

# ***Guide***

***live working tools***  
***L.V.***



**CATU**<sup>TM</sup>





## CONTENTS

Introduction to live works methods . . . . . 4 - 7

**1** Personal protective equipment  
and voltage detection . . . . . 8 - 9

**2** Equipment for working on pole . . . . . 10 - 11

**3** Insulated tools . . . . . 12 - 19

**4** Overhead bare networks . . . . . 20 - 24

**5** Overhead insulated network. . . . . 26 - 28

**6** L.V. underground network . . . . . 30 - 31

**7** Street lighting . . . . . 32 - 33

**8** Consumer unit . . . . . 34 - 37

**9** Solar installation . . . . . 38 - 39

**10** Battery installation. . . . . 40 - 41

# L.V. live working



## Framework of conditions for working with live electricity

Working with live electricity is part of daily operations for transport network and energy distribution companies. It remains rare for all other types of facilities and is only necessary if working without electricity would be dangerous (hospital operating theatres, airfield lighting, furnaces etc.).



## Responsibilities and management chain

When working with live electricity, the **site manager** is responsible for all operations. He decides on the live work to be done, appoint staff, take the necessary measures for their safety and issue them with a written work order. Only the **site manager** may authorise, by written order, an external company to perform live work.

The **operations manager** grants access to the worksite for high voltage. He is responsible for the special operating conditions for the high voltage facility on which live work will be carried out.

He will also take part in preparing the work with the project manager.

The **project manager** will explain to his operator teams how the work will proceed. He must ensure the safety of these operators and the their teams; prepare suitable tools and ensure they are in a good condition.

**They must receive specific training for live work from an organisation approved by the Live Work Committee.**

# L.V. live working



Each operator must ensure their own safety.

They must receive specific training for the live work from an organisation approved by the Live Work Committee.

Trained and authorised live-work personnel must perform this type of work regularly, or, failing this, they must have regular refresher training courses in training centres approved by the Live Work Committee. Heightened medical monitoring is compulsory.

## Special training elements for live work

For live work, only the **Live Work Committee** is authorised to:

- approve a training programme,
- approve working conditions,
- approve the technical documents for the special work tools,
- approve training bodies,
- approve suitable live work tools,
- approve laboratories for periodic live-work tool checks.

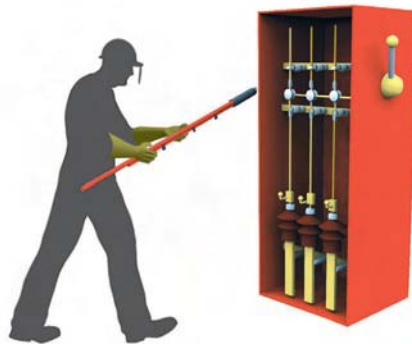
## Introduction to live work methods

There are three methods for live work:

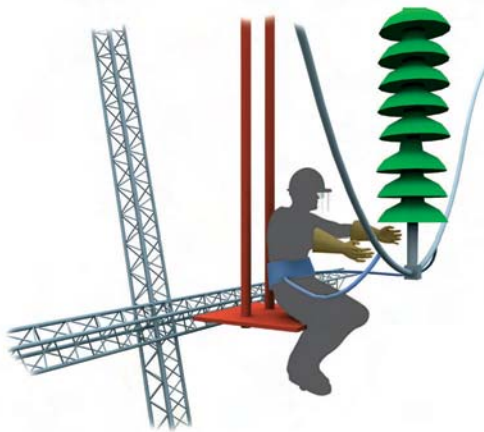
- The insulated gloves method involves **working at the contact** point whilst protecting oneself from bare live parts with insulating protective equipment, adjusted to the voltage level (insulating gloves etc.). This method is generally used between **50V** and **33kV**.



# ***L.V. live working***



- **Safe clearance work** involves constantly maintaining at least a minimum clearance distance using insulating poles for live work. This method is generally used between 400V and 225kV.



- **The bare hand method** is reserved for very high voltage and involves the worker taking on the power of the line part being worked while protecting the worker from parts of different potential and from earth.

This method is generally used between 225kV and 400kV.

Whatever method is used, it is vital to wear individual protective equipment which is appropriate to the voltage level.





# ***L.V. live working***

## **Atmospheric conditions**

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Weather conditions such as drizzle, spray drift, storms etc. play an important role and must be taken into consideration as these will affect the feasibility of the work and the risk assessment. Unfavourable weather conditions may damage the insulating protective equipment installed or may lead to overvoltage, or even affect visibility.

## **live cleaning operations**

Operators who perform live cleaning operations on electrical facilities must receive specific training with an approved training body and use equipment approved by the Live Work Committee.

1

## Personal protective equipment

### Helmets

EN 397 440 V  
EN 50365  $\Delta$  1000 V  
ANSI Z89.1/2003 20000 V  
Class E



MO-182/1-B

Safety industrial helmet.  
Electrical insulation 1000 V.

EN 166/EN 170

CE

MO-184

EN 166/EN 170/EN 397  
EN 50365  $\Delta$  1000 V

CE



MO-185

Ref	Weight (g)	
MO-184	170	Face shield on MO-182 helmet
MO-182/1-B	300	
MO-185-BL	270	With built-in face shield

### Insulating rubber gloves

- Our gloves are made of latex especially treated to obtain high dielectric characteristics.
- Composite gloves (CG-02) with mechanical properties (use of over-gloves not necessary).



CEI-60903  $\Delta$

CE

Ref	Weight (g)	
CG-02 (*)	300	Composite gloves
CG-05 (*)	150	Latex
CG-10 (*)	220	Latex

(\*) References to be completed by size A, B, C, D.  
Correspondence with standard sizes: A = 8, B = 9, C = 10, D = 11

### Pneumatic glove tester

For compulsory control  
of gloves before use.



Ref	Weight (g)
CG-117	600

### Safety glasses

EN 166/EN 170

CE



Protection against UV radiation, anti-scratch product treatments.

Ref		
MO-11000	Clear lenses	Delivered in pouch.
MO-11001	Tinted lenses	Delivered in pouch.

### Undergloves

Cotton undergloves.  
To be used with insulating  
rubber gloves.



CE

Ref		
CG-80(*)	* : H = Men	F = Women

### Overgloves

Silicon grain leather, very flexible.  
Adhesive strap



EN 388

CE

Ref	
CG-98(*)	

### Carrying bag

Made from reinforced waterproof  
fabric for transport of rubber  
gloves.



Ref	Dim. (mm)
CG-36	60 x 180 x 400





### Insulating shoes



Out of flexible leather, sole anti perforation resisting heat and hydrocarbons.

Ref	Weight (g)	Sizes
<b>MV-132</b>	400	39 to 44

### Insulating boots



Made from elastomer canvas support, very flexible and resistant. Anti-perforation stainless steel sole and shell.

EN 345



Ref	Weight (g)	Sizes
<b>MV-135</b>	730	39 to 47

### Electrician suit



100% cotton.  
Without metallic parts  
(to protect from flash hazards)

Ref	Sizes
<b>MO-104</b>	40 to 66

### Tool bag



Leather tool bag with handle and shoulder strap. Reinforced bottom. With tool tray

Ref	Dim. (cm)	Weight (kg)
<b>MO-36</b>	20 x 25 x 45	4,8

## Voltage detection

### Contact probes for L.V. tester

For overhead lines (MS-8014) or installation et boîtiers de trottoirs (MS-8013).



