles of operation

### Travel

5.8 ± 0.2 mm

### Resistance to shock

(single impacts, semi-sinusoidal) 30 g for 11 ms as per EN 60 947-5-1

### Resistance to vibration

(sinusoidal) 10 g at 10-2000 Hz, amplitude 0,75 mm as per EN 60 947-5-1

### Rebound time

<= 1 ms

### Ambient air temperature

min. - 25°C (- 40° with restriction)  
 max. without illumination: + 80°C  
 max. with neon lamp + 80°C  
 max. with LED: + 80°C  
 max. with incandescent lamp: + 40°C

## Electrical characteristics

### Rated insulation voltage

500 VAC/600 VDC as per VDE 0100, group C

### Standards

The switches comply with the Rules for low-voltage switching devices EN 60 947-5-1

### Contact resistance

starting value <= 50 mΩ as per IEC 512-2-4

### Insulation resistance

>= 100 mΩ between open contacts at 500 VDC, as per IEC 512-2-10.

### Continuous thermal current Ith<sub>2</sub>

10 A  
 The maximum current in continuous operation and at ambient temperature must not exceed the quoted maximum values.

### Switch rating max.

at switch rating AC for gold-, silver- and hard silver contacts  
 service category AC-15 as per EN60947-5-1 (cos φ = 0.7)  
 voltage: 230 VAC 400 VAC 500 VAC  
 current: 7 A 5 A 4 A

At switch rating DC for gold-, silver- and hard silver contacts  
 service category DC as per EN60947-5-1

L/R=100 ms at P>=50 W and

L/R=2 x P ms<50 W

WOP stands for switch rating in watt

voltage: 24 VDC 60 VDC 110 VDC

current: 10 A 5 A 2.5 A

### Switch rating min.

gold/silver contacts:

voltage 24 VDC 110 VDC

current: 10 mA 2 mA

hard silver contacts:

voltage 24 VDC 110 VDC

current: 50 mA 10 mA

### Electric strength

5000 VAC, 50 Hz, 1 min. between all terminals and earth

## Approvals

- SEV 500 VAC/10 A
- CSA 300 VAC
- UL 600 VAC HD
- German Navy
- German Lloyd
- CE (declaration of conformity)
- CB

## Buzzer

### Buzzer system

#### System

Piezo disc

## Material

### Alarm buzzer case

polyamide

### Front cap

plastic: polyamide

metal: nickel-plated brass sea-water proof

## Mechanical characteristics

### Connection method

plug-in terminal 2.8 x 0.5 mm

### Operating temperature

-25°C to + 50°C

### Storage temperature

-25°C to + 50°C

### Degree of protection

IP 40 as per IEC 529 (flush mounting)

IP 65 (raised fitting) as per IEC 529

## Electrical characteristics

### Frequency (tone)

ca. 2.8 kHz continuous tone only

### Sound pressure

95 db (A) ± 8 at a distance of 0.1 m

### Operation voltage/current

operation voltage: 24 VDC ± 10%

operation current: <= 25 mA

## Selector switch actuator

### Material

#### Front ring

polyamide, aluminium or chromium-plated nickel steel

#### Mounting flange

polyethylene terephthalate

#### Actuator case

polycarbonate, polyamide

### Mechanical characteristics

#### Actuating force

snap-action switching element: 11-20 N ± 1 N  
slow-make switching element: 13-36 N ± 1 N  
depending on the number of snap-action elements

#### Storage temperature

-30°C to + 85°C

#### Mechanical life

pushbutton: ≥ 3 million operations  
selector switch: ≥ 2.5 million operations  
emergency stop switch: ≥ 50'000 operations  
keylock switch: ≥ 50'000 operations

#### Travel

5.8 ± 0.2 mm

#### Degree of protection

front as per IEC 529: IP 65

#### Ambient air temperature

min. -25°C  
max. without illumination: + 80°C  
max. with neon lamp: + 80°C  
max. with LED: + 80°C  
max. with incandescent lamp: + 55°C

### Electrical characteristics

#### Standards

The switches comply with the "Rules for low-voltage switching devices" EN 60 947-5-1

## Rotary selector switch element

### Mechanical characteristics

#### Number of positions

2 to 12 positions max.

