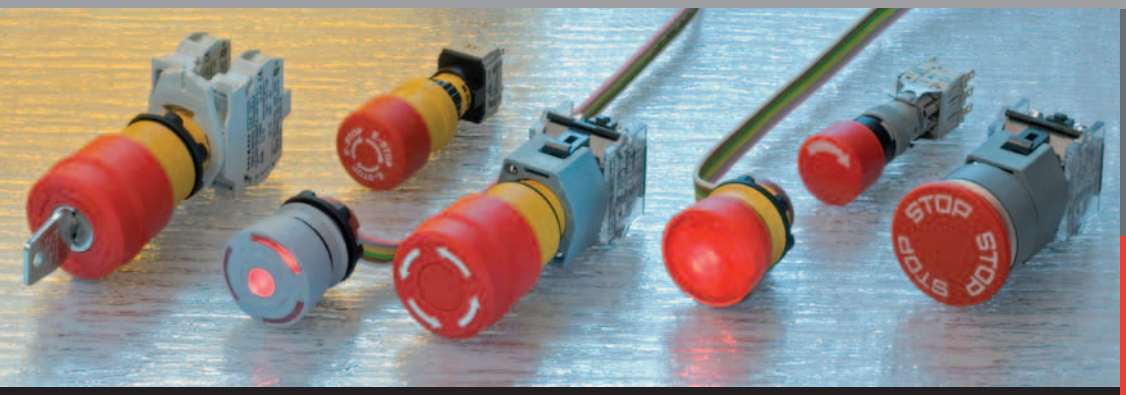
EAO – Your Expert Partner for
Human Machine Interfaces



Emergency-Stop & Stop Switches

Emergency-stop and Stop switches by comparison

EAO, the experts for Human Machine Interfaces, offers a complete range of E-stops (Emergency-stops) and stop switches, as part of their comprehensive choice of actuators and indicators.

Put simply, the difference between an “E-stop” and a “stop” is that E-stops are foolproof and conform to the relevant norms and standards.

1. Emergency-stop switches, foolproof

E-stop equipment incorporates positive opening action and is tested according to the pre-determined standards EN 60947-5-1 and EN 60947-5-5. They are also suitable for applications complying with DIN EN ISO 13850 and EN 60204. This is why they must be equipped with a red lens with a clearly marked unlocking symbol and must have a yellow background.
E-stop switches are always foolproof. This means that no contact may open before the mechanical interlocking has taken place. The norms and specifications read as follows: “It shall not be possible for the emergency stop device to latch-in without generating the emergency stop signal (EN 60947-5-5 chapter 6.2.1 / 1)”.

2. Stop switches, non-foolproof

Stop switches do not have to comply with the above mentioned norms and specifications. This is why they are of less demanding design. They do not have to be foolproof and the contact may open before the mechanical interlocking has taken place. In addition, neither the lens colour has to be red nor the background has to be yellow. Positive opening contacts may be used with stop switches, even though this is not a binding requirement.

3. Stop switches, foolproof (customer specific)

As an exception to the rule, stop switches can be ordered that correspond technically and norm-wise with an E-stop switch but use a different colour code – the red lens and the yellow background are not allowed to be used. In addition to being foolproof, special stop switches can be equipped with positive opening contacts also. This type of stop switch is especially suited for wireless handheld control panels.

These three types of switch enable original equipment manufacturers and designers to exactly select the type of product that best suits their requirements. For example, the emergency-call switch on page 18, even though not being of the forced opening type, fulfils all the required functions.

Of special interest are the illuminated Series 84 E-stops on page 24. They are of mono-block design with an especially low behind-panel depth which renders them especially suitable for compact, space-restricted applications.

If you have any questions regarding E-stop or stop switches, or for information regarding HMI applications, please do not hesitate to contact your local EAO subsidiary, or visit our website at www.eao.com.

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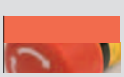
Colour Coding



Switches, Pushbuttons, Actuators

Switching Elements, Adapters

Accessories

Easy configuration

To simplify the ordering of these switches and indicators, only one type of switch is shown per page. To configure a complete unit, just select the red, green and/or yellow coded components.

Product Overview

EAO Emergency-stop switches and stop switches may be equipped with up to four contacts. The opening contacts are forced opening. EAO offers different series with 16 mm, 22.5 mm or 30.5 mm mounting diameter. Accessories such as surface-mounted enclosures, labels and protective shrouds complement the product range. The low 13.5 mm mounting depth of the Series 84 Emergency stop makes it especially useful for small control panels.

Emergency-Stop Switches, foolproof

Foolproof to EN IEC 60947-5-5, EN ISO 13850 and EN 60947-5-1

Features	Series 04	Series 44	Series 61	Series 84
Mounting	22.5 mm	22.5 mm	16 mm	22.5 mm
Minimal mounting depth	53 mm, 2 contacts	53 / 64 mm, 3 contacts	44 / 46 mm, 2 contacts	13.5 / 18 mm, 2 contacts
Degree of protection	IP65	IP65	IP65	IP65
Screw terminal	x	x	x	–
Plug-in terminal	2 × 6.3 × 0.8 mm	–	2.8 × 0.5 mm	2.8 × 0.5 mm
Soldering terminal	–	–	x	x
Ribbon cable	–	–	–	x
Illuminated	–	–	–	x
Max. current I_{th}	10 A	10 A	5 A	5 A
Max. voltage	500 VAC / 600 VDC	600 VAC / 250 VDC	250 VAC	250 VAC / DC
Min. current / voltage	10 mA, 24 VDC	20 mA, 6 V	100 mA, 20 VAC / DC	1 mA, 1 VAC / DC
Silver contacts	x	x	x	–
Gold-plated contacts	x	x	–	x
Number of contacts	max. 4	max. 3	max. 2	max. 2
Twist release	x	x	x	x
Key release	x	x	x	–
Head cap colour	red	red	red	red
Head cap diameter	37 mm	37 mm	27 mm	32 mm
Head cap height	47 mm	47 mm	33.5 mm	26 mm

Stop Switches, non-foolproof

Features	Series 04	Series 44	Swisstac
Mounting	22.5 / 30.5 mm	22.5 mm	16 mm
Minimal mounting depth	53 mm, 2 contacts	53 / 64 mm, 3 contacts	52 / 70 mm, 3 contacts
Degree of protection	IP65	IP65	IP40 / IP65
Screw terminal	x	x	–
Plug-in terminal	2 × 6.3 × 0.8 mm	–	2.8 × 0.5 mm
Soldering terminal	–	–	x
PCB terminal	–	–	x
Ribbon cable	–	–	–
Illuminated	–	–	–
Max. current I_{th}	10 A	10 A	5 A
Max. voltage	500 VAC / 600 VDC	600 VAC / 250 VDC	250 VAC / DC
Min. current / voltage	10 mA, 24 VDC	20 mA, 6 V	20 mA, 20 VAC / DC
Silver contacts	x	x	–
Gold-plated contacts	x	x	x
Number of contacts	max. 4	max. 3	max. 3
Twist release	x	x	x
Key release	x	–	x
Head cap colour	red	red	red
Head cap diameter	40 mm	50 mm	24 mm
Head cap height	25 / 14 mm	38 mm	25 mm

Stop Switches, foolproof

Series 61	Series 84
16 mm	22.5 mm
44 / 46 mm, 2 contacts	13.5 / 18 mm, 2 contacts
IP65	IP65
x	–
2.8 × 0.5 mm	2.8 × 0.5 mm
x	x
–	–
–	x
–	x
5 A	5 A
250 VAC	250 VAC / DC
2 mA, 10 VAC / DC	1 mA, 1 VAC / DC
x	–
x	x
max. 2	max. 2
x	x
x	–
grey / black	grey / black
27 mm	32 mm
33.5 mm	26 mm

EAO Emergency-Stop Switches

Foolproof

16 mm ∅, Series 61, IP65, non-illuminated

Emergency-stop actuator

Twist release; head cap red 27 mm ∅; foolproof

Part No.	Marking	Indication ring	Fixing nut
61-3440.4/1	Arrows	Black	Plastic
61-3440.4/2	Stop+Arrows	Black	Plastic
61-344.4/D	Arrows	Black	Metal

Foolproof according to EN IEC 60947-5-5, EN ISO 13850 and EN 60204-1

For complete unit also order switching element

Emergency-stop actuator

Key release; head cap red 27 mm ∅; foolproof

Part No.	Labelling	Indication ring	Fixing nut
61-5441.4/K	Stop	Black	Plastic

Foolproof according to EN IEC 60947-5-5, EN ISO 13850 and EN 60204-1

For complete unit also order switching element

Switching element

Slow make; silver contacts; forced opening

Part No.	Contacts	Terminals
61-8755.11	2NC	Screw
61-8755.17	2NC	Soldering-/Plug-in
61-8775.11	1NO/1NC	Screw
61-8775.17	1NO/1NC	Soldering-/Plug-in
61-8745.11	1NC	Screw
61-8745.17	1NC	Soldering-/Plug-in

Conforming to IEC 60947-5-1

Label

Yellow 43 mm ∅; labelling in German, English and French

Part No.	Labelling
61-9970.0	None
61-9970.1	NOT AUS
61-9970.2	EMERGENCY STOP
61-9970.3	ARRET D'URGENCE
61-9970.6	NOT HALT

Enclosure

Bottom grey; cover yellow, lead-sealable; IP66; cable gland with traction relief; IP68

Part No.	Reference	Dimensions l × w × h
61-9480.5	Housing	65 × 65 × 57 mm
61-9481.6	Cable gland M16	
704.945.6	Cable gland M20	

Mounting tool

1) For tightening or loosening of the fixing nut
2) For dismantling of the switching element

Image	Part No.	Reference
1	01-907	Mounting tool
2	61-9711.0	Dismantling tool

– Technical data and technical drawings available on pages 26 to 28
– For 3D downloads, please refer to the EAO website

22.5 mm ∅, Series 84, IP65, non-illuminated

Emergency-stop switch

Twist release; head cap red 32 mm ∅; gold-silver contacts; forced opening; foolproof; soldering- / plug-in terminals