MS-8013



MS-8014

Ref	Weight (g)	Dim. (mm)
<b>MS-8014</b>	400	50 x 130 x 1300
<b>MS-8013</b>	750	50 x 150 x 470

### Voltage multi-tester



Voltage detector (AC and DC) and a multi-tester.  
- check the voltage levels  
6 to 400 V with phase rotation.  
- check the continuity of disconnected electric circuit, phase rotation.  
- determine polarities.

CEI-61243-3  
CEI-61557-7  
EN 50110-1



Ref	
<b>MS-911/2</b>	Delivered with power supply

# L.V. live working

## Individual equipment for working on pole

2

### Mechanical climbers for rectangular shaped concrete poles



Used for clamping onto poles 14 to 42 cm wide. Automatic locking of jaws by elastic cord.

Ref	Weight (Kg)
<b>MO-17-A</b>	9

### Forged steel climbers for round wooden poles



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

NFS-071-012

Ref	Weight (Kg)
<b>MO-25</b>	2,8

### Anti-fall kit

#### Constraint tie

EN 795

CE

Tie in polyamid,  
L : 1,5 m.



Ref	Weight (kg)
<b>MO-52034</b>	0,150

#### Pro electric full body fall arrest harness

EN 361

EN 358

CE



Ref	Weight (kg)
<b>MO-563 (*)</b>	3

\*S,M,XL.

#### Snap hooks

EN 362

CE

stainless steel.



Ref	Weight (kg)
<b>MO-54</b>	0,154

#### Tether rope with energy absorber

EN 355

CE

L : 1,5 m



Ref	Weight (kg)
<b>MO-52020</b>	0,590

#### Anti-fall grip

EN 353-2

CE

Delivered with 15 m of rope  
Ø 15 mm



Ref	Weight (kg)
<b>MO-68/15</b>	2,90

#### Tether rope equipped with a tension device

EN 358

CE

L : 3 m



Ref	Weight (kg)
<b>MO-56009</b>	1,425

### Working on pole kit



Composition : 1 MO-563 (\*), 1 MO-52020, 1 MO-52034, 1 MO-56009, 1 MO-68/15, 1 MO-54 and 1 carrying bag M-87-295

Ref	Size
<b>KIT-HAUT-01(*)</b>	M ou XL

\*To specify the size with the command

## INSULATED TOOLS IEC 60900 - EN 60900 1000 VOLTS

### Phase tester insulated screwdriver

Signaling by intermittent lighting through ultra high intensity diode.  
Phase detection from 127 V A.C..

CE



Ref	Characteristics	Weight (g)
<b>MO-65222</b>	Flat blade 4 x 85 mm	65

### Flat blade screwdrivers

Chrome - molybdenum vanadium steel blade.



Ref	Characteristics	Weight (g)
<b>MO-65203</b>	Blade 3 x 100 mm	33
<b>MO-65204</b>	Blade 3,5 x 100 mm	37
<b>MO-65205</b>	Blade 4 x 100 mm	46
<b>MO-65206</b>	Blade 5,5 x 125 mm	75
<b>MO-65207</b>	Blade 6,5 x 150 mm	94
<b>MO-65209</b>	Blade 8 x 175 mm	165
<b>MO-65211</b>	Blade 10 x 200 mm	195
<b>MO-652-D</b>	<b>Set of 4 screwdrivers</b> 3 x 100 - 4 x 100 6,5 x 150 - 8 x 175	310

### POZIDRIV screwdrivers

Chrome - molybdenum vanadium steel blade.



Ref	Characteristics	Weight (g)
<b>MO-65240</b>	n° 0 Blade 3 x 60 mm	25
<b>MO-65242</b>	n° 1 Blade 4,5 x 80 mm	50
<b>MO-65244</b>	n° 2 Blade 6 x 100 mm	75
<b>MO-65246</b>	n° 3 Blade 8 x 150 mm	150
<b>MO-65248</b>	n° 4 Blade 10 x 200 mm	230

### PHILLIPS screwdrivers

Chrome - molybdenum vanadium steel blade.



Ref	Characteristics	Weight (g)
<b>MO-65230</b>	n° 0 Blade 3 x 60 mm	25
<b>MO-65232</b>	n° 1 Blade 4,5 x 80 mm	50
<b>MO-65234</b>	n° 2 Blade 6 x 100 mm	75
<b>MO-65236</b>	n° 3 Blade 8 x 150 mm	150
<b>MO-65238</b>	n° 4 Blade 10 x 200 mm	230
<b>MO-653-D</b>	<b>Set of 3 screwdrivers n° 0, n° 2, n° 3</b>	250

### Universal pliers

Special steel, oil-hardened. Burnished head.

MO-66002



MO-66005



Ref	Overall length (mm)	Weight (g)
<b>MO-66001</b>	160	210
<b>MO-66002</b>	180	260

Ref	Overall length (mm)	Weight (g)
<b>MO-66003</b>	200	300
<b>MO-66005</b>	250	510



### Flat nose pliers

Special tool steel, oil-hardened. Burnished head.



Ref	Overall length (mm)	Weight (g)
<b>MO-66300</b>	145	115
<b>MO-66302</b>	160	160

### Bent snipe nose pliers

Chrome-vanadium steel. Burnished head.



Ref	Overall length (mm)	Weight (g)
<b>MO-66402</b>	160	160
<b>MO-66404</b>	200	185

### Round nose pliers

Special tool steel, oil-hardened. Burnished head.



Ref	Overall length (mm)	Weight (g)
<b>MO-66202</b>	160	150

### Long nose pliers with side cutter

Special tool steel, oil-hardened. Burnished head.



Ref	Overall length (mm)	Weight (g)
<b>MO-66102</b>	160	145

### Plug pliers for preinsulated pin terminals

Chrome-vanadium steel for pin terminals 2,8/5/6,35 mm.



Ref	Overall length (mm)	Weight (g)
<b>MO-66105</b>	200	200

### Water pump pliers

Chrome-vanadium steel. Burnished head.



Ref	Overall length (mm)	Weight (g)
<b>MO-66502</b>	250	410

### End cutting pliers

Special carbon steel, oil-hardened. Burnished head.



MO-67402



MO-67404

Ref	Overall length (mm)	Cutting capacity (mm) Hard 140kg/mm <sup>2</sup>	Weight (g)
<b>MO-67401</b>	140	Ø 1	165
<b>MO-67402</b>	160	Ø 2	210

Ref	Overall length (mm)	Cutting capacity (mm) Hard 140kg/mm <sup>2</sup>	Weight (g)
<b>MO-67404</b>	200	Ø 3	450

### Side cutters

Special carbon steel, oil-hardened. Burnished head.



Ref	Overall length (mm)	Cutting capacity (mm) Hard 140kg/mm <sup>2</sup>	Weight (g)
<b>MO-67101</b>	140	Ø 1	150
<b>MO-67102</b>	160	Ø 1,5	180
<b>MO-67103</b>	180	Ø 2,5	210

### Cable cutter

Chrome-vanadium forged steel, oil-hardened.



Ref	Overall length (mm)	Cutting capacity (mm <sup>2</sup> ) Cu Al	Weight (g)
<b>MO-67500</b>	180	2,5 16	420

### Cable cutters

Chrome-vanadium forged steel, oil-hardened.

MO-67501



Ref	Overall length (mm)	Cutting capacity maxi (mm)	Weight (g)
<b>MO-67501</b>	170	Ø 15	285

MO-67502



Ref	Overall length (mm)	Cutting capacity maxi (mm)	Weight (g)
<b>MO-67502</b>	230	Ø 20	520

### Ratchet cable cutters

For copper and aluminium cables only. Treated forged steel blade.



Ref	Cutting capacity (mm <sup>2</sup> ) Cu Al	Weight (g)
<b>MO-67599</b>	180 250	900
<b>MO-67600</b>	240 300	950



Ref	Cutting capacity (mm <sup>2</sup> ) Cu Al	Weight (g)
<b>MO-67601</b>	300 450	975

### Frontal ratchet cable cutter

Hardened steel for copper and aluminium cables only.



Ref	Cutting capacity (mm <sup>2</sup> ) Cu Al	Weight (g)
<b>MO-67611</b>	180 250	900

### Hacksaw

Protected hard forged steel. Blade length 300 mm.



Ref	Overall length (mm)	Weight (g)
<b>MO-64502</b>	450	780



### Stripping pliers for L.V. cables

Aluminium casting plier.  
To strip L.V. twisted cables from 16 to 150 mm<sup>2</sup>.



Ref	Overall length (mm)	Weight (g)
<b>MO-67304</b>	220	470

### Stripping pliers for L.V. cables

Aluminium casting plier. To strip L.V. twisted cable



Ref	Overall length	Capacity mm <sup>2</sup>	Weight (g)
<b>MO-67305</b>	265	from 16 to 150	650
<b>MO-67306</b>	270	from 50 to 240	670

### Stripping knives

Delivered with pouch.

MO-61001



Ref	Characteristics	Capacity mm <sup>2</sup>	Weight (g)
<b>MO-61001</b>	Blade length 62 mm	180	110

MO-61002



Ref	Characteristics	Capacity mm <sup>2</sup>	Weight (g)
<b>MO-61002</b>	Curve blade length 50 mm	180	110

### Wire stripping pliers

Chrome-vanadium steel. Burnished head.



Ref	Overall length	Capacity mm <sup>2</sup>	Weight (g)
<b>MO-67302</b>	160	0,6 to 10	170

### Adjustable spanner

Special steel, oil-hardened.



Ref	Overall length (mm)	Maximum capacity (mm)	Weight (g)
<b>MO-69002</b>	210	24	295
<b>MO-69003</b>	250	28	450
<b>MO-69004</b>	310	34	550
<b>MO-69005</b>	385	43	1 350

### Reversible hexagonal ratchet handle

Special steel, oil-hardened.

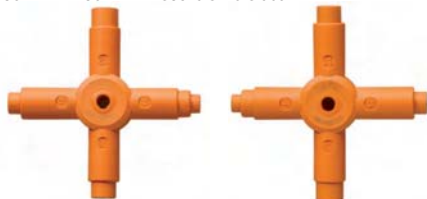


Ref	Size (mm)	Weight (g)
<b>MO-69210</b>	10	160
<b>MO-69213</b>	13	190
<b>MO-69216</b>	16	350
<b>MO-69217</b>	17	370
<b>MO-69218</b>	18	380
<b>MO-69219</b>	19	390



### Combination wrench

Special steel inserts insulated using one-piece injection.  
150 mm x 150 mm. 4 sockets - 6 sided.



Ref	Characteristics (mm)	Weight (g)
MO-68701	6-8-10-12	225
MO-68702	8-10-12-14	260
MO-68703	7-9-11-13	250
MO-68704	8-10-13-17	260

### Right angle hexagonal key wrench

Chrome-vanadium steel.



Ref	Characteristics	Weight (g)
MO-69903	3 mm/83 x 123 mm	30
MO-69904	4 mm/84 x 124 mm	40
MO-69905	5 mm/84 x 126 mm	50
MO-69906	6 mm/85 x 126 mm	70
MO-69908	8 mm/87 x 128 mm	110
MO-69910	10 mm/87 x 130 mm	150
MO-69912	12 mm/90 x 132 mm	240

### Hexagonal spanner with T handle, 130 mm

Chrome steel.



Ref	Size (mm)	Weight (g)
MO-68610	10	145
MO-68613	13	185

Ref	Size (mm)	Weight (g)
MO-68614	14	220

### Insulated torque wrench 3/8"

Capacity : 8 to 54 Nm (ibF Ft : 5-40).  
Linear graduation, english and french scales (ibF Ft and Nm).  
Length : 325 mm. Tolerance : 4%



Ref	Characteristics (mm)	Weight (g)
MO-69050	8 to 54 Nm	790

### Open end spanners

Chrome-vanadium steel.



Ref	Size (mm)	Weight (g)
MO-68008	8	40
MO-68009	9	40
MO-68010	10	45
MO-68011	11	50
MO-68012	12	60
MO-68013	13	80
MO-68014	14	100
MO-68015	15	110

Ref	Size (mm)	Weight (g)
MO-68016	16	120
MO-68017	17	140
MO-68018	18	160
MO-68019	19	170
MO-68020	20	185
MO-68021	21	200
MO-68022	22	220
MO-68023	23	250

Ref	Size (mm)	Weight (g)
MO-68024	24	260
MO-68025	25	280
MO-68026	26	300
MO-68027	27	340
MO-68028	28	360
MO-68029	29	400
MO-68030	30	500
MO-68032	32	570

Ref	Characteristics	Weight (g)
MO-68008/19	8 open end spanners set 8/10/11/12/13/14/17/19 mm	685

### Cranked ring wrench

Chrome-vanadium steel.



Ref	Size (mm)	Weight (g)
MO-68107	7	35
MO-68108	8	40
MO-68109	9	45
MO-68110	10	50
MO-68111	11	65
MO-68112	12	80
MO-68113	13	100
MO-68114	14	120
MO-68115	15	150

Ref	Size (mm)	Weight (g)
MO-68116	16	180
MO-68117	17	190
MO-68118	18	195
MO-68119	19	200
MO-68120	20	240
MO-68121	21	260
MO-68122	22	260
MO-68123	23	270
MO-68124	24	280

Ref	Size (mm)	Weight (g)
MO-68125	25	300
MO-68126	26	360
MO-68127	27	400
MO-68128	28	440
MO-68129	29	480
MO-68130	30	500
MO-68132	32	540

### Sockets 3/8" Long series

65 mm length. Chrome steel.



Ref	Socket (mm)	Weight (g)
MO-69610	10	75
MO-69613	13	80
MO-69614	14	100
MO-69616	16	115

Ref	Socket (mm)	Weight (g)
MO-69617	17	125
MO-69618	18	140
MO-69619	19	160
MO-69621	21	190

### 6 sided male hex Key / Socket 3/8"

Steel.



Ref	Socket (mm)	Weight (g)
MO-69393	3	45
MO-69394	4	55
MO-69395	5	60
MO-69396	6	65

Ref	Socket (mm)	Weight (g)
MO-69397	7	70
MO-69398	8	70
MO-693100	10	80

### Sockets 3/8" U.S. Standard

Chrome steel.



Ref	Socket (mm)	Weight (g)
MO-69735	3/8"	25
MO-69736	7/16"	30
MO-69737	1/2"	35
MO-69738	9/16"	35
MO-69739	5/8"	42
MO-69740	11/16"	50
MO-69741	3/4"	55
MO-69742	13/16"	60

### Tool bag

Black grained leather with handle. The interior includes : an all-purpose pocket, a separation which forms a tool tray and a fold-down tool tray.



Ref	Characteristics (mm)	Weight (kg)
MO-34	410 x 280 x 150 mm	3,2

### Sockets wrench sets

Chrome steel.

3



### Sockets 3/8" (9,53 mm) - 6 sided

Ref	Characteristics (mm)	Weight (g)
MO-69306	6	25
MO-69307	7	30
MO-69308*	8	30
MO-69309	9	30
MO-69310*	10	35
MO-69311	11	35
MO-69312*	12	35
MO-69313*	13	45

\*Sockets composing the sets.

Ref	Characteristics (mm)	Weight (g)
MO-69314*	14	45
MO-69315	15	50
MO-69316	16	55
MO-69317*	17	60
MO-69318	18	65
MO-69319*	19	70
MO-69321*	21	85
MO-69322*	22	90

Ref	Characteristics (mm)	Weight (g)
MO-69323*	23	100
MO-69513*	Reversible ratchet	600
MO-69523*	Extension 130	124
MO-69533	Extension 250	270
MO-69542	"T" spanner 130	220
MO-69543	"T" spanner 200	380
<b>Sockets composing the set</b>		
MO-69308/23		1250

### Sockets 1/2" (12,7 mm) - 12 sided

Ref	Characteristics (mm)	Weight (g)
MO-69408*	8	60
MO-69410*	10	60
MO-69411	11	60
MO-69412*	12	70
MO-69413*	13	70
MO-69414*	14	70
MO-69415	15	75
MO-69416	16	75

\*Sockets composing the sets.

Ref	Characteristics (mm)	Weight (g)
MO-69417*	17	80
MO-69418	18	80
MO-69419*	19	85
MO-69420	20	90
MO-69421*	21	100
MO-69422*	22	100
MO-69423*	23	115
MO-69424	24	130

Ref	Characteristics (mm)	Weight (g)
MO-69430	30	160
MO-69514*	Reversible ratchet	600
MO-69524*	Extension 125	250
MO-69534	Extension 250	435
MO-69544	"T" spanner 300	520
<b>Sockets composing the set</b>		
MO-69408/23		1500

### Low voltage complete set



Ref

**MO-510-03** Composition of the set:

#### Personal equipment

**MO-186** 1 face shield  
**CG-98-C** 1 working gloves, size C

#### Voltage detector

**MS-911** 1 voltage multimeter

#### Insulation

**CG-05-B** 1 rubber gloves, size B  
**CG-36** 1 carrying bag for rubber gloves  
**MP-42/16** 1 insulating mat  
**MP-26-A** 10 insulating caps  
**MP-35/12** 1 insulating blanket  
**MP-39** 10 wood clamp for insulating blanket  
**MP-32/15** 6 line protectors  
**MP-19** 5 insulated adhesive tapes

#### Insulated tools

**MO-61001** 1 stripping knife  
**MO-67502** 1 cable cutter 230 mm  
**MO-68008/19** 1 open end spanners set with 8, 10, 11, 12, 13, 14, 17, 19 mm open end spanners

**MO-69903** 1 right angle hexagonal key wrench 3 mm  
**MO-69904** 1 right angle hexagonal key wrench 4 mm  
**MO-69906** 1 right angle hexagonal key wrench 6 mm  
**MO-751** 1 insulating folding rule  
**MO-69003** 1 adjustable spanner 250 mm  
**MO-66002** 1 universal pliers 180 mm  
**MO-66202** 1 round nose pliers 160 mm  
**MO-66502** 1 water pump pliers 250 mm  
**MO-67102** 1 side cutter 160 mm  
**MO-69308/23** 1 sockets 3/8" wrench set with 10 sockets : 8-10-12-13-14-17-19-21-22-23  
**MO-65205** 1 flat blade screwdriver 4 x 100  
**MO-65207** 1 flat blade screwdriver 6.5 x 150  
**MO-65209** 1 flat blade screwdriver 8 x 175  
**MO-65232** 1 Phillips screwdriver n° 1  
**MO-65234** 1 Phillips screwdriver n° 2  
**MO-65236** 1 Phillips screwdriver n° 3

### Complete export kit

Réf

**MO-510-03-EX** Composition of the set:

#### Personal equipment

**MO-11001** 1 tinted lenses safety glasses  
**CG-98** 1 working gloves

#### Voltage detector

**MS-911-EX** 1 voltage multimeter

**Insulation** Same **MO-510-03**

**Insulated tools** Same **MO-510-03**



### Insulating ladders

#### Fitting ladders



MP-402-MB

Ref	Overall length (m)	Weight (kg)
MP-402-MB*	2,10	5,4
MP-403-MB*	3,00	7,6
MP-402-MI	2,10	4,8
MP-403-MI	3,00	7,0
MP-501-D	1,20	3,3
MP-502-D	2,10	5,8
MP-503-D	3,00	8,3

\* Adjustable feet.

#### Insulating 2 section extension ladders, rope and pulley operated

Ref	Overall length (m)	Weight (kg)
MP-506/2	6,05	22,9
MP-508/2	8,30	35,4
MP-509/2	8,86	38,6
MP-510/2	10,26	43

MP-506/...



#### Insulator cover

Made of synthetic rubber orange color.

Réf	Field of use	Weight (kg)
MP-22	Supporting insulator rubber hoods - Diam. 110	0,475
MP-23	Dead end insulator rubber hoods - Diam. 180	1,145



#### Bag for insulator covers

Nylon basket with reinforced bottom and rope handle. Strong waterproof. Steel suspension hook.



Ref  
MP-50



### Insulating blanket clamp

Ref		Length (mm)
<b>MP-41/10</b>	Plastic	160
<b>MP-41-530</b>	Rubber mini plier	



### Flexible rubber insulating tube

Section  $\Omega$ , thickness 3,3 mm.  
For conductors  $\varnothing$  16 mm maxi.



Ref	Length (m)	Weight (kg)
<b>MP-32/10</b>	1,00	0,41
<b>MP-32/15</b>	1,50	0,62
<b>MP-33</b>	3,00	1,23

### Lockable conductor protector

Assembly using notches.  
For conductors  $\varnothing$  20-22 mm.



Ref		Weight (kg)
<b>MP-31</b>	Protector 5 m	0,6
<b>MP-59</b>	Indent tool for MP-31	

### Insulating flexible cover

MP-35/12  
MP-35  
MP-40



Ref	Size	Weight (kg)
<b>MP-35/12</b>	1,3 x 12,5 m	6
<b>MP-35</b>	1,3 x 25 m	11,8
<b>MP-40</b>	1,3 x 20 m	24,8
<b>MP-37</b>	90 mm x 25 m	0,800
<b>MP-123</b>	360 x 660 mm	0,150
<b>MP-123/1</b>	500 x 900 mm	0,290
<b>MP-123/2</b>	800 x 1200 mm	0,600



MP-37

MP-123  
MP-123/1  
MP-123/2

### Poles, accessories and tools

#### Sticks

Distance method.  
insulating tube in white colour epoxy resin and glass fiber composite material.



Ref	Length (m)	Weight (kg)
MG-116-S	2	2,10
MG-117-S	2,60	2,30
MG-125-K	2,60	1,30
MG-130	2,60	3,80

#### Measuring stick

Consisting of 2 elements of epoxy resin and glass fiber composite material.  
Thick : 0,80 mm.



Ref	Weight (kg)
MG-208-K	0,52

#### Pig tail hook

K end-pieces steel  
Dim. : 120 x 65 x 60 mm.



Ref	Weight (kg)
MG-207-K	0,210

#### Conductor brushes

Pivoting  
Dim. : 110 x 110 x 70 mm



Ref	Weight (kg)
MG-352-K	Reserved for aluminium conductors 0,250
MG-353-R	Recharge for MG-352-K
MG-354-K	V-Shape brush 0,150
MG-358-K	Turk's head brush

#### Conductor gauge

For conductors 3 to 16 mm Ø.  
Entirely insulated material  
270 x 35 x 12 mm  
- Delivered in bag.



Ref	Weight (kg)
MG-535-K	0,090

#### Pruning saw

Dim. : 485 x 70 x 36 mm.



Ref	Weight (kg)
MG-292/2-K	0,23

#### Stranded polypropylene rope



Ref	Length (m)	Breaking load (daN)
MO-492/100-L	80	2940

# L.V. live working

## Overhead bare networks

### Live line connectors

RG-110-S1



RG-210-S1



Ref	Weight (kg)
<b>RG-110-S1</b>	0,20
<b>RG-210-S1</b>	0,50

### Universal adaptor

Dim. : 75 x 55 x 33 mm.



Ref	Weight (kg)
<b>CI-6-K</b>	0,14

### Insulating hanger

Dim. : 95 x 90 x 55 mm.



Ref	Weight (kg)
<b>MG-210-S</b>	0,22

### Connector spanner

Dim. : L 30 mm - Thickness 120 mm .



Ref	Weight (kg)
<b>MG-380-D</b>	0,16

### Insulated holding fork

Dim. : 140 x 55 x 33 mm.



Ref	Weight (kg)
<b>MO-204-AK</b>	0,2

### Insulated connector spanner

Dim. : L 250 mm - Diam. 23 mm .



Ref	Weight (kg)
<b>MG-203-D</b>	0,25

### Siliconed cloth



Ref
<b>MO-984</b>

### Neutral grease



Ref	Weight (kg)
<b>MO-980</b>	0,23

### Pole cleaning product



Ref	Weight (kg)
<b>MO-985</b>	1 Litre

4

### Hoisting equipment

#### Hook for service rope

Body in alloy with security tongue.



Ref	Breaking load
<b>MO-303</b>	200 daN

#### Insulating running-block

Laminated polyester.  
Retractable safety pawl  
Swivel-mounted hook  
Ø of groove-based pulley: 130mm.  
Ø maxi of rope : 24,5 mm.  
Breaking load : 1 000 daN.  
Hook opening capacity : 30 mm.



Ref	Weight (kg)
<b>MO-371</b>	1,7

4

#### Insulating hoist

Insulating hoist including :  
2 blocks in insulating moulded material with pivoting cupro aluminium hook with eyelet ring.  
Block diameter at throat bottom : 60 mm.  
Hook opening capacity : 22 mm.



Ref	With rope	Breaking load (daN)
<b>MO-346-S</b>	25 m	240 daN
<b>MO-348-35</b>	35 m	550 daN
<b>MO-348-70</b>	70 m	550 daN

#### Tools holder strap

Length : 1 m



Ref	Weight (kg)
<b>MG-792</b>	0,67

#### Parallel jaws "Come-along"

Forged steel against corrosion.



Ref	Breaking load (daN)	Weight (kg)
<b>MO-331/04-B</b>	500	0,25
<b>MO-331/08-B</b>	1000	0,85
<b>MO-331/10-B</b>	1700	1,20
<b>MO-331/16-B</b>	3000	1,85
<b>MO-331/26-B</b>	3500	3,80

#### "TIRVIT" mechanical adjusters

Equipped with a chain and handle for fixed anchoring.



Ref	Force (daN)	Weight (kg)
<b>MK-40</b>	400	4
<b>MK-60</b>	600	5,2
<b>MK-100</b>	800	6,2

# ARC FLASH

In many countries regulations have been established to protect workers from electrical shock and flash hazards in specific areas within which arc flash protection is required. These equipment must be used with insulating gloves and leather overgloves. Equipment up to 100 cal/cm<sup>2</sup> on request.



Available on our general catalogue

[www.catuelec.com](http://www.catuelec.com)



### Ladders, insulation and tools

#### Spliced ladders



Ref	Length (m)	Weight (kg)
MP-402-MB*	2,10	5,4
MP-403-MB*	3,00	7,6
MP-402-MI	2,10	4,8
MP-403-MI	3,00	7,0
MP-501-D	1,20	3,3
MP-502-D	2,10	5,8
MP-503-D	3,00	8,3

\*Adjustable feet.

#### Insulating 2 section extension ladders, rope and pulley operated

Ref	Length (m)	Weight (kg)
MP-506/2	6,05	22,9
MP-508/2	8,30	35,4
MP-509/2	8,86	38,6
MP-510/2	10,26	43

MP-506/...



#### Insulating wedge



Ref	Dimensions (mm)
MG-221-D	180 x 35 x 20

#### Phase separator



Ref	Weight (kg)
MG-222-D	0,25

#### Stranded polypropylene rope



Ref	Length (m)	Breaking load (daN)
MO-492/100-L	80	2940





## Overhead insulated network

### Insulating blanket clamp

Ref	Length (mm)
MP-41/10	Plastic 160
MP-41-530	Rubber mini plier

MP-41/10



MP-41/530



### Voltage take-off punch

Ref	Capacity (Ø mm)	Weight (kg)
MS 62	5,6 - 14,4	0,015
MS 63	12-31	0,05



### TTD

Sicame BT connector.



Ref  
TTD 2710 X

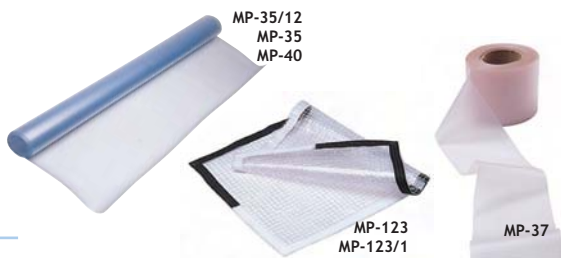
### Insulating lever

Synthetic bar. Tool for preparation of the cables underground.



