Product Catalogue

9

Safety Equipment

Portable and Stationary Earthing Lances

ARCUS ELEKTROTECHNIK
ALOIS SCHIFFMANN GMBH

Availability by phone:

For queries concerning products and delivery time, and to place an order by phone, we are available as follows:

+49 (0)89/436 04-0

Monday - Thursday:

8:00 am-12:00 noon and 12:30 pm-16:00 pm

Friday:

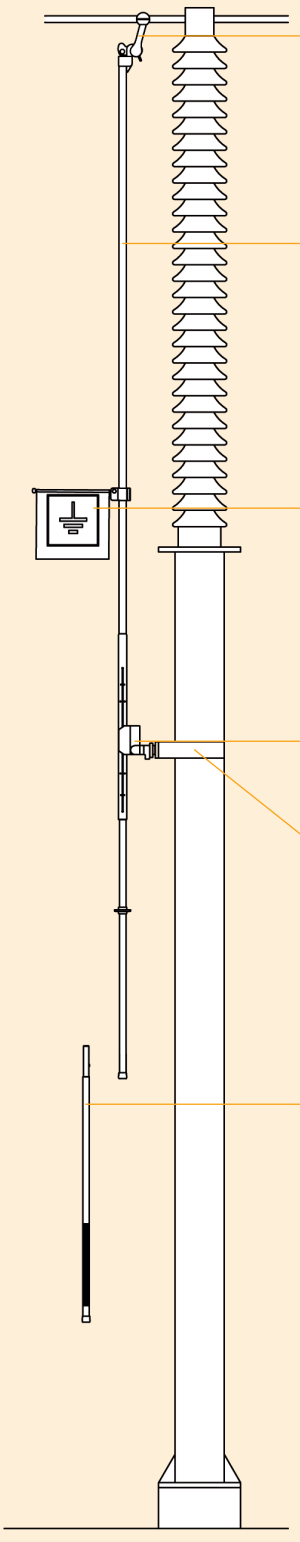
8:00 am-12:00 noon

Information concerning this catalogue:

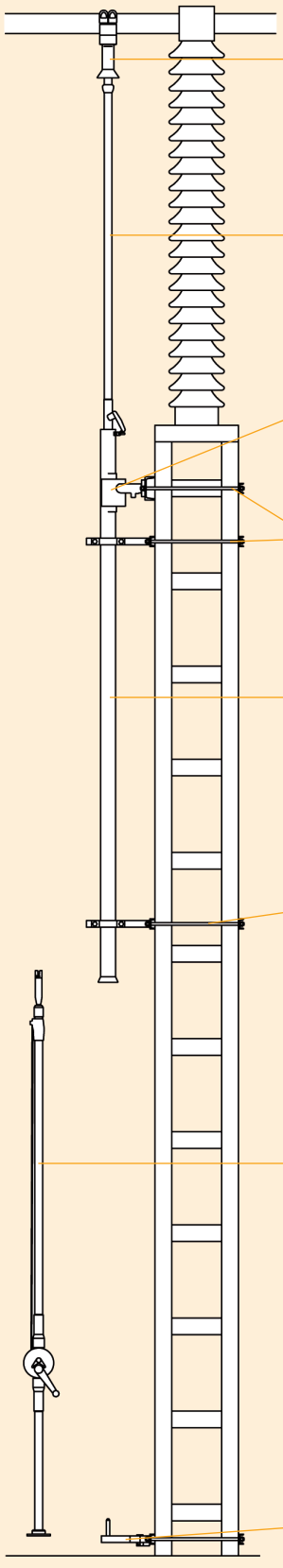
Contents

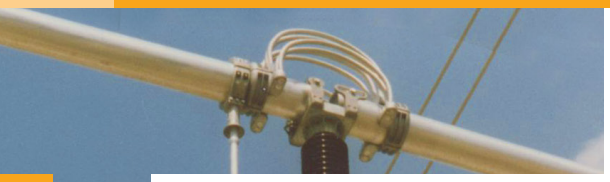
List of Type Numbers

Portable Earthing Lances
(up to approx. 8 m conductor height)



Stationary Earthing Lances
(approx. 8 m conductor height and higher)





Safe. Economical. Space Saving.

Economical and space saving

Short-circuit-proof earthing and short-circuiting in outdoor high voltage substations is a considerable challenge due to increased conductor heights and high short-circuit currents.

Limited space as well as complicated and sometimes insecure operation of portable earthing and short-circuiting devices with leads of large cross section often are the reason for using earthing switches.

Since the beginning of the 1980ies ARCUS Earthing Lances offer an excellent alternative, also with respect to avoiding clashing earthing cables in case of a short circuit. Furthermore earthing lances offer a more economic and space saving alternative compared to earthing switches.

Generally it is possible for one person to operate ARCUS Earthing Lances safely. The restricted guidance of earthing lances allows use even in confined space.

Earthing lances - a safe system for earthing and short-circuiting up to 420 kV, 80 kA/0.5 s and 63 kA/1 s

The term "earthing lance" is used for "earthing or earthing and short-circuiting devices with lances as short circuiting device". It is a modular system consisting of:

- Phase fixed point,
- earth fixed point,
- and the earthing lance as short-circuit-proof connection between both fixed points.

The earthing lance is an earthing device as it forms the short-circuit-proof connection between phase conductor and earth potential.

The connection between phase conductors, the actual short-circuiting, is carried out through the grounding bus firmly installed in the substation.

Why Earthing Lances?

Operating range of earthing lances

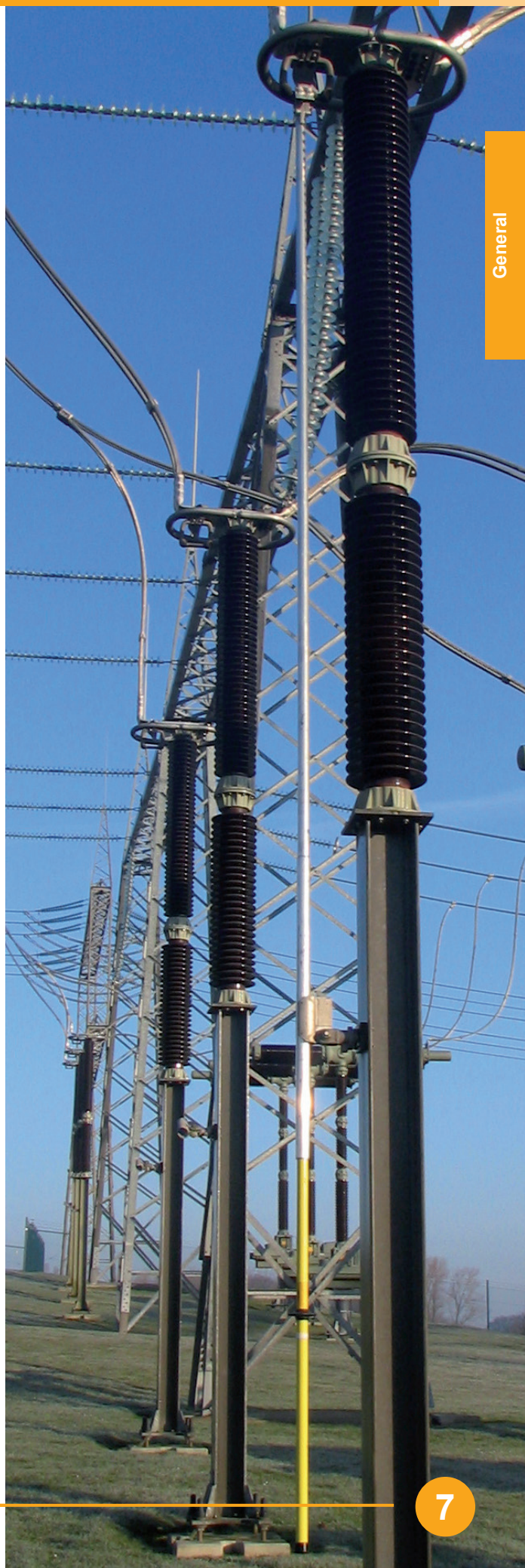
ARCUS Earthing Lances are designed for use in outdoor high voltage substations up to 420 kV, 80 kA/0.5 s and 63 kA/1 s.

On higher voltages the distance between conductor and earthed subconstruction will be too large, so that a calculation of the load on the earthing lance caused by electrodynamic forces in case of a short-circuit will be impossible.

According to EN 50110 earthing lances must be used exclusively on disconnected substation sections, after absence of voltage has been verified. They have no making capacity and are unsuitable for use as earth switch. Earthing lances are designed for temporary use.

In conformance and type tested

ARCUS Earthing Lances are in conformance with standard IEC 61219 and VDE 0683 part 200 of January 1995. This standard is still valid.