#### Number of contacts

1 to 16 max. normally open contacts  
(contact positioning to the rotary plan)

#### Switching angle

Switching position a (90°) is basic position  
maintained action switching angle  
12 x 30° max.  
8 x 45° max.  
6 x 60° max.  
4 x 90° max.

momentary action with release 24°

(provide at the beginning or at the end)

#### Standard type of Kraus + Naimer

- CG 4 hardsilver contacts with 1 µ gold layer  
- CG 4-1 hardsilver contacts with 35 µ gold layer

### Electrical characteristics

#### DC 1, resistive circuits T = 1 ms

1 contact in line						
permissible voltage	24 V	48 V	60 V	110 V	220 V	440 V
rated service current	10.0 A	6.0 A	2.5 A	0.7 A	0.3 A	0.2 A
2 contacts in line						
permissible voltage	48 V	95 V	120 V	220 V	440 V	660 V
rated service current	10.0 A	6.0 A	2.5 A	0.7 A	0.3 A	0.2 A
3 contacts in line						
permissible voltage	70 V	140 V	180 V	330 V	660 V	
rated service current	10.0 A	6.0 A	2.5 A	0.7 A	0.3 A	
4 contacts in line						
permissible voltage	95 V	190 V	240 V	440 V		
rated service current	10.0 A	6.0 A	2.5 A	0.7 A		
5 contacts in line						
permissible voltage	120 V	240 V	300 V	550 V		
rated service current	10.0 A	6.0 A	2.5 A	0.7 A		
6 contacts in line						
permissible voltage	144 V	290 V	360 V	660 V		
rated service current	10.0 A	6.0 A	2.5 A	0.7 A		
8 contacts in line						
permissible voltage	190 V	350 V	450 V			
rated service current	10.0 A	6.0 A	2.5 A			

#### Inductive circuits T = 50 ms

1 contact in line					
permissible voltage	24 V	30 V	48 V	60 V	110 V
rated service current	6.0 A	3.0 A	1.0 A	0.7 A	0.3 A
2 contacts in line					
permissible voltage	48 V	60 V	95 V	120 V	220 V
rated service current	6.0 A	3.0 A	1.0 A	0.7 A	0.3 A
3 contacts in line					
permissible voltage	72 V	90 V	140 V	180 V	330 V
rated service current	6.0 A	3.0 A	1.0 A	0.7 A	0.3 A
4 contacts in line					
permissible voltage	96 V	120 V	190 V	240 V	440 V
rated service current	6.0 A	3.0 A	1.0 A	0.7 A	0.3 A
5 contacts in line					
permissible voltage	120 V	150 V	240 V	300 V	550 V
rated service current	6.0 A	3.0 A	1.0 A	0.7 A	0.3 A
6 contacts in line					
permissible voltage	144 V	180 V	290 V	360 V	660 V
rated service current	6.0 A	3.0 A	1.0 A	0.7 A	0.3 A
8 contacts in line					
permissible voltage	190 V	240 V	350 V	450 V	
rated service current	6.0 A	3.0 A	1.0 A	0.7 A	0.3 A

#### Short-circuit-proof

max. insurance (gL-characteristics) 10 A  
conditional rated short-circuit current 3 kA

#### Rated service voltage

IEC	500 V
UL	300 V
SEV	380 V
CEE 24	380 V

#### Rated service current I<sub>0</sub>

10 A  
AC 21 switching of resistive load with low overload  
AC 1 non or bad inductive load  
AC 22 switching of mixed resistive and inductive load with low overload  
AC 11 switching of magnetic drives, contactors, valves, draw-in magnet

