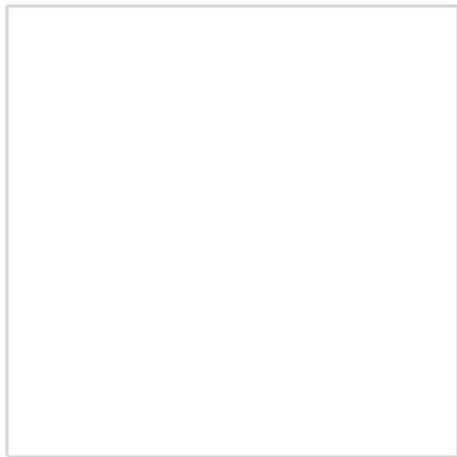
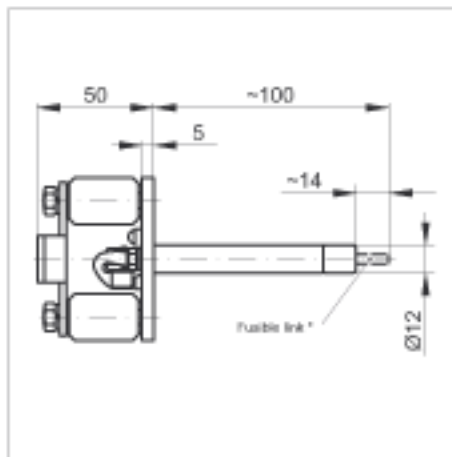
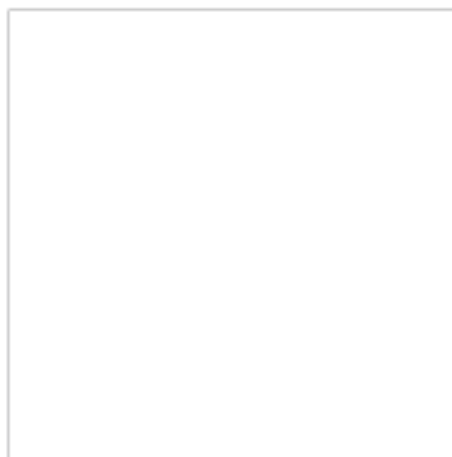
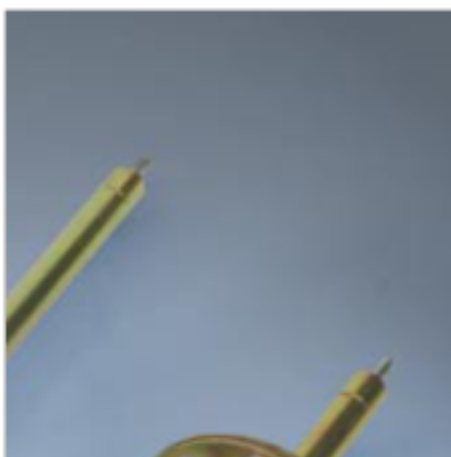


**Overtemperature
devices**
Series
ZH037, ZH437, ZH937



F 196e

Fusible overtemperature protection and tripping devices

Schaltbau fusible overtemperature protection and tripping devices ensure fail-safe thermal cutout protection against overheating of electric air heaters as used in rail vehicles and stationary heating systems. The devices are a prerequisite for fire protection and operate totally independent of the heater controls.

Represented in this catalogue are stock items. If you need a variant like, for example, one with a tripping device for water tanks or a different rod length, do not hesitate to contact us. We are capable of both designing and producing a wide range of specialised devices and will manufacture to customer requirements. In this case, however, minimum order quantities apply.

Tripping the fuse

The device must be wired into the heater load circuit (see diagram on page 3). Prior to installation, every device of the various series must be fitted with a fusible link. Fusible links are available with a number of trip temperatures, so you can order the one fusible link which meets exactly the requirements of your application (see tables on page 4). That is why fusible links are not included in delivery of any overtemperature protection or tripping device.

Insufficient air flow or failure of heater control results in rapid overheating of the system. When the fixed temperature set point of the fusible link is exceeded, the device shorts the heater load circuit, tripping a series-connected fuse. This stops the flow of current through the components, and provides protection against any return to operation of the heaters in an overtemperature condition.

