

Railways

Electrical safety equipment

Catalogue 2006/2007





Golden Rules

1 First, select the right equipment



2 SEPARATE THE WORK AREA FROM ALL POSSIBLE SOURCES OF POWER-SUPPLY
by opening circuit-breakers, switches...
and lock the links in the open position



3 CHECK THE ABSENCE OF VOLTAGE
at source and on site, on each conductor and apparatus involved



4 APPLY APPROPRIATE SHORT-CIRCUIT AND EARTHING SYSTEMS
in sufficient numbers on the conductors
of your network
where operation is taking place



5 SHOWN, WARN OTHERS AND LIMIT THE WORK AREA
even during the most simple temporary maintenance operation





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on catenaries

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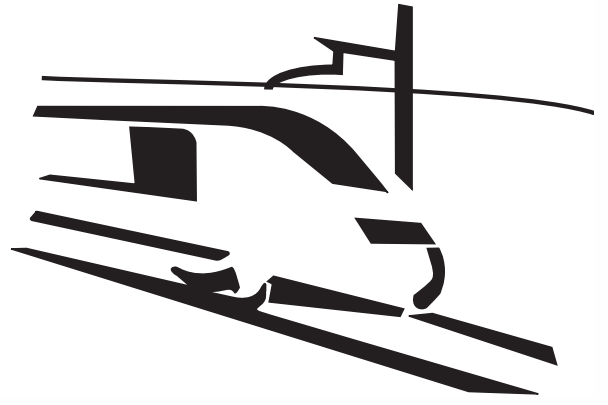
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Equipment for intervention on catenaries

Complete equipment guide

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Voltage detectors

Insulating sticks

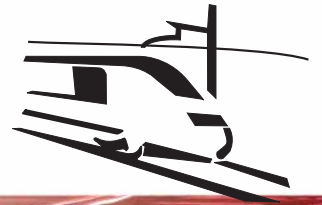
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Short-circuiting
and earthing systems

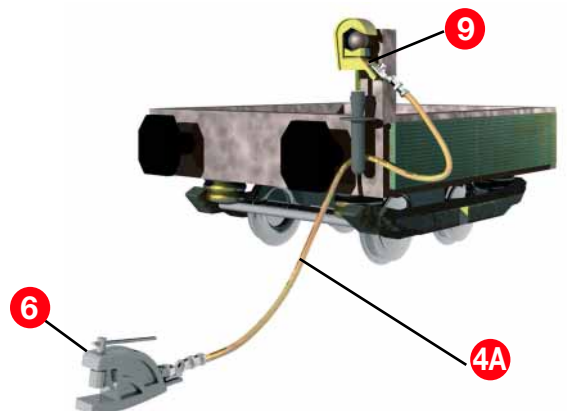
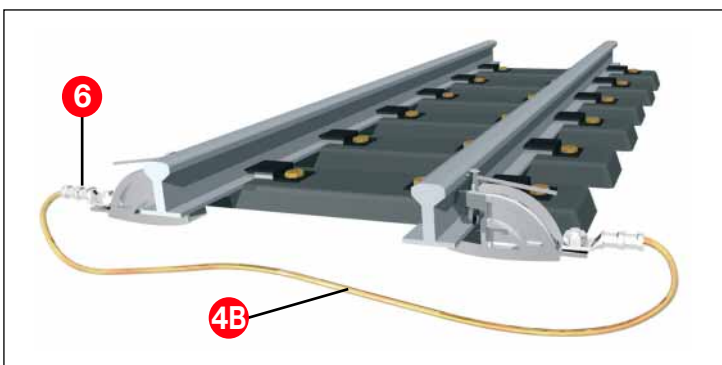
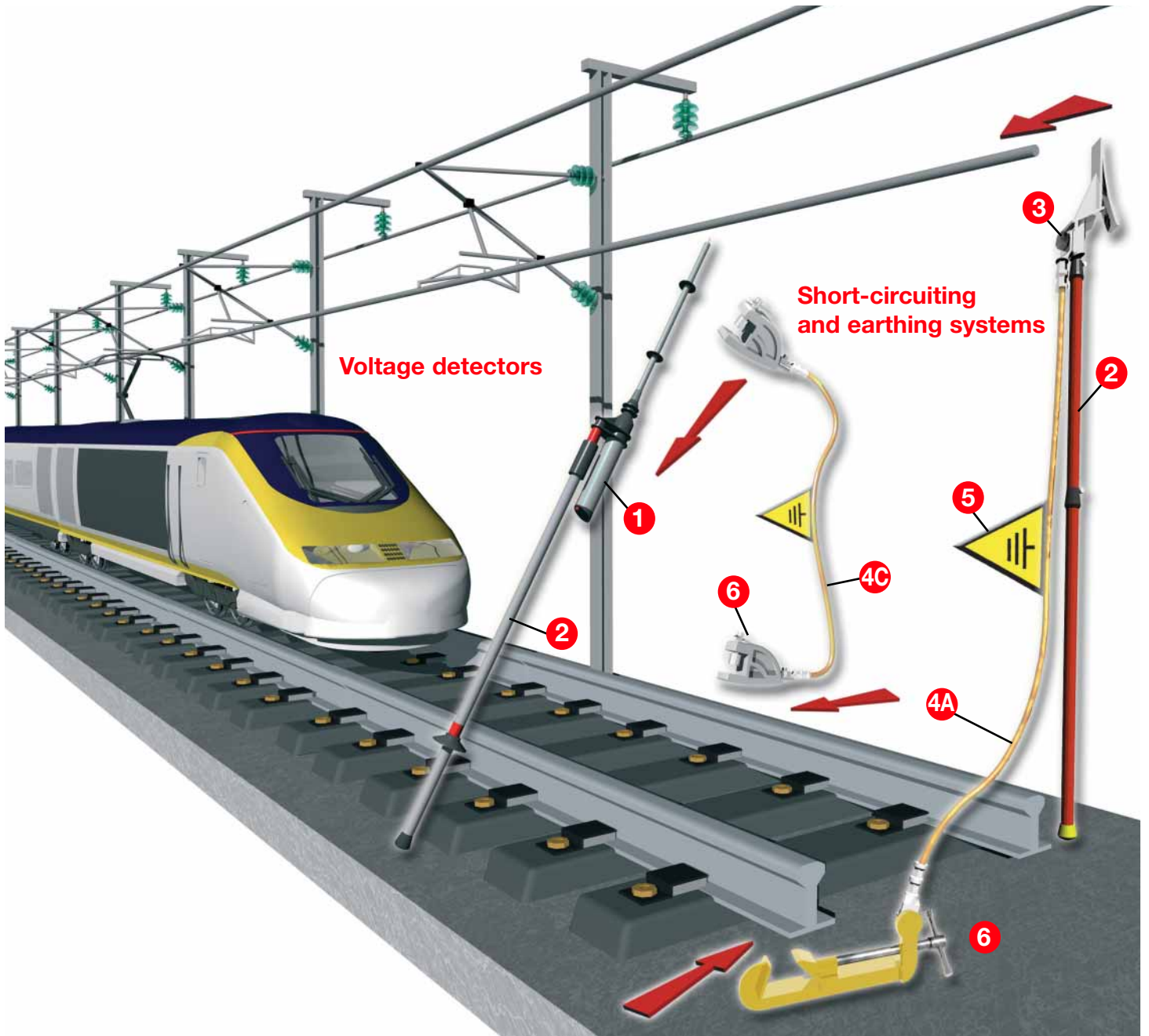
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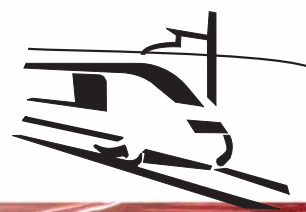


complete equipment guide





Equipment for intervention on catenaries



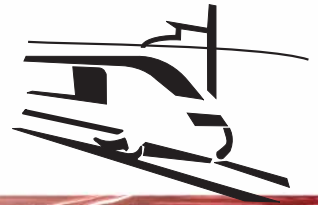
complete equipment guide

* For other voltage, please consult us

Voltage detectors*				
a.c.		d.c.		
15 kV	25 kV	1500 V	3000 V	
1 Electronic voltage detector 15 kV 16 Hz 2/3 reference: CC-578-15 See page 11	Electronic voltage detectors 25 kV 50/60 Hz references: CC-875-25-C CC-875-25-K See page 12	Electronic voltage detector 600/2000 V reference: CC-1515-100 See page 13	Electronic voltage detector 750/3000 V reference: CL6-3000 See page 13	
	Railway detector 25 kV Hz alternative catenary reference: ZVATDAC 25 SNCF See page 11	Electronic voltage detector 750/1500 V reference: ZVATDC 750/1500 W See page 14	Bipolar voltage detector with discrimination of induced voltage 750/3000 V reference: ZVAT DC IND See page 14	
Insulating sticks for voltage detectors and short-circuiting systems				
2 Insulating sticks with connectable elements references: CM-42.... serie CM-4620.. serie CM-43.... serie CM-4625.. serie CM-4610.. serie CM-3000 CM-4615.. serie See page 13		Insulating telescopic sticks references: ZPTE-504-U, ZPTE-504-H, ZPTVZCR 5403, ZPTVZCR 5603, ZPTVZCR 5603 B, ZRAVZC 200 See page 16 Accessories Stick bags references: CM-1.., CM-2.., CM-3.. series See page 16		
Short circuiting and earthing systems				
Clamps				
3 Universal clamp references: ZCCVZC 25, ZCCVZC 25 B See page 17		Clamps with or without fuse contact wire references: MT-128, ZEMRC 200 B, ZEMRC 201 B See page 17		
Clamps for flat and round conductors references: MT-128, MT-815-E See page 17		Clamps for single or double catenary reference: ZEMCC-3162-BC, ZEMRC 300 B, ZEMRC 301 B See page 18		
Cables with connections**				
a.c.		d.c.		
15 kV	25 kV	1500 V	3000 V	
4A reference: ZCESS-50-10 - Length: 10 m, section: 50 mm ² 4B reference: ZCESS-50-02 - Length: 2 m, section: 50 mm ² 4C reference: ZCESS-50-03 - Length: 3 m, section: 50 mm ² ZCESS-50-045 - Length: 4.5 m, section: 50 mm ² See page 18		reference: ZCESS-95-10 - Length: 10 m, section: 95 mm ² reference: ZCESS-95-02 - Length: 2 m, section: 95 mm ² reference: ZCESS-95-03 - Length: 3 m, section: 95 mm ² ZCESS-95-045 - Length: 4.5 m, section: 95 mm ² See page 18		
5 Accessory: earth flag reference: AL-58, AL-60 See page 10		For copper cable on your own specification see M-24-... series page 18		
Earth clamps				
6 Earthing rail clamps references: MT-848, ZSMT-848/100, ZSMT-848/101, ZET-62042 See pages 19/20		9 Earth clamps for fixed ball points references: MT-1911, MT-1921, for round and flat conductor: MT-843 See page 19		



Equipment for intervention on catenaries



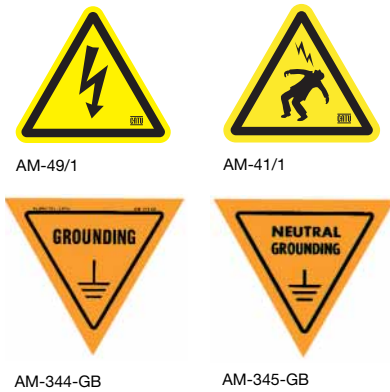
warning signs and delineators

Warning and specialized signs

Warning signs

Reference	Type	Dimensions	Characteristics
AM-41/1*	Aluminium	100 mm side	Black on yellow Fixing: 3 holes Ø 4.5 mm
AM-49/1*	Aluminium	100 mm side	Black on yellow Fixing: 3 holes Ø 4.5 mm
AM-344-GB	Aluminium	100 mm side	Black letters on yellow Fixing: 3 holes Ø 4.5 mm
AM-345-GB	Aluminium	100 mm side	Black letters on yellow Fixing: 3 holes Ø 4.5 mm

* Pack of 10 units.



Specialized signs

Reference	Type	Dimensions (mm)	Characteristics
AM-20-GB	Aluminium	350 x 250	Blue letters on plain aluminium
AM-20-RM	Aluminium	350 x 500	Blue letters on plain aluminium
AM-61-GB	Aluminium	150 x 200	Black on yellow on plain aluminium



AM-20-GB



AM-20-RM



AM-61-GB

Warning flags



AL-58	Attached on handle; for work site
AL-60	To be attached on earthing cable; for immediate identification in open-type switchgears possible inscription: 0 to 99 (by using ALU-SCRIPT markers)

Safety boundary post

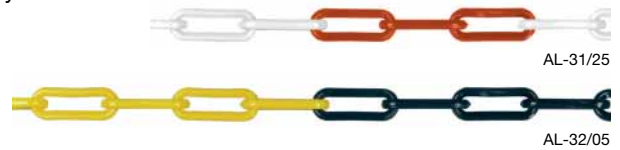
For temporary installation. Used with tough link chain delineators (AL-32/05). Removal foot. Ø 50 mm. Length: 0.9 m.



AL-316	Red and white - Weight: 4.2 kg
AL-318	Black and yellow - Weight: 4.2 kg

Chain delineators

Polyamide chains.



AL-31/25	Red and white - Length: 25 m
AL-32/05	Black and yellow - Length: 5 m

Delineators

Brightly colored ribbon. Snap hook on one ribbon end and another on spool. A ring on spool brakes ribbon at desired length. Wide: 50 mm. Length: 20 m.

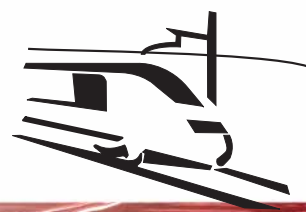


AL-62-A	Red ribbon
AL-63-A	Yellow ribbon



Equipment for intervention on catenaries

a.c.



voltage detectors

Electronic voltage detector with contact electrode extension 15 kV 16 Hz 2/3

Voltage presence is indicated by: IEC-61243-I Δ
 • red flashing LED'S (very bright - visible at more than 50 m in direct lighting) DIN VDE 0682-411 CE
 • powerful rated audible signal > 60 dB (A)/2 m

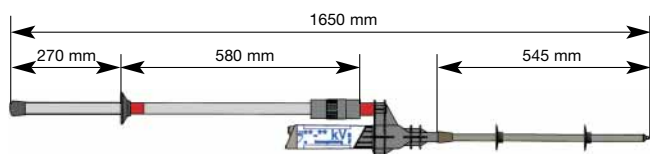
Check of working order:

- by pressing the TEST button:
 - red LED flashes on
 - sound signal is activated
- when TEST button is released:
 - timed green LED lights up. While remaining on, this LED indicates the good working order of the detector. It lights off as soon as the red LED lights up in case of a voltage presence.

This checking validates the good working order of the detector.

Characteristics

Detectors are adjusted, tested and controlled one by one. Precise and stable operating threshold. Reduced sensitivity to induced voltages. Dielectrically tested on substation bars. High environmental resistance (impacts, vibrations, moisture). Temperature conditions: class N (IEC-1243-1 standard). storage and operation: -25 / +55 °C. Robust housing. Power supply: one 9-V alkaline battery type 6 LR 61. The voltage detector is always ready for use, since it is on continuous monitoring conditions with almost no battery consumption. Under normal use conditions the batteries last more than a year. Contact electrode extension fitted to the housing by screwing. Delivered complete in a bag with insulating stick. Weight: 1.7 Kg.



Reference	Voltage (kV)	Frequency (Hz)
CC-578-15	15	16-2/3

Electronic voltage detector 25 kV

Operation

Single pole voltage detector used to check the voltage state of a railway electrical catenary system. The detector must be used with the insulating sticks assembled.

Check of working order:

To check for correct operation:

- by pressing the Test button:
 - illumination of the red diodes
 - triggering of the sound signal
- by releasing the test button:
 - illumination of the green diodes for about 2 minutes.

This checking validates the good working order of the detector.

Voltage presence is indicated by:

Bring the hook into contact with the catenary or the feeder:

- The presence of voltage is indicated by illumination of the red diodes and triggering of the sound signal.
- The absence of voltage is confirmed by the green diodes, which remain illuminated after the contact is established.

Characteristics

- 1 voltage detector fixed on a 1.5 m stick.
- 1 antenna, length 1.5 m.
- 1 base element sticks, length 1.5 m.
- 2 extension sticks, length 1.5 m each.
- 1 silicone cloth.
- 1 pair of insulating gloves.
- 1 carrying bag.

Power supply

Power for the appliance is provided by a 9 volt, 6 LR 61 type battery.



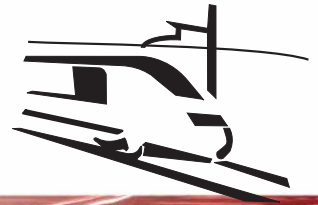
Reference	Frequency (Hz)	Operating voltage (kV)	Weight (kg)
ZVATDAC 25 SNCF	50	25	12**

** Total weight with stick, gloves, antenna and detectors.



Equipment for intervention on catenaries

a.c.



voltage detectors

IEC electronic Voltage Detectors, "Compact serie" for indoor and outdoor use

Ultimate technology of voltage detector "Head Capacitive Technology"

IEC-61243-1

Compact and light

It offers:

- a wide band (25 kV)
- a universal application (50/60 Hz)

NEW

Voltage presence is indicated by:

- red flashing LED (very bright -visible at more than 20 m in direct lighting)
- powerful rated audible signal > 60 dB(A)/2 m

Operating check:

By pressing the TEST button, correct operation is indicated as follows:

- a red LED flashes on
- sound signal

(during and after this test, the timed green LED lights up. While remaining on, it indicates the good working order of the detector)

Characteristics:

- Detectors have unitary adjustment and are checked by routine test
- Dielectrically tested on substation bars (bridging test)
- Precise and stable operating threshold
- Reduced sensitivity to induced voltages
- Reduced sensitivity to interference field
- High environmental resistance (impacts, vibrations, moisture)

Use from 50 to 60 Hz

Temperature conditions: class N (IEC-61243-1 standard).

Storage and operation: -25 / +55 °C

Robust housing.

Power supply: 1 x 9V alkaline battery type 6 LR 61

Contact electrodes fitted to the housing by screwing and are easily interchangeable.

End fittings:

C = hexagonal 12 mm, for hexagonal end-fitting sticks.

K = universal, for universal end-fitting sticks.

Weight of the detector: 420 g

Size of the detector: Ø 59 x 270 mm

Packaging: unit supplied complete in a case with batteries and contact electrodes.

Total weight: 1100 g

Total size: 340 x 275 x 83 mm

* Specify type of mounting when ordering: C or K.

Recommended stick:

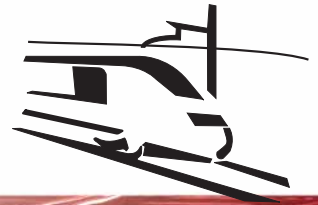
ZPTE 504, see page 16.