#### Thermic rated current I<sub>th2</sub>

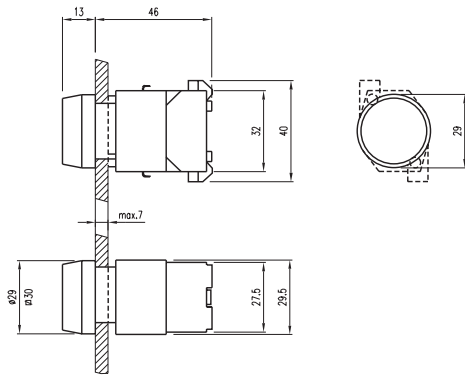
I<sub>th2</sub> = 10 A

#### Resistance/motor load

CEE 24 4/2 A

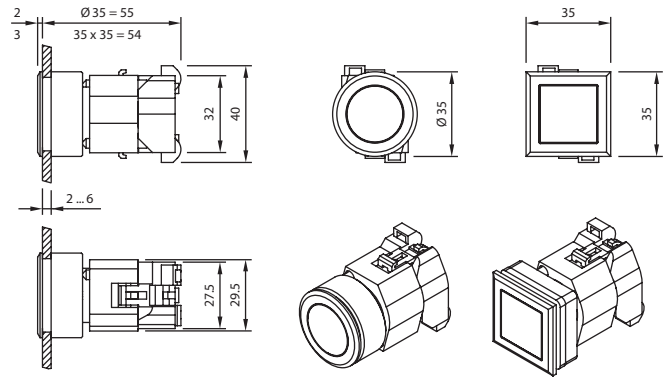
## 04 Indicator

Raised



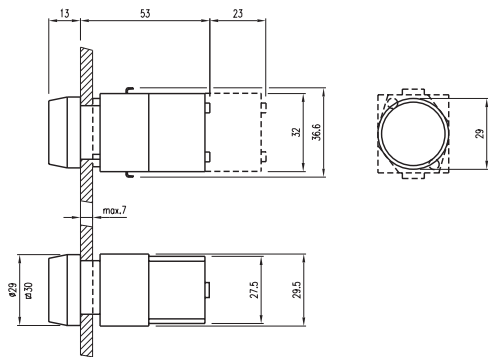
## 04 Indicator

Flush



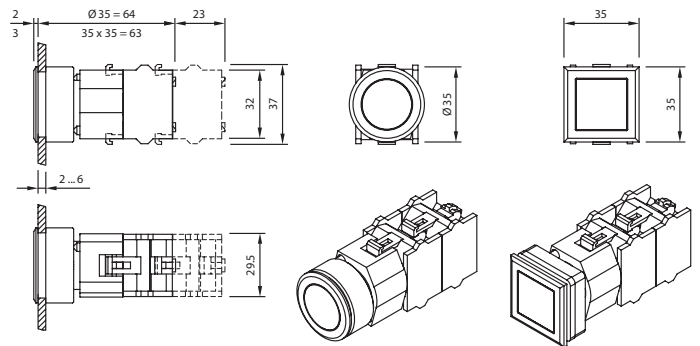
## 04 Pushbutton

Non-Illuminated, Raised



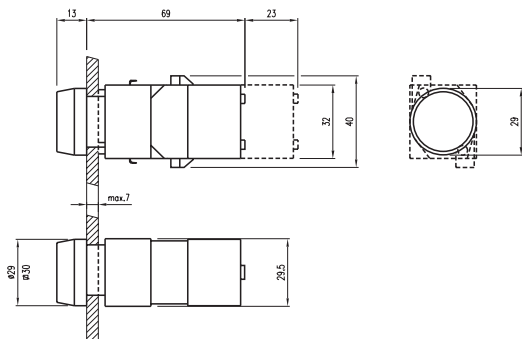
## 04 Pushbutton

Non-Illuminated, Flush



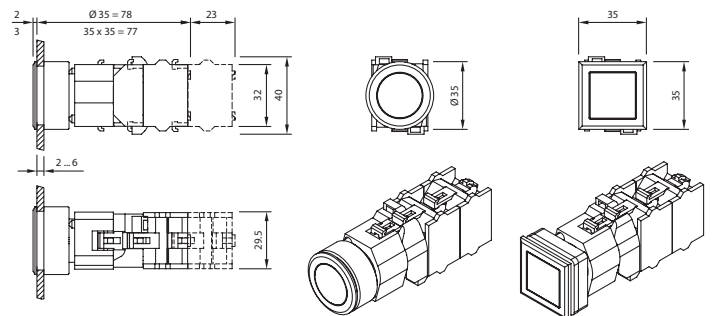
## 04 Pushbutton

Illuminated, Raised