Features

- Fail-safe overtemperature protection of heater coils and tubular elements
- Tripping function independent of control voltage
- Replacement fusible link necessary after tripping operation
- Applicable standards: IEC 60077, IEC 50124-1

Application

- Electric open coil and finned tubular heaters
- Electric air heaters

Technical data

Series	ZH037	ZH437, ZH437 K, ZH437 K-H, ZH437 K-KH, ZH437 K-K	ZH937
Nominal voltage U_N	1,500 V	1,800 V ^{*1} / 3,000 V ^{*2}	3,000 V
Kind of voltage	DC, AC	DC, AC	DC, AC
Rated insulation voltage U_i	1,800 V	4,000 V	4,000 V
Pollution degree	PD3	PD3	PD3
Overvoltage category	OV3	OV3	OV3
Degree of protection	short types long types	IP00 IP54	IP00 IP54
Optional components	standard	standard	reflector plate
Thread size of fusible link	M2.5	M3	M3
Auxiliary contact	---	snap-action switch S870 ^{*3} (type H)	snap-action switch S870 ^{*3} (type H)
Series-connected fuse	≤ 100 A	≤ 100 A	≤ 100 A
Maximum ambient temperature of insulator	200° C	200° C	200° C
Mechanical endurance	5 tripping operations min. (see also 'Maintenance Instructions' on page 5)		
Weight	short types long types	approx. 350 g approx. 1,700 g	approx. 700 g approx. 1,800 g

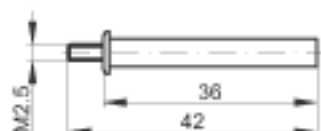
^{*1} Series ZH437 K-K and ZH437 K-KH

^{*2} Series ZH437 K-KH

^{*3} See also catalogue DTDe

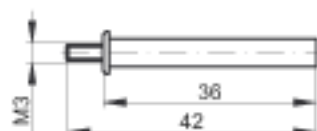
ZH037 Exxx, ZH437 Exxx Fusible links

ZH037 Exxx fusible links are for use with the short overtemperature tripping devices of Series **ZH037 K**, **ZH437 K-HK**, and **ZH437 K-K**.



Ordering code	Trip temperature (tolerance $\pm 10\%$)	Colour code
ZH037 E090	90 °C	black
ZH037 E103	103 °C	blue
ZH037 E130	130 °C	green
ZH037 E150	150 °C	red
ZH037 E175	175 °C	grey
ZH037 E200	200 °C	yellow
ZH037 E236	236 °C	white


ZH437 Exxx fusible links are for use with the overtemperature protection devices of Series **ZH437** and **ZH937** as well as the overtemperature tripping devices of Series **ZH437 K**, **ZH437 K-H**, and **ZH437 K-Z**.

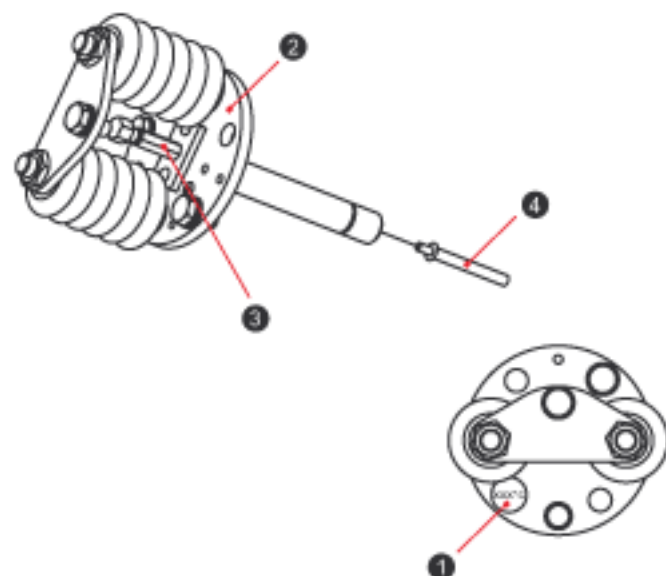


Ordering code	Trip temperature (tolerance $\pm 10\%$)	Colour code
ZH437 E090	90 °C	black
ZH437 E103	103 °C	blue
ZH437 E130	130 °C	green
ZH437 E150	150 °C	red
ZH437 E175	175 °C	grey
ZH437 E200	200 °C	yellow
ZH437 E236	236 °C	white

