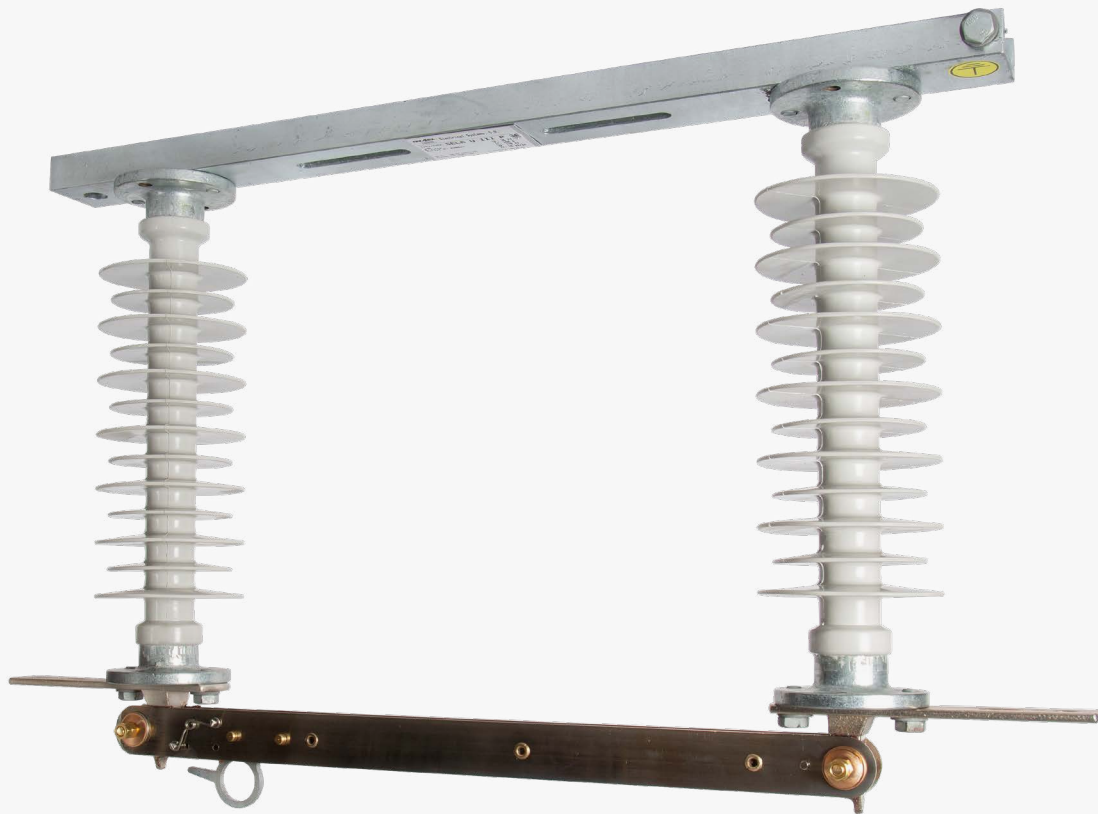




Disconnectors-Switch

Index

Introduction	4-5
Single-Pole Disconnecter SELA	6-7
Indoor Triple Disconnecter ST 3.000	8
Indoor Triple Disconnecter ST 3.050	9
MS Operating Mechanism	10
ME Operating Mechanism	11
Indoor Disconnecter Assembly	12
Outdoor Operating Mechanism Type MM	13
Overhead Three-Pole Disconnectors 3.900	14-15
Overhead Three-Pole Disconnectors 3.950	15
Overhead Three-Pole Disconnectors ST 3.910 – ST 3.960	15-16
Wall Bushings PM – PE	16-17
Wall Bushing Plates PLM and PPM	17-18
Insulators for Outdoor or Indoor Use	18
Outdoor Insulators	19
Indoor Insulators	19
Rod Supports SP and Busbar Supports PRB	20
Accessories	21
	22

Introduction

With over 45 years of experience in the industry, Inael has accumulated in-depth knowledge in the design and manufacture of disconnectors, adapting to the constant technological evolutions of the electrical industry. Our experience allows us to offer innovative products that meet the highest standards of quality and safety.

The different electrical switchgear included in this catalogue is manufactured according with the following international standard: Disconnectors and Earthing switches: EN60129, IEC 62271-102. Insulators: IEC 60168 & IEC 60273.

All ferrous parts of outdoor switchgears have been hot dip galvanized according to the international standard ISO 1461, to provide them a long service life.

For the indoor switchgear, the ferrous parts are rust protected by an electrolytic zinc coating of 20 µm thickness.

All the connections of metallic parts and insulators are achieved by elastic cement in order to absorb the expansion coefficient variations of the different materials. The robust construction, easy assembly, the absence of corrosions between galvanic parts and the hard routine tests during the manufacture process guarantee a long life without any maintenance operation.

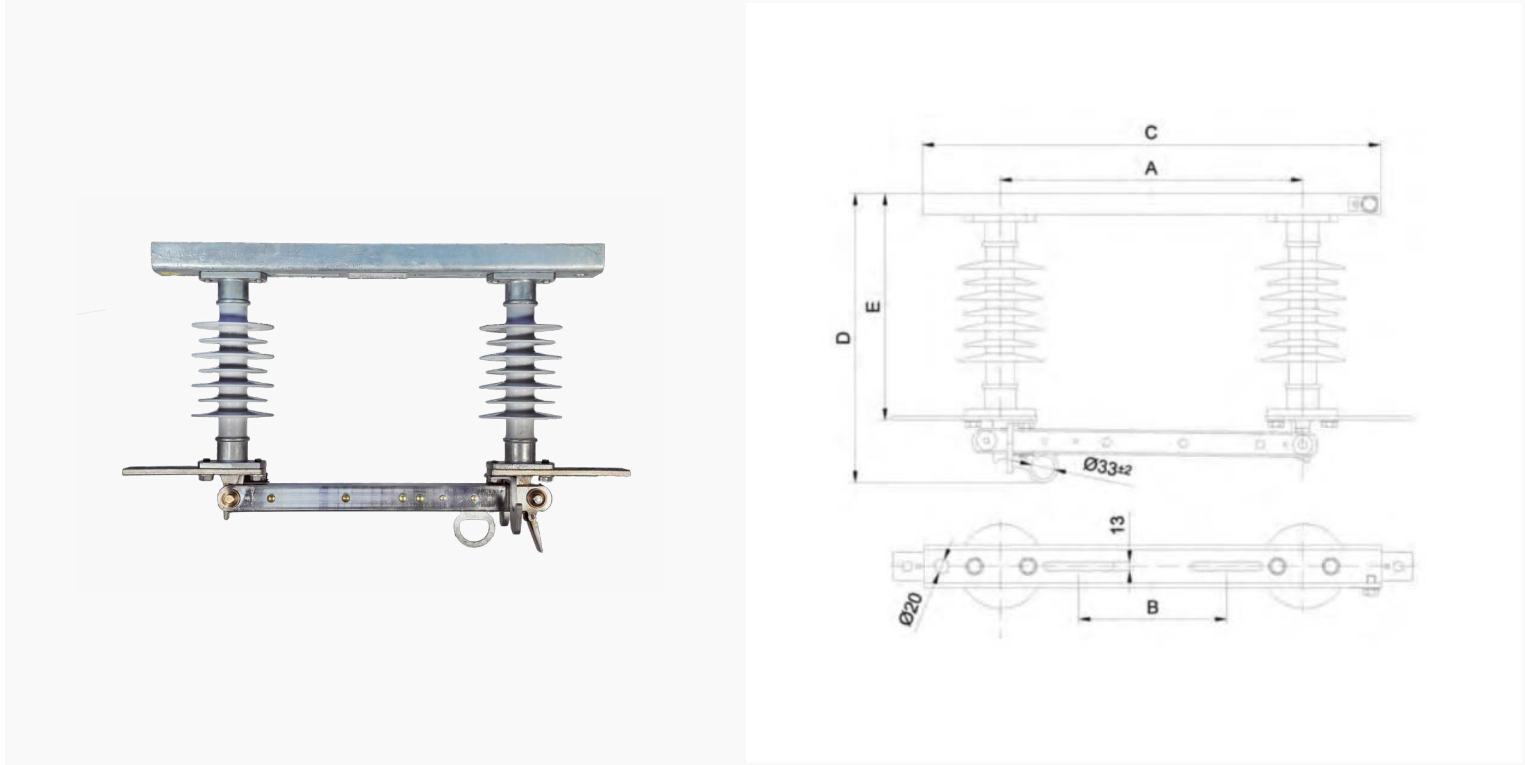


Single-Pole Outdoor Disconnector, Ceramic and Polymeric RU 6401 B

Disconnector suitable for installation in any position between vertical and inverted horizontal, that is, with the blades on the lower side.

It is always equipped with a double blade and a locking device that prevents unintentional opening or opening caused by wind or freezing conditions.

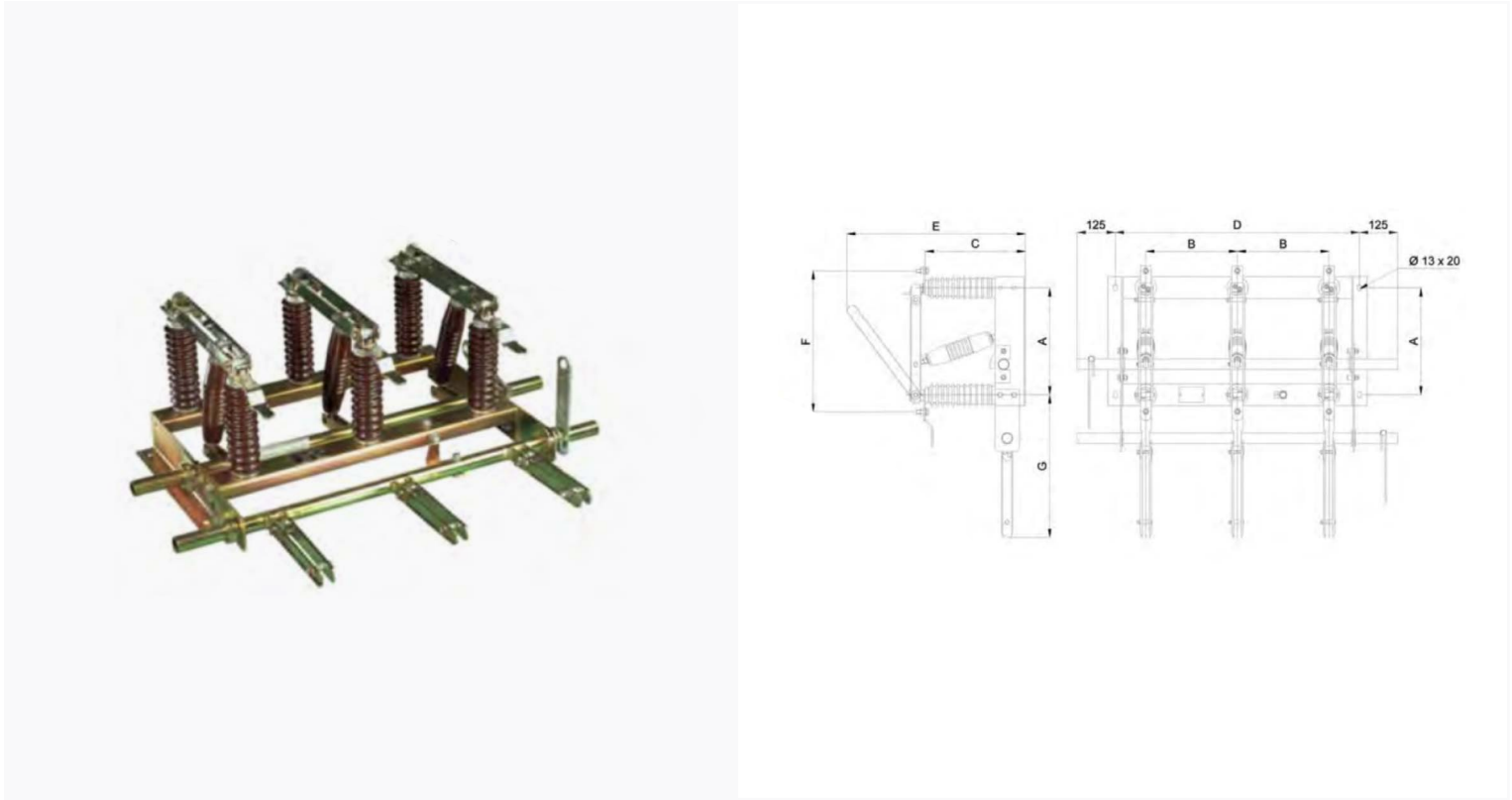
It is fitted with C4-type insulators according to IEC 273 standard, for pollution level I with a creepage distance of 16 mm/kV, and level III with a creepage distance of 25 mm/kV. It can also be equipped with hooks for Load Buster operation (LB models).



Characteristics											
Types	Ur kV	Ur kV	Ur kV	Dimensions mm.					Creepage distance mm.	Falling load N	Weight kg
				A	B	C	D	E			
SELA U I 24 (LB)	24	16	400 6 600	430	210	650	435±5	341	380	4000	16
SELA U III 24 (LB)							415±5	322	600		24
SELA U III 24 P (LB)									635		10
SELA U I 36 (LB)	36			548	210	768	575±5	481	580		26
SELA U III 36 (LB)							535±5	446	900		32
SELA U III 36 P (LB)									1104		13

Three-Pole Indoor Disconnectors, ST 3.000

Three-pole disconnectors suitable for vertical installation, with a double blade operated on all three phases by insulated rods connected by a metal shaft, allowing manual operation via an ME or MS type mechanism. Optionally, it can be equipped with a voltage transformer disconnector and its corresponding mechanical interlock. In this case, it will be operated using a second manual mechanism of type MS or ME.

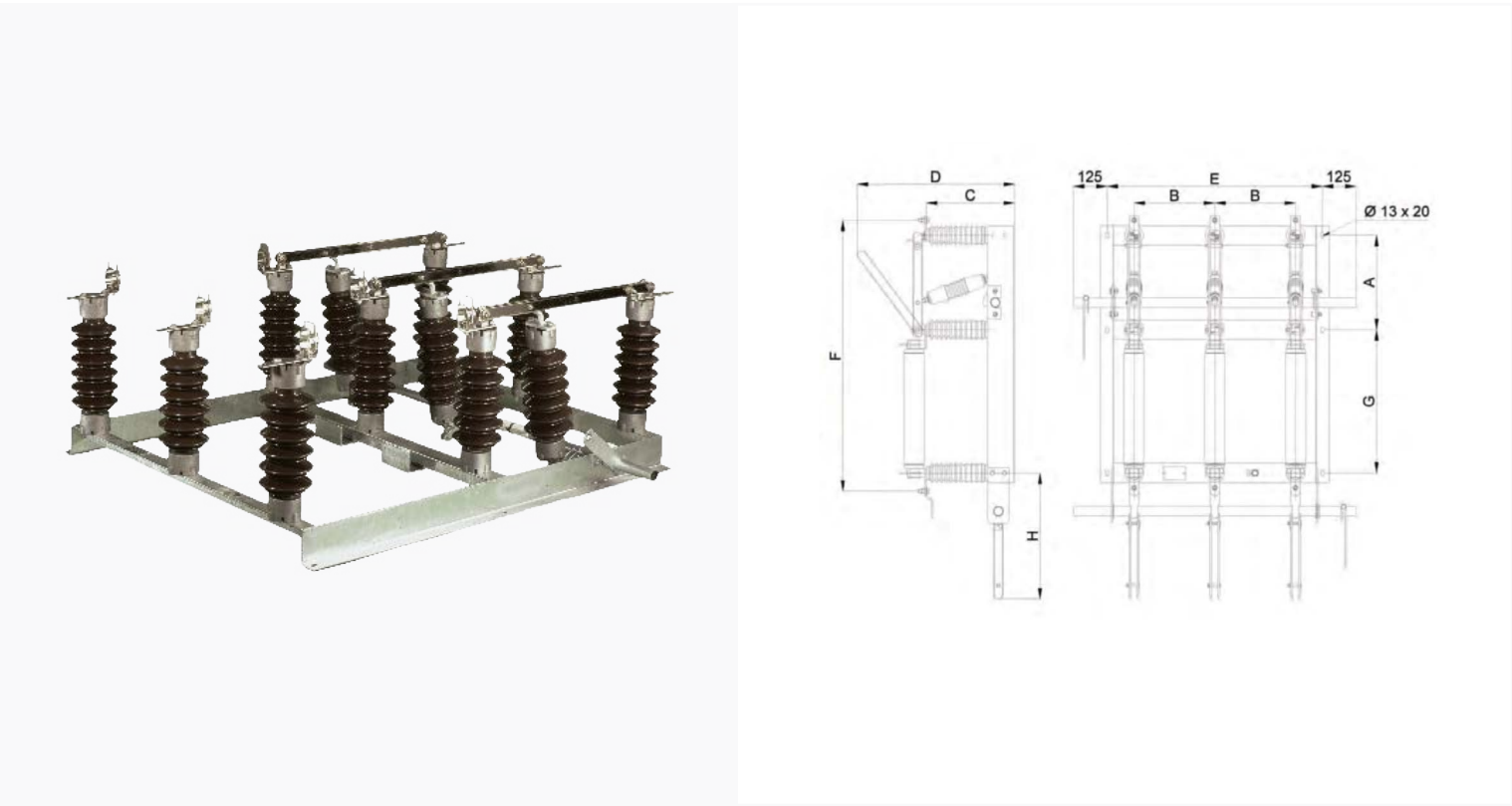


Characteristics													
Types	Ur kV	Ur kV	Dimensions mm.							Creepage distance mm.	Creepage distance N	Weight kg	Volume m³
			A	B	C	D	E	F	G				
ST 3.000	12	400 ó 630	250	210	234	600	490	365	313	140	1800 ó 3750*	24	0.07
								390					
	24		350	300	329	800	695	465	411	260		35	0.20
								490					
	36		450	400	413	1050	875	565	500	380		44	0.35

* If orderer

Three-Pole Disconnector with Fuse Bases, STB 3.050

These disconnectors are normally supplied with AIPO-type insulators with a breaking load of 1,800 N. Upon request, they can be supplied with insulators of the same type but with a breaking load of 3,750 N.



Characteristics														
Types	Ur kV	Ur kV	Dimensions mm.								Creepage distance mm.	Failing load N	Weight kg	Volume m³
			A	B	C	D	E	F	G	H				
ST 3.050 Fuses IB.D1 IB.D2 (DIN)	12	400 ø 630	250	210	234	490	490	772	407	313	140	1800 ø 3750*	24	0.07
	24		350	300	329	295	695	1022	557	411	260		35	0.20
	36		450	400	413	875	1050	1217	652	500	380		44	0.35
ST 3.050 Fuses IB.DG IB.DK	12		250	210	234	490	600	744	379	313	140		39	0.19
	24		350	300	329	695	800	944	479	411	260		48	0.38
	36		450	400	413	875	1050	1244	679	500	380		66	0.76

* If orderer

MS Type Control

For indoor use, wall-mounted or surface-mounted, with front output.

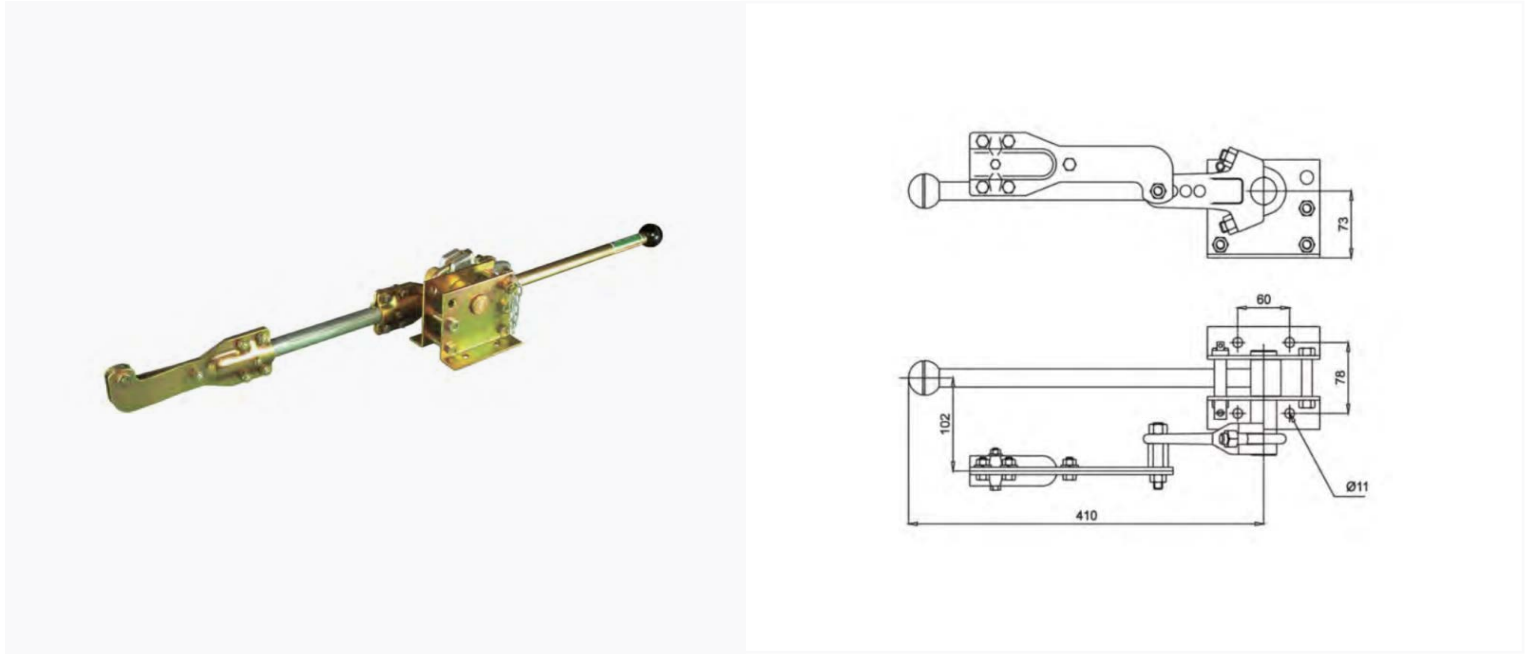
Mounted on two support plates that serve as its mounting base, between which the operating lever is housed, indicating the open-closed positions. This mechanism includes:

- A locking plate that secures the selected position.
- A continuously adjustable rod that aligns according to the inclination of the extension tube.

In addition to the built-in components, the mechanisms are supplied with a TUB tube terminal (see page 27) for connecting a 3/4” tube.

The metal parts are protected against corrosion by electrolytic zinc coating followed by passivation.

TC: 3 m tube with insulator.
TS: 3 m tube without insulator.



ME Type Control

It is mounted on a 3 mm thick sheet metal frame, providing high mechanical strength. This frame houses the rotation points of:

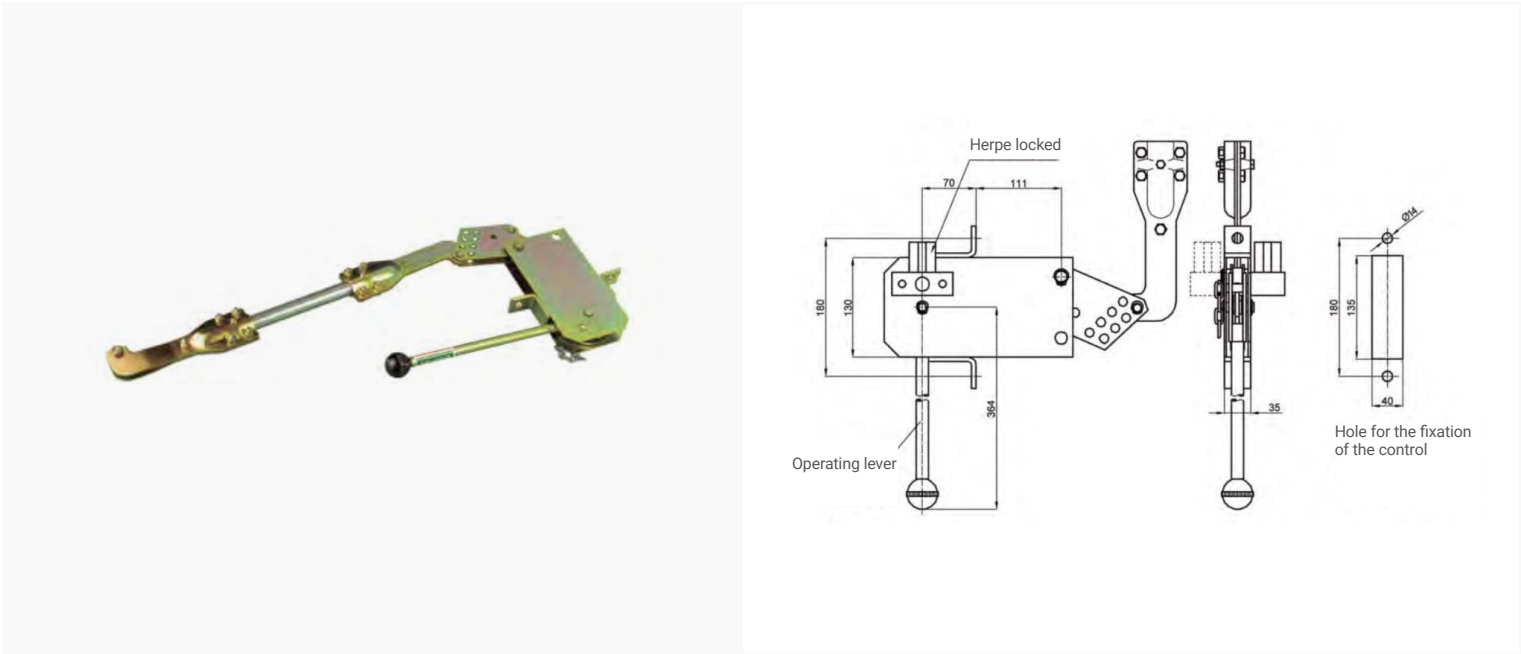
- The operating lever, which indicates the open/closed position of the disconnector,
- The adjustable cam, with a wide adjustment range, to which the tube holder is attached.

When used to operate disconnectors, it is supplied with a TUB-type tube terminal (see page 27), which is also used to connect the disconnector shaft with the transmission tube, in addition to the one already included in the ME mechanism.

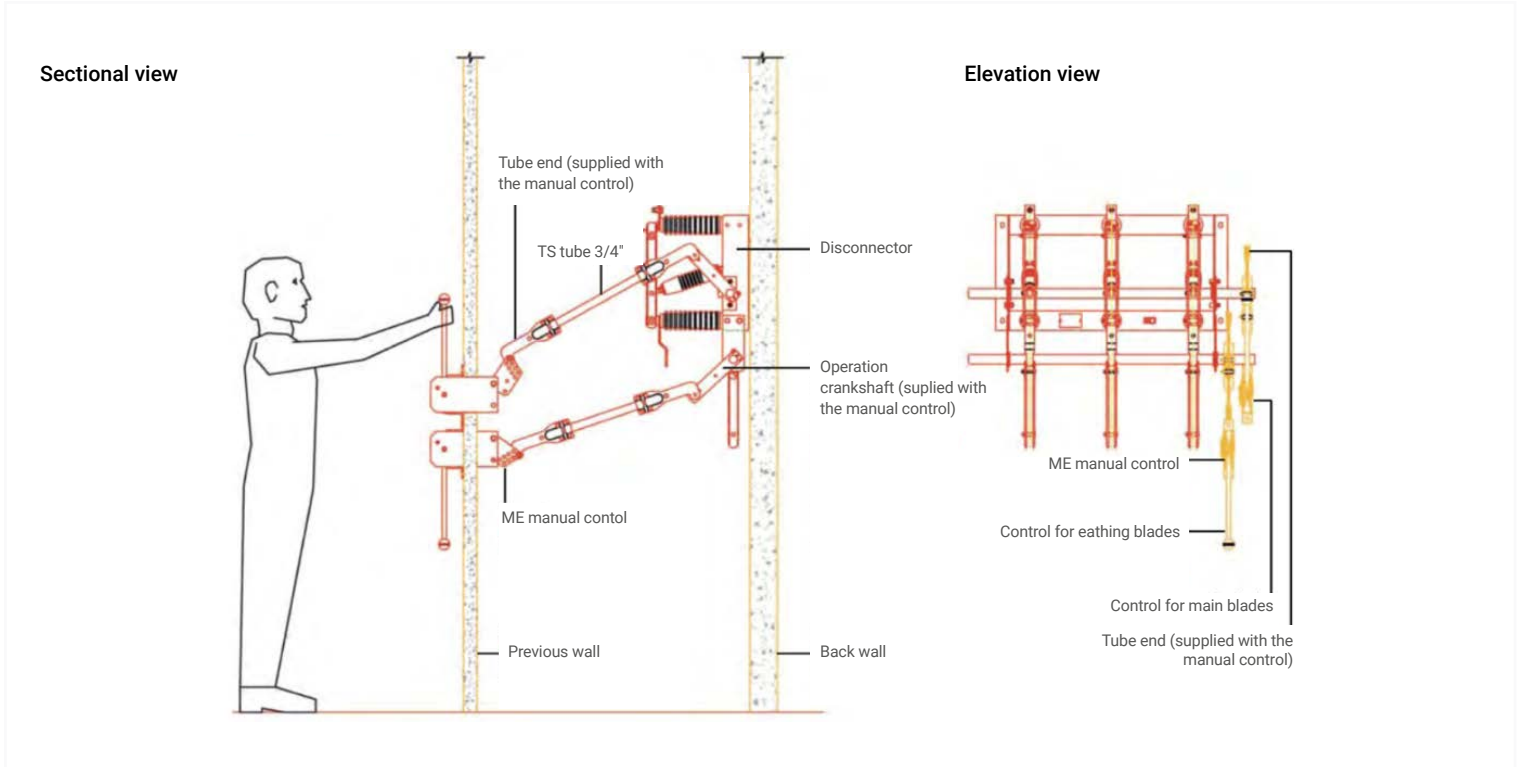
For the connection to the disconnector, 3/4” galvanized tubes can also be used.

TC: 3 m tube with insulator.
TS: 3 m tube without insulator.

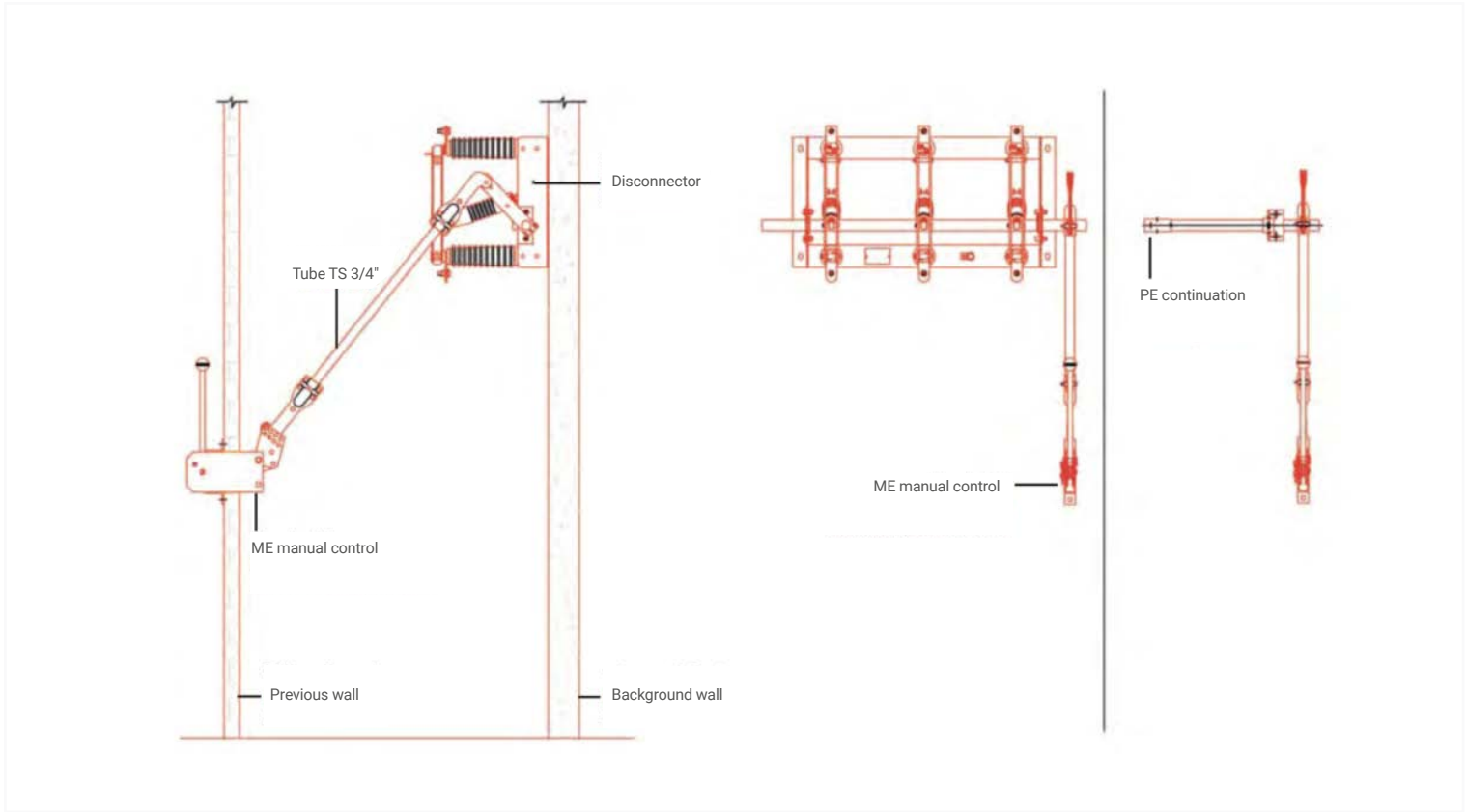
This mechanism can also be equipped with a Herpe lock for locking or interlocking purposes.



Disconnecter mounting indoor



Mounting on lateral wall of the switch



MM Type Control for Outdoor Use

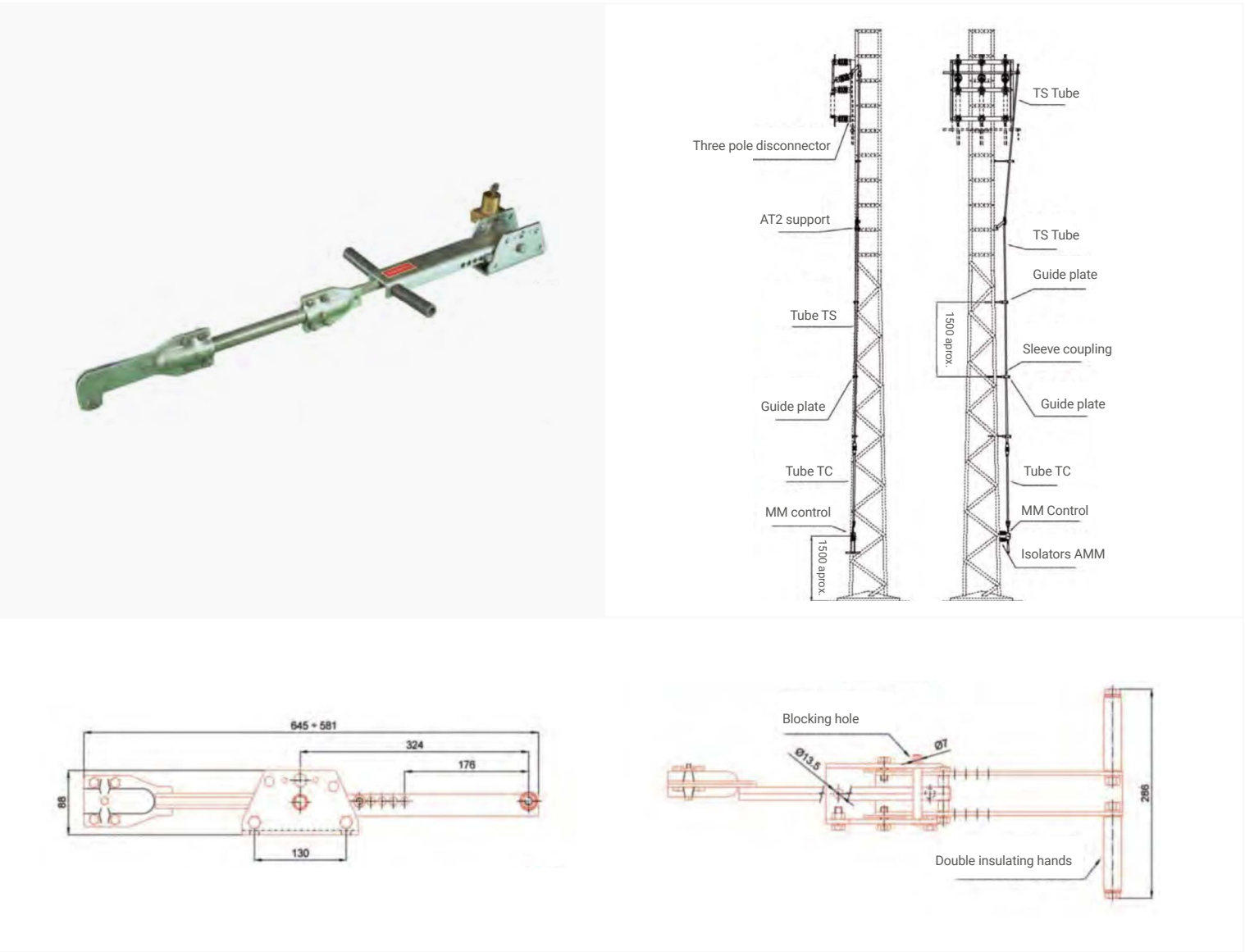
MM type control for outdoor post mounting with front output. It consists of a mounting support plate and an operating lever marked with open/close positions. The lever features a double insulating handle to which a rod with 5 adjustment points is attached.

The control is supplied with a TUB tube end (see page 27) for connecting a 3/4" tube to the disconnector.

All parts are hot-dip galvanized: non-centrifuged parts have a minimum coating thickness of 85 µm, and centrifuged parts, 53 µm, ensuring high corrosion resistance.

This control can optionally include a HERPE lock for locking or interlocking functions.

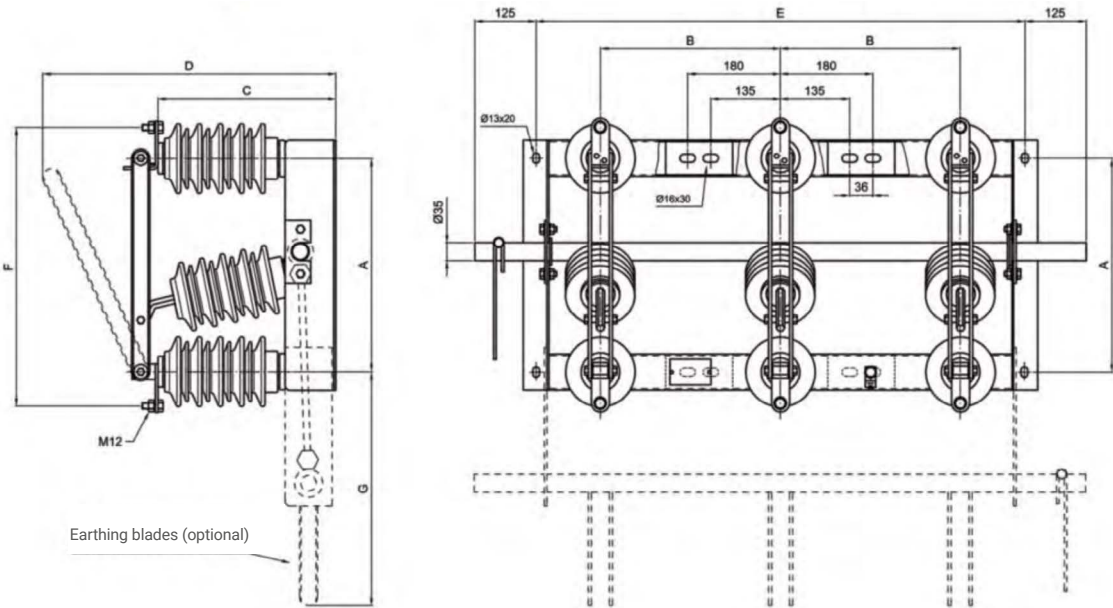
To connect the control to the disconnector, 3/4" galvanized tubes can be used:
TC: 3 m tube with insulator.
TS: 3 m tube without insulator.



Sectionneurs tripolaires d'extérieur 3.900 CR et 3.900 CN

Les sectionneurs tripolaires ont été conçus pour un montage principalement vertical. On peut y incorporer ou changer les éléments suivants:

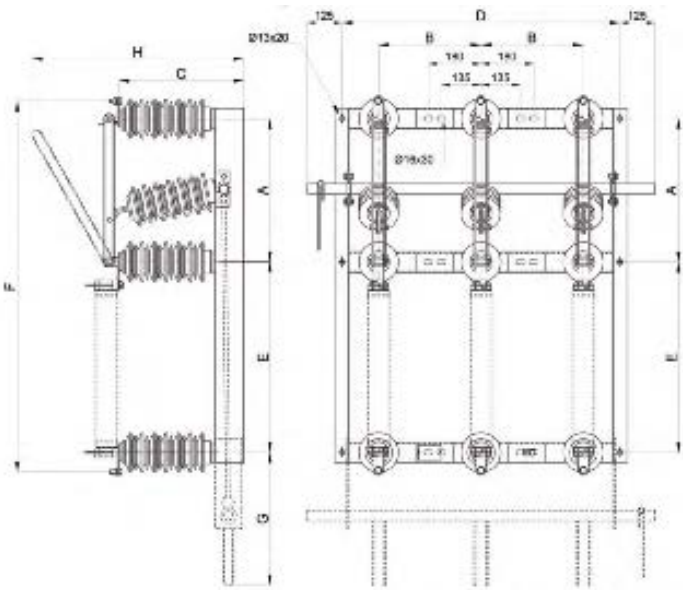
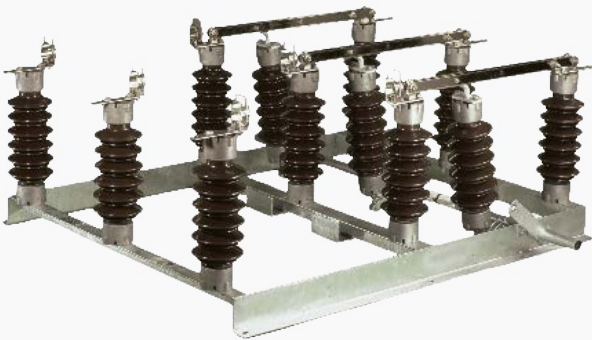
- Fuse holder base
- Earthing switch with interlock
- The earthing switch can be positioned at the input or output of the main disconnector
- The disconnector is operated by its own independent mechanism
- Operating shafts can be placed on the right or left side
- Operating shafts can be extended by 250, 500, 750 or 1,000 mm; these extensions are equipped with a support to prevent bending
- The outdoor disconnectors have openings that allow direct mounting onto the metal pole or onto a frame previously installed on any type of support structure



Characteristics													
Types	Ur kV	Ir A	Dimensions mm.							Creepage distance mm.	Charge rupture N	Weight kg	Volume m³
			A	B	C	D	E	F	G				
3.900 CR	17.5	400 6 630	415	300	310	621	850	525	404	455	3.000	71	0.33
								550					
	24		440	350	360	707	950	550	454	565		72	0.62
								575					
	36		520	450	440	865	1.150	630	541	800		86	0.93
								655					
3.900 CN	17.5		415	300	325	636	850	525	419	375	1.500	71	0.49
								550					
	24		440	350	373	720	950	550	467	475		72	0.62
		575											
	36	520	450	445	870	1.150	630	546	625	86		0.93	
							655						

Outdoor Three-Pole Disconnectors, ST 3.910 and ST 3.960 with Fuse Bases

The insulators are mounted vertically on the frame and incorporate fuse holder bases, which can be of the DIN type (Ø45 mm clamp), or of the IB-DG and IB-DK types (Ø55 mm clamp).

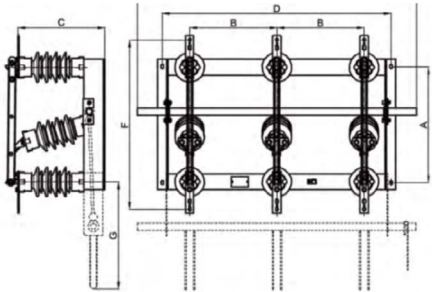


Characteristics														
Types	Ur kV	Ir A	Dimensions mm.								Creepage distance mm.	Charge rupture N	Weight kg	Volume m³
			A	B	C	D	E	F	G	H				
3.950 CR Fusibles IB-D1 IB-2 (DIN)	24	400 6 630	440	350	360	950	557	1.112	454	707	565	3.000	74	0.76
	36		520	450	440	1.150	652	1.287	541	865	800		86	1.24
3.950 CR Fusibles IB-DG IB-DK	24		440	350	360	950	479	1.034	454	707	565		73.5	0.76
	36		520	450	440	1.150	679	1.314	541	865	800	85	1.32	
3.950 CN Fusibles IB-D1 IB-D2 (DIN)	24		440	350	360	950	557	1.112	467	720	475	1.500	71.5	0.76
	36		520	450	440	1.150	652	1.287	546	860	625		84	1.24
3.950 CN Fusibles IB-DG IB-DK	24		440	350	360	950	479	1.034	467	720	475		70.5	0.76
	36		520	450	440	1.150	679	1.314	546	860	625		83	1.32

Outdoor Three-Pole Disconnectors, ST 3.910 and ST 3.960 with Fuse Bases

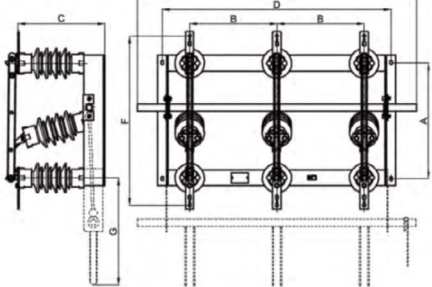
ST 3.910



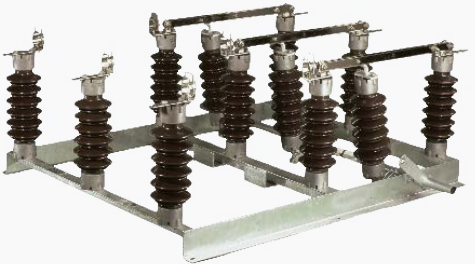


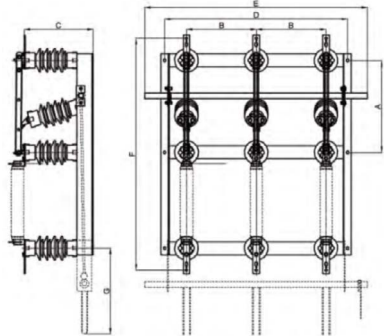
ST 3.910 P





ST 3.960





Characteristics												
Types	Ur kV	Ir A	Dimensions mm.								Creepage distance mm.	Charge rupture N
			A	B	C	D	E	F	G	H		
ST 3.910	24	400 6 630	575	360	421	970	1.220	835	521	-	625	3.000
	36		700	475	526	1.200	1.548	960	626	-	925	2.500
ST 3.960	24	400 6 630	575	360	421	970	1.220	1.398	521	610	625	3.000
	36		700	475	526	1.200	1.548	1.618	626	705	925	2.500



Bushings PM -PE

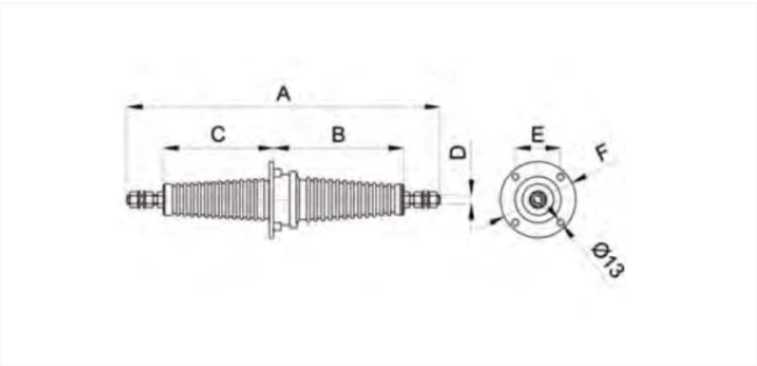
Description of the Bushings INAEL bushings are made of brown vitrified porcelain. The internal conductor is made of copper or brass, with a large cross-section designed according to the rated current.

The supporting metal fitting is a robust aluminum alloy component with four holes for mounting to a plate using M12 screws.

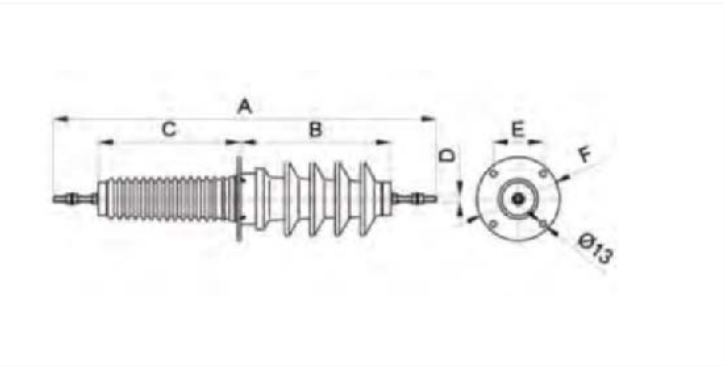
All ferrous parts — such as nuts, screws, and washers — in the PE type are hot-dip galvanized.

PM types are protected by electrolytic zinc plating.

Type PM

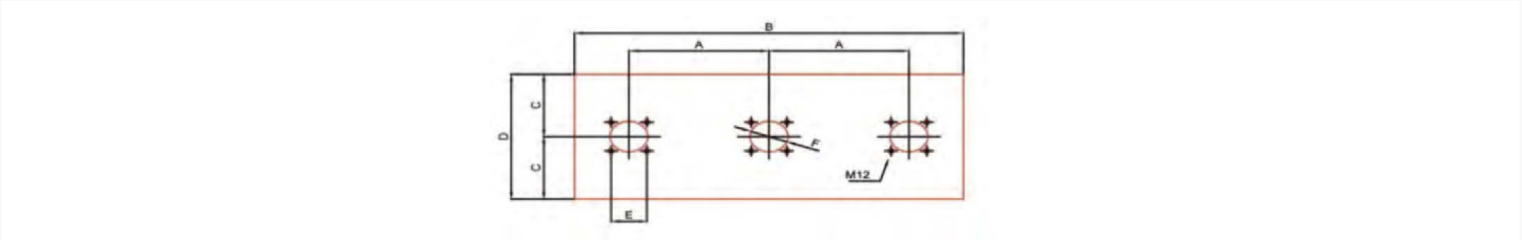


Type PE



PM and PE Bushing's characteristics													
Types	Ur kV	BIL kV	Ir A	Creepage distance mm.		Dimensions mm.						Weight kg.	Packing m³
				Ext.	Int.	A	B	C	D	E	F		
PM 24/200	20-24	125	200	-	275	622	205	270	M12	89	Ø150	4.9	0.016
PM 24/400			400						M18			5.3	
PM 36/630			630						M20			5.7	
PM 36/200	30-36	170	200	-	425	840	320	365	M12	89	Ø150	6.8	0.018
PM 36/400			400						M18			7.25	
PM 36/630			630						M20			7.6	
PM 24/200	20-24	125	200	500	330	680	295	245	M12	89	Ø150	6.8	0.017
PM 24/400			400						M18			8.05	
PM 24/630			630						M20			6.8	
PM 36/200	30-36	170	200	730	490	950	425	360	M12	115	Ø185	15.9	0.036
PM 36/400			400						M18			16.3	
PM 36/630			630						M20			16.6	

Bushing's plates PLP and PPM



PLP bushing plate, outdoor installation, for bushing PE.PPM bushing plate, outdoor installation, for bushing PM.

Plates PLP and PPM Characteristics								
Ref-	Maximum voltage kV	Dimensions mm.						Weight kg.
		A	B	C	D	E	F	
PLP 24	24	350	1.150	225	450	89	86	12.2
PLP 36	36	450	1.250	250	500	115	122	15.7
PPM 24	24	300	950	200	400	89	95	9.2
PPM 36	36	400	1.250	250	500	89	95	14.2

Indoor or Outdoor Insulators

Compliant with IEC 60168 and IEC 60273 standards.The outdoor insulators are made of glazed brown porcelain.

To prevent localized stress on the ceramic parts, the insulators are bonded to the top metal fitting using a special cement that absorbs the effects of temperature variations, caused by the different thermal expansion coefficients of the materials.

The top fitting is also mounted on elastic joints to protect the insulator from sudden mechanical stress.

Characteristics																			
Type	Ur kV	BIL kV	Dimensions mm.						Ligne de fuite mm.	Nombre d'ailettes		Carga rotura N	Poids kg	Fig Nº					
			H	D1	D2	D3	M1	M2		Grandes	Petites								
CN-24	24	125	268*	132	60	70	60	M12	M12	475	4	-	1.500	3.2	1				
CN-36	36	170	340*	135						625	6	-		5					
CR-12	12	75	165*							330	3	2		2.6					
CR-24	24	125	255*	138						565	5	4	3.000	4.6	2				
CR-36	36	170	335*							800	7	6		6.2					

Number of sheds														
Type	Ur kV	BIL kV	Dimensions						Creepage distance mm.	Number of sheds		Charge rupture N	Weight kg	Fig Nº
			H	D1	D2	D3	M1	M2		Bigs	Smalls			
C4-95 I	17.5	95	225	147	102				320	3	-	4.000	6.0	3
C4-95 II				163					358	3	-		6.6	
C4-95 III				220					445	3	-		7.5	
C4-125 I	24	125	305	153	76	108	M12	M12	380	4	-		8.2	
C4-125 II				150					540	5	-		8.4	
C4-125 III				165					600	5	-		9.5	
C4-170 I	36	170	445	160	90				730	6	-		11.6	
C4-170 II				160					720	6	-		12.0	
C4-170 III				175					900	5	4		14.0	
C4-170 IV	52	250	560	193					1.120	5	4	2.000	15.0	4
C4-250 I				170					970	8	-		15.5	
C4-250 II				180					1.260	11	-		19.5	
C4-250 III	12	75	225	185	145	90			1.320	7	-		20.4	
C4-250 IV				210					1.620	7	6		23.6	
IN-12 III									310	2	2		2.5	
IN-24 III	24	125	315	145	90				625	4	4		5.5	
IN-36 III	36	170	420						925	6	6		9.8	

Data subject to slight modifications; in case of doubt, please consult us.

Indoor Insulators

Fig. 1

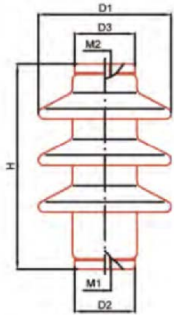


Fig. 2

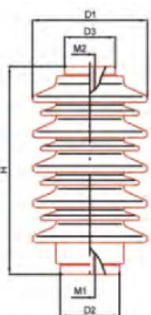


Fig. 3

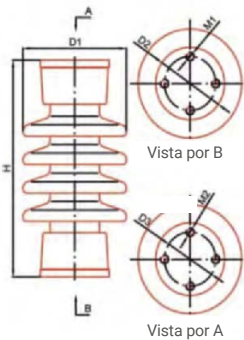


Fig. 4

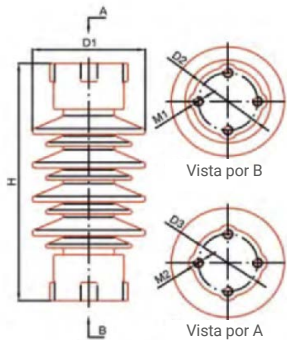


Fig. 5

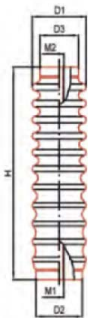


Fig. 6



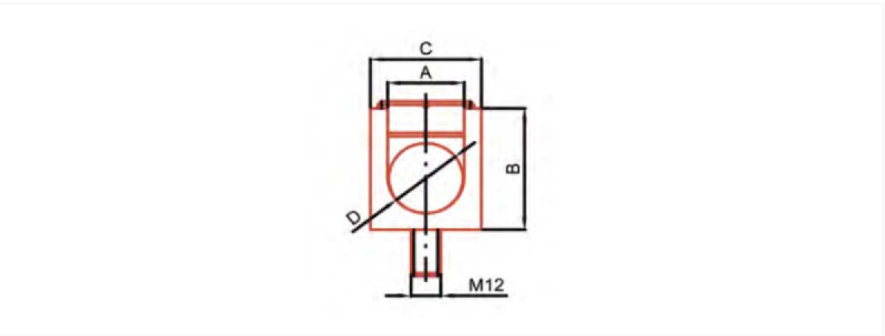
Characteristics												
Type	Ur kV	BIL kV	Dimensions						Charge rupture N	Weight kg	Fig Nº	
			H	D1	D2	D3	M1	M2				
J-4-95	17.5	95	175	80	60	50	M16	M12	4.000	1.5	5	
J-2-125				210	75	60	50		M12	2.000		1.8
J-4-125					85	90	50		M16	4.000		2.0
J-2-170	36	170	300	75	70	50	M12		2.000	2.5		
J-4-175				105	90	60	M16		4.000	3.8		

Characteristics												
Type	Ur kV	BIL kV	Dimensions							Charge rupture N	Weight kg	Fig Nº
			H	D1	D2	M1	M2	M3	A			
J-4-60	7.2	60	95	58	51	M16	M12	M6	36	4.000	0.55	6
J-4-75	12	75	130	70	58						0.7	
J-4-95	17.5	95	175	76	58						1.1	
J-4-125	24	125	210	70	64							
J-4-170	36	170	300	72	74							

Rod Supports SP and Busbar Supports PRB

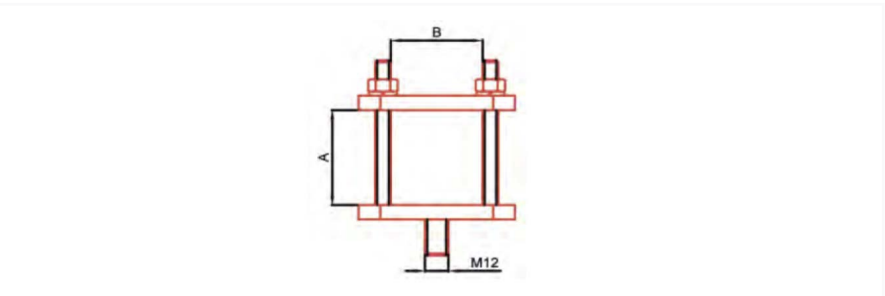
They are made of steel, electrolytically zinc-plated for indoor use and hot-dip galvanized for outdoor use. Both types are equipped with an M12 threaded rod for mounting onto support insulators.

SP



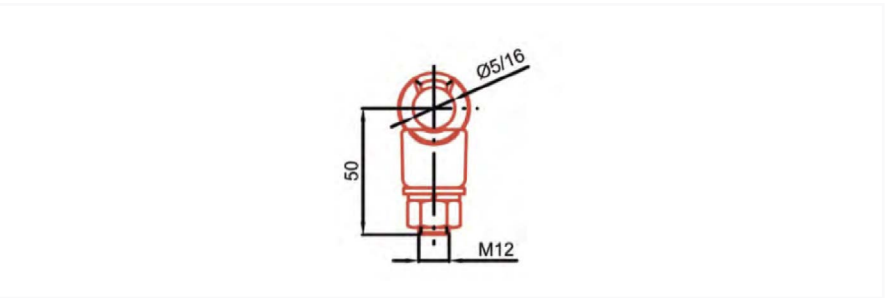
Characteristics					
Type	Dimensions				
	A	B	C	D	
				Min.	Max.
SP 10	95	58	51	51	51
SP 12	130	70	58	51	51
SP 16	175	76	58	51	51
SP 20	210	70	64	51	51
SP 30	300	72	74	51	51

PRB



Characteristics			
Type	Dimensions		
	Conductor	A	B
PRB-2	20X100	20	100
PRB-4	40x100	40	100
PRB-6	60x100	60	100
PRB-8	80x60	80	60
PRB-10	100x60	100	60

Conector SC



Accessoires

1. **Shaft Extension PE**
Made of Ø30 mm or Ø35 mm tubes, one end of which includes a ring for connection to the disconnector.
All extensions are supplied with a support to prevent tube bending, except the 1 m version, which is supplied with two.
Standard lengths: 250, 500, 750, and 1,000 mm.
2. **UR:** Ball joints
3. **CPT:** Voltage Presence Box
4. **PA:** Operating Mechanism
5. **AR-30:** Regulating Mechanism
6. **CCA:** Auxiliary Contact Box
7. **CPT:** Capacitive Voltage Presence Insulators
8. **TUB:** Tube End
9. **RC:** Transmission Joints
RC1: Lever Input – Cardan Output
RC2: Lever Input – Straight Output
RC3: Cardan Input and Output
RC4: Cardan Input – Lever Output
10. **AT2:** Support Intermédiaire.
11. **GT:** Tube Guide



GENERAL CONDITIONS OF SALE

TODOS LOS PRECIOS, CÓDIGOS Y REFERENCIAS INDICADOS EN LA PRESENTE TARIFA, ESTÁN SUJETOS A VARIACIÓN SIN PREVIO AVISO

GENERAL TERMS

Any sale made by the Seller shall be expressly subject to the Buyer's full acceptance of the terms and conditions specified below and the waiver of the Buyer's general conditions of purchase, which acceptance and waiver shall be deemed to have been made on any order placed by the Buyer.

PURPOSE AND SCOPE OF THE OFFERS

The applicable prices are those shown in the Seller's price list in force on the date of the order.

The prices and conditions for specific offers shall relate exclusively to the products offered, valid for one month, unless otherwise stipulated.

The acceptance of an offer must be materialised with an order to the Seller. This shall be understood to be definitively accepted after the express and unreserved acceptance of the order by the Seller. The modifications and/or variations to the scope, deadlines or other terms of the contract that may be proposed by one of the parties must always be notified in writing and accepted by the same means.

TERMS OF PAYMENT

Unless special agreements have been made, all our sales are insured by an insurance company and will be made with a maximum payment of 60 days from the date of invoice in accordance with the provisions of Law 15/2010, of 5 July, amending Law 3/2004, of 29 December, which establishes measures to combat late payment in commercial transactions, without exceeding in any case the maximum periods established therein. For orders 300, payment shall be made in advance.

In the case of international sales and purchases, when payment is made by documentary credit, the buyer must obtain the seller's acceptance of the terms of the letter of credit and of the bank confirming it before it is issued. Due to the handling costs borne by the seller, a minimum invoice amount of 150€ will be applied to all sales.

TRANSPORT AND INSURANCE

For shipments within the Peninsula, shipments that exceed a net of 2000€ will go carriage paid, for any other destination the goods will be placed in EXW Toledo conditions. For shipments carriage paid, no transport claims will be accepted after 48 hours from delivery. In cases of urgent shipments, requested by the customer, such goods will always go carriage paid. The goods always travel at the risk of the buyer, who, in case of damage or delay, must make the relevant claim to the companies or transport agents, within 48 hours of delivery.

TOOLING AND PACKAGING

The tools made for the manufacture of special products shall be the responsibility of the customer, and shall be deposited at INAEL and used exclusively for the orders for which they were made. They may only be used for third parties with the express authorisation of the customer, and shall remain at INAEL's disposal five years after the last use. The delivery of the tools must be expressly agreed with the order. All materials shipped from INAEL to customers are in standard packaging suitable for road transport, any other type of specific packaging requested by the purchaser will be at the customer's expense.

MANUFACTURING

In the event of force majeure of any kind, including those caused by an obvious lack of raw materials, manufacturing difficulties, strike, lack of communication or catastrophe, INAEL is automatically released from any commitment made, and reserves the right to cancel orders pending production without prior notice.

DELIVERY TIMES

Delivery times are approximate, unless the Seller expressly accepts firm delivery times.

Delivery times shall commence from the latest of the following dates:

- Delivery times are approximate, unless the Seller expressly accepts firm delivery times.
- Delivery times shall start to run from the latest of the following dates
- Date of unreserved acceptance of the order by INAEL.
- The receipt by INAEL of the information at the customer's expense that is necessary for the execution of the order.
- The receipt by INAEL of the advance payment that is necessary for the execution of the order.

If the preconditions have not been fulfilled within 6 months from the existence of the contract, the contract shall be null and void and the customer shall waive all claims for damages. In the event that the customer requests the postponement of the delivery date, INAEI may invoice with the provision of the products on the agreed date, without prejudice to the passing on to the customer of the storage costs to be borne.

GENERAL CONDITIONS OF SALE

OWNERSHIP OF THE GOODS AND RETENTION OF TITLE

INAEI shall remain the owner of the goods until full payment of the invoice sales price, even if there is a bill of exchange. The customer is authorised to process the goods, but this authorisation shall cease as of right if the customer does not strictly observe the stipulated conditions.

RETURN OF MATERIALS

Returns are not admitted without the express intervention or consent of INAEL, and in no case for special materials. In the event that the return is accepted, all transport, revision and repair or verification costs for a new set-up will be the exclusive responsibility of the sender. No returns of any type of material will be accepted after one year from the date of delivery.

TESTS

Returns are not admitted without the express intervention or consent of INAEL, and in no case for special materials. In the event that the return is accepted, all transport, revision and repair or verification costs for a new set-up will be the exclusive responsibility of the sender. No returns of any type of material will be accepted after one year from the date of delivery.

GUARANTEE

We guarantee the products of our construction for one year, from the date of leaving the factory, against all defects in materials or manufacturing defects, obliging us, during this time, to repair or replace at our expense and in our factory, in the shortest possible time, any part recognized as defective, without compensation for any of the parties, not admitting responsibility for direct or indirect damages that may arise.

In order for our warranty to remain intact, it is essential to comply with the provisions of our operating manuals.

To ensure that our warranty is not affected, it is essential to comply with the instructions in our installation and maintenance manuals. Likewise, the notification or repair of our products without our intervention or consent, implies the termination of our warranty on them.

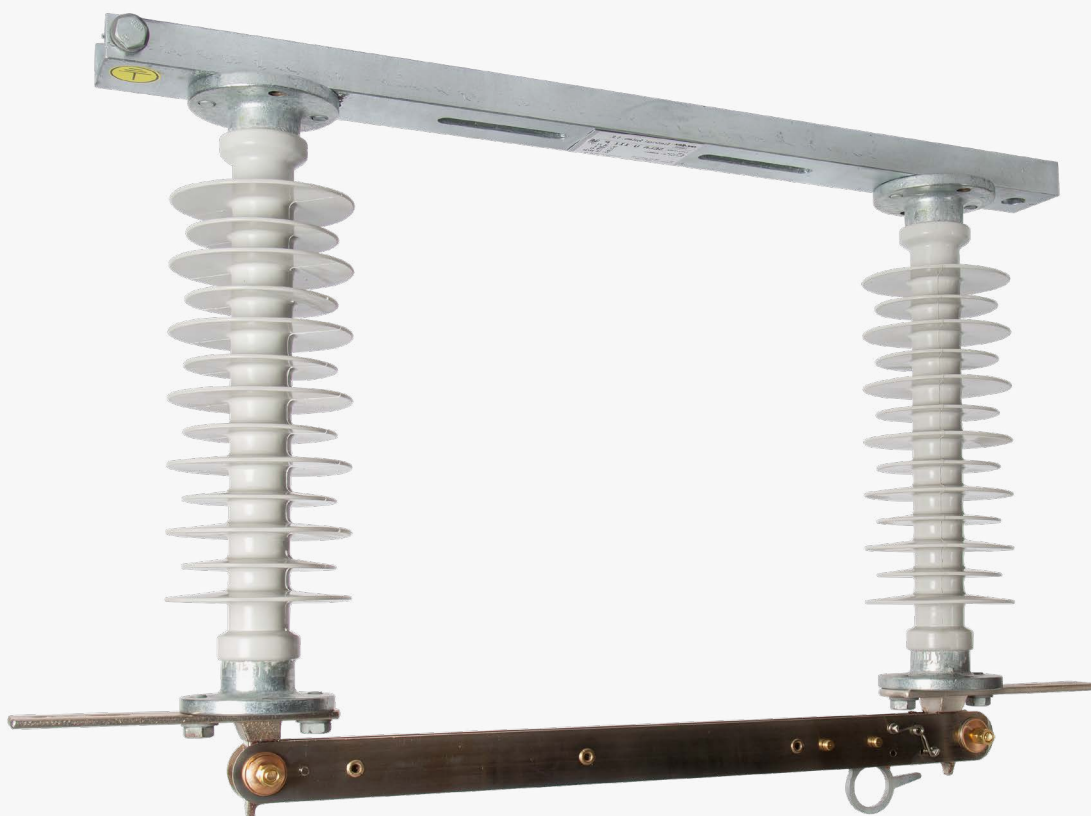
The repair of the product or part of it, its exchange or replacement during the warranty period, in no case will cause the extension of the warranty period of the product.

NORMATIVA MEDIOAMBIENTAL

It is the responsibility of the waste holder to collect and dispose of the waste or to have it collected and disposed of. For professional electrical and electronic equipment affected by European Directives 2002/96/EC of 27 January 2003 and 2006/66/EC of 6 September 2006 as well as the regulations implementing them, the organisational and financial responsibility for the collection and processing of waste arising from such equipment placed on the market after 13 August 2005 has been transferred to the direct purchaser who accepts it. The direct purchaser undertakes to assume responsibility for the collection and disposal of the waste arising, as well as for its processing and recycling. Failure by the purchaser to comply with these obligations could lead to the application of the criminal sanctions of each member state of the European Union. INAEL hereby warrants that the substances, either alone or contained in products it has incorporated for the production process in question, have been used in accordance with the provisions relating to registration, authorisation and limitation.

JURISDICTION

In the event of disputes, the Courts and Tribunals of Toledo shall have jurisdiction, to which both parties expressly agree to submit, waiving their own jurisdiction.



Inael Electrical Systems, S.A. C/
Río Jarama, 7, 45007 Toledo,
Spain

+34 925 233 511
+34 925 231 095
inael@inael.com