

NHT0.. Emergency-Stop push-button / KE2.. Contact elements



Translation of the original operating instructions

1 Designated use

GB

The Emergency-Stop push-buttons are electromechanical switches designed to protect persons at or near machines. They are used to switch off / shut down machines and systems to prevent or reduce imminent or existing dangers to persons or damage to the machine or the workpiece.

Safety instructions

The person installing the Emergency-Stop push-button is to be provided with the operating instructions. Read these operating instructions carefully and keep them in a safe place.

- Danger**
- Before beginning installation! Disconnect system and device from power supply!!
 - Emergency-Stop push-buttons fulfill a personal protection function. Incorrect installation or manipulations may lead to serious personal injuries!
 - Emergency-Stop push-buttons must not be circumvented, removed or otherwise put out of action!
 - The switching process may only be triggered by suitable actuators which are safely connected to the contact element!
 - Incorrect installation or manipulations may lead to damage to the machine and workpiece!
 - The Emergency-Stop function must not be used as a substitute for protective measures or other safety functions but should be designed as an additional protective measure.
 - The Emergency-Stop function must not impair the effectiveness of safety equipment or of equipment with other safety functions.
 - The designer must ensure with a risk analysis that the Emergency-Stop push-button complies with the required safety category in combination with the control.

2 Area of application

The national and international statutory regulations apply for the installation and use as well as commissioning and regular technical inspections, in particular:

- the Machinery Directive 2006/42/EC
- the safety regulations
- the accident prevention and safety rules

The manufacturer and users of the machine on which the safety equipment is used are responsible for agreeing all applicable safety rules and regulations with their competent authority and for complying with them.

Designated use includes compliance with the relevant requirements for installation and operation, in particular:

- EN ISO 13849-1
- DIN EN 60204-1
- EN ISO 13850:2008

Designated use also includes regular inspection of the safety equipment (see point 7) by experts.

3 Product description

The Emergency-Stop push-button consists of a push-button and a contact element with up to five functions.

The Emergency-Stop push-buttons are available as a built-in version and as a mounted version with an enclosure.

Scope of supply

- Built-in version:
 - As a separate push-button and contact element
- Mounted version:
 - As a separate push-button, contact element and mounted enclosure

Function

The push-button is actuated by the contact element. To maintain safety in the event of a voltage drop of the contact element of the push-button, the contact elements are also available with failure protection. This opens a contact when the contact element is disconnected from the button. The failure protection thus detects a fault and triggers the emergency stop function. Please observe the wiring diagram on the contact element.

Release

- Twist release:
 - turning clockwise/counter-clockwise
- Key release:
 - only NHT04S

4 Installation and connection of the built-in version

- Drill installation hole (22.3 mm) in the installation board, see Fig. 2; the Ø 9 mm hole is only required for the types with an illuminated blocking protection collar, see Fig. 2.
- Push the push-button through the installation hole and fix with locking nut (max. torque 2.5 Nm).
- Mount contact element and turn clockwise through one eighth of a revolution. The contact element locks into place, see Fig. 1.
- Check whether the contacts of the failure protection are closed when the contact element is locked in position and the button is not pressed.
- Connect connection cables to the terminal blocks. Observe permitted electrical and mechanical values (see "Technical specifications").

Note: When using illuminated push-buttons, a maximum of 230 V AC may be connected to the contact elements.

5 Installation and connection of the mounted version

- Mount the lower part of the enclosure on a flat surface at a distance of 59 x 39 mm (see bottom of enclosure).
- Feed the connection cable through one of the two M20 cable bushings.
- Connect connection cables to the terminal blocks. Observe permitted electrical and mechanical values (see "Technical specifications").


6 Check before commissioning

Mechanical operation test

- The button is securely fixed.
- The mounting nut is tightened so that no play can be detected in longitudinal direction.

Electrical operation test:

- Start machine
- Press button

Danger  **▶ Check stopping of the machine!**
Check whether the machine stops when the emergency button is pressed.

▶ Procedure in the event of a fault
In the event of a mechanical overload or the exertion of external force, damage and operational faults of the Emergency-Stop button may result. Carry out operational test as described in point 7.

7 Regular technical inspections

The inspection interval is to be defined by the designer with the aid of a risk analysis. However, it is recommended that the responsible safety officer trigger the Emergency-Stop button at least once a year and check correct operation.

- trouble-free operation
- no manipulations detected
- safe attachment of the components
- tightness of the cable bushings
- no loose cable connections

8 Further operating instructions

The Emergency-Stop buttons for hygienic environments (NHT02D) may only be cleaned with the following cleaning agents:

Note:

- good resistance against acids, alkalis and alcohols
- no/limited resistance against hydrocarbons (petrol, oil etc.)!
- high ozone- and UV-resistance

9 Disposal

Dispose of packaging and used parts in accordance with the regulations of the country in which the device is installed.

10 Order details

| Contact elements | Order designation |
|---|-------------------|
| NC / NC | KE20 |
| NC / NC + failure protection | KE20SF |
| NC / NC + failure protection / illumination | KE20FSB |
| NC / NC / NO | KE21 |
| NO / NC / NC + failure protection | KE21SF |
| NO / NC / NC + failure protection / illumination | KE21SFB |
| Accessories | |
| Emergency-Stop enclosure | NHG01 |
| Installation wrench | MS01 |
| Push-button | |
| Twist to release | NHT01D |
| Twist to release, suitable for hygienic environments as per DIN EN 1672-2 and GS-FW | NHT02D |
| With blocking protection, twist to release | NHT03D |
| With blocking protection, twist to release, illuminated | NHT04D |
| With blocking protection, key-release, illuminated | NHT04S |
| With protective collar, twist to release | NHT05D |

EC Declaration of Conformity

We declare that the safety components described in the following comply with the following directives:
2006/42/CE

Applicable harmonised standards:
EN 60947-5-5:1997 + A1:2005, EN ISO13850:2008

Designation of the safety component:
Emergency-Stop push-button NHT0.. / contact elements KE2....

Description of the safety component:
Emergency-Stop control unit

Leutkirch, 08.03.2010



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| | | |
|--|---|----------------|
| Technical specifications | | |
| Buttons | NHT0.. | NHT02D |
| Housing material | Kunststoff/plastic/ plastique/plastica/ plástico | |
| Protection class: - Without light - With light | IP 65 IP 54 | IP69K |
| Operating temperature - Without light - With light | -30.. +70°C -30.. +55°C | -30.. +70°C |
| Transport and storage temperature | -50..+85°C | |
| Number of switching operations | > 50 000 / ≥ 6050 | |
| Max. torque | 2,5 NM | |
| Mounting hole diameter | 22,3 mm | |
| Contact element / switching element | KE ... | |
| Protection class | II | |
| Operating temperature - Without light - With light | -30..+85°C -30..+65°C | |
| Transport and storage temperature | -50..+85°C | |
| Rated insulation voltage Ui | 600V | |
| Usage category | AC15A600 (250V AC 3A / 440V AC 1,6A) DC13Q600 (24V DC 2A) (EN60947-5-1) | |
| Connection technology | Schraubklemme/ screw terminal/borne à vis/morsetto a vite/ borne | |
| Min. switching voltage | 5V | |
| Min. switching current (under laboratory conditions) | 1mA | |

| | | |
|--|---|--|
| Technical specifications | | |
| Max. conductor cross-section | 2,5 mm ² | |
| Continuous thermal current | 16A | |
| Max. volume resistance | 20 mΩ | |
| Max. bounce time | 10ms | |
| Min. positive break travel | ≥ 3 mm | |
| Rated current I _e / Rated voltage U _e | 16 (10) A bei/with/à/a/ a 250V AC 10 (6) A bei/with/à/a/a 440V AC (EN 61 058-1) | |
| B10d value (switching operations) | 180 000 | |
| Mech. service life (switching operations) | 1x10 ⁶ | |
| Electr. service life with rated load (switching operations) | 1x10 ⁶ | |
| Contact material | AgNi | |
| Contact element with illumination connection | KE ...B | |
| See Contact elements | | |
| Operating voltage | 12..30V AC/DC | |
| Operating current | 8...44mA | |
| Service life LED | 100 000h (T=25C, I=20mA) 70 000h (T=55C, I=20mA) | |
| Connecting wire, 10cm | BKL Stecker/BKL connector/connecteur BKL/connettore BKL/conector BKL, 0,25 m ² | |

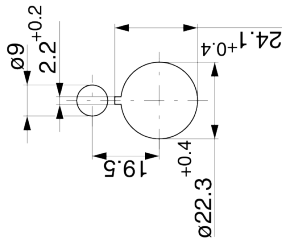


Fig. 2 Mounting hole KE...B

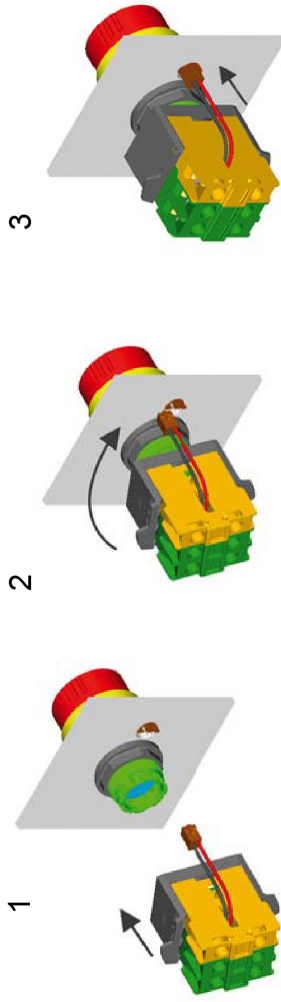
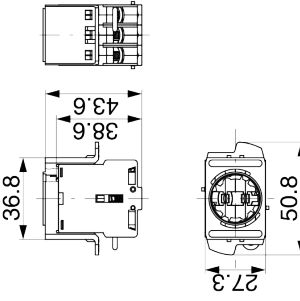
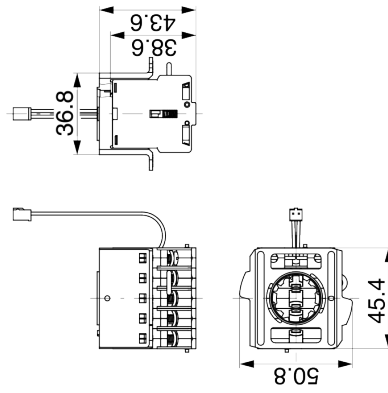


Fig. 1 Installation KE...B (illustration shows version with illumination connection)

KE2. / KE20SF



KE21SF / KE2.SFB



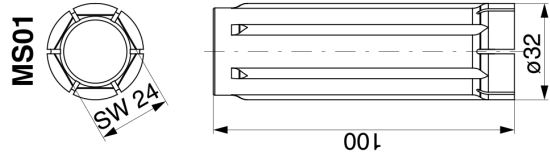


Fig. 4 Installation wrench

