



# INSTRUCTION FOR USE

GA65GB-10.20

GB



Read thoroughly before use.

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**Short-Circuiting Device**  
for Underground Railways with Lateral Current Rail – Current  
Feed from Bottom Side

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Read this instruction for use completely before use of the short-circuiting device (SCD).

This instruction for use contains all information required for safe operation of the SCD.

Save this instruction for use for your information, if required.

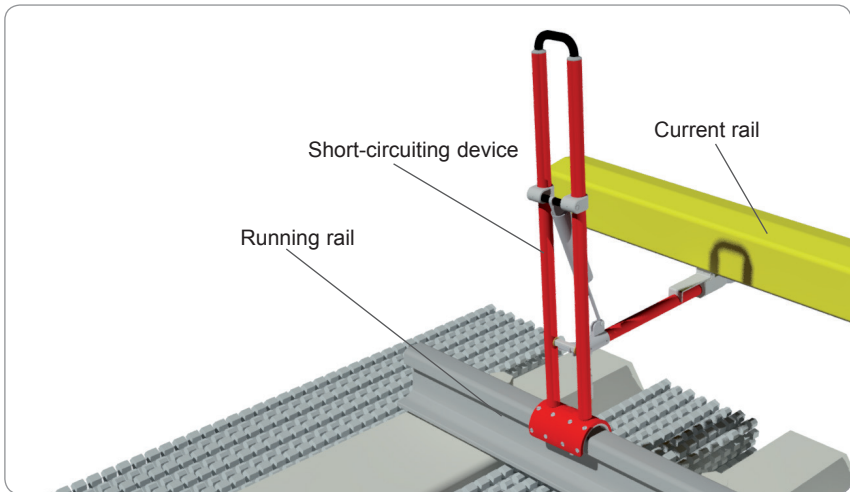
In case the SCD is made available to another person, hand out the instruction for use as well.

Please note that the SCD may differ from the following pictures due to a multitude of variations.

## FIELD OF APPLICATION AND APPROPRIATE USE

The SCD for underground railways is used for earthing and short-circuiting of rail tracks with lateral current rail (current feed from the bottom side):

- In case of maintenance and repair work at the underground railway network the SCD prevents an unintended energisation of the current rail.
- In case of breakdown of service the SCD will earth the current rail by compulsory short-circuiting the running rail.



## SAFETY INFORMATION

### Information in the Instruction for Use

Safety hints and warning hints will warn you for risks and will inform you how to prevent risks.

General safety hints can be found in chapter *Prevention of Dangers* on page 8.

Warning hints can be found before operational steps connected to dangers.

Follow all safety and warning hints.  
They are shown as follows:

 **DANGER!**

This sign warns of a dangerous situation which will definitely lead to death or serious and irreversible injury in case of non-observance of the danger hint.

 **WARNING!**

This sign warns of a dangerous situation which will lead to death or serious and irreversible injury in case of non-observance of the danger hint.

 **ATTENTION!**

This sign warns of a dangerous situation which will lead to light or medium serious injury in case of non-observance of the danger hint.

**HINT!**

This sign warns of situations which will lead to material damages in case of non-observance of the hint.

## Hints on the SCD

### WARNING!

#### Danger when used incorrectly!

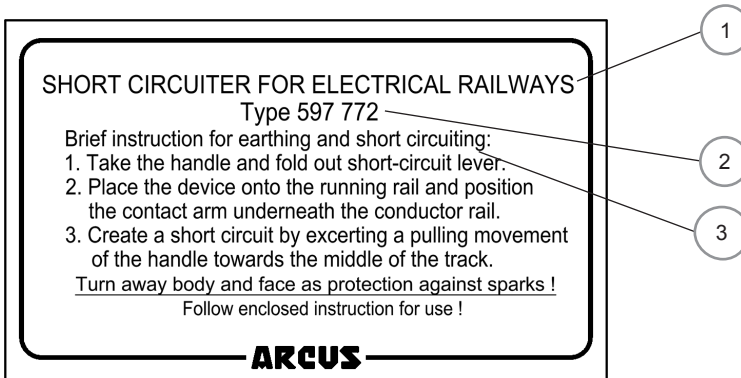
- Observe all hints on the label before use of the SCD!!

