

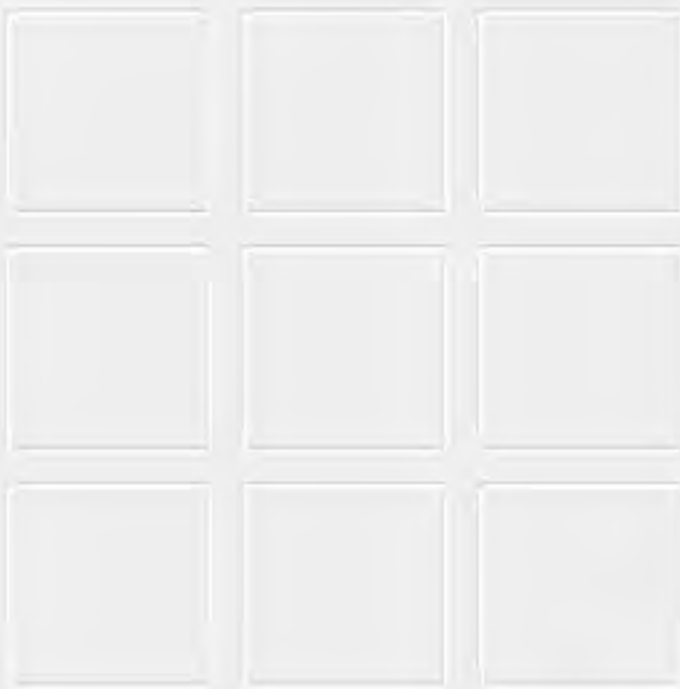
4

Electrics for Rolling Stock

ZH037, ZH437 Series

Overtemperature
devices

Catalogue F196.en



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

Applications

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

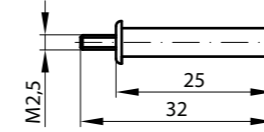
Specifications

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, ZH437 K-Z
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 ---
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. 350 g ---
		approx. 650 g approx. 1,700 g

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

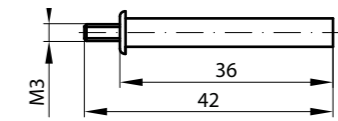
ZH037 Exxx, ZH437 Exxx Fusible links

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 ± 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.

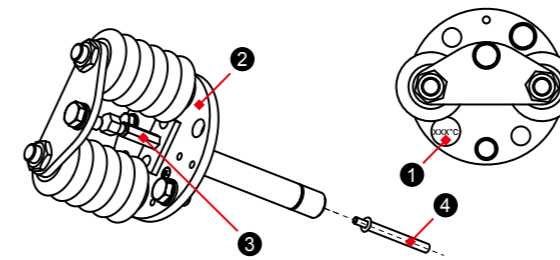


Ordering code	Trip temperature (tolerance ± 10 %)	Colour code
ZH437 E090	90 °C	black
ZH437 E103	103 °C	blue
ZH437 E130	130 °C	green
ZH437 E150	150 °C	red
ZH437 E175	175 °C	grey
ZH437 E200	200 °C	yellow
ZH437 E236	236 °C	white

Assembly, Circuit diagram, Maintenance instructions

Assembly instructions:

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

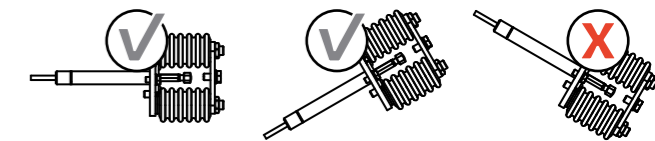


Maintenance instructions:

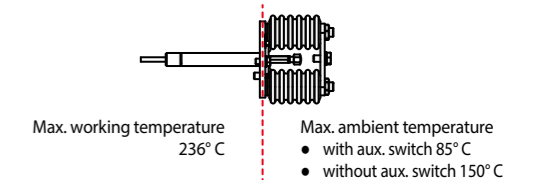
- Check overtemperature devices every 4 years for effectiveness (spring resistance / spring return insured after tripping). Push switch rod backwards against spring resistance. Remove fusible link from switch rod. When you let go the switch rod it should reach the terminal plate exerting discernible contact pressure. Caution: Severely corroded and polluted devices must be replaced.
- Replace fusible links every 4 years since they are subject to a chemical aging process which is further negatively influenced by harsh environmental conditions such as heavy pollution or varying humidity. In general, we recommend replacing the overtemperature device every 8 years and devices which were delivered before 2007 every 6 years. It is possible to use the devices even longer under favourable conditions but this cannot be guaranteed. For use in harsh environments we recommend the stainless steel version of the overtemperature device (version VA).