Assembly, Circuit diagram, Maintenance instructions

Assembly instructions:

- Prior to assembly, check spring function! Switch rod must not get stuck.
- Remove label ① from anti-adhesive paper, ensure clean mounting plate ② and stick label on.
- Manually push switch rod ③ backwards against pressure spring force and hold.
- Manually screw fusible link ④ inside switch rod.
 **The fusible link must not be damaged or deformed when being screwed in!**
- Treat fusible link with **CARE** to avoid any damage that might ensue by hitting, bending, or canting.

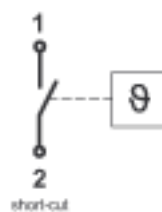


Mounting, Mounting position:

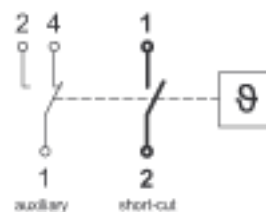
- When mounting an overtemperature protection or tripping device make sure that its fusible link is fully placed in the airflow generated by the heater and an optional reflector plate is streamlined with it.
- Overtemperature tripping devices are designed to mount horizontally and angled down respectively (see below drawing) or else their tripping function might be impaired.



Circuit diagram:



Circuit diagram for Series ZH037 K, ZH437, ZH437 K, ZH437 K-K, ZH437 K-Z and ZH937