## 04 Pushbutton

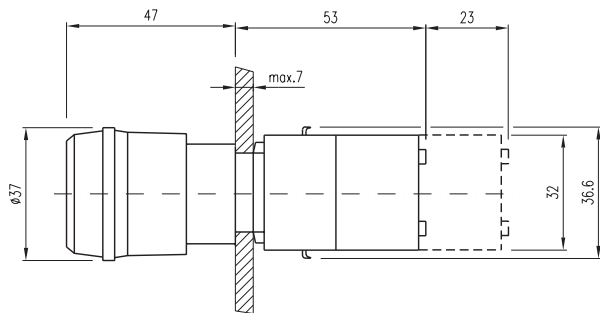
Illuminated, Flush





## 04 E-Stop

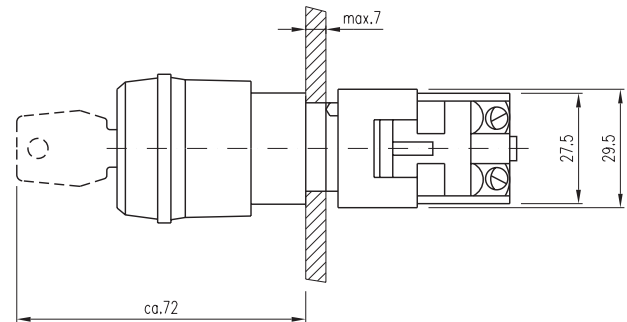
EN 418



twist to release

## 04 E-Stop

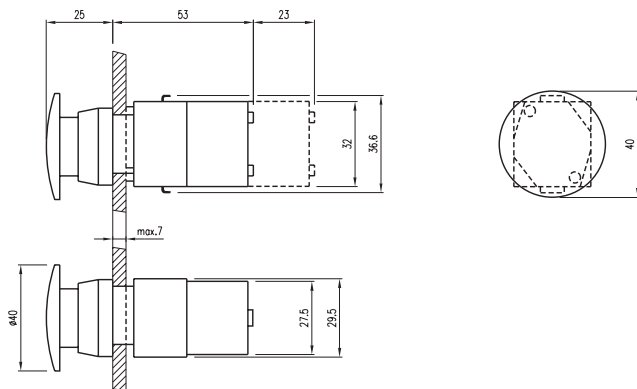
EN 418 with optional key



key to unlock

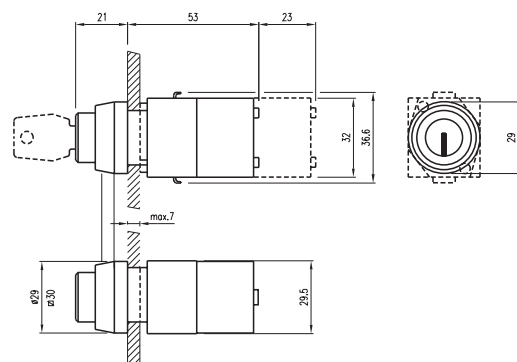
## 04 E-Stop Mushroom

Pushbutton Mushroom



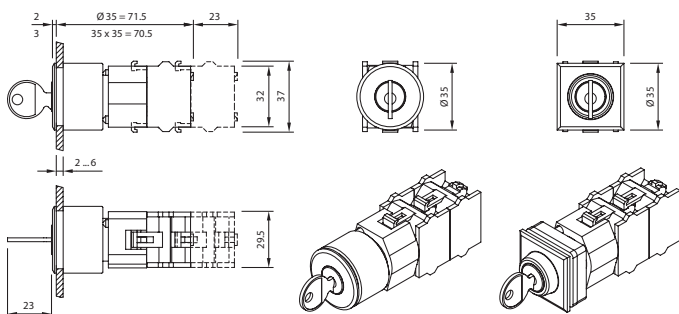
## 04 Keylock

2-Position, 3-Position, Raised



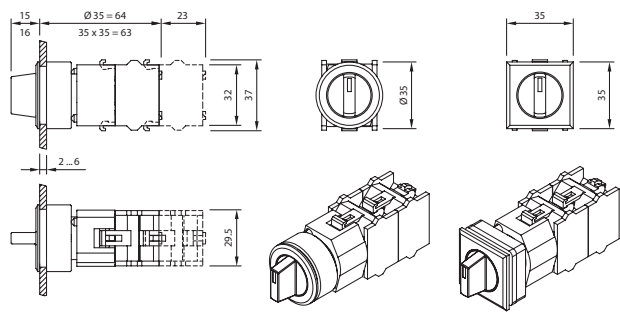
## 04 Keylock

2-Position, 3-Position, Flush