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.

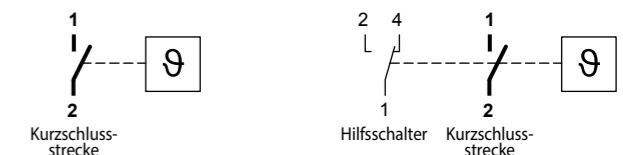


Allowable temperature range:



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.

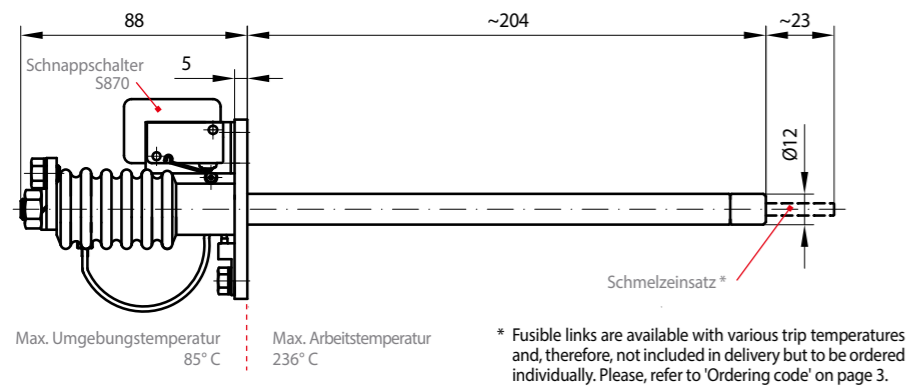
Circuit diagram:



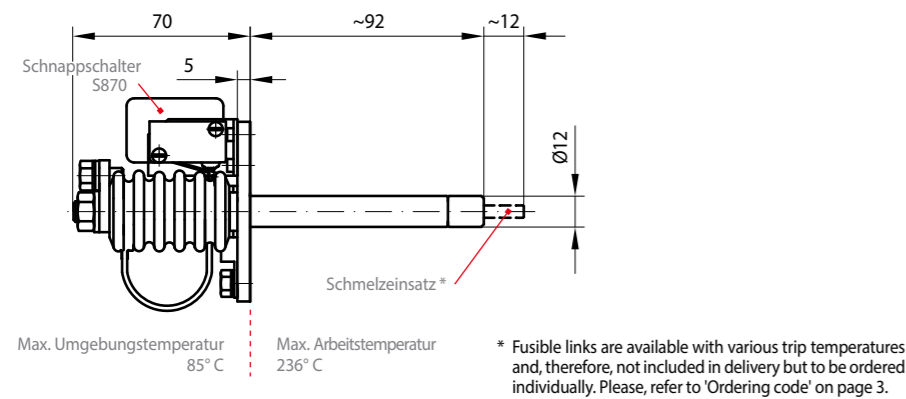
Circuit diagram for Series **ZH037 K, ZH437, ZH437 K, ZH437 K-K**

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

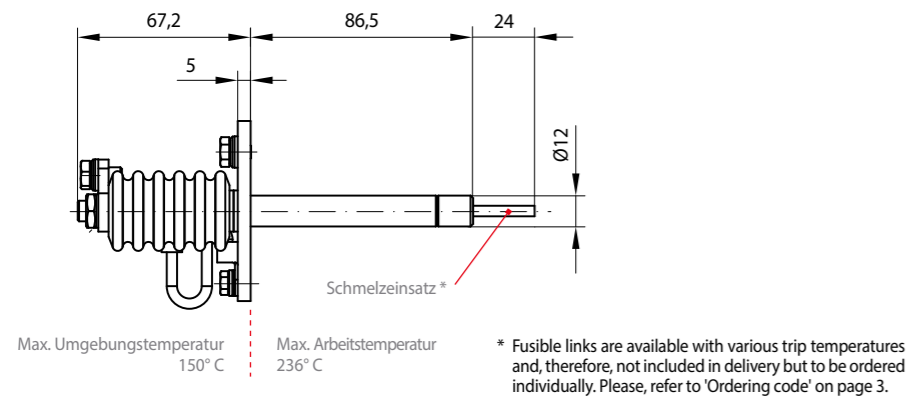
ZH437 K-H Tripping device with auxiliary switch, standard



