



Railways

Electrical safety equipment



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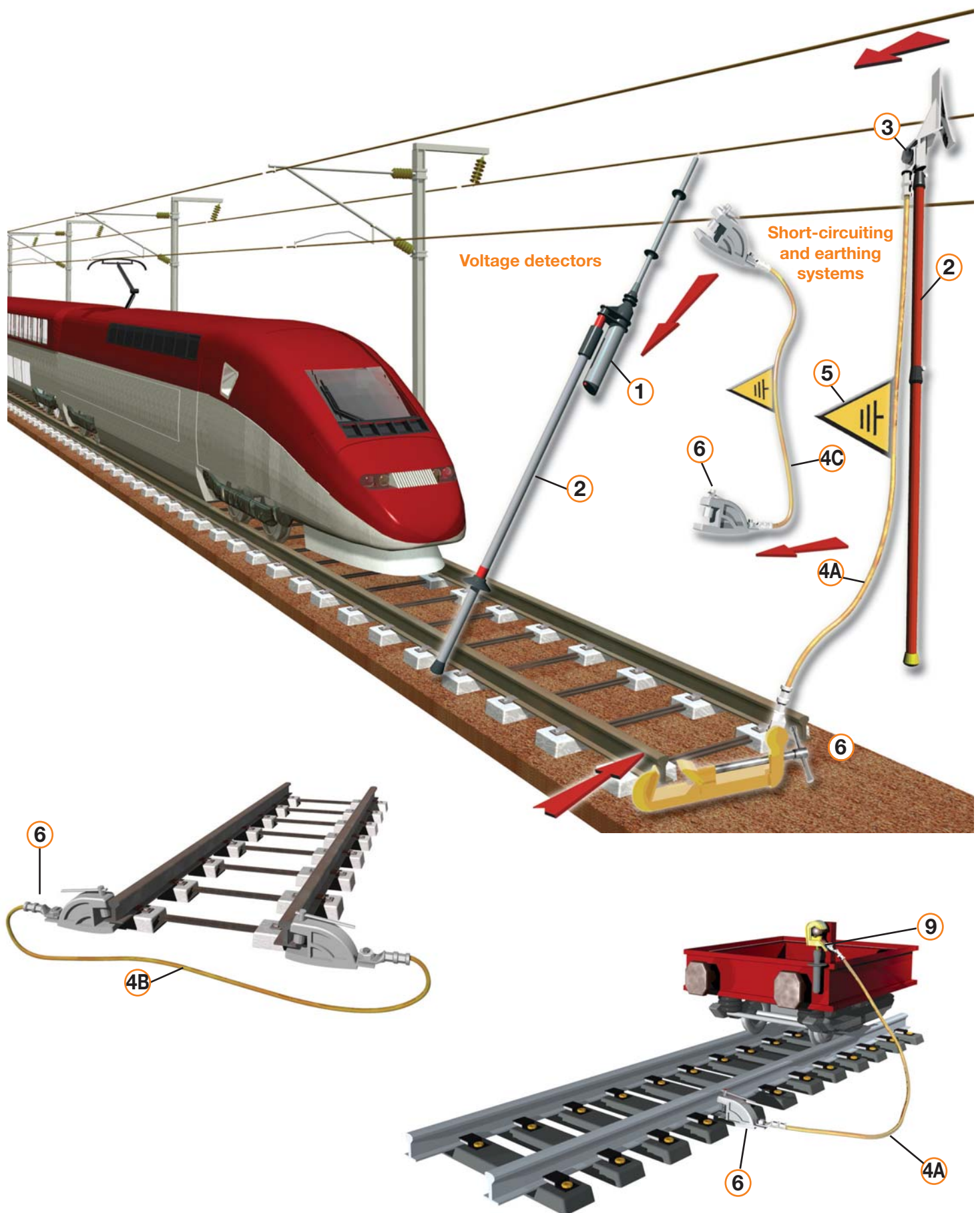
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Equipment for intervention on catenaries



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VOLTAGE DETECTORS*

1

	a.c.		d.c.	
	15 kV Electronic voltage detector 15 kV 16 Hz 2/3 reference: CC-578-15 See page11	25 kV Electronic voltage detectors 25 kV 50/60 Hz references: CC-765-25-C CC-765-25-K See page12 Railway detector 25 kV Hz alternative catenary reference: ZVATDAC 25 SNCF See page11	1500 V Electronic voltage detector 600/2000 V reference: CC-1515-100 See page13 Electronic voltage detector 750/1500 V reference: ZVATDC 750/1500 W See page14	3000 V Bipolar voltage detector with discrimination of induced voltage 750/3000 V reference: ZVAT DC IND See page14

Insulating sticks for voltage detectors and short-circuiting systems

2	Insulating sticks with connectable elements references: CM-42.... serie CM-43.... serie CM-4610.. serie CM-4615.. serie See page 15	Insulating telescopic sticks references: CE-5-50-C, CE-5-50-K, ZPTVZCR 5603, ZPTVZCR 5603 B, ZRAVZC 200 See page 16 Accessories Stick bags references: CM-1.., CM-2.., CM-3.. series See page 16
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Short circuiting and earthing systems

Clamps

3	Universal clamp references: ZCCVZC 25, ZCCVZC 25 B, ZCCVZC 25 1 See page 17	Clamps with or without fuse contact wire references: ZEMRC 200 B, ZEMRC 201 B See page 17/18
	Clamps for flat and round conductors references: MT-815-E See page 17/18	Clamps for single or double catenary reference: MT-731-E, ZEMRC 300 B, ZEMRC 301 B See page 17/18

Cables with connections

	a.c.	d.c.
4A	15 kV	1500 V
4B	reference: M-24-35-S - 8 kA/1s, section: 35 mm ²	reference: M-24-70-S - 16 kA/1s, section: 70 mm ²
4C	reference: M-24-40-S - 10 kA/1s, section: 40 mm ²	reference: M-24-95-S - 20 kA/1s, section: 95 mm ²
	reference: M-24-50-S - 12 kA/1s, section: 50 mm ²	
	See page 18	See page 18

5 Accessory: earth flag reference: [AL-58](#), [AL-60](#), [ZCFVTTBSNCF](#)

See page 10

Earth clamps

6	Earthing rail clamps references: MT-843, MT-847, ZSMT-848/100, ZETMRTOP, ZET-62042 See page 19/20	9 Earth clamps for fixed ball points references: MT-1911, MT-1921, for round and flat conductor: MT-843, MT-847 See page 20
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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.



AM-49/1



AM-41/1



AM-344-GB



AM-345-GB

Specialized signs

Reference	Type	Dimensions	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

Reference	Characteristics
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)



AL-60



AL-58

SAFETY BOUNDARY POST

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



AL-316



AL-318

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

CHAIN DELINEATORS

Polyamide chains.



AL-31/...



AL-32/...

Reference	Characteristics
AL-31/05	Red and white - Length: 5 m
AL-31/25	Red and white - Length: 25 m
AL-32/05	Yellow and black - Length: 5 m
AL-32/25	Yellow and black - Length: 25 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

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

ELECTRONIC VOLTAGE DETECTOR WITH CONTACT ELECTRODE EXTENSION 15 KV 16 HZ 2/3**Voltage presence is indicated by:**

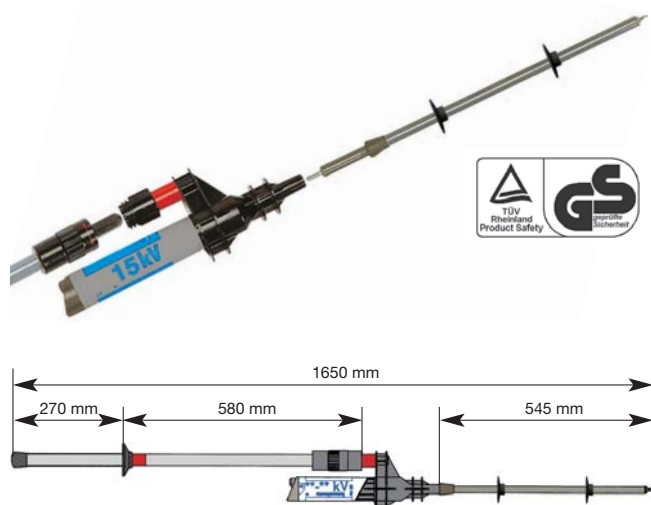
- red flashing LED'S (very bright - visible at more than 50 m in direct lighting)
- powerful rated audible signal > 60 dB (A)/2 m

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-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.

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.

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.

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 CG-30D (see p 51).
- 1 carrying bag.

Power supply

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

SNCF approval: IEM-RMS 04112

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

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



IEC ELECTRONIC VOLTAGE DETECTORS, "COMPACT SERIE" FOR INDOOR AND OUTDOOR USE

IEC-61243-1
CE

Ultimate technology of voltage detector "Head Capacitive Technology"

Compact and light, it offers a wide band (10/36 kV).

Operating check:

By pressing the TEST button:

- A RED LED flashes on.
- Powerful rated audible signal > 60 dB(A)/2 m.
- When loosening the button. The timed GREEN LED lights up.

While remaining on, it indicates the good working order of the detector.

Characteristics:

- Precise and stable operating threshold.
- High environmental resistance (impacts, vibrations, moisture).
- Temperature conditions: class N (IEC 61243-1 standard).
- Use from 50 to 60 Hz.
- Robust housing.
- Weight of the detector: 350 gr.
- Size of the detector: Ø 59 x 270 mm.
- 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.

Recommended stick: CE-4-21, CE-75.

Reference	Frequency	Operating voltage (KV)	Battery	Weight (kg)
CC-765-25*	50/60 Hz	25	9 V	0.350

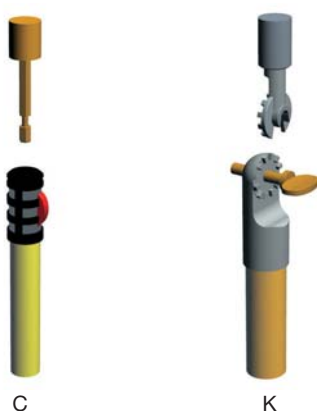
(*) Specify type of mounting when ordering: C or K.

Packaging: unit supplied complete in a case with batteries and contact electrodes (straight and V-shaped). Total weight: 1100 g. Total size: 340 x 275 x 83 mm.



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.



For other voltages,
please consult us.

NEW Dual voltage range detector : CC-775

This voltage detector is also available with two voltage ranges without a manual selector switch, in compliance with the standard IEC 61243-1. Example: from 2 to 7kV & from 12 to 25kV. Please contact us in order to determine together your appropriate need in the respect of the standard.

VOLTAGE DETECTORS

D.C. BIPOLAR VOLTAGE DETECTOR 0.6 TO 2 KV

Operation

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. 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 springcontacts

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.

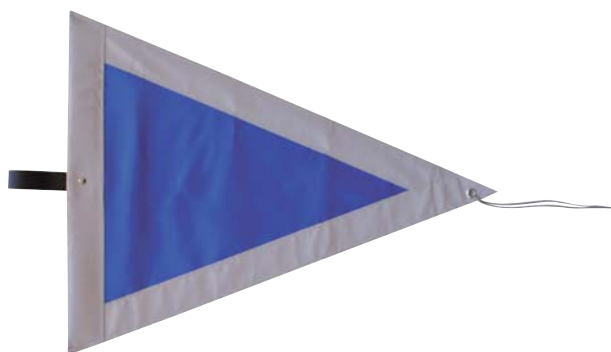


Reference	Characteristics	Voltage (KV)
CC-1515-101	Stick	0.6 - 1.5
CC-1515-102	Antenna	0.6 - 1.5

REFLECTIVE BLUE FLAGS

- Used to mark work area.
- Velcro fastening on stick. Strap to roll flag for easier storage.
- Blue material with coating.
- Dimensions : 470 x 600 mm.
- With retro reflective parts.

SNCF symbol: 0.392.3681



Reference	Weight (kg)	Dimensions
ZSCFVTTBSNCF	0.173	470 x 600



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 5603M, see page 16.

Other models or configurations: contact us.

SNCF approval: IEM 05066



Reference	Field of use	Contact-piece	Cable lenght (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: 1.5 kg.

Recommended stick: ZPTVZCR 4603 W, see page 25.



Reference	Field of use	Fitting	Contact-piece	Total lenght (m)
ZVATDC 750/1500W	750-3000	W	Hook	8

INSULATING STICKS FOR SHORT-CIRCUITING AND EARTHING SYSTEMS

Made of IEC-60855 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. 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	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 lenght sticks		
CM-4115-*	1	1.35
CM-4120-*	2	1.80
CM-4125-*	2.5	2.80
CM-4130-*	3	3.30
CM-4600-J	0.36	0.95

* Add end piece C, K, E.

• With the smallest end fitting.
 •• With the biggest end fitting.

SET OF STICKS

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

For cables < 95 mm²
 CM-4000 serie is
 recommended.

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.



CM-4600-J



TELESCOPIC STICKS FOR VOLTAGE DETECTORS

IEC-61235

Telescopic stick for use in checking for absence of voltage or electrical operation on installation or equipment

• 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: K = Universal (notched type)
C = 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.



CE-5-...

Reference	Fitting	Length extended (m)	Length folded (m)	Weight (Kg)	Elements n°
CE-5-50-C	C	5.03	1.46	1.9	4
CE-5-50-K	K	5.03	1.46	1.9	4

INSULATING STICK

IEC-61235



ECM710SNCF

- One piece stick, 1 m length.
- Hand guard
- Thread on upper part to fix devices on catenary (CCVZC 25).

SNCF symbol: 0.392.6955.

Reference	Characteristics
ECM710SNCF	Short stick dedicated to maintenance gears. Facilitate earthing system on rails for DC 1 500 V and AC 25 000V catenaries.

STICK BAGS

Strong waterproof fabric, strap for carrying.



Reference	Max. stick length (m)
CM-1-10	1.30
CM-1-15	1.80
CM-1-20	2.40

TELESCOPIC STICKS

IEC-61235

ZPTVZCR 5603 M

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, glass fiber foam filled
- 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 excentric 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 sticksserie ZPTVZCR 5603. Epoxy reinforced fibre glass insulating section Ø 45 mm of red colour.

SNCF symbol: 0 392 6978.



Reference	Length extended (m)	Length folded (m)	Weight (Kg)	Elements nbr
ZPTVZCR 5403	5.40	2.00	3.6	3
ZPTVZCR 5603 M	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-3-03	1.75	0.575 x 1.950
CM-3-04	2.00	0.575 x 2.450
CM-3-05	2.50	0.575 x 2.850
CM-3-06	3.00	0.575 x 3.400

CLAMPS

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	16-40 5-35 5-40

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



ZCCVZC 25

Recommended stick: ZPTVZCR 5603 B

***SNCF symbol:** 0.392.6325.



ZCCVZC 25 1

Reference	Weight (kg)	Dimensions (mm)
ZCCVZC 25*	0.75	270 x 200 x 40
ZCCVZC 25 B	0.8	270 x 200 x 40
ZCCVZC 25 1	0.75	270 x 200 x 40

CLAMPS FOR SINGLE OR DOUBLE CATENARY WITH QUICK OPENING AND CLOSING

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.
- lcc: 50kA/25ms
- Clamping capacities:
 - single catenary: diam. 12/15 mm
 - double catenary: diam. 12/15 mm
- Connection for earth cable: screw diam. 12 mm.
- End fitting: bayonet type.



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

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

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. Manoeuvring by 4600 serie insulated stick of appropriate length and characteristics. Weight: 1.45 kg. Dimensions: h 200 x L 200 x thickness 50.



