



YOUR SAFETY SHIELD

Work Italia is active since 1986 in the design research, production and sale of quality products building a strong reputation in the safety against electrical risks industry based on the ability to anticipate the market needs turning them into innovative solutions.

Customers can take advantage of Work Italia's ability to create their own customized shield for protection against electrical risks by choosing the components of their device from a wide range of solutions for Low, Medium and High Voltage.

SAFETY TECHNOLOGY

Integrity, commitment and growing investments have led to what Work Italia is today: a highly specialized organization in safety technology and a partner for innovation with customers, research and engineering center to provide edge of technology solutions and opportunities to the business community.

This continuous research of specialization, care and investments have enabled the company to occupy today a leading position in Italy and foreign markets.

Work Italia recognizes that its business has direct impact on the society protecting the people and this is a great motivation for our company to give a complete and secure service over time.

PROTECTION AGAINST ELECTRICAL HAZARDS

Work Italia is the main supplier in Italy of E-distribuzione and E-produzione (ENEL, the Italian national electricity board), TERNA (the Italian national board for high voltage electricity transport), RFI and TRENITALIA (Italian national railways), EDISON, ACEA ROME (power distribution in Rome), A2A MILAN (power distribution in Milan) and of the other most important producers, distributors and users of electric power.

Work Italia is certified **ISO 9001:2015** as manufacturer for Protective Equipment for safety against electrical risks. Work Italia has a long list of Certified Products.

All Work Italia products are tested and certified by accredited laboratories I.N.R.I.M. National Institute of Metrological Research, ABB SACE, SIEMENS SVEPPI, E-distribuzione and E-produzione (ENEL), NEMKO, CESI, IMQ, TÜV, SGS, PPC Greece, CREDEG Algeria and by other Official Laboratories in conformity with the International Standards (IEC), the European Standards (EN/CE Mark), E-distribuzione and E-produzione (ENEL), TERNA, RFI, TRENITALIA Specifications and the Standards and Technical Specifications of other European countries.

SAFETY MADE IN ITALY

All Work Italia devices are produced in Italy as well as all raw materials.

A regular export activity enables the company to be present all over the world with high quality products approved by the relevant Public Power Companies, Railway Authorities and other major customers.

Work Italia is present abroad with its trading partners operating in France, Spain, Portugal, England, Ireland, Belgium, Sweden, Romania, Greece, Bulgaria, Slovenia, Croatia, Serbia and Montenegro, Estonia, Latvia, Lithuania, Albania, United States, Canada, Algeria, Tunisia, Morocco, Kenya, Ethiopia, Tanzania, South Africa, Turkey, Georgia, Lebanon, UAE, Saudi Arabia, Iraq, Sri Lanka, Hong Kong, Singapore, Malaysia, Indonesia, Vietnam, Thailandia, India, Pakistan, Russia and other countries.



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Short circuiting and grounding	Low Voltage	Systems
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Code: **WBT 127**

Short circuiting and grounding equipment for LV insulated conductors in correspondence of fixed points suitable for insulation piercing.



In compliance with	ENEL Technical Specification EA 0127	
ICC	9.2 kA / 0.22 s	4.5 kA / 1 s

Equipment contents:

- Copper alloy connecting plugs, expansion screw steel with high insulation plastic handle. Protective covering by high insulation uncoloured material.
- Short circuit cables section **16 mm²**, length 0.6 and 0.75 m, made of electrolytic copper covered by transparent plastic sheath.
- Ground cable section **16 mm²** made of electrolytic copper covered by transparent plastic sheath, length **2 m**.
- Copper alloy short circuit central connector with central socket for introduction of the grounding expansion connecting plug. Protective covering by high insulating transparent uncoloured material by high insulating transparent uncoloured material.
- Forged brass earth clamp, clamping capacity up to 22 mm, type MT22.
- Rigid plastic case type 170/30.

Short circuiting and grounding	Low Voltage	Systems
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Code: **WI-CABINET**

Portable low voltage earthing and short circuiting equipment for cabinet



In compliance with	IEC 61230
ICC	5.2 kA / 1 s

Equipment contents:

- 4 shunt clamps type PE20 for holding on six faces nuts and screws with hexagonal head inside of energized parts on LV installations. Brass inner body, nylon external rigid cover and extensible mobile plastic part.
Maximum opening 20 mm.
- 4 short circuiting extraflexible electrolytic copper cables covered by transparent plastic sheath, section **25 mm²**, length **0.4 m** (different lengths on demand).
- Central quadri-furcating connector.
- Ground extraflexible electrolytic copper cable covered by transparent rubber sheath, section **16 mm²**, length **3 m** (different lengths on demand).
- Forged brass earth clamp, clamping capacity up to 33 mm type MT33.
- Rigid plastic case type 170/38.





Short circuiting and grounding

Low Voltage

HRC fuse systems

Code: **WIBT/FB-50**

Earthing and short-circuiting equipment for low voltage HRC fuse bases



In compliance with	IEC 61230
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ICC	9.9 kA / 1 s
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Equipment contents:

- 3 short circuit extraflexible electrolytic copper cables covered by transparent plastic sheath with section 50 mm². Lengths: 0.55 m, 0.7 mm, 1 m (different lengths on demand).
- Central quadrifurcating connector
- Earth extraflexible electrolytic copper cable covered by transparent plastic sheath with section 50 mm², length 1 m (different length on demand)
- Press forged brass earth clamp. Clamping capacity up to 22 mm.
- 3 Earth cartridges for insertion into HRC fuse-bases, type NH 1-3.
- 3 Earth cartridges for insertion into HRC fuse-bases, type NH 00.
- Dual functions insulating rod, length 0.35 m, handling grips with protection guard on both sides. Male M10 attack at one extremity, for the insertion and the removal of the earth cartridge and at the other extremity hexagonal female CH17 attack for the placement and the removal of the short-circuit cables.
- Metallic storage case with separated compartments for the earthing device, the rods and cartridges.



Alternative versions:

WIBT/FB-25	With cables section 25 mm ²	IEC 61230	ICC 7.2 kA / 1 s
WIBT/FB-35	With cables section 35 mm ²	IEC 61230	ICC 9.6 kA / 1 s



Short circuiting and grounding	Low Voltage	Insulated conductors
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Code: **WI6-SC**

Equipment for connection of branch connectors on LV insulated conductors.



In compliance with	IEC 61230
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ICC	4 kA / 1 s
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Equipment contents:

- 6 insulated female connecting plugs type **SOCKET/F**, with elastic contacts and bayonet plug-in system made of tinned brass. Covering insulating synthetic sleeves suitable for outdoor use.
- Extraflexible electrolytic copper cables connection covered by transparent plastic sheath, section **16 mm²**.
- 2 insulating connectors with plastic sheath.
- Rigid plastic case type **170/30**.

Alternative versions:			
WI5-SC	5 connecting plugs type SOCKET/F cables section 16 mm²	IEC 61230	ICC 4 kA / 1 s
WI7-SC	7 connecting plugs type SOCKET/F cables section 16 mm²	IEC 61230	ICC 4 kA / 1 s
WI5-SC/25	5 connecting plugs type SOCKET/F cables section 25 mm²	IEC 61230	ICC 5.2 kA / 1 s
WI6-SC/25	6 connecting plugs type SOCKET/F cables section 25 mm²	IEC 61230	ICC 5.2 kA / 1 s
WI7-SC/25	7 connecting plugs type SOCKET/F cables section 25 mm²	IEC 61230	ICC 5.2 kA / 1 s

Type: **WI-MT**

Earthing equipment to connect to the short circuiting equipments on LV insulated conductors.



ICC	4 kA / 1 s
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Equipment contents:

- Insulated male plug type **SOCKET/M** having a bayonet blocking system suitable for the connection to the female plugs **SOCKET/F** of the short circuiting equipment. Covering by insulating synthetic sleeve suitable for outdoor use.
- Extraflexible electrolytic copper cable covered by transparent plastic sheath. Section **16 mm²**, length **10 m** (different lengths on demand).
- Press forged brass earth clamp, clamping capacity up to **33 mm**, type **MT33**.
- Rigid plastic case type **170/30**.



Short circuiting and grounding

Low Voltage

Overhead bare conductors

Code: **DBT322/4**

Short circuiting and grounding equipment for LV overhead bare conductors



6056.00



6128.00

In compliance with

IEC 61230

ICC

4.5 kA / 1 s

Equipment contents:

- 4 light alloy contact clamps type BT322 with automatic spring clamping on conductor 2+22 mm diameter, fitted onto insulating fiberglass rod length 0.8 m (different lengths on demand), with insulating plastic handle.
- 3 short circuit extraflexible electrolytic copper cables covered by transparent plastic sheath, section 16 mm², length of each connection 0.7 m (different lengths on demand).
- Ground extraflexible electrolytic copper cable covered by transparent plastic sheath, connecting the first clamp to the earth rod. Section 16 mm², length 16 m (different lengths on demand), rolled up on cable coiler type 6128.00.
- Hexagonal CH18 earth rod type 6056.00
- Metallic carrying case type 5011.00.

Alternative versions:

DBT322/5	5 clamps type BT322 cables section 16 mm ²	IEC 61230	ICC 4.5 kA / 1 s
DBT322/4-25	4 clamps type BT322 cables section 25 mm ²	IEC 61230	ICC 6 kA / 1 s
DBT322/5-25	5 clamps type BT322 cables section 25 mm ²	IEC 61230	ICC 6 kA / 1 s



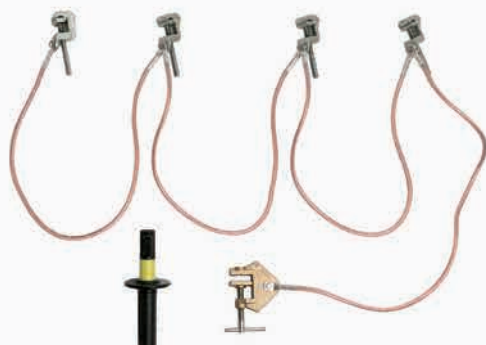


Short circuiting and grounding	Low Voltage	Cabins and installations
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Code: **WIPC22/4-35/16**

Short circuiting and grounding equipment for LV electric cabins

ICC	9.6 kA / 1 s
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Equipment contents:

- 4 forged brass contact clamps type **PC22** with hexagonal tang.
Clamping capacity:
 - Round conductors $\varnothing$ up to 22 mm;
 - Flat conductors up to 22 mm.
- 3 short circuit extraflexible electrolytic copper cables covered by transparent rubber sheath, section **35 mm²**, length **0.6 m**.
- Ground extraflexible electrolytic copper cable covered by transparent rubber sheath, section **16 mm²**, length **2 m**.
- Forged brass earth clamp, clamping capacity up to **33 mm** type **MT33**.
- Insulating handle for contact clamp type **MPP1/020EF** certified **IEC 61235**. Length 20 cm with attack for hexagonal and threaded M10 tangs.

