

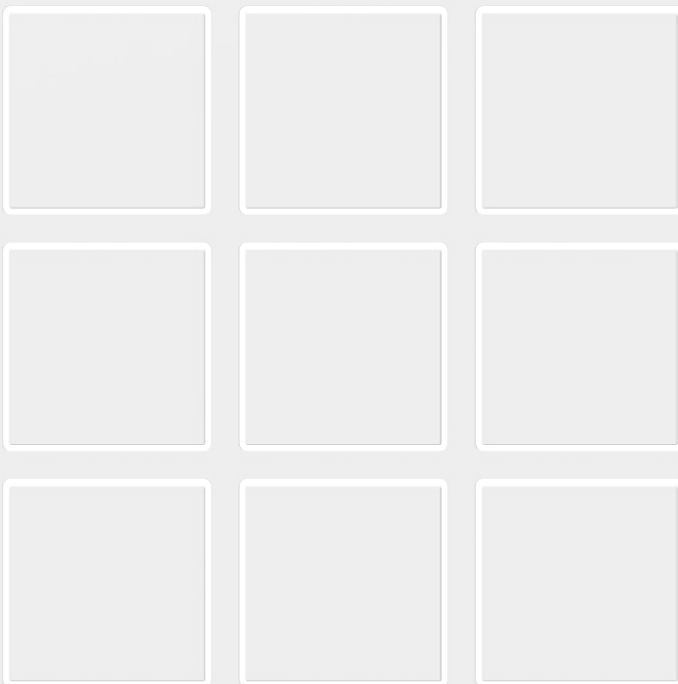
# 4

## Electrics for Rolling Stock

ZH037, ZH437 Series

Overtemperature protection  
and tripping devices

Catalogue F196.en



More information  
[schaltbau.com](http://schaltbau.com)

## Overtemperature protection and tripping devices

Schaltbau 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. There is also a stainless steel version available for use in harsh environments.

## 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 protec-

tion 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
- Optional auxiliary contact for version ZH437
- Applicable standards: IEC 60077, IEC 50124-1

## Applications

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

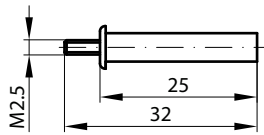
## Specifications

Series	ZH037 K, ZH037 K VA*, ZH437 K-HK, ZH437 K-K, ZH437 K-K3, ZH437 K-KG	ZH437, ZH437 K, ZH437 K VA*, ZH437 K-H
Nominal voltage $U_N$	1,500 V	1,800 V** / 3,000 V***
Kind of voltage	DC, AC	DC, AC
Rated insulation voltage $U_i$	1,800 V	4,000 V
Pollution degree	PD3	PD3
Overvoltage category	OV3	OV3
Degree of protection	short types long types	IP00 IP54
Optional components	standard	standard
Series-connected fuse	≤ 100 A	≤ 100 A
Maximum ambient temperature of insulator	200° C	200° C
Mechanical endurance	5 tripping operations min. (see also 'Maintenance Instructions' on page 3)	
Weight	short types long types	approx. 650 g approx. 1,700 g

\* Stainless steel version  
\*\* ZH437 K-K and ZH437 K-KH Series  
\*\*\* ZH437 K-H Series

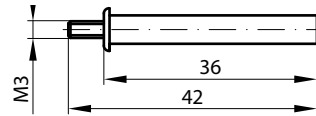
## ZH037 Exxx, ZH437 Exxx Fusible links

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



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 Series **ZH437** overtemperature protection devices as well as the Series **ZH437 K, ZH437 K VA, ZH437 K-H** and **ZH437 K-K3** tripping devices.