Part No.	Contacts	Indication ring
84-5020.0020	1NC	Black
84-5030.0020	1NC / 1NO	Black
84-5040.0020	2NC	Black
84-5120.0020	1NC	Green
84-5130.0020	1NC / 1NO	Green
84-5140.0020	2NC	Green

Foolproof according to EN IEC 60947-5-5, EN ISO 13850 and EN 60204-1

Emergency-stop switch

Twist release; head cap red 32 mm ∅; gold-silver contacts; forced opening; foolproof; ribbon cable

Part No.	Contacts	Indication ring
84-5020.0040	1NC	Black
84-5030.0040	1NC / 1NO	Black
84-5040.0040	2NC	Black
84-5120.0040	1NC	Green
84-5130.0040	1NC / 1NO	Green
84-5140.0040	2NC	Green

Foolproof according to EN IEC 60947-5-5, EN ISO 13850 and EN 60204-1

Label

Yellow; labelling in German, English and French

Part No.	Labelling	Outer diameter
704.963.0	NOT AUS	90 mm
704.963.1	EMERGENCY STOP	90 mm
704.963.3	NOT HALT	90 mm
704.963.5	NOT AUS	60 mm
704.963.6	EMERGENCY STOP	60 mm
704.963.7	ARRET D'URGENCE	60 mm
704.963.8	NOT HALT	60 mm

Protective shroud

Yellow; labelling in German and English; outer diameter 50 mm, height 11 mm

Part No.	Labelling
84-902	None
84-902A	NOT AUS
84-902B	EMERGENCY STOP
84-902D	NOT HALT

Enclosure

Bottom grey, cover yellow, lead-sealable; IP66; cable gland for sealing and strain relief, IP68

Part No.	Reference	Dimensions l × w × h
84-910	Housing	65 × 65 × 57 mm
61-9481.6	Cable gland M16	
704.945.6	Cable gland M20	

Mounting tool

For tightening (or loosening) of the emergency-stop fixing nut

Part No.	Reference
84-996	Mounting tool

– Technical data and technical drawings available on pages 31 to 33
– For 3D downloads, please refer to the EAO website

22.5 mm ∅, Series 84, IP65, illuminated

Emergency-stop switch

Twist release; head cap red 32 mm ∅;
gold-silver contacts; forced opening; foolproof;
soldering- / plug-in terminals

Part No.	Contacts	Indication ring
84-5021.2B20	1NC	Black
84-5041.2B20	1NC / 1NO	Black
84-5031.2B20	2NC	Black
84-5121.2B20	1NC	Green
84-5131.2B20	1NC / 1NO	Green
84-5141.2B20	2NC	Green

Foolproof according to EN IEC 60947-5-5, EN ISO 13850 and EN 60204-1

Emergency-stop switch

Twist release; head cap red 32 mm ∅;
gold-silver contacts;
forced opening; foolproof; ribbon cable

Part No.	Contacts	Indication ring
84-5021.2B40	1NC	Black
84-5041.2B40	1NC / 1NO	Black
84-5031.2B40	2NC	Black
84-5121.2B40	1NC	Green
84-5131.2B40	1NC / 1NO	Green
84-5141.2B40	2NC	Green

Foolproof according to EN IEC 60947-5-5, EN ISO 13850 and EN 60204-1

Label

Yellow; labelling in German, English and French

Part No.	Labelling	Outer diameter
704.963.0	NOT AUS	90 mm
704.963.1	EMERGENCY STOP	90 mm
704.963.3	NOT HALT	90 mm
704.963.5	NOT AUS	60 mm
704.963.6	EMERGENCY STOP	60 mm
704.963.7	ARRET D'URGENCE	60 mm
704.963.8	NOT HALT	60 mm

Protective shroud

Yellow; labelling in German and English; outer diameter 50 mm, height 11 mm

Part No.	Labelling
84-902	None
84-902A	NOT AUS
84-902B	EMERGENCY STOP
84-902D	NOT HALT

Enclosure

Bottom grey, cover yellow lead-sealable; IP66; cable gland with traction relief, IP68

Part No.	Reference	Dimensions l × w × h
84-910	Housing	65 × 65 × 57 mm
61-9481.6	Cable gland M16	
704.945.6	Cable gland M20	

Mounting tool

For tightening (or loosening) of the emergency-stop fixing nut

Part No.	Reference
84-996	Mounting tool

– Technical data and technical drawings available on pages 31 to 33
– For 3D downloads, please refer to the EAO website

22.5 mm ∅, Series 44, IP65, non-illuminated

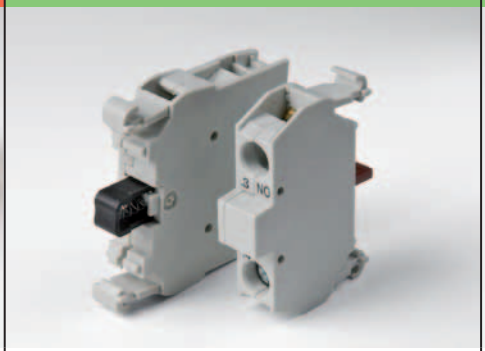
Emergency-stop switch

Twist- or Key release; mushroom head red 37 mm ∅; foolproof

Part No.	Reference
44-712	Twist release
44-713	Key release

Foolproof according to EN IEC 60947-5-5, EN ISO 13850 and EN 60204-1

Switching element



Slow make; forced opening; front mounting; screw terminals

Part No.	Contacts	Contact material	Front mounting
44-131	1NC/NO	Hard Silver	Stackable
44-151	1NC	Hard Silver	Stackable
44-161	1NO	Hard Silver	Stackable
44-132	1NC/NO	Gold-Silver	Stackable
44-152	1NC	Gold-Silver	Stackable
44-162	1NO	Gold-Silver	Stackable
44-111	1NC	Hard Silver	Non-stackable
44-121	1NC	Hard Silver	Non-stackable

Conforming to IEC 60947-5-1

Front adapter

For switching element

Part No.	Labelling
44-900	without
44-901	1 3 2
44-902	1/2 5/6 4/3
44-903	1/2/3 7/8/9 6/5/4

Please refer to main catalogue

Label

Yellow; adhesive; labelling in German, English and French

Part No.	Labelling	Outer diameter
44-950	None	60 mm
44-950.1	NOT AUS	60 mm
44-950.2	EMERGENCY STOP	60 mm
44-950.3	ARRET D'URGENCE	60 mm
44-950.4	NOT HALT	60 mm
44-951	None	45 mm
44-951.1	NOT AUS	45 mm
44-951.2	EMERGENCY STOP	45 mm
44-951.3	ARRET D'URGENCE	45 mm
44-951.4	NOT HALT	45 mm

Label

Yellow; adhesive; labelling in German, English and French

Part No.	Labelling	Outer diameter
44-949	None	90 mm
44-949.1	NOT AUS	90 mm
44-949.2	EMERGENCY STOP	90 mm
44-949.3	ARRET D'URGANCE	90 mm
44-949.4	NOT HALT	90 mm

Enclosure

Yellow; with adapter for base-mounting

Part No.	Reference	Dimensions l × w × h
44-001.4	Housing	84 × 72 × 64 mm
44-956	Cable gland M20	

– Technical data and technical drawings available on pages 38 to 40
– For 3D downloads, please refer to the EAO website

22.5 mm ∅, Series 04, IP65, non-illuminated

Emergency-stop actuator

Twist release; head cap red 37 mm ∅; foolproof

Part No.	Marking
704.064.2	Arrows

Foolproof according to EN IEC 60947-5-5, EN ISO 13850 and EN 60204-1

For complete unit also order switching element

Emergency-stop actuator

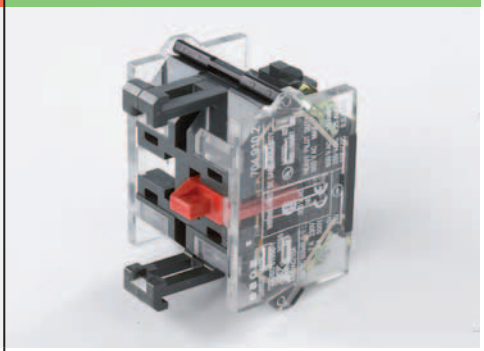
Key release; head cap red 37 mm ∅; foolproof

Part No.	Marking
704.066.2	Arrows

Foolproof according to EN IEC 60947-5-5, EN ISO 13850 and EN 60204-1

For complete unit also order switching element

Switching element

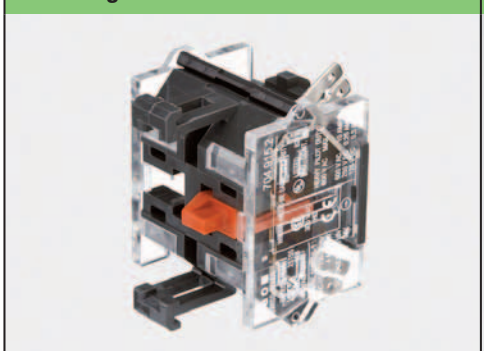


Slow make; forced opening; screw terminals

Conforming to IEC 60947-5-1

Part No.	Contacts	Contact material
704.910.1	1NO	Hard Silver
704.910.2	1NC	Hard Silver
704.910.3	2NO	Hard Silver
704.910.4	2NC	Hard Silver
704.910.5	1NC/1NO	Hard Silver
704.911.1	1NO	Gold-Silver
704.911.2	1NC	Gold-Silver
704.911.3	2NO	Gold-Silver
704.911.4	2NC	Gold-Silver
704.911.5	1NC/1NO	Gold-Silver

Switching element



Slow make; forced opening; plug-in terminal

Part No.	Contacts	Contact material
704.915.1	1NO	Hard Silver
704.915.2	1NC	Hard Silver
704.915.3	2NO	Hard Silver
704.915.4	2NC	Hard Silver
704.915.5	1NC/1NO	Hard Silver