### WARNING!

#### Danger when label is illegible!

- Always keep the labels in a well-readable condition!
- Damaged labels must be replaced immediately!

## Labeling on the SCD



1. Product name
2. Type number of the SCD
3. Hints for use of the SCD

## REQUIRED QUALIFICATION OF OPERATING PERSONNEL

Operation, maintenance, and repair of the SCD must only be carried out by electricians or personnel specially trained in electrotechnics according to EN 50110-1, as well as persons trained in railway technologies.

For prevention of accidents and dangers to health we recommend to have a training related to safe use before initial use of the SCD.

## PREVENTION OF DANGERS

Observe all safety regulations for work on rail-tracks!

Work on rail-tracks requires permanent attention and full concentration!

In case of disadvantageous environmental conditions or weather conditions, work must not be started or continued. When required, work needs to be restricted!

Only use the SCD in rail systems of electric underground railways in the low voltage area!

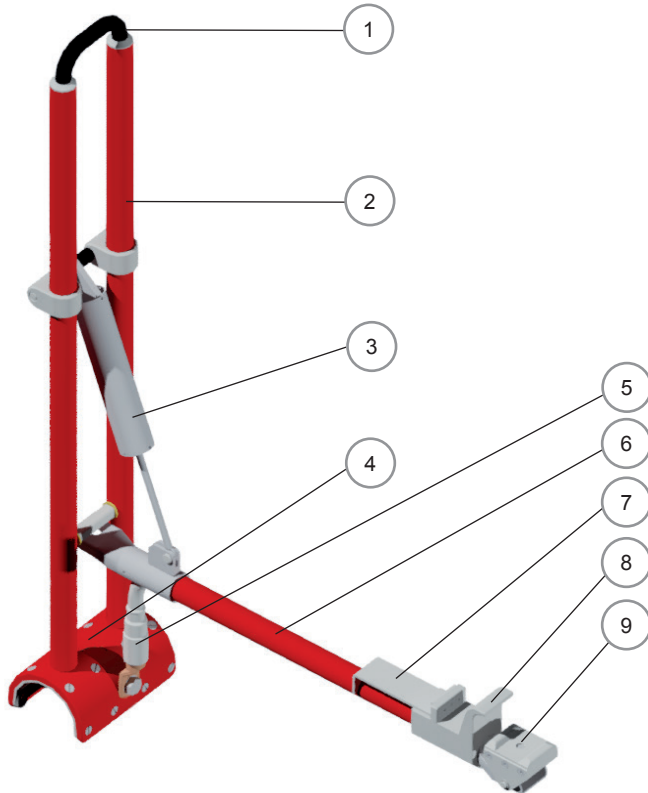
The SCD must not be used for transmission of permanent current!

Exclude the SCD from reuse after it was charged by a short circuit!

In addition to this instruction for use, respective national laws, regulations, standards, and in-house instructions in the valid version are to be observed (e.g. personal protection equipment, country-specific training regulations for electricians, EN 50110-1)



## CONSTRUCTION OF THE SCD



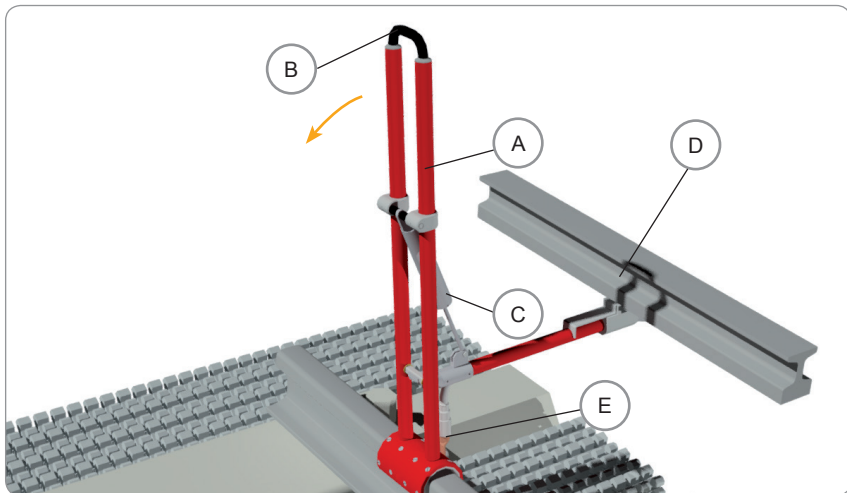
- 1 Handle
- 2 Frame
- 3 Tension spring
- 4 Contact foot for running rail
- 5 Earthing and short- circuiting cable
- 6 Contact arm
- 7 Step plate
- 8 Stopper for current rail head
- 9 Contact block for current rail

## OPERATIONAL PRINCIPLE OF THE SCD

The SCD is set onto the running rail next to the current rail (A).

By pulling the handle (B) a spring store (C) which is integrated in the device is prestressed and releases its energy in a sudden. This way the contact element which is positioned underneath the current rail hits the current rail in high speed (D).

The earth connection between running and current rail closes within few milliseconds. The earth connection within the device is established by an earthing and short-circuiting cable (E).



Pict.: SCD in use – protective cover of current rail is not shown.

## UNPACKING AND EXAMINATION

The SCD is packed to protect it against normal impact and transport stress.

Unpack and examine short circuiter as follows:

- Unpack the SCD and examine if all parts on the despatch note have been received.
- Examine the SCD for transport damage.

### TIP:

In case packing has been damaged during transport so that possibly supplied parts are damaged or missing, make a note on the receipt documents.

Otherwise insurance will not carry the cost for replacement!

If package is undamaged but supplied parts are damaged or missing, please contact ARCUS Schiffmann immediately.

## Packing Material

Return the SCD in its original packing to prevent damage. Save the packing for this purpose.

Alternatively dispose of packing material not needed under observation of the valid regulations in your country.

## STORAGE AND TRANSPORT

Treat the SCD with care.

Make sure that the SCD is protected against surface damages and shock during storage and transport.

For storage make sure that the SCD is not exposed to permanent solar radiation.

Store the SCD in clean and and dry condition. Rub a wet SCD dry with a clean and lint-free cloth.

## INSPECTION OF SCD

### DANGER!

#### Danger when SCD is damaged or not functional!

- Inspect the SCD before each use whether it is undamaged and operates faultlessly.
- A damaged or not fully functional SCD must be excluded from further use!

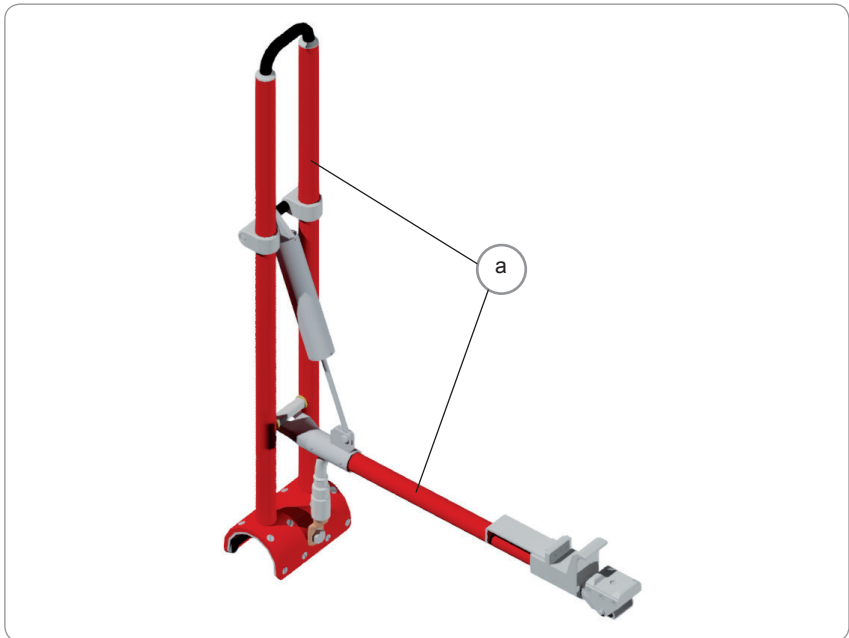
The inspection is carried out as visual inspection or as function check.

Check the following:

<b>GENERAL</b>		
<b>Inspection criteria</b>	<b>Type of test</b>	<b>Hint</b>
Is the SCD cleared for the place of use?	Visual inspection	Important when a number of different SCD are available at the location!
Is the instruction for use attached or is it available on site?	Visual inspection	Incorrect use jeopardises function and safety!
Are safety hints on the SCD clearly legible?	Visual inspection	Important for prevention of injuries and damages!
Is the SCD complete, as far as recognisable?	Visual inspection	Missing parts jeopardise faultless function!
Are all detachable connections (threaded connections) tight, as far as recognisable?	Visual inspection and function test	Loose connections jeopardise faultless function!

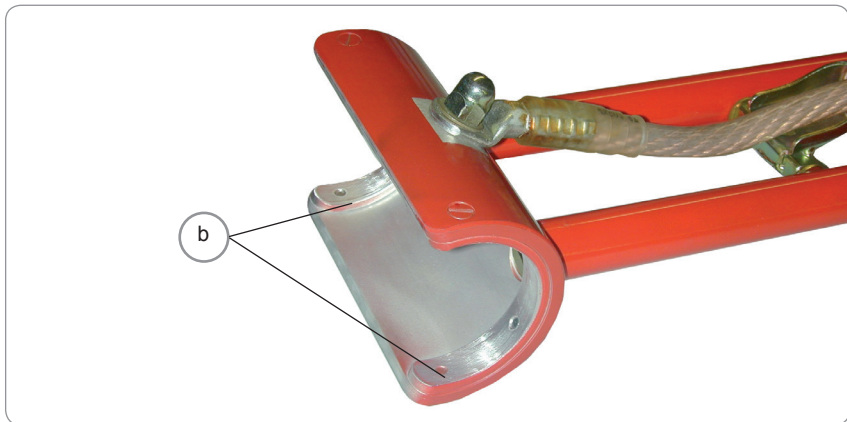
## INSULATING TUBES

Inspection criteria	Type of test	Hint
Is the varnish of the frame (a) in good order?	Visual inspection	In case the varnish is damaged, water may enter and reduce properties of use. Also, free glassfibres may cause hand injuries!
Is the frame (a) free of fissures, cracks or other deformations?	Visual inspection	Fissures, cracks, etc., reduce the mechanic stability and may lead to accidents during use of the SCD!