Frequency 50/60 Hz	
Reference	Operating voltage (KV)
CC-875-25	25

* Specify type of mounting when ordering: C or K.

For other voltages, please consult us.



d.c. bipolar voltage detector 0.6 to 2 kV

Two-pole voltage detector for the presence of voltage between the catenary and the rail **CE**

- Presence of voltage is indicated by:
 - illumination of 6 red LEDs
 - an audible signal (60 dbA/2 m)
- Correct operation check: Correct operation of the equipment is verified:
 - by pressing the test button which causes:
 - illumination of the 6 red LEDs
 - activation of the audible signal
 - and
 - by releasing the test button which causes:
 - temporary illumination of 6 green LEDs

The correct operation check consists in a built-in device. It checks all of the detector's functions. Stand-by state

No previous voltage adjustment required

Routine operations in factory to adjust and test the equipment

Detector fixed to stick, attachment to rail by metal spring-contacts

Power supply: 1 x 9V alkaline battery, type 6 LR 61

Stick included in pack: CC-1515-101

Supplied in carrying case: CM-303.



CC-1515-100

Reference	Operating voltage (kV)	Weight (kg)
CC-1515-100	0.6 to 2 d.c.	5.2

Telescopic insulating stick

Telescopic insulating stick, 3 elements, fully folded/extended: 1,65 x 3,95 m, including:

- Regulation piece of intermediary position.

Reference	Length	
	Folded	Extended
CC-1515-101	1.65	3.95

d.c. voltage detector 0.75 to 3 kV acoustic and optical signal

NEW

Two-pole voltage detector for the presence of voltage equipped with a flexible cable terminated by a contact clamp or a magnetic clamp.

- Presence of voltage is indicated by:
 - illumination of 6 red LEDs
 - an audible signal (60 dbA/2 m)
- Correct operation check: Correct operation of the equipment is verified:
 - by pressing the test button which causes:
 - Illumination of the 6 red LEDs
 - Activation of the audible signal
 - and
 - by releasing the test button which causes:
 - temporary illumination of 6 green LEDs

The correct operation check consists in a built-in device. It checks all of the detector's functions.

• Characteristics:

No previous voltage adjustment required

Routine operations in factory to adjust and test the equipment

- Power supply: 1 x 9V alkaline battery, type 6 LR 61
- Supplied in plastic case
- Weight: 6 kg with plastic case
- Cable length: 8 m

Recommended stick: ZPTVZCR 5603 B, see pages: 16/27.

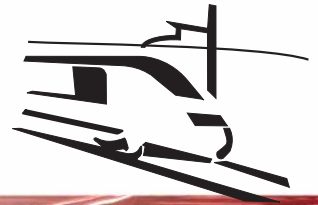


Reference	Field of use	Fitting	Contact-piece	Total length (mm)
CL6-3000	750-3000	B	Hook	450



Equipment for intervention on catenaries

d.c.



voltage detectors

d.c. bipolar voltage detector with discrimination of induced voltage 0.75 to 3 kV

Characteristics:

Two-pole voltage detector to indicate the presence of voltage between the catenary and the rail.
 There are a lot of interference voltages on catenary lines which come from other lines situated at proximity. This could create, especially when the weather is humid or when there are air pollution, VERY BIG induced voltage. This detector discriminate the real voltage from the induced one.
 10 meters of cable.
 Hook for catenary contact.
 Magnetized handle for an easy use and connection to the rail.

Voltage presence is indicated by:

- Presence of real voltage indicated by:
 - Illumination of red LEDs with acoustic signal.
- Presence of induced voltage is indicated by:
 - Illumination of green LEDs and flashing of orangous LEDs with acoustic signal.

Checking

- Connect the electrode to the rail handle to have a ring contact and the result is satisfactory if:
- When pressing the test button:
 - The red and orangous diodes lighting with acoustic signal sounding.
 - When releasing the test button by:
 - Timed green LEDs lights up. It indicate the good working of the detector and it lights off as soon as the red LED lights up in case of a voltage presence or after 2 minutes.

Power supply: 1 x 9 V alkaline battery, type 6 LR 61.

End fittings: round threaded brass M25.00 x 3.5 or other on request.

Packaging: carrying bag.

Weight: 1.5 kg.

Recommended stick: ZPTVZCR 5403, see page 16.

Other models or configurations: contact us.



Reference	Field of use	Contact-piece	Cable length (m)
ZVAT DC IND	750-3000	Hook	10

d.c. voltage detector 0.75 to 1.5 kV acoustic and optical signal

Characteristics:

Two-pole voltage detector for the presence of voltage equipped with a flexible cable terminated by a magnetic clamp.
 8 meters of cable.
 Hook for catenary contact.
 Magnetized handle for an easy use and connection to the rail.

Voltage presence is indicated by:

- illumination of 6 red LEDs with accoustic signal.

Checking

Correct operation of the equipment is verified:

- by pressing the test button which causes:
 - illumination of the 6 red LEDs.
 - activation of the audible signal.
- by releasing the test button which causes:
 - temporary illumination of 6 green LEDs.

The correct operation check consists in a built-in device.

It checks all of the detector's functions.

No previous voltage adjustment required.

Routine operations in factory to adjust and test the equipment.

Power supply: 1 x 9 V alkaline battery, type 6 LR 61.

Packaging: plastic case.

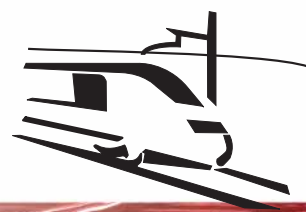
Weight: 7 kg with plastic case and magnetic clamp.
Recommended stick: ZPTVZCR 4603 W, see page 25.



Reference	Field of use	Fitting	Contact-piece	Cable length (m)
ZVATDC 750/1500W	750-1500	W	Hook	8



Equipment for intervention on catenaries



insulating sticks

Insulating sticks for short-circuiting and earthing systems

Made of IEC-60855 orange foam filled tube, these Ø 39 mm dia. elements are assembled using a new safety bayonet system connector in aluminium alloy. They allow construction of a large variety of custom made sticks that meet the most varied conditions of application. Calibrated lengths of 1 to 3 meters (with fraction of 0.50 m) permit a huge number of applications.

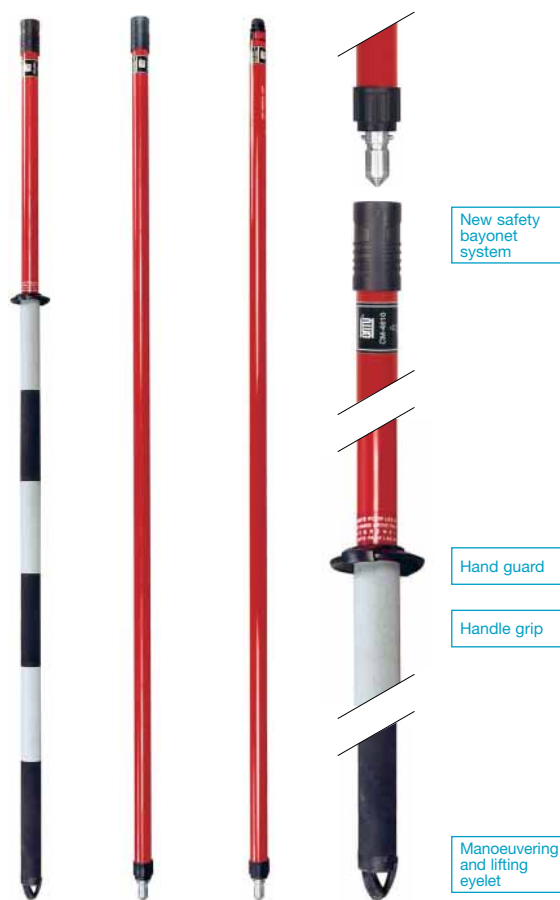
This range thus allows a stick-length limitation in case of space requirements and carrying capabilities.

IEC-60855

For common applications a serie of complete sets including 2 or 3 elements are made to give simple solutions for working distance from 2 to 6 meters.

Reference	Length (m)	Weight (kg)
Basic elements		
CM-4610	1	1.35
CM-4615	1.5	1.80
CM-4620	2	2.80
CM-4625	2.5	3.30
Intermediate element		
CM-4610-I	1	1.30
CM-4615-I	1.5	1.70
CM-4620-I	2	2.60
CM-4625-I	2.5	3.10
Terminal elements		
CM-4610-*	1	1.00
CM-4615-*	1.5	1.40
CM-4620-*	2	2.20
CM-4625-*	2.5	2.70
Fixed length sticks		
CM-4115-*	1	1.35
CM-4120-*	2	1.80
CM-4125-*	2.5	2.80
CM-4130-*	3	3.30

* Add end piece C, K, E.



Set of sticks

Complete sets of sticks for standard applications.

IEC-60855

Reference	Working distance (m)	Composition
CM-4220*	2	2 elements: CM-4610 + CM-4610-*
CM-4230*	3	2 elements: CM-4615 + CM-4615-*
CM-4240*	4	2 elements: CM-4620 + CM-4620-*
CM-4330*	3	3 elements: CM-4610 + CM-4610-I + CM-4610-*
CM-4345*	4.5	3 elements: CM-4615 + CM-4615-I + CM-4615-*
CM-4360*	6	3 elements: CM-4620 + CM-4620-I + CM-4620-*

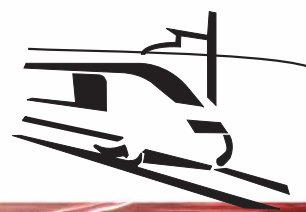
* Add end piece C, K, E.

Carrying and storage stick case

Case especially designed for Ø 39 mm new range sticks. Carrying capacity: 3 elements.

CM-3000	480 x 330 x 120 mm - Weight: 1.2 kg
---------	-------------------------------------





Telescopic sticks for voltage detectors

Telescopic stick for use in checking for absence of voltage or electrical operation on installation or equipment **IEC-61235** ⚠

• Description:

- 4 yellow epoxy reinforced fibre-glass insulating sections, diameters 28 mm, 33 mm, 37 mm and 43 mm each section is fixed in position by a black plastic, spring-mounted button
 - end-fittings: U = Universal (notched type)
H = Hexagonal (hexagonal with 12 mm/flats)
 - button cap: fixed made of elastomer material
- Intermediate positions: length = 2.65 m / 3.85 m

Other models or lengths: contact us.



Reference	Fitting	Length extended (m)	Length folded (m)	Weight (Kg)	Elements n°
ZPTE-504-H	H	5.03	1.46	1.9	4

Stick bags

Strong waterproof fabric, strap for carrying.



Reference	Max. stick length (m)
CM-1-10	1.20
CM-1-15	1.63
CM-1-20	2.20
CM-1-34	3.30
CM-2-26	2.70

Telescopic sticks

ZPTVZCR 5603 **IEC-61235** ⚠

Adjustable multipoint telescopic stick for use in earthing and short-circuiting.

SNCF Symbol 0 392 6977

Description:

- 3 epoxy reinforced fibre-glass isolating sections:
- 1 red terminal tube, diameter 28 mm,
- 1 intermediate tube, diameter 37 mm,
- 1 red base tube, diameter 45 mm, equipped with a screwing attachment at the end protected by a removable cap, which allows the 2 m extension to be attached (reference ZRAVZC 200) each section may be set at the desired length, according to operating height, with lever clamping system using an eccentric cam,
- 1 end-fitting: round threaded brass M 25.00 x 3.50 (stick ZPTVZCR 5603) or type B bayonet (stick ZPTVZCR 5603 B),
- button cap: removable made of elastomer material.

Other models or lengths: contact us.

ZRAVZC 200

Lower extension for telescopic stickserie ZPTVZCR 5603. Epoxy reinforced fibre glass insulating section Ø 45 mm of red colour.



Reference	Length (mm)		Weight (kg)	Elements N°
	extended	folded		
ZPTVZCR 5403	5.40	2.00	3.6	3
ZPTVZCR 5603	5.60	2.15	3.7	3
ZPTVZCR 5603 B	5.60	2.15	3.7	3
ZRAVZC 200		2.00	1.9	1

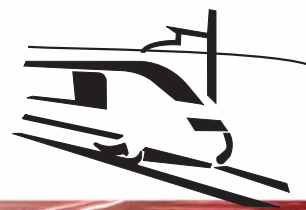
Stick covers

Can contain 5 simple elements.

Strongly waterproof fabric strap for carrying.



Reference	Elements length (m)	Overall dimensions (m)
CM-3-02	1.00	0.575 x 1.450
CM-3-03	1.50	0.575 x 1.950
CM-3-04	2.00	0.575 x 2.450
CM-3-05	2.50	0.575 x 2.950
CM-3-06	3.00	0.575 x 3.400



Clamp for single or double catenary

Earthing clamp for single or double catenary, attached by clamping with operating sticks.

- Materials:
 - body: aluminium
 - clamping screw: hardened steel
- lcc: 30 kA/1 s
- Connection: for cables fitted with screw terminal diam.12 mm
- Clamping capacities:
 - double catenary: diam. 12/14 mm, distance between axes 25 mm
 - single catenary or conductors: diam. 5/35 mm, 16/40 mm, 5/40 mm
- End-fitting: bayonet type
- Recommended sticks: CM-46..E connectable ZPTVZCR 5603 B telescopic.



Reference	Weight (kg)	Dimensions (mm)	Conductors (mm)
MT-815-E	0.650	44 x 100 x 180	<ul style="list-style-type: none"> — 16-40 ● 5-35 ■ 5-40

Clamps for single or double catenary with fuse contact wire

Earthing clamp for single or double catenary, attached by clamping with operating stick. Clamp equipped with a fuse contact wire

- Materials:
 - body: aluminium
 - quick-fix clamping screw: hardened steel
- lcc: 30 kA/1 s
- Connection: for cables fitted with screw terminal diam.12 mm
- Clamping capacities:
 - single catenary: diam. 10/22 mm
- End-fitting: bayonet type
- Recommended sticks: CM-46..E connectable ZPTVZCR 5603 B telescopic.



Reference	Weight (kg)	Dimensions (mm)
MT-128	1.3	260 x 160 x 70

Universal clamp for single or double catenary

Earthing clamp for single or double catenary, automatically attached by pressure from operating sticks.

- Materials:
 - body: aluminium
 - contact spring: hardened bronze
- lcc: a.c. = 12 kA/150 ms
d.c. = 35 kA/25 ms
- Rate of current: 750 A/20 s
- Connection: for cables fitted with screw terminal diam.12 mm
- Clamping capacities:
 - double catenary: diam. 12/14 mm, distance between axes 50 mm
 - single catenary or tube: diam. 10/50 mm
- End-fitting: type round brass M 25.00 x 3.50
- Recommended stick: ZPTVZCR 5603 B
- SNCF symbol: 0.392.6325.



Reference	Weight (kg)	Dimensions (mm)
ZCCVZC 25	0.75	270 x 200 x 40
ZCCVZC 25 B	0.8	270 x 200 x 40

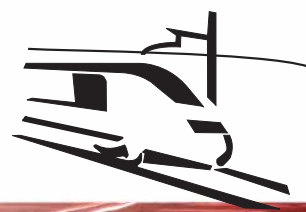
Clamps for single or double catenary

Earthing clamp for single or double catenary, attached by clamping with operating stick. Clamp equipped with a fuse contact wire

- Materials:
 - body: aluminium
 - quick-fix clamping screw: hardened steel
- lcc: 30 kA/1 s
- Connection: for cables fitted with screw terminal diam.12 mm
- Clamping capacities:
 - single catenary: diam. 10/22 mm
- End-fitting: bayonet type
- Recommended sticks: CM-46..E connectable ZPTVZCR 5603 B telescopic



Reference	Weight (Kg)	Dimensions (mm)	Specifications
ZEMRC 200 B	0.9	280 x 125 x 40	Without fuse contact wire
ZEMRC 201 B	0.9	280 x 125 x 40	With fuse contact wire



Clamp for single catenary

Body in aluminium alloy with trapezoidal threaded screw. Interposed elastic washers in the clamping system improve efficiency and insure a higher withstand in case of electrodynamic shock. Manœuvring by 4600 serie insulated stick of appropriate length and characteristics. Weight: 1.45 kg. Dimensions: h 200 x L 200 x thickness 50.



ZEMCC-3162-BC

Reference	Clamping capacity (Ø mm)	Rating insulation (kA/1 s)	I asymmetrical (A)	Copper connection		
				Copper cables Ø range (mm² max.)	Stud or hole (mm)	Stud or hole
ZEMCC-3162-BC	5-60	40	92	150	45	M 12

Clamps for single or double catenary with quick opening and closing NEW

Earthing clamp for single or double catenary, attached by clamping with operating stick.

- Opening and closing in one turn.
- Materials:
 - all the components are in a light alloy.
- Icc: 50kA/25ms
- Clamping capacities:
 - single catenary: diam. 12/15 mm
 - double catenary: diam. 12/15 mm
 - distance between axes: 80 mm maxi
- Connection for earth cable: screw diam. 12 mm.
- End fitting: bayonet type.



Recommended stick: ZPTVZCR 5603 B, see pages: 16/27.

Reference	Dimensions (mm)	Weight (kg)	Specifications
ZEMRC 300 B	250 x 220 x 60	1.1	With fuse contact wire
ZEMRC 301 B	250 x 220 x 60	1.1	Without fuse contact wire

Copper cables

Flexible copper braid silicon sheath (IEC-61230), with double crimped lugs. Hole: 12.50 mm.

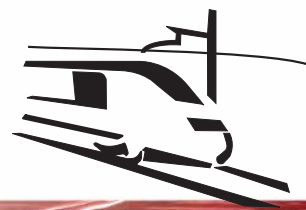


Reference	Ø (mm)	Section (mm²)	Length (m)	SNCF symbol
ZCESS-50-10	10	50	10	-
ZCESS-50-02	10	50	2	-
ZCESS-50-03	10	50	3	-
ZCESS-50-045	10	50	45	-
ZCESS-95-10	14	95	10	0.392.6335
ZCESS-95-02	14	95	2	0.392.6338
ZCESS-95-03	14	95	3	0.392.6337
ZCESS-95-045	14	95	45	0.392.6336

Transparent silicon sheath according to IEC-61230 . Resistant to temperature variations (-40 °C to +70 °C) with double IEC triangle marked on cable section.



IEC-61230	Rating (kA/1 s)	Weight (kg/m)	Cable Ø (mm)	Section (mm²)
	M-24-35-S	8	0.386	9
M-24-40-S	10	0.440	9.5	40
M-24-50-S	12	0.545	10	50
M-24-70-S	16	0.768	12	70
M-24-95-S	20	1.000	14	95



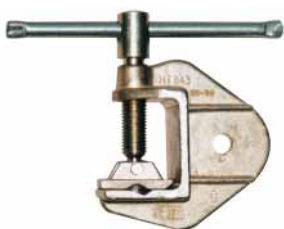
Earth clamps

Earthing clamp for connection to rail / poles, attached by manual tightening

• Materials:

- body: cupro-aluminium
- clamping screw: stainless steel

Connection: for cables fitted with screw terminal diam.12 mm.



Reference	Rating insulation	Dimensions (mm) Weight (kg)	Connection	Clamping capacity (mm)
MT-843	40 kA/1 s	45 x 106 x 165 0.95	Hole: Ø 13	• Ø 6-35 — Ø 0-35

For fixed ball points



MT-1911
MT-1921

For fixed point

Reference	Weight (kg)	Connection conductors (mm)
MT-1911	0.58 Ø 20 mm	Spheric fixed points MT-2951 Round conductors Ø 8 to 18 mm
MT-1921	0.69 Ø 25 mm	Spheric fixed points MT-3951 Round conductors Ø 10 to 25 mm

Earthing rail clamps

Rail earthing clamp for catenary, attached by manual tightening

• Materials:

- body: aluminium
- clamping screw: stainless steel

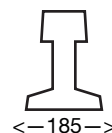
• Connection: for cables fitted with screw terminal diam.12 mm

• Clamping capacities:

- clamping: 1: 19 mm spanner used to clamp horizontally to the rail flange
2: lever used to clamp to the rail flange. Electrical contact is maintained by spring washers

- capacities: horizontal to the rail flange = 100 to 155 mm max.

Vertical to the rail flange = 7 to 19 mm max.



MT-848

Reference	Weight (Kg)	Icc	Dimensions (mm)
MT-848	2,4	30 kA/1 s	320 x 150 x 75

• Rail earthing clamp for catenary, attached by manual tightening. Clamp for carrying out continuity shunt during the laying of a section of rail

• Materials:

- body: aluminium
- clamping screw: stainless steel

• Rate of current: 750 A/20 s

• Connection: for cables fitted with screw terminal diam.10 mm and diam.12 mm

• Clamping capacities:

- clamping: clamped by lever. Electrical contact is maintained by spring washers. The contact quality is guaranteed by a plate with "diamond tip" shapes
- capacities: vertical to the rail flange = 7 to 22 mm.



Reference	Weight (Kg)	Icc	Dimensions (mm)
ZSMT-848/100	1.5	a.c. 15 kA/150 ms d.c. 35 kA/50 ms	180 x 130 x 50
ZSMT-848/101	1.5	a.c. 15 kA/150 ms d.c. 35 kA/50 ms	180 x 130 x 50



Equipment for intervention on catenaries

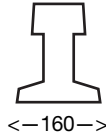


earthing rail clamps

Earthing rail clamp

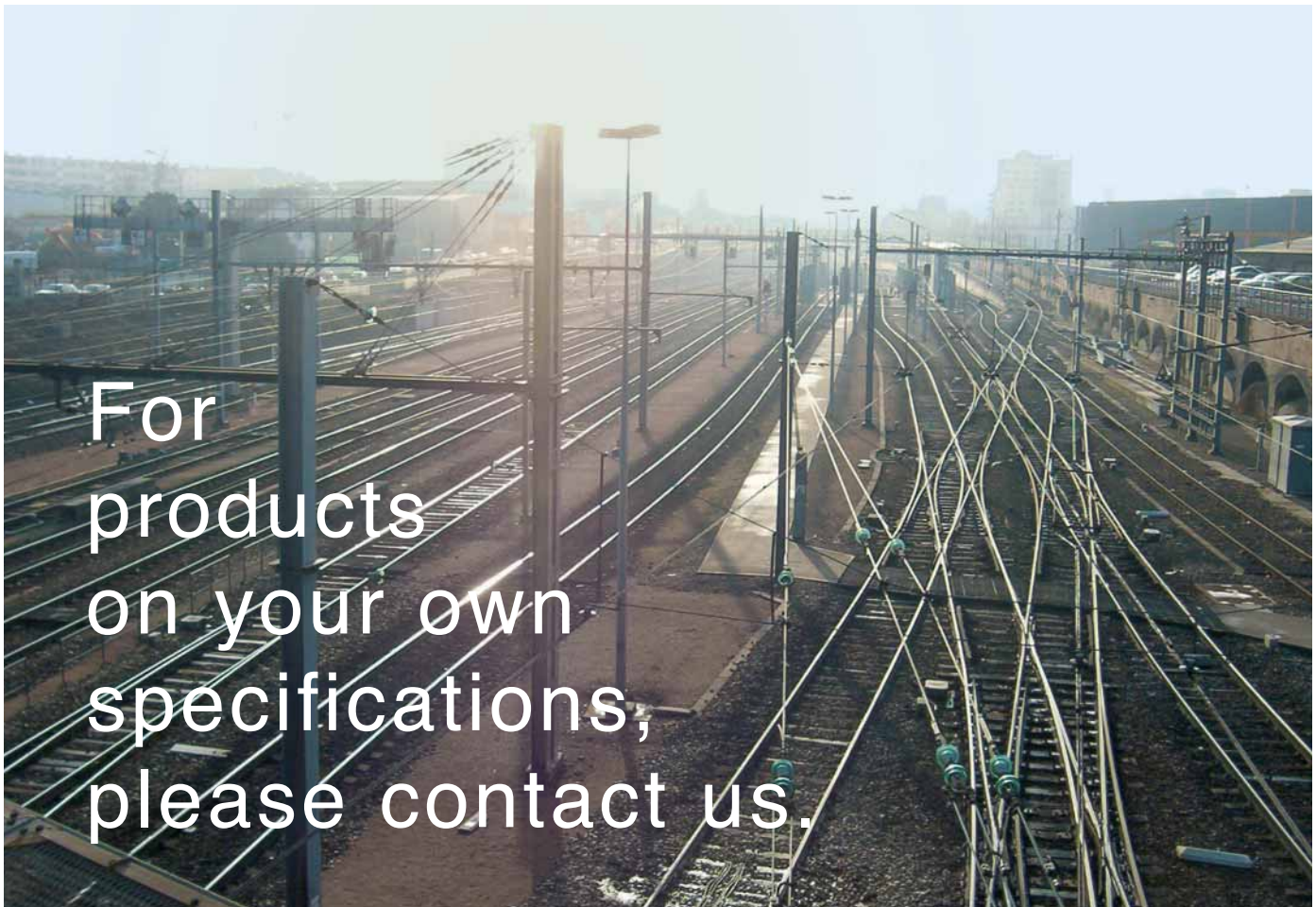
Rail earthing clamp for catenary, attached by manual tightening.

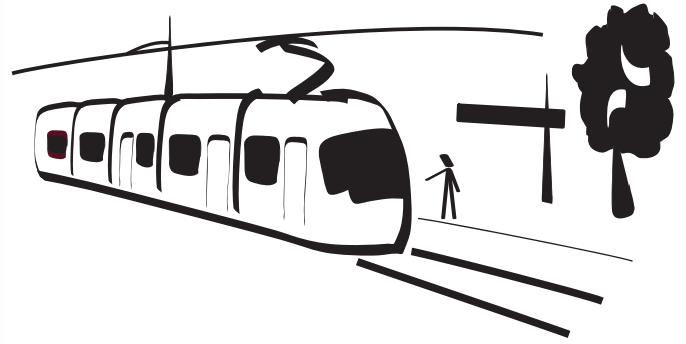
- Materials:
 - body: ZET-62040: aluminium
ZET-62042: copper-aluminium
 - clamping screw: ZET-62040: stainless steel
ZET-62042: hardened steel
- Connection: for cables fitted with screw terminal diam. 12 mm
- Clamping capacities:
 - clamping: clamped by lever.
 - capacities: horizontal to the rail flange
= 100 to 160 mm max.



ZET-62042

Reference	Weight (Kg)	Icc	Dimensions (mm)
ZET-62040	1.680	30 kA/1 s	310 x 90 x 70
ZET-62042	2.0	30 kA/1 s	310 x 120 x 65





Equipment for intervention on electrical urban transports

Complete equipment guide
(Tramway, Trolley, Subway)

22

Voltage detectors and
short-circuiting system for tramway

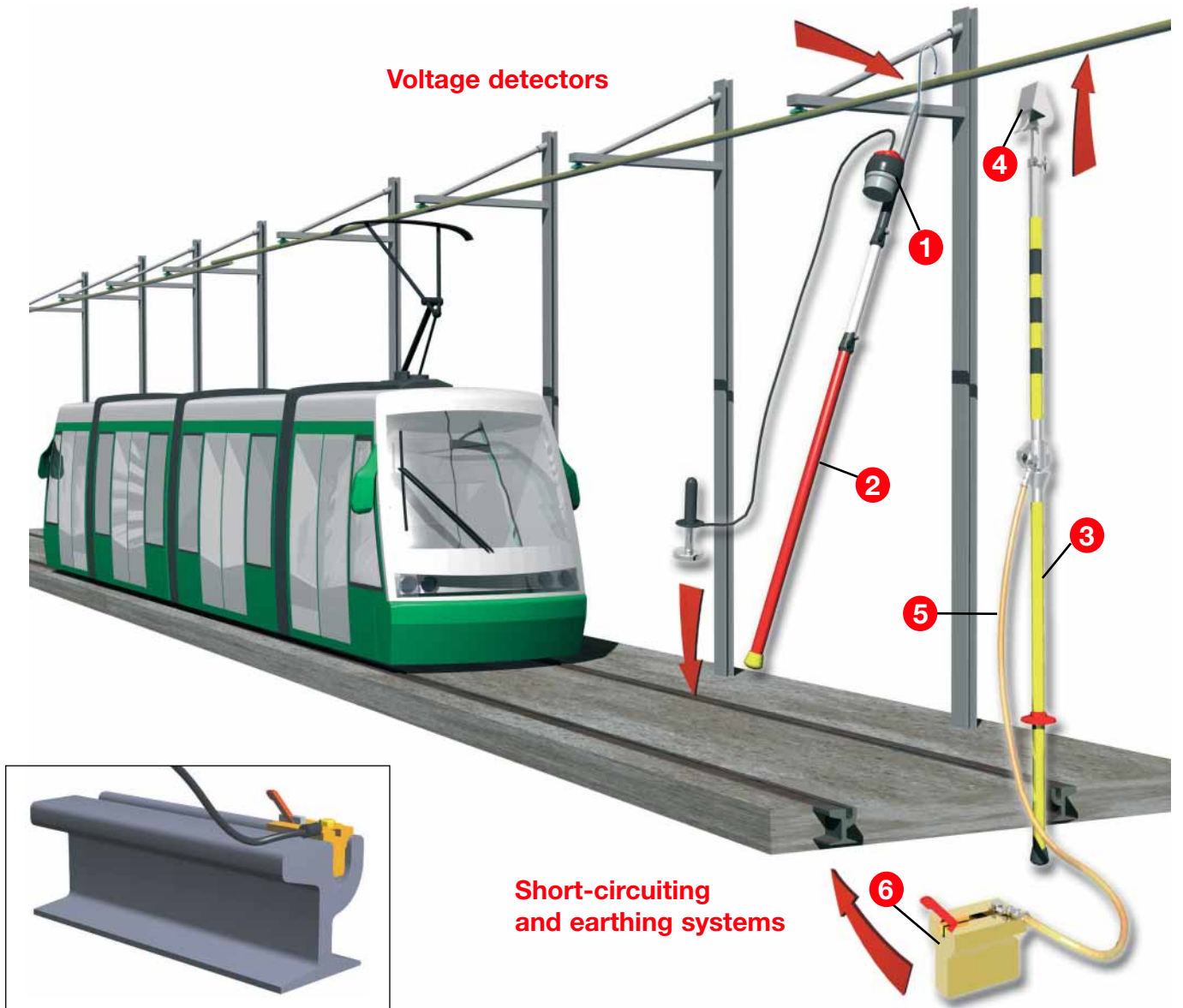
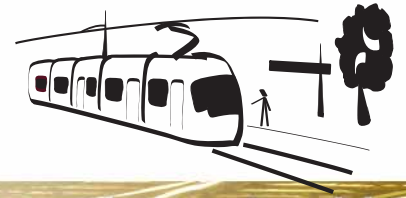
25

Voltage detectors and
short-circuiting system for trolley

27

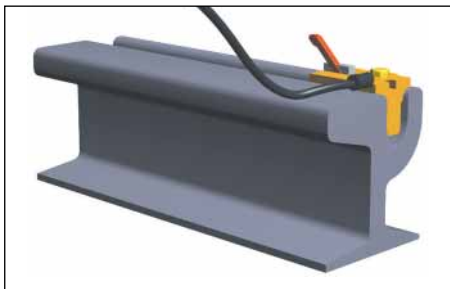
Voltage detectors and
short-circuiting system for subway

28



Voltage detectors

Short-circuiting and earthing systems



Voltage detectors

d.c.

750/1500 V

- 1** Bipolar electronic voltage detector
Reference: [ZVATDC 750/1500 W](#)

See page 25

Insulating sticks

- 2** For voltage detector reference: [ZPTVZCR 4603](#)

See page 25

- 3** For short-circuiting system reference: [ZPL7R 120N](#), [ZPTVZCR 5003](#)

See page 26

Short circuiting and earthing systems

Clamp

- 4** Autoclamping contact clamp
reference: [ZEMCC 2160](#)

See page 26

Cables with connections

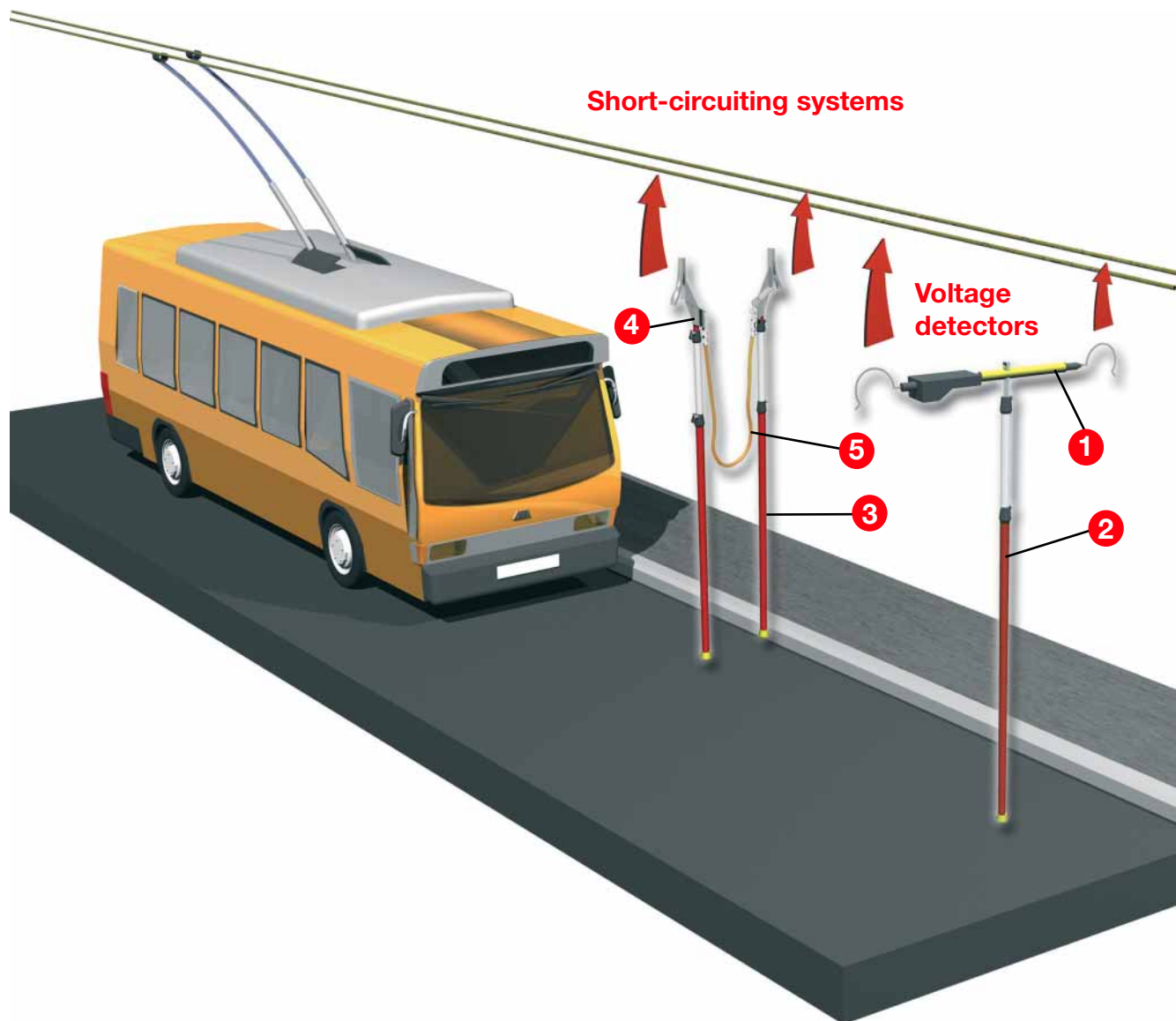
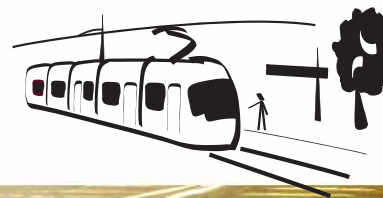
- 5** Copper cable with connection - Length: 2 m, section: 35 mm²
reference: [ZCESS 35/05 MR](#)

See page 26

Earth clamps

- 6** Automatic earth clamps
references: [ZETMR 35](#), [ZETRT 35](#), [ZETMR 41](#), [ZETMR RG29](#)

See page 26



Voltage detectors

d.c.

