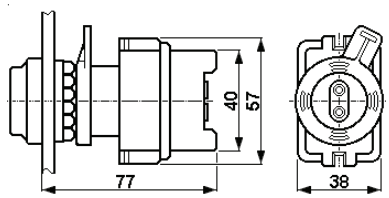
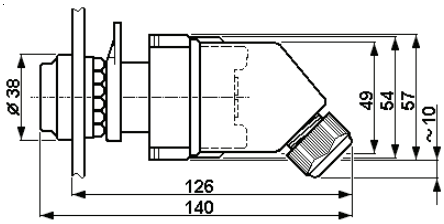
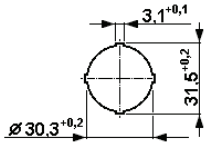
Dimensions in mm



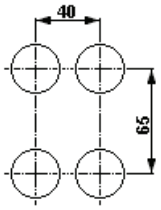
Control unit without protective cap



Control unit with protective cap

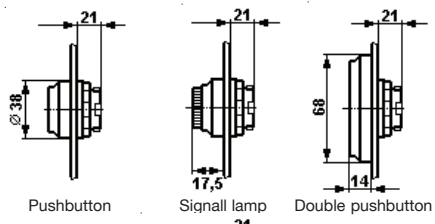


Drilling for actuator elements

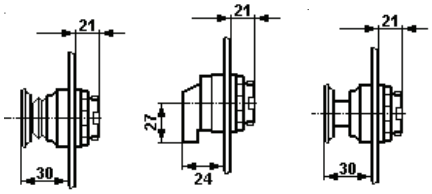


Minimum clearances between drillings

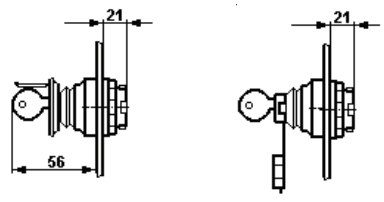
Dimensions of the actuator elements



Pushbutton | Signall lamp | Double pushbutton



Mushroom-head pushbutton "EMERGENCY STOP" | Switch + Potentiometer | Mushroom-head pushbutton



Mushroom-head pushbutton "EMERG. STOP" with key release

Key-operated pushbutton

1 Technical data

1.1 Control unit assemblies with protective cap

Marking acc. to 94/9/EC and directive:	Ⓔx II 2 G Ex d e ia II C T6
EC type examination certificate:	PTB99 ATEX 1034
Rated voltage::	up to max.500 V
Rated current	max. 16 A
Permissible ambient temperature: Other temperatures possible with special versions.	-20° C to +40° C (standard version)
Perm.storage temperature in original packing:	-50° C to +80° C
Degree of protection to EN/IEC 60529:	IP 66 (with protective cap)
Insulation class acc. to EN/IEC 61140:	I - the apparatus fulfil this requirement
PE- terminal:	2 x 4 mm²
Terminals:	see built-in components
Cable entry:	(Ø 6 - 15mm)
Weight:	
protctive cap	approx. 0.05 kg
Test torques:	
Terminal:	2.50 Nm
Cap nut of the plastic cable entry	3.50 Nm
Self cutting screw (strain relief)	2.00 Nm

1.2 Pushbutton and switch

EC type examination certificate:	Ⓔx II 2 G Ex d e ia/ib [ia/ib] II C
	Ⓔx I M2 Ex d e ia/ib [ia/ib] I
EC type examination certificate:	PTB 97 ATEX 1081 U
Rated voltage:	up to max.500 V
Rated current:	16 A
Switching capacity acc. to AC 15:	250V / 6 A 500V / 4.0 A
Switching capacity acc. to DC 13:	24V/6 A L/R 30ms; 60V/1,0A L/R 30ms
with L/R relation of :	110V/1,0A L/R 30ms; 220V/1,0A L/R 15ms
with gold-tipped contacts:	max. 400 mA
Supply terminal:	2 x 1.0 - 2.5 mm²
Weight:	approx. 0.15 kg

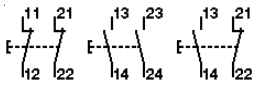
1.3 Signal lamp

Marking acc. to 94/9/EC and directive:	Ⓔx II 2 G Ex d e ia/ib [ia/ib] II C
	Ⓔx I M2 Ex d e ia/ib [ia/ib] I
EC type examination certificate:	PTB 98 ATEX 1040 U
Rated voltage	
Ex ed IIC (LED)	20 V to 254 V AC/DC
Ex ed IIC	12 V to 24 V AC/DC
Ex d ia IIC	18 V to 30 V DC
Rated current:	
Ex ed IIC 20 V to 250 V AC/DC (LED)	4 to 15 mA
Ex ed IIC 12 V to 24 V AC/DC	max. 24 mA
Ex d ia IIC 18 V to 30 V DC	max. 25 mA
Supply terminal:	2 x 1.0 - 2.5 mm²
Weight:	approx. 0.15 kg