Conforming to IEC 60947-5-1

Switching element

Slow make; forced opening; double plug-in terminal

Part No.	Contacts	Contact material
704.915.1/D	1NO	Hard Silver
704.915.2/D	1NC	Hard Silver
704.915.3/D	2NO	Hard Silver
704.915.4/D	2NC	Hard Silver
704.915.5/D	1NC/1NO	Hard Silver

Conforming to IEC 60947-5-1

– Technical data and technical drawings available on pages 34 to 37
– For 3D downloads, please refer to the EAO website

22.5 mm ∅, Series 04, IP65, non-illuminated

Label

Yellow; labelling in German, English and French

Part No.	Labelling	Outer diameter
704.963.0	NOT AUS	90 mm
704.963.1	EMERGENCY STOP	90 mm
704.963.3	NOT HALT	90 mm
704.963.5	NOT AUS	60 mm
704.963.6	EMERGENCY STOP	60 mm
704.963.7	ARRET D'URGENCE	60 mm
704.963.8	NOT HALT	60 mm

Enclosure

Bottom grey; cover yellow lead-sealable; IP66;
cable gland with traction relief; IP68

Part No.	Reference	Dimensions l × w × h
704.945.7	Housing	65 × 65 × 81 mm
704.945.8	Housing	94 × 65 × 81 mm
704.945.0	Housing	94 × 94 × 81 mm
61-9481.6	Cable gland	M16
704.945.6	Cable gland	M20

Protective shroud

For E-stop and stop switch applications; IP65;
with anti-rotation pin; material: plastic

Part No.	Dimensions
704.927.9	82 mm

Available: spring 2010

Conforms to SEMI S2-93 12.4 in combination with
E-stop switches

Protective shroud

For E-stop and stop switch applications only; material plastic

Part No.	Dimensions
704.927.8	50 mm

Available: spring 2010

The protective shroud 704.927.8 can obstruct
sudden operation

– Technical data and technical drawings available on pages 34 to 37
– For 3D downloads, please refer to the EAO website

EAO Stop Switches

Non-Foolproof

16 mm ∅, Series Swisstac, IP65, non-illuminated

Stop switch

Twist release; head cap red 24 mm ∅; gold contacts; forced opening; non-foolproof; incl. switching element

Part No.	Mounting depth	Contacts	Terminals
951+2000-WP	52 mm	1NC	PCB
952+2000-WP	52 mm	2NC	PCB
953+2000-WP	52 mm	3NC	PCB
951+2000-W0	55 mm	1NC	Soldering- / plug-in
952+2000-W0	55 mm	2NC	Soldering- / plug-in
953+2000-W0	55 mm	3NC	Soldering- / plug-in
851+2000-WP	67 mm	1NC	PCB
852+2000-WP	67 mm	2NC	PCB
853+2000-WP	67 mm	3NC	PCB
851+2000-W0	70 mm	1NC	Soldering- / plug-in
852+2000-W0	70 mm	2NC	Soldering- / plug-in
853+2000-W0	70 mm	3NC	Soldering- / plug-in

Stop switch

Key release; head cap red 24 mm ∅; gold contacts; forced opening; non-foolproof; incl. switching element

Part No.	Mounting depth	Contacts	Terminals
961+2401-WP	52 mm	1NC	PCB
962+2401-WP	52 mm	2NC	PCB
963+2401-WP	52 mm	3NC	PCB
961+2401-W0	55 mm	1NC	Soldering- / plug-in
962+2401-W0	55 mm	2NC	Soldering- / plug-in
963+2401-W0	55 mm	3NC	Soldering- / plug-in
861+2401-WP	67 mm	1NC	PCB
862+2401-WP	67 mm	2NC	PCB
863+2401-WP	67 mm	3NC	PCB
861+2401-W0	70 mm	1NC	Soldering- / plug-in
862+2401-W0	70 mm	2NC	Soldering- / plug-in
863+2401-W0	70 mm	3NC	Soldering- / plug-in

Mounting tool

For tightening (or loosening) of the fixing nut

Part No.	Reference
300-0003-00	Mounting tool

Jaw spanner

For tightening (or loosening) of the fixing nut and dismantling of the switching element block

Part No.	Reference
300-0004-00	Jaw spanner

– Technical data and technical drawings available on pages 29 to 30
– For 3D downloads, please refer to the EAO website

16 mm ∅, Series Swisstac, IP40, non-illuminated

Stop switch

Twist release; head cap red 24 mm ∅; gold contacts; forced opening; non-foolproof; incl. switching element

Part No.	Mounting depth	Contacts	Terminals
951+2000-0P	52 mm	1NC	PCB
952+2000-0P	52 mm	2NC	PCB
953+2000-0P	52 mm	3NC	PCB
951+2000-00	55 mm	1NC	Soldering-/plug-in
952+2000-00	55 mm	2NC	Soldering-/plug-in
953+2000-00	55 mm	3NC	Soldering-/plug-in
851+2000-0P	67 mm	1NC	PCB
852+2000-0P	67 mm	2NC	PCB
853+2000-0P	67 mm	3NC	PCB
851+2000-00	70 mm	1NC	Soldering-/plug-in
852+2000-00	70 mm	2NC	Soldering-/plug-in
853+2000-00	70 mm	3NC	Soldering-/plug-in

Stop switch

Key release; head cap red 24 mm ∅; gold contacts; forced opening; non-foolproof; incl. switching element

Part No.	Mounting depth	Contacts	Terminals
961+2401-0P	52 mm	1NC	PCB
962+2401-0P	52 mm	2NC	PCB
963+2401-0P	52 mm	3NC	PCB
961+2401-00	55 mm	1NC	Soldering-/plug-in
962+2401-00	55 mm	2NC	Soldering-/plug-in
963+2401-00	55 mm	3NC	Soldering-/plug-in
861+2401-0P	67 mm	1NC	PCB
862+2401-0P	67 mm	2NC	PCB
863+2401-0P	67 mm	3NC	PCB
861+2401-00	70 mm	1NC	Soldering-/plug-in
862+2401-00	70 mm	2NC	Soldering-/plug-in
863+2401-00	70 mm	3NC	Soldering-/plug-in

Mounting tool

For tightening (or loosening) of the fixing nut

Part No.	Reference
300-0003-00	Mounting tool

Jaw spanner

For tightening (or loosening) of the fixing nut and dismantling of the switching element block

Part No.	Reference
300-0004-00	Jaw spanner

– Technical data and technical drawings available on pages 29 to 30
– For 3D downloads, please refer to the EAO website

22.5 mm ∅, Series 44, IP65, non-illuminated

Stop switch actuator

Twist release; mushroom head red 50 mm ∅; non-foolproof

Part No.
44-710

Stop switch actuator

Twist release; mushroom head red 37 mm ∅; non-foolproof

Part No.
44-711

Front adapter

In combination with switching element

Part No.	Marking
44-900	without
44-901	1 3 2
44-902	1/2 5/6 4/3
44-903	1/2/3 7/8/9 6/5/4
Please refere to main catalogue	

Switching element

Slow make; forced opening; *stackable;* front mounting; screw terminals

Part No.	Contacts	Contact material
44-131	1NC/NO	Hard Silver
44-151	1NC	Hard Silver
44-161	1NO	Hard Silver
44-132	1NC/NO	Gold-Silver
44-152	1NC	Gold-Silver
44-162	1NO	Gold-Silver
Conforming to IEC 60947-5-1		

Switching element

Slow make; forced opening; *non-stackable;* front mounting; screw terminals

Part No.	Contacts	Contact material
44-111	1NC	Hard Silver
44-121	1NO	Hard Silver
Not to be used with emergency-stop switch		
Conforming to IEC 60947-5-1		

Enclosure

Grey; with adapter for basemounting

Part No.	Reference		Dimensions l × w × h
44-001.8	Housing	1 x	84 × 72 × 64 mm
44-002.8	Housing	2 x	117 × 72 × 64 mm
44-003.8	Housing	3 x	150 × 72 × 64 mm
44-005.8	Housing	5 x	215 × 72 × 64 mm
44-956	Cable gland.		M20

– Technical data and technical drawings available on pages 38 to 40
– For 3D downloads, please refer to the EAO website

22.5 mm ∅, Series 04, IP65, non-illuminated

Stop switch actuator

Twist release; mushroom head red 40 mm ∅; non-foolproof; raised mounting

Part No.	Marking	Front ring
704.075.2	Arrows	Aluminium nature
704.075.3	Stop	Aluminium nature
704.074.2	Arrows	Plastic grey
704.074.3	Stop	Plastic grey

For complete unit also order switching element

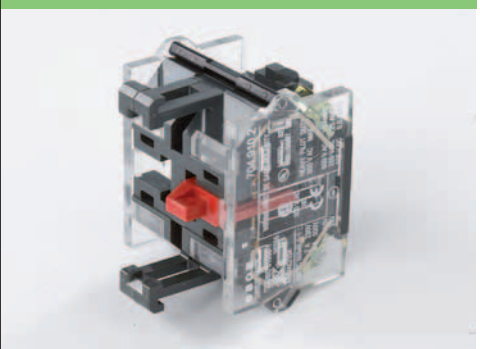
Stop switch actuator

Key release; mushroom head red 40 mm ∅; non-foolproof; raised mounting

Part No.	Front ring
704.078.0	Aluminium nature
704.076.0	Plastic grey

For complete unit also order switching element

Switching element



Slow make; forced opening; screw terminals

Conforming to IEC 60947-5-1

Part No.	Contacts	Contact material
704.910.1	1NO	Hard Silver
704.910.2	1NC	Hard Silver
704.910.3	2NO	Hard Silver
704.910.4	2NC	Hard Silver
704.910.5	1NC/1NO	Hard Silver
704.911.1	1NO	Gold-Silver
704.911.2	1NC	Gold-Silver
704.911.3	2NO	Gold-Silver
704.911.4	2NC	Gold-Silver
704.911.5	1NC/1NO	Gold-Silver

