



Insulating sticks technical guide

Operations on
electrical installations

CATU
Sicame Group

About us

sicame
GROUP

Sicame Group is one of the key players in the electrical equipment business worldwide. It has been able to adapt and develop to support the continuous evolution of electricity infrastructure in France and around the world, and become the largest independent entity in its sector.

A true player in the energy transition, it offers its customers new products and services to improve energy efficiency, deal with environmental risks and support the development of electric vehicle and solar power plant markets.

+65

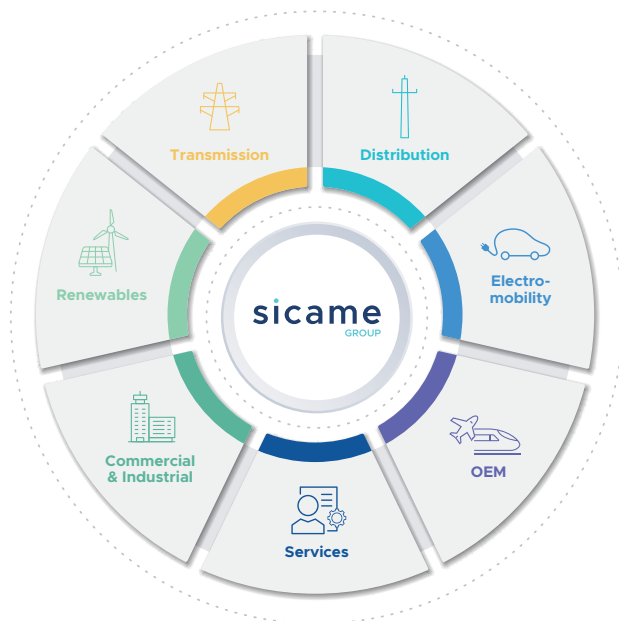
years of worldwide success

525 M€

2022 turnover

3,600

employees



Our fields of activity

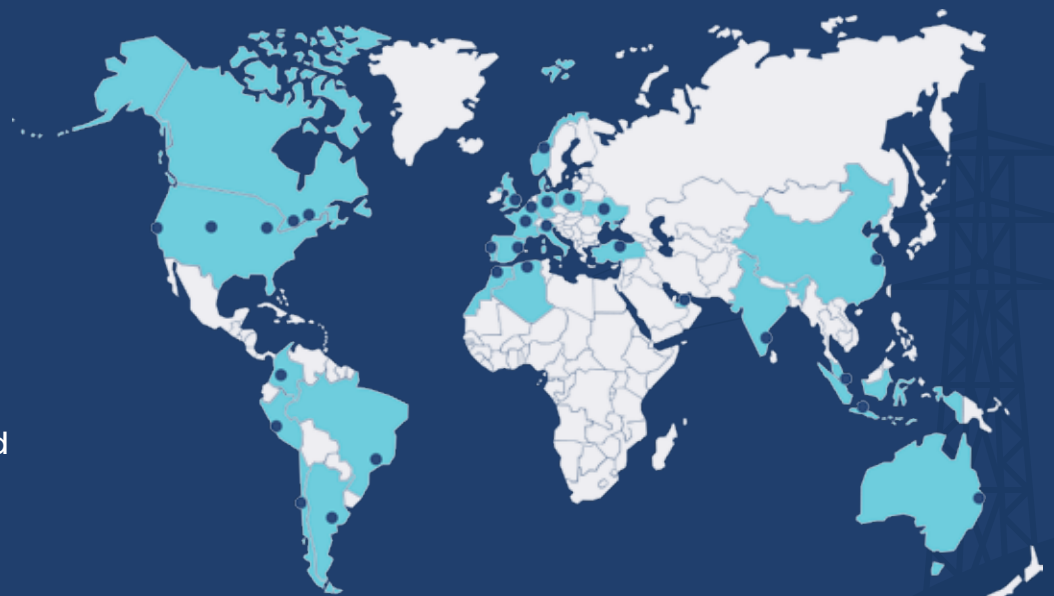
Sicame Group is specialised in **products and services** related to transmission and distribution of **electrical energy**, renewables, electro-mobility, safety equipment and industrial applications.