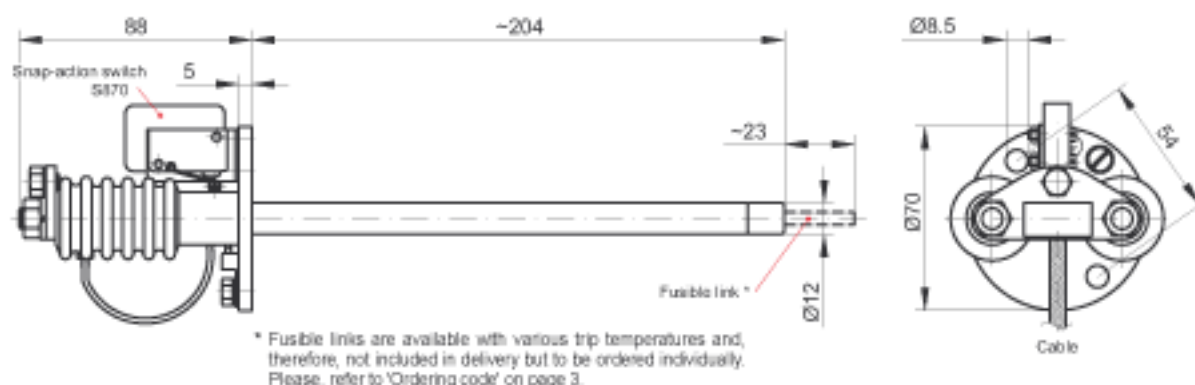


Circuit diagram for Series ZH437 K-H, ZH437 K-HK

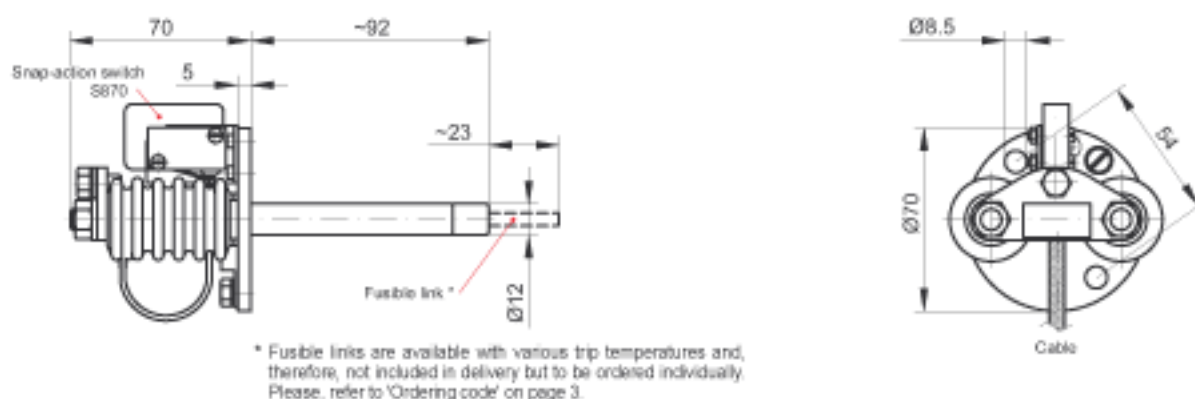
Maintenance instructions:

- Replace fusible link every 3 years.
- A visual and mechanical check of the overtemperature device is to be made at the same time.
Attention: Severely corroded and polluted devices must be replaced.
- We recommend replacing an overtemperature protecting or tripping device every 6 years at the latest!

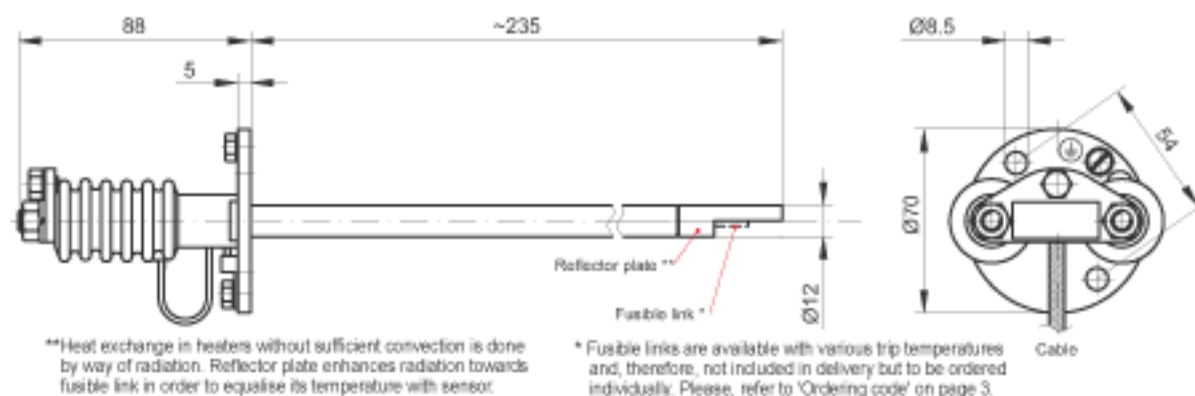
ZH437 K-H Tripping device with auxiliary switch, standard



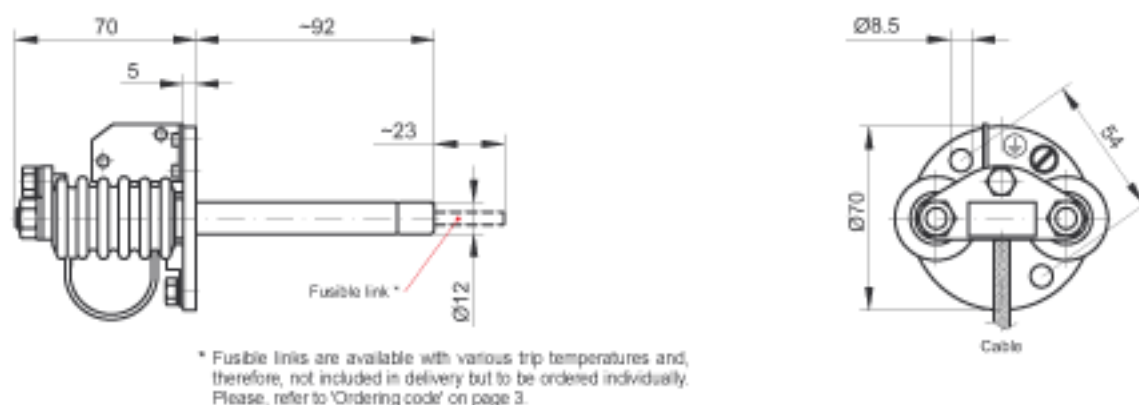
ZH437 K-HK Tripping device with auxiliary switch, short