Ref	Length (cm)	Weight (g)
MO-218-D	19	80

### Insulating flexible cover



### Insulated adhesive tapes



Ref  
MP-19 set with 5 tapes

Ref	Length	Weight (kg)
MP-35/12	1,3 x 12,5 m	6
MP-35	1,3 x 25 m	11,8
MP-40	1,3 x 20 m	24,8
MP-37	90 mm x 25 m	0,800
MP-123	360 x 660 mm	0,150
MP-123/1	500 x 900 mm	0,290
MP-123/2	800 x 1200 mm	0,600

### Hoisting equipment

#### Bracket with strap for stringing block with hook

Made in plastic.  
Rotating safety hook.

MO-371/100



MO-371/1

Ref	Maximum load (daN)	Weight (kg)
MO-371/01	800	1,5
MO-371/100	Strap's bracket	2,2

#### Hook for service rope

Body in alloy with  
security tongue.



Ref	Maximum load
MO-303	200 daN

### Insulating hoist

5



Ref	with rope	Maximum load (daN)
MO-346-S	25 m	240 daN
MO-348-35	35 m	550 daN

Ref	with rope	Maximum load (daN)
MO-348-70	70 m	550 daN

### Automatic come-along



Ref	Maximum load (daN)	Weight (kg)
MO-331/13-P	600	1
MO-331/22-P	400	1
MO-331/38-P	800	3,775

### "TIRVIT" mechanical adjusters

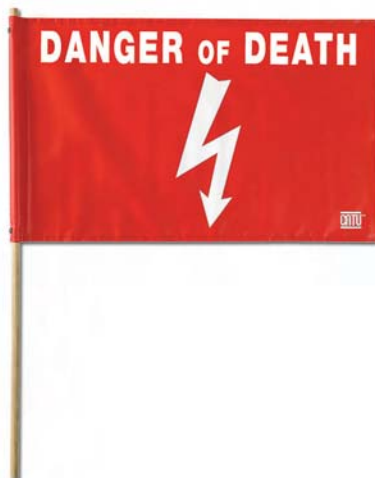
Equipped with a chain and handle  
for fixed anchoring.



Ref	Force (daN)	Weight (kg)
MK-40	400	4
MK-60	600	5,2
MK-100	800	6,2



# WARNING AND DELINEATING



**LIVE WORKING  
DANGER OF DEATH**



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### Insulation, tools and accessories

#### Live line cable identifier

Delivered in ABS cases with two connection cables and an ammeter clamp.



Ref	Dim. (mm)	Weight (kg)
MX-400	510 x 465 x 216	10,6

#### Conductor insulating end-cap

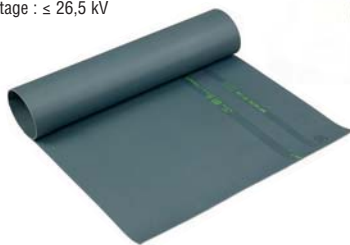


Ref	Diameter (mm)	Length (mm)
MP-26-A	10	60
MP-26-B	15	100
MP-26-C	20	120
MP-26-D	25	120



#### Insulating mats

Thickness : 3 mm - Class : 3  
Voltage :  $\leq 26,5$  kV



#### Voltage take-off punch



Ref	Capacity (Ø mm)	Weight (kg)
MS 62	5,6 - 14,4	0,015
MS 63	12-31	0,05

Ref	Dim. (m)	Weight (kg)
MP-42/11	1 x 1	5
MP-42/16	0,6 x 1	2,9





### Insulating wedge



Ref	Dimensions (mm)
<b>MG-221-D</b>	180 x 35 x 20

### Insulating lever

Synthetic bar. Tool for preparation of the cables underground.



Ref	Length (cm)	Weight (g)
<b>MO-218-D</b>	19	80

### Insulated adhesive tapes

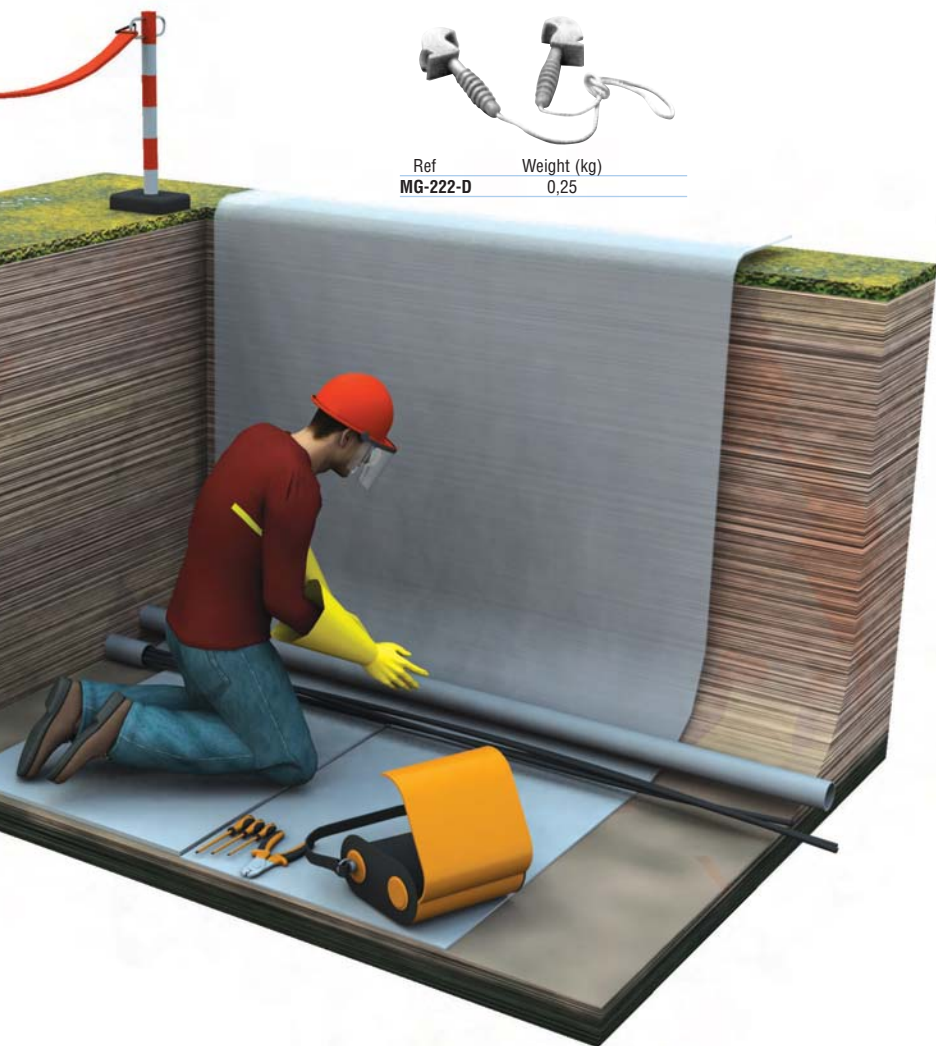


Ref	
<b>MP-19</b>	set with 5 tapes

### Phase separator



Ref	Weight (kg)
<b>MG-222-D</b>	0,25



### Ladders, insulation and tools

#### Conductor insulating end-cap



Ref	Diameter (mm)	Length (mm)
MP-26-A	10	60
MP-26-B	15	100
MP-26-C	20	120
MP-26-D	25	120