5 continents

26 countries

50 companies
around the world

Products distributed
in 157 countries



Sommaire

Introduction _____ **P.4**

Why use insulating sticks? _____ **P.5**

Insulating sticks made in France to current standards _____ **P.5**

- 3 types of sticks for safety and reliability
- Quality tubes meeting the standards drawn up by the committee for live working

How to choose an insulating stick? _____ **P.7**

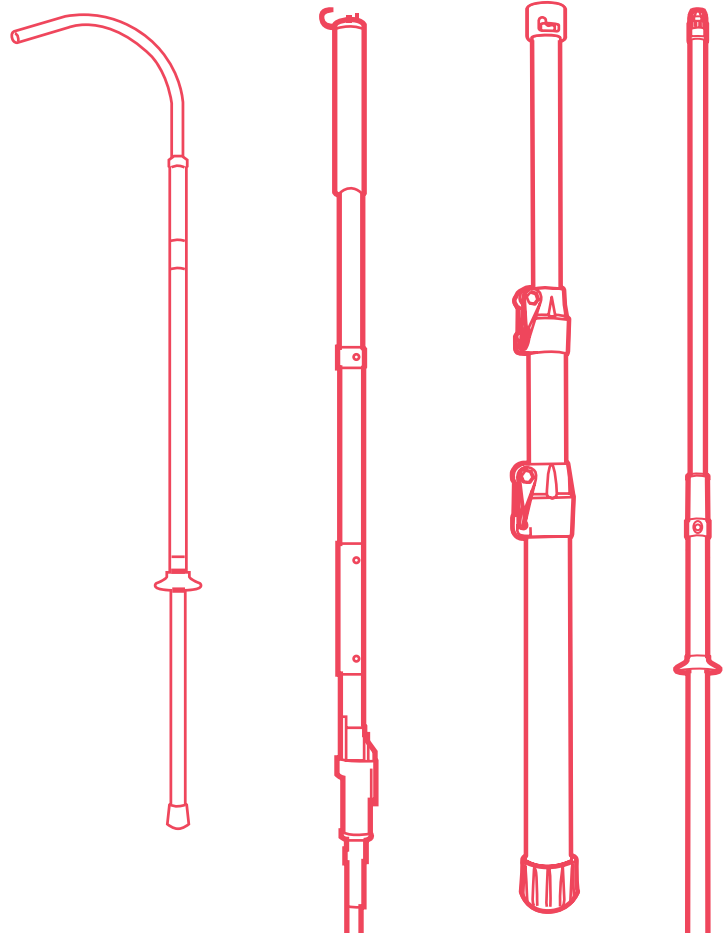
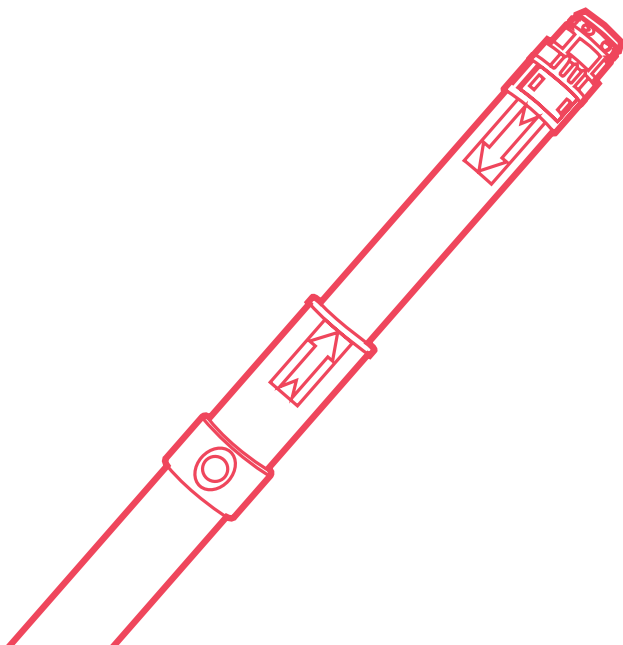
- 1- Determine the nature of the operation
- 2- Knowing the rated voltage
- 3- Estimate the working distance between operator and element to reach
- 4- Calculate the minimum safety distance from the rated voltage
- Selection table

The advantages of our ranges _____ **P.16**

- Signaling
- Precise length adjustment for telescopic stick in the CE-9 telescopic stick
- Time-saving during installation

Our accessories _____ **P.17**

- Adapters
- Intermediate element for rain protection
- Wall brackets
- Bags
- Stick-pass accessory
- Silicone cloth





Sicame Group

Protecting employees is a key factor in avoiding any risk of electrical accidents.