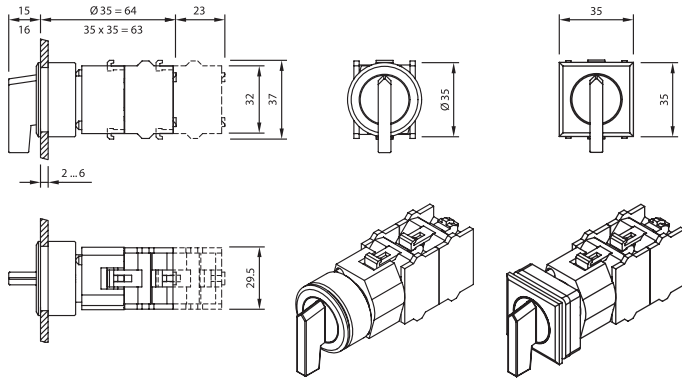
## 04 Selector

2-Position, 3-Position, Short, Flush



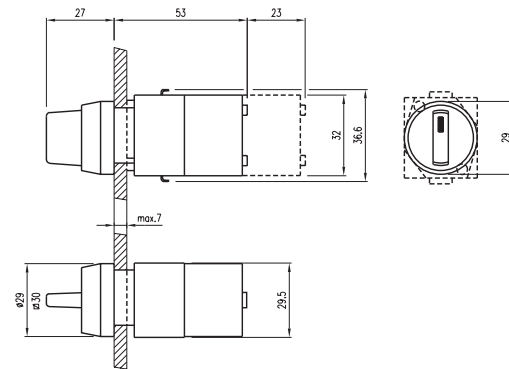
## 04 Selector

2-Position, 3-Position, Long, Flush



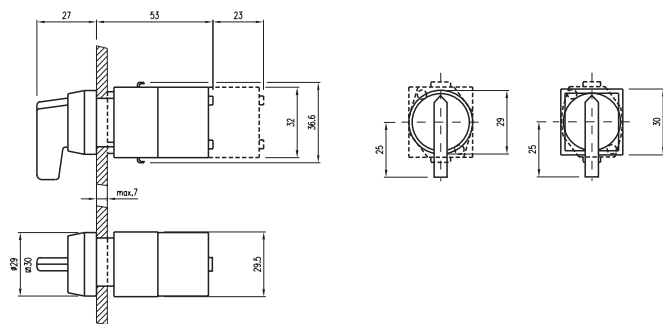
## 04 Selector, Short Lever

2-Position, 3-Position, Raised



## 04 Selector, Long Lever

2-Position, 3-Position, Raised

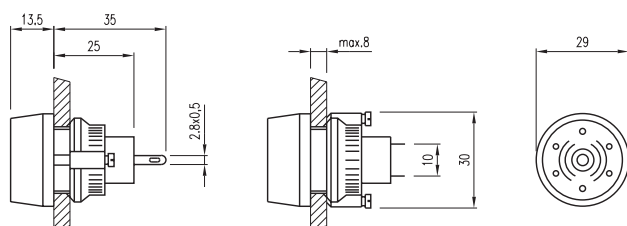


## 04 Lever switch

Separate technical document available.  
Please contact your local sales office.