Switching element

Slow make; forced opening; plug-in terminal

Part No.	Contacts	Contact material
704.915.1	1NO	Hard Silver
704.915.2	1NC	Hard Silver
704.915.3	2NO	Hard Silver
704.915.4	2NC	Hard Silver
704.915.5	1NC/1NO	Hard Silver

Conforming to IEC 60947-5-1

Switching element

Slow make; forced opening; double plug-in terminal

Part No.	Contacts	Contact material
704.915.1/D	1NO	Hard Silver
704.915.2/D	1NC	Hard Silver
704.915.3/D	2NO	Hard Silver
704.915.4/D	2NC	Hard Silver
704.915.5/D	1NC/1NO	Hard Silver

Conforming to IEC 60947-5-1

Enclosure

Grey; cover lead-sealable, IP66; cable gland with traction relief, IP68

Part No.	Reference	Holes	Dimensions l × w × h
704.945.1	Housing	1 x	94 × 94 × 81 mm
704.945.2	Housing	2 x	130 × 94 × 81 mm
704.945.3	Housing	3 x	180 × 94 × 81 mm
704.945.4	Housing	4 x	180 × 182 × 110 mm
704.945.5	Housing	6 x	180 × 182 × 110 mm
61-9481.4	Cable gland M16		
704.945.6	Cable gland M20		

– Technical data and technical drawings available on pages 34 to 37
– For 3D downloads, please refer to the EAO website

22.5 mm ∅, Series 04, IP67, non-illuminated

Emergency call actuator

Twist release; mushroom head red 60 mm ∅; metal powder coated; slipping clutch included; non-foolproof; raised mounting

Part No.	Reference
704.077.2D	Unlocking with key insert

For additional customized products, please contact your local EAO sales office

For complete unit also order switching element

Switching element

Snap action; screw terminals

Part No.	Contacts	Contact material
704.900.1	1NO	Hard Silver
704.900.2	1NC	Hard Silver
704.900.3	2NO	Hard Silver
704.900.4	2NC	Hard Silver
704.900.5	1NC/1NO	Hard Silver
704.901.1	1NO	Gold-Silver
704.901.2	1NC	Gold-Silver
704.901.3	2NO	Gold-Silver
704.901.4	2NC	Gold-Silver
704.901.5	1NC/1NO	Gold-Silver

Switching element

Snap action; plug-in terminals

Part No.	Contacts	Contact material
704.905.1	1NO	Hard Silver
704.905.2	1NC	Hard Silver
704.905.3	2NO	Hard Silver
704.905.4	2NC	Hard Silver
704.905.5	1NC/1NO	Hard Silver

Switching element

Snap action; double plug-in terminals

Part No.	Contacts	Contact material
704.901.1/D	1NO	Gold-Silver
704.901.2/D	1NC	Gold-Silver
704.901.3/D	2NO	Gold-Silver
704.901.4/D	2NC	Gold-Silver
704.901.5/D	1NC/1NO	Gold-Silver
704.905.1/D	1NO	Hard Silver
704.905.2/D	1NC	Hard Silver
704.905.3/D	2NO	Hard Silver
704.905.4/D	2NC	Hard Silver
704.905.5/D	1NC/1NO	Hard Silver

Switching element

Snap action; screw terminals for ring cable shoes

Part No.	Contacts	Contact material
704.900.1B	1NO	Hard Silver
704.900.2B	1NC	Hard Silver
704.900.3B	2NO	Hard Silver
704.900.4B	2NC	Hard Silver
704.900.5B	1NC/1NO	Hard Silver

Protective shroud

Yellow painted aluminium; outer diameter 50 mm; height 48 mm

Part No.	Reference
704.927.4	Protective shroud

The protective shroud 704.927.4 is not suitable for proper use of the emergency-stop switch. It can obstruct sudden operation.

– Technical data and technical drawings available on pages 34 to 37
– For 3D downloads, please refer to the EAO website

30.5 mm ∅, Series 04, IP65, non-illuminated

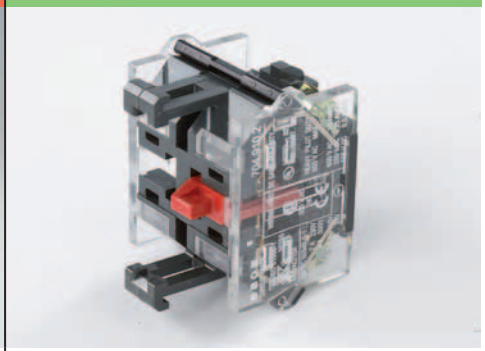
Stop switch actuator

Twist release; mushroom head red 40 mm ∅; non-foolproof; flush mounting

Part No.	Labelling	Front ring
704.075.218	Arrows	Aluminium nature
704.075.210	Arrows	Aluminium black
704.075.318	Stop	Aluminium nature
704.075.310	Stop	Aluminium black

For complete unit also order switching element

Switching element



Slow make; forced opening; screw terminals

Conforming to IEC 60947-5-1

Part No.	Contacts	Contact material
704.910.1	1NO	Hard Silver
704.910.2	1NC	Hard Silver
704.910.3	2NO	Hard Silver
704.910.4	2NC	Hard Silver
704.910.5	1NC/1NO	Hard Silver
704.911.1	1NO	Gold-Silver
704.911.2	1NC	Gold-Silver
704.911.3	2NO	Gold-Silver
704.911.4	2NC	Gold-Silver
704.911.5	1NC/1NO	Gold-Silver

Switching element

Slow make; forced opening; plug-in terminal

Part No.	Contacts	Contact material
704.915.1	1NO	Hard Silver
704.915.2	1NC	Hard Silver
704.915.3	2NO	Hard Silver
704.915.4	2NC	Hard Silver
704.915.5	1NC/1NO	Hard Silver

Conforming to IEC 60947-5-1

Switching element

Slow make; forced opening; double plug-in terminal

Part No.	Contacts	Contact material
704.915.1/D	1NO	Hard Silver
704.915.2/D	1NC	Hard Silver
704.915.3/D	2NO	Hard Silver
704.915.4/D	2NC	Hard Silver
704.915.5/D	1NC/1NO	Hard Silver

Conforming to IEC 60947-5-1

– Technical data and technical drawings available on pages 34 to 37
– For 3D downloads, please refer to the EAO website

EAO Stop Switches

Foolproof

16 mm ∅, Series 61, IP65, non-illuminated

Stop switch actuator

Twist release; head cap grey 27 mm ∅; foolproof

Part No.	Marking	Indication ring	Fixing nut
61-3440.4/8	Arrows	Black	Plastic

For complete unit also order switching element

Stop switch actuator

Key release; head black 27 mm ∅; foolproof

Part No.	Labelling	Indication ring	Fixing nut
61-5441.0/KA	None	Black	Plastic

For complete unit also order switching element

Switching element

Slow make; silver contacts; forced opening.

Part No.	Contacts	Terminals
61-8755.11	2NC	Screw
61-8755.17	2NC	Soldering-/plug-in
61-8775.11	1NO/1NC	Screw
61-8775.17	1NO/1NC	Soldering-/plug-in
61-8745.11	1NC	Screw
61-8745.17	1NC	Soldering-/plug-in

Conforming to IEC 60947-5-1

Switching element

Slow make element; gold contacts

Part No.	Contacts	Terminals
61-8745.37	1NC	Soldering-/plug-in
61-8775.37	1NC/1NO	Soldering-/plug-in
61-8755.37	2NC	Soldering-/plug-in

Enclosure

Grey, cover lead-sealable, IP66; cable gland with traction relief; IP68

Part No.	Reference	Dimensions l × w × h
61-9480.6	Housing	65 × 65 × 57 mm
61-9481.6	Cable gland M16	
704.945.6	Cable gland M20	

Protective shroud

Alluminium anodised, yellow varnished;
outer diameter 48 mm; height 35 mm

Part No.	Reference
61-9965	Protective shroud

The protective shroud 61-9965 is not suitable for proper use of the emergency-stop switch. It can obstruct sudden operation.

– Technical data and technical drawings available on pages 26 to 28
– For 3D downloads, please refer to the EAO website

22.5 mm ∅, Series 84, IP65, non-illuminated

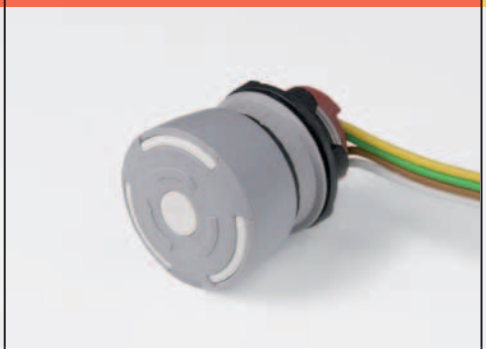
Stop switch

Twist release; head cap grey 32 mm ∅; gold-silver contacts; forced opening; foolproof; soldering- / plug-in terminals

Part No.	Contacts	Indication ring
84-6020.0020	1NC	Black
84-6030.0020	1NC / NO	Black
84-6040.0020	2NC	Black

Conforming to IEC 60947-5-1

Stop switch



Twist release; head cap grey 32 mm ∅; gold-silver contacts; forced opening; foolproof; ribbon cable

Part No.	Contacts	Indication ring
84-6020.0040	1NC	Black
84-6030.0040	1NC / NO	Black
84-6040.0040	2NC	Black

Conforming to IEC 60947-5-1

Enclosure

Grey; cover lead-sealable; IP66; cable gland with traction relief; IP68

Part No.	Reference	Holes	Dimensions l × w × h
704.945.1	Housing	1 x	94 × 94 × 81 mm
704.945.2	Housing	2 x	130 × 94 × 81 mm
704.945.3	Housing	3 x	180 × 94 × 81 mm
704.945.4	Housing	4 x	180 × 182 × 110 mm
704.945.5	Housing	6 x	180 × 182 × 110 mm
61-9481.4	Cable gland M16		
704.945.6	Cable gland M20		

Protective shroud

Yellow painted aluminium; outside diameter 48 mm; height 35 mm

Part No.	Reference
84-909	Protective shroud

The protective shroud 84-909 is not suitable for proper use of the emergency-stop switch. It can obstruct spontaneous operation.