Reference	Clamping capacity (Ø mm)	Rail insulation (kA/1 s)	Asymmetrical current (A)	Copper cables (mm² max.)	Dim. of fastening screw (mm)	Weight (kg)	Dim. H x L x Thickness (mm)
MT-731-E	5-60	40	92	150	M 12	1.45	200 x 200 x 50

COPPER CABLES

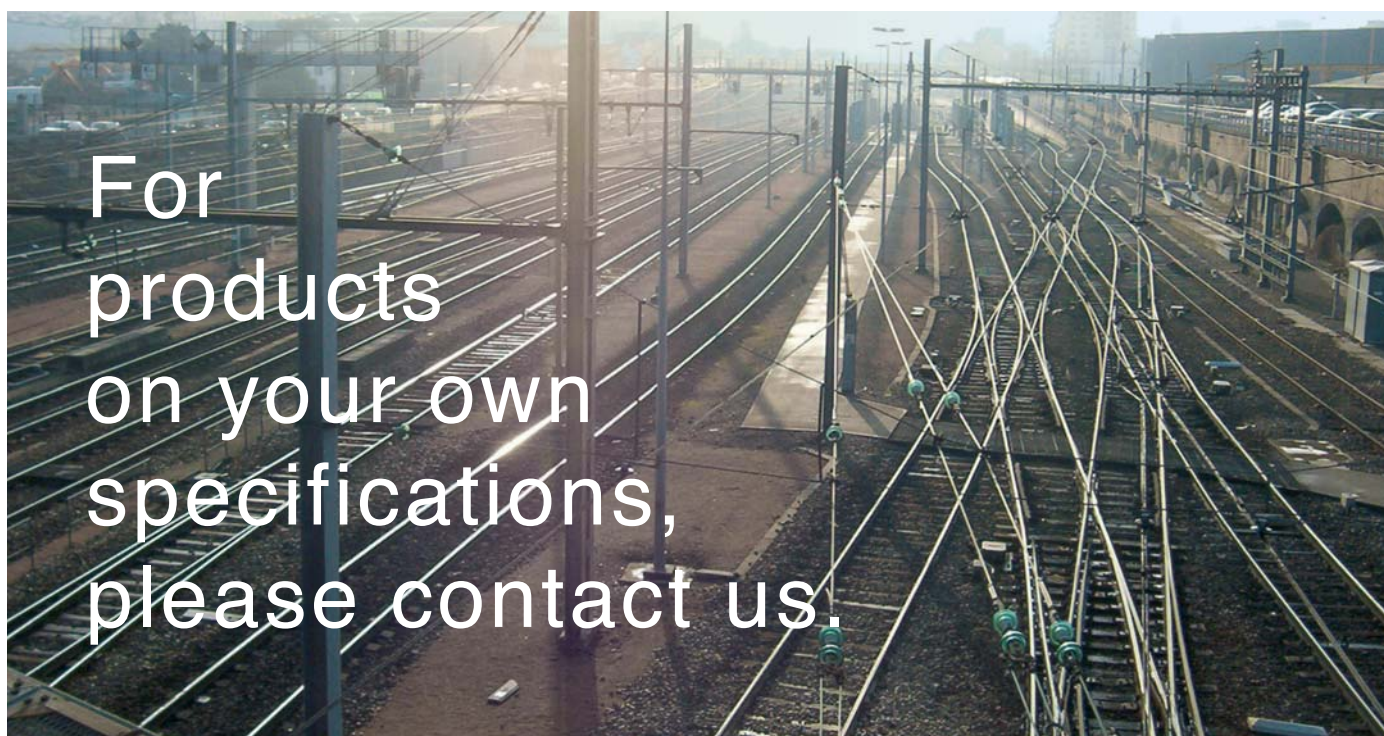
IEC-61230

Transparent silicon sheath according to IEC-61230. Resistant to temperature variations (-40 °C to +70 °C) with double IEC triangle marked on cable section. Lugs diameter: 12 mm.



Length on request

Reference	Rating (kA/1 s)	Cable		Section (mm²)
		Weight (kg/m)	Ø (mm)	
M-24-35-S	8	0.386	9	35
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



For products on your own specifications, please contact us.

EARTH CLAMPS, EARTHING RAIL CLAMPS

CLAMPING ON THE EDGE

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.



7 to 22 mm



Reference	Weight (kg)	Icc	Dimensions (mm)
ZSMT-848/100	1.5	a.c. 15 kA/150 ms d.c. 52 kA/35 ms*	180 x 130 x 50

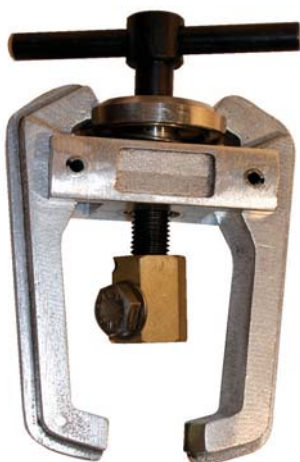
* x 3 Shocks

CLAMPING ON THE TOP OF THE RAIL

Earthing clamp for connection to the top of the rail and attached by manual tightening.

- Materials
 - Body & Clamping : aluminium
 - Contact : Brass
- Connection for cables fitted with screw terminal diam.12mm

73mm max

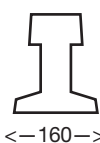


Reference	Icc	Clamping capacities (Ø mm)
ZETMRTOP	40 kA/120ms	73

CLAMPING UNDER THE RAIL

Rail earthing clamp for catenary, attached by manual tightening.

- Materials:
 - ZET-62042: copper-aluminium
 - clamping screw: 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.



<- 160 ->



Reference	Weight (kg)	Icc	Dimensions (mm)
ZET-62042	1.680	30 kA/1 s	310 x 90 x 70



EARTH CLAMP FOR OVERHEAD LIVE NETWORKS AND SUBSTATIONS

Earthing clamp for connection to rail or poles and attached by manual tightening.

- Materials
 - Body: cupro-aluminium
 - Clamping : stainless steel
- Connection for cables fitted with screw terminal diam.12mm
- For Overhead line



Reference	Rating insulation	Dimensions (mm)	Connection (mm)	Clamping capacity (mm)
		Weight (kg)		
MT-847	25 kA/0.5 s	45 x 106 x 170 1.00	Hole: Ø 13	0 - 30

NEW RANGE OF BIMATERIAL INSULATED TOOLS

ISOMIL™
SAFETY TOOLS

1000 V IEC 60900 - EN 60900

**FOR LIVE WORKING UP TO 1000 VOLTS
ACCORDING TO IEC 60900
STANDARD**

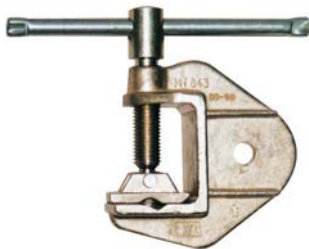
CATU™

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

For fixed points see page 40.



MT-1911-C
MT-1921-C



MT-1911 for Ø 20 mm
MT-1921 for Ø 25 mm

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

Equipment for intervention on electrical urban transports



Complete equipment guide **22**

**Voltage detectors and
Short-circuiting system for tramway** **25**

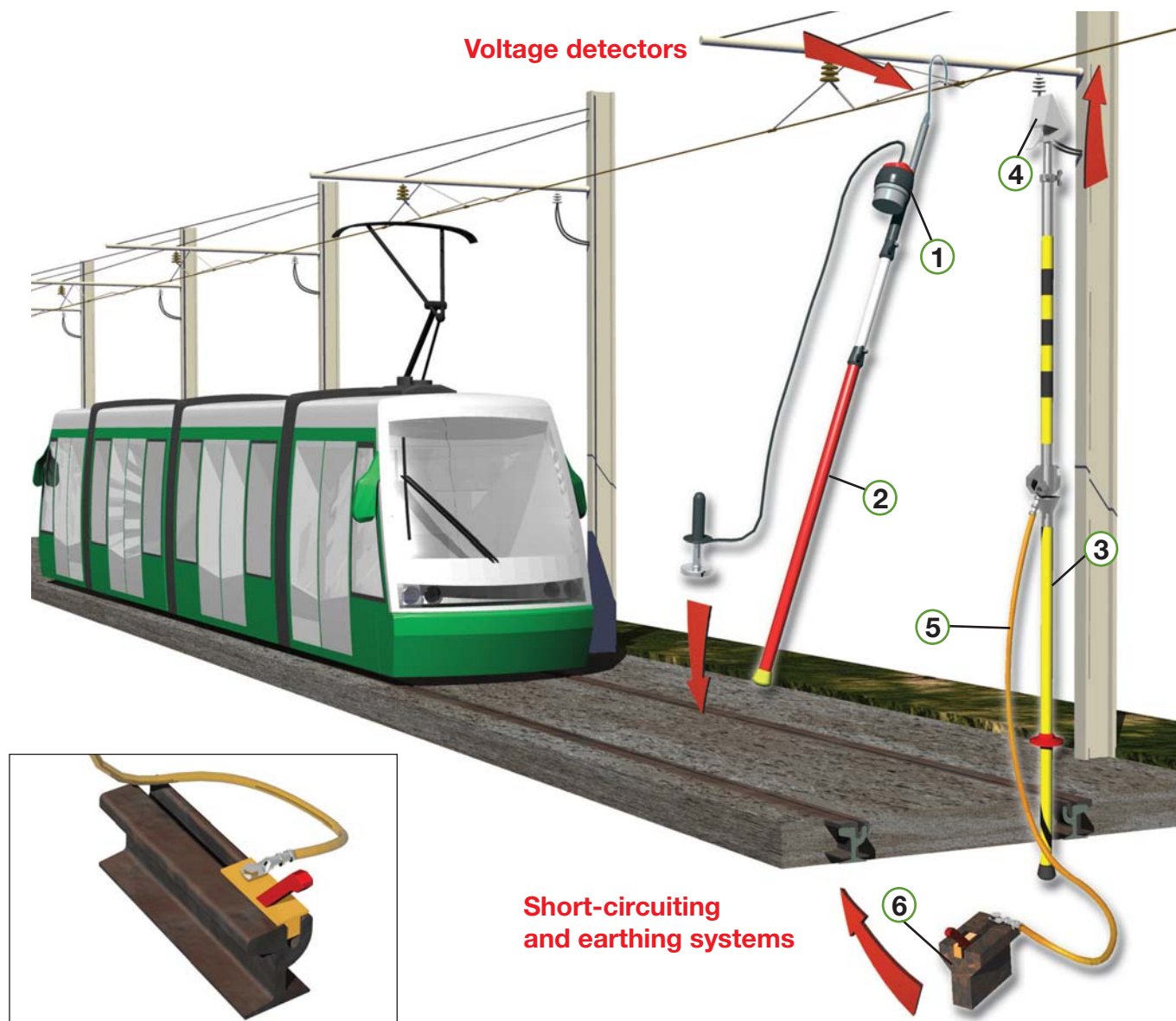
**Voltage detectors and
Short-circuiting system for trolley** **27**

**Voltage detectors and
Short-circuiting system for subway** **28**

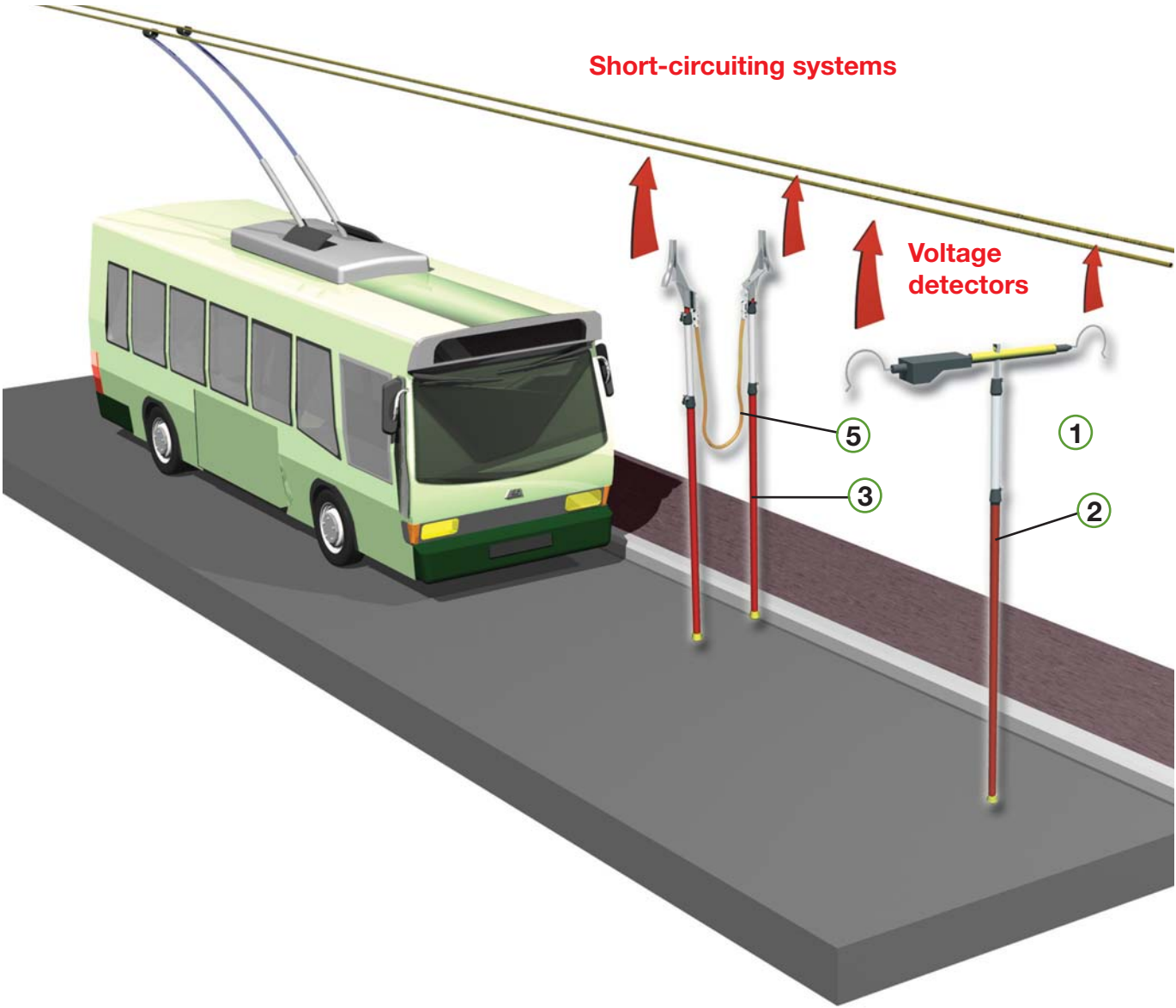




Equipment for intervention on electrical urban transports EQUIPMENT FOR INTERVENTION ON TRAMWAY INSTALLATIONS



VOLTAGE DETECTORS		SHORT CIRCUITING AND EARTHING SYSTEMS	
d.c.		Clamp	
750/1500 V			
1	Bipolar electronic voltage detector reference: ZVATDC 750/1500 W See page 28	4	Autoclamping contact clamp reference: ZEMCC 2160 , ZCCVZC25 See page 26
Insulating sticks		Cables with connections	
2	For voltage detector reference: ZPTVZCR 4603 W , ZPTVZCR5603 M See page 28	5	Copper cable with connection - Length: 2 m, section: 35 mm ² reference: ZCESS 35/05 MR , ZCESS 50/05 MR See page 26
3	For short-circuiting system reference: ZPL7R 120N , ZPTVZCR 5603 M , ZPTE 072 N See page 28	Earth clamps	
		6	Automatic earth clamps references: ZETMR 35 , ZETRT 35 , ZETMR 41 , ZETMR RG29 , ZETMR UNIV See page 26



VOLTAGE DETECTORS		SHORT CIRCUITING SYSTEMS	
d.c.		Clamp	
750			
1	Bipolar electronic voltage detector reference: ZVDCAL 750 TROL See page27	4	Autoclamping contact clamp reference: ZCCVZC 25 See page27
Insulating sticks		Cables with connections	
2	For voltage detector reference: ZPTVZCR 5603 B See page27	5	Copper cable section 50 mm² Lg : 2 m See page27
3	For short-circuiting system reference: ZPTVZCR 5603 M See page27		

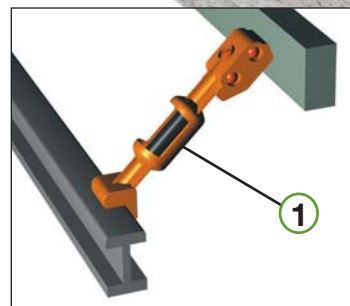


Diagram of a hand exerciser with a green circle containing the number 6 pointing to a red component.