#### Insulating wedge



Ref	Dimensions (mm)
MG-221-D	180 x 35 x 20

#### Phase separator



Ref	Weight (kg)
MG-222-D	0,25

#### Insulating mats

Thickness : 3 mm - Class : 3  
Voltage : ≤ 26,5 kV



Ref	Dim. (m)	Weight (kg)
MP-42/11	1 x 1	5
MP-42/16	0,6 x 1	2,9

7





### Insulating blanket clamp

Ref	Length (mm)
MP-41/10	Plastic 160
MP-41-530	Rubber mini plier



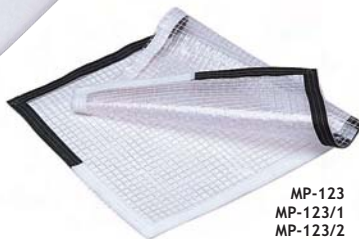
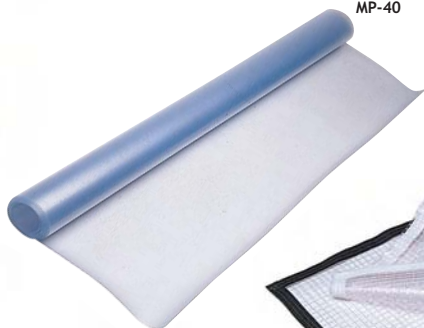
### Insulated adhesive tapes



Ref	
MP-19	set with 5 tapes

### Insulating flexible cover

MP-35/12  
MP-35  
MP-40



MP-123  
MP-123/1  
MP-123/2



MP-37

Ref	Length	Weight (kg)
MP-35/12	1,3 x 12,5 m	6
MP-35	1,3 x 25 m	11,8
MP-40	1,3 x 20 m	24,8
MP-37	90 mm x 25 m	0,800
MP-123	360 x 660 mm	0,150
MP-123/1	500 x 900 mm	0,290
MP-123/2	800 x 1200 mm	0,600

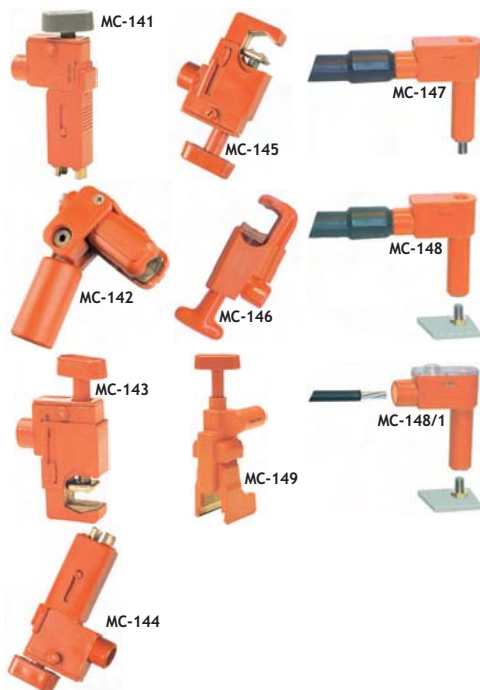
## Tools

### Mini jumper clamps fully insulated

These clamps are specially designed for use on energized parts in L.V. installations (switchboards, etc). Insulated bronze

Axial model: contact on threaded rod, nut or smooth marker.

Ref	Utilisation	Weight (kg)
<b>MC-141</b>	Six-sided 17 to 19 mm	0,260
<b>MC-142</b>	Round 6-10 flat 0-5 mm	0,130
<b>MC-143</b>	Flat bar, thickness 2-25 mm	0,230
<b>MC-144</b>	Round 8-12 square 9-10 mm	0,280
<b>MC-145</b>	Full cable pliers for stripped conductors	0,220
	Ø 3 à 10 mm	
<b>MC-146</b>	Ø 10 à 24 mm	0,230
<b>MC-147</b>	Threaded rod M8	
<b>MC-147/1</b>	Threaded rod M10	
<b>MC-148</b>	Clamp with tapped revolving rod end M8, 200 A shunt. To be used with an insulated six-sided male hex key 5 mm.	
<b>MC-148/1</b>	Clamp with tapped revolving rod end M8 for 10 to 50 mm cable.	
<b>MC-149</b>	Horse-shoe pliers for terminals or bars of 20 to 30mm width.	



### Jumper cables with threaded ferrules

For temporary connections in LV facilities (safes, cabinets etc.). Insulated bronze.

Axial model: contact on threaded rod, nut or smooth marker.



Section : 50 mm<sup>2</sup>

Ref	Length (m)	Weight (kg)
<b>MC-155/05</b>	0,5	0,380
<b>MC-155/10</b>	1	0,760
<b>MC-155/20</b>	2	1,520
<b>MC-155/30</b>	3	2,280
<b>MC-155/60</b>	6	4,560
<b>MC-155/80</b>	8	6,080

Section : 35 mm<sup>2</sup>

Ref	Length (m)	Weight (kg)
<b>MC-153/05</b>	0,50	0,270
<b>MC-153/10</b>	1	0,570
<b>MC-153/30</b>	3	1,720
<b>MC-153/60</b>	6	3,460





## Consumer unit

### Jumper cable with insulated jumper clamps



Ref	Length (m)	Weight (kg)
MC-120/15	1,50	0,850
MC-120/50	5	1,950
MC-120/100	10	4

### Shunts complementary products



Ref	Field of use	Weight (kg)
MC-121	Junction for shunt M8	0,055
MC-122	Fuse holder for shunt (Female-female end-piece)	
MC-123	Fuse holder 30 A pour shunt (Male-female end-piece)	
MC-124	Fuse holder 30 A for mini-clamps + fiches banane	



Ref	Field of use
MC-126	Insulation piercing socket 1,5 à 16 mm <sup>2</sup> In 60 A
MC-126/1	Insulation piercing socket 10 à 70 mm <sup>2</sup> In 100 A



Ref	Field of use
MC-126	M8 retractable sleeve accessory

### Insulation and accessories

#### Tap off box

The tap off box allows on each side to connect 3 by pass jumpers type MC-153. It is delivered equipped with 6 removable fittings type MC 156/1 and an insulating wrench. This item in conjunction with by pass jumpers allows to shunt a tap off box by means of a second tap off box.



Ref	Utilisation
MC-156	Box 40 x 80 x 158 mm
MC-156/1	Spare part
MO-237-D	Triangular spanner with T handle

#### Insulating blanket clamp

Ref	Length (mm)
MP-41/10	Plastic 160
MP-41-530	Rubber mini plier



#### Jumper connecting box with fuse

The shunt for collective channeling is a box used to make sure, before proceeding to the removing a molten fuse situated on a channeling, that the defect which brought about the molten is eliminated. It can also be used to open a circuit in load, for example to change a damaged accessory such as a pin.