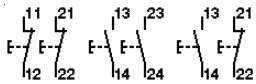
1.4 Potentiometer

Marking acc. to 94/9/EC and directive:	Ⓔx II 2 G Ex d e ia/ib [ia/ib] II C
	Ⓔx I M2 Ex d e ia/ib [ia/ib] I
EC type examination certificate:	PTB 97 ATEX 1081 U
Rated voltage:	up to 250 V
Rating:	1 W
Turning range:	270°
Scale:	0 - 100%
Supply terminal:	2 x 1.0 - 2.5 mm²
Weight:	approx. 0.15 kg

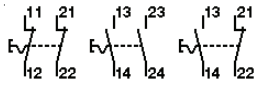
Contact arrangements



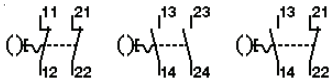
Pushbutton



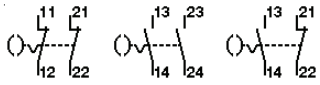
Double-pushbutton



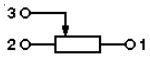
Mushroom head pushbutton



Mushroom head pushbutton with key

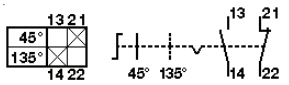


Key-operated pushbutton

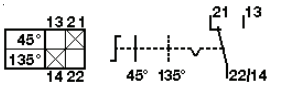


Potentiometer

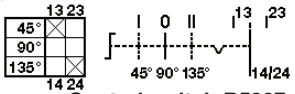
Control switch R6201



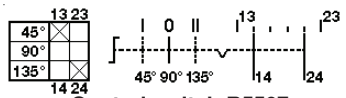
Control switch R6102



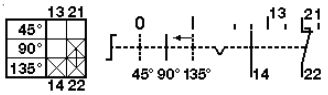
Control switch R6002



Control switch R5307



Control switch R5507



Control switch R8701

2 Safety instructions

The control units GHG 418 .. are not suited for use in Zone 0.

The temperature class and type of protection stated on the apparatus shall be observed.

Modifications or changes to the control units are not permitted.
They shall be used for their intended purpose and shall be in a perfect and clean state.

Only original COOPER CROUSE-HINDS / CEAG parts may be used as replacements and for repairs.
Repairs that affect the explosion protection may only be carried out by COOPER CROUSE-HINDS / CEAG or by a qualified electrician in compliance with the respective national regulations.

Prior to being put into operation, the control units shall be checked in accordance with the instructions as per section 6.

Before initial operation, any foreign matter shall be removed from the apparatus.

Apparatus without a protective cap may only be built into approved or certified enclosures, operating panels or switch cabinets.

The national safety rules and regulations for the prevention of accidents, as well as the safety instructions included in these operating instructions, that, like this text, are set in italics, shall be observed!

3 Conformity with standards

The apparat is conform to the standards specified in the EC-Declaration of conformity, enclosed separately.
It has been designed, manufactured and tested according to the state of the art and to DIN EN ISO 9001.

94/9 EC: Equipment and protective systems intendet for use in potentially explosive atmospheres.

The control units fulfil further requirements, such as the EC directive on electromagnetic compatibility (2004/108/EEC).

4 Field of application

The control units are intended for use in potentially explosive atmospheres in zones 1,2 in accordance with EN/IEC 60079-10.

The enclosure materials used, including any external metal parts, are high quality materials that ensure a corrosion resistance and resistance to chemical substances according to the requirements for use in a ”normal industrial atmosphere”:

- impact resistant polyamide

When used in extremely aggressive atmospheres, the additional data relating to the chemical resistance of the plastics being used shall be taken from the data sheet GHG 902 4001 P0001.

5 Application / Properties

The control units GHG 418 .. are intended for the local control of electrical installations in potentially explosive atmospheres. These apparatus components are built into switch cabinets, operating panels or machinery according to the individual requirements.

The version with gold-tipped contacts is suited for switching extra-low voltage circuits. Special attention shall be paid to the maximum current load (see technical data, page 7). The contact chamber of the gold-tipped version is marked with the letter ”G” or colour-coded.

To ensure a safe and reliable disconnection, the normally closed contacts are designed as compulsory opening contacts.

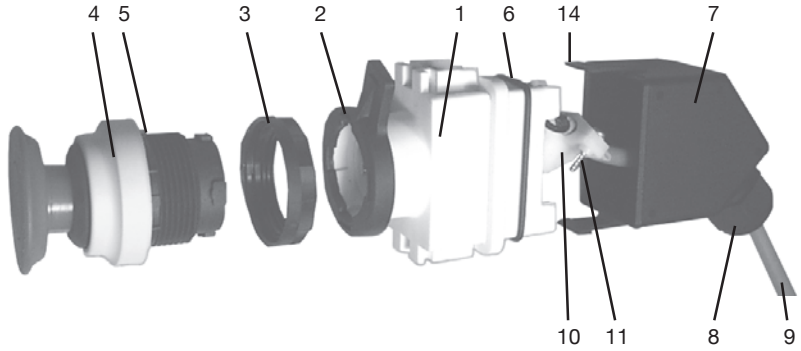
Where required, the bases are fitted with 0.6 W resistors, fine-wire fuses and diodes (max. power dissipation 1 W).

When the switch collar of small control switches is cut out at the respective locking position, they can be padlocked (padlock shackle Ø up to 5 mm).

Apparatus versions without a protective cap are only issued with a ”Component Certificate” and may only be used if built into certified Ex-e protective enclosures.

The apparatus versions with a protective cap are fully certified and can, therefore, be operated directly.

Fig. 1



Components

1	Flameproof components
2	Fixing bow
3	Counter-nut
4	Actuator elements
5	Seal for actuator elements
6	Seal for protective cap
7	Protective cap
8	Cap nut of the cable entry
9	Cable
10	Strain-relief
11	Self-cutting screw
12	Mounting tool
13	Dismantling tool
14	Clips

Fig. 2

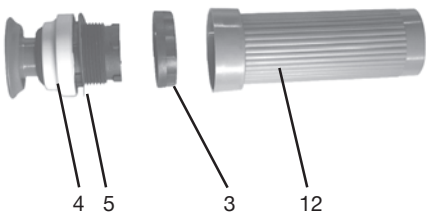


Fig. 3

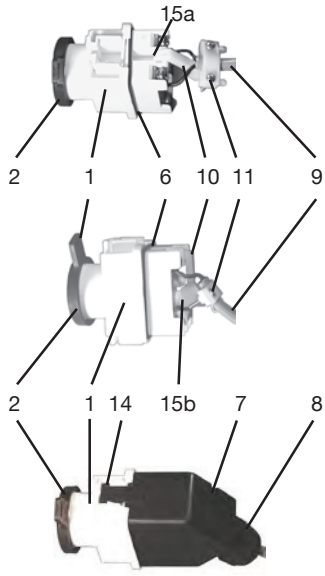
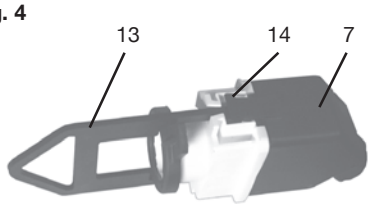


Fig. 4



Any admissibly high mechanical stress of the protective cap that might impair the explosion protection shall be avoided.

The data according to sections 3 and 4 shall be taken into account during use.

Applications other than those described are not permissible without a written declaration of consent from Messrs. COOPER CROUSE-HINDS / CEAG.

During operation the instructions stated in section 7 of the operating instructions shall be observed.

The sole responsibility with respect to the suitability and proper use of the control switches with regard to the basic requirements of these instructions (see technical data) lies with the operator.

6 Installation

The relevant national regulations(e.g. Betr.Si.V, the equipment safety law for Germany) and the generally recognized rules of engineering apply for the installation and operation.

The improper installation and operation of control switches may result in the invalidation of the guarantee.

6.1 Mounting / Dismantling

Components for panel mounting are mounted in accordance with Figs. 1 – 4 and according to the following:

1. The operating and indicating element, item 4, is inserted from the front into the bore hole (Ø 30.3 mm) of the switch panel or enclosure, maximum wall thickness 5 mm. Here special attention shall be paid to the correct fit of the seal, item 5, and of the element (positioning lug on element shall fit into the recess, see dimensions drawing on page 7.)

2. Tighten the counter-nut, item 3, using the mounting tool, item 12 (Accessory Order No. **GHG4101914R0001**).

Excessive tightening can result in damage to the actuator elements.