Working safely at a distance must be carried out in accordance with well-defined procedures and standards.

That's why CATU, a specialist in electrical risk prevention for over 100 years, has developed dedicated solutions for insulating sticks, and presents them in this new guide.

The purpose of this technical guide is to provide an overview of the different types of insulating and solutions for working in complete safety. CATU sets out what you need to know about insulating sticks, which are essential for all remote work, and compliant with regulations, to

ensure the safety of operators carrying out electrical or non-electrical work in in de-energised mode.

According to standard EN 50110-1 - OPERATIONS OF ELECTRICAL INSTALLATIONS:

"Insulating sticks are designed to insulate the OPERATOR from live bare parts. They enable the OPERATOR to maintain a safe distance from the WORK or INSTALLATION on which he is working.

Apart from live working, they are mainly used for OPERATIONS, voltage detection, earthing and short-circuiting, and fuse replacement.

Insulating sticks are not subject to regulatory marking, but to standard marking for the products or for their components:

- for multi-purpose sticks for electrical work in accordance with standard EN 50508 ;
- for telescopic height-measuring poles in accordance with standard IEC 62193.

Insulating sticks must be suitable for the voltage rating of the structures on which they are used.

An insulating stick which complies with the essential safety requirements can be identified by the following: the double triangle \triangle , the date of manufacture, any additional information and the reference to the relevant standard.

In its instructions for use, CATU recommends precautions for use, maintenance, storage, checking and limits of use of its sticks.

CATU has also developed dedicated solutions for target markets (Electric and Hybrid Vehicles, Energy Storage, Renewable Energy, Railways, etc.) to make it easy for everyone to find the equipment they need to work in complete safety.

You can find all our solutions on our website www.catuelec.com.



Why use insulating sticks?

The use of these solutions becomes necessary whenever an isolation distance between an operator and a potentially live electrical part to ensure their safety.

The right length of insulating sticks will provide the right level of protection to the operating voltage. These devices can be used all operations requiring remote work, such as:

- connection and disconnection operations,
- installation and removal of earthing equipment,
- checking for absence of voltage,
- fuse replacement,
- equipment cleaning,
- measurement of overhead conductors,
- rescue operations,
- installation and removal of lifelines.

Thanks to its recognized expertise and ongoing monitoring of standards, regulations and technology, CATU offers a range of insulating sticks covering all requirements for electrical work, with guaranteed insulation: up to 100 kV / 30 cm / 1 min.

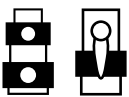


Insulating sticks made in France to current standards

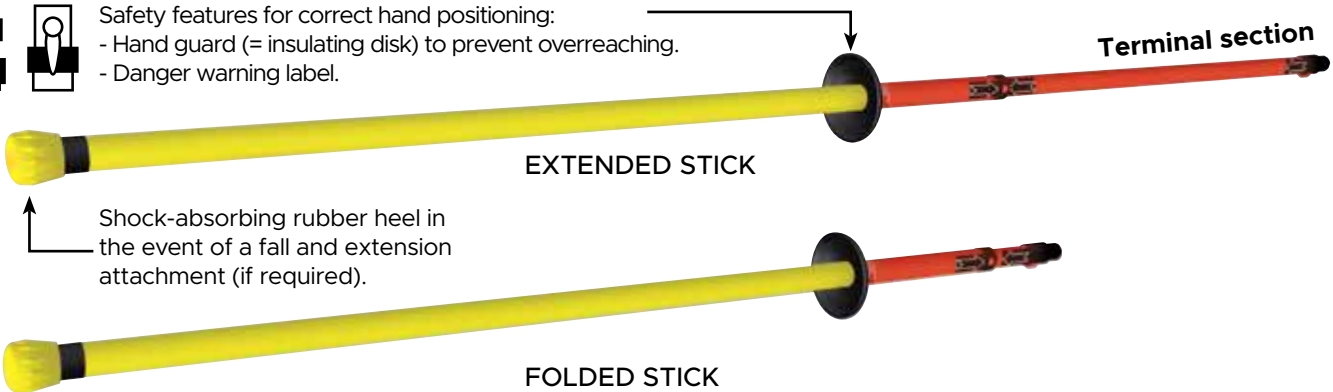
3 types of sticks for safety and reliability

Standard EN 50110-1 defines product standards according to boom type:

Telescopic and measuring sticks: IEC 62193: 2003



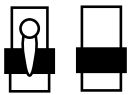
Safety features for correct hand positioning:
- Hand guard (= insulating disk) to prevent overreaching.
- Danger warning label.



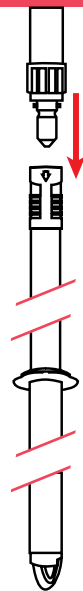
Telescopic sticks enable you to reach great lengths (up to 10 m) for working on applications at height, such as checking the absence of voltage. They are made up of one or more hollow tube elements sliding into each other, and a solid tube end. With adjustable models, you can define length (to the nearest cm) to suit your application. When folded, they take up very little space, for easy transport.

Important : For complete insulation, the terminal element must always be fully extended.

Multi-purpose sticks: EN 50508 : 2009



QUICK, SAFE ASSEMBLY BY SCREWING ON A RING



High-rigidity sticks for work involving high mechanical stress (e.g. earthing work or grounding operations). Ideal for use in substations and electrical cabinets.

Fixed and rescue sticks in accordance with CATU Technical Standard No. 43



Rescue stick with fixed hook for immediate use.

Fixed sticks are suitable for use in substations and control cabinets. Rescue sticks are intended for use in the event of electrification of a victim, to move cables or parts that are still live. They are used in low-and-high-voltage installations inside buildings. CATU offers you different models: with fixed, removable or insulated hook.

Quality tubes meeting the standards drawn up by the committee for live working

Hollow tube IEC 61235 : 2013

Tubes **1** are made of epoxy resin and fiberglass, ensuring excellent dielectric properties.

Foam-filled tube IEC 60855-1 : 2016

These tubes incorporate polyurethane foam **2** providing additional electrical insulation and preventing the formation moisture and condensation. The quality of the foam's adhesion to the tube's inner wall also guarantees high dielectric performance.



Particular care is taken when assembling components to guarantee the integrity of our products.

How to choose an insulating stick?

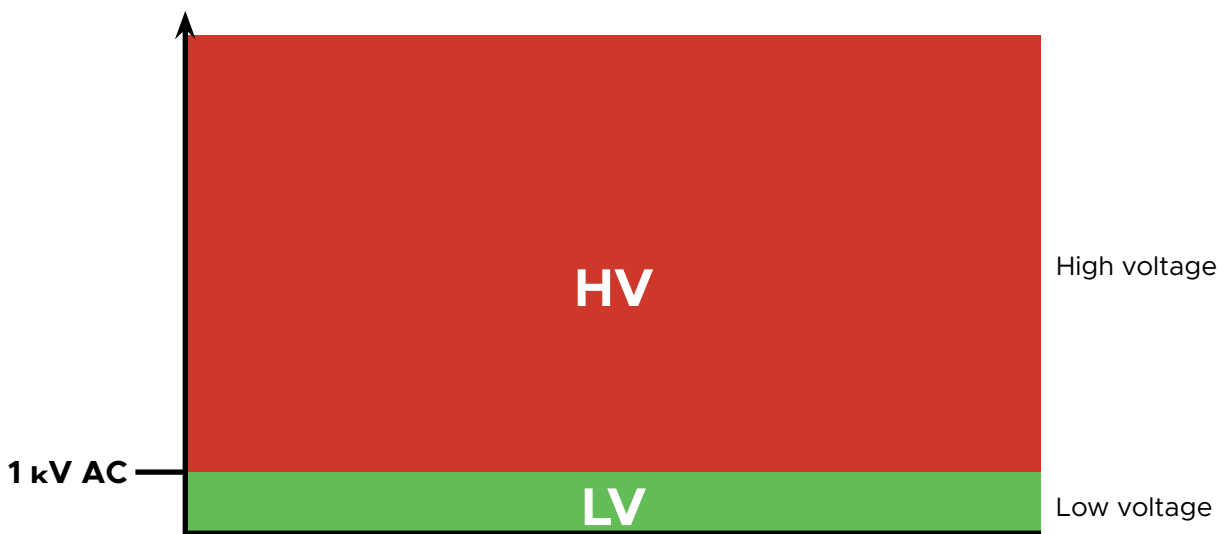
CATU's wealth of experience will help you select your insulating stick, based on current standards, stick types and and tube performance, using the following questionnaire:

1- Determine the nature of the operation

The choice of stick type depends first and foremost on the nature of the operation: checking for absence of voltage, grounding, switching, etc.

2- Knowing the rated voltage

This data is essential, and enables us to predict the minimum insulation distance according to the voltage ranges defined by EN 50110-1 and minimum approach distances.



3- Estimate the working distance between operator and driver

Note that the working distance varies according to the operating mode used (working on the ground, from a gondola, from a structure, etc.).

When choosing the stick length, don't forget to subtract the span from the operator's reach.

Example: On a line, the operator is 5 m above the ground. The operator working from the ground will use a 3.5 m stick.

4- Calculate the minimum safety distance from the rated voltage

To do this, we advise you never to choose a stick whose length after the handguard (or the position $kV = cm$).

A mnemonic: 10 kV = 10 cm.

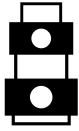
Example: for a voltage of 10 kV, the insulation length of the stick should be at least 10 cm. This equivalence could be applied if the tube is compliant with standard IEC 60855-1 or IEC 61235 tubes, excluding hand guards.

Selection table

Insulating sticks are classified by :

- voltage range,
- type of operation,
- working distance.

CATU sticks can be fitted with any type of tool at the end, thanks to a large range of end-fittings. (*at the end of the part number, to be completed with the desired end-fitting. See the complete list of end fitting and adapters at the end of this guide).



Telescopic sticks



Adjustable sticks














Fixed and connectable sticks














		LV ($\leq 1\ 000\ V\ AC$)			
		$\leq 1.5\ m$		$> 1.5\ m$	
CHECK ABSENCE OF VOLTAGE					
	CF-6-075/1-* Total length: 0.75 m	CF-6-920-* Total length: 0.92 m	CC-45-K Total length: 1.25 m	MT-830-P Extended length: 1.6 m, folded: 0.64 m	
EARTHING AND SHORT-CIRCUITING SYSTEM					
	CF-3-72-C Total length: 1.5 m			CF-5-40-E Total length: 1.5 m With protective apron to break up any water run-off.	

* End fittings C, K or E, ** end fittings C, K, E or W, *** end fittings D, T or H, **** end fittings C or K



LV ($\leq 1\ 000\ V\ AC$)

	$\leq 1.5\ m$	$> 1.5\ m$		
RESCUE	 <p>509048 : double S Total length: 1 m</p>	 <p>Removable hook optional Ref.: CS-01-C</p>  <p>MT-830-P Extended length: 1.6 m, folded: 0.64 m</p>	 <p>CS-45 : Metal fixed hook CS-45/1 : Removable hook métal CS-45/2 : Insulated fixed hook Total length: 1.65 m</p>	 <p>509049 : double S Total length: 2 m</p>
	 <p>Metal hook included</p> <p>CM-45 Total length: 1.5 m</p>	 <p>Removable hook optional Ref.: CM-02-C</p>  <p>MT-830-P Extended length: 1.6 m, folded: 0.64 m</p>	 <p>Metal hook included</p> <p>CM-90 Total length: 1.85 m</p>	
HOOK	 <p>Metal hook included</p> <p>MG-115/1-S Total length: 1.5 m</p>	 <p>Metal hook included</p> <p>MG-116-S Total length: 2 m</p>		

* End fittings C, K or E, ** end fittings C, K, E or W, *** end fittings D, T or H, **** end fittings C or K

HV (> 1 000 V AC)					
≤ 1.5 m			2 m	2.5 m	
CHECK ABSENCE OF VOLTAGE	 <p>CE-4-08-*</p> <p>Extended length: 0.8 m, folded: 0.6 m</p>	 <p>CF-6-1000/1-E</p> <p>Total length: 1 m</p>	 <p>CE-4-15-****</p> <p>Extended length: 1.5 m, folded: 0.9 m</p>	 <p>CE-4-21-**</p> <p>Extended length: 2 m, folded: 1.15 m</p>	 <p>CE-4-30-**</p> <p>Extended length: 3 m, folded: 1.75 m</p>
EARTHING AND SHORT-CIRCUITING SYSTEM				 <p>CF-5-90-*</p> <p>Total length: 2 m</p> <p>With protective apron to break up any water run-off</p>	 <p>CF-5-110-*</p> <p>Total length: 2.5 m</p> <p>With protective apron to break up any water run-off</p>
RESCUE				 <p>CS-90</p> <p>Length: 2.05 m</p> <p>Metal hook included</p>	 <p>CS-225</p> <p>Total length: 2.45 m</p> <p>Metal hook included</p>
MANEUVERING				  <p>CE-2-21/1-C</p> <p>Extended length: 2 m, folded: 1.25 m</p> <p>Removable hook optional Ref.: CM-02-C</p>	  <p>CE-2-25/1-C</p> <p>Extended length: 2.5 m, folded: 1.5 m</p> <p>Removable hook optional Ref.: CM-02-C</p>

* End fittings C, K or E, ** end fittings C, K, E or W, *** end fittings D, T or H, **** end fittings C or K

HV (> 1 000 V AC)			
	≤ 1.5 m	2 m	2.5 m
HOOK		 <p>MG-100/S Total length: 2 m</p>	 <p>MG-101/S Total length: 2.6 m</p>

* End fittings C, K or E, ** end fittings C, K, E or W, *** end fittings D, T or H, **** end fittings C or K

For sizes over 2.5 m, see next page.


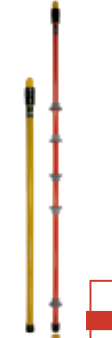



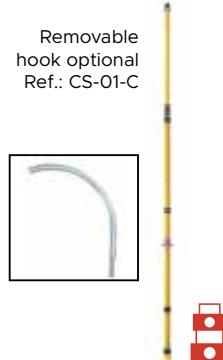



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Visit our website to discover even more electrical electrical safety solutions

- Easy access to information about our products and services.
- Clear, comprehensive content (technical technical data sheets, instructions for use, brochure, videos, etc).
- A multilingual site.
- Highlighting of CATU innovations.
- A search engine.

HV (> 1 000 V AC)				
		3 m	3.5 m	4 m
CHECK ABSENCE OF VOLTAGE	 Z-PLET-63-* Total length: 3 m		 Z-PLET-150-* Total length: 3.5 m	
EARTHING AND SHORT-CIRCUITING SYSTEM	 CF-5-170-* Total length: 3 m	 CM-4230-** Total length: 3 m		 CM-4240-*** Total length: 4 m CM-4345-** Total length: 4.5 m
	 Removable hook optional Ref.: CS-01-C CE-4-30-C Extended length: 3 m, folded: 1.75 m		 Removable hook optional Ref.: CS-01-C Z-PLET-150-H Total length: 3,5 m (Z-PLET-63-H) Total length: 3 m	
RESCUE				
MANEUVERING			 CE-5-36-K Extended length: 3.66 m, folded: 1.45 m	 CE-5-50-*** Extended length: 5 m, folded: 1.46 m

* End fittings C, K or E, ** end fittings C, K, E or W, *** end fittings D, T or H, **** end fittings C or K

HV (> 1 000 V AC)

3 m

3.5 m

4 m

MEASURING



MO-831

Direct reading on tube from 2.65 m to 11 m. Graduations in m, dm and cm
Extended length: 11 m, folded: 1.5 m

ADJUSTABLE



CE-9-5603-**

Extended length: up to 5.6 m, folded: 2.15 m

HOOK

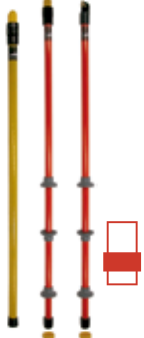

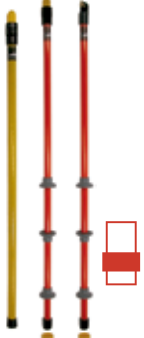










MG-102/S
Total length: 3.2 m











MG-103/S
Total length: 3.8 m

* End fittings C, K or E, ** end fittings C, K, E or W, *** end fittings D, T or H, **** end fittings C or K

HV (> 1 000 V AC)					
5 m		6 m		7 m	8 m
CHECK ABSENCE OF VOLTAGE					
	Z-PLET-225- [*] Length: 4.5 m	CE-TL-4-051-K Extended length: 5.1 m, folded: 1.55 m	Z-PLET-400- [*] Total length: 5.5 m	CE-TL-5-064-K Extended length: 6.4 m, folded: 1.6 m	CE-5-70-**** Extended length: 7.8 m, folded: 1.56 m
					
	CM-4615 + CM-4615-I + CM-4620- [*] Total length: 5.4 m	CM4360- [*] Total length: 6 m			
RESCUE					
	Removable hook optional Ref.: CS-01-C	Removable hook optional Ref.: CS-01-C	Removable hook optional Ref.: CS-01-C		
	CE-5-50-C Extended length: 5 m, folded: 1.46 m	CE-5-60-C Extended length: 6.4 m, folded: 1.51 m	CE-5-70-C Extended length: 7.8 m, folded: 1.56 m		
MANEUVERING					
	MO-832. Direct reading on tube from 2.65 m to 11 m. Gradations in m, dm and cm. Extended length: 12 m, folded: 1.5 m				



* End fittings C, K or E, ** end fittings C, K, E or W, *** end fittings D, T or H, **** end fittings C or K

HV (> 1 000 V AC)					
5 m		6 m		7 m	8 m
ADJUSTABLE					
	CE-9-5603-* + Z-RAVZC-200 (extension) Extended length: 7.6 m, folded: 2.15 m				

9 m		10 m		11 m		12 m		
CHECK ABSENCE OF VOLTAGE	 <p>CE-5-90-**** Extended length: 9.25 m, folded: 1.61 m</p>		 <p>CE-TL-7-092-K Extended length: 9.2 m, folded: 1.7 m</p>		 <p>CE-5-105-**** Extended length: 10.75 m, folded: 1.66 m</p>		 <p>CE-TL-8-106-K Extended length: 10.6 m, folded: 1.75 m</p>	
	 <p>CE-TL-9-121-K Extended length: 12.1 m, folded: 1.8 m</p>		EARTHING AND SHORT-CIRCUITING SYSTEM		EARTHING AND SHORT-CIRCUITING SYSTEM		EARTHING AND SHORT-CIRCUITING SYSTEM	
RESCUE	 <p>Removable hook optional Ref.: CS-01-C</p> <p>CE-5-70-C Extended length: 7.8 m, folded: 1.56 m</p>		 <p>Removable hook optional Ref.: CS-01-C</p> <p>CE-5-90-C Extended length: 9.25 m, folded: 1.61 m</p>		EARTHING AND SHORT-CIRCUITING SYSTEM		EARTHING AND SHORT-CIRCUITING SYSTEM	

* End fittings C, K or E, ** end fittings C, K, E or W, *** end fittings D, T or H, **** end fittings C or K

Table continued on next page.

		HV (> 1 000 V AC)			
		9 m	10 m	11 m	12 m
MEASURING					
	MO-832. Direct reading on tube from 2.65 m to 11 m. Graduations in m, dm and cm Extended length: 12 m, folded: 1.5 m				
ADJUSTABLE					
	MO-832. Direct reading on tube from 2.65 m to 11 m. Graduations in m, dm and cm Extended length: 12 m, folded: 1.5 m				

* End fittings C, K or E, ** end fittings C, K, E or W, *** end fittings D, T or H, **** end fittings C or K

The advantages of our ranges

Signaling

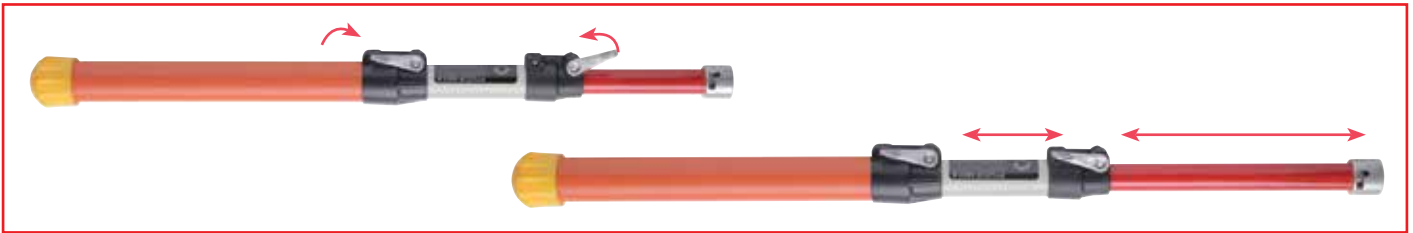
All our insulating sticks have a label indicating:

- dates of periodic inspection,
- the rated operating voltage,
- a table showing the date of the last checked.