Alternative versions:			
WIPC22/4-25/16	Cables section 25 mm ²	IEC 61230	ICC 7.25 kA / 1 s
WIPC22/4-50/16	Cables section 50 mm ²	IEC 61230	ICC 12.4 kA / 1 s

Short circuiting and grounding	Low Voltage	Cabins and installations
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Code: **WIPC20PM-P16-BI**

Short circuiting and grounding equipment for LV cabins with ergonomic handle on contact clamps

ICC	4.5 kA / 1 s
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Composition of the equipment

- 4 forged brass contact clamps type **MT20/PM** with ergonomic clamping handle, one of which connected to the ground cable. Clamping capacity round or flat conductors up to 22 mm.
- 3 Short circuit extraflexible electrolytic copper cables covered by transparent rubber sheath, section **16 mm²**, length **0.7 m**.
- Ground extraflexible electrolytic copper cable covered by transparent rubber sheath, section **16 mm²**, length **2 m**.
- Rigid plastic case type **170/38**.

Alternative versions:		
WIPC20PM-P50-BI	Cables section 50 mm ²	ICC 12.4 kA / 1 s
WIPC20PM-P95-BI	Cables section 95 mm ²	ICC 20 kA / 1 s



MEDIUM VOLTAGE SHORT CIRCUITING AND GROUNDING EQUIPMENT

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Short circuiting and grounding

Medium Voltage

Overhead bare conductors

Code: **WI332/E-35**

Short circuiting and grounding equipment for MV overhead bare conductors.



WI332/35

In compliance with IEC 61230

ICC 9.6 kA / 1 s

Equipment contents:

- 3 Light alloy contact clamps type **PC332** with automatic tightening. Clamping capacity: conductors **3÷32 mm** diameter. Attack suitable for fitting on the appropriate seats of the clamp holder head. The clamps are provided, at their lower end, with a special mechanical system that allow the detachment from the clamp holder head only when they are firmly secured on the line conductor, so to prevent their accidental detaching and fall.
- Light alloy clamp holder head type **TPP332**, complete of steel recover hook and threaded M10 tang for fixing on the head of the insulating rod (hexagonal or universal attack on demand).
- 2 Short circuit extraflexible electrolytic copper cables covered by transparent rubber sheath, section **35 mm²**, length **2,5 m** (different lengths on demand).
- Ground extraflexible electrolytic copper cable covered by transparent rubber sheath, section **16 mm²**, length **16 m** (different lengths on demand), rolled up on cable coiler type **6128.00**.
- Hexagonal CH18 earthing rod type **6056.00**.
- High insulating fiberglass rod type **PE2/300FA** made of epoxy resin reinforced by fiberglass tube (tube certified in compliance with **IEC 61235**). Total length 3 m in two elements each length **1,5 m**, with fast joint and attack suitable for fitting on clamp holder head.
- Metallic case type **5007.00** for the equipment.
- Heavy fabric bag type **5526.00** for the insulating rod.

Alternative versions:

WI332/E-25	Cables section 25 mm²	IEC 61230	ICC 7.25 kA/1s
WI332/E-50	Cables section 50 mm²	IEC 61230	ICC 12.7 kA/1s
WI332/25	Cables 25 mm², 2 earth rods type 6113.00, connecting rods copper cable 16 mm², length 6 m	IEC 61230	ICC 7.25 kA/1s
WI332/35	Cables 35 mm², 2 earth rods type 6113.00, connecting rods copper cable 16 mm², length 6 m	IEC 61230	ICC 9.6 kA/1s
WI332/50	Cables 50 mm², 2 earth rods type 6113.00, connecting rods copper cable 16 mm², length 6 m	IEC 61230	ICC 12.7 kA/1s



Short circuiting and grounding

Medium Voltage

Overhead bare conductors

Code: **WINEV-MT411**

Short circuiting and grounding equipment **NEVERS** type, for MV overhead lines on bare conductors

The equipment called **NEVERS** allows to the operator to ground and to short circuit the overhead lines up to 11 m heights without using rifters or without climbing on poles and pylon. The equipment allows moreover the operator to check the presence/absence of tension on overhead conductors up to 11 m fitting the voltage detector on the lowest element of the telescopic rod.



In compliance with

IEC 61230

IEC 60855-1

ICC

8 kA / 1 s

Equipment contents:

- 3 Light alloy auto-blocking contact clamp type **PC-AB** with automatic clamping of conductor in case of short circuit. Clamping capacity: round conductors $\varnothing 3\div 22$ mm.
- 3 Insulating telescopic rods in 4 elements in aluminum with attack for voltage detector (not included) on the lower element. Extended length **6.60 m**, folded length **1.86 m**.
- High insulating rod type **PVR3/495/FOR** in vinylester resin tube reinforced by fiberglass, diameter $\varnothing 40$ mm, filled by closed cells polyurethane foam, certified in conformity with **IEC 60855-1**. Total length **4.95 m** in 3 elements length 1,65 m each.
- Extraflexible electrolytic copper cables covered by transparent plastic sheath, section **35 mm²**, length **10 m** (other lengths on demand).
- 2 hexagonal CH18 earth rod type **6041.00**.
- Rod lifting system to install it on one of the two earth rods, type **WI/DSF**.
- Rotating cable coiler with earth clamp to install on the other earth rods type **WI/BARM**.
- Heavy fabric bag for the transport of the aluminium and insulating rods, earth rods and lifting system.

Alternative versions:

WINEV-MT410	Up to 10 meters	8 kA / 1 s	IEC 61230
WINEV-MT311	Up to 11 m, aluminium rods in 3 elements	8 kA / 1 s	IEC 61230
WINEV-MT411/25	Cables section 25 mm ²	7.25 kA / 1 s	IEC 61230
WINEV-MT311/25	Up to 11 m, aluminium rods in 3 elements, cables section 25 mm ²	7.25 kA / 1 s	IEC 61230



Short circuiting and grounding

Medium Voltage

Cabins and substations

Code: **MT/BM-50**

Short circuiting and grounding equipment with universal contact clamps for MV electric cabins and substations.

In compliance with	IEC 61230
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ICC	12.7 kA / 1 s
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Equipment contents:

- 3 Aluminium universal contact clamps type **PC/BM-AL**, clamping capacity:
 - round conductors $\varnothing 5\div40$ mm;
 - flat conductors **40x60 mm** (—);
 - bars on horizontal level **12x60 mm** (I);
 - 45° slanting bars up to **28 mm** thickness (/).
- 3 Short circuit extraflexible electrolytic copper cables, covered by transparent plastic sheath, section **50 mm²**, length **0,75 m** (different lengths on demand).
- Central trifurcating connector.
- Ground extraflexible electrolytic copper cable, covered by transparent rubber sheath, section **50 mm²**, length **2 m** (different lengths on demand)
- Forged brass ground clamp type **MT22**, clamping capacity up to **22 mm**.
- High insulating rod type **PE2/135EF** made of epoxy resin tube reinforced by fiberglass. Total length **1,35 m** in compliance with **IEC 61235**. **2** elements rod with quick coupler and attack for hexagonal CH12 and threaded M10 tang.
- Metallic case type **5007.00** for the equipment.



PE2/135EF



5007.00

Alternative versions:

MT/BM-25	Cables section 25 mm ²	IEC 61230	ICC 7.25 kA / 1 s
MT/BM-35	Cables section 35 mm ²	IEC 61230	ICC 9.6 kA / 1 s
MT/BM-95	Cables section 90 mm ²	IEC 61230	ICC 20 kA / 1 s



Short circuiting and grounding

Medium Voltage

Overhead lines and cabins

Code: **WI535-70**

Short circuiting and grounding equipment with universal contact clamps for MV cabins and substations

In compliance with

IEC 61230

ICC

15.1 kA / 1 s

Equipment contents:

- 3 light alloy contact clamps type **PC535**, hexagonal CH12 tang, clamping capacity:
 - Round conductors $\varnothing 5\div35$ mm;
 - Flat bars **5x40 mm** (—);
 - Bars on horizontal levels **16x40 mm** (|).
- 3 short circuit extraflexible electrolytic copper cables covered by transparent rubber sheath, section **70 mm²**, length **1.5 m** (other lengths on demand).
- Central trifurcating connector.
- Ground extraflexible electrolytic copper cable covered by transparent rubber sheath, section **70 mm²**, length **2.5 m** (different lengths on demand).
- Forged brass clamp type **MT22**, clamping capacity up to **22 mm**.
- Insulating telescopic rod type **PE-PV/200EF-TEL** in resin tube reinforced by fiberglass certified in conformity with **IEC 61235**. Extended length **2 m** (folded length **1.15 m**) in **2** elements and attack suitable for hexagonal CH12 and threaded M10 tangs.
- Metallic case type **5007.00** for the equipment.
- Heavy fabric bag type **5527.00** for the rod.



PE-PV/200EF-TEL



5007.00

Alternative versions:

Code	Cables section	IEC 61230	ICC
WI535-25	Cables section 25 mm ²	IEC 61230	ICC 7.25 kA / 1 s
WI535-35	Cables section 35 mm ²	IEC 61230	ICC 9.6 kA / 1 s
WI535-50	Cables section 50 mm ²	IEC 61230	ICC 12.7 kA / 1 s
WI535-95	Cables section 95 mm ²	IEC 61230	ICC 20 kA / 1 s



Short circuiting and grounding	Medium Voltage	Overhead bare conductors
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Code: **WIS20-35**

Short circuiting and earthing equipment for MV overhead bare conductors with screw clamps type **SNAP-ON**



In compliance with	IEC 61230
ICC	9.6 kA / 1 s

Equipment contents:

- 3 aluminium alloy line end clamps type S20 (SNAP ON). Blocking system moved by steel screw. Bayonet tang type DIN for connection to the operating rod. Clamping capacity: round conductors $\varnothing 3\div30$ mm. The line clamp, for connection with the middle phase, is provided with two lateral branches supporting the two others line end clamps.
- 2 Short circuit extraflexible electrolytic copper cables covered by transparent sheath, section 35 mm^2 , length 2.5 m.
- Ground extraflexible electrolytic copper cable covered by transparent rubber sheath, section 16 mm^2 , length 16 m.
- Press forged brass earth clamp, clamping capacity up to 33 mm, type MT33.
- High insulating rod type PE2/300DIN made of epoxy resin reinforced by fiberglass tube, certified IEC 61235. Total length 3 m in two elements each length 1,5 m with DIN bayonet attack.

Alternative versions:			
WIS20-25	Cables section 25 mm^2	IEC 61230	ICC 7.25 kA / 1 s
WIS20-50	Cables section 35 mm^2	IEC 61230	ICC 12.4 kA / 1 s

Short circuiting and grounding	Medium voltage	Cabins and substations
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Code: **MT/PF-25**

Short circuiting and grounding equipment for MV electric cabins and substations with contact clamps for ball fixed points.