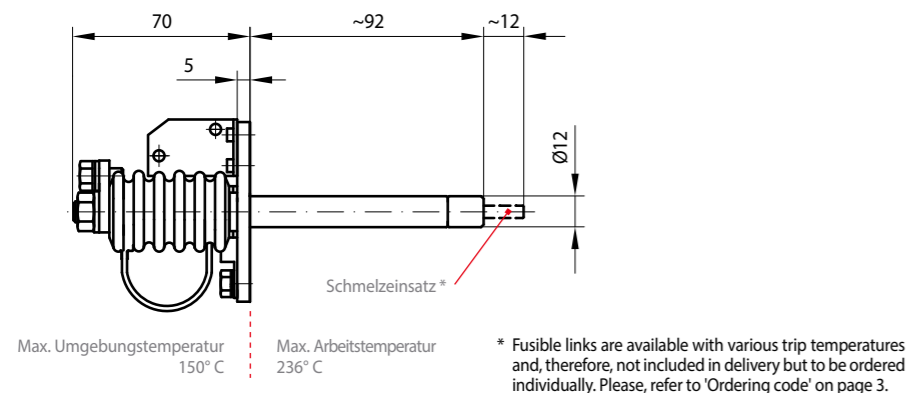
ZH437 K-HK Tripping device with auxiliary switch, short