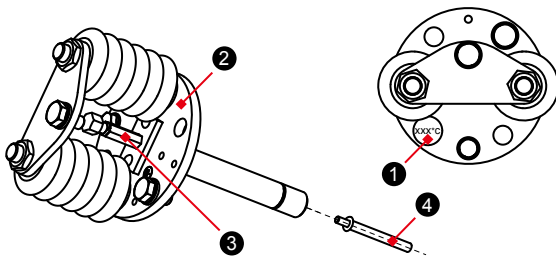


Ordering code	Trip temperature (tolerance $\pm 10\%$ )	Colour code
ZH437 E090	90 °C	black
ZH437 E103	103 °C	blue
ZH437 E130	130 °C	green
ZH437 E150	150 °C	red
ZH437 E175	175 °C	grey
ZH437 E200	200 °C	yellow
ZH437 E236	236 °C	white




## Assembly, Circuit diagram, Maintenance instructions

### Assembly instructions:

- Prior to assembly, check spring function! Switch rod must not get stuck.
- Remove label ❶ from anti-adhesive paper, ensure clean mounting plate ❷ and stick label on.
- Manually push switch rod ❸ backwards against pressure spring force and hold.
- Manually screw fusible link ❹ 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.



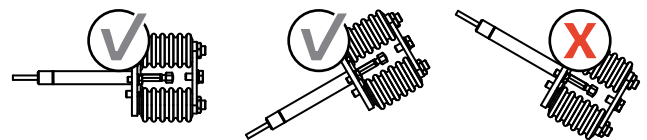
### Maintenance instructions:

-  **Overtemperature protection devices must be checked for functionality at least every 4 years!**  
Spring force and secured return are checked when triggering. Push switch rod backwards against spring resistance. Remove fusible link from switch rod. When you let go the switch rod it should reach the terminal plate exerting discernible contact pressure. Severely corroded and polluted devices must be replaced.
-  **Overtemperature protection devices must be replaced every 6 or 8 years!**  
It is generally recommended to replace the overtemperature protection device every 8 years or every 6 years for units delivered before 2007. Longer use cannot be guaranteed. We recommend a stainless steel version (VA version) for heavy environmental loads.
-  **Fusible links must be replaced every 4 years from the date of manufacture!**  
Fusible links are subject to a chemical ageing process which is additionally negatively influenced by unfavourable environmental conditions such as heavy soiling or changing humidity.

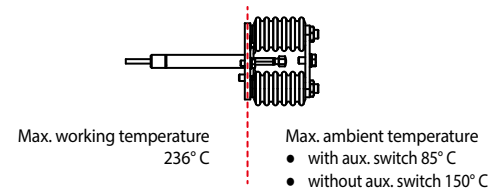
Subject to change


### Mounting, Mounting orientation:

- 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.

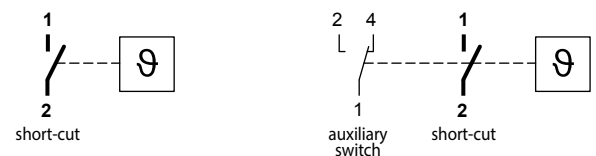


### Allowable temperature range:



 **Note:**  
Trigger speed is to a great extent determined by the overall structure of the system. We, therefore, recommend field testing of the actual reaction time of the system beforehand.

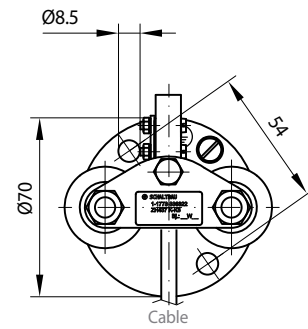
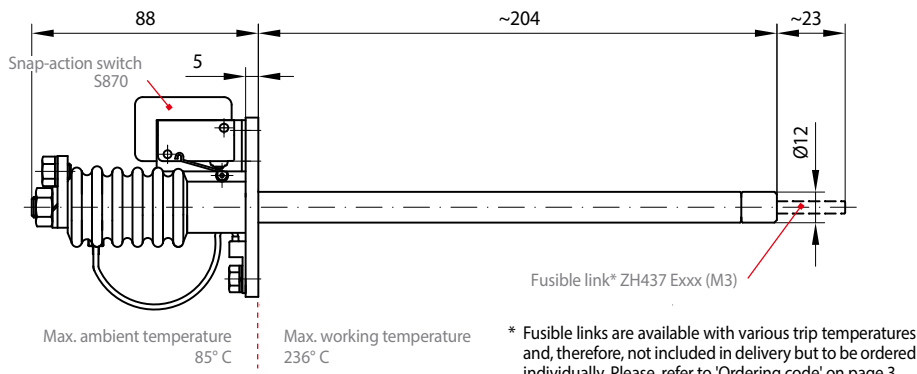
### Circuit diagram:



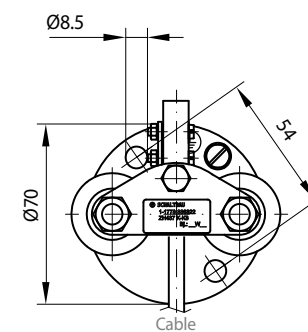
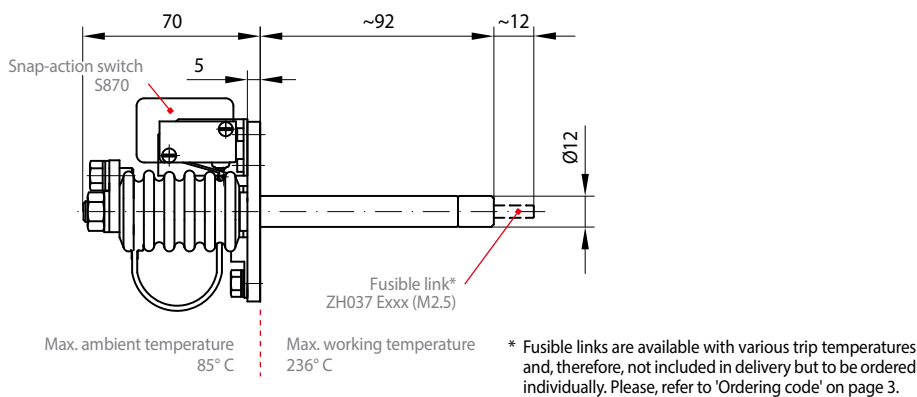
Circuit diagram for Series **ZH037 K, ZH437, ZH437 K, ZH437 K-K**

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

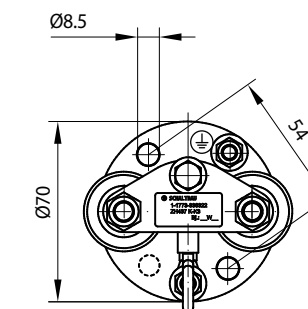
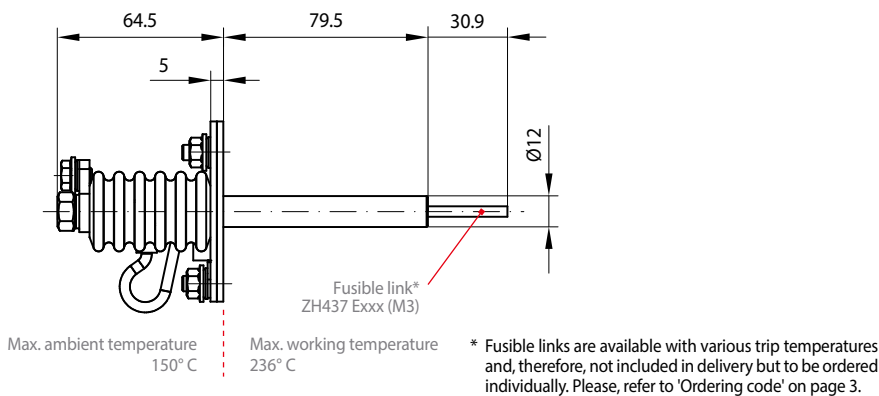
**ZH437 K-H** Tripping device with auxiliary switch, standard



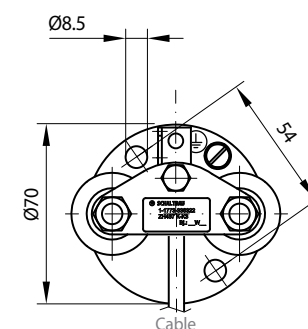
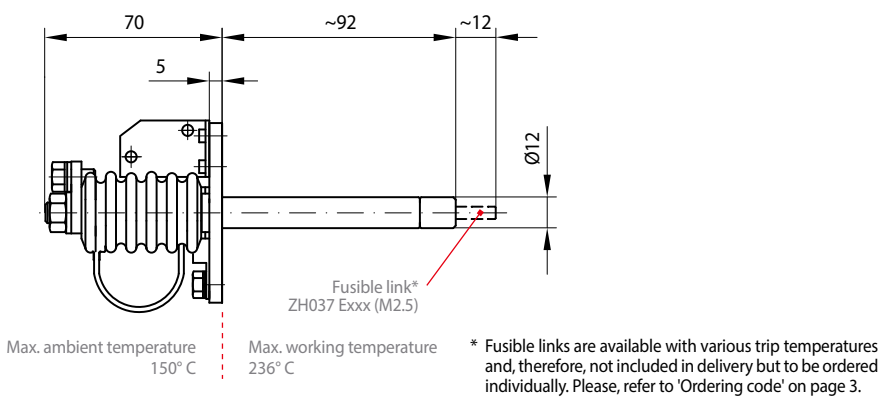
**ZH437 K-HK** Tripping device with auxiliary switch, short



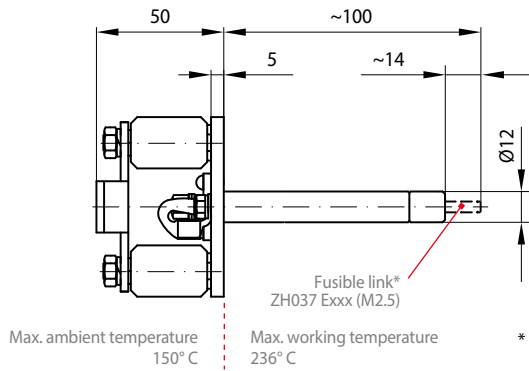
**ZH437 K-K3** Tripping device, short



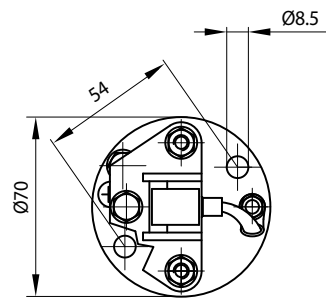
**ZH437 K-K** Tripping device, short



**ZH037 K VA, ZH037 K** Tripping device, short

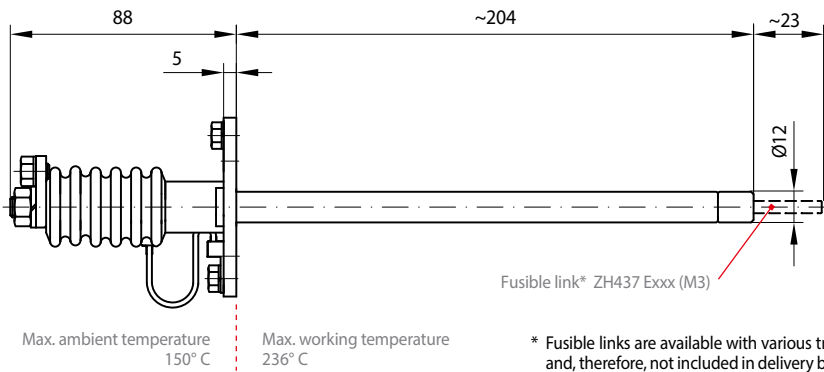


\* Fusible links are available with various trip temperatures and, therefore, not included in delivery but to be ordered individually. Please, refer to 'Ordering code' on page 3.