Competence through Long-Term Experience

Profit from our long-term experience and competence

We plan, project and manufacture stationary and portable earthing lances for more than three decades.

Make use of our long-term experience and competence resulting from a multitude of earthing lance projects successfully installed worldwide.

We give detailed advice and are able to provide a custom-made solution for your requirements, in cooperation with you.

Intensive customer and product support

Nothing is more important to us than the direct contact to our customers as this creates trust.

For this reason you have a personal contact partner from our company at your side from the start who actively supports you during planning and implementation.

Portable or Stationary?

Depending on place of use, we offer two safe high-performance lance earthing systems:

Portable lance earthing devices

Usually portable lance earthing devices are suitable for conductor heights up to approx. 8 m.

If required these are brought to the earthing place from a storage room or similar and are set into the fix points by a combined slide and swivel movement.

Stationary lance earthing devices

With conductor heights of more than 8 m handling of portable lance earthing devices becomes difficult, as the earth fixed point needs to be installed too high to be used as support and then the lever action becomes disadvantageous. Further one has to consider poor weather conditions which complicate clamping of the earthing lance to the phase fixed point.

Stationary lance earthing devices are the ideal alternative to portable lance earthing devices under the described conditions. Stationary lance earthing devices remain installed at the earthing place and are brought into the contacts by simply lifting the earthing rod. This way it is possible to reach conductor heights of approx.12 m easily and to contact them safely.

In the following both systems are described and differences and compliances are explained.

Portable earthing lances (up to approx. 8 m conductor height)

Design

The system consists of one phase fixed point (1), one earth fixed point (2) and the earthing lance (3).

Phase fixed point

The phase fixed point (1) is available in many different models, suitable for different conductor forms and voltage levels (page 17 ff.), for instance for:

- Tubular busbars,
- single and bundle conductors,
- flat connections.

To prevent possible partial discharge it may be required to take additional steps on site (e.g. corona rings).

Earth fixed point

The earth fixed point (2) mainly consists of a slotted sleeve. The electrically and mechanically safe connection of the earth fixed point (2) to the earthed subconstruction (steelwork) is handled by a rotatable bolt flange.

Earth fixed points can be found on page 25 ff.

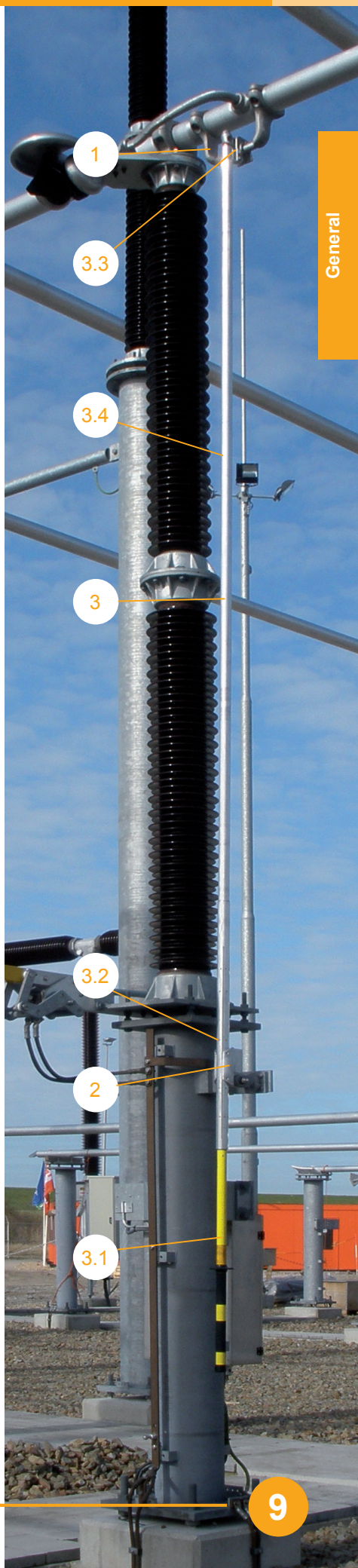
Earthing lance

The earthing lance (3) consists of an earth connection (3.2), a phase connection (3.3), an insulating rod (3.1), and a conductive section (3.4).

The conductive section (3.4) forms the mechanically and electrically safe connection between earth connection (3.2) and phase connection (3.3).

The insulating rod (3.1) guarantees a simple and safe handling of the earthing lance.

Earthing lances in different lengths and for different voltage levels can be found on page 16.



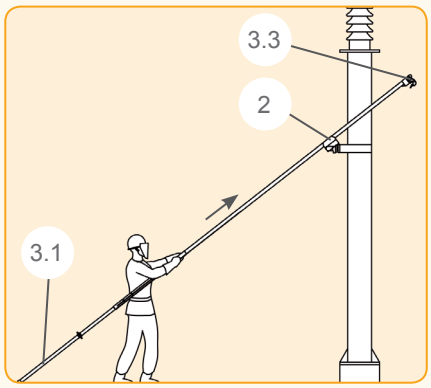
Simple handling

Handling of a portable earthing lance is simple, safe and usually possible by one person.

Insertion of the earthing lance into the earth fixed point.

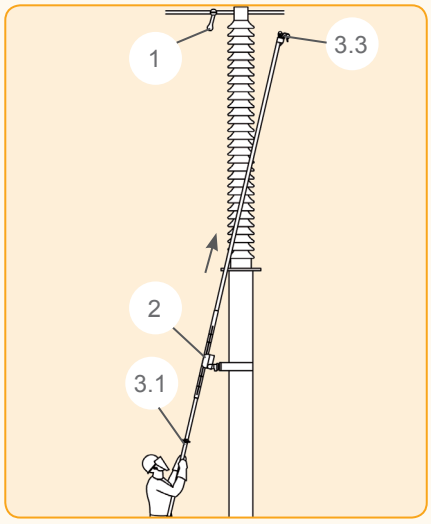
As first step the user inserts the phase connection (3.3) into the sleeve of the earth fixed point (2).

At this stage the insulating rod (3.1) still rests on the ground.



Guiding the earthing lance through the earth fixed point towards the phase fixed point

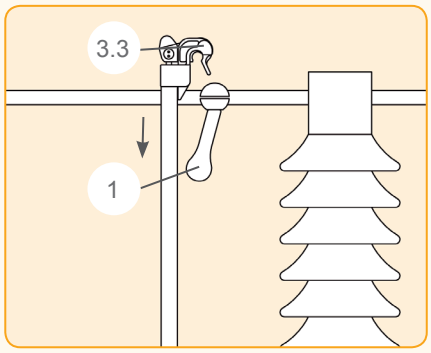
The user holds the earthing lance at the handle of the insulating rod (3.1) and slides the phase connection (3.3) upwards in direction of the phase fixed point (1). During this process the earth fixed point (2) serves as friction bearing and guidance.



Fitting the earthing lance into the phase fixed point

As next step the phase connection (3.3) is hooked into the strap of the phase fixed point (1).

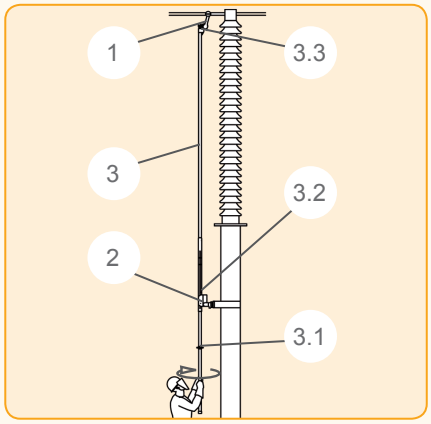
The weight of the earthing lance is now carried by the phase fixed point (1).



Closing the contact between earth fixed point and phase fixed point

As last step the earthing lance (3) is tightened by the user by a bi-manual clockwise turning of the insulating rod (3.1).

This way the earth connection (3.2) contacts the earth fixed point (2), and the phase connection (3.3) contacts the phase fixed point (1) – the connection between phase and earth is short-circuit-proof.



Stationary earthing lances (approx. 8 m conductor height and higher)

Design

The system consists of:

- the phase fixed point (1),
- the protection tube (5) with integrated earth fixed point (2),
- the earthing lance (3),
- the telescopic insulating rod (4),
- the pylon fixations (6),
- the foot support (7).

Phase fixed point

The phase fixed point (1) is installed at the phase conductor. The phase fixed point is bell-shaped at its underside to take up the phase connector of the earthing lance (3.3).

The phase fixed point is available in many different models, suitable for different conductor forms (page 32 ff.), for instance for:

- tubular busbar,
- flat connections.

To prevent possible partial discharge it may be required to take additional measures on site (e.g. corona rings).

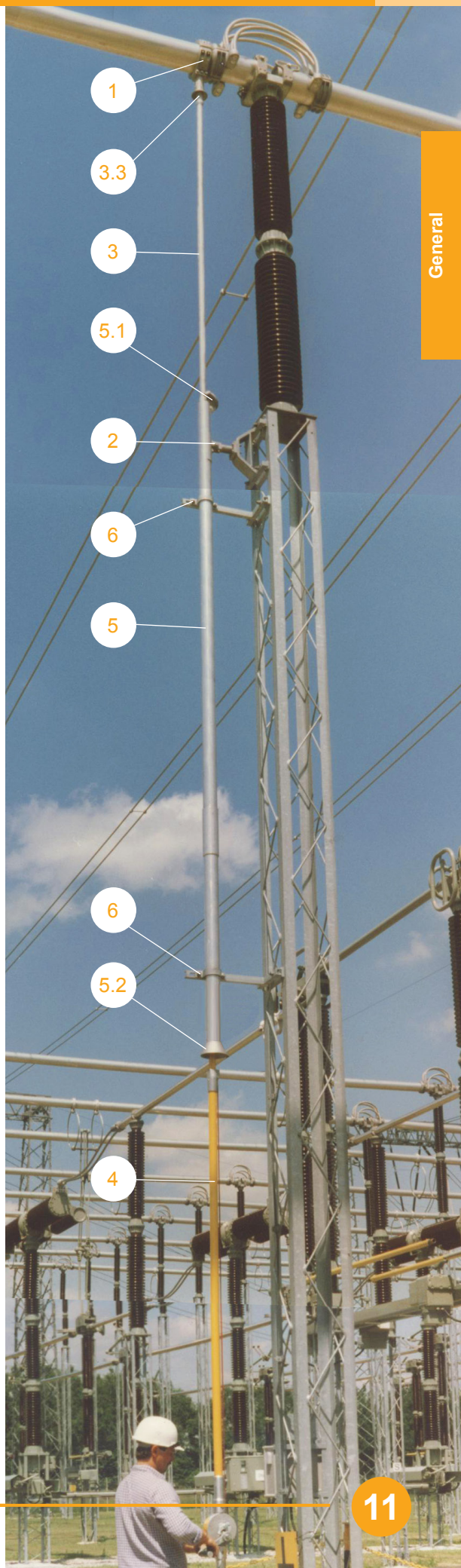
Protection tube with integrated earth fixed point

To protect the earthing lance (3) against weather influences, in its parking position it is enclosed in full length by a protection tube (5).

The protection tube (5) is equipped with a self-opening lid (5.1) on its upper end, and on its lower end with a funnel (5.2) for insertion of the telescopic insulating rod (4).

The protection tube (5) is connected to the earthed subconstruction by means of two pylon fixations (6).

The earth fixed point (2) is incorporated in the protection tube (5). The earth fixed point (2) is also mounted to the earthed subconstruction (steel work) in an electrically and mechanically safe way.



Earthing lance

The earthing lance (3) forms the electrically and mechanically safe connection between phase fixed point (1) and earth fixed point (2).

By means of a telescopic insulating rod (4) the earthing lance (3) is guided vertically upwards from its parking position into the usage position.

In this process the phase connection (3.3) is inserted into the bell-shaped contact of the phase fixed point (1) and at the same time the earth connection (3.2) is inserted into the earth fixed point (2).

Next the internal mechanism of the earthing lance (3) is operated by turning the telescopic insulating rod (4) whereby the earthing lance contacts both fixed points (1 and 2) in an electrically and mechanically safe way.

Telescopic insulating rod

The telescopic insulating rod (4) serves to direct, lock and unlock the earthing lance.

Foot support

Close to the ground a foot support (7, page 13) is mounted to the subconstruction which fixes the telescopic insulating rod (4) in a safe and correct position. For this purpose the upright bolt on the foot support (7) is placed in the axial boring at the lower end of the telescopic insulating rod (4).

Simple handling

Handling of the stationary earthing lance is simple, safe, and possible by one person.

Insertion of the telescopic earthing lance into the protection tube

First the user inserts the upper end of the telescopic insulating rod (4) into the lower end of the protection tube (5). A funnel (5.2) supports this step.

Next the lower end of the telescopic insulating rod (4) is set onto the foot support (7).

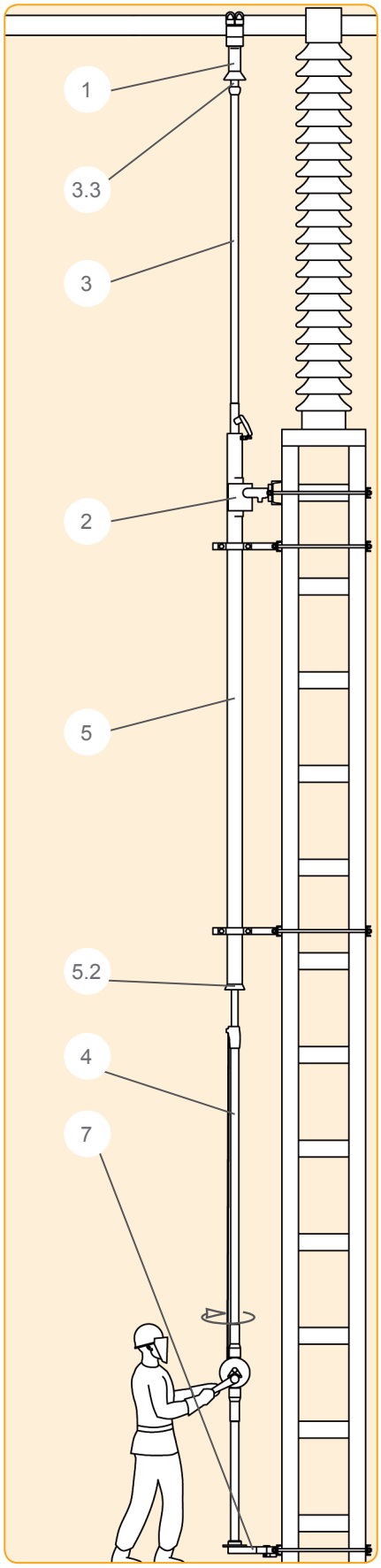
Guiding the earthing lance upwards through the protection tube towards the phase fixed point

By telescoping the insulating rod (4), the earthing lance (3) is slid upwards vertically through protection tube (5) and earth fixed point (2) until the phase connection (3.3) is completely pushed into the bell-shaped contact of the phase fixed point (1).

Usually this process can be visually monitored. As the user also feels when the earthing lance has reached its highest position, this procedure works under poor visibility conditions as well.

Making contact between earth fixed point and phase fixed point

As soon as the phase connection (3.3) is pushed into the bell-shaped contact of the phase fixed point (1) until stop, the user turns the telescopic insulating rod (4) with both hands in clockwise direction and this way connects earthing lance (3) with fixed points (1 and 2).

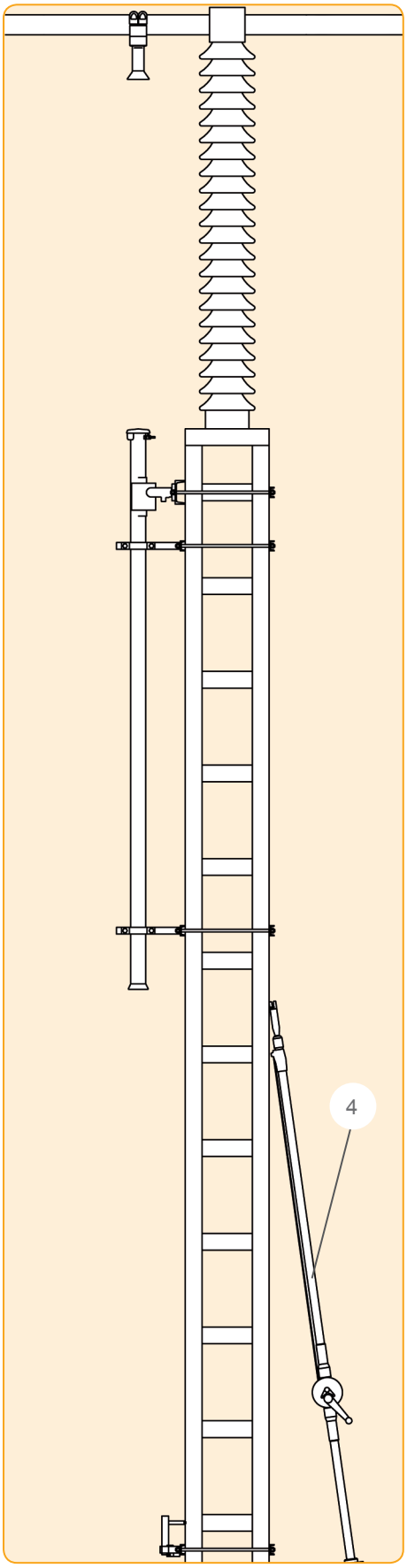


Remove the telescopic insulating rod.

Next it is possible to retract the telescopic rod parts, remove the insulating rod from the earthing place and use it at the next phase.

De-earthing.

Lowering of the earthing lance into its parking position is done in reverse sequence.



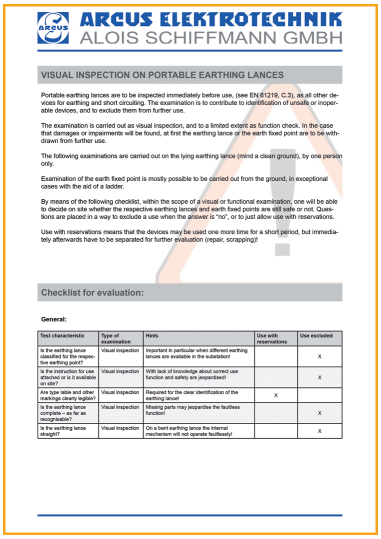
Picture shows the earthing lance in parking position.

Visual inspection

On stationary earthing lances it is not possible to carry out a visual inspection before use, as the parts to be examined are stored inside the protection tube and are thus invisible. A visual inspection is possible only on the telescopic insulating rod.

On portable earthing lances it is well possible to visually inspect them at the day of work.

For this purpose we provide a clearly arranged list of inspection points which can be found on our company website. With this list electrically qualified persons or electrically trained persons are able to carry out a visual inspection on the portable earthing lance and determine for themselves whether it can be released for its upcoming use.



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VISUAL INSPECTION ON PORTABLE EARTHING LANCES

Portable earthing lances are to be inspected immediately before use, (see EN 61219, C.3), as all other devices for earthing and short circuiting. The examination is to contribute to identification of unsafe or inoperable devices, and to exclude them from further use.

The examination is carried out as visual inspection, and to a limited extent as function check. In the case that damages or impairments will be found, at first the earthing lance or the earth fixed point are to be withdrawn from further use.

The following examinations are carried out on the lying earthing lance (mind a clean ground), by one person only.

Examination of the earth fixed point is mostly possible to be carried out from the ground, in exceptional cases with the aid of a ladder.

By means of the following checklist, within the scope of a visual or functional examination, one will be able to decide on site whether the respective earthing lances and earth fixed points are still safe or not. Questions are placed in a way to exclude a use when the answer is "no", or to just allow use with reservations.

Use with reservations means that the devices may be used one more time for a short period, but immediately afterwards have to be separated for further evaluation (repair, scrapping)!

Checklist for evaluation:

General:

Test characteristic	Type of examination	Hints	Use with reservations	Use excluded
Is the earthing lance classified for the respective earthing point?	Visual inspection	Important in particular when different earthing lances are available in the substation!		x
Is the instruction for use attached or is it available on site?	Visual inspection	With lack of knowledge about correct use function and safety are jeopardised!		x
Are type table and other markings clearly legible?	Visual inspection	Required for the clear identification of the earthing lance!	x	
Is the earthing lance complete – as far as recognisable?	Visual inspection	Missing parts may jeopardise the faultless function!		x
Is the earthing lance straight?	Visual inspection	On a bent earthing lance the internal mechanism will not operate faultlessly!		x

Repeated use

In principle ARCUS Earthing Lances can be used as often as required, provided they are free of damages.

When an earthing lance was submitted to a short circuit, it looks almost undamaged, as well as the fixed points. One could conclude from this that the system can be used a second time. Yet this conclusion is incorrect and is not supported by the standard.

Standard IEC 61219 and VDE 0683 part 200 of January 1995 differentiate between “Devices for continued use after short circuit load“ and those devices which are not designated for continued use.

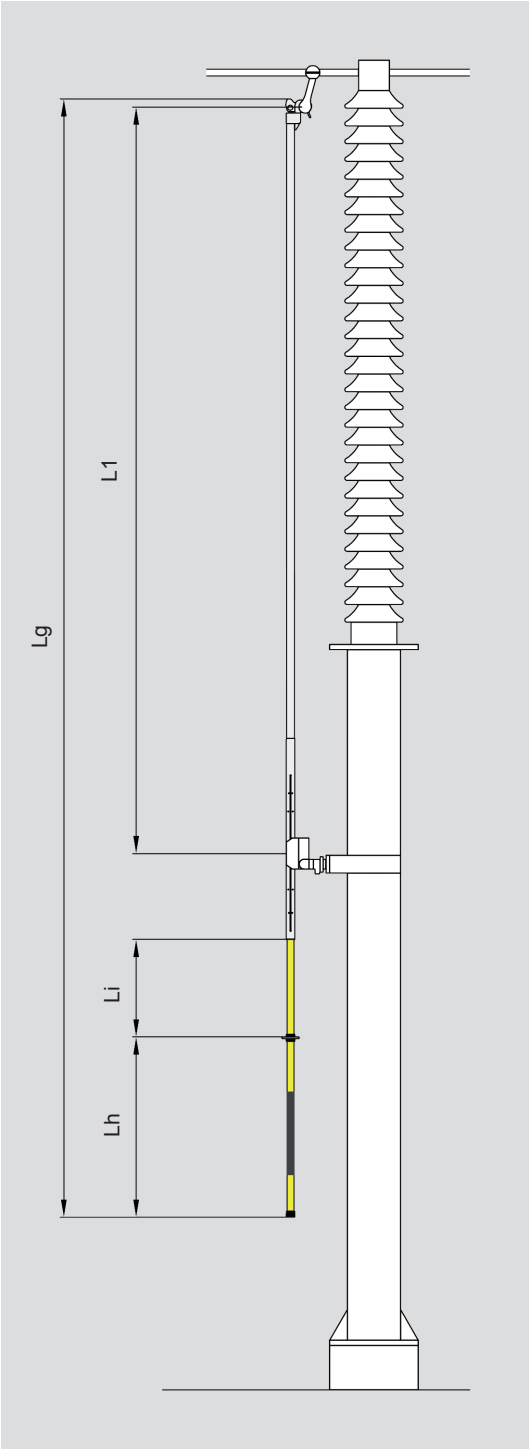
For earthing lances for continued use the standard specifies additional tests. When these tests are passed, earthing lances can be marked for continued use.

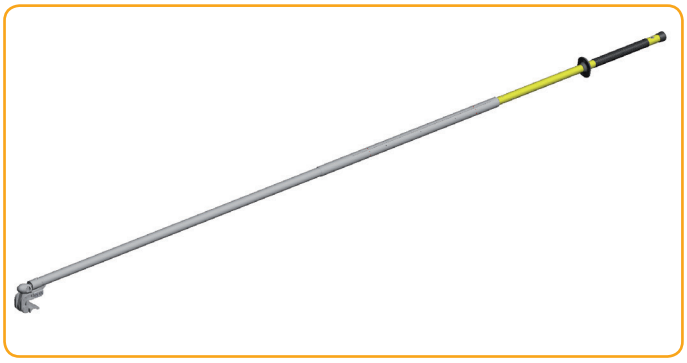
ARCUS Earthing Lances are neither tested for continued use, nor approved for it. This means that after a short circuit load earthing lance and fixed points are to be replaced for safety reasons.

Storage, transport, maintenance and care

ARCUS Earthing Lances and telescopic insulating rods are maintenance-free, but are to be handled with care as any other safety-related device.

Earthing Lance



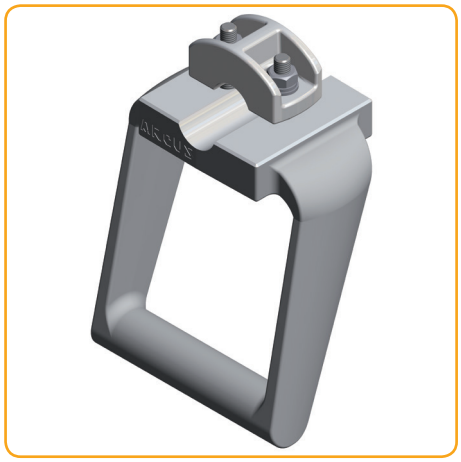


Technical Information

Model:	Portable, with firmly connected insulating rod.
Standard:	IEC 61219 or VDE 0683 part 200
Application:	Outdoor high voltage substations
Nominal voltage Un:	Up to 420 kV (dependent on construction)
Climatic category:	N (-25 °C up to +70 °C)
Max. conductor height:	Approx. 8 m
Materials:	Conductive parts: corrosion-resistant aluminium alloy Internal mechanism: stainless steel resp. copper alloy Insulating rod: glassfibre-reinforced epoxy-resin
Handle:	Extendable, simple and slip-proof handling by use of anti-slip foil.