Fixing nut

Plastic, black

Part No.	Reference
84-905	28 mm ∅, for limited space application
84-908	30 mm ∅, standard delivery

– Technical data and technical drawings available on pages 31 to 33
– For 3D downloads, please refer to the EAO website

22.5 mm ∅, Series 84, IP65, illuminated

Stop switch

Twist release; head cap grey 32 mm ∅; gold-silver contacts; forced opening; foolproof; soldering- / plug-in terminals

Part No.	Contacts	Indication ring
84-6021.2B20	1NC	Black
84-6031.2B20	1NC / NO	Black
84-6041.2B20	2NC	Black

Conforming to IEC 60947-5-1

Stop switch

Twist release; head cap grey 32 mm ∅; gold-silver contacts; forced opening; foolproof; ribbon cable

Part No.	Contacts	Indication ring
84-6021.2B40	1NC	Black
84-6031.2B40	1NC / NO	Black
84-6041.2B40	2NC	Black

Conforming to IEC 60947-5-1

Enclosure

Grey; cover lead-sealable; IP66; cable gland with traction relief; IP68

Part No.	Reference	Holes	Dimensions l × w × h
704.945.1	Housing	1 x	94 × 94 × 81 mm
704.945.2	Housing	2 x	130 × 94 × 81 mm
704.945.3	Housing	3 x	180 × 94 × 81 mm
704.945.4	Housing	4 x	180 × 182 × 110 mm
704.945.5	Housing	6 x	180 × 182 × 110 mm
61-9481.4	Cable gland M16		
704.945.6	Cable gland M20		

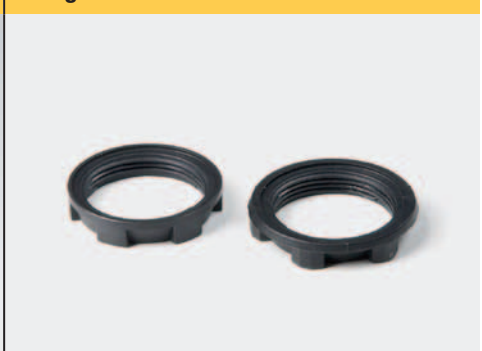
Protective shroud

Yellow painted aluminium; outside diameter 48 mm; height 35 mm

Part No.	Reference
84-909	Protective shroud

The protective shroud 84-909 is not suitable for proper use of the emergency-stop switch. It can obstruct spontaneous operation.

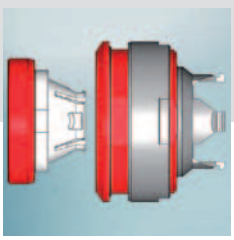
Fixing nut



Plastic, black

Part No.	Reference
84-905	28 mm ∅, for limited space application
84-908	30 mm ∅, standard delivery

– Technical data and technical drawings available on pages 31 to 33
– For 3D downloads, please refer to the EAO website



Technical Data and Technical Drawings

Series 61
Series Swisstac
Series 84
Series 04
Series 44

Emergency-stop switch and Stop switch

Switching system

Double-break slow-make system, contact opening width 2 × 1.5 mm, with 2 × 2 contact points per switching element.
NC-contact elements fulfill requirements of switches with forced opening as per EN IEC 60947-5-1.
The slow-make elements are optionally obtainable with the following switching functions: 1 NO or 2 NO, 1 NC or 2 NC, 1 NO + 1 NC.

Material

Head cap
Polyamide (PA 6), as per UL 94 HB

Actuator housing
Polyamide (PA 6.6), as per UL 94 HB

Material of contact
Silver contact: Ag-Ni alloy, silver plated
Gold contact: Cu-Ni alloy, gold plated

Switching element
Solder housing: Polyamide (PA), as per UL 94 V0
Screw housing: Polyamide (PA) and (PA 6.6), as per UL 94 V0 and Polycarbonate (PC), as per UL 94 V2

Mechanical characteristics

Terminals

– Solder	rigid	flexible	superflexible
1 wire	0.5 ... 1.5 mm²	0.5 ... 0.75 mm²	0.5 mm²
2 wires	0.75 mm²	0.5 mm²	
– Screw			
1 wire	0.5 ... 1.5 mm²	0.5 ... 0.75 mm²	0.5 mm²
2 wires	0.75 mm²	0.5 mm²	0.5 mm²

Actuating force
max. 65 N

Actuating travel
10 mm

Rebound time
2 ms, contact making and contact breaking
The rebound times apply to normal manual activation

Mechanical lifetime

Switching element:	≤50 000	cycles of operation
Emergency-stop switch:	6 050	cycles of operation

Electrical characteristics

Standards
The devices comply with: EN IEC 61058-1 and EN IEC 60947-5-1, EN IEC 60947-5-5 (Emergency-stop)

Electrical lifetime
Switching element: ≤50 000 cycles of operation
at 250 VAC, 5A, cosϕ 0.85, as per EN IEC 60947-5-1
Emergency-stop switch: 6 050 cycles of operation
as per EN IEC 60947-5-5

Electric strength
4000 VAC, 50 Hz, 1 min., as per DIN IEC 60512-2
between all terminals and earth

Overvoltage category
III, as per EN IEC 60947-5-1

Protection class
Class II, as per EN IEC 61058-1

Degree of pollution
3, as per EN IEC 60947-1

Electrical characteristics for silver contacts

Rated operational voltage U_e
250 VAC / DC as per EN IEC 60947-1

Rated insulation voltage U_i
320 VAC, as per EN IEC 60947-5-1

Rated impulse withstand voltage U_{imp}
4 kV, as per EN IEC 60947-5-1

Contact resistance
New state ≤50 mΩ, as per DIN IEC 60512-2-4, measured at 100 mA, 10 V

Conventional free air thermal current I_{th}
5 A, as per EN IEC 60947-5-1
The maximum current in continuous operation and at ambient temperature must not exceed the quoted maximum values.

Switch rating
AC with silver contact and screw terminal, service category AC-15, as per EN IEC 60947-5-1

Voltage	125 VAC	250 VAC
Current	3 A	2 A

DC with silver contact and screw terminal, service category DC-13, as per EN IEC 60947-5-1

Voltage	250 VDC
Current	0.2 A

Recommended minimal operational data
20 VAC / DC, 100 mA

Electrical characteristics for gold contacts

Rated operational voltage U_e
50 AC/DC, as per EN IEC 60947-1

Rated insulation voltage U_i
320 VAC, as per EN IEC 60947-5-1

Rated impulse withstand voltage U_{imp}
EN IEC 60947-5-1

Contact resistance
New state ≤50 mΩ, as per DIN IEC 60512-2-4, measured at 20 mV, 10 mA

Conventional free air thermal current I_{th}
3 A, as per EN IEC 60947-5-1
The maximum current in continuous operation and at ambient temperature must not exceed the quoted maximum values.

Switch rating
AC with gold contact, service category AC-15,
as per EN IEC 60947-5-1

Voltage	50 VAC
Current	0.5 A

DC with gold contact, service category DC-13,
as per EN IEC 60947-5-1

Voltage	50 VAC
Current	0.1 A

Recommended minimal operational data
10 mVAC/DC, 2 mA

Environmental conditions

Storage temperature
–40 °C ... +85 °C

Operating temperature
–25 °C ... +55 °C

Protection degree
as per EN IEC 60529
Frontside IP65 | rear side IP40

Shock resistance
(semi-sinusoidal)
max. 100 m/s², pulse width 11 ms, 3-axis, as per EN IEC 60068-2-27

Vibration resistance
(sinusoidal)
max. 100 m/s² at 10 Hz ... 500 Hz, as per EN IEC 60068-2-6

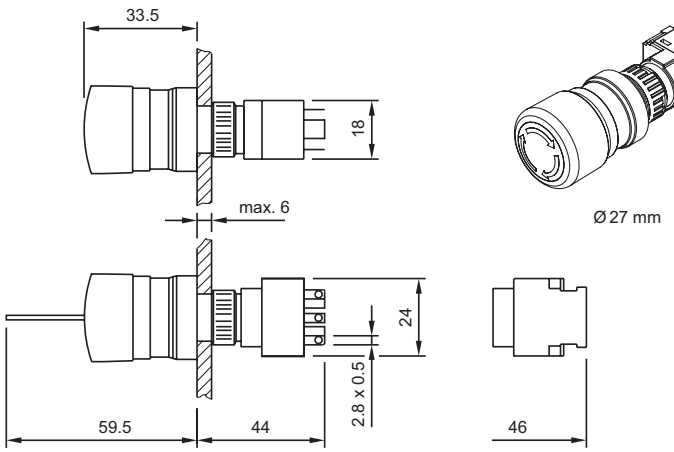
Climate resistance
Damp heat, cyclic
96 hours, +25 °C / 97%, +55 °C / 93% relative humidity,
as per EN IEC 60068-2-30
Damp heat, state
56 days, +40 °C / 93% relative humidity, as per EN IEC 60068-2-78
Rapid change of temperature
100 cycles, –40 °C ... +80 °C, as per EN IEC 60068-2-14

Approvals

Approbations
CB (IEC 60947)
CB (IEC 61058)
CSA
ENEC (EN 61058)
Germanischer Lloyd
GOST
UL
VDE

Declaration of conformity
CE

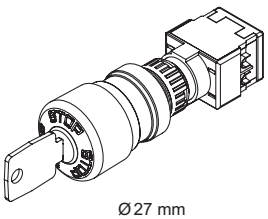
61 Emergency-stop switch and Stop switch



Slow-make switching element
Soldering terminal

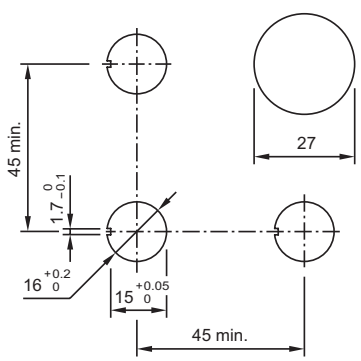
Slow-make switching element
Screw terminal

Ø 27 mm



Ø 27 mm

61 Cut-outs



Stop switch

Switching system

Is equipped with rigid contact link. The slow-make element opens positively and simply consists of a double-break NC, contact opening width 2 × 1.5 mm. The multi-layer contacts are designed according to EN IEC 60947-5-1.