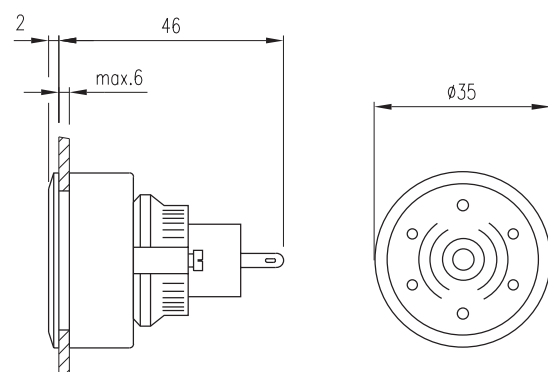
## 04 Buzzer

Raised

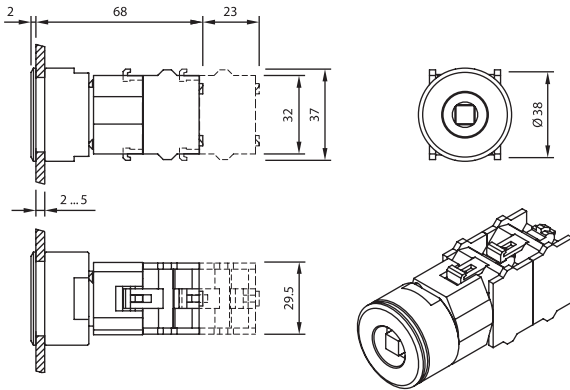


## 04 Buzzer

Flush

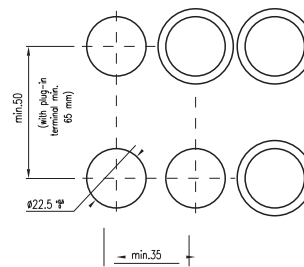


## 04 Key Insert Switch



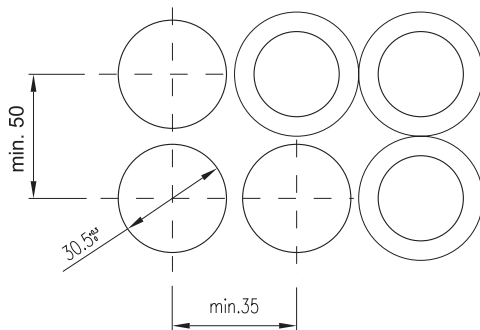
## 04 Cut-outs, Raised Mounting

(All but long lever)

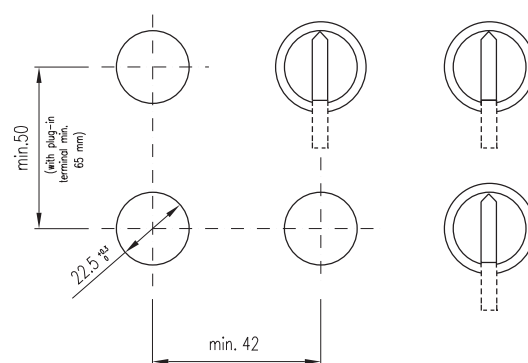


## 04 Cut-outs, Flush Mounting

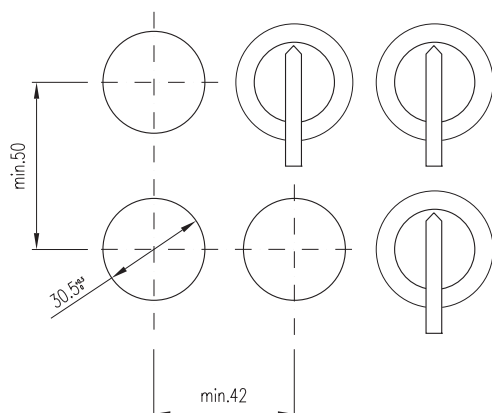
(All but long lever)