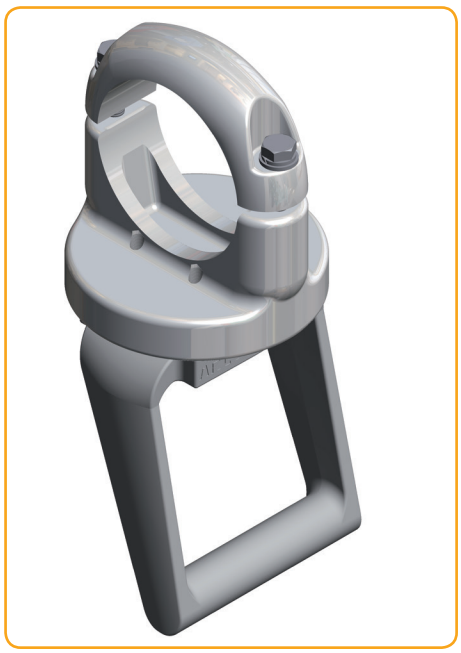
Un [kV]	Ir [kA] at tr 0.5 s	Ir [kA] at tr 1.0 s	Total length [mm]	Distance L1 [mm] Earth and Phase Fixed Point	Lh [mm]	Li [mm]	Type Number
110	63	44,5	2900	1650	457	500	618 136
220	80	63	4100	2500	507	550	618 137
380	80	63	6100	4200	807	550	618 138
110-380	80	63	customised, L1 max. 4200			550	618 141

With connection for one conductor



Phase Fixed Point	Type Number 515 202
Model:	Transverse to conductor
Material:	Aluminum alloy
Conductor:	Ø 10-32 mm
Nominal voltage Un:	110 kV

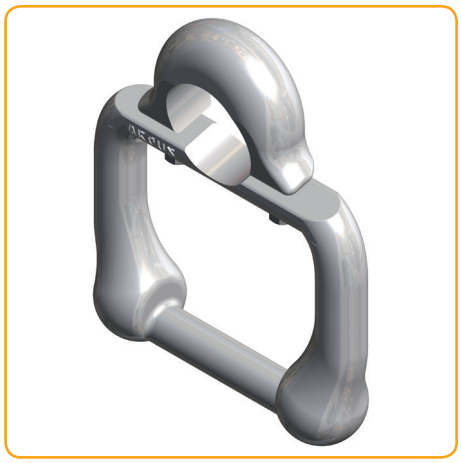
Phase Fixed Point	Type Number 515 205
Model:	Parallel or transverse to conductor
Material:	Aluminum alloy
Conductor:	Ø 60-95 mm
Nominal voltage Un:	110 kV



Phase Fixed Point	Type Number 515 207
Model:	Parallel or transverse to conductor
Material:	Aluminum alloy
Conductor:	Ø 100-120 mm
Nominal voltage Un:	110 kV

With connection for one conductor

Phase Fixed Point	Type Number 515 188
Model:	Transverse to conductor
Material:	Aluminum alloy
Conductor:	up to Ø 45 mm
Nominal voltage Un:	380 kV



Phase Fixed Point	Type Number 515 184
Model:	Transverse to conductor
Material:	Aluminum alloy
Conductor:	Ø 50-80 mm
Nominal voltage Un:	380 kV

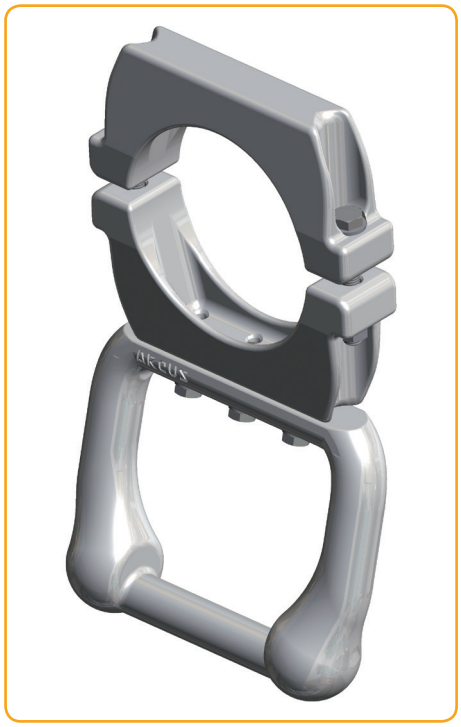
Phase Fixed Point	Type Number 515 195
Model:	Parallel or transverse to conductor
Material:	Aluminum alloy
Conductor:	Ø 100-120 mmm
Nominal voltage Un:	380 kV

With connection for one conductor

Phase Fixed Point	Type Number 515 001 010
Model:	Transverse to conductor
Material:	Aluminum alloy
Conductor:	Ø 125 mm
Nominal voltage Un:	380 kV

Phase Fixed Point	Type Number 515 231
Model:	Parallel or transverse to conductor
Material:	Aluminum alloy
Conductor:	Ø 140-170 mm
Nominal voltage Un:	380 kV

With connection for one conductors



Phase Fixed Point	Type Number 515 182
Model:	Transverse to conductor
Material:	Aluminum alloy
Conductor:	Ø 160 mm
Nominal voltage Un:	380 kV

Phase Fixed Point	Type Number 515 190
Model:	Parallel or transverse to conductor
Material:	Aluminum alloy
Conductor:	Ø 200-250 mm
Nominal voltage Un:	380 kV

With connection for two conductors

Phase Fixed Point	Type Number 515 180
Model:	Transverse to conductor
Material:	Aluminum alloy
Conductor:	Up to Ø 32 mm
Conductor spacing:	45 mm
Nominal voltage Un:	380 kV

Phase Fixed Point	Type Number 515 183
Model:	Transverse to conductor
Material:	Aluminum alloy
Conductor:	Up to Ø 32.6 mm
Conductor spacing:	100 mm
Nominal voltage Un:	380 kV

Phase Fixed Point	Type Number 515 001 006
Model:	Transverse to conductor
Material:	Aluminum alloy
Conductor:	Ø 36.17 mm
Conductor spacing:	100 mm
Nominal voltage Un:	380 kV

Phase Fixed Points

With connection for 2 conductors

Phase Fixed Point	Type Number 515 198
Model:	Transverse to conductor
Material:	Aluminum alloy
Conductor:	Up to Ø 50 mm
Conductor spacing:	200 mm
Nominal voltage Un:	380 kV

With connection for 3 conductors

Phase Fixed Point	Type Number 515 210
Model:	Transverse to conductor
Material:	Aluminum alloy
Conductor:	Ø 39.2 mm
Conductor spacing:	100 mm
Nominal voltage Un:	220 kV

Phase Fixed Point	Type Number 515 232
Model:	Parallel or transverse to conductor
Material:	Aluminum alloy
Conductor:	Up to Ø 50 mm
Conductor spacing:	50 mm
Nominal voltage Un:	380 kV

Phase Fixed Point	Type Number 515 235
Model:	Parallel or transverse to conductor
Material:	Aluminum alloy
Conductor:	Up to Ø 50 mm
Conductor spacing:	110 mm
Nominal voltage Un:	380 kV

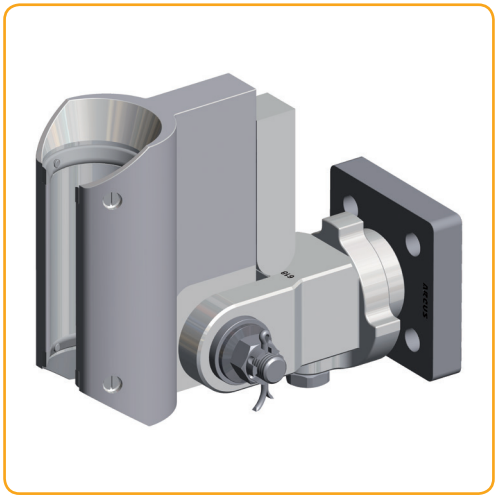
With flange

Phase Fixed Point	Type Number 515 227
Model:	With flange, 45° inclined
Material:	Aluminum alloy
Flange area:	100x100 mm
Holes:	Ø 14 mm
Hole spacing:	50x50 mm
Nominal voltage Un:	380 kV

Phase Fixed Point	Type Number 515 185
Model:	With flange, slightly inclined
Material:	Aluminum alloy
Flange area:	100x100 mm
Holes:	Ø 14 mm
Hole spacing:	50x50 mm
Nominal voltage Un:	380 kV