Ref	Utilisation
MC-116	Shunt for collective channeling from 30 to 200 A

#### Insulating mats

Thickness : 3 mm - Class : 3  
Voltage : ≤ 26,5 kV



Ref	Dim. (m)	Weight (kg)
MP-42/11	1 x 1	5
MP-42/16	0,6 x 1	2,9





### Insulating flexible cover

MP-35/12  
MP-35  
MP-40



MP-123  
MP-123/1  
MP-123/2



MP-37



Ref	Length	Weight (kg)
MP-35/12	1,3 x 12,5 m	6
MP-35	1,3 x 25 m	11,8
MP-40	1,3 x 20 m	24,8
MP-37	90 mm x 25 m	0,800
MP-123	360 x 660 mm	0,150
MP-123/1	500 x 900 mm	0,290
MP-123/2	800 x 1200 mm	0,600



### Insulation and accessories

#### Pro electric full body fall arrest harness

- 2 fall arrest attachment point : dorsal, sternal
- A work positioning belt
- 2 buckles of work positioning belt
- Leg loops and shoulder straps adjustable
- Tools holder
- Delivered in a protective bag

EN 361  
EN 358  
CE

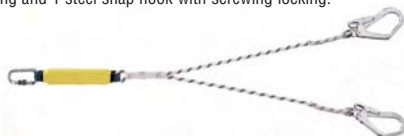


Ref	Size	Weight (kg)
MO-71	Unique	1,9

#### Double tether rope with energy absorber

Equipped with 2 steel snap hooks with automatic locking and 1 steel snap hook with screwing locking.

EN 355  
CE



Ref	Length (m)	Weight (kg)
MO-54010	1,2	1,4

#### Tether rope equipped with a tension device

L : 3 m

EN 358  
CE



Ref	Weight (kg)
MO-56009	1,425

#### Working on pole kit



Composition : 1 MO-71,  
1 MO-54010, 1MO-56009  
and 1 carrying bag M-87-295

Ref	Size
KIT-HAUT-05	Unique



### Insulated adhesive tapes



Ref  
**MP-19** set with 5 tapes



### Conductor insulating end-cap



Ref	Diameter (mm)	Length (mm)
<b>MP-26-A</b>	10	60
<b>MP-26-B</b>	15	100
<b>MP-26-C</b>	20	120
<b>MP-26-D</b>	25	120

### Insulation and accessories

Insulating flexible cover and insulating tape



MP-35/12  
MP-35  
MP-40



MP-123  
MP-123/1  
MP-123/2



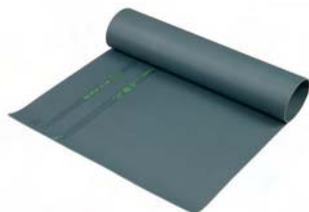
MP-37

Ref	Length	Weight (kg)
MP-35/12	1,3 x 12,5 m	6
MP-35	1,3 x 25 m	11,8
MP-40	1,3 x 20 m	24,8
MP-37	90 mm x 25 m	0,800

Réf	Length	Weight (kg)
MP-123	360 x 660 mm	0,150
MP-123/1	500 x 900 mm	0,290
MP-123/2	800 x 1200 mm	0,600

### Insulating mats

Thickness : 3 mm - Class : 3  
Voltage :  $\leq 26,5$  kV



Ref	Dim. (m)	Weight (kg)
MP-42/11	1 x 1	5
MP-42/16	0,6 x 1	2,9





## Battery installation

### Insulating blanket clamp



Ref		Length (mm)
MP-41/10	Plastic	160
MP-41-530	Rubber mini plier	



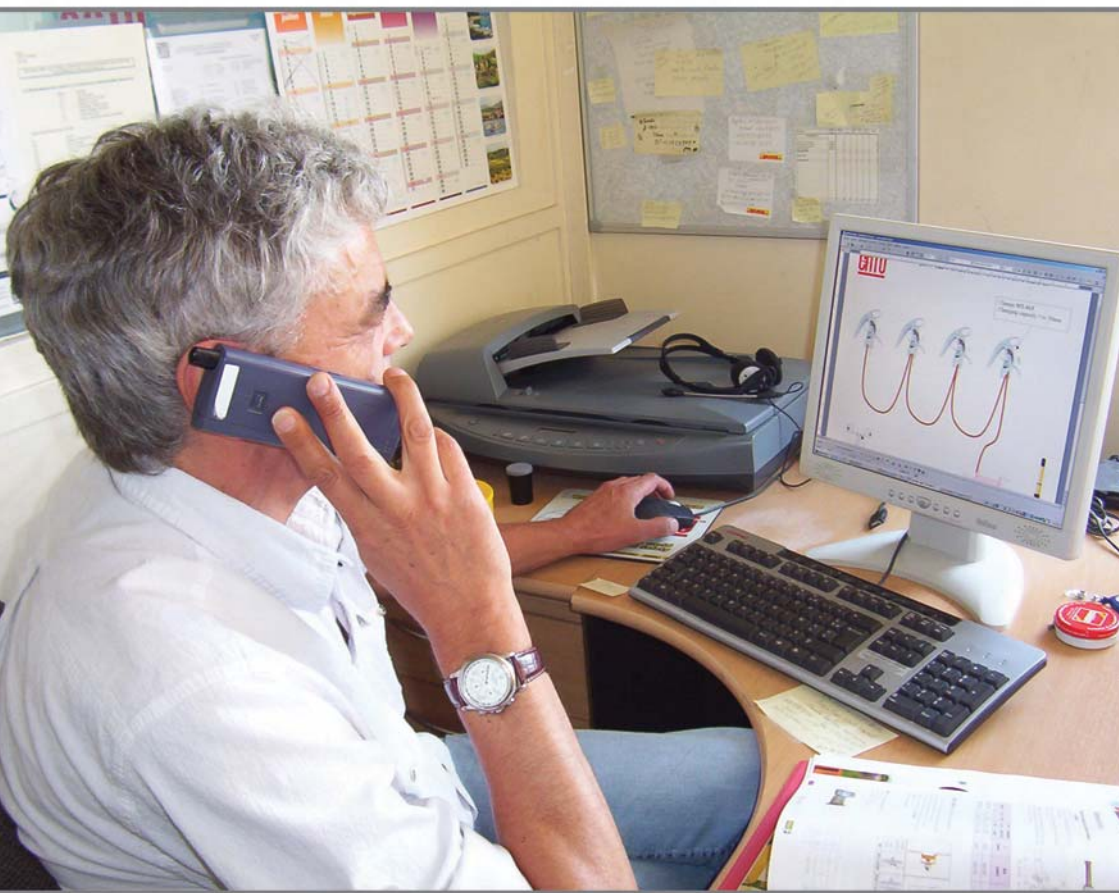
### Insulated adhesive tapes



Ref	
MP-19	set with 5 tapes



# Technical assistance



For further information, please contact:  
[philippe.monteillet@catuelec.com](mailto:philippe.monteillet@catuelec.com)

Phone: +33 1 42 31 46 24 - Fax: +33 1 42 31 46 34



***No contractual document***



[WWW.CATUELEC.COM](http://WWW.CATUELEC.COM)



10/20 avenue Jean-Jaures B.P.2  
92220 BAGNEUX - FRANCE  
Phone: +33 1 42 31 46 00 - Fax: +33 1 42 31 46 34  
[www.catuelec.com](http://www.catuelec.com)