**D.C. VOLTAGE DETECTOR 0.75 TO 1.5 KV
ACOUSTIC AND OPTICAL SIGNAL**

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 9 V alkaline battery, type 6 LR 61
- Supplied in plastic case
- Total weight with case and magnetic clamp: 1.5 kg
- Cable length: 8 m

Recommended stick: ZPTVZCR 4603 W.
*ZPTVZCR5603 M.



Reference	Field of use (V)	Fitting	Contact-piece	Total length (m)
ZVATDC 750/1500W	750-1500	W	Hook	8
ZVATDC 750/1500*	750-1500	M25	Hook	8

TELESCOPIC STICKS**ZPTVZCR 4603 W / 5603 M**

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

Description:

- 3 epoxy reinforced fibre-glass isolating sections:
- 1 red terminal tube, diameter 28 mm, glass fiber foam filled,
- 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 extended (m)	Length folded (m)	Weight (Kg)	Elements nbr
ZPTVZCR 4603 W	4.70	1.90	2	3
ZPTVZCR 5603 M	5.60	2.15	3.7	3



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
ZPTPEU 072 N	1.80	2.20

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.

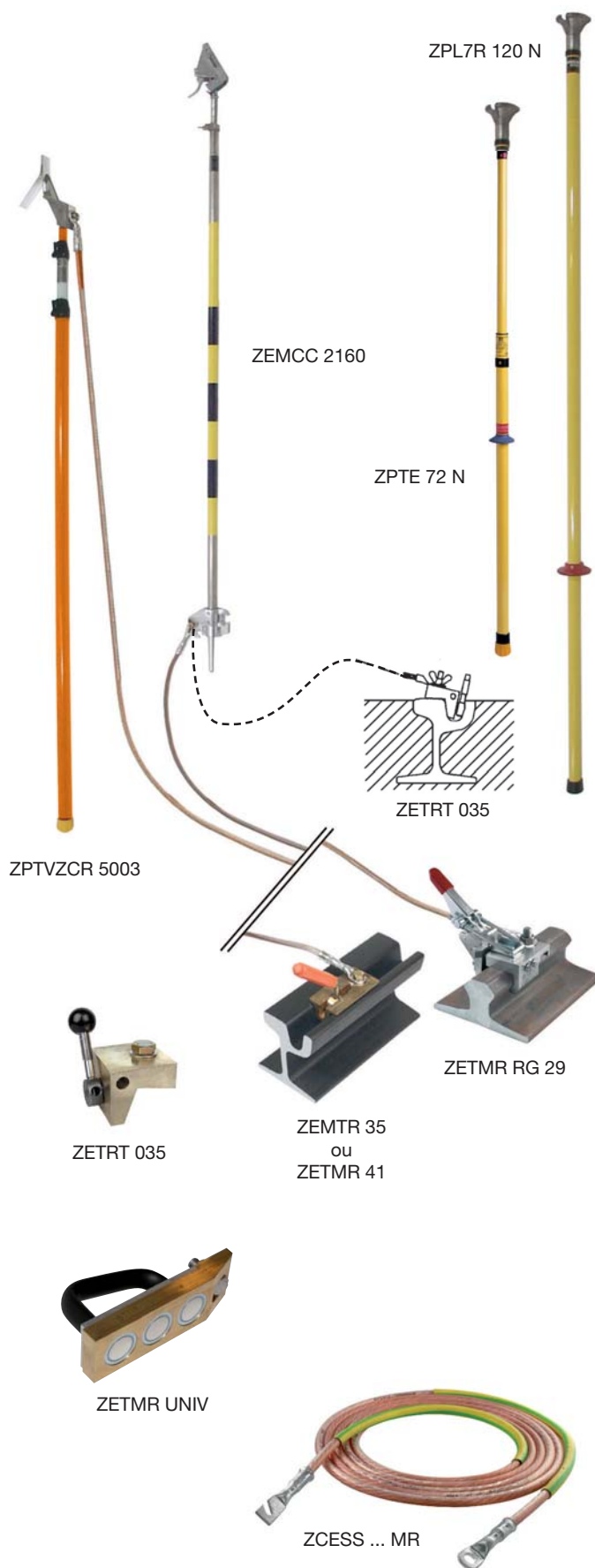
Reference	Weight (kg)	Icc	Rail type	Dimensions (mm)
ZETMR 35	1.2	8 kA/1 s	GTF 35	115 x 63 x 40
ZETMR 41	1.3	8 kA/1 s	GP 41	115 x 63 x 40
ZETRT 35	0.8	8 kA/1 s	GTF 35	85 x 70 x 50
ZETMR RG 29	0.7	8 kA/1 s	RG 29	190 x 85 x 80
ZETMR UNIV	0.7	8 kA/1 s	ALL*	100 x 85 x 50

* Magnetic clamping.

Copper cables

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

Reference	Weight (kg)	Section (mm²)	Length (m)
ZCESS-35/05 MR	2.00	35	5
ZCESS-50/05 MR	5.00	50	5



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.

Reference	Weight (kg)
ZVDCAL 750 TROL	2.5

EARTHING RAIL EQUIPMENT**Universal earth clamp**

Icc = 35 kA / 50 ms.

For catenaries diameter 10 to 50 mm. See page 17

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

Copper cables, flexible copper braid, silicon sheath

(IEC-61230). See page 18.

Telescopic stick. See page 16

Reference	Weight (kg)	Dimensions (mm)
ZPTVZCR 5603 M	3.7	2.15 / 5.60
ZPTVZCR 5603 B	3.7	2.15 / 5.60





Equipment for intervention on electrical urban transports 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	Weight (kg)	Dimensions (mm)
CL-1607/1 (Paris)	1.350	500
CL-1607/ML (Marseille, Lyon)	1.900	535
CL-1607/10 (Alger)	1.900	535
CL-1607/20 (Bruxelles)	1.900	535

EARTHING RAIL EQUIPMENT FOR THIRD RAIL CONFIGURATION

This equipment is designed to permit safe earthing and short-circuiting between the running rail and the railway lateral current rail.

- Materials
- Aluminium contact block for current rail with guiding magnet and brass plate designed to permit safe earthing and short-circuiting between the running rail and the railway lateral current rail.



- Materials
- Aluminium contact block for current rail with guiding magnet and brass plate

Reference	Weight (kg)	Icc	Dimensions (mm)
MT-300 (Singapore)	10	85 kA/30 ms	900 x 300 x 125
MT-300/10 (Alger)	10	85 kA/30 ms	900 x 300 x 125

EARTHING CLAMP FOR CONNECTION TO THE THIRD RAIL CONFIGURATION

This equipment is designed to permit short-circuiting between the running rail and the railway lateral current rail.



Reference	Characteristics
ZET 3R	Body steel

CLAMPING ON THE RAIL

- 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.



Reference	Weight (kg)	Icc	Dimensions (mm)
ZSMT 848/100	1.5	a.c. 12 kA/150 ms d.c. 52 kA/35 ms*	180 x 130 x 50

* x 3 shocks

EARTH CLAMP

For fixed point.
characteristics :
see page 40.



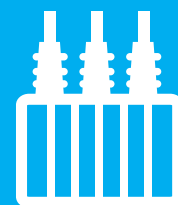
Reference	Weight (kg)	Connection conductors
MT-1921	0.69	Flat 18 mm - Ø 25 mm

COPPER CABLES

Flexible copper braid, silicon sheath (IEC-61230).
See page 18.



Equipment for lines, substations and installations



Safety equipment	30
Low voltage detectors and short-circuiting systems	32
Medium voltage detectors and short-circuiting system	34
Voltage detectors and short-circuiting system	41
Accessories	43





WARNING FLAGS



AL-60



AL-58

Reference	Characteristics
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 chain link delineators (AL-32/05).
Removable foot.
Ø 50 mm.
Length: 0.9 m.



AL-316



AL-318

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

CHAIN DELINEATORS

Polyamide chains.



AL-31/...



AL-32/...

Reference	Characteristics
AL-31/05	Red and white - Length: 5 m
AL-31/25	Red and white - Length: 25 m
AL-32/05	Yellow and black - Length: 5 m
AL-32/25	Yellow and black - Length: 25 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

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

INTERVENTION KITS



CG-35/2



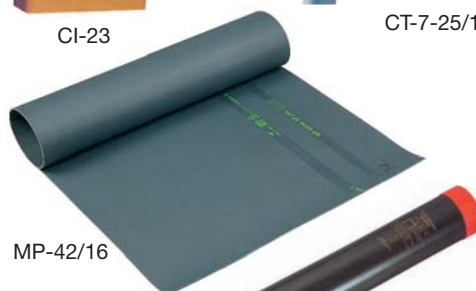
CG-3-10-NR



CI-23



CT-7-25/1



MP-42/16



MP-20



CS-45

Composition of the kits

Reference	Composition	Dimensions	Characteristics
CG-3-10-NR	Insulating rubber gloves	size 10	26 500 V max
CG-35/2	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	1.65 m	45 kV
CI-06-D	Wall mounted supports	Delivered with CS-45	
CT-7-25/1*	Insulating platform	500 x 500 x 220 mm	24 000 V max
MP-42/16**	Insulating MAT	0.6 x 1 mm	≤ 26.5 kV

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

EXTINGUISHERS

Carbon dioxide for B and C type fires.



CD-302



CD-306

Reference	Characteristics
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-128



CD-124

Reference	Characteristics
CD-128	2 modes of operation: BAPI (the default) or BAES (automatic trigger mode to cut industry) - 1 white LED 1W - Autonomy H 1 to 3 H according switch position - 45 lm / 3 H: 1st press / 100 lm / H 1: 2nd press - Meet the NFC standard BAPI 71810 - Ni Cd battery 2.4V 1.5Ah 1 - Food 230V - 50 / 60HZ - Operating Temperature 0 ° C to + 40 ° C - Protection classes IP42 and IK10 I - Class II
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

LIFE SAVING KITS FOR M.V. SUBSTATIONS

Wall mounted KIT

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 or 36 kV high voltage Insulating gloves, insulating boots
- Safety instructions on the plastic board
- 1 talcum powder can.

Wall mounted panel 0.84 x 0.745 x 0.27 m
21 kg - With instructions in English.



Closed



Opened

Reference	Characteristics
CZ-54-R	Use tension: 24 kV
CZ-54-MR	Same as CZ-54-R - With instructions in English/Arabic - 24 kV
CZ-55-R	Same as CZ-54-R - except use tension: 36 kV
CZ-55-MR	Same as CZ-55-R - With instructions in English/Arabic - 36 kV



VOLTAGE DETECTORS AND TESTERS DETEX™ MS 917 AND MS 918

EN 61243-3 (2010)
NF C 18-510 / EN 50110-1



The Detex™+ MS-917 and 918 are designed according to standards EN 61243-3 (2010), in response to the requirements of the new standard NF C 18-510 and the European standard EN 50110-1.

Sound and light equipment, suitable for indoor/ outdoor use, they allow you to perform the Checking of No voltage voltage but also:

- check voltage levels from 12 to 900 V AC, 1000 V DC (depending on model)
- check a circuit's sound and light continuity with power off (200 Ω threshold for MS 917 and 80 Ω for MS 918),
- the unipolar phase tracking,
- search for polarity in a DC circuit,
- check the phase rotation using 2 wire method only for the MS 918.

Double insulated flexible cords.

MS 917 and MS 918

- Fitted with IP2X test probes with Touch function".
- Total safety with a diode indicating the presence of dangerous voltage (> 50 V).
- High levels of protection IP65 and IK06.
- A test button allowing you to detect the checking of correct operation and the continuity function.
- Totally adjustable and adaptable to sockets with safety shutters.

MS 918

- Fitted with a light at the measurement point.
- Check the phase rotation (2 wire method).
- Extended voltage range 900Vac 1000Vdc.

Accessories

Reference	Characteristics
M-87369	Carrying bag *
M-952325	Board hanger *

* Ordered separately.



Detex™+
..... **MS-917**



MS-917-L
MS-918-L

MS-917-PG
MS-918-PG

Detex™+
..... **MS-918**

Reference	Voltage	Hz	Thres- hold	TBT	Polarity DC	Φ Indication	Rotation	Continuity R	Continuity Tempo	Probes	Lighting unit	Weight (kg)	Packaging
MS-917	12-900 V ac / 750 V dc	50-60 Hz	7	•	•	•		200 Ω		L. 19 mm without elastic cage		0.210	Blister
MS-917-BS	50, 230, 400 V ac	50-60 Hz	3	•						L. 19 mm without elastic cage		0.210	Blister
MS-918	12-900 V ac / 1000 V dc	50-400 Hz	8	•	•	•	•	80 Ω	10 s	L. 23 mm with elastic cage	•	0.210	Blister
MS-917 PG	12-900 V ac / 1000 V dc	50-400 Hz	8	•	•	•		80 Ω	10 s	L. 23 mm with elastic cage	•	0.210	Case
MS-918 PG	12-900 V ac / 1000 V dc	50-400 Hz	8	•	•	•	•	80 Ω	10 s	L. 23 mm with elastic cage	•	0.210	Case
MS-918-SP2	12-900 V ac / 1000 V dc	50-400 Hz	8	•	•	•	•	80 Ω	300 s	L. 23 mm with elastic cage	•	0.210	Case
MS-917-ET	12-690 V ac / 750 V dc	50-60 Hz	7	•	•	•		200 Ω	10 s	L. 19 mm without elastic cage		0.210	Case
MS-918-ET	12-900 V ac / 1000 V dc	50-400 Hz	8	•	•	•	•	80 Ω	10 s	L. 23 mm with elastic cage	•	0.210	Case
MS-917-L	12-690 V ac / 750 V dc	50-60 Hz	7		•	•		200 Ω				0.210	Blister
MS-918-L	900 V ac / 1000 V dc	50-60 and 400 Hz	8		•	•	•	80 Ω	10 s		•	0.210	Blister

VOLTAGE DETECTORS AND TESTERS

DETEX™+ MS 920

The Detex™ + MS-920 is designed according to EN 61243-3 standards (2010), in response to the requirements of the new NF C 18-510 standard and the European standard EN 50110-1. A device with two-coloured LCD screen, sound and light, suitable for indoor/outdoor use, which allows you to carry out the Check of No voltage but also:

- checking of voltage levels > 50 V AC and DC,
- measurement of AC voltages up to 690 V and up to 750 V DC
- the sound continuity check of a circuit with power off (< 100 Ω),
- the unipolar phase tracking,
- search for polarity in a DC circuit,
- check the phase rotation using 2 wire method. Double insulated flexible cords.
- Fitted with IP2X test probes with "Touch" function", 24mm and cage type.
- 3 digits digital display and two-coloured (RED and BLUE).
- High levels of protection IP65 and IK06.
- A test button allowing you to discern the checking of correct operation and the continuity function (threshold of 100 Ω).
- Total safety with a diode indicating the presence of dangerous voltage (> 50 V).
- Totally adjustable and adaptable to sockets with safety shutters.
- Fitted with a light at the measurement point.