Material

Head cap
Polyamide (PA)

Actuator housing
Polycarbonate (PC), as per UL 94 V0

Switching element
Rynite (PET), as per UL 94 V0

Material of contact
Ag-Ni, 2 µm gold plated

Mechanical characteristics

Terminals
Soldering terminal (also pluggable 2.8 × 0.5 mm) or PCB terminal, Brass gold plated
Wire cross-section 1.0 mm^2 max.

Mechanical lifetime
8000 cycles of operation

Electrical characteristics

Rated operational voltage U_e
250 VAC, as per EN IEC 60947-1

Rated insulation voltage U_i
250 V, as per EN IEC 60947-5-1

Contact resistance
New state ≤50 mΩ, as per DIN IEC 60512-2-5

Electrical life
8000 cycles of operation at 250 VAC, 1 A

Conventional free air thermal current I_{th}
5 A, as per EN IEC 60947-5-1
The maximum current in continuous operation and at ambient temperature must not exceed the quoted maximum values.

Switch rating
AC (inductive) with silver contact (gold plated), service category AC-15, as per EN IEC 60947-5-1

Voltage	250 VAC
Current	1 A

Electric strength
Switching element 2000 VAC, 50 Hz, 1 min. (functional isolation)

Short-circuit protection
Series-connected blow-out fuse 5 A gL

Environmental conditions

Storage temperature
–40 °C ... +85 °C, as per EN IEC 60068

Operating temperature
–25 °C ... +55 °C, as per EN IEC 60068-2

Protection degree
Frontside IP65 and IP40, as per EN IEC 60529

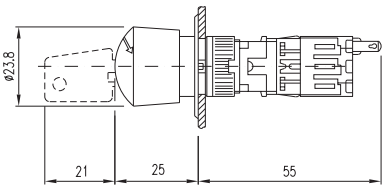
Approvals

Approbations
CSA
UL
VDE

Declaration of conformity
CE

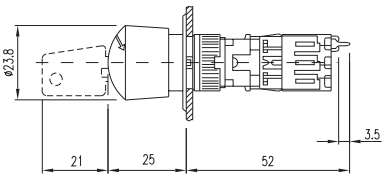
Swisstac Stop switch

55 mm; soldering-/plug-in terminal; IP40 and IP65; non-foolproof



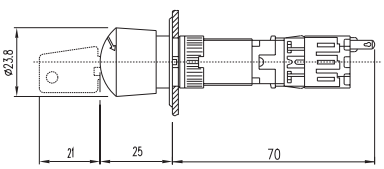
Swisstac Stop switch

52 mm; PCB terminal; IP40 and IP65; non-foolproof



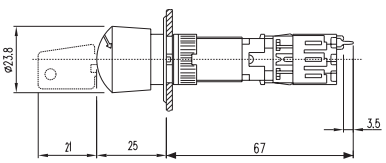
Swisstac Stop switch

70 mm; soldering-/plug-in terminal; IP40 and IP65; non-foolproof



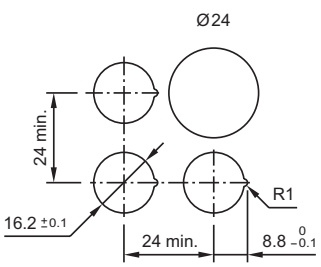
Swisstac Stop switch

67 mm; PCB terminal; IP40 and IP65; non-foolproof



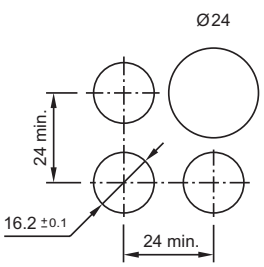
Swisstac Cut-outs

Stop switch; IP40; non-foolproof



Swisstac Cut-outs

Stop switch; IP65; non-foolproof



Emergency-stop switch and Stop switch

Switching system

The double-break switching system can be supplied for the following switching functions: 1 NC, 2 NC, 1 NC + 1 NO.
The NC contacts have forced opening according to EN IEC 60947-5-1.

Material

Connection cable
Polyvinylchloride (PVC) flame retardant, operating temp. +65 °C

Mushroom-head cap
Polybutylenterephthalate (PBT), as per UL 94 V0 (red items)

Actuator housing
Polyamide (PA 66), as per UL 94 V0, flat ribbon cable-cover
Polyamide (PA 6.6), as per UL 94 V0

Material of contact
Silver alloy gold plated

Mechanical characteristics

Front panel thickness
Standard 1 ... 4 mm
With emergency-stop protective shroud part-no. 84-902, 1 … 3 mm

Mounting hole
22.5 mm ∅ as per EN IEC 60947-5-1 with anti-twist device

Terminals
Plug-in terminals 2.8 × 0.5 mm (solderable), CuSn6 tin-plated, flat ribbon cable 2-, 4-, or 6-conductors 0.35 mm² (AWG 22)

Tightening torque
Fixing nut 80 Ncm

Actuating force
22 N ±4 N

Actuating travel
Approx. 4 mm to release the internal operation part

Mechanical lifetime
≥50 000 cycles of operations

Electrical characteristics

Standards
The devices comply with: EN IEC 60947-5-1, EN IEC 60947-5-5 (Emergency-stop), EN ISO 13850, EN 60947-5-1

Illumination
LED red with pole reversal, constant current source

Operation Voltage	5 VDC ... 30 VDC
Current consumption	9.7 mA ... 12.4 mA

Rated operational voltage U_e
250 VAC, as per EN IEC 60947-1

Rated insulation voltage U_i
250 V, as per EN IEC 60947-1

Rated impulse withstand voltage U_{imp}
2.5 kV, as per EN IEC 60947-1

Contact resistance
New state ≤50 mΩ, as per DIN IEC 60512-2-3

Isolation resistance
$>10^{11}$ Ω between the open contacts at 500 VDC, as per DIN IEC 60512-2-10

Electrical life
≥50 000 cycles of operations (inductive cosϕ 0.4), as per EN IEC 60947-5-1

Voltage	120 VAC	240 VAC	125 VDC	250 VDC
Current	3 A	1.5 A	0.55 A	0.27 A

Reduced load ≥50 000 cycles of operations (resistive)

Voltage	1 VAC / DC	42 VAC / DC
Current	100 mA	200 mA

Conventional free air thermal current I_{th}
5 A, as per EN IEC 60947-5-1
The maximum current in continuous operation and at ambient temperature must not exceed the quoted maximum values.

Switch rating
AC with silver contact (gold plated), service category AC-15, as per EN IEC 60947-5-1

Voltage	120 VAC	240 VAC
Current	3 A	1.5 A

DC for silver contact (gold plated), service category DC-13, as per EN IEC 60947-5-1 (inductive)

Voltage	12 VDC	24 VDC	48 VDC	60 VDC	125 VDC	250 VDC
$Current_{plug}$	5 A	4 A	2.1 A	1.7 A	0.55 A	0.27 A
$Current_{cable}$	3 A	3 A	2.1 A	1.7 A	0.55 A	0.27 A

Recommended minimal operational data
Silver contacts (gold plated)

Voltage	1 VAC / DC
Current	1 mA

Electric strength
500 VAC, 50 Hz, 1 min. as per DIN IEC 60512-2

Rated conditional short-circuit current
1000 A, type of short-circuit unit 6 A gG, as per EN IEC 60947-5-1

Protection class
Class II, as per EN IEC 60947-5

Overvoltage category
II, as per EN IEC 60947-1

Degree of pollution
3, as per EN IEC 60947-1

Environmental conditions

Operating temperature
–25 °C ... +65 °C

Storage temperature
–25 °C ... +80 °C

Front protection
IP65, as per EN IEC 60529

Shock resistance
(semi-sinusoidal)
max. 150 m / s², pulse width 11 ms, 3-axis, as per EN IEC 60068-2-27

Vibration resistance
(sinusoidal)
max. 50 m / s² at 10 Hz ... 500 Hz, 10 cycles, 3-axis, as per EN IEC 60068-2-6

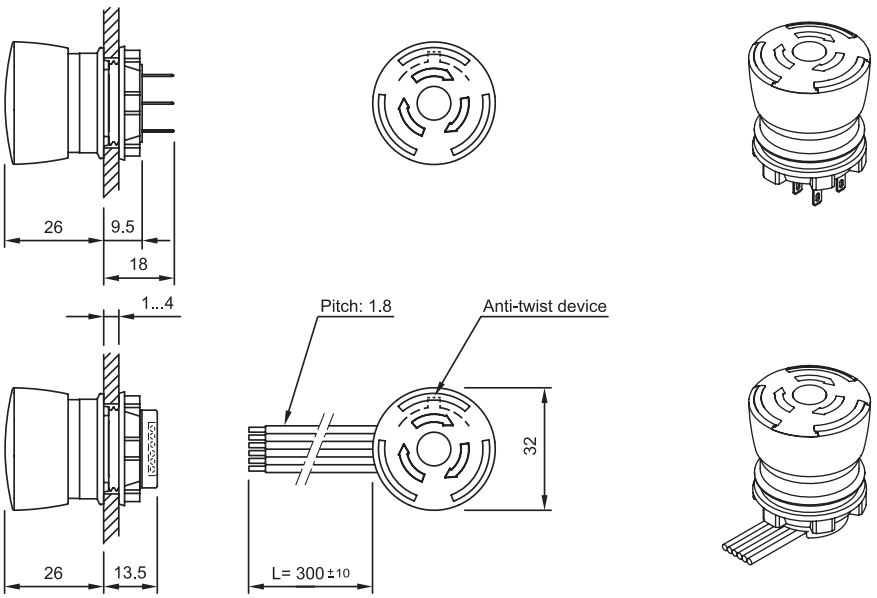
Approvals

Approbations
SEV
UL

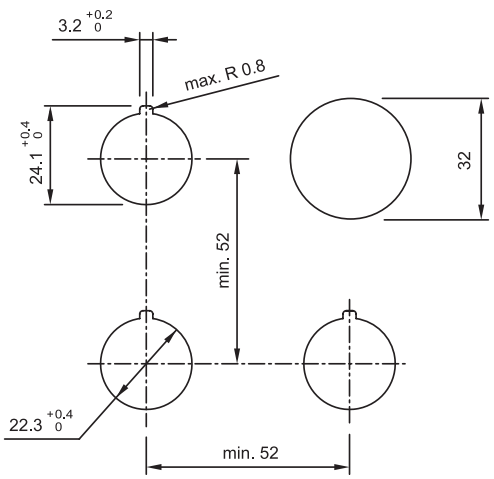
Declaration of conformity
CE

84 Emergency-stop switch and Stop switch

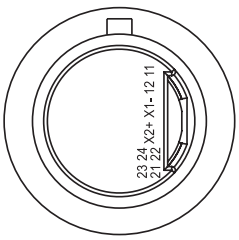
Illuminated and non-illuminated; plug-in and ribbon cable