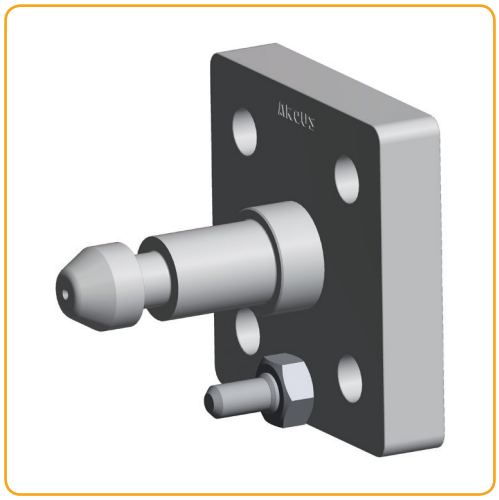
Phase Fixed Point	Type Number 515 200
Model:	With flange
Material:	Aluminum alloy
Flange area:	100x100 mm
Holes:	Ø 14 mm
Hole spacing:	50x50 mm
Nominal voltage Un:	110 kV

Earth Fixed Point	Type Number 618 135
Model:	For firm installation on earthed installation parts, fixed or rotatable by 70° to the right or to the left, with flange.
Material:	Sleeve: aluminum alloy Slide rings: stainless steel Bolt: copper alloy Flange: hot-dip galvanized steel
Flange area:	100x100 mm
Holes:	Ø 14 mm
Hole spacing:	60x60 mm

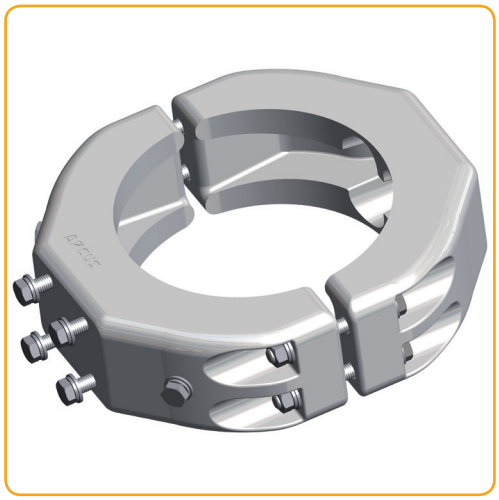


Earth Fixed Point	Type Number 697 032
Model:	For firm installation on earthed installation parts, rotatable by 70° to the right or to the left, with stopper for limitation of swivel angle, with flange.
Material:	Sleeve: aluminum alloy Slide rings: stainless steel Bolt: copper alloy Flange: hot-dip galvanized steel
Flange area:	100x100 mm
Holes:	Ø 14 mm
Hole spacing:	60x60 mm

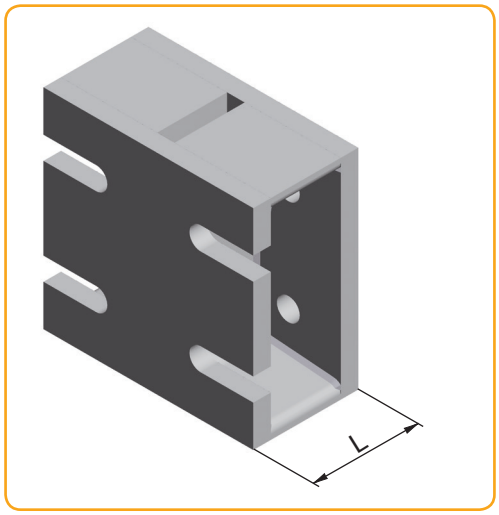
Earth Fixed Point	Type Number 618 132
Model:	Mobile, for bolted flange (type number 618 131), rotatable by 70° to the right or to the left.
Material:	Sleeve: aluminum alloy Slide rings: stainless steel



Bolt Flange	Type Number 618 131
Model:	For mobile earth fixed point (Type Number 618 132)
Material:	Bolt: copper alloy Flange: hot-dip galvanized steel
Flange area:	100x100 mm
Holes:	Ø 14 mm
Hole spacing:	60x60 mm



Bracket for earth fixed point	Type Number 618 145
Model:	For earth fixed point (Type Number 618 135)
Material:	Bolt: copper alloy Flange: hot-dip galvanized steel
Pylon diameter	Ø 219.1 mm



Intermediate adaptor	
Model:	For earth fixed point (Type Number 618 135)
Material:	Hot-dip galvanized
Flange area:	120x120 mm
Holes:	Ø 14 mm
Hole spacing:	60x60 mm

	Type Number 618 149
Length L:	60 mm

	Type Number 618 150
Length L:	120 mm

Handle Extensions

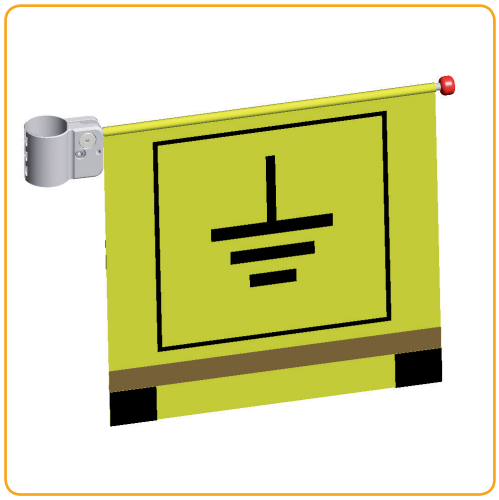
Technical Information

Model:	Suitable for portable earthing lances, with push-button locking.
Climatic category:	N (-25 °C up to +70 °C)
Material:	Glassfibre-reinforced epoxy resin
Handle:	Not extendable, simple and slip-proof handling by use of anti-slip foil.

Type overview

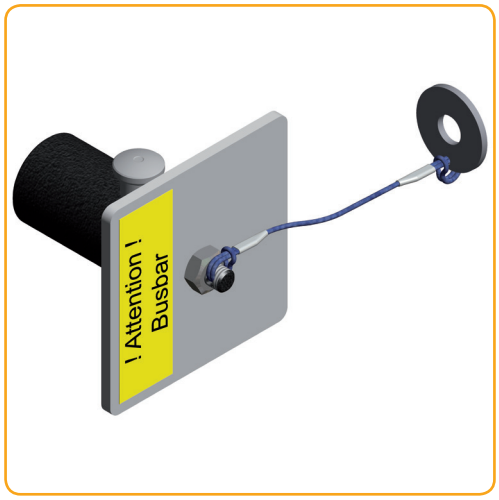
L [mm]	Effective length [mm]	Type Number
688	500	698 780
1188	1000	618 124
1388	1200	698 795
1688	1500	698 781
1888	1700	698 772
2188	2000	618 125

Further models available upon request.



Signal Flag	Type Number 618 134
Model:	For clear visibility of portable earthing lances, colour yellow, with reflecting strips, earthing symbol and Velcro tape.

Fork-Shaped Head	Type Number 597 001 479
Model:	Lifting support for earthing lances, attachable on a bayonet of an insulating rod.



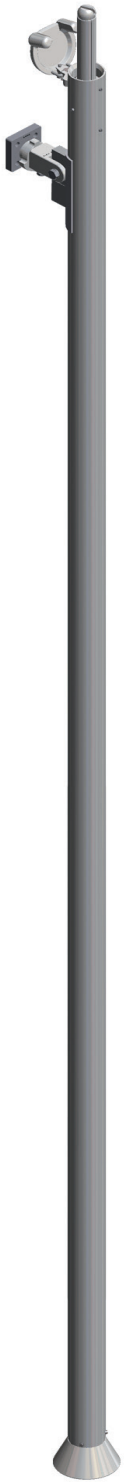
Protection Cap	Type Number 698 960
Model:	For bolted flange (type number 618 131), with fastening cord.

Adaptor

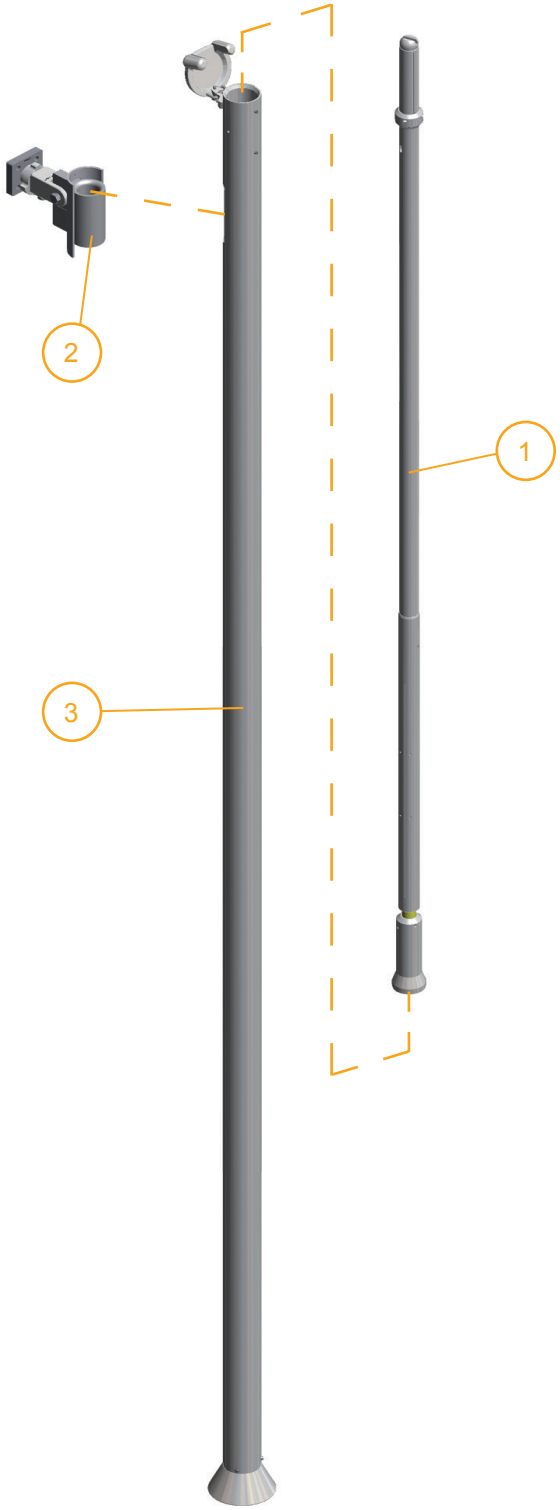
Adaptor	Type Number 618 153
Model:	Installation support, for portable earthing lances, hexagon KS17 for impact wrenches.

Earthing Lance

Assembly consisting of:
Earthing lance, earth fixed point and protection tube.



Assembly group: assembled



Assembly group: picture of separate components

Earthing lance
Assembly consisting of:
Earthing lance, earth fixed point and protection tube.

Type Number 618 123

Technical Information about the Earthing Lance (1)

Model:	Stationary
Length:	Customised
Standard:	IEC 61219 and VDE 0683 part 200
Application:	Outdoor high voltage substations
Nominal voltage Un:	Up to 420 kV (dependent on construction)
Ir at tr 0.5 s:	80 kA
Ir at tr 1.0 s:	63 kA
Max. conductor height:	Approx. 12 m
Materials:	Conductive parts: corrosion-resistant aluminium alloy Internal mechanism: stainless steel resp. copper alloy
Handling:	Safe handling by one person

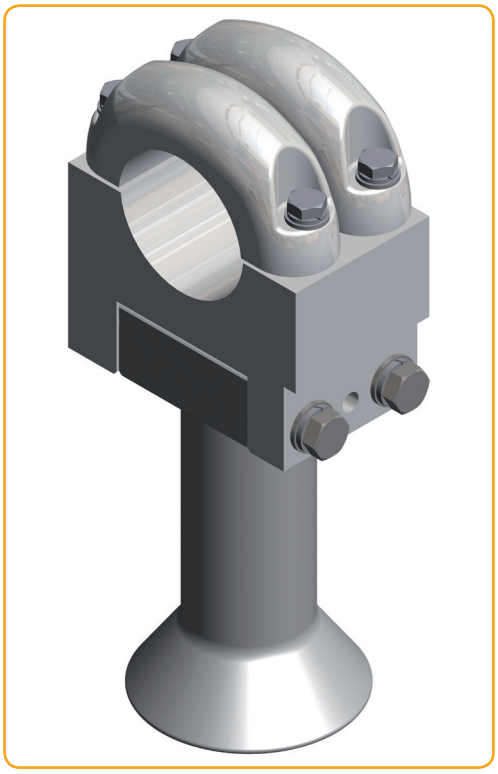
Technical Information about the Earthing Fixed Point (2)

Model:	For permanent installation on earthed installation parts, not rotatable.
Materials:	Sleeve: aluminium alloy Bolt: copper alloy Flange: hot-dip galvanized steel

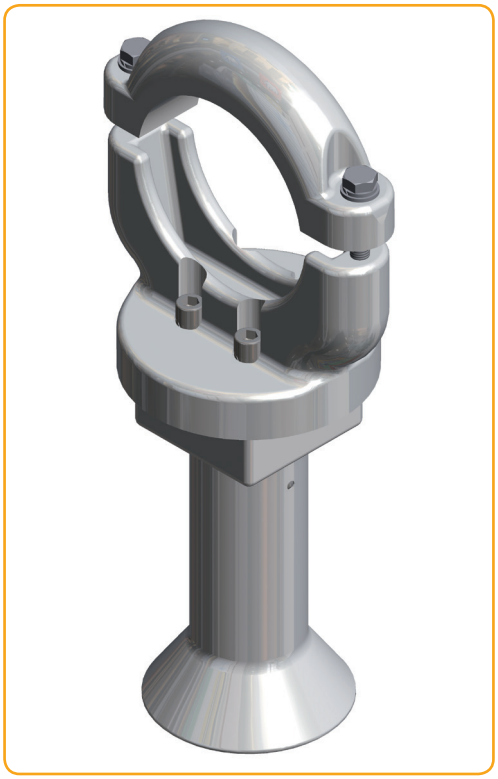
Technical Information about the Protection Tube (3)

Model:	Protects the earthing lance against weather influences, top end with self-opening lid and lower end with funnel for introduction of the telescopic insulating rod.
Length:	Related to length of earthing lance (1)
Application:	Outdoor high voltage substations
Material:	Aluminium alloy

Phase Fixed Points

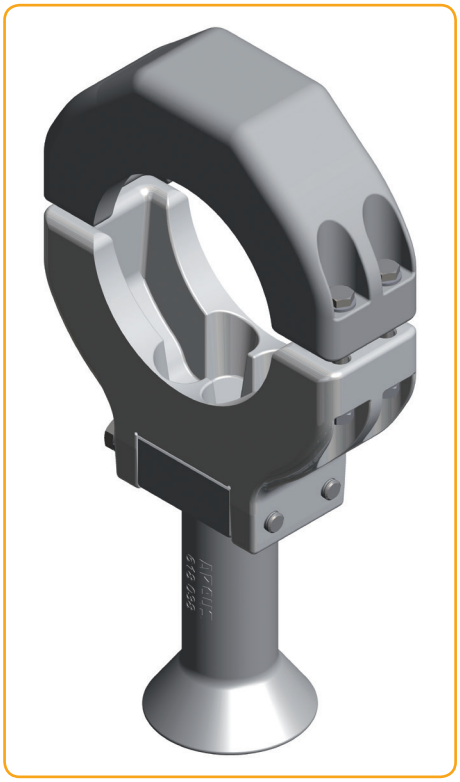


Phase Fixed Point	Type Number 515 193
Model:	For tube
Material:	Aluminium alloy
Conductor:	Ø 100-120 mm
Nominal voltage Un:	380 kV

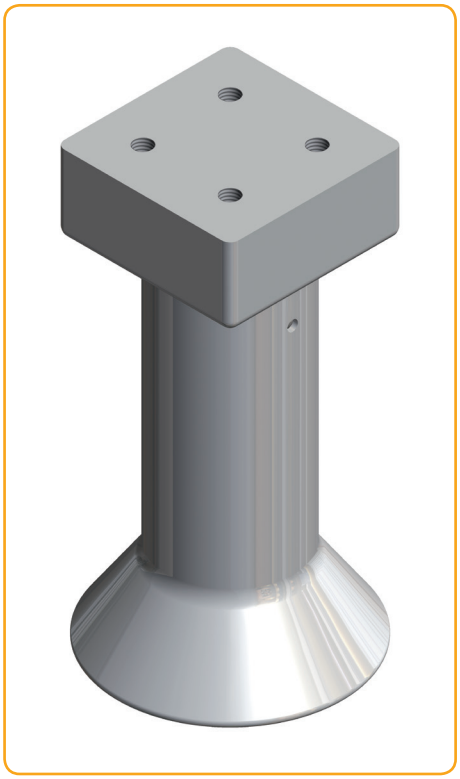


Phase Fixed Point	Type Number 515 203
Model:	For tube
Material:	Aluminium alloy
Conductor:	Ø 140-170 mm
Nominal voltage Un:	380 kV

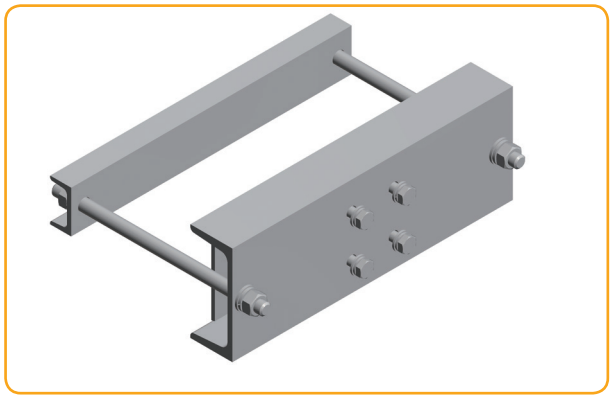
Further models available upon request.



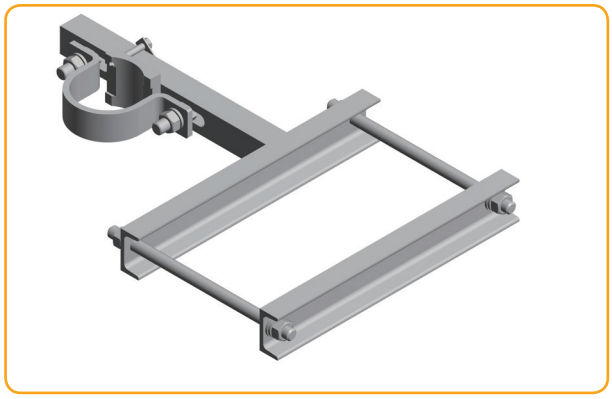
Phase Fixed Point	Type Number 515 192
Model:	For tube
Material:	Aluminium alloy
Conductor:	Ø 200-250 mm
Nominal voltage Un:	380 kV



Bell-Shaped Contact	Type Number 618 038
Model:	For plate
Material:	Aluminium alloy
Flange area:	100x100 mm
Holes:	M12
Hole spacing:	50x50 mm
Nominal voltage Un:	380 kV



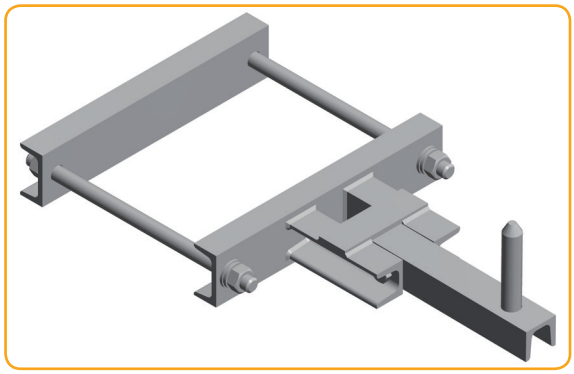
Pylon Fixation for Earth Fixed Point	Type Number 698 747
Model:	For hexagonal pylons
Materials:	U-profile: construction steel Threaded rod, bolts, washers, nuts: stainless steel



Pylon Fixation for Protection Tube	Type Number 698 748
Model:	For hexagonal pylons
Materials:	U-profile: construction steel Threaded rod, bolts, washers, nuts: stainless steel Pipe clip: hot-dip galvanized steel

Dimensions are specified project-related.

Foot Support

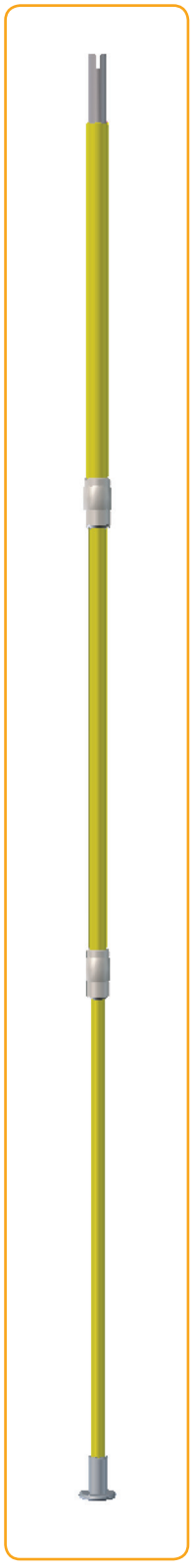


Foot Support	Type Number 698 750
Model:	Fold-out design, for hexagonal pylons
Materials:	U-profile: construction steel Threaded rod, bolts, washers, nuts: stainless steel

Dimensions are specified project-related.

Insulating Rod for Connection/Disconnection of Stationary Earthing Lances

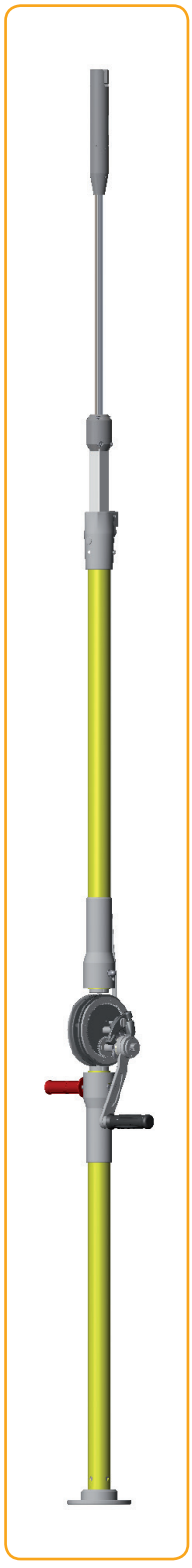
Telescopic insulating rod with push-button lockings



Technical Information

Model:	3-section, with push-button locking
Application:	Outdoor high voltage sub-stations, for connection/disconnection of stationary earthing lances
Transport- and total length:	Customised
Materials:	Bayonet to contact the earthing lance: stainless steel Insulating rod: glassfibre-reinforced epoxy resin Step plate: aluminium alloy
Type Number.	511 190

Telescopic insulating rod with crank drive



Technical Information

Model:	3-section, witht crank drive
Application:	Outdoor high voltage sub-stations, for connection/disconnection of stationary earthing lances
Transport- and total length:	Customised
Materials:	Bayonet to contact the earthing lance: stainless steel Insulating rod: glassfibre-reinforced epoxy resin Drive unit: stainless steel, Textile tape Step plate: aluminium alloy
Type Number	511 191

ARCUS ELEKTROTECHNIK
ALOIS SCHIFFMANN GMBH

Questionnaire for Earthing Lances

To prepare an offer, please fill in this questionnaire as detailed as possible and return by fax, post or e-mail.

Fax +49 89 / 4 36 04 73

Post ARCUS ELEKTROTECHNIK Alois Schiffmann GmbH • Truderinger Straße 199 • 81673 Munich/Germany

E-mail info@arcus-schiffmann.com

Contact Information

Last name	First name
Company	Department
Street, number	Zip code, town
Phone	Fax
E-mail	Web

Earthing point

Name / Location of the substation .....

Nominal voltage [kV] .....

Rated short-circuit current / Rated time [kA/s] .....

Conductor distance [mm] .....

Details of conductor (-bundle)

- Type (line, tube) .....
- Material (Al, Cu) .....
- Dimensions (diameter) .....
- Centre spacing between bundle conductors .....

Earthing point (continued)

Conductor height [mm] * .....

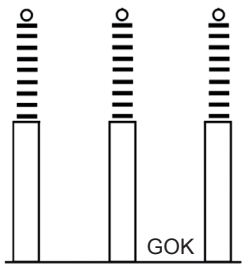
Height of the earthed support [mm] * .....

Are the supports accessible from all sides? .....

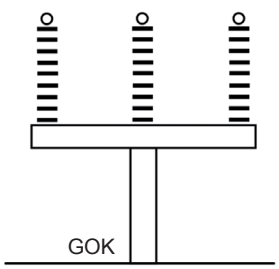
Type of support (A/B/C/D) .....

*Refer to the upper edge of the ground level, please (GOK)

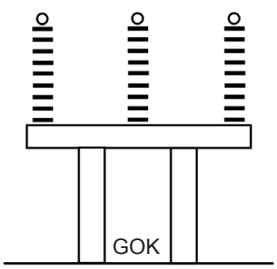
A



B



C



D Your sketch/text

Others

Required quantity	Required delivery time
Language of documentation	Others

I agree that my data will be permanently saved for contacting and queries.

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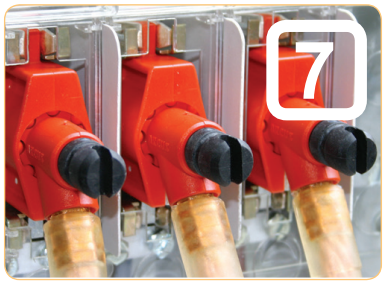

Fully-Insulated and Part-Insulated Earthing and Short Circuiting Devices for Low Voltage Applications

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