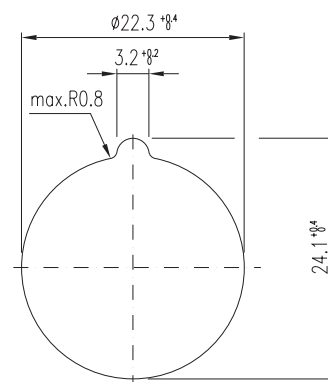
## 04 Long Lever Cut-outs, Raised Mounting



## 04 Long Lever Cut-outs, Flush Mounting

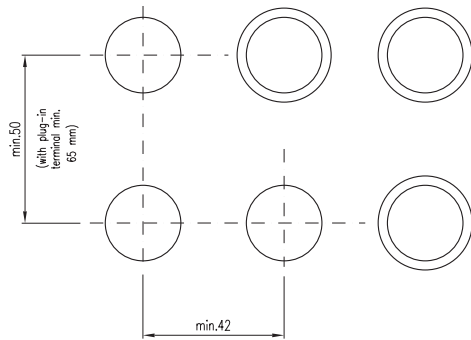


## 04 E-Stop EN418 Cut-outs

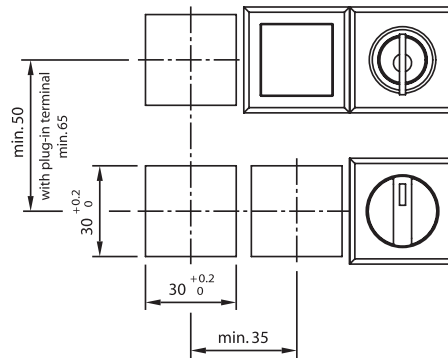


## 04 E-Stop Mushroom Cut-outs

Pushbutton Mushroom

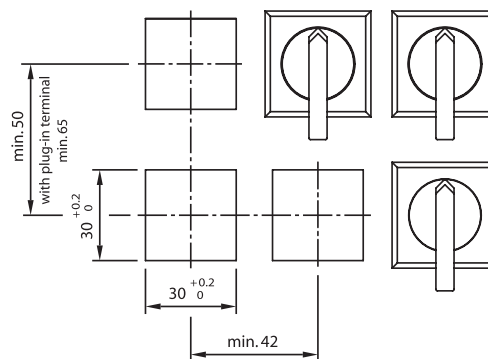
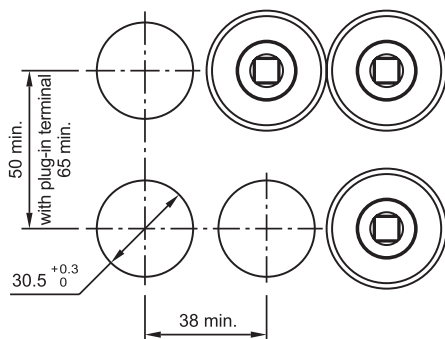


## 04 Cut-outs, Square, Flush Mounting

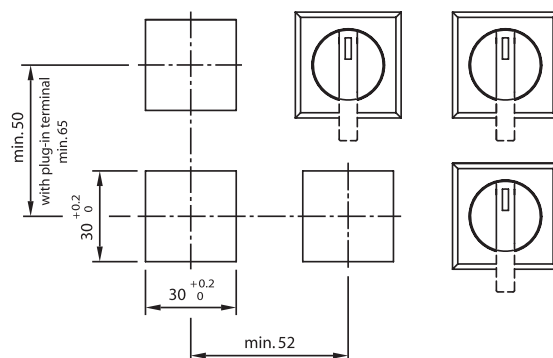


Indicator-, pushbutton-, keylock switch-, selector switch actuator short lever

## 04 Key Insert Cut-outs, Flush Mounting



Selector switch actuator long lever



Multi position rotary selector switch actuator