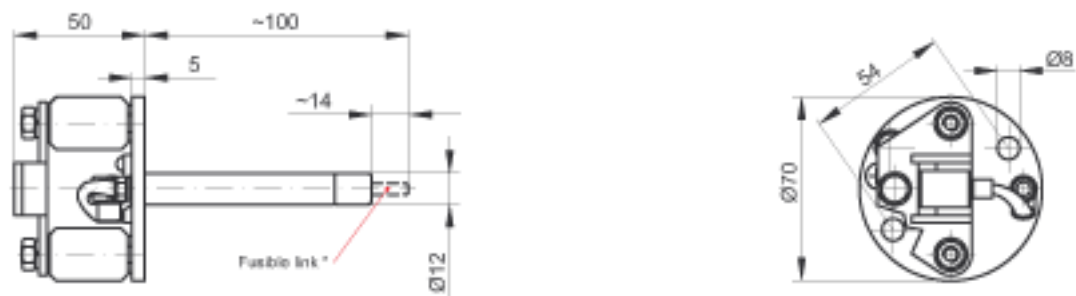
ZH437 K-Z Tripping device with reflector plate



ZH437 K-K Tripping device, short

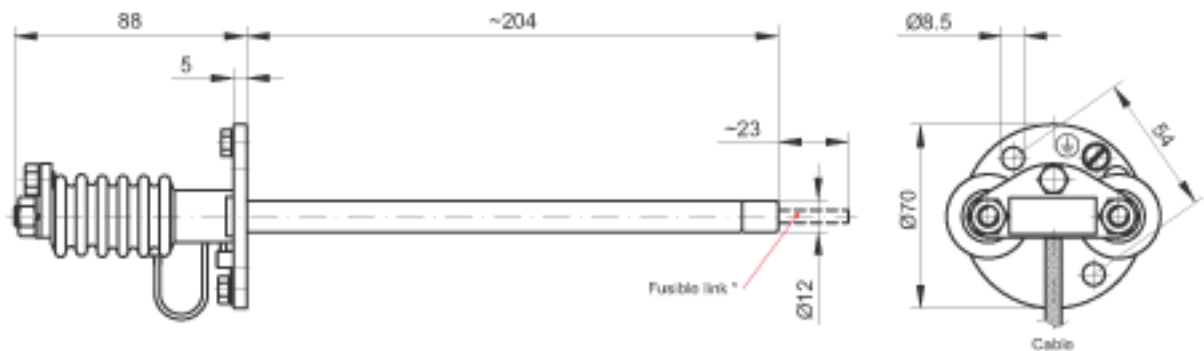


ZH037 K Tripping device, short



* Fusible links are available with various trip temperatures and, therefore, not included in delivery but to be ordered individually. Please, refer to 'Ordering code' on page 3.