Precise length adjustment for telescopic sticks in the CE-9 telescopic sticks

Thanks to a system of levers, the CE-9 series telescopic sticks can be adjusted in length to suit the working distance required.



Time-saving during installation

Thanks to alignment arrows, folding the sticks is easy and saves time.



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Stick maintenance

A clean and polished sticks surface is the key to maximum dielectric performance. It is recommended that all sticks are checked electrically or dielectrically at least once a year.

CATU recommends that you carry out the following checks:

- **Before each use**, carry out a visual inspection: check for scratches, cracks, breakage (for any non-conformity during the daily inspection, you must carry out the annual inspection checks).
- **Annually:**
 - Carry out a thorough cleaning to remove grease and other encrusted dirt.
 - In order to remove this dust and dirt, recreate and increase the insulation, clean completely with a cloth coated with silicone (ref MO-984).
 - The dielectric test specified in the standard must be carried out by a recognised laboratory. For any non-compliance at the time of the annual inspection you must place the item in quarantine or out of use.

NOTE : For cleaning, do not use soapy, liquid or powder detergents to avoid any conductive residue or deterioration of the glossy surfaces.

Periodic inspection of sticks

Our experts can offer you tailored solutions for maintaining and checking your equipment as part of an annual contract or on a one-off basis. All of these services comply with the rules and procedures set out in the CATU quality assurance charter.























For more information, please contact our team:
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Our accessories

Adapters

Thanks to a wide range of adapters, many tools and devices can be assembled at the head as grounding clamps, voltage detectors, brushes, cameras, manoeuvring and rescue hooks, etc.

Tools end fittings	 C	 K	 H	 E				
Adaptors	 CI-7-C	 CI-6-C2	 CI-4-K	 CI-6-K	 CI-5-K	 CI-6-H2	 CI-7-E	 CI-4-E
Sticks end fittings	 E	 K	 C	 K	 E	 K	 K	 C

NB: because of their design, there are no adapters for S-ended poles (hooks that can be operated).

Intermediate element for rain protection

Special element with protective skirt for use in the rain. It is fitted between two connectable elements of the CM-4600 series.



Wall brackets

Semi-rigid thermoplastic.
Supplied with screws and fixing plugs.



High support

Low support

Wall brackets			
Part no.	Sticks concerned	Admissible diameters	
		High support	Low support
CI-06-D	CS45 / CS90 / CS225 CM45 / CM90 / CM225	28/30 mm	Max 36 mm
CI-08	CE2*	16/20 mm	Max 36 mm
CI-10-D	CE421 / CE430 CF372 / CF5* / CF6* ZPLET / MG100	32/36 mm	Max 58 mm
CI-12-D	MT830P CE5* CE95603	28/30 mm	Max 58 mm
CI-15-D	CM46* / CM4360 CM4240	39 mm	Max 58 mm
CI-18-D	CM-6, CE-5	42-48 mm	Max 58

Bags

Waterproof, ultra-resistant canvas case. Adjustable carrying strap with zip closure. Transparent pocket for equipment identification.



CM-1

Contains from 1 to 3 sticks.

CM-3

Contains 5 single elements or 4 double elements

CM-1		CM-3	
Part no.	Length carried max	Part no.	Length carried max
CM-1-10	1.3 m	CM-3-03	1.75 m
CM-1-15	1.8 m	CM-3-04	2 m
CM-1-20	2.4 m	CM-3-05	2.5 m
		CM-3-06	3 m

Stick-pass accessory

Moulded plastic. Fitted from the outside by tightening three on a steel clamp.
Diameter of passage: 60 mm.



CI-70



Silicone cloth

Cotton impregnated with silicone, to maintain the insulating properties.
Dimensions: 380 x 330 mm.



MO-984



At CATU, we're always ready to listen and help you to help you take steps to prevent electrical hazards.

Our experts are on hand to :

- **Advise** on the use of products (installation and maintenance).
- **Advise** on current product regulations.
- **Help** you define and choose equipment to suit your applications.
- **Help** in drawing up technical specifications.

Please do not hesitate to contact them:

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