3. The Ex-d components, item 1, can be completed by adding a protective cap, item 7, an optional item – see section 5 –to form fully certified built-in apparatus.
The protective cap is mounted as follows:
4. Remove the pressure screw with seal, item 8, from the protective cap, item 7, and adapt the sealing rings to suit the cable cross section.
5. Push the cable, item 9, through the pressure screw with cable seal, item 8, of the seal, item 6, and the protective cap, item 7.
6. Connect the cable. Fix the strain-relief, item 1, with the screws, item 11, to the cable and engage in the guide grooves, items 15a and 15b, of the component, item 1 (see Fig. 3).
7. Push the protective cap over the connection terminals until the clips, item 14, engage in the grooves of the component, item 1 (see Fig. 3). Special attention shall be piad to the correct fit of the seal, item 6.
8. Tighten the connection cable in the protective cap with the pressure screw, item 8 (see Section 6.3).

To dismantle, proceed in the reverse order. To release the protective cap, the clips are pushed out of the grooves in the component, item 1, using the dismantling tool (item 13) and the protective cap removed (see Fig. 4).

6.2 Opening apparatus/ Electrical connection

Before opening the apparatus (pulling off protective cap), it is necessary to ensure that there is no voltage or to take suitable protective measures.

The electrical connection of the may only be carried out by specialists.

The properly bared conductors of cables shall be connected with due regard to the respective regulations.

To maintain the explosion protection, conductors shall be connected with special care.

The insulation shall reach up to the terminal. The conductor itself shall not be damaged.

The minimum and maximum conductor cross sections that can be connected shall be observed (see technical data).

All screws and/or nuts of connection terminals, including those not in use, shall be tightened down securely.

The standard terminals are designed for the direct connection of conductors with copper wires.

The circuit diagram of the built-in components is shown on the components or in the operating instructions.

6.3 Cable entries (KLE); blanking plugs

When fitting cables, care shall be taken to use sealing inserts of the cable entry of the protective cap that are suited for the respective cable diameter.

In order to ensure the required minimum degree of protection, the pressure screws shall be tightened down securely.

Overtightening can impair the degree of protection.

6.4 Closing apparatus

Any foreign matter shall be removed from the apparatus.

In order to ensure the required minimum degree of protection, the protective cap and the actuating element shall be mounted correctly in accordance with the instructions (see 6.1).

Overtightening can impair the degree of protection.

6.5 Putting into operation

Before putting the apparatus into operation, the tests specified in the individual national regulations shall be performed.

In addition to this, before being put into operation, the correct functioning and installation of the apparatus and built-in components (signal lamps, pushbuttons, etc.) shall be checked in accordance with these operating instructions and other applicable regulations.

The improper operation of control units may result in the invalidation of the guarantee.

7 Maintenance / Servicing

The valid national regulations for the servicing / maintenance of electrical apparatus for use in potentially explosive atmospheres shall be observed (EN 60 079-17).

Prior to opening the enclosure, it is necessary to ensure that the voltage supply has been isolated or to take suitable protective measures.

The necessary intervals between servicing depend upon the specific application and shall be stipulated by the operator according to the respective operating conditions.

During servicing, above all, the parts on which the explosion protection depend, (e.g. intactness of the flameproof components, the enclosure, the seals and cable entries), and the switch mechanism function of the control switch shall be checked.

If, in the course of servicing, it is ascertained, that repairs are necessary, section 8 of these operating instructions shall be observed.

8 Repairs / Overhaul / Modifications

Only original COOPER CROUSE-HINDS / CEAG parts shall be used for carrying out repairs.

In the event of damage to the flameproof encapsulation, replacement of these components is mandatory. In case of doubt, the respective apparatus shall be sent to COOPER CROUSE-HINDS / CEAG for repair.

Repairs that affect the explosion protection may only be carried out by COOPER CROUSE-HINDS / CEAG or by a qualified electrician in compliance with the respective national regulations (EN 60 079-19).

Apparatus modifications or design changes are not permitted.

When replacing individual built-in components (pushbuttons, etc.) section 6.2 ”Opening apparatus / Electrical connection” shall be observed.

9 Disposal / Recycling

The respective valid national regulations for waste disposal shall be observed when disposing of apparatus and built-in components (measuring instruments, signal lamps, pushbuttons, etc.).

To facilitate the recycling of individual parts, parts made of moulded plastic shall bear the marking for the type of plastic used.

The product range is subject to changes and additions.