ZH437 K Tripping device, standard

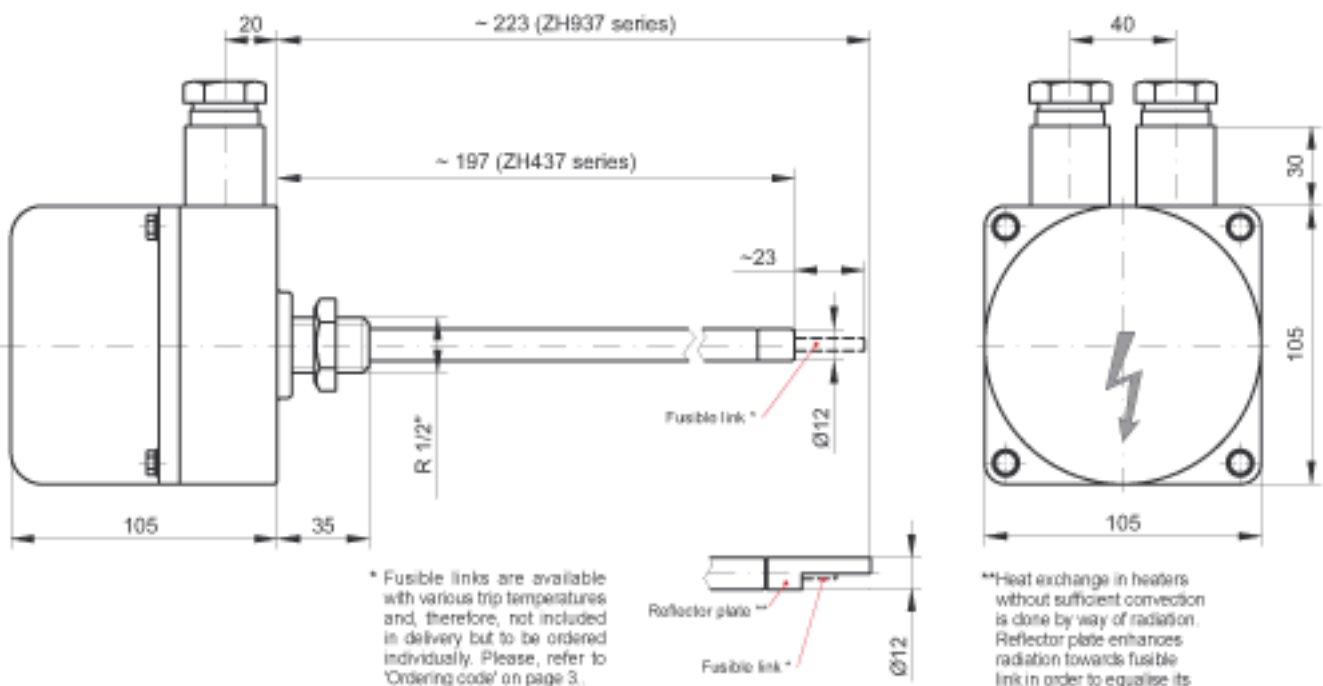


* Fusible links are available with various trip temperatures and, therefore, not included in delivery but to be ordered individually. Please, refer to 'Ordering code' on page 3.

ZH437, ZH937 Overtemperature protection device, standard / with reflector plate

ZH437 Overtemperature protection device, standard

ZH937 Overtemperature protection device with reflector plate



* Fusible links are available with various trip temperatures and, therefore, not included in delivery but to be ordered individually. Please, refer to 'Ordering code' on page 3.

**Heat exchange in heaters without sufficient convection is done by way of radiation. Reflector plate enhances radiation towards fusible link in order to equalise its temperature with sensor.

Electrical Components and Systems for Transportation and Industrial Applications

Connectors	<ul style="list-style-type: none"> ● Connectors manufactured to industry standards ● Connectors to suit the special requirements of communications engineering (MIL connectors) ● Charging connectors for battery-powered machines and systems ● Connectors for railway engineering, including UIC connectors ● Special connectors to suit customer requirements
Snap-action switches	<ul style="list-style-type: none"> ● Snap-action switches with positive opening operation ● Snap-action switches with self-cleaning contacts ● Enabling switches ● Special switches to suit customer requirements
Contactors	<ul style="list-style-type: none"> ● Single and multi-pole DC contactors ● High-voltage AC/DC contactors ● Contactors for battery powered vehicles and power supplies ● Contactors for railway applications ● Terminal bolts and fuse holders ● DC emergency stop switches ● Special contactors to suit customer requirements
Control devices	<ul style="list-style-type: none"> ● Master controllers and reversers for railway applications ● Toggle switch devices ● Handles and foot switches for railway applications (dead-man equipment) ● Switching elements with high breaking capacity ● Emergency brake handles ● Signal devices
Transportation	<ul style="list-style-type: none"> ● Power supplies for passenger coaches (electric equipment) ● Battery chargers for locomotives and passenger coaches ● High-voltage equipment for single and multi-phase operation ● Heating devices and heating controls ● Design and engineering services for high-voltage equipment ● Special equipment to suit customer requirements

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with compliments: