



# INSTRUCTION FOR USE

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GA33GB-10.11



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## HIGH VOLTAGE LIVE LINE TESTER ARCUSDETECT H

for effectively star point-isolated neutral 3-phase system

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This instruction for use, specially its safety information, is to be read and to be observed by everyone before working with the high voltage live line tester !  
Keep this instruction for use to have information available when required.  
In case you will hand over the high voltage live line tester to another person, include the instruction for use !

## FIELD OF APPLICATION AND USAGE

### General

The high voltage live line tester is designed to state absence of voltage of electric equipment in effectively star point-isolated neutral 3-phase systems which afterwards are to be earthed and short circuited.

The high voltage live line tester is to be used only for the nominal voltage or nominal voltage range and frequency mentioned on the head part label !

For usage observe EN 50110-1 or standardised safety rules of your country and internal operational instructions to prevent dangers !

### Use in type-tested switchgear

Use of high voltage live line testers in type-tested switchgear is possible only under certain conditions as the tester was designed in accordance with the minimum distances and their sparking distance of the protector gap to HD 637 S1.



Please contact the manufacturer of the switchgear to find out if and where the high voltage live line tester is permitted to be used !

### Use on contact wires of electric railways



This high voltage live line tester is not suitable for use on contact wires of electric railways !

## SAFETY INFORMATION

### Instruction for use: special remarks



#### **Warning !**

All warnings are marked with this symbol. Do not ignore any warning. Failure in observance may lead to injuries or death.



#### **Attention !**

All safety hints are marked with this symbol. Do not ignore any safety hint. Failure in observance may lead to damage of devices or long-term health damages.



#### **Information !**

All information is marked with this symbol. Do not ignore any information. It contains important details to facilitate working and improve apprehension.



#### **Recommendation !**

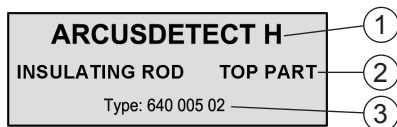
All recommendations are marked with this symbol. They will contain details for optimum usage of the device.

### High voltage live line tester: special remarks

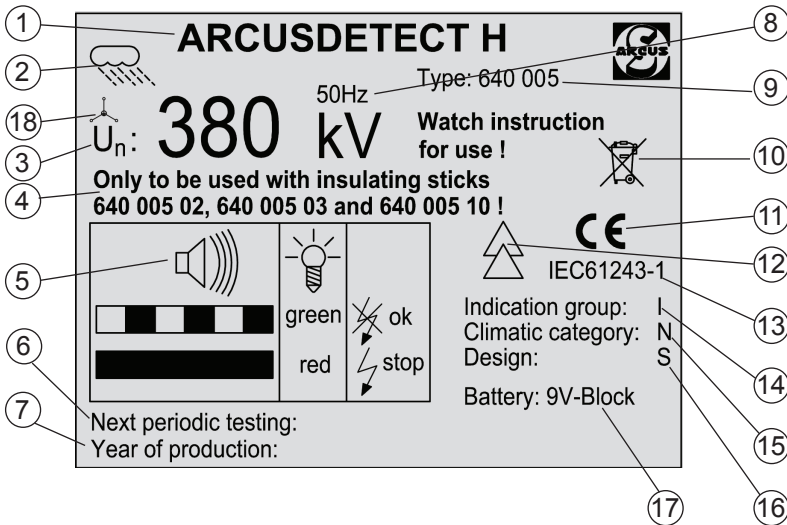




Before use of this high voltage live line tester, please examine labels for suitability of tester for its intended usage. For simplification, symbols are explained as follows:


*Label insulating rod:*



1. Product name
2. Denomination of insulating rod part
3. Type number of rod part

*Label head part:*

1. Product name
2. Model: for indoor or outdoor use  
 indoor  outdoor
3. Nominal voltage
4. Assembly information for high voltage live line tester
5. Explanation visual and audible indication
6. Date for next periodic testing
7. Year of construction
8. Nominal frequency
9. Type number of high voltage live line tester
10. Marking according to EU Directive 2002/96/EG
11. CE marking according to EMV Directive 2004/108/EG
12. Marking of accessories and devices suitable for live working
13. Model to IEC 61243-1
14. Indication of high voltage live line tester:  
 Group I: Indication with at least two distinct active signals, which give an indication of the condition "voltage present" and "no voltage present".
15. Climatic conditions (usage and storage)  
 Climatic category: Normal (N)  
 Temperature °C: -25 to +55  
 Humidity %: 20 to 96

16. Design: High voltage live line testers with contact electrode extension are marked "Category S". These testers may be used in substations and on overhead lines.
17. Indication of battery type
18. Net system  effectively star point-isolated neutral 3-phase system

### Required qualification of operating personnel

Operation and maintenance of this high voltage live line tester is to be carried out only by electricians or specially trained personnel following EN 50110-1 or the standardised safety rules of the respective country. Further it needs to be secured that before start of work the operating personnel was trained for this operation !

### Prevention of dangers



The high voltage live line tester is to be used only for the nominal voltage or nominal voltage range and frequency in effectively star point-isolated neutral 3-phase systems stated on the head part !

High voltage live line testers in several parts are to be used only together with their own insulating rods !

The high voltage live line tester is to be used exclusively for verification of absence of voltage !

Experienced personnel is required for verification of absence of voltage !

Directly before each use high voltage live line testers are to be examined for faultless function. The built-in self-test device is destined for this purpose !

High voltage live line testers of construction "indoor usage" are not to be used in case of fog. Precipitation is any kind of weather that causes forming of moisture or drops on the surface of the insulating rod !

In case of precipitation, high voltage live line testers "for outdoor use" must not be applied to live installation parts for more than 1 minute continuously !





### Prevention of dangers (continuation)

The high voltage live line tester may be used with precipitation only when each of its parts (head part and insulating rods) are of construction for outdoor use.

For use the high voltage live line tester is to be held at the handle  $L_H$  (→ page 10) only. The high voltage live line tester is to be operated in a way that the operating person remains at required safety distance to all live switchgear parts !

Absence of voltage at the working place always is to be verified on all phases !

Additional threaded contacts (such as fork contacts for overhead lines) are prohibited in switchgear.

Use of a high voltage live line tester does not relieve from observance of EN 50110-1 requirements regarding necessary steps to produce and secure a de-energised condition during work on electric installations !  
Maintain the high voltage live line tester well !

Send it to periodic testing at least every 6 years !

The nearest date for periodic testing can be found on the head part label (→ page 7).

Relevant regulations of the professional association are to be observed !

## HIGH VOLTAGE LIVE LINE TESTER IN GENERAL

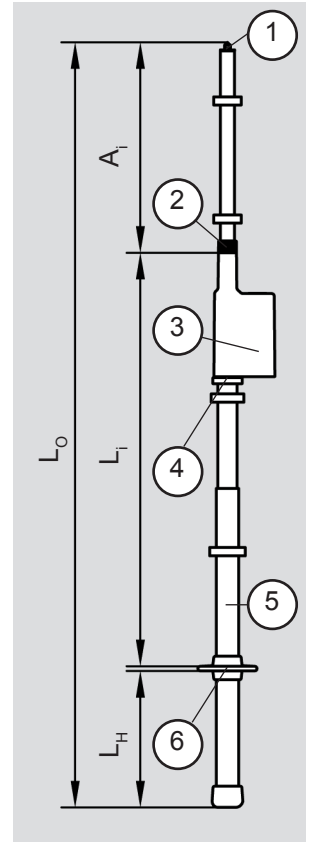
The high voltage live line tester is a portable device for verification of presence or absence of operating voltage on the installation part to be tested.

The high voltage live line tester is in conformance with IEC 61243-1.

The high voltage live line tester consists of several parts split up in handle  $L_H$ , insulating section  $L_i$  and an operating head with extension  $A_i$ .

At the handle section  $L_H$  the high voltage live line tester is to be held during voltage test. The section between hand guard (6) and limit mark (red ring) (2) is the insulating section which gives the user the necessary protective distance and sufficient insulation towards the installation part to be tested for absence of voltage.

Extension part  $A_i$  is located on the high voltage live line tester between limit mark (red ring) (2) and the test electrode (1). It eliminates the influence of stray fields on the indication (3). The part of the high voltage live line tester between contact electrode (1) and limit mark (red ring) (2) is permitted to be positioned on earthed or live installation parts, or to contact them.



- $L_H$  = Handle
- $L_i$  = Insulating part
- $A_i$  = Extension
- $L_o$  = Total length

- 1) Contact electrode
- 2) Limit mark (red ring)
- 3) Indicator
- 4) Adaptor
- 5) Insulating rod
- 6) Hand protection disk

## Model Sound-Light

Features of your high voltage live line tester:

- visual indication with 2 LEDs (red/green)
- acoustic indication with piezo oscillator
- fully-tested contact electrode (VGS)
- simple battery exchange (→ page 19)

## UNPACKING AND EXAMINATION

The high voltage live line tester is packed to be protected against normal impact and damage during transport.

Unpack and examine the high voltage live line tester as follows:

- Unpack and examine the high voltage live line tester as follows:  
Unpack the high voltage live line tester and make sure you have received all parts listed on the packing list.
- Examine the high voltage live line tester for damages from transportation.  
In case packing is damaged and you have to expect damage or loss of supplied parts, this is to be noted on the delivery documents, otherwise insurance will not pay !  
If shipment is packed orderly and parts are damaged or missing, please contact ARCUS Schiffmann.



### **Recommendation !**

Stock all packing material to be available in case the high voltage live line tester needs to be returned to ARCUS Schiffmann.

## STORAGE AND TRANSPORT

The high voltage live line tester is to be stored in clean and dry condition. Make sure that the high voltage live line tester is protected against shock, impact and damage of surface !

## ASSEMBLY AND DISASSEMBLY



### Warning !

The high voltage live line tester is to be used with its own suitable insulating rod only !

Examine labels of head part and insulating rods for suitability of insulating rods for the intended usage !

### Assembly

Screw all insulating rod parts stoutly until stop.

#### 3-part high voltage live line tester

head part

top part

lower part

#### 4-part high voltage live line tester

head part

top part

center part

lower part

### Disassembly

Unscrew the insulating rod from the threaded joint of the head part. Disassemble multi-sectional insulating rods to obtain separate rods.



## HANDLING

Handling of high voltage live line testers is permitted only for electricians or personnel with electrotechnical training to EN 50110-1.

Also one needs to secure that before start of work the operating personnel was instructed about the task !

This high voltage live line tester must only be used on the nominal voltage or nominal voltage range and frequency in effectively star point-isolated neutral 3-phase systems as stated on the housing !

The high voltage live line tester of construction “indoor usage” is to be used only under dry conditions !

High voltage live line testers in several parts are to be used only together with their own insulating rods !

Before each usage examine the high voltage live line tester for visible damages or soiling.

In case parts are damaged, function limited, or labels are illegible, do not use this high voltage live line tester by any means !

Before each usage examine the high voltage live line tester for faultless function. For this purpose your high voltage live line tester is provided with a built-in self-testing device.

After positive function control you may start with the actual high voltage live line test !

Always hold the high voltage live line tester at the handle  $L_H$  only when using it !

As on angular or complex conductor arrangements stray fields or stray voltages are possible, a clear indication is to be examined !

A position for usage is not stipulated !

A faultless voltage test of a switchgear part consists of the following steps:

- *test of high voltage live line tester for faultless function (1st self-test)*
- *voltage test of switchgear part*
- *repeated test of high voltage live line tester for faultless function (2nd self-test)*

Before each usage examine the high voltage live line tester for faultless function.

For this purpose your high voltage live line tester is provided with a built-in self testing device.

After positive function control you may start with the actual voltage test.

The correct procedure of voltage test with your high voltage live line tester is described in the following chapter.

## INDICATION SIGNALS AND SELF-TEST

### Model Sound-Light

*Switch on your high voltage live line tester and start with the self-test.*

Press the pushbutton and hold it down for 2 seconds to activate the high voltage live line tester.

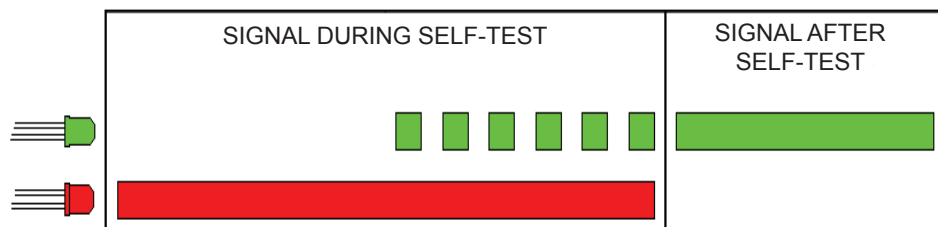
LED shows red light – at the same time you hear a permanent sound.

Green LED starts to blink.

Release the pushbutton.

Your high voltage live line tester is operating faultlessly when the red LED goes out, the green light shows and you hear an intermittent sound (see picture below).

Now start the voltage test !



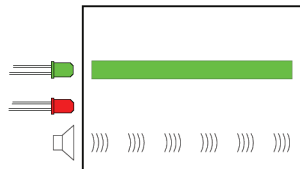
Pict. Positive self-test



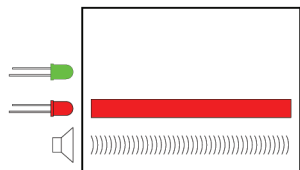
### Warning !

In case the green LED will not blink and there will not be a permanent sound during self-test, the high voltage live line tester must be withdrawn from any further usage ! ("Help in case of malfunction"  
→ page 17 ff).

*Now start with voltage test.*



Pict. tester shows „no voltage present“



pict. tester shows presence of voltage

Approach the switchgear part to be tested, under observance of the safety distance.

Only carry out the voltage test when the green LED is on and if you hear an intermittennd sound.

Both signals "test readiness" after positive self-test. Place contact electrode on the switchgear part to be tested.

If green LED remains on and you hear an intermittennd sound, no voltage is present.

If red LED is on and the intermittennd sound changes into a permanent sound, voltage is present.

A clear indication "voltage present" is usually secured when the conductor-earth voltage of the switchgear part to be tested is min. 45% of the nominal voltage, for which the high voltage live line tester is calibrated.

A clear indication "no voltage present" is usually secured when the conductor-earth voltage of the switchgear part to be tested is less than 10% of the nominal voltage, for which the high voltage live line tester is calibrated.



### Recommendation !

Please note that tester switches off automatically after around 1 min. !  
For manual deactivation of tester press push-button briefly.

*Carry out 2nd self-test for faultless function.*

Remove the high voltage live line tester from the tested switchgear part.

For 2nd self-test briefly switch off and on tester.

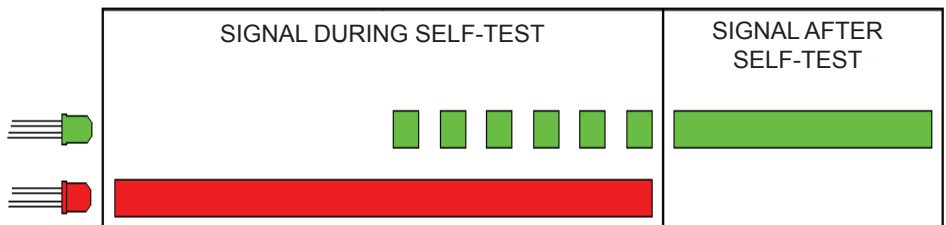
Press the pushbutton and hold it down for

2 seconds to activate the high voltage live line tester.

The red LED shows – at the same time you hear a permanent sound. The green LED starts to blink.

Release the pushbutton.

Self-test is successful when red LED goes out, green LED shows and you hear an intermitten sound (see picture below).




Pict. Positive self-test

**Warning !**

In case the green LED will not blink and permanent sound will not come up during self-test, the high voltage live line tester must be withdrawn from any further usage ! („Help in case of malfunction“ → page 17 ff). The previous voltage test is void and is to be repeated with a faultless high voltage live line tester.









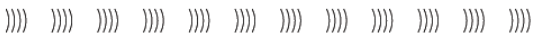




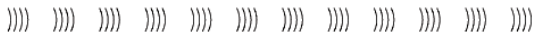




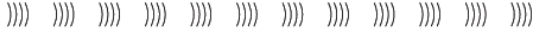



HELP IN CASE OF MALFUNCTION



In case of malfunction please only change battery !

Repair of electronics or of mechanic damages is to be effected by  
ARCUS Schiffmann only !

No guarantee when electronics was interfered with by third parties.

	<div></div> <div>press pushbutton for min. 2s</div>	<div></div> <div>release pushbutton</div>
	<div>2s self-test</div> <div>self-test completed</div>	
<div>  </div>	<div></div> <div></div>	Battery is nearly empty → change battery
<div>  </div>	<div></div> <div></div>	extension part faulty → return high voltage live line tester to AR- CUS Schiffmann
<div>  </div>	<div></div> <div></div>	Electronics defect → return high voltage live line tester to AR- CUS Schiffmann
<div>  </div>		Battery is nearly empty or Electronics defect → change battery or return high voltage live line tester to ARCUS Schiffmann

## ROUTINE MAINTENANCE AND UPKEEP

The device is to be treated carefully. Protect it against damage and soiling (colour, metal dust, etc.) to maintain its insulation properties.

The high voltage live line tester is to be stored in dry condition.

### Cleaning

For cleaning use a watered cloth. Mind that the device is totally dry before use !

### Before each use



The high voltage live line tester is to be examined by a trained person for detectable damages and soiling !

In case parts are damaged and function is affected or labels are illegible, withdraw the high voltage live line tester from further use !

### Once a year

To keep the insulation properties we recommend to treat the high voltage live line tester once a year with ARCUS Silicon Grease (Type No. 625 004).

### Latest after 6 years (periodic testing)

Periodic testing to IEC 61243-1 is to be carried out latest after 6 years.

The nearest date for periodic testing can be found on the tester label (→ page 7).

SPARE PARTS AND ACCESSORIES

List of spare parts

Name of part		Type number
O-ring (battery unit)	(Change see page 21)	69 0009
Battery	(Change see page 19)	71 8263
ARCUS Silicon Grease		625 004

Storage case, carrying bag, wall bracket, upon request.

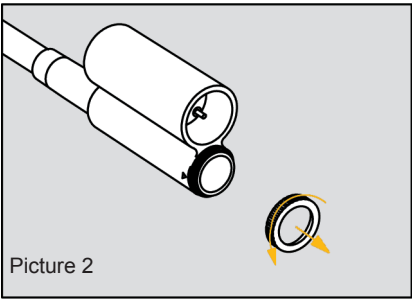
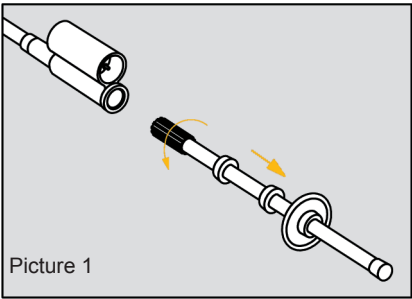
Change of battery

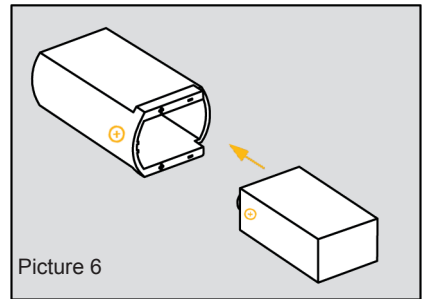
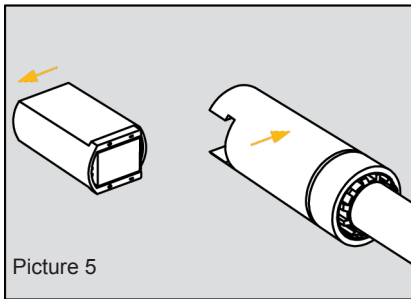
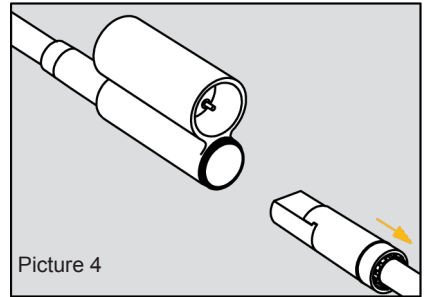
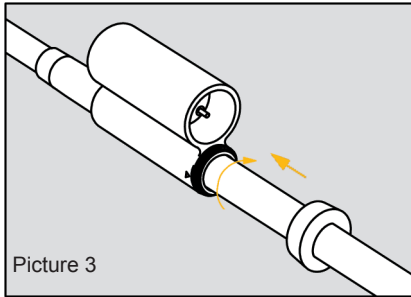
As the battery consumption depends on several factors it is impossible to state an exact battery life time.

This tester does not require tools for battery change.

Battery should be changed in a clean and dry room only !

If this is impossible, secure that dirt, moisture and other foreign matter will not be enclosed in the housing when battery is changed.





- Unscrew insulating rod from head part (see pict.1 / page 19).
- Unscrew blue knurled nut from head part (see pict.2 / page 19).
- Screw insulating rod stoutly back into head part (see pict.3 / page 20).
- carefully pull insulating rod from head part, not to damage the O-ring (see pict.4 / page 19).
- Slip battery unit apart (see pict.5 / Seite 19).
- Replace old battery by new one.
- Pay attention to place poles of new battery correctly (see pict.6 / page 20).

Before assembly of high voltage live line tester examine the O-ring thoroughly for scratches or fissures, placing of O-ring and contact surface for damages !

In your high voltage live line tester one O-ring protects the electronics against moisture and soil ingress from outside !

Consequently a damaged O-ring needs to be exchanged !

(Change of O-ring → page 21)

Assembly of high voltage live line tester is carried out in reversed sequence.

**Attention !**

Old and used batteries are hazardous waste !

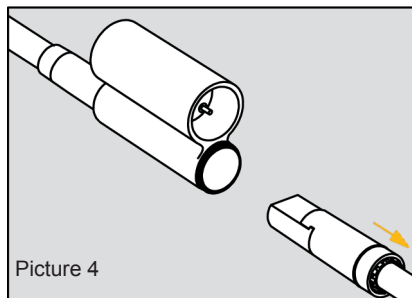
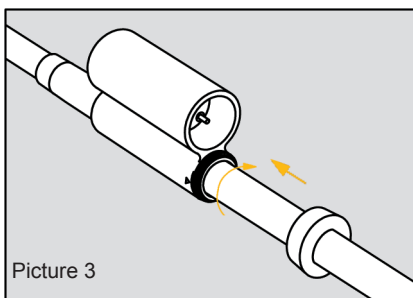
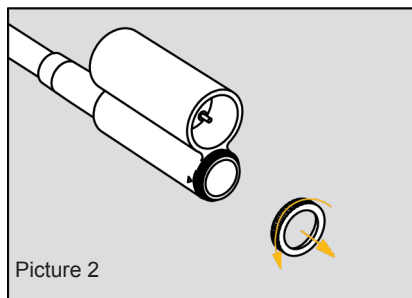
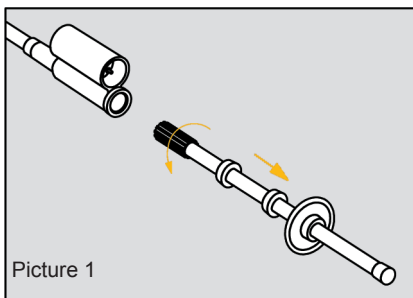
Do not dispose in domestic waste but e.g. through a collection point.

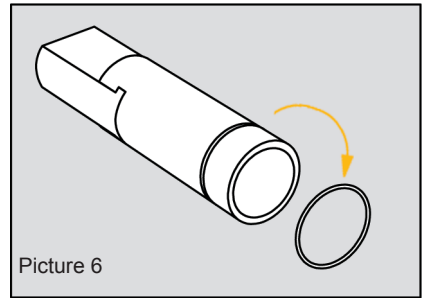
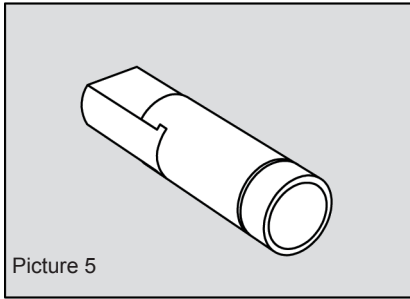
**Change of O-ring**

In your high voltage live line tester the O-ring secures protection of electronics against dust and soiling from outside.

O-rings should be changed in a clean and dry room !

If this is impossible secure that dirt, moisture and other foreign matter will not be enclosed in the housing when o-ring is changed.





- Unscrew insulating rod from head part (see pict.1 / page 21).
  - Unscrew blue knurled nut from head part (see pict.2 / page 21).
  - Screw the insulating rod stoutly into head part (see pict.3 /page 21).
  - Pull insulating rod carefully from head part (see pict.4 / page 21.
  - unscrew insulating rod from battery unit (see pict.5 / page 22).
  - Remove O-ring from battery unit (see pict.6 / page 22).
- Do not use sharp-edged tool !
- Carefully clean new O-ring with a cloth. Examine new O-ring for damages before use! Also carefully clean O-ring groove with a cloth.
  - Slightly grease O-ring with ARCUS-Silicon Grease (Type no. 625 004). The silicon grease enables the O-ring to move inside the groove, to find its optimum position.

Secure central position of the O-ring in the groove !

Assembly of the high voltage live tester is carried out in reversed sequence !

## WASTE DISPOSAL

Observe local regulations for disposal of high voltage live line tester and packing.  
 ARCUS Schiffmann will not be reliable for unsuitable disposal.  
 For queries concerning used materials please contact ARCUS Schiffmann.

## TECHNICAL DATA

Design:	S
Indication group:	I
Field of application:	see labels of high voltage live line tester
Frequency range:	50 Hz
Climatic category:	N
Humidity:	20 - 96%
Temperature range	-25 up to +55 °C
Type of battery:	9V block (lithium)
Standard:	IEC 61243-1

## ANNEXURE

### CE Conformity Declaration

ARCUS high voltage live line testers fulfil the requirements of the EU Directive:  
EMC Directive 2004/108/EG.

Conformity of the high voltage live line tester with above directive is confirmed by the CE mark.

### Product liability and guarantee

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

Basis for guarantee is the proven observation of this instruction for use for storage, operation, maintenance and care.

Valid are the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry".

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