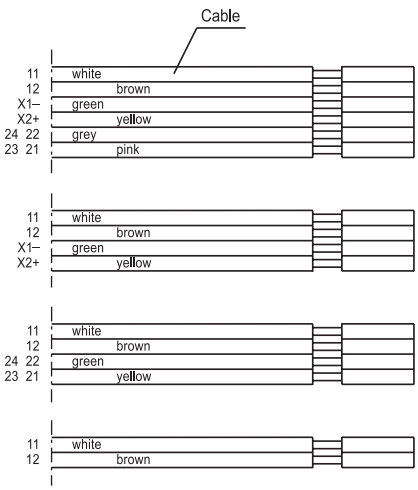


84 Cut-outs



84 Flat ribbon cable





	Terminals
1 NC + 1 NO	11 / 12 + 23 / 24
2 NC	11 / 12 + 21 / 22
Illumination	X1– / X2+

	Terminals
1 NC	11 / 12
Illumination	X1– / X2+

	Terminals
1 NC + 1 NO	11 / 12 + 23 / 24
2 NC	11 / 12 + 21 / 22

	Terminals
1 NC	11 / 12

Emergency-stop switch and Stop switch

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. The normally closed contact has forced opening. Slow-make contacts with forced action are ideal for high switch ratings. Up to three switching elements can be snapped onto the actuator. For the emergency-stop switch use max. two slow make switching elements.

Material

Material of contact
Hard Silver, Gold-Silver

Switch housing
Polycarbonate (PC),as per UL 94 V0

Actuator housing
Polyamide (PA), as per UL 94 HB

Head cap
Polyamide (PA), as per UL 94 V2

Bayonet flange
Polyethylene therephtalate (PETP), as per UL 94 V0

Mechanical characteristics

Terminals
Screw terminals
Plug-in terminals 6.3 × 0.8 mm
Max. wire cross-section 2 × 2.5 mm²
Max. wire cross-section of stranded cable 2 × 1.5 mm²
For switches with plug-in terminals it is necessary to provide insulation sleeves and to maintain a spacing of 65 mm between rows (mounting dimensions)

Tightening torque
Screws at the mounting flange max. 25 Ncm
Screws at switching element max. 50 Ncm

Actuating force
1 normally closed 2 N
1 normally open 3.1 N

Actuating travel
5.8 mm ±0.2 mm

Rebound time
≤3 ms

Mechanical lifetime
(with 1 switching element)

Switching element	>50 000 Cycles of operation
Emergency-stop switch	> 6 050 Cycles of operation

Electrical characteristics, slow make contacts

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

Rated insulation voltage U_i
500 VAC / 600 VDC, as per EN IEC 60947-5-1

Contact resistance
New state ≤50 mΩ as per DIN IEC 60512-2-4

Isolation resistance
≥10 MΩ between open contacts at 500 VDC, as per DIN IEC 60512-2-10

Conventional free air thermal current I_{th}
10 A, as per EN IEC 60947-5-1
The maximum current in continuous operation and at ambient temperature must not exceed the quoted maximum values.

Switch rating
AC for Gold-Silver and Hard Silver contacts, service category AC-15, as per EN IEC 60947-5-1 (cosϕ 0.3)

Voltage	230 VAC	400 VAC	500 VAC
Current	7 A	5 A	4 A

DC for Gold-Silver and Hard Silver contacts, service category DC-13, as per EN IEC 60947-5-1

Voltage	24 VDC	60 VDC	110 VDC	250 VDC
Current	10 A	5 A	2.5 A	0.6 A

Recommended minimal operational data
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

Protection class
Class II

Environmental conditions

Storage temperature
–40 °C ... +85 °C

Operating temperature
–40 °C ... +55 °C

Protection degree
Frontside IP65, as per EN IEC 60529

Shock resistance
(single impacts, semi-sinusoidal)
300 m / s² puls width 11 ms, as per EN IEC 60068-2-27

Vibration resistance
(sinusoidal)
100 m / s² at 10 Hz ... 500 Hz, amplitude 0.75 mm, as per EN IEC 60068-2-6