750 V

1 Bipolar electronic voltage detector
reference: [ZVDCAL 750 TROL](#)

See page 27

Insulating sticks

2 For voltage detector
reference: [ZPTVZCR 5603 B](#)

See page 27

3 For short-circuiting system
reference: [ZPTVZCR 5603](#)

See page 27

Short circuiting systems

Clamp

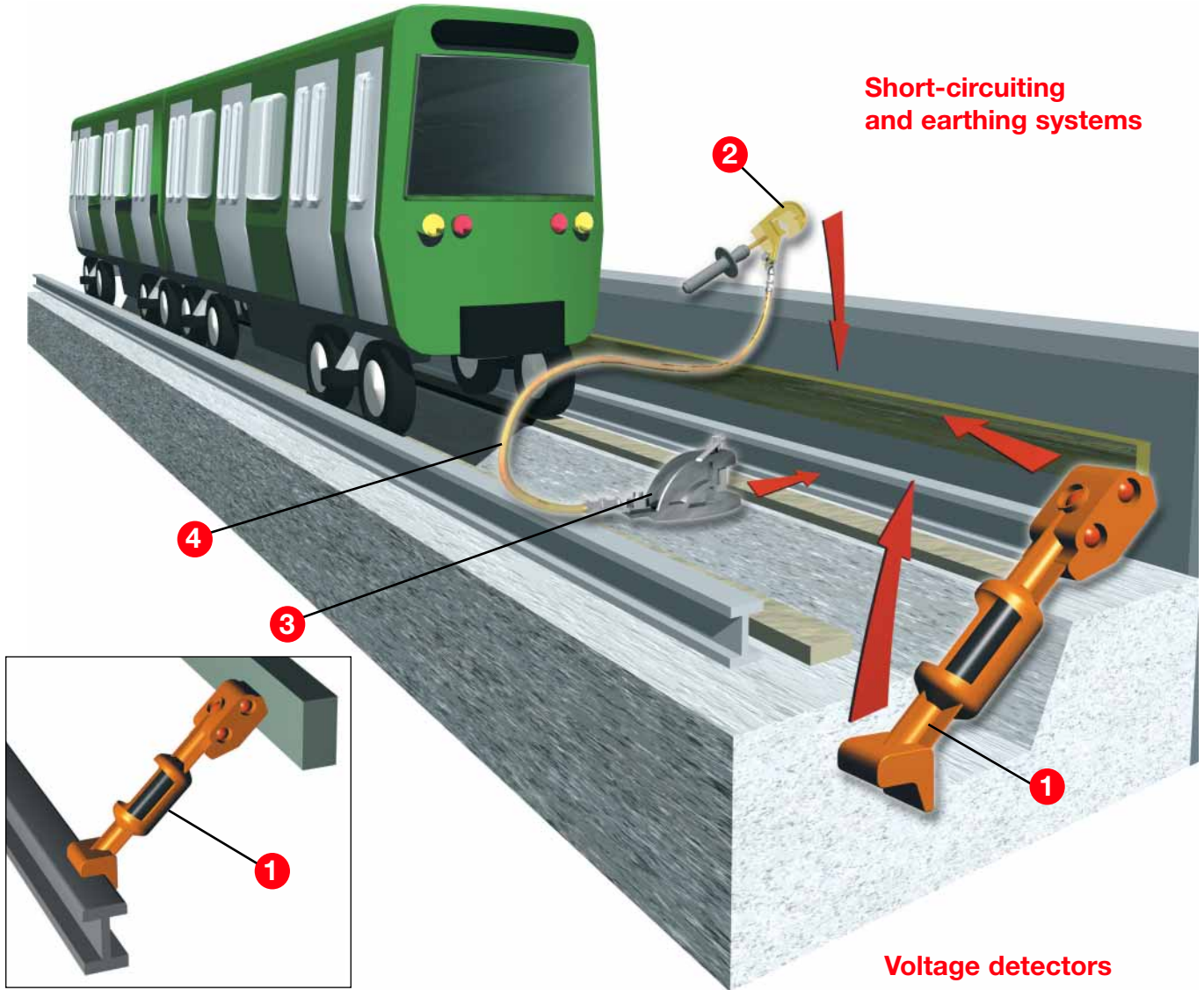
4 Autoclamping contact clamp
reference: [ZCCVZC 25](#)

See page 27

Cables with connections

5 Copper cable with connection
reference: [ZCESS-50-02](#) - Length: 2 m, section: 50 mm²

See page 27



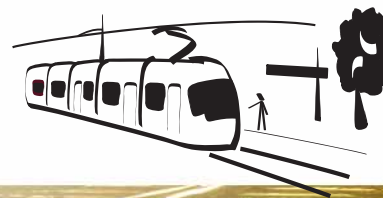
Short-circuiting and earthing systems

Voltage detectors

Voltage detectors		Short circuiting and earthing systems	
	d.c.		Clamp
	750 V		
1	Bipolar electronic voltage detector reference: CL-1607/1	2	Clamp for side conductor references: MT-1921
See page	28	See page	28
			Cables with connections
		4	Copper cable with connection reference: ZCESS-50-03 - Length: 3 m, section: 50 mm ²
		See page	28
			Earth clamps
		3	Earth clamp for rail references: ZSMT 848/100
		See page	28



Equipment for intervention on tramway installations



voltage detectors, earthing rail equipment

d.c. voltage detector 0.75 to 1.5 kV acoustic and optical signal

NEW

Two-pole voltage detector for the presence of voltage equipped with a flexible cable terminated by a magnetic clamp.

- Presence of voltage is indicated by:
 - illumination of 6 red LEDs
 - an audible signal (60 dbA/2 m)

- Correct operation check:

Correct operation of the equipment is verified:

- by pressing the test button which causes:

- Illumination of the 6 red LEDs
- Activation of the audible signal

and

- by releasing the test button which causes:
 - temporary illumination of 6 green LEDs

The correct operation check consists in a built-in device. It checks all of the detector's functions.

- Characteristics:

No previous voltage adjustment required

Routine operations in factory to adjust and test the equipment

- Power supply: 1 x 9V alkaline battery, type 6 LR 61
- Supplied in plastic case
- Total weight with case and magnetic clamp: 7 kg
- Cable length: 8 m

Recommended stick: ZPTVZCR 4603, see page 25.




Reference	Field of use	Fitting	Contact-piece	Total length (m)
ZVATDC 750/1500W	750-1500	W	Hook	8

Telescopic sticks

NEW

ZPTVZCR 4603 W

Adjustable multipoint telescopic stick for use in earthing and short-circuiting.

IEC-61235 

Description:

- 3 epoxy reinforced fibre-glass isolating sections:
- 1 red terminal tube, diameter 28 mm,
- 1 intermediate tube, diameter 37 mm,
- 1 red base tube, diameter 45 mm, equipped with a screwing attachment at the end protected by a removable cap, which allows the 2 m extension to be attached each section may be set at the desired length, according to operating height, with lever clamping system using an excentric cam,
- 1 end-fitting: type W,
- button cap: removable made of elastomer material.
- delivered in a stick bag.



Reference	Length (m)		Weight (kg)	Elements N°
	extended	folded		
ZPTVZCR 4603	4.70	1.90	2	3



Equipment for intervention on tramway installations



voltage detectors, earthing rail equipment

Earthing rail equipment

Clamps

Auto clamping contact clamp for catenary wire, fixed on top of a telescopic two elements metallic stick.
 Folded / extended length: 1.80 / 3.25 m.
 Bottom of metallic stick has a pin to be fixed on insulating stick.
 Also on bottom a grounding braid clamp.

Reference	Weight (kg)	Length (m)
ZEMCC 2160	1.20	1.80 / 3.25

Insulating sticks

One part insulating stick, length 2 m.
 Equipped on top with a "tulip" connector for ZEMC 2160 clamp.

Reference	Weight (kg)	Length (m)
ZPL7R 120N	2.00	2
ZPTVZCR 5003	2.00	1.80 / 5.00

Earthing rail clamps

Rail earthing clamp for 35 GTF rail (buried rail - streetcar).
 Rail earthing clamp for catenary, attached by manual tightening.

- Materials:
 - body: copper-aluminium,
 - clamping screw: hardened steel 240 kg/mm.
- Connection: for cables fitted with screw terminal diam. 12 mm.
- Clamping capacities:
 - clamping: clamped by 1/4 turn lever. Electrical contact is maintained by an excentric cam,
 - capacities: clamps to the neck of rail type 35 GTF.

Reference	Weight (kg)	Icc	Rail type	Dimensions (mm)
ZETMR 35	1.2	8 kA/1 s	GTF 35	115 x 63 x 40
ZETMR 41	1.3	8 kA/1 s	GP 41 GPI 41	115 x 63 x 40
ZETRT 35	0.8	8 kA/1 s	GTF 35 GPI 41 RI 59	85 x 70 x 50
ZETMR RG 29		8 kA/1 s	RG 29	

Copper cables

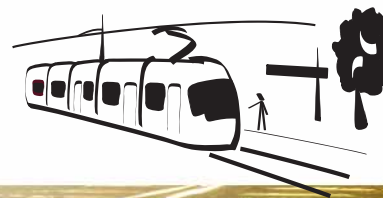
Flexible copper braid, silicon sheath (IEC-61230), with terminals.

Reference	Weight (kg)	Section (mm ²)	Length (m)
ZCESS-35/05 MR	2.00	35	2





Equipment for intervention on trolley installations



voltage detectors, earthing rail equipment

d.c. voltage detector 750 V

Two-pole voltage detector for presence of voltage between positive line and negative line, installation with a telescopic stick.

- Presence of voltage is indicated by:
 - illumination of 6 red LEDs
 - an audible signal (60 dbA/2 m)

- Correct operation check:

Correct operation of the equipment is verified:

- by pressing the test button which causes:

- Illumination of the 6 red LEDs
- Activation of the audible signal

and

- by releasing the test button which causes:
 - temporary illumination of 6 green LEDs.

The correct operation check consists in a built-in device.

It checks all of the detector's functions.

- Characteristics

Operating voltage: 750 V d.c.

Stand-by state.

No previous voltage adjustment required, any polarity.

Routine operations in factory to adjust and test the equipment.

Distance between line axes: 700 mm.

- Power supply: 1 x 9 V alkaline battery, type 6 LR 61.

Recommended stick: PTVZCR 5603 B.

Supplied in carrying case.

- Telescopic stick: ZPTVZCR 5603 B.



Other models or configurations: contact us.

ZVDCAL 750 TROL Weight: 2.5 kg

Earthing rail equipment

- Universal earth clamp.

Icc = 35 kA / 50 ms.

For catenaries diameter 10 to 50 mm. see page 15

ZCCVZ 25

- Copper cables, flexible copper braid, silicon sheath (IEC-61230) with double crimped lugs.

Reference	Ø mm	Selection (mm)	Length (m)
ZCESS 50 02	10	50	2

- Telescopic stick. see page 14

Reference	Weight (kg)	Length (m)
ZPTVZCR 5603	3.7	2.15 / 5.60
ZPTVZCR 5603 B	3.7	2.15 / 5.60





Equipment for intervention on subway installations



voltage detectors, earthing rail equipment

d.c. voltage detector 750 V

Bipolar detector for d.c. networks:

- Built in testing device.
- Presence of d.c. voltage indicated by 5 red LED'S.
- Contact piece on rail: 3 contacts.
- Battery 4.5 V type 3 LR 12.



Reference	Dimensions (mm)	Weight (kg)
CL-1607/1	500	1.350
CL-1607/ML	535	1.900

Other models or configurations: contact us.

Earthing rail clamp

- Rail earthing clamp for catenary, attached by manual tightening. Clamp for carrying out continuity shunt during the laying of a section of rail.
- Materials:
 - body: aluminium,
 - clamping screw: stainless steel.
- Rate of current: 750 A/20 s.
- Connection: for cables fitted with screw terminal diam.10 mm and diam.12 mm.
- Clamping capacities:
 - clamping: clamped by lever. Electrical contact is maintained by spring washers. The contact quality is guaranteed by a plate with "diamond tip" shapes,
 - capacities: vertical to the rail flange = 7 to 22 mm.
- SNCF symbol: 0.392.6481.



ZSMT 848/100

Reference	Weight (Kg)	Icc	Dimensions (mm)
ZSMT 848/100	1,5	a.c. 12 kA/150 ms d.c. 35 kA/50 ms	180 x 130 x 50

Earth clamp

For fixed point.



MT-1921

Reference	Weight (kg)	Connection conductors
MT-1921	0.69	Flat 18 mm - Ø 25 mm

Copper cables

Flexible copper braid, silicon sheath (IEC-61230), with double crimped lugs.



ZCESS 5003

Reference	Ø mm	Section (mm)	Length (m)
ZCESS 5003	10	50	3



Equipment for lines, substations and installations

Safety equipment

30

Low voltage detectors and
short-circuiting systems

32

Medium voltage detectors and
short-circuiting systems

34

High voltage detectors and
short-circuiting systems

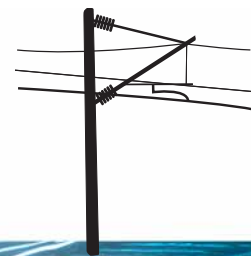
41

Accessories

43



Lines, substations and installations



delineators, safety equipment

Warning flags



AL-58	Attached on handle; for work site
AL-60	to be attached on earthing cable; for immediate identification in open-type switchgears possible inscription: 0 to 99 (by using ALU-SCRIPT markers)

Safety boundary post

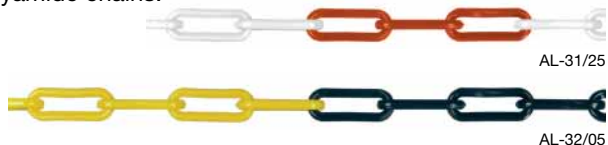
For temporary installation.
Used with tough link chain delineators (AL-32/05).
Removal foot.
Ø 50 mm.
Height: 0.9 m.



AL-316	Red and white - Weight: 4.2 kg
AL-318	Black and yellow - Weight: 4.2 kg

Chain delineators

Polyamide chains.



AL-31/25	Red and white - Length: 25 m
AL-31/05	Red and white - Length: 5 m

Delineators

Brightly colored ribbon.
Snap hook on one ribbon end and another on spool.
A ring on spool brakes ribbon at desired length.
wide: 50 mm
length: 20 m.



AL-62-A	Red ribbon
AL-63-A	Yellow ribbon

Intervention kits



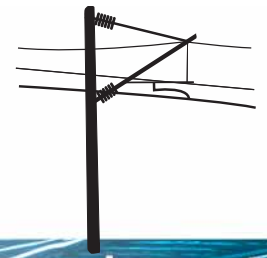
Composition of the kits

Reference	Composition	Characteristics	Dimensions
CG-30-C	Insulating rubber gloves	26 500 V max	size 10
CG-35/1	Rubber gloves storage box with window		60 x 210 x 460 mm
CI-23	Fuse holder		90 x 240 x 260 mm
CS-45	Rescue stick	45 kV	1.65 m
CI-06-D	Wall mounted supports	Delivered with CS-45	
CT-7-25/1*	Insulating platform	24 000 V max	500 x 500 x 220 mm
MP-42/16**	Insulating MAT	≤ 26,5 kV	0.6 x 1 mm

KIT-01*	Intervention kit with insulating platform
KIT-10**	Intervention kit with insulating mat delivered with a protective P.V.C. container



Lines, substations and installations



delineators, safety equipment

Extinguishers

Carbon dioxide for B and C type fires.



CD-302	Capacity: 2.68 L - 290 x 615 mm Weight full: 5.4 kg
CD-306	Capacity: 8.04 L - 320 x 870 mm Weight full: 14 kg

Safety lamps

Emergency mobile lighting for MV indoor substations, rechargeable on 220 V.



CD-122	Adjustable flood beam - power beam: 5.5 W Operates: 3 hours - Weight: 1.2 kg
CD-124	Delivered with a wall mounted support Bulb: 6 W/12 W Operates: 1 hour (12 W), 2 hours (6 W) Rechargeable on 230 V 50/60 Hz 3 positions switch: Off, 6 W, 12 W 100 x 190 x 220 mm - Weight: 1.9 kg

Intrinsically safe torch light

Protection mode EEx iae IIc T6 (suitable for all areas and gases).
Appropriate certificates for Merchant Marine and VERITAS.
Power supply by 1.5 V LR 20 batteries (x 2).
Fixed light or intermittent optical signals.
Double optical systems.



CD-104	Dimensions: 230 x 90 x 90 mm - Weight: 400 g
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Life saving kits for M.V. substations

Wall mounted KIT

NEW

In case of an electrical accident, quick response is essential: seconds gained or lost can decide the life or death of a victim.

Our life saving equipment is designed to make all necessary materials immediately available to rescue personnel.

It includes:

- 1 rescue telescopic stick
- 1 voltage detector with flexible antenna contact (with autotest)
- 1 cable cutter with insulated handles
- Forged steel blades maximum opening: 30 mm
- 1 insulating platform 24 kV high voltage
- Insulating gloves, insulating boots
- Safety instructions on the plastic board
- 1 talcum powder can.

Closed



Opened

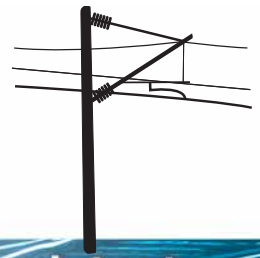


CZ-54-R	Wall mounted panel 0.84 x 0.745 x 0.27 m 21 kg - With instructions in English
CZ-54-MR	Same as CZ-54-R With instructions in English/Arabic



Lines, substations and installations

Low voltage a.c./d.c.



voltage detectors

Voltage multi-tester DETEX™ 911-EX

The DETEX 911-EX has been designed in accordance with IEC 61243-3 and EN 50110-1 standards.

IEC-61243-3
EN 50110-1
CE

The DETEX 911-EX is a voltage detector which checks the absence of voltage (a.c. or d.c.) and a multimeter.

It enables you to: check the voltage levels from 6 to 600 volts; check the continuity of a disconnected electric circuit; find phase or neutral (by single pole method) determine polarities. It is equipped with 2 test probes and an integrated correct operation test.

Features: Field of use: from 6 to 690 V =/~

Frequency: 50/60 Hz +/- 10%

Operating Temperature: -10°C / +55°C

Protection level: IP54 / IK06

Double insulation class II.



MS-911-EX

Delivered with power supply
Weight: 0.370 kg

Voltage multi-tester DETEX™ 911/BR

The DETEX 911/BR has been designed in accordance with IEC 61243-3 and EN 50110-1 standards.

The DETEX 911/BR is a voltage detector which checks the absence of voltage (a.c. or d.c.) and a multimeter.

It enables you to: check the voltage levels from 6 to 600 volts; check the continuity of a disconnected electric circuit; find phase or neutral (by single pole method) determine polarities. It is equipped with IP2X safety test probes and an integrated correct operation test.

Features: Field of use: from 24 to 900 V =/~

Frequency: 50/60 Hz +/- 10%

Operating Temperature: -10°C / +55°C

Protection level: IP54 / IK06

Double insulation class II.

MS-911/BR

Delivered with power supply
Weight: 0.370 kg

Voltage multi-tester with phase rotation DETEX™ 911/2

The DETEX 911/2 has been designed in compliance with IEC/CENELEC standard 61243-3 in response to the requirements of European standard EN 50110-1.

IEC-61243-3
EN 50110-1
CE

The device is a voltage detector which checks the absence of voltage (AC and DC) and a multi-tester.

It enables to:

- check the voltage levels 12 to 400 Volts;
- check the continuity of disconnected electric circuit;
- find phase or neutral (by single pole method);
- Control the phase rotation;
- Determine polarities.

It is equipped with IP2X safety test probes.

Technical features

Field of use: From 12 to 400 V A.C and D.C

Frequency: 50/60 Hz

Operating temperature: -10/+55°C

Storage temperature: -25/+55°C

Protection level: IP54

Double insulation Class II



MS-911/2

Delivered with power supply
Weight: 0.370 kg

Accessories for MS-911 serie

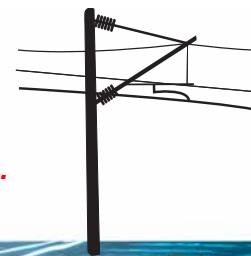
M-87369

Storage Bag



Lines, substations and installations

Low voltage a.c./d.c.



consumer units system, jumper cables

Short-circuiting system for underground networks

Icc = 4kA / 1 s.

Short-circuiting system for low voltage consumer unit especially designed for underground networks including:

- copper braids with 4 or 5 insulated conductors 25 mm² H07RNF type interconnected by an overmolded insulation brass contact piece.
- revolving extra small size contact clamps
- fork type adapters to fit fixed jaws in a fuse box or cabinet.
- Threaded adapters M6, M8, M10, M12 to fit threaded stems.
- Insulated spanner to tighten the extra small size clamps and equipped with a neon detector to verify voltage absence.
- insulating box spanner (10 / 17) to install threaded adapters.
- insulated eye spanner (13 / 14 / 17) for tightening of terminal pads.



MC-244/1	System with 4 cables
MC-245/1	System with 5 cables

Jumper cable with insulated jumper clamps

2 clamps MC-120.

Spring tightening. Connector for 8 mm cable Ø.

Tightening capacity: 12 mm (diameter - flat).

Rated insulation: 1 500 V. Rating 5 (kA/1 s).

Continuous rating 75 A.

1 insulated cable 25 mm² section.



Reference	Cable length (m)	Weight (kg)
MC-120/15	1.50	0.850
MC-120/50	5.00	1.950

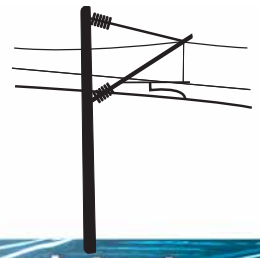
ISOMIL™
IEC 60900

Complete range of insulated tools for live working up to 1 000 Volts according to IEC 60900 standard. Each ISOMIL tool is controlled and tested to 10 000 Volts. This ensured by strict quality control procedures.



Lines, substations and installations

Medium voltage a.c.



voltage detectors

Electronic voltage detectors with contact electrode extension

Voltage presence is indicated by: IEC-61243-1 ⚠

- red flashing LED'S (very bright - visible at more than 50 m in direct lighting)
- powerful rated audible signal > 60 dB (A)/2 m

Check of working order:

- by pressing the TEST button:
 - red LED flashes on
 - sound signal is activated
- when TEST button is released:
 - timed green LED lights up. While remaining on, this LED indicates the good working order of the detector. It lights off as soon as the red LED lights up in case of a voltage presence.

This checking validates the good working order of the detector.

Characteristics

Detectors are adjusted, tested and controlled one by one. Precise and stable operating threshold. Reduced sensitivity to induced voltages.

Dielectrically tested on substation bars. High environmental resistance (impacts, vibrations, moisture). Temperature conditions: class N (IEC-61243-1 standard). storage and operation: -25 / +55 °C

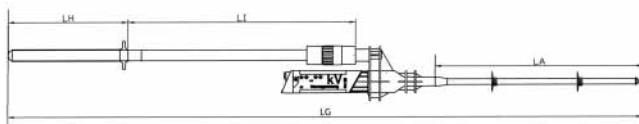
Robust housing.

Power supply: one 9-V alkaline battery type 6 LR 61.

The voltage detector is always ready for use, since it is on continuous monitoring conditions with almost no battery consumption. Under normal use conditions the batteries last more than a year.

Contact electrode extension fitted to the housing by screwing.

Delivered complete in a bag with insulating stick.



Reference	Voltage (kV)	Frequency (Hz)	LG (mm)	LH (mm)	LI (mm)	LA (mm)	Weight (Kg)
CC-575-5/15-BS	5-15	50	1.485	200	525	650	1.70
CC-575-10/20-BS	10-20	50	1.485	200	525	650	1.70
CC-575-10/30-BS	10-30	50	1.645	200	525	810	1.80
CC-578-15	15	16 2/3	1.650	970	580	545	1.95
CC-577-10/17.5	10-17.5	50	1.790	400	525	700	1.95

Voltage tester for M.V. separable connectors

Check the absence of voltage on the capacitive terminals of plug-in M.V. bushings.

Sensor in the form of a bent finger enabling removal and reinstallation of the terminal insulating cover.

Signal via beeping and bright red flashing of electro-luminescent diodes.

Built-in function test via the "TEST" button which covers the entire device.

Permanent stand-by state.

Power supply: four 1.5 V, R-6 batteries.

Mounting on insulating stick via a universal end.



CC-151-K	Tester in rigid case with batteries 70 x 100 x 165 mm - 0.70 kg
CC-45-K	Special 45 kV insulating stick L = 1.25 m - 0.6 kg

Voltage detector

For indoor use

Built-in device for checking operation of the led's indicator via a piezo-electric generator.

High-brightness led's indicator.

Sturdy thermo-plastic moulded case.

Pivoting contact electrode enabling wire contact at any angle.

Telescopic insulating stick.



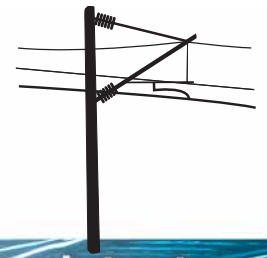
Operating voltage (kV)	Length (m)		Weight (kg)
	extended	folded	
5-40	1.26	0.85	0.95

CL-4-41/2	Delivered in a waterproof fabric case with strap - Weight: 0.95 kg
-----------	--



Lines, substations and installations

Medium voltage a.c.



voltage detectors

IEC electronic Voltage Detectors, "Compact serie" for indoor and outdoor use NEW

Ultimate technology of voltage detector "Head Capacitive Technology"

IEC-61243-1

CE

Compact and light

It offers:

- a wide band (10/36 kV)
- a universal application (50/60 Hz)

Voltage presence is indicated by:

- red flashing LED (very bright -visible at more than 20 m in direct lighting)
- powerful rated audible signal > 60 dB(A)/2 m

Operating check:

By pressing the TEST button, correct operation is indicated as follows:

- a red LED flashes on
- sound signal

(during and after this test, the timed green LED lights up. While remaining on, it indicates the good working order of the detector)

Characteristics:

- Detectors have unitary adjustment and are checked by routine test
- Dielectrically tested on substation bars (bridging test)
- Precise and stable operating threshold
- Reduced sensitivity to induced voltages
- Reduced sensitivity to interference field
- High environmental resistance (impacts, vibrations, moisture)

Use from 50 to 60 Hz

Temperature conditions: class N (IEC-61243-1 standard).

Storage and operation: -25 / +55 °C

Robust housing.

Power supply: 1 x 9 V alkaline battery type 6 LR 61

Contact electrodes fitted to the housing by screwing and are easily interchangeable.

End fittings:

C = hexagonal 12 mm, for hexagonal end-fitting sticks.

K = universal, for universal end-fitting sticks.

Weight of the detector: 420 g

Size of the detector: Ø 59 x 270 mm

Packaging: unit supplied complete in a case with batteries and contact electrodes.

Total weight: 1100 g

Total size: 340 x 275 x 83 mm

* Specify type of mounting when ordering: C or K.

Recommended stick:

CE-4-21. See page 48.



CC-875-C

CC-875-K



C

K

For other voltages, please consult us.

Frequency 50/60 Hz	
Reference	Operating voltage (KV)
CC-875-10/36*	10-36
CC-875-11/33*	11-33
CC-875-25	25

* Specify type of mounting when ordering: C or K.



Lines, substations and installations

Medium voltage d.c.



voltage detectors

d.c. voltage detector acoustic and optical signal

NEW

Two-pole voltage detector for the presence of voltage equipped with a flexible cable terminated by a contact clamp.

- Presence of voltage is indicated by:
 - illumination of 6 red LEDs
 - an audible signal (60 dbA/2 m)

• Correct operation check:

Correct operation of the equipment is verified:

- by pressing the test button which causes:

- illumination of the 6 red LEDs
- activation of the audible signal

and

- by releasing the test button which causes:
 - temporary illumination of 6 green LEDs

The correct operation check consists in a built-in device. It checks all of the detector's functions.

• Characteristics:

No previous voltage adjustment required

Routine operations in factory to adjust and test the equipment

- Power supply: 1 x 9 V alkaline battery, type 6 LR 61
- Supplied in plastic case
- Weight: 6 kg
- Cable length: 8 m
- Clamping capacity: 5-33 mm



Reference	Field of use	Fitting	Contact-piece	Total length (mm)
ZVATDC 2000 HS	600-2000	H	ANTP	415
ZVATDC 2000 RS	600-2000	R	ANTP	485
ZVATDC 3000 HS	750-3000	H	ANTP	415
ZVATDC 3000 RS	750-3000	R	ANTP	485
ZVATDC 4000 HS	1500-4000	H	ANTP	415
ZVATDC 4000 RS	1500-4000	R	ANTP	485

d.c. voltage detector acoustic and optical signal

NEW

Two-pole voltage detector for the presence of voltage equipped with two insulating sticks.

- Presence of voltage is indicated by:
 - illumination of 6 red LEDs
 - an audible signal (60 dbA/2 m)

• Correct operation check:

Correct operation of the equipment is verified:

- by pressing the test button which causes:

- illumination of the 6 red LEDs
- activation of the audible signal

and

- by releasing the test button which causes:
 - temporary illumination of 6 green LEDs

The correct operation check consists in a built-in device. It checks all of the detector's functions.

• Characteristics:

No previous voltage adjustment required

Routine operations in factory to adjust and test the equipment

- Power supply: 1 x 9 V alkaline battery, type 6 LR 61
- Supplied in plastic case
- Weight: 6 kg
- Cable length: 2 m



Reference	Field of use	Contact-piece	Total length (mm)
ZVATDC 3000 PS	750-3000	ANTP	910

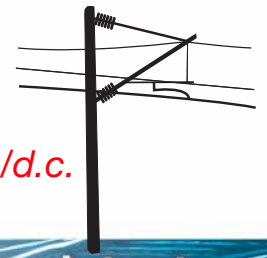
Contact-piece



Reference	Total length or diameter (mm)	Reference	Total length or diameter (mm)
ZANTP	36	ZANTC 12	120
ZANTC 06	60	ZANTC 20	400
ZANTD 10	100		



Lines, substations and installations



Medium voltage a.c./d.c.

voltage detectors

Two-pole phase comparator for indoor and outdoor use (a.c./d.c.)

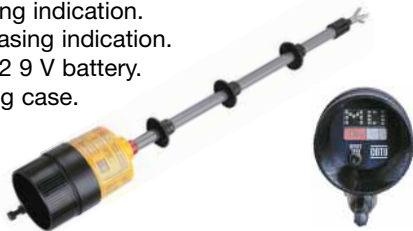
Precise indications provided by the galvanometer needle; dials are calibrated according to voltage. Assessment of the voltage value on testers/measurers. Complete function testing built-in, with TEST push-button (battery supplied). Consists of two elements connected by a high-insulation lead. Removable handles. Device delivered in metal case. 140 x 250 x 850 mm - 7.5 kg.



Reference	Voltage (kV)	Dial scale (kV)	Observations
Phase tester			
CL-5-33-GB	11-33	11-33 A. C/D. C	Straight & angled antennae
CL-5-36	5-36	5-10-15-20-25-30-36 A. C/D. C	Straight antennae
Tester-measurer			
CL-5-03	0.75-3	0.75-1-1.25-1.5-3 A. C/D. C	Straight antennae

Single pole phase comparator for indoor and outdoor use (a.c.)

Frequency and voltage phase memory. Integrated TEST push-button. Orange LED = indication that frequency and voltage are in memory. Green LED = phasing indication. Red LED = non-phasing indication. Powered by a LF 22 9 V battery. Delivered in carrying case.



Reference	Voltage (kV)	Length of antenna (m)
CL-7-06/18*	6-18	0.85
CL-7-10/30*	10-30	0.85
CL-7-10/30-1*	10-30	1.15
CL-7-12/36*	12-36	1.20

* Please specify type C or K when ordering.

For other voltages, please contact us.

Bipolar detector for d.c. networks

Two-pole voltage detector for the presence of voltage between the catenary and the rail

- Presence of voltage is indicated by:
 - illumination of 6 red LEDs
 - an audible signal (60 dbA/2 m)
- Correct operation check: Correct operation of the equipment is verified:
 - by pressing the test button which causes: illumination of the 6 red LEDs
 - activation of the audible signal
 - and
 - by releasing the test button which causes: temporary illumination of 6 green LEDs

The correct operation check consists in a built-in device. Stand-by state

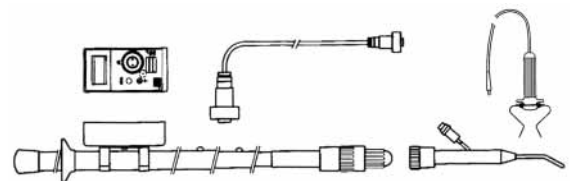
No previous voltage adjustment required
Routine operations in factory to adjust and test the equipment

Detector fixed to stick, attachment to rail by metal spring-contacts

Power supply: 1 x 9 V alkaline battery, type 6 LR 61
Stick included in pack: CC-1515-101
Supplied in carrying case: CM-303



Reference	Voltage (KV)
CC-1515-100	0,6 - 1,5



Telescopic insulating stick, 3 elements, fully folded/extended: 1,65 x 3,95 m, including:

- Regulation piece of intermediary position.

Reference	Voltage (KV)
CC-1515-101	0,6 - 1,5



Lines, substations and installations

Medium voltage a.c./d.c.



short-circuiting and earthing systems

Clamps for MV installations and substations

Earth cable connection

With a crimped lug (12 mm Ø hole).

Material

Aluminium alloy except MT-814, MT-1911 and MT-1921: copper-aluminium bronze.



MT-812-C

MT-817-C

MT-813-C

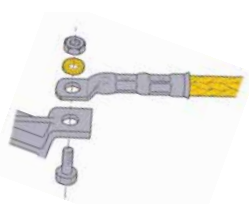
MT-814/2
MT-814/3



MT-815-C

MT-815-S1

MT-1911-E
MT-1921-E



Reference	Weight (kg)	Dimensions (mm)	Conductors (mm)
MT-812-C	0.320	35 x 79 x 143	• Ø 5-16 ■ 0-16
MT-813-C	0.330	35 x 79 x 169	■ 40 x 16
MT-814/2-C	0.660	85 x 56 x 192	• Ø 5-28
MT-817-C	0.330	30 x 90 x 140	• Ø 5-16 ■ 40 x 16
MT-814/3-C	0.620	85 x 56 x 195	• Ø 18-33
MT-815-C MT-815-E MT-815-S MT-815-S1	0.650	44 x 100 x 180	• 5-35 ■ 16-40 ■ 5-40
MT-1911-E	0.580	For permanent fixed point Ø 20 mm	
MT-1921-E	0.69	For permanent fixed point Ø 25 mm	

Earth clamps

Copper aluminium bronze earth clamps.



MT-840/1

MT-841

MT-1911
MT-1921

For bare conductors

Reference	Weight (kg)	Connection	Conductors (mm)
MT-840/1	0.48	Connector: TO-08 - 35 mm ²	• Ø 6-25 ■ 0-25
MT-841	0.48	Connector: ≤ 50 mm ²	• Ø 6-25 ■ 0-30

For fixed point

Reference	Weight (kg)	Connection conductors (mm)
MT-1911	0.58	Spheric fixed points MT-2951 Ø 20 mm Round conductors Ø 8 to 18 mm
MT-1921	0.69	Spheric fixed points MT-3951 Ø 25 mm Round conductors Ø 10 to 25 mm

Fixed points

IEC-61230



MT-2951
MT-3951
MT-3952

MT-2951/1
MT-2951/2
MT-3951/1
MT-3952/1

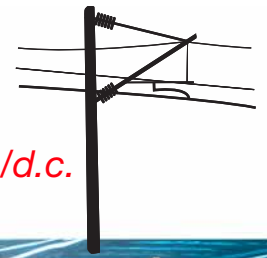
For flat conductors

Reference	Sphere dimension (mm)	Weight (g)	Fixing
MT-2951	Ø 20	130	Thread: M 12
MT-2951/1	Ø 20	180	Bolt: M 12 - L = 35 mm
MT-2951/2	Ø 20	200	Bolt: M 12 - L = 45 mm
MT-3951	Ø 25	240	Thread: M 12
MT-3952	Ø 25	240	Thread: M 16
MT-3951/1	Ø 25	300	Bolt: M 12 - L = 45 mm
MT-3952/1	Ø 25	350	Bolt: M 16 - L = 45 mm



Lines, substations and installations

Medium voltage a.c./d.c.



short-circuiting and earthing systems

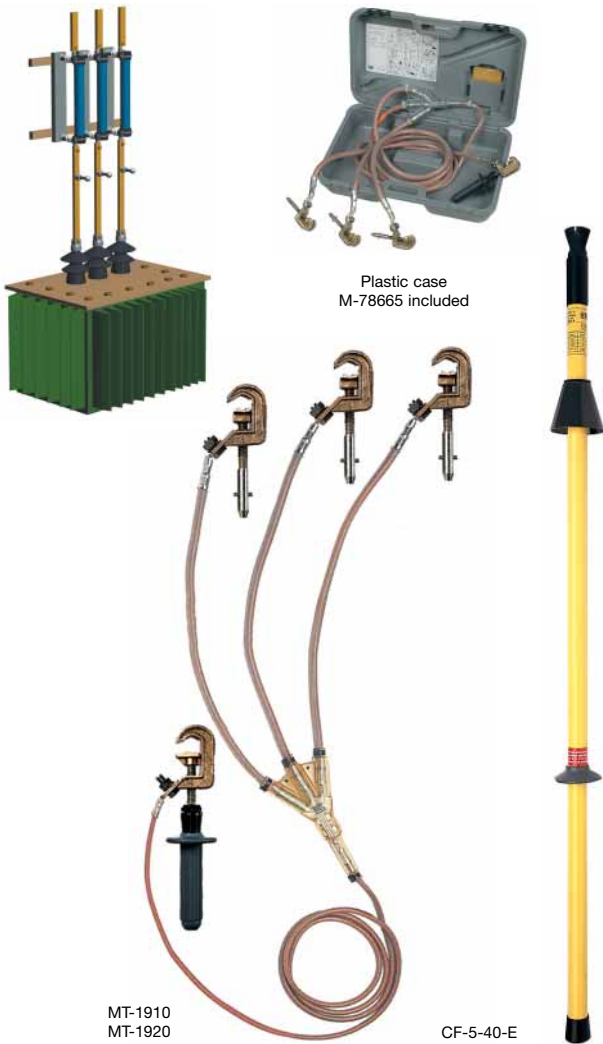
IEC short-circuiting and earthing systems for MV substations

These equipment are intended for connection: to permanent fixed points or to bare conductors. They consist of 3 contact clamps. 1 short-circuit earthing connection set consisting of 3 extra-flexible copper cables with silicone sheath, L = 1.5 m each. 1 trifurcation connector earthed by an extra-flexible copper cable with silicone sheath, L = 2.5 m. 1 earthing clamp. 1 plastic case (M-78665).

IEC-61230

Installation on permanent fixed points

Installation on bare conductors



Reference	MT-1910	MT-1920
Icc (kA/1 s)	20	30
Installation on fixed points	Ø 20 mm MT-2951 range	Ø 25 mm MT-3951 range
Composition	3 clamps MT-1911-E 1 MT-1911	3 clamps MT-1921-E 1 MT-1921
Connection set	3 cables 95 mm ² 1 earth cable 35 mm ²	3 cables 150 mm ² 1 earth cable 50 mm ²
Sticks**	CF-5-40-E	CF-5-40-E

** Stick to be ordered separately.

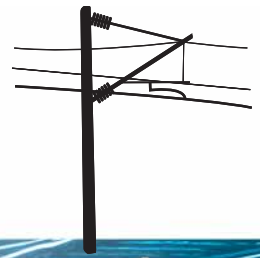
Reference	MT-5805	MT-9801
Icc (kA/1 s)	20	10
Conductors (mm)	● Ø 5-35 ┃ 16-40 ┃ 5-40	● Ø 5-16 ┃ 0-16 ┃ 40-16 ● Ø 5-28
Composition	3 clamps MT-815-C 1 earth clamp MT-840/1	3 clamps MT-817-C 3 clamps MT-814/2 1 earth clamp MT-840/1
Connection set	3 cables 95 mm ² 1 earth cable 35 mm ²	3 cables 50 mm ² 1 earth cable 25 mm ²
Sticks**	CE-4-21-C	CE-4-21-C

For earthing systems to your own specifications, please see page 63.



Lines, substations and installations

Medium voltage a.c.



short-circuiting and earthing systems

Short-circuiting and earthing systems for switchgear and metalclad switchgear



Short-circuiting and earthing systems for 250 A separable connectors

Rating = 12.5 kA/1 s.

Equipment consisting of:

3 terminals, each fitted with a "handarff device" for locking.

1 terminal connecting kit, with double-crimped connectors

- 3 copper cables, 70 mm² section, length ~ 0.70 m

- 1 copper cable, section 35 mm², length ~ 2 m

- 1 earthing clamp MT-840/1

- 3 padlocks AL-230-S.



MT-8612

Delivered in metal box
620 x 195 x 150 mm - Weight: 7.6 kg

Stand by devices

Allows the supply under voltage

Equipment composition:

3 insulating "EPDM" interfaces

3 padlocks.



MT-8601

MT-8602

For 250 A separable connectors

MT-8601

Delivered with 3 padlocks AL-230 in metal case
315 x 160 x 150 mm - Weight: 4 kg

For 400 A separable connectors

MT-8602

Delivered with 3 padlocks AL-230 in metal case
315 x 160 x 150 mm - Weight: 5.8 kg

Short-circuiting and earthing systems for 400 A separable connectors

Rating = 12.5 kA/1 s

Equipment consisting of:

3 terminals, each fitted with a bolted stirrup for locking.

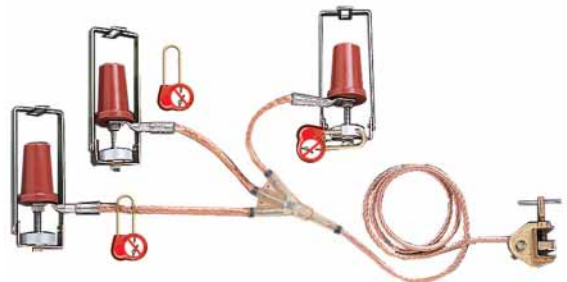
1 terminal connecting kit, with double-crimped connectors

- 3 copper cables, 70 mm² section, length ~ 0.40 m

- 1 copper cable, section 35 mm², length ~ 2 m

- 1 earthing clamp MT-840/1

- 3 padlocks AL-230-S.



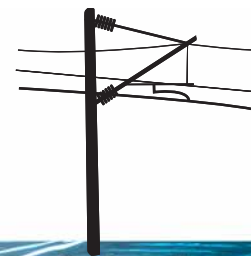
MT-8614

Delivered in metal box
480 x 340 x 195 mm Weight: 13.5 kg



Lines, substations and installations

High voltage a.c.



voltage detectors

63 to 550 kV electronic voltage detectors for indoor and outdoor use

Designed to give users maximum safety, the DETEX detectors of the CC-245 Series are the result of the most modern developments in electronic research. They offer a number of important properties and advantages.

Double signalling

Voltage presence indicated at the same time by:

- 4 extremely bright red flashing electro-luminescent diodes (visible at more than 50 meters even in direct lighting),
- a powerful rated acoustic signal (60 dB/2 m).

Checking

Satisfactory operation of the unit is indicated:

- When pressing the test button, by:
 - the red diodes flashing,
 - the acoustic signal sounding.
- When releasing the TEST button, by:
 - timed green up diodes lighting.

As long as they light, the unit continues its self-testing and the detector is fully operational.

High specifications

- Detectors are adjusted, tested and controlled one by one.
- Remarkably resistant to impacts, vibrations, extreme temperatures, humidity and sudden changes in the atmosphere (condensation, freezing).
- Precise and stable operating threshold. Insensitivity to induced voltages by limiting the operating voltage range.
- Robust housing made from polycarbonate with high mechanical properties and dielectric strength.
- The contact electrodes are simply screwed to the housing and are therefore easily interchangeable.

Power supply

- One 9 V battery type 6 LR 61.

End fittings:

- "C" for hexagonal sticks.
- "K" for universal sticks.

Weight

500 g (with battery).

Packaging

Units supplied complete with battery and electrode in a rigid synthetic case with handle.

- **Recommended sticks: CM-46...** serie. See pages 15/43.



CC-245-63/90-C



CC-245-150/420-K

Reference	Operating voltage (Ph/Ph-kV)	Contact electrode Ø (mm)	Body colour	Freq. (Hz)
FRENCH STANDARD NETWORKS				
CC-245-63/90...*	63-90	120	Yellow	50
CC-245-225/420...*	225-420	200	Red	50
BRITISH STANDARD NETWORKS				
CC-245-66/132-K	66-132	200	Red	50
OTHER MODELS				
CC-248-110-K	110	120	Red	16 2/3
CC-245-63/150-K	63-150	120	Red	50
CC-245-90/225-K	90-225	120	Red	50
CC-245-150/420-K	150-420	200	Red	50
CC-245-225/550-K	225-550	200	Red	50

* Please specify type of mounting when ordering: C or K.

For other voltages, or 60 Hz Frequency detectors (CC-246 Serie) please consult us.



Lines, substations and installations

High voltage a.c./d.c.



clamps

HV and EHV clamps manoeuvrable by insulating stick

Body in aluminium alloy with trapezoidal threaded screw. Interposed elastic washers in the clamping system improve efficiency and insure a higher withstand in case of electrodynamic shock. Manoeuvring by **CM-6** insulated stick of appropriate length and characteristics.



MT-731



MT-732



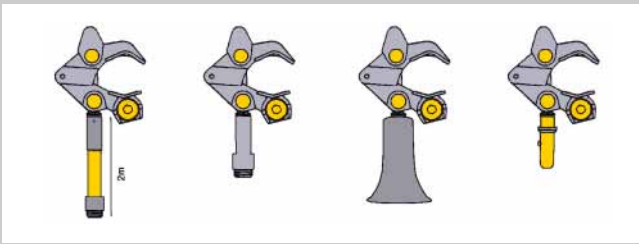
MT-734



MT-735



MT-737-H

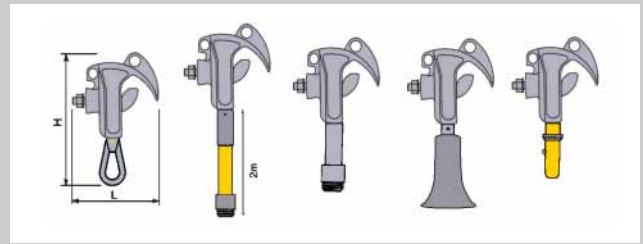


MT-732-A
MT-731-A

MT-732-B
MT-731-B

MT-732-E
MT-731-E

MT-732-H
MT-731-H



MT-734
MT-735

MT-734-A
MT-735-B

MT-734-B
MT-735-B

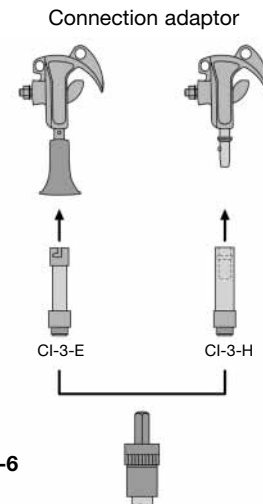
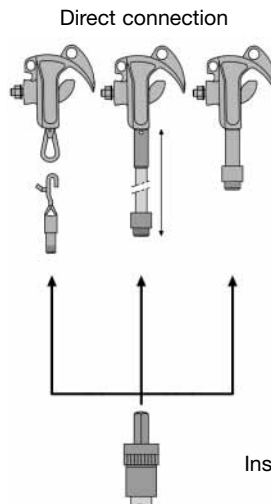
MT-734-E
MT-735-E

MT-734-H
MT-735-H

Reference	Clamping capacity (Ø mm)	Rating insulation (kA/1 s)	I asymmetrical (A)	Copper connection			Weight (Kg)	Dimensions (mm) h x L x thickness
				Copper cables (mm² max.)	Ø range (mm)	Stud or hole		
MT-731*	5-60	40	92	150	45	M 12	1.45	200 x 200 x 50
MT-732*	40-120	40	93	150	45	M 12	1.45	200 x 200 x 50
MT-734*	5-40	40	92	150	45	M 12	0.8	145 x 125 x 52
MT-735*	15-60	40	92	150	58	M 12	0.8	195 x 135 x 45
MT-737-H	20-120	40				M 12	1.35	340 x 200 x 55

* Add type of connection A - B - E - H.

Attachment of **MT-734/MT-735** clamps with **MT-717-3-B** hook.

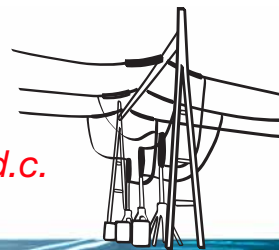


Insulated sticks **CM-6** see page 44.



Lines, substations and installations

High voltage a.c./d.c.



insulating sticks, accessories

Insulating sticks for short-circuiting and earthing systems

Made of IEC-60855 orange foam filled tube, these Ø 39 mm dia. elements are assembled using a new safety bayonet system connector in aluminium alloy. They allow construction of a large variety of custom made sticks that meet the most varied conditions of application. Calibrated lengths of 1 to 3 meters (with fraction of 0.50 m) permit a huge number of applications.

This range thus allows a stick-length limitation in case of space requirements and carrying capabilities.

IEC-60855

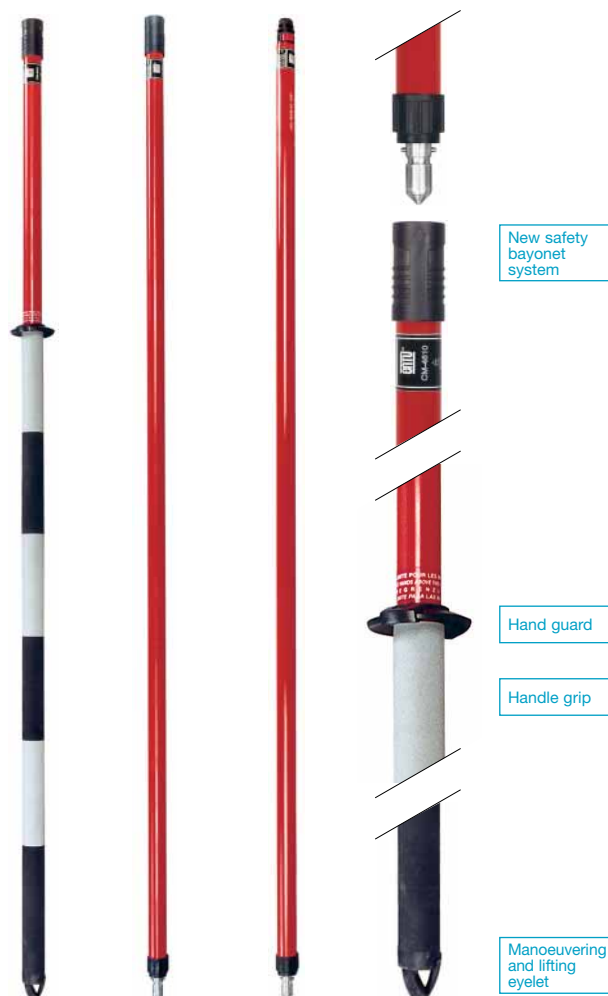
For common applications a serie of complete sets including 2 or 3 elements are made to give simple solutions for working distance from 2 to 6 meters.

CM4000

Reference	Complete stick length (m)*	Complete stick length (m)**	Insulating length (m)	Weight (kg)
Basic elements				
CM-4610	1.13		0.08	1.35
CM-4615	1.63		0.33	1.80
CM-4620	2.13		0.33	2.80
CM-4625	2.63		0.83	3.30
Intermediate element				
CM-4610-I	1.165		0.8	1.30
CM-4615-I	1.665		1.3	1.70
CM-4620-I	2.165		1.8	2.60
CM-4625-I	2.665		2.3	3.10
Terminal elements				
CM-4610-*	1.115	1.21	0.78	1.00
CM-4615-*	1.615	1.71	1.28	1.40
CM-4620-*	2.115	2.21	1.78	2.20
CM-4625-*	2.615	2.71	2.28	2.70
Fixed length sticks				
CM-4115-*	1.575	1.675	0.82	1.35
CM-4120-*	2.075	2.175	1.07	1.80
CM-4125-*	2.575	2.675	1.32	2.80
CM-4130-*	3.075	3.175	1.82	3.30

* Add end piece C, K, E.

- With the smallest end fitting.
- With the biggest end fitting.



Carrying and storage stick case

Case especially designed for Ø 39 mm new range sticks. Carrying capacity: 3 elements.



CM-3000 480 x 330 x 120 mm - Weight: 1.2 kg

Set of sticks

Complete sets of sticks for standard applications.

IEC-60855

Reference	Working distance (m)	Composition
CM-4220*	2	2 elements: CM-4610 + CM-4610-*
CM-4230*	3	2 elements: CM-4615 + CM-4615-*
CM-4240*	4	2 elements: CM-4620 + CM-4620-*
CM-4330*	3	3 elements: CM-4610 + CM-4610-I + CM-4610-*
CM-4345*	4.5	3 elements: CM-4615 + CM-4615-I + CM-4615-*
CM-4360*	6	3 elements: CM-4620 + CM-4620-I + CM-4620-*

* Add end piece C, K, E.



Lines, substations and installations

High voltage a.c./d.c.



insulating sticks, accessories

Insulating sticks for short-circuiting and earthing systems

- 46 mm dia. single type elements, yellow colour, with superior characteristics, they are connected between them without any prior order of assembly.
- These elements allow "long length" assemblies which can support short-circuit systems with large cross-section cables.
- Shockproof guard and pole end cap.

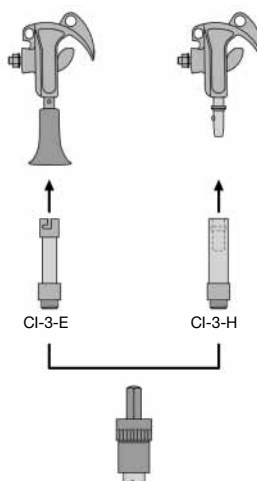


Reference	Length (mm)	Weight (Kg)
CM-6-15	1.5	2.40
CM-6-20	2.0	3.20
CM-6-25	2.5	4.00
CM-6-30	3.0	4.80

For cables $\geq 95 \text{ mm}^2$ CM-6 series is recommended.

Connection adaptors for insulating sticks

- For earthing systems



- For voltage detectors

Accessories	E	C
Connection adaptors	CI-7-E	CI-6-C
Sticks	K	K

Earthing kit support

- Welded steel assembly with galvanization surface treatment.
- Writing zone available.



MT-895 230 x 230 x 150 mm - Weight: 0,9 Kg

Short-circuiting and earthing systems carrying bags

Strong water proof canvas. Reinforced bottom.

M-87-53	380 x 250 - Height: 400 mm - Weight: 2 kg
M-87-153	380 x 250 - Height: 600 mm - Weight: 2.5 kg
M-87-295	550 x 300 x 300 mm - Weight: 2 kg



M-87-295



M-87-53



Lines, substations and installations

High voltage a.c./d.c.

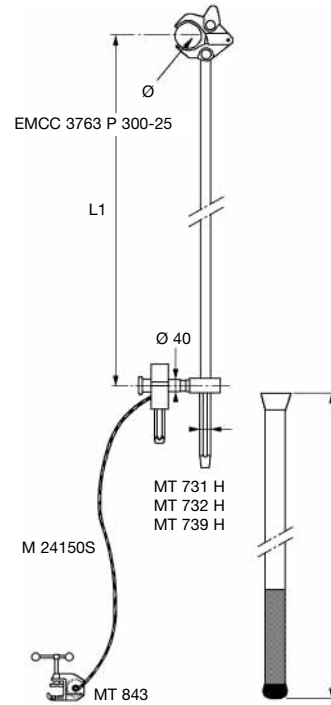
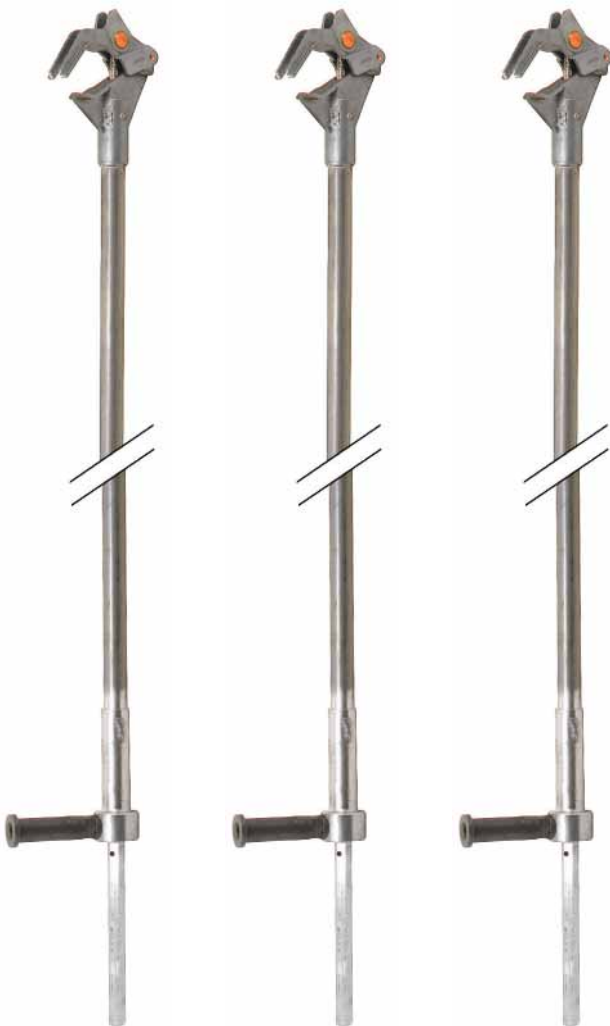


extended clamps for high level busbar in HV substations

Extended clamps for high level busbar in HV substations

Assembly includes:

- One aluminium alloy electrical tube (lcc = 25 kA / 1 s), on top of which is an aluminium alloy contact clamp and on bottom an access point on which will be installed the grounding clamp.
- In the inside of the previous tube is a second one allowing the clamp to be tightened over busbar conductor or pipe by means on the bottom side of a rod connector type FL so that the assembly can be installed with an insulating stick ref. ZPL9R FL.



Switch clamps

- ZPL9R FL: insulating sticks \varnothing 47 mm of yellow colour, length 3 or 4 m, equipped on one end with a hex female connector 26 mm on flat and on the other side with a rubber cap handle to ensure a firm grip.



Reference	L 2 (m)
ZPL9R 130 FL	3.00

Reference	L 1 (m)	Ø (mm)	lcc (kA / 1 s)
ZEMCC 3763 P 300-25	3.00	40 - 120	25



Lines, substations and installations

High voltage a.c./d.c.



cables and earth clamps

Copper cables

Transparent silicon sheath according to IEC-61230 . Resistant to temperature variations (-40 °C to +70 °C) with double IEC triangle marked on cable section.

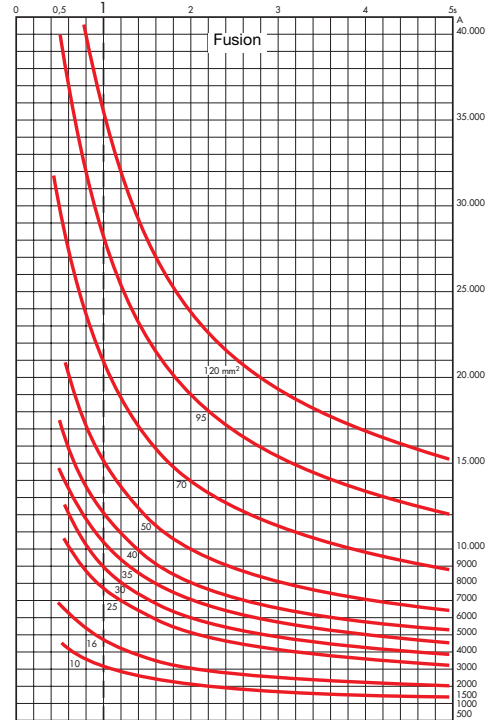


IEC-61230	Rating (kA/1 s)	Weight (kg/m)	Cable Ø (mm)	Section (mm ²)
M-24-50-S	12	0.545	10	50
M-24-70-S	16	0.768	12	70
M-24-95-S	20	1.000	14	95
M-24-120-S	30	1.280	17	120
M-24-150-S	36	1.630	19	150

For leads with double-terminated lugs, please consult us.

To indicate your short-circuiting and earthing system, use warning earth flag and for definition of your working zone: see page 10.

Copper cables only: Heating curves (Gut & Grundberg method)



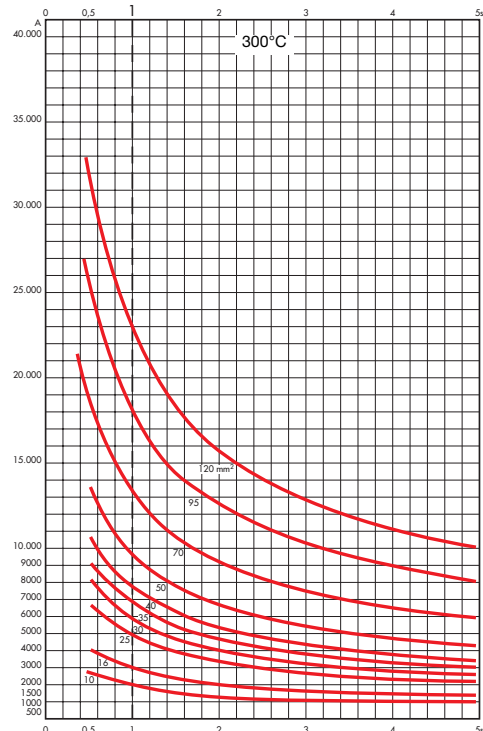
Earth clamps

Copper aluminium bronze earth clamps.



Reference	Rating insulation	Dimension (mm) Weight (kg)	Connection	Clamping capacity (mm)
MT-843	40 kA/1 s	45 x 106 x 165 0.95	Hole: Ø 13 mm	● Ø 6-35 ■ 0-35
MT-847	30 kA/0.5 s	45 x 106 x 170 1.00	Hole: Ø 13 mm	■ 0-25
MT-852	40 kA/1 s	70 x 125 x 155 1.40	Hole: Ø 13 mm	Fixed points
MT-853	40 kA/1 s	65 x 130 x 135 1.00	Hole: Ø 13 mm	Fixed points

Copper cables only: Heating curves - 300 °C





Lines, substations and installations

High voltage a.c./d.c.



fixed points, access points

Adjustable fixed points

For large vertical or oblique heavy duty conductors.



Reference	Rating insulation (kA/1 s)	Weight (kg)	Dimensions L x W x T (mm)	Conductors Type	Conductors Ø (mm)	Description
MT-790	30	1.400	255 x 105 x 50	Copper	12-60	arm Ø 18 mm
MT-792	30	0.855	270 x 105 x 60	Aluminium	12-60	arm Ø 20 mm
MT-797	20	1.200	240 x 170 x 60	Aluminium	60-120	arm Ø 20 mm

Access points

All our saddles are delivered with copper-aluminium bolt, screw, nut and lock nut.

On request, earthing clamps can be supplied with bi-metallic plate and washer.



ZSTA1



ZSTDA1

Single access points (single or double)

Reference	Cable area (mm ²)	HR Bronze bolt	Short circuit value	Base A to B
ZSTA 1-75	75	12 x 50	20 000 A / 1 s	50 x 30
ZSTDA 1-75	75	12 x 70	20 000 A / 1 s	50 x 30



ZSTN147



ZSTDN75

Access points (single or double)

Reference	Cable area (mm ²)	HR Bronze bolt	Short circuit value	Base A to B
ZSTN 75-116	75-116	12 x 50	30 000 A / 1 s	50 x 30
ZSTN 147	147	14 x 50	40 000 A / 1 s	50 x 30
ZSTN 181	181.6	16 x 50	63 000 A / 0,5 s	54 x 31
ZSTDN 75-116	75-116	12 x 70	30 000 A / 1 s	50 x 30
ZSTDN 147	147	14 x 70	40 000 A / 1 s	50 x 30
ZSTDN 181	181.6	16 x 80	63 000 A / 0,5 s	54 x 31



ZSTA2



ZSTDA2

Double access points (single or double)

Reference	Cable area (mm ²)	HR Bronze bolt	Short circuit value	Base A to B
Single or double				
ZSTA 2-116	75-116	12 x 50	30 000 A / 1 s	50 x 30
ZSTA 2-147	147	14 x 50	40 000 A / 1 s	50 x 30
ZSTA 2-181	181.6	16 x 60	63 000 A / 0,5 s	54 x 31
ZSTDA 2-116	75-116	12 x 70	30 000 A / 1 s	50 x 30
ZSTDA 2-147	147	14 x 70	40 000 A / 1 s	50 x 30
ZSTDA 2-181	181.6	16 x 80	63 000 A / 0,5 s	54 x 31
Double position (type CRTT)				
ZSTA 2-147 DP	75-147	12 x 50	1 cable	
ZSTDA 2-147 DP	75-147	12 x 70	2 cables	
ZSTA 2-116 USI	75	12 x 50	30 000 A / 1 s	50 x 30
ZSTA 2-147 USI	75	14 x 50	40 000 A / 1 s	50 x 30



Lines, substations and installations

High voltage a.c./d.c.



accessories

Telescopic sticks

Telescopic sticks for voltage detectors and earthing systems for use in dry and wet conditions. Telescopic stick contains 2 elements made of polyester/fiberglass foam filled tube, which slide together and are equipped with a push button lock. **IEC-61235**

	Rated insulation (kV)	Ø (mm)	Overall length (m)		Weight (kg)
			folded	extended	
CE-4-21*	90	41/32	1.15	2.00	1.50

* Add end-piece C, K or E.

Fixed length stick for use in dry and wet conditions

Manufactured from 36 mm dia. elements, with single 100 dia. skirts, light and rigid, shock resistant. **IEC-61235**

	Rated insulation	Ø (mm)	Overall length (m)	Weight (kg)
CE-5-40*	40	36	1.50	1.15

* Add end-piece C, K or E.

Extension for insulating sticks

Extension with a male end-piece. **IEC-61235**

Reference	Length (m)	Weight (kg)
CM-7-10-A	1.00	1.10

Insulating clampstick

Reference	Length (m)	Weight (kg)
MG-115/1-S	1.5	2.80

Wall mounted supports

For sticks and voltage detectors. Plastic. Delivered with wood screws

	Top	Bottom
CI-06-D	Ø 28-30 mm	Ø 36 mm max.
CI-10-D	Ø 28-36 mm	Ø 58 mm max.
CI-12-D	Ø 28-30 mm	Ø 58 mm max.



CE-4-21-C

CF-5

CM-7-10-A

MG-115/1-S

Top

Bottom



Personnel protective equipment

Head and eyes protection

50

Insulating rubber gloves

51

Insulating platforms

53

Insulating mats and boots

54



Personnel protective equipment



head and eyes protection

ABS helmet

Electrically insulating helmets for use on low voltage installations. Safety industrial helmet, safety helmet for electrical use, especially designed to maximize wearer's comfort. Standard sizes 53 to 63. Leather trim 21 cm along the inside for added comfort. Multiple adjustments for a perfect fit - headband: adjustable in 3 mm increments. Built-in cushion for optimum ventilation. Safety chin strap: fastenings to shell tear resistant. Weight: 0.300 kg.



EN 397
EN 50365 ⚡
ANSI 789.1/1986
20000 V
CE

MO-182/1-B	White
MO-182/1-R	Red

Polycarbonate helmet

Polycarbonate helmet. Shock and wear resisting, comfortable. Adjustable size from 53 to 63 cm. Weight: 0,465 Kg.



EN 397
CE

MO-183-BL	White, single size, adjustable
MO-183-RL	Red, single size, adjustable

Helmet with built-in face shield

Panoramic face shield in non-scratch and anti-mist polycarbonate. Chinstrap (with Velcro fastening) Head fit adjustment by milled wheel.



EN 166/EN 170/EN 397
CE

MO-185-BL	Single size - Weight: 0.270 kg
M-881622	Spare face shield for MO-185-BL

Face shield

Face shield adjustable on MO-182 helmet. 100% UV protection. Weight: 0.170 kg.



EN 166/EN 170
CE

MO-184

MO-184	Single size, adjustable by rubber band
--------	--

Face shield

Polycarbonate face shield adjustable on the head by milled wheel. Protection against electric arcs of short-circuits. Anti-condensation treatment. Caution: Do not use for welding operations.



EN 166/EN 170
CE

MO-186	Single size, adjustable
M-881635	Spare face shield for MO-186
M-87384	Bag for face shield and helmet

Safety glasses

Protection against UV radiation and ejections of solid particles. Grilamid frame in orange Softflex. Anti-scratch, anti-impact and anti-chemical product treatments. Caution: Do not use for welding operations.

EN 166/EN 170
CE



MO-11000



MO-11001

MO-11000	Clear lenses, delivered in pouch
MO-11001	Tinted lenses, delivered in pouch

Overglasses

Polycarbonate overglasses. Protection against UV radiation and ejections of solid particles. Caution: Do not use for welding operations.

EN 166/EN 170
CE



MO-11010



MO-11011

MO-11010	Clear lenses
MO-11011	Green tinted lenses



Personnel protective equipment



headlamp, insulating rubber gloves

Headlamp with adjustable focus

Can be carried either on the head or any type of helmet.
Lighting control and beam adjustment with one movement, even wearing gloves.
Adjustable lamp height angle.
Locking of switch into off position. Sealed against rain.
Polyamide box, unbreakable polycarbonate glass, shielded cable.
Incorporated replacement bulb.
Powered by 4.5 V battery (3 LR 12) or with 3 batteries (LR 6) and adaptor.

CE



MS-118	Headlamp, weight: 0.145 kg
M-95-865	Halogen bulb
M-95-864	Hooks set for helmet

Insulating rubber gloves

Insulating rubber gloves conform to international IEC-60903 standard.
To satisfy the requirements of this standard, they are subjected to dielectrical, mechanical resistance and ageing tests.
Our gloves are made of latex especially treated to obtain high dielectric characteristics; they are individually tested and delivered in sealed plastic bags.

IEC-60903
CE



Reference	Class	Voltage (V)	Thickness (mm)	Designation	Weight (g)
CG-05 (*)	00	500	0.5	Latex	90
CG-10 (*)	0	1 000	1.0	Latex	200
CG-15 (*)	1	7 500	1.5	Latex	270
CG-20 (*)	2	17 000	2.3	Latex	450
CG-30 (*)	3	26 500	2.9	Latex	560
CG-40 (**)	4	36 000	3.6	Latex	800

* References to be completed by size A, B, C or D.

** References to be completed by size C or D.

Correspondence with standard sizes: A = 8, B = 9, C = 10, D = 11.

LED's Headlamp

Can be carried either on the head or any kind of helmet.
- Lighting by 3 high performance LEDs.
- 3 lighting levels.
- Adjustable lamp height angle.
- Very light, waterproof IP65.
- Range: 10 to 15 meters.
- Powered by 3 batteries LR 03 (AAA).
- Autonomy: 80 hours.

CE



MS-121	Delivered with batteries and a carrying bag Weight: 0.09 kg
M-95-864	Hooks set for helmet

Lighting by 5 white new generation LEDs
5 light modes: Red on, Power save, Medium, Bright, Blinking.
Can be carried either on the head or any type of helmet.
Powered by 4 batteries LR 06 (AA).
Range: 30 meters.
Autonomy: 100 hours.
IPX6.

CE



MS-127	Delivered with batteries and a carrying bag Weight: 0.226 kg
M-95-864	Hooks set for helmet



Personnel protective equipment



insulating rubber gloves

Undergloves

Cotton undergloves.
To be used with insulating rubber gloves.



CE

CG-80 (**)

** H: men / F: women

Pneumatic glove tester

For compulsory control of gloves before use.
Checking is done by inflating and immersing in water.



CG-117

140 x 150 x 160 mm - Weight: 0.600 kg

Rubber gloves storage box with window

To be placed in high voltage stations.
Insulating material, shock resistant, yellow colour.
Transparent window (enables to check gloves presence).
Bottle of talc included.
Attachment: 4 holes 3.5 mm dia., centre distances 155 x 345 mm.
U.V. protection window.



CG-35/1

60 x 210 x 460 mm - Weight: 0.730 kg

Working gloves

Handling leather and cotton gloves. Docker type.

EN 388

CE



CG-96 (*)

Weight: 0.115 kg

Carrying box

Made from reinforced waterproof fabric for transport of rubber gloves in vehicles and tool boxes.
Rear loop for belt and snaps.



CG-36

60 x 180 x 400 mm - Weight: 0.120 kg

Overgloves

Used as outer glove.
Silicon grain leather, very flexible.
Large protective cuff in chrome tanned hide.
Adhesive strap.

CE



CG-98 (*)

Weight: 0.170 kg



Personnel protective equipment



insulating platforms, rescue sticks

Insulating platform (indoor models)

Moulded insulating material, one-piece. Top 50 x 50 cm.



Reference	Rated insulation (V)	Height (mm)	Weight (kg)
CT-7-25/1	24 000	220	3.7
CT-7-40/1	40 000	260	3.8

Insulating platform (indoor model)

Solid plate with moulded insulating material 52 x 52 cm, thickness 40 cm. Feet with rubber tips.



Reference	Rated insulation (V)	Height (mm)	Weight (kg)
CT-7-63	63 000	515	3.35

Insulating platform (outdoor models)

Solid plate with moulded insulating material 52 x 52 cm, thickness 40 cm. Feet with rubber tips.



Reference	Rated insulation (V)	Number of skirts per foot	Height (mm)	Weight (kg)
CT-9-25	24 000	2	350	6.00
CT-9-45	45 000	3	435	6.50
CT-9-63	63 000	4	515	7.00

Rescue stick

Insulating stick ended by a large hook in order to rescue quickly an electrified victim in case of accident.



CS-45*	Length: 1.65 m - Rated insulation: 45 kV
CS-90*	Length: 2.05 m - Rated insulation: 90 kV
CS-225*	Length: 2.45 m - Rated insulation: 225 kV

* Delivered with wall mounted supports.




Personnel protective equipment

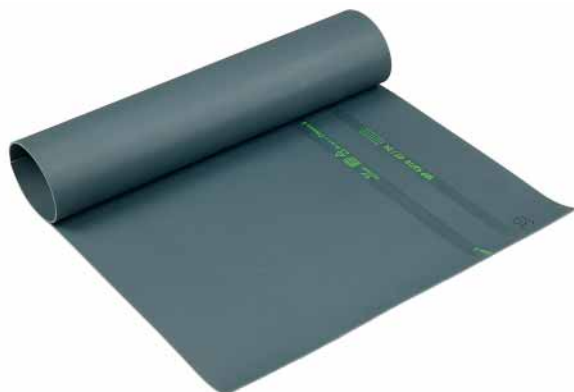


insulating mats, insulating boots

Insulating mats

The matting is manufactured of elastomeric compounds with slip-resistant surface. High quality dielectrical rubber.

*IEC-61111 
EN 61111



Individual models

Reference	Thickness (mm)	Voltage (kV)	Dimensions (m)
MP-42/11*	3	≤ 33	1 x 1
MP-42/16*	3	≤ 33	0.6 x 1

* IEC - 61111.