Detex™+
 **MS-920**

EN 61243-3 (2010)
 NF C 18-510 / EN 50110-1



Accessories

Reference	Characteristics
M-87369	Carrying bag *
M-952325	Board hanger *

* Ordered separately.



Example of continued 24V detection, display is BLUE because < 50 V.



Example of detecting 230 V AC, displayed in RED.

Reference	Voltage 12-690 V AC 12-800 V DC	50/60 Hz	Continuity < 100 Ω	IP65 IK06 Protection	Class II	Category IV 600 V	-15 à +45 °C Operation (class IV)	Digital screen 3 digits	2 batteries AAA 1.5V	Rotary field indicator	Probes IP2X	Lighting unit	Weight (kg)	Packaging
MS-920	•	•	•	•	•	•	•	•	•	•	•	•	0.210	Blister
MS-920 ET	•	•	•	•	•	•	•	•	•	•	•	•	0.210	Case
MS-920-EX	•	•	•	•	•	•	•	•	•	•	•	•	0.210	Blister



EARTHING AND SHORT-CIRCUITED FOR LV SWITCHBOARDS

IEC 61230

MC-244/2 and MC-245/2

EDF Technical specifications SPS No. 41.

For implementing in short circuit of the conductors of a start or of a busbar of an LV switchboard for working in off mode on 1st category underground networks

MC-296-NFC

The earthing of LV structures is a mandatory operation in the NFC 18510 standard (chp 7.1 - Consignment processes). Core 16 mm² silicone insulated copper cable braid.



MC-24...



MC-296-NFC

Reference	Characteristics
MC-244/2	4 multi-strand copper cables 25mm ² – Micro clamps – Connecting blade – Smooth bolt terminal M6, M8, M10, M12 – Pipe wrench – Open jaw spanner 13/14/16/17 – Case and notice
MC-245/2	5 multi-strand copper cables 25mm ² – Micro clamps – Connecting blade – Smooth bolt terminal M6, M8, M10, M12 – Pipe wrench – Open jaw spanner 13/14/16/17 – Case and notice
MC-296-NFC	5 multi-strand copper cables 25mm ² – Micro clamps – Case and notice

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

SHORT-CIRCUITING AND EARTHING SYSTEMS

Earthing clamp for connection to circular diameter and attached by stick tightening.

The connecting set formed by extra multi strand copper cables 16mm² with silicon sheath according IEC61230.

- Materials:
 - Body: Aluminium.
 - Screw: stainless steel.
 - Lg: 3 x 0.75 m / 1 x 2 m.

Connection for cables fitted with screw terminal diam. 8 mm.

End fitting: "C" type.

- One equipment includes:
 - 2 set of 4 clamps with cables,
 - 1 stick,
 - Notice and carrying bag.



Reference	ICC	IEC	Clamping capacities
ZEMCT 32 SNCF PS	4kA/1s	61230	diam. 6 to 30mm

VOLTAGE DETECTORS

Electronic voltage detector, sound and light 3.2 kV AC for switchboards and supply cabinets of rail signalling. Delivered without pole Model HS. With pole MT830P model TS.



ZVATD32TS

Reference	kV	L	(Ø mm)	Weight (kg)
ZVATD 32 HS	3.2	640	59	0.730
ZVATD 32 TS	3.2	640	59	1.550

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

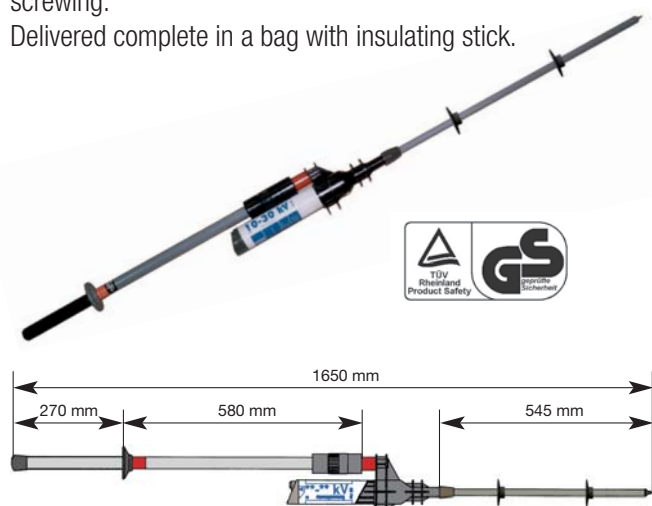
Robust housing.

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	Frequency	LG (mm)	LH (mm)	LI (mm)	LA (mm)	Weight (kg)
CC-578-15	15	16 2/3	1.650	970	580	545	1.95

IEC ELECTRONIC VOLTAGE DETECTOR, WITH ANTENNA FOR INDOOR AND OUTDOOR USESIEC-61243-1 **Description**

CE

- Ultimate "head capacitive technology" of voltage detector.
- Universal application 50 / 60 Hz and wide band of voltage from 5 to 30 kV.
- Type S (Substation) with electrode extension. The electrode extension is designed to ensure no inside failure.
- Equipped with its insulating stick : Assembly by screwing.
- Accessory: Plastic carrying case: REF. M78723.

Characteristics

- Temperature conditions: class N (-25 to 55°C).
- Type S (with electrode extension).
- Electrode extension diameter : 14 mm.
- Power supply: 1 standard 9 V battery 6LR61.
- Network frequencies : 50 and 60 Hz.
- Contact electrodes fitted by screwing and easily interchangeable.
- Packaging: supplied in a carrying bag with zip (930 mm x 200 mm) and transparent side pocket.
- In compliance with the standard IEC 61243-1 Ed 2 (2003).
- CE marking complies with EMC immunity regulations.

Voltage presence is indicated by:

RED flashing LED (very bright, visible at more than 20 m in direct lighting). Powerful rated audible signal > 67 dB (A) / 1.5 m.



Reference	Tension (kV)	Total length	Weight (kg)
CC-965-10/30	10 to 30	Length: 1.55 m Diameter: 59 mm	0.85
CC-965-5/15	5 to 15	Length: 1.45 m Diameter: 59 mm	0.85



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 electroluminescent 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.



Reference	Characteristics
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

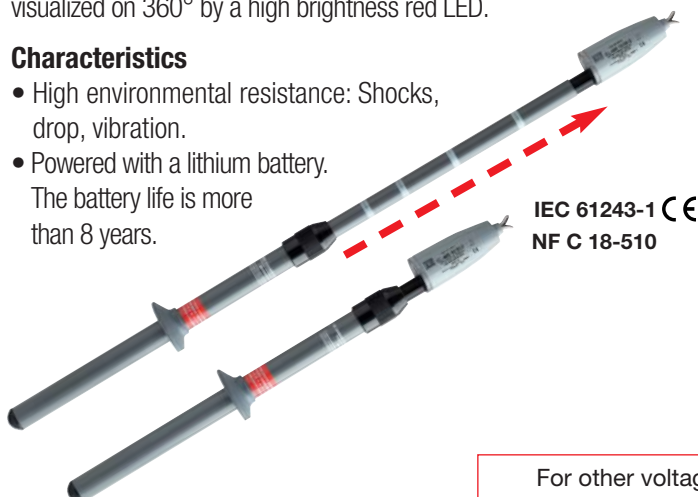
VOLTAGE DETECTOR FOR MV SUBSTATION

Description

Voltage detector for indoor use. It's equipped with its built-in device for the checking operation. The indication "voltage present" is visualized on 360° by a high brightness red LED.

Characteristics

- High environmental resistance: Shocks, drop, vibration.
- Powered with a lithium battery.
The battery life is more than 8 years.



IEC 61243-1 CE
NF C 18-510

For other voltages, please consult us.

Reference	Length (m)	Weight (kg)	Voltage
CL-465-10/30-2 **	1.35	0.9	10 - 30 kV

** Delivered in canvas, waterproofed with shoulder strap.

IEC ELECTRONIC VOLTAGE DETECTORS, "COMPACT SERIE" FOR INDOOR AND OUTDOOR USE

Ultimate technology of voltage detector "Head Capacitive Technology"

Compact and light, it offers a wide band (10/36 kV).

Operating check:

By pressing the TEST button:

- A RED LED flashes on.
- Powerful rated audible signal > 60 dB(A)/2 m.
- When loosening the button. The timed GREEN LED lights up. While remaining on, it indicates the good working order of the detector.

Characteristics:

- Precise and stable operating threshold.
- High environmental resistance (impacts, vibrations, moisture).
- Temperature conditions: class N (IEC 61243-1 standard).
- Use from 50 to 60 Hz.
- Robust housing.
- Weight of the detector: 350 gr.
- Size of the detector: Ø 59 x 270 mm.
- 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.

Recommended stick: CE-4-21, CE-75.



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.



Reference	Frequency	Operating voltage (kV)	Battery	Weight (kg)
CC-765-25*	50/60 Hz	25	9 V	0.350

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

Packaging: unit supplied complete in a case with batteries and contact electrodes (straight and V-shaped). Total weight: 1100 g. Total size: 340 x 275 x 83 mm.

VOLTAGE DETECTORS

Electronic voltage detector, sound and light 0.4 to 2 kV AC for switchboards and supply cabinets of rail signalling.

- An apparatus consisting of an insulating box comprising an electronic circuit, a buzzer. Powered by 4 x 1.5V LR 6 type batteries.
- Immunity to static electric fields.
- Automatic function test for the entire period of use by a green indicator light.
- Presence of voltage indicated by a buzzer (> 60 dbA) and by a synchronised red light.
- Use in rainy conditions.
- Operating temperature: – 15 to + 40°C.



Reference	kV	L (mm)	(Ø mm)	Weight (kg)
ZVATD BT 420 H	0.4/2	340	59	1.150



Test laboratory



for all your mechanical and electrical tests

COFRAC : French Accreditation of Certification



Certificate no. 1-0897
Available at
www.cofrac.fr





D.C. VOLTAGE DETECTOR ACOUSTIC AND OPTICAL SIGNAL

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: 1.5 kg
- Cable length: 8 m
- Clamping capacity: 5-33 mm



Reference	Field of use (V)	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
ZVATDC 120/2200 S	120-2200	Handle	ANTP	910

D.C. VOLTAGE DETECTOR ACOUSTIC AND OPTICAL SIGNAL

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 (V)	Contact-piece	Total length (mm)
ZVATDC 3000 PS	750-3000	ANTP	910
ZVATDC 120/2200 PS	120-2200	ANTP	910
CL-6-10-30000	10-30000	ANTP	910

CONTACT-PIECES



Reference	Dimensions	Reference	Dimensions
ZANTC M8	Ø 70	ZANTV M8	-
ZANTCT M8	Ø 70	ZANTD M8	-
ZANTP M8	-		

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 consult us.

D.C. BIPOLAR VOLTAGE DETECTOR 0.6 TO 2 KV**Operation**

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
 - 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 springcontacts

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

Stick included in pack: CC-1515-101

Supplied in carrying case: CM-303.



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	Characteristics	Voltage (KV)
CC-1515-101	Stick	0.6 - 1.5
CC-1515-102	Antenna	0.6 - 1.5



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



AMT-813-C



MT-814/2
MT-814/3



MT-815-C



MT-815-S1



MT-1911-E
MT-1921-E



MT-1911-S1
MT-1921-S1



MT-815-E



MT-1911-C
MT-1921-C

Reference	Weight (kg)	Dimensions (mm)	Conductors (mm)	Test current (kA/1s)
MT-812-C	0.320	35 x 79 x 143	• Ø 5-16 — 0 - 16	21
MT-813-C	0.330	35 x 79 x 169	— 40 x 16	21
MT-814/2-C	0.660	85 x 56 x 192	• Ø 5-28	14.5
MT-817-C	0.330	30 x 90 x 140	• Ø 5-16 — 40 X 16	21
MT-814/3-C	0.620	85 x 56 x 195	• Ø 18-33	14.5
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	30
MT-1911-C MT-1911-E MT-1911-S1	0.580	For permanent fixed point Ø 20 mm		20
MT-1921-C MT-1921-E MT-1921-S1	0.69	For permanent fixed point Ø 25 mm		30

EARTH CLAMPS

Copper aluminium bronze earth clamps.



MT-840/1



MT-843



AMT-841



MT-1911
MT-1921

For bare conductors

Reference	Weight (kg)	Dimensions (mm)	Conductors (mm)	Test current (kA/1s)
MT-840/1	0.48	Connector: TO-08 - 35 mm²	• Ø 6-25 — 0-25	20
MT-841	0.48	Connector: ≤ 50 mm²	• Ø 6-25 — 0-30	30
MT-843	0.95	45 x 106 x 165	• Ø 6-25 — 0-30	30

For fixed point

Reference	Weight (kg)	Connection conductors (mm)	Test current (kA/1s)
MT-1911	0.58	Spheric fixed points MT-2951 Ø 20 mm Round conductors Ø 8 to 18 mm	20
MT-1921	0.69	Spheric fixed points MT-3951 Ø 25 mm Round conductors Ø 10 to 25 mm	30

FIXED POINTS

MT-2951
MT-3951
MT-3952



IEC-61230

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

For flat conductors

Reference	Weight (g)	Sphere dim. (mm)	Fixing	Test current (kA/1s)
MT-2951	Ø 20	130	Thread: M 12	20
MT-2951/1	Ø 20	180	Bolt: M 12 - L = 35 mm	20
MT-2951/2	Ø 20	200	Bolt: M 12 - L = 45 mm	20
MT-3951	Ø 25	240	Thread: M 12	30
MT-3952	Ø 25	240	Thread: M 16	30
MT-3951/1	Ø 25	300	Bolt: M 12 - L = 45 mm	30
MT-3952/1	Ø 25	350	Bolt: M 16 - L = 45 mm	30

IEC SHORT-CIRCUITING AND EARTHING SYSTEMS FOR MV SUBSTATIONSIEC-61230 

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).

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 1 MT-1911-1911-E	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
Installation on fixed points	• 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 81.**



Equipment for lines, substations and installations INSULATING STICKS

TELESCOPIC STICKS

IEC-61235 
IEC-62193

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.

Reference	Rated insulation (kV)	Ø (mm)	Overall length (m)		Weight (kg)
			extended	folded	
CE-4-21*	90	41/32	2.00	1.15	1.50
CE-4-30**	150	41/32	3.00	1.75	2.20

* Add end-piece C, K, W or E.

** Add end-piece C or K.

FIXED LENGTH STICK FOR USE IN DRY AND WET CONDITIONS

IEC-61235 

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

Reference	Rated insulation (kV)	Ø (mm)	Overall length (m)	Weight (kg)
CF-5-40*	40	36	1.50	1.15
CF-5-90*	90	36	2.00	1.55
CF-5-110*	110	36	2.50	2.00
CF-5-170*	170	36	3.00	2.40

* Add end-piece C or K.

EXTENSION FOR INSULATING STICKS

IEC-61235 

Extension with a male end-piece.

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

Reference	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.
ZAPSP 08	Ø 46 mm	Ø 46 mm max.



CE-4-21-C



CF-5



CM-7-10-A



MG-115/1-S



CI-...-D



ZAPSP 08

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.



Reference	Characteristics
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

Reference	Characteristics
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

Reference	Characteristics
MT-8601	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

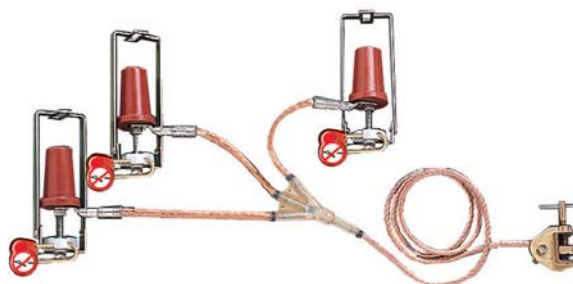
Equipment consisting of:

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.



Reference	Characteristics
MT-8614	Delivered in metal box 480 x 340 x 195 mm Weight: 13.5 kg



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.



CC-245-63/90-C

C



CC-245-150/420-K

K

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 15/48.

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.

HV AND EHV CLAMPS MANOEUVERABLE 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



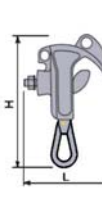
MT-732-B
MT-731-B



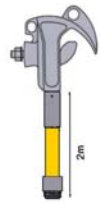
MT-732-E
MT-731-E



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

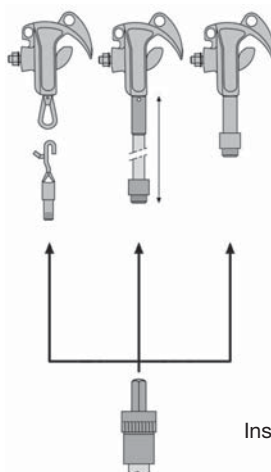
Reference	Clamping capacity (Ø mm)	Rating insulation (kA/1 s)	Asymmetrical (A)	Copper cable section (mm ²)	Dimension of fastening screw (mm)	Weight (Kg)	Dimensions (mm) h x L x thickness
MT-731*	5-60	40	92	150	M 12	1.45	200 x 200 x 50
MT-732*	40-120	40	93	150	M 12	1.45	200 x 200 x 50
MT-734*	5-40	40	92	150	M 12	0.8	145 x 125 x 52
MT-735*	15-60	40	92	150	M 12	0.8	195 x 135 x 45
MT-737-H	20-120	40	92	150	M 12	1.35	340 x 200 x 55

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

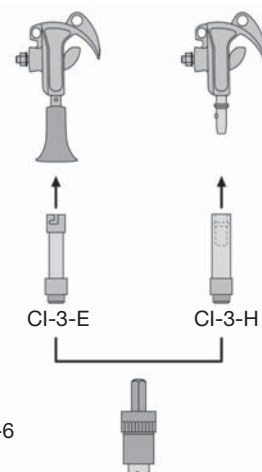
Attachment of MT-734/MT-735 clamps
with MT-717-3-B hook.



Direct connection



Connection adaptor



Insulated sticks CM-6
see page 49.



COPPER CABLES

IEC-61230 

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

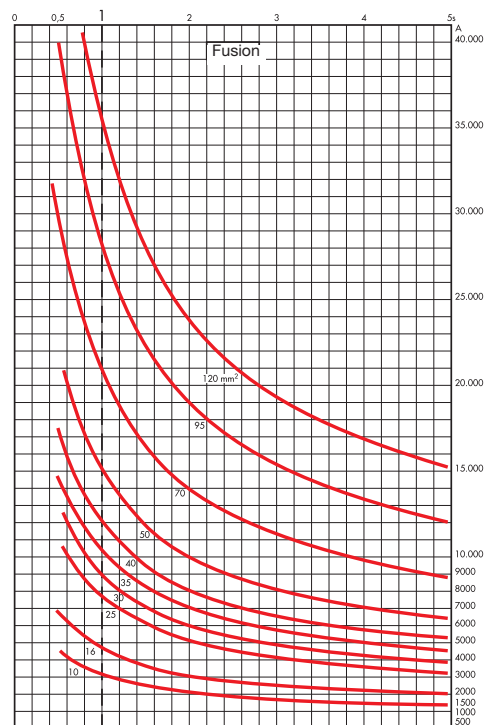


Reference	Rating (kA/1 s)	Cable		Section (mm ²)
		Weight (kg/m)	Ø (mm)	
M-24-16-S	3.5	0.156	5.6	16
M-24-25-S	6	0.275	7.5	25
M-24-35-S	8	0.386	9	35
M-24-40-S	10	0.440	9.5	40
M-24-50-S	12	0.545	10	50
M-24-70-S	16	0.768	12	70
M-24-95-S	20	1.000	14	95
M-24-120-S	30	1.280	17	120
M-24-150-S	40	1.630	19	150

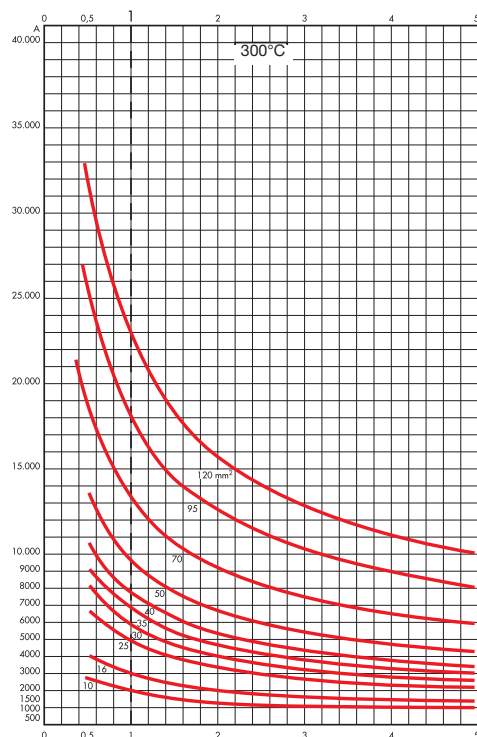
For leads with double-crimped lugs, please consult us.

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)



Copper cables only: Heating curves - 300 °C



EARTH CLAMPS

Copper aluminium bronze earth clamps.



MT-843

MT-847

MT-852

MT-853

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

EARTHING SYSTEM WITH CLAMPS INTERLOCKING

The APE is a grounding system with an interlocking system between earthing and line clamps. It is used for safe and accurate installation (earthing clamp and then line clamp) and removal (line clamp and then earthing clamp).

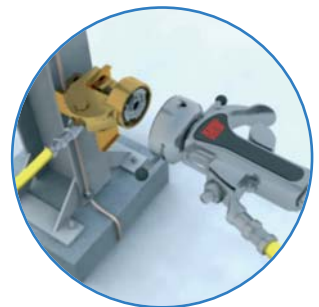
- Locking system using a patented system with more than 30,000 possible combinations.
- Easy installation and removal without additional accessories.
- Automatic trip at the recommended torque on support withstand the short circuit current.
- System security (unable to be unlocked without the associated clamp).

One reference including 3 phases, so 3 clamps equipped.

Substation clamp



Line clamp



Reference	Rating	Use	Fitting	Connection		Dimension (mm)	Ø (mm)	Weight (kg)
				Range	Stud			
MT-834-H	31.5 kA/1 s	Substation	H hexagonal	width 38 mm	M 12	360 x 200 x 85	● 5 - 40	3.2
MT-834-E	31.5 kA/1 s	Substation	E bayonet	width 38 mm	M 12	360 x 200 x 85	● 5 - 40	3.2
MT-834-T	31.5 kA/1 s	Substation	T bayonet	width 38 mm	M 12	360 x 200 x 85	● 5 - 40	3.2
MT-835-H	31.5 kA/1 s	Substation	H hexagonal	width 38 mm	M 12	390 x 200 x 85	● 15 - 60	3.48
MT-835-E	31.5 kA/1 s	Substation	E bayonet	width 38 mm	M 12	390 x 200 x 85	● 15 - 60	3.48
MT-835-T	31.5 kA/1 s	Substation	T bayonet	width 38 mm	M 12	390 x 200 x 85	● 15 - 60	3.48
MT-837-H	31.5 kA/1 s	Substation	H hexagonal	width 38 mm	M 12	470 x 220 x 85	● 20 - 120	3.88
MT-837-E	31.5 kA/1 s	Substation	E bayonet	width 38 mm	M 12	470 x 220 x 85	● 20 - 120	3.88
MT-837-T	31.5 kA/1 s	Substation	T bayonet	width 38 mm	M 12	470 x 220 x 85	● 20 - 120	3.88
MT-934	31.5 kA/1 s	Line	ring	width 38 mm	M 12	360 x 200 x 85	● 5 - 40	3.2
MT-935	31.5 kA/1 s	Line	ring	width 38 mm	M 12	390 x 200 x 85	● 15 - 60	3.48



INSULATING STICKS FOR SHORT-CIRCUITING AND EARTHING SYSTEMS

Made of IEC-60855 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.

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	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
CM-4600-J	0.36	0.95

* Add end piece C, K, E.

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

SET OF STICKS

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

For cables < 95 mm²
CM-4000 serie is
recommended.

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.



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 crossection cables.
- Shockproof guard and pole end cap.



CM-6-15



CM-6-20



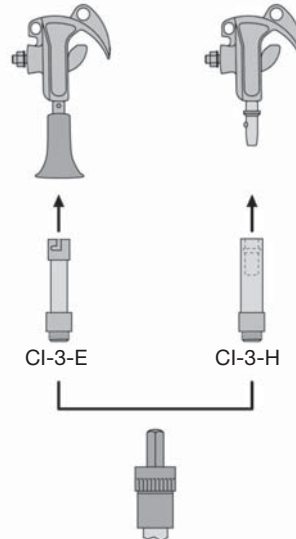
CM-6-25

Reference	Length (m)	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 < 95 mm² CM-6 serie is recommended.

CONNECTION ADAPTORS FOR INSULATING STICKS

- For earthing systems



- For voltage detectors

	E	C
Accessories		
Connection adaptors		
Sticks		

EARTHING KIT SUPPORT

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



Reference	Characteristics
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.

Reference	Characteristics
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



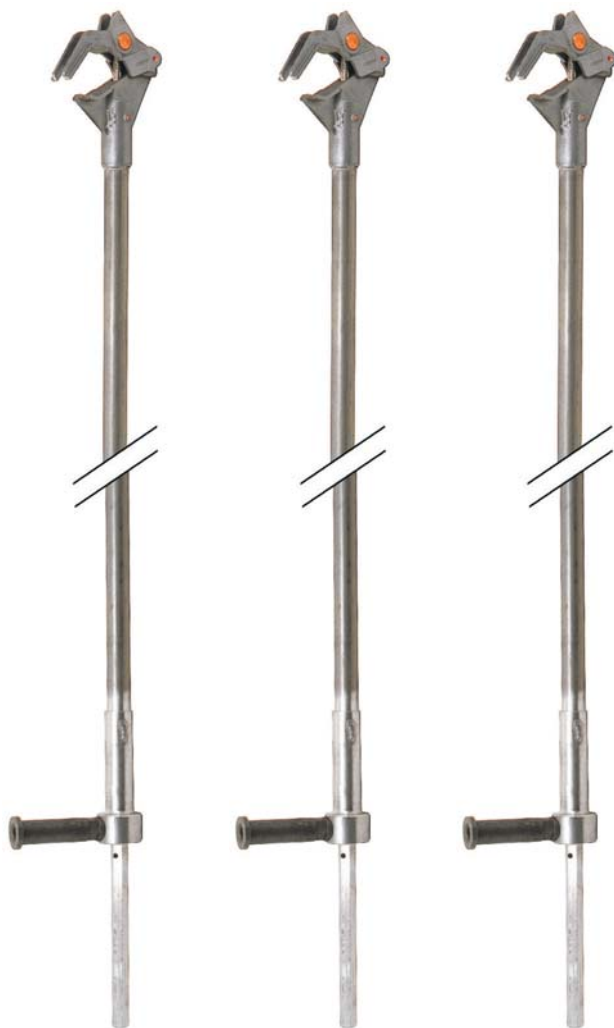
M-87-153



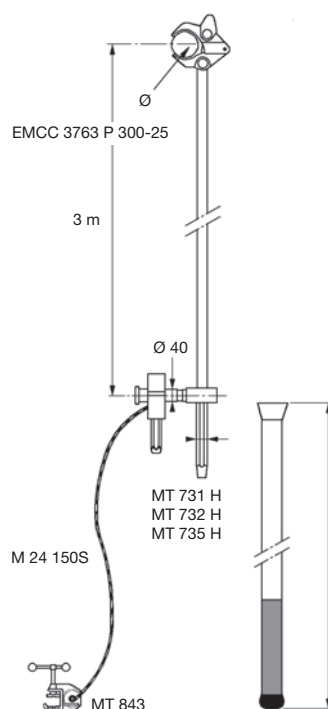
EXTENDED CLAMPS FOR HIGH LEVEL BUSBAR IN HV SUBSTATIONS

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.



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



INSULATING STICK

ZPL9R FL: insulating sticks Ø 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 (m)
ZPL9R 130 FL	3.00

EQUIPOTENTIAL LINES

Use

Conductive line connecting two pieces of metallic pieces in order to give them the same potential.



Cable composition and features

35 mm² copper cable insulated in a green silicone sheathing. Double crimped lugs at the cable ends.

Reference	Characteristics
M-24-35-V	Cable 35 mm



Clamp and stick composition and features:

Insulating stick equipped with a clamp MT-735 in aluminium alloy with Ø 15 to 60 mm clamp capacity.

Reference	Characteristics
MT-735-P4	Clamps MT-735 on stick 400 mm

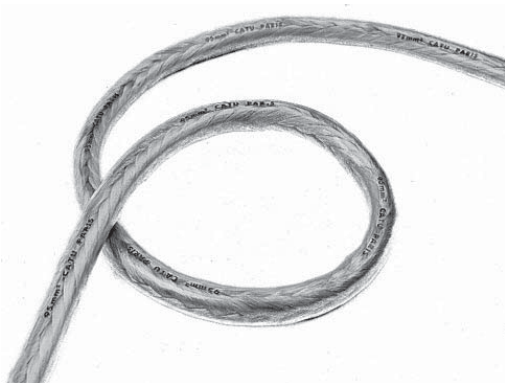
Earth Clamp composition and features:

All the earth clamps of page 46 are available to complete the equipotential lines.

ALUMINIUM CABLES

Extra flexible braided multi-strand cables. Transparent PVC sheath, with cable section identification.

Reference	Rating (kA/1 s)	Cable		Section (mm ²)
		Weight (kg/m)	Ø (mm)	
M-28-70	10.0	0.240	13.4	70
M-28-120	17.5	0.430	19.00	120
M-28-150	20.0	0.510	21.00	150



Voltage detector for MV Substation

CL-465

NEW

Compact series
with visual
indication on

360
degrees



IEC 61243-1 C €
NF C 18-510

CATU™

SICAME GROUP

Personal protective equipment



Head and eyes protection	54
Headlamp, Insulating rubber gloves	56
Insulating boots	57
Insulating platforms, rescue sticks	58
Insulating mats and accessories	59





Personal 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.

EN 397

EN 50365

ANSI 789.1/1986

20000 V

CE

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.



Reference	Characteristics
MO-182/1-B	White
MO-182/1-R	Red
MO-182/1-J	Yellow

POLYCARBONATE HELMET

Polycarbonate helmet.

Shock and wear resistant, comfortable.

Adjustable size from 53 to 63 cm.

Weight: 0.465 kg.

EN 397

CE



Reference	Characteristics
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.

Protection against electric arcs of

short -circuits. Chinstrap

(with Velcro fastening) Head fit

adjustment by milled wheel.

EN 166/EN 170/EN 397

EN 50365

1000 V

CE



Reference	Characteristics
MO-185-BL	Single size - Weight: 0.270 kg
MO-185-BLM	Single size - Weight: 0.270 kg
M-882677	Spare face shield for MO-185-BL and MO-185-BLM

FACE SHIELD

Face shield adjustable on MO-182 helmet.

100% UV protection.

Weight: 0.170 kg.

Caution: Do not use for welding operations.



EN 166/EN 170

CE

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

Reference	Characteristics
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.

Anti-scratch, anti-impact and anti-chemical product treatments.

Caution: Do not use for welding operations.

EN 166/EN 170

CE



Reference	Characteristics
MO-11000	Clear lenses, delivered in pouch
MO-11001	Tinted lenses, delivered in pouch
MO-11003	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



Reference	Characteristics
MO-11010	Clear lenses
MO-11011	Green tinted lenses

LED'S HEADLAMP (4 LED'S)

Can be carried either on the head or any kind of helmet.

- Light wiring for a wide, short-distance beam or a long-range directional beam, or a combination of the two for optimal lighting. 1 flash mode. Range 32 m.
- Lumens max.: 34 Lumens
- Powered by 1 battery AA LR6: 20 hours.
- Adhesive clip supplied to attach to helmet or shield.



Reference	Characteristics	Sealing	Weight (kg)
MS-124	5 led's headlamp	IP x 7	0,75
SUP-124	Adhesive clip	-	0,75

LED'S HEADLAMP WITH HELMET SUPPORT

ATEX approval

European category 1 Certificate (Zone 0).

CE Ex II 1 G Ex ia IIC T4 Ga

II 1 G Ex ia IIC T4 Ga.

Very light headlamp, worn either on the head or on the different models of helmets. Compact lamp and certified Zone 0 (presence of explosive gas atmosphere).

- ABS housing with adjustable elastic headband elastic.
- 3 white Leds.
- 2 levels of intensity: high (3 Leds) or low (1 Led).
- Water resistant.
- Long lighting : 150h.
- Material : high impact ABS.
- 2 types of banners to choose from fabric (standard), or rubber (ideal for helmets and caps).



Reference	Battery	Dimension (mm)	Weight (kg)
MS-126	3 x 1.5 V included	76 x 68 x 44	90

Livrée avec piles et 2 bandeaux.

INSULATING RUBBER GLOVES

EN 60903 / IEC 60903

Our gloves are made of latex especially treated to obtain high dielectric characteristics; they are individually tested and delivered in sealed plastic bags.

Gloves without mechanical protection for use with silicon leather glove covers

Mechanical gloves

Insulating gloves with higher mechanical properties for working in full safety without leather overgloves.



Reference	Class	Voltage	Category	Total length	Color
CG-05-(*)	00	≤ 500 V	AZC	360	Beige
CG-10-(*)	0	≤ 1 000 V	AZC	360	
CG-1-(*)-NR	1	≤ 7 500 V	AZC	360	Bi-colour: Red out- side. Natural inside
CG-2-(**)-NR	2	≤ 17 000 V	RC	360	
CG-3-(**)-NR	3	≤ 26 500 V	RC	360	
CG-4-(***)-NR	4	≤ 36 000 V	RC	410	



Reference	Class	Voltage	Category	Total length	Color
CGM-00-(*)	00	≤ 500 V	RC	360	Bi-colour: Orange outside. Natural inside.
CGM-0-(*)	0	≤ 1 000 V	RC	360	
CGM-1-(**)	1	≤ 7 500 V	RC	360	
CGM-2-(**)	2	≤ 17 000 V	RC	360	
CGM-3-(**)	3	≤ 26 500 V	RC	360	
CGM-4-(***)	4	≤ 36 000 V	RC	410	

(*) References to be completed by size 07, 08, 09, 10, 11, 12 (07 and 12 on request).

(**) References to be completed by size 09, 10, 11, 12

(*) Complete by size codes 07 to 12 (sizes 7 and 12 on request).

(**) Complete by size codes 08 to 12 (size 12 on request).

(***) Complete by size codes 09 to 12 (size 12 on request).



Personal protective equipment INSULATING RUBBER GLOVES

UNDERGLOVES

Cotton undergloves.
To be used with insulating rubber gloves.



Reference	Characteristics
CG-80 (**)	** H: men / F: women

GLOVES BOX

Specially designed for protecting insulating gloves.
Can be fixed on wall.
Includes a bottle of talcum powder and precautions for use on tape positioned according to the language (English, French, Spanish, German, Italian, Portuguese, Arabic dutch, Chinese, Russian).



Reference	Dimension (mm)	Weight (kg)
CG-35/2	101 x 224 x 476	0.900

CARRYING BOX

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



Reference	Dimension (mm)	Weight (kg)
CG-36	90 x 175 x 585	0.120

PNEUMATIC GLOVE TESTER

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



CE

Reference	Dimension (mm)	Weight (kg)
CG-117	140 x 150 x 160	0.600

WORKING GLOVES

Handling leather and cotton gloves. Docker type.



EN 388

CE

Reference	Weight (kg)
CG-96 (*)	0.115

OVERGLOVES

EN 388 / IEC 388
EN 420

CE

Mechanical and electric arc protection.

CG-981-(*): Silicon grain leather, very flexible. Large protective cuff in chrome tanned hide.

CG-991-(*): Silicon goat grain leather. Large protective cuff.

3122



CG-981



CG-991

2121



Reference	Size	Weight (kg)
CG-981-(*) Classes 0 and 00	8, 9, 10, 11	0.160
CG-991-(*) Classes 1 to 4	8, 9, 10, 11, 12	0.200

* Complete by size codes.

INSULATING BOOTS

EN 20345 / EN 50321 

Provide electrical insulation protecting "step voltages."
No metallic element.

Sole: design to prevent clogging. Non-slip vulcanized rubber.

MV-136 / MV-137: Provides protection against step voltage.

MV-136B: For agribusiness application.



Reference	Size	Class	Voltage
MV-136-*	39 to 49	0	1 000V AC
MV-137		-	Tested 20 kV

* Add size to the reference. Ex: MV-137-43.

INSULATING OVER SHOES

Overshoes which provide electrical insulation to protect operators against the risk of a current flow from the feet to the ground or a step voltage.

- Adapted to a temporary and frequent use.
- Classe 0: 1 kV AC - 1.5 kV DC.
- Can be used on footwear.



Reference	Size
MV-138/*	M (39 to 42), L (43 to 45), XL (46 to 48)

* Add size to the reference. Ex: MV-138/L.

LIVE WORKING SAFETY SHOES WITH INSULATING SOLE

Anti-perforation midsole textile (1430N).
Marking => Notified body : ASQUAL 0334

These safety shoes are specially designed for use in a dry area. Do not use them if there is a risk of moisture penetration.
Rear tendon indented soft leather. Protective toe cap 240J.

Rubber sole: Nitrile
Resistant to 300° C



Reference	Size	Voltage (kV)
MV-232-(*)	38 to 48	20

* Add size to the reference. Ex: MV-138/L.

SAFETY SHOES WITH INSULATING SOLE FOR INDOOR AND DRY ENVIRONMENT

100 % TESTED 5 KV

EN 20345 

Shoe with leather and breathable liner microphone.

Anti-perforation textile sole. Protection cap 200J. Adhesion: SRC.
Torsion resistant sole.



Reference	Type	Size	Class	Standard	Use
MV-222-*	Low	39 to 47	0: 1 000V	EN ISO 20345	Industry, construction, bold and smooth floors
MV-223-*	High	39 to 47	0: 1 000V	EN ISO 20345	

* Add size to the reference. Ex: MV-222-43.

Shoes with polyurethane rod and antibacterial lining, ventilated 3D mesh neighborhoods.

Anti-perforation textile sole. Protection cap 200J. Adhesion: SRC.
Anti-perforation textile sole. Protection cap 200J. Adhesion: SRC.



Reference	Type	Size	Class	Standard	Use
MV-226-*	Low	39 to 47	0: 1 000V	EN ISO 20345	Industry, logistics and transport, services and communities.
MV-227-*	High	39 to 47	0: 1 000V	EN ISO 20345	

* Add size to the reference. Ex: MV-226-43.



Personal 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	36 000	220	3.7
CT-7-40/1	45 000	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.



Reference	Length (m)	Rated insulation (kV)
CS-45*	1.65	45
CS-90*	2.05	90
CS-225*	2.45	225

* Delivered with wall mounted supports.

IN ACCORDANCE WITH STANDARDS

The insulating mats provide individual and collective protection. Elastomer, they are used to cover the ground for the electrical protection of operators during work or interventions on electrical installations.

In accordance with IEC 61111 
(Live working tools – insulating mats category C:
Resistant to very low temperature -40°C)

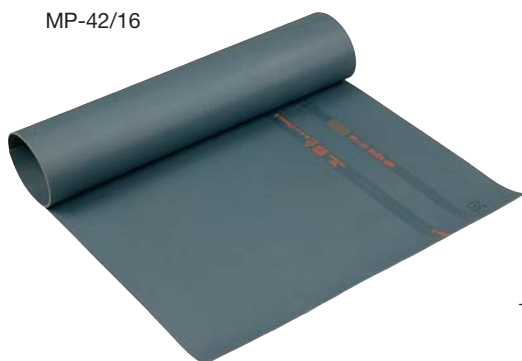
CHARACTERISTICS OF SYMBOLS



Label with a double triangle symbol
IEC 60 417-5216, suitable for live
working.

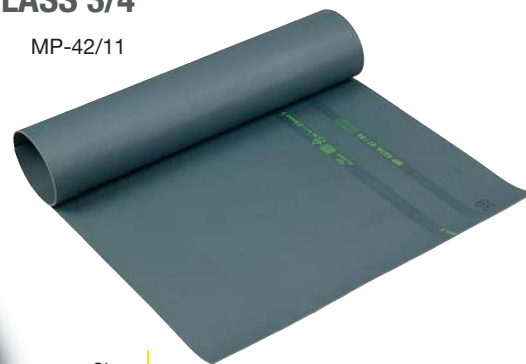
INSULATING MATS LV CLASS 0

MP-42/16



INSULATING MATS MV CLASS 3/4

MP-42/11



Marking
IEC or EN.

In compliance with
IEC 61 111.

Traceability.

Class.

Marking area showing
the date of first use and
periodic testing date.

CLASS AND MAXIMUM VOLTAGE

Classe	Voltage 	Voltage 
0	1 000 V _{effective}	1 500 V
1	7 500 V _{effective}	11 250 V
2	17 000 V _{effective}	25 500 V
3	26 500 V _{effective}	39 750 V
4	36 000 V _{effective}	54 000 V

RECOMMENDATIONS FOR USE

Storage/Transport

Insulated blanket should be properly stored to avoid the risk of damage to the insulating material.

Do not bend insulating mats.

Do not store or use close to excessive heat.

Do not expose to direct sunlight for long period.

Storage temperature : 10°C to 21°C.

Before use

Visually inspected by the user. If the insulating mats is dirty, wash it with soap and water. Dry it with respect of using temperatures.

In use

Operating temperatures : -40°C to 55°C.

Avoid contact with chemical products

Place the mat on a clean, smooth floor, devoid of aggressive elements for insulation.

Position the feet in the center of the insulating mat.

Periodic inspection

Insulating mats should not be used without having been electrically tested within twelve month preceding with the exception of class 0. Only visual inspection is required for class 0.



Personal protective equipment INSULATING MATS AND ACCESSORIES

INSULATING MATS

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

- High quality dielectrical rubber.
- Regulatory mark clearly indicating the mat features.
- Anti slipping surface.



Individual models

Reference	Class	Voltage 	Voltage 	Thickness (mm)	Dimension (mm)	Weight (kg)
MP-11/11	0	≤ 1 000 V	≤ 1 500 V	2	1 x 1	2.9
MP-11/16	0	≤ 1 000 V	≤ 1 500 V	2	0.6 x 1	1.4
MP-42/11	3	≤ 26 500 V	≤ 39 750 V	3	1 x 1	4.5
MP-42/16	3	≤ 26 500 V	≤ 39 750 V	3	0.6 x 1	2.9
MP-42/66	3	≤ 26 500 V	≤ 39 750 V	3	0.6 x 0.6	1.8
MP-120/03-1	3	≤ 26 500 V	≤ 39 750 V	3	1.2 x 1	5.8

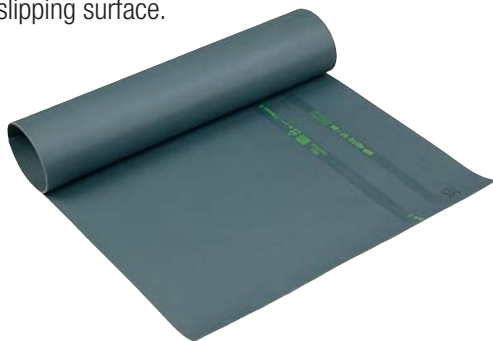
Models in rolls

Reference	Class	Voltage 	Voltage 	Thickness (mm)	Dimension (mm)	Weight (kg)
MP-60/03-5	3	≤ 26 500 V	≤ 39 750 V	3	0.6 x 5	14
MP-60/03-10	3	≤ 26 500 V	≤ 39 750 V	3	0.6 x 10	28
MP-100/03-5	3	≤ 26 500 V	≤ 39 750 V	3	1 x 5	25
MP-100/03-10	3	≤ 26 500 V	≤ 39 750 V	3	1 x 10	53.5
MP-60/05-5	4	≤ 36 000 V	≤ 54 000 V	5	0.6 x 5	28
MP-60/05-10	4	≤ 36 000 V	≤ 54 000 V	5	0.6 x 10	44
MP-100/05-5	4	≤ 36 000 V	≤ 54 000 V	5	1 x 5	45

INSULATING MATS HV

Adapted to the B High Voltage.

- High quality dielectrical rubber.
- Regulatory mark clearly indicating the mat features.
- Anti slipping surface.



Reference	Umax. (kV)	Thickness (mm)	Dimension (m)	Weight (kg)
MP-100/10-5	90	10	1 x 5	87
MP-100/10-10	90	10	1 x 10	154

BAGS FOR INSULATING MATS

Specially designed for carrying and protecting insulating mats.

Equipped with a shoulder strap.

Plastic window for instructions and storage identification.



Reference	Characteristics	Total length
MP-01	For MP-11/16, P-42/16 and MP-42/66	0.7
MP-02	For MP-11/11 and MP-42/11	1.1

Padlocks and warning signs



Padlocks	62
Self adhesive signs	64
Warning signs and delineators	65





PADLOCKS AND WARNING SIGNS PADLOCKS AND WARNING SIGNS

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.



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

CIRCUIT BREAKER LOCKERS CLIPBLOCK™

Quick fitting with a no. 3 flat screwdriver.
Highly compact and can be padlocked.
Prohibition sign.
Delivered in blister pack.



Reference	Description and packing	Weight (kg)
AL-201/1	5 units, no padlock	0.158
AL-201-C/1	Comes with 1 padlock	0.060

CIRCUIT BREAKER LOCKERS MULTIPLE MODEL

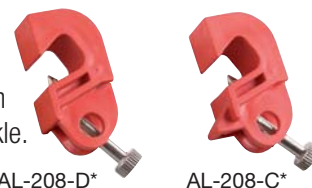
- Suitable for all types of low voltage protection unit locker.
- Particularly suited to the CLIPBLOCK™ circuit breaker locker.



Reference	Description and packing	Weight (kg)
AL-205	2 parts - delivered without padlock or locker AL-201/1.0.	0.110
AL-205/5	2 parts - delivered with 5m cord. Delivered without padlock or locker AL-201/1.	0.160

MEDIUM-SIZE MODELS CIRCUIT BREAKER LOCKERS

Red PVC. Easy installation without tools (tightened manually). Trip worm to allow space for the padlock shackle.



Reference	Ø holes	Screw	Weight (kg)
AL-208-C*	4	Stainless steel	0.020
AL-208-D**	4	Stainless steel	0.020

* Bent snipe nose.
** Straight.

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-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



AT-41/1



AT-41/05



AT-41/025



AT-49/1



AT-49/05



AT-49/025



AT-50/1



AT-50/053



AT-50/025



AT-51/1



AT-51/05



AT-51/025



AT-52/1



AT-52/05



AT-53/1



AT-53/05



AT-54/1



AT-54/05



AT-55/1



AT-55/05



AT-56/1



AT-56/05



AT-58/1



AT-58/05



AT-59/1



AT-59/05



AT-60/1



AT-60/05



AT-61/1



AT-61/05



AT-62/1



AT-62/05



AT-63/1



AT-63/05



AT-66/1



PADLOCKS AND WARNING SIGNS 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.



AM-49/1



AM-41/1



AM-344-GB



AM-345-GB

Specialized signs

Reference	Type	Dimensions	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

Reference	Characteristics
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)



AL-60



AL-58

SAFETY BOUNDARY POST

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



AL-316



AL-318

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

CHAIN DELINEATORS

Polyamide chains.



AL-31-...



AL-32-...

Reference	Characteristics
AL-31/05	Red and white - Length: 5 m
AL-31/25	Red and white - Length: 25 m
AL-32/05	Yellow and black - Length: 5 m
AL-32/25	Yellow and black - Length: 25 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

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

General tools



<u>Arc Flash equipment</u>	66
<u>Workwear and other protections</u>	67
<u>Equipment for working on pole</u>	69
<u>Insulated tools</u>	74
<u>Insulating ladders</u>	76
<u>Accessories</u>	77





"ARC FLASH" JACKET AND PROTECTIVE COVERALL KITS (12 CAL/CM²)

IEC 61482-2
NFPA 70E
CE



Composition of the kit:

- 1 Face shield with chin cup 12 cal/cm², absorbs > 99.9% of harmful UV radiation, tested to ASTM F2178 specifications,
- 1 ABS helmet electrically insulated EN397, EN 50365, ANSI Z89.1, 20kV ;
- 1 safety glasses EN 166/EN 170,
- 1 arc flash protective hood (12 cal/cm²), only with coverall and blue short jacket ;
- 1 protective coverall 12 cal/cm² *1 , ASTM F1506 and NFPA 70E Standards or 1 arc flash protective jacket 12 cal/cm², ASTM F1506 and NFPA 70E Standards ;
- 1 carrying bag for face shield and helmet,
- 1 all kit carrying bag.



Reference	Characteristics	Capacity cal/cm ²	Weight (kg)
KIT-ARC-12-C-(*) *1	Coverall	12 cal/cm ²	4.2
KIT-ARC-12-J-(*) *2	Long hooded jacket	12 cal/cm ²	3
KIT-ARC-12-JP-(*) *3	Short jacket without hood + pants	12 cal/cm ²	4.4

(*) Reference to be completed by the size M, L or XL. Size S to 3 XL on request.

1 For reference KIT-ARC-12-C-()

2 For reference KIT-ARC-12-J-()

3 For reference KIT-ARC-12-JP-()

ARC FLASH" PROTECTIVE KITS (25, 40, 65 OR 100 CAL/CM²)

IEC 61482-2
NFPA 70E
CE



Composition of the kit:

- 1 arc flash protective hood with an integrated face shield 25 *1, 40 *2, 65 *3 or 100 *4 cal/cm², ASTM F2178 and NFPA 70E Standards,
- 1 ABS helmet electrically insulated EN397, EN 50365, ANSI Z89.1 20kV,
- 1 arc flash protective bib overall 25 *1, 40 *2, 65 *3 or 100 *4 cal/cm², ASTM F1506 and NFPA 70E Standards ;
- 1 arc flash protective coat 25 *1, 40 *2, 65 *3 or 100 *4 cal/cm², ASTM F1506 and NFPA 70E Standards ;
- 1 safety glasses EN 166/EN 170,
- 1 all kit carrying bag.



KIT-ARC-25-B-(*)

KIT-ARC-65/100-B-(*)

KIT-ARC-40-B-(*)

Reference	Capacity cal/cm ²	Weight (kg)	Color
KIT-ARC-25-B-(*) *1	25	6	KAKI
KIT-ARC-40-B-(*) *2	40	6.9	GREY
KIT-ARC-65-B-(*) *3	65	8	CAMEL
KIT-ARC-100-B-(*) *4	100	8	CAMEL

(*) Reference to be completed by the size M, L or XL. Size S to 3 XL on request.

1 For reference KIT-ARC-25-B-().

2 For reference KIT-ARC-40-B-().

3 For reference KIT-ARC-65-B-().

4 For reference KIT-ARC-100-B-().

ELECTRICIAN COVERALL

Coverall without metallic part, avoiding any flash hazards. 100% cotton.

- Gusset back. Neck jumper.
- 2 flattened breasts pockets closed by injected zips every plastic part hidden.
- Front closed by injected zip every plastic part hidden.
- Tape measure pocket on right back leg.
- 2 flattened thighs pockets.
- Tape measure pocket on right back leg.



Reference	Size for Ref. (*)	Size	Chest size
MV-104/ (*)	01	40/42	85/92
	02	44/46	92/100
	03	48/50	101/108
	04	52/54	109/116
	05	56/59	117/124
	06	60/62	125/132
	07	64/66	133/140

(*) Reference to be completed by the size, ex : MV-104/02

WORK GLOVES

EN 388
EN 420
CE

CG-96-C: american style gloves with very soft and flexible full bloom leather allowing full finger movement. Tightening elastic on the back of the hand.

CG-97-C: "Docker" style gloves with very soft full bloom leather allowing full finger movement. Semirigid red fabric top with elastic on the back.



CG-96-C

CG-97-C

Reference	Size for ref. (*)	Weight (kg)	
CG-96-(*)	A = 8	0.115	3122
	B = 9		
	C = 10		
	D = 11		
CG-97-C	One size C = 10	0.115	3122

(*) Reference to be completed by the size of A, B, C or D.

PROTECTIVE GLOVES CUT

CG-951-(*): knitted glove, gauge 15, black nylon Black foam nitrile coating on palm and on fingertips.

EN 388
EN 420
CE

CG-952-(*): knitted glove, 13 gauge in technical fibers resistant to cutting, with edge elastic wrist coast black mottled with black non-slip foam coating nitrile on palm and fingertips.



CG-951

CG-952

Reference	Size for ref. (*)	Weight (kg)	
CG-951-(*)	7 to 10	0.045	4121
CG-952-(*)	7 to 10	0.085	4544

(*) Reference to be completed by the size of 07, 08, 09 or 10.



GENERAL TOOLS OTHER PROTECTION

SAFETY SHOES

ISO EN 20345
SRC (SRA+SRB)
PPE category 2.
CE

MV-123: Low, derby style shoe without metal parts.

MV-124: Heavy duty boots without metal parts.

- Form-fitting, antistatic HI-CI and anti-bacterial.
- Bodkin strap closure.
- Indestructible lightweight TPU end pieces, extra wide 200 joules. in Light-System® composite.
- Extrem 4 multidensity PU/TPU foam sole and puncture-resistant composite Flex System®.



MV-124

MV-123

Reference	Size	Marking	Weight (kg)
MV-123-(*)	from 39 to 48	S3	1.2
MV-124-(*)	from 39 to 48	S3	1.26

(*) Reference to be completed by the size: 39, 40, 41, 42, 43, 44, 45, 46, 47, 48. Example: MV-123-40.

COLD PROTECTION KIT AND CAP

EN 471
CE

MO-157: Industrial safety cap with a fabric covered protective shell.

MO-158: Kit to protect against harsh weather conditions, including:

- 1 acrylic helmet cap. Protects against cold inside the helmet.
- 1 yellow high-visibility neck warmer.



MO-157



MO-158

Reference	Characteristics	Weight (kg)
MO-157	safety cap	0.155
MO-158	universal cap	0.055
	neck warmer	0.086

ARC FLASH

equipment

See page 66

PRO ELECTRIC FULL BODY FALL ARREST HARNESS

EN 358
EN 361
CE

2 fall arrest attachment point: dorsal and sternal. Automatic buckles of the belt and leg loops. Elastic shoulder straps. Padded leg loops. A work positioning belt, with a comfortable and lightweight pad. 2 buckles of work positioning Belt. Leg loops and shoulder straps adjustable. Polyamide straps. Tools holders. Delivered in a protective bag with a users manual.



Reference	Size	Weight (kg)
MO-563-A(*)	S = small / M = medium / XL = large	2.7

* add size: S/M/XL

PRO ELECTRIC FULL BODY FALL ARREST HARNESS

EN 358
EN 361
EN 813
CE

4 fall arrest attachment point : one dorsal point, two sternal points by two metallic D rings, a sternal point by strap. A ventral attachment point for a descender and / or lanyard. Automatic buckles of leg loops. Padded leg loops. A work positioning belt, with a comfortable and lightweight pad. 2 buckles of work positioning Belt. Leg loops and shoulder straps adjustable. Polyamide straps. Tools holders. Delivered in a protective bag with a users manual.



Reference	Size	Weight (kg)
MO-565-(*)	S = small / M = medium / XL = large	2.9

* add size: S/M/XL

FULL BODY FALL ARREST HARNESS

EN 358
EN 361
CE

2 fall arrest attachment point : dorsal and sternal. A work positioning belt, with a comfortable and lightweight pad. 2 buckles of work positioning Belt. Leg loops and shoulder straps adjustable. Polyamide straps. Unique size. Delivered in a protective bag.



Reference	Weight (kg)
MO-71	1.9

EQUIPPED ROPE STRAPS WITH LEVER STRETCHER

EN 358
CE

Equipped with adjuster. Hooks to belt with rapid link.



Reference	Length (m)	Weight (kg)
MO-52-L	4	1

ANTI-FALL GRIP

EN 353-3
CE

The safety block runs freely on its rope but can be automatically locked in case of a sudden downward drop. Must be used only with special 15 mm Ø rope delivered with the device.



Reference	Rope	Weight (kg)
MO-68/10	10 m	2.3
MO-68/15	15 m	3.25

DOUBLE SAFETY DESCENT DEVICE

EN 361
CE

Articulated stainless steel cam. Aluminium housing. Highresistance handle. Operates with 9-12 mm diameter lanyard. Ideal for evacuation. Lets you regulate descent.



Reference	Weight (kg)
MD-02	0.32

DOUBLE SAFETY DESCENT DEVICE

EN 355
CE

Tether rope in polyamide Ø14 mm.



Reference	Length (m)
MO-52020	1.5
MO-52021	2.0

DOUBLE TETHER ROPE WITH ENERGY ABSORBER

EN 355
CE

Double tether rope with energy absorber. Equipped with 2 steel snap hooks with automatic locking and 1 steel snap hook with screwing locking.



Reference	Length (m)	Weight (kg)
MO-54010	1.2	1.4



GENERAL TOOLS EQUIPMENT FOR WORKING ON POLE

SNAP HOOKS (STAINLESS STEEL)



MO-54



MO-55/1

EN 362
CE

Reference	Characteristics	Weight (kg)
MO-54	Locks with threaded ring Opening: 15 mm 105 x 58 mm	0.154
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

SNAP HOOKS (ALUMINIUM ALLOY) ZICRAL



MO-54000



MO-54004

EN 362
CE

Reference	Characteristics	Weight (kg)
MO-54000	Oval snap hook - Opening: 15 mm Individually tested - 110 x 58 mm	0.071
MO-54004	D-shaped snap hook with automatic locking Opening: 23 mm - Individually tested - 120 x 72 mm	0.087

RETRACTABLE FALL ARREST WITH CABLE

Designed for lineman safety. Quick EN 360 acceleration causes instant locking. Corrosion protected steel shell. Integrated braking mechanism and dissipating element. Self locking mechanism and automatic tensioning and return facility. Delivered with a screw crab.



EN 360

Reference	Cable	Strength (daN)	Length max. (m)	Weight (kg)
MO-591002	Galvanized Ø 4 mm	1 200	10	7

SNAP HOOK WITH DOUBLE SAFETY LATCH

EN 362
CE

Body in steel. Fingers in stainless steel.



Reference	Opening (mm)	Resistance (kN)	Weight (kg)
MO-54002	50	20	0.39

WORK POSITIONING AND RESTRAINT LANYARD

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. Polyamide.

EN 358
CE



Reference	Ø (mm)	Length (m)	Resistance (kN)	Weight (kg)
MO-56009	12	2	15	0.75
MO-56010	12	5	15	1

SAFETY ROPE WITH WEAR TELL TALES

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. Polyamide.

EN 358
CE



Reference	Characteristics	Length (m)	Weight (kg)
MO-052	Safety rope only	4	0.76

LANYARD

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

EN 354
CE



Reference	Length (m)	Weight (kg)
MO-53	1.50	0.125

RETRACTABLE FALL ARREST WITH STRAP

EN 360

CE

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



Reference	Length (m)	Weight (kg)
MO-53	2	1.160

ANCHORING TIE

EN 795

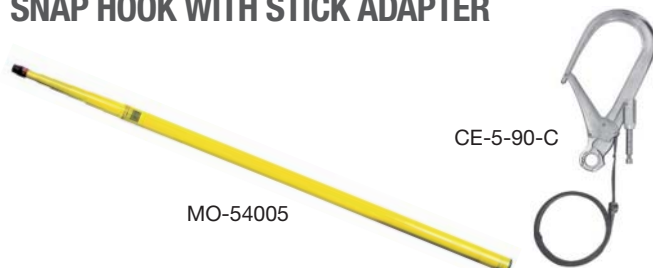
CE

Tie in polyamide.



Reference	Length (m)	Weight (kg)
MO-52031	0.8	0.100
MO-52033	1.2	0.135
MO-52034	1.5	0.150

SNAP HOOK WITH STICK ADAPTER



CE-5-90-C

MO-54005

Reference	Opening (mm)	Length (m)	Weight (kg)
MO-54005	50	-	0.5
CE-5-90-C	-	9 max	4

POLYCARBONATE HELMET

Adjustable size from 53 to 63 cm. Deformable shock-resistant helmet. Chinstrap with an easy adjustment buckle. Designed to tear if hooked. < 25 daN).



Reference	Weight (kg)
MO-183-BL	0.455

KIT FOR CLIMBING USING AN AERIAL DEVICE

Equipment preventing the operator to reach a location from where a fall is possible.



Lanyard



Snap hook



MO-70

Composition	KIT-HAUT-10
MO-70	1 to 2 fall arrest harness anchor points
-	1 restraint lanyard length 1.5 m
-	2 screw carabiners

KIT FOR CLIMBING USING AN AERIAL DEVICE

Equipment adapted to work in pod or platform.



MO-52020



M-87295



MO-71

Composition	KIT-HAUT-06
MO-71	1 single pro body harness to 2 anchors
MO-52020	1 single fall arrest lanyard with energy absorber, length 1.5 m
M-87295	1 carrying bag



GENERAL TOOLS EQUIPMENT FOR WORKING ON POLE

KIT FOR HEIGHT WORKING, MORE THAN 6M HIGH ON SCAFFOLDING OR METAL STRUCTURE

Fall arrest kit for operator at over 6 meters high. Adapted to many applications to more than 6 m from above. Simple, light, practical.



MO-52040



MO-70

Composition	KIT-HAUT-11
MO-70	1 to 2 fall arrest harness anchor points
MO-52040	1 along stretchy length m 2 absorber energy and automatic locking connector Opening 54 mm

KIT FOR HEIGHT WORKING AT WEAK HEIGHT OF FALL

Equipment operator working at a height between 3 and 6 m.



MO-591001



MO-52031



MO-70

Composition	KIT-HAUT-12
MO-70	1 to 2 fall arrest harness anchor points
MO-591001	1 Self Retracting Fall with Strap 2.5 m in length and energy absorber
MO-52031	1 anchor tie length 1 m

KIT FOR CLIMBING ON A ROOF OR AN INCLINED SUPPORT

Equipment adapted to work on all types of pillars, structures metal, antenna supports or metal poles.



MO-56009



M-87295



MO-71



MO-54010

Composition	KIT-HAUT-05
MO-71	1 single pro body harness to 2 anchors
MO-54010	1 Double fall arrest lanyard with energy absorber, length 1.2 m
MO-56009	1 tensioner with lanyard, length 2 m
M-87295	1 carrying bag

KIT FOR CLIMBING A POLE WITH A STANDARD INSULATING LADDER

Equipment for the job or pole facade with ladder standard insulation.



MO-68/15



MO-56009



M-87295



MO-54



MO-563



MO-52020

Composition	KIT-HAUT-01-(*)
MO-563	1 fall arrest harness pro electrician to 2 points anchor and work positioning belt
MO-68/15	1 mobile fall rope length 15 m
MO-52020	1 single fall arrest lanyard with energy absorber, length 1.5 m
MO-56009	1 tensioner with lanyard, length 2 m
MO-54	1 carabiner
MO-52034	1 anchor tie length 1.5 m
M-87295	1 carry bag

* Add size: M or XL when ordering

KIT FOR CLIMBING A POLE WITH SPLICED
INSULATING LADDERS

Equipment adapted to work on fixing interlocking scales pole.



Composition	KIT-HAUT-02-(*)
MO-563	1 fall arrest harness pro electrician to 2 points anchor and work positioning belt
MO-68/15	1 mobile fall rope length 15 m
MO-54010	1 Double fall arrest lanyard with energy absorber, length 1.2 m
MO-56009	1 tensioner with lanyard, length 2 m
MO-54	1 carabiner
MO-52034	1 anchor tie length 1.5 m
M-87295	1 carry bag

* Add size: M or XL when ordering

KIT FOR CLIMBING ON CATENARY SUPPORT
STRUCTURES (RAIL, TRAM)

Equipment suitable for work on poles or pole supporting catenary.



Composition	KIT-HAUT-03-(*)
MO-563	1 fall arrest harness pro electrician to 2 points anchor and work positioning belt
MO-68/15	1 mobile fall rope length 15 m
MO-54020	Energy absorbing forked lanyard with buckles 2 connectors entirely insulated, length 1.5 m
MO-56009	1 tensioner with lanyard, length 2 m
M-87295	1 carry bag

* Add size: M or XL when ordering

KIT FOR CLIMBING UP ON TOWERS (RAILWAY,
METAL STRUCTURES, ANTENNA SUPPORTS,
METALLIC PYLONS)

Equipment suitable for working all types of pillars, metallic structures, antenna supports or posts metal.



Composition	KIT-HAUT-04-(*)
MO-565	1 fall arrest harness pro electrician 2 anchor points and 1 ventral attachment point and work positioning belt
MO-68/15	1 mobile fall rope length 15 m
MO-54010	Forked lanyard with energy absorber 2 steel snap hooks, length 1.2 m
MO-56009	1 tensioner with lanyard, length 2 m
MO-52031	1 anchor tie length 0.8 m
M-87295	1 carry bag

* Add size: M or XL when ordering



GENERAL TOOLS INSULATED TOOLS

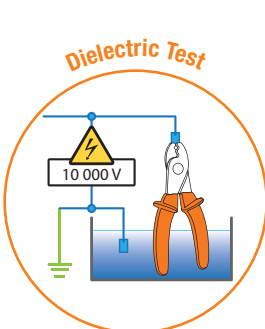
INSULATED TOOLS, FIND THE TOOLS TO MEET YOUR NEEDS!

Insulated tools must comply with the **NF EN 60900** and **IEC 60900** standards. To meet these standards, insulated tools undergo 10 000 volts through electrical testing and many mechanical tests, including impact tests, tearing tests, and puncture tests. For working live at nominal voltage up to 1000 V a.c and 1500 V d.c.

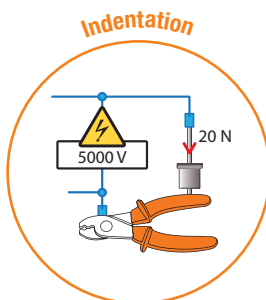
IEC 60900 2012



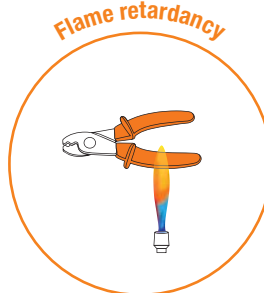
ISOMIL™
SAFETY TOOLS



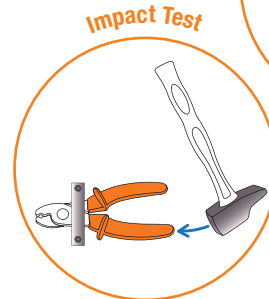
Dielectric Test



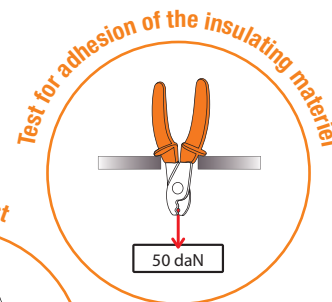
Indentation



Flame retardancy

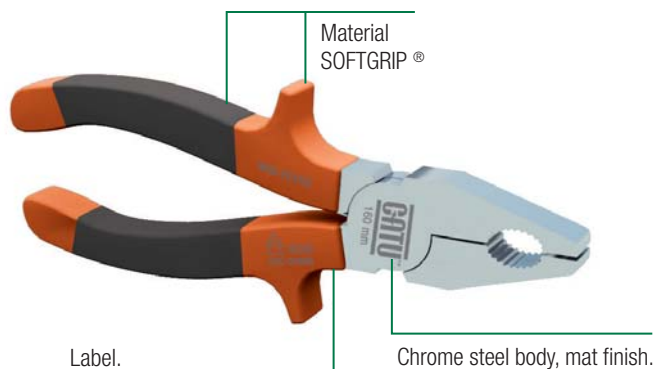


Impact Test

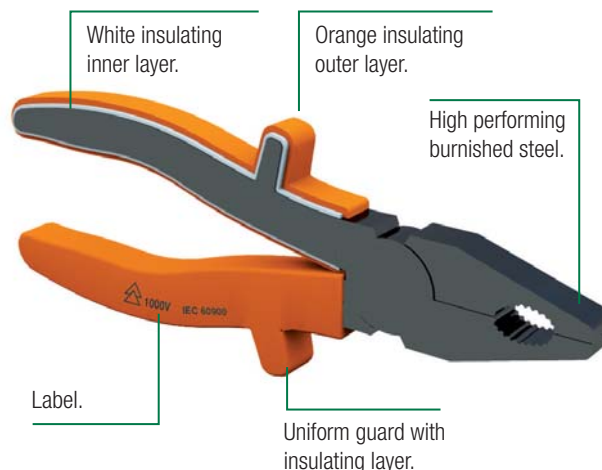


Test for adhesion of the insulating material

Dual Material Insulated Tools



Dual Layer Insulated Tools



SPECIAL FEATURES

- Products suitable for work on live cables, particularly low voltage (30 cm area of a live bare wire).
- Ergonomic.
- Dual material with non-skid "SOFTGRIP"® injected material for operator comfort.

SPECIAL FEATURES

- Extensive product line for work on live cables; mainly used by LV Live Line Working teams.
- Ergonomic.
- Dual-layer with a white insulating layer.
- High mechanical strength in the layers due to dipping technique.
- Steel with high mechanical properties.

Routine test: each tool is tested at 10kV for ten seconds.

SCREWDRIVERS KIT, DUAL MATERIAL



Composition	Reference: KIT-23
MO-72004	Flat blade screwdriver de 4 x 125 mm
MO-72006	Flat blade screwdriver 6 x 150 mm
MO-72008	Flat blade screwdriver 8 x 175 mm
MO-72042	Pozidriv screwdriver N°1
MO-72044	Pozidriv screwdriver N°2

PLIERS KIT, DUAL MATERIAL



Composition	Reference: KIT-27
MO-72102	Universal plier 180 mm
MO-72155	Water pump plier 250 mm
MO-72172	Wire stripping plier 160 mm
MO-72142	Bent snipe nose plier 160 mm
MO-72200	Cable cutter 160 mm

INTERVENTION KIT, DUAL MATERIAL



Composition	Reference: KIT-24
MO-72004	Flat blade screwdriver 4 x 125 mm
MO-72006	Flat blade screwdriver 6 x 150 mm
MO-72008	Flat blade screwdriver 8 x 175 mm
MO-72042	Pozidriv screwdriver N°1
MO-72044	Pozidriv screwdriver N°2
MO-72172	Wire stripping plier 160 mm
MO-72142	Bent snipe nose plier 160 mm
MO-72200	Cable cutter 160 mm

COMPLETE INTERVENTION KIT, DUAL MATERIAL



Composition	Reference: KIT-25
MO-72004	Flat blade screwdriver 4 x 125 mm
MO-72006	Flat blade screwdriver 6 x 150 mm
MO-72008	Flat blade screwdriver 8 x 175 mm
MO-72042	Pozidriv screwdriver N°1
MO-72044	Pozidriv screwdriver N°2
MO-72102	Universal plier 180 mm
MO-72155	Water pump plier 250 mm
MO-72172	Wire stripping plier 160 mm
MO-72142	Bent snipe nose plier 160 mm
MO-72200	Cable cutter 160 mm

SCREWDRIVERS KIT DUAL MATERIAL



Photos of KIT-23SCP

Composition	KIT-...								
	23C	23S	23SC2	23SH	23P	23SP2	23SCP	23CH	23PH
MO-72003 flat blade screwdriver 3 x 100		•	•	•		•	•		
MO-72004 flat blade screwdriver 4 x 125		•	•	•		•	•		
MO-72005 flat blade screwdriver 5 x 150		•	•	•		•	•		
MO-72006 flat blade screwdriver 6 x 150		•	•			•			
MO-72008 flat blade screwdriver 8 x 175		•							
MO-72030 screwdriver PH 0 x 60	•								
MO-72032 screwdriver PH 1 x 100	•		•				•	•	
MO-72034 screwdriver PH 2 x 125	•		•				•	•	
MO-72036 screwdriver PH 3 x 150	•							•	
MO-72040 screwdriver PZ 0 x 60					•				
MO-72042 screwdriver PZ 1 x 100					•	•	•		•
MO-72044 screwdriver PZ 2 x 125					•	•	•		•
MO-72046 screwdriver PZ 3 x 150					•				•
MO-68403 hexagonal screwdriver 3 x 75				•					•
MO-68404 hexagonal screwdriver 4 x 100				•					•
MO-68404 hexagonal screwdriver 5 x 100				•					•



GENERAL TOOLS INSULATING LADDERS

SECURITY INSULATING LADDERS

Work on or near electrical works and electrical installations maximum voltage of 1000V ac or 1500V dc. Minutes N° NF 930-03/01/01-29 L.N.E / AFNOR showing compliance with EN-131 and the mark "NF" (Quality Label). A complete range to high specifications:

- Nominal insulation between 2 bars after immersion in water: 10 000V (EN 50528).
- High mechanical resistance to bending and torsion.
- Good strength / mass.
- Marking of information for use.
- High resistance to weather and corrosive elements and fire.
- The maximum working load 150 daN.

Insulating 2 section extension ladders, hand operated

Reference	Folded length (m)	Deployed length (m)	Number of rungs	Weight (kg)
MP-514/2	2.41	4.09	2 x 8	13.9
MP-515/2	2.97	5.21	2 x 10	17

Insulating 2 section extension ladders, rope and pulley operated

Reference	Folded length (m)	Deployed length (m)	Number of rungs	Weight (kg)
MP-506/2	3.53	6.05	2 x 12	22.9
MP-508/2	4.66	8.30	2 x 16	35.4
MP-509/2	5.22	9.14	2 x 18	39.3
MP-510/2	5.78	10.26	2 x 20	43



MP- 506...

MP- 514...

FORGED STEEL CLIMBERS FOR ROUND POLE

Hard forged steel - Leather belts with cast buckles.
Delivered by pair.



Reference	Folded length (m)	Weight (kg)	Characteristics
MO-24	Ø 20	2.6	Pair of climbers
MO-25	Ø 25	2.8	Pair of climbers
MO-26	Ø 30	3	Pair of climbers
MO-35	Ø 35	3.2	Pair of climbers

FORGED STEEL CLIMBERS FOR ROUND POLE

Hard forged steel - Leather belts with cast buckles.
Delivered by pair.



Reference	Weight (kg)	Characteristics
MO-16-A	6.5	Pair of climbers

MECHANICAL CLIMBERS FOR RECTANGULAR SHAPED CONCRETE POLES

Automatic locking of jaws by elastic cord. Sole in aluminium alloy, high resistance, with leather belts and steel buckle. Wear plate placed on sole arm. Mobile drum on axis can be removed; processed steel rollers. High resistance aluminium alloy rack, used for clamping onto poles 14 to 42 cm wide.



Spare parts:

- MO-17-01: pair of elastic cords
- MO-17-02: pair of wear plates
- MO-17-03: blade roller
- MO-17-04: pair of runners

Reference	Weight (kg)	Characteristics
MO-17-A	9	Pair of climbers

CLIMBERS

For H profile metallic poles.
Hard forged steel.



Reference	Weight (kg)	Characteristics
MO-23	5.10	Pair of climbers

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).



Reference	Dimensions (mm)	Weight (kg)	Characteristics
CZ-53-R	710 x 570 x 240	18.5	with instructions in English

SIGNAL FOR WORKING SITES

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.



Reference	Dimensions (mm)	Weight (kg)	Characteristics
CD-140	105 x 130 x 170	1.5	Red flashing
CD-141	105 x 130 x 170	1.5	Blue flashing

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 light-up in chronological order above, push successively on run button.
 - Feeding by NiCd 12 V, 1 200 m/Ah battery.
- Recharge by mains.
- Lighting autonomy 5 hours.
 - Standby autonomy 10 hours.
 - Load check by luminous indicator.
 - Luminous signal to remember color signal.



Reference	Dimensions (mm)	Weight (kg)
CD-130	220 x 195 x 95	1.870

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NEW RANGE OF BIMATERIAL INSULATED TOOLS

ISOMIL™ SAFETY TOOLS

1000 V IEC 60900 - EN 60900

**FOR LIVE WORKING UP TO 1000 VOLTS
ACCORDING TO IEC 60900 STANDARD**



Each ISOMIL tool is controlled and tested to 10 000 Volts.
This ensured by strict quality control procedures.

CATU™

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. $\varnothing$ T 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 ☐

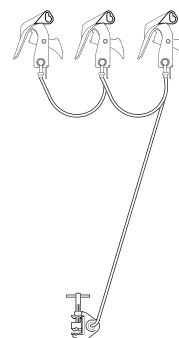
Characteristics

- 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 _____

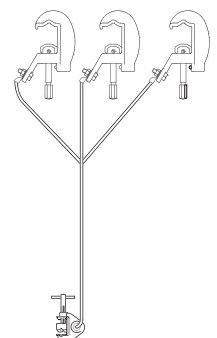
Sketch N°1



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.
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