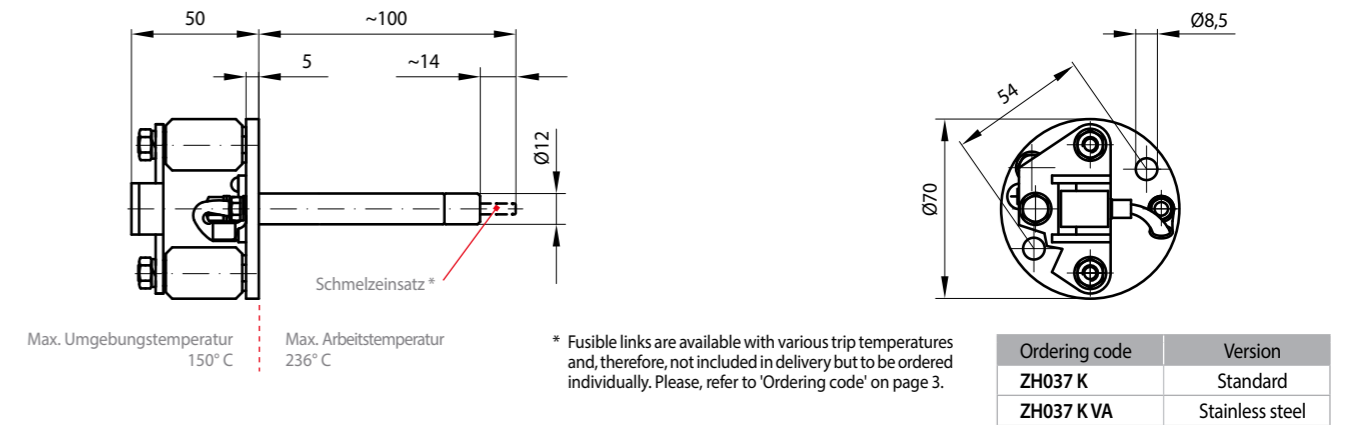
ZH437 K-K3 Tripping device, short



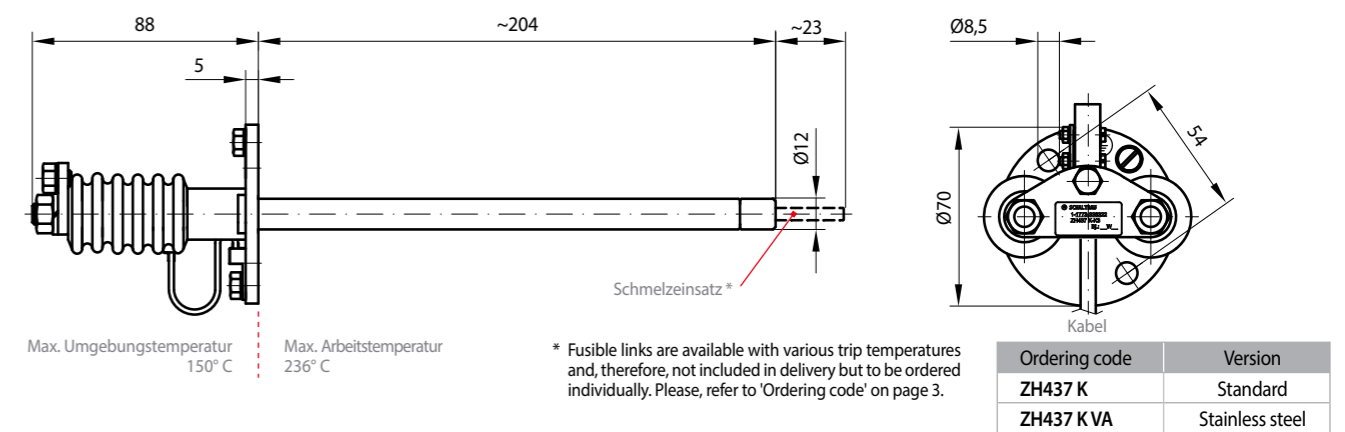
ZH437 K-K Tripping device, short



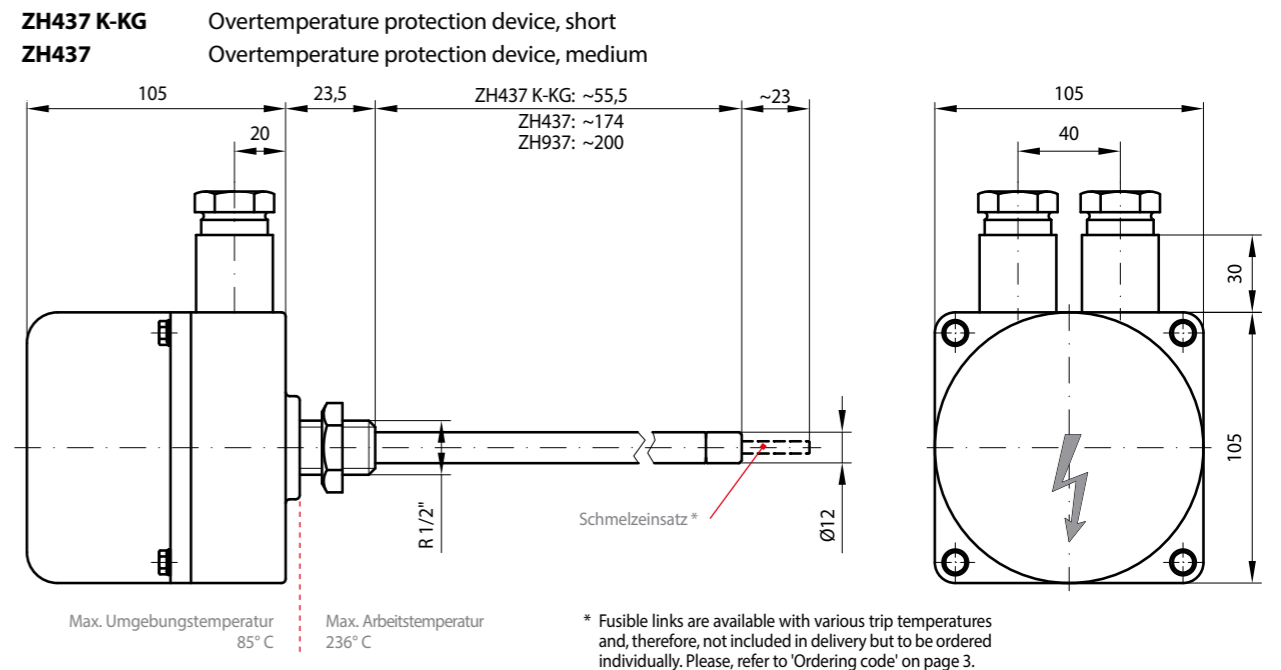
ZH037 K VA, ZH037 K Tripping device, short



ZH437 K VA, ZH437 K Tripping device, standard



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



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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.

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