For placing in front of panels

Reference	Thickness (mm)	Voltage (kV)	Dimensions (m)
MP-42/66	3	20	0.6 x 0.6
MP-60/03-5	3	20	0.6 x 5
MP-60/03-10	3	20	0.6 x 10
MP-100/03-5	3	20	1 x 5
MP-100/03-10	3	20	1 x 10
MP-100/04-5	4	33	1 x 5
MP-100/04-10	4	33	1 x 10
MP-60/05-5	5	40	0.6 x 5
MP-60/05-10	5	40	0.6 x 10
MP-100/05-5	5	40	1 x 5
MP-100/05-10	5	40	1 x 10
MP-100/10-5	10	> 80	1 x 5
MP-100/10-10	10	> 80	1 x 10

Bags for insulating mats

Specially designed for carrying and protecting insulating mats. Equipped with a shoulder strap and a plastic window for instructions and storage identification.



MP-01	For MP-42/16 and MP-42/66 - Length: 70 cm
MP-02	For MP-42/11 - Length: 110 cm

Insulating boots

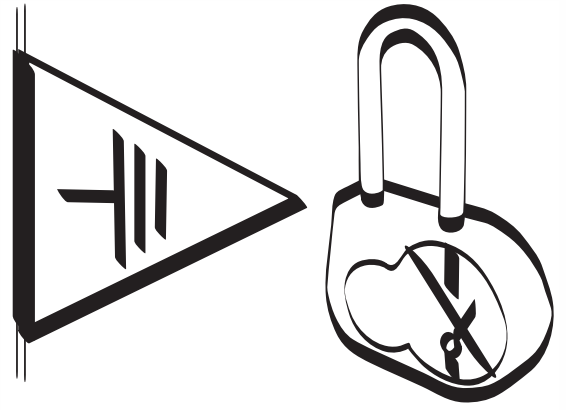
Made from elastomer canvas support, very flexible and resistant. Anti-perforation stainless steel sole and shell. Anti-slip sole. Protection against step and touch hazardous potential gradients.

EN 345



MV-135*	60 x 210 x 460 mm - Weight: 0.730 kg
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* Add sizes: 39-40/41-42-43/44-45-46/47.



Padlocks and warning signs

Padlocks

56

Self adhesive signs

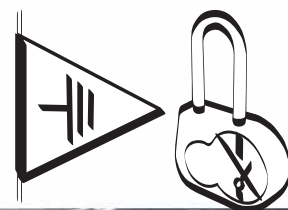
57

Warning signs

58



Padlocks and warning signs



padlocks

Padlocks with warning signs

Brass ring bow 50 or 70 mm.
Diameter of the ring bow 4 or 6 mm.



Reference	Ring bow (mm)	Ø (mm)	Weight (kg)
AL-230-111-EX	50	6	0.170
AL-230-S-222-EX	70	6	0.190
AL-240-111-EX	50	4	0.170
AL-240-S-222-EX	70	4	0.190

Handle with 6 padlocks

Handle of moulded plastic for holding up to six padlocks.
Compartment with transparent cover for key storage.



Reference	Weight (kg)	Handle with 6 padlocks
AL-236-111-EX	1.150	AL-230-111-EX
AL-236-S-111-EX	1.210	AL-230-S-111-E
AL-236-222-EX	1.150	AL-230-222-EX
AL-236-S-222-EX	1.210	AL-230-S-222-EX

Multiple locking apparatus

Holds up to four padlocks and a sign.



AL-200



AL-202

AL-200	100 x 60 x 10 mm - Weight: 0.150 kg
AL-202	165 x 50 x 12 mm - Weight: 0.200 kg

Single pole breaker lockout

Clipblock™, locks lever in off position to isolate and prevent breaker use.

Clipblock fits most of standard single pole devices. Quick installation with a flat blade screwdriver N°3 (MO-65203).



AL-201	Delivered in Pack of 5 units
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Single pole breaker lockout with padlock

Clipblock™, locks lever in off position to isolate and prevent breaker use.

Clipblock fits most of standard single pole devices. Quick installation with a flat blade screwdriver N°3 (MO-65203). Locked by padlock.

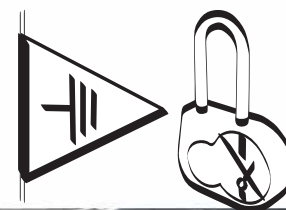
NEW



AL-201/C	Delivered with a padlock
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Padlocks and warning signs



warning signs

Self adhesive warning signs

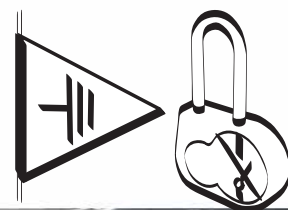


Reference	Dimensions	Characteristics	Quantity/box
AT-41/025	25 mm side	Self adhesive PVC	50
AT-41/05	50 mm side	Self adhesive PVC	30
AT-41/1	100 mm side	Self adhesive PVC	20
AT-49/025	25 mm side	Self adhesive PVC	50
AT-49/05	50 mm side	Self adhesive PVC	30
AT-49/1	100 mm side	Self adhesive PVC	20
AT-50/025	25 mm side	Self adhesive PVC	50
AT-50/053	50 mm side	Self adhesive PVC	30
AT-50/1	100 mm side	Self adhesive PVC	20
AT-51/025	25 mm side	Self adhesive PVC	50
AT-51/05	50 mm side	Self adhesive PVC	30
AT-51/1	100 mm side	Self adhesive PVC	20
AT-66/1	100 mm side	Self adhesive PVC	10
AT-52/05	50 mm side	Self adhesive PVC	30
AT-52/1	100 mm side	Self adhesive PVC	20
AT-53/05	50 mm side	Self adhesive PVC	30
AT-53/1	100 mm side	Self adhesive PVC	20
AT-54/05	Ø 50 mm	Self adhesive PVC	30
AT-54/1	Ø 100 mm	Self adhesive PVC	20
AT-55/05	Ø 50 mm	Self adhesive PVC	30
AT-55/1	Ø 100 mm	Self adhesive PVC	20
AT-56/05	Ø 50 mm	Self adhesive PVC	30
AT-56/1	Ø 100 mm	Self adhesive PVC	20
AT-57/05	Ø 50 mm	Self adhesive PVC	30
AT-57/1	Ø 100 mm	Self adhesive PVC	20
AT-58/05	Ø 50 mm	Self adhesive PVC	30
AT-58/1	Ø 100 mm	Self adhesive PVC	20
AT-59/05	Ø 50 mm	Self adhesive PVC	30
AT-59/1	Ø 100 mm	Self adhesive PVC	20
AT-60/05	Ø 50 mm	Self adhesive PVC	30
AT-60/1	Ø 100 mm	Self adhesive PVC	20
AT-61/05	Ø 50 mm	Self adhesive PVC	30
AT-61/1	Ø 100 mm	Self adhesive PVC	20
AT-62/05	Ø 50 mm	Self adhesive PVC	30
AT-62/1	Ø 100 mm	Self adhesive PVC	20
AT-63/05	Ø 50 mm	Self adhesive PVC	30
AT-63/1	Ø 100 mm	Self adhesive PVC	20





Padlocks and warning signs



warning signs, delineators

Warning and specialized signs

Warning signs

Reference	Type	Dimensions	Characteristics
AM-41/1*	Aluminium	100 mm side	Black on yellow Fixing: 3 holes Ø 4.5 mm
AM-49/1*	Aluminium	100 mm side	Black on yellow Fixing: 3 holes Ø 4.5 mm
AM-344-GB	Aluminium	100 mm side	Black letters on yellow Fixing: 3 holes Ø 4.5 mm
AM-345-GB	Aluminium	100 mm side	Black letters on yellow Fixing: 3 holes Ø 4.5 mm

* Pack of 10 units.



AM-49/1



AM-41/1



AM-344-GB



AM-345-GB

Specialized signs

Reference	Type	Dimensions (mm)	Characteristics
AM-20-GB	Aluminium	350 x 250	Blue letters on plain aluminium
AM-20-RM	Aluminium	350 x 500	Blue letters on plain aluminium
AM-61-GB	Aluminium	150 x 200	Black on yellow on plain aluminium



AM-20-GB

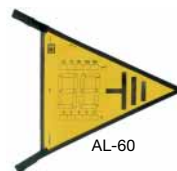


AM-20-RM



AM-61-GB

Warning flags



AL-60



AL-58

AL-58 Attached on handle; for work site

AL-60 To be attached on earthing cable; for immediate identification in open-type switchgears possible inscription: 0 to 99 (by using ALU-SCRIPT markers)

Safety boundary post

For temporary installation. Used with tough link chain delineators (AL-32/05). Removal foot. Ø 50 mm. Length: 0.9 m.



AL-316



AL-318

AL-318 Black and yellow - Weight: 4.2 kg

Chain delineators

Polyamide chains.



AL-31/25



AL-32/05

AL-31/25 Red and white - Length: 25 m

AL-32/05 Black and yellow - Length: 5 m

Delineators

Brightly colored ribbon. Snap hook on one ribbon end and another on spool. A ring on spool brakes ribbon at desired length.

Wide: 50 mm. Length: 20 m.



AL-62-A



AL-63-A

AL-62-A Red ribbon

AL-63-A Yellow ribbon



General tools

Equipment for working
on pole

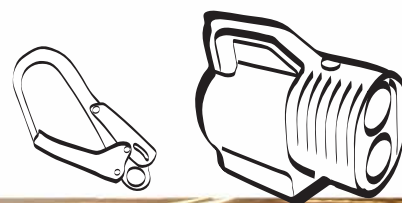
60

Accessories

62



General tools



equipment for working on pole

Working on pole kits

Composition:

- 1 harness belt ref: MO-56001 or MO-56002.
- 1 anti full grip with 15 meters of rope ref: MO-68/15.
- 2 Snap hooks ref: MO-55/1.
- 1 carrying bag ref: M-87295.



KIT-56/1	Complete kit with harness belt size 1 (S-L)
KIT-56/2	Complete kit with harness belt size 2 (L-XXL)

Insulating stepladders

A complete range with top quality features:
 Insulation between two steps: 30 000 V.
 Lateral risers in polyester/fiberglass.
 Aluminium alloy rungs.
 with anti-slip coating.

EN 131



Reference	Nbr. of steps	Foot rest height (m)	Reach height (m)	Weight (kg)
MP-700-4	3	0.68	2.68	5.9
MP-700-1	4	0.91	2.81	6.9
MP-700-2	5	1.14	3.04	8.0
MP-700-3	6	1.37	3.27	9.4

Insulating ladders

A complete range with top quality features: Insulation between two steps: 58 000 V (test performed after immersion in water for 24 hours). High mechanical resistance to bending and twisting. Good resistance/weight ratio. High fire resistance. High resistance against bad weather and corrosive elements. Lateral stiles in polyester/fiberglass rectangular section 70 x 25 mm. Aluminium alloy rungs with square 29 x 29 mm section and anti-slip coating.

Insulating 2 section extension ladders, hand operated

Reference	Folded length (m)	Extended length (m)	Number of rungs	Weight (kg)
MP-514/2	2.41	4.09	2 x 8	12.6
MP-515/2	2.97	5.21	2 x 10	15.5

Insulating 2 section extension ladders, rope and pulley operated

Reference	Folded length (m)	Extended length (m)	Number of rungs	Weight (kg)
MP-506/2	3.53	6.05	2 x 12	20
MP-508/2	4.66	8.30	2 x 16	31
MP-510/2	5.78	10.26	2 x 20	38



Climbers

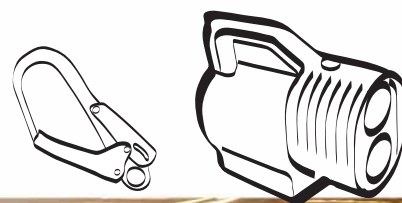
For H profile metallic poles.
 Hard forged steel.



Reference	Weight (kg)	Delivered by pair
MO-23	5.10	Delivered by pair



General tools



equipment for working on pole

Snap hooks (stainless steel)



MO-54

EN 362
CE

MO-54

Locks with threaded ring
105 x 58 mm - 0.154 kg



MO-55/1

EN 362
CE

MO-55/1

Locking by screwing ring on a spring loaded mobile catch; an additional catch is provided to prevent the rope from slipping in the carabiner
155 x 75 mm - 0.140 kg

Snap hooks (aluminium alloy)



MO-54000

EN 362

MO-54000

Oval snap hook - Opening: 15 mm
Individually tested - Weight: 0.071 kg



MO-54004

EN 362
CE

MO-54004

D-shaped snap hook with automatic locking
Opening: 23 mm - Individually tested
Weight: 0.087 kg

Fall arrester - retractable type

Designed for lineman safety. Quick acceleration causes instant locking. Corrosion protected steel shell. Integrated braking mechanism and dissipating element. Self locking mechanism and automatic tensioning and return facility. Galvanized cable Ø 4 mm. Strength: 1 200 daN. Delivered with a screw crab.



EN 360

MO-591002

Weight: 7.00 kg

Anti fall device with automatic release strap

Winder with self-locking strap. Length: 2 m. Equipped with shock absorber. Allows 2 m of movement autonomy around anchoring point.



EN 360

MO-591000

Weight: 1.160 kg

Snap hook with double safety latch

Opening: 60 mm
Body in aluminium
Fingers in stainless steel
Resistance: 20 kN.



EN 362
CE

MO-54002

Weight: 0.450 Kg

Tether rope equipped with a tension device

The tether rope is intended to ensure that operators are held in position when working at a height. This tether rope must be associated with a harness belt. Ends sewn to form an attachment and protected with a plastic girdle. Static resistance: 15 kN.



EN 358
CE

MO-56009

Weight: 0.310 kg - Length: 3 m

MO-56010

Weight: 0.420 kg - Length: 5 m

Safety rope with wear tell tales

Rope: 14 PEPT multi-filament (15 mm diam.)
Two-colour safety rope, 100% polyester made of 3 white strands with black central thread (wear telltale).
Buckle: Polyamide central lug attaches to snap-hook of belt.



CE

MO-052

Safety rope only - Length: 4 m - 0.76 kg

Lanyard

Synthetic fibre ropes - 10 mm. Loops spliced at both ends. Delivered without snap hook.



EN 354
CE

MO-53

Length: 1.50 m - Weight: 0.125 kg

Constraint tie

Tie in polyamide.



EN 795
CE

MO-52031

Length: 0.8 m

MO-52033

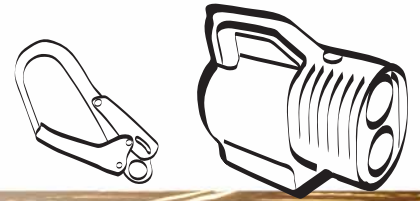
Length: 1.50 m

MO-52034

Length: 1.50 m



General tools



accessories

Compact carrying KIT

This compact kit is design especially to be carried in a vehicle for safety electrical intervention.
 Made in two part (of moulded material: PEHD), the case is also on its red part, an insulating platform.
 Composition of the kit:
 1 insulating platform
 1 telescopic insulating stick
 1 voltage detector with autotest
 1 rescue hook
 1 insulated cable cutter
 1 pair of insulating gloves
 1 pair of insulating boots
 1 talk can
 1 safety instructions and safety first aid posters
 1 adhesive tape (black and yellow).



CZ-53-R 710 x 570 x 240 mm - Weight: 18.5 kg with instructions in English

Connection adaptors

For insulating sticks

For voltage detectors

Accessories		
Connection adaptors		
Sticks		

Signal for working sites

NEW

Field of use.
 To remotely signal the presence of a working site by red color emission.
Characteristics:
 Light distance: Visibility of the luminous signal at a distance of 300 m (with ambient luminancy of 200LUX).
 Discharge time: 24h at 20°C.
 Rechargeable on power supply 230-50 Hz.
 IK 43/IK08.



CD-140 105 x 130 x 170 mm - Weight: 1.5 kg

Signal for working sites

Self-contained torch and safety lamp, including:

- White lighting optic.
- Signalisation optical, including three colours luminous signal: red, orange and green.
- To lighth-up in chronological order above, push successively on run button.
- Feeding by NiCd 12 V, 1 200 m/Ah battery. Reload on mains.
 - Lighting autonomy 5 hours.
 - Standby autonomy 10 hours.
- Load check by luminous indicator.
- Luminous signal to remember color signal.



CD-130 220 x 195 x 95 mm - Weight: 1.870 Kg

Specification for short-circuiting and earthing systems



A Network, electrical installation characteristics

Network voltage: kV _____ Max. short-circuiting current (1s): kA _____
 Nature of the conductive materials: Basis Al Basis Cu

Overhead lines

- Dia. or section of the conductors: min. _____
 max. _____

Switchboard or substation

- Round bars dia. (mm): mini. _____maxi. _____
 Length = _____
 - Flat bars
 H type Thickness = _____
 V type Length = _____
 Thickness = _____

 - Fitting on edge face Fitting on side face

B Characteristics of the earthing system

- Selected sketch (out of the three standard types shown below)
- Distance between live conductors (m): _____ , between live conductors and grounding point (m) _____
- To place the clamps in position, the operator will stand: above the conductors under the conductors
 at the conductors level
- For cable sections, please indicate max. ΔT or min. dia. of the conductor _____

C Earthing connection point

- Earth rods: dia. or thickness on side face (mm): _____ Flat bar, angle-bar, thickness (mm): _____
- Round conductor dia. (mm): _____

D Operating stick

- Insulating stick: total length _____ Fixed Connectable stick Telescopic

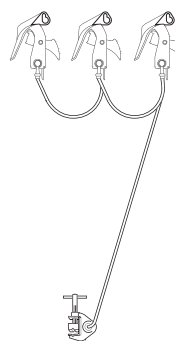
Characteristics

- Selected connection type: Sketch n° _____
- Contact clamps (type MT- _____)
- Short-circuiting cable
 - Length (m) _____
 - Dia. or section (mm, mm²) _____
- Grounding cable
 - Length (m) _____
 - Dia. or section (mm, mm²) _____
- Connection of cables on clamps, earth clamps, trifurcation
 - Direct connection by screw and nut
 - Connection by means of crimped lugs
- Earth clamp, type _____
- Presence of a reel _____
- Insulating stick, type _____

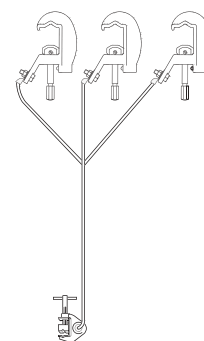
Sketch N°1



Sketch N°2



Sketch N°3



Accessories

- Carrying bag for sticks
- Canvas bag for equipment
- Carrying case for equipment
- Cable reel



This documentation is not contractual. Items represented are proposed while stock lasts.
 CEGERS / CATU reserve the right to stop production or modify specifications without prior notice.

CGR-04



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