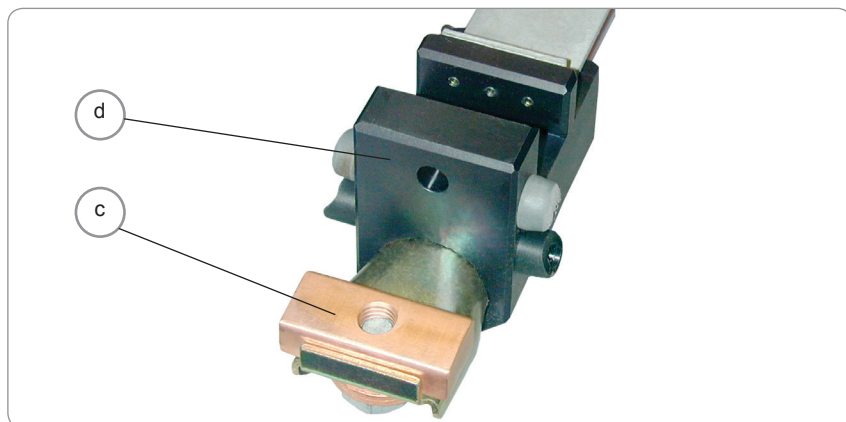
**CONTACT ON RUNNING RAIL**

Inspection criteria	Type of test	Hint
Are all contact shells (b) at their place?	Visual inspection	Missing contact shells may jeopardise fault-less function!
Is the surface of the contact shells metallic bright and free of unevenness, burnings, fissures, and cracks?	Visual inspection	This area must be damage-free, otherwise a safe electric contact towards the head of the running rail is not guaranteed!



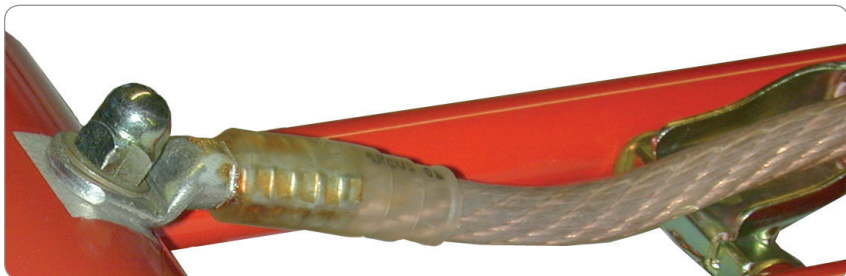
### CONTACT ON CURRENT RAIL

Inspection criteria	Type of test	Hint
Is the surface of the contact block (c) metallic bright and free of irregularities, burnings, or fissures and cracks?	Visual inspection	This area must be damage-free, otherwise a safe electric contact towards the current rail is not guaranteed!
Is the stopper (d) for the head of the current rail free of fissures or cracks?	Visual inspection	A damaged stopper jeopardises faultless function!



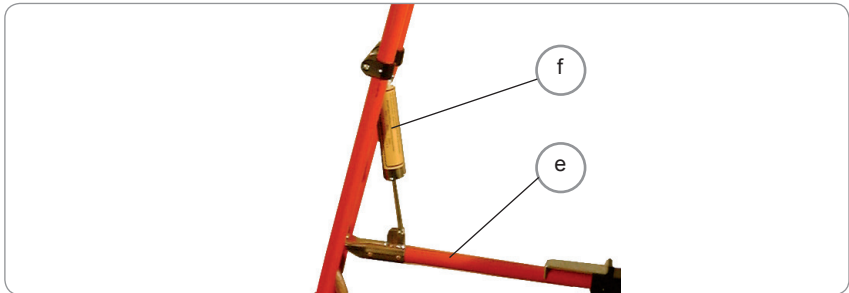
## EARTHING AND SHORT-CIRCUITING CABLE

Inspection criteria	Type of test	Hint
Is the insulation of the cable sufficiently transparent to be able to inspect the copper strands?	Visual inspection	Discolouration or clouding of insulation prevents evaluation of strands of the copper cable!
Is the insulation of the cable free of damages (abrasion, fissures, holes, bare copper strands)?	Visual inspection	Damaged insulation does not protect the copper strands against outside influences!
Is the insulation of the cable free of damages from heat (melting, discolouration, burnings)?	Visual inspection	Damages from heat may be an indication of high current load caused by a short circuit!
Are the copper strands of the cable free of discolouration?	Visual inspection	Discolouration may be an indication of corrosion!
Are the copper strands of the cable unbroken?	Visual inspection	Broken copper strands jeopardise safe current transmission!





<b>FOLDING MECHANISM</b>		
<b>Inspection criteria</b>	<b>Type of test</b>	<b>Hint</b>
Is it easy to open or fold the contact arm (e)?	Function check	A rough-running contact arm may jeopardise a fault-less function!
Is it easy to safely secure the contact arm in transport position?	Function check	An unsecured contact arm may lead to accidents during transport of the SCD!
Is the effect of the tension spring (f) clearly perceptible even before the contact arm is in rectangular position towards the frame?	Function check	With an ineffective tension spring a safe electric and mechanic contact is not given!
Is it possible to press the contact arm downwards over the rectangular position, against the spring force?	Function check	With a blocked contact arm it is not possible to fit the SCD between the rails!



## INSTALLATION AND REMOVAL

### DANGER!

#### **Danger when SCD is damaged or soiled!**

- Examine your SCD before use for damage or soiling.

### WARNING!

#### **Danger when used incorrectly!**

- Before use of your SCD, observe all hints on the label!



Wear protective clothing for protection against possible flying sparks.



Wear a hearing protection against possible explosive bang (during a short circuit).

### **Use on rippled, rough, soiled, or corroded rail surfaces**

Do not install the SCD on rippled, rough, soiled, or corroded rail surfaces.

Such points may lead to increased flying sparks and arcing, as well as burnings on the rails!

Relocate the SCD to a different point. This will considerably improve the electric and mechanic contact.

## Use at rail connections

Do not install the SCD in the area of rail connections. In this area the SCD does not have a safe electric and mechanic connection.

Relocate the SCD. This will considerably improve the electric and mechanic contact.

## Installation of the SCD



Carry the SCD to place of operation.

Unfold the SCD.



Lift the SCD below the current rail, as shown.

Keep distance as large as possible between contact block of the SCD and current rail or other conductive parts!



Set the SCD onto running rail as shown in the picture. The contact foot is to contact the rail properly.



Pull handle backwards. This way the contact block will snap to the current rail for full contact.

Let handle go after audible contacting.

If handle is pulled further on there is the danger that contact comes loose again!

## Removal of the SCD



Hold the SCD on handle.

Be sure to stand firmly on the ground.



Press contact arm downwards with your foot on the step plate and unfold the SCD. Be sure to stand firmly on the ground !

Afterwards remove the SCD from running and current rail and fold again.

## CLEANING

Slight soiling may be removed by a clean and lint-free cloth.

## MAINTENANCE

Generally the SCD is maintenance-free. If the SCD is stored permanently on a train it will be strained by vibration, acceleration forces and changing climatic influences.

For this reason it is recommended to carry out an examination of the SCD at least every two years. Visual inspection and function tests can be found in chapter *Inspection of SCD* on page 12 and following.

## EXCLUSION FROM REUSAGE

Is the SCD damaged or its operational reliability limited, it must be withdrawn from further use!

SCD must be withdrawn from further use after a short circuit or an earth fault current!

Depending on general condition of the SCD, it is possible to exchange those components involved in current transmission.

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## WASTE DISPOSAL

### HINT!

#### Environmental damages by false disposal!

- An inappropriate waste disposal damages the environment.
- Observe national and local regulations for disposal.
- Dispose of the SCD at local return and collection points.
- In case of uncertainties about utilised materials, ARCUS Schiffmann will be pleased to inform you.

## TECHNICAL DATA

Usage:	Rail-tracks with lateral current rail in the low voltage area
Humidity:	20 - 96%
Temperature range:	-25 °C up to +70 °C

## PRODUCT LIABILITY AND GUARANTEE

### HINT!

#### **Termination of product liability!**

Please note that inappropriate interference and modification on the product will lead to safety risks and termination of product liability.

This instruction for use was written with greatest care and examined before publishing.

Condition for any guarantee is the proven observance of the instruction for use for storage, transport, examination, operation, maintenance and care.

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