In conformity with	IEC 61230
ICC	12.7 kA / 1 s

Equipment contents:

- 3 forged brass contact clamps type PF25. Clamping capacity:
 - spherical head fixed points $\varnothing 20/25$ mm;
 - round conductors and flat bars up to 22 mm.
- 3 Short circuit extraflexible electrolytic copper cables covered by transparent rubber sheath, section 25 mm^2 , length 0.75 m.
- Central trifurcating connector.
- Ground extraflexible electrolytic copper cable covered by transparent rubber sheath, section 16 mm^2 , length 2 m.
- Brass ground clamp, clamping capacity up to 22 mm, type MT22.
- High insulating fiberglass rod type PE2/135EF made of epoxy resin reinforced by fiberglass tube, certified IEC 61235. Total length 1,35 m in two elements with quick coupler and attack for hexagonal and threaded tangs.

Alternative versions:			
MT/PF-50	Cables section 50 mm^2	IEC 61230	ICC 12.4 kA / 1 s
MT/PF-95	Cables section 95 mm^2	IEC 61230	ICC 25 kA / 1 s





Short circuiting and grounding

Medium Voltage

Lines, cabins, installations

Code: **WIDTSE-400**

Short circuiting and grounding equipment for disconnectable terminals and derivations with contact plug 400 A.



6118.00

In compliance with

ENEL EA0290

ICC

12.5 kA / 0.3 s – 2.5

Equipment contents:

- 3 Short circuiting groups each composed of 3 threaded female elastic contacts for the grounding and short-circuiting of connectors of entry, exit and derivation.
- Embraces pole support.
- Contacts holder bracket with three seats.
- 6 Extraflexible electrolytic copper cables covered by transparent plastic sheath, section 35 mm², length 2 m.
- 3 Extraflexible electrolytic copper cables covered by transparent plastic sheath, section 16 mm², length 1.5 m, connecting the first elastic contact of each group with the central trifurcating connector.
- Ground extraflexible electrolytic copper cable covered by transparent plastic sheath, section 16 mm², length 14 m.
- Metallic reel type 6118.00.
- 2 Earth pickets type 6113.00 into heavy fabric bag.
- Extraflexible electrolytic copper cable covered by transparent plastic sheath, section 16 mm², length 6 m, connecting the earth pickets between them.
- Double pipe wrench.
- Metallic case type 5042.00.

Alternative versions:

WIDTSE-250	3 elastic contacts for terminals 250A	ENEL EA 0287	12.5 kA / 0.3 s
WIDTSE-250	3 elastic contacts for connectors 250A	ENEL EA 0274	12.5 kA / 0.3 s

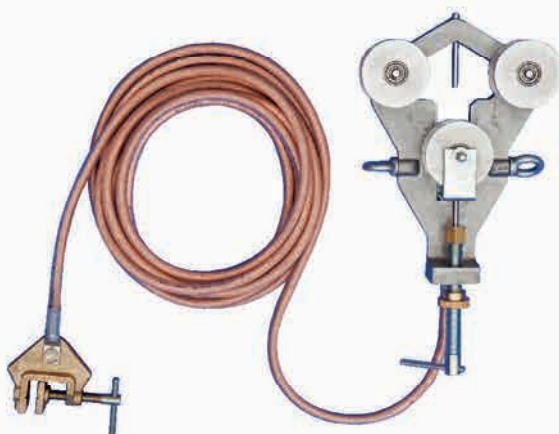
Grounding equipment

Low, medium, high voltage

Overhead lines

Code: **WTM-20**

Portable equipment for grounding operations on overhead LV, MV lines during stringing works.



In conformity with

ENEL 8522AO

ICC

3,5 kA / 0,5 s

Composition of the equipment:

- Light alloy frame supporting two contact rollers and light alloy guide sliding for supporting and control the mobile roller. Clamping capacity: conductors Ø 3÷20 mm.
- Eyebolts on the external sides for anchorage of the ropes.
- Ground extraflexible electrolytic copper cable covered by transparent plastic sheath section 16 mm², length 5 m, complete of press forged brass ground clamp.
- Rigid plastic case type 170/51.

Alternative versions:

WTA-40	High voltage, clamping capacity Ø 5÷40 mm, cable 50 mm ²	ENEL 8522AP	3.5 kA / 0,5 s
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HIGH VOLTAGE SHORT CIRCUITING AND GROUNDING EQUIPMENT

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PC-BMG/C	Multipurpose contact clamps for HV substations	19



Short circuiting and grounding

High Voltage

Overhead lines and substations

Code: **WI560A-120**

Short circuiting and grounding equipment for HV overhead lines up to 500 kV



In compliance with

IEC 61230

ICC

32 kA / 1 s

42.8 kA / 0.5 s

Equipment contents:

- 3 light alloy contact clamps type **PC560/A**. Suitable for oxidized conductors too. Lower ring for fastening and unfastening.
Clamping capacity: round conductors $\varnothing$ 5+60 mm.
- 3 Extraflexible electrolytic copper cables covered by transparent plastic sheath, section **120 mm²**, length **6 m** (different lengths on demand).
- 3 Press forged brass ground clamps type **MT33**.
Clamping capacity: round conductors and bars up to **33 mm**.
- High insulating rod made of vinylester resin tube reinforced by fiberglass and filled by closed cells polyurethane foam, certified in conformity with **IEC 60855-1**. Type **PVR2/400G**, total length **4 m** in two elements with quick couplers and top hook for maneuvering the clamps.
- Metallic case type **5025.00** for the equipment.
- Heavy fabric bag for the insulating rod

Alternative versions:

WI560A-50	Cables section 50 mm²	IEC 61230	ICC 12.7 kA / 1 s
WI560A-70	Cables section 70 mm²	IEC 61230	ICC 15.1 kA / 1 s
WI560A-95	Cables section 95 mm²	IEC 61230	ICC 25 kA / 1 s

Contact clamps for HV substations



PC560/C	PC120/C	PC-BMG/C
ICC 41 kA / 1 s	ICC 40.7 kA / 1 s	ICC 30.7 kA / 1 s
Round conductors $\varnothing$ 5+60 mm	Round conductors $\varnothing$ 20+120 mm	Round conductors $\varnothing$ 14+70 mm; Flat bars up to 90x100 mm (—); Bars on horizontal level up to 20x110 mm (┐); 45° slanting bars up to 50x120 mm (↙).
Bayonet, DIN and hexagonal attacks	Bayonet, DIN and hexagonal attacks	Bayonet, DIN and hexagonal attacks



CLAMPS AND ACCESSORIES FOR SHORT CIRCUITING AND GROUNDING EQUIPMENTS

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Contact clamps	Low Voltage	Overhead lines and cabins
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Contact clamps



BT322	PE20	S20
ICC 6 kA / 1 s	ICC 5.2 kA / 1 s	ICC 23.8 kA / 1 s
Round conductors Ø 2÷22 mm	Screw and nuts with hexagonal head, opening up to 20 mm	Round conductors Ø 3÷30 mm
Rods in fiberglass tube	DIN bayonet tangs	DIN bayonet tangs

Contact clamps	Medium Voltage	Overhead lines and cabins
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Contact clamps



PC332	PC/BM-AL	PC535
ICC 12.7 kA / 1 s	ICC 20 kA / 1 s	ICC 30 kA / 1 s
Round conductors and bars Ø 3÷32 mm	Round conductors Ø 5÷40 mm; Flat bars 40x60 mm (—); Vertical Bars 12x60 mm (I); 45° slanting bars up to 28 mm thickness (/).	Round conductors Ø 5÷35 mm; Flat bars 5x40 mm (—); Bars on horizontal levels 16x40 mm (I);
Clamp holder head	Hexagonal or DIN bayonet tangs	Hexagonal or DIN bayonet tangs

Contact clamps



PF20	PF25	PC2014
ICC 30.9 kA / 1 s	ICC 30.9 kA / 1 s	ICC 13.5 kA / 1 s
Round conductors, bars max 22 mm Spherical fixed point Ø 20 mm	Round conductors, bars max 22 mm Spherical fixed point Ø 25 mm	Round conductors Ø 6 ÷ 35 mm
Hexagonal or DIN bayonet tangs	Hexagonal or DIN bayonet tangs	Hexagonal or DIN bayonet tangs



Contact clamps	High Voltage	Overhead lines and substations
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Pinze di contatto



PC560/A	PC560/D	PC560/CH
ICC 41 kA / 1 s	ICC 41 kA / 1 s	ICC 41 kA / 1 s
Round conductors Ø 5÷60 mm	Round conductors Ø 5÷60 mm	Round conductors Ø 5÷60 mm
Ring tangs	DIN bayonet tangs	Hexagonal tangs

Contact clamps



PC560/C	PC120/C	PC-BMG/C
ICC 41 kA / 1 s	ICC 40.7 kA / 1 s	ICC 30.7 kA / 1 s
Round conductors Ø 5÷60 mm	Round conductors Ø 20÷120 mm	Round conductors Ø 20÷120 mm Flat bars up to 90x100 mm (—); Bars on horizontal levels up to 20x110 mm (▮); 45° slanting bars up to 50x120 mm (▽)
Hexagonal and bayonet DIN tangs	Hexagonal and bayonet DIN tangs	Hexagonal and bayonet DIN tangs

Ground clamps	Low Medium High Voltage	Overhead lines and cabins
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Ground clamps



MT33	MT40	MT50
ICC 40 kA / 1 s	ICC 41 kA / 1 s	ICC 41 kA / 1 s
Round conductors and flat bars up to 33 mm	Round conductors and flat bars up to 40 mm	Round conductors and flat bars up to 50 mm
Steel Handle	Steel Handle	Steel Handle



Ground clamps	Low, Medium, High Voltage	Overhead lines and cabins
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Ground clamps



MT20	MT25	MT40F
ICC 30.9 kA / 1 s	ICC 30.9 kA / 1 s	ICC 40 kA / 1 s
Round conductors, flat bars 22 mm Spherical fixed point Ø 20 mm	Round conductors, flat bars 22 mm Spherical fixed point Ø 25 mm	Milling jaw, capacity up to 40 mm
Steel or ergonomic plastic handle	Steel or ergonomic plastic handle	Steel or ergonomic plastic handle

Contact fixed points	Low and Medium Voltage	Cabins and substations
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Contact fixed points



P20F	P25F	P30F
Fixed point Ø 20 mm	Fixed point Ø 25 mm	Fixed point Ø 30 mm
Tinned copper	Tinned copper	Tinned copper



Cartridges for fuses	Low Voltage	Cabinets and cabins
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Cartridges



NH 1-3	NH 00	PH/35-CH17/M10
Earthing cartridges for insertion into HRC fuse-bases size 1 - 3. ICC 9.9 kA / 1 s	Earthing cartridges for insertion into HRC fuse-bases size 00. ICC 9.9 kA / 1 s	Insulating rod with double function - insertion and removal - the earth cartridges, length 0.35 m.
M10	M10	M10 and hexagonal CH17

Earthing rod and	Low Medium High Voltage	Lines and substations
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Earth rods and drill earth rods



6041.00	6113.00	6114.00
Hexagonal CH18 earth rod. Length 1 m.	Earth rod length 73 cm and section 0.075 m ² . ENEL homologated	Earth rod length 110 cm and section 0.150 m ² . ENEL homologated
Hot galvanized steel	Hot galvanized steel	Hot galvanized steel

Earth rods and drill earth rods



6056.00	6184.00	6115.00
Hexagonal CH18 earth rod with wing nut. Length 1 m.	Drill rod length 95 cm and section 0.075 m ² . ENEL homologated	Drill rod length 95 cm ENEL and section 0.150 m ² . homologated
Hot galvanized steel	Hot galvanized steel	Hot galvanized steel



Short circuiting and grounding	Low Medium High Voltage	All stages
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Copper cables covered of PVC sheath



Code	P16	P25	P35	P50	P70	P95	P120
Section (mm²)	16	25	35	50	70	95	120
ICC (kA/1s)	4.5	7.25	9.6	12.8	17.8	23.2	33.3
Connection	Electrolytic copper with elementary wires 0.2 mm stranded and twisted						
Sheath	Transparent PVC						
Conform to	IEC 61138						

Copper cable covered of silicone sheath



Code	Σ16	Σ25	Σ35	Σ50	Σ70	Σ95	Σ120
Section (mm²)	16	25	35	50	70	95	120
ICC (kA/1s)	4.5	7.25	9.6	12.8	17.8	23.2	33.3
Connection	Electrolytic copper with elementary wires 0.2 mm stranded and twisted						
Sheath	Transparent silicone						
Conform to	IEC 61138						

Multiple connectors	Low Medium High Voltage	All stages
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Trifurcating and quadrifurcating connectors



CTR	CTS	QTS
For all cable sections	For all cable sections	For all cable sections



Cases for transport	Low Medium High Voltage	Equipments
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Metallic cases



5011.00	5007.00	5025.00
Painted metallic case for external use for short circuiting and grounding equipment transport	Painted metallic case for external use for short circuiting and grounding equipment transport	Painted metallic case for external use for short circuiting and grounding equipment transport
Dimensions 1100x250x180 mm	Dimensions 850x250x180 mm	Dimensions 1100x350x250 mm

Plastic cases



Serie 170

Plastic case with handle for short circuiting and grounding equipment transport

170/30

Dimensions 320x280x119 mm

170/38

Dimensions 395x300x103 mm

170/51

Dimensions 515x415x135 mm

Bags and backpacks



Backpack	Bag
Heavy fabric waterproof backpack for short circuiting and grounding equipment transport. ENEL Homologated.	Heavy fabric waterproof bag for short circuiting and grounding equipment transport. ENEL Homologated.
Dimensions 430x285x170 mm	Dimensions 480x210x310 mm



INSULATING RODS

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PE1 e PE2	Rods for equipment with epoxy resin tube certified IEC 61235	30
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Switches Disconnection Rods

Low and Medium Voltage

Overhead lines and cabins

Insulating rods for switches disconnection

High insulating rods made of polyester resin tube reinforced by fiberglass, for external and internal use. Length on demand, external diameters: Ø 32 or 40 mm. Complete of:

- maneuvering metallic hook;
- insulating closing cap;
- hand guard;
- quick couplers for rods having two or more elements.



P1/200GS



P2/250FA-GSF

Code	Elements	Total length
P1/150GS	1	1.5 m
P1/150EF-GSH	1	1.5 m
P1/150FA-GSF	1	1.5 m
P1/150U-GSU	1	1.5 m

Code	Elements	Total length
P1/200GS	1	2 m
P1/200EF-GSH	1	2 m
P1/200FA-GSF	1	2 m
P1/200U-GSU	1	2 m

Code	Elements	Total length
P2/250GS	2	2.5 m
P2/250EF-GSH	2	2.5 m
P2/250FA-GSF	2	2.5 m
P2/250U-GSU	2	2.5 m

Code	Elements	Total length
P2/300GS	2	3 m
P2/300EF-GSH	2	3 m
P2/300FA-GSF	2	3 m
P2/300U-GSU	2	3 m

Maneuvering hooks



GSF



GSH



GS



GSU



For Equipment and Detectors

Low Medium High Voltage

Overhead lines and cabins

Insulating rods for short circuiting and grounding equipment with standard tube

High insulating rods made of polyester resin tube reinforced by fiberglass type P, yellow colour, for external and internal use. Length on demand, diameter Ø 32 or 40 mm. Complete of:

- suitable top fitting for the maneuvering of the contact clamps or the voltage detectors;
- insulating closing cap;
- hand guard;
- quick couplers for rods having two or more elements.



P1/150U

P1/150FA

P2/300B

Code	Elements	Total length
P1/150GS	1	1.5 m
P1/150DIN	1	1.5 m
P1/150B	1	1.5 m
P1/150EF	1	1.5 m
P1/150U	1	1.5 m
P1/150CH	1	1.5 m
P1/150FA	1	1.5 m

Code	Elements	Total length
P2/135GS	2	1.35 m
P2/135DIN	2	1.35 m
P2/135B	2	1.35 m
P2/135EF	2	1.35 m
P2/135U	2	1.35 m
P2/135CH	2	1.35 m
P2/135FA	2	1.35 m

Code	Elements	Total length
P2/300GS	2	3 m
P2/300DIN	2	3 m
P2/300B	2	3 m
P2/300EF	2	3 m
P2/300U	2	3 m
P2/300CH	2	3 m
P2/300FA	2	3 m
P2/300G	2	3 m

Attacks



G



DIN



B



EF



U



CH



FA



For Equipment and Detectors

Low Medium High Voltage

Overhead lines and cabins

Insulating rods for short circuiting and grounding equipment certified IEC 61235

High insulating rods made of epoxy resin tube reinforced by fiberglass type PE, certified in compliance with the International Standard IEC 61235, for external and internal use. Length on demand, yellow colour, external diameter Ø 40 mm. Complete of:

- suitable top fitting for the maneuvering of the contact clamps or the voltage detectors;
- insulating closing cap;
- hand guard;
- quick couplers for rods having two or more elements;
- protections on demand for use under rain.



PE2/135EF

PE2/400DIN

PE2/400U

Code	Elements	Total length
PE1/150G	1	1.5 m
PE1/150DIN	1	1.5 m
PE1/150B	1	1.5 m
PE1/150EF	1	1.5 m
PE1/150U	1	1.5 m
PE1/150CH	1	1.5 m
PE1/150FA	1	1.5 m

Code	Elements	Total length
PE2/135G	2	1.35 m
PE2/135DIN	2	1.35 m
PE2/135B	2	1.35 m
PE2/135EF	2	1.35 m
PE2/135U	2	1.35 m
PE2/135CH	2	1.35 m
PE2/135FA	2	1.35 m

Code	Elements	Total length
PE2/400G	2	4 m
PE2/400DIN	2	4 m
PE2/400B	2	4 m
PE2/400EF	2	4 m
PE2/400U	2	4 m
PE2/400CH	2	4 m
PE2/400FA	2	4 m

Attacks



G

DIN

B

EF

U

CH

FA



For Equipment and Detectors

Medium High Voltage

Overhead lines and cabins

Insulating rods for short circuiting and grounding equipment for Medium and High voltage, certified IEC 61235

High insulating rods made of vinylester resin tube reinforced by fiberglass type PV, orange colour, certified in compliance with the **International Standard IEC 61235**, for external and internal use. Length on demand, external diameter $\varnothing$ 32 and 40 mm. Complete of:

- suitable top fitting for the maneuvering of the contact clamps or the voltage detectors;
- insulating closing cap;
- hand guard;
- quick couplers for rods having two or more elements;
- protections on demand for use under rain.



PV2/400B

PV3/600G

Code	Elements	Total length
PV2/400G	2	4 m
PV2/400DIN	2	4 m
PV2/400B	2	4 m
PV2/400EF	2	4 m
PV2/400U	2	4 m
PV2/400CH	2	4 m
PV2/400FA	2	4 m

Code	Elements	Total length
PV3/600G	3	6 m
PV3/600DIN	3	6 m
PV3/600B	3	6 m
PV3/600EF	3	6 m
PV3/600U	3	6 m
PV3/600CH	3	6 m
PV3/600FA	3	6 m

Attacks



G

DIN

B

EF

U

CH

FA



For Equipment and Detectors

Medium High Voltage

Overhead lines and cabins

Insulating rods for short circuiting and grounding equipment for Medium and High voltage with filled tube certified IEC 60855-1

High insulating rods made of vinylester resin tube reinforced by fiberglass and filled by closed cells polyurethane foam type PVR, orange colour, certified in compliance with the International Standard IEC 60855-1, for external and internal use. Length on demand, external diameter Ø 32 and 40 mm. Complete of:

- suitable top fitting for the maneuvering of the contact clamps or the voltage detectors;
- insulating closing cap;
- hand guard;
- quick couplers for rods having two or more elements;
- protections on demand for use under rain.



Code	Elements	Total length
PVR2/400G	2	4 m
PVR2/400DIN	2	4 m
PVR2/400B	2	4 m
PVR2/400EF	2	4 m
PVR2/400U	2	4 m
PVR2/400CH	2	4 m
PVR2/400FA	2	4 m

Code	Elements	Total length
PVR3/600G	3	6 m
PVR3/600DIN	3	6 m
PVR3/600B	3	6 m
PVR3/600EF	3	6 m
PVR3/600U	3	6 m
PVR3/600CH	3	6 m
PVR3/600FA	3	6 m

Attacks



G

DIN

B

EF

U

CH

FA



For Equipment and Detectors

Low Medium High Voltage

Overhead lines and cabins

Telescopic insulating rods in 2 elements for voltage detectors and short circuiting and grounding equipment

Telescopic insulating rods in 2 elements for external and internal use made in different type of tubes:

- P in polyester resin reinforced by fiberglass, Ø 40 and 32 mm
- PE in epoxy resin reinforced by fiberglass, certified IEC 61235, Ø 40 mm
- PV in vinylester resin reinforced by fiberglass, certified IEC 61235, Ø 32 mm
- PVR in vinylester resin reinforced by fiberglass filled by closed cells polyurethane foam, IEC 60855-1, Ø 32 mm

Length on demand, complete of:

- suitable top fitting for the maneuvering of contact clamps or voltage detectors;
- insulating closing cap;
- hand guard;



P2/200U-TEL PE-PVR/200FA-TEL

Code	Composition	Total length	Conformity
P2/200G-TEL	P Ø 40 and 32	1.1 - 2 m	-
P2/200DIN-TEL	P Ø 40 and 32	1.1 - 2 m	-
P2/200EF-TEL	P Ø 40 and 32	1.1 - 2 m	-
P2/200U-TEL	P Ø 40 and 32	1.1 - 2 m	-
P2/200FA-TEL	P Ø 40 and 32	1.1 - 2 m	-

Code	Composition	Total length	Conformity
PE-PV/150G-TEL	PE Ø 40 - PV Ø 32	0.85 - 1.5 m	IEC 61235
PE-PV/150DIN-TEL	PE Ø 40 - PV Ø 32	0.85 - 1.5 m	IEC 61235
PE-PV/150EF-TEL	PE Ø 40 - PV Ø 32	0.85 - 1.5 m	IEC 61235
PE-PV/150U-TEL	PE Ø 40 - PV Ø 32	0.85 - 1.5 m	IEC 61235
PE-PV/150FA-TEL	PE Ø 40 - PV Ø 32	0.85 - 1.5 m	IEC 61235

Code	Composition	Total length	Conformity
PE-PVR/200G-TEL	PE Ø 40 - PVR Ø 32	1.1 - 2 m	IEC 60855-1
PE-PVR/200DIN-TEL	PE Ø 40 - PVR Ø 32	1.1 - 2 m	IEC 60855-1
PE-PVR/200EF-TEL	PE Ø 40 - PVR Ø 32	1.1 - 2 m	IEC 60855-1
PE-PVR/200U-TEL	PE Ø 40 - PVR Ø 32	1.1 - 2 m	IEC 60855-1
PE-PVR/200FA-TEL	PE Ø 40 - PVR Ø 32	1.1 - 2 m	IEC 60855-1

Attacks



G

DIN

EF

U

FA



For Detectors and Disconnection Low Medium High Voltage Lines and substations

Telescopic insulating rods in 3 elements for voltage detectors and hooks for switches disconnection

Telescopic insulating rods in 3 elements for external and internal use made of different type of tubes:

- P in polyester resin reinforced by fiberglass, Ø 40 and 32 mm
- PR in polyester resin reinforced by fiberglass and filled by closed cells polyurethane foam, Ø 24 mm
- PE in epoxy resin reinforced by fiberglass, certified IEC 61235, Ø 48 and 40 mm
- PV in vinylester resin reinforced by fiberglass, certified IEC 61235, Ø 40 and 32 mm
- PVR in vinylester resin reinforced by fiberglass and filled by closed cells polyurethane foam, IEC 60855-1, Ø 32 mm

Length on demand, complete of:

- suitable top fitting for the maneuvering of contact clamps or voltage detectors;
- insulating closing cap;
- hand guard.



P3/380U-TEL PE2-PVR/520U-TEL

Code	Composition	Length	Conformity
P3/380FA-TEL	P Ø 40 and 32 – PR Ø 24	1.6 – 3.8 m	-
P3/380U-TEL	P Ø 40 and 32 – PR Ø 24	1.6 – 3.8 m	-
P3/380EF-TEL	P Ø 40 and 32 – PR Ø 24	1.6 – 3.8 m	-

Code	Composition	Length	Conformity
PE2-PV/300FA-TEL	PE Ø 48 and 40 – PV Ø 32	1.16 – 3 m	IEC 61235
PE2-PV/300DIN-TEL	PE Ø 48 and 40 – PV Ø 32	1.16 – 3 m	IEC 61235
PE2-PV/300EF-TEL	PE Ø 48 and 40 – PV Ø 32	1.16 – 3 m	IEC 61235
PE2-PV/300U-TEL	PE Ø 48 and 40 – PV Ø 32	1.16 – 3 m	IEC 61235

Code	Composition	Length	Conformity
PE2-PVR/520FA-TEL	PE Ø 48 and 40 – PVR Ø 32	1.9 – 5.2 m	IEC 60855-1
PE2-PVR/520DIN-TEL	PE Ø 48 and 40 – PVR Ø 32	1.9 – 5.2 m	IEC 60855-1
PE2-PVR/520EF-TEL	PE Ø 48 and 40 – PVR Ø 32	1.9 – 5.2 m	IEC 60855-1
PE2-PVR/520U-TEL	PE Ø 48 and 40 – PVR Ø 32	1.9 – 5.2 m	IEC 60855-1

Attacks



EF



U



FA

Maneuvering metallic hooks



GSF



GSH



GS



GSU



For Equipment and Disconnection

Low Medium High Voltage

Lines and cabins

Code: **PE-PVR/2010CRC-TEL**

Telescopic hooked clampstick with shotgun movement

In compliance with

IEC 60855-1, IEC 61235



For the use and handling of short circuiting and grounding equipment contact clamps with a specific ring or hook. Extensible length up to 2.5 m.

Composition of the insulating rod:

- Upper element in tube made of vinylester resin tube reinforced by fiberglass and filled by closed cells polyurethane foam type PVR certified in compliance with International Standard IEC 60855-1, Ø 32 mm.
- Forged brass maneuvering hook with foldaway movement.
- Base element made of epoxy resin tube reinforced by fiberglass type PE, certified in conformity with International Standard IEC 61235, Ø 40 mm.
- Waterproof heavy fabric bag.



Alternative versions

PE-PVR/1500CRC-TEL

Length 1.5 m, extensible up to 1.8 m

IEC 60855-1

IEC 61235

PE-PVR/2500CRC-TEL

Length 2.5 m, extensible up to 3 m

IEC 60855-1

IEC 61235



For Equipment and Disconnection

Low Medium High Voltage

Lines and cabins

Code: **PVR3/500CRC**

High insulating hooked clampstick in 3 elements with shotgun movement



In compliance with

IEC 60855-1

For the use and handling of short circuiting and grounding equipments contact clamps with a specific ring or hook placed at a long distance. Total length 5 m.

Usable even in the configuration upper element-base element, length 3 m.

Vinylester resin reinforced by fiberglass tube filled by cells polyurethane foam type PVR certified in conformity with International Standard IEC 60855-1. Tube Ø 32 mm.

Composition of the insulating rod:

- Upper element length 1 m with press forged brass maneuvering hook and foldaway movement.
- Intermediate element, length 2 m.
- Base element with insulating closing cap, length 2 m.
- Heavy fabric bag.

Alternative versions:

PVR2/300CRC

2 elements, total length 3 m

IEC 60855-1

PVR3/600CRC

3 elements, total length 6 m, usable in 2 elements 4 m

IEC 60855-1



Rescue rods	Low Medium Voltage	Cabins and substations
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Code: **FS63**

High insulating rod made of resin reinforced by fiberglass tube, diameter 32 mm, steel hook covered by plastic sheath

Total length hook included: 2 m

Composition:

- steel rescue hook covered by plastic sheath;
- hand guard.
- insulating closing cap.
- heavy fabric bag (on demand)



Alternative versions:		
FS45	Total length hook included 1.65 m	-
FS110	2 elements, total length hook included 3 m	-
FS225	2 elements, total length hook included 4 m	-
FS45/PV	Length 1.65 m, tube type PV, Ø 32 mm	IEC 61235
FS63/PV	Length 2 m, tube type PV, Ø 32 mm	IEC 61235
FS110/PV	2 elements, length 3 m, tube type PV, Ø 32 mm	IEC 61235
FS63/PVR	Length 2 m, tube PVR filled by polyurethane foam	IEC 60855-1
FS110/PVR	2 elements, length 3 m, tube PVR filled by polyurethane foam	IEC 60855-1
FS225/PVR	2 elements, length 4 m, tube PVR filled by polyurethane foam	IEC 60855-1



Fuse extraction	Low and Medium Voltage	Electric Cabins
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Code: **EF30**

Insulating rod for fuse extraction and insertion on max 30 kV system



In compliance with	IEC 61235	ENEL EA0375
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Total length 1.5 m

Composition:

- High insulating clamp made of resin reinforced by fiberglass, suitable for easy and safe clamping of high voltage fuses having 30÷90 mm diameter. Internal surfaces coated with striped rubber for a better grip on the fuses inclined at 75° respect to the axis of the rod for an easier extraction and insertion of the fuses.
- High insulating rod made of epoxy resin tube reinforced by fiberglass type PE, certified in compliance with International Standard IEC 61235.
- **Dynamometric device** to limit the torque and to guarantee the grip without damage of the fuse.
- Waterproof heavy fabric bag.

Alternative versions:		
EF15	Total length 1 m	IEC 61235
EF45	Total length 2 m	IEC 61235



Discharge devices

Low Medium High Voltage

Overhead lines and cabins

Code: **WIP1/160FA-GSO-P2/2 MT33**

Discharge device for electrostatic energy

Total length 1.6 m



Composition of the device:

- High insulating rod type **P1/160FA** made of polyester resin tube reinforced by fiberglass. Length **1.6 m**, $\varnothing$ 32 mm. Complete of insulating closing cap, hand guard and threaded aluminum M10 attack on the head of rod.
- Extraflexible electrolytic copper cable covered by transparent plastic sheath section **25 mm²**, length **2 m** with electrolytic tinned copper lugs and heat shrink reinforcement.
- Forged brass ground clamps type **MT33** connected to one lug of the cable. Clamping capacity: round conductors and bars up to 33 mm
- Metallic hook with threaded male M10 tang to screw on the head of rod after the insertion of the threaded tang into the hole of the free lug so to obtain the optimal contact between hook and lug and the electrical continuity until the ground clamp.

Alternative versions:

WIP1/120FA-GSO-P2/2-MT22	Length 1.2 m, clamping 22 mm	-
WIP1/200FA-GSO-P2/5-MT33	Length 2 m, cables 5 m	-
WIPE1/200FA-GSO-P2/5-MT33	Length 2 m, cables 5 m, tube PE	IEC 61235



Dynamometric rods

Medium High Voltage

Overhead lines and cabins

Code: **PVR3/600D-SD**

High insulating rod with dynamometric release for short circuiting and grounding equipment

High insulating rod in 3 elements with dynamometric release for short circuiting and grounding equipment with limit of strength to apply to the conductors to clamp. Made of vinylester resin tube reinforced by fiberglass and filled by closed cells polyurethane foam, tube type PVR, orange colour, certified in compliance with the International Standard IEC 60855-1, for internal and external use. External diameter: Ø 40 mm.



Total length: 6 m

Complete of:

- Attack with dynamometric release with clamping force $14 \text{ Nm} \pm 20\%$ (or other on demand) suitable for the maneuvering of the contact clamps;
- Insulating closing cap;
- Hand guard;
- Protection for under rain use on demand;
- Quick couplers for jointing the three elements;
- DIN bayonet attack.

Code	Elements	Total length
PVR1/200D-SD	1	2 m
PVR2/400D-SD	2	4 m

Alternative attacks:



G



B



CH





Cases for transport	Low Medium High Voltage	Overhead lines and cabins
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Bags for rods



5522.00	5525.00	5526.00
Waterproof heavy fabric bag, length 130 cm	Waterproof heavy fabric bag, length 235 cm	Waterproof heavy fabric bag, length 180 cm
Dimensions 1300x200 mm	Dimensions 2350x245 mm	Dimensions 1820x265 mm

Maneuvering hooks	Low Medium High Voltage	Switches disconnection
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Manoeuvering hooks



GSF	GSH	GS	GSU
For attacks EF and FA	For attacks EF	For rods with tube Ø 32	For universal attack U



Adaptors for rods	Low Medium High Voltage	Overhead lines and cabins
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Adaptors for rods



ADATT/DIN-U	ADATT/CH12-DIN
Adaptor for rods with bayonet DIN attack. It allows to use voltage detectors and maneuvering hooks for switches disconnections with universal U tang.	Adaptor for rods with bayonet CH12 attack. It allows to use voltage detectors, maneuvering hooks for switches disconnections, contact clamps and clamp holder heads with hexagonal DIN tang.

Adaptors for rods



ADATT/U-EF	ADATT/U-DIN
Adaptor for rods with universal U attack. It allows to use voltage detectors, maneuvering hooks for switches disconnections and clamp holder heads with hexagonal CH12 or M10 tang.	Adaptor for rod with universal U attack. It allows to use voltage detectors, maneuvering hooks for switches disconnections, contact clamps and clamp holder heads with bayonet DIN tang.



VOLTAGE DETECTORS

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Voltage detectors	Low Voltage	Cabinets and cabins
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Code: **RBT690**



Voltage detector / phases rotation tester for low voltage



In compliance with	IEC 61243-3, IEC 61010-1, IEC 61326-1
Range	12 ÷ 690 V

Safety rating: CAT IV 600V

Frequency: 50 ~ 60 Hz

- LED AC/DC Voltage Indication: 12V, 24V, 50V, 120V, 230V, 400V, 690V
- Water-Proof (IP65)
- Built-in self-control check for testing the accurate working of the voltage detector before use.
- Single Lead Voltage Detection: 0 ÷ 690 V, 50 ~ 400 Hz
- Continuity Test with beeper and LED light indicator 0~100KΩ
- Polarity detection: positive & negative
- Work light
- Supply: 1.5V Batteries (R03) (2 included).
- Product size: 275 mm x 51 mm x 30 mm
- Product net weight: 210 g
- Plastic blister.

Voltage detectors	Low Voltage	Cabinets and cabins
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Code: **RBT750**



Electronic voltage capacitive and/or resistive detector of LV presence/absence with visual and acoustic signals



In compliance with	ENEL EA 0118		
Range	Bipolar 25÷500 V AC	Bipolar 50÷750 V DC	Unipolar 50÷500 V DC

- Built-in self-control check for testing the accurate working of the voltage detector before use.
- Detector box made of ABS reinforced by fiberglass.
- Dimensions: 200x40x40 mm.
- Contact-electrode made of tinned brass covered by rubber.
- Nylon probe with contact electrode made of tinned brass covered by rubber.
- Supply: alkaline battery 9 V included.
- Detector supplied in a suitable polypropylene impact-resistant case with internal foam housing.

Alternative Version		
RBT750-E/A	For overhead lines use, isolated extension length 1 m with case	ENEL EA 0118





Voltage detectors	Medium Voltage	Overhead lines and cabins
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Code: **RMT1133**

Electronic capacitive detector of voltage presence/absence on MV substations by visual signal

Range	3 ÷ 45 KV
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- Suitable for indoors and outdoors use.
- **4 flashing red led-lights** indicating the operative voltage presence.
- Built-in self-control check for testing the accurate working of the voltage detector before use.
- Cylindrical box made of polycarbonate, diameter 58 mm.
- V-shape metallic contact probe.
- End fitting: M10 or universal U or hexagonal CH12.
- Metallic carrying case with internal foam housing



Versioni alternative	
RMT1133/POCKET	Voltage detector fixed on telescopic rod length 1 m complete of heavy fabric bag with belt loop for application on the belt.

Voltage detectors	Medium Voltage	Disconnectable connectors
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Code: **WIRTDC/EA0279**



Electronic capacitive detector of voltage presence/absence for MV (8÷24 kV) external cone disconnectable connectors 250/400 A by visual and acoustic signals

In conformity with	ENEL EA 0279
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Range	8 ÷ 24 KV
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- Double indication of operative voltage presence: intermittent acoustic and flashing of the **red led-light**
- The absence of operative voltage is indicated by **green led-light permanent on**.
- Built-in self-control check for testing the accurate working of the voltage detector before and after use.
- The shape of the contact electrode allows to remove protecting caps of capacitor dividers placed on 250 A straight and square terminals and on 400 A terminations and derivations.
- Attack for rod **bayonet B** or **universal U**.
- Rigid plastic case, impact-resistant, with internal foam housing.



Voltage detectors	Medium Voltage	Lines, cabins and substations
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Code: **RMT1030**



Electronic capacitive detector of voltage presence/absence on MV lines and installations by visual and acoustic signals. In conformity with International Standard IEC 61243-1

In compliance with	IEC 61243-1
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Range	3 ÷ 10 KV
	6 ÷ 12 KV
	10 ÷ 30 KV
	15 ÷ 45 KV
	22 ÷ 66 KV

Group: III

Category: L

Frequency: 50 ~ 60 Hz

Climatic category: N



- Suitable for use in wet condition, either indoors or outdoors.
- Double indication of operative voltage presence: intermittent acoustic and flashing of **red LEDs in the lower and part of the detector**.
- The absence of operative voltage is indicated by **green LED permanent on in the lower part of the detector**.
- The lighting of the orange led-light is the indication of low battery.
- **Built-in self-control check** for testing the accurate working of the voltage detector before use.
- Cylindrical box made of ABS, diameter **58 mm**.
- V-shape metallic contact probe.
- Supply: alkaline battery 9 V (2 included).
- Metallic carrying case with internal foam housing.
- Other voltage ranges to be set in base at working voltage.

Alternative attacks:



U



M10



CH12



Voltage detectors	Medium Voltage	Lines, cabins and substations
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Code: **R-VISOR**



Electronic capacitive detector of MV voltage presence / absence through acoustic and visual signals clearly visible from bottom and lateral side of the detector



In conformity with	IEC 61243-1
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Range	3 ÷ 10 KV
	6 ÷ 12 KV
	10 ÷ 30 KV
	15 ÷ 45 KV
	22 ÷ 66 KV

Group: III

Category: L

Frequency: 50 ~ 60 Hz

Climatic category: N

- Suitable for use in wet condition, either indoors or outdoors.
- Double indication of operative voltage presence: intermittent acoustic and flashing of **red LEDs in the lower and lateral side of the detector**.
- The absence of operative voltage is indicated by **green permanent LEDs on in the lower and lateral side of the detector**.
- The lighting of the orange led-light is the indication of low battery.
- Built-in self-control check for testing the accurate working of the voltage detector before use.
- Cylindrical box made of ABS, diameter **58 mm**.
- V-shape metallic contact probe.
- Supply: alkaline battery 9 V (2 included).
- Carrying case with internal foam housing.
- Other voltage ranges to be set in base at working voltage.

Alternative attacks:



U



M10



CH12





Voltage detectors

Medium High Voltage

Overhead lines and substations

Code: **RT1030**



Non-contact electronic capacitive detector of voltage presence / absence by visual and acoustic signals with detection of the electric field

In compliance with	IEC 61243-6
	ENEL EA0498, EA0499, TERNA RS XP 002

Range	60 ÷ 72 KV
	50 ÷ 132 KV
	132 ÷ 150 KV
	220 K V
	132 ÷ 380 KV



- Suitable for indoor and outdoor use.
- Double indication of operative voltage presence: intermittent acoustic and flashing of **red LEDs**.
- The absence of operative voltage is indicated by permanent on **green LEDs**.
- Built-in self-control check for testing the accurate working of the voltage detector before and after use.
- Cylindrical box made of ABS, diameter **58 mm**.
- Supply: alkaline battery 9 V (2 included).
- Metallic case with internal foam housing.
- Settable in base at operating voltage of the installation including **Medium Voltage ranges**.

Alternative attacks:



U



M10



CH12



Voltage detectors

High Voltage

Lines, cabins and substations

Code: **RMT3090**



Electronic capacitive detector of HV voltage presence / absence by visual and acoustic signals.



In compliance with

IEC 61243-1

Range

24 ÷ 76 KV

60 ÷ 90 KV

76 ÷ 150 KV

90 ÷ 220 KV

220 ÷ 400 KV

Group: III

Category: L

Frequency: 50 ~ 60 Hz

Climatic category: N

- Suitable for use in wet condition, indoors or outdoors.
- Double indication of operative voltage presence: intermittent acoustic and flashing of **red LEDs**.
- The absence of operative voltage is indicated by permanent **green LEDs**.
- The lighting of the orange led-light is the indication of low battery.
- Built-in self-control check for testing the accurate working of the voltage detector before and after use.
- Cylindrical box made of ABS.
- Hook shape metallic contact probe, 360° swivel type.
- End fitting: **universal U** splined.
- Supply: alkaline battery 9 V (2 included).
- Metallic carrying case with internal foam housing.
- Other voltage ranges to be set in base at working voltage.



Phase Comparators	Medium Voltage	Lines, cabins and substations
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Code: **RBM36-QS**

Phase comparator and voltage detector for MV voltage by visual and acoustic signals for internal use



Range	2 ÷ 36 KV
	5 ÷ 36 KV

It can be used as:

- Phase comparator
- Double poles voltage detector
- MV fuse tester

Kit contents:

- 2 high insulating rods, fitted with ergonomic handle with hand guard, connected between them by a flexible high insulated cable of 1.4 m length.
- **Rod 1** is provided with **LEDs and audible** voltage indicators.
- **Rod 2** with function of circuit detection closing.
- 2 high impedance antennas, made of high insulating material and provided with electrodes connectable onto the head of the two rods. Total length of each rod complete of antenna: 1.20 m.
- Metallic case.

Alternative versions:	
RBM36-QS/A	Phase comparator with high insulating contact antenna extensions length 0.62 m



Phase Comparator	Medium Voltage	Lines, cabins and substations
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Code: **R-FASER**



Device for voltage presence detection and phase comparison with radiofrequency connection and display receiver

Kit composed of 2 voltage detection Probes and one Display Receiver.

Display Receiver is connected in radiofrequency with the probes for phase comparison or for a clear reading of the voltage detection working in cabins or in situations of poor visibility and audibility of the probe signals. Device in compliance with both norms as voltage detector (single probe) and as phase comparator (complete kit).



In compliance with	Probe	IEC 61243-1
	Device	IEC 61481-1
Range voltage detector	6 ÷ 20 KV	
	15 ÷ 36 KV	
Class of phase detection	0° ÷ ± 30° -	Phase Concordance
	± 60° ÷ ± 300° -	Phase Discordance



Characteristics of Probes as voltage detector.

Group: I

Category: L

Frequency: 50 ~ 60 Hz

Climatic categorie: N

- Suitable indoor and outdoor use.
- Water-Proof (IP43)
- Double indication of operative voltage presence: intermittent acoustic and flashing of LEDs.
- The absence of operative voltage is indicated by green LEDs permanent on.
- Built-in self-control check for testing the accurate working of the voltage detector before and after use.
- Cylindrical box made of ABS, diameter 38 mm.
- V-shape metallic contact probe.
- Supply: alkaline battery 9 V.
- Universal U attack for the rod.

Characteristics of Phase Comparator (Receiver + 2 Probes):

- Suitable indoor and outdoor use.
- Water-Proof (IP43)
- Double indication of operative voltage presence: intermittent acoustic and flashing of 2 LEDs on Display Receiver for both probes.
- The absence of operative voltage is indicated by green LEDs permanent on, on Display Receiver for both probes.
- Phase Concordance signaled by green LEDs in the center of Display Receiver
- Phase Discordance signaled by red LEDs in the center of Display Receiver
- Built-in self-control check for testing the accurate working of the voltage detector Probes and Display Receiver before and after use.
- Carrying case with internal foam housing.



SAFETY KITS AND INSULATING MATERIALS

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Safety kits	Low Medium Voltage	Overhead lines
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Code: **WICONT/PL**

Windbracer device for wooden poles, assuring poles stability before to climb them.



In conformity with	ENEL Technical Specification EA 0079
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- Steel section body equipment with double shooing clamping device with endless screw and sledge with clamp for fixing steel rope anchoring the equipment to the wooden pole and three rings for hooking of the synthetic rope.
- Aluminum rod for lifting and maneuvering the equipment composed of four elements connectable between them, blocking by metallic pins. Total length **6 m**.
- **3** synthetic ropes with the protection thimble on one side for the connection to the ring to assure the stability of the wooden pole.
- **3** galvanized steel X-shaped pickets, dimensions 50x50x5 mm, length 1 m, each complete of ring for connection of the synthetic rope.

Alternative versions:

WICONT/PA Pole Armour	Windbracer device for any kind of pole	ENEL EA 0079
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Earthing equipment	Low Medium High Voltage	Insulated buried cables
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Code: **WIPCMT-95**

Cable-piercing equipment for one or three poles insulated cables up to 100 mm external diameter and up to 45 kV



ICC	5.2 kA / 1 s
-----	--------------

- Light alloy body with piercing helical element.
- Protection tile.
- Pole and handles made of synthetic resin reinforced by fiberglass.
- Extraflexible electrolytic copper cable covered by transparent plastic sheath, section **25 mm²**, length **5 m**.
- Press forged brass ground clamp, clamping capacity up to 33 mm.
- Metallic case.



Safety kit	Low Medium Voltage	Cabins and substations
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Code: **WIRSB-CL3**

Safety Bag

**Compact and portable kit for safety works from electric risks
CLASS 3 for tensions up to 26.5 kV**

Class	3
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Safety suitcase:

- Nylon suitcase with 30 % of fiber glass.
Trolley type with extensible handle and wheels for transport.
Certified water-proof: **IP67**
Dimensions: 687 x 528 x 376 mm.

Kit Contents:

Voltage detector	RMT1030 Electronic capacitive detector o voltage presence/absence on MV lines and installations by visual and acoustic signals, range 10 ÷ 36 kV
Safety hook	Steel hook covered by plastic sheath.
Insulating Rod	P3/150EF-TEL Insulating telescopic rod in three elements, extended length 1.5 m
Dielectric Gloves	GI 30 CLASS 3 Maximum voltage use 26500 V. Dielectric gloves with case certified Personal Protection Equipment. in compliance with the International Standard IEC 60903.
Dielectric Boots	TD20 Resistant dielectric boots up to 20 kV certified EN ISO 20345
Insulating Carpet	WI3/100-0,6 Insulating carpet in compliance with the IEC 61111 CLASS 3 dimensions 100x60 cm. Maximum operating voltage 26500 V
Insulating Cable Cutter	WI/TRC Insulating Shears for cable cutting with handles in epoxy resin reinforced by fiberglass
Accessories	- Delimitation tape - Talc - Instructions



Alternative versions:

WIRSB-CL4	Compact and portable kit for safety works from electric risks CLASS 4 for tensions up to 36 kV Variants compared to type WIRSB-CL3: - Dielectric gloves GI 40 CLASS 4 Maximum voltage use 36000 V. - WI6/100-0,6 Insulating mat conform to the IEC 61111 CLASS 4 Maximum operating voltage 36000 V	CLASS 4
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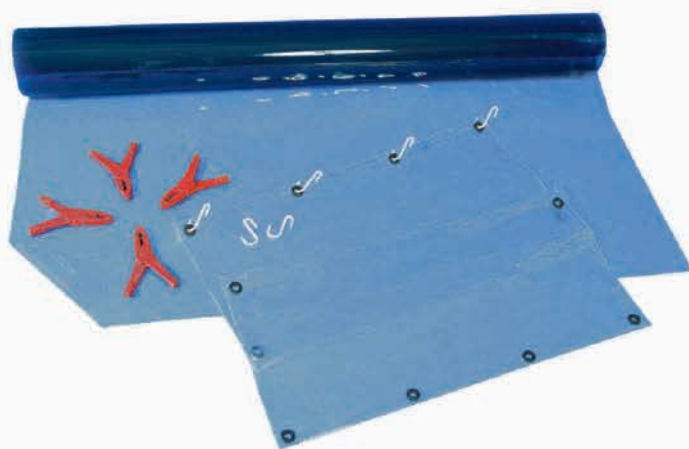


Insulating materials	Low Voltage	Cabins and cabinets
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Code: **ISOLPLAST 353/05**

Insulating cover for temporary protection against accidental contact at energized LV installations up to 1000 V

Flexible, transparent, thickness 0.5 mm, acid and oil resistant, self-extinguishing and flame resistant.



In compliance with	IEC 61112
	ENEL EA0337

Category	M
Class	0
Thickness	0.5 mm
Tensile test	19.1 MPa
Max absorbed current	0.4 mA
Voltage test	5 kV
Withstand test	10 kV
Max operative voltage	1 kV

Alternative versions	
ISOL353/0,5-R25M	Roll width 1,4 m, length 25 m
ISOL353T/0,5	Cover size 800x1000 mm (different sizes on demand)
ISOL353TELO/0,5	With plastic button-holes size 800x1000 mm with 2 "S" shape hook
ISOL353VLC/0,5	Cover with Velcro, size 800x1000 mm (different sizes on demand)

Accessories



PI/96	GA/S
Insulating spring clamp in plastic material for hanging covers, beaks opening 45 mm	"S" shape insulating hook for hanging covers with button-holes



Insulating materials	Low Medium Voltage	Electric cabins and cabinets
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Code: **Insulating carpets**

Insulating rubber carpet, grey colour, antisliding clothing on both surfaces



In conformity with	IEC 61111
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Type	WI2,6/100
Class	0
Thickness	2.6 mm
Height	100 cm
Maximum length	10 m
Voltage test	5 kV
Withstand test voltage	10 kV
Maximum voltage use	1 kV

Type	WI3/100
Class	3
Thickness	3 mm
Height	100 cm
Maximum length	10 m
Voltage test	30 kV
Withstand test voltage	40 kV
Maximum voltage use	26.5 kV

Type	WI4,5/100
Class	4
Thickness	4.5 mm
Height	100 cm
Maximum length	10 m
Voltage test	40 kV
Withstand test voltage	50 kV
Maximum voltage use	36 kV



Type	WI6/100
Class	4
Thickness	6 mm
Height	100 cm
Maximum length	10 m
Voltage test	40 kV
Withstand test voltage	50 kV
Maximum voltage use	36 kV

Accessories	
Bag for carpet	Bag for carpet size 100x100 cm



Insulating platform	Low Medium High Voltage	Cabins and cabinets
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Code: **WI45/260**



Insulating platform with anti-slip surface made of synthetic resin reinforced by fiberglass, dimensions 500x500x40 mm

Insulating plastic legs, screw connection to the body of the platform. Legs are slanted for preventing the tilting of platform.



WI45/260

In conformity with	NBN 761.01
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Maximum voltage use	45 kV
Height	260 mm



WI45E/350

Alternative versions:	
WI45/310	Maximum tension voltage 45 kV, height 310 mm
WI45E/350	For external use, maximum voltage use 45 kV, full PVC legs and 2 rubber bells for use under rain, height 350 mm
WI45E/430	For external use, maximum voltage use 45 kV, full PVC legs and 2 rubber bells for use under rain, height 430 mm
WI60E/510	For external use, maximum voltage use 60 kV, full PVC legs and 4 rubber bells for use under rain, height 510 mm



Personal Protective Equipment

Low Medium Voltage

Lines, cabins and cabinet

Code: **GI – DIELECTRIC GLOVES**



Dielectric gloves certified as Personal Protective Equipment in compliance with the International Standard IEC 60903

Insulating gloves in natural latex.



In conformity with	IEC 60903
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Type	GI 2.5
Class	00
Length	36 cm / 41 cm
Voltage test	2500 V
Max operating voltage	500 V

Type	GI 5
Class	0
Length	36 cm / 41 cm
Voltage test	5000 V
Max operating voltage	1000 V

Type	GI 10
Class	1
Length	36 cm / 41 cm
Voltage test	10000 V
Max operating voltage	7500 V

Type	GI 20
Class	2
Length	36 cm / 41 cm
Voltage test	20000 V
Max operating voltage	17000 V

Type	GI 30
Class	3
Length	36 cm / 41 cm
Voltage test	30000 V
Max operating voltage	26500 V

Type	GI 40
Class	4
Length	41 cm
Voltage test	40000 V
Max operating voltage	36000 V

Accessories

CUST/GI

Insulating plastic case for transport or for fixing to the wall



Accessories	Low Medium High Voltage	Lines, cabins, substations
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Code: **VPG90**

Pneumatic inflation tester for detection of eventual perforations on dielectric gloves before the use of the individual protection device



- Made of thermoplastic material.
- Upper part tapered to allow easy insert and fixing of glove by the two elastic rings and provided with no return valve.
- Lower side is composed by inflating body pump with compression spring and rubber type o-ring for seal and sliding.
- Suitable for periodic inspection test as specified by the European Standard EN 60903 – International Standard IEC 60903.

Accessories	Low Medium Voltage	Lines, cabins, substations
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Code: **WI/TRC**

Insulating cable cutter



Equipment contents:

- Shears with long blade
- Tube in epoxy resin reinforced by fiberglass type PE, in compliance with the International Standard IEC 61235. Diameter Ø 40 mm, length 0.60 mm.
- Hand guard.
- Insulating closing cap.

Alternative versions:

WI/TRC/PL

For external use and for use under- rain, tube length 1.5 m



EQUIPMENT FOR RAILWAYS, TRAM LINES AND UNDERGROUNDS

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Grounding equipment	Medium Voltage	Contact lines
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Code: **WIDLC/RFI-600**

Short circuiting and grounding equipment for railway contact line 3 kV DC

In compliance with	RFI DMA IM TE SP IFS 083
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Cat. RFI	817/600
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Equipment contents:

- Insulating part made of epoxy resin reinforced by fiberglass tube type **PE** certified in conformity with **IEC 61235**, external diameter 40 mm, length **2.5 m** filled by closed cells polyurethane foam.
- Metallic extension made of aluminium tube with conductive element made of aluminium light alloy plate connecting the ground cable's lug and the contact clamp.
- Contact clamp, made of aluminium light alloy fixed onto the upper end of metallic extension rod, clamping the conductors of the contact line. Dynamometric clamping device with torque limiter **14 Nm $\pm$ 20%**.
- Total length. **4,6 m**.
- Extraflexible electrolytic copper cable covered by transparent silicone sheath section **95 mm²**, length **4.95 m**.
- Ground clamp clamping onto the rail by means of steel milling jaws. Dynamometric clamping device with torque limiter **22 Nm $\pm$ 20%**.

Alternative versions:			
WIDLC/RFI-601	Cat. RFI 817/601	2 elements for feeder. Cable 95 mm² , length 9.2 m	RFI DMA IM TE SP IFS 083
WIDLC/RFI-602	Cat. RFI 817/602	3 elements for railway contact lines. Cable 95 mm² , length 5.5 m	RFI DMA IM TE SP IFS 083



Grounding equipment	Medium Voltage	Contact lines
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Code: **WIDLC/RFI-605**

Short circuiting and grounding equipment for contact lines at 25 kV AC

In compliance with	RFI DMA IM TE SP IFS 003
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Cat. RFI	817/605
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Composition of the equipment:

- Insulating part made of epoxy resin reinforced by fiberglass tube type **PE** certified in conformity with **IEC 61235**, external diameter 40 mm, length **2.5 m** filled by closed cells polyurethane foam.
- Metallic extension made of aluminium tube with conductive element made of aluminium light alloy plate connecting the ground cable's lug and the contact clamp.
- Contact clamp, made of aluminium light alloy fixed onto the upper end of metallic extension rod, clamping the conductors of the contact line. Dynamometric clamping device with torque limiter **14 Nm $\pm$ 20%**.
- Total length. **4,6 m**.
- Extraflexible electrolytic copper cable covered by transparent silicone sheath section **50 mm²**, length **6.1 m**.
- Ground clamp clamping onto the rail by means of steel milling jaws. Dynamometric clamping device with torque limiter **22 Nm $\pm$ 20%**.

Alternative versions			
WIDLC/RFI-603	Cat. RFI 817/603	2 elements for contact lines. Cable 50 mm ² , length 5.5 m	RFI DMA IM TE SP IFS 003
WIDLC/RFI-604	Cat. RFI 817/604	2 elements for feeder. Cable 50 mm ² , length 8.1 m	RFI DMA IM TE SP IFS 003
WIDLC/RFI-606	Cat. RFI 817/606	3 elements for feeder. Cable 50 mm ² , length 8.1 m	RFI DMA IM TE SP IFS 003



Grounding equipment	Medium Voltage	Cabins and substations
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Code: **WIDSSE/RFI-608**

Short circuiting and grounding equipment for substations and cabins 3 kV DC



In compliance with	RFI DPRIM STF IFS SS 020
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Cat. RFI	817/6080
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Composition of the equipment

- Light alloy contact clamp type **PC/BMG** for **multiconductors** with bayonet DIN tang and multiples beack for different clamping capacity:
 - conductors Ø 14÷70 mm;
 - flat bars up to 90x100 mm (—);
 - Bars on horizontal levels up to 20x110 mm (I);
 - 45° slanting bars up to 50x120 mm (/).
- Extraflexible electrolytic copper cable covered by transparent rubber sheath, sect. **95 mm²**, length **5 m**.
- Ground clamp type **MT50** with dynamometric clamping device with torque limiter **14 Nm ± 20%**.
- High insulating rod type **PV3/550D-SD** in 3 elements length **5.5 m** made of vinylester resin reinforced tube by fiberglass type **PV**, certified in conformity with **IEC 61235**. Complete of dynamometric torque, clamping force limiter **14 Nm ± 20%** (other clamping force on demand) suitable for the maneuvering of the contact clamps

Alternative versions:			
WIDSSE/RFI-609	Cat. RFI 817/6090	3 kV c.c. with spherical head fixed points contact clamp, cables 5 m	RFI DPRIM STF IFS SS 020
WIDSSE/RFI-610	Cat. RFI 817/6100	3 kV c.c. with multiconductor contact clamp, cables 10 m	RFI DPRIM STF IFS SS 020
WIDSSE/RFI-611	Cat. RFI 817/6110	3 kV c.c. with spherical head fixed points contact clamp, cables 10 m	RFI DPRIM STF IFS SS 020
WIDSSE/RFI-612	Cat. RFI 817/6120	2.71 kV with 3 multiconductor contact clamps, cables 5 m	RFI DPRIM STF IFS SS 020
WIDSSE/RFI-613	Cat. RFI 817/6130	2.71 kV with 3 spherical head fixed points contact clamps, cables 5 m	RFI DPRIM STF IFS SS 020
WIDSSE/RFI-614	Cat. RFI 817/6140	2.71 kV with 6 multiconductor contact clamps, cables 5 m	RFI DPRIM STF IFS SS 020
WIDSSE/RFI-615	Cat. RFI 817/6150	2.71 kV with 6 spherical head fixed points contact clamps, cables 5 m	RFI DPRIM STF IFS SS 020



Short circuiting and grounding	DC	Underground lines
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Code: **WIDMT/METRO-MM1**

Short circuiting and grounding equipment for 2 plain line rails, third rail of alimentation and fourth rail negative



In compliance with	RFI DMA IM TE SP IFS 083 A
ICC	40.9 kA / 0.25 s

Equipment contents:

- 3 Ground clamps type **MTR/RFI-SDCH22** clamping onto the rail by means of steel milling jaws. Dynamometric clamping device with torque limiter **14 Nm $\pm$ 20%**. Electrolytic copper contact to the rail 120x30x20 mm. Hexagonal tang CH22.
- 1 Press forged ground clamp type **PC22/CH22-SD** clamping onto the third rail. Dynamometric clamping device with torque limiter **14 Nm $\pm$ 20%**. Hexagonal tang CH22.
- 3 Extraflexible electrolytic copper cables covered by transparent rubber sheath, section **95 mm²**, lengths **1 m, 2 m and 2.5 m**.
- High insulating rod type **PVR2/200CH23** made of vinylester resin tube reinforced by fiberglass and filled by closed cells polyurethane foam, in conformity with IEC 60855-1. Length **2 m** with 6 reflectors.

Short circuiting and grounding	DC	Underground lines
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Code: **WIDMT/METRO-ATH**

Short circuiting and grounding equipment for two underground rails, one fed and one negative



In compliance with	RFI DMA IM TE SP IFS 083 A
ICC	100 kA D.C. / 80 ms

Equipment contents:

- Ground clamp type **MTR/RFI-SD-IR** clamping onto the fed rail by means of steel milling jaws. Dynamometric clamping device with torque limiter **14 Nm $\pm$ 20%** maneuvered by a rod, tube **PV** conform to the IEC 61235. Electrolytic copper contact to the rail 120x30x20 mm.
- Ground clamp type **MTR/RFI-SD** clamping onto the negative rail by means of steel milling jaws. Dynamometric clamping device with torque limiter **14 Nm $\pm$ 20%** maneuvered by a rod, tube **PV** conform to the IEC 61235. Electrolytic copper contact to the rail 120x30x20 mm.
- Extraflexible electrolytic copper cable covered by transparent rubber sheath, section **120 mm²**, lengths **1 m**.



Voltage detectors	DC	Railway lines
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Code: **RTC3600/FER**



DC voltage electronic detector with visual and acoustic signals for use on railway lines and substations

Range	385 ÷ 3600 V c.c.
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- Suitable for indoor and outdoor use.
- Double indication of operative voltage presence: intermittent acoustic and flashing of **red LEDs**.
- The absence of operative voltage is indicated by **green LEDs** permanent on.
- The lighting of the **orange LED** is the indication of low battery.
- **Built-in self-control check** for testing the accurate working of the voltage detector before use.
- Cylindrical box made of ABS.
- Hook shape metallic contact probe, **360° swivel type**.
- **Universal U** end fitting splined for connection onto the head of to the insulating rod.
- Supply: alkaline battery 9 V.
- Electrolytic copper cable covered by rubber sheath for connection to the ground clamp. Section **1 mm²**, length **8 m** (different lengths on demand).
- Magnetic type ground clamp for connection on the rail.
- Metallic case.
- Insulating rod made of resin reinforced by fiberglass tube, total length **4 m** (different lengths on demand).
- Heavy waterproof fabric bag containing the insulating rod.

Alternative versions	
RTC1800/TRM	Range 385 ÷ 1800 V c.c. for tramways and underground lines



Voltage detectors	DC	Railway lines
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Code: **RTC1800/FIL**



DC voltage electronic detector with visual and acoustic signals for use on trolley-bus lines



Range	385 + 1800 V c.c.
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- Suitable for indoor and outdoor use.
- Double indication of operative voltage presence: intermittent acoustic and flashing of **red LEDs**.
- The absence of operative voltage is indicated by **green LEDs** permanent on.
- The lighting of the **orange LED** is the indication of low battery.
- **Built-in self-control check** for testing the accurate working of the voltage detector before use.
- Cylindrical box made of ABS.
- Hook shape metallic contact probe, **360° swivel type**.
- **Universal U** end fitting splined for connection onto the head of to the insulating rod.
- Supply: alkaline battery 9 V.
- Electrolytic copper cable covered by thermoplastic rubber sheath for connection to the neutral conductor. Section **1 mm²**, length **2 m** (different lengths on demand).
- Metallic case.
- **2** Insulating rods made of in resin tube reinforced by fiberglass, total length of one rod **4 m** in 2 elements (different lengths on demand) connecting between them by quick coupler. The first rod is complete with a metallic hook contact probe, the second one with fitting for the voltage detector.
- Heavy waterproof fabric containing the insulating rods.

Electrical continuity	DC	Railway lines
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Code: **WI33-120**

Portable device for electrical continuity between rails



- **2** forged brass ground clamps suitable for clamping on the lower part of the rail.
- Extraflexible electrolytic copper cable covered by transparent rubber sheath. Section **120 mm²**, length **1.5 m** (different lengths on demand).
- Rigid plastic case.

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