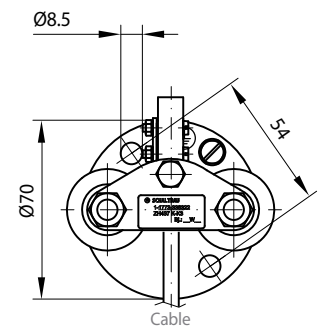


Ordering code	Version
ZH037 K	Standard
ZH037 K VA	Stainless steel

**ZH437 K VA, ZH437 K** Tripping device, standard



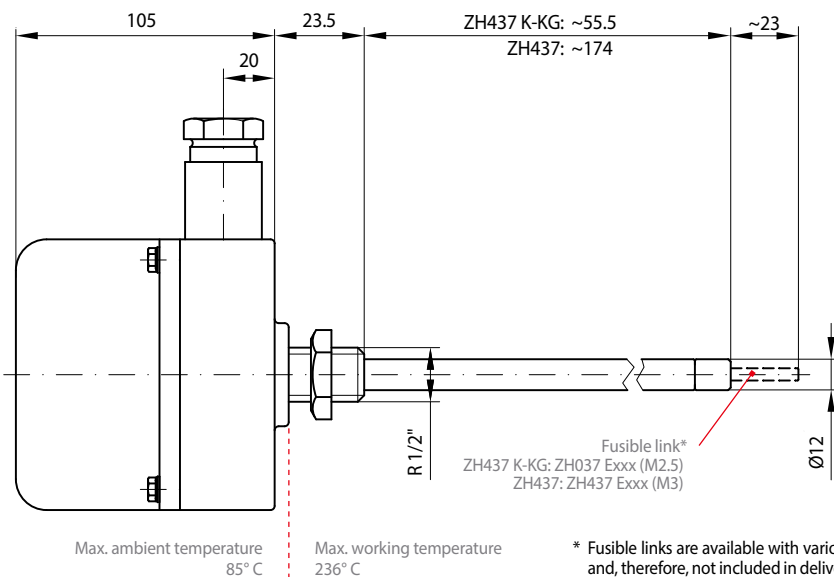
\* Fusible links are available with various trip temperatures and, therefore, not included in delivery but to be ordered individually. Please, refer to 'Ordering code' on page 3.



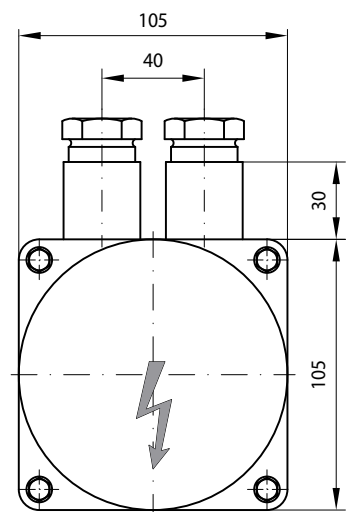
Ordering code	Version
ZH437 K	Standard
ZH437 K VA	Stainless steel

**ZH437 K-KG, ZH437** Overtemperature protection device, short / medium

**ZH437 K-KG** Overtemperature protection device, short  
**ZH437** Overtemperature protection device, medium



\* 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.



# Schaltbau GmbH

For detailed information on our products and services visit our website – or give us a call!

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with compliments:



Schaltbau GmbH manufactures in compliance with RoHS.



The production facilities of Schaltbau GmbH have been IRIS certified since 2008.



Certified to DIN EN ISO 14001 since 2002. For the most recent certificate visit our website.



Certified to DIN EN ISO 9001 since 1994. For the most recent certificate visit our website.

## Electrical Components and Systems for Railway Engineering and Industrial Applications

### Connectors

- 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

- Snap-action switches with positive opening operation
- Snap-action switches with self-cleaning contacts
- Enabling switches
- Special switches to suit customer requirements

### Contactors

- 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 disconnect switches
- Special contactors to suit customer requirements

### Electrics for rolling stock

- Equipment for driver's cab
- Equipment for passenger use
- High-voltage switchgear
- High-voltage heaters
- High-voltage roof equipment
- Equipment for electric brakes
- Design and engineering of train electrics to customer requirements

We reserve the right to make technical alterations without prior notice.

For updated product information visit [www.schaltbau-gmbh.com](http://www.schaltbau-gmbh.com).

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