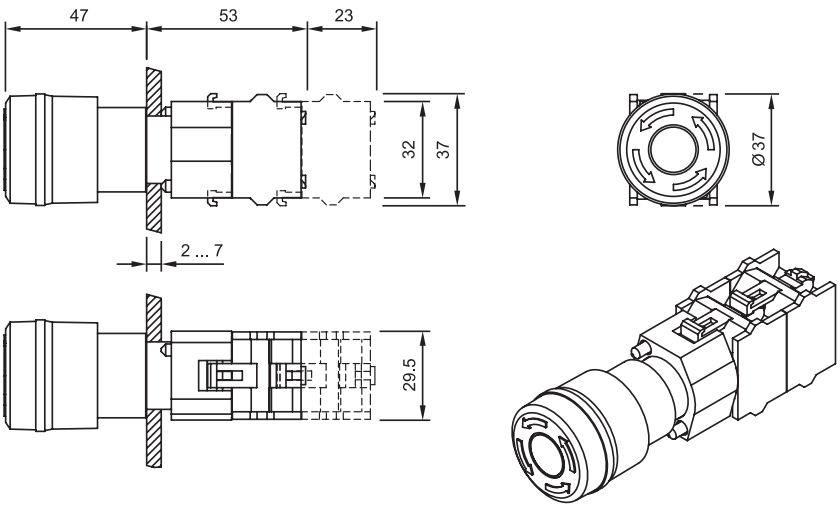
Approvals

Approbations
CB (IEC 60947)
CCC
CSA
Germanischer Lloyd
GOST
SEV
UL

Declaration of conformity
CE
NF F16-102

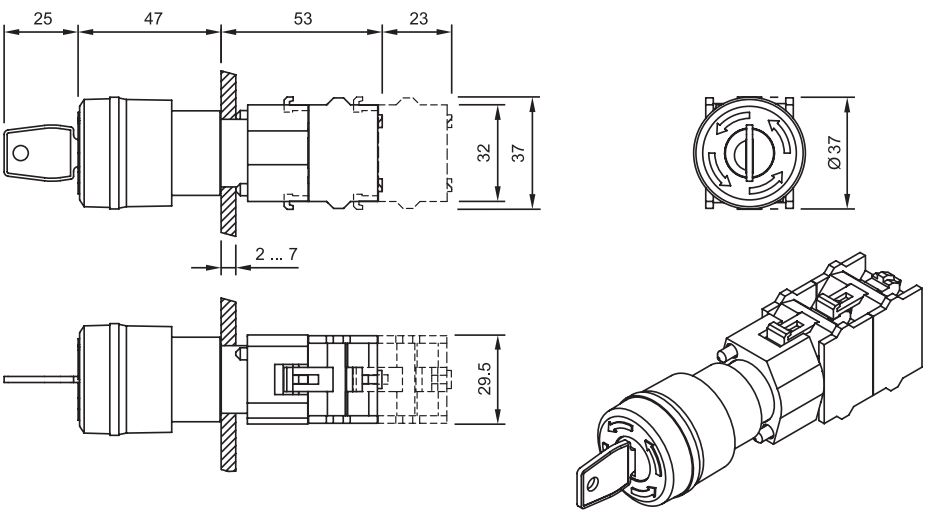
04 Emergency-stop switch

Twist release; foolproof



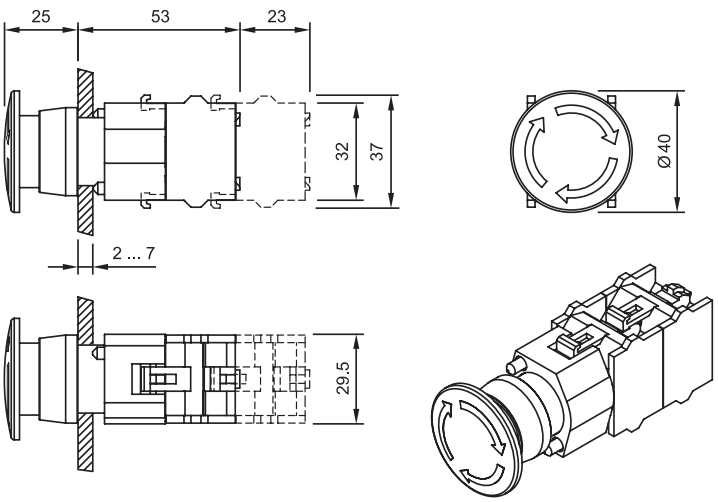
04 Emergency-stop switch

Key release; foolproof



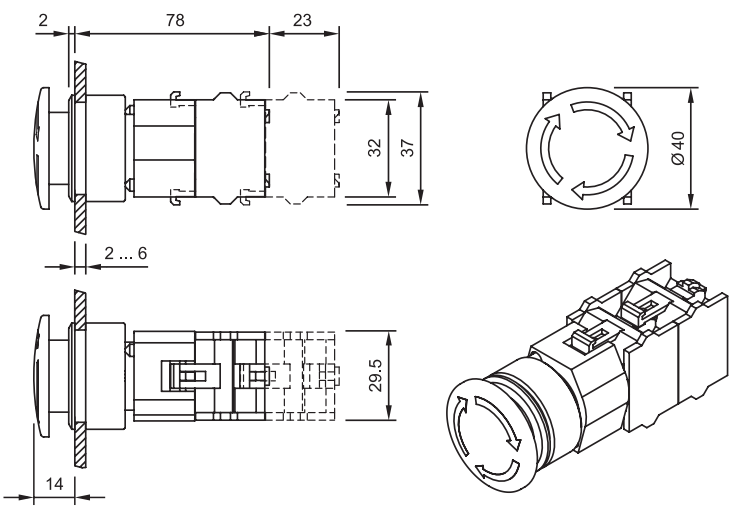
04 Stop switch

Raised mounting; non-foolproof



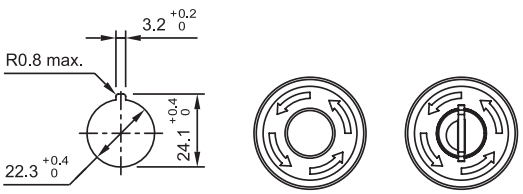
04 Stop switch

Flush mounting; non-foolproof



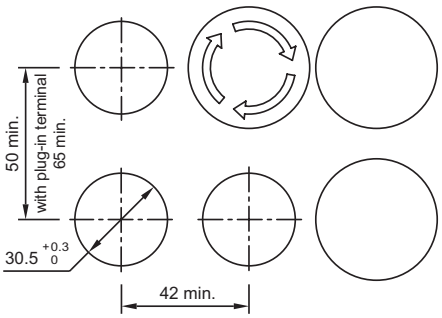
04 Cut-outs

Emergency-stop switch; foolproof



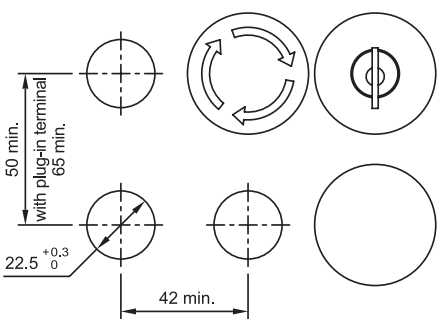
04 Cut-outs

Stop switch; flush mounting; non-foolproof



04 Cut-outs

Stop switch; raised mounting; non-foolproof



Emergency-stop switch and Stop switch

Switching system

The double-break switching system can be supplied for the following switching functions: 1 normally closed, 1 normally open or 1 changeover contact with or without overlap.
The normally closed contacts have forced opening according to EN IEC 60947-5-1.
The switching element offers high reliability due to its H-contact system with relative friction. The normally open and normally closed contacts can be used electrically separated.
The standard version is ideal for high breaking capacities. For lower capacities a special version can be supplied.

Material

Material of contact
Standard version: Ag-Ni alloy
Special version: Gold-Silver

Plastics
UL listed, Cd-free

Switching element
PC, PA 6.6 self-extinguishing

Front parts
PA 6, PA 12, PC

Adapter and enclosure
PC

Mechanical characteristics

Actuating force
Actuator foolproof ≤70 N

Actuating travel
Approx. 6 mm

Mechanical lifetime
Slow-make switching element 10×10^6 switching operations
Emergency-stop foolproof >6050 cycles of operation

Electrical characteristics

Rated insulation voltage U_i
Slow-make switching element 660 V

Rated operational voltage U_e
AC 15 (inductive)
120 V, ~6 A
230 V, ~6 A
400 V, ~4 A
500 V, ~3 A
600 V, ~1.2 A
DC 13
24 V, 3 A
60 V, 1.3 A
120 V, 0.6 A
250 V, 0.3 A

Rated impulse withstand voltage U_{imp}
Slow-make switching element 6 kV*
*between the electrically separated normally closed contacts and normally open contacts for slow-make switching elements.
1 NC + 1 NO without overlap
Ue >400 V, same polarity
U_{imp} = 4000 V
1 NC + 1 NO with overlap
U_e >250 V, same polarity
U_{imp} = 4000 V

Rated Operational Current I_e
AC-12 (resistive)
500 V, ~5 A
DC-12
24 V, 10 A
60 V, 8 A
125 V, 3 A
250 V, 1 A

Contact resistance
Starting value (initial) ≤50 mΩ

Electrical life
AC-15
400 V, ~2 A, 1×10^6 switching operations

Conventional free air thermal current I_{th2}
10 A

Short-circuit protection
Max. series fuse to be provided 10 A gL

Switch rating

Ag-Ni alloy	minimal 6 V, 20 mA
(Standard version)	maximum 12 V, 10 mA
Gold-Silver	minimal 5 V, 1 mA
(Special version)	maximum 42 V, 100 mA

Degree of pollution
3, as per EN IEC 60947-1

Environmental conditions

Storage temperature
–40 °C ... +70 °C

Operating temperature
–25 °C, as per EN IEC 60068-2-1
+60 °C, as per EN IEC 60068-2-2

Protection degree
Actuators at front and enclosure IP65, as per EN IEC 60529

Shock resistance
40 g (duration 6 ms), as per EN IEC 60068-2-27

Vibration resistance
Sinusoidal, 5 g at 10-500 Hz, as per EN IEC 60068-2-6

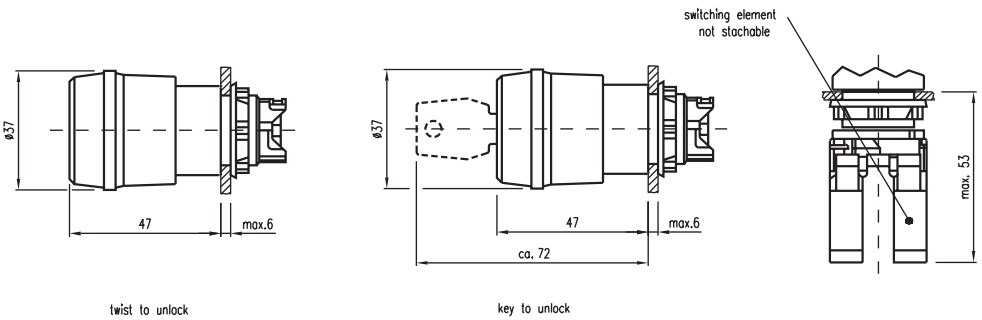
Climate resistance
Humidity and heat constant, as per EN IEC 60068-2-3
Humidity and heat cyclic, as per EN IEC 60068-2-30

Approvals

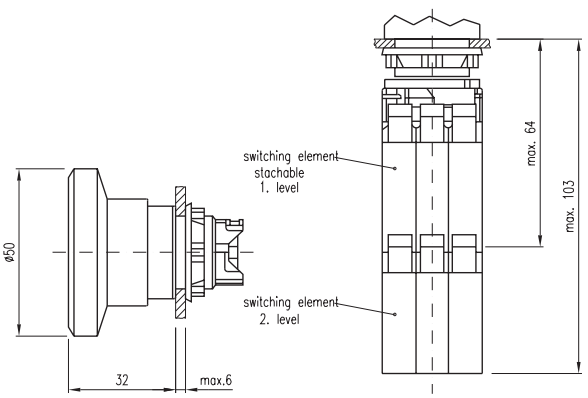
Approbations
CSA
Germanischer Lloyd
UL
VDE

Declaration of conformity
CE

44 Emergency-stop switch

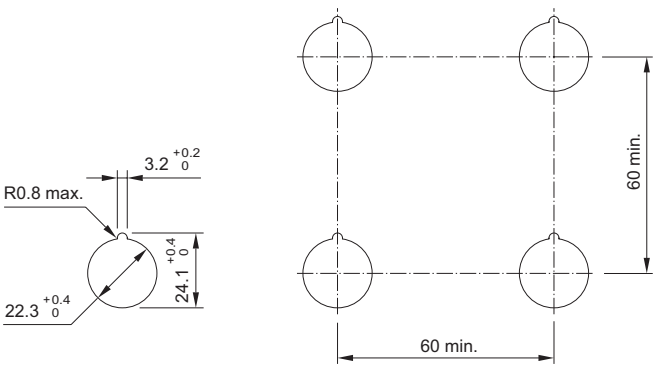


44 Stop switch



44 Cut-outs

Emergency-stop switch and Stop switch



IP & IK Ratings

Degrees of protection to EN 60529

Protection against ingress of solid objects			Protection against water
IP	**First Figure**	**Second Figure**	**IP**
No Protection	**0**	**0**	No Protection
Solid object ∅ ≥50.0 mm	**1**	**1**	Vertical drops of water
Solid object ∅ ≥12.5 mm	**2**	**2**	Water droplets (at 15° from the vertical)
Solid object ∅ ≥2.5 mm	**3**	**3**	Sprinkled water
Solid object ∅ ≥1.0 mm	**4**	**4**	Water sprayed from any direction
Protection against dust: limited ingress	**5**	**5**	Water jets from any direction
Total protection against dust	**6**	**6**	Strong jets of water
		7	Temporary immersion
		8	Long periods of immersion
		9k*	High pressure/ high-temperature jets of water *DIN 40050-9

Degrees of protection to EN 50102

Protection against external mechanical impacts		
IK		
	00	No Protection
200 g	**01**	Impact energy 0.15 joule
200 g	**02**	Impact energy 0.2 joule
200 g	**03**	Impact energy 0.35 joule
200 g	**04**	Impact energy 0.5 joule
200 g	**05**	Impact energy 0.7 joule
500 g	**06**	Impact energy 1 joule
500 g	**07**	Impact energy 2 joule
1.7 kg	**08**	Impact energy 5 joule
5 kg	**09**	Impact energy 10 joule
5 kg	**10**	Impact energy 20 joule

For more details